

Work Plan

Ithaca Gun Company Site

Site:

Ithaca Gun Company Site
Ithaca, New York 14850

Prepared for:

USEPA Region II
2890 Woodbridge Avenue
Edison, New Jersey 08837

Prepared by:

Earth Tech, Inc.
7870 Villa Park Drive
Richmond, Virginia 23228

July 19, 2002

Earth Tech Job No. 51187

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1.0 SITE BACKGROUND – ACTION MEMORANDUM

1.1 Site Description

The Ithaca Gun Company Site (Site) comprises the Ithaca Gun Company property and the Ithaca Falls parcel. The Site appears to be the historical source of widespread lead contamination from the operations of the Ithaca Gun Company. Historically, lead shot was dumped into the gorge, and lead shot and lead-contaminated soils have migrated onto the Ithaca Falls parcel via erosion from the Site. The Ithaca Gun property is fenced, but the Ithaca Falls parcel is not. There is evidence that trespassers frequent the Site.

The Ithaca Gun Company was in operation from 1880 through 1986. The main operations included manufacture of firearms and munitions. Secondary operations included spray painting, drying gunstocks in ovens, firing ranges, plating, metal shops, and forging. The Ithaca Gun Company is adjacent to Fall Creek Gorge and overlooks the falls. A large pool at the base of the falls is a popular spot for swimming and fishing.

The Ithaca Gun Company is located at 121-125 Lake Street, Ithaca, Tompkins County, New York. The City of Ithaca recently purchased the Ithaca Falls parcel with the intention of converting it into a park. This parcel is to the north and northwest of the Ithaca Gun property, which is directly uphill from the Ithaca Falls parcel. This area is popular with hikers and others due to the scenic nature of the Fall Creek Gorge.

According to 1990 U.S. Census Bureau data, there are approximately 2,000 people within ¼-mile of the Site and 7,500 people within ½-mile of the Site. The New York State Department of Health (NYSDOH) has been informed that the Ithaca Falls parcel is a favorite gathering area for students at Ithaca High School, which is less than ¼-mile from the Site. The Fall Creek Elementary School is also approximately ¼-mile from the Site.

1.2 Removal Site Assessment

On August 29, 2000, the USEPA received a request from the New York State Department of Environmental Conservation (NYSDEC) to conduct an emergency removal action at the Ithaca Gun Company Site.

From September 26 through September 29, 2000, the USEPA Response and Prevention Branch conducted a removal site assessment (RSA) utilizing the Removal Support Team (RST) contractor. The RST contractor collected surface and subsurface soil/sediment samples and screened the samples for lead and arsenic with a field portable x-ray fluorescence (XRF) instrument to determine the extent of contamination. A 25-foot-by-25-foot grid was established on an area approximately 100 feet by 200 feet on the Ithaca Falls parcel. Soil samples were collected at a depth of 0 to 6 inches and four samples were collected at a 15-inch depth. Soil/sediment samples were collected along the millrace at 25-foot intervals for a length of 500 feet. Soil/sediment samples were collected at 25-foot intervals along the southern bank of Fall Creek (at the northern boundary of the Site). Finally, 10 biased soil samples were collected on the Ithaca Gun Company property.

The results from this initial assessment revealed lead concentrations from non-detected to 136,000 parts per million (ppm). Subsurface soil samples collected at 15 inches contained lead in concentrations up to 28,900 ppm. Arsenic concentrations ranged from non-detected to 3,000 ppm in the surface soil samples.

Additional delineation of the extent of contamination occurred from July 24 to 26, 2001. An upper area of the millrace, its banks, and a plunge pool, were assessed. A total of 50 surface and subsurface soil samples were collected and analyzed in the field with the XRF. These results indicated lead concentrations ranging from 648 ppm to 24,150 ppm. Six subsurface soil samples (24 inches deep) were collected and had lead concentrations of up to 42,400 ppm. This sampling event revealed a thin veneer of soils averaging 6 inches in depth.

The NYSDEC conducted a soil depth profile in May 2001 showing that soils are the deepest in the eastern boundary (5 feet) of the Ithaca Falls parcel and then gradually decrease in depth toward the west (1.5 feet). The total estimated volume of lead-contaminated soil on the Site to bedrock is 1,820 cubic yards.

Lead-contaminated soils were also identified on the Sigma Nu Fraternity property to the east of the Site. This area is a heavily vegetated slope along the entire site access road. The contaminated soils are in the areas at the southern and northern ends of the sloped section.

The NYSDOH, in cooperation with the Agency for Toxic Substances and Disease Registry (ATSDR) issued a Health Consultation to assist USEPA in the evaluation of the public health implications of exposure to lead-contaminated soils at the Site. Based on the on-site observations, the available sampling data, and ATSDR's hazard category classification, the areas of lead contamination at the Ithaca Gun Company Site pose a public health hazard. Direct contact, incidental ingestion, and inhalation of contaminated soils are likely.

Also located on the Ithaca Falls parcel is a small circular area about 100 square feet where the NYSDEC, using very sensitive radiation detection instruments, detected concentrations of a uranium series of compounds. The NYSDEC collected two surface and subsurface soil samples, and the measured dose rates ranged from 3 to 12 micro-rem per hour (urem/hr), which is consistent with the background levels in the area.

2.0 SITE PREPARATION AND MOBILIZATION

The following is an alphabetical list of definitions of terms used in this Work Plan.

1. ATSDR – Agency for Toxic Substances and Disease Registry.
2. Barn – a two-story vinyl-sided wood building on the Island.
3. Bridge – a bridge that spans the millrace to connect the southern portion of the Ithaca Gun Company property to the Island.
4. CAMP (Community Air Monitoring Plan) – a NYSDOH generic air monitoring plan that requires continuous real-time monitoring for particulate levels at the perimeter of the exclusion zone or work areas.
5. Cornell Property – parcel of land along Lake Street to the south of the Fall Creek Parcel.
6. Crew Building – an old shed that is located to the east of the Barn.
7. Earth Tech, Inc. – USEPA's Emergency Response and Rapid Services (ERRS) contractor.

8. East Area – an embankment (hillside) to the east of the site access road between the Ithaca Gun Company property and the Sigma Nu Fraternity property.
9. Fall Creek Parcel – a parcel of land to the north and west of the Ithaca Gun Company Property. This parcel was recently purchased by the City of Ithaca from Cornell University with the intention of creating a park.
10. Gorge Area – an area along Fall Creek and at the bottom of the sheer cliff below the “Ye Old Man’s Home”.
11. Island – a portion of the Site between Fall Creek and the millrace.
12. Ithaca Gun Company – The former company that manufactured guns which occupies the parcel of land designated as 121 – 125 Lake Street, Ithaca, NY.
13. Ithaca Gun Company Site – the USEPA designated Site encompassing the Ithaca Gun Property, the Fall Creek Parcel and includes the East Area, the Cornell Property, the Lake Street Area and the Northeast Area.
14. Lower Millrace Area – the portion of the millrace from the partial rock dam to the western end of the millrace.
15. Metal Building – a long single story metal building on the Island that used to be the gun finishing building. Also referred to as the “Ye Old Man’s Home”.
16. Middle Millrace Area – a portion of the millrace between the plunge pool and the partial rock dam.
17. Millrace – an area downstream of the Ezra Cornell tunnel and southern boundary of the Ithaca Fall parcel, which was used to generate electricity via waterpower to operate mills.
18. Natural Area Commission (NAC) – an advisory group to the Ithaca City Common Council. Certain NAC members are assisting in identifying trees/plants and in the development of a re-vegetation plan for the city-owned Ithaca Falls parcel.
19. NYSDEC – New York State Department of Environmental Conservation.
20. NYSDOH – New York State Department of Health.
21. Plunge Pool – a flat circular section of the millrace nearly below the bridge.
22. Sigma Nu Fraternity – the property along the east edge of the Ithaca Gun Company property.
23. Staging and Loading Area – an area on the Island where the Metal Building and Barn were located. This will be a staging area where the covered and sealed containers with lead-contaminated soil will be located until they are transported to approved TSDFs.
24. Topsoil – a blend of materials to make an appropriate mix of ingredients to meet the natural soil conditions of the site soil. The City of Ithaca Forester and members of the NAC will provide topsoil specifications that will be used.
25. TSDF – Treatment, storage and disposal facility.
26. Upper Millrace Area – a portion of the millrace between the plunge pool and the dam below the Ezra Cornell tunnel.
27. USEPA – United States Environmental Protection Agency.

28. Westerly Parcel – a portion of the Site, which is between the existing Gun Hill Apartment Parking Lot and along the western side of the main manufacturing building.
29. XRF – x-ray fluorescence. A field portable device used to measure the concentration of lead and arsenic in soil samples.

2.2 Building Descriptions

USEPA demolished three buildings on the Site during the week of April 15 and April 22. These buildings were the Quonset Hut, the Metal Building, and the Barn. Earth Tech collected samples from these materials from each building, and submitted them to a laboratory for asbestos analysis. See Figure 1 for the location of the buildings.

Prior to dismantling the three site buildings, Earth Tech applied for and obtained a demolition permit from the City of Ithaca. On March 12, 2002, Earth Tech completed a pre-demolition survey and submitted it to the City of Ithaca. This Pre-Demolition Building Survey Report included an Asbestos Abatement Report. A New York State-certified asbestos inspector from Target Group of Central New York of Syracuse, New York, conducted the pre-demolition building survey and Asbestos Abatement Report. Earth Tech received the demolition permit from the City of Ithaca on April 17. Copies of the pre-demolition building survey report and demolition permit are included in Appendix A.

1. Quonset Hut

a. Description

The Quonset Hut was 41 feet wide, 60 feet long, and 25 feet high. The building had one large bay door on the front, and encompassed an open area with a concrete slab floor. Previously, a nonprofit agency (Repair Ithaca Bikes (RIBs)) operated a bicycle repair facility within the Quonset Hut. Prior to the demolition, the EPA was unable to make arrangements with RIBs for removal of their bicycles and other items. All items were transferred to another building for safekeeping.

The Quonset Hut contained a sheet steel/tin roof, 2-inch by 4-inch rafters, I-beams, particleboard covering the rafters, and internal heating pipes. These metal components were recycled at a local metal salvager. Non-metallic building components were sent for landfilling at a Resource Conservation and Recover Act (RCRA) subtitle D TSDF.

b. Demolition of the Quonset Hut

Earth Tech used a Kobelco SK300 excavator with a grappler attachment. All metal I-beams longer than 10 feet were cut with an oxygen-acetylene torch. As the Quonset Hut was demolished, the various types of materials were segregated (e.g., wood placed in one location, steel in another).

Water was obtained from a fire hydrant on Lake Street. A fire hose with high-pressure spray nozzle was used to water down the building and demolition debris to minimize the amount of dust generated. Most of the water used evaporated from the concrete pad with minimal amount percolating into the soil immediately adjacent to the concrete pad.

Once the building was removed, the EPA established a Command Post trailer on the concrete pad. This building is easily accessible from the main access road from Lake Street. The concrete pad will allow for adequate parking of site vehicles.

c. Treatment and Disposal of Quonset Hut Debris

Earth Tech obtained a licensed certified T&D Contractor to haul the debris to both a recycling facility (metal building components) and for disposal at a RCRA-approved landfill (non-metallic building components).

2. Crew Building

The Crew Building is a one-story wood vinyl-siding building on the Island that is 11 feet wide, 20 feet long, and 10 feet high with a shingle roof. This building will be retained for use as the Site's Crew building. This building was remodeled prior to its use.

3. Metal Building (Ye Old Man's Home)

a. Description

The Metal Building was a long, single-story building on the Island that was 24 feet wide, 83 feet long, and 15 feet high. The EPA required demolition of this building to provide a staging area for covered and sealed metal containers of lead-contaminated soil that will be generated during the cleanup.

The Metal Building had a sheet steel/tin roof, steel structure beams and supports, wooden 2-inch by 4-inch rafters, particleboard covering the rafters, and internal steel heating pipes.

b. Demolition of the Metal Building

Earth Tech used a Kobelco SK300 excavator with a grappler attachment. As the Metal Building was demolished, the various types of materials were segregated (e.g., wood placed in one location, steel in another).

Water was obtained from a fire hydrant on Lake Street. A fire hose with high-pressure spray nozzle was used to water down the building and demolition debris to minimize the amount of dust generated. Most of the water used evaporated from the concrete pad with a minimal amount percolating into the soil immediately adjacent to the concrete pad.

c. Treatment and Disposal of Metal Building Debris

Earth Tech obtained a licensed certified T&D Contractor to haul the debris to both recycling facility (metal building components) and for disposal at a RCRA-approved landfill (non-metallic building components).

4. Barn

a. Description

The Barn was a two-story wood vinyl siding building on the Island that is 27 feet wide, 46 feet long, and 20 feet high. There were numerous support posts holding up the first floor. The Barn contained wood walls covered with vinyl siding, steel heating pipes, and a wooden roof. Attempts were made to salvage the wooden structural members, but they were too brittle and disintegrated.

b. Demolition of the Barn

Earth Tech used a Kobelco SK300 excavator with a grappler attachment. As the Barn was demolished, the various types of materials were segregated (i.e., wood placed in one location, steel in another, etc.).

Water was obtained from a fire hydrant on Lake Street. A fire hose with high-pressure spray nozzle was used to water down the building and demolition debris to minimize the amount of dust generated. Most of the water used evaporated from the concrete pad with minimal amount percolating into the soil immediately adjacent to the concrete pad.

c. Treatment and Disposal of Barn Debris

Earth Tech obtained a licensed certified T&D Contractor to haul the debris to both recycling facility (metal building components) and for disposal at a RCRA-approved landfill (non-metallic building components).

2.3 Widen The Retaining Wall For Site Access

2.3.1 Removing the Walls Along the Access Road

The site access road from Lake Street is adequate until after the Quonset Hut. An existing poured concrete retaining wall was along the east portion of the access road adjacent to the Quonset Hut (Figure 2). Along the west side of the access road is a structural bearing wall of the former forging building. A part of this wall is constructed of poured concrete, and another section (closer to the bridge) is constructed of concrete blocks. This portion of the access roads was bottlenecked to a width of 9 feet, which was inadequate to allow passage of heavy equipment or large trucks that will be hauling lead-contaminated soil from the staging area on the Island. See Figure 3 for two cross-sections through the Quonset Hut and Access Road. See Figures 1 and 2 for the location of the wall that was removed.

Earth Tech removed the existing poured concrete retaining wall, widened the access road, and rebuilt a temporary wooden retaining wall. Widening the road will allow Earth Tech to construct an access road of at least 15 feet wide. The soil removed from the excavation was screened with the XRF and the lead concentration was determined to be 900 ppm. The soil was placed along the upper millrace bank and covered with a geomembrane fabric. Silt fence was installed at the toe to prevent migration of contaminants.

At the same time, widening of the access road also increased the turning radius entering or leaving the bridge.

2.4 Set Up Site Command Post Trailer

Once the Quonset Hut was removed, Earth Tech spotted a 60-foot-long by 12-foot-wide trailer to be used as the Site's Command Post. Several trees along the site access road from Lake Street were cut down and chipped to provide access for backing in the trailer to the Site. Earth Tech will obtain the utilities as described in Section 2.5 below.

2.5 Provide Utilities

2.5.1 Electricity

Earth Tech subcontracted a local electrician to install the wire from the pole and to install a circuit breaker panel box. All electrical work was completed according to national, state, and local electrical codes.

2.5.2 Telephone

Earth Tech contracted with the local telephone utility to install six separate telephone lines. Two of the lines will be for data modem connections (OSC and Earth Tech RM/Field Cost Accountant (FCA)). One line will be for a site FAX machine, and the other three lines will be landlines for the same persons with a data modem line.

2.5.3 Public Water

A fire hydrant is located on Lake Street across from the Gun Hill Apartments that will provide water during the removal action. Earth Tech has contacted the City of Ithaca Public Works Department and a new water meter was installed and an account for city water established. Figure 1 shows the locations of the fire hydrant and where the water mains enter the property.

2.6 Storage Facility

USEPA will arrange with the property owner, if necessary, to determine if space in one of the Site buildings is available for storage purposes.

2.7 Mobile Laboratory Trailer

Earth Tech is renting a small trailer to be used for preparing and analyzing soil samples. This trailer will contain an exhaust hood with fan, a drying oven, and tables for the portable XRF. The trailer was placed on a concrete pad on which a dilapidated shed once stood. (See Figure 1).

3.0 PREPARING THE SITE FOR WORK

The progression of site activities and tentative dates for completing each phase of the removal activities includes:

- Install a power line to the Command Post (April 2002).

- Complete the Draft Work Plan (April 2002).
- Remove or replace the fence along the site access road (July 2002).
- Designate which trees, shrubs, and/or plants that will be protected, transplanted, or removed (April and on-going).
- Renovate the Crew Building (April 2002).
- Install the electrical service to the Command Post (April 2002).
- Dismantle the Quonset Hut and dispose of the building debris (April 2002).
- Widen the site access road by removing the existing retaining wall and installing another wall (April 2002).
- Obtain comments on the Work Plan from interested parties (June 2002).
- Install sediment controls/perimeter fencing (May/July 2002).
- Delivery and Setup of small trailer for sample prep/XRF (May 2002).
- Designate and mark out the working areas (April through August 2002).
- Set up the Site Command Post trailer (April 2002).
- Finalize the Work Plan (July 2002).
- Dismantle the Metal Building and dispose of the debris (April 2002).
- Dismantle the Barn and dispose of the debris (April 2002).
- Set up the staging and loading area (April 2002).
- Remove the contaminated soil from the East Area along the site access road (July to August 2002).
- Remove the contaminated soil from the Westerly Parcel (August to September 2002).
- Remove the contaminated soil from the Upper Millrace Area and the Northeast Area (September to October 2002).
- Remove the contaminated soil from the Island Area (October to Nov. 2002).
- Remove the contaminated soil from the Middle Millrace Area (Nov. to Dec. 2002).
- Remove the contaminated soil from the Lower Millrace Area and Lake Street Area (December 2002).
- Remove the contaminated material from the Gorge Area (December 2002).

3.1 Fence

There is currently a fence around the Ithaca Gun Company property, which is in disrepair. Several areas have the soil washed away where trespassers are obtaining access to the Site. A new lock was placed on the door at the main gate. At several areas the fence has been cut and opened far enough for trespassers to gain access. Therefore, Earth Tech initially repaired the fence and installed locks.

The Island parcel is currently not fenced, and therefore will be fenced. The Lower Millrace Area and Ithaca Falls parcel are easily accessible by visitors. The island area between Fall Creek and the millrace

is a difficult area to fence due to the steep terrain. There is evidence of visitors hiking in this area. Therefore, a temporary fence will be installed at the lower portion of the Site to prevent trespassers from entering the Island and Millrace Areas. This temporary security fence will be installed from the existing fence corner post in Area M-7 and continuing down along the southern side of the millrace and around the existing concrete walls, and ending at the end of the millrace just above the last drop to Fall Creek. See Figure 1 for the location of this fence.

Appropriate signage will be affixed to all fencing.

3.2 Security

The equipment staging area, covered and sealed vacuum box staging area, and Command Post are being adequately lighted in compliance with the City of Ithaca lighting ordinances. Once removal activities are underway, a security guard will be hired for non-working hours. The City of Ithaca Police Department was notified that USEPA is conducting a removal action at the Site and requested to make courteous inspections of the property fence line.

The eastern edge of the property line is adjacent to several fraternity buildings. Earth Tech will install a temporary fence along western edge of the Sigma Nu Fraternity parking lot.

3.3 Bridge

3.3.1 Structural Integrity

Since the Metal Building and Barn are dismantled, USEPA will use this location as a staging area and loading point for the covered and sealed metal containers of lead-contaminated soil. This bridge was showing some deterioration.

On February 27 and 28, 2002, two New York State Department of Transportation (DOT) certified inspectors, from Earth Tech's Albany office, inspected the bridge to determine whether the bridge is adequate to contain the weight of a fully loaded 25-ton dump truck (up to 80,000 pounds).

The inspection was completed under the supervision of a Professional Engineer certified by the State of New York. A final report was submitted to USEPA on March 14, 2002. A copy of the Bridge Inspection Report is included as Appendix B. The report contains several conditions under which the bridge will be used for the removal activities. The conditions include:

- The bridge was determined to be structurally worthy to support 80,000 pounds provided that speeds do not exceed 5 miles per hour. The reduced speed will minimize or eliminate vibrations to the bridge.
- All holes through the concrete decking were covered with a 1-inch-thick steel plate, at 4 feet wide by 12 feet long. This steel plate covered the holes to distribute the loads to the supporting I-beams around the holes. Portions of asphalt were removed prior to placing the steel plates. After the steel plates were placed, asphalt was placed around the perimeter to make a smooth transition between the old asphalt and the steel plates when the trucks cross.
- An observer must be underneath the bridge when the trucks cross at least four times each day to make observations. The observer will look for spalling or cracking of concrete from the deck, spalling of rust from the I-beams, bending or twisting of the I-beams, and determine if existing cracks are widening.

- All recommendations advanced in the report have been or will be complied with.

3.3.2 Structural Upgrades if Required

At this time, structural upgrades will not be required for the bridge. As the removal project progresses, if the bridge weakens and there are areas of weakness that need repair, structural upgrades will be completed.

During and bridge upgrades and/or repairs, an Earth Tech engineer will be on site to oversee these upgrades and/or repairs to ensure they are being done according to standard engineering practices, and according to the specifications.

3.4 Crew Building

3.4.1 Rebuild The Building Foundation

The building supports were upgraded and the building leveled. Floor jacks were used to raise the building and rebuild the support pillars. The existing wooden supports were braced with 2-by-6s or with concrete blocks stacked underneath the support beams. The steps leading to the door were repaired.

3.4.2. Refinish The Inside Of The Building

The current inside walls and ceiling have been damaged. The old paneling and ceiling were removed and replaced.

3.4.3 Install an Electric Heater

Earth Tech installed power to the building for electric heat, lights, and several 120-volt outlets.

4.0 AREAS OF CONCERN

4.1 Air Monitoring/Sampling Plan

All appropriate and applicable state and federal guidance for perimeter ambient air monitoring/sampling will be followed to the most conservative measures during all soil removal activities. Applicable state guidances are the NYSDOH's Community Air Monitoring Plan (CAMP) and the NYSDEC Technical and Administrative Guidance Memorandum #4031 - "Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites. See Appendix C for the NYSDOH CAMP plan and the NYSDEC Memorandum # 4031. USEPA's RST contractor will implement and oversee the ambient air monitoring/sampling plan. A total of four data rams (particulate data recorders) and four personal pumps will be set up along the perimeter of the Site and one data ram with a personal pump will be situated at the Fall Creek Elementary School, along Queen Street. The locations will vary depending on site weather conditions such as wind speed and direction, and where site activities are being conducted. An on-site meteorological station has been erected and weather conditions will be constantly monitored. Particulates will be monitored on a continuous basis and the equipment utilized will collect a one-second sample out of each minute worked. At the end of each work day, this information will be downloaded and reviewed.

The personal pumps will be used to collect samples of the air at the perimeter of the Site to ensure that no off-site airborne releases of contaminants occur. These samples will be analyzed for lead and arsenic.

Background perimeter air samples were collected during the weeks of July 8 and July 15, 2002. Samples were and will continue to be submitted to an American Industrial Hygiene Association (AIHA)-certified laboratory for analyses.

4.1.1 Background Samples

Earth Tech will collect soil, sediment, and water background samples prior to removing lead and arsenic-contaminated soil. Background soil samples will be collected at locations to be determined and in consultation with the NYSDOH and NYSDEC.

Background sediment samples will be collected from Fall Creek upstream and downstream of the junction with the millrace, one location in Fall Creek above Ithaca Falls, and at two locations in the millrace, one below the rock ledge and one from an area west of the Ezra Cornell tunnel.

Background surface water samples will be collected in the pool of water within the Ezra Cornell tunnel, from the Plunge Pool, and from Fall Creek above and below the junction with the millrace.

All these samples will be submitted to a certified laboratory for total lead and arsenic analysis, and for toxicity characteristics leachate procedure (TCLP) analysis for lead and arsenic.

4.2 Traffic Control Plan

When equipment or rolloff containers are delivered and/or removed from the Site, Earth Tech will have one person on each lane of Lake Street to stop traffic. The lowboys must be stopped on the uphill portion of Lake Street and backed into the gate, or they will pull into the gate and then back out onto Lake Street.

Earth Tech will comply with local street regulations and consult with the Ithaca City Traffic Engineer when necessary.

4.3 East Area, Millrace Area, Island Area, Westerly Parcel, Northeast Area, Fall Creek Gorge Area, and Lake Street Area

Earth Tech has recent experience in addressing lead-contaminated soil from sensitive environmental areas and in steep terrain. Within the last year, Earth Tech completed an EPA removal action of lead-contaminated soil at a site in Hamburg, Pennsylvania. The removal action addressed trees and other vegetation that had to be protected along a major river bank. The slope of the bank along the river at the Hamburg site varied from 1 to 1 to 3 to 1. The slopes of the areas to be remediated at the Ithaca Gun Factory Site are similar to the slopes at the Pennsylvania site. Selected color photographs of the work completed at the Pennsylvania site are shown in Appendix D.

The East Area includes the portion of the Site along the site access road. The East Area encompasses the slope from the site access road to the parking lot of the Sigma Nu Fraternity property. The East Area will be split into 25 foot wide work sections with variable lengths. Each section will be completed in its entirety prior to continuing with the next section. This will minimize the amount of disturbed soil at one time thus minimizing the potential for generating airborne particulates and washout of soil during rainfall events.

The Millrace Area will be split up into three workable sections: The Upper, Middle, and Lower Millrace Areas. The Upper Area includes the portion of the Site from the millrace dam to the bridge. The Upper Area will be split into two areas. Area U-1 will be the northern bank of the upper millrace, and Area U-2 will be the southern bank of the millrace.

The Middle Millrace Area includes the portion of the Site from the bridge to 175 feet west or just east of the rock ledge. The Middle Area will be split into sections of 25 feet in width with variable lengths. The Middle Area includes the Plunge Pool.

The Lower Millrace Area includes the portion of the Site from the rock ledge to the end of the millrace. The Lower Area will be split into sections of 25 feet in width with variable lengths.

The Island Area includes the portion of the Site between the millrace and Fall Creek. Based on the RSA, this area contains the majority of the lead-contaminated soil. The Island Area will be split into sections of 25 feet in width with variable lengths.

Based upon a meeting during the week of April 2, 2002 between the EPA, the property owner, and the developer, EPA agreed to remove the lead-contaminated soil from an area referred to as the Westerly Parcel. The Westerly Parcel includes the portion of the Site along the eastern edge of the Gun Hill Apartments parking lot, and the Manufacturing Building (see Figure 1). This parcel is flat along the eastern edge and has a steep slope down to the parking lot. This parcel contains Ailanthus and Norway Maple trees which will be removed during the removal activities. The Parking Lot will be protected from damage during the removal activities.

The Northeast Area includes the portion of land to the east of the fence along the northeastern corner of the Site (see Figure 1). Reportedly, this area was used for test firing guns where the lead shot was fired into the embankment. The amount of contamination is approximately 1 cubic yard of material.

The Gorge Area contains a long (approx. 230 feet) narrow band constituting the talus slope at the base of the Fall Creek gorge cliff; it has lead concentrations above the intended cleanup level of 100 ppm.

The Lake Street Area includes a portion of land just to the south of the upper gravel parking lot and east of the intersection of Lake and Lincoln Streets (see Figure 1). This area consists of two small areas. One is a pile of material and the other is a flat area approximately 50 feet in diameter. The area contains approximately 50 cubic yards of material.

The following items will be completed for each section and will be addressed in the work plan. The generic portions of each of these items are as follows:

4.3.1 Description

The description of each area will include major physical features, figures showing the plan and cross-section views, the original soil surface slope, and the location in regard to adjacent areas.

4.3.2 Vegetation

The City of Ithaca Forester has visited and will continue to visit the Site to inspect and document all the trees and shrubs. The Forester will tag all trees, shrubs, and plants that will be left in place, untouched, or protected. The Natural Area Commission (NAC) committee members are also assisting in this endeavor. These plants interfere with the removal of the contaminated soil and will be removed, saved, and replanted when the removal activities are completed. The Forester along with members of the NAC are also noting any native and/or rare species that will be removed and replanted upon the final restoration of the removal activities. This section lists all types of trees and shrubs located within the individual areas.

Members of NAC are placing various colored flags on the trees and plants. Green flags indicate trees and plants to remain and, blue flags indicate trees or plants that will be removed and transplanted at the Cornell Plantations and will be returned to the Site upon completion of area activities. White flags indicate the plant can be cut down and recycled.

4.3.3 Saving of Native/Rare Vegetation

Members of the NAC, Cornell Plantations and City of Ithaca Forester will identify plants and shrubs that are native/rare and need of removal to the Cornell Plantations. Earth Tech will remove these plants and rinse-off contaminated soil where appropriate, and transfer them to Cornell Plantations personnel. Cornell Plantations' personnel will prepare the plants and store them until Earth Tech has completed the removal activities. Earth Tech or subcontracted personnel will then replant them in the replaced topsoil.

If topsoil will be placed over areas that have not been excavated and there is organic matter covering the soil surface, all the organic matter will be removed prior to the placement of the topsoil. The topsoil must be placed over soil to ensure a good bond between the original soil and the new topsoil. The topsoil will be a blend of materials that comply with the topsoil mixture provided to Earth Tech by the City of Ithaca Forester and the NAC members. This topsoil will be appropriately tested to ensure a proper environment for the restoration/revegetation of the excavated areas.

4.3.4 Saving Trees and Plants

Trees greater than 3, 4, or 6 inches in diameter, as well as smaller diameter trees that the City of Ithaca Forester and/or the NAC members determine to remain, will not be removed. Great care will be taken not to disturb the tree trunk, limbs, and the roots during vacuuming of the soil. If there is lead-contaminated soil beneath a particular tree that needs to be removed, the USEPA On-Scene Coordinator (OSC) will decide whether or not the tree will be removed. All Ailanthus and Norway Maples will be removed.

4.3.5 Sedimentation Controls

Sedimentation controls will include silt fence, CoirTM coconut logs, CoirTM erosion control mats, straw bales, etc.

Silt fence and/or CoirTM coconut logs will be installed along the northern edge of the Island and at the downstream edge of each area prior to remediation for additional sediment protection. The silt fence will be installed by digging a ditch approximately 6 inches deep, installing the bottom of the silt fence, and

backfilling with soil. Coir™ coconut logs will be placed over the natural soil and/or bedrock and anchored in place with 2-foot-long steel rebar driven into the ground.

Coir™ coconut logs are 10 feet long and 16 inches in diameter. They are made from the husks of coconuts. The husks are held together with coconut twine. These logs were placed in the millrace to serve as sediment traps to capture sediment during rain events. The logs will allow the water to filtrate through while trapping the sediment. These logs were anchored with 2-foot-long pieces of rebar. If the rebar can't be driven into the ground and/or rock, then willow pilot holes will be drilled for the rebar. These logs were placed at the beginning and end of the Plunge Pool, at the partial dam below the Plunge Pool, in the flat area just below the rock ledge, and in the narrow portion at the end of the millrace.

Coir™ erosion control mats come in rolls approximately 165 feet long and 6 feet wide. They are made of woven coconut twine approximately 1/4-inch in diameter. The spaces between the woven coconut twine is 1/4-inch. The openings allow space for germination of seed. The mat is installed by overlapping the seams approximately 6 inches. The overlap must be down dip with the upstream piece over the downstream portion. The matting is anchored with 6-inch long metal staples driven into the ground.

Straw will be used on certain portions of the Site for sediment control. The straw bales will be broken and the straw spread over the soil.

Straw bales will also be used for erosion control in stream channels. They will supplement the Coir™ coconut logs if required. Straw bales will be anchored in the same manner as the Coir™ Logs.

On "natural areas" of the Island, excelsior matting made of aspen woven fabric will be utilized. The aspen blended matting biodegrades much more quickly than the coconut fiber matting.

4.3.6 Special Equipment Requirements

A turbo-vac/guzzler/truck-mounted vacuum unit will be used to remove contaminated soil from the Site. The only area where this method may not be safe to do so, because of the steep terrain, is the southern side of the lower Island parcel. Either a rubber-tired Bobcat (or equivalent) may be used to transport the contaminated soil to a staging area where the material will be vacuumed to a covered and sealed container or the wetted soil will be raked into the lower millrace from which it will be vacuumed. The vacuum unit will include a HEPA filter to minimize airborne particulates from entering the atmosphere.

Other special equipment will be used on the steeper portions of the areas. Some types of equipment include:

A. Articulating Man-Lift

An 80-foot or 120-foot boom articulating man-lift will be used to raise personnel at the cliffs and along the millrace walls to collect samples, remove accumulated soils, etc.

B. Backhoe/Excavator

A backhoe or excavator will be utilized in removing tree stumps and large rocks in concert with the vacuum hose.

C. Rototiller/scarifier

A rototiller/scarifier may be utilized to loosen some of the material in the dense/compacted soil areas (i.e., flat area on the Island and the flat areas in the Millrace Area).

D. Bobcat

A Bobcat may be used on the Island parcel to move the contaminated soil to a staging area.

E. Power Sweeper

A power sweeper will be used to sweep the site access road to remove wetted dust and wetted dirt generated during hauling activities. The sweeper will collect the dust, and the dirt and dust will be dumped at the staging area for placement of a vacuum.

4.3.7 Island Area Haul Road

The Work Plans for the East Area and the Island Area to utilize a haul road. The haul road for the Eastern Area will be the site access road (driveway) located on the eastern side of the Ithaca Gun Company property. In the Island Area, a haul road may be necessary to move soil to a staging area from Area I-8 to Area I-3, which is just below the Metal Building at the shear cliff. The Haul Road, if necessary, will have a Geotextile™ layer placed on top of the original ground surface. A 6-inch layer of Number 4 stone placed and compacted with a 4-inch layer of Modified 2Bs placed to choke off the Number 4. If constructed, the Haul Road will be appropriately placed across and along contours in a serpentine route so as to lessen the slope. A rubber-tired Bobcat loader will be able to tram up and down the haul road with slopes of approximately 1.3 horizontal to 1 vertical. The EPA is working with the NAC to determine the course to cause as little damage to the natural area as possible, as well as discussing using a narrower version as a path after the cleanup.

4.3.8 Excavation and/or Removal of Contaminated Soil

The following describes a proposed plan for addressing lead-contaminated soil. Additional tasks will be completed to satisfy the National Historic Preservation Act (NHPA). A Phase I Cultural Resources Survey is currently underway and the findings/recommendations may alter the approach described. Also, once removal activities are underway, field conditions may dictate modification(s) to the proposed operational plan to achieve the most efficient/effective removal action.

Prior to and during the removal of soil, an adequate volume of water will be continuously applied to prevent the generation of airborne particulates. In association with the air-monitoring/sampling program, all efforts will be made to safeguard the surrounding community from off-site migration of airborne particulates. Once the wetted soil is vacuumed, it is deposited in a covered and sealed metal vacuum container. Once the container is filled, the hosing is disconnected and it is taken directly to an approved landfill or is taken to the staging area on the Island.

Within each designated work area, work will concentrate on a 25-foot-wide section. All work (i.e., removal, topsoil, vegetation, and erosion control) will be completed prior to moving on to the next section.

Members of the NAC and the Ithaca City Forester have and will continue to identify trees/plants for preserving and appropriately tag them. Rare and sensitive species will be removed, if appropriate, and

given to the Cornell Plantations to preserve. If the tree cannot be removed, removal of soil from around the base will be delicate to minimize possible damage to the root structure. Invasive species such as Ailanthus Norway Maples and will be cut down and recycled and a more native species replanted. Once removal of contaminated soil is completed and topsoil placed, replanting of saved trees/plants will occur. A Revegetation Plan will be developed in concert with members of the NAC, Cornell Plantations, and the Ithaca City Forester. Implementation of the final plan will be undertaken by either Earth Tech, Inc. and/or its subcontractor.

At the conclusion of each workday, no open excavation will be left exposed. The work area will be appropriately covered with geo-fabric membrane and/or clean topsoil.

The site cleanup levels were determined in consultation with the NYSDOH and the NYSDEC for specific areas. For flat areas or areas less than 45 degrees (a slope of 1 horizontal to 1 vertical), the cleanup concentration will be 400 ppm. For areas greater than 45 degrees in areas that are not easily accessible by the public, the cleanup levels will be an average of 400 ppm with no exceedances above 1,200 ppm. Sediments within the millrace will be removed to 13 ppm (Lower Effect Level) and soil along the gorge talus slope to 100 ppm. Hours of operation for the turbo-vacuum will be 08:00 to 17:00.

Each individual Work Plan will include a detailed discussion of the procedures to be used in completing the removal of contaminated soil.

a. East Area

The East Area (Figure 1) is divided into 18-25-foot-wide sections, (i.e., E-000 to E-15). The vertical extent of lead contamination is equally divided between 1-foot and 2-foot depths and work will begin at the northern end, E-12, and progress southward. A truck-mounted turbo-vacuum will be utilized to remove the soil into covered and sealed vacuum boxes. The existing fence will be removed and trees marked for removal will be cut. Debris and dead vegetation will also be removed. The green flagged trees will be left and protected, to the extent practicable. A temporary fence has been erected on the Sigma Nu fraternity parking lot. The final slope along the embankment will approach 2 horizontal to 1 vertical where possible. A backhoe or excavator will be used to remove tree stumps and large rocks. Once the contaminated soil has been removed, topsoil will be added and compacted. The topsoil will be seeded with a mix developed by Cornell Plantations, fertilized, and covered with a CoirTM erosion control mat. CoirTM coconut logs will be placed ½ the distance up the slope and at the bottom of the slope until there is adequate vegetation growth for additional erosion control measures. After the grass is growing, the bottom row of coconut logs will be removed and used elsewhere on the Site. See Table 1 for a listing of the amount of contaminated material to be removed from the East Area. See Appendix E for the detailed work plans for each section in the East Area.

b. Upper Millrace Area

Area U-1 (the flat portion of the Upper Area to the east of the former Barn) contains between 1 to 2 feet of lead-contaminated soil. Area U-2 (the bottom of the millrace with steep side slopes) has a minimal amount of contamination because the cliffs are rock and the bottom is rock (Figure 1). See Figure 4 for the cross-section through Area U-1. See Table 2 for a listing of the amount of contaminated material to be removed from the Millrace Area.

The truck-mounted turbo-vacuum will be used to remove the contaminated soil from both Area U-1 and Area U-2. Due to the thin layer of soil, all soil will be removed to exposed bedrock. During all soil removal activities, the soil will be continuously wetted to prevent generation of airborne particulates.

The soil behind the concrete wall and rock ledge on the southern portions of the Upper Area in Areas U-2 is densely compacted and may require loosening with a rototiller/scarifier prior to vacuuming. Sediment will be trapped by the CoirTM Coconut Logs, or straw bales. See Appendix F for the detailed work plans for each section in the Upper Millrace Area.

c. Middle Millrace Area

NYSDEC personnel noted that there are approximately 5 feet of contaminated material within the middle of the Plunge Pool (Figure 1). This contaminated material will be removed with the truck-mounted vacuum unit. The contaminated soil will be vacuumed into a covered and sealed vacuum box staged on a concrete foundation of the former Metal Building. For the truck-mounted super vacuum unit to operate, all of the larger trees (Ailanthus or Norway Maples) will be removed. All trees tagged for removal by members of the NAC and the Ithaca City Forester will be cut and recycled. The limbs will be trimmed, chipped and recycled. The trees will be cut into 10-to-12-foot rails and given to the City.

Earth Tech will use a combination of stair towers, ladders, and scaffolding for personnel to access the cliffs for sampling or to operate a hose from the vacuum truck. As in the Upper Millrace Area, all soil will be removed to exposed bedrock.

The contaminated soil on the steep slopes of the Plunge Pool will be cleaned prior to the flat sections of the Plunge Pool.

