FOCUSED FEASIBILITY STUDY

STAUFFER MANAGEMENT COMPANY
SKANEATELES FALLS SITE
4512 JORDAN ROAD
SKANEATELES FALLS, NEW YORK

NYSDEC SITE NO. 7-34-010

Prepared for:
Stauffer Management Company, LLC
1800 Concord Pike
Wilmington, DE 19850-5437

Prepared by:

16 Computer Drive West
Albany, New York 12205

REVISED
March 2013

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DEFINITIONS

6 NYCRR	Title 6 New York Codes, Rules and Regulations
AEC	Area of Environmental Concern
AOI	Area of Interest
ARAR	Applicable or Relevant and Appropriate Requirement
AROD	Amended Record of Decision
CAMU	Corrective Action Management Unit
Commercial Use	Anticipates a future site use by businesses with the primary purpose of buying, selling or trading of merchandise or services. Commercial use restricts the use of a site to commercial activities including the buying and /or selling of goods or services and requires a Site Management Plan (SMP) to manage any remaining soil contamination and document the institutional/engineering controls implemented as part of the approved remediation.
CSCO	Commercial Use Soil Cleanup Objective as set forth in 6 NYCRR Part 375 6.8 (b). Applicable standard for soil the top two (2) feet of soil outside of 25 feet of Skaneateles Creek.
CY	Cubic Yard
DER-10	Division of Environmental Remediation, DER-10, Technical Guidance for Site Investigation and Remediation
Engineering Control (EC)	A physical barrier or method employed to actively or passively contain, stabilize, or monitor contamination, restrict the movement of contamination to ensure the long-term effectiveness of a remedial program, or eliminate potential exposure pathways to contamination. Engineering controls relevant to this document include soil covers.
ESCO	Ecological Use Soil Cleanup Objective as set forth in 6NYCRR Part 375 6.8 (b). Applicable standard for the top two (2) feet of soil within 25 feet of Skaneateles Creek.
FFS	Focused Feasibility Study
IC/EC	Institutional Controls and Engineering Controls

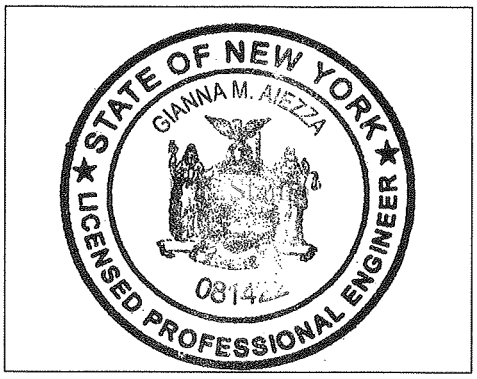
Industrial Use	Anticipates a future site use for the primary purpose of manufacturing, production, fabrication or assembly processes and ancillary services. The industrial use category allows the use of the site only for industrial purposes with access to the site limited to workers or occasional visitors; requires a SMP to manage remaining soil contamination and institutional/engineering controls at the site.
Institutional controls (IC)	A non-physical means of enforcing a restriction on the use of real property that limits human or environmental exposure, restricts the use of groundwater, provides notice to potential owners, operators, or members of the public, or prevents actions that would interfere with the effectiveness of a remedial program or with the effectiveness and/or integrity of site management activities at or pertaining to a site. Examples include deed restrictions and a Site Management Plan.
IRM	Interim Remedial Measure
ISCO	Industrial Use Soil Cleanup Objective as set forth in 6NYCRR Part 375 6.8 (b). Applicable standard for soil below two (2) feet.
NYCRR	New York Code of Rules and Regulations
NYSDEC	New York State Department of Environmental Conservation
O&M	Operation and Maintenance
PAH	Polynuclear aromatic hydrocarbon/ Polycyclic aromatic hydrocarbon
PCB	Polychlorinated Biphenyl
RAO	Remedial Action Objectives
ROD	Record of Decision
SCC	Stauffer Chemical Company
SCG	Standards, Criteria, and Guidance. Refers to soil cleanup standards in the 2001 AROD
SCO	Soil Cleanup Objective. Includes ISCO, CSCO, and ESCO, and refers to the currently proposed soil cleanup standards.
SI	Phase II Supplemental Investigation, conducted 2009-2010
SI/RA	Supplemental Investigation and Remedial Activities, conducted 2006-2007

SMC	Stauffer Management Company, LLC
SMP	Site Management Plan
SVOC	Semi-volatile Organic Compound
TAL	Target Analyte List
TCL	Target Compound List
Unrestricted Use	Unrestricted use means a use without imposed restrictions such as environmental easements, deed restrictions or other land use controls.
VOC	Volatile Organic Compound

ENGINEER'S CERTIFICATION

I, Gianna Aiezza, certify that I am currently a NYS registered professional engineer, this Focused Feasibility Study was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the Division of Environmental Remediation Technical Guidance for Site Investigation and Remediation (DER-10), and all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.

Gianna M. Aiezza
Name



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Signature

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Date

1.0 INTRODUCTION

Envirospec Engineering, PLLC (Envirospec), has prepared this Focused Feasibility Study (FFS) to evaluate a modification of the remedial action for the Stauffer Management Company, LLC (SMC) Skaneateles Falls Site (Site) located on Jordan Road in Skaneateles Falls, NY. The FFS provides a detailed and comprehensive review, analysis and comparison of two approaches to site remediation following procedures established by the New York State Department of Conservation (NYSDEC). This analysis shows that the proposed commercial use remedy mitigates environmental impacts, limits the degree of post-closure care, promotes a beneficial re-use of the property, and is protective of human health and the environment. The proposed modification consists of altering the future end use of the site from an unrestricted use to a commercial use and application of appropriate Soil Cleanup Objectives (SCOs) at the site.

Under the proposed modification to the existing site remedy, commercial SCOs (CSCOs), industrial SCOs (ISCOs), and ecological SCOs (ESCOs) are to be applied to specific areas of the site based on soil location and depth. Specifically, CSCOs will be applicable to the top two (2) feet of soil and sediment located outside of 25 feet of Skaneateles Creek, ESCOs will be applicable to the top two (2) feet of soil and sediment located within 25 feet of Skaneateles Creek, and ISCOs will be applicable to all soils located below two (2) feet. This soil cleanup scenario is pursuant to a commercial end use for the Site.

1.1 Purpose and Scope

The purpose of this FFS is to amend the existing Site remedy as outlined in the 2001 Amended Record of Decision (AROD) to allow for a future commercial use. The current remedial action for the Site will continue to consist of excavation and off-site disposal of impacted soil and sediment and the use of engineering controls (ECs) such as soil covers and institutional controls (ICs) such as deed restrictions and a Site Management Plan (SMP) that ensures the long term integrity of the engineering controls. The proposed change limits the future use of the Site to commercial use and will continue to reduce, eliminate and control residual chemical constituents in Site soils and sediments. This FFS addresses soil remediation only and does not directly address the groundwater component of the 2001 AROD remedy.

Throughout this report, the remedy outlined in the 2001 AROD to remediate the Site to allow for unrestricted use is referred to as the Unrestricted Use Remedy and the proposed new remedial action outlined in this document is referred to as the Commercial Use Remedy.

2.0 SITE DESCRIPTION AND BACKGROUND INFORMATION

The Site is located in central New York State in the Town of Skaneateles Falls, Onondaga County, as shown on attached Drawing L-1. The property is located at 4512 Jordan Road, approximately three (3) miles north of Skaneateles Lake and approximately 20 miles west of the City of Syracuse. The Site encompasses an area of approximately 120 acres. The property is divided into two (2) unequal portions by Skaneateles Creek.

The focus of this report is approximately 20 acres located along Skaneateles Creek and includes the former manufacturing operation areas, the former landfill and former settling ponds and sludge lagoons, located on the eastern portion of the property. The Site is bounded to the west and north by a mix of residential and commercial properties. To the east and south are undeveloped properties.

