New York State Department of Environmental Conservation
Office of Environmental Quality, Region 5
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Alexander B. Grannis
Commissioner

November 20, 2007

Mr. Robert C. Abel, Director
Department of Public Works
City of Goversville
City Hall
3 Frontage Road
Gloversville, NY 12078-2897

Re: B00150 Risedorph Tannery
Proposed Remedial Action Plan

Dear Mr. Abel:

Enclosed for your information is a copy of the Proposed Remedial Action Plan for the Risedorph Tannery dated November 20, 2007. As discussed on Page 2 of the document, the City of Gloversville-Department of Public Works office has been identified as a repository for the document.

The public meeting to discuss the PRAP has been set for December 18, 2007 at 7 p.m. at City Hall. A Fact Sheet concerning the site and the public meeting is also enclosed for your reference.

I look forward to seeing you on December 18. If you have any concerns or questions in the interim, please feel free to contact me at (518) 897-1242.

Sincerely,

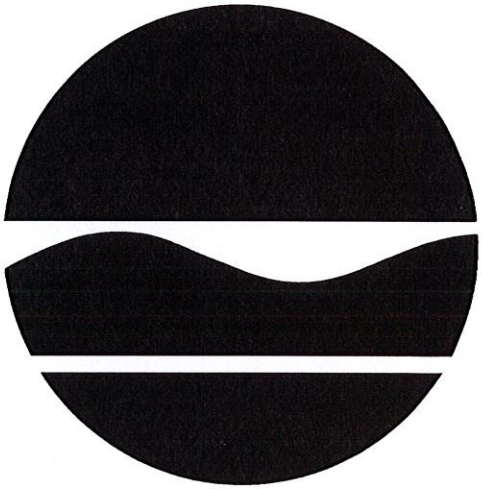
Michael P. McLean, P.E.
Environmental Engineer 2

MPM:jh
Enclosures

c: R. Huyck, RERE
J. Marx, CT Male
J. Swartwout

PROPOSED REMEDIAL ACTION PLAN
Risedorph Tannery
Environmental Restoration Project
City of Gloversville, Fulton County, New York
Site No. B00150

November 20, 2007



Prepared by:

Division of Environmental Remediation
New York State Department of Environmental Conservation

A 1996 Clean Water/Clean Air Bond Act
Environmental Restoration Project

PROPOSED REMEDIAL ACTION PLAN

Risedorph Tannery
City of Gloversville, Fulton County, New York
Site No. B00150
November 20, 2007

SECTION 1: SUMMARY AND PURPOSE OF THE PROPOSED PLAN

The New York State Department of Environmental Conservation (Department), in consultation with the New York State Department of Health (NYSDOH), is proposing a remedy for the Risedorph Tannery located at 130-146 West Eighth Avenue in the City of Gloversville, Fulton County. The presence of hazardous substances has created threats to human health and/or the environment that are addressed by this proposed remedy.

The 1996 Clean Water/Clean Air Bond Act provides funding to municipalities for the investigation and cleanup of brownfields. Brownfields are abandoned, idled or under-used properties where redevelopment is complicated by real or perceived environmental contamination. They typically are former industrial or commercial properties where operations may have resulted in environmental contamination. Brownfields often pose not only environmental, but legal and financial burdens on communities. Under the Environmental Restoration (Brownfields) Program, the state provides grants to municipalities to reimburse up to 90 percent of eligible costs for site investigation and remediation activities. Once remediated, the property can then be reused.

As more fully described in Sections 3 and 5 of this document, leather tanning operations at the site from the mid 1800s to the late 1980s have resulted in the disposal of hazardous substances, including metals (especially arsenic and trivalent chromium), volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs). These hazardous substances have contaminated the soil, sediment, and groundwater at the site, and have resulted in:

- a threat to human health associated with current and potential exposure to soil and sediment contaminated with metals, VOCs, and SVOCs. Exposure pathways include direct contact, ingestion, or inhalation (dusts).

- an environmental threat associated with metals, VOCs, and SVOCs in the soil and groundwater, and the potential migration of these materials in the groundwater.

- an environmental threat associated with metals and semivolatile organic compounds (SVOCs) in sediment, and the potential migration of these materials in surface waters.

To eliminate or mitigate these threats, the Department proposes a remedy to allow for residential use of the site. The proposed remedy includes the excavation and disposal of metals and petroleum contaminated soils and sediments, restricting the use of groundwater as a source of potable or process water without appropriate treatment, and periodic groundwater monitoring.

The proposed remedy, discussed in detail in Section 8, is intended to attain the remediation goals identified for this site in Section 6. The remedy must conform with officially promulgated standards and criteria that are directly applicable, or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, criteria and guidance are hereafter called SCGs.

This Proposed Remedial Action Plan (PRAP) identifies the preferred remedy, summarizes the other alternatives considered, and discusses the reasons for this preference. The Department will select a final remedy for the site only after careful consideration of all comments received during the public comment period.

The Department has issued this PRAP as a component of the Citizen Participation Plan developed pursuant to the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375. This document is a summary of the information that can be found in greater detail in the August 2006 "Site Investigation Report" (SI), the August 2006 "Remedial Alternatives Report" (RAR), and the August 2006 "Reference Tables", and other relevant documents. The public is encouraged to review the project documents, which are available at the following repositories:

City of Gloversville-Public Works Office
City Hall 3 Frontage Street
Gloversville, New York 12078-2897
Contact: Mr. Robert C. Abel
Telephone: (518) 773-4558
Hours: M-F 8 a.m. - 3 p.m.

Gloversville Free Library
58 East Fulton Street
Gloversville, New York 12078
Telephone: (518) 725-2819
Hours: T-W 10 a.m. - 7 p.m.
Th-F 10 a.m. - 6 p.m.
Saturday 10 a.m. - 4 p.m.