Areas M-1 and M-2 contain the oldest foundations of the Ithaca Gun Property. EPA and NYSDEC personnel have been informed by previous employees of the Ithaca Gun Company that the material used to fill in the concrete walls contained numerous artifacts from the gun manufacturing facility. Extreme care will be taken when excavating in this area. All artifacts will be preserved, noted, and recorded. Any recommendations from the Cultural Resources Survey with respect to this area will be followed. See Appendix H for the detailed work plans for each section in the Middle Millrace Area.

d. Lower Millrace Area

Based on the results from the Removal Site Assessment (RSA), there is a minimal amount of contaminated soil in the Lower Millrace Area. Earth Tech will use an 80-foot or 120-foot long articulating man-lift to raise personnel who will either sample the cliffs or remove contaminated soil from the steep slopes along the southern edge of the Island Area. The personnel will use brushes, shovels, rakes, etc., to remove the contaminated soil or operate a hose from the vacuum truck. The man-lift will be set up along the southern edge of the millrace just off the gravel parking lot across Lake Avenue. Several appropriately tagged trees will be removed and an access road made from the upper gravel parking lot. The access road will be constructed in such a way as to minimize any impacts to the natural area. Remains of foundations in this area will not be disturbed. The majority of the contaminated soil from the cliffs will be removed by using the man-lift. See Appendix I for the detailed work plans for each section in the Lower Millrace Area.

e. Island Area

Based on the results of the RSA, the Island contains most of the lead-contaminated soil on the Site. The soil in the first 50 feet just to the west of the former Metal Building has the highest concentration of lead. This area is also the steepest and most difficult in which to remove the contaminated soil. The soil will be removed utilizing the truck-mounted turbo-vacuum unit from above. The vacuumed material will be placed into covered and sealed vacuum boxes. Areas of rare and sensitive species of trees/plants will be saved to the extent possible. If sampling analyses indicate lead levels in excess of cleanup levels exist, soil will be removed. In some areas, soil will be removed to exposed bedrock. To the extent possible, efforts will be made to establish topsoil/vegetation.

The soil on the cliff area along the northern and southern portions of the Island area will be analyzed for lead. If contaminated, the soil on the southern portion will be removed from the Lower Millrace Area. The man-lift will be used to raise personnel to remove the contaminated soil. If the soil on the southern portion is contaminated, a determination will be made on how best to safely and effectively to remove, if possible, the soil. This determination will have to weigh the concerns of potential exposure scenarios against possible damage to existing native species of plants.

Silt fence, CoirTM coconut logs and/or straw bales will be used for sediment control along the northern edge of the Island to prevent spillage over the cliff. During critical excavations or soil removal along the northern edge, a spotter with radio communication will be staged in the gorge. The gorge will also have restricted access during these activities. Earth Tech will use care when removing soil along the edge to minimize the amount of material that falls into the gorge.

There is a horseshoe-shaped foundation located on the flat portion of the Island (in Area I-4). All work completed around this foundation will be completed by hand with extreme caution not to disturb the foundation. With regard to this area, all recommendations from the Phase I Survey will be followed. See Appendix G for the detailed work plans for each section in the Island Area.

f. Westerly Parcel Area

The Westerly Parcel Area contains approximately 2 feet of contaminated soil. The Westerly Parcel also served as a drum storage area for the Ithaca Gun Company. The Ailanthus and Norway Maple trees will be removed. EPA will discuss with the property owner and developer the possibility of dismantling the shed along Lake Street for better access to the parcel. During removal activities, the parking lot will be protected from damage.

The top 2 feet of soil will be removed with the truck-mounted super vacuum unit and placed into covered and sealed vacuum boxes. An excavator will be utilized to remove an abundance of Ailanthus and Norway Maple tree stumps.

Silt fence, CoirTM coconut logs, and/or straw bales will be placed along the parking lot to prevent sediment from leaving the work area. See Appendix J for the detailed work plans of each section in the Westerly Parcel.

g. Northeast Area

Based on NYSDEC results, there is a small area just outside the fence at the northeast corner of the Site. The contaminated soil will be removed via the turbo-vacuum and placed into covered and sealed metal vacuum containers. There are sensitive indigenous plants that will be protected during the removal

activities. The NAC members are helping to identify the plants to be preserved. Personnel from Earth Tech and Cornell Plantations are working to remove and tend the plants to be preserved.

This area will be reclaimed so it is as close to natural conditions as possible. Please see Appendix K for the detailed work plan for this area.

h. Gorge Area

Contaminated soil exists within the Fall Creek Gorge below the former Metal Building. The contamination was from spillage of soil from the Site through the years and forms a talus slope at the base of the cliff. The area for removal begins at the foot of the falls and extends westward for 230 feet. While removal activities are completed in the Gorge Area, there will be a spotter in the Gorge with radio communication. Also, access will be restricted during all activities. The contaminated soil will be removed via the truck-mounted turbo-vacuum unit and deposited into covered and sealed vacuum boxes.

Earth Tech is considering conducting this work during evening hours to minimize contact with visitors to Fall Creek. Potential noise and lighting concerns for the neighborhood will be assessed. Please see Appendix L for the detailed work plan for this area.

i. Lake Street Area

The contaminated soil will be removed with the truck-mounted super vacuum unit and placed in covered and sealed vacuum boxes. The disturbance to trees/plants in this area will be minimal and little, if any, revegetation is required. Please see Appendix M for the detailed work plan for this area.

Each Section will have a specific Work Plan. These Work Plans are included in separate Appendices as follows:

Appendix E – East Area
Appendix F – Upper Millrace Area

The Island Area contains eleven areas; I-1, I-2, I-3, I-4, I-5, I-6, I-7, I-8, I-9, I-10, and I-11. All areas are 25 feet wide and variable in lengths.

The Middle Millrace Area contains seven areas; M-1, M-2, M-3, M-4, M-5, M-6, and M-7. All areas are 25 feet wide and variable in lengths.

The Lower Millrace Area contains four areas; L-1, L-2, L-3, and L-4. All areas are 25 feet wide and variable in lengths.

The Westerly Parcel, Northeast Area, Gorge Area all contain one area.

The Lake Street Area contains two areas. One is the Pile Area, and the other is the Flat Area.

4.3.9 Placement of Topsoil Where Appropriate

The topsoil that will be utilized will be based on a physical and chemical characteristics prescribed by the NAC, Cornell Plantations, and the Ithaca City Forester. No topsoil will be placed in the millrace. Confirmation of physical and chemical properties will be determined by sending soil samples to the New

York State Agricultural Laboratory at Cornell University or another NYS-certified laboratory. Topsoil will be replaced to pre-existing depths or to a prescribed slope. Exposed bedrock areas will be assessed to determine practicability of placing topsoil and revegetating.

4.3.10 Compaction of Topsoil

Topsoil will be placed in 4- to 6-inch lifts to the final thickness. Each 4- to 6-inch layer will be compacted. A vibratory plate compactor equivalent will be used. The plate compactor will be maneuvered manually. The compaction will be less than 85% to allow for proper germination of the seed and much less around root structures. All the topsoil will be compacted according to the description in this section, therefore, no discussion will be presented in the individual Work Plans.

4.3.11 Placement of Seed and Fertilizer

A shade-tolerant seed mix will be planted on the topsoil. The type of seed species and amount of each to be added per acre will be determined by the City of Ithaca Forester in consultation with members of the NAC and Cornell Plantations. Based on the soil test results, fertilizer consisting of the appropriate amount of nitrogen, phosphorus (phosphate), and/or potassium (potash) will be added with care taken not to over fertilize. All the topsoil will be covered with seed and fertilizer according to the description in this section; therefore, no discussion will be presented in the individual Work Plans.

4.3.12 Planting Native Species of Trees and Shrubs

A re-vegetation plan will be developed by members of the NAC, Cornell Plantations and in consultation with the Ithaca City Forester. Implementation of the revegetation plan will be conducted by Earth Tech, Inc personnel and/or their subcontractor. To the extent practicable, all efforts will be made to use native species of trees and plants; therefore, no discussion will be presented in the individual Work Plans.

4.3.13 Covering with CoirTM Erosion Control Mats and CoirTM Coconut Logs

Once the topsoil has been placed, compacted, fertilized, and seeded on the slopes of the East Area, Island Area, and the Westerly Parcel Area, CoirTM coconut erosion-control matting will be placed over it. Along all slopes, CoirTM coconut logs will be placed at the middle of the slope along the contour to provide additional erosion protection. The coconut matting will be Number 9 matting. This matting comes in 6-foot wide rolls that are 365 feet long. The matting will be installed from downstream towards the upstream, with a minimum overlap of 6 inches. All water running off the matting must flow across the seams so the water doesn't flow underneath a seam; the goal is to reduce velocity to less than 8 feet per second. Where possible the matting will be anchored with 6-inch-long metal staples. One staple will be placed for every 5 square feet of matting. If staples can't be inserted into the ground, natural rocks will be placed at strategic locations or the matting will be fastened to trees with CoirTM twine.

Since the Millrace Areas consist of mostly bedrock, topsoil will not be placed. To minimize the water flow velocity down the channel during heavy rain events, CoirTM coconut logs will be placed across the millrace in the center of each Area.

These CoirTM logs are 10 feet long and 16 inches in diameter. One or more CoirTM logs will be required for each area. The millrace has several very steep sections that need velocity dissipaters. See Figure 5 for a cross-section along the millrace from upstream to downstream.

If applicable, the areas will be covered with Coir™ erosion control mats and coconut logs according to the description in this section; therefore, no discussion will be presented in the individual Work Plans.

4.3.14 Post Excavation Soil Sampling

Once the contaminated soil has been removed, Earth Tech personnel will collect samples of the subsoil and analyze the samples for lead and arsenic with a field portable XRF. In general, five aliquots of soil will be collected from each 500-square-foot area in a work section. The five aliquots will be screened with the XRF and homogenized for one composite sample. Samples are collected from the surface (0-3 inches), from 12-14 inches, and from 21-24 inches. When the cleanup level is exceeded, soil will be removed to the next lower depth. The specific area and number of aliquots of samples to be collected for each area will be described in the individual Work Plans.

The site cleanup levels will be determined for specific areas. For flat areas or areas less than 45 degrees (a slope of 1 horizontal to 1 vertical), the cleanup concentration will be 400 ppm. For areas greater than 45 degrees or in areas that are not easily accessible by people, the cleanup levels will be an average of 400 ppm with no spikes above 1,200 ppm. In the Island Area, if the lead concentrations of the surface soil samples are less than the site cleanup level of 400 ppm, topsoil will be placed. If the lead concentrations are greater than 400 ppm, additional soil will be removed. Then the subsoil will be sampled again by the same procedures used above.

Earth Tech will send 20% of the samples collected and analyzed with the XRF to a laboratory for confirmation analysis by atomic absorption (AA) for lead and arsenic analysis. The results obtained from the AA analysis will be compared to the XRF results to determine the statistical correlation between the data.

The number of confirmation samples required to verify that the undisturbed soil is below the site cleanup level will vary depending on the surface area disturbed during the excavation. Approximately five aliquots will be collected per 500 square feet. The aliquots from each area will be composited into one sample.

The Work Plans in Appendices E, F, G, H, I, J, K, L, and M contain the number of samples that will be collected from each area.

The site cleanup level for the sediments in the millrace will be either 31 ppm, which is the NYSDEC Fish and Wildlife cleanup criteria, or removal of sediments to bedrock.

4.4 Control Of Surface-Water

Surface-water control will be maintained during the entire removal process. Since the millrace is a channel, there will always be surface-water will be a constant concern. Ideally, the surface-water will be removed prior to entering the work area in a specific removal area. The Ezra Cornell Tunnel is also a source of water. Since it is at the top end of the millrace, there is the possibility that water will always be generated. There is a pipeline (approximately 36 inches in diameter) that goes from the dam on the east end of the Site to the Gate Building just to the south of the Plunge Pool. This pipeline will be plugged and the surface-water collected and diverted to Fall Creek through the rock cut just at the exit of the Ezra Cornell tunnel.

When the Plunge Pool area is excavated, surface-water will be encountered. This water will be collected where possible and removed during removal activities. Small collection sumps will be used to collect the water, and pumps will be used to divert the water from the Plunge Pool.

Wherever groundwater is encountered, a sump will be installed along with a pump and pipeline to pump the water around the work area.

5.0 SEDIMENT AND EROSION CONTROL PLAN

CoirTM coconut logs are erosion control structures that are used for along stream embankments and to slow down water velocity so it doesn't get too high to cause erosion. CoirTM coconut logs are made from fibers from coconuts. These fibers are compressed and placed inside an outer shell. These logs are either 10 or 20 feet long and 10 inches or 16 inches in diameter.

CoirTM coconut erosion control mats are erosion structures used for protecting freshly seeded slopes and to prevent rainfall droplets from disturbing the seedbed, and to reduce soil and/or sediment loss during rain events. These mats are also made from the fibers from coconuts. The mats are woven together, and depending on the type of slopes in which the mats are to be used, the individual strand thickness of the mats are 5, 7, or 9. The woven strands have a minimum of 1/4-inch gap between them. These 1/4-inch gaps allow for germination of the seeds.

Other erosion control devices include silt fence, straw bales, straw, and tarps.

Silt fence will be placed at locations where runoff will leave the work zone along non-point-source areas, that include slopes along a stream, slopes along a road, and adjacent to a parking lot. The silt fence is installed by excavating a 6-inch-deep trench. The silt fence is staked to the ground with wooden stakes at predetermined intervals. The bottom of the silt fence is then placed into the trench and backfilled with soil. The silt fence contains stormwater runoff and traps sediment behind the fence. When the loading of sediment retained by the fence reaches 60 percent of the original available fence height, the sediment will be removed and placed into the rolloffs for disposal.

Straw bales will also be used to control erosion or slow down the velocity of water in a runoff control ditch or channel. Straw bales are placed in stream channels aligned perpendicular to the stream flow. The bales are staked to the ground with metal bars or wooden stakes.

For disturbed relatively flat areas, straw will be placed to control erosion control from rain events.

At the end of the workday and in areas where CoirTM erosion control mats have not been installed, those areas will be covered with tarps. Tarps are only a temporary erosion control measure. The next workday, the tarps will be removed and the area covered with the appropriate erosion control matting.

APPENDIX E

WORK PLANS

East Area

AREA E-1
DETAILED WORK PLAN
July 15, 2002

1. Description

Area E-1 is the first area in the East Area that encompasses the eastern slope adjacent to the site access road from Lake Street. Areas E-000 thru E-4 are part of a privately owned residential property. Discussions will be held with the property owners on which trees are to be saved and those that are to be removed. The sections in the East Area are all downward sloping toward the west from a flat area at the top at the Sigma Nu Fraternity property. The eastern slope is initially 2.4 to 1 horizontal to vertical, but it changes to 1.3 to 1 one-half the way up the hill. The initial slope is fairly gentle, but the final slope is rather steep. Figure 1 shows the plan view, and Figure 7 shows the cross-section of the area. The location is from 0+00 feet to 0+25 to the north.

2. Vegetation

The City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) has inspected Area E-1, and identified the trees and other vegetation. Area E-1 contains the following trees and vegetation species:

- A. Five – 1-inch diameter Norway Maples
- B. Seven – 2-inch diameter Norway Maples
- C. Five – 3-inch diameter Norway Maples
- D. Three – 4-inch diameter Norway Maples
- E. One – 5-inch diameter Norway Maple
- F. Two – 7-inch diameter Norway Maples
- G. Two – 8-inch diameter Norway Maples
- H. One – 10-inch diameter Norway Maple
- I. One – 24-inch diameter Norway Maple
- J. One – 30-inch diameter Norway Maple
- K. Five – 1-inch diameter Sumacs
- L. Two – 2-inch diameter Sumacs
- M. One – 5-inch diameter Sumac
- N. One – 8-inch diameter *Ailanthus*
- O. One – 2-inch diameter Elm
- P. Two – 6-inch diameter Box Elders
- Q. One – Privet bush
- R. Several forsythia bushes
- S. Several honeysuckle bushes

3. Removal of Vegetation and Organic Material

There is a lot of dead vegetation, trees limbs, leaves, etc., in Area E-1 that will be removed prior to removing the contaminated soil. The vegetation will be chipped and recycled or disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from some NAC members has marked the trees and plants with various colored flags. The green flags indicate trees and plants that will remain. The limbs, bark, and roots will be protected during the excavation of lead-contaminated soil and disturbance will be kept to a minimum. The blue flags indicate trees and plants that will be removed and transplanted at the Cornell Plantations for nurturing. The trees and plants with both green and blue flags may either remain or be transferred to the Cornell Plantations. The trees and plants with pink flags indicate rare native species and will be saved wherever possible. The trees with marked with white paint or white flags will be cut down and recycled. Once the trees and plants have been removed and any soil washed-off from the root structure, they will be handed over to the Cornell Plantations' personnel. The following trees and plants will remain:

- A. Five – 1-inch diameter Sumacs
- B. Two – 2-inch diameter Sumacs
- C. One – 5-inch diameter Sumac
- D. One – 2-inch diameter Elm
- E. Two 6-inch diameter Box Elders
- F. As many of the forsythia bushes as possible will be saved.

5. Sedimentation Controls

A silt fence will be installed on the top of the eastern slope at the western edge of the Sigma Nu parking lot, and along the eastern edge of the access road. The silt fence will be installed by digging a ditch approximately 6 inches deep, driving wooden stakes into the ground, anchoring the bottom of the silt fence, and backfilling with soil. Once Area E-1 has been revegetated, Coir™ coconut logs will be permanently placed one-half the distance down the slope and temporarily at the bottom of the slope at the site access road. These coconut logs will capture any sediment from Area E-1 until there is adequate vegetation growth. Then the temporary row of coconut logs will be removed and used elsewhere on the site.

The site access road will be wetted with water from a hose to minimize the amount of dust and it will sweep with a power sweeper as required to reduce the amount of dirt and dust on the road. If Area E-1 can't be covered with Coir™ erosion control mats by the end of the workday, then it will be covered with a tarp until the area can be covered with the Coir™ erosion control mats.

6. Special Equipment Requirements

A vacuum truck with rigid plastic and flexible hose will be used to remove the contaminated material. The vacuumed soil will be deposited within a sealed roll-off container. A backhoe or an excavator will be used to extricate tree stumps and large rocks concurrently with vacuuming activities.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from three depths, i.e., surface (0 to 3-inches), 12-inches (10.5 to 13.5 inches), and 24-inches (21 to 24 inches). Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and five locations were from each were sampled. These were at approximately 4-feet from each corner and at the center of each area. These five samples were analyzed individually and a composite of each 500 square foot was analyzed. The results of this delineation are:

- A. The lead values of the three composites analyzed at the 12-inch depth were not-detected (ND), 362 ppm, and 132 ppm
- B. The lead values of the three composites analyzed at the 24-inch depth were ND, ND, and ND.

Based on these results, Earth Tech estimates that 12-inches of contaminated material are to be removed or approximately 93 cubic yards. Once the contaminated material has been removed, the remaining slope may be graded to a final slope of 2 to 1 or as close to this as possible.

The vacuum truck will have access to Area E-1 via the site access road. Since the area has fairly gentle slopes at the bottom, the vacuum truck hose should be able to reach the entire area. Where needed, an excavator will extricate any tree stumps and/or remove large rocks. Once containerized, the vacuumed contaminated material will either be directly transported to a disposal facility or brought to a staging area until transportation arrangements can be arranged.

A sound proof barrier will be constructed to reduce the sound from the vacuum truck so it minimizes the amount of noise heard by the community. This barrier will consist of plywood framed with 2-inch by 4-inch boards that are lined with a sound absorbent material. These barriers will be modified as needed to further reduce any noise coming from the truck. The truck will be located in a location to minimize the amount of sound that could reach the community.

8. Revegetation Plan

Once the contaminated material has been removed, 12 to 24-inches of topsoil will be placed on the area. This topsoil shall be placed by dumping it from dump trucks on the Sigma Nu parking lot, and drawing it downhill with either a backhoe/excavator or

manually. This topsoil will be compacted with a vibratory plate compactor to approximately 6- to 10- inches. The topsoil will be amended with appropriate amount of fertilizer and lime, then seeded with a shade-tolerant seed mix, and covered with the Coir™ coconut erosion control matting. Once the vegetation has taken, the silt fence (located along the top of the East slope) will be removed.

A permanent diversion control channel will be installed along the western edge of the Sigma Nu Parking lot to prevent rainwater runoff from flowing across the revegetated slope. The diversion channel will carry the runoff northward so it flows into the millrace.

9. Post-Excavation Soil Sampling

The disturbed area in E-1 will be approximately 1,800 square feet. Therefore, Earth Tech personnel shall collect four aliquot soil samples for one composite confirmation sample to verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA E-2
DETAILED WORK PLAN
July 15, 2002

1. Description

Area E-2 is the second area in the East Area that encompasses the eastern slope adjacent to the site access road from Lake Street. Areas E-1 thru E-4 are part of a privately owned residential property. Discussions will be held with the property owners on which trees are to be saved and those that are to be removed. The sections in the East Area are all downward sloping toward the west from a flat area at the top at the Sigma Nu property. The eastern slope is initially 2.1 to 1 horizontal to vertical, but it changes to 0.8 to 1, then finally to 2.1 to 1. The initial and final slopes are fairly gentle, but the middle slope is very steep. Figure 1 shows the plan view, and Figure 8 shows the cross-section of the area. The location is from 0+25 feet to 0+50 to the north.

2. Vegetation

The City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) has inspected Area E-2, and identified the trees and other vegetation. Area E-2 contains the following trees and vegetation species:

- A. One 1-inch diameter Norway Maple
- B. Two 2-inch diameter Norway Maples
- C. Four 3-inch diameter Norway Maples
- D. One 4-inch diameter Norway Maple
- E. One 5-inch diameter Norway Maple
- F. One 14-inch diameter Norway Maple
- G. One 15-inch diameter Norway Maple
- H. One 18-inch diameter Norway Maple
- I. One 5-inch diameter Chestnut Oak
- J. Three 1-inch diameter Box Elders
- K. Two 1-inch diameter *Ailanthus*
- L. Six 1-inch diameter Sumacs
- M. Two 2-inch diameter Sumacs
- N. One 2-inch diameter Ash
- O. Several Forsythia bushes
- P. Three Honeysuckle bushes

3. Removal of Vegetation and Organic Material

There is a lot of dead vegetation, trees limbs, leaves, etc., in Area E-2 that will be removed prior to removing the contaminated soil. The vegetation will be chipped and recycled or disposed of properly.

4. Saving Large Trees and Plants

The City of Ithaca Forester along with assistance from some NAC members has marked the trees and plants with various colored flags. The green flags indicate trees and plants that will remain. The limbs, bark, and roots will be protected during the excavation of lead-contaminated soil and disturbance will be kept to a minimum. The blue flags indicate trees and plants that will be removed and transplanted at the Cornell Plantations for nurturing. The trees and plants with both green and blue flags may either remain or be transferred to the Cornell Plantations. The trees and plants with pink flags indicate rare native species and will be saved wherever possible. The trees with marked with white paint or white flags will be cut down and recycled. Once the trees and plants have been removed and any soil washed-off from the root structure, they will be handed over to the Cornell Plantations' personnel. The following trees and plants will remain:

- A. One 5-inch diameter Chestnut Oak
- B. Three 1-inch diameter Box Elders
- C. Six 1-inch diameter Sumacs
- D. Two 2-inch diameter Sumacs
- E. One 2-inch diameter Ash
- F. As many as possible of the Forsythia bushes

5. Sedimentation Controls

A silt fence will be installed on the top of the eastern slope at the western edge of the Sigma Nu parking lot, and along the eastern edge of the access road. The silt fence will be installed by digging a ditch approximately 6 inches deep, driving wooden stakes into the ground, anchoring the bottom of the silt fence, and backfilling with soil. Once Area E-2 has been revegetated, Coir™ coconut logs will be permanently placed one-half the distance down the slope and temporarily at the bottom of the slope at the site access road. These coconut logs will capture any sediment from Area E-2 until there is adequate vegetation growth. Then the temporary row of coconut logs will be removed and used elsewhere on the site.

The site access road will be wetted with water from a hose to minimize the amount of dust and it will sweep with power sweeper as required to reduce the amount of dirt and dust on the road. If Area E-2 can't be covered with Coir™ erosion control mats by the end of the workday, then it will be covered with a tarp until the area can be covered with the Coir™ erosion control mats.

6. Special Equipment Requirements

A vacuum truck with rigid plastic and flexible hose will be used to remove the contaminated material. The vacuumed soil will be deposited within a sealed roll-off container. A backhoe or an excavator will be used to extricated tree stumps and large rocks concurrent with vacuuming activities.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from three depths, i.e., surface (0 to 3-inches), 12-inches (10.5 to 13.5 inches), and 24-inches (21 to 24 inches). Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and five locations were from each were sampled. These were at approximately 4-feet from each corner and at the center of each area. These five samples were analyzed individually and a composite of each 500 square foot was analyzed. The results of this delineation are:

- A. The lead values from the three composites analyzed at the 12-inch depth were 368 ppm, 858 ppm, and 230 ppm. At least one individual lead value from each section was greater than 400 ppm.
- B. The lead values from the three composites analyzed at the 24-inch depth were 113 ppm, 281 ppm, and 120 ppm. One of the individual samples from one section had a lead value greater than 400 ppm. The other two sections were all below 400 ppm.

Based on these results, Earth Tech estimates there at least two feet of material will be excavated from all three sections or 124 cubic yards. Once the contaminated material has been removed, the remaining slope may be graded to a final slope of 2 to 1 or as close to this as possible.

The vacuum truck will have access to Area E-2 via the site access road. Since the area has fairly gentle slopes at the bottom, the vacuum truck hose should be able to reach the entire area. Where needed, an excavator will extricate any tree stumps and/or remove large rocks. Once containerized, the vacuumed contaminated material will either be directly transported to a disposal facility or brought to a staging area and stored until transportation arrangements can be arranged.

A sound proof barrier will be constructed to reduce the sound from the vacuum truck so it minimizes the amount of noise heard by the community. This barrier will consist of plywood framed with 2-inch by 4-inch boards that are lined with a sound absorbent material. These barriers will be modified as needed to further reduce any noise coming from the truck. The truck will be located in a location to minimize the amount of sound that could reach the community.

8. Revegetation Plan

Once the contaminated material has been removed, 12 to 24-inches of topsoil will be placed on the area. This topsoil shall be placed by dumping it from dump trucks on the Sigma Nu parking lot, and pulling it downhill with either an excavator or manually. This topsoil will be compacted with a vibratory plate compactor to approximately 6- to 10-inches. The topsoil will be amended with appropriate amount of fertilizer and lime, then seeded with a shade-tolerant seed mix, and covered with the Coir™ coconut erosion control matting. Once the vegetation has taken, the silt fence (located along the top of the East slope) will be removed.

A permanent diversion control channel will be installed along the western edge of the Sigma Nu Parking lot to prevent rainwater runoff from flowing across the revegetated slope. The diversion channel will carry the runoff northward so it flows into the millrace.

9. Post-Excavation Soil Sampling

The disturbed area in E-2 will be approximately 1,675 square feet. Therefore, Earth Tech personnel shall collect four aliquot soil samples for one composite confirmation sample to verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA E-3
DETAILED WORK PLAN
July 15, 2002

1. Description

Area E-3 is the third area in the East Area that encompasses the eastern slope adjacent to the site access road from Lake Street. Areas E-1 thru E-4 are part of a privately owned residential property. Discussions will be held with the property owners on which trees are to be saved and those that are to be removed. The sections in the East Area are all downward sloping toward the west from a flat area at the top at the Sigma Nu property. The eastern slope is initially 2.2 to 1 horizontal to vertical, but it changes to 0.7 to 1, then finally to 1.5 to 1. The initial slope is fairly gentle, but the middle and final slopes are very steep. Figure 1 shows the plan view, and Figure 9 shows the cross-section of the area. The location is from 0+50 feet to 0+75 to the north.

2. Vegetation

The City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) have inspected Area E-3, and identified the trees and other vegetation. Area E-3 contains the following trees and vegetation species:

- A. Thirteen 1-inch diameter Norway Maples
- B. Thirteen 2-inch diameter Norway Maple
- C. Eight 3-inch diameter Norway Maples
- D. Three 4-inch Norway Maples
- E. One 5-inch diameter Norway Maple
- F. Three 6-inch diameter Norway Maple
- G. One 8-inch diameter Norway Maple
- H. One 22-inch diameter Norway Maple
- I. Three 1-inch diameter Sugar Maples
- J. One 1-inch diameter Box Elder
- K. Three 1-inch diameter Ashes
- L. Two 1-inch diameter Cherries
- M. Two 1-inch diameter Sumacs
- N. One 3-inch diameter Sumac
- O. One 4-inch diameter Elm
- P. One 1-inch diameter *Ailanthus*
- Q. Two 2-inch diameter *Ailanthus*
- R. Three 3-inch diameter *Ailanthus*
- S. Four 1-inch diameter Locusts
- T. One 1-inch diameter American Basswood
- U. One Privet bush
- V. Three Honeysuckle bush
- W. Several Forsythia bushes

3. Removal of Vegetation and Organic Material

There is a lot of dead vegetation, trees limbs, leaves, etc., in Area E-3 that will be removed prior to removing the contaminated soil. The vegetation will be chipped and recycled or disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from some NAC members has marked the trees and plants with various colored flags. The green flags indicate trees and plants that will remain. The limbs, bark, and roots will be protected during the excavation of lead-contaminated soil and disturbance will be kept to a minimum. The blue flags indicate trees and plants that will be removed and transplanted at the Cornell Plantations for nurturing. The trees and plants with both green and blue flags may either remain or be transferred to the Cornell Plantations. The trees and plants with pink flags indicate rare native species and will be saved wherever possible. The trees with marked with white paint or white flags will be cut down and recycled. Once the trees and plants have been removed and any soil washed-off from the root structure, they will be handed over to the Cornell Plantations' personnel. The following trees and plants will remain:

- A. Three 1-inch diameter Sugar Maples
- B. One 1-inch diameter Box Elder
- C. Three 1-inch diameter Ashes
- D. Two 1-inch diameter Cherries
- E. Two 1-inch diameter Sumacs
- F. One 3-inch diameter Sumac
- G. One 4-inch diameter Elm
- H. One 1-inch diameter American Basswood
- I. As many as possible of the Forsythia bushes will be saved

5. Sedimentation Controls

A silt fence will be installed on the top of the eastern slope at the western edge of the Sigma Nu parking lot, and along the eastern edge of the access road. The silt fence will be installed by digging a ditch approximately 6 inches deep, driving wooden stakes into the ground, anchoring the bottom of the silt fence, and backfilling with soil. Once Area E-3 has been revegetated, Coir™ coconut logs will be permanently placed one-half the distance down the slope and temporarily at the bottom of the slope at the site access road. These coconut logs will capture any sediment from Area E-3 until there is adequate vegetation growth. Then the temporary row of coconut logs will be removed and used elsewhere on the site.

The site access road will be wetted with water from a hose to minimize the amount of dust and it will sweep with power sweeper as required to reduce the amount of dirt and dust on the road. If Area E-3 can't be covered with Coir™ erosion control mats by the

end of the workday, then it will be covered with a tarp until the area can be covered with the Coir™ erosion control mats.

6. Special Equipment Requirements

A vacuum truck with rigid plastic and flexible hose will be used to remove the contaminated material. The vacuumed soil will be deposited within a sealed roll-off container. A backhoe or an excavator will be used to extricate tree stumps and large rocks concurrently with vacuuming activities.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from three depths, i.e., surface (0 to 3-inches), 12-inches (10.5 to 13.5 inches), and 24-inches (21 to 24 inches). Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and five locations were from each were sampled. These were at approximately 4-feet from each corner and at the center of each area. These five samples were analyzed individually and a composite of each 500 square foot was analyzed. The results of this delineation are:

- A. The lead values from the two composites analyzed at the 12-inch depth were 348 and 99 ppm. Two individual lead values from one section were greater than 400 ppm. The other section was all below 400 ppm.
- B. The lead values from the two composites analyzed at the 24-inch depth were 289 ppm and ND. One of the individual samples from one section had a lead value greater than 400 ppm. The other section was all below 400 ppm.

Based on these results, Earth Tech estimates at least 2-feet of material will be excavated from one section or 38 cubic yards. And 12-inches will be removed from the other section or 19 cubic yards. This is a total of 57 cubic yards from Area E-3. Once the contaminated material has been removed, the remaining slope may be graded to a final slope of 2 to 1 or as close to this as possible.

The vacuum truck will have access to Area E-3 via the site access road. Since the area has fairly gentle slopes at the bottom, the vacuum truck hose should be able to reach the entire area. Where needed, an excavator will extricate any tree stumps and/or remove large rocks. Once containerized, the vacuumed contaminated material will either be directly transported to a disposal facility or brought to a staging area and stored until transportation arrangements can be arranged.

A sound proof barrier will be constructed to reduce the sound from the vacuum truck so it minimizes the amount of noise heard by the community. This barrier will consist of plywood framed with 2-inch by 4-inch boards that are lined with a sound absorbent material. These barriers will be modified as needed to further reduce any noise coming from the truck. The truck will be located in a location to minimize the amount of sound that could reach the community.

8. Revegetation Plan

Once the contaminated material has been removed, 12-inches of topsoil will be placed on the area. This topsoil shall be placed by dumping it from dump trucks on the Sigma Nu parking lot, and drawing it downhill with either an excavator or manually. This topsoil will be compacted with a vibratory plate compactor to approximately 6- to 10- inches. The topsoil will be amended with appropriate amount of fertilizer and lime, then seeded with a shade-tolerant seed mix, and covered with the CoirTM coconut erosion control matting. Once the vegetation has taken, the silt fence (located along the top of the East slope) will be removed.

A permanent diversion control channel will be installed along the western edge of the Sigma Nu Parking lot to prevent rainwater runoff from flowing across the revegetated slope. The diversion channel will carry the runoff northward so it flows into the millrace.

9. Post-Excavation Soil Sampling

The disturbed area in E-3 will be approximately 1,875 square feet. Therefore, Earth Tech personnel shall collect four aliquot soil samples for one composite confirmation sample to verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA E-4
DETAILED WORK PLAN
July 15, 2002

1. Description

Area E-4 is the fourth area in the East Area that encompasses the eastern slope adjacent to the site access road from Lake Street. Areas E-1 thru E-4 are part of a privately owned residential property. Discussions will be held with the property owners on which trees are to be saved and those that are to be removed. The sections in the East Area are all downward sloping toward the west from a flat area at the top at the Sigma Nu property. The eastern slope is initially 2 to 1 horizontal to vertical, but it changes to 0.7 to 1, then finally to 2.3 to 1. The initial and final slopes are fairly gentle, but the middle slope is very steep. Figure 1 shows the plan view, and Figure 10 shows the cross-section of the area. The location is from 0+75 feet to 1+00 to the north.

2. Vegetation

The City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) will inspect Area E-4, and identify the trees and other vegetation. Area E-4 contains the following trees and vegetation species:

- A. One 3-inch diameter Ailanthus
- B. Seven 1-inch diameter Norway Maples
- C. Seventeen 2-inch diameter Norway Maples
- D. Eleven 3-inch diameter Norway Maples
- E. Eight 4-inch diameter Norway Maples
- F. Two 5-inch diameter Norway Maples
- G. Four 6-inch diameter Norway Maples
- H. Two 7-inch diameter Norway Maples
- I. One 9-inch diameter Norway Maple
- J. One 14-inch diameter Norway Maple
- K. Six 1-inch diameter Sugar Maples
- L. Four 2-inch diameter Sugar Maples
- M. One 3-inch Sugar Maple
- N. One 1-inch diameter Box Elder
- O. Two 1-inch diameter Locusts
- P. One 2-inch diameter Locust
- Q. One 3-inch diameter Locust
- R. One 8-inch diameter Locust
- S. One 1-inch diameter Elm
- T. One 6-inch diameter Elm
- U. Two 2-inch American Basswoods
- V. Several Forsythia bushes

3. Removal of Vegetation and Organic Material

There is a lot of dead vegetation, trees limbs, leaves, etc., in Area E-4 that will be removed prior to removing the contaminated soil. The vegetation will be chipped and recycled or disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from some NAC members has marked the trees and plants with various colored flags. The green flags indicate trees and plants that will remain. The limbs, bark, and roots will be protected during the excavation of lead-contaminated soil and disturbance will be kept to a minimum. The blue flags indicate trees and plants that will be removed and transplanted at the Cornell Plantations for nurturing. The trees and plants with both green and blue flags may either remain or be transferred to the Cornell Plantations. The trees and plants with pink flags indicate rare native species and will be saved wherever possible. The trees with marked with white paint or white flags will be cut down and recycled. Once the trees and plants have been removed and any soil washed-off from the root structure, they will be handed over to the Cornell Plantations' personnel. The following trees and plants will remain:

- A. Six 1-inch diameter Sugar Maples
- B. Four 2-inch diameter Sugar Maples
- C. One 3-inch Sugar Maple
- D. One 1-inch diameter Box Elder
- E. One 1-inch diameter Elm
- F. One 6-inch diameter Elm
- G. Two 2-inch American Basswoods
- H. As many as possible of the Forsythia bushes will be saved

5. Sedimentation Controls

A silt fence will be installed on the top of the eastern slope at the western edge of the Sigma Nu parking lot, and along the eastern edge of the access road. The silt fence will be installed by digging a ditch approximately 6 inches deep, driving wooden stakes into the ground, anchoring the bottom of the silt fence, and backfilling with soil. Once Area E-4 has been revegetated, CoirTM coconut logs will be permanently placed one-half the distance down the slope and temporarily at the bottom of the slope at the site access road. These coconut logs will capture any sediment from Area E-4 until there is adequate vegetation growth. Then the temporary row of coconut logs will be removed and used elsewhere on the site.

The site access road will be wetted with water from a hose to minimize the amount of dust and it will sweep with power sweeper as required to reduce the amount of dirt and dust on the road. If Area E-4 can't be covered with CoirTM erosion control mats by the end of the workday, then it will be covered with a tarp until the area can be covered with the CoirTM erosion control mats.

6. Special Equipment Requirements

A vacuum truck with rigid plastic and flexible hose will be used to remove the contaminated material. The vacuumed soil will be deposited within a sealed roll-off container. A backhoe or an excavator will be used to extricate tree stumps and large rocks concurrently with vacuuming activities.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from three depths, i.e., surface (0 to 3-inches), 12-inches (10.5 to 13.5 inches), and 24-inches (21 to 24 inches). Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and five locations were from each were sampled. These were at approximately 4-feet from each corner and at the center of each area. These five samples were analyzed individually and a composite of each 500 square foot was analyzed. The results of this delineation are:

- A. The lead values from the two composites analyzed at the 12-inch depth were ND and ND. None of the individual lead values from either section was greater than 400 ppm.
- B. The lead values from the two composites analyzed at the 24-inch depth were 108 ppm and ND. None of the individual lead values from either section was greater than 400 ppm.

Based on these results, Earth Tech estimates there are 12-inches of material that will be excavated from the two sections or 63 cubic yards. Once the contaminated material has been removed, the remaining slope may be graded to a final slope of 2 to 1 or as close to this as possible.

The vacuum truck will have access to Area E-4 via the site access road. Since the area has fairly gentle slopes at the bottom, the vacuum truck hose should be able to reach the entire area. Where needed, an excavator will extricate any tree stumps and/or remove large rocks. Once containerized, the vacuumed contaminated material will either be directly transported to a disposal facility or brought to a staging area and stored until transportation arrangements can be arranged.

A sound proof barrier will be constructed to reduce the sound from the vacuum truck so it minimizes the amount of noise heard by the community. This barrier will consist of plywood framed with 2-inch by 4-inch boards that are lined with a sound absorbent material. These barriers will be modified as needed to further reduce any noise coming from the truck. The truck will be located in a location to minimize the amount of sound that could reach the community.

8. Revegetation Plan

Once the contaminated material has been removed, 12-inches of topsoil will be placed on the area. This topsoil shall be placed by dumping it from dump trucks on the Sigma Nu parking lot, and pulling it downhill with either an excavator or manually. This topsoil will be compacted with a vibratory plate compactor to approximately 6- to 10- inches. The topsoil will be amended with appropriate amount of fertilizer and lime, then seeded with a shade-tolerant seed mix, and covered with the CoirTM coconut erosion control matting. Once the vegetation has taken, the silt fence (located along the top of the East slope) will be removed.

A permanent diversion control channel will be installed along the western edge of the Sigma Nu Parking lot to prevent rainwater runoff from flowing across the revegetated slope. The diversion channel will carry the runoff northward so it flows into the millrace.

9. Post-Excavation Soil Sampling

The disturbed area in E-4 will be approximately 1,700 square feet. Therefore, Earth Tech personnel shall collect four aliquot soil samples for one composite confirmation sample to verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA E-5
DETAILED WORK PLAN
July 15, 2002

1. Description

Area E-5 is the fifth area in the East Area that encompasses the eastern slope adjacent to the site access road from Lake Street. The sections in the East Area are all downward sloping toward the west from a flat area at the top at the Sigma Nu property. The eastern slope is initially 2 to 1 horizontal to vertical, but it changes to 0.9 to 1, then finally to 2 to 1. The initial and final slopes are fairly gentle, but the middle slope is very steep. Figure 1 shows the plan view, and Figure 11 shows the cross-section of the area. The location is from 1+00 feet to 1+25 to the north.