In March 1996, a Record of Decision (ROD) was issued for the Site by the New York State Department of Environmental Conservation (NYSDEC). The ROD outlined a remedy for the Site to treat soil contaminated with volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) by constructing an on-site, engineered treatment and disposal cell, designated as a Corrective Action Management Unit (CAMU). Under the ROD, shallow groundwater was be extracted and treated via an on-site groundwater treatment system. Based upon data available at the time, the ROD called for the excavation and treatment/disposal of approximately 60,000 cubic yards (CY) of contaminated soil. After issuance of the ROD, the first step of the remedial action was designing and constructing the groundwater extraction system, which was completed in 1999. The remedial alternative outlined in the 1996 ROD for deep groundwater was monitoring with the future possibility of treatment. The groundwater treatment system continues to operate at the Site.

As activities involving groundwater remediation progressed, investigation into the nature and extent of soil contamination at the Site was conducted. In 2000, based upon SMC's submittal of supplemental information and the NYSDEC's review of that information, it was determined that the waste material at the Site could be disposed of at a 6 NYCRR Part 360 landfill (soil waste landfill) if the waste passed characteristic testing for ignitability, corrosivity, reactivity, and toxicity, as well as testing for PCBs. Based on soil sampling results, it was believed that the majority of Site wastes could meet the testing requirements and be disposed of off-site at a solid waste facility rather than at a hazardous waste (6 NYCRR Part 373) facility. As a result, off-site disposal became a more economically feasible and viable solution for Site soil.

With the potential for greatly reduced off-site disposal costs and a change in the intended future property use, it was decided that a change in the remedy for the project should be evaluated. In May 2001, SMC submitted a Focused Feasibility Study (FFS) to the NYSDEC that evaluated off-site

disposal of soil and sediments. After review and approval of the FFS, the NYSDEC issued an AROD in December 2001 which identified off-site disposal as the preferred remedy for contaminated soils and sediments at the Site.

Between the 1996 ROD and 2001 AROD, eight (8) areas of environmental concern (AECs) were identified for remediation. Five (5) AECs (AEC-1 through AEC-5) were included in the original 1996 ROD and three (3) additional AECs (6, 7, and 8) were included in the 2001 AROD as a result of additional investigations. The eight AECs at the Site are identified as follows:

- AEC-1 Former Landfill
- AEC-2 Area North of the Main Plant Building
- AEC-3 Shallow Groundwater (overburden and upper bedrock)
- AEC-4 Deep Groundwater (deep bedrock)
- AEC-5 Skaneateles Creek (seeps, surface water and sediments)
- AEC-6 Main Plant Building
- AEC-7 Area in Front of the Main Plant Building
- AEC-8 South Plant Area (divided into 8A, 8B and 8C)

The change in the remedy for the Site in 2001 did not affect AEC-3 or AEC-4. The proposed changes outlined in this FFS will also not affect AEC-3 or AEC-4 and the groundwater treatment system will continue to operate at the Site until the NYSDEC grants approval to discontinue its operation.

2.1 Historical Operations

The Site was formerly used to manufacture potassium silicates, detergents, and organic intermediates for other industries. The principal organic compound manufactured at the Site was toluic acid, which used xylene as a raw material. Currently there are no manufacturing activities conducted at the Site.

The facility was built in the mid-1920s by Draycott Mills, which manufactured felt roofing materials. Cowles Chemical Company bought the property in the mid-1940s and manufactured potassium and sodium silicates and industrial detergents. Organic compounds were manufactured at the facility from the late 1950s to 1981. Stauffer Chemical Company (SCC) purchased the facility in the late 1960s and continued operations until 1985.

3.0 SUMMARY OF SITE CONDITIONS

Numerous environmental investigations have been conducted at the Site since it was first investigated in 1986. Since issuance of the ROD in 1996 and the 2001 AROD, several remedial

actions have been performed in the eight (8) AECs. More than 380,000 tons of contaminated soil have been removed and properly disposed of off-site since soil and groundwater remediation activities began over 15 years ago.

In 2006 and 2007, Supplemental Investigation and Remedial Activities (SI/RA) were completed. The SI/RA was conducted in response to a request from the NYSDEC that SMC complete a supplemental investigation to determine if there were additional sources of contamination at the Site. In addition to further remedial work in several AECs, seven (7) new Areas of Investigation (AOIs) were identified during the SI/RA which included the following:

- AOI-1 Area East of AEC-2, across Skaneateles Creek
- AOI-2 Area around AEC-2 satellite area
- AOI-3 Area North of AEC-2
- AOI-4 Northern area of the Site (between Skaneateles Creek and the property line)
- AOI-5 Area between AEC-8A and the Creek
- AOI-6 Former Settling Ponds and Sludge Lagoons
- AOI-7 Off-site

During the SI/RA work, 12,740 tons of material were excavated and disposed of off-site. A total of 30 test pits were excavated, 40 soil borings were completed and 141 samples were collected. As a result of the SI/RA, Lagoon 1 and the former oil spill area were remediated as Interim Remedial Measures (IRMs).

Following the SI/RA, a Phase II Supplemental Investigation (SI) was performed after the NYSDEC requested further delineation of the nature and extent of remaining contamination in areas that had been previously investigated and to investigate additional areas of the Site. The SI was completed at the end of 2009 and early 2010. The SI consisted of a soil boring investigation and groundwater investigation, with a total of 157 soil borings completed, over 350 soil samples collected, and 56 new monitoring wells installed.

3.1 Nature and Extent of Contamination

Site soils have been extensively tested for Target Compound List (TCL) organics including toluic acid and Target Analyte List (TAL) Metals including cyanide in several matrices through the numerous environmental investigations completed to date. The extensive sampling completed at the Site has served to delineate the nature and extent of remaining contamination on site. The most recent SI/RA and Phase II investigations have delineated metals and PAHs in certain areas of the Site at levels above unrestricted use clean up numbers. The results of the investigation led to the request of SMC to alter the future use of the Site to allow for a commercial use through focused soil

excavation and the application of EC/ICs. The remaining levels of contaminants above applicable soil cleanup objectives (SCOs) are shown on the attached Drawing F-1.

To date, over 1,200 samples have been collected from soil remaining on Site, not including locations that have been excavated. As a result of such soil data, it has been determined that additional work is required in order to achieve the proposed Commercial Use Remedy. Such additional work is outlined in Section 5.1 and illustrated on the attached Drawing F-3.

3.1.1 Summary of Additional Investigations

Of the 141 samples collected and analyzed during the SI/RA, eight (8) soil samples remain with levels above applicable SCOs for Site related contaminants. Four (4) of these samples were located in Lagoon #1, which has since been excavated. Of the 25 test pits completed and the 55 samples collected, only four (4) samples were found to have site related contaminants above applicable SCOs. Refer to Envirospec Engineering, PLLC's, June 2007 Supplemental Investigation and Remedial Activities Report for a complete summary of investigation and soil analytical data collected.

Of the 357 soil samples collected during the SI, 47 exceeded applicable SCOs for one (1) or more of the following contaminant classes: VOCs, SVOCs, PCBs, or metals. Thirty-three (33) of the samples exceeded CSCOs and only 18 samples exceeded industrial SCOs. No VOC or SVOC Site related contaminants of concern exceeded commercial or industrial SCOs. Refer to Envirospec Engineering, PLLC's, January 2011 Phase II of Supplemental Investigation Report for a complete summary of investigation and soil analytical data collected.

3.2 Contaminant Fate and Transport

Based on contaminant characteristics, geological and hydrogeological conditions of the Site, and the documented nature and extent of the contamination at the Site, there are several potential contaminant migration pathways. These include; volatilization of contaminants from soil, dust, and migration of contaminants via ground water and surface water (EA1995). Soils and sediments are defined as sources of contamination because contaminants transfer from below ground surface to groundwater by infiltration of precipitation.

The proposed remaining remedial work at the Site will continue to include soil excavation. As such, exposure to contaminated media will be limited to construction and remediation workers during site remediation work. Given the nature of the chemical constituents reported, remediation and construction measures will continue to eliminate any significant exposures to soil vapor, contaminated soil, and groundwater during Site remediation.

Under the proposed remedy, soil covers will be used to eliminate any exposure pathway that may exist for soils remaining that have concentrations of metals above commercial values. Exposure to covered soil will be eliminated by a demarcation barrier and one (1) to two (2) feet of soil which will be maintained as part of the Site Management Plan (SMP).

4.0 REMEDIAL ACTION GOALS AND OBJECTIVES

The remedial goals developed for the 1996 ROD and the 2001 AROD are still applicable to the Site under the proposed Site re-use scenario. Remedial goals for the soil, groundwater, and sediment are required to protect human health and the environment.

As defined in DER-10, Remedial Action Objectives (RAOs) are medium-specific or operable-unit specific objectives for the protection of public health and the environment. RAOs are developed based on the Standards, Criteria and Guidance to address contamination identified at the Site in consideration of the intended future land use. In this instance the intended future land use is commercial use.

To develop cleanup goals, RAOs, Applicable or Relevant and Appropriate Requirements (ARAR's), and site-specific risk assessments and site specific conditions were reviewed. Although the remedial goals for the Site remain unchanged pertaining to groundwater, due to a large amount of additional data having been collected subsequent to the issuance of the 2001 AROD, SMC has proposed a change in the future use of the Site from unrestricted to commercial resulting in a change to the cleanup standards for the Site.

The goals of the remediation are listed below:

- Eliminate, to the extent practicable, the potential for direct human or animal contact with site related contaminants.
- Reduce, control, or eliminate, to the extent practicable the contamination within soils and wastes on the Site and generation of leachate from areas of environmental concern.
- Mitigate environmental threats to Skaneateles Creek by eliminating, to the extent practicable, further inflows of any contaminated run-off, contaminated groundwater, and leachate from the contaminated soils and waste.
- Mitigate site-related contamination within creek sediments to levels that will not impair aquatic organisms and promote unimpaired use by aquatic organisms.
- Prevent, to the extent practicable, migration of contaminants from areas of environmental concern to groundwater

- Mitigate the impacts of contaminated groundwater on the environment.
- Provide for attainment of SCG's for groundwater quality at the limits of AEC-3, the shallow groundwater, and AEC-4, the deep groundwater, and to the extent practicable, provide for SCG attainment within these AECs.

5.0 GENERAL RESPONSE ACTIONS

Based on the results of multiple investigative activities at the Site, soils, sediments, and groundwater have been determined to be the impacted media of concern and therefore warrant response actions. VOCs, SVOCs, PCBs and metals impacted soils were found to be present within the eight (8) areas of concern. Extensive site remediation activities were completed between 2001 and 2005 to remediate most of the contaminants. There remain several well defined areas of the site where additional remediation is still warranted. The general response actions discussed below will be evaluated as means of achieving the Site RAOs.

5.1 Remedial Response Areas and Soil Excavation Volumes

The remedial areas to be excavated pursuant to the newly proposed commercial end use remedy were based on analytical results from remedial activities and investigations that occurred subsequent to the issuance of the 2001 AROD. These areas have been proposed based on historical analytical data in order to reduce the exorbitant amount of material that would have had to be excavated and disposed of under the 2001 AROD. The volume of soil estimated to require excavation under adherence to a commercial end use is approximately 1.83 acres and 8,000 cubic yards (CY), compared to approximately 6.10 acres and 108,940 CY estimated to require excavation under adherence to the SCGs established in the 2001 AROD. Areas requiring remediation under the Unrestricted Use Remedy and the Commercial Use Remedy are shown on Drawings F-2 and F-3, respectively.

Areas requiring remediation under the Commercial Use Remedy include the following remedial technologies per area:

- Skaneateles Creek Area A – Excavation and replacement with clean fill
- Skaneateles Creek Area B – Excavation and replacement with clean fill
- AOI-4 PCB Contamination – Excavation and replacement with clean fill
- AEC-7 PCB Contamination – Excavation and replacement with clean fill
- AEC-2 and AOI-3 Lead Contamination – Excavation and replacement with clean fill
- AOI-3 Mercury Contamination – Excavation of surface soil and installation of soil cover

- AOI-4 Mercury Contamination – Excavation of surface soil and installation of soil cover
- AEC-8C South Chromium Contamination – Excavation and replacement with clean fill
- Former Sludge Lagoons 2,3, and 4 – Replacement of clay cap from former test pits
- Former Settling Ponds – Soil cover

6.0 SUMMARY OF UNRESTRICTED USE REMEDY

The components of the 2001 AROD Unrestricted Use Remedy involved the excavation and off-site disposal of source areas AEC-1, AEC-2, AEC-6, AEC-7, AEC-8 and Skaneateles Creek (AEC-5). Excavated material was transported to an appropriate off-site disposal facility. The remedy for shallow groundwater (AEC-3) entailed operation of a groundwater extraction and treatment system which currently operates at the Site. The majority of the AECs identified in the 2001 AROD have been excavated and contaminated soil and waste has been properly disposed of off-site. The areas excavated to date are shown on Drawing F-1.

The remedial activities to be completed as specified in the 2001 AROD for the Site included:

- Excavation and proper off-site disposal of contaminated soils and waste exceeding SCGs for AEC-1, AEC-2, AEC-6, AEC-7 and AEC-8.
- Excavation and proper off-site disposal of contaminated sediments from Skaneateles Creek (AEC-5) that exceed SCGs. Excavate and dispose of off-site identified abandoned pipe in the Skaneateles Creek.
- Excavate soils containing PCBs that exceed Site cleanup SCGs and properly dispose of off-site.
- Establish SSRGs for confirmatory sampling of metals contaminated soils. Remediate residual metals contaminated soils that exceed SSRGs by excavation and proper off-site disposal or on-site isolation/treatment technologies.
- Demolition of Main Plant Building (AEC-6) and remediation of impacted soils underneath the building.
- Design, construct and operate a shallow groundwater extraction and treatment system for AEC-3.
- No action for deep groundwater (AEC-4) with monitoring to assess expected improvements. Contingency for future extraction and treatment of deep groundwater (AEC-4) if source removal and natural attenuation fail to promote adequate improvements.
- De-watering operations and subsequent treatment of water generated from excavation activities.
- Ensure and implement truck traffic safety protocols as wells as implement appropriate

decon and emergency spill procedures for disposal trucks along designated transportation routes.
- Institutional Controls, including restricting future Site use to only Industrial/Commercial purposes and restricting on-site groundwater usage.

Institutional controls under the Unrestricted Use Remedy included: deed restrictions to protect remedial features and restrict on-site groundwater use; deed restriction to prohibit the Site from ever being used for purposes other than for appropriate industrial or commercial enterprises; restricted Site access; long term monitoring of Site conditions; and routine maintenance operations, such as, fence repairs and lawn mowing and soil cover maintenance.

7.0 SUMMARY OF COMMERCIAL USE REMEDY

As a result of additional investigations, a re-evaluation of the proposed cleanup levels for Site soils and sediments was completed. Based on this re-evaluation, a remedy that allows for commercial Site use was deemed more appropriate given conditions at the Site. The components of the new remedy are consistent with the 2001 remedy with additional areas of the Site being addressed. These additional areas of the Site were identified during the investigations. The remedial components are outlined below.

The additional components of the Commercial Use Remedy are as follows:

- Excavation and proper off-site disposal of contaminated soils and waste exceeding applicable SCOs consistent with a commercial end use.
- Isolation of mercury contaminated soils in AOI-3 and AOI-4 exceeding applicable SCOs by removing the top one (1) or two (2) feet of soils, covering remaining soil in place and applying appropriate institutional controls.
- Isolation of metals contaminated soils in other areas of the Site if identified during excavation activities exceeding applicable SCOs by excavation, covering remaining soil in place and applying appropriate institutional controls.
- Repair of the two (2) foot clay cap in former Sludge Lagoons 2, 3, and 4 to complete a 6 NYCRR Part 360 closure.
- Installation of a one (1) foot soil cover on the two (2) former Settling Ponds to complete a 6 NYCRR Part 360 closure.
- Institutional Controls, including restricting future Site use to only Industrial/Commercial purposes.

7.1 Approximate Limits of Excavation

The approximate limits of soil and sediment excavations are shown on Drawing F-3. During remedial activities, confirmatory soil sampling will dictate the final limits of excavation and will include side-wall and bottom sampling. The sampling frequency, method, procedure and QA/QC have been described in previously submitted documents prepared by Envirospec and approved by the NYSDEC. The final limits of excavation will be based on confirmatory samples meeting applicable SCOs for VOCs, SVOCs, PCBs, and Metals.