New York State Department of Environmental Conservation
Region 5 Office
PO Box 296, 1115 NYS Route 86
Ray Brook, New York 12977-0296
Contact: Michael P. McLean, P.E.
Telephone: (518) 897-1242
Hours: M-F 8 a.m. - 4 p.m.

The Department seeks input from the community on all PRAPs. A public comment period has been set from November 20, 2007 to January 3, 2008 to provide an opportunity for public participation in the remedy selection process. A public meeting is scheduled for December 18 at Gloversville City Hall beginning at 7 p.m.

At the meeting, the results of the SI/RAR will be presented along with a summary of the proposed remedy. After the presentation, a question-and-answer period will be held, during which verbal or written comments may be submitted on the PRAP. Written comments may also be sent to Mr. Michael McLean at the above address through January 3, 2008.

The Department may modify the proposed remedy or select another of the alternatives presented in this PRAP, based on new information or public comments. Therefore, the public is encouraged to review and comment on all of the alternatives identified here.

Comments will be summarized and addressed in the responsiveness summary section of the Record of Decision (ROD). The ROD is the Department's final selection of the remedy for this site.

SECTION 2: SITE LOCATION AND DESCRIPTION

The Risedorph Tannery Site is located at 130-146 West Eighth Avenue in the City of Gloversville, Fulton County. The site is approximately 13 acres in size and is bounded by one residence and wooded undeveloped land to the north, West Eighth Avenue and residences to the south, one residence and the City of Gloversville recreation area (public pool) to the west, and Wilson Street and Colonial Tanning to the east. The site is located in a relatively low traffic flow area and no major highways are located within close proximity of the site. The property is located in a predominantly residential area, however, commercial property in the immediate area includes a tannery, hair salon, art supply store, deli, and a diner. Refer to Figure 1-Site Location Map. An unnamed low flow tributary to the Cayadutta Creek runs through the property; two ponds fed by the tributary are located on the property and are identified as the Upper and Lower Ponds. The western portion of the site is wooded. Most of the tanning operations have occurred on the eastern portion of the property. Refer to Figure 2 - Surface Soil Contaminants.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The Risedorph Leather Tannery site has been used to de-hair, tan, dye, and finish animal skins since the mid 1800s. The tanning and finishing of hides involves many processes, each of which utilizes particular chemicals and generates various liquid and solid waste streams. Chemicals and products used in these processes and identified at this location include: mineral spirits, aerosols, degreaser, sulfuric acid, formic acid, nitrobenzene, tar, hydrogen peroxide, selenium, sodium hydroxide, methyl ethyl ketone, chromium, dyes, petroleum products, paints, and fungicides.

During the early years of operation and prior to the establishment of wastewater treatment facilities in Gloversville, the liquid wastes generated in the various site processes were most likely discharged directly to the tributary to the Cayadutta Creek along the southern wall of the main tannery building. In the late 1970s or possibly early 1980s, tanneries were mandated to construct and maintain wastewater pretreatment plants and monitoring stations. The pretreatment plant at Risedorph Leather began operation around 1980 with liquid waste being discharged to the Gloversville municipal sewer system. In 1984, approximately 450,000 gallons per day of wastewater was generated at the site.

In January 1983, approximately 100 gallons of concentrated sulfuric acid was spilled into the Cayadutta Creek as a result of overflow during a tank filling operation. Fish and wildlife within the stream were affected at that time.

In March 1984, a spill occurred when a hose ruptured during the unloading of a tractor-trailer. The spill material was Daxad 8-NO1, a liquid cleaning compound commonly referred to as Sytan. Sytan is used as a mild tanning solution to knit the fibers of raw skins. The Department reported the spill as a minor, unfortunate accident, and no fish were injured and environmental damage was minimal.

In the late 1980s, Risedorph Leather shut down operations. Tanning chemicals, products, and wastes were left on-site. The site was then used for leather storage with no active tanning activities. The leather storage operations ceased in the late 1990s. The City took title of the property in March of 2000 from the Feuer Leather Group, Inc. From 2002 to the present, the City of Gloversville currently uses part of the site for the Department of Public Works vehicle and equipment storage.

3.2: Remedial History

No other previous site investigations were reported to exist for the site.

SECTION 4: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past owners and operators, waste generators, and haulers.

The site has been used by various tanneries since the mid 1800s including Reliable Tanners, John Stockamore Leather Dresser, Stockamore Leather Manufacture, and Risedorph, Inc. The City took possession of the property in 2000 from the Feuer Leather Group, Inc. Legal action may be initiated at a future date by the state to recover state response costs should PRPs be identified. The City of Gloversville will assist the state in its efforts by providing all information to the state which identifies PRPs. The City will also not enter into any agreement regarding response costs without the approval of the Department.

SECTION 5: SITE CONTAMINATION

The City of Gloversville has recently completed a site investigation/remedial alternatives report (SI/RAR) to determine the nature and extent of any contamination by hazardous substances at this environmental restoration site.

5.1: Summary of the Site Investigation

The purpose of the SI was to define the nature and extent of any contamination resulting from previous activities at the site. The SI was conducted between December 2000 and November 2006. The field activities and findings of the investigation are described in the SI report.

The following activities were conducted during the SI: research of historical information; geophysical survey (ground penetrating radar) to locate potential tanks, piping, dry wells, drums, and other buried structures; inventory, characterization and disposal of abandoned materials; site survey; evaluation of floor drains and storm water system including a purported French drain; evaluation of the pre-treatment wastewater plant; investigation of underground storage tank location; evaluation of building materials, electrical motors and transformers, and an asbestos and lead-based paint survey; excavation of test pits to investigate potential environmental issues; installation of soil borings and monitoring wells for analysis of soils and groundwater, as well as physical properties of soil and hydrogeologic conditions;

sampling of 16 new monitoring wells; a survey of public and private water supply wells in the area around the site; collection of surface water, sediment, soil, structural/process wood, and vapor samples; and a fish and wildlife impact analysis.