2. Vegetation

The City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) have inspected Area E-5, and identified the trees and other vegetation. Area E-5 contains the following trees and vegetation species:

- A. Four 1-inch diameter Norway Maples
- B. Eight 2-inch diameter Norway Maples
- C. Seven 3-inch diameter Norway Maples
- D. Seven 4-inch diameter Norway Maples
- E. Two 5-inch diameter Norway Maples
- F. Seven 6-inch diameter Norway Maples
- G. One 9-inch diameter Norway Maple
- H. One 12-inch diameter Norway Maple
- I. One 1-inch diameter Red Maple
- J. Three 1-inch diameter Sugar Maples
- K. Three 2-inch diameter Sugar Maples
- L. One 1-inch diameter Cherry
- M. One 1-inch diameter Ash
- N. One 1-inch diameter Locust
- O. One 4-inch diameter Locust
- P. One 6-inch diameter Locust
- Q. Two 8-inch diameter Locusts
- R. One 9-inch diameter Locust
- S. Two 10-inch diameter Locusts
- T. One 20-inch diameter Locust
- U. Six 1-inch diameter *Ailanthus*
- V. One 8-inch diameter *Ailanthus*
- W. One 18-inch diameter *Ailanthus*

3. Removal of Vegetation and Organic Material

There is a lot of dead vegetation, trees limbs, leaves, etc., in Area E-5 that will be removed prior to removing the contaminated soil. The vegetation will be chipped and recycled or disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from some NAC members has marked the trees and plants with various colored flags. The green flags indicate trees and plants that will remain. The limbs, bark, and roots will be protected during the excavation of lead-contaminated soil and disturbance will be kept to a minimum. The blue flags indicate trees and plants that will be removed and transplanted at the Cornell Plantations for nurturing. The trees and plants with both green and blue flags may either remain or be transferred to the Cornell Plantations. The trees and plants with pink flags indicate rare native species and will be saved wherever possible. The trees with marked with white paint or white flags will be cut down and recycled. Once the trees and plants have been removed and any soil washed-off from the root structure, they will be handed over to the Cornell Plantations' personnel. The following trees will remain:

- A. One 1-inch diameter Red Maple
- B. Three 1-inch diameter Sugar Maples
- C. Three 2-inch diameter Sugar Maples
- D. One 1-inch diameter Cherry
- E. One 1-inch diameter Ash

5. Sedimentation Controls

A silt fence will be installed on the top of the eastern slope at the western edge of the Sigma Nu parking lot, and along the eastern edge of the access road. The silt fence will be installed by digging a ditch approximately 6 inches deep, driving wooden stakes into the ground, anchoring the bottom of the silt fence, and backfilling with soil. Once Area E-5 has been revegetated, CoirTM coconut logs will be permanently placed one-half the distance down the slope and temporarily at the bottom of the slope at the site access road. These coconut logs will capture any sediment from Area E-5 until there is adequate vegetation growth. Then the temporary row of coconut logs will be removed and used elsewhere on the site.

The site access road will be wetted with water from a hose to minimize the amount of dust and it will sweep with power sweeper as required to reduce the amount of dirt and dust on the road. If Area E-5 can't be covered with CoirTM erosion control mats by the end of the workday, then it will be covered with a tarp until the area can be covered with the CoirTM erosion control mats.

6. Special Equipment Requirements

A vacuum truck with rigid plastic and flexible hose will be used to remove the contaminated material. The vacuumed soil will be deposited within a sealed roll-off container. A backhoe or an excavator will be used to extricate tree stumps and large rocks concurrently with vacuuming activities.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from three depths, i.e., surface (0 to 3-inches), 12-inches (10.5 to 13.5 inches), and 24-inches (21 to 24 inches). Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and five locations were from each were sampled. These were at approximately 4-feet from each corner and at the center of each area. These five samples were analyzed individually and a composite of each 500 square foot was analyzed. The results of this delineation are:

- A. The lead values from the three composites analyzed at the 12-inch depth were 398 ppm, 249 ppm, and 193 ppm. One of individual lead values from two of the sections was greater than 400 ppm. The lead values from the other section were less than 400 ppm.
- B. The lead values from the three composites analyzed at the 24-inch depth were ND, ND, and ND. None of the individual lead values from the three sections was greater than 400 ppm.

Based on these results, Earth Tech estimates that 24-inches of material will be excavated from two of the sections or 84 cubic yards. And 12-inches of material will be removed from the other section or 19 cubic yards. There will be approximately 103 cubic yards of contaminated material removed from Area E-5. Once the contaminated material has been removed, the remaining slope may be graded to a final slope of 2 to 1 or as close to this as possible.

The vacuum truck will have access to Area E-5 via the site access road. Since the area has fairly gentle slopes at the bottom, the vacuum truck hose should be able to reach the entire area. Where needed, an excavator will extricate any tree stumps and/or remove large rocks. Once containerized, the vacuumed contaminated material will either be directly transported to a disposal facility or brought to a staging area and stored until transportation arrangements can be arranged.

A sound proof barrier will be constructed to reduce the sound from the vacuum truck so it minimizes the amount of noise heard by the community. This barrier will consist of plywood framed with 2-inch by 4-inch boards that are lined with a sound absorbent material. These barriers will be modified as needed to further reduce any noise coming from the truck. The truck will be located in a location to minimize the amount of sound that could reach the community.

8. Revegetation Plan

Once the contaminated material has been removed, 12 to 24-inches of topsoil will be placed on the area. This topsoil shall be placed by dumping it from dump trucks on the Sigma Nu parking lot, and pulling it downhill with either an excavator or manually. This topsoil will be compacted with a vibratory plate compactor to approximately 6- to 10-inches. The topsoil will be amended with appropriate amount of fertilizer and lime, then seeded with a shade-tolerant seed mix, and covered with the CoirTM coconut erosion control matting. Once the vegetation has taken, the silt fence (located along the top of the East slope) will be removed.

A permanent diversion control channel will be installed along the western edge of the Sigma Nu Parking lot to prevent rainwater runoff from flowing across the revegetated slope. The diversion channel will carry the runoff northward so it flows into the millrace.

9. Post-Excavation Soil Sampling

The disturbed area in E-5 will be approximately 1,750 square feet. Therefore, Earth Tech personnel shall collect four aliquot soil samples for one composite confirmation sample to verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA E-6
DETAILED WORK PLAN
July 15, 2002

1. Description

Area E-6 is the sixth area in the East Area that encompasses the eastern slope adjacent to the site access road from Lake Street. The sections in the East Area are all downward sloping toward the west from a flat area at the top at the Sigma Nu property. The eastern slope is initially 2.2 to 1 horizontal to vertical, but it changes to 1.1 to 1, then finally to 2.7 to 1. The initial and final slopes are fairly gentle, but the middle slope is very steep. Figure 1 shows the plan view, and Figure 12 shows the cross-section of the area. The location is from 1+25 feet to 1+50 to the north.

2. Vegetation

The City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) have inspected Area E-6, and identified the trees and other vegetation. Area E-6 contains the following trees and vegetation species:

- A. One 1-inch diameter Sugar Maple
- B. One 2-inch diameter Norway Maple
- C. Six 3-inch diameter Norway Maples
- D. One 4-inch diameter Norway Maple
- E. One 6-inch diameter Norway Maple
- F. One 9-inch diameter Norway Maple
- G. One 12-inch diameter Norway Maple
- H. One 19-inch diameter Norway Maple
- I. One 1-inch diameter Locust
- J. One 8-inch diameter Locust
- K. One 8-inch diameter *Ailanthus*
- L. One 14-inch diameter *Ailanthus*

3. Removal of Vegetation and Organic Material

There is a lot of dead vegetation, trees limbs, leaves, etc., in Area E-6 that will be removed prior to removing the contaminated soil. The vegetation will be chipped and recycled or disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from some NAC members has marked the trees and plants with various colored flags. The green flags indicate trees and plants that will remain. The limbs, bark, and roots will be protected during the excavation of lead-contaminated soil and disturbance will be kept to a minimum. The blue flags indicate trees and plants that will be removed and transplanted at the Cornell Plantations

for nurturing. The trees and plants with both green and blue flags may either remain or be transferred to the Cornell Plantations. The trees and plants with pink flags indicate rare native species and will be saved wherever possible. The trees with marked with white paint or white flags will be cut down and recycled. Once the trees and plants have been removed and any soil washed-off from the root structure, they will be handed over to the Cornell Plantations' personnel. The following tree will remain:

A. One 1-inch diameter Sugar Maple

5. Sedimentation Controls

A silt fence will be installed on the top of the eastern slope at the western edge of the Sigma Nu parking lot, and along the eastern edge of the access road. The silt fence will be installed by digging a ditch approximately 6 inches deep, driving wooden stakes into the ground, anchoring the bottom of the silt fence, and backfilling with soil. Once Area E-6 has been revegetated, Coir™ coconut logs will be permanently placed one-half the distance down the slope and temporarily at the bottom of the slope at the site access road. These coconut logs will capture any sediment from Area E-6 until there is adequate vegetation growth. Then the temporary row of coconut logs will be removed and used elsewhere on the site.

The site access road will be wetted with water from a hose to minimize the amount of dust and it will sweep with power sweeper as required to reduce the amount of dirt and dust on the road. If Area E-6 can't be covered with Coir™ erosion control mats by the end of the workday, then it will be covered with a tarp until the area can be covered with the Coir™ erosion control mats.

6. Special Equipment Requirements

A vacuum truck with rigid plastic and flexible hose will be used to remove the contaminated material. The vacuumed soil will be deposited within a sealed roll-off container. A backhoe or an excavator will be used to extricate tree stumps and large rocks concurrently with vacuuming activities.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from three depths, i.e., surface (0 to 3-inches), 12-inches (10.5 to 13.5 inches), and 24-inches (21 to 24 inches). Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and five locations were from each were sampled. These were at approximately 4-feet from each corner and at the center of each area. These five samples were analyzed individually and a composite of each 500 square foot was analyzed. The results of this delineation are:

A. The lead values from the three composites analyzed at the 12-inch depth were 537 ppm, ND, and ND. One of individual lead value from one of the sections was

greater than 400 ppm. The lead values from the other two section were less than 400 ppm.

- B. The lead values from the three composites analyzed at the 24-inch depth were 278 ppm, ND, and ND. One of individual lead value from one of the sections was greater than 400 ppm. The lead values from the other two section were less than 400 ppm.

Based on these results, Earth Tech estimates that 24-inches of material will be excavated from one of the sections or 38 cubic yards. And 12-inches of material will be removed from the other two sections or 38 cubic yards. There will be approximately 76 cubic yards of contaminated material removed from Area E-6. Once the contaminated material has been removed, the remaining slope may be graded to a final slope of 2 to 1 or as close to this as possible.

The vacuum truck will have access to Area E-6 via the site access road. Since the area has fairly gentle slopes at the bottom, the vacuum truck hose should be able to reach the entire area. Where needed, an excavator will extricate any tree stumps and/or remove large rocks. Once containerized, the vacuumed contaminated material will either be directly transported to a disposal facility or brought to a staging area and stored until transportation arrangements can be arranged.

A sound proof barrier will be constructed to reduce the sound from the vacuum truck so it minimizes the amount of noise heard by the community. This barrier will consist of plywood framed with 2-inch by 4-inch boards that are lined with a sound absorbent material. These barriers will be modified as needed to further reduce any noise coming from the truck. The truck will be located in a location to minimize the amount of sound that could reach the community.

8. Revegetation Plan

Once the contaminated material has been removed, 12 to 24-inches of topsoil will be placed on the area. This topsoil shall be placed by dumping it from dump trucks on the Sigma Nu parking lot, and pulling it downhill with either an excavator or manually. This topsoil will be compacted with a vibratory plate compactor to approximately 6- to 10-inches. The topsoil will be amended with appropriate amount of fertilizer and lime, then seeded with a shade-tolerant seed mix, and covered with the CoirTM coconut erosion control matting. Once the vegetation has taken, the silt fence (located along the top of the East slope) will be removed.

A permanent diversion control channel will be installed along the western edge of the Sigma Nu Parking lot to prevent rainwater runoff from flowing across the revegetated slope. The diversion channel will carry the runoff northward so it flows into the millrace.

9. Post-Excavation Soil Sampling

The disturbed area in E-6 will be approximately 1,500 square feet. Therefore, Earth Tech personnel shall collect three aliquot soil samples for one composite confirmation sample to verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA E-7
DETAILED WORK PLAN
July 15, 2002

1. Description

Area E-7 is the seventh area in the East Area that encompasses the eastern slope adjacent to the site access road from Lake Street. The sections in the East Area are all downward sloping toward the west from a flat area at the top at the Sigma Nu property. The eastern slope is 1.9 to 1 horizontal to vertical, which is very close to the 2 to 1 slope that engineers design for reclamation projects. Figure 1 shows the plan view, and Figure 13 shows the cross-section of the area. The location is from 1+50 feet to 1+75 to the north.

2. Vegetation

The City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) have inspected Area E-7, and identified the trees and other vegetation. Area E-7 contains the following trees and vegetation species:

- A. One 2-inch diameter Norway Maple
- B. One 3-inch diameter Norway Maple
- C. Two 4-inch diameter Norway Maples
- D. One 6-inch diameter Norway Maple
- E. One 9-inch diameter Norway Maple
- F. One 10-inch diameter Norway Maple
- G. One 18-inch diameter Norway Maple
- H. One 19-inch diameter Norway Maple
- I. One 1-inch diameter Sugar Maple
- J. Six 1-inch diameter Locusts
- K. One 8-inch diameter Locust
- L. One 10-inch diameter Locust
- M. Nine 1-inch diameter *Ailanthus*
- N. One 10-inch diameter *Ailanthus*
- O. One 16-inch diameter *Ailanthus*

3. Removal of Vegetation and Organic Material

There is a lot of dead vegetation, trees limbs, leaves, etc., in Area E-7 that will be removed prior to removing the contaminated soil. The vegetation will be chipped and recycled or disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from some NAC members has marked the trees and plants with various colored flags. The green flags indicate trees and plants that will remain. The limbs, bark, and roots will be protected during the excavation of lead-contaminated soil and disturbance will be kept to a minimum. The blue flags indicate trees and plants that will be removed and transplanted at the Cornell Plantations for nurturing. The trees and plants with both green and blue flags may either remain or be transferred to the Cornell Plantations. The trees and plants with pink flags indicate rare native species and will be saved wherever possible. The trees with marked with white paint or white flags will be cut down and recycled. Once the trees and plants have been removed and any soil washed-off from the root structure, they will be handed over to the Cornell Plantations' personnel. The following tree will remain:

A. One 1-inch diameter Sugar Maple

5. Sedimentation Controls

A silt fence will be installed on the top of the eastern slope at the western edge of the Sigma Nu parking lot, and along the eastern edge of the access road. The silt fence will be installed by digging a ditch approximately 6 inches deep, driving wooden stakes into the ground, anchoring the bottom of the silt fence, and backfilling with soil. Once Area E-7 has been revegetated, Coir™ coconut logs will be permanently placed one-half the distance down the slope and temporarily at the bottom of the slope at the site access road. These coconut logs will capture any sediment from Area E-7 until there is adequate vegetation growth. Then the temporary row of coconut logs will be removed and used elsewhere on the site.

The site access road will be wetted with water from a hose to minimize the amount of dust and it will sweep with power sweeper as required to reduce the amount of dirt and dust on the road. If Area E-7 can't be covered with Coir™ erosion control mats by the end of the workday, then it will be covered with a tarp until the area can be covered with the Coir™ erosion control mats.

6. Special Equipment Requirements

A vacuum truck with rigid plastic and flexible hose will be used to remove the contaminated material. The vacuumed soil will be deposited within a sealed roll-off container. A backhoe or an excavator will be used to extricate tree stumps and large rocks concurrent with vacuuming activities.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from three depths, i.e., surface (0 to 3-inches), 12-inches (10.5 to 13.5 inches), and 24-inches (21 to 24 inches). Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and five locations were from each were sampled. These were at approximately 4-feet from each corner and at the center of each area. These five samples were analyzed individually and a composite of each 500 square foot was analyzed. The results of this delineation are:

- A. The lead values from the two composites analyzed at the 12-inch depth were 178 ppm and ND. The lead values from the two sections were less than 400 ppm.
- B. The lead values from the two composites analyzed at the 24-inch depth were 218 ppm and ND. Two of individual lead values from one of the sections were greater than 400 ppm. The lead values from the other section were less than 400 ppm.

Based on these results, Earth Tech estimates that 24-inches of material will be excavated from one of the sections or 38 cubic yards. And 12-inches of material will be removed from the other section or 19 cubic yards. There will be approximately 57 cubic yards of contaminated material removed from Area E-7. Once the contaminated material has been removed, the remaining slope may be graded to a final slope of 2 to 1 or as close to this as possible.

The vacuum truck will have access to Area E-7 via the site access road. Since the area has fairly gentle slopes at the bottom, the vacuum truck hose should be able to reach the entire area. Where needed, an excavator will extricate any tree stumps and/or remove large rocks. Once containerized, the vacuumed contaminated material will either be directly transported to a disposal facility or brought to a staging area and stored until transportation arrangements can be arranged to the disposal facility.

A sound proof barrier will be constructed to reduce the sound from the vacuum truck so it minimizes the amount of noise heard by the community. This barrier will consist of plywood framed with 2-inch by 4-inch boards that are lined with a sound absorbent material. These barriers will be modified as needed to further reduce any noise coming from the truck. The truck will be located in a location to minimize the amount of sound that could reach the community.

8. Revegetation Plan

Once the contaminated material has been removed, 12 to 24-inches of topsoil will be placed on the area. This topsoil shall be placed by dumping it from dump trucks on the Sigma Nu parking lot, and pulling it downhill with either an excavator or manually. This topsoil will be compacted with a vibratory plate compactor to approximately 6- to 10-inches. The topsoil will be amended with appropriate amount of fertilizer and lime, then seeded with a shade-tolerant seed mix, and covered with the CoirTM coconut erosion

control matting. Once the vegetation has taken, the silt fence (located along the top of the East slope) will be removed.

A permanent diversion control channel will be installed along the western edge of the Sigma Nu Parking lot to prevent rainwater runoff from flowing across the revegetated slope. The diversion channel will carry the runoff northward so it flows into the millrace.

9. Post-Excavation Soil Sampling

The disturbed area in E-7 will be approximately 1,450 square feet. Therefore, Earth Tech personnel shall collect three aliquot soil samples for one composite confirmation sample to verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA E-8
DETAILED WORK PLAN
July 15, 2002

1. Description

Area E-8 is the eighth area in the East Area that encompasses the eastern slope adjacent to the site access road from Lake Street. The sections in the East Area are all downward sloping toward the west from a flat area at the top at the Sigma Nu property. The eastern slope is 2 to 1 horizontal to vertical, which is the slope that engineers design for reclamation projects. Figure 1 shows the plan view, and Figure 14 shows the cross-section of the area. The location is from 1+75 feet to 2+00 to the north.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) have inspected Area E-8, and identified the trees and other vegetation. Area E-8 contains the following trees and vegetation species:

- A. Three 1-inch diameter Norway Maples
- B. Two 2-inch diameter Norway Maples
- C. Four 3-inch diameter Norway Maples
- D. One 4-inch diameter Norway Maple
- E. Two 6-inch diameter Norway Maples
- F. One 8-inch diameter Norway Maple
- G. Two 17-inch diameter Norway Maples
- H. One 1-inch diameter Ash
- I. Five 1-inch diameter *Ailanthus*
- J. Two 1-inch diameter Aspens
- K. One 2-inch diameter Aspen
- L. One 14-inch diameter Shagbark Hickory
- M. Two 1-inch diameter Locusts

3. Removal of Vegetation and Organic Material

There is a lot of dead vegetation, trees limbs, leaves, etc., in Area E-8 that will be removed prior to removing the contaminated soil. The vegetation will be chipped and recycled or disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from some NAC members has marked the trees and plants with various colored flags. The green flags indicate trees and plants that will remain. The limbs, bark, and roots will be protected during the excavation of lead-contaminated soil and disturbance will be kept to a minimum. The blue flags indicate trees and plants that will be removed and transplanted at the Cornell Plantations for nurturing. The trees and plants with both green and blue flags may either remain or be transferred to the Cornell Plantations. The trees and plants with pink flags indicate rare native species and will be saved wherever possible. The trees with marked with white paint or white flags will be cut down and recycled. Once the trees and plants have been removed and any soil washed-off from the root structure, they will be handed over to the Cornell Plantations' personnel. The following trees will remain:

- A. One 1-inch diameter Ash
- B. One 14-inch diameter Shagbark Hickory

5. Sedimentation Controls

A silt fence will be installed on the top of the eastern slope at the western edge of the Sigma Nu parking lot, and along the eastern edge of the access road. The silt fence will be installed by digging a ditch approximately 6 inches deep, driving wooden stakes into the ground, anchoring the bottom of the silt fence, and backfilling with soil. Once Area E-8 has been revegetated, Coir™ coconut logs will be permanently placed one-half the distance down the slope and temporarily at the bottom of the slope at the site access road. These coconut logs will capture any sediment from Area E-8 until there is adequate vegetation growth. Then the temporary row of coconut logs will be removed and used elsewhere on the site.

The site access road will be wetted with water from a hose to minimize the amount of dust and it will sweep with power sweeper as required to reduce the amount of dirt and dust on the road. If Area E-8 can't be covered with Coir™ erosion control mats by the end of the workday, then it will be covered with a tarp until the area can be covered with the Coir™ erosion control mats.

6. Special Equipment Requirements

A vacuum truck with rigid plastic and flexible hose will be used to remove the contaminated material. The vacuumed soil will be deposited within a sealed roll-off container. A backhoe or an excavator will be used to extricate tree stumps and large rocks concurrently with vacuuming activities.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from three depths, i.e., surface (0 to 3-inches), 12-inches (10.5 to 13.5 inches), and 24-inches (21 to 24 inches). Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and five locations were from each were sampled. These were at approximately 4-feet from each corner and at the center of each area. These five samples were analyzed individually and a composite of each 500 square foot was analyzed. The results of this delineation are:

- A. The lead values from the two composites analyzed at the 12-inch depth were 511 ppm and 114 ppm. At least one of the lead values from the two sections was greater than 400 ppm.
- B. The lead values from the two composites analyzed at the 24-inch depth were 488 ppm and ND. At least one of the lead values from the two sections was greater than 400 ppm.

Based on these results, Earth Tech estimates that 24-inches of material will be excavated from both of the sections or 106 cubic yards of contaminated material removed from Area E-8. Once the contaminated material has been removed, the remaining slope may be graded to a final slope of 2 to 1 or as close to this as possible.

The vacuum truck will have access to Area E-8 via the site access road. Since the area has fairly gentle slopes at the bottom, the vacuum truck hose should be able to reach the entire area. Where needed, an excavator will extricate any tree stumps and/or remove large rocks. Once containerized, the vacuumed contaminated material will either be directly transported to a disposal facility or brought to a staging area and stored until transportation arrangements can be arranged.

A sound proof barrier will be constructed to reduce the sound from the vacuum truck so it minimizes the amount of noise heard by the community. This barrier will consist of plywood framed with 2-inch by 4-inch boards that are lined with a sound absorbent material. These barriers will be modified as needed to further reduce any noise coming from the truck. The truck will be located in a location to minimize the amount of sound that could reach the community.

8. Revegetation Plan

Once the contaminated material has been removed, 12 to 24-inches of topsoil will be placed on the area. This topsoil shall be placed by dumping it from dump trucks on the Sigma Nu parking lot, and pulling it downhill with either an excavator or manually. This topsoil will be compacted with a vibratory plate compactor to approximately 6- to 10-inches. The topsoil will be amended with appropriate amount of fertilizer and lime, then seeded with a shade-tolerant seed mix, and covered with the CoirTM coconut erosion control matting. Once the vegetation has taken, the silt fence (located along the top of the East slope) will be removed.

A permanent diversion control channel will be installed along the western edge of the Sigma Nu Parking lot to prevent rainwater runoff from flowing across the revegetated slope. The diversion channel will carry the runoff northward so it flows into the millrace.

9. Post-Excavation Soil Sampling

The disturbed area in E-8 will be approximately 1,425 square feet. Therefore, Earth Tech personnel shall collect three aliquot soil samples for one composite confirmation sample to verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA E-9
DETAILED WORK PLAN
July 15, 2002

1. Description

Area E-9 is the ninth area in the East Area that encompasses the eastern slope adjacent to the site access road from Lake Street. The sections in the East Area are all downward sloping toward the west from a flat area at the top at the Sigma Nu property. The eastern slope is 2.3 to 1 horizontal to vertical, which is less steep than the slope of 2 to 1 that engineers design for reclamation projects. Figure 1 shows the plan view, and Figure 15 shows the cross-section of the area. The location is from 2+00 feet to 2+25 to the north.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) has inspected Area E-9, and identified the trees and other vegetation. Area E-9 contains the following trees and vegetation species:

- A. Nine 1-inch diameter Norway Maples
- B. Six 2-inch diameter Norway Maples
- C. Eight 3-inch diameter Norway Maples
- D. Two 4-inch diameter Norway Maples
- E. One 6-inch diameter Norway Maple
- F. One 7-inch diameter Norway Maple
- G. Two 9-inch diameter Norway Maples
- H. One 12-inch diameter Norway Maple
- I. One 13-inch diameter Norway Maple
- J. One 1-inch diameter Sugar Maple
- K. One 9-inch diameter Sugar Maple
- L. One 1-inch diameter Walnut
- M. Three 1-inch diameter Locusts
- N. One 2-inch diameter Aspen
- O. Two 2-inch diameter White Hazels
- P. One 12-inch diameter Chestnut

3. Removal of Vegetation and Organic Material

There is a lot of dead vegetation, trees limbs, leaves, etc., in Area E-9 that will be removed prior to removing the contaminated soil. The vegetation will be chipped and recycled or disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from some NAC members has marked the trees and plants with various colored flags. The green flags indicate trees and plants that will remain. The limbs, bark, and roots will be protected during the excavation of lead-contaminated soil and disturbance will be kept to a minimum. The blue flags indicate trees and plants that will be removed and transplanted at the Cornell Plantations for nurturing. The trees and plants with both green and blue flags may either remain or be transferred to the Cornell Plantations. The trees and plants with pink flags indicate rare native species and will be saved wherever possible. The trees with marked with white paint or white flags will be cut down and recycled. Once the trees and plants have been removed and any soil washed-off from the root structure, they will be handed over to the Cornell Plantations' personnel. The following trees and plants will remain:

- A. One 1-inch diameter Sugar Maple
- B. One 9-inch diameter Sugar Maple
- C. One 1-inch diameter Walnut
- D. Two 2-inch diameter Which Hazels
- E. One 12-inch diameter Chestnut

5. Sedimentation Controls

A silt fence will be installed on the top of the eastern slope at the western edge of the Sigma Nu parking lot, and along the eastern edge of the access road. The silt fence will be installed by digging a ditch approximately 6 inches deep, driving wooden stakes into the ground, anchoring the bottom of the silt fence, and backfilling with soil. Once Area E-9 has been revegetated, Coir™ coconut logs will be permanently placed one-half the distance down the slope and temporarily at the bottom of the slope at the site access road. These coconut logs will capture any sediment from Area E-9 until there is adequate vegetation growth. Then the temporary row of coconut logs will be removed and used elsewhere on the site.

The site access road will be wetted with water from a hose to minimize the amount of dust and it will sweep with power sweeper as required to reduce the amount of dirt and dust on the road. If Area E-9 can't be covered with Coir™ erosion control mats by the end of the workday, then it will be covered with a tarp until the area can be covered with the Coir™ erosion control mats.

6. Special Equipment Requirements

A vacuum truck with rigid plastic and flexible hose will be used to remove the contaminated material. The vacuumed soil will be deposited within a sealed roll-off container. A backhoe or an excavator will be used to extricated tree stumps and large rocks concurrently with vacuuming activities.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from three depths, i.e., surface (0 to 3-inches), 12-inches (10.5 to 13.5 inches), and 24-inches (21 to 24 inches). Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and five locations were from each were sampled. These were at approximately 4-feet from each corner and at the center of each area. These five samples were analyzed individually and a composite of each 500 square foot was analyzed. The results of this delineation are:

- A. The lead values from the two composites analyzed at the 12-inch depth were 776 ppm and 142 ppm. At least one of the lead values from the two sections was greater than 400 ppm.
- B. The lead values from the two composites analyzed at the 24-inch depth were ND and 133 ppm. The lead values from the two sections were less than 400 ppm.

Based on these results, Earth Tech estimates that 24-inches of material will be excavated from both of the sections or 85 cubic yards of contaminated material removed from Area E-9. Once the contaminated material has been removed, the remaining slope may be graded to a final slope of 2 to 1 or as close to this as possible.

The vacuum truck will have access to Area E-9 via the site access road. Since the area has fairly gentle slopes at the bottom, the vacuum truck hose should be able to reach the entire area. Where needed, an excavator will extricate any tree stumps and/or remove large rocks. Once containerized, the vacuumed contaminated material will either be directly transported to a disposal facility or brought to a staging area and stored until transportation arrangements can be arranged.

A sound proof barrier will be constructed to reduce the sound from the vacuum truck so it minimizes the amount of noise heard by the community. This barrier will consist of plywood framed with 2-inch by 4-inch boards that are lined with a sound absorbent material. These barriers will be modified as needed to further reduce any noise coming from the truck. The truck will be located in a location to minimize the amount of sound that could reach the community.

8. Revegetation Plan

Once the contaminated material has been removed, 12 to 24-inches of topsoil will be placed on the area. This topsoil shall be placed by dumping it from dump trucks on the Sigma Nu parking lot, and pulling it downhill with either an excavator or manually. This topsoil will be compacted with a vibratory plate compactor to approximately 6- to 10-inches. The topsoil will be amended with appropriate amount of fertilizer and lime, then seeded with a shade-tolerant seed mix, and covered with the CoirTM coconut erosion control matting. Once the vegetation has taken, the silt fence (located along the top of the East slope) will be removed.

A permanent diversion control channel will be installed along the western edge of the Sigma Nu Parking lot to prevent rainwater runoff from flowing across the revegetated slope. The diversion channel will carry the runoff northward so it flows into the millrace.

9. Post-Excavation Soil Sampling

The disturbed area in E-9 will be approximately 1,150 square feet. Therefore, Earth Tech personnel shall collect three aliquot soil samples for one composite confirmation sample to verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA E-10
DETAILED WORK PLAN
July 15, 2002

1. Description

Area E-10 is the tenth area in the East Area that encompasses the eastern slope adjacent to the site access road from Lake Street. The sections in the East Area are all downward sloping toward the west from a flat area at the top at the Sigma Nu property. The eastern slope is 2 to 1 horizontal to vertical, which is the slope that engineers design for reclamation projects. Figure 1 shows the plan view, and Figure 16 shows the cross-section of the area. The location is from 2+25 feet to 2+50 to the north.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) has inspected Area E-10, and identified the trees and other vegetation. Area E-10 contains the following trees and vegetation species:

- A. Eleven 1-inch diameter Norway Maples
- B. Eleven 2-inch diameter Norway Maples
- C. Twelve 3-inch diameter Norway Maples
- D. Two 4-inch diameter Norway Maples
- E. Two 5-inch diameter Norway Maples
- F. Three 6-inch diameter Norway Maples
- G. One 7-inch diameter Norway Maple
- H. One 2-inch diameter Sugar Maple
- I. One 3-inch diameter Sugar Maple
- J. One 1-inch diameter Locust
- K. Five 1-inch diameter *Ailanthus*
- L. One 2-inch diameter *Ailanthus*
- M. Five 2-inch diameter Witch Hazels
- N. One 6-inch diameter Elm
- O. One 8-inch diameter Elm
- P. One 10-inch diameter Cherry
- Q. One 14-inch diameter Cherry
- R. One 16-inch diameter Cherry
- S. One 20-inch diameter Cherry
- T. One 1-inch diameter Spirea bush
- U. One 1-inch diameter Privete Bush

3. Removal of Vegetation and Organic Material

There is a lot of dead vegetation, trees limbs, leaves, etc., in Area E-10 that will be removed prior to removing the contaminated soil. The vegetation will be chipped and recycled or disposed of properly.

4. Saving Large Trees

The City of Ithaca Forester along with assistance from some NAC members has marked the trees and plants with various colored flags. The green flags indicate trees and plants that will remain. The limbs, bark, and roots will be protected during the excavation of lead-contaminated soil and disturbance will be kept to a minimum. The blue flags indicate trees and plants that will be removed and transplanted at the Cornell Plantations for nurturing. The trees and plants with both green and blue flags may either remain or be transferred to the Cornell Plantations. The trees and plants with pink flags indicate rare native species and will be saved wherever possible. The trees with marked with white paint or white flags will be cut down and recycled. Once the trees and plants have been removed and any soil washed-off from the root structure, they will be handed over to the Cornell Plantations' personnel. The following trees and plants will remain:

- A. One 2-inch diameter Sugar Maple
- B. One 3-inch diameter Sugar Maple
- C. Five 2-inch diameter Witch Hazels
- D. One 6-inch diameter Elm
- E. One 8-inch diameter Elm
- F. One 10-inch diameter Cherry
- G. One 14-inch diameter Cherry
- H. One 16-inch diameter Cherry
- I. One 20-inch diameter Cherry
- J. One 1-inch diameter Spirea bush
- K. One 1-inch diameter Privet Bush

5. Sedimentation Controls

A silt fence will be installed on the top of the eastern slope at the western edge of the Sigma Nu parking lot, and along the eastern edge of the access road. The silt fence will be installed by digging a ditch approximately 6 inches deep, driving wooden stakes into the ground, anchoring the bottom of the silt fence, and backfilling with soil. Once Area E-10 has been revegetated, CoirTM coconut logs will be permanently placed one-half the distance down the slope and temporarily at the bottom of the slope at the site access road. These coconut logs will capture any sediment from Area E-10 until there is adequate vegetation growth. Then the temporary row of coconut logs will be removed and used elsewhere on the site.

The site access road will be wetted with water from a hose to minimize the amount of dust and it will sweep with power sweeper as required to reduce the amount of dirt and dust on the road. If Area E-10 can't be covered with CoirTM erosion control mats by the end of the workday, then it will be covered with a tarp until the area can be covered with the CoirTM erosion control mats.

6. Special Equipment Requirements

A vacuum truck with rigid plastic and flexible hose will be used to remove the contaminated material. The vacuumed soil will be deposited within a sealed roll-off container. A backhoe or an excavator will be used to extricate tree stumps and large rocks concurrently with vacuuming activities.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from three depths, i.e., surface (0 to 3-inches), 12-inches (10.5 to 13.5 inches), and 24-inches (21 to 24 inches). Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and five locations were from each were sampled. These were at approximately 4-feet from each corner and at the center of each area. These five samples were analyzed individually and a composite of each 500 square foot was analyzed. The results of this delineation are:

- A. The lead values from the two composites analyzed at the 12-inch depth were 668 ppm and 138 ppm. One of the sections has lead values greater than 400 ppm. The lead values from the other section are all less than 400 ppm.
- B. The lead values from the two composites analyzed at the 24-inch depth were 179 and 93 ppm. One of the lead values from each of the two sections was greater than 400 ppm.

Based on these results, Earth Tech estimates that 24-inches of material will be excavated from both of the sections or 102 cubic yards of contaminated material removed from Area E-10. Once the contaminated material has been removed, the remaining slope may be graded to a final slope of 2 to 1 or as close to this as possible.

The vacuum truck will have access to Area E-10 via the site access road. Since the area has fairly gentle slopes at the bottom, the vacuum truck hose should be able to reach the entire area. Where needed, an excavator will extricate any tree stumps and/or remove large rocks. Once containerized, the vacuumed contaminated material will either be directly transported to a disposal facility or brought to a staging area and stored until transportation arrangements can be arranged.

A sound proof barrier will be constructed to reduce the sound from the vacuum truck so it minimizes the amount of noise heard by the community. This barrier will consist of plywood framed with 2-inch by 4-inch boards that are lined with a sound absorbent material. These barriers will be modified as needed to further reduce any noise coming from the truck. The truck will be located in a location to minimize the amount of sound that could reach the community.

8. Revegetation Plan

Once the contaminated material has been removed, 12 to 24-inches of topsoil will be placed on the area. This topsoil shall be placed by dumping it from dump trucks on the Sigma Nu parking lot, and pulling it downhill with either an excavator or manually. This topsoil will be compacted with a vibratory plate compactor to approximately 6- to 10-inches. The topsoil will be amended with appropriate amount of fertilizer and lime, then seeded with a shade-tolerant seed mix, and covered with the CoirTM coconut erosion control matting. Once the vegetation has taken, the silt fence (located along the top of the East slope) will be removed.

A permanent diversion control channel will be installed along the western edge of the Sigma Nu Parking lot to prevent rainwater runoff from flowing across the revegetated slope. The diversion channel will carry the runoff northward so it flows into the millrace.

9. Post-Excavation Soil Sampling

The disturbed area in E-10 will be approximately 1,350 square feet. Therefore, Earth Tech personnel shall collect three aliquot soil samples for one composite confirmation sample to verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA E-11
DETAILED WORK PLAN
July 15, 2002

1. Description

Area E-11 is the eleventh area in the East Area that encompasses the eastern slope adjacent to the site access road from Lake Street. The sections in the East Area are all downward sloping toward the west from a flat area at the top at the Sigma Nu property. The eastern slope is 2 to 1 horizontal to vertical, which is the slope that engineers design for reclamation projects. Figure 1 shows the plan view, and Figure 17 shows the cross-section of the area. The location is from 2+50 feet to 2+75 to the north.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) has inspected Area E-11, and identified the trees and other vegetation. Area E-11 contains the following trees and vegetation species:

- A. Twenty-two 1-inch diameter Norway Maples
- B. Seventeen 2-inch diameter Norway Maples
- C. Nineteen 3-inch diameter Norway Maples
- D. Two 4-inch diameter Norway Maples
- E. One 5-inch diameter Norway Maple
- F. Three 6-inch diameter Norway Maples
- G. Two 7-inch diameter Norway Maples
- H. Two 8-inch diameter Norway Maples
- I. One 10-inch diameter Norway Maple
- J. One 3-inch diameter Sugar Maple
- K. One 2-inch diameter Sugar Maple
- L. Two 4-inch diameter Sugar Maples
- M. One 7-inch diameter Sugar Maple
- N. One 5-inch diameter Red Maple
- O. Two 1-inch diameter Locusts
- P. One 1-inch diameter Cherry
- Q. Two 1-inch diameter Ashes
- R. Two 1-inch diameter Ironwoods
- S. Twelve 1-inch diameter Witch Hazels
- T. Six 2-inch diameter Witch Hazels
- U. One 3-inch diameter Witch Hazel
- V. One 2-inch diameter Ironwood
- W. One 6-inch diameter Chestnut Oak
- X. One 13-inch diameter Chestnut Oak
- Y. Four 1-inch Honeysuckle bushes
- Z. Two 2-inch Honeysuckle bushes
- AA. One 1-inch diameter Privet bush

3. Removal of Vegetation and Organic Material

There is a lot of dead vegetation, trees limbs, leaves, etc., in Area E-11 that will be removed prior to removing the contaminated soil. The vegetation will be chipped and recycled or disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from some NAC members has marked the trees and plants with various colored flags. The green flags indicate trees and plants that will remain. The limbs, bark, and roots will be protected during the excavation of lead-contaminated soil and disturbance will be kept to a minimum. The blue flags indicate trees and plants that will be removed and transplanted at the Cornell Plantations for nurturing. The trees and plants with both green and blue flags may either remain or be transferred to the Cornell Plantations. The trees and plants with pink flags indicate rare native species and will be saved wherever possible. The trees with marked with white paint or white flags will be cut down and recycled. Once the trees and plants have been removed and any soil washed-off from the root structure, they will be handed over to the Cornell Plantations' personnel. The following trees and plants will remain:

- A. One 3-inch diameter Sugar Maple
- B. One 2-inch diameter Sugar Maple
- C. Two 4-inch diameter Sugar Maples
- D. One 7-inch diameter Sugar Maple
- E. One 5-inch diameter Red Maple
- F. One 1-inch diameter Cherry
- G. Two 1-inch diameter Ashes
- H. Two 1-inch diameter Ironwoods
- I. Twelve 1-inch diameter Witch Hazels
- J. Six 2-inch diameter Witch Hazels
- K. One 3-inch diameter Witch Hazel
- L. One 2-inch diameter Ironwood
- M. One 6-inch diameter Chestnut Oak
- N. One 13-inch diameter Chestnut Oak

5. Sedimentation Controls

A silt fence will be installed on the top of the eastern slope at the western edge of the Sigma Nu parking lot, and along the eastern edge of the access road. The silt fence will be installed by digging a ditch approximately 6 inches deep, driving wooden stakes into the ground, anchoring the bottom of the silt fence, and backfilling with soil. Once Area E-11 has been revegetated, CoirTM coconut logs will be permanently placed one-half the distance down the slope and temporarily at the bottom of the slope at the site access road. These coconut logs will capture any sediment from Area E-11 until there is adequate vegetation growth. Then the temporary row of coconut logs will be removed and used elsewhere on the site.

The site access road will be wetted with water from a hose to minimize the amount of dust and it will sweep with power sweeper as required to reduce the amount of dirt and dust on the road. If Area E-11 can't be covered with Coir™ erosion control mats by the end of the workday, then it will be covered with a tarp until the area can be covered with the Coir™ erosion control mats.

6. Special Equipment Requirements

A vacuum truck with rigid plastic and flexible hose will be used to remove the contaminated material. The vacuumed soil will be deposited within a sealed roll-off container. A backhoe or an excavator will be used to extricate tree stumps and large rocks concurrently with vacuuming activities.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from three depths, i.e., surface (0 to 3-inches), 12-inches (10.5 to 13.5 inches), and 24-inches (21 to 24 inches). Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and five locations were from each were sampled. These were at approximately 4-feet from each corner and at the center of each area. These five samples were analyzed individually and a composite of each 500 square foot was analyzed. The results of this delineation are:

- A. The lead values from the two composites analyzed at the 12-inch depth were 165 ppm and 245 ppm. One of the sections has lead values greater than 400 ppm. The lead values from the other section are all less than 400 ppm.
- B. The lead values from the two composites analyzed at the 24-inch depth were ND and ND. The lead values from the two sections were less than 400 ppm.

Based on these results, Earth Tech estimates that 12-inches of material will be excavated from both of the sections or 54 cubic yards of contaminated material removed from Area E-11. Once the contaminated material has been removed, the remaining slope may be graded to a final slope of 2 to 1 or as close to this as possible.

The vacuum truck will have access to Area E-11 via the site access road. Since the area has fairly gentle slopes at the bottom, the vacuum truck hose should be able to reach the entire area. Where needed, an excavator will extricate any tree stumps and/or remove large rocks. Once containerized, the vacuumed contaminated material will either be directly transported to a disposal facility or brought to a staging area and stored until transportation arrangements can be arranged.

A sound proof barrier will be constructed to reduce the sound from the vacuum truck so it minimizes the amount of noise heard by the community. This barrier will consist of plywood framed with 2-inch by 4-inch boards that are lined with a sound absorbent material. These barriers will be modified as needed to further reduce any noise coming

from the truck. The truck will be located in a location to minimize the amount of sound that could reach the community.

8. Revegetation Plan

Once the contaminated material has been removed, 8- to 12-inches of topsoil will be placed on the area. This topsoil shall be placed by dumping it from dump trucks on the Sigma Nu parking lot, and pulling it downhill with either an excavator or manually. This topsoil will be compacted with a vibratory plate compactor to approximately 6- to 10-inches. The topsoil will be amended with appropriate amount of fertilizer and lime, then seeded with a shade-tolerant seed mix, and covered with the CoirTM coconut erosion control matting. Once the vegetation has taken, the silt fence (located along the top of the East slope) will be removed.

A permanent diversion control channel will be installed along the western edge of the Sigma Nu Parking lot to prevent rainwater runoff from flowing across the revegetated slope. The diversion channel will carry the runoff northward so it flows into the millrace.

9. Post-Excavation Soil Sampling

The disturbed area in E-11 will be approximately 1,450 square feet. Therefore, Earth Tech personnel shall collect three aliquot soil samples for one composite confirmation sample to verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA E-12
DETAILED WORK PLAN
July 15, 2002

1. Description

Area E-12 is the twelfth area in the East Area that encompasses the eastern slope adjacent to the site access road from Lake Street. The sections in the East Area are all downward sloping toward the west from a flat area at the top at the Sigma Nu property. The eastern slope is 2 to 1 horizontal to vertical, which is the slope that engineers design for reclamation projects. Figure 1 shows the plan view, and Figure 18 shows the cross-section of the area. The location is from 2+75 feet to 3+05 to the north.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) has inspected Area E-12, and identified the trees and other vegetation. Area E-12 contains the following trees and vegetation species:

- A. Twenty-one 1-inch diameter Norway Maples
- B. Eleven 2-inch diameter Norway Maples
- C. Six 3-inch diameter Norway Maples
- D. One 4-inch diameter Norway Maple
- E. One 6-inch diameter Norway Maples
- F. One 7-inch diameter Norway Maple
- G. Eight 1-inch diameter Sugar Maples
- H. Three 3-inch diameter Sugar Maples
- I. Three 1-inch diameter Red Maples
- J. One 3-inch diameter Red Maple
- K. Four 4-inch diameter Red Maples
- L. One 7-inch diameter Red Maple
- M. Six 1-inch diameter Striped Maples
- N. One 7-inch diameter Hickory
- O. One 24-inch diameter Hickory
- P. One 8-inch diameter Chestnut Oak
- Q. One 12-inch diameter Chestnut Oak
- R. One 26-inch diameter Chestnut Oak
- S. Seventy-seven 1-inch diameter Witch Hazels
- T. Thirteen 2-inch diameter Witch Hazels
- U. Three 1-inch diameter Ashes
- V. One 3-inch diameter Ash
- W. Three 1-inch diameter Oaks
- X. One 3-inch diameter Oak
- Y. Thirteen 1-inch diameter Choke Cherries
- Z. Two 2-inch diameter Choke Cherries
- AA. One 6-inch diameter Choke Cherry

- BB. One 8-inch diameter Choke Cherry
- CC. Eighteen 1-inch diameter Thimbleberries
- DD. Three 3-inch diameter Thimbleberries
- EE. Three 2-inch diameter Thimbleberries
- FF. Twenty Blueberry bushes
- GG. One 1-inch diameter Locust
- HH. Two 2-inch diameter Locusts
- II. One 3-inch diameter Locust
- JJ. One 1-inch diameter Hemlock
- KK. One Raspberry bush
- LL. Three 1-inch diameter Privets

3. Removal of Vegetation and Organic Material

There is a lot of dead vegetation, trees limbs, leaves, etc., in Area E-12 that will be removed prior to removing the contaminated soil. The vegetation will be chipped and recycled or disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from some NAC members has marked the trees and plants with various colored flags. The green flags indicate trees and plants that will remain. The limbs, bark, and roots will be protected during the excavation of lead-contaminated soil and disturbance will be kept to a minimum. The blue flags indicate trees and plants that will be removed and transplanted at the Cornell Plantations for nurturing. The trees and plants with both green and blue flags may either remain or be transferred to the Cornell Plantations. The trees and plants with pink flags indicate rare native species and will be saved wherever possible. The trees with marked with white paint or white flags will be cut down and recycled. Once the trees and plants have been removed and any soil washed-off from the root structure, they will be handed over to the Cornell Plantations' personnel. The following trees and plants will remain:

- A. Eight 1-inch diameter Sugar Maples
- B. Three 3-inch diameter Sugar Maples
- C. Three 1-inch diameter Red Maples
- D. One 3-inch diameter Red Maple
- E. Four 4-inch diameter Red Maples
- F. One 7-inch diameter Red Maple
- G. Six 1-inch diameter Striped Maples
- H. One 7-inch diameter Hickory
- I. One 24-inch diameter Hickory
- J. One 8-inch diameter Chestnut Oak
- K. One 12-inch diameter Chestnut Oak
- L. One 26-inch diameter Chestnut Oak
- M. Seventy-seven 1-inch diameter Witch Hazels
- N. Thirteen 2-inch diameter Witch Hazels

- O. Three 1-inch diameter Ashes
- P. One 3-inch diameter Ash
- Q. Three 1-inch diameter Oaks
- R. One 3-inch diameter Oak
- S. Thirteen 1-inch diameter Choke Cherries
- T. Two 2-inch diameter Choke Cherries
- U. One 6-inch diameter Choke Cherry
- V. One 8-inch diameter Choke Cherry
- W. Eighteen 1-inch diameter Thimbleberries
- X. Three 3-inch diameter Thimbleberries
- Y. Three 2-inch diameter Thimbleberries
- Z. Twenty Blueberry bushes

5. Sedimentation Controls

A silt fence will be installed on the top of the eastern slope at the western edge of the Sigma Nu parking lot, and along the eastern edge of the access road. The silt fence will be installed by digging a ditch approximately 6 inches deep, driving wooden stakes into the ground, anchoring the bottom of the silt fence, and backfilling with soil. Once Area E-12 has been revegetated, Coir™ coconut logs will be permanently placed one-half the distance down the slope and temporarily at the bottom of the slope at the site access road. These coconut logs will capture any sediment from Area E-12 until there is adequate vegetation growth. Then the temporary row of coconut logs will be removed and used elsewhere on the site.

The site access road will be wetted with water from a hose to minimize the amount of dust and it will sweep with power sweeper as required to reduce the amount of dirt and dust on the road. If Area E-12 can't be covered with Coir™ erosion control mats by the end of the workday, then it will be covered with a tarp until the area can be covered with the Coir™ erosion control mats.

6. Special Equipment Requirements

A vacuum truck with rigid plastic and flexible hose will be used to remove the contaminated material. The vacuumed soil will be deposited within a sealed roll-off container. A backhoe or an excavator will be used to extricate tree stumps and large rocks concurrently with vacuuming activities.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from three depths, i.e., surface (0 to 3-inches), 12-inches (10.5 to 13.5 inches), and 24-inches (21 to 24 inches). Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and five locations were from each were sampled. These were at approximately 4-feet from each corner and at the center of each area. These five samples were analyzed

individually and a composite of each 500 square foot was analyzed. The results of this delineation are:

- A. The lead values from the three composites analyzed at the 12-inch depth were 342 ppm, ND, and ND. One of the sections has lead values greater than 400 ppm. The lead values from the other two sections are all less than 400 ppm.
- B. The lead values from the three composites analyzed at the 24-inch depth were ND, ND, and ND. The lead values from the three sections were less than 400 ppm.

Based on these results, Earth Tech estimates that 12-inches of material will be excavated from the three sections or 86 cubic yards of contaminated material removed from Area E-12. Once the contaminated material has been removed, the remaining slope may be graded to a final slope of 2 to 1 or as close to this as possible.

The vacuum truck will have access to Area E-12 via the site access road. Since the area has fairly gentle slopes at the bottom, the vacuum truck hose should be able to reach the entire area. Where needed, an excavator will extricate any tree stumps and/or remove large rocks. Once containerized, the vacuumed contaminated material will either be directly transported to a disposal facility or brought to a staging area and stored until transportation arrangements can be arranged.

A sound proof barrier will be constructed to reduce the sound from the vacuum truck so it minimizes the amount of noise heard by the community. This barrier will consist of plywood framed with 2-inch by 4-inch boards that are lined with a sound absorbent material. These barriers will be modified as needed to further reduce any noise coming from the truck. The truck will be located in a location to minimize the amount of sound that could reach the community.

8. Revegetation Plan

Once the contaminated material has been removed, 8- to 12-inches of topsoil will be placed on the area. This topsoil shall be placed by dumping it from dump trucks on the Sigma Nu parking lot, and pulling it downhill with either an excavator or manually. This topsoil will be compacted with a vibratory plate compactor to approximately 6- to 10-inches. The topsoil will be amended with appropriate amount of fertilizer and lime, then seeded with a shade-tolerant seed mix, and covered with the CoirTM coconut erosion control matting. Once the vegetation has taken, the silt fence (located along the top of the East slope) will be removed.

A permanent diversion control channel will be installed along the western edge of the Sigma Nu Parking lot to prevent rainwater runoff from flowing across the revegetated slope. The diversion channel will carry the runoff northward so it flows into the millrace.

9. Post-Excavation Soil Sampling

The disturbed area in E-12 will be approximately 2,310 square feet. Therefore, Earth Tech personnel shall collect five aliquot soil samples for one composite confirmation sample to verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA E-13
DETAILED WORK PLAN
July 18, 2002

1. Description

Area E-13 is the thirteenth area in the East Area that encompasses the eastern slope. It is east of the site Command Post trailer. The sections in the East Area are all downward sloping toward the west from a flat area at the top at the Sigma Nu property. The eastern slope is 4.3 to 1 horizontal to vertical, which is less than the slope that engineers design for reclamation projects. Figure 1 shows the plan view, and Figure 48 shows the cross-section of the area. The location is from 3+05 feet to 3+30 to the north.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) has inspected Area E-13, and identified the trees and other vegetation. Area E-13 contains the following trees and vegetation species:

- A. Four – 1-inch diameter Norway Maples
- B. One – 1-inch diameter Sugar Maple
- C. One – 3-inch diameter Sugar Maple
- D. Seven – 1-inch diameter Red Maples
- E. Four – 2-inch diameter Red Maples
- F. One – 4-inch diameter Red Maple
- G. One – 5-inch diameter Red Maple
- H. One – 1-inch diameter Striped Maple
- I. Two – 1-inch diameter Elms
- J. Fifteen – 1-inch diameter Choke Cherries
- K. Two – 3-inch diameter Choke Cherries
- L. Three – 1-inch diameter Cherries
- M. One - 2-inch diameter Cherry
- N. One – 4-inch diameter Cherry
- O. One – 5-inch diameter Cherry
- P. One – 8-inch diameter Cherry
- Q. One – 10-inch diameter Cherry
- R. One – 10-inch White Pine
- S. Ten – 1-inch Thimbleberries
- T. One – 12-inch diameter Chestnut Oak
- U. One – 2-inch diameter Chestnut Oak
- V. One – 3-inch diameter Chestnut Oak
- W. One – 4-inch diameter Chestnut Oak
- X. One – 6-inch diameter Chestnut Oak
- Y. Nineteen – 1-inch diameter Witch Hazels
- Z. Four – 1-inch diameter Ashes
- AA. One – 3-inch diameter Ash

- BB. One – 10-inch diameter Ash
- CC. One – 1-inch diameter Chestnut
- DD. One – 8-inch diameter Hickory
- EE. Two – 1-inch diameter Locusts
- FF. One – 2-inch diameter Ailanthus
- GG. Three Privets
- HH. Many Burdocks

3. Removal of Vegetation and Organic Material

There is a lot of dead vegetation, trees limbs, leaves, etc., in Area E-13 that will be removed prior to removing the contaminated soil. The vegetation will be chipped and recycled or disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from NAC has marked the trees and plants with various colored flags. The green flags indicate trees and plants that will remain. The limbs, bark, and roots will be protected during the excavation of lead-contaminated soil and disturbance will be kept to a minimum. The blue flags indicate trees and plants that will be removed and transplanted at the Cornell Plantations for nurturing. The trees and plants with both green and blue flags may either remain or be transferred to the Cornell Plantations. The trees and plants with pink flags indicate rare native species and will be saved wherever possible. The trees with marked with white paint or white flags will be cut down and recycled. Upon completion of removal activities, Earth Tech personnel or its subcontractor will replant the trees and bushes. These trees or plants will not be removed:

- A. One – 1-inch diameter Sugar Maple
- B. One – 3-inch diameter Sugar Maple
- C. Seven – 1-inch diameter Red Maples
- D. Four – 2-inch diameter Red Maples
- E. One – 4-inch diameter Red Maple
- F. One – 5-inch diameter Red Maple
- G. One – 1-inch diameter Striped Maple
- H. Two – 1-inch diameter Elms
- I. Fifteen – 1-inch diameter Choke Cherries
- J. Two – 3-inch diameter Choke Cherries
- K. Three – 1-inch diameter Cherries
- L. One - 2-inch diameter Cherry
- M. One – 4-inch diameter Cherry
- N. One – 5-inch diameter Cherry
- O. One – 8-inch diameter Cherry
- P. One – 10-inch diameter Cherry
- Q. One – 10-inch White Pine
- R. Ten – 1-inch Thimbleberries

- S. One – 12-inch diameter Chestnut Oak
- T. One – 2-inch diameter Chestnut Oak
- U. One – 3-inch diameter Chestnut Oak
- V. One – 4-inch diameter Chestnut Oak
- W. One – 6-inch diameter Chestnut Oak
- X. Nineteen – 1-inch diameter Witch Hazels
- Y. Four – 1-inch diameter Ashes
- Z. One – 3-inch diameter Ash
- AA. One – 10-inch diameter Ash
- BB. One – 1-inch diameter Chestnut
- CC. One – 8-inch diameter Hickory

5. Sedimentation Controls

A silt fence will be installed on the top of the eastern slope at the western edge of the Sigma Nu parking lot, and along the eastern edge of the access road. The silt fence will be installed by digging a ditch approximately 6 inches deep, driving wooden stakes into the ground, anchoring the bottom of the silt fence, and backfilling with soil. Once Area E-13 has been revegetated, Coir™ coconut logs will be permanently placed one-half the distance down the slope and temporarily at the bottom of the slope at the site access road. These coconut logs will capture any sediment from Area E-13 until there is adequate vegetation growth. Then the temporary row of coconut logs will be removed and used elsewhere on the site.

The site access road will be wetted with water from a hose to minimize the amount of dust and it will sweep with power sweeper as required to reduce the amount of dirt and dust on the road. If Area E-13 can't be covered with Coir™ erosion control mats by the end of the workday, then it will be covered with a tarp until the area can be covered with the Coir™ erosion control mats.

6. Special Equipment Requirements

A vacuum truck with rigid plastic and flexible hose will be used to remove the contaminated material. The vacuumed soil will be deposited within a sealed roll-off container. A backhoe or an excavator will be used to extricate tree stumps and large rocks concurrently with vacuuming activities.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from three depths, i.e., surface (0 to 3-inches), 12-inches (10.5 to 13.5 inches), and 24-inches (21 to 24 inches). Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and five locations were from each were sampled. These were at approximately 4-feet from each corner and at the center of each area. These five samples were analyzed individually and a composite of each 500 square foot was analyzed. The results of this delineation are:

- A. The lead values from the two composites analyzed at the 0-3-inch depth were 2,231 ppm and 540 ppm. Both of the sections have at least one lead value greater than 400 ppm.
- B. The lead values from the two composites analyzed at the 12-inch depth were 230 ppm and 628 ppm. Both of the sections have lead values greater than 400 ppm.
- C. The lead values from the two composites analyzed at the 24-inch depth were 42 ppm and 151 ppm. The lead values from the two sections were less than 400 ppm.

Based on these results, Earth Tech estimates there up to 24-inches of material will be excavated from the three sections or 93 cubic yards of contaminated material removed from Area E-13. Once the contaminated material has been removed, the remaining slope may be graded to a final slope of 2 to 1 or as close to this as possible.

The vacuum truck will have access to Area E-13 via the concrete pad and parking area at the site Command Post. Since the area has fairly gentle slopes at the bottom, the vacuum truck hose should be able to reach the entire area. Where needed, an excavator will extricate any tree stumps and/or remove large rocks. Once containerized, the vacuumed contaminated material will either be directly transported to a disposal facility or brought to a staging area until transportation arrangements can be arranged.

A sound proof barrier will be constructed to reduce the sound from the vacuum truck so it minimizes the amount of noise heard by the community. This barrier will consist of plywood framed with 2-inch by 4-inch boards that are lined with a sound absorbent material. These barriers will be modified as needed to further reduce any noise coming from the truck. The truck will be located in a location to minimize the amount of sound that could reach the community.

8. Revegetation Plan

Once the contaminated material has been removed, 8- to 12-inches of topsoil will be placed on the area. This topsoil shall be placed by dumping it from dump trucks on the Sigma Nu parking lot, and pulling it downhill with either an excavator or manually. This topsoil will be compacted with a vibratory plate compactor to approximately 6- to 10-inches. The topsoil will be amended with appropriate amount of fertilizer and lime, then seeded with a shade-tolerant seed mix, and covered with the CoirTM coconut erosion control matting. Once the vegetation has taken, the silt fence (located along the top of the East slope) will be removed.

A permanent diversion control channel will be installed along the western edge of the Sigma Nu Parking lot to prevent rainwater runoff from flowing across the revegetated slope. The diversion channel will carry the runoff northward so it flows into the millrace.

9. Post-Excavation Soil Sampling

The disturbed area in E-13 will be approximately 1,250 square feet. Therefore, Earth Tech personnel shall collect three aliquot soil samples for one composite confirmation sample to verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA E-14
DETAILED WORK PLAN
July 18, 2002

1. Description

Area E-14 is the fourteenth area in the East Area that encompasses the eastern slope. It is east of the site Command Post trailer. The sections in the East Area are all downward sloping toward the west from a flat area at the top at the Sigma Nu property. The eastern slope is 4.5 to 1 horizontal to vertical, which is less than the slope that engineers design for reclamation projects. Figure 1 shows the plan view, and Figure 49 shows the cross-section of the area. The location is from 3+30 feet to 3+55 to the north.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) has inspected Area E-14, and identified the trees and other vegetation. Area E-14 contains the following trees and vegetation species:

- A. Twenty-four – 1-inch diameter Witch Hazels
- B. Twenty-five – 1-inch diameter Choke Cherries
- C. Seven – 2-inch diameter Choke Cherries
- D. One – 3-inch diameter Choke Cherry
- E. Six – 1-inch diameter Striped Maples
- F. Nine – 1-inch diameter Red Maples
- G. Three – 3-inch diameter Red Maples
- H. Four – 2-inch diameter Red Maples
- I. Two – 4-inch diameter Red Maples
- J. Six – 1-inch diameter Chestnut Oaks
- K. Two – 2-inch diameter Chestnut Oaks
- L. Four – 3-inch diameter Chestnut Oaks
- M. One – 3-inch diameter Chestnut
- N. One – 1-inch diameter Ash
- O. One – 2-inch diameter Ash
- P. Five – 1-inch diameter Sumacs
- Q. One – 2-inch diameter Locust
- R. One – 3-inch diameter Locust
- S. Two – 4-inch diameter Locusts
- T. Two – 6-inch diameter Locusts
- U. Three – 1-inch diameter *Ailanthus*
- V. Several Burdock
- W. Several Horse Dock

3. Removal of Vegetation and Organic Material

There is a lot of dead vegetation, trees limbs, leaves, etc., in Area E-14 that will be removed prior to removing the contaminated soil. The vegetation will be chipped and recycled or disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from NAC has marked the trees and plants with various colored flags. The green flags indicate trees and plants that will remain. The limbs, bark, and roots will be protected during the excavation of lead-contaminated soil and disturbance will be kept to a minimum. The blue flags indicate trees and plants that will be removed and transplanted at the Cornell Plantations for nurturing. The trees and plants with both green and blue flags may either remain or be transferred to the Cornell Plantations. The trees and plants with pink flags indicate rare native species and will be saved wherever possible. The trees with marked with white paint or white flags will be cut down and recycled. Upon completion of removal activities, Earth Tech personnel or its subcontractor will replant the trees and bushes. These trees or plants will not be removed:

- A. Twenty-four – 1-inch diameter Witch Hazels
- B. Twenty-five – 1-inch diameter Choke Cherries
- C. Seven – 2-inch diameter Choke Cherries
- D. One – 3-inch diameter Choke Cherry
- E. Six – 1-inch diameter Striped Maples
- F. Nine – 1-inch diameter Red Maples
- G. Three – 3-inch diameter Red Maples
- H. Four – 2-inch diameter Red Maples
- I. Two – 4-inch diameter Red Maples
- J. Six – 1-inch diameter Chestnut Oaks
- K. Two – 2-inch diameter Chestnut Oaks
- L. Four – 3-inch diameter Chestnut Oaks
- M. One – 3-inch diameter Chestnut
- N. One – 1-inch diameter Ash
- O. One – 2-inch diameter Ash.

5. Sedimentation Controls

A silt fence will be installed on the top of the eastern slope at the western edge of the Sigma Nu parking lot, and along the eastern edge of the access road. The silt fence will be installed by digging a ditch approximately 6 inches deep, driving wooden stakes into the ground, anchoring the bottom of the silt fence, and backfilling with soil. Once Area E-14 has been revegetated, CoirTM coconut logs will be permanently placed one-half the distance down the slope and temporarily at the bottom of the slope at the site access road. These coconut logs will capture any sediment from Area E-14 until there is adequate

vegetation growth. Then the temporary row of coconut logs will be removed and used elsewhere on the site.

The site access road will be wetted with water from a hose to minimize the amount of dust and it will sweep with power sweeper as required to reduce the amount of dirt and dust on the road. If Area E-14 can't be covered with Coir™ erosion control mats by the end of the workday, then it will be covered with a tarp until the area can be covered with the Coir™ erosion control mats.

6. Special Equipment Requirements

A vacuum truck with rigid plastic and flexible hose will be used to remove the contaminated material. The vacuumed soil will be deposited within a sealed roll-off container. A backhoe or an excavator will be used to extricate tree stumps and large rocks concurrently with vacuuming activities.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from three depths, i.e., surface (0 to 3-inches), 12-inches (10.5 to 13.5 inches), and 24-inches (21 to 24 inches). Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and five locations were from each were sampled. These were at approximately 4-feet from each corner and at the center of each area. These five samples were analyzed individually and a composite of each 500 square foot was analyzed. The results of this delineation are:

- A. The lead values from the two composites analyzed at the 0-3-inch depth were 2,664 ppm and 1,896 ppm. Both of the sections have at least one of the lead values greater than 400 ppm.
- B. The lead values from the two composites analyzed at the 12-inch depth were 158 ppm and 373 ppm. One of the sections has one lead value greater than 400 ppm, therefore this section will be excavated to 12-inches in depth. The other section contains at least one lead values greater than 400 ppm, therefore, this section will be excavated to 2-feet in depth.
- C. The lead values from the two composites analyzed at the 24-inch depth were ND and ND. The lead values from the two sections were less than 400 ppm.

Based on these results, Earth Tech estimates that 12-inches of material will be excavated from one section or 28 cubic yards and 24-inches at the other section or 56 cubic yards of contaminated material removed from Area E-14. Once the contaminated material has been removed, the remaining slope may be graded to a final slope of 2 to 1 or as close to this as possible.

The vacuum truck will have access to Area E-14 via the concrete pad and parking area at the site Command Post. The vacuum truck hose should be able to reach the entire area. Where needed, an excavator will extricate any tree stumps and/or remove large rocks. Once containerized, the vacuumed contaminated material will either be directly transported to a disposal facility or brought to a staging area until transportation arrangements can be arranged.

A sound proof barrier will be constructed to reduce the sound from the vacuum truck so it minimizes the amount of noise heard by the community. This barrier will consist of plywood framed with 2-inch by 4-inch boards that are lined with a sound absorbent material. These barriers will be modified as needed to further reduce any noise coming from the truck. The truck will be located in a location to minimize the amount of sound that could reach the community.

8. Revegetation Plan

Once the contaminated material has been removed, 8- to 12-inches of topsoil will be placed on the area. This topsoil shall be placed by dumping it from dump trucks on the Sigma Nu parking lot, and pulling it downhill with either an excavator or manually. This topsoil will be compacted with a vibratory plate compactor to approximately 6- to 10-inches. The topsoil will be amended with appropriate amount of fertilizer and lime, then seeded with a shade-tolerant seed mix, and covered with the CoirTM coconut erosion control matting. Once the vegetation has taken, the silt fence (located along the top of the East slope) will be removed.

A permanent diversion control channel will be installed along the western edge of the Sigma Nu Parking lot to prevent rainwater runoff from flowing across the revegetated slope. The diversion channel will carry the runoff northward so it flows into the millrace.

9. Post-Excavation Soil Sampling

The disturbed area in E-14 will be approximately 1,500 square feet. Therefore, Earth Tech personnel shall collect three aliquot soil samples for one composite confirmation sample to verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA E-15
DETAILED WORK PLAN
July 18, 2002

1. Description

Area E-15 is the fifteenth area in the East Area that encompasses the eastern slope. It is east of the site Command Post trailer. The sections in the East Area are all downward sloping toward the west from a flat area at the top at the Sigma Nu property. The eastern slope is 5 to 1 horizontal to vertical, which is the slope that engineers design for reclamation projects. Figure 1 shows the plan view, and Figure 50 shows the cross-section of the area. The location is from 3+55 feet to 3+80 to the north.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) has inspected Area E-15, and identified the trees and other vegetation. Area E-15 contains the following trees and vegetation species:

- A. One – 1-inch diameter Norway Maple
- B. Seven – 1-inch diameter Red Maples
- C. Three - 2-inch diameter Red Maples
- D. Two – 3-inch diameter Red Maples
- E. Three – 1-inch diameter Sugar Maples
- F. Fifteen – 1-inch diameter Choke Cherries
- G. Nine – 2-inch diameter Choke Cherries
- H. Two – 4-inch diameter Choke Cherries
- I. Ten – 1-inch diameter Hickories
- J. Seven – 2-inch diameter Hickories
- K. Three – 6-inch diameter Hickories
- L. Three – 1-inch diameter Sumacs
- M. One – 2-inch diameter Sumac
- N. One – 2-inch diameter Locust
- O. One 3-inch diameter Locust
- P. Two – 2-inch diameter Ashes
- Q. One – 3-inch diameter Ash
- R. Eight – 1-inch diameter Chestnut Oaks
- S. Four – 2-inch diameter Chestnut Oaks
- T. One – 3-inch diameter Chestnut Oak
- U. One – 4-inch diameter Chestnut Oak
- V. One – 18-inch diameter Chestnut Oak
- W. Two – 1-inch diameter Douglas Firs
- X. Two – 1-inch diameter Thimbleberries
- Y. Eleven – 1-inch diameter Witch Hazels
- Z. Several Burdock
- AA. Several Horse dock

- BB. Several Raspberries
- CC. Seven Choke Berries
- DD. Two Privets

3. Removal of Vegetation and Organic Material

There is a lot of dead vegetation, trees limbs, leaves, etc., in Area E-15 that will be removed prior to removing the contaminated soil. The vegetation will be chipped and disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from NAC has marked the trees and plants with various colored flags. The green flags indicate trees and plants that will remain. The limbs, bark, and roots will be protected during the excavation of lead-contaminated soil and disturbance will be kept to a minimum. The blue flags indicate trees and plants that will be removed and transplanted at the Cornell Plantations for nurturing. The trees and plants with both green and blue flags may either remain or be transferred to the Cornell Plantations. The trees and plants with pink flags indicate rare native species and will be saved wherever possible. The trees with marked with white paint or white flags will be cut down and recycled. Upon completion of removal activities, Earth Tech personnel or its subcontractor will replant the trees and bushes. These trees or plants will not be removed:

- A. One – 1-inch diameter Norway Maple
- B. Seven – 1-inch diameter Red Maples
- C. Three - 2-inch diameter Red Maples
- D. Two – 3-inch diameter Red Maples
- E. Three – 1-inch diameter Sugar Maples
- F. Fifteen – 1-inch diameter Choke Cherries
- G. Nine – 2-inch diameter Choke Cherries
- H. Two – 4-inch diameter Choke Cherries
- I. Ten – 1-inch diameter Hickories
- J. Seven – 2-inch diameter Hickories
- K. Three – 6-inch diameter Hickories
- L. Three – 1 inch diameter Sumacs
- M. One – 2-inch diameter Sumac
- N. One – 2-inch diameter Locust
- O. One 3-inch diameter Locust
- P. Two – 2-inch diameter Ashes
- Q. One – 3-inch diameter Ash
- R. Eight – 1-inch diameter Chestnut Oaks
- S. Four – 2-inch diameter Chestnut Oaks
- T. One – 3-inch diameter Chestnut Oak
- U. One – 4-inch diameter Chestnut Oak
- V. One – 18-inch diameter Chestnut Oak

- W. Two – 1-inch diameter Douglas Firs
- X. Two – 1-inch diameter Thimbleberries
- Y. Eleven – 1-inch diameter Witch Hazels

5. Sedimentation Controls

A silt fence will be installed on the top of the eastern slope at the western edge of the Sigma Nu parking lot, and along the eastern edge of the access road. The silt fence will be installed by digging a ditch approximately 6 inches deep, driving wooden stakes into the ground, anchoring the bottom of the silt fence, and backfilling with soil. Once Area E-15 has been revegetated, Coir™ coconut logs will be permanently placed one-half the distance down the slope and temporarily at the bottom of the slope at the site access road. These coconut logs will capture any sediment from Area E-15 until there is adequate vegetation growth. Then the temporary row of coconut logs will be removed and used elsewhere on the site.

The site access road will be wetted with water from a hose to minimize the amount of dust and it will sweep with power sweeper as required to reduce the amount of dirt and dust on the road. If Area E-15 can't be covered with Coir™ erosion control mats by the end of the workday, then it will be covered with a tarp until the area can be covered with the Coir™ erosion control mats.

6. Special Equipment Requirements

A vacuum truck with rigid plastic and flexible hose will be used to remove the contaminated material. The vacuumed soil will be deposited within a sealed roll-off container. A backhoe or an excavator will be used to extricate tree stumps and large rocks concurrently with vacuuming activities.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from three depths, i.e., surface (0 to 3-inches), 12-inches (10.5 to 13.5 inches), and 24-inches (21 to 24 inches). Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and five locations were from each were sampled. These were at approximately 4-feet from each corner and at the center of each area. These five samples were analyzed individually and a composite of each 500 square foot was analyzed. The results of this delineation are:

- A. The lead values from the two composites analyzed at the 0-3-inch depth were 2,427 ppm and 4,232 ppm. Both of the sections have lead values greater than 400 ppm.
- B. The lead values from the two composites analyzed at the 12-inch depth were 236 ppm and 226 ppm. One of the sections has at least one lead value greater than 400 ppm. The lead values from the other section are all less than 400 ppm.
- C. There were no composite samples collected from the 24-inch depth samples.

Based on these results, Earth Tech estimates there approximately 12-inches of material to be excavated from one section or 62 cubic yards of contaminated material and approximately 24-inches of material removed from the other section or 31 cubic yards. This is approximately 93 cubic yards of contaminated material to be removed from Area E-15. Once the contaminated material has been removed, the remaining slope may be graded to a final slope of 2 to 1 or as close to this as possible.

The vacuum truck will have access to Area E-15 via the concrete pad and parking area at the site Command Post. The vacuum truck hose should be able to reach the entire area. Where needed, an excavator will extricate any tree stumps and/or remove large rocks. Once containerized, the vacuumed contaminated material will either be directly transported to a disposal facility or brought to a staging area until transportation arrangements can be arranged.

A sound proof barrier will be constructed to reduce the sound from the vacuum truck so it minimizes the amount of noise heard by the community. This barrier will consist of plywood framed with 2-inch by 4-inch boards that are lined with a sound absorbent material. These barriers will be modified as needed to further reduce any noise coming from the truck. The truck will be located in a location to minimize the amount of sound that could reach the community.

8. Revegetation Plan

Once the contaminated material has been removed, 8- to 12-inches of topsoil will be placed on the area. This topsoil shall be placed by dumping it from dump trucks on the Sigma Nu parking lot, and pulling it downhill with either an excavator or manually. This topsoil will be compacted with a vibratory plate compactor to approximately 6- to 10-inches. The topsoil will be amended with appropriate amount of fertilizer and lime, then seeded with a shade-tolerant seed mix, and covered with the CoirTM coconut erosion control matting. Once the vegetation has taken, the silt fence (located along the top of the East slope) will be removed.

A permanent diversion control channel will be installed along the western edge of the Sigma Nu Parking lot to prevent rainwater runoff from flowing across the revegetated slope. The diversion channel will carry the runoff northward so it flows into the millrace.

9. Post-Excavation Soil Sampling

The disturbed area in E-15 will be approximately 1,625 square feet. Therefore, Earth Tech personnel shall collect four aliquot soil samples for one composite confirmation sample to verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA E-16
DETAILED WORK PLAN
November 7, 2002

1. Description

Area E-16 is the sixteenth area in the East Area that encompasses the eastern slope. It is east of the site Command Post trailer, and it extends eastward to a concrete driveway approximately 215 feet away. This section slopes gradually westward from the concrete driveway to the site command post trailer. The eastern slope is approximately 7 to 1 horizontal to vertical. Figure 1 shows the plan view. Earth Tech doesn't have surface contours of Area E-16, therefore, cross-sections of the area are not available. The location is from 3+80 feet to 4+05 to the north.

2. Vegetation

Members from the Natural Area Commission (NAC) and the City of Ithaca Forester inspected Area E-16, and identified the trees and other vegetation. Area E-16 contains the following trees and vegetation species:

- A. 1-inch diameter Norway Maples - 15
- B. 2-inch diameter Norway Maples - 3
- C. 3-inch diameter Norway Maples - 5
- D. 4-inch diameter Norway Maples - 2
- E. 5-inch diameter Norway Maples - 3
- F. 8-inch diameter Norway Maple - 1
- G. 9-inch diameter Norway Maple - 1
- H. 10-inch diameter Norway Maple - 1
- I. 1-inch diameter Red Maple - 1
- J. 2-inch diameter Red Maple - 1
- K. 1-inch diameter Sugar Maples - 2
- L. 2-inch diameter Striped Maple - 1
- M. 4-inch diameter Hackberry - 1
- N. 1-inch diameter Hickory - 1
- O. 2-inch diameter Hickory - 1
- P. 8-inch diameter Hickories - 2
- Q. 9-inch diameter Hickory - 1
- R. 20-inch diameter Hickory - 1
- S. 1-inch diameter White Ash - 1
- T. 1-inch diameter Chestnut Oaks - 11
- U. 2-inch diameter Chestnut Oaks - 2
- V. 4-inch diameter Chestnut Oaks - 2
- W. 5-inch diameter Chestnut Oak - 1
- X. 6-inch diameter Chestnut Oak - 1
- Y. 8-inch diameter Chestnut Oak - 1
- Z. 14-inch diameter Chestnut Oak - 1

- AA. 18-inch diameter Chestnut Oak – 1
- BB. 30-inch diameter dead Chestnut Oak – 1
- CC. 1-inch diameter Black Oaks – 4
- DD. 2-inch diameter Black Oaks – 2
- EE. 3-inch diameter Black Oaks – 2
- FF. 4-inch diameter Black Oak – 1
- GG. 6-inch diameter Black Cherry – 1
- HH. 1-inch diameter Hemlocks – 4
- II. 2-inch diameter Hemlocks – 2
- JJ. 1-inch diameter Hop Hornbeams – 13
- KK. 2-inch diameter Hop Hornbeams – 5
- LL. 8-inch diameter dead White Pine – 1
- MM. 28-inch diameter White Pine – 1
- NN. 1-inch diameter Juniper – 1
- OO. 1-inch diameter Shadbushes – 7
- PP. 2-inch diameter Shadbushes – 3
- QQ. 3-inch diameter Shadbushes – 3
- RR. 6-inch diameter Shadbush – 1
- SS. Maple Leaf Viburnums – 5
- TT. Blueberries – 50
- UU. Privets – 3
- VV. Honeysuckles – 13
- WW. Buckthorns – 2

3. Removal of Vegetation and Organic Material

Dead vegetation, trees limbs, leaves, etc... are present throughout Area E-16 that will be removed prior to vacuuming the lead contaminated soil. The vegetation will be chipped and disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester with assistance from members from the NAC marked trees and plants with various colored flags. The green flags indicate trees and plants that will not be disturbed during the removal activities. These trees will not interfere with the removal of the lead-contaminated soil. The blue flags indicate trees and plants that will be removed during the removal activities. The trees and plants with both green and blue flags may be dug up and removed from the site. The trees and plants with pink flags indicate sensitive species and will be saved wherever possible. The trees with white flags will be removed. The Forester and NAC will ensure that Earth Tech removes these trees and plants properly. Once the trees and plants have been dug up, they will be handed over to NAC for storage. Upon completion of removal activities, NAC will replant the trees and bushes. For the trees that will be left undisturbed, the limbs, bark, and roots will be protected during the excavation of lead-contaminated soil. These trees or plants may or may not be removed:

- a. 1-inch diameter Red Maple – 1
- b. 2-inch diameter Red Maple – 1
- c. 1-inch diameter Sugar Maples – 2
- d. 2-inch diameter Striped Maple – 1
- e. 4-inch diameter Hackberry – 1
- f. 1-inch diameter Hickory – 1
- g. 2-inch diameter Hickory – 1
- h. 8-inch diameter Hickories – 2
- i. 9-inch diameter Hickory – 1
- j. 20-inch diameter Hickory – 1
- k. 1-inch diameter White Ash – 1
- l. 1-inch diameter Chestnut Oaks – 11
- m. 2-inch diameter Chestnut Oaks – 2
- n. 4-inch diameter Chestnut Oaks – 2
- o. 5-inch diameter Chestnut Oak – 1
- p. 6-inch diameter Chestnut Oak – 1
- q. 8-inch diameter Chestnut Oak – 1
- r. 14-inch diameter Chestnut Oak – 1
- s. 18-inch diameter Chestnut Oak – 1
- t. 30-inch diameter dead Chestnut Oak – 1
- u. 1-inch diameter Black Oaks – 4
- v. 2-inch diameter Black Oaks – 2
- w. 3-inch diameter Black Oaks – 2
- x. 4-inch diameter Black Oak – 1
- y. 6-inch diameter Black Cherry – 1
- z. 1-inch diameter Hemlocks – 4
- aa. 2-inch diameter Hemlocks – 2
- bb. 1-inch diameter Hop Hornbeams – 13
- cc. 2-inch diameter Hop Hornbeams – 5
- dd. 8-inch diameter dead White Pine – 1
- ee. 28-inch diameter White Pine – 1
- ff. 1-inch diameter Juniper – 1
- gg. 1-inch diameter Shadbushes – 7
- hh. 2-inch diameter Shadbushes – 3
- ii. 3-inch diameter Shadbushes – 3
- jj. 6-inch diameter Shadbush – 1
- kk. Maple Leaf Viburnums – 5
- ll. Blueberries – 50

5. Sedimentation Controls

Silt fence or straw bales will be installed on the eastern edge of the area along the concrete driveway. The silt fence will be installed by excavating a ditch approximately 6 inches deep, driving the wooden stakes into the ground, installing the bottom of the silt fence, and backfilling with soil. Once Area E-16 has been revegetated, Coir™ coconut logs will be permanently placed at intervals of 50 feet down the slope and at the bottom of the slope beside the site Command Post trailer. These coconut logs will capture any sediment from Area E-16 until there is adequate vegetation growth.

If Area E-16 can't be covered with Coir™ erosion control mats by the end of the workday, then it will be covered with a tarp until the area can be covered with the Coir™ erosion control mats.

6. Special Equipment Requirements

A vacuum truck with steel, polyvinyl chloride (PVC), and flexible hose will be used to remove the contaminated material. If the vacuum truck can't remove some of the material, a mini-excavator may be used to loosen the contaminated material. The mini-excavator may push contaminated material from the top of the slope towards the vacuum hose.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from the surface (0 to 2-inches). Below the 2-inches of surface soil is bedrock. Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and samples were collected from five locations in each 500 square foot area. These sample locations were approximately 4-feet from each corner and at the center of each area. These five samples were analyzed individually and a composite sample generated from each 500 square foot area analyzed. The results of this delineation indicate the lead values from the surface samples ranged from 340 to 6,720 ppm.

Based on these results, Earth Tech estimates that 50 cubic yards of lead-contaminated material needs to be removed from this area. Once the contaminated material has been removed, topsoil will be added to the slope to the approximate original contour.

The vacuum truck will have access to Area E-16 via the parking lot of the Sigma Nu Fraternity House. The vacuum truck hose should be able to reach the entire area from these two locations. The vacuumed lead-contaminated material will be removed from the site inside sealed vacuum containers and disposed of properly.

8. Revegetation Plan

Once the contaminated material has been removed, 4- to 6-inches of topsoil will be placed on the area. This topsoil will be dumped from dump trucks on the Sigma Nu lawn

and then moved with either a backhoe or a diesel powered mud-buggy. This topsoil will be compacted with a concrete-filled roller to approximately 3- to 4- inches. The topsoil will be amended with appropriate amount of fertilizer and lime, then seeded with a shade-tolerant seed mix, and covered with the CoirTM coconut erosion control matting. Once the vegetation has taken, the silt fence (located along the concrete driveway) will be removed.

9. Post-Excavation Soil Sampling

The disturbed area in Area E-16 will be approximately 5,500 square feet. Area E-16 will be split into eleven 25-foot by 20-foot sections (E-16-1 through E-16-11). Five aliquot samples will be collected from each section. These aliquots shall be analyzed separately with the XRF, and then if all XRF values are below 400 ppm, the five aliquots will be combined into a composite sample. If any one aliquot is greater than 400 ppm, additional soil will be removed from the section and then resampled. These composite samples will be analyzed with the XRF, and then submitted to a laboratory for confirmation. Therefore, a total of eleven composite samples will be collected from Area E-16.

AREA E-17
DETAILED WORK PLAN
November 7, 2002

1. Description

Area E-17 is the seventeenth area in the East Area that encompasses the eastern slope. It lies east of the site Command Post trailer. Area E-17 extends eastward to a concrete driveway approximately 215 feet away and south of the Mill Race. This section slopes gradually westward from the concrete driveway to the site command post trailer. The eastern slope is approximately 7 to 1 horizontal to vertical. Figure 1 shows the plan view. Earth Tech doesn't have surface contours of Area E-17, therefore, cross-sections of the area are not available. The location is from 4+05 feet to 4+30 to the north.

2. Vegetation

Members from the Natural Area Commission (NAC) and the City of Ithaca Forester inspected Area E-17, and identified the trees and other vegetation. Area E-17 contains the following trees and vegetation species:

- A. 1-inch diameter Norway Maples - 6
- B. 2-inch diameter Norway Maples - 4
- C. 3-inch diameter Norway Maple - 1
- D. 4-inch diameter Norway Maples - 3
- E. 10-inch diameter Norway Maple - 1
- F. 11-inch diameter Norway Maple - 1
- G. 1-inch diameter Red Maple - 1
- H. 3-inch diameter Red Maple - 1
- I. 4-inch diameter Red Maple - 1
- J. 1-inch diameter Sugar Maples - 2
- K. 8-inch diameter Sugar Maple - 1
- L. 1-inch diameter Hackberry - 1
- M. 2-inch diameter Hickory - 1
- N. 7-inch diameter Hickory - 1
- O. 1-inch diameter Chestnut Oaks - 5
- P. 2-inch diameter Chestnut Oak - 1
- Q. 3-inch diameter Chestnut Oak - 1
- R. 5-inch diameter Chestnut Oak - 1
- S. 6-inch diameter Chestnut Oaks - 2
- T. 8-inch diameter Chestnut Oaks - 3
- U. 9-inch diameter Chestnut Oaks - 3
- V. 11-inch diameter Chestnut Oak - 1
- W. 13-inch diameter Chestnut Oaks - 3
- X. 15-inch diameter Chestnut Oak - 1
- Y. 18-inch diameter dead Chestnut Oak - 1
- Z. 32-inch diameter Chestnut Oak - 1

- AA. 1-inch diameter Black Oaks – 4
- BB. 1-inch diameter Hemlocks – 3
- CC. 6-inch diameter Hemlock – 1
- DD. 7-inch diameter Hemlock – 1
- EE. 10-inch diameter Hemlock – 1
- FF. 13-inch diameter Hemlock – 1
- GG. 14-inch diameter Hemlock – 1
- HH. 1-inch diameter Hop Hornbeams – 11
- II. 2-inch diameter Hop Hornbeams – 4
- JJ. 3-inch diameter Hop Hornbeams – 4
- KK. 4-inch diameter Hop Hornbeams – 3
- LL. 5-inch diameter Hop Hornbeams – 4
- MM. 6-inch diameter Hop Hornbeams – 3
- NN. 8-inch diameter dead Hop Hornbeam – 1
- OO. 8-inch diameter Hop Hornbeams – 2
- PP. 3-inch diameter White Pine – 1
- QQ. 14-inch diameter White Pine – 1
- RR. 28-inch diameter White Pine – 1
- SS. 1-inch diameter Shadbushes – 12
- TT. 2-inch diameter Shadbushes – 2
- UU. 3-inch diameter Shadbush – 1
- VV. Blueberries – 50
- WW. 28-inch diameter Ailanthus – 1
- XX. 1-inch diameter Sumac – 1
- YY. Honeysuckles – 65

3. Removal of Vegetation and Organic Material

Dead vegetation, trees limbs, leaves, etc. is present throughout Area E-17 and will be removed prior to vacuuming the contaminated soil. The vegetation will be chipped and disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from the NAC marked trees and plants with various colored flags. The green flags indicate trees and plants that will not be disturbed during the removal activities. These trees will not interfere with the removal of the lead-contaminated soil. The blue flags indicate trees and plants that will be removed during the removal activities. The trees and plants with both green and blue flags may be dug up and removed from the site. The trees and plants with pink flags indicate sensitive species and will be saved wherever possible. The trees with white flags will be removed. The Forester and NAC will ensure that Earth Tech removes these trees and plants properly. Once the trees and plants have been dug up, they will be handed over to NAC for storage. Upon completion of removal activities, NAC will replant the trees and bushes. For the trees that will be left undisturbed, the limbs, bark, and roots will be

protected during the excavation of lead-contaminated soil. These trees or plants may or may not be removed:

- a. 1-inch diameter Red Maple – 1
- b. 2-inch diameter Red Maple – 1
- c. 4-inch diameter Red Maple – 1
- d. 1-inch diameter Sugar Maples – 2
- e. 8-inch diameter Sugar Maple – 1
- f. 1-inch diameter Hackberry – 1
- g. 2-inch diameter Hickory – 1
- h. 7-inch diameter Hickory – 1
- i. 1-inch diameter Chestnut Oaks – 5
- j. 2-inch diameter Chestnut Oak – 1
- k. 3-inch diameter Chestnut Oak – 1
- l. 5-inch diameter Chestnut Oak – 1
- m. 6-inch diameter Chestnut Oaks – 2
- n. 8-inch diameter Chestnut Oaks – 3
- o. 9-inch diameter Chestnut Oaks – 3
- p. 11-inch diameter Chestnut Oak – 1
- q. 13-inch diameter Chestnut Oaks – 3
- r. 15-inch diameter Chestnut Oak – 1
- s. 32-inch diameter Chestnut Oak – 1
- t. 1-inch diameter Black Oaks – 4
- u. 1-inch diameter Hemlocks – 3
- v. 6-inch diameter Hemlock – 1
- w. 7-inch diameter Hemlock – 1
- x. 10-inch diameter Hemlock – 1
- y. 13-inch diameter Hemlock – 1
- z. 14-inch diameter Hemlock – 1
- aa. 1-inch diameter Hop Hornbeams – 11
- bb. 2-inch diameter Hop Hornbeams – 4
- cc. 3-inch diameter Hop Hornbeams – 4
- dd. 4-inch diameter Hop Hornbeams – 3
- ee. 5-inch diameter Hop Hornbeams – 4
- ff. 6-inch diameter Hop Hornbeams – 3
- gg. 8-inch diameter dead Hop Hornbeam – 1
- hh. 8-inch diameter Hop Hornbeams – 2
- ii. 3-inch diameter White Pine – 1
- jj. 14-inch diameter White Pine – 1
- kk. 28-inch diameter White Pine – 1
- ll. 1-inch diameter Shadbushes – 12
- mm. 2-inch diameter Shadbushes – 2
- nn. 3-inch diameter Shadbush – 1
- oo. Blueberries – 50

5. Sedimentation Controls

Silt fence or straw bales will be installed on the eastern edge of the area along the concrete driveway and along the mill race to the north of Area E-17. The silt fence will be installed by excavating a ditch approximately 6 inches deep, driving the wooden stakes into the ground, installing the bottom of the silt fence, and backfilling with soil. Once Area E-17 has been revegetated, Coir™ coconut logs will be permanently placed at intervals of 50 feet down the slope and at the bottom of the slope beside the site Command Post trailer. These coconut logs will capture any sediment from Area E-17 until there is adequate vegetation growth.

If Area E-17 can't be covered with Coir™ erosion control mats by the end of the workday, then it will be covered with a tarp until the area can be covered with the Coir™ erosion control mats.

6. Special Equipment Requirements

A vacuum truck with steel, polyvinyl chloride (PVC), and flexible hose will be used to remove the contaminated material. If the vacuum truck can't remove some of the material, a mini-excavator may be used to loosen the contaminated material. The mini-excavator may push contaminated material from the top of the slope towards the vacuum hose.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from the surface (0 to 2-inches). Below the 2-inches of surface soil is bedrock. Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and samples were collected from five locations in each 500 square foot section. These sample locations were approximately 4-feet from each corner and at the center of each area. These five samples were analyzed individually and a composite of each 500 square foot analyzed. The results of this delineation indicated lead values from the surface ranged from 216 parts per million (ppm) to 4,095 ppm.

Based on these results, Earth Tech estimates that 25 cubic yards of lead-contaminated material needs to be removed from this area.

The vacuum truck will have access to Area E-17 via the Sigma Nu Fraternity House parking lot. The vacuum truck hose should be able to reach the entire area from these two locations. The vacuumed lead-contaminated material will be removed from the site in sealed containers and disposed of properly.

8. Revegetation Plan

Once the contaminated material has been removed, 4- to 6-inches of topsoil will be placed on the area. This topsoil will be dumped from trucks on the Sigma Nu lawn and then moved with either a backhoe or a diesel powered mud-buggy. This topsoil will be compacted with a concrete-filled roller to approximately 3- to 4- inches. The topsoil will be amended with appropriate amount of fertilizer and lime, then seeded with a shade-tolerant seed mix, and covered with the CoirTM coconut erosion control matting. Once the vegetation has taken, the silt fence (located along the concrete driveway will be removed.

9. Post-Excavation Soil Sampling

The disturbed area in Area E-17 will be approximately 2,750 square feet. Area E-17 will be split into approximately eleven 25-foot by 10-foot sections (E-17-1 through E-17-11). Five aliquot samples will be collected from each section. These aliquots will be analyzed separately with the XRF, and when all XRF values are below 400 ppm, the five aliquots will be combined into a composite sample. If any one aliquot is greater than 400 ppm, additional soil will be vacuumed and then resampled. Composite samples will be analyzed with the XRF, and will be submitted to a laboratory for confirmation. A total of eleven composite samples will be collected from Area E-17.

AREA E-0
DETAILED WORK PLAN
July 18, 2002

1. Description

Area E-0 is in the East Area just south of Area E-1. It is partially on the Ithaca Gun Company property and part on private property. The sections in the East Area are all downward sloping toward the west from a flat area at the top at the Sigma Nu property. The eastern slope is 1.3 to 1 horizontal to vertical, which is steeper than the slope that engineers design for reclamation projects. Earth Tech will attempt to grade the surface to a slope of 2 to 1 or as close to 2 to 1 as possible. Figure 1 shows the plan view, and Figure 51 shows the cross-section of the area. The location is from 0+00 feet to 0+25 feet to the south.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) has inspected Area E-O, and identified the trees and other vegetation. Area E-0 contains the following trees and vegetation species:

- A. Eight – 1-inch diameter Norway Maples
- B. Seven – 2-inch diameter Norway Maples
- C. Three - 3-inch diameter Norway Maples
- D. One – 5-inch diameter Norway Maple
- E. Three – 1-inch diameter Sugar Maples
- F. Two – 2-inch diameter Sugar Maples
- G. One – 16-inch diameter Sugar Maple
- H. One – 3-inch diameter Choke Cherry
- I. One – 2-inch diameter Mulberry
- J. Two – 3-inch diameter *Ailanthus*
- K. One – 2-inch diameter Wild Grape Vine
- L. Two 1-inch diameter Elms
- M. One – 5-inch diameter Elm
- N. Many Raspberry bushes
- O. Many Forsythia bushes

3. Removal of Vegetation and Organic Material

There is a lot of dead vegetation, trees limbs, leaves, etc., in Area E-O that will be removed prior to removing the contaminated soil. The vegetation will be chipped and recycled or disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from some NAC members has marked the trees and plants with various colored flags. The green flags indicate trees and plants that will remain. The limbs, bark, and roots will be protected during the excavation of lead-contaminated soil and disturbance will be kept to a minimum. The blue flags indicate trees and plants that will be removed and transplanted at the Cornell Plantations for nurturing. The trees and plants with both green and blue flags may either remain or be transferred to the Cornell Plantations. The trees and plants with pink flags indicate rare native species and will be saved wherever possible. The trees with marked with white paint or white flags will be cut down and recycled. Once the trees and plants have been removed and any soil washed-off from the root structure, they will be handed over to the Cornell Plantations' personnel. The following trees and plants will remain:

- A. Three – 1-inch diameter Sugar Maples
- B. Two – 2-inch diameter Sugar Maples
- C. One – 16-inch diameter Sugar Maple
- D. One – 3-inch diameter Choke Cherry
- E. Two 1-inch diameter Elms
- F. One – 5-inch diameter Elm

5. Sedimentation Controls

A silt fence will be installed on the top of the eastern slope at the western edge of the Sigma Nu parking lot, and along the eastern edge of the access road. The silt fence will be installed by digging a ditch approximately 6 inches deep, driving wooden stakes into the ground, anchoring the bottom of the silt fence, and backfilling with soil. Once Area E-0 has been revegetated, Coir™ coconut logs will be permanently placed one-half the distance down the slope and temporarily at the bottom of the slope at the site access road. These coconut logs will capture any sediment from Area E-0 until there is adequate vegetation growth. Then the temporary row of coconut logs will be removed and used elsewhere on the site.

The site access road will be wetted with water from a hose to minimize the amount of dust and it will sweep with power sweeper as required to reduce the amount of dirt and dust on the road. If Area E-0 can't be covered with Coir™ erosion control mats by the end of the workday, then it will be covered with a tarp until the area can be covered with the Coir™ erosion control mats.

6. Special Equipment Requirements

A vacuum truck with rigid plastic and flexible hose will be used to remove the contaminated material. The vacuumed soil will be deposited within a sealed roll-off container. A backhoe or an excavator will be used to extricate tree stumps and large rocks concurrently with vacuuming activities.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from three depths, i.e., surface (0 to 3-inches), 12-inches (10.5 to 13.5 inches), and 24-inches (21 to 24 inches). Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and five locations were from each were sampled. These were at approximately 4-feet from each corner and at the center of each area. These five samples were analyzed individually and a composite of each 500 square foot was analyzed. The results of this delineation are:

- A. The lead values from the three composites analyzed at the 0-3-inch depth were 1,032 ppm, 1,102 ppm, and 1,552 ppm. All of the sections have lead values greater than 400 ppm.
- B. Composite samples were not analyzed in Area E-0. There were no samples collected at most of the locations. Of the 14 locations sampled, five were analyzed at 12-inches in depth. Four of these values were ND, and the other value was 293 ppm. Therefore, the soil at 12-inches is considered clean.
- C. Composite samples were not analyzed in Area E-0. There were no samples collected at most of the locations. Of the 14 locations sampled, five were analyzed at 12-inches in depth. Two of these values were ND, and the other values were 181 ppm, 330 ppm, and 174 ppm. Therefore, the soil at 24-inches is considered clean.

Based on these results, Earth Tech estimates there 12-inches of contaminated material will be excavated from the three sections or 56 cubic yards of contaminated material removed from Area E-0. Once the contaminated material has been removed, the remaining slope may be graded to a final slope of 2 to 1 or as close to this as possible.

The vacuum truck will have access to Area E-O via the site access road and/or along Lake Street. The area has fairly steep slopes at the bottom, but the vacuum truck hose should be able to reach the entire area. Where needed, a rototiller will be able to move within the area to reach to the top of the slope to loosen any hard-packed material. Where needed, an excavator will extricate any tree stumps and/or remove large rocks. Once containerized, the vacuumed contaminated material will either be directly transported to a disposal facility or brought to a staging area until transportation arrangements can be arranged.

A sound proof barrier will be constructed to reduce the sound from the vacuum truck so it minimizes the amount of noise heard by the community. This barrier will consist of plywood framed with 2-inch by 4-inch boards that are lined with a sound absorbent material. These barriers will be modified as needed to further reduce any noise coming from the truck. The truck will be located in a location to minimize the amount of sound that could reach the community.

8. Revegetation Plan

Once the contaminated material has been removed, 8- to 12-inches of topsoil will be placed on the area. This topsoil shall be placed by dumping it from dump trucks on the Sigma Nu parking lot, and pulling it downhill with either an excavator or manually. This topsoil will be compacted with a vibratory plate compactor to approximately 6- to 10-inches. The topsoil will be amended with appropriate amount of fertilizer and lime, then seeded with a shade-tolerant seed mix, and covered with the CoirTM coconut erosion control matting. Once the vegetation has taken, the silt fence (located along the top of the East slope) will be removed.

9. Post-Excavation Soil Sampling

The disturbed area in E-O will be approximately 1,425 square feet. Therefore, Earth Tech personnel shall collect three aliquot soil samples for one composite confirmation sample to verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA E-00
DETAILED WORK PLAN
July 18, 2002

1. Description

Area E-00 is in the East Area just south of Area E-0. It is on private property. The sections in the East Area are all downward sloping toward the west from a flat area at the top at the Sigma Nu property. The eastern slope is 1.1 to 1 horizontal to vertical, which is steeper than the slope that engineers design for reclamation projects. Figure 1 shows the plan view, and Figure 52 shows the cross-section of the area. The location is from 0+25 feet to 0+50 feet to the south.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) has inspected Area E-00, and identified the trees and other vegetation. Area E-00 contains the following trees and vegetation species:

- A. Six – 1-inch diameter Norway Maple
- B. Four – 2-inch diameter Norway Maples
- C. Five – 3-inch diameter Norway Maples
- D. One – 6-inch diameter Norway Maple
- E. One – 10-inch diameter Norway Maple
- F. One - 12-inch diameter Norway Maple
- G. One – 14-inch diameter Norway Maple
- H. One – 16-inch diameter Norway Maple
- I. One – 20-inch diameter Norway Maple
- J. One - 24-inch diameter Norway Maple
- K. One – 30-inch diameter Norway Maple
- L. Three – 1-inch diameter Sugar Maples
- M. One – 13-inch diameter Ash
- N. One – 14-inch diameter Ash
- O. One – 16-inch diameter Black Locust
- P. One – 8-inch diameter Ailanthus
- Q. One – 1-inch diameter Wild Grape Vine
- R. Several Forsythia bushes

3. Removal of Vegetation and Organic Material

There is a lot of dead vegetation, trees limbs, leaves, etc., in Area E-00 that will be removed prior to removing the contaminated soil. The vegetation will be chipped and recycled or disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from some NAC members has marked the trees and plants with various colored flags. The green flags indicate trees and plants that will remain. The limbs, bark, and roots will be protected during the excavation of lead-contaminated soil and disturbance will be kept to a minimum. The blue flags indicate trees and plants that will be removed and transplanted at the Cornell Plantations for nurturing. The trees and plants with both green and blue flags may either remain or be transferred to the Cornell Plantations. The trees and plants with pink flags indicate rare native species and will be saved wherever possible. The trees with marked with white paint or white flags will be cut down and recycled. Once the trees and plants have been removed and any soil washed-off from the root structure, they will be handed over to the Cornell Plantations' personnel. The following trees and plants will remain:

- A. Three – 1-inch diameter Sugar Maples
- B. One – 13-inch diameter Ash
- C. One – 14-inch diameter Ash
- D. Many Forsythia bushes

5. Sedimentation Controls

A silt fence will be installed on the top of the eastern slope at the western edge of the Sigma Nu parking lot, and along the eastern edge of the access road. The silt fence will be installed by digging a ditch approximately 6 inches deep, driving wooden stakes into the ground, anchoring the bottom of the silt fence, and backfilling with soil. Once Area E-00 has been revegetated, Coir™ coconut logs will be permanently placed one-half the distance down the slope and temporarily at the bottom of the slope at the site access road. These coconut logs will capture any sediment from Area E-00 until there is adequate vegetation growth. Then the temporary row of coconut logs will be removed and used elsewhere on the site.

The site access road will be wetted with water from a hose to minimize the amount of dust and it will sweep with power sweeper as required to reduce the amount of dirt and dust on the road. If Area E-00 can't be covered with Coir™ erosion control mats by the end of the workday, then it will be covered with a tarp until the area can be covered with the Coir™ erosion control mats.

6. Special Equipment Requirements

A vacuum truck with rigid plastic and flexible hose will be used to remove the contaminated material. The vacuumed soil will be deposited within a sealed roll-off container. A backhoe or an excavator will be used to extricate tree stumps and large rocks concurrently with vacuuming activities.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from three depths, i.e., surface (0 to 3-inches), 12-inches (10.5 to 13.5 inches), and 24-inches (21 to 24 inches). Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and five locations were from each were sampled. These were at approximately 4-feet from each corner and at the center of each area. These five samples were analyzed individually and a composite of each 500 square foot was analyzed. The results of this delineation are:

- A. The lead values from the three composites analyzed at the 0-3-inch depth were 1,302 ppm, 1,160 ppm, and 1,270 ppm. All three of the sections have at least one lead value greater than 400 ppm.
- B. The lead values from the three composites analyzed at the 12-inch depth were 138 ppm, 96 ppm, and 346 ppm. One of the sections has at least one lead value greater than 400 ppm. The lead values from the other two sections are all less than 400 ppm.
- C. The lead values from the three composites analyzed at the 24-inch depth were ND, 44 ppm, and 103 ppm. The lead values from the three sections were less than 400 ppm.

Based on these results, Earth Tech estimates that 12-inches of material will be excavated from two of the sections or 43 cubic yards of contaminated material and 24-inches of soil will be excavated from the other section or 43 cubic yards of contaminated soil will be excavated. This will give a total of 86 cubic yards of contaminated soil to be removed from Area E-00. Once the contaminated material has been removed, the remaining slope may be graded to a final slope of 2 to 1 or as close to this as possible.

The vacuum truck will have access to Area E-00 via Lake Street. Since the area has fairly gentle slopes at the bottom, the vacuum truck hose should be able to reach the entire area. Where needed, a rototiller will be able to reach to the top of the slope to loosen any hard-packed material. Where needed, an excavator will extricate any tree stumps and/or remove large rocks. Once containerized, the vacuumed contaminated material will either be directly transported to a disposal facility or brought to a staging area until transportation arrangements can be arranged.

A sound proof barrier will be constructed to reduce the sound from the vacuum truck so it minimizes the amount of noise heard by the community. This barrier will consist of plywood framed with 2-inch by 4-inch boards that are lined with a sound absorbent material. These barriers will be modified as needed to further reduce any noise coming from the truck. The truck will be located in a location to minimize the amount of sound that could reach the community.

8. Revegetation Plan

Once the contaminated material has been removed, 8- to 12-inches of topsoil will be placed on the area. This topsoil shall be placed by dumping it from dump trucks on the Sigma Nu parking lot, and pulling it downhill with either an excavator or manually. This topsoil will be compacted with a vibratory plate compactor to approximately 6- to 10-inches. The topsoil will be amended with appropriate amount of fertilizer and lime, then seeded with a shade-tolerant seed mix, and covered with the CoirTM coconut erosion control matting. Once the vegetation has taken, the silt fence (located along the top of the East slope) will be removed.

9. Post-Excavation Soil Sampling

The disturbed area in E-00 will be approximately 1,725 square feet. Therefore, Earth Tech personnel shall collect four aliquot soil samples for one composite confirmation sample to verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA E-000
DETAILED WORK PLAN
July 18, 2002

1. Description

Area E-000 is the first area in the East Area that encompasses the eastern slope adjacent to the site access road from Lake Street. Areas E-000 thru E-4 are part of a privately owned residential property. Discussions will be held with the property owners on which trees are to be saved and those that are to be removed. The sections in the East Area are all downward sloping toward the west from a flat area at the top at the Sigma Nu property. The eastern slope is to 1 horizontal to vertical, which is steeper than a slope of 2 to 1. This is the slope that engineers design for in reclamation projects. Figure 1 shows the plan view, and Figure 53 shows the cross-section of the area. The location is from 0+50 feet to 0+75 feet to the south.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) has inspected Area E-000, and identified the trees and other vegetation. Area E-000 contains the following trees and vegetation species:

- A. Ten – 1-inch diameter Norway Maple
- B. One – 2-inch diameter Norway Maple
- C. One – 8-inch diameter Norway Maple
- D. One – 14-inch Norway Maple
- E. Two – 26-inch diameter Norway Maples
- F. Four – 1-inch diameter Sugar Maples
- G. One – 8-inch Sugar Maple
- H. Three – 1-inch diameter Ash
- I. One – 2-inch diameter Ash
- J. One – 1-inch diameter Elm
- K. One – 18-inch diameter Elm
- L. Six – 1-inch diameter Choke Cherries
- M. One – 2-inch Box Elder
- N. Five – 1-inch diameter *Ailanthus*
- O. One – 3-inch diameter *Ailanthus*
- P. One – 1-inch diameter Mulberry
- Q. One – 1-inch diameter Locust
- R. Three – 1-inch diameter Wild Grape Vines
- S. Many Raspberries

3. Removal of Vegetation and Organic Material

There is a lot of dead vegetation, trees limbs, leaves, etc., in Area E-000 that will be removed prior to removing the contaminated soil. The vegetation will be chipped and recycled or disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from some NAC members has marked the trees and plants with various colored flags. The green flags indicate trees and plants that will remain. The limbs, bark, and roots will be protected during the excavation of lead-contaminated soil and disturbance will be kept to a minimum. The blue flags indicate trees and plants that will be removed and transplanted at the Cornell Plantations for nurturing. The trees and plants with both green and blue flags may either remain or be transferred to the Cornell Plantations. The trees and plants with pink flags indicate rare native species and will be saved wherever possible. The trees with marked with white paint or white flags will be cut down and recycled. Once the trees and plants have been removed and any soil washed-off from the root structure, they will be handed over to the Cornell Plantations' personnel. The following trees and plants will remain:

- A. Four – 1-inch diameter Sugar Maples
- B. One – 8-inch Sugar Maple
- C. Three – 1-inch diameter Ash
- D. One – 2-inch diameter Ash
- E. One – 1-inch diameter Elm
- F. One – 18-inch diameter Elm
- G. Six – 1-inch diameter Choke Cherries
- H. One – 2-inch Box Elder

5. Sedimentation Controls

A silt fence will be installed on the top of the eastern slope at the western edge of the Sigma Nu parking lot, and along the eastern edge of the access road. The silt fence will be installed by digging a ditch approximately 6 inches deep, driving wooden stakes into the ground, anchoring the bottom of the silt fence, and backfilling with soil. Once Area E-000 has been revegetated, CoirTM coconut logs will be permanently placed one-half the distance down the slope and temporarily at the bottom of the slope at the site access road. These coconut logs will capture any sediment from Area E-000 until there is adequate vegetation growth. Then the temporary row of coconut logs will be removed and used elsewhere on the site.

The site access road will be wetted with water from a hose to minimize the amount of dust and it will sweep with power sweeper as required to reduce the amount of dirt and dust on the road. If Area E-000 can't be covered with CoirTM erosion control mats by the end of the workday, then it will be covered with a tarp until the area can be covered with the CoirTM erosion control mats.

6. Special Equipment Requirements

A vacuum truck with rigid plastic and flexible hose will be used to remove the contaminated material. The vacuumed soil will be deposited within a sealed roll-off container. A backhoe or an excavator will be used to extricate tree stumps and large rocks concurrently with vacuuming activities.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from three depths, i.e., surface (0 to 3-inches), 12-inches (10.5 to 13.5 inches), and 24-inches (21 to 24 inches). Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and five locations were from each were sampled. These were at approximately 4-feet from each corner and at the center of each area. These five samples were analyzed individually and a composite of each 500 square foot was analyzed. The results of this delineation are:

- A. The lead values from the three composites analyzed at the 0-3-inch depth were 326 ppm, 833 ppm, and 1,270 ppm. Each section has at least one lead value greater than 400 ppm.
- B. The lead values from the three composites analyzed at the 12-inch depth were 342 ppm, 187 ppm, and 287 ppm. All three of the sections have lead values greater than 400 ppm.
- C. The lead values from the three composites analyzed at the 24-inch depth were 383 ppm, 131 ppm, and 123 ppm. Two of the sections have at least one lead value greater than 400 ppm. The other section has all lead values less than 400 ppm.

Based on these results, Earth Tech estimates that 24-inches of material will be excavated from the three sections or 120 cubic yards of contaminated material removed from Area E-000. Once the contaminated material has been removed, the remaining slope may be graded to a final slope of 2 to 1 or as close to this as possible.

The vacuum truck will have access to Area E-000 via Lake Street. Since the area has fairly gentle slopes at the bottom, the vacuum truck hose should be able to reach the entire area. Where needed, a rototiller will be able to move on the slope to reach to the top to loosen any hard-packed material. Where needed, an excavator will extricate any tree stumps and/or remove large rocks. Once containerized, the vacuumed contaminated material will either be directly transported to a disposal facility or brought to a staging area until transportation arrangements can be arranged.

A sound proof barrier will be constructed to reduce the sound from the vacuum truck so it minimizes the amount of noise heard by the community. This barrier will consist of plywood framed with 2-inch by 4-inch boards that are lined with a sound absorbent material. These barriers will be modified as needed to further reduce any noise coming from the truck. The truck will be located in a location to minimize the amount of sound that could reach the community.

8. Revegetation Plan

Once the contaminated material has been removed, 8- to 12-inches of topsoil will be placed on the area. This topsoil shall be placed by dumping it from dump trucks on the Sigma Nu parking lot, and pulling it downhill with either an excavator or manually. This topsoil will be compacted with a vibratory plate compactor to approximately 6- to 10-inches. The topsoil will be amended with appropriate amount of fertilizer and lime, then seeded with a shade-tolerant seed mix, and covered with the CoirTM coconut erosion control matting. Once the vegetation has taken, the silt fence (located along the top of the East slope) will be removed.

9. Post-Excavation Soil Sampling

The disturbed area in E-000 will be approximately 1,625 square feet. Therefore, Earth Tech personnel shall collect four aliquot soil samples for one composite confirmation sample to verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

APPENDIX F

WORK PLANS

Upper Millrace Area

AREA U-1
DETAILED WORK PLAN
November 6, 2002

1. Description

Area U-1 consists of the northern flat portion of the Upper Mill Race Area. Area U-1 starts at the fence and dam downstream (west of) the Ezra Cornell tunnel and proceeds to the northern fence line and westward to the Barn. It contains 4,300 square feet. The results from the RSE indicate there is approximately 3 feet of contaminated soil at the deepest in Area U-1. In October 2002, Earth Tech collected samples from a 20-foot by 25-foot grid pattern. The Earth Tech results are discussed in Section 7 below. Figure 1 shows the plan view, and Figures 19, 20, 21, and 22 show cross-sections through the area. The existing slope from east to west is approximately 4 horizontal to 1 vertical. Area U-1 stops at Area U-2 along the southern border. Once the contaminated soil is removed, the final slope shall remain approximately 4 to 1.

2. Vegetation

The City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) inspected Area U-1, and identified the trees and other vegetation. Area U-1 contains the following three trees and vegetation species:

- a. 1-inch diameter Norway Maples - 7
- b. 1-inch diameter White Ashes - 3
- c. 6-inch diameter White Ash - 1
- d. 1-inch diameter Red Oaks - 9
- e. 1-inch diameter Black Oaks - 16
- f. 2-inch diameter Black Oaks - 3
- g. 3-inch diameter Black Oaks - 2
- h. 36-inch diameter Black Oak - 1 (two 18-inch diameter trunks)
- i. 1-inch diameter Chestnut Oaks - 170
- j. 2-inch diameter Chestnut Oaks - 38
- k. 3-inch diameter Chestnut Oaks - 11
- l. 4-inch diameter Chestnut Oaks - 4
- m. 14-inch diameter Chestnut Oak - 1
- n. 30-inch diameter Chestnut Oak - 1
- o. 1-inch diameter Scarlet Oaks - 4
- p. 3-inch diameter Scarlet Oak - 1
- q. 1-inch diameter Shadbushes - 18
- r. 2-inch diameter Shadbushes - 4
- s. 1-inch diameter Hop Hornbeams - 15
- t. 1-inch diameter Hickories - 6
- u. 2-inch diameter Hickory - 1
- v. 1-inch diameter Red Maples - 5
- w. Blueberries - 62

- x. Solomon's Seal – 3
- y. Viburnums – 4
- z. Maple Leaf Viburnums – 13
- aa. Persimmon – 1
- bb. 1-inch diameter Black Locusts – 30
- cc. 2-inch diameter Black Locusts – 7
- dd. 3-inch diameter Black Locusts – 6
- ee. 4-inch diameter Black Locust – 1
- ff. Honeysuckles – 6

3. Removal of Vegetation and Organic Material

All the organic matter (leaves, brush, dead vegetation) will be removed, separated, and placed in a separate stockpile. The small scrub bushes will be pruned at ground level. The vegetation and pruned bushes will be chipped and disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from NAC have marked the trees and plants with various colored flags. The green flags indicate trees and plants that should not be disturbed during the removal activities. The trees and plants with pink flags indicate sensitive species and will be saved, as with green flagged trees and plants, whenever/wherever possible. The trees with white paint marks or white flags indicate invasive species and will be removed. For the trees that will be left undisturbed, the limbs, bark, and roots will be protected during the vacuuming of lead-contaminated soil. These trees or plants may or may not be removed:

- a. 1-inch diameter White Ashes – 3
- b. 6-inch diameter White Ash – 1
- c. 1-inch diameter Red Oaks – 9
- d. 1-inch diameter Black Oaks – 16
- e. 2-inch diameter Black Oaks – 3
- f. 3-inch diameter Black Oaks – 2
- g. 36-inch diameter Black Oak – 1 (two 18-inch diameter trunks)
- h. 1-inch diameter Chestnut Oaks – 170
- i. 2-inch diameter Chestnut Oaks – 38
- j. 3-inch diameter Chestnut Oaks – 11
- k. 4-inch diameter Chestnut Oaks – 4
- l. 14-inch diameter Chestnut Oak – 1
- m. 30-inch diameter Chestnut Oak – 1
- n. 1-inch diameter Scarlet Oaks – 4
- o. 3-inch diameter Scarlet Oak – 1
- p. 1-inch diameter Shadbushes – 18
- q. 2-inch diameter Shadbushes – 4
- r. 1-inch diameter Hop Hornbeams – 15
- s. 1-inch diameter Hickories – 6

- t. 2-inch diameter Hickory – 1
- u. 1-inch diameter Red Maples – 5
- v. Blueberries – 62
- w. Solomon's Seal – 3
- x. Viburnums – 4
- y. Maple Leaf Viburnums – 13
- z. Persimmon – 1

5. Sedimentation Controls

Silt fence shall be installed along the southern border of Area U-1 (where Area U-1 meets Area U-2). A 6-inch deep trench shall be excavated, the bottom of the silt fence placed into the trench, and the trench will be backfilled with soil. The silt fence is attached to 3-foot long wooden stakes that will be driven into the ground. Coir™ coconut logs shall be placed in the Mill Race just to the west of the bridge and at other locations in the Mill Race to assist in containing sediment during rain events. The logs shall be anchored to the ground with 3-foot long rebar. The logs will allow water to pass through while containing sediment. If Area U-1 can't be covered with erosion control matting by the end of the workday, then it will be covered with a tarp until the area can be covered with the erosion control matting.

6. Special Equipment Requirements

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. A 6-inch-diameter poly-vinyl chloride (PVC) pipeline will be laid from the vacuum truck to Area U1-1 through U1-9. A flexible 6-inch diameter hose will be attached to the end of the PVC pipeline.

7. Excavation and/or Removal of Contaminated Soil

According to the RSE, the area to the east of the Barn (Area U-1) contains approximately 3-feet at the deepest of lead-contaminated soil. (See the cross-sections in Figures 4, 19, 20, 21, and 22). In October 2002, Earth Tech sampled and analyzed 43 surface samples and obtained lead values ranging from 128 ppm to 16,060 ppm. Based on the results obtained, the entire Upper Mill Race Area U1 contains approximately 3 inches of lead-contaminated soil. Below the 3-inches of contaminated soil is bedrock. The lead-contaminated soil is entrained within the organic matter on the soil. This organic matter will be removed with the lead-contaminated soil.

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. The vacuum truck and 20-cubic yard container will be staged on the Barn concrete slab. A 6-inch-diameter PVC pipeline will be laid from the vacuum truck to Area U1-1 through U1-9. A flexible 6-inch diameter hose will be attached to the end of the PVC pipeline. The cleanup shall commence in Area U1-9 and more westward to Section U1-5, and then continue from Section U1-4 through U1-1.

One area will be completed at a time. The silt fence and other erosion controls i.e., CoirTM coconut logs; straw, etc. will also keep sediment from moving off the Upper Mill Race Area.

8. Post-Excavation Soil Sampling

The disturbed area in U-1 will be approximately 4,300 square feet. The Upper Mill Race Area U1 is divided into nine approximately equal section of approximately 500 square feet each. Five aliquot samples will be collected from each Section (U1-1 through U1-9). These aliquots shall be analyzed separately with the XRF, and then if all XRF values are below 400 ppm, the five aliquots will be combined into an composite sample. If any one aliquot is greater than 400 ppm, the section will be cleaned again with the vacuum truck and then the area resampled. These composite samples will be analyzed with the XRF, and they shall be submitted to a laboratory for total lead analysis. Therefore, Earth Tech personnel shall collect nine composite samples from the Upper Mill Race Area.

APPENDIX G

WORK PLANS

Island Area

AREA I-1
DETAILED WORK PLAN
September 17, 2002

1. Description

Area I-1 is the first area in the Island Area. Area I-1 is the first work section west of the former Metal Building, and it is north of and adjacent to Area M-3. The sections on the Island Area all have downward side slopes from a flat or relatively flat area at the top. The existing uphill slope toward the Metal Building is very steep (slope of 1.25 to 1). The existing slope on the northern side is 2.5 to 1 horizontal to 1 vertical, and the slope on the southern side is 2 to 1. The eastern slope is steeper than 2 to 1. Figure 1 shows the plan view, and Figure 25 shows the cross-section of the area. The location is from 1+75 feet to 2+00.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) inspected Area I-1 and identified existing trees and other vegetation. Area I-1 contains the following trees and vegetative species:

- a. 1-inch diameter Norway Maples – 18
- b. 2-inch diameter Norway Maples – 7
- c. 3-inch diameter Norway Maples – 3
- d. 4-inch diameter Norway Maple – 1
- e. 5-inch diameter Norway Maple – 1
- f. 6-inch diameter Norway Maples – 1
- g. 1-inch diameter Sugar Maples – 2
- h. 1-inch diameter Choke Cherry – 1
- i. 1-inch diameter Hop Hornbeam (Ironwood) – 1
- j. 2-inch diameter Hop Hornbeam (Ironwood) – 1
- k. 3-inch diameter Hop Hornbeam (Ironwood) – 1
- l. 1-inch diameter Hackberry - 1
- m. 6-inch diameter Cherry – 1
- n. 10-inch diameter Cherry – 1
- o. 1-inch diameter Shadbushes – 2
- p. 2-inch diameter Shadbush – 1
- q. 3-inch diameter Shadbush – 1
- r. 12-inch diameter Hemlock – 1
- s. 1-inch diameter Ashes – 4
- t. 3-inch diameter Ashes – 2
- u. 6-inch diameter Ash – 1
- v. 3-inch diameter Scarlet Oak – 1
- w. 1-inch diameter Chestnut Oak – 1
- x. 2-inch diameter Chestnut Oak – 1
- y. 4-inch diameter Chestnut Oak – 1

- z. 5-inch diameter Chestnut Oak – 1
- aa. 1-inch diameter Red Oaks – 3
- bb. 2-inch diameter Red Oak – 1
- cc. 1-inch diameter Sumacs – 10
- dd. 2-inch diameter Sumacs – 3
- ee. 1-inch diameter Locust – 1
- ff. 4-inch diameter Ailanthus – 1
- gg. 6-inch diameter Ailanthus – 2
- hh. Solomon's Seal – Many
- ii. Ferns – many
- jj. Honeysuckles – many
- kk. European Barberry – many
- ll. Buckthorns – many
- mm. Hawthorns – many

3. Removal of Vegetation and Organic Material

A large volume of dead vegetation, i.e., trees limbs, leaves, etc., will be removed prior to removing the contaminated soil and will be chipped and disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from NAC have marked the trees and plants with various colored flags. The green flags indicate trees and plants that should not be disturbed during the removal activities. The trees and plants with pink flags indicate sensitive species and will be saved, as with green flagged trees and plants, whenever/wherever possible. The trees with white paint marks or white flags indicate invasive species and will be removed. For the trees that will be left undisturbed, the limbs, bark, and roots will be protected during the vacuuming of lead-contaminated soil. These trees or plants may or may not be removed:

- a. 1-inch diameter Sugar Maples – 2
- b. 1-inch diameter Choke Cherry – 1
- c. 1-inch diameter Hop Hornbeam (Ironwood) – 1
- d. 2-inch diameter Hop Hornbeam (Ironwood) – 1
- e. 3-inch diameter Hop Hornbeam (Ironwood) – 1
- f. 1-inch diameter Hackberry – 1
- g. 6-inch diameter Cherry – 1
- h. 10-inch diameter Cherry – 1
- i. 1-inch diameter Shadbushes – 2
- j. 2-inch diameter Shadbush – 1
- k. 3-inch diameter Shadbush – 1
- l. 12-inch diameter Hemlock – 1
- m. 1-inch diameter Ashes – 4
- n. 3-inch diameter Ashes – 2
- o. 6-inch diameter Ash – 1

- p. 3-inch diameter Scarlet Oak – 1
- q. 1-inch diameter Chestnut Oak – 1
- r. 2-inch diameter Chestnut Oak – 1
- s. 4-inch diameter Chestnut Oak – 1
- t. 5-inch diameter Chestnut Oak – 1
- u. 1-inch diameter Red Oaks – 3
- v. 2-inch diameter Red Oak – 1
- w. Solomon's Seal – Many
- x. Ferns – many

5. Sedimentation Controls

Silt fence will be installed at the down slope edge of the northern slope just above the steep cliff leading to Fall Creek Gorge. Silt fence will also be installed on the southern slope at the intersection of Areas I-1 and M-3. The silt fence will capture sediment from Area I-1 while the contaminated soil is being removed. Coir™ coconut logs may also be installed along the northern and southern edges of Area I-1 as supplemental erosion control measures.

If required, hay or straw bales will be placed at specific locations across the site to provide additional sediment control. If Area I-1 can't be covered with erosion control matting by the end of the workday, then it will be covered with a tarp until the area can be covered with erosion control matting.

Once the topsoil has been placed, the topsoil will be covered with erosion control matting. Coir™ coconut logs will be placed along the edge of the northern and southern cliffs. One-half the distance from the top of the slope to the end, another row of Coir™ coconut logs will be placed. These Coir™ coconut logs will reduce the velocity of the runoff to minimize soil erosion.

The NAC will provide information on the type of vegetation that will be planted and seed that will be spread on the Island. This vegetation will match the NAC's plan for the long-term use of the Island's Natural Area.

6. Special Equipment Requirements

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. An excavator will be utilized to remove tree stumps and large boulders that will be encountered. In those areas where the steep terrain presents an unsafe working environment for the workers, an excavator will be utilized to remove the lead contaminated soil. A 6-inch-diameter plastic pipeline will be laid from the vacuum truck situated on the former Metal Building's concrete foundation slab. A flexible 6-inch diameter hose will connect the plastic pipeline to the vacuum truck. A temporary "bridge" will be constructed at the western end of the Island Area. A 12-inch culvert pipe will be placed on the Millrace bed and covered with crushed stone. This temporary

bridge will allow for access/egress for personnel and the mini-excavator and will be removed once the project is completed.

7. Excavation and/or Removal of Contaminated Soil

The Removal Site Assessment states there is contaminated soil up to 15-inches deep in the flat portion of the Island Area (Areas I-3, I-4, I-5, I-6, and I-7). There is some organic material in Area I-1. Therefore, the lead-contaminated soil will be removed with the organic material. Area I-1 is fairly steep. Earth Tech personnel sampled Area I-1 to determine the extent of contamination. The sampling indicates there is lead contamination in the soil up to 2-feet deep. The entire Area I-1 contains lead-contaminated soil. Based on the 24-inch deep soil sampling, the lead content ranges from 139 ppm (far northern end) to 7,720 ppm. The lead values from the composite samples at the surface range from 6,160 to 12,830 ppm; for the 12-inches deep samples range from 3,273 to 12,900 ppm, and the 24-inches deep samples range 3,172 to 6,620 ppm. Based on these results, there is approximately 100 tons of lead-contaminated soil in Area I-1.

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. The vacuum truck and 20-cubic yard container will be staged on the old Metal Building concrete slab. In those areas where the steep terrain presents an unsafe working environment for the workers, an excavator will be utilized to remove the lead contaminated soil. A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-1. A flexible 6-inch diameter hose will be attached to the end of the plastic pipeline.

Area I-1 contains relatively shallow side slopes and a center section with a slope of 1.25 to 1. The bottom of the Island Area is shale, and depending on how deep the contamination is, the shale may be excavated.

One area will be completed at a time. The silt fence and other erosion controls i.e., CoirTM coconut logs; straw, etc. will also keep sediment from moving off the Island Area.

8. Post-Excavation Soil Sampling

The disturbed area in I-1 will be approximately 2,075 square feet. Therefore, Earth Tech personnel will collect five composite soil samples to confirm effectiveness in removing lead contaminated soil to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. The vacuum truck and 25-cubic yard container will be staged on the old Metal Building concrete slab. A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-1. A flexible 6-inch diameter hose will be attached to the end of the plastic pipeline. An operator will move the flexible hose to vacuum the contaminated soil. A 120-foot articulating boom man-lift or rope and harnesses will be used to lower personnel who will maneuver the flexible hose to vacuum the contaminated soil from the slopes.

A small excavator, BobcatTM, or track-mounted ATVTM unit may be used to loosen the contaminated soil and supplement the vacuum truck operation. This equipment will be lowered to the Island Area from the staging area by a crane with steel cable. A small excavator will not be able to tram up Area I-1.

One area will be completed at a time. The silt fence and other erosion controls i.e., CoirTM coconut logs; straw, etc. will also keep sediment from moving off the Island Area.

9. Post-Excavation Soil Sampling

The disturbed area in I-1 will be approximately 1,300 square feet. Therefore, Earth Tech personnel will collect three aliquot soil samples for one composite confirmation sample to verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA I-2
DETAILED WORK PLAN
September 18, 2002

1. Description

Area I-2 is the second work section in the Island Area west of the former Metal Building, and it is north of and adjacent to Area M-4. The sections on the Island Area all have downward sloping sides from a flat area at the top. The existing uphill slope toward the Metal Building is very steep (slope of 1.25 to 1). The existing slope on the northern side where it meets the steep cliff to Fall Creek is 2.8 horizontal to 1 vertical, and the slope on the southern side is 1.7 to 1. The southern slope is steeper than 2 to 1, which is the standard slope that engineers typically try to design for reclaimed slopes. There is a sheer cliff along the eastern portion of Area I-2. Figure 1 shows the plan view, and Figure 26 shows the cross-section of the area. The location is from 2+00 feet to 2+25.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) inspected Area I-2, and identified the trees and other vegetation. Area I-2 contains the following trees and vegetation species:

- a. 1-inch diameter Norway Maples – 3
- b. 2-inch diameter Norway Maples – 2
- c. 4-inch diameter Norway Maple – 1
- d. 5-inch diameter Norway Maple – 1
- e. 10-inch diameter Norway Maple – 1
- f. 1-inch diameter Sugar Maples – 3
- g. 1-inch diameter Red Maple – 1
- h. 2-inch diameter Red Maples – 4
- i. 6-inch diameter Red Maple – 1
- j. 1-inch diameter Chestnut Oak – 1
- k. 2-inch diameter Chestnut Oak – 1
- l. 3-inch diameter Chestnut Oak – 1
- m. 1-inch diameter Red Oaks – 3
- n. 2-inch diameter Red Oaks – 2
- o. 3-inch diameter Red Oaks – 2
- p. 5-inch diameter Red Oak – 1
- q. 18-inch diameter Red Oak – 1
- r. 3-inch diameter Shingle Oak – 1
- s. 7-inch diameter Shingle Oak – 1
- t. 4-inch diameter Scarlet Oak – 1
- u. 14-inch diameter Scarlet Oak – 1
- v. 1-inch diameter Hop Hornbeam (Ironwood) – 1
- w. 2-inch diameter Hop Hornbeam (Ironwood) – 1
- x. 3-inch diameter Hop Hornbeams (Ironwood) – 2

- y. 4-inch diameter Hop Hornbeam (Ironwood) – 1
- z. 1-inch diameter Shadbush – 8
- aa. 2-inch diameter Shadbush – 4
- bb. 3-inch diameter Shadbush – 1
- cc. 4-inch diameter Shadbush – 1
- dd. 5-inch diameter Shadbush – 1
- ee. 1-inch diameter Choke Cherry – 1
- ff. 1-inch diameter Hackberry – 1
- gg. 4-inch diameter Hackberry – 1
- hh. 1-inch diameter Quaking Aspen – 1
- ii. 2-inch diameter Quaking Aspen – 1
- jj. 1-inch diameter Fragrant Sumac – 7
- kk. 1-inch diameter Current – 1
- ll. 1-inch diameter Shadbush – 1
- mm. 1-inch diameter White Ash – 3
- nn. 8-inch diameter Hemlock – 1
- oo. 12-inch diameter Hemlock – 1
- pp. 1-inch diameter Sumac – 1
- qq. 2-inch diameter Sumac – 1
- rr. 1-inch diameter Ailanthus – 5
- ss. Solomon's Seal – 7
- tt. Goldenrods – Many
- uu. Sarsaparilla – Many
- vv. Ferns – 12
- ww. Buckthorns – 9

3. Removal of Vegetation and Organic Material

A large volume of dead vegetation, i.e., trees limbs, leaves, etc., will be removed prior to removing the contaminated soil and will be chipped and disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from NAC have marked the trees and plants with various colored flags. The green flags indicate trees and plants that should not be disturbed during the removal activities. The trees and plants with pink flags indicate sensitive species and will be saved, as with green flagged trees and plants, whenever/wherever possible. The trees with white paint marks or white flags indicate invasive species and will be removed. For the trees that will be left undisturbed, the limbs, bark, and roots will be protected during the vacuuming of lead-contaminated soil. These trees or plants may or may not be removed:

- a. 1-inch diameter Sugar Maples – 3
- b. 1-inch diameter Red Maple – 1
- c. 2-inch diameter Red Maples – 4
- d. 6-inch diameter Red Maple – 1

- e. 1-inch diameter Chestnut Oak – 1
- f. 2-inch diameter Chestnut Oak – 1
- g. 3-inch diameter Chestnut Oak – 1
- h. 1-inch diameter Red Oaks – 3
- i. 2-inch diameter Red Oaks – 2
- j. 3-inch diameter Red Oaks – 2
- k. 5-inch diameter Red Oak – 1
- l. 18-inch diameter Red Oak – 1
- m. 3-inch diameter Shingle Oak – 1
- n. 7-inch diameter Shingle Oak – 1
- o. 4-inch diameter Scarlet Oak – 1
- p. 14-inch diameter Scarlet Oak – 1
- q. 1-inch diameter Hop Hornbeam (Ironwood) – 1
- r. 2-inch diameter Hop Hornbeam (Ironwood) – 1
- s. 3-inch diameter Hop Hornbeams (Ironwood) – 2
- t. 4-inch diameter Hop Hornbeam (Ironwood) – 1
- u. 1-inch diameter Shadbush – 8
- v. 2-inch diameter Shadbush – 4
- w. 3-inch diameter Shadbush – 1
- x. 4-inch diameter Shadbush – 1
- y. 5-inch diameter Shadbush – 1
- z. 1-inch diameter Hackberry – 1
- aa. 4-inch diameter Hackberry – 1
- bb. 1-inch diameter Quaking Aspen – 1
- cc. 2-inch diameter Quaking Aspen – 1
- dd. 1-inch diameter Fragrant Sumac – 7
- ee. 1-inch diameter Current – 1
- ff. 1-inch diameter Shadbush – 1
- gg. 1-inch diameter White Ash – 3
- hh. 8-inch diameter Hemlock – 1
- ii. 12-inch diameter Hemlock – 1
- jj. Solomon's Seal – 7
- kk. Goldenrods – Many
- ll. Sarsaparilla – Many
- mm. Ferns – 12

5. Sedimentation Controls

Silt fence will be installed at the down slope edge of the northern slope just above the steep cliff leading to Fall Creek Gorge. Silt fence will also be installed on the southern slope at the intersection of Areas I-2 and M-4. The silt fence will capture sediment from Area I-1 while the contaminated soil is being removed. CoirTM coconut logs may also be installed along the northern and southern edges of Area I-2 as supplemental erosion control measures.

If required, hay or straw bales will be placed at specific locations across the site to provide additional sediment control. If Area I-2 can't be covered with erosion control matting by the end of the workday, then it will be covered with a tarp until the area can be covered with erosion control matting.

Once the topsoil has been placed, the topsoil will be covered with erosion control matting. CoirTM coconut logs will be placed along the edge of the northern and southern cliffs. One-half the distance from the top of the slope to the end, another row of CoirTM coconut logs will be placed. These CoirTM coconut logs will reduce the velocity of the runoff to minimize soil erosion.

The NAC will provide information on the type of vegetation that will be planted and seed that will be spread on the Island. This vegetation will match the NAC's plan for the long-term use of the Island's Natural Area.

6. Special Equipment Requirements

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. An excavator will be utilized to remove tree stumps and large boulders that will be encountered. In those areas where the steep terrain presents an unsafe working environment for the workers, an excavator will be utilized to remove the lead contaminated soil. A 6-inch-diameter plastic pipeline will be laid from the vacuum truck situated on the former Metal Building's concrete foundation slab. A flexible 6-inch diameter hose will connect the plastic pipeline to the vacuum truck. A temporary "bridge" will be constructed at the western end of the Island Area. A 12-inch culvert pipe will be placed on the Millrace bed and covered with crushed stone. This temporary bridge will allow for access/egress for personnel and the mini-excavator and will be removed once the project is completed.

7. Excavation and/or Removal of Contaminated Soil

The Removal Site Assessment states there is contaminated soil up to 15-inches deep in the flat portion of the Island Area (Areas I-3, I-4, I-5, I-6, and I-7). There is some organic material in Area I-2. Therefore, the lead-contaminated soil will be removed with the organic material. Area I-2 is fairly steep. Earth Tech personnel sampled Area I-2 to determine the extent of contamination. The sampling indicates there is lead contamination in the soil up to 2-feet deep. The entire Area I-2 contains lead-

contaminated soil. Based on the 24-inch deep soil sampling, the lead content ranges from 1,086 ppm to 17,500 ppm. The lead values from the composite samples at the surface range from 8,790 to 23,930 ppm; for the 12-inches deep samples range from 9,060 to 51,950 ppm, and the 24-inches deep samples range 3,414 to 8,190 ppm. Based on these results, there is approximately 154 tons of lead-contaminated soil in Area I-2.

Area I-2 contains relatively shallow side slopes and a center section with a slope of 1.25 to 1. The bottom of the Island Area is shale, and depending on how deep the contamination is, the shale may be excavated.

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. The vacuum truck and 20-cubic yard container will be staged on the old Metal Building concrete slab. In those areas where the steep terrain presents an unsafe working environment for the workers, an excavator will be utilized to remove the lead contaminated soil. A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-2. A flexible 6-inch diameter hose will be attached to the end of the plastic pipeline. An operator will move the flexible hose to vacuum the contaminated soil.

One area will be completed at a time. The silt fence and other erosion controls i.e., CoirTM coconut logs; straw, etc. will also keep sediment from moving off the Island Area.

8. Post-Excavation Soil Sampling

The disturbed area in I-2 will be approximately 2,075 square feet. Therefore, Earth Tech personnel will collect five composite soil samples to confirm effectiveness in removing lead contaminated soil to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA I-3
DETAILED WORK PLAN
September 18, 2002

1. Description

Area I-3 is the third area in the Island Area, immediately west of Area I-2, north and adjacent to Area M-5. The sections in the Island Area all have downward sloping sides from a flat area at the top. Area I-3 consists of a large flat area that encompasses approximately 95 % of the area. The existing slope on the northern side until it meets the steep cliff to Fall Creek is 2 horizontal to 1 vertical, and the slope on the southern side meets with the northern edge of Area M-5. Figure 1 shows the plan view, and Figure 27 shows the cross-section of the area. The location is from 2+25 feet to 2+50.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) inspected Area I-3, and identified the trees and other vegetation. Area I-3 contains the following trees and vegetation species:

- a. 1-inch diameter Norway Maples – 3
- b. 2-inch diameter Norway Maples – 5
- c. 3-inch diameter Norway Maples – 2
- d. 4-inch diameter Norway Maples – 3
- e. 6-inch diameter Norway Maples – 6
- f. 8-inch diameter Norway Maple – 1
- g. 10-inch diameter Norway Maple – 1
- h. 2-inch diameter Red Maple – 1
- i. 1-inch diameter Sugar Maples – 3
- j. 1-inch diameter Hickory – 1
- k. 4-inch diameter Hemlock – 1
- l. 10-inch diameter Hemlock – 1
- m. 12-inch diameter Hemlock – 1
- n. 14-inch diameter Hemlock – 1
- o. 1-inch diameter Choke Cherries – 3
- p. 5-inch Black Cherry – 1
- q. 1-inch diameter Shadbush – 22
- r. 3-inch diameter Shadbush – 2
- s. 1-inch diameter Hop Hornbeams (Ironwood) – 19
- t. 2-inch diameter Hop Hornbeams (Ironwood) – 5
- u. 3-inch diameter Hop Hornbeams (Ironwood) – 9
- v. 4-inch diameter Hop Hornbeams (Ironwood) – 3
- w. 5-inch diameter Hop Hornbeam (Ironwood) – 1
- x. 1-inch diameter Current – 1
- y. 1-inch diameter Purple Thimbleberry – 1
- z. 1-inch diameter Chestnut Oaks – 3

- aa. 4-inch diameter Chestnut Oak – 1
- bb. 1-inch diameter Red Oaks – 5
- cc. 2-inch diameter Red Oaks – 6
- dd. 3-inch diameter Red Oak – 1
- ee. 4-inch diameter Red Oak – 1
- ff. 6-inch diameter Red Oak – 1
- gg. 1-inch diameter White Ashes – 5
- hh. 6-inch diameter White Ash – 1
- ii. 1-inch diameter Striped Maple – 1
- jj. 1-inch diameter Hackberries – 2
- kk. Eunomonis or Persimmon vine (blue ribbon) – 3
- ll. Solomon's Seal – 6
- mm. Ferns – 8
- nn. 1-inch diameter Viburnums – 15
- oo. 1-inch diameter Ailanthus - 10
- pp. 8-inch diameter Ailanthus – 1
- qq. Privets – 14
- rr. 1-inch diameter Honeysuckles – 9
- ss. 2-inch diameter Honeysuckle - 1

3. Removal of Vegetation and Organic Material

A large volume of dead vegetation, i.e., trees limbs, leaves, etc., will be removed prior to removing the contaminated soil and will be chipped and disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from NAC have marked the trees and plants with various colored flags. The green flags indicate trees and plants that should not be disturbed during the removal activities. The trees and plants with pink flags indicate sensitive species and will be saved, as with green flagged trees and plants, whenever/wherever possible. The trees with white paint marks or white flags indicate invasive species and will be removed. For the trees that will be left undisturbed, the limbs, bark, and roots will be protected during the vacuuming of lead-contaminated soil. These trees or plants may or may not be removed:

- a. 2-inch diameter Red Maple – 1
- b. 1-inch diameter Sugar Maples – 3
- c. 1-inch diameter Hickory – 1
- d. 4-inch diameter Hemlock – 1
- e. 10-inch diameter Hemlock – 1
- f. 12-inch diameter Hemlock – 1
- g. 14-inch diameter Hemlock – 1
- h. 5-inch Black Cherry – 1
- i. 1-inch diameter Shadbush – 22
- j. 3-inch diameter Shadbush – 2

- k. 1-inch diameter Hop Hornbeams (Ironwood) – 19
- l. 2-inch diameter Hop Hornbeams (Ironwood) – 5
- m. 3-inch diameter Hop Hornbeams (Ironwood) – 9
- n. 4-inch diameter Hop Hornbeams (Ironwood) – 3
- o. 5-inch diameter Hop Hornbeam (Ironwood) – 1
- p. 1-inch diameter Current – 1
- q. 1-inch diameter Purple Thimbleberry – 1
- r. 1-inch diameter Chestnut Oaks – 3
- s. 4-inch diameter Chestnut Oak – 1
- t. 1-inch diameter Red Oaks – 5
- u. 2-inch diameter Red Oaks – 6
- v. 3-inch diameter Red Oak – 1
- w. 4-inch diameter Red Oak – 1
- x. 6-inch diameter Red Oak – 1
- y. 6-inch diameter White Ash – 1
- z. 1-inch diameter Striped Maple – 1
- aa. 1-inch diameter Hackberries – 2
- bb. Eunomonis or Persimmon vine (blue ribbon) – 3
- cc. Solomon's Seal – 6
- dd. Ferns – 8
- ee. 1-inch diameter Viburnums – 15

5. Sedimentation Controls

Silt fence will be installed at the down slope edge of the northern slope just above the steep cliff leading to Fall Creek Gorge. Silt fence will be installed on the southern slope at the intersection of Areas I-3 and M-5. The silt fence will capture sediment from Area I-3 while the contaminated soil is being removed. CoirTM coconut logs may also be installed along the northern and southern edges of Area I-3 as supplemental erosion control measures.

If required, hay or straw bales will be placed at specific locations across the site to provide additional sediment control. If Area I-3 can't be covered with erosion control matting by the end of the workday, then it will be covered with a tarp until the area can be covered with erosion control matting.

Once the topsoil has been placed, the topsoil will be covered with erosion control matting. CoirTM coconut logs will be placed along the edge of the northern and southern cliffs.

The NAC will provide information on the type of vegetation that will be planted and seed that will be spread on the Island. This vegetation will match the NAC's plan for the long-term use of the Island.

6. Special Equipment Requirements

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-3. A flexible 6-inch diameter hose will be attached to the end of the aluminum pipeline. Soundproofing barricades may be required to be constructed and placed around the vacuum truck while it is situated in the lower parking lot (off Lake Street).

A mini-excavator unit will be used to loosen the contaminated soil and move the contaminated soil to a pile in Area I-3 where the vacuum hose can be used. A temporary “bridge” will be constructed at the western end of the Island Area. A 12-inch culvert pipe will be placed on the Millrace bed and covered with crushed stone. This temporary bridge will allow for access/egress for personnel and the mini-excavator and will be removed once the project is completed.

7. Excavation and/or Removal of Contaminated Soil

The Removal Site Assessment states there is contaminated soil up to 15-inches deep in the flat portion of the Island Area (Areas I-3, I-4, I-5, I-6, and I-7). The thickness of the soil and thus the amount of contaminated material decreases with distance to the west from the Ithaca Gun Factory Buildings. Earth Tech personnel sampled Area I-3 to determine the extent of contamination. Based on the soil boring logs, the southern half of the Section (locations 1 through 14) has bedrock at approximately 14-inches in depth with lead concentrations at the 12-inch depth ranging from 1,940 to 11,050 ppm. The northern half of the section has lead contaminated soil at 24-inches ranging from 920 to 11,620 ppm. The bottom of the Island is shale, and depending on how deep the contamination is, the shale may be excavated. The sampling indicates there is lead contamination in the soil up to 14-inches in the northern half and 24-inches in the southern half. The lead values from the composite samples at the surface range from 7,080 to 25,888 ppm; for the 12-inches deep samples range from 2,238 to 11,960 ppm, and the 24-inches deep samples range from 787 to 5,720 ppm. Based on these results, there is approximately 140 tons of lead-contaminated soil in Area I-3.

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. The vacuum truck and 20-cubic yard container will be staged in the lower parking lot (off Lake Street). A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-3. A flexible 6-inch diameter hose will be attached to the end of the plastic pipeline.

A mini-excavator unit will be used to loosen the contaminated soil and move the contaminated soil to a pile in Area I-3 where the vacuum hose can be used.

One area will be completed at a time. The silt fence and other erosion controls i.e., CoirTM coconut logs; straw, etc. will also keep sediment from moving off the Island Area.

8. Post-Excavation Soil Sampling

The disturbed area in I-3 will be approximately 2,075 square feet. Therefore, Earth Tech personnel will collect five composite soil samples to confirm effectiveness in removing lead contaminated soil to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA I-4
DETAILED WORK PLAN
September 19, 2002

1. Description

Area I-4 is the fourth area in the Island Area, immediately west of I-3, north of and adjacent to Area M-6. The sections in the Island Area all have downward sloping sides from a flat area at the top. Area I-4 consists of a large flat area that encompasses approximately 75 % of the area. The existing slope on the northern side where it meets the steep cliff to Fall Creek is 2.8 horizontal to 1 vertical, and the slope on the southern side is 2 to 1. Figure 1 shows the plan view, and Figure 28 shows the cross-section of the area. The location is from 2+50 feet to 2+75.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) inspected Area I-4, and identified the trees and other vegetation. Area I-4 contains the following trees and vegetation species:

- a. 1-inch diameter Norway Maples – 4
- b. 2-inch diameter Norway Maple – 1
- c. 3-inch diameter Norway Maples – 4
- d. 6-inch diameter Norway Maple – 1
- e. 8-inch diameter Norway Maples – 2
- f. 10-inch diameter Norway Maple – 1
- g. 12-inch diameter Norway Maple – 1
- h. 1-inch diameter Red Maple – 1
- i. 2-inch diameter Sugar Maple – 1
- j. 3-inch diameter Sugar Maple – 1
- k. 1-inch diameter Choke Cherries – 7
- l. 1-inch diameter Hop Hornbeams – 2
- m. 2-inch diameter Hop Hornbeams – 2
- n. 3-inch diameter Hop Hornbeams – 3
- o. 4-inch diameter Hop Hornbeam – 1
- p. 1-inch diameter Shadbushes – 3
- q. 3-inch diameter Shadbush – 1
- r. 1-inch diameter Chestnut Oaks – 5
- s. 12-inch diameter Chestnut Oak – 1
- t. 8-inch diameter Chestnut Oaks – 2
- u. 1-inch diameter Red Oaks – 19
- v. 2-inch diameter Red Oaks – 2
- w. 4-inch diameter Red Oaks – 2
- x. 6-inch diameter Red Oaks – 2
- y. 1-inch diameter Hickory – 1
- z. 1-inch diameter Hemlock – 1

- aa. 2-inch diameter Hemlock – 1
- bb. 3-inch diameter Hemlock – 1
- cc. 7-inch diameter Hemlock – 1
- dd. 18-inch diameter Hemlock – 1
- ee. 1-inch diameter Juniper – 1
- ff. 1-inch diameter White Ashes – 2
- gg. 4-inch diameter White Ash – 1
- hh. 6-inch diameter White Ash – 1
- ii. 7-inch diameter White Ash – 1
- jj. 8-inch diameter White Ash – 1
- kk. 1-inch diameter Hackberry – 2
- ll. 1-inch diameter Current – 1
- mm. 1-inch diameter Fragrant sumacs – 6
- nn. Viburnum bushes – 151
- oo. Persimmon plants – 9
- pp. Unknown Black-eyed Susan like flower with pairs of leaves alternating on stem – 12
- qq. Meadow Rue – 1
- rr. Goldenrod – many
- ss. Sarsaparilla – many
- tt. Privet bushes – 16
- uu. 4-inch diameter Ailanthus – 1
- vv. 1-inch diameter Honeysuckles – 4
- ww. 1-inch diameter Buckthorns – 9
- xx. 2-inch diameter Buckthorns - 7

3. Removal of Vegetation and Organic Material

A large volume of dead vegetation, i.e., trees limbs, leaves, etc., will be removed prior to removing the contaminated soil and will be chipped and disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from NAC have marked the trees and plants with various colored flags. The green flags indicate trees and plants that should not be disturbed during the removal activities. The trees and plants with pink flags indicate sensitive species and will be saved, as with green flagged trees and plants, whenever/wherever possible. The trees with white paint marks or white flags indicate invasive species and will be removed. For the trees that will be left undisturbed, the limbs, bark, and roots will be protected during the vacuuming of lead-contaminated soil. These trees or plants may or may not be removed:

- a. 1-inch diameter Red Maple – 1
- b. 2-inch diameter Sugar Maple – 1
- c. 3-inch diameter Sugar Maple – 1
- d. 1-inch diameter Choke Cherries – 7

- e. 1-inch diameter Hop Hornbeams – 2
- f. 2-inch diameter Hop Hornbeams – 2
- g. 3-inch diameter Hop Hornbeams – 3
- h. 4-inch diameter Hop Hornbeam – 1
- i. 1-inch diameter Shadbushes – 3
- j. 3-inch diameter Shadbush – 1
- k. 1-inch diameter Chestnut Oaks – 5
- l. 12-inch diameter Chestnut Oak – 1
- m. 8-inch diameter Chestnut Oaks – 2
- n. 1-inch diameter Red Oaks – 19
- o. 2-inch diameter Red Oaks – 2
- p. 4-inch diameter Red Oaks – 2
- q. 6-inch diameter Red Oaks – 2
- r. 1-inch diameter Hickory – 1
- s. 1-inch diameter Hemlock – 1
- t. 2-inch diameter Hemlock – 1
- u. 3-inch diameter Hemlock – 1
- v. 7-inch diameter Hemlock – 1
- w. 18-inch diameter Hemlock – 1
- x. 1-inch diameter Juniper – 1
- y. 1-inch diameter White Ashes – 2
- z. 4-inch diameter White Ash – 1
- aa. 6-inch diameter White Ash – 1
- bb. 7-inch diameter White Ash – 1
- cc. 8-inch diameter White Ash – 1
- dd. 1-inch diameter Hackberry – 2
- ee. 1-inch diameter Current – 1
- ff. 1-inch diameter Fragrant sumacs – 6
- gg. Viburnum bushes – 151
- hh. Persimmon plants – 9
- ii. Unknown Black-eyed Susan like flower with pairs of leaves alternating on stem – 12
- jj. Goldenrod – many
- kk. Sarsaparilla – many
- ll. Meadow Rue – 1

5. Sedimentation Controls

Silt fence will be installed at the down slope edge of the northern slope just above the steep cliff leading to Fall Creek Gorge, and it will be installed on the southern slope at the intersection of Areas I-4 and M-6. The silt fence will capture sediment from Area I-4 while the contaminated soil is being removed. CoirTM coconut logs may also be installed along either edge of Area I-4 as supplemental erosion control measures.

If required, hay or straw bales will be placed at specific locations across the site to provide additional sediment control. If Area I-4 can't be covered with erosion control matting by the end of the workday, then it will be covered with a tarp until the area can be covered with erosion control matting.

Once the topsoil has been placed, the topsoil will be covered with erosion control matting. CoirTM coconut logs will be placed along the edge of the northern and southern cliffs.

The NAC will provide information on the type of vegetation that will be planted and seed that will be spread on the Island. This vegetation will match the NAC's plan for the long-term use of the Island.

6. Special Equipment Requirements

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-4. A flexible 6-inch diameter hose will be attached to the end of the plastic pipeline. Soundproofing barricades may be required to be constructed and placed around the vacuum truck while it is situated in the lower parking lot (off Lake Street).

A mini-excavator unit will be used to loosen the contaminated soil and move the contaminated soil to a pile in Area I-4 where the vacuum hose can be used. A temporary "bridge" will be constructed at the western end of the Island Area. A 12-inch culvert pipe will be placed on the Millrace bed and covered with crushed stone. This temporary bridge will allow for access/egress for personnel and the mini-excavator and will be removed once the project is completed.

7. Excavation and/or Removal of Contaminated Soil

The Removal Site Assessment states there is contaminated soil up to 15-inches deep in the flat portion of the Island Area (Areas I-3, I-4, I-5, I-6, and I-7). The thickness of the soil and thus the amount of contaminated material decreases with distance to the west from the Ithaca Gun Factory Buildings. Earth Tech personnel sampled Area I-4 to determine the extent of contamination. Based on the soil boring logs, 4 of the 23 samples were 24-inches in depth. When the boring was less than 24-inches in depth, a sample was collected at the bottom 2 or 3 inches of sample depending on the amount of soil recovery. The average depth of these 23 borings was 15.5 inches. The results at the bottom of all

the samples ranged from ND to 1,484 ppm. The bottom of the Island is shale, and depending on how deep the contamination is, the shale may be excavated. The lead values from the composite samples at the surface range from 733 to 4,053 ppm; for the 12-inches deep samples range from 178 to 1,820 ppm, and the 24-inches deep samples range from 121 to 406 ppm. The average depth of lead contamination in borings 1 to 12 is 15.5 inches. The average depth of lead contamination in borings 13 to 23 is 10 inches. Based on these results, there is approximately 110 tons of lead-contaminated soil in Area I-4.

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. The vacuum truck and 20-cubic yard container will be staged in the lower parking lot (off Lake Street). A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-4. A flexible 6-inch diameter hose will be attached to the end of the plastic pipeline.

A mini-excavator unit will be used to loosen the contaminated soil and move the contaminated soil to a pile in Area I-4 where the vacuum hose can be used.

One area will be completed at a time. The silt fence and other erosion controls i.e., CoirTM coconut logs; straw, etc. will also keep sediment from moving off the Island Area.

8. Post-Excavation Soil Sampling

The disturbed area in I-4 will be approximately 2,625 square feet. Therefore, Earth Tech personnel will collect six composite soil samples to confirm effectiveness in removing the lead contaminated soil to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA I-5
DETAILED WORK PLAN
September 19, 2002

1. Description

Area I-5 is the fifth area in the Island Area, immediately west of I-4, north of and adjacent to Area M-7. The sections in the Island Area all have downward sloping sides from a flat area at the top. Area I-5 consists of a large flat area that encompasses approximately 40 % of the area. The existing eastern slope is 6 horizontal to 1 vertical. The existing slope on the northern side is 2.1 to 1, and the flat slope on the southern side meets with the edge of Area M-7. Figure 1 shows the plan view, and Figure 29 shows the cross-section of the area. The location is from 2+75 feet to 3+00.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) inspected Area I-5, and identified the trees and other vegetation. Area I-5 contains the following trees and vegetation species:

- a. 1-inch diameter Norway Maples – 17
- b. 2-inch diameter Norway Maples – 6
- c. 3-inch diameter Norway Maple – 1
- d. 4-inch diameter Norway Maples – 2
- e. 6-inch diameter Norway Maple – 1
- f. 10-inch diameter Norway Maple – 1
- g. 12-inch diameter Norway Maple – 1
- h. 12-inch diameter Sugar Maple – 1
- i. 1-inch diameter Red Maple – 1
- j. 5-inch diameter Red Maple – 1
- k. 1-omch diameter Striped Maples – 2
- l. 1-inch diameter Chestnut Oaks – 12
- m. 2-inch diameter Chestnut Oak – 1
- n. 3-inch diameter Chestnut Oaks – 2
- o. 4-inch diameter Chestnut Oak – 1
- p. 14-inch diameter Chestnut Oak – 1
- q. 1-inch diameter Red Oaks – 13
- r. 2-inch diameter Red Oaks – 5
- s. 4-inch diameter Red Oak – 1
- t. 5-inch diameter Red Oak – 1
- u. 1-inch diameter White Ashes – 12
- v. 2-inch diameter White Ash – 1
- w. 3-inch diameter White Ashes – 2
- x. 5-inch diameter White Ash – 1
- y. 6-inch diameter White Ash – 1
- z. 2-inch diameter Hackberry – 1

- aa. 2-inch diameter Walnut – 1
- bb. 1-inch diameter Hickories – 2
- cc. 1-inch diameter Shadbushes – 14
- dd. 1-inch diameter Choke Cherries – 5
- ee. 2-inch diameter Choke Cherry – 1
- ff. 1-inch diameter Hop Hornbeams – 5
- gg. 4-inch diameter Hop Hornbeam – 1
- hh. 3-inch diameter Hemlock – 1
- ii. 1-inch diameter Fragrant Sumacs – 21
- jj. 1-inch diameter Viburnums – 96
- kk. Sage (Herb) – 1
- ll. Ferns – Many
- mm. Goldenrods – Many
- nn. Persimmons – 8
- oo. Privets – 5
- pp. 1-inch diameter Honeysuckles – 13
- qq. 1-inch diameter Buckthorns – 16

3. Removal of Vegetation and Organic Material

A large volume of dead vegetation, i.e., trees limbs, leaves, etc will be removed prior to removing the contaminated soil and will be chipped and disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from NAC have marked the trees and plants with various colored flags. The green flags indicate trees and plants that should not be disturbed during the removal activities. The trees and plants with pink flags indicate sensitive species and will be saved, as with green flagged trees and plants, whenever/wherever possible. The trees with white paint marks or white flags indicate invasive species and will be removed. For the trees that will be left undisturbed, the limbs, bark, and roots will be protected during the vacuuming of lead-contaminated soil. These trees or plants may or may not be removed:

- a. 12-inch diameter Sugar Maple – 1
- b. 1-inch diameter Red Maple – 1
- c. 5-inch diameter Red Maple – 1
- d. 1-inch diameter Striped Maples – 2
- e. 1-inch diameter Chestnut Oaks – 12
- f. 2-inch diameter Chestnut Oak – 1
- g. 3-inch diameter Chestnut Oaks – 2
- h. 4-inch diameter Chestnut Oak – 1
- i. 14-inch diameter Chestnut Oak – 1
- j. 1-inch diameter Red Oaks – 13
- k. 2-inch diameter Red Oaks – 5
- l. 4-inch diameter Red Oak – 1

- m. 5-inch diameter Red Oak – 1
- n. 1-inch diameter White Ashes – 12
- o. 2-inch diameter White Ash – 1
- p. 3-inch diameter White Ashes – 2
- q. 5-inch diameter White Ash – 1
- r. 6-inch diameter White Ash – 1
- s. 2-inch diameter Hackberry – 1
- t. 2-inch diameter Walnut – 1
- u. 1-inch diameter Hickories – 2
- v. 1-inch diameter Shadbushes – 14
- w. 1-inch diameter Choke Cherries – 5
- x. 2-inch diameter Choke Cherry – 1
- y. 1-inch diameter Hop Hornbeams – 5
- z. 4-inch diameter Hop Hornbeam – 1
- aa. 3-inch diameter Hemlock – 1
- bb. 1-inch diameter Fragrant Sumacs – 21
- cc. 1-inch diameter Viburnums – 96
- dd. Sage (Herb) – 1
- ee. Ferns – Many
- ff. Goldenrods – Many
- gg. Persimmons – 8

5. Sedimentation Controls

Silt fence will be installed at the down slope edge of the northern slope just above the steep cliff leading to Fall Creek Gorge, and it will be installed on the southern slope at the intersection of Areas I-5 and M-7. The silt fence will capture sediment from Area I-5 while the contaminated soil is being removed. CoirTM coconut logs will also be installed along either edge of Area I-5 as supplemental erosion control measures.

If required, hay or straw bales will be placed at specific locations across the site to provide additional sediment control. If Area I-5 can't be covered with erosion control matting by the end of the workday, then it will be covered with a tarp until the area can be covered with erosion control matting.

Once the topsoil has been placed, the topsoil will be covered with erosion control matting. CoirTM coconut logs will be placed along the edge of the northern and southern cliffs.

The NAC will provide information on the type of vegetation that will be planted and seed that will be spread on the Island. This vegetation will match the NAC's plan for the long-term use of the Island.

6. Special Equipment Requirements

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-5. A flexible 6-inch diameter hose will be attached to the end of the aluminum pipeline. Soundproofing barricades may be required to be constructed and placed around the vacuum truck while it is situated in the lower parking lot (off Lake Street).

A mini-excavator unit will be used to loosen the contaminated soil and move the contaminated soil to a pile in Area I-5 where the vacuum hose can be used. A temporary “bridge” will be constructed at the western end of the Island Area. A 12-inch culvert pipe will be placed on the Millrace bed and covered with crushed stone. This temporary bridge will allow for access/egress for personnel and the mini-excavator and will be removed once the project is completed.

7. Excavation and/or Removal of Contaminated Soil

The Removal Site Assessment states there is contaminated soil up to 15-inches deep in the flat portion of the Island Area (Areas I-3, I-4, I-5, I-6, and I-7). The thickness of the soil and thus the amount of contaminated material decreases with distance to the west from the Ithaca Gun Factory Buildings. Earth Tech personnel sampled Area I-5 to determine the extent of contamination. Based on the soil boring logs, 14 of the 25 samples were 24-inches in depth. When the boring was less than 24-inches in depth, a sample was collected at the bottom 2 or 3 inches of sample depending on the amount of soil recovery. The average depth of borings 1 to 8 was 15 inches. The average depth of borings 9 to 25 was 24 inches. The bottom of the Island is shale, and depending on how deep the contamination is, the shale may be excavated. The lead values from the composite samples at the surface range from 1,030 to 1,584 ppm; for the 12-inches deep samples range from 326 to 801 ppm, and the 24-inches deep samples range from ND to 373 ppm. The average depth of lead contamination in borings 1 to 5 is 11 inches, and the average depth of lead contamination in borings 6 to 25 is 15 inches. Based on these results, there is approximately 115 tons of lead-contaminated soil in Area I-5.

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. The vacuum truck and 20-cubic yard container will be staged in the lower parking lot (off Lake Street). A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-5. A flexible 6-inch diameter hose will be attached to the end of the plastic pipeline.

A mini-excavator unit will be used to loosen the contaminated soil and move the contaminated soil to a pile in Area I-5 where the vacuum hose can be used.

One area will be completed at a time. The silt fence and other erosion controls i.e., CoirTM coconut logs; straw, etc. will also keep sediment from moving off the Island Area.

8. Post-Excavation Soil Sampling

The disturbed area in I-5 will be approximately 2,500 square feet. Therefore, Earth Tech personnel will collect five composite soil samples to confirm effectiveness in removing the lead contaminated soil to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA I-6
DETAILED WORK PLAN
September 23, 2002

1. Description

Area I-6 is the sixth area in the Island Area, immediately west of I-5, north of and adjacent to Area L-1. The sections in the Island Area all have downward sloping sides from a flat area at the top. The eastern slope is approximately 1.3 to 1. This slope is fairly steep. The existing slope on the northern side is 2.7 to 1. The slope along the southern side is 4.3 to 1, and it meets with the edge of Area L-1. The eastern slope is steeper than the slope of 2 to 1 that engineers typically try to design for reclaimed slopes. Figure 1 shows the plan view, and Figure 30 shows the cross-section of the area. The location is from 3+00 feet to 3+25.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) inspected Area I-6, and identified the trees and other vegetation. Area I-6 contains the following trees and vegetation species:

- a. 1-inch diameter Norway Maples – 3
- b. 3-inch diameter Norway Maples – 2
- c. 4-inch diameter Norway Maples – 2
- d. 3-inch diameter Red Maple – 1
- e. 1-inch diameter Sugar Maple – 1
- f. 4-inch diameter Sugar Maple – 1
- g. 1-inch diameter Shadbushes – 39
- h. 2-inch diameter Shadbushes – 4
- i. 1-inch diameter Chestnut Oaks – 7
- j. 2-inch diameter Chestnut Oaks – 5
- k. 3-inch diameter Chestnut Oaks – 2
- l. 6-inch diameter Chestnut Oaks – 2
- m. 8-inch diameter Chestnut Oaks – 2
- n. 11-inch diameter Chestnut Oak – 1
- o. 1-inch diameter Red Oaks – 2
- p. 2-inch diameter Red Oaks – 2
- q. 3-inch diameter Red Oak – 1
- r. 9-inch diameter Red Oak – 1
- s. 14-inch diameter Red Oak – 1
- t. 16-inch diameter Red Oak – 1
- u. 1-inch diameter Choke Cherries – 9
- v. 1-inch diameter White Ashes – 6
- w. 3-inch diameter White Ashes – 3
- x. 4-inch diameter Hemlocks – 2
- y. 6-inch diameter Hemlocks – 4

- z. 8-inch diameter Hemlock – 1
- aa. Fragrant Sumacs – 30
- bb. 1-inch Viburnums – 195
- cc. 1-inch Maple Leaf Viburnums – 12
- dd. Dogwood-like Viburnums – 10
- ee. Blueberries – 4
- ff. Persimmons – 6
- gg. Ferns – Many
- hh. Goldenrods – Many
- ii. Light-Yellow Flowered Wildflowers (not Goldenrod) – 8
- jj. 1-inch diameter Black Locust – 1
- kk. Honeysuckles – 5
- ll. Privets – 22
- mm. Buckthorns – 6

3. Removal of Vegetation and Organic Material

A large volume of dead vegetation, i.e., trees limbs, leaves, etc., will be removed prior to removing the contaminated soil and will be chipped and disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from NAC have marked the trees and plants with various colored flags. The green flags indicate trees and plants that should not be disturbed during the removal activities. The trees and plants with pink flags indicate sensitive species and will be saved, as with green flagged trees and plants, whenever/wherever possible. The trees with white paint marks or white flags indicate invasive species and will be removed. For the trees that will be left undisturbed, the limbs, bark, and roots will be protected during the vacuuming of lead-contaminated soil. These trees or plants may or may not be removed:

- a. 3-inch diameter Red Maple – 1
- b. 1-inch diameter Sugar Maple – 1
- c. 4-inch diameter Sugar Maple – 1
- d. 1-inch diameter Shadbushes – 39
- e. 2-inch diameter Shadbushes – 4
- f. 1-inch diameter Chestnut Oaks – 7
- g. 2-inch diameter Chestnut Oaks – 5
- h. 3-inch diameter Chestnut Oaks – 2
- i. 6-inch diameter Chestnut Oaks – 2
- j. 8-inch diameter Chestnut Oaks – 2
- k. 11-inch diameter Chestnut Oak – 1
- l. 1-inch diameter Red Oaks – 2
- m. 2-inch diameter Red Oaks – 2
- n. 3-inch diameter Red Oak – 1
- o. 9-inch diameter Red Oak – 1

- p. 14-inch diameter Red Oak – 1
- q. 16-inch diameter Red Oak – 1
- r. 1-inch diameter Choke Cherries – 9
- s. 1-inch diameter White Ashes – 6
- t. 3-inch diameter White Ashes – 3
- u. 4-inch diameter Hemlocks – 2
- v. 6-inch diameter Hemlocks – 4
- w. 8-inch diameter Hemlock – 1
- x. Fragrant Sumacs – 30
- y. 1-inch Viburnums – 195
- z. 1-inch Maple Leaf Viburnums – 12
- aa. Dogwood-like Viburnums – 10
- bb. Blueberries – 4
- cc. Persimmons – 6
- dd. Ferns – Many
- ee. Goldenrods – Many
- ff. Light-Yellow Flowered Wildflowers (not Goldenrod) – 8

5. Sedimentation Controls

Silt fence will be installed at the down slope edge of the northern slope just above the steep cliff leading to Fall Creek Gorge, and it will be installed on the southern slope at the intersection of Areas I-6 and L-1. The silt fence will capture sediment from Area I-6 while the contaminated soil is being removed. CoirTM coconut logs may also be installed along either edge of Area I-6 as supplemental erosion control measures.

If required, hay or straw bales will be placed at specific locations across the site to provide additional sediment control. If Area I-6 can't be covered with erosion control matting by the end of the workday, then it will be covered with a tarp until the area can be covered with erosion control matting.

Once the topsoil has been placed, the topsoil will be covered with erosion control matting. CoirTM coconut logs will be placed along the edge of the northern and southern cliffs.

The NAC will provide information on the type of vegetation that will be planted and seed that will be spread on the Island. This vegetation will match the NAC's plan for the long-term use of the Island.

6. Special Equipment Requirements

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-6. A flexible 6-inch diameter hose will be attached to the end of the aluminum pipeline. Soundproofing barricades may be required to be constructed and placed around the vacuum truck while it is situated in the lower parking lot (off Lake Street).

A mini-excavator unit will be used to loosen the contaminated soil and move the contaminated soil to a pile in Area I-6 where the vacuum hose can be used. A temporary “bridge” will be constructed at the western end of the Island Area. A 12-inch culvert pipe will be placed on the Millrace bed and covered with crushed stone. This temporary bridge will allow for access/egress for personnel and the mini-excavator and will be removed once the project is completed.

7. Excavation and/or Removal of Contaminated Soil

The Removal Site Assessment states there is contaminated soil up to 15-inches deep in the flat portion of the Island Area (Areas I-3, I-4, I-5, I-6, and I-7). The thickness of the soil and thus the amount of contaminated material decreases with distance to the west from the Ithaca Gun Factory Buildings. Earth Tech personnel sampled Area I-6 to determine the extent of contamination. Based on the soil boring logs, 21 of the 25 samples were 24-inches in depth. When the boring was less than 24-inches in depth, a sample was collected at the bottom 2 or 3 inches of sample depending on the amount of soil recovery. The bottom of the Island is shale, and depending on how deep the contamination is, the shale may be excavated. The lead values from the composite samples at the surface range from 841 to 3,508 ppm; for the 12-inches deep samples range from 92 to 827 ppm, and the 24-inches deep samples range from 38 to 111 ppm. Based on these results, there is approximately 80 tons of lead-contaminated soil in Area I-6.

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. The vacuum truck and 20-cubic yard container will be staged in the lower parking lot (off Lake Street). A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-6. A flexible 6-inch diameter hose will be attached to the end of the plastic pipeline.

A mini-excavator unit will be used to loosen the contaminated soil and move the contaminated soil to a pile in Area I-6 where the vacuum hose can be used.

One area will be completed at a time. The silt fence and other erosion controls i.e., CoirTM coconut logs; straw, etc. will also keep sediment from moving off the Island Area.

9. Post-Excavation Soil Sampling

The disturbed area in I-6 will be approximately 2,125 square feet. Therefore, Earth Tech personnel will collect five composite soil samples to confirm effectiveness in removing the lead contaminated soil to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA I-7
DETAILED WORK PLAN
September 24, 2002

1. Description

Area I-7 is the seventh area in the Island Area, immediately west of I-6, north of and adjacent to Area L-2. The sections in the Island Area all have downward sloping sides from a flat area at the top. The eastern slope is 2.4 horizontal to 1 vertical. This slope is fairly gentle. The existing slope on the northern side is 2.3 to 1. The slope along the southern side is 2 to 1, and it meets with the edge of Area L-2. Figure 1 shows the plan view, and Figure 31 shows the cross-section of the area. The location is from 3+25 feet to 3+50.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) inspected Area I-7, and identified the trees and other vegetation. Area I-7 contains the following trees and vegetation species:

- a. 1-inch diameter Norway Maples – 3
- b. 1-inch diameter Hickories – 2
- c. 1-inch diameter Black Cherry – 1
- d. 1-inch diameter Chestnut Oaks – 8
- e. 2-inch diameter Chestnut Oak – 1
- f. 3-inch diameter Chestnut Oaks – 2
- g. 6-inch diameter Chestnut Oak – 1
- h. 8-inch diameter Chestnut Oak – 2
- i. 10-inch diameter Chestnut Oak – 1
- j. 12-inch diameter Chestnut Oaks – 3
- k. 14-inch diameter Chestnut Oaks – 3
- l. 20-inch diameter Chestnut Oak – 1
- m. 1-inch diameter Red Oaks – 28
- n. 2-inch diameter Red Oaks – 2
- o. 14-inch diameter Red Oak – 1
- p. 20-inch diameter Red Oak – 1
- q. 1-inch diameter Hop Hornbeams – 2
- r. 1-inch diameter Shadbushes – 71
- s. 2-inch diameter Shadbushes – 6
- t. 3-inch diameter Shadbush – 1
- u. 1-inch diameter White Ash – 1
- v. 1-inch diameter Hemlocks – 2
- w. 2-inch diameter Hemlock – 1
- x. 3-inch diameter Hemlock – 1
- y. 4-inch diameter Hemlock – 1
- z. 5-inch diameter Hemlock – 1

- aa. 1-inch diameter Juniper – 1
- bb. Fragrant Sumacs – 3
- cc. Maple Leaf Viburnums – 80
- dd. Viburnums – 110
- ee. Virginia Creeper – 1
- ff. Blueberries – 204
- gg. Ferns – Many
- hh. Goldenrods – Many

3. Removal of Vegetation and Organic Material

A large volume of dead vegetation, i.e., trees limbs, leaves, etc., will be removed prior to removing the contaminated soil and will be chipped and disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from NAC have marked the trees and plants with various colored flags. The green flags indicate trees and plants that should not be disturbed during the removal activities. The trees and plants with pink flags indicate sensitive species and will be saved, as with green flagged trees and plants, whenever/wherever possible. The trees with white paint marks or white flags indicate invasive species and will be removed. For the trees that will be left undisturbed, the limbs, bark, and roots will be protected during the vacuuming of lead-contaminated soil. These trees or plants may or may not be removed:

- a. 1-inch diameter Hickories – 2
- b. 1-inch diameter Black Cherry – 1
- c. 1-inch diameter Chestnut Oaks – 8
- d. 2-inch diameter Chestnut Oak – 1
- e. 3-inch diameter Chestnut Oaks – 2
- f. 6-inch diameter Chestnut Oak – 1
- g. 8-inch diameter Chestnut Oak – 2
- h. 10-inch diameter Chestnut Oak – 1
- i. 12-inch diameter Chestnut Oaks – 3
- j. 14-inch diameter Chestnut Oaks – 3
- k. 20-inch diameter Chestnut Oak – 1
- l. 1-inch diameter Red Oaks – 28
- m. 2-inch diameter Red Oaks – 2
- n. 14-inch diameter Red Oak – 1
- o. 20-inch diameter Red Oak – 1
- p. 1-inch diameter Hop Hornbeams – 2
- q. 1-inch diameter Shadbushes – 71
- r. 2-inch diameter Shadbushes – 6
- s. 3-inch diameter Shadbush – 1
- t. 1-inch diameter White Ash – 1
- u. 1-inch diameter Hemlocks – 2

- v. 2-inch diameter Hemlock – 1
- w. 3-inch diameter Hemlock – 1
- x. 4-inch diameter Hemlock – 1
- y. 5-inch diameter Hemlock – 1
- z. 1-inch diameter Juniper – 1
- aa. Fragrant Sumacs – 3
- bb. Maple Leaf Viburnums – 80
- cc. Viburnums – 110
- dd. Virginia Creeper – 1
- ee. Blueberries – 204
- ff. Ferns – Many
- gg. Goldenrods – Many

5. Sedimentation Controls

Silt fence will be installed at the down slope edge of the northern slope just above the steep cliff leading to Fall Creek Gorge, and it will be installed on the southern slope at the intersection of Areas I-7 and L-2. The silt fence will capture sediment from Area I-7 while the contaminated soil is being removed. CoirTM coconut logs may also be installed along either edge of Area I-7 as supplemental erosion control measures.

If required, hay or straw bales will be placed at specific locations across the site to provide additional sediment control. If Area I-7 can't be covered with erosion control matting by the end of the workday, then it will be covered with a tarp until the area can be covered with erosion control matting.

Once the topsoil has been placed, the topsoil will be covered with erosion control matting. CoirTM coconut logs will be placed along the edge of the northern and southern cliffs.

The NAC will provide information on the type of vegetation that will be planted and seed that will be spread on the Island. This vegetation will match the NAC's plan for the long-term use of the Island.

6. Special Equipment Requirements

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-7. A flexible 6-inch diameter hose will be attached to the end of the aluminum pipeline. Soundproofing barricades may be required to be constructed and placed around the vacuum truck while it is situated in the lower parking lot (off Lake Street).

A mini-excavator unit will be used to loosen the contaminated soil and move the contaminated soil to a pile in Area I-7 where the vacuum hose can be used. A temporary "bridge" will be constructed at the western end of the Island Area. A 12-inch culvert pipe will be placed on the Millrace bed and covered with crushed stone. This temporary

bridge will allow for access/egress for personnel and the mini-excavator and will be removed once the project is completed.

7. Excavation and/or Removal of Contaminated Soil

The Removal Site Assessment states there is contaminated soil up to 15-inches deep in the flat portion of the Island Area (Areas I-3, I-4, I-5, I-6, and I-7. The thickness of the soil and thus the amount of contaminated material decreases with distance to the west from the Ithaca Gun Factory Buildings. Earth Tech personnel sampled Area I-7 to determine the extent of contamination. Based on the soil boring logs, 5 of the 25 samples were 24-inches in depth. The average depth of the cores was 17-inches. When the boring was less than 24-inches in depth, a sample was collected at the bottom 2 or 3 inches of sample depending on the amount of soil recovery. The bottom of the Island is shale, and depending on how deep the contamination is, the shale may be excavated. The lead values from the surface samples ranged from 447 to 7,150 ppm; the composite samples for the 12-inches deep samples ranged from 194 to 317 ppm, and the composite samples for the 24-inches deep samples ranged from ND to 377 ppm. Based on these results, there is approximately 90 tons of lead-contaminated soil in Area I-7.

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. The vacuum truck and 20-cubic yard container will be staged in the lower parking lot (off Lake Street). A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-7. A flexible 6-inch diameter hose will be attached to the end of the plastic pipeline.

A mini-excavator unit will be used to loosen the contaminated soil and move the contaminated soil to a pile in Area I-7 where the vacuum hose can be used.

One area will be completed at a time. The silt fence and other erosion controls i.e., CoirTM coconut logs; straw, etc. will also keep sediment from moving off the Island Area.

9. Post-Excavation Soil Sampling

The disturbed area in I-7 will be approximately 2,375 square feet. Therefore, Earth Tech personnel will collect five composite soil samples to confirm effectiveness in removing the lead contaminated soil to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA I-8
DETAILED WORK PLAN
September 24, 2002

1. Description

Area I-8 is the eighth area in the Island Area, immediately west of I-7, north of and adjacent to Area L-3. The sections in the Island Area all have downward sloping sides from a flat area at the top. The eastern slope is 2.4 horizontal to 1 vertical. This slope is fairly gentle. The existing slope on the northern side is 2.8 to 1. The slope along the southern side is almost flat, and it meets with the edge of Area L-3. Figure 1 shows the plan view, and Figure 32 shows the cross-section of the area. The location is from 3+50 feet to 3+75.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) inspected Area I-8, and identified the trees and other vegetation. Area I-8 contains the following trees and vegetation species:

- a. 1-inch diameter Norway Maple – 1
- b. 1-inch diameter Sugar Maple – 1
- c. 1-inch diameter Red Maple – 1
- d. 1-inch diameter Red Oaks – 13
- e. 3-inch diameter Red Oaks – 2
- f. 8-inch diameter Red Oak – 1
- g. 1-inch diameter Chestnut Oaks – 6
- h. 2-inch diameter Chestnut Oak – 1
- i. 3-inch diameter Chestnut Oaks – 2
- j. 6-inch diameter Chestnut Oak – 1
- k. 8-inch diameter Chestnut Oaks – 2
- l. 9-inch diameter Chestnut Oak – 1
- m. 10-inch diameter Chestnut Oak – 1
- n. 12-inch diameter Chestnut Oaks – 2
- o. 13-inch diameter Chestnut Oak – 1
- p. 14-inch diameter Chestnut Oaks – 1
- q. 1-inch diameter Shadbushes – 27
- r. 2-inch diameter Shadbushes – 7
- s. 1-inch diameter Hop Hornbeams – 5
- t. 2-inch Hop Hornbeam – 1
- u. 1-inch White Ashes – 3
- v. 2-inch diameter Hemlock – 1
- w. 3-inch diameter Hemlock – 1
- x. 5-inch diameter Hemlocks – 2
- y. 6-inch diameter Hemlock – 1
- z. 8-inch diameter Hemlock – 1

- aa. 1-inch diameter Choke Cherries – 5
- bb. Blueberries – 47
- cc. Maple Leaf Viburnums – 32
- dd. Viburnums – 73
- ee. Ferns – Many
- ff. Goldenrods – Many

3. Removal of Vegetation and Organic Material

A large volume of dead vegetation, i.e., trees limbs, leaves, etc., will be removed prior to removing the contaminated soil and will be chipped and disposed of properly.

4. Saving Large Trees

The City of Ithaca Forester along with assistance from NAC have marked the trees and plants with various colored flags. The green flags indicate trees and plants that should not be disturbed during the removal activities. The trees and plants with pink flags indicate sensitive species and will be saved, as with green flagged trees and plants, whenever/wherever possible. The trees with white paint marks or white flags indicate invasive species and will be removed. For the trees that will be left undisturbed, the limbs, bark, and roots will be protected during the vacuuming of lead-contaminated soil. These trees or plants may or may not be removed:

- a. 1-inch diameter Sugar Maple – 1
- b. 1-inch diameter Red Maple – 1
- c. 1-inch diameter Red Oaks – 13
- d. 3-inch diameter Red Oaks – 2
- e. 8-inch diameter Red Oak – 1
- f. 1-inch diameter Chestnut Oaks – 6
- g. 2-inch diameter Chestnut Oak – 1
- h. 3-inch diameter Chestnut Oaks – 2
- i. 6-inch diameter Chestnut Oak – 1
- j. 8-inch diameter Chestnut Oaks – 2
- k. 9-inch diameter Chestnut Oak – 1
- l. 10-inch diameter Chestnut Oak – 1
- m. 12-inch diameter Chestnut Oaks – 2
- n. 13-inch diameter Chestnut Oak – 1
- o. 14-inch diameter Chestnut Oaks – 1
- p. 1-inch diameter Shadbushes – 27
- q. 2-inch diameter Shadbushes – 7
- r. 1-inch diameter Hop Hornbeams – 5
- s. 2-inch Hop Hornbeam – 1
- t. 1-inch White Ashes – 3
- u. 2-inch diameter Hemlock – 1
- v. 3-inch diameter Hemlock – 1
- w. 5-inch diameter Hemlocks – 2

- x. 6-inch diameter Hemlock – 1
- y. 8-inch diameter Hemlock – 1
- z. 1-inch diameter Choke Cherries – 5
- aa. Blueberries – 47
- bb. Maple Leaf Viburnums – 32
- cc. Viburnums – 73
- dd. Ferns – Many
- ee. Goldenrods – Many

5. Sedimentation Controls

Silt fence will be installed at the down slope edge of the northern slope just above the steep cliff leading to Fall Creek Gorge, and will be installed on the southern slope at the intersection of Areas I-8 and L-3. The silt fence will capture sediment from Area I-8 while the contaminated soil is being removed. CoirTM coconut logs may also be installed along either edge of Area I-8 as supplemental erosion control measures.

If required, hay or straw bales will be placed at specific locations across the site to provide additional sediment control. If Area I-8 can't be covered with erosion control matting by the end of the workday, then it will be covered with a tarp until the area can be covered with erosion control matting.

Once the topsoil has been placed, the topsoil will be covered with erosion control matting. CoirTM coconut logs will be placed along the edge of the northern and southern cliffs.

The NAC will provide information on the type of vegetation that will be planted and seed that will be spread on the Island. This vegetation will match the NAC's plan for the long-term use of the Island.

6. Special Equipment Requirements

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-8. A flexible 6-inch diameter hose will be attached to the end of the aluminum pipeline. Soundproofing barricades may be required to be constructed and placed around the vacuum truck while it is situated in the lower parking lot (off Lake Street).

A mini-excavator unit will be used to loosen the contaminated soil and move the contaminated soil to a pile in Area I-8 where the vacuum hose can be used. A temporary "bridge" will be constructed at the western end of the Island Area. A 12-inch culvert pipe will be placed on the Millrace bed and covered with crushed stone. This temporary bridge will allow for access/egress for personnel and the mini-excavator and will be removed once the project is completed.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech personnel sampled Area I-8 to determine the extent of contamination. Based on the soil boring logs, 4 of the 25 samples were 24-inches in depth. The average depth of the cores was 16-inches. When the boring was less than 24-inches in depth, a sample was collected at the bottom 2 or 3 inches of sample depending on the amount of soil recovery. The bottom of the Island is shale, and depending on how deep the contamination is, the shale may be excavated. The lead values from the surface samples ranged from 80 to 7,810 ppm; the composite samples for the 12-inches deep samples ranged from 90 to 364 ppm, and the composite samples for the 24-inches deep samples ranged from ND to 101 ppm. Based on these results, there is approximately 65 tons of lead-contaminated soil in Area I-8.

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. The vacuum truck and 20-cubic yard container will be staged in the lower parking lot (off Lake Street). A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-8. A flexible 6-inch diameter hose will be attached to the end of the plastic pipeline.

A mini-excavator unit will be used to loosen the contaminated soil and move the contaminated soil to a pile in Area I-8 where the vacuum hose can be used.

One area will be completed at a time. The silt fence and other erosion controls i.e., CoirTM coconut logs; straw, etc. will also keep sediment from moving off the Island Area.

9. Post-Excavation Soil Sampling

The disturbed area in I-8 will be approximately 2,500 square feet. Therefore, Earth Tech personnel will collect five composite soil samples to confirm effectiveness in removing the lead contaminated soil to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA I-9
DETAILED WORK PLAN
September 24, 2002

1. Description

Area I-9 is the ninth area in the Island Area, immediately west of I-8, north of and adjacent to Area L-4. The sections in the Island Area all have downward sloping sides from a flat area at the top. The eastern slope is 4.4 horizontal to 1 vertical. This slope is fairly gentle. The existing slope on the northern side is 4.5 to 1. The slope along the southern side is almost flat where it meets with the edge of Area L-4. Figure 1 shows the plan view, and Figure 33 shows the cross-section of the area. The location is from 3+75 feet to 4+00.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) inspected Area I-9, and identified the trees and other vegetation. Area I-9 contains the following trees and vegetation species:

- a. 1-inch diameter Norway Maple – 1
- b. 1-inch diameter Red Maple – 1
- c. 3-inch diameter Red Maple – 1
- d. 1-inch diameter Sugar Maples – 6
- e. 1-inch diameter Shadbushes – 63
- f. 2-inch diameter Shadbushes – 3
- g. 3-inch diameter Shadbushes – 3
- h. 1-inch diameter Chestnut Oaks – 12
- i. 2-inch diameter Chestnut Oaks – 2
- j. 3-inch diameter Chestnut Oak – 1
- k. 4-inch diameter Chestnut Oaks – 3
- l. 7-inch diameter Chestnut Oak – 1
- m. 11-inch diameter Chestnut Oak – 1
- n. 13-inch diameter Chestnut Oaks – 1
- o. 20-inch diameter Chestnut Oak – 1
- p. 2-inch diameter Hickory – 1
- q. 4-inch diameter Hickory – 1
- r. 1-inch diameter Hop Hornbeams – 6
- s. 3-inch diameter Hop Hornbeam – 1
- t. 1-inch diameter Black Oaks – 13
- u. 2-inch diameter Black Oaks – 3
- v. 6-inch diameter Black Oak – 1
- w. 1-inch diameter White Ashes – 7
- x. 5-inch diameter White Ash – 1
- y. Maple Leaf Viburnums – 16
- z. Dogwood Viburnums – 2

- aa. Viburnums – 109
- bb. Fragrant Sumacs – 16
- cc. Blueberries – 2
- dd. Goldenrods - Many
- ee. Ferns – Many
- ff. 1-inch diameter Black Locust – 1

3. Removal of Vegetation and Organic Material

A large volume of dead vegetation, i.e., trees limbs, leaves, etc., will be removed prior to removing the contaminated soil and will be chipped and disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from NAC have marked the trees and plants with various colored flags. The green flags indicate trees and plants that should not be disturbed during the removal activities. The trees and plants with pink flags indicate sensitive species and will be saved, as with green flagged trees and plants, whenever/wherever possible. The trees with white paint marks or white flags indicate invasive species and will be removed. For the trees that will be left undisturbed, the limbs, bark, and roots will be protected during the vacuuming of lead-contaminated soil. These trees or plants may or may not be removed:

- a. 1-inch diameter Red Maple – 1
- b. 3-inch diameter Red Maple – 1
- c. 1-inch diameter Sugar Maples – 6
- d. 1-inch diameter Shadbushes – 63
- e. 2-inch diameter Shadbushes – 3
- f. 3-inch diameter Shadbushes – 3
- g. 1-inch diameter Chestnut Oaks – 12
- h. 2-inch diameter Chestnut Oaks – 2
- i. 3-inch diameter Chestnut Oak – 1
- j. 4-inch diameter Chestnut Oaks – 3
- k. 7-inch diameter Chestnut Oak – 1
- l. 11-inch diameter Chestnut Oak – 1
- m. 13-inch diameter Chestnut Oaks – 1
- n. 20-inch diameter Chestnut Oak – 1
- o. 2-inch diameter Hickory – 1
- p. 4-inch diameter Hickory – 1
- q. 1-inch diameter Hop Hornbeams – 6
- r. 3-inch diameter Hop Hornbeam – 1
- s. 1-inch diameter Black Oaks – 13
- t. 2-inch diameter Black Oaks – 3
- u. 6-inch diameter Black Oak – 1
- v. 1-inch diameter White Ashes – 7
- w. 5-inch diameter White Ash – 1

- x. Maple Leaf Viburnums – 16
- y. Dogwood Viburnums – 2
- z. Viburnums – 109
- aa. Fragrant Sumacs – 16
- bb. Blueberries – 2
- cc. Goldenrods – Many
- dd. Ferns – Many

5. Sedimentation Controls

Silt fence will be installed at the down slope edge of the northern slope just above the steep cliff leading to Fall Creek Gorge, and it will be installed on the southern slope at the intersection of Areas I-9 and L-4. The silt fence will capture sediment from Area I-9 while the contaminated soil is being removed. CoirTM coconut logs may also be installed along either edge of Area I-9 as supplemental erosion control measures.

If required, hay or straw bales will be placed at specific locations across the site to provide additional sediment control. If Area I-9 can't be covered with erosion control matting by the end of the workday, then it will be covered with a tarp until the area can be covered with erosion control matting.

Once the topsoil has been placed, the topsoil will be covered with erosion control matting. CoirTM coconut logs will be placed along the edge of the northern and southern cliffs.

The NAC will provide information on the type of vegetation that will be planted and seed that will be spread on the Island. This vegetation will match the NAC's plan for the long-term use of the Island.

6. Special Equipment Requirements

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-9. A flexible 6-inch diameter hose will be attached to the end of the aluminum pipeline. Soundproofing barricades may be required to be constructed and placed around the vacuum truck while it is situated in the lower parking lot (off Lake Street).

A mini-excavator unit will be used to loosen the contaminated soil and move the contaminated soil to a pile in Area I-9 where the vacuum hose can be used. A temporary "bridge" will be constructed at the western end of the Island Area. A 12-inch culvert pipe will be placed on the Millrace bed and covered with crushed stone. This temporary bridge will allow for access/egress for personnel and the mini-excavator and will be removed once the project is completed.

7. Excavation and/or Removal of Contaminated Soil

The thickness of the soil and thus the amount of contaminated material decreases with distance to the west from the Ithaca Gun Factory Buildings. Earth Tech personnel sampled Area I-9 to determine the extent of contamination. Based on the soil boring logs, 5 of the 25 samples were 24-inches in depth. The average depth of the cores was 17-inches. When the boring was less than 24-inches in depth, a sample was collected at the bottom 2 or 3 inches of sample depending on the amount of soil recovery. The bottom of the Island is shale, and depending on how deep the contamination is, the shale may be excavated. The lead values from the surface samples ranged from 207 to 6000 ppm; the composite samples for the 12-inches deep samples ranged from 70 to 981 ppm, and the composite samples for the 24-inches deep samples ranged from ND to 366 ppm. Based on these results, there is approximately 65 tons of lead-contaminated soil in Area I-9.

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. The vacuum truck and 20-cubic yard container will be staged in the lower parking lot (off Lake Street). A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-9. A flexible 6-inch diameter hose will be attached to the end of the plastic pipeline.

A mini-excavator unit will be used to loosen the contaminated soil and move the contaminated soil to a pile in Area I-9 where the vacuum hose can be used.

One area will be completed at a time. The silt fence and other erosion controls i.e., CoirTM coconut logs; straw, etc. will also keep sediment from moving off the Island Area.

9. Post-Excavation Soil Sampling

The disturbed area in I-9 will be approximately 2,500 square feet. Therefore, Earth Tech personnel will collect five composite soil samples to confirm effectiveness in removing the lead contaminated soil to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA I-10
DETAILED WORK PLAN
October 16, 2002

1. Description

Area I-10 is the tenth area in the Island Area, immediately west of I-9. The sections in the Island Area all have downward sloping sides from a flat area at the top. The eastern slope is 4.4 horizontal to 1 vertical. This slope is fairly gentle. The existing slope on the northern side is 6 to 1. The slope along the southern side is 1.3 to 1 where it meets the sheer cliff at the Mill Race channel. Figure 1 shows the plan view, and Figure 34 shows the cross-section of the area. The location is from 4+00 feet to 4+25.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) inspected Area I-10, and identified the trees and other vegetation. Area I-10 contains the following trees and vegetation species:

- a. 4-inch diameter Norway Maples – 1
- b. 7-inch diameter Norway Maple – 1
- c. 1-inch diameter Chestnut Oaks – 35
- d. 2-inch diameter Chestnut Oaks – 2
- e. 3-inch diameter Chestnut Oak – 1
- f. 4-inch diameter Chestnut Oaks – 3
- g. 6-inch diameter Chestnut Oak – 1
- h. 7-inch diameter Chestnut Oak – 1
- i. 8-inch diameter Chestnut Oaks – 2
- j. 9-inch diameter Chestnut Oak – 1
- k. 10-inch diameter Chestnut Oak – 1
- l. 12-inch diameter Chestnut Oak – 1
- m. 48-inch diameter Chestnut Oak – 1 (with 3 trunks @ 14, 15, and 18 inches)
- n. 3-inch diameter Black Oak – 1
- o. 6-inch diameter Black Oak – 1
- p. 8-inch diameter Black Oak – 1
- q. 1-inch diameter Shadbushes – 43
- r. 2-inch diameter Shadbush – 1
- s. 3-inch diameter Shadbushes – 2
- t. 4-inch diameter Shadbush – 1
- u. 1-inch diameter Hickories – 2
- v. 1-inch diameter White Ashes – 18
- w. 2-inch diameter White Ash – 1
- x. 1-inch diameter Choke Cherry – 1
- y. 1-inch Juniper – 1
- z. Fragrant Sumacs – 7
- aa. Viburnums – 158

- bb. Persimmons – 4
- cc. Goldenrods – Many
- dd. Currents – 3
- ee. Solomon's Seal – 6
- ff. Ferns – Many
- gg. 1-inch diameter Black Locust – 1
- hh. 2-inch diameter Black Locust – 1
- ii. Privets – 3
- jj. Buckthorns – 7
- kk. Honeysuckles – 5

3. Removal of Vegetation and Organic Material

A large volume of dead vegetation, i.e., trees limbs, leaves, etc will be removed prior to removing the contaminated soil and will be chipped and disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from NAC have marked the trees and plants with various colored flags. The green flags indicate trees and plants that should not be disturbed during the removal activities. The trees and plants with pink flags indicate sensitive species and will be saved, as with green flagged trees and plants, whenever/wherever possible. The trees with white paint marks or white flags indicate invasive species and will be removed. For the trees that will be left undisturbed, the limbs, bark, and roots will be protected during the vacuuming of lead-contaminated soil. These trees or plants may or may not be removed:

- a. 1-inch diameter Chestnut Oaks – 35
- b. 2-inch diameter Chestnut Oaks – 2
- c. 3-inch diameter Chestnut Oak – 1
- d. 4-inch diameter Chestnut Oaks – 3
- e. 6-inch diameter Chestnut Oak – 1
- f. 7-inch diameter Chestnut Oak – 1
- g. 8-inch diameter Chestnut Oaks – 2
- h. 9-inch diameter Chestnut Oak – 1
- i. 10-inch diameter Chestnut Oak – 1
- j. 12-inch diameter Chestnut Oak – 1
- k. 48-inch diameter Chestnut Oak – 1 (with 3 trunks @ 14, 15, and 18 inches)
- l. 3-inch diameter Black Oak – 1
- m. 6-inch diameter Black Oak – 1
- n. 8-inch diameter Black Oak – 1
- o. 1-inch diameter Shadbushes – 43
- p. 2-inch diameter Shadbush – 1
- q. 3-inch diameter Shadbushes – 2
- r. 4-inch diameter Shadbush – 1
- s. 1-inch diameter Hickories – 2

- t. 1-inch diameter White Ashes – 18
- u. 2-inch diameter White Ash – 1
- v. 1-inch diameter Choke Cherry – 1
- w. 1-inch Juniper – 1
- x. Fragrant Sumacs – 7
- y. Viburnums – 158
- z. Persimmons – 4
- aa. Goldenrods – Many
- bb. Currents – 3
- cc. Solomon's Seal – 6
- dd. Ferns – Many

5. Sedimentation Controls

Silt fence will be installed at the down slope edge of the northern slope just above the steep cliff leading to Fall Creek Gorge, and it will be installed on the southern slope at the top of the steep cliff to the Mill Race. The silt fence will capture sediment from Area I-10 while the contaminated soil is being removed. CoirTM coconut logs may also be installed along either edge of Area I-10 as supplemental erosion control measures.

If required, hay or straw bales will be placed at specific locations across the site to provide additional sediment control. If Area I-10 can't be covered with erosion control matting by the end of the workday, then it will be covered with a tarp until the area can be covered with erosion control matting.

Once the topsoil has been placed, the topsoil will be covered with erosion control matting. CoirTM coconut logs will be placed along the edge of the northern and southern cliffs.

The NAC will provide information on the type of vegetation that will be planted and seed that will be spread on the Island. This vegetation will match the NAC's plan for the long-term use of the Island.

6. Special Equipment Requirements

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-10. A flexible 6-inch diameter hose will be attached to the end of the aluminum pipeline. Soundproofing barricades may be required to be constructed and placed around the vacuum truck while it is situated in the lower parking lot (off Lake Street).

A mini-excavator unit will be used to loosen the contaminated soil and move the contaminated soil to a pile in Area I-10 where the vacuum hose can be used. A temporary "bridge" will be constructed at the western end of the Island Area. A 12-inch culvert pipe will be placed on the Millrace bed and covered with crushed stone. This

temporary bridge will allow for access/egress for personnel and the mini-excavator and will be removed once the project is completed.

7. Excavation and/or Removal of Contaminated Soil

The thickness of the soil and thus the amount of contaminated material decreases with distance to the west from the Ithaca Gun Factory Buildings. Earth Tech personnel sampled Area I-10 to determine the extent of contamination. Based on the soil boring logs, 5 of the 23 samples were 24-inches in depth. The average depth of the cores was 14-inches. When the boring was less than 24-inches in depth, a sample was collected at the bottom 2 or 3 inches of sample depending on the amount of soil recovery. The bottom of the Island is shale, and depending on how deep the contamination is, the shale may be excavated. The lead values from the surface samples ranged from 231 to 4182 ppm; the composite samples for the 12-inches deep samples ranged from ND to 737 ppm, and the composite samples for the 24-inches deep samples ranged from 14 to 67 ppm. Based on these results, there is approximately 100 tons of lead-contaminated soil in Area I-10.