The selection of the remedial measure of covering remaining soil to be applied to metal contaminated soils exceeding commercial and/or ecological cleanup goals will be based on good engineering judgment, and will consider the following factors:

- Location
- Volume
- Accessibility
- Potential for long-term contribution to groundwater contamination
- Potential for human exposure

A reevaluation of the proposed cleanup level for Site soils and sediments included in the 2001 Feasibility Study has been completed. Based on the reevaluation, a remedy that pursues a restricted use consistent with commercial uses is being proposed.

8.0 EVALUATION OF COMMERCIAL AND UNRESTRICTED REMEDIAL ALTERNATIVES

The Commercial Use Remedy consisting of off-site disposal of soils and sediments and covering of metals was evaluated against the 2001 AROD Unrestricted Use Remedy. The criteria against which the two (2) remedial approaches were evaluated include:

- Threshold criteria
  - Overall protection of human health and the environment
  - Compliance with previously established SCGs versus newly established applicable SCOs
- Balancing criteria
  - Long-term effectiveness and permanence
  - Reduction of Toxicity, mobility, or volume
  - Short-term impact and effectiveness
  - Implementability

  - Cost
  - Community Acceptance
  - Land Use
- Use of Institutional and Engineering Controls

8.1 Threshold Criteria

The threshold criteria must be satisfied in order for an alternative to be eligible for selection. Each of the threshold criteria in relation to soil cleanup objectives (Unrestricted Use vs. Restricted Commercial Use) is evaluated below.

8.1.1 Overall Protectiveness of Human Health and the Environment

This criterion is an evaluation of the ability of each alternative or the remedy to protect public health and the environment. The Commercial Use Remedy will continue to eliminate potential risk to human health through direct contact with contaminated materials by permanently removing soils exceeding applicable SCOs in the top one (1) or two (2) feet via excavation and off-site disposal and properly covering soils remaining with levels of metals above applicable SCOs. Although the Commercial Remedy allows for higher cleanup values then the Unrestricted Use Remedy, it maintains the same level of protection for public health and environment by eliminating the exposure pathway via covering and limiting the future Site use to commercial uses.

Both remedies protect the environment by eliminating uncontrolled sources of contamination. Subsequent groundwater monitoring will serve to ensure continued protection of the environment from remaining on-site contamination.

8.1.2 Compliance with Standards, Criteria, and Guidance

Compliance with standards, criteria and guidance addresses whether a remedy will meet applicable Federal and State environmental laws and regulations.

The Unrestricted Use Remedy proposed active removal of contaminants from impacted areas to a level consistent with unrestricted SCOs, thus allowing a future unrestricted use of the Site. The Commercial Use Remedy maintains active removal of contaminants from those same impacted areas, but to levels that allow a commercial use of the site. A change in the soil cleanup objectives and future use is permissible under New York State regulations and the proposed change is compliant with applicable Federal and State laws and regulations. Institutional controls will also be imposed on the Site to ensure continued long-term compliance with applicable standards, criteria and guidance.

8.2 Primary Balancing Criteria

The remaining six criteria are considered "primary balancing criteria". These criteria are used to compare the positive and negative aspects of each remedial alternative, provided the alternative satisfies the threshold criteria. The primary balancing criteria are discussed below.

8.2.1 Long-Term Effectiveness and Permanence

If contamination will remain on or off-site after the selected remedy has been implemented, the impact of the remaining contamination on any of the following must be assessed: 1) human exposures; 2) ecological receptors; and 3) impacts to the environment.

The Unrestricted Use Remedy would be permanent and effective for elimination of the contamination source areas from the Site through off-site disposal. This remedy would provide a high level of effectiveness and permanence and would not leave remaining contamination on-site. The Commercial Use Remedy would also provide a high level of long-term effectiveness and permanence, by excavating levels of contamination above applicable SCOs and placing ECs (soil covers) and ICs (use restrictions) on the Site. The placement of use restrictions would limit the Site to commercial uses and therefore provide an adequate level of protection to future occupants.

Remaining on-site contamination from the Commercial Use Remedy would not pose a risk to humans based on the Site use restrictions and covering of subsurface soils with remaining metals concentrations above the commercial criteria to eliminate exposure pathways. The Creek will be remediated to ecological standards and will therefore not pose a threat to ecological or human receptors. Groundwater sampling has shown the levels of contaminants have improved since the 2001 AROD and continued groundwater monitoring will determine if additional investigation and/or remediation are necessary.

8.2.2 Reduction of Toxicity, Mobility, or Volume

This criterion evaluates the remedy's ability to reduce the toxicity, mobility or volume of Site contamination. The Unrestricted Use Remedy and the Commercial Remedy both offer a reduction in toxicity, mobility, and volume of contamination as each remedy includes removal of impacted soils and sediments from the Site.

The Unrestricted Use Remedy would provide a higher reduction in toxicity, mobility, and volume of contaminated soils and sediments at the Site. This is evident through the sheer volume of material that would be required to be excavated and disposed of under the remedy. Since the Unrestricted Use Remedy would leave no residual contamination in soils above associated SCOs, remaining toxicity levels and mobility of residual contaminants would be minimal.

The Commercial Use Remedy would also provide a high degree of reduction in toxicity, mobility, and volume of contaminated soil and sediments at the Site. This is also evident through the remaining volume of material that would be excavated and disposed of under this alternative. Toxicity would be reduced by removing impacted soils to a concentration sufficient for the intended future commercial use of the Site. Toxicity would be further controlled through the implementation of institutional controls for the Site and mobility would be adequately controlled through ECs and continued groundwater monitoring.

8.2.3 Short-term Impacts and Effectiveness

The evaluation of short term impacts considers the potential short term adverse environmental impacts and human exposure during the construction and/or implementation of the remedy.

The Unrestricted Use Remedy and Commercial Use remedies both involve the excavation and handling of soils with chemical concentrations exceeding established SCOs. Workers involved in the excavation, staging and handling would be required to wear appropriate personal protective equipment (PPE). The short-term off-site impact of the Unrestricted Use Remedy is higher than the Commercial Use Remedy due to the volume of excavation required and the level of off-site waste transportation required for the Unrestricted Use Remedy.

Under both the Unrestricted Use Remedy and Commercial Use remedies, the excavated soils would be placed directly into trucks, to the maximum extent possible, and disposed at an appropriate off-site facility. Under the Unrestricted Use Remedy there is a higher risk of exposure to dust and VOC emissions from the additional soil excavation volumes and the required time needed to complete the excavation. Regardless of the remedy chosen, the implementation of appropriate excavation procedures, including dust and volatilization monitoring and control would be implemented to minimize these risks.

Both remedies would have short-term impacts on the community due to construction activities including noise and truck traffic. The Unrestricted Use Remedy would have higher short term impacts to the community based on the increased length of time required to implement the remedy. It is expected that the Unrestricted Use Remedy would require approximately 2 additional years to complete while the Commercial Use Remedy would be completed within 6 additional months.

8.2.4 Implementability

This criterion evaluates the technical and administrative feasibility of implementing the remedies being evaluated. Technically, this includes; the difficulties associated with the construction and operation of the alternative, the reliability of the technology, and the ability to monitor the effectiveness of the remedy. Administratively, the availability of the necessary personnel and

equipment is evaluated along with potential difficulties in obtaining special permits, rights-of-way for construction, etc.

The two remedies being considered in this FFS are both technically feasible to implement. Both remedies consist of excavation and off-site disposal and are equally feasible to implement. Soil excavation has been demonstrated to be effective and has previously been implemented at the majority of the Site. The Site is accessible for truck access and the topography is generally level so the equipment can be used at the Site. Soil covering is a component of the Commercial Use Remedy and is also technically feasible as covering is a common means of isolating on-site contamination. Access is obtainable from a neighboring property and although the topography will need to be modified, covering is a technically feasible remedial action. Both excavation and soil covering are also reliable alternatives. The effectiveness of the Commercial Use Remedy will be monitored through annual site inspections and groundwater monitoring.