5.1.1 Standards, Criteria, and Guidance (SCGs)

To determine whether the soil, groundwater, surface water, soil vapor, and sediments contains contamination at levels of concern, data from the investigation were compared to the following SCGs:

- Groundwater and surface water SCGs are based on June 1998 NYSDEC "Ambient Water Quality Standards and Guidance Values".
- Soil SCGs are based on the NYSDEC 6 NYCRR Part 375-6.8(b) Environmental Remediation Programs effective December 14, 2006.
- Sediments are based on the November 23, 1993 Revised March 2, 1998 NYSDEC "Technical Guidance for Screening Contaminated Sediments."
- Concentrations of VOCs in air were evaluated using the air guidelines provided by the NYSDOH guidance document titled "Guidance for Evaluating Soil Vapor Intrusion in the State of New York," dated October 2006.

Based on the SI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized in Section 5.1.2. More complete information can be found in the SI report.

5.1.2: Nature of Contamination

This section describes the findings of the investigation for all environmental media that were investigated.

As described in the SI report, many soil, groundwater, surface water, air, and sediment samples were collected to characterize the nature and extent of contamination. As summarized in Table 1, the main categories of contaminants that exceed their SCGs are volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and inorganics (metals). For comparison purposes, where applicable, SCGs are provided for each medium.

Chemical concentrations are reported in parts per billion (ppb) for water and parts per million (ppm) for waste, soil, and sediment. Air samples are reported in micrograms per cubic meter ($\mu g/m^3$).

Table 1 summarizes the degree of contamination for the contaminants of concern in air, surface water, surface soil, subsurface soil, sediments, and groundwater, and compares the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigation.

Waste Materials

A significant volume of waste materials were identified at the site. Hazardous wastes identified at the site included hazardous solids (green powder) from vat #3, gasoline and water mixtures, sulfuric acid solids from aboveground storage tanks (ASTs) #5 and #2, selenium bottoms from vats #8 and #9, tar-like waste from vat #1, leaded paint, sodium hydroxide solid, aerosol cans, degreaser, formic acid, sodium hydroxide liquid, nitrobenzene, methyl ethyl ketone, and hydrogen peroxide. Non-hazardous wastes identified included oily

debris, deer hair, #6 oil, suspect kerosene from AST #4, oily sludge, floor sweepings, dyes, steel shot, waste oil, tar-like solids, sodium bicarbonate, borax, grease, and salt. A total of 104 containers of wastes (55g drums/1 cubic yard boxes) were collected at the location. Wastes identified during the SI/RAR were addressed by the interim remedial measures (IRMs) described in Section 5.2.

Surface Soil

Surface soil at this site is defined as soil less than two inches below the vegetative cover. Analytes identified above SCGs included six SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and dibenzo(a,h)anthracene), and four metals (arsenic, trivalent chromium, barium, and lead). These six SVOCs above SCGs, ranging in concentration from 0.41 to 3.9 ppm, were only detected along the southern side of the site near the toe of the slope in the wooded area where surface water runoff from West Eighth Street is expected. As explained in the SI, these low level detections do not warrant remedial action. Barium was detected at one location only and lead was found at two locations; there was no source of these metals identified at the site. Arsenic and trivalent chromium were identified predominantly in the area of the main tannery building. As discussed in Section 8, the area of arsenic and chromium contamination will be addressed in the remedy selection process. Refer to Figure 2-Surface Soil Contaminants for specific location and concentrations.

Subsurface Soil

Subsurface soil at the site is defined as soil greater than two inches below the ground surface. Analytes identified above SCGs included five metals (arsenic, cadmium, mercury, trivalent chromium, and lead). Cadmium, lead, and mercury were detected at one or two locations only and there was no source of these metals identified at the site. The majority of the arsenic and trivalent chromium exceedences were identified in the area of the main tannery building. As discussed in Section 8, this area of arsenic and chromium contaminants will be addressed in the remedy selection process. Refer to Figure 3-Subsurface Soil Contaminants for specific location and concentrations.

Groundwater

Two sets of groundwater samples were collected from on site monitoring wells. Contaminants identified above SCGs included three VOCs (methylene chloride, m/p-xylenes and o-xylenes), one SVOC (naphthalene), and eleven metals (aluminum, antimony, arsenic, beryllium, chromium, iron, lead, magnesium, manganese, mercury, and sodium). The VOCs, naphthalene, and magnesium are located in the area of the main tannery building. There was no source of antimony, beryllium, or lead identified at the site. Mercury and sodium were historically used at the site but are not considered contaminants of concern. Additionally, the highest concentrations of mercury and sodium are located along Wilson and Eighth Streets and are not attributed to on-site activities. Arsenic and chromium were historically used on the site in abundance, are the main contaminants of concern, and are primarily in the area of the main tannery building. As discussed in Section 8, this area of arsenic and chromium contaminants will be addressed in the remedy selection process. Refer to Figure 4-Groundwater Contaminants for specific location and concentrations.

Surface Water

Aluminum and iron were the only parameters that were detected at concentrations above applicable SCGs. The highest concentrations of both of these metals were detected in the upstream samples. These contaminants are at levels that do not warrant remedial action and are not the result of past tanning activities performed at the site. Therefore, no remedial alternatives need to be evaluated for surface water.

Sediments

Two ponds (Upper, Lower) and a stream are located at the site. Both ponds are hydraulically controlled by spillways (dams) which maintains the level of the ponds at a consistent elevation. Analysis of

sediment samples from the ponds and stream found two SVOCs (benzo(k)fluoranthene and chrysene) and six metals (arsenic, trivalent chromium, copper, lead, manganese, zinc) above SCGs. SVOCs appear to be prevalent in both the Upper and Lower ponds, are very low in concentration, and do not represent a significant source of contamination. There is no information or data regarding the actual impacts to ecological resources from the concentrations of chromium and arsenic identified in the Upper Pond. All known source areas of arsenic and chromium contamination are downgradient of the Upper Pond. As discussed in Section 8, arsenic and chromium are at significant levels in the Lower pond and stream and will be addressed in the remedy selection process. Refer to Figure 5-Sediment Contaminants for specific location and concentrations.

Sediments (sand/debris from parking lot runoff) are also present in the storm water system at the site. One SVOC (benzo(a)pyrene) and several metals (magnesium, zinc, trivalent chromium, arsenic, copper, nickel) were detected in the sediments. These sediments will be addressed in the remedy selection process. Refer to Figure 6-Storm Water System Sediment Contaminants.

Soil Vapor/Sub-Slab Vapor/Air

A sub-slab vapor sample was collected in each of the three warehouses at the site. No site-related soil vapor or indoor air contamination of concern was identified during the SI/RAR. However, soil vapor samples were not collected in the area of the main tannery building where VOCs were identified in the groundwater. Additional soil vapor sampling will be performed in the main tannery building area during the remediation phase, once excavation and remediation is completed in this area. Results of the soil vapor sampling are included in Table 1.

5.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the SI/RAR. From January 2001 to December 2002, several IRMs were conducted at the site during the investigation activities and include the removal of 104 drums of hazardous and non-hazardous wastes; the closure of numerous petroleum, chemical, and process storage tanks; the removal and disposal of the contents of the pre-treatment wastewater plant; the disposal of electric motors, transformers, and light fixtures; and asbestos abatement and demolition of the main tannery building.

5.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. A more detailed discussion of the human exposure pathways can be found in Section 3 of the RA report. An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

Current and potential exposure pathways exist at the Risedorph Tannery site. Current pathways include direct contact with and ingestion of soils contaminated with heavy metals including arsenic and chromium, by persons accessing the site. In addition, dust generated from these soils could result in an inhalation exposure pathway. The site is partially fenced to restrict access to the property, but evidence of trespassing exists. Exposures could occur via contact with contaminated sediments in the lower pond and creek. Children in particular are known to access the site for fishing. However, contact with the contaminants detected in the lower pond sediments where fishing occurs is not expected to cause health effects. Public water serves the area, so contact with contaminated groundwater is not expected. Surface water and soil vapor were not found to be significantly impacted. However, additional soil vapor sampling is needed following remediation for confirmation. Physical hazards also exist at the site.

5.4: Summary of Environmental Assessment

This section summarizes the existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands.

The Fish and Wildlife Impact Analysis, which is included in the SI report, presents a detailed discussion of the existing and potential impacts from the site to fish and wildlife receptors.

Since this site is in a commercial/residential area, the likelihood of wildlife being impacted is low. Access to the Risedorph Leather site is fenced and restricted from Wilson Street.

Site contamination has also impacted the shallow groundwater aquifer. This shallow aquifer is not utilized, as the area is serviced by a public water system. No private wells are known to exist in the immediate area of the site.

Sediment samples from the Upper and Lower Ponds and the stream contain elevated levels of contaminants, especially arsenic and chromium, resulting in a viable exposure pathway to fish. There is no significant fish resource present in the ponds and tributary at this site. There is no information or data regarding the actual impacts to ecological resources from the concentrations of chromium and arsenic identified in the Upper Pond.

The following environmental exposure pathways and ecological risks have been identified:

- Sediments in the two ponds and stream contained levels of metals, especially arsenic and chromium, that are known to affect the survival of benthic organisms and to bioaccumulate. This results in reduced availability of food for forage species (i.e. fish, frogs, birds) and affects reproduction.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS AND THE PROPOSED USE OF THE SITE

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. At a minimum, the remedy selected must eliminate or mitigate all significant threats

to public health and/or the environment presented by the hazardous substances disposed at the site through the proper application of scientific and engineering principles.

The proposed future use for the Risedorph Tannery Site would be residential.

The remediation goals for this site are to eliminate or reduce to the extent practicable:

- Exposures of persons at or around the site to numerous metals (especially arsenic and trivalent chromium) and to a much lesser extent VOCs and SVOCs in surface soils, subsurface soils, sediments, and groundwater at the site.

- The further release and migration of metals (especially arsenic and trivalent chromium), and to a much lesser extent petroleum contaminants (VOCs and SVOCs) from surface and subsurface soils into the groundwater and surface waters through storm water erosion, infiltration, and/or wind borne dust.

- The further release and migration of metals (especially arsenic and trivalent chromium), and to a much lesser extent SVOCs from sediments into the surface water and tributary to the Cayadutta Creek through storm water erosion and water flow.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost-effective, and comply with other statutory requirements. Potential remedial alternatives for the Risedorph Tannery Site were identified, screened and evaluated in the RA report, which is available at the document repositories established for the site.

A summary of the remedial alternatives that were considered for this site are discussed below. The present worth represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved.

7.1: Description of Remedial Alternatives

The following potential remedies were considered to address the contaminated soils, sediments, and groundwater at the site.

Alternative 1: No Action

Present Worth: *$150,000*
Capital Cost: *$120,000*
Annual O&M:
(Years 1-5): *$2,000*
(Years 5-30): *$2,000*

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. It requires continued monitoring only, allowing the site to remain in an unremediated state. This alternative would leave the site in its present condition and would not provide any additional protection

to human health or the environment. The capital cost of $120,000 represents the cost for the construction of a fence around the former tannery area, the two ponds and the stream.

Alternative 2: Soil Barrier To Contact For Contaminated Areas With Institutional Controls

Present Worth: *$530,000*
Capital Cost: *$508,000*
Annual O&M:
(Years 1-5): *$2,000*
(Years 5-30): *$2,000*

This alternative would place a protective soil barrier over all areas of contamination (metals, VOCs, SVOCs) at the site. Contaminated soils at the site would be covered with at least two feet of clean soil cover. Top soil and grass would be placed on top of the soil cover. The grassed soil cover would require periodic maintenance (O&M). Since this alternative would leave contaminated soil on site, institutional controls in the form of an environmental easement would be required to notify future owners and/or developers of the restricted use of the property.

Optional Protective cover possibilities for Alternative 2 would be: concrete sidewalks, asphalt/concrete parking lots, building footprints, or other acceptable strategies that provide a barrier to human contact with the contaminated soils. Any excavated contaminated soil, needed to implement an acceptable alternative protective cover, would be analyzed and properly disposed of according to Department regulations.

Clean out of sediment identified in the storm water drainage system would occur; no sediment removal would occur in the ponds and stream. Groundwater sampling of select monitoring wells on a periodic basis would occur to monitor residual contaminants, including volatiles, semivolatiles, arsenic and trivalent chromium. An environmental easement on groundwater usage and future use and development are included with this alternative. Refer to Figure 7-Remedial Alternative 2 Soil Barrier to Contact.

The time to design the remedy and implement the remedy would be a matter of a few months. Specific remediation goals are not pursued under this alternative.

Alternative 3: Limited Excavation of Contaminated Soils and Sediments and Soil Barrier To Contact for Remaining Contaminated Areas With Institutional Controls

Present Worth: *$5,477,000*
Capital Cost: *$5,455,000*
Annual O&M:
(Years 1-5): *$2,000*
(Years 5-30): *$2,000*

This alternative would excavate areas of arsenic and chromium contaminated soils and sediments to levels of 30 ppm for arsenic and 1,500 ppm for chromium. These levels were chosen as a means to remove the most severe contaminants, or hotspots, as discussed in the Remedial Alternatives Report. Areas with co-mingled contamination result in arsenic being the driving clean-up factor. Thus, by achieving remediation goals for arsenic, remediation goals for all other contaminants would be achieved, including chromium and low level VOC's and SVOCs. This alternative would result in the excavation and disposal of approximately 27,600 tons of contaminated soils and sediment. A protective soil barrier would be placed over all remaining areas of contamination (metals, VOCs, SVOCs) at the site. Contaminated soils at the site would be covered with at least two feet of soil cover. Top soil and grass would be placed over of the

soil cover. The grassed soil cover would require periodic maintenance (O&M). Since this alternative would leave contaminated soil on site, institutional controls in the form of an environmental easement would be required to notify future owners and/or developers of the presence of contamination and to restrict use of the property.

Optional protective cover possibilities for Alternative 2 would be: concrete sidewalks, asphalt/concrete parking lots, building footprints, or other acceptable strategies that provide a barrier to contact with the contaminated soils. Any excavated contaminated soil needed to implement an acceptable alternative protective cover would be properly disposed of according to Department regulations.

All contaminated sediment above SCGs would be removed in the stream along the former main tannery building. Also, the Lower pond would be remediated to be of concentration and quality of contaminant levels identified in the Upper pond (to levels of 30 mg/kg or less for both arsenic and chromium). Additionally, clean out of sediment identified in the storm water drainage system would occur. Groundwater sampling of select monitoring wells on a periodic basis would occur to monitor residual groundwater contaminants, including volatiles, semivolatiles, arsenic and trivalent chromium. An environmental easement on groundwater usage and future use and development are included with this alternative. Refer to Figure 8 - Remedial Alternative 3 Limited Excavation and Soil Barrier to Contact.

The time to design the remedy and implement the remedy would be a matter of several months. Specific remediation goals under this Alternative can be defined as removal of areas of highly to moderately elevated contaminants.

Alternative 4: Excavation of all Contaminated Soil Above SCGs and Targeted Sediment Removal

Present Worth: *$6,094,000*
Capital Cost: *$6,072,000*
Annual O&M:
(Years 1-5): *$2,000*
(Years 5-30): *$2,000*

This alternative would excavate areas of arsenic and chromium contaminated soils to levels of 16 ppm arsenic and 36 ppm for trivalent chromium, which would meet requirements for residential usage. Areas with co-mingled contamination result in arsenic being the driving clean-up factor. Thus, by achieving remediation goals for arsenic, remediation goals for all other contaminants would be achieved, including chromium and low level VOCs and SVOCs. This alternative would result in the excavation and disposal of approximately 41,000 tons of contaminated soils and sediment. A protective soil barrier would not be needed as all contaminated media above SCGs would be removed. The excavated area would be backfilled, and top soil and grass would be placed as cover. Additionally, soil vapor sampling will occur in the main tannery building area during the remediation phase, once excavation and remediation is completed in this area.

All contaminated sediment would be removed in the stream along the former main tannery building to meet Lowest Effect Levels for sediments. Also, the Lower Pond would be remediated to be of concentration and quality to contaminant levels identified in the Upper Pond (to levels of 30 ppm or less for both arsenic and chromium). These levels would meet the Severe Effect Levels of 33 ppm for arsenic and 110 ppm for chromium, and also meet the Lowest Effect Level for chromium of 26 ppm. There is no information or data regarding the actual impacts to ecological resources from the concentrations of chromium and arsenic identified in the Upper Pond. Additionally, clean out of sediment identified in the

storm water drainage system would occur. Refer to Figure 9 -Remedial Alternative 4 Complete Soil Excavation and Targeted Sediment Removal.

Groundwater contamination will be partially addressed during the excavation process, as excavation will occur to depths below static groundwater levels. Excess groundwater encountered during soil excavation will be pumped, treated to remove contamination, and disposed of properly. Further reduction in contaminant concentrations in groundwater is anticipated through natural attenuation, since the soils acting as a source will be removed.

Since the remedy results in very low levels of hazardous substances remaining at the site in the soil and groundwater, a long term monitoring program would be instituted. Select groundwater monitoring wells will be sampled on a periodic basis, as determined by the Department. This program would allow the effectiveness of the contaminated soil excavation to be monitored and would be a component of the operation, maintenance, and monitoring for the site. Environmental easements on groundwater usage and future use and site development are included with this alternative.

The time to design the remedy and implement the remedy is expected to be on the order of one to two years. Specific remediation goals under this Alternative can be defined as removal of all contaminants above SCGs. This alternative would allow for residential usage of the property.

Alternative 5: On-Site Stabilization and Groundwater Treatment With Institutional Controls

Present Worth: *$8,737,000*
Capital Cost: *$8,505,000*
Annual O&M:
(Years 1-10): *$32,000*
(Years 11-30): *$2,000*

This alternative is offered as a comparison to contaminated soil excavation and disposal. This alternative would involve the active pumping and treating of VOC and SVOC contaminated groundwater, predominantly in the area of the main tannery building, and the injection of chemicals to bind metal contaminants and further deter migration of the contaminants via ex-situ and/or in-situ methods. This alternative would remediate all contamination areas (metals, SVOCs, VOCs) to meet SCG levels.

Groundwater sampling of select monitoring wells on a periodic basis would occur to monitor residual contaminants, including volatiles, semivolatiles, chromium, and arsenic. An environmental easement on groundwater usage, future use and development, and indoor air issues are included with this alternative. Refer to Figure 10-Alternative 5 On-Site Stabilization/Groundwater Treatment.

The time to design the remedy and implement the remedy would be a matter of several years. Specific remediation goals under this Alternative can be defined as removal and binding of all site contaminants to meet SCGs.

7.2 Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of environmental restoration projects in New York State. A detailed discussion of the evaluation criteria and comparative analysis is included in the RA report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

5. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

7. Cost-Effectiveness. Capital costs and operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision. The costs for each alternative are presented in Table 2.

This final criterion is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

8. Community Acceptance. Concerns of the community regarding the SI/RA reports and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

SECTION 8: SUMMARY OF THE PROPOSED REMEDY

The Department is proposing Alternative 4: Complete Soil Excavation and Targeted Sediment Removal as the remedy for this site. The elements of this remedy are described at the end of this section. The proposed remedy is based on the results of the SI and the evaluation of alternatives presented in the RAR.

Alternative 4 is proposed due to the residential site usage consistent with the City's redevelopment objectives and existing zoning. It also best satisfies the site specific threshold criteria, and it provides the best balance of the primary balancing criteria as described in Section 7.2. It would achieve the remediation goals for the site by removing all contaminated soils above SCGs preventing any threat to public health and the environment. It would drastically reduce any contamination in the groundwater, and by removing contaminated sediments would protect the surface waters of the tributary of the Cayadutta Creek. Single family housing would be able to occur on the property. Restrictions on groundwater will occur with this alternative.

Alternative 1 would involve no further investigation or reduction of contaminants, no barrier to contact, and would incur an expense of periodic monitoring of several groundwater wells located throughout the facility. Site usage would be severely restricted.

Alternative 2 also would involve no further investigation or reduction of contaminants, but would provide a barrier to contact. Significant arsenic contamination has been identified on the site, and may be a continuing source of groundwater and surface water contamination. Site usage would be severely restricted.

Alternative 3 would involve the excavation of highly contaminated soils, removing the soils that create the most significant threat to public health and the environment. It would also reduce the source of contamination to the groundwater and protect the surface waters of the tributary to the Cayadutta, and would provide a barrier to contact to the remaining contaminants. However, it would not allow for single family housing due to contaminated soils remaining at the site. Restricted-residential, commercial, or industrial use, as described in 6NYCRR Part 375.1.8(g), would be allowed.

Alternatives 2-4 would all have short-term impacts which can be easily controlled. The time needed to achieve the remediation goals would be longest for Alternative 5 and very similar for Alternatives 3 and 4.

Achieving long-term effectiveness would best be accomplished by excavation and removal of the contaminated overburden soils (Alternatives 3 and 4). Alternative 4 is favorable because it will result in removal of all soil above SCGs and sediments above Severe Effect Level, thereby preventing groundwater and surface water contamination to the extent practical.

Alternative 4 is favorable in that it will be readily implementable. Alternatives 1, 2 and 3 would also be achievable. The implementability of Alternative 5 would be much more complex and uncertain.

Alternative 4 will reduce the volume of waste on-site, addressing all areas of the soil and sediment contamination. Approximately 41,000 tons of material would be removed with Alternative 4. Alternative 3 would remove approximately 27,600 tons of contaminated soil. Groundwater quality will be improved with the excavation and dewatering activities. Contaminated soil would remain in the saturated and unsaturated zones with Alternative 3.

In an effort to avoid excavation and off site disposal, treatment on site consisting of groundwater treatment for petroleum contaminated areas and soil stabilization of areas of metal contamination (arsenic and

chromium) is considered in Alternate 5. Groundwater treatment would occur over a period of years, and would be maintenance and sampling intensive. On site stabilization via chemical injection would be initially labor and engineering intensive, but would achieve improved levels of compliance with SCGs in that the contaminants would be physically and chemically bound within a solidified matrix or converted into a more immobile form using a chemical reaction.

The cost of the alternatives varies significantly. Although barrier to contact only (Alternative 2) would be less expensive than excavation (Alternatives 3 and 4) or treatment (Alternative 5), it is not an acceptable remedy. Alternative 4 is very favorable because it is a remedy that would eliminate any source of groundwater and surface water contamination at the site, from petroleum, chromium, and arsenic contaminated areas. Treatment (Alternative 5) is the most costly remedy.

The estimated present worth cost to implement the remedy is $6,094,000. The cost to construct the remedy is estimated to be $6,072,000. The estimated average annual operation, maintenance, and monitoring costs for 10 years of $2000.

The elements of the proposed remedy are as follows:

1. A remedial design program would be implemented to provide the details necessary for the preparation of the design and bid documents to execute, construction, operation, maintenance, and monitoring of the remedial program. It should be noted that other alternatives to disposal of the 41,000 tons of material at the Fulton County Landfill were pursued and found impractical. As it is in the best interest of parties involved to pursue alternative disposal methods with changes in technology, the use of alternative methods will be re-evaluated during the remediation design phase.

2. The elements of the remedy program would consist of :

   - excavation and proper disposal of 32,300 tons of arsenic, trivalent chromium, VOCs, and SVOCs contaminated soils, predominantly near the former main tannery building.

   -excavation and proper disposal of 8,700 tons of arsenic and trivalent chromium contaminated sediments from the Lower pond and stream.

   -the excavated area would be backfilled and covered with top soil and grass.

   - soil vapor sample(s) will be collected in the main tannery building area during the remediation phase, once excavation and remediation is completed in this area.

3. Imposition of an institutional control in the form of an environmental easement that would require (a) limiting the use and development of the property to residential use, which would also permit commercial and industrial in accordance with local zoning use; (b) compliance with the approved site management plan; (c) restricting the use of groundwater and surface water as a source of potable water, without necessary water quality treatment as determined by NYSDOH; and (d) the property owner to complete and submit to the Department a periodic certification of institutional and engineering controls.

4. Development of a site management plan, which would include the following institutional and engineering controls: (a) monitoring of contaminant levels in groundwater; (b) identification of any use restrictions for the site; and (c) provisions for the continued proper operation and maintenance of the components of the remedy.

5. The property owner would provide a periodic certification of institutional controls, prepared and submitted by a professional engineer or such other expert acceptable to the Department will be provided until the Department notifies the property owner in writing that this certification is no longer needed. This submittal would (a) contain certification that the institutional controls put in place are still in place and are either unchanged from the previous certification or are compliant with Department-approved modifications; (b) allow the Department access to the site, and (c) state that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan unless otherwise approved by the Department.

Since the remedy results in very low levels of hazardous substances remaining at the site, a long term monitoring program would be instituted. Select groundwater monitoring wells will be sampled on a periodic basis, as determined by the Department. This program would allow the effectiveness of the contaminated soil excavation to be monitored and would be a component of the operation, maintenance, and monitoring for the site.

TABLE 1
Nature and Extent of Contamination
October 2000 - December 2006

SURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Semi-volatile Organic Compounds (SVOCs)	Benzo(a)anthracene	ND[d] to 3.6	1	2 of 38
	Benzo(a)pyrene	ND to 3.1	1	2 of 38
	Benzo(b)fluoranthrene	ND to 3.9	1	2 of 38
	Benzo(k)fluoranthrene	ND to 1.4	1	1 of 38
	Chrysene	ND to 3.4	1	2 of 38
	Dibenzo(a,h)anthracene	ND to 0.41	0.33	1 of 38
Inorganic Compounds	Arsenic	2.1 to 4,210	16	6 of 38
	Barium	16.7 to 387	350	1 of 38
	Chromium, trivalent	6 to 2,070	36	11 of 38
	Lead	1.4 to 641	400	2 of 38

SUBSURFACE SOIL	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Arsenic	0.9 to 16,400	16	55 of 88
	Cadmium	ND to 16.400	2.5	1 of 72
	Chromium, trivalent	4.9 to 2,970	36	40 of 77
	Lead	1.7 to 1,280	400	2 of 72
	Mercury	ND to 3.7	.81	2 of 72

TABLE 1
Nature and Extent of Contamination (Continued)

GROUNDWATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Methylene Chloride	ND to 6.3 ND	5	3 of 16 (Jan. 2001) 0 of 2 (May 2002)
	O-Xylene	ND to 13 ND to 10	5	1 of 16 (Jan. 2001) 1 of 2 (May 2002)
	M/P-Xylene	ND to 1.8 ND to 14	5	0 of 16 (Jan. 2001) 1 of 2 (May 2002)
Semivolatile Organic Compounds (SVOCs)	Naphthalene	ND to 13 6.6. to 160	10	1 of 16 (Jan. 2001) 1 of 2 (May 2002)
Inorganic Compounds	Aluminum	115 to 76,600 34.3 to 410,000	2,000	9 of 16 (Jan. 2001) 10 of 15 (May 2002)
	Antimony	ND to 20.3 ND to 6	3	1 of 16 (Jan. 2001) 3 of 15 (May 2002)
	Arsenic	ND to 2,950 ND to 4,510	25	8 of 16 (Jan. 2001) 11 of 15 (May 2002)
	Beryllium	ND to 3.7	3	1 of 16 (Jan. 2001) 2 of 15 (May 2002)
	Chromium	ND to 1,010 3.2 to 488	50	2 of 16 (Jan. 2001) 6 of 15 (May 2002)
	Iron	117 to 129,000 172 to 785,000	300	15 of 16 (Jan. 2001) 14 of 15 (May 2002)
	Lead	ND to 240 2.8 to 158	25	1 of 16 (Jan. 2001) 3 of 15 (May 2002)
	Magnesium	2,710 to 84,200 2,520 to 653,000	35,000	4 of 16 (Jan. 2001) 4 of 15 (May 2002)
	Manganese	66 to 12,800 40.6 to 17,200	300	8 of 16 (Jan. 2001) 8 of 15 (May 2002)
	Mercury	ND to 1.5 ND to 1	0.7	4 of 16 (Jan. 2001) 1 of 15 (May 2002)
	Sodium	2,290 to 2,220,000 2,980to 915,000	20,000	13 of 16 (Jan. 2001) 12 of 15 (May 2002)