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. The vacuum truck and 20-cubic yard container will be staged in the lower parking lot (off Lake Street). A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-10. A flexible 6-inch diameter hose will be attached to the end of the plastic pipeline.

A mini-excavator unit will be used to loosen the contaminated soil and move the contaminated soil to a pile in Area I-10 where the vacuum hose can be used.

One area will be completed at a time. The silt fence and other erosion controls i.e., CoirTM coconut logs; straw, etc. will also keep sediment from moving off the Island Area.

9. Post-Excavation Soil Sampling

The disturbed area in I-10 will be approximately 2,300 square feet. Therefore, Earth Tech personnel will collect five composite soil samples to confirm effectiveness in removing the lead contaminated soil to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA I-11
DETAILED WORK PLAN
October 28, 2002

1. Description

Area I-11 is the eleventh and last area in the Island Area, immediately west of I-10. Area I-11 is 20 feet wide because the steep sheer cliff of the Mill Race Creek channel is along the entire western and southern sides. The sections in the Island Area all have downward sloping sides from a flat area at the top. The eastern slope is 1.3 horizontal to 1 vertical. This slope is steeper than a 2 to 1 slope that engineers usually design final slopes for revegetation. The existing slope on the northern side is 7 to 1 where it meets the sheer cliff to Fall Creek Gorge. The slope along the southern side is 3.4 to 1 where it meets the sheer cliff at the Mill Race. Figure 1 shows the plan view, and Figure 35 shows the cross-section of the area. The location is from 4+25 feet to 4+50.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) inspected Area I-11, and identified the trees and other vegetation. Area I-11 contains the following trees and vegetation species:

- a. 1-inch diameter Norway Maples – 5
- b. 2-inch diameter Norway Maples – 2
- c. 3-inch diameter Norway Maples – 3
- d. 4-inch diameter Norway Maple – 1
- e. 5-inch diameter Norway Maple – 1
- f. 1-inch diameter Sugar Maple – 1
- g. 2-inch diameter Sugar Maples – 2
- h. 4-inch diameter Sugar Maple – 1
- i. 1-inch diameter Black Oaks – 5
- j. 2-inch diameter Black Oak – 1
- k. 5-inch diameter Black Oak – 1
- l. 9-inch diameter Black Oak – 1
- m. 10-inch diameter Black Oak – 1
- n. 1-inch diameter Chestnut Oaks – 3
- o. 3-inch diameter Chestnut Oak – 1
- p. 4-inch diameter Chestnut Oak – 1
- q. 5-inch diameter Chestnut Oaks – 2
- r. 6-inch diameter Chestnut Oak – 1
- s. 7-inch diameter Chestnut Oak – 1
- t. 8-inch diameter Chestnut Oaks – 3
- u. 10-inch diameter Chestnut Oak – 1
- v. 16-inch diameter Chestnut Oak – 1
- w. 1-inch diameter White Ashes – 18
- x. 2-inch diameter White Ashes – 2

- y. 3-inch diameter White Ash – 1
- z. 5-inch diameter White Ash – 1
- aa. 6-inch diameter White Ashes – 3
- bb. 9-inch diameter White Ash – 1
- cc. 1-inch diameter Hop Hornbeams – 3
- dd. 3-inch diameter Hop Hornbeams – 2
- ee. 1-inch diameter Shadbushes – 50
- ff. 2-inch diameter Shadbushes – 5
- gg. 3-inch diameter Shadbush – 1
- hh. 6-inch diameter Shadbush – 1
- ii. 1-inch diameter Choke Cherry – 1
- jj. 1-inch diameter Hickory – 1
- kk. 1-inch diameter Juniper – 1
- ll. 3-inch diameter Juniper – 1
- mm. 1-inch diameter Fragrant Sumacs – 55
- nn. 2-inch diameter Fragrant Sumac - 1
- oo. Viburnums – 293
- pp. Ferns – Many
- qq. Goldenrods – Many
- rr. Honeysuckles – 5
- ss. Privets – 11
- tt. 1-inch diameter Buckthorns – 7
- uu. 2-inch diameter Buckthorns - 10

3. Removal of Vegetation and Organic Material

A large volume of dead vegetation, i.e., trees limbs, leaves, etc., will be removed prior to removing the contaminated soil and will be chipped and disposed of properly.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from NAC have marked the trees and plants with various colored flags. The green flags indicate trees and plants that should not be disturbed during the removal activities. The trees and plants with pink flags indicate sensitive species and will be saved, as with green flagged trees and plants, whenever/wherever possible. The trees with white paint marks or white flags indicate invasive species and will be removed. For the trees that will be left undisturbed, the limbs, bark, and roots will be protected during the vacuuming of lead-contaminated soil. These trees or plants may or may not be removed:

- a. 1-inch diameter Sugar Maple – 1
- b. 2-inch diameter Sugar Maples – 2
- c. 4-inch diameter Sugar Maple – 1
- d. 1-inch diameter Black Oaks – 5
- e. 2-inch diameter Black Oak – 1
- f. 5-inch diameter Black Oak – 1

- g. 9-inch diameter Black Oak – 1
- h. 10-inch diameter Black Oak – 1
- i. 1-inch diameter Chestnut Oaks – 3
- j. 3-inch diameter Chestnut Oak – 1
- k. 4-inch diameter Chestnut Oak – 1
- l. 5-inch diameter Chestnut Oaks – 2
- m. 6-inch diameter Chestnut Oak – 1
- n. 7-inch diameter Chestnut Oak – 1
- o. 8-inch diameter Chestnut Oaks – 3
- p. 10-inch diameter Chestnut Oak – 1
- q. 16-inch diameter Chestnut Oak – 1
- r. 1-inch diameter White Ashes – 18
- s. 2-inch diameter White Ashes – 2
- t. 3-inch diameter White Ash – 1
- u. 5-inch diameter White Ash – 1
- v. 6-inch diameter White Ashes – 3
- w. 9-inch diameter White Ash – 1
- x. 1-inch diameter Hop Hornbeams – 3
- y. 3-inch diameter Hop Hornbeams – 2
- z. 1-inch diameter Shadbushes – 50
- aa. 2-inch diameter Shadbushes – 5
- bb. 3-inch diameter Shadbush – 1
- cc. 6-inch diameter Shadbush – 1
- dd. 1-inch diameter Choke Cherry – 1
- ee. 1-inch diameter Hickory – 1
- ff. 1-inch diameter Juniper – 1
- gg. 3-inch diameter Juniper – 1
- hh. 1-inch diameter Fragrant Sumacs – 55
- ii. 2-inch diameter Fragrant Sumac - 1
- jj. Viburnums – 293
- kk. Ferns – Many
- ll. Goldenrods – Many

5. Sedimentation Controls

Silt fence will be installed at the down slope edge of the northern slope just above the steep cliff leading to Fall Creek Gorge, and it will be installed on the southern and western slopes along the top of the steep cliff to the Mill Race. The silt fence will capture sediment from Area I-11 while the contaminated soil is being removed. CoirTM coconut logs may also be installed along either edge of Area I-11 as supplemental erosion control measures.

If required, hay or straw bales will be placed at specific locations across the site to provide additional sediment control. If Area I-11 can't be covered with erosion control matting by the end of the workday, then it will be covered with a tarp until the area can be covered with erosion control matting.

Once the topsoil has been placed, the topsoil will be covered with erosion control matting. CoirTM coconut logs will be placed along the edge of the northern and southern cliffs.

The NAC will provide information on the type of vegetation that will be planted and seed that will be spread on the Island. This vegetation will match the NAC's plan for the long-term use of the Island.

6. Special Equipment Requirements

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-11. A flexible 6-inch diameter hose will be attached to the end of the aluminum pipeline. Soundproofing barricades may be required to be constructed and placed around the vacuum truck while it is situated in the lower parking lot (off Lake Street).

A mini-excavator unit will be used to loosen the contaminated soil and move the contaminated soil to a pile in Area I-11 where the vacuum hose can be used. A temporary "bridge" will be constructed at the western end of the Island Area. A 12-inch culvert pipe will be placed on the Millrace bed and covered with crushed stone. This temporary bridge will allow for access/egress for personnel and the mini-excavator and will be removed once the project is completed.

7. Excavation and/or Removal of Contaminated Soil

The thickness of the soil and thus the amount of contaminated material decreases with distance to the west from the Ithaca Gun Factory Buildings. Earth Tech personnel sampled Area I-11 to determine the extent of contamination. Based on the soil boring logs, 2 of the 18 samples were 24-inches in depth. The average depth of the cores was 16-inches. When the boring was less than 24-inches in depth, a sample was collected at the bottom 2 or 3 inches of sample depending on the amount of soil recovery. The bottom of the Island is shale, and depending on how deep the contamination is, the shale may be excavated. The lead values from the surface samples ranged from 238 to 1,574 ppm; the composite samples for the surface samples ranged from 504 to 566; the composite samples for the 12-inches deep samples ranged from ND to 331 ppm, and the composite samples for the 24-inches deep samples ranged from ND to 54 ppm. Based on these results, there is approximately 97 tons of lead-contaminated soil in Area I-11.

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. The vacuum truck and 20-cubic yard container will be staged in the lower parking lot (off Lake Street). A 6-inch-diameter plastic pipeline will be laid from the vacuum truck to Area I-11. A flexible 6-inch diameter hose will be attached to the end of the plastic pipeline.

A mini-excavator unit will be used to loosen the contaminated soil and move the contaminated soil to a pile in Area I-11 where the vacuum hose can be used.

One area will be completed at a time. The silt fence and other erosion controls i.e., CoirTM coconut logs; straw, etc. will also keep sediment from moving off the Island Area.

9. Post-Excavation Soil Sampling

The disturbed area in I-11 will be approximately 1,960 square feet. Therefore, Earth Tech personnel will collect four composite soil samples to confirm effectiveness in removing the lead contaminated soil to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

APPENDIX H

WORK PLANS

Middle Millrace Areas

AREA M-1
DETAILED WORK PLAN
July 18, 2003

1. Description

Area M-1 is the first area in the Middle Millrace Area and is immediately adjacent to Area U-2 to the west. This area leads into the plunge pool further to the west. There is a flat section on the top of the southern slope at the back end of one of the larger site buildings. The results from the RSA indicate there is minimal contamination in this area, and the thickness of contaminated soil varies in depth from approximately 12 inches to nothing at bedrock. The existing slope on the north slope is 1.2 horizontal to 1 vertical, and the slope on the south slope is 1.4 to 1. Once the contaminated soil is removed, the final slope shall remain 1.2 to 1 on the north and 1.4 to 1 on the south. These slopes are steeper than 2 to 1, which is the standard slope that engineers typically try to design for reclaimed slopes. Figure 1 shows the plan view, and Figure 36 shows the cross-section of the area. It is the next portion of the millrace, and it is located from 1+25 feet to 1+50.

This area has such steep slopes that no equipment will be able to maneuver within.

2. Vegetation

Most of the larger trees are at the top of the northern slope adjacent to the staging area. The City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) has inspected the trees and other vegetation within this area and has identified most of it as invasive and can be removed.

3. Removal of Vegetation and Organic Material

All vegetation within this area will be removed prior to the removal of contaminated soil and staged in a separate pile. The vegetation will then be removed and placed into an open top roll-off container for disposal.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from NAC has marked trees and plants with various colored flags. The green flags indicate trees and plants that will not be disturbed during the removal activities. These trees will not interfere with the removal of the lead-contaminated soil. The trees with white paint marks will be removed. For the trees that will be left undisturbed, the limbs, bark, and roots will be protected during the excavation of lead-contaminated soil.

5. Sedimentation Controls

A silt fence along with a CoirTM coconut log will be anchored across the millrace channel along the western edge of Area M-4 to prevent downstream migration of soil/sediment. In addition, hay or straw bales may be placed at specific locations across the work sections to provide supplemental sediment control.

When Area M-1 finished, the silt fence and CoirTM coconut log will remain in the millrace channel.

6. Special Equipment Requirements

Since this area has such steep slopes, no equipment will be maneuvered on the slopes. A vacuum truck with hoses will be used to remove the smaller contaminated particles that can't be removed by the laborers. Fall prevention devices will be worn by laborers while working in this area.

7. Excavation and/or Removal of Contaminated Soil

There is a minimal thickness of topsoil in Area M-1. The surface in this area is steep, there is a minimal amount of contaminated soil (average of a few inches). The bottom of the Mill Race is shale, and the material to be removed is mostly at the toe of the cliffs. Laborers will shovel, rake, or sweep the contaminated soil down the slopes to a lower flat area where it can be vacuumed. In those areas too steep for workers to safely work, a fire hose will be utilized to flush contaminated material down into the plunge pool from where it will be later removed.

Once the laborers have removed and segregated the contaminated material into a pile, a vacuum truck with hose will be used. The laborers holding the hose will be wearing fall prevention devices.

8. Post-Excavation Soil Sampling

The disturbed area in M-1 will be approximately 2,000 square feet therefore, four composite soil samples are required. Where soil material is present, RST personnel will collect five aliquot soil samples for each of the composite samples. These samples will verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA M-2
DETAILED WORK PLAN
July 18, 2003

1. Description

Area M-2 is the next area west of Area M-1 and contains the first portion of the plunge pool. The existing slope on the north slope is 0.6 horizontal to 1 vertical, and the slope on the southern slope is 0.9 to 1. There is a flat section on the top of the southern slope at the back end of one of the larger site buildings. The results from the RSA and from the NYSDEC indicate there is minimal contamination along the edges of the plunge pool, but there is up to 5-feet of contaminated soil in the middle of the Plunge Pool. The thickness of contaminated soil changes from 5-foot at the center of the area to nothing at the bedrock along the edges. Once the contaminated soil is removed, the final slopes will remain the same. These slopes are steeper than 2 to 1, which is the standard slope that engineers typically try to design for reclaimed slopes. Figure 1 shows the plan view, and Figure 37 shows the cross-section of the area. It is the next portion of the millrace, and it is located from 1+50 feet to 1+75.

This area has such steep slopes that no equipment will be able to maneuver within.

2. Vegetation

Most of the larger trees are at the top of the northern slope adjacent to the staging area. The City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) has inspected the trees and other vegetation within this area and has identified most of it as invasive and can be removed.

3. Removal of Vegetation and Organic Material

All vegetation within this area will be removed prior to the removal of contaminated soil and staged in a separate pile. The vegetation will then be removed and placed into an open top roll-off container for disposal.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from NAC has marked trees and plants with various colored flags. The green flags indicate trees and plants that will not be disturbed during the removal activities. These trees will not interfere with the removal of the lead-contaminated soil. The trees with white paint marks will be removed. For the trees that will be left undisturbed, the limbs, bark, and roots will be protected during the excavation of lead-contaminated soil.

5. Sedimentation Controls

A silt fence along with a CoirTM coconut log will be anchored across the millrace channel along the western edge of Area M-4 to prevent downstream migration of soil/sediment. In addition, hay or straw bales may be placed at specific locations across the work sections to provide supplemental sediment control.

When Area M-1 finished, the silt fence and CoirTM coconut log will remain in the millrace channel.

6. Special Equipment Requirements

Since this area has such steep slopes, no equipment will be maneuvered on the slopes. A vacuum truck with hoses will be used to remove the smaller contaminated particles that can't be removed by the laborers. Fall prevention devices will be worn by laborers while working in this area.

7. Excavation and/or Removal of Contaminated Soil

There is a minimal thickness of topsoil in Area M-2. The surface in this area is steep, there is only a minimal amount of contaminated soil (average of a few inches). The bottom of the millrace is shale, and the material to be removed is mostly at the toe of the cliffs. Laborers will shovel, rake, or sweep the contaminated soil down the slopes to a lower flat area where it can be vacuumed. In those areas too steep for workers to safely work, a fire hose will be utilized to flush contaminated material down into the plunge pool from where it will be later removed.

Once the laborers have removed and segregated the contaminated material into a pile, a vacuum truck with hose will be used. The laborers holding the hose will be wearing fall prevention devices.

8. Post-Excavation Soil Sampling

The disturbed area in M-2 will be approximately 2,300 square feet therefore, five composite soil samples area required. Where soil material is present, RST personnel will collect five aliquot soil samples for each of the composite samples. These samples will verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA M-3
DETAILED WORK PLAN
July 18, 2003

1. Description

Area M-3 is the next area west of Area M-2 and contains the second portion of the Plunge Pool. The existing slope on the north slope is .63 horizontal to 1 vertical and on the slope on the southern slope is 0.7 to 1. There is a flat section on the top of the southern slope at the back end of one of the larger site buildings. The results from the RSA and from the NYSDEC indicate there is minimal contamination along the edges of the Plunge Pool, but there is up to 5-feet of contaminated soil in the middle of the plunge pool. The thickness of contaminated soil changes from 5-foot at the center of the area to nothing at the bedrock along the edges. These slopes are steeper than 2 to 1, which is the standard slope that engineers typically try to design for reclaimed slopes. Figure 1 shows the plan view, and Figure 38 shows the cross-section of the area. It is the next portion of the millrace, and it is located from 1+75 feet to 2+00.

2. Vegetation

Most of the larger trees are at the top of the northern slope adjacent to the staging area. The City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) has inspected the trees and other vegetation within this area and has identified most of it as invasive and can be removed.

3. Removal of Vegetation and Organic Material

All vegetation within this area will be removed prior to the removal of contaminated soil and staged in a separate pile. The vegetation will then be removed and placed into an open top roll-off container for disposal.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from NAC has marked trees and plants with various colored flags. The green flags indicate trees and plants that will not be disturbed during the removal activities. These trees will not interfere with the removal of the lead-contaminated soil. The trees with white paint marks will be removed. For the trees that will be left undisturbed, the limbs, bark, and roots will be protected during the excavation of lead-contaminated soil.

5. Sedimentation Controls

A silt fence along with a CoirTM coconut log will be anchored across the millrace channel along the western edge of Area M-4 to prevent downstream migration of soil/sediment. In addition, hay or straw bales may be placed at specific locations across the work sections to provide supplemental sediment control.

When Area M-1 finished, the silt fence and CoirTM coconut log will remain in the millrace channel.

6. Special Equipment Requirements

Since this area has such steep slopes, no equipment will be maneuvered on the slopes. A crane will lower a mini-excavator into the plunge pool. The crane will be setup on the staging area for lowering and lifting a bucket to remove contaminated material.

7. Excavation and/or Removal of Contaminated Soil

The mini-excavator will excavate contaminated material from the plunge pool and place it into the bucket. Once filled, the material in the bucket will be brought to a designated area on a paved area of the “island” where it will be staged and sampled prior to appropriate disposal. To remove the contaminated material from the flat area on the top of the southern slope will require laborers to shovel and/or rake material into the plunge pool. The contaminated soil from the flat bottom sections of the plunge pool in Areas M-2, M-3, and M-4 will be removed once the contaminated material is removed from the steep slopes of Areas M-2, M-3, and M-4. In those areas too steep for workers to safely work, a fire hose will be utilized to flush contaminated material down into the plunge pool.

8. Post-Excavation Soil Sampling

The disturbed area in M-3 will be approximately 2,500 square feet therefore, five composite soil samples area required. Where soil material is present, RST personnel will collect five aliquot soil samples for each of the composite samples. These samples will verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

AREA M-4
DETAILED WORK PLAN
July 18, 2003

1. Description

The fourth area in the Middle Millrace Area and third portion of the plunge pool is Area M-4. The existing slope on the northern edge is 1.3 horizontal to 1 vertical, and the slope on the southern edge is 1.1 to 1. The results from the RSA and from the NYSDEC indicate there is minimal contamination along the edges of the plunge pool, but there is up to 5-feet of contaminated soil in the middle of the plunge pool. The thickness of contaminated soil changes from 5-foot at the center of the area to nothing at the bedrock along the edges. These slopes are steeper than 2 to 1, which is the standard slope that engineers typically try to design for reclaimed slopes. Figure 1 shows the plan view, and Figure 39 shows the cross-section of the area. It is the next portion of the millrace, and it is located from 2+00 feet to 2+25.

2. Vegetation

Most of the larger trees are at the top of the northern slope adjacent to the staging area. The City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) has inspected the trees and other vegetation within this area and has identified most of it as invasive and can be removed.

3. Removal of Vegetation and Organic Material

All vegetation within this area will be removed prior to the removal of contaminated soil and staged in a separate pile. The vegetation will then be removed and placed into an open top roll-off container for disposal.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from NAC has marked trees and plants with various colored flags. The green flags indicate trees and plants that will not be disturbed during the removal activities. These trees will not interfere with the removal of the lead-contaminated soil. The trees with white paint marks will be removed. For the trees that will be left undisturbed, the limbs, bark, and roots will be protected during the excavation of lead-contaminated soil.

5. Sedimentation Controls

A silt fence along with a CoirTM coconut log will be anchored across the millrace channel along the western edge of Area M-4 to prevent downstream migration of soil/sediment. In addition, hay or straw bales may be placed at specific locations across the work sections to provide supplemental sediment control.

When Area M-1 finished, the silt fence and CoirTM coconut log will remain in the millrace channel.

6. Special Equipment Requirements

Since this area has such steep slopes, no equipment will be maneuvered on the slopes. A crane will lower a mini-excavator into the plunge pool. The crane will be setup on the staging area for lowering and lifting a bucket to remove contaminated material.

7. Excavation and/or removal of contaminated soil

The mini-excavator will excavate contaminated material from the plunge pool and place it into the bucket. Once filled, the material in the bucket will be brought to a designated area on a paved area of the “island” where it will be staged and sampled prior to appropriate disposal. To remove the contaminated material from the flat area on the top of the southern slope will require laborers to shovel and/or rake material into the plunge pool. The contaminated soil from the flat bottom sections of the plunge pool in Areas M-2, M-3, and M-4 will be removed once the contaminated material is removed from the steep slopes of Areas M-2, M-3, and M-4. In those areas too steep for workers to safely work, a fire hose will be utilized to flush contaminated material down into the plunge pool.

8. Post-Excavation Soil Sampling

The disturbed area in M-4 will be approximately 1,875 square feet therefore, four composite soil samples area required. Where soil material is present, RST personnel will collect five aliquot soil samples for each of the composite samples. These samples will verify the lead contaminated soil has been removed to below the site cleanup level of 400 ppm with no single samples with a concentration above 1,200 ppm.

APPENDIX J

WORK PLANS

Westerly Parcel

WESTERLY PARCEL
AREA W-1
DETAILED WORK PLAN
May 26, 2003

1. Description

Area W-1 is the Westerly Parcel, which is situated between lower parking lot of the Gun Hill Apartments and the former Ithaca Gun Company manufacturing building represents an area of 7,250 square feet. Earth Tech will undertake lead soil removal in six stages with each stage being 25 feet wide. This will minimize the amount of disturbed soil at one time. One 25-foot section will be completed before proceeding to the next 25-foot section. The depth of lead contaminated soil in this area is approximately two-feet. A 15-foot wide flat portion is adjacent to the former Ithaca Gun Company manufacturing building with a wooden fence separating the flat portion from a steep grade sloping to the west at 1.67 horizontal to 1 vertical. Figure 1 shows the plan view, and Figure 47 shows three cross-sections through the area.

2. Vegetation

Assistance from members of the Natural Area Commission (NAC) as well as the City of Ithaca Forester have inspected Area W-1, and identified all trees and vegetation. This area contains the following trees and vegetation species:

Section W-1:

1. 1-inch diameter *Ailanthus* – 13
2. 2-inch diameter *Ailanthus* – 5
3. 3-inch diameter *Ailanthus* – 3
4. 4-inch diameter *Ailanthus* – 1
5. 9-inch diameter *Ailanthus* – 1
6. 10-inch diameter *Ailanthus* – 2
7. 12-inch diameter *Ailanthus* – 1
8. 14-inch diameter *Ailanthus* - 2
9. 22-inch diameter *Ailanthus* – 1
10. 1-inch diameter Norway Maples – 6
11. 2-inch diameter Norway Maples – 6
12. 3-inch diameter Norway Maples – 2
13. 4-inch diameter Norway Maples – 2
14. 16-inch diameter Norway Maple – 1
15. 1-inch diameter Northern Catalpa – 1
16. 3-inch diameter Northern Catalpa – 1
17. Many Burdock plants

Section W-2:

1. 1-inch diameter *Ailanthus* – 3
2. 2-inch diameter *Ailanthus* – 2
3. 8-inch diameter *Ailanthus* – 3
4. 1-inch diameter Norway Maples – 22
5. 2-inch diameter Norway Maples – 3
6. 3-inch diameter Norway Maples – 5
7. 6-inch diameter Norway Maple – 1
8. 7-inch diameter Norway Maple – 1
9. 14-inch diameter Norway Maple – 1
10. 1-inch diameter Northern Catalpa – 1
11. Privet bushes - 11

Section W-3:

1. 1-inch diameter *Ailanthus* – 4
2. 2-inch diameter *Ailanthus* – 8
3. 3-inch diameter *Ailanthus* – 5
4. 4-inch diameter *Ailanthus* – 1
5. 5-inch diameter *Ailanthus* – 1
6. 10-inch diameter *Ailanthus* – 1
7. 14-inch diameter *Ailanthus* – 1
8. 16-inch diameter *Ailanthus* – 1
9. 1-inch diameter Norway Maples – 4
10. 2-inch diameter Norway Maples – 2
11. 3-inch diameter Norway Maples – 4
12. 4-inch diameter Norway Maple – 1
13. 5-inch diameter Norway Maple – 1
14. 6-inch diameter Norway Maples – 4
15. 8-inch diameter Norway Maple – 1
16. Privet bushes - 6

Section W-4:

1. 1-inch diameter *Ailanthus* – 18
2. 2-inch diameter *Ailanthus* – 1
3. 3-inch diameter *Ailanthus* – 4
4. 4-inch diameter *Ailanthus* – 1
5. 6-inch diameter *Ailanthus* – 4
6. 8-inch diameter *Ailanthus* – 1
7. 18-inch diameter *Ailanthus* – 1
8. 24-inch diameter *Ailanthus* - 1
9. 1-inch diameter Norway Maples – 11
10. 2-inch diameter Norway Maples – 5
11. 3-inch diameter Norway Maples – 6

12. 4-inch diameter Norway Maples – 4
13. 6-inch diameter Norway Maples – 3
14. 3-inch diameter Locust - 1
15. Privet bushes – 2
16. Burdock plants - 5

Section W-5:

1. 1-inch diameter *Ailanthus* – 10
2. 3-inch diameter *Ailanthus* – 4
3. 6-inch diameter *Ailanthus* – 1
4. 12-inch diameter *Ailanthus* – 2
5. 1-inch diameter Norway Maples – 5
6. 2-inch diameter Norway Maples – 2
7. 3-inch diameter Norway Maples – 5
8. 4-inch diameter Norway Maples – 5
9. 6-inch diameter Norway Maples – 2
10. 2-inch diameter Mulberry – 1
11. 2-inch diameter Locusts – 5
12. 3-inch diameter Locusts - 2
13. Privet bushes – 3
14. Burdock plant - 1

Section W-6:

1. 1-inch diameter *Ailanthus* – 9
2. 2-inch diameter *Ailanthus* - 2
3. 3-inch diameter *Ailanthus* – 7
4. 6-inch diameter *Ailanthus* - 6
5. 8-inch diameter *Ailanthus* – 2
6. 12-inch diameter *Ailanthus* – 1
7. 1-inch diameter Norway Maples – 12
8. 2-inch diameter Norway Maples – 10
9. 3-inch diameter Norway Maples – 11
10. 4-inch diameter Norway Maples – 2
11. 6-inch diameter Norway Maples – 6
12. 10-inch diameter Locust – 1
13. 12-inch diameter Locust – 1
14. 16-inch diameter Locusts – 2
15. Privet bushes – 5

3. Removal of Vegetation and Organic Material

All trees and vegetation within this area are considered invasive and will be removed along with dead vegetation. Mature trees will be topped and their limbs chipped with the dead vegetation. The trunks will then be cut into manageable rail lengths.

4. Saving Trees and Plants

Assistance from members of the Natural Area Commission (NAC) as well as the City of Ithaca Forester has identified all trees and vegetation as being invasive and will be removed. No trees or plants will remain in this section.

5. Sedimentation Controls

Silt fence will be installed along the bottom of the slope adjacent to the parking lot. The silt fence will capture sediment from Area W-1 while the contaminated soil is being removed. If required, hay or straw bales will be placed at specific locations to provide additional sediment control. If a section of Area W-1 can't be covered with CoirTM erosion control mats by the end of the workday, then it will be covered with a plastic cover until the area can be covered with CoirTM erosion control mats. During soil disturbance, the area will be watered to maintain soil moisture that will minimize the amount of dust generated during operations.

The parking lot will be wetted with water from a hose to minimize the amount of dust and it will be swept with a power sweeper as required to reduce the amount of dirt and dust on the road.

6. Special Equipment Requirements

A vacuum truck with metal and flexible plastic hose will be used to remove lead contaminated soil. If the vacuum hose has difficulty or is unable to remove the material, a wheeled excavator (Komatsu PW270 or equivalent) will be used to loosen the contaminated material as well as to remove stumps and/or large rocks.

7. Excavation and/or Removal of Contaminated Soil

Earth Tech has completed a delineation of this area by collecting samples from three depths, i.e., surface (0 to 3-inches), 12-inches (10.5 to 13.5 inches), and 24-inches (21 to 24 inches). Each 25-foot wide area was divided into 20-foot long sections (500 square feet) and five locations were from each were sampled. These were at approximately 4-feet from each corner and at the center of each area. These five samples were analyzed individually and a composite of each 500 square foot was analyzed. The results of this delineation are:

Section W-1:

- A. No composite samples were collected from 0- to 3-inches in depth. All data were greater than 16,490 ppm.
- B. No composite samples were collected from 12-inches in depth. All data were greater than 11,300 ppm.
- C. The lead values from the two composites analyzed at the 24-inch depth were 20,370 ppm and 8,270 ppm. This section will be excavated to a 2-foot depth.

An estimated 110 cubic yards of contaminated soil will be removed from W-1

Section W-2:

- A. No composite samples were collected from 0- to 3-inches in depth. All data were greater than 2,314 ppm.
- B. No composite samples were collected from 12-inches in depth. All data were greater than 1,172 ppm.
- C. The lead values from the two composites analyzed at the 24-inch depth were 7,010 ppm and 6,100 ppm. This section will be excavated to a 2-foot depth.

An estimated 91 cubic yards of contaminated soil will be removed from W-2.

Section W-3:

- A. No composite samples were collected from 0- to 3-inches in depth. All data except one value (97 ppm) were greater than 954 ppm.
- B. No composite samples were collected from 12-inches in depth. All data except for two values (58 ppm and 150 ppm) were greater than 815 ppm.
- C. The lead values from the two composites analyzed at the 24-inch depth were 4,498 ppm and 3,990 ppm. This section will be excavated to a 2-foot depth.

An estimated 91 cubic yards of contaminated soil will be removed from W-3.

Section W-4:

- A. No composite samples were collected from 0- to 3-inches in depth. All data except three values (79 ppm, 256 ppm, and 365 ppm) were greater than 505 ppm.
- B. No composite samples were collected from 12-inches in depth. Four of the data values were greater than 764 ppm.
- C. The lead values from the two composites analyzed at the 24-inch depth were 502 ppm and 283 ppm. At least one of the values from each section was greater than 400 ppm. This section will be excavated to a 2-foot depth.

An estimated 91 cubic yards of contaminated soil will be removed from W-4.

Section W-5:

- A. The lead values from the two composites analyzed at the 0-3-inch depth were 177 ppm and 682 ppm. Both of the sections have at least one of the lead values greater than 400 ppm.
- B. The lead values from the two composites analyzed at the 12-inch depth were 37 ppm and 108 ppm. All lead values within both sections are less than 400 ppm. Therefore, this section will be excavated up to 1-foot in depth.
- C. The lead values from the two composites analyzed at the 24-inch depth were ND and ND. All lead values within both sections are less than 400 ppm.

An estimated 45 cubic yards of contaminated soil will be removed from W-5.

Section W-6:

- A. The lead values from the two composites analyzed at the 0-3-inch depth were 274 ppm and 471 ppm. Both of the sections have at least one of the lead values greater than 400 ppm.
- B. The lead values from the two composites analyzed at the 12-inch depth were 144 ppm and 114 ppm. All lead values in both sections were less than 400 ppm. Therefore, this section will be excavated up to 1-foot in depth.
- C. The lead values from the two composites analyzed at the 24-inch depth were 79 ppm and 28 ppm. All lead values within both sections are less than 400 ppm.

An estimated 45 cubic yards of contaminated soil will be removed from W-6.

In total, an estimated 473 cubic yards of contaminated soil will be removed from the Westerly Parcel.

The removal of soil will begin at the northern edge of the area and proceed to the south toward Lake Street. Earth Tech will coordinate the removal of contaminated soil from the Westerly Parcel with the owner of the Gun Hill Apartments to minimize the impact of disturbances to the parking lot.

8. Post-Excavation Soil Sampling

The disturbed area in Area W-1 of each stage will be approximately 1,250 square feet. Therefore, Earth Tech personnel will collect five composite samples consisting of five aliquots to verify that the lead contaminated soil has been removed to below the site cleanup level of an average of 400 ppm with no single samples with a concentration above 1,200 ppm. In sections where soil has been removed to bedrock, no samples will be collected

APPENDIX K

WORK PLANS

Northeast Area

AREA NE-1
DETAILED WORK PLAN
November 6, 2002

1. Description

Area NE-1 is the Northeast Area of the site, which is to the east of the fence along Area U-1 and west of the rock cut near the Ezra Cornell Tunnel. This area is approximately 50 feet long by 90 feet with contaminated soil of approximately six to twelve inches in depth. The slope of this area is relatively flat. Figure 1 shows the plan view, and Figure 48 show the details of this Northeast Area.

2. Vegetation

City of Ithaca Forester along with assistance from the Natural Area Commission (NAC) inspected Area NE-1, and identified the trees and other vegetation. Area NE-1 contains the following trees and vegetation species:

- a. 10-inch diameter Norway Maple – 1
- b. 5-inch diameter Red Maple – 1
- c. 2-inch diameter Choke Cherries – 3
- d. 1-inch diameter Shadbushes – 15
- e. 2-inch diameter Shadbushes – 5
- f. 4-inch diameter Shadbush – 1
- g. 1-inch diameter Hop Hornbeams – 6
- h. 2-inch diameter Hop Hornbeams 2
- i. 4-inch diameter Hop Hornbeam – 1
- j. 1-inch diameter Scarlet Oaks – 10
- k. 5-inch diameter Scarlet Oak – 1
- l. 1-inch diameter Black Oaks – 17
- m. 4-inch diameter Black Oak – 1
- n. 1-inch diameter Chestnut Oaks – 16
- o. 2-inch diameter Chestnut Oaks – 10
- p. 3-inch diameter Chestnut Oaks – 15
- q. 4-inch diameter Chestnut Oaks – 3
- r. 5-inch diameter Chestnut Oaks – 7
- s. 6-inch diameter Chestnut Oaks – 3
- t. 7-inch diameter Chestnut Oaks – 5
- u. 8-inch diameter Chestnut Oaks – 2
- v. 11-inch diameter Chestnut Oak – 1
- w. 13-inch diameter Chestnut Oak – 1
- x. 17-inch diameter Chestnut Oak – 1
- y. 6-inch diameter Hemlock – 1
- z. 8-inch diameter Hemlock – 1
- aa. 10-inch diameter Hemlock – 1
- bb. 1-inch diameter Striped Maples – 2

- cc. 1-inch diameter Yellow Birches – 2
- dd. 3-inch diameter Yellow Birch – 1
- ee. 4-inch diameter Yellow Birch – 1
- ff. 5-inch diameter Yellow Birch – 1
- gg. 6-inch diameter Yellow Birch – 1
- hh. 2-inch diameter White Pine – 1
- ii. 9-inch diameter White Pine – 1
- jj. 14-inch diameter White Pine – 1
- kk. Maple Leaf Viburnums - 35
- ll. Blueberries – 45
- mm. 7-inch diameter Black Locust – 1
- nn. 12-inch diameter Black Locust – 1
- oo. 15-inch diameter Black Locust – 1
- pp. Privet – 1

3. Removal of Vegetation and Organic Material

There is no appreciable amount of dead vegetation, trees limbs, leaves, etc., in Area NE-1. Some of the lead-contaminated soil is bound up with organic matter, but only in certain areas.

4. Saving Trees and Plants

The City of Ithaca Forester along with assistance from NAC have marked the trees and plants with various colored flags. The green flags indicate trees and plants that should not be disturbed during the removal activities. The trees and plants with pink flags indicate sensitive species and will be saved, as with green flagged trees and plants, whenever/wherever possible. The trees with white paint marks or white flags indicate invasive species and will be removed. For the trees that will be left undisturbed, the limbs, bark, and roots will be protected during the vacuuming of lead-contaminated soil. These trees or plants may or may not be removed:

- a. 5-inch diameter Red Maple – 1
- b. 2-inch diameter Choke Cherries – 3
- c. 1-inch diameter Shadbushes – 15
- d. 2-inch diameter Shadbushes – 5
- e. 4-inch diameter Shadbush – 1
- f. 1-inch diameter Hop Hornbeams – 6
- g. 2-inch diameter Hop Hornbeams 2
- h. 4-inch diameter Hop Hornbeam – 1
- i. 1-inch diameter Scarlet Oaks – 10
- j. 5-inch diameter Scarlet Oak – 1
- k. 1-inch diameter Black Oaks – 17
- l. 4-inch diameter Black Oak – 1
- m. 1-inch diameter Chestnut Oaks – 16
- n. 2-inch diameter Chestnut Oaks – 10

- o. 3-inch diameter Chestnut Oaks – 15
- p. 4-inch diameter Chestnut Oaks – 3
- q. 5-inch diameter Chestnut Oaks – 7
- r. 6-inch diameter Chestnut Oaks – 3
- s. 7-inch diameter Chestnut Oaks – 5
- t. 8-inch diameter Chestnut Oaks – 2
- u. 11-inch diameter Chestnut Oak – 1
- v. 13-inch diameter Chestnut Oak – 1
- w. 17-inch diameter Chestnut Oak – 1
- x. 6-inch diameter Hemlock – 1
- y. 8-inch diameter Hemlock – 1
- z. 10-inch diameter Hemlock – 1
- aa. 1-inch diameter Striped Maples – 2
- bb. 1-inch diameter Yellow Birches – 2
- cc. 3-inch diameter Yellow Birch – 1
- dd. 4-inch diameter Yellow Birch – 1
- ee. 5-inch diameter Yellow Birch – 1
- ff. 6-inch diameter Yellow Birch – 1
- gg. 2-inch diameter White Pine – 1
- hh. 9-inch diameter White Pine – 1
- ii. 14-inch diameter White Pine – 1
- jj. Maple Leaf Viburnums – 35
- kk. Blueberries – 45

5. Sedimentation Controls

Since Area NE-1 is a sensitive area with special plant species, no erosion control will be required. The work will be completed with the vacuum truck and hose by hand to minimize the surface disturbance.

If required, straw bales will be placed at specific locations cross the site to provide sediment control. If Area NE-1 can't be covered with straw by the end of the workday, then it will be covered with a tarp until the area can be covered with straw.

6. Special Equipment Requirements

A vacuum truck with hose and other attachments will be used to remove the contaminated soil. A 6-inch-diameter poly-vinyl chloride (PVC) pipeline will be laid from the vacuum truck to the Northeast Area Section NE-1 through NE-11. A flexible 6-inch diameter hose will be attached to the end of the PVC pipeline.

7. Excavation and/or Removal of Contaminated Soil

The Removal Site Assessment states there is approximately 6 to 12-inches of contamination within this area. In October to November 2002, Earth Tech collected samples along a 25-foot by 20-foot grid and analyzed the samples with an XRF. The average depth of lead-contamination is approximately 3-inches across the entire Northeast Area, and below 3-inches there is bedrock. The results indicated there is lead-contamination ranging from non-detects to 4,447 ppm. This equates to approximately 51 cubic yards of lead-contaminated soil.

One area will be completed at a time. The silt fence and other erosion controls i.e., CoirTM coconut logs; straw, etc. will also keep sediment from moving off the Northeast Area.

8. Post-Excavation Soil Sampling

The disturbed area in the Northeast Area will be approximately 4,500 square feet. The Northeast Area is divided into ten sections of approximately 500 square feet each. Five aliquots will be collected from each Section (NE-1 through NE-10). These aliquots shall be analyzed separately with the XRF, and then if all XRF values are below 400 ppm, the five aliquots will be combined into a composite sample. If any one aliquot is greater than 400 ppm, the section will be cleaned again with the vacuum truck and then the area resampled. These composite sample will be analyzed with the XRF, and they shall be submitted to a laboratory for total lead analysis. Therefore, Earth Tech personnel shall collect ten composite samples from the Northeast Area.