Excavators and backhoes will be required for the excavation of the soils. Front loaders and dump trucks will be needed for off-site transportation of the excavated soils. The construction components of both remedies are equally feasible. Each remedy is also administratively feasible to implement. The Unrestricted Use Remedy and the Commercial Use Remedy would require the same administrative activities and approvals as both remedies entail the same type of remedial activity. The Commercial Use Remedy will require additional administrative measures to institute EC/ICs associated with the soil cover and restricted future use of the property. However, these types of controls are common and feasible to implement.

Each of the proposed remedies require obtaining permits and approvals from state and local agencies for storm water and erosion and sediment control and Skaneateles Creek bypass activities. Administrative approvals would not differ between the two remedies for construction. Both remedies would involve institutional controls to limit groundwater use.

8.2.5 Cost

Although cost is one of the last criteria evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for final selection. The following cost analysis demonstrates that the Commercial Use Remedy is a cost effective remedial alternative and is approximately $35,000,000 less than the Unrestricted Use Remedy.

The capital cost of the Commercial Use Remedy cost is approximately $6,300,000 while the cost of the Unrestricted Use Remedy is over $41,400,000. The Unrestricted Use Remedy is nearly $35,000,000 more than the Commercial Use Remedy due to the large volume of material that would require excavation and off-site disposal. The Commercial Use Remedy has a higher

operational and maintenance (O&M) cost associated with annual inspections and maintenance of the ECs and groundwater monitoring while the O&M costs associated with the Unrestricted Use Remedy are negligible. However, the present worth value of the Commercial Use Remedy is low compared to the present worth of the Unrestricted Use Remedy.

The costs presented in Table 1 are based on recent prices obtained for off-site disposal and revised volumes of soil and sediment to be excavated that were identified during pre-design and design activities.

- Soil targeted for excavation in Restricted Use Remedy: > 100,000 cubic yards.
- Soil targeted for excavation in Commercial Use Remedy: < 10,000 cubic yards.

Itemized costs are included in Appendix A.

Table 1: Preliminary Cost Analysis

Original Remedy		
Capital Cost	$	41,436,000
O&M - Present Worth (30 years)	$	-
TOTAL:	$	41,436,000
Proposed Remedy		
Capital Cost	$	6,304,000
O&M - Present Worth (30 years)	$	258,000
TOTAL:	$	6,562,000
Additional Cost for Preferred Remedy verses Original Remedy		
Capital Cost	$	(35,132,000)
O&M - Present Worth (30 years)	$	258,000
TOTAL:	$	(34,874,000)

Note: Bracket values represent a negative amounts

The Commercial Use Remedy has significantly lower costs demonstrating it is a cost effective remedial alternative.

8.2.6 Community Acceptance

Public comments will be considered and incorporated into the March 2013 Amended Record of Decision upon the completion of the public comment period.

8.2.7 Land Use

This criterion includes an evaluation of the current, intended and reasonably anticipated future use of the Site and its surroundings, as it relates to the alternative or remedy, when unrestricted levels would not be achieved.

The Site is currently zoned Industrial/Research/Office District ("commercial /industrial") and is vacant. The majority of the Site is grass and gravel covered and the perimeter is fenced. Land use in the area includes other commercial and industrial activities as well as residential. The future commercial use of the Site is consistent with surrounding land use and current zoning of the property.

8.3 Evaluation of Institutional and Engineering Controls

Both remedies would involve groundwater use restrictions. There are no private drinking water wells in the vicinity of the Site or on-site and therefore a groundwater use restriction can be implemented and maintained with the deed for the Site. Compliance with the groundwater use restriction on-site will be confirmed during annual Site inspections.

The Commercial Use Remedy involves institutional controls to limit the future use of the Site to commercial uses and ECs to maintain an on-site soil cover to isolate metals contaminated soil. The EC will involve at least a one (1) foot soil cover outside of 25 feet of the creek and two (2) feet within 25 feet of the creek and will have a demarcation layer to indicate the layer between clean and covered soils. The covered areas will be vegetated appropriately to prevent erosion as part of a planned restoration program.

Site management requirements for the Commercial Use Remedy would entail a SMP that outlines use restrictions in the area of the soil cover and for the Site in general. Annual inspections of the soil cover will be completed to ensure the correct amount of cover is maintained and the demarcation barrier is not visible. The inspections will also ensure restrictions associated with building in the soil covers are followed once they are outlined it the SMP and summarized in the Periodic Review Report.

The future use restriction is consistent with current zoning and will be filed with the deed for the Site by SMC. SMC or subsequent property owner will be responsible for maintaining and monitoring the restrictions.

EC/ICs consistent with those being proposed as part of the Commercial Use Remedy are common and have been proven to be reliable and a viable long term components of a remedial action. The long term costs associated with the controls have been included in the O&M costs presented in Section 8.2.5 above and will be the responsibility of SMC or subsequent property owners.

9.0 RECOMMENDED REMEDY

The Commercial Use Remedy is the recommended remedy for the Site. This recommendation is based on the comprehensive evaluation and comparison presented in Section 8. The Commercial Use Remedy is a cost effective remedy that is consistent with Site zoning and the intended future use while being protective of human health and the environment.

The current Unrestricted Use remedy is not a cost effective solution and is not the preferred alternative given conditions at the Site and the required volume of excavation to reach an unrestricted use. While a less stringent cleanup remedy is being proposed, the Commercial Use Remedy mitigates environmental impacts, limits the degree of post-closure care, promotes a beneficial re-use of the property, and is protective of human health and the environment.

SMC is requesting a second ROD Amendment to implement the Commercial Use Remedy. The components of the preferred remedy are detailed in Section 7.0. The proposed changes to the 2001 AROD Unrestricted Use Remedy are listed below:

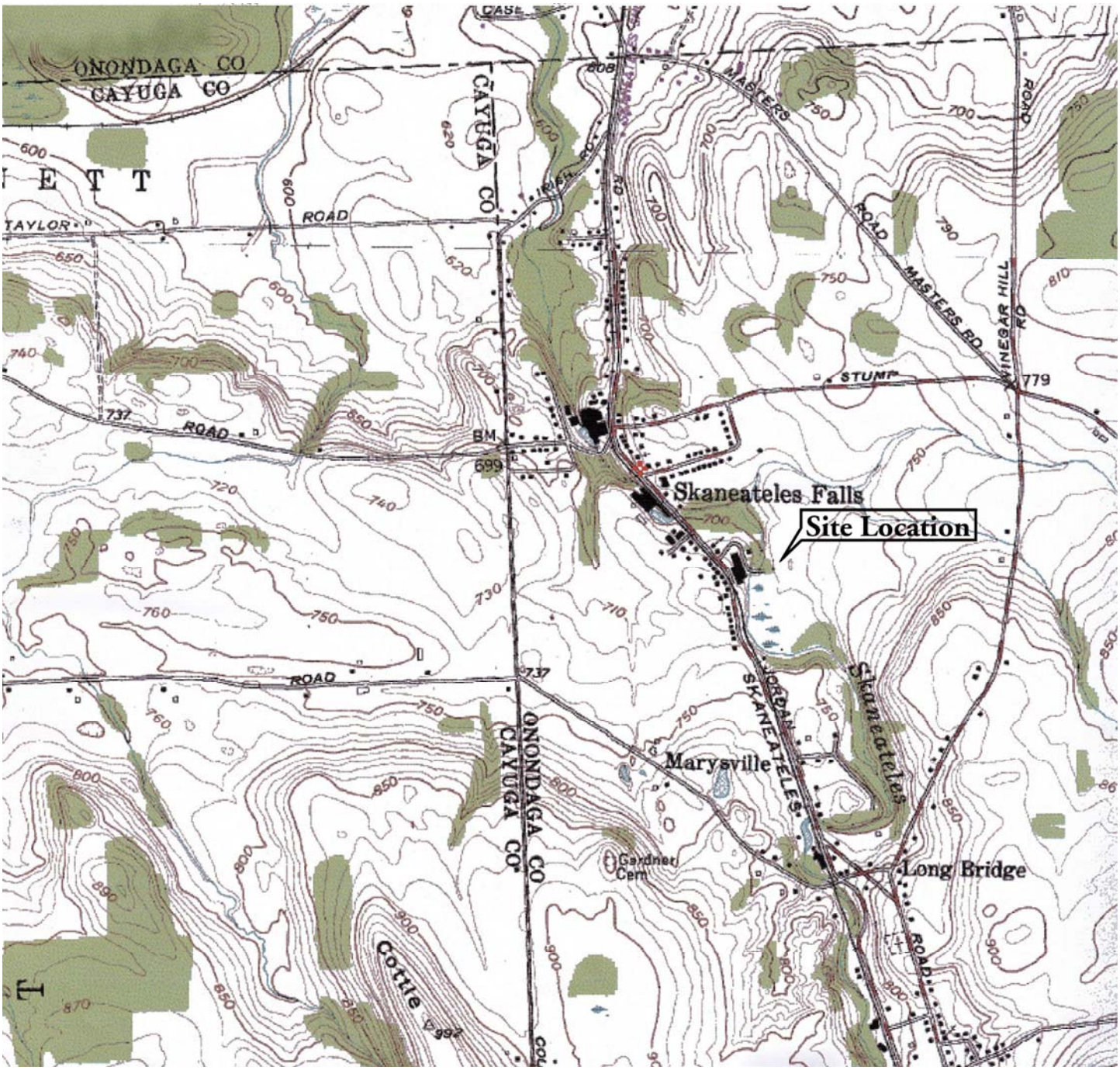
- Excavation and proper off-site disposal of contaminated soils and waste exceeding applicable SCOs consistent with a commercial or industrial end use.
- Isolation of metals contaminated soils in AOI-3 and AOI-4 exceeding applicable SCOs by covering in place and applying appropriate deed restrictions and institutional controls.
- Isolation of metals contaminated soils in other areas of the Site if identified during excavation activities exceeding applicable SCOs by covering in place and applying appropriate deed restrictions and institutional controls.
- Repair of the two (2) foot clay cap in former Sludge Lagoons 2, 3, and 4 to complete a 6 NYCRR Part 360 closure.
- Installation of a one (1) foot soil cover on the two (2) former Settling Ponds to complete a 6 NYCRR Part 360 closure.
- Institutional Controls, including restricting future Site use to only Commercial/Industrial purposes and restricting on-site groundwater usage.

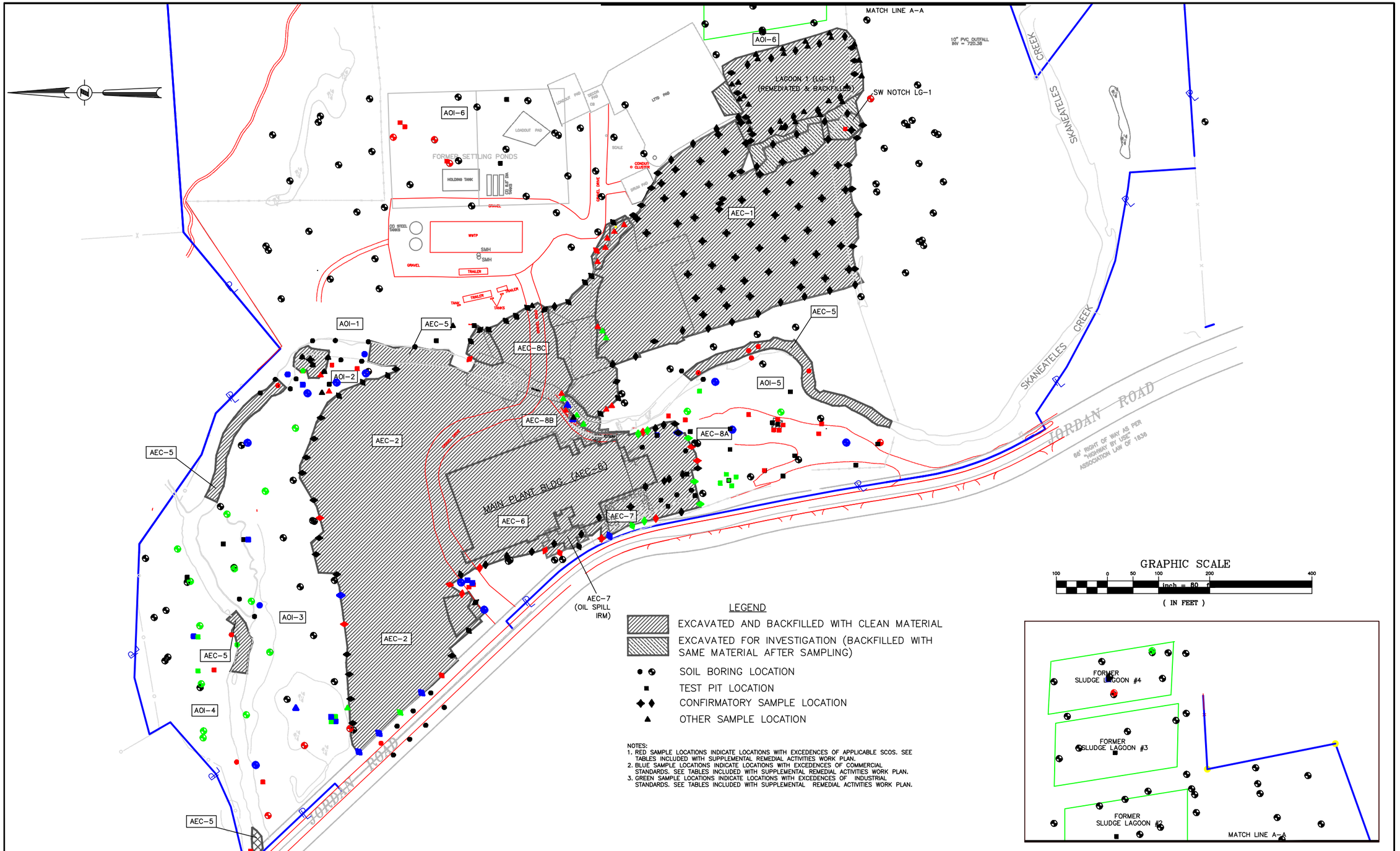
DRAWINGS

SITE: SKANEATELES FALLS, NY
CLIENT: STAUFFER MANAGEMENT COMPANY, LLC
CLIENT JOB#: E07-100
DESCRIPTION: SITE LOCATION MAP
SHEET#: L-1

enviroSPEC ENGINEERING, PLLC
16 COMPUTER DRIVE WEST
ALBANY, NY 12205
P:518.453.2203
F:518.689.4800

PREPARED BY: S. THOMAS
DATE: 6/17/02
REVIEWED BY: J. BURKE
DATE: 6/17/02
SOURCE: USGS QUADS (7.5 MIN SERIES)





ENVIROSPEC PROJECT #E12-623

envirospec ENGINEERING

W.O. No.	REVISION	DATE	APR.

DRAWING STATUS: FOR REFERENCE ONLY

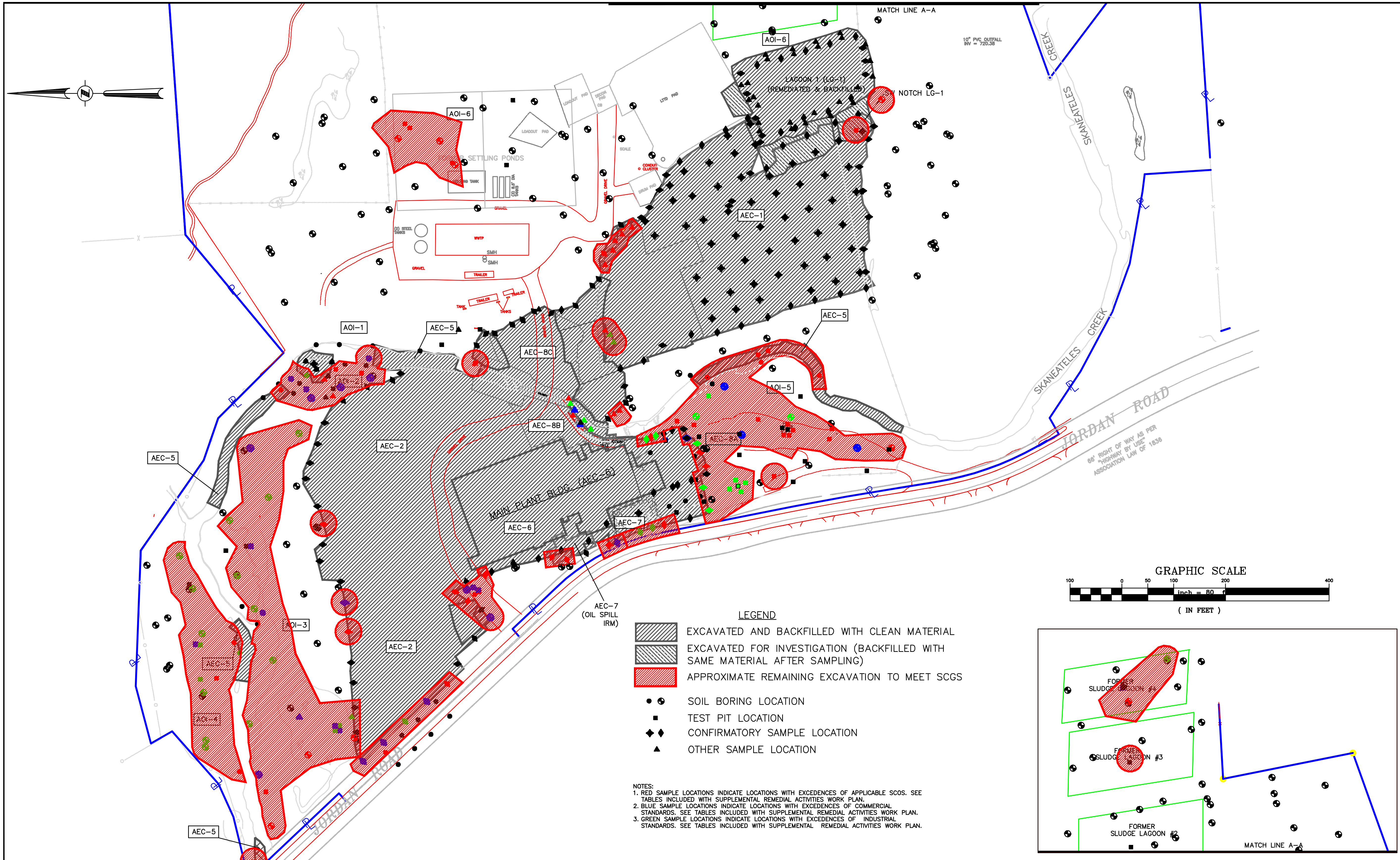
DRAWN	K.B.	7/09/12
DESIGNED		
CHECKED	G.A.	4/26/13

REMAINING LEVELS OF CONTAMINANTS ABOVE SCOS

STAUFFER MANAGEMENT COMPANY SITE
SKANEATELES FALLS, NEW YORK

FOCUSED FEASIBILITY STUDY

SCALE	DRAWING No.	SHEET	REV. No.
1"=80'	F-1	1 of 1	–



LEGEND

- EXCAVATED AND BACKFILLED WITH CLEAN MATERIAL
- EXCAVATED FOR INVESTIGATION (BACKFILLED WITH SAME MATERIAL AFTER SAMPLING)
- APPROXIMATE REMAINING EXCAVATION TO MEET SCGS
- SOIL BORING LOCATION
- TEST PIT LOCATION
- CONFIRMATORY SAMPLE LOCATION
- OTHER SAMPLE LOCATION

NOTES:
1. RED SAMPLE LOCATIONS INDICATE LOCATIONS WITH EXCEDENCES OF APPLICABLE SCOS. SEE TABLES INCLUDED WITH SUPPLEMENTAL REMEDIAL ACTIVITIES WORK PLAN.
2. BLUE SAMPLE LOCATIONS INDICATE LOCATIONS WITH EXCEDENCES OF COMMERCIAL STANDARDS. SEE TABLES INCLUDED WITH SUPPLEMENTAL REMEDIAL ACTIVITIES WORK PLAN.
3. GREEN SAMPLE LOCATIONS INDICATE LOCATIONS WITH EXCEDENCES OF INDUSTRIAL STANDARDS. SEE TABLES INCLUDED WITH SUPPLEMENTAL REMEDIAL ACTIVITIES WORK PLAN.

ENVIROSPEC PROJECT #E12-623

envirospec ENGINEERING, PLLC

W.O.	No.	REVISION	DATE	DRN. CHK	APR.

DRAWING STATUS: FOR REFERENCE ONLY

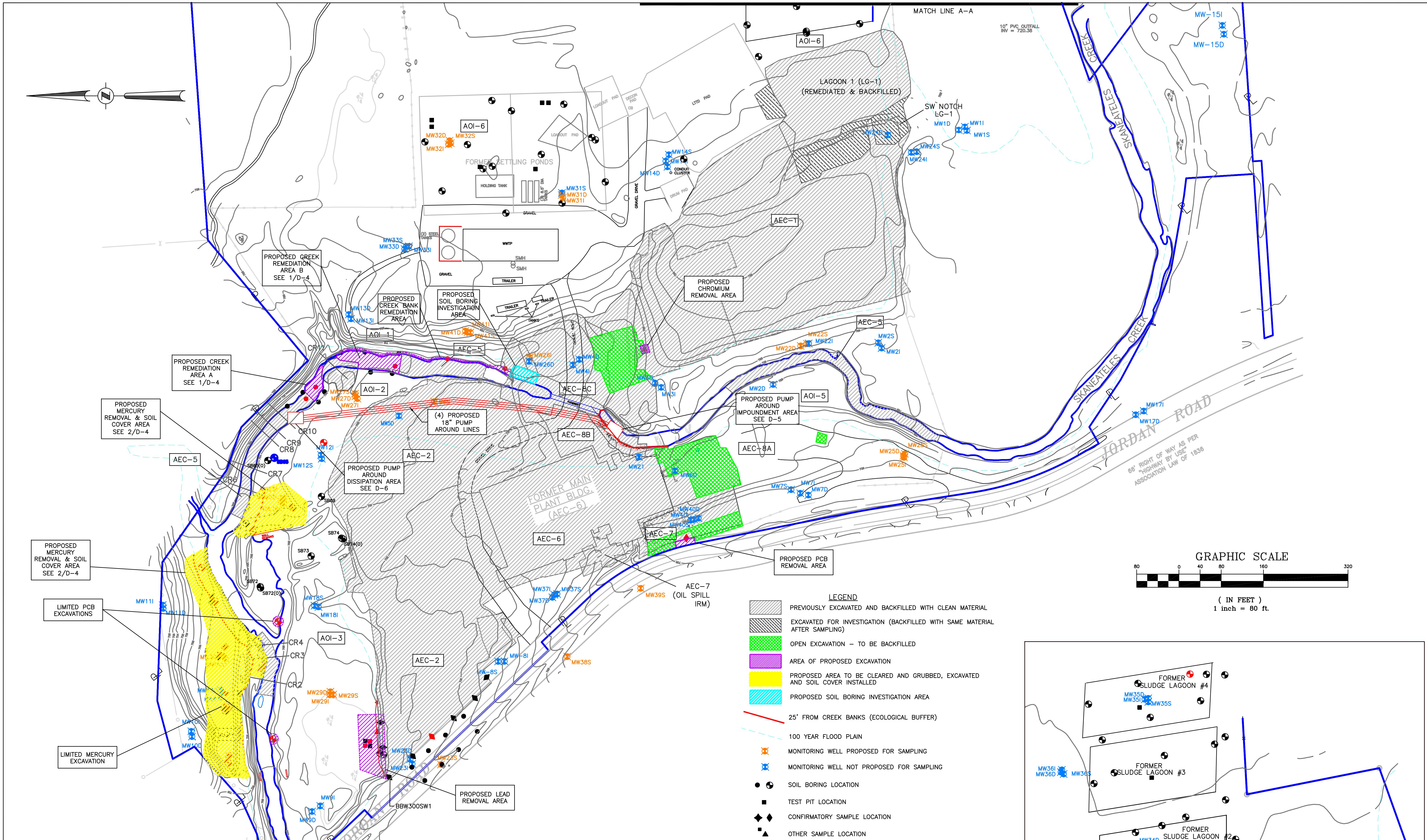
REMAINING EXCAVATION FOR UNRESTRICTED USE

DRAWN BY N.S. 7/09/12
DRAWING CHECK G.A. 4/28/08

STAUFFER MANAGEMENT COMPANY SITE
SKANEATELES FALLS, NEW YORK

FOCUSED FEASIBILITY STUDY

SCALE 1"=80' | DRAWING No. F-2 | SHEET 1 of 1 | REV. No. –


MATCH LINE A–A
AOI–6
LAGOON 1 (LG–1)
(REMEDIATED & BACKFILLED)
SW NOTCH
LG–1
FORMER SETTLING PONDS
HOLDING TANK
WWTP
AEC–1
PROPOSED CHROMIUM REMOVAL AREA
AEC–5
PROPOSED CREEK REMEDIATION AREA B
SEE 1/D–4
PROPOSED CREEK BANK REMEDIATION AREA
PROPOSED SOIL BORING INVESTIGATION AREA
AOI–1
PROPOSED CREEK REMEDIATION AREA A
SEE 1/D–4
PROPOSED MERCURY REMOVAL & SOIL COVER AREA
SEE 2/D–4
AOI–2
(4) PROPOSED 18" PUMP AROUND LINES
AEC–8C
AEC–8B
AEC–8A
AOI–5
PROPOSED PUMP AROUND IMPOUNDMENT AREA
SEE D–5
PROPOSED PUMP AROUND DISSIPATION AREA
SEE D–6
AEC–2
FORMER MAIN PLANT BLDG. (AEC–6)
AEC–6
AEC–7
PROPOSED PCB REMOVAL AREA
AEC–7 (OIL SPILL IRM)
LIMITED PCB EXCAVATIONS
AOI–3
LIMITED MERCURY EXCAVATION
PROPOSED LEAD REMOVAL AREA
BBW300SW1
SKANEATELES CREEK
JORDAN ROAD
66' RIGHT OF WAY AS PER "HIGHWAY BY USE" ASSOCIATION LAW OF 1836
GRAPHIC SCALE
(IN FEET)
1 inch = 80 ft.
LEGEND
PREVIOUSLY EXCAVATED AND BACKFILLED WITH CLEAN MATERIAL
EXCAVATED FOR INVESTIGATION (BACKFILLED WITH SAME MATERIAL AFTER SAMPLING)
OPEN EXCAVATION – TO BE BACKFILLED
AREA OF PROPOSED EXCAVATION
PROPOSED AREA TO BE CLEARED AND GRUBBED, EXCAVATED AND SOIL COVER INSTALLED
PROPOSED SOIL BORING INVESTIGATION AREA
25' FROM CREEK BANKS (ECOLOGICAL BUFFER)
100 YEAR FLOOD PLAIN
MONITORING WELL PROPOSED FOR SAMPLING
MONITORING WELL NOT PROPOSED FOR SAMPLING
SOIL BORING LOCATION
TEST PIT LOCATION
CONFIRMATORY SAMPLE LOCATION
OTHER SAMPLE LOCATION
FORMER SLUDGE LAGOON #4
FORMER SLUDGE LAGOON #3
FORMER SLUDGE LAGOON #2
MATCH LINE A–A

NOTES:
1. RED SAMPLE LOCATIONS INDICATE LOCATIONS WITH EXCEDENCES OF INDUSTRIAL STANDARDS. SEE TABLES INCLUDED WITH SUPPLEMENTAL REMEDIAL ACTIVITIES WORK PLAN.

ENVIROSPEC PROJECT #E12–623

envirosPEC ENGINEERING, PLLC
16 COMPUTER DRIVE WEST
ALBANY, NY 12205
P:518.453.2203
F:518.689.4800

W.O.	No.	REVISION	DATE	DRN. CHK.	APR.
	2	REVISED TEXT	3/13		
	1	REVISED LEGEND	7/12		

DRAWING STATUS: FOR REFERENCE ONLY

REMAINING EXCAVATION FOR COMMERCIAL USE

DRAWN BY: N.B. 7/09/12
DRAWING CHECK: G.A. 4/28/08

STAUFFER MANAGEMENT COMPANY SITE
SKANETELES FALLS, NEW YORK

FOCUSED FEASIBILITY STUDY

SCALE: 1"=80' | DRAWING No.: F–3 | SHEET 1 of 1 | REV. No. –

APPENDIX A

Preliminary Estimate of Capital and Operation Maintenance Cost for the Original Remedy at the SMC Site

Site Work

Description	Quantity	Unit cost	Total
Mobilization/Demobilization	LS	165,000	$ 165,000
Excavation	110,000	$192/CY	$ 22,000,000
Sampling	LS	643,500	$ 643,500
Disposal	110,000	Varies	$ 9,683,050
Backfill of Previously Open Excavations	75,000	$10/CY	$ 750,000
Soil Cover	0 SF	$15/SF	$ -
DIRECT COST SUBTOTAL			$ 33,076,550
Preparation of Closure Report	LS	50,000	$ 50,000
Engineering Design	LS	40,000	$ 40,000
QA/QC & Construction Oversight		10%	$ 3,307,655
Contingency		15%	$ 4,961,483
INDIRECT COSTS SUBTOTAL			$ 8,359,138
			$ 41,436,000

* Ranges from $50/cy to $200/cy for hazardous waste disposal.

Annual Clay Cap and Soil Covers O&M

Description	Quantity	Unit cost	Total
Maintenance	LS	4,000	$ -
Site Insections	LS	2,500	$ -
Annual Reporting and Certifications	LS	3,500	$ -
Stormwater Maintenance*	LS	5,000	$ -
Total O&M			$ -

* Assumes stormwater maintenance is only required for the first 10 years.

Capital Cost =	$	41,436,000
Yearly O&M Costs =		
(0-10 years)	$	-
(11-30 years)	$	-
(Yearly O&M Costs 0-10 yrs) * (P/A , 4% ,0-8)	$	-
(Yearly O&M Costs 11-30 yrs) * (P/A , 4% ,11- 20)	$	-
Present Worth O&M Costs =	$	-
Total Present Worth =	$	41,436,000

Notes:
LS - Lump Sum, SF - Square Foot, CY- Cubic Yard
Interest set at 7%, inflation set at 3%, Net P/A rate set at 4%

Preliminary Estimate of Capital and Operation Maintenance Cost for the Proposed Remedy at the SMC Site

Site Work

Description	Quantity	Unit cost	Total
Mobilization/Demobilization	LS	165,000	$ 165,000
Excavation	8,300	$192/CY	$ 1,593,600
Sampling	LS	209,630	$ 209,630
Disposal	8,300	Varies	$ 1,434,090
Backfill of Previously Open Excavations	75,000	$10/CY	$ 750,000
Soil Cover	65,600 SF	$15/SF	$ 984,000
DIRECT COST SUBTOTAL			$ 4,971,320
Preparation of Closure Report	LS	50,000	$ 50,000
Engineering Design	LS	40,000	$ 40,000
QA/QC & Construction Oversight		10%	$ 497,132
Contingency		15%	$ 745,698
INDIRECT COSTS SUBTOTAL			$ 1,332,830
			$ 6,304,000

* Ranges from $50/cy to $200/cy for hazardous waste disposal.

Annual Clay Cap and Soil Covers O&M

Description	Quantity	Unit cost	Total
Maintenance	LS	4,000	$ 4,000
Site Insections	LS	2,500	$ 2,500
Annual Reporting and Certifications	LS	3,500	$ 3,500
Stormwater Maintenance*	LS	5,000	$ 5,000
Total O&M			$ 15,000

* Assumes stormwater maintenance is only required for the first 10 years.

Capital Cost =	$	6,304,000
Yearly O&M Costs =		
(0-10 years)	$	15,000
(11-30 years)	$	10,000
(Yearly O&M Costs 0-10 yrs) * (P/A , 4% ,0-8)	$	122,000
(Yearly O&M Costs 11-30 yrs) * (P/A , 4% ,11- 20)	$	135,903
Present Worth O&M Costs =	$	258,000
Total Present Worth =	$	6,562,000

Notes:
LS - Lump Sum, SF - Square Foot, CY- Cubic Yard
Interest set at 7%, inflation set at 3%, Net P/A rate set at 4%