TABLE 1
Nature and Extent of Contamination (Continued)

SURFACE WATER	Contaminants of Concern	Concentration Range Detected (ppb)[a]	SCG[b] (ppb)[a]	Frequency of Exceeding SCG
Inorganic Compounds	Aluminum	241 to 562	100	4 of 4
	Iron	553 to 894	300	4 of 4

SEDIMENTS	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
Semi-volatile Organic Compounds (SVOCs)	Benzo(k)fluoranthene	ND to 1.4	1.3	1 of 14 (Feb. 2002)
	Chrysene	ND to 1.4	1.3	1 of 14 (Feb. 2002)
Inorganic Compounds	Arsenic	29.1 to 64 12 to 75.1 2.8 to 202	LEL[c] - 6	4 of 4 (Jan. 2001) 14 of 14 (Feb. 2002) 16 of 28 (Mar. 2006)
			SEL[c] - 33	2 of 4 (Jan. 2001) 2 of 14 (Feb. 2002) 3 of 28 (Mar. 2006)
	Chromium, trivalent	25 to 449 25.6 to 1,690 4.3 to 7,870	LEL - 26	3 of 4 (Jan. 2001) 11 of 14 (Feb. 2002) 11 of 28 (Mar. 2006)
			SEL - 110	1 of 4 (Jan. 2001) 4 of 14 (Feb. 2002) 2 of 28 (Mar. 2006)
	Copper	10.2 to 104 8.1 to 31.2	LEL - 16	3 of 4 (Jan. 2001) 8 of 14 (Feb. 2002)
			SEL - 110	0 of 4 (Jan. 2001) 0 of 14 (Feb. 2002)
	Lead	11.4 to 68.9 11.8 to 77	LEL - 33	2 of 4 (Jan. 2001) 9 of 14 (Feb. 2002)
			SEL - 110	0 of 4 (Jan. 2001) 0 of 14 (Feb. 2002)
	Manganese	172 to 1,230 129 to 896	LEL - 460	2 of 4 (Jan. 2001) 10 of 14 (Feb. 2002)
			SEL - 1,100	1 of 4 (Jan. 2001) 0 of 14 (Feb. 2002)

TABLE 1
Nature and Extent of Contamination (Continued)

SEDIMENTS	Contaminants of Concern	Concentration Range Detected (ppm)[a]	SCG[b] (ppm)[a]	Frequency of Exceeding SCG
	Zinc	56.9 to 291 57 to 254	LEL - 120	3 of 4 (Jan. 2001) 9 of 14 (Feb. 2002)
			SEL - 270	1 of 4 (Jan.2001) 0 of 14 (Feb. 2002)

SOIL VAPOR	Contaminants of Concern	Concentration Range Detected (µg/m^3)[a]	SCG[b] (µg/m^3)[a]	Frequency of Exceeding SCG
Volatile Organic Compounds (VOCs)	Dichloro-difluoromethane	ND to 0.4	NA	NA
	Chloromethane	ND to 0.93	NA	NA
	Trichloro-fluoromethane	ND to 84	NA	NA
	Acetone	29 to 88	NA	NA
	Carbon Disulfide	ND to 3.7	NA	NA
	Methyl Tert-butyl Ether	2.2 to 4.4	NA	NA
	Chloroform	ND to 2.5	NA	NA
	Cyclohexane	ND to 2.4	NA	NA
	Benzene	ND to 1.8	NA	NA
Volatile Organic Compounds (VOCs) (cont.)	n-Heptane	6 to 8.3	NA	NA
	Toluene	4.5 to 8.3	NA	NA
	Ethylbenzene	0.91 to 1.5	NA	NA
	Xylene (m,p)	2.1 to 3.8	NA	NA
	Xylene (o)	0.69 to 1.4	NA	NA
	4-Ethyltoluene	ND to 0.84	NA	NA
	1,2,4-Trimethylbenzene	ND to 1.1	NA	NA

TABLE 1
Nature and Extent of Contamination (Continued)

[a] ppb = parts per billion, which is equivalent to micrograms per liter, ug/L, in water;
ppm = parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
ug/m^3 = micrograms per cubic meter

[b] SCG = standards, criteria, and guidance values; {list SCGs for each medium}

[c] LEL = Lowest Effects Level and SEL = Severe Effects Level. A sediment is considered to be contaminated if either of these criteria is exceeded. If both criteria are exceeded, the sediment is severely impacted. If only the LEL is exceeded, the impact is considered to be moderate.

[d] ND = no contaminants detected above method detection limit

Table 2
Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
No Action	$119,700	$2,000	$150,445
Soil Barrier To Contact	$391,224	$2,000	$421,989
Limited Excavation	$5,291,501	$2,000	$5,322,246
Complete Excavation	$6,072,248	$2,000	$6,102,993
GW Treatment/Stabilization	$8,341,062	$32,000	$8,603,458