New York State Department of Environmental Conservation

FACT SHEET

State Superfund Program

May 2010

Town of Salina Landfill Site
NYSDEC Site # 734036
Wolf Street
Town of Salina, NY

Record of Decision Amendment Proposed for State Superfund Site; Public Comment Period and Public Meeting Announced

The public is invited to comment on a Record of Decision (ROD) amendment proposed by the New York State Department of Environmental Conservation (NYSDEC) and United States Environmental Protection Agency (USEPA) to address contamination related to the Town of Salina Landfill Site ("site"). The site is located on the west side of Wolf Street in the Town of Salina, Onondaga County. See map for site location.

Public Meeting
Monday, June 7, 2010
7:00 PM

Town of Salina Town Hall
201 School Road
Liverpool, New York

NYSDEC invites you to a public meeting to discuss the remedy proposed for the site. You are encouraged to provide comments at the meeting, and during the 30-day comment period described in this fact sheet.

The Proposed Remedy

The revised remedy proposed for the site includes excavation of the landfilled wastes located south of Ley Creek and consolidation of those wastes on the landfill area north of Ley Creek, design and construction of a groundwater/leachate collection and pre-treatment system (if warranted), and design and construction of a 6 NYCRR Part 360 cap over the entire landfill area north of Ley Creek. The proposed remedy is described in a draft cleanup plan called a "Proposed Remedial Action Plan" developed under New York's State Superfund Program. The document is available for public review at the Salina Free Library located at 100 Belmont Street in Mattydale, NY, at the Town of Salina located at 201 School Road in Liverpool, NY, at the Onondaga County Public Library located at 447 South Salina Street in Syracuse, NY, at the Atlantic States Legal Foundation located at 658 West Onondaga Street in Syracuse, NY, at the NYSDEC Region 7 Office located at 615 Erie Boulevard West in Syracuse, NY, and at the NYSDEC Central Office located at 625 Broadway in Albany, NY identified below under "Where to Find Information".

State Superfund Program: New York's State Superfund Program (SSF) identifies and characterizes suspected inactive hazardous waste disposal sites. Sites that pose a significant threat to public health and the environment go through a process of investigation, evaluation, cleanup and monitoring.

NYSDEC generally attempts to identify parties responsible for site contamination and require cleanup before committing State funds.

For more information about the SSF, visit: **www.dec.ny.gov/chemical/8439.html**

How to Comment

NYSDEC is accepting written comments about the proposed remedy for 30 days, from May 24, 2010 through June 22, 2010.

Submit written comments to:
John Grathwol
New York State Department of Environmental Conservation
625 Broadway, 12th Floor
Albany, New York 12233-7016
jcgrathw@gw.dec.ny.state.us

Summary of the Proposed Remedy

This Superfund Proposed Plan for Remedy Modification (Proposed Plan), which describes the proposed changes to the ROD, was developed by the New York State Department of Environmental Conservation (NYSDEC) and the United States Environmental Protection Agency (EPA) in consultation with the New York State Department of Health (NYSDOH), to address site contamination. NYSDEC and EPA are issuing this Proposed Plan consistent with Section 117(a) of CERCLA, Section 300.430(f) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), New York State Environmental Conservation Law, and 6 NYCRR Part 375.

The main goal of the plan is to eliminate or reduce to the extent practicable potential human exposures to volatile organic compounds, polychlorinated biphenyls, metals and other contaminants in soil and groundwater. To determine whether the soil, sediment, or groundwater contained contamination at levels of concern, the Remedial Investigation and pre-design studies, on which the proposed plan is based, compared the data collected to NYSDEC Standards, Criteria and Guidance (SCGs).

Pre-design studies conducted subsequent to the March 2007 Record of Decision (ROD) indicated the potential to improve the remedy and realize a significant cost savings for the project. Based on this, three (3) alternatives from the ROD were re-evaluated. These are presented in the proposed plan, and include no action; construction of 6 NYCRR Part 360 caps over the landfill areas north and south of Ley Creek and, excavation and consolidation of the landfill waste south of Ley Creek onto the northern section of the landfill, which would then be capped The NYSDEC, NYSDOH and USEPA believe the proposed remedy, Alternative 5 (listed below), will protect public health and the environment, reduce the sources of groundwater contamination, and will minimize potential contact with any residual contaminants remaining at the site. This alternative's remedial improvements include: the consolidations of two landfills into one, diminishing the footprint of the landfill and adding the necessary landfill closure system over the natural gas line. The potential cost savings for this alternative include: a single landfill closure system for the Town to construct, operate and maintain; and reducing the scope of work and duration of operation and maintenance for the groundwater/leachate treatment system.

The elements of the proposed revised remedy are as follows:

- Construction of groundwater/leachate collection trenches north of Ley Creek;

- Evaluation of the groundwater/leachate collection trench and/or pre-treatment system requirements before this wastewater is sent to the County's Metropolitan Wastewater Treatment Plant (METRO) for final treatment.;

- Installation of an on-Site storage tank to hold excess water volume from the groundwater/leachate collection trench(es) stemming from storm events;

- Excavation of the landfilled wastes located south of Ley Creek and consolidation of those wastes on the landfill area north of Ley Creek;

- Excavation of waste in the northeastern corner of the landfill area to the north of Ley Creek to the center of that landfill area to allow a diminished footprint;

- Excavation of waste on the northern boundary of the landfill area north of Ley Creek so that the Buckeye natural-gas pipeline will not be in contact with wastes from the Site;

- Excavation of contaminated sediments in the western drainage ditch;

- Consolidation of the excavated sediments and the soils and wastes (from the excavation of the collection trenches) on the landfill area north of Ley Creek, as appropriate;

- Construction of 6 NYCRR Part 360 caps over the landfill area north of Ley Creek;

- Installing a clay cap in the corridors containing underground natural gas lines or overhead electric lines to allow National Grid to maintain their utilities without damaging a geomembrane cap;

- Engineered drainage controls and fencing;

- Institutional controls (such as environmental easements) to prohibit residential use of Site property and the installation and use of groundwater wells, as well as to protect and ensure the integrity of the cap, the groundwater/leachate collection trench(es), and the engineered drainage controls;

- Operation and maintenance of the on-Site treatment plant and groundwater/leachate collection trench(es), if these remedy components are necessary, and maintenance of the Part 360 cap;

- If any portion of the site is redeveloped, NYSDEC and NYSDOH will require that an evaluation be completed to determine the potential for soil vapor intrusion to occur in any future constructed buildings, including provision for implementing actions recommended to address exposures; and

- Long-term monitoring.

The estimated present worth cost to implement the remedy is $24,990,011. The cost to construct the remedy is estimated to be $21,690,000 and the estimated average annual costs for 30 years is $265,936.

Next Steps

NYSDEC will consider public comments as it finalizes the remedy for the site. The selected remedy will be described in a document called a "Record of Decision Amendment" that will explain why the remedy was selected and respond to public comments. This document will be made available to the public (see "Where to Find Information" below). The project is in the design phase and performing the cleanup action to address the site contamination will follow. NYSDEC will keep the public informed during the cleanup of the site.

FOR MORE INFORMATION

Where to Find Information

Project documents are available at the following location(s) to help the public to stay informed. These documents include the proposed cleanup plan for the site, called the "Proposed Remedial Action Plan".

Salina Free Library
100 Belmont Street
Mattydale, New York 13211
Telephone: (315) 454-4524
Please call for hours of availability.

Town of Salina
201 School Road
Liverpool, NY 13088
Telephone: (315) 457-2710
Please call for hours of availability.

Atlantic States Legal Foundation
658 West Onondaga Street
Syracuse, NY 13204-3757
Telephone: (315) 475-1170
Email : Atlantic.States@aslf.org
Please call for hours of availability.

NYSDEC
Division of Environmental Remediation
625 Broadway, 12th Floor
Albany, New York 12233-7016
Telephone: (518) 402-9775
Call for an appointment.

Onondaga County Public Library
Syracuse Branch at the Galleries
447 South Salina Street
Syracuse, New York 13202
Telephone: (315) 435-1900
Please call for hours of availability.

NYSDEC Region 7 Office
615 Erie Boulevard West
Syracuse, NY 13204-2400
Telephone: (315) 426-7400
Please call for an appointment.

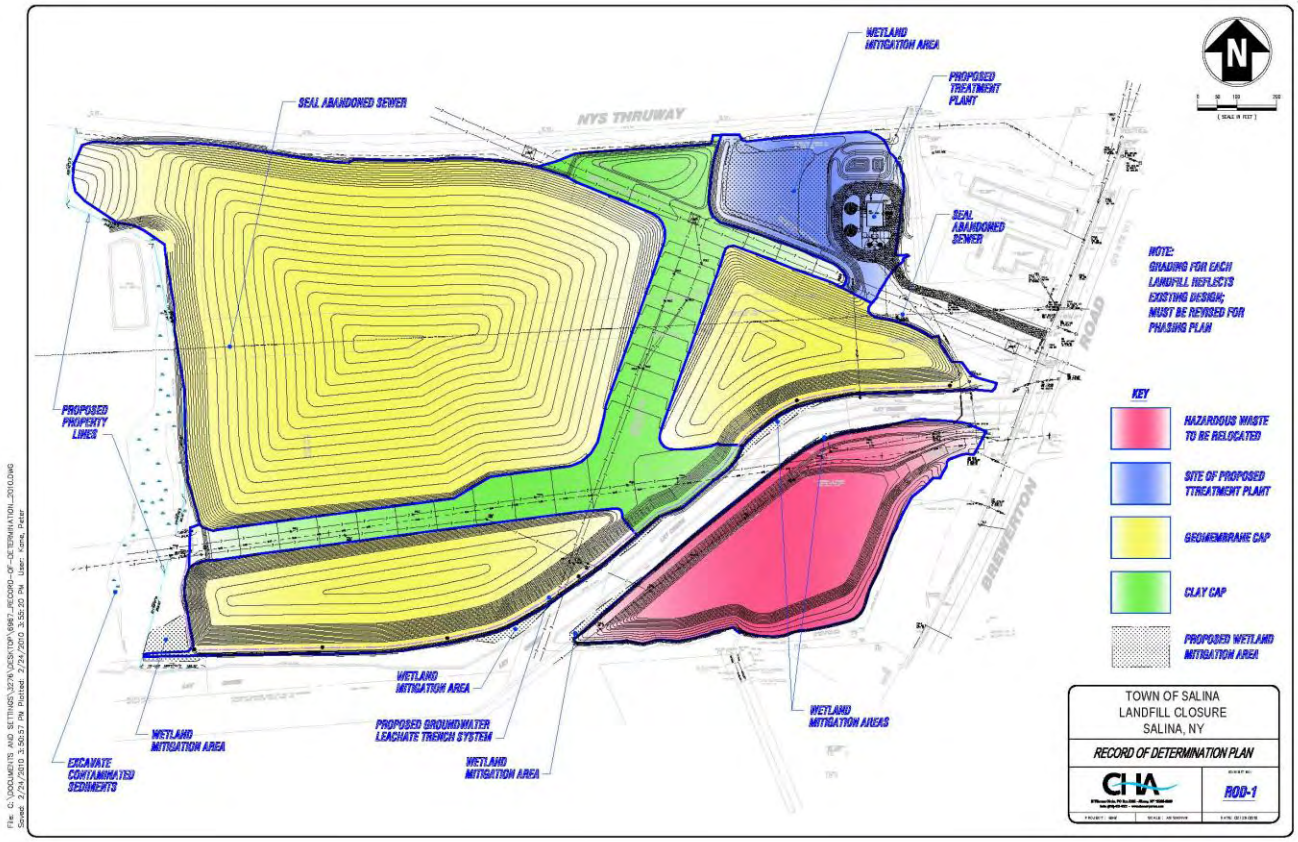
Who to Contact

Comments and questions are always welcome and should be directed as follows:

Project Related Questions
John Grathwol
NYSDEC
625 Broadway, 12th floor
Albany, NY 12233-7016
518-402-9775 or Toll-Free
1-888-212-9586
jcgrathw@gw.dec.state.ny.us

Project Related Health Questions
Mark Sergott
NYSDOH
Bureau of Environmental Exposure Investigation
Flanigan Square
547 River Street, Room 300
Troy, NY 12180
1-800-458-1158, Ext 27860
beei@health.state.ny.us

If you know someone who would like to be added to the site contact list, have them contact the NYSDEC project manager above. We encourage you to share this fact sheet with neighbors and tenants, and/or post this fact sheet in a prominent area of your building for others to see.



NYSDEC

Town of Salina Landfill

Region 2

Subsite of the Onondaga Lake Superfund Site

Town of Salina, Onondaga County, New York

EPA

PURPOSE OF THIS REVISED PROPOSED PLAN

The remedy selected in a March 29, 2007 Record of Decision (ROD) for the Town of Salina Landfill (the Site), a subsite of the Onondaga Lake site, included capping the landfill areas located north and south of Ley Creek, contaminated groundwater/leachate collection north and south of Ley Creek, on-Site groundwater/leachate treatment, and long-term operation, monitoring, and maintenance. In the ROD it was stated that the Town of Salina and Onondaga County may enter into an agreement allowing for the groundwater/leachate to be treated in the County's Metropolitan Wastewater Treatment Plant (METRO) if such an agreement occurred before a Remedial Design Work Plan was approved for the Site. The groundwater/leachate would be pumped to a pretreatment facility to be constructed on-Site and then sent to METRO, rather than sending the groundwater/leachate to a full-scale on-Site wastewater treatment plant to be constructed on-Site and then discharging it to Ley Creek. An agreement to treat the groundwater/leachate at METRO was subsequently entered into by the Town of Salina and Onondaga County.

During the Remedial Design phase, the Town, with concurrence of NYSDEC and EPA, conducted a number of pre-design studies. These studies were intended to address specific questions regarding the project. The studies included geotechnical engineering studies to evaluate foundation options for the pre-treatment plant, additional well installation and sampling activities to update groundwater quality information, an investigation to determine the depth of underground natural gas and petroleum pipelines, a source area investigation to identify the source of high concentrations of volatile organic compounds in the groundwater, sediment sampling to update data in drainage channels adjacent to the landfill, and several investigations to further evaluate the alternatives of capping waste in place vs. relocating waste.

Based upon the results of samples collected during the design of the selected remedy from the landfill area located south of Ley Creek, it was determined that the quantity of hazardous substances located in this portion of the landfill was substantially less than was originally estimated. As a result, the remedy was reevaluated and a modified remedy is being proposed. In accordance with Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. §9617(a), and Section 300.435(c)(2)(i) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), if after the selection of a remedy, there is a proposal to modify a fundamental component, an amendment to the ROD must be proposed. This Superfund Proposed Plan for Remedy Modification (Proposed Plan), which describes the proposed changes to the ROD, was developed by the New York State Department of Environmental Conservation (NYSDEC) and the United States Environmental Protection Agency (EPA) in consultation with the New York State Department of Health (NYSDOH). NYSDEC and EPA are issuing this Proposed Plan consistent with Section 117(a) of CERCLA, Section 300.430(f) of the NCP, New York State Environmental Conservation Law, and 6 NYCRR Part 375.

The reassessment of the contamination in the landfill located south of Ley Creek can be found in the September 2009 *Geotechnical Report*, the November 2009 *Monitoring Well Installation and Sampling Report*, and the December 2009 Cost *Estimates to Relocate Waste Vs. Cap In Place,* and the alternatives summarized in this Proposed Plan are described in the May 2002 feasibility study (FS) report, NYSDEC's August 2006 Bridging Document to the FS, and the ROD. EPA and NYSDEC encourage the public to review these documents to gain a more comprehensive understanding of the Site.

NYSDEC and EPA's preferred modified remedy to address the Site involves waste excavation of the landfill area materials located south of Ley Creek and consolidation of those excavated materials north of Ley Creek, capping the consolidated waste north of Ley Creek, contaminated groundwater/leachate collection north and, potentially, south of Ley Creek, followed by pretreatment (if necessary) and discharge of the collected groundwater/leachate to METRO, and long-term operation, monitoring and maintenance.

Because the preferred remedy would result in contaminants remaining on-Site at levels that exceed health-based levels, CERCLA requires that the Site be reviewed every five years. If justified by the review, additional remedial actions may be implemented.

The remedy described in this Proposed Plan is the preferred modified remedy for the Site. Changes to the preferred modified remedy, or a change from the preferred modified remedy to another remedy, may be made if public comments or additional data indicate that such a change will result in a more appropriate remedial action. The final decision regarding the selected remedy will be made after NYSDEC and EPA have taken into consideration all public comments.

COMMUNITY ROLE IN SELECTION PROCESS

NYSDEC and EPA rely on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each Superfund site. To this end, the Town of Salina Landfill RI/FS reports, the 2007 ROD, and

this Proposed Plan have been made available to the public for a public comment period which begins on May 24, 2010 and concludes on June 22, 2010.

A public meeting will be held during the public comment period at the Salina Town Hall in Liverpool, New York on June 7, 2010 at 7:00 P.M. At the public meeting, NYSDEC and EPA will elaborate on the reasons for recommending the preferred modified remedy and accept public comments.

Comments received at the public meeting, as well as written comments, will be addressed in the Responsiveness Summary section of an amended ROD, the latter of which will formalize the selection of the modified remedy.

Written comments on this Proposed Plan should be addressed to:

John Grathwol, Project Manager
New York State
Department of Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, NY 12233-7013
Fax: (518) 402-9775

E-mail: jcgrathw@gw.dec.state.ny.us

The administrative record file, which contains the information upon which the selection of this amended remedy will be based, is available at the following locations:

Town of Salina
201 School Road
Liverpool, NY 13088
Telephone: (315) 457-2710
Please call for hours of availability.

Salina Free Library
100 Belmont Street
Syracuse, NY 13211
Telephone: (315) 454-4524
Please call for hours of availability.

Onondaga County Public Library
Syracuse Branch at the Galleries
447 South Salina Street
Syracuse, New York 13202
Telephone: (315) 435-1900
Please call for hours of availability.

NYSDEC Central Office
625 Broadway
Albany, NY 12233-7016
Telephone: (518) 402-9774
or toll-free (888) 212-9586
Please call for an appointment.

NYSDEC Region 7 Office
615 Erie Boulevard West
Syracuse, NY 13204-2400
Telephone: (315) 426-7400
Hours: Monday - Friday, 8:30 AM - 4:45 PM
Please call for an appointment.

Atlantic States Legal Foundation
658 West Onondaga Street
Syracuse, NY 13204-3757
Telephone: (315) 475-1170
Hours: Please call for hours and appointment.
Email : Atlantic.States@aslf.org

SCOPE AND ROLE OF ACTION

The primary objectives of this action are to prevent direct contact (human and wildlife) with the landfill waste, minimize the migration of Site-related contaminants, and minimize any current and potential future health and environmental impacts.

SITE BACKGROUND

Site Description

The Town of Salina Landfill, approximately 55 acres in size, is located in the Town of Salina, Onondaga County, New York. It is designated a Class 2 Inactive Hazardous Disposal Waste Site by NYSDEC (New York Registry No. 7-34-036). The Site is bounded by the New York State Thruway to the north and by Route 11 (Wolf Street) to the east. An Onondaga County Resource Recovery Agency Transfer Station is located immediately to the west of the landfill. Ley Creek, a Class B stream, runs through the eastern half of the Site and along the southern border of the western half of the Site. The eastern half of the Site is bounded to the south by the banks of a separate tributary, known as the Old Ley Creek Channel (herein after OLCC). The location of a portion of the Ley Creek channel was moved in the early 1970s to its current location. The relocation of the channel resulted in Ley Creek flowing through the Landfill, bisecting it into a northern and southern area. Thus Landfilled materials have been identified both north and south of Ley Creek, the latter being in the land area located between the current Ley Creek and the OLCC (see Figure 1).

The sediments, surface waters, and banks of Ley Creek downstream of the Route 11 Bridge are a separate Class 2 New York State inactive hazardous waste disposal site known as the Lower Ley Creek sub-site. The sediments, surface waters, and banks of the OLCC are also a separate Class 2 New York State inactive hazardous waste disposal site known as the OLCC site. Further investigation of both the Lower Ley Creek and OLCC sub-sites is necessary.

Access to the Town of Salina Landfill has historically been gained from Route 11. In the past, trespassers could enter the Site on foot or by vehicle. The Town has attempted to limit access to the Site by installing a locked gate at the Site entrance and placing barriers across the dirt access road. It has also placed signs indicating that no dumping is allowed on-Site.

A 48-inch abandoned sewer line runs across the Site. A 48-inch corrugated metal pipe (CMP) culvert is located in the eastern part of the Site, and drainage ditches are located along the western, northern, and eastern borders of the Site (see Figure 1). Storm water from the Site drains to Ley Creek via the drainage ditches and the culvert.

The Site occupies 55 acres and is currently owned by five parties. The Town of Salina owns roughly 29 acres, comprising approximately the western half of the Site. Part of the Site (east of the Town's property line to the west of Route 11) is owned by John Paratore. Plaza East, Inc. owns the portion of the Site located between Ley Creek and the OLCC. Onondaga County previously owned a strip of land trending east-west across the Site associated with the underground sanitary-sewer pipe, but transferred ownership of that property to the Town of Salina in the fall of 2009. National Grid owns a strip of land trending east-west across the Site where public utilities (electrical wires and a gas line) are present.

The Site is located within an area zoned as an Industrial District. Land located immediately to the south and to the west of the Site is also zoned as an Industrial District. The land directly east of the Site, on the opposite side of Wolf Street, is zoned both as a Highway Commercial District and a One-Family Residential District. The land located to the north of the Site, on the opposite side of the New York State Thruway, is zoned as Open-Land District, Planned Commercial District, and One-Family Residential District. Based on the Code of the Town of Salina, land within each zoning district has specific intended uses. Any written proposals submitted to NYSDEC for the future use of the Site will be considered for incorporation into the remedial plans, as appropriate.

The area is served by municipal water.

Site History

The Town of Salina could not produce records indicating the actual date the Salina Landfill opened. However, in 1962, the Town Board closed the dump known as the "Mattydale Dump" pursuant to a court action. The Mattydale Dump was located in the vicinity of the current town garage off of Factory Avenue, approximately ½ mile to the east of the Site. With the closure of the Mattydale Dump, it is believed that the Town proceeded to work with a Site property owner (East Plaza, Inc.) to start landfill operations at the current location of the Town of Salina Landfill. In the same year, the Town adopted a garbage collection ordinance to regulate the collection of solid waste within the boundaries of the Town and to promote the public health, safety, and welfare of the residents.

The Town of Salina established residential refuse districts as early as 1941. As such, the Town Board would solicit bids from independent haulers and enter into a contract each year. Licensing procedures were adopted to monitor the disposal of waste, and permits were issued to haulers doing business in the Town. In 1970, periodic checks on the Landfill indicated that in addition to waste generated within the Town, additional tonnage was coming from outside areas. The Highway Superintendent reported that the Landfill was reaching capacity and suggested that the boundaries be expanded up to Route 81 or additional property be purchased.

During the period the landfill was open, in addition to accepting municipal solid waste, the landfill also accepted hazardous wastes including paint sludge, paint thinner, polychlorinated biphenyl (PCB)-contaminated wastes, and sediment dredged from Ley Creek.

In 1971, several complaints were made by the New York State Thruway Authority because refuse was being left uncovered and debris was blowing over the Thruway. The Thruway Authority requested that the Town apply cover material at the Landfill. Because of the capacity problems, the Town Board started looking into other solid waste disposal options, such as purchasing additional property to start another landfill, building an incinerator, or using a shredding plant which was being constructed by the City of Syracuse.

Between 1971 and 1974, landfill operations continued with little or no control exercised over the refuse haulers that were dumping in the Landfill. Town records indicate that the trucks with permit stickers were on the "honor system" and were not checked for source or quantity of refuse and that only town residents that brought their own refuse to the landfill were checked. Reaching its capacity, the Landfill was officially closed sometime in late 1974 or early 1975, pursuant to an order by NYSDEC.

In 1976, landfill-cover specifications were issued by NYSDEC for applying dirt fill and grading of the Site. However, litigation proceedings commenced between the Town of Salina and a property owner, East Plaza, Inc. In 1981, the Town purchased the western portion of the Site (approximately 29 acres) from East Plaza, Inc. Once again, landfill cover specifications were issued for the Site by the NYSDEC in July 1981.

In September 1981, pursuant to the new specifications for landfill closure at that time, the Town awarded a contract to cover the landfill by applying a two-foot layer of clay-type soil. Once the soil was placed, the area was hydroseeded to establish a vegetative cover. This project was completed in November 1982.

Since that time, a number of investigations have been performed at the Landfill. The investigations have largely been focused on gathering data to determine whether the landfill was a threat to human health and the environment.

In 1986, NYSDEC and the Onondaga County Department of Health collected three soil samples adjacent to the north bank of Ley Creek along the Landfill and four surface water samples from the same stretch of Ley Creek and drainage ditches north and east of the Landfill. PCBs were not detected in the water samples, but they were detected in the soil samples collected adjacent to Ley Creek.

In 1987, NUS Corporation (on behalf of EPA) collected five soil samples from the main fill area north of Ley Creek and three surface water and sediment samples were collected from Ley Creek as follows – one surface water and sediment sample was collected from an upstream location in Ley Creek (west of Route 11), one surface water and sediment sample was collected alongside the landfill (in the drainage swale in the northeast section of the landfill), and one surface water and sediment sample was collected from just downstream of the Landfill in Ley Creek. The soil samples contained polyaromatic hydrocarbon compounds (PAHs), metals, volatile organic compounds (VOCs), and pesticides in low levels, but no PCBs. The surface water and sediment samples collected downstream from the landfill did not contain higher concentrations of contaminants than the sample collected upstream from the landfill.

In 1987, Atlantic Testing (on behalf of NYSDEC) attempted to install three groundwater monitoring wells on-Site. Only one well was completed, as drilling for the other two wells encountered wastes in the form of black oil and petroleum-saturated soil. The soils in these borings contained PCBs, low levels of semi-volatile organic compounds (SVOCs) and dibenzofuran, and elevated levels of cadmium, chromium, nickel, and zinc. One upgradient monitoring well was installed. The groundwater from this well contained low levels of VOCs and SVOCs, high iron and manganese, but no PCBs.

In 1989, a bioaccumulation study conducted by O'Brien & Gere (on behalf of General Motors Corporation) on fish caught in Ley Creek showed that the fish contained up to 6.8 mg/kg PCBs.

In 1991, during an inspection of the Landfill by Ecology and Environment (on behalf of NYSDEC), a leachate outbreak was observed along the northern bank of Ley Creek downgradient of an area within the southwestern corner of the landfill.

In 1994, Ecology and Environment completed a Preliminary Site Assessment (PSA) on behalf of NYSDEC. This investigation included the collection of 10 surface water and sediment samples from locations in Ley Creek alongside the Landfill (including one upstream of the landfill) and in the adjacent drainage ditches situated to the north and west of the Landfill. Additionally, five surface-soil samples were collected on or around the landfilled area, and three leachate samples were collected along the north bank of Ley Creek (two along the southwestern corner of the Landfill and one near the power lines that pass over Ley Creek). The results indicated low levels of VOCs and SVOCs in the surface water (but no PCBs were detected). PCBs, pesticides, VOCs, and SVOCs were detected in the sediment samples, soil samples, and leachate samples.

In 1994, EPA designated Onondaga Lake, its tributaries, and the upland areas which have contributed or are contributing hazardous substance to the lake (called subsites) as a Superfund National Priorities List (NPL) site.

In 1996, Ecology and Environment prepared a PSA Addendum on behalf of NYSDEC. This supplemental investigation was conducted to provide further information on potential groundwater contamination at the Landfill. Five new monitoring wells were installed, developed, and sampled in the landfilled area north of Ley Creek. The groundwater from most wells contained low levels of VOCs and SVOCs. A PCB compound was detected in one well at a low concentration. One of the downgradient wells (MW-4) (see Figure 2) contained almost no organic compounds, but it did show elevated levels of a number of metals. Two surface water and sediment samples collected by NYSDEC from on-Site drainage ditches indicated PCBs were present in the sediment, but were absent from the surface water.

In 1996, NYSDEC designated the Site as a Class 2 Inactive Hazardous Waste Disposal Site. This designation means that NYSDEC considers the Site a significant threat to human health and/or the environment that requires remedial action. This Site was designated a subsite of the Onondaga Lake Superfund site in June 1997 by NYSDEC and EPA, because Site contaminants are migrating, and continue to migrate, to Ley Creek, which flows into the lake.

In 1997, representatives from NYSDEC collected three sediment samples from the OLCC. The results of that sampling show that detectable concentrations of VOCs, SVOCs, and PCBs are present in Old Ley Creek Channel.

On October 29, 1997, the Town of Salina entered into an Order on Consent with the NYSDEC to perform the RI/FS, remedial design, and remedial action for the Site. The RI started on June 29, 1998. Two phases of sampling occurred over two summers. An RI report was submitted by the Town, through its consultants, in May 2000. The report was reviewed by the EPA and NYSDEC, and then revised by the Town's consultants. The RI Report was approved in March 2001. The Town submitted a Draft FS Report in January 2001. The report was reviewed by the EPA and NYSDEC, and then revised by the Town's consultants. The FS Report was approved in May 2002.

In January 2003, NYSDEC released a Proposed Plan describing the remedial alternatives considered for the Site and identifying the preferred remedy with the rationale for the preference. The primary elements of the preferred remedy included constructing impermeable caps over the landfill areas north and south of Ley Creek, constructing groundwater/leachate collection trenches north and south of Ley Creek, with the collected leachate to be pumped to the Onondaga County wastewater-treatment plant.

Comments received during the public comment period indicated that Onondaga County had a policy not to accept wastewater from inactive hazardous-waste sites for treatment at METRO. The Town of Salina and the County participated in extended negotiations in an effort to reach an agreement to allow the landfill's groundwater/leachate to be treated at METRO. At the time that the ROD was signed in March 2007, no agreement had been reached. Therefore, a contingency remedy was selected. If the negotiations between the Town of Salina and Onondaga County related to the utilization of METRO to treat the collected contaminated groundwater/leachate were successful, then the collected groundwater/leachate would be pretreated on-Site and conveyed to METRO in lieu of the groundwater leachate undergoing complete treatment at an on-Site treatment facility and thereafter being discharged to Ley Creek. On September 10, 2008, the Town of Salina and the County entered into an agreement for METRO to accept the pretreated groundwater/leachate.

In July 2007, the Town of Salina's contractor commenced the design of the selected remedy.

In the ROD, Alternative 5 (waste excavation south of Ley Creek and consolidation north of Ley Creek; capping of landfill north of Ley Creek; and contaminated leachate collection with off-site discharge of treated effluent) was eliminated from consideration due to concerns that significant quantities of hazardous waste were commingled with the municipal refuse in the landfill located south of Ley Creek, which would have significantly increased the cost of the remedy since these wastes would require off-Site disposal. After the issuance of the ROD, samples were collected from the waste in the landfill area south of Ley Creek as part of the design. Upon analysis of these samples, it has been concluded that the landfill likely contains a heterogeneous mixture of municipal refuse with
only low concentrations of hazardous substances typically associated with municipal refuse.

Based upon a review of sample results from on-Site monitoring wells, it was noted that the VOC concentration in monitoring well MW-10 (see Figure 2 for the location of the well and the "Results of the Remedial Investigation" section, below, for more detail) exceeds the other monitoring wells by several orders-of-magnitude. This finding led to the conclusion that there was likely a source in the vicinity of monitoring well MW-10. In mid-January 2010, NYSDEC performed a trench/test-pit investigation to locate this source area. In this investigation, two trenches and 14 test pits were excavated. Based on the results of the investigation, the source area was located. In March 2010, approximately 1,810 tons of VOC-contaminated soil and waste was excavated and properly disposed off-Site. Information related to the reassessment of the contamination in the landfill area located south of Ley Creek can be found in the September 2009 *Geotechnical Report*, the November 2009 *Monitoring Well Installation and Sampling Report*, and the December 2009 Cost *Estimates to Relocate Waste Vs. Cap In Place*, all of which are available in the administrative record files (see above).

RESULTS OF THE REMEDIAL INVESTIGATION

The results of the RI/FS conducted to support the 2007 ROD are also relied upon to support this proposed plan.

Groundwater

Groundwater underlying the Site is found in two water-bearing units. The uppermost water-bearing unit is unconfined. The water table ranges from four to 22 feet below grade and is present either within the waste or in the uppermost sand unit. (See Figure 5.) The lower water-bearing unit is under confined conditions and is present in the lower sand unit, above the till. In fact, the conditions are such that one groundwater monitoring well, screened in the lower sand unit, was a free-flowing artesian well.

Groundwater samples were collected from a total of seventeen permanent monitoring wells on-Site, including fourteen shallow wells and three deep wells. (See Figure 2.)

The groundwater that appears to be most heavily impacted is located in the southeast portion of the main landfilled area north of Ley Creek. Monitoring well MW-10 (see Figure 2) is the most heavily contaminated, with elevated concentrations of toluene (92,774 µg/l; the groundwater standard is 5 µg/l) and xylenes (17,900 µg/l; the groundwater standard is 5 µg/l), as well as elevated concentrations of chlorinated solvents, such as trichloroethene (11,138 µg/l; the groundwater standard is 5 µg/l). Other wells in the southeastern vicinity of MW-10, including MW-6, MW-7, MW-8 and MW-9, contained a number of volatile organic compounds that exceed water quality standards or guidance values.

Four monitoring wells (MW-8, MW-9, MW-10 and MW-15) contained semi-volatile organic compounds that exceeded standards, such as bis(2-ethylhexyl)phthalate (17 µg/l; the groundwater standard is 5 µg/l) and naphthalene (36 µg/l; the groundwater guidance value is 10 µg/l). The groundwater in four monitoring wells (MW-7, MW-10, MW-12 and MW-15) also contained a few pesticides, BHC-

alpha (0.011 µg/l; the groundwater standard is 0.01 µg/l) and endrin (0.014 µg/l; the groundwater standard is "non-detect").

PCBs (Aroclor 1248) were detected in six monitoring wells (MW-1, MW-5, MW-6, MW-8, MW-9 and MW-15) in excess of water quality standards or guidance values (maximum concentration of 1.6 µg/l; the groundwater standard is 0.09 µg/l).

The groundwater in the confined aquifer was almost entirely free of organic compounds. The only exception was upgradient well MW-0D, which contained 2 µg/l of butyl benzyl phthalate (the groundwater guidance value is 50 µg/l).

The metals that exceed groundwater standards, the maximum detections, and the applicable groundwater standards include cadmium (34 µg/l; the groundwater standard is 5 µg/l) and chromium (309 µg/l; the groundwater standard is 50 µg/l). These parameters, as well as elevated concentrations of total dissolved solids and specific conductance, may indicate that the groundwater is slightly brackish.

Review of the leachate indicator data from the monitoring wells indicates that most of the shallow wells have been impacted by the landfill. The ratio of alkalinity to sulfate can be used to show leachate impacts and the majority of the shallow wells show high alkalinity/sulfate ratios. Alternatively, the deep wells have a low alkalinity/sulfate ratio, indicating that they have not been impacted by leachate. This evaluation is supported by the presence of elevated levels of nitrogen compounds (ammonia and Total Kjeldahl Nitrogen [TKN]) and total organic carbon (TOC) in the shallow wells, but absence or low concentrations of these compounds in the deep wells. The stratigraphic information and information on contaminant distribution within monitoring wells MW-12 and MW-12D indicate that the two aquifers are not interconnected.

Water samples were also collected from seven temporary wells that were installed in the water table aquifer along the northern bank of Ley Creek. The wells were installed to help define groundwater flow direction and to aid in the understanding of the interconnection between groundwater and surface water. Three of the seven wells were installed immediately upgradient of active leachate seeps. The results show high alkalinity/sulfate ratios and elevated concentrations of ammonia, TKN, and TOC. These results would appear to confirm that groundwater immediately adjacent to Ley Creek is impacted by landfill leachate.

Leachate

Three leachate samples were collected from the northern bank of Ley Creek (see Figure 3). The organic compounds that exceeded Class GA groundwater standards, the maximum detections, and the applicable groundwater standards included benzene (4 µg/l; the groundwater standard is 1 µg/l), chlorobenzene (22 µg/l; the groundwater standard is 5 µg/l), and Aroclor 1248 (1.0 µg/l; the groundwater standard is 0.09 µg/l). The metals that exceeded groundwater standards, the maximum detections, and the applicable groundwater standards included chromium (126 µg/l; the groundwater standard is 50 µg/l) and lead (199 µg/l; the groundwater standard is 25 µg/l).

Surface Water

Surface water samples were collected from six locations (see Figure 3). Organic compounds were detected in 2 of the samples. The parameters that were detected, the maximum concentrations, and the applicable water quality standards or guidance values were benzo(k)fluoranthene (10 µg/l; the water quality guidance value is 0.002 µg/l) and Aroclor 1248 (0.14 µg/l; the water quality standard is $1x10^{-6}$ µg/l). Although there appear to be upstream sources of Aroclor 1248, the Site may be a potential source since it was detected in samples collected in Ley Creek alongside the landfill.

The parameters that were detected, the maximum concentrations, and the applicable water quality standards for the metals that exceeded water quality standards for Class B waters were aluminum (238 µg/l; the water quality standard is 100 µg/l) and iron (702 µg/l; the water quality standard is 300 µg/l). These compounds were found in all of the samples. Both metals showed a trend of increasing concentrations with increasing distance downstream. The increase in concentration of the metals between the 48-inch storm water discharge pipe and the drainage ditch along the western border of the landfill indicates that groundwater flowing into the landfill and through the Site that seeps into Ley Creek impacts stream water quality. Cyanide was detected in three of the six samples in excess of the standards or guidance values for Class B waters (13.6 µg/l, 13.6 µg/l, and 18.6 µg/l; the standard is 5.2 µg/l).

Sediment

At each surface water sample location, two sediment depths were targeted for collection—one from 0-6 inches below the sediment/water interface and a second from 6-12 inches below the interface. A sediment sample was selected upstream of the Site in Ley Creek (see Figures 3 and 4). With regard to VOCs, most of the sediment samples contained acetone (0.014 milligrams per kilogram [mg/kg] to 0.078 mg/kg) and three samples contained methylene chloride 0.003 mg/kg, 0.004 mg/kg, and 0.007 mg/kg). All of the Ley Creek samples contained numerous SVOCs in excess of New York State sediment criteria. The predominant SVOCs present in the sediments were PAHs. The PAHs detected above sediment criteria with their maximum concentrations were benzo(a)

anthracene (9.1mg/kg), benzo(a)pyrene (7.45 mg/kg); and chrysene (10.15 mg/kg). In most cases, the uppermost sample was 1.5 to two times higher in concentration compared to the deeper sample, with one location as the exception.

There were no pesticides detected in the sediments. PCBs (Aroclors 1248 and 1260) were detected in every sample in high concentrations (ranging from 3.6 mg/kg to 81mg/kg), with the exception of the sediment samples collected from the drainage ditch paralleling the New York State Thruway where PCBs were not detected. The Site-specific sediment screening criterion for PCBs is 0.0008 mg/kg. The upstream sample location had PCB concentrations of 51.3 mg/kg and 49.7 mg/kg (shallow and deep, respectively). This upstream Ley Creek sample indicates that PCBs emanate from an upstream source.

A number of metals, including arsenic, cadmium, chromium, lead, nickel, silver, and zinc, were present in the sediments in excess of sediment criterion in virtually all samples except the sediment samples collected from the drainage ditch paralleling the New York State Thruway. The metals that were detected, the maximum detections, and the associated sediment criterion are cadmium (83.7 mg/kg; the sediment criterion is 0.6 mg/kg) and chromium (1,767 mg/kg; the sediment criterion is 26.0 mg/kg). The concentrations for chromium in the downgradient samples were significantly higher than upstream concentrations, indicating that the contamination in the landfill could be contributing to the contamination of the sediments in Ley Creek.

Data from previous investigations at the landfill show PCBs and metals above sediment criterion in the drainage ditch west of the landfill which is located in a wetland. Cadmium concentrations ranged from not detected to 7.2 mg/kg; the criterion is 0.6 mg/kg. Lead concentrations ranged from not detected to 151 mg/kg; the criterion is 31 mg/kg.

Soil

The uppermost soils encountered over most of the Site consist of silt and clay and represent the soil cover placed over the waste in 1982. This uppermost layer is approximately 2 feet thick. The soil cover overlies landfilled waste. The waste is thickest on the western portion of the Site and thins out to the east. Across the western portion of the landfill, the waste overlies a layer of clay varying in thickness from six to 40 feet. A discontinuous layer of sand appears between the waste and clay layer along the southern and eastern portions of the Site. A silt and sand unit up to 20 feet thick underlies this clay layer over most of the Site. This silt and sand unit overlies a sand unit up to 25-feet thick that appears to dip slightly to the west. A dense glacial till is present beneath the sand unit. The landfill appears to lie in a trough, as the till is found within 10 feet of the surface on the south side of Ley Creek, but is approximately 60 feet below grade in boring B-11 (see Figure 5).

The guidance used for the evaluation of contaminant concentrations in soil are based on NYSDEC's 6NYCRR Subpart 375-6.8 Remedial Program Soil Cleanup Objectives (Part 375).

Surface Soil

Twenty-nine surface soil samples were collected on and around the Site. As with the sediments, the predominant SVOCs were PAHs, and these compounds were detected in every sample. The concentrations of SVOCs are depicted in Figure 6. The PAHs that were detected in excess of Part 375 Soil Cleanup objectives with their maximum concentrations were: benzo(a)anthracene (8.3 mg/kg; the Part 375 Unrestricted use Soil Cleanup objective is 1 mg/kg), benzo(a)pyrene (5.2 mg/kg; the Part 375 objective is 1 mg/kg), and benzo(b)fluoranthene (13.9 mg/kg; the Part 375 objective is 1 mg/kg). The highest concentrations of PAHs were detected in the samples collected over most of the landfill surface north of Ley Creek. A number of pesticides were detected in three samples, but none were in excess of the Part 375 objectives. Aroclor 1248 was detected in two surface soil samples (0.22 mg/kg and 8.4 mg/kg; the Part 375 Unrestricted Use objective is 0.1 mg/kg), which are both located on the parcel between OLCC and Ley Creek. Aroclor 1248 was detected in one surface soil sample at a concentration of 8.4 mg/kg, which exceeds the Part 375 objective of 0.1 mg/kg for surface soils. The sample was collected from the parcel between OLCC and Ley Creek.

Evaluation of the metals data shows that almost all metals concentrations exceeded Part 375 objectives in every sample. In many cases, the metals concentrations in the samples collected on top of the landfill were present in concentrations only slightly above background. The metals detected above standards with their maximum concentrations and background levels were: cadmium (17.3 mg/kg; background is 1 mg/kg), chromium (116 mg/kg; background is 10 mg/kg), lead (1,163 mg/kg; background is 18.75 mg/kg), and mercury (2.6 mg/kg; background is 0.1 mg/kg.

Subsurface Soil

Eight subsurface soil samples were collected from test pits during the waste area investigation. The sample from one test pit was collected from a black oily sludge with a strong petroleum odor. The samples from four test pits were collected near this test pit in an attempt to determine the extent of the black oily sludge. One sample was collected from a very compact yellow sandy material, with no odor. Another sample was collected from a dark stained soil, near where the original sanitary sewer line connected to the current sewer line. The samples from other test pits

were collected from soils in contact with the original sanitary sewer line that crossed the Site.

A number of VOCs were detected in the subsurface soil samples. In particular, one sample had 0.377 mg/kg of 1,1-dichloroethane (the Part 375 Unrestrictive Use objective is 0.27 mg/kg) and 0.766 mg/kg of 1,2-dichloroethene (total) (the Part 375 objective is 0.33 mg/kg). One sample contained a relatively high concentration of total xylenes (45.362 mg/kg; the Part 375 Unrestricted Use objective is 0.26 mg/kg) and toluene (147.949 mg/kg; the Part 375 objective is 0.7 mg/kg). As with the surface soil samples, the subsurface soil samples all contained PAHs as the predominant subclass of SVOCs present in excess of Part 375 objectives. The PAHs detected above Part 375 objectives with their maximum concentrations and the Part 375 objectives were: benzo(a)anthracene (16.0 mg/kg; the Part 375 Unrestricted Use Soil Cleanup Objective is 1 mg/kg), benzo(a)pyrene (11.700 m g/kg; the Part 375 objective is 1 mg/kg), benzo(b)fluoranthene (22.0 mg/kg, the Part 375 objective is 1 mg/kg. The subsurface soil samples did not contain pesticides but all samples contained PCBs. The samples from four test pits contained Aroclor 1248 in excess of the Part 375 Unrestricted Use Soil Cleanup objective, the highest being 420 mg/kg (the Part 375 objective is 0.1 mg/kg).

Again, as with the surface soil samples, virtually all of the metals in all of the samples exceeded Part 375 objectives. However, the metals concentrations were generally within one to two times background concentrations. The exceptions were the samples from three test pits (collected along the edge of the creek, immediately north of the confluence of Ley Creek and the OLCC), where metals concentrations ranged from two to 250 times background concentrations. In particular, the concentrations of chromium and cyanide were significantly higher than both background concentrations and the concentrations found in other areas of the landfill. The metals detected above standards with their maximum concentrations were: cadmium (34.5 mg/kg, the background is 1 mg/kg), chromium (4,265 mg/kg; background is 10 mg/kg), lead (418 mg/kg; background is 18.75 mg/kg), and mercury (0.87 mg/kg; background is 0.1 mg/kg). It is likely that these elevated concentrations of metals in this area are predominantly the result of historical waste disposal in the area rather than an upstream source.

It is important to note that while the subsurface soil samples collected adjacent to the former sanitary sewer contained elevated levels of certain contaminants, there was no evidence of coarse-grained bedding material around the sewer. It appeared that the sewer was placed in native soils. Based on these direct visual observations, it appears unlikely that the material surrounding the sewer has, or will act as a preferred pathway for contaminant migration. However, it is unknown whether the interior of the sewer can act as a pathway.

In addition to the test pits, samples were collected from two soil borings at varying depths and analyzed for inorganic compounds. Several of the metal concentrations exceeded the background values, but virtually all metal concentrations were within one to 2 times the background concentrations, except selenium which was approximately three times the background. The samples collected from these borings were also analyzed to determine the feasibility of using bioremediation as a remedial alternative for soil in the vicinity of MW-10 (see Figure 2). (Bioremediation was determined to not be feasible based upon the tests due to the nature of the wastes present.) Two borings were also drilled in the middle of Ley Creek to determine if waste was present beneath the bed of the creek. No waste was found in these borings.

Biota

The analytical results for earthworm bioassays indicate that metals are the most common contaminant class in earthworms. The metals that were detected at levels of concern were chromium, copper, lead, mercury and zinc. Only two SVOCs were detected: 4-methylphenol and di-n-butyl phthalate. Since the earthworm samples were composited into one sample in order for the laboratory to perform the required analyses, no trends across the Site could be established.

Principal Threat Wastes

No principal threat wastes[3] have been identified at the Site.

SUMMARY OF SITE RISKS

Based upon the results of the RI, a baseline risk assessment was conducted to estimate the risks associated with current and future site conditions. The baseline risk assessment estimates the human health and ecological risks which could result from the contamination at the Site if no remedial actions were taken.

Human Health Risk Assessment

A Superfund baseline human health risk assessment is an analysis of the potential adverse health effects caused by

[3] Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur. See A Guide to Principal Threat and Low Level Threat Wastes, USEPA, November 1991.

hazardous substance releases from a site in the absence of any actions to control or mitigate these under current- and future-land uses. A four-step process is utilized for assessing site-related human health risks for reasonable maximum exposure scenarios.

Hazard Identification: In this step, the contaminants of concern (COC) at the site in various media (*i.e.*, soil, groundwater, surface water, and air) are identified based on such factors as toxicity, frequency of occurrence, and fate and transport of the contaminants in the environment, concentrations of the contaminants in specific media, mobility, persistence, and bioaccumulation.

Exposure Assessment: In this step, the different exposure pathways through which people might be exposed to the contaminants identified in the previous step are evaluated. Examples of exposure pathways include incidental ingestion of and dermal contact with contaminated soil. Factors relating to the exposure assessment include, but are not limited to, the concentrations that people might be exposed to and the potential frequency and duration of exposure. Using these factors, a "reasonable maximum exposure" scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated.

Toxicity Assessment: In this step, the types of adverse health effects associated with chemical exposures and the relationship between magnitude of exposure and severity of adverse effects are determined. Potential health effects are chemical-specific and may include the risk of developing cancer over a lifetime or other non-cancer health effects, such as changes in the normal functions of organs within the body (*e.g.*, changes in the effectiveness of the immune system). Some chemicals are capable of causing both cancer and non-cancer health effects.

Risk Characterization: This step summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks. Exposures are evaluated based on the potential risk of developing cancer and the potential for non-cancer health hazards. The likelihood of an individual developing cancer is expressed as a probability. For example, a 10^{-4} cancer risk means a "one-in-ten-thousand excess cancer risk"; or one additional cancer may be seen in a population of 10,000 people as a result of exposure to site contaminants under the conditions explained in the Exposure Assessment. Current Superfund guidelines for acceptable exposures are an individual lifetime excess cancer risk in the range of 10^{-4} to 10^{-6} (corresponding to a one-in-ten-thousand to a one-in-a-million excess cancer risk) with 10^{-6} being the point of departure. For non-cancer health effects, a "hazard index" (HI) is calculated. An HI represents the sum of the individual exposure levels compared to their corresponding reference doses. The key concept for a non-cancer HI is that a "threshold level" (measured as an HI of less than 1) exists below which non-cancer health effects are not expected to occur.

Exposure pathways considered for the baseline risk assessment included:

Current and future land use scenarios by trespassers:

Exposure to surface soils via ingestion;

Exposure to surface soils via dermal contact;

Exposure to leachate via ingestion; and

Exposure to leachate via dermal contact.

Future exposure pathways for on-Site construction workers:

Exposure to surface soil via ingestion;

Exposure to surface soil via dermal contact;

Exposure to subsurface soil via ingestion;

Exposure to subsurface soil via ingestion;

Exposure to subsurface soil via dermal contact; and

Exposure to groundwater via incidental ingestion.

The results of the risk assessment indicate that the estimated excess cancer risks for the child trespasser (considering exposures to surface soil and leachate) in both the current and future land-use scenarios were 1.4 x 10^{-4}. This value represents the upperbound of EPA's acceptable risk range. The largest portion of this cumulative risk is from dermal contact with surface soil. The COCs contributing to the cancer risk for child trespassers are benzo(a)pyrene and benzo(b) fluoranthene for surface soil, and Aroclor 1248 for leachate.

The cumulative cancer risk (1.2 x 10^{-4}) for the construction worker in the future land-use scenario (through exposures to surface soil, subsurface soil, and groundwater) represents the upperbound of EPA's acceptable risk range. The largest portion of this risk is attributable to ingestion of and dermal contact with subsurface soil. Some of the COCs that contributed most significantly to the construction worker cancer risk were benzo(a)pyrene, benzo(b)fluoranthene, Aroclor 1248, and arsenic.

The estimated HI for the construction worker in the future land-use scenario was in excess of 1.0 (1.7). This value represents the cumulative effect of exposure to surface soil (ingestion and dermal contact), subsurface soil (ingestion and dermal contact), and groundwater (incidental ingestion only) at the Site in the future. The groundwater route represents the largest portion of the cumulative noncarcinogenic risk to construction workers. Thus, there appears to be a potential risk for noncancer health effects to this receptor in the future. The major COCs identified as contributing to the increased noncarcinogenic risk for construction workers were arsenic (for surface soil and subsurface soil), and arsenic, cadmium, and 1,2-dichloroethene (total) for groundwater.

Ecological Risk Assessment

Based on the results of the ecological risk assessment, the contamination at the Site poses a risk to soil invertebrates (worms) and terrestrial vertebrates (soil invertebrate-feeding birds and mammals). Specifically, using maximum contaminant concentrations in surface soil, a risk was calculated for soil invertebrates from total PAHs, chromium, copper, lead, mercury, and zinc. Using mean contaminant concentrations, a risk was calculated for soil invertebrates from chromium, copper, mercury, and zinc. Using the mean concentrations, chromium had the highest hazard quotient[4] (HQ=118), while copper, mercury, and zinc had lower quotients (HQs ranging from 1.1 to 6.3). Toxicity values for soil invertebrates were not available for many other contaminants present in Site surface soils, particularly, many PAHs, bromoform, 4-chloroaniline, bis(2-ethylhexyl)phthalate, Aroclor 1248, nine metals, and cyanide. PAHs were evaluated by comparing total PAH concentrations with the toxicity value for fluorine. However, the potential risks to soil invertebrates from the remaining contaminants for which no toxicity value was available are uncertain.

The risk assessment also indicates that, using maximum contaminant concentrations, soil-invertebrate feeding birds are potentially at risk from aluminum, barium, cadmium, chromium, cobalt, copper, lead, mercury, selenium, silver, vanadium, zinc, and cyanide. Of these, chromium had the highest hazard quotients (HQs=67 and 6.7 using the No-Observed-Adverse-Effect Level [NOAEL] and Lowest-Observed-Adverse-Effect Level [LOAEL], respectively), while the remaining metals had lower quotients (HQs ranging from 1.3 to 26 using the NOAEL and 1.05 to 6.4 using the LOAEL).

The results of the ecological risk assessment also indicate that using the maximum contaminant concentrations, soil invertebrate-feeding mammals are potentially at risk from aluminum, arsenic, barium, cadmium, copper, lead, mercury, selenium, silver, thallium, vanadium, and cyanide. Of these, aluminum had the highest hazard quotients, with HQs of 259 and 26 using the NOAEL and LOAEL, respectively. The remaining contaminants had lower hazard quotients, ranging from 1.1 to 14 using the NOAELs and from 1.4 to 3.5 using the LOAELs. Toxicity values were not available for beryllium, iron, or thallium for birds, nor for iron for mammals. Therefore, the risks posed by these contaminants to these receptors are uncertain.

[4] Hazard Quotients (HQs) are values obtained from dividing an estimated environmental exposure value by a toxicity reference value (such as a concentration known to cause no adverse effects. HQ values equal to or greater than 1.0 indicate potential ecological risk.

Summary of Human-Health and Ecological Risks

The human-health risk assessment conducted for the Site concluded that the COCs detected in environmental media (*i.e.*, PAHs, arsenic, Aroclor 1248) at the levels identified in the RI pose elevated carcinogenic (under both current and future land-use scenarios) and noncarcinogenic (under the future land-use scenario) health risks to potentially-exposed populations at the Site.

Based on the results of the ecological risk assessment, the contamination at the Site poses a risk to soil invertebrates and terrestrial vertebrates. Specifically, using maximum contaminant concentrations in surface soil, a risk was calculated for soil invertebrates from total PAHs, chromium, copper, lead, mercury, and zinc. Using mean contaminant concentrations, a risk was calculated for soil invertebrates from chromium, copper, mercury, and zinc.

The risk assessment also indicates that, using maximum contaminant concentrations, soil-invertebrate feeding birds are potentially at risk from aluminum, barium, cadmium, chromium, cobalt, copper, lead, mercury, selenium, silver, vanadium, zinc, and cyanide.

The results of the ecological risk assessment also indicate that, using maximum contaminant concentrations, soil invertebrate-feeding mammals are potentially at risk from aluminum, arsenic, barium, cadmium, copper, lead, mercury, selenium, silver, thallium, vanadium, and cyanide. Using mean contaminant concentrations, a risk was calculated from aluminum, arsenic, barium, cadmium, lead, mercury, selenium, silver, thallium, vanadium, and cyanide.

Although the risk assessment did not address exposures that occur as a result of the discharge of contaminated groundwater to Ley Creek, the groundwater underlying the Site has been documented to be a source of contamination to Ley Creek. Surface water samples from Ley Creek contained PCBs exceeding the NYSDEC's ambient water quality standards for New York State Class B surface waters and the levels of PCBs in Site groundwater, which discharges into Ley Creek, also exceeded the Class B surface water quality standards for PCBs. These standards are based on impacts to humans who consume fish and on wildlife protection. In addition, the levels of aluminum and iron exceeded the State's Class B ambient water quality standards for these metals in both Ley Creek surface water samples and in Site groundwater. The standard for aluminum is based on fish propagation, and the standards for iron are based on fish propagation and fish survival.

It should also be noted that Ley Creek surface water and sediments were not evaluated in the baseline human-health and ecological risk assessments conducted for the Town of Salina Landfill subsite RI/FS due to the presence of upstream sources of contamination. Upstream

contaminated surface water and sediments in Ley Creek are currently being investigated under an RI/FS for the IFG Facility and Ley Creek Deferred Media subsite of the Onondaga Lake site. As is stated in the "Site Description" section above, the sediments, surface waters, and banks of Ley Creek under and downstream of the Route 11 Bridge as well as the sediments, surface waters, and banks of the OLCC are being addressed as two separate inactive hazardous waste disposal sites.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) are site-specific goals to protect human health and the environment. These objectives are based on available information and standards such as applicable or relevant and appropriate requirements (ARARs)[5] and unacceptable exposures established in the risk assessment.

The following RAOs, which were established in the 2007 ROD, remain the same:

- Reduce/eliminate contaminant leaching to ground water
- Control surface-water runoff and erosion
- Prevent the off-Site migration of contaminated groundwater and leachate
- Restore groundwater quality to levels which meet state and federal drinking-water standards
- Prevent human contact with contaminated soils, sediment, and ground water
- Minimize exposure of aquatic species and wildlife to contaminants in surface water, sediments, and soils

SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA requires that each selected site remedy be protective of human health and the environment, be cost-effective, comply with other statutory laws, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. In addition, the statute includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances.

During preparation of the May 2002 FS, the complete excavation and removal of the landfilled wastes both north and south of Ley Creek was not considered to be a viable remedial alternative and was, therefore, eliminated from further consideration. Not only is source containment (*i.e.*, landfill cap, measures to control landfill leachate, source-area groundwater control to contain the plume, and institutional controls to supplement engineering controls) consistent with the *Presumptive Remedy for CERCLA Municipal Landfill Sites* [6], but the cost of complete excavation and removal of the landfilled wastes would be an order of magnitude higher than the other remedial alternatives that were considered.

The present-worth costs for all of the alternatives discussed below are calculated using a discount rate of 7 percent and a 30-year time interval. The time to implement reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy or procure contracts for design and construction.

Each alternative considered in the FS supporting the 2007 ROD was evaluated using nine different criteria, as summarized following the detailed descriptions of the five alternatives. The cost associated with each alternative is one of the criteria considered during this evaluation of the alternatives. It is important to recognize several important issues with respect to the cost estimates. First, the cost estimates were prepared based on conceptual plans and the actual cost of the selected remedial alternative may change after the detailed engineering design is completed. Additionally, the costs were prepared during the FS stage of the project and it will be several years until construction is completed. The cost of construction materials and energy costs have risen rapidly in recent years and therefore the passage of time will likely impact the cost estimates presented in this Plan. That being said, NYSDEC will work closely with the Town in designing a cost-effective remedy under a State Assistance Contract with the Town.

The 2007 ROD identified five alternatives, including no action (Alternative 1). Two of the alternatives (Alternatives

[5] Section 121(d) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) requires that on-Site remedial actions attain or waive Federal environmental ARARs, or more stringent State environmental ARARs, upon completion of the remedial action. The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) also requires compliance with ARARs during remedial actions and during removal actions to the extent practicable. ARARs are identified on a site-by-site basis for all on-site response actions where CERCLA authority is the basis for cleanup.

[6] See EPA Publication 9203.1-021, SACM Bulletins, *Presumptive Remedies for Municipal Landfill Sites*, April 1992, Vol. 1, No. 1, and February 1993, Vol. 2, No.1, SACM Bulletin *Presumptive Remedies*, August 1992, Vol.1, No. 3. and EPA Directive No. 9355.0-49FS, *Presumptive Remedy for CERCLA Municipal Landfill Sites*, September 1993.

2 and 3) involved on-Site treatment of the contaminated groundwater/leachate and two of the alternatives (Alternatives 4 and 5) involved off-Site treatment of the contaminated groundwater/leachate at METRO. Since the county has agreed to treat the contaminated groundwater/leachate at METRO, the on-Site treatment alternatives (Alternatives 2 and 3) have been dropped from consideration in this Proposed Plan.

The no-further-action alternative (Alternative 1) and the two alternatives involving off-Site treatment of the contaminated groundwater/leachate at METRO (Alternatives 4 and 5) have been retained for this proposed modification. These alternatives were slightly altered from those presented in the 2007 ROD because of new information obtained during the remedial design. The no-action alternative is now called “no further action” since a source removal was undertaken at the Site. Alternative 4, described below, is the contingency remedy selected in the 2007 ROD. Alternative 4 called for placing a cap over the wastes landfilled in the area south of Ley Creek. Alternative 5 calls for relocating these wastes onto the to-be-capped area north of Ley Creek.

The alternatives are:

Alternative 1: No Further Action

Capital Cost:	$0
Annual Operation, Monitoring, and Maintenance (OM&M) Costs:	$0
Present-Worth Cost:	$0
Construction Time:	0 months

The Superfund program requires that the "no-action" alternative be considered as a baseline for comparison with the other alternatives. The no-action remedial alternative does not include any physical remedial measures. Since a source was identified and removed in the vicinity of MW-10 in March 2010, this alternative is being called “no further action” as opposed to “no action.”

Because this alternative would result in contaminants remaining on-Site, CERCLA requires that the Site be reviewed at least once every five years. If justified by this assessment, remedial actions may be implemented in the future to remove or treat the waste.

Alternative 4: Part 360 Cap North and South of Ley Creek and Contaminated Groundwater/Leachate Collection North and South of Ley Creek, Pretreatment of the Collected Contaminated Groundwater/Leachate, Off-Site Contaminated Groundwater/Leachate Treatment and Discharge of Treated Effluent, and Long-Term Operation, Monitoring and Maintenance

Capital Cost:	$22,736,268
Annual OM&M Costs:	$329,703
Present-Worth Cost:	$26,827,561
Construction Time:	2 years

The key elements of this alternative are as follows:

- Construction of groundwater/leachate collection trenches north and south of Ley Creek;
- Excavation of contaminated sediments in the western drainage ditch;
- Lining the drainage ditches located along the northern and eastern borders of the Site;
- Consolidation of the excavated sediments and the soils and wastes (from the excavation of the collection trenches) on the landfill area north of Ley Creek, as appropriate;
- Construction of 6 NYCRR Part 360 caps over the landfill area north and south of Ley Creek;
- Engineered drainage controls and fencing;
- Installation of an on-Site storage tank to hold excess water volume from the groundwater/leachate collection trench(es) stemming from storm events;
- Conveyance of the collected groundwater/ leachate to an on-Site pretreatment facility and then to METRO for final treatment.
- Institutional controls (such as deed restrictions) to prohibit residential use of Site property and the installation and use of groundwater wells, as well as to protect and ensure the integrity of the cap, the groundwater/leachate collection trench(es), and the engineered drainage controls;
- Operation and maintenance of the on-Site treatment plant and maintenance of the cap and groundwater/leachate collection trench(es); and
- Long-term monitoring.

The northern collection trench would be approximately 2,900 feet long. The southern collection trench would be approximately 1,260 feet long. The trenches would be constructed and creek banks would be restored, as appropriate, in compliance with the New York State stream protection ARAR, 6 NYCRR Part 608 Use and

Protection of Waters. The groundwater/leachate collection trench would be installed along (the channelized portion of) Ley Creek. Based upon available data and the conclusion that the groundwater flow from the landfill south of Ley Creek is likely to be influenced by a northwestern flowing gradient to the southern collection trench along Ley Creek, a collection trench along the northern side of OLCC may not be needed. If monitoring data becomes available in the future that indicates a different flow gradient, then the need for a groundwater collection trench along the north side of the OLCC will be evaluated.

The institutional controls (such as deed restrictions) would prohibit the residential use of the Site property, the installation and use of groundwater wells, and the excavation of soils that would negatively impact the integrity of the cap, the groundwater/leachate collection trenches, and/or the engineered drainage controls.

All excavated sediments, soils, and wastes which have PCB concentrations which equal or exceed 50 mg/kg would be sent off-Site for treatment/disposal at a Toxic Substances Control Act (TSCA)-compliant facility. Those sediments that have PCB concentrations less than 50 mg/kg would be consolidated underneath the cover on the landfill area north of Ley Creek. Nonhazardous soils and waste would be consolidated on-Site over approximately 10 acres in a currently flat area in the northern portion of the Site. The consolidated material would be graded to improve drainage in this area and then covered with the Part 360 cap.

The high level of VOCs in soils and waste in the vicinity of MW-10 (see Figure 2) is within the expected area of the leachate collection trench north of Ley Creek. Design modifications to the leachate pretreatment facility are expected since the March 2010 VOC source removal will significantly improve the groundwater/leachate quality at the Site. The groundwater investigation to study the positive effects of the March 2010 source removal on landfill leachate and site groundwater will begin in Spring 2010. Design modifications to the groundwater/leachate pretreatment facility will be determined based on the results of this investigation.

After spreading the waste materials, soils, and sediments on top of the landfilled areas, the surfaces north and south of Ley Creek would be graded and covered. Before installing the multilayer caps in the areas to the north and south of Ley Creek, the subgrades would be graded to promote drainage and exhibit final slopes between 4% and 33%. After its installation, the caps would be seeded.

A 6 NYCRR Part 360 cap is commonly used in New York State to close municipal solid waste landfills. The cap systems would include the following components:

1. A gas venting layer, in accordance with 6 NYCRR Part 360 regulations, will be placed directly overlying the waste material. A filter fabric is typically directly below and above the venting layer to minimize the migration of fines into the venting layer. This layer is required to transmit methane for high organic waste material.

2. A synthetic 60 mil geomembrane overlying the gas venting layer.

3. A 12-inch compacted soil layer to protect the geomembrane from root penetration, desiccation, and freezing.

4. A final 6-inches of topsoil placed on top of the protective layer to promote vegetative growth for erosion control.

Results of an analysis to determine the infiltration rate through the multilayer caps show a significant reduction in infiltration through the caps. Estimates of collection trench flow are made with consideration of the reduced infiltration, which results in a reduced saturated thickness and a reduced hydraulic gradient.

Prior to the installation of collection trenches, any landfill wastes encroaching on or near the banks of Ley Creek and OLCC would be pulled back approximately 30 feet from the northern and southern banks of Ley Creek and approximately 30 feet from the northern banks of OLCC. This waste would be removed and disposed properly at a permitted off-Site facility if it is characterized as hazardous waste. If it is not characterized as hazardous waste, then the waste would be consolidated onto the landfill. Site preparation prior to trench construction would include clearing, grubbing, and removal of trees along the relevant banks of Ley Creek. Erosion controls, including silt fencing and/or hay bales, would be installed to prevent soil and silt runoff. The existing slopes along the banks would be regraded to provide a suitable work pad for construction of the trenches.

The groundwater/leachate collection trenches would be keyed into the low-permeability till, or clay layer that act as an aquitard between the shallow and deep aquifers at the Site. Pending further evaluation, it is anticipated that the trenches would be installed using the bio-polymer slurry construction technique, which eliminates the need for shoring, dewatering, and personnel working in the trench. A barrier liner may be installed on the downgradient side of the trenches to prevent the inflow of uncontaminated water from Ley Creek. A perforated HDPE pipe would be installed at the bottom of the trenches and a porous media (such as large diameter gravel) would be backfilled. The trenches would be designed such that the collected groundwater/leachate would flow by gravity through conveyance piping to a collection point or points from which it would be conveyed to an on-Site pretreatment facility (if necessary) and then to METRO via a force main to a sewer connection underlying Route 11.

After the installation of the trenches, the work areas in the buffer areas would be graded for proper drainage, covered with topsoil, and revegetated. The creek banks would be

restored, as appropriate, in compliance with the New York State stream protection ARAR, 6 NYCRR Part 608 *Use and Protection of Waters*.

Calculations performed for this alternative estimated that approximately 45,600 gallons per day (gpd) would be collected in the northern collection trench and 6,900 gpd would be collected in the southern collection trench. These values would likely decline over time as the local groundwater table was lowered in response to the installation of an impermeable cap and collection and discharge of groundwater/leachate.

The 48-inch abandoned sewer line that runs across the Site would be exposed, broken, and sealed with concrete (or some other suitable material) at the eastern and western borders of the Site, to prevent it from serving as a conduit to convey contaminated groundwater off-Site. In addition, a slip liner would be installed in the 48-inch CMP culvert located in the eastern part of the Site to prevent contaminated groundwater from leaking into the pipe and discharging to Ley Creek.

Sediments in the western drainage ditch would be excavated and the area restored, allowing for positive drainage of surface water runoff to Ley Creek.

Mitigation of any disturbed wetlands is also included under this alternative.

As part of a long-term groundwater monitoring program, the direction of groundwater flow across the southeastern portion of the Site toward the northwest would be confirmed, and biodegradation parameters (*e.g.*, oxygen, nitrate, sulfate, methane, ethane, ethene, alkalinity, redox potential, pH, temperature, conductivity, chloride, and total organic carbon) would be used to assess the progress of the degradation of the contaminants in the groundwater downgradient of the groundwater/leachate collection trenches (*i.e.*, the buffer areas between the trenches and the northern and southern banks of Ley Creek and between the limit of waste north of the OLCC and the banks of OLCC).

Because this alternative would result in contaminants remaining on-Site above health-based levels, CERCLA requires that the Site be reviewed every five years. As part of any such review, groundwater monitoring results and Site modeling would be utilized to assess the effects of natural attenuation[7] in the approximately 30-foot buffer areas (*i.e.,* and downgradient of the groundwater/leachate collection trenches) and the buffer area north of the OLCC, and to otherwise confirm that the remedy remains protective. If justified by the review, additional remedial actions may be implemented.

Alternative 5: Waste Excavation South of Ley Creek and Consolidation North of Ley Creek, Part 360 Cap North of Ley Creek, Contaminated Groundwater/Leachate Collection North and, Potentially, South of Ley Creek, Pretreatment of the Collected Groundwater/Leachate, Off-Site Contaminated Groundwater/Leachate Treatment and Discharge of Treated Effluent, and Long-Term Operation, Monitoring and Maintenance

Capital Cost:	$21,690,000
Annual OM&M Costs:	$265,936
Present-Worth Cost:	$24,990,011
Construction Time:	3.5 years

This alternative is similar to Alternative 4, except that instead of capping the landfilled wastes located south of Ley Creek, wastes would be excavated and relocated to the main landfilled area north of Ley Creek. This would be followed by a post-excavation assessment (to characterize groundwater and possibly other media, as appropriate, in the area where the removal had occurred). Also, under this alternative, the drainage ditches located along the northern and eastern borders of the Site would not be lined as they would under Alternative 4. In addition, this alternative would involve:

- Excavation of waste in the northeastern corner of the landfill area north of Ley Creek to the center of that landfill area to allow for a diminished footprint;
- Excavation of waste on the northern boundary of the landfill area north of Ley Creek so that the Buckeye natural-gas pipeline will not be in contact with wastes from the Site;
- Evaluation of the groundwater/leachate collection trench and/or pre-treatment system requirements before this wastewater is sent to METRO for final treatment;
- Installing a clay cap in the corridors containing underground natural gas lines or overhead electric lines to allow National Grid to maintain their utilities without damaging a geomembrane cap; and
- If any portion of the site is redeveloped, NYSDEC and NYSDOH will require that an evaluation be completed to determine the potential for soil vapor intrusion to occur in any future constructed

[7] Natural attenuation is a variety of physical, chemical and biological processes which, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil and groundwater. These in-situ processes include biodegradation, dispersion, dilution, sorption, volatilization, and chemical or biological stabilization, transformation, or destruction.

buildings, including provision for implementing actions recommended to address exposures.

The northern drainage ditch was sampled in 2009. Upon review of the sample results, no further action is necessary. During September 2009 Geotechnical Survey work, the landfill waste was found to be only 2' to 4' thick in the northeast corner of the Site. To reduce the footprint of the Landfill, the waste from this area will be relocated onto the north section of the Landfill. The eastern drainage ditch will be removed during the relocation of waste and this area will be restored to promote proper drainage.

Following the construction of a temporary bridge across Ley Creek and a haul road for the transport of excavated material to the northern part of the Site, the entire area south of Ley Creek (approximately four acres) would be cleared and grubbed to facilitate waste removal. Erosion controls would be established around the perimeter of the disturbed area. Once the area is prepared, an estimated 140,000 cubic yards of soil and waste would be excavated, transported to the northern portion of the Site, and staged. The excavation would remove apparent evidence of contamination, including visibly-stained soils and soils with aromatic odors. Post-excavation sampling would be conducted in the southern landfill area.

All excavated sediments, soils, and wastes which have PCB concentrations which equal or exceed 50 mg/kg would be sent off-Site for treatment/disposal at a TSCA-compliant facility[8]. Those sediments that have PCB concentrations less than 50 mg/kg would be consolidated underneath the cover on the landfill area north of Ley Creek. Nonhazardous soils and waste would be consolidated on-Site over approximately 10 acres in a currently flat area in the northern portion of the Site. The consolidated material would be graded to improve drainage in this area and then covered with the Part 360 cap.

The groundwater/leachate collection trench south of Ley Creek would not be immediately constructed. Following the excavation of the waste from the landfill area south of Ley Creek, groundwater monitoring and a study would be conducted to determine if (a) Site-related contaminants remaining in the area between Ley Creek and OLCC, if any, are a continuing potential source of contaminants to these tributaries (particularly PCBs and metals) at levels that require remediation, and (b) natural attenuation could reduce groundwater contaminants within and downgradient of the excavated source area to Maximum Contaminant Levels (MCLs)[9] within an acceptable time frame. If the study indicates that Site-related contaminants are migrating or may potentially migrate at levels that would require remediation or that natural attenuation has little potential to adequately reduce on-Site groundwater contamination to MCLs, then a groundwater/leachate collection trench would be constructed south of Ley Creek.

Based on March 2010 source removal, an evaluation of the groundwater/leachate collection trench and/or pre-treatment system requirements would be conducted before this wastewater is sent to METRO for final treatment to determine the degree of treatment, if any.

As recorded in the 2007 ROD Responsiveness Summary, no Part 360 cap would be placed over National Grid's natural gas line. National Grid has agreed to installation of a clay cap in the corridors containing underground natural gas lines or overhead electric lines to allow National Grid to maintain their utilities without damaging a geomembrane cap. This will complete a continuous Part 360 cap system throughout the north section of the Site and increases the effectiveness of the remedy to protect human health and the environment.

Because this alternative would result in contaminants remaining on-Site above health-based levels, CERCLA requires that the Site be reviewed every five years. As part of any such review, groundwater monitoring results and Site modeling would be utilized to assess the effects of natural attenuation in the area of the Site south of Ley Creek and in the approximately 30-foot buffer areas (and downgradient of the groundwater/leachate collection trench(es)), and to otherwise confirm that the remedy remains protective. If justified by the review, additional remedial actions may be implemented.

EVALUATION OF ALTERNATIVES

During the detailed evaluation of remedial alternatives, each alternative is assessed against nine evaluation criteria, namely short-term effectiveness; long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; implementability; cost; compliance with applicable or relevant and appropriate requirements; overall protection of human health and the environment; and support agency and community acceptance. The evaluation criteria are described below.

- Overall protection of human health and the environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

[8] For cost estimating purposes, it was assumed that 1% of the materials in the waste area located to the south of Ley Creek would be hazardous.

[9] Drinking-water standards.

- Compliance with applicable or relevant and appropriate requirements addresses whether or not a remedy would meet all of the applicable or relevant and appropriate requirements of federal and state environmental statutes and requirements or provide grounds for invoking a waiver.

- Long-term effectiveness and permanence refer to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. It also addresses the magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.

- Reduction of toxicity, mobility, or volume through treatment is the anticipated performance of the treatment technologies, with respect to these parameters, a remedy may employ.

- Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.

- Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

- Cost includes estimated capital and operation and maintenance costs, and net present-worth costs.

- Support Agency acceptance indicates whether, based on its review of the RI/FS and Proposed Plan, NYSDOH (the support agency for NYSDEC) concurs with, opposes, or has no comment on the preferred modified remedy at the present time.

- Community acceptance will be assessed and documented in the amended ROD, and refers to the public's general response to the alternatives described in the Proposed Plan and the RI/FS reports.

A comparative analysis of these alternatives based upon the evaluation criteria noted above, follows.

Overall Protection of Human Health and the Environment

Since Alternative 1 would not address the risks posed through each exposure pathway, it would not be protective of human health and the environment.

Alternatives 4 and 5 would be significantly more protective than Alternative 1, in that the risk of incidental contact with waste by humans and ecological receptors would be reduced by excavating waste material, contaminated soils and sediments, and excavating and/or covering the landfilled waste material and contaminated soil. Collecting and treating the leachate and contaminated groundwater under Alternative 4 would restore water quality in the aquifer downgradient of the collection trenches. Collecting and treating contaminated groundwater and leachate in a collection trench north and, possibly, south of Ley Creek, under Alternative 5, in combination with removing landfilled wastes south of Ley Creek, would reduce groundwater contamination originating from this area and help restore water quality in the aquifer south of Ley Creek and downgradient of the northern collection trench.

Alternatives 4 and 5 would protect human health and the environment to a similar extent. Under Alternative 4, the capping of the landfilled waste both north and south of Ley Creek would significantly reduce the infiltration of precipitation through the landfilled wastes, thereby significantly decreasing the generation of leachate and contaminated groundwater. Under Alternative 5, the capping of the landfilled waste north of Ley Creek and the excavation of the landfilled waste south of Ley Creek would significantly reduce the infiltration of precipitation through the landfilled waste and would remove source material, thereby reducing the volume of contaminants of concern that may migrate to the groundwater.

Compliance with ARARs

A 6 NYCRR landfill cap is an action-specific ARAR for landfill closure. Therefore, Alternatives 4 and 5 would satisfy this action-specific ARAR. Alternative 1 would not meet this ARAR, since it does not include any provisions for a 6 NYCRR Part 360 landfill cap.

Since Alternative 4 would involve the excavation of PCB-contaminated sediments and Alternative 5 would involve the excavation of PCB-contaminated waste material, soils, and sediments, their disposition would be governed by the requirements of TSCA. Those excavated waste materials, soils, and sediments which equal or exceed 50 mg/kg PCB would be sent off-Site for treatment/disposal at a TSCA-compliant facility. If off-Site disposal of contaminated waste material, soils, or sediments is necessary under Alternatives 4 and 5, state and federal regulations related to the transportation and off-Site treatment/disposal of wastes would apply. Since these alternatives would involve the excavation of contaminated soils and sediments, fugitive dust and VOC emission regulations would apply.

Alternatives 4 and 5 would need to comply with 6 NYCRR Part 608 by protecting Ley Creek and OLCC during

construction and restoring the creek banks after construction is completed, as appropriate.

Alternative 1 does not provide for any direct remediation of groundwater and would, therefore, not comply with chemical-specific ARARs (*i.e.*, MCLs). A combination of the groundwater/leachate collection trench(es) and monitored natural attenuation in the buffer areas downgradient of the trench(es) and north of OLCC, and in the area where landfilled wastes would be removed south of Ley Creek in Alternative 5, would result in the downgradient groundwater eventually meeting MCLs. However there is no expectation that MCLs would be met in the areas beneath the new landfill caps under Alternatives 4 and 5.

The groundwater/leachate collection trenches would prevent the migration of the contaminated groundwater away from the Landfill. Prevention of migration of contaminated groundwater and leachate away from the Landfill is an action-specific Remedial Action Objective for the Site.

The lower precipitation infiltration rate associated with placing an impermeable cap over the landfilled areas would significantly reduce the generation of leachate and additional groundwater contamination. The excavation of the waste materials south of Ley Creek under Alternative 5 would significantly reduce the migration of contaminants to the groundwater in this area. Since the viability of monitored natural attenuation of the contaminated groundwater south of Ley Creek under Alternative 5 and in the buffer areas in Alternative 4 cannot be confirmed until after the landfilled waste material is removed, it is unknown whether removing the waste material in combination with natural attenuation of the groundwater in this area would adequately reduce migration of Site-related contaminants of concern or restore the on-Site groundwater exceeding MCLs to groundwater quality standards within an acceptable time frame.

Long-Term Effectiveness and Permanence

Alternative 1 would not provide reliable protection of human health and the environment over time. Alternatives 4 and 5 would be more effective over the long-term than Alternative 1, since they include the collection and treatment of the contaminated leachate and groundwater. Excavating the waste from the landfill area south of Ley Creek, excavating contaminated sediments from the western drainage ditch, consolidating the waste material, soils, and sediments on the landfill area north of Ley Creek and constructing an impermeable cap over the landfill area north of Ley Creek under Alternative 5, and excavating contaminated sediments from the western drainage ditch, consolidating the sediments on the landfill area north of Ley Creek, and constructing caps over the landfill areas north and south of Ley Creek under Alternative 4, would substantially reduce the residual risk posed by the landfilled waste on the Site by essentially isolating it from contact with human and environmental receptors. The impermeable caps constructed under Alternatives 4 and 5 would also reduce the mobility of contaminants caused by infiltrating rainwater. The impermeable caps proposed in Alternatives 4 and 5 represent permanent measures that could be maintained at regular intervals to ensure their structural integrity. Long-term effectiveness of the remedial measures in the buffer areas would also be expected, as the contaminated soils would be removed. In addition, the removal of contaminated soils in the buffer areas under both alternatives and the removal of the waste south of Ley Creek under Alternative 5 would permanently eliminate the mobility of the contaminants.

The 6 NYCRR Part 360 cap(s) that would be constructed under Alternatives 4 and 5 would require routine inspection and maintenance to ensure their long-term effectiveness and permanence. Routine maintenance, as a reliable management control, would include mowing, fertilizing, reseeding, and repairing any potential erosion or burrowing rodent damage. The fencing under these alternatives would need to be inspected for holes or breeches. In addition, flushing of the collection trench drainage systems would need to be performed on a periodic basis, and engineered drainage controls would need to be inspected and repaired as needed. Since only one cap would be constructed under Alternative 5, it would require less maintenance than Alternative 4. In addition, if it is determined that a groundwater/leachate collection system is not needed south of Ley Creek (*e.g.*, if natural attenuation of the contaminated groundwater in this area restores the groundwater exceeding MCLs to groundwater quality standards within an acceptable time frame), Alternative 5 would require significantly less overall maintenance than Alternative 4 since there would only be a single groundwater/leachate collection trench.

Reliability is another measure of the long-term effectiveness of a remedial action. A reliable alternative performs its function with reduced long-term oversight and maintenance. Long-term operation and maintenance would be required for both of the action alternatives. Both of the action alternatives would be reliable, if designed and constructed according to sound engineering practices for landfill closure. If pretreatment is necessary, the on-Site pretreatment plant under Alternatives 4 and 5 would be very reliable, as long as the operation and maintenance of the plant is properly attended to by the on-Site operator. The caps would also be reliable.

Reduction in Toxicity, Mobility, or Volume Through Treatment

Alternative 1 would not actively reduce the toxicity, mobility, or volume of contaminants through treatment.

This alternative would solely rely on natural attenuation to reduce the levels of contaminants.

The impermeable landfill cap(s) in Alternatives 4 and 5 and the excavation of the landfill south of Ley Creek under Alternative 5 would result in significantly reduced infiltration of precipitation into the waste, and therefore a significant reduction in the mobility of the contaminants, and a significantly reduced volume of contaminated groundwater/leachate requiring treatment.

Treating the collected leachate and contaminated groundwater at both the on-Site pre-treatment plant and the METRO facility under Alternatives 4 and 5 would reduce the toxicity, mobility, and volume of contaminants in collected leachate/groundwater through treatment, and it would also reduce the possibility of additional groundwater contamination.

Alternatives 4 and 5 would limit further migration of and potential exposure to hazardous substances, and under these alternatives the infiltration of rainwater into the waste disposal areas and the associated leaching of contaminants from these areas would be nearly eliminated, but the reduction in mobility would not be accomplished through treatment.

Short-Term Effectiveness

Alternative 1 does not include any physical construction measures in any areas of contamination and, therefore, does not present a risk to the community as a result of their implementation. The excavation of 4 - 5 acres of waste under Alternative 5 may result in the release of objectionable odors. The excavation and relocation of this waste would also pose a much more significant risk of exposure of on-Site workers to potentially contaminated soils and waste material than the other action alternative. Long-term monitoring activities related to Alternatives 4 and 5 would present some risk to on-Site workers through dermal contact and inhalation. Alternatives 4 and 5 would pose an additional risk of exposure of on-Site workers to waste material and contaminated sediments and soils through excavating, moving, placing, and regrading the waste and contaminated soils and sediments. Alternatives 4 and 5 would also pose a risk of exposure of on-Site workers to potentially contaminated soils and groundwater through the installation of groundwater/leachate collection trenches. The noted exposures to on-Site workers under Alternatives 4 and 5 can be minimized by utilizing proper protective equipment. The vehicle traffic associated with landfill cap construction and the off-Site transport of contaminated soils/sediments could impact the local roadway system and nearby residents through increased noise level. Disturbance of the land during excavation and cap and groundwater/leachate collection trench construction could affect the surface water hydrology of the Site. There would also be the potential for increased stormwater runoff and erosion during excavation and construction activities that must be properly managed to prevent excessive water and sediment loading.

Excavation and impermeable cap construction activities, as well as groundwater/leachate collection trench installation activities as part of Alternatives 4 and 5, would require substantial clearing of trees and vegetation across the Site, which would temporarily disrupt animal habitats during the construction. Alternative 5 would likely be most disruptive to habitats, since this alternative would take longer to implement and would be more invasive than Alternative 4. Excavation of the waste under Alternative 5, as well as the construction of the collection trenches, could result in fugitive dust generation and direct contact with waste and contaminated soil or water. Engineering controls could be applied to reduce the production of dust, and health and safety measures can reduce direct contact with contamination.

Since no activities would be performed under Alternative 1, there would be no implementation time. It is estimated that Alternative 4 would be implemented in 2 years and that Alternative 5 would be implemented in 3.5 years.

Implementability

Alternative 1 involves no construction and would, therefore, be easy to implement. Excavating contaminated sediments from the western drainage ditch, consolidating the sediments on the landfill area north of Ley Creek, constructing multilayer caps over the landfill areas north and south of Ley Creek, and installing groundwater/leachate collection trenches north and south of Ley Creek under Alternative 4, and excavating the waste from the landfill area south of Ley Creek, excavating contaminated sediments from the western drainage ditch, consolidating the waste material, soils, and sediments on the landfill area north of Ley Creek, constructing an impermeable cap over the landfill areas north of Ley Creek, and installing a groundwater/leachate collection trench north and, if needed, south of Ley Creek under Alternative 5, although more difficult to implement than Alternative 1, can be accomplished using technologies known to be reliable and can be readily implemented. Since it would involve the movement of a substantial amount of waste material, Alternative 5 would be more difficult to implement than Alternative 4. Alternatives 4 and 5 would also involve monitoring of natural attenuation parameters. Equipment, services and materials for this work are readily available. These actions would also be administratively feasible.

The on-Site and off-Site treatment facilities would be a reliable source of treatment of the collected groundwater/leachate.

Since Alternatives 4 and 5 may result in the disturbance of wetland areas, mitigation of the affected wetlands is also included under these alternatives. The purpose of

mitigation of the affected wetlands is to restore wetlands disturbed by remediation activities. If wetland mitigation would include the establishment of a new on-Site high quality wetland, this may be more feasible to implement under Alternative 5 since the area south of Ley Creek may be available for wetland development.

Cost

The present-worth costs are calculated using a discount rate of seven percent and a thirty-year time interval.

The estimated capital, annual operation, maintenance, and monitoring, and present-worth costs for each of the alternatives are presented below.

Alt.	Capital Cost	Annual Cost	Present-Worth Cost
1	$0	$0	$0
4	$22,736,268	$329,703	$26,827,561
5	$21,690,000	$265,936	$24,990,011

As is indicated from the cost estimates, there are no costs associated with the no-action alternative, Alternative 1. The estimated present-worth cost for Alternatives 4 is $1,837,550 greater than Alternative 5.

Depending on the success of the March 2010 VOC source removal, it is believed that pretreatment processes of the collected contaminated groundwater/leachate may be reduced. If, however, the post-source removal groundwater/leachate study concludes that pretreatment is needed as described in the March 2007 Record of Decision, the capital cost and the annual operation and maintenance cost would increase.

Support Agency Acceptance

NYSDOH (the support agency for NYSDEC) concurs with the preferred modified remedy.

Community Acceptance

Community acceptance of the preferred modified remedy will be assessed in the amended ROD following review of the public comments received on the Town of Salina Landfill RI/FS reports and this Proposed Plan.

PREFERRED MODIFIED REMEDY

Description of the Preferred Modified Remedy

Based upon an evaluation of the alternatives, NYSDEC and EPA recommend that the ROD be amended by choosing Alternative 5, which includes:

- Construction of groundwater/leachate collection trenches north of Ley Creek;
- Evaluation of the groundwater/leachate collection trench and/or pre-treatment system requirements before this wastewater is sent to METRO for final treatment.;
- Installation of an on-Site storage tank to hold excess water volume from the groundwater/leachate collection trench(es) stemming from storm events;
- Excavation of the landfilled wastes located south of Ley Creek and consolidation of those wastes on the landfill area north of Ley Creek;
- Excavation of waste in the northeastern corner of the landfill area to the north of Ley Creek to the center of that landfill area to allow a diminished footprint;
- Excavation of waste on the northern boundary of the landfill area north of Ley Creek so that the Buckeye natural-gas pipeline will not be in contact with wastes from the Site;
- Excavation of contaminated sediments in the western drainage ditch;
- Consolidation of the excavated sediments and the soils and wastes (from the excavation of the collection trenches) on the landfill area north of Ley Creek, as appropriate;
- Construction of 6 NYCRR Part 360 caps over the landfill area north of Ley Creek;
- Installing a clay cap in the corridors containing underground natural gas lines or overhead electric lines to allow National Grid to maintain their utilities without damaging a geomembrane cap;
- Engineered drainage controls and fencing;
- Institutional controls (such as environmental easements) to prohibit residential use of Site property and the installation and use of groundwater wells, as well as to protect and ensure the integrity of the cap, the groundwater/leachate collection trench(es), and the engineered drainage controls;
- Operation and maintenance of the on-Site treatment plant and groundwater/leachate collection trench(es), if these remedy components are necessary, and maintenance of the Part 360 cap;

- If any portion of the site is redeveloped, NYSDEC and NYSDOH will require that an evaluation be completed to determine the potential for soil vapor intrusion to occur in any future constructed buildings, including provision for implementing actions recommended to address exposures; and

- Long-term monitoring.

All excavated sediments, soils, and wastes which have PCB concentrations which equal or exceed 50 mg/kg would be sent off-Site for treatment/disposal at a TSCA-compliant facility. Those excavated sediments, soils, and wastes that have PCB concentrations less than 50 mg/kg would be consolidated underneath the cap north of Ley Creek.

The groundwater/leachate collection trench south of Ley Creek would not be immediately constructed. Following the excavation of the waste from the landfill area south of Ley Creek, groundwater monitoring and a study would be conducted to determine if (a) Site-related contaminants remaining in the area between Ley Creek and OLCC, if any, are a continuing potential source of contaminants to these tributaries (particularly PCBs and metals) at levels that require remediation, and (b) natural attenuation could reduce groundwater contaminants within and downgradient of the excavated source area to Maximum Contaminant Levels (MCLs)[10] within an acceptable time frame. If the study indicates that Site-related contaminants are migrating or may potentially migrate at levels that would require remediation or that natural attenuation has little potential to adequately reduce on-Site groundwater contamination to MCLs, then a groundwater/leachate collection trench would be constructed south of Ley Creek.

The environmental benefits of the selected remedy may be enhanced by consideration, during the remedial design, of technologies and practices that are sustainable in accordance with EPA Region 2's Clean and Green policy. This will include consideration of green remediation technologies and practices.

The Town of Salina would need to certify the continued effectiveness of the institutional and engineering controls on a periodic basis. The certification would need to indicate that the required long-term monitoring is being conducted, identify the required institutional and engineering controls, indicate whether they remain effective for the protection of public health and the environment, and indicate whether they should remain in place. Before installing the multilayer cap, the subgrade would be graded to promote drainage and exhibit final slopes between 4% and 33%. The entire cap would then be seeded.

[10] Drinking-water standards.

Currently, the limits of the landfill waste encroach on the banks of Ley Creek in several locations. Landfilled waste would be pulled back approximately 30 feet from the banks of Ley Creek prior to the installation of the groundwater/leachate collection trenches[11]. This landfilled waste would be removed and disposed properly at a permitted off-Site facility if it is characterized as hazardous waste. If it is not characterized as hazardous waste, then the waste would be consolidated onto the landfill. The groundwater/leachate collection trenches would then be installed along the banks of Ley Creek at the new limits of the waste. Site preparation prior to trench construction would include clearing, grubbing, and removal of trees along the banks of Ley Creek. Erosion controls, including silt fencing and/or hay bales would be installed to prevent soil and silt runoff from entering the creek. The existing slopes along the banks would be regraded to provide a suitable work pad for construction of the trench. Contaminated material cut from the banks would be placed under the cap (contingent upon the results of the PCB testing noted above); uncontaminated material would be used as fill, as necessary.

Based on March 2010 source removal, an evaluation of the groundwater/leachate collection trench and/or pre-treatment system requirements would be conducted before this wastewater is sent to METRO for final treatment to determine the degree of treatment, if any.

The groundwater/leachate collection trenches, if necessary, would be keyed into the low-permeability till, or clay layer that act as an aquitard between the shallow and deep aquifers at the Site. Pending further evaluation during design, it is anticipated that the trenches would be installed using the bio-polymer slurry construction technique, which eliminates the need for shoring, dewatering, and personnel working in the trench. A barrier liner may be installed on the downgradient side of the trenches to prevent the inflow of uncontaminated water from Ley Creek. A perforated HDPE pipe would be installed at the bottom of the trenches and a porous media (such as large diameter gravel) would be backfilled. The trenches would be designed such that collected water would flow by gravity through conveyance piping to the on-Site treatment plant.

After the installation of the trenches, the downgradient work areas would be graded for proper drainage and covered with topsoil. All areas disturbed by the construction would be revegetated or otherwise restored, as necessary. The trenches would be constructed and buffer areas and the banks of Ley Creek and OLCC would be restored, as appropriate, in compliance with the New York State stream protection ARAR, 6 NYCRR Part 608 *Use and Protection of Waters*.

[11] The collection trench would be approximately 2,500 feet long.

The 48-inch abandoned sewer line that runs across the Site would be exposed, broken, and sealed with concrete (or some other suitable material) at the eastern and western borders of the Site, to prevent it from serving as a conduit to convey contaminated groundwater off the Landfill. In addition, a slip liner would be installed in the 48-inch CMP culvert located in the eastern part of the Site to prevent contaminated groundwater from leaking into the pipe and discharging to Ley Creek.

Sediments in the western drainage ditch would be excavated and the area restored, allowing for positive drainage of surface water runoff to Ley Creek. Surface water may be temporarily rerouted if necessary during this effort. Mitigation of any disturbed wetlands is also included under the preferred alternative.

To reduce the footprint of the landfill, the waste from the northern drainage ditch will be relocated onto the north section of the landfill. The eastern drainage ditch will be removed during the relocation of waste and this area will be restored to promote proper drainage.

As recorded in the 2007 ROD Responsiveness Summary, no Part 360 cap would be placed over National Grid's natural gas line. National Grid has agreed to the installation of a clay cap in the corridors containing underground natural gas lines or overhead electric lines to allow National Grid to maintain their utilities without damaging a geomembrane cap. This will complete a continuous Part 360 cap system throughout the north section of the Site and increases the effectiveness of the remedy to protect human health and the environment.

Because the preferred alternative would result in contaminants remaining on-Site above health-based levels, CERCLA requires that the Site be reviewed every five years. As part of any such review, groundwater monitoring results and Site modeling would be utilized to assess the effects of natural attenuation in the buffer areas associated with Ley Creek and in the buffer area north of OLCC, and to otherwise confirm that the remedy remains protective. If justified by the review, additional remedial actions may be implemented.

Basis for the Remedy Preference

Under the requirements of the NCP, the "Overall Protection of Human Health and the Environment" and "Compliance with ARARs" evaluation criteria are threshold requirements that each alternative must meet in order to be eligible for selection. Both Alternatives 4 and 5 would reduce the risk of incidental contact with waste by humans and ecological receptors.

While Alternatives 4 and 5 would both effectively prevent the risk of incidental contact with waste material, contaminated soils, and contaminated sediment by humans and ecological receptors, Alternative 5, the preferred modified remedy, has the following advantages over Alternative 4:

- In the ROD, Alternative 5 was eliminated from consideration because of concerns that significant quantities of hazardous waste were commingled with the municipal refuse in the landfill located south of Ley Creek, which would have significantly increased the cost of the remedy since these wastes would require off-Site disposal. As part of the design, samples were collected from the waste in the landfill south of Ley Creek. Upon analysis of these samples, it has been concluded that the landfill likely contains a heterogeneous mixture of municipal refuse with only low concentrations of hazardous substances typically associated with municipal refuse. As a result, the present-worth cost of Alternative 4 is now estimated to be $1,837,550 greater than Alternative 5.

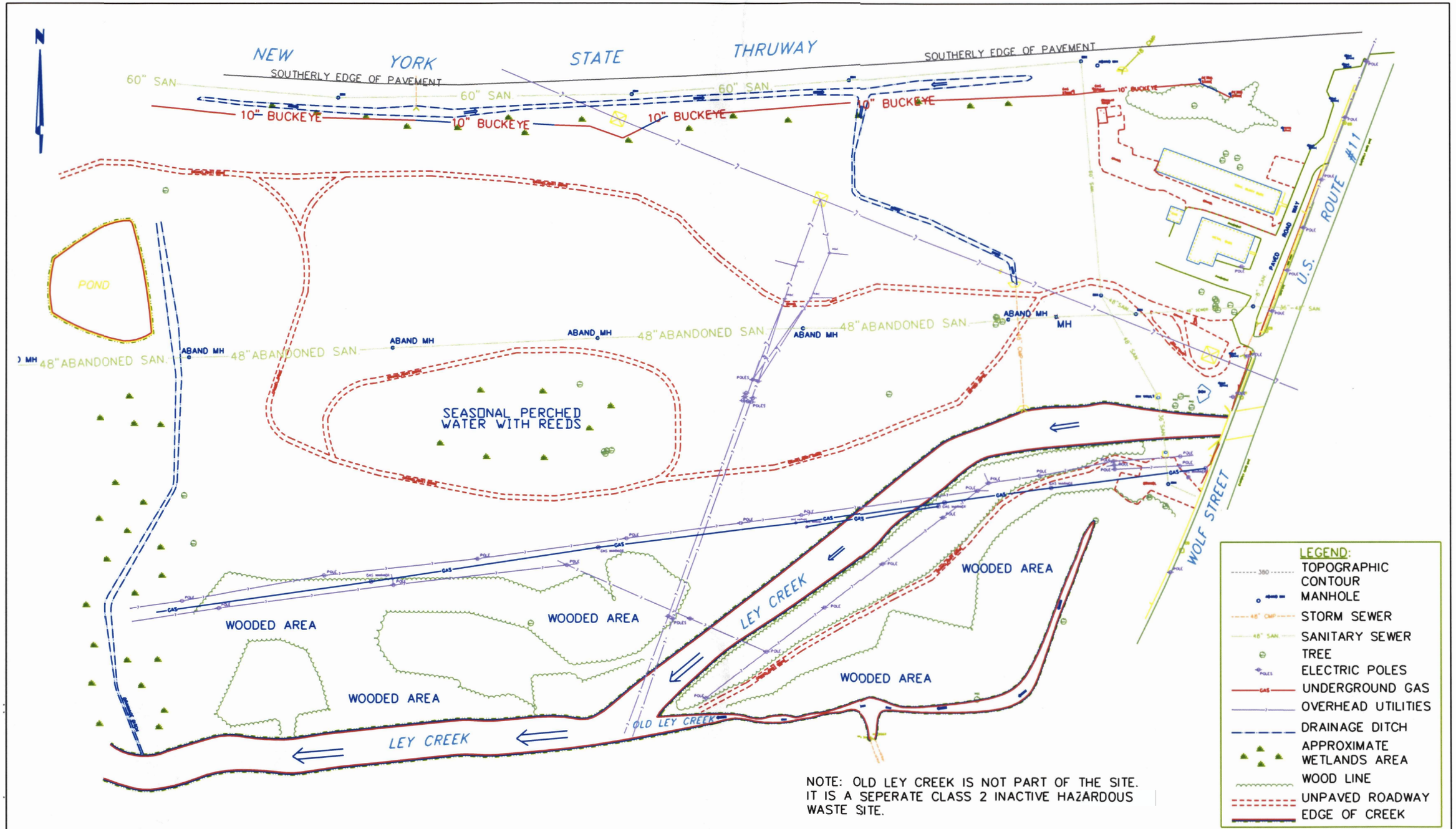
- Since only one cap would be constructed under Alternative 5, it would require less maintenance than Alternative 4. In addition, if it is determined that a groundwater/leachate collection system is not needed south of Ley Creek (*e.g.*, if natural attenuation of the contaminated groundwater in this area restores the groundwater exceeding MCLs to groundwater quality standards within an acceptable time frame), Alternative 5 would require significantly less overall maintenance than Alternative 4 since there would only be a single groundwater/leachate collection trench.

As is described in the above evaluation of alternatives, NYSDEC and EPA believe that the preferred modified remedy for the Site will provide the best balance of tradeoffs among alternatives with respect to the evaluation criteria, would be protective of human health and the environment, and would comply with all ARARs.

The preferred modified remedy would mitigate the migration of contamination to Onondaga Lake via Ley Creek; it would provide a reduction in the toxicity, mobility, and/or volume of contaminated groundwater and leachate through treatment; it would satisfy the ARARs and RAOs; and it would provide long-term effectiveness. The preferred modified remedy would be implemented in a reasonable time frame with minimal significant short-term impacts to human health or the environment. It also would be cost-effective, and would utilize permanent solutions to the maximum extent practicable. The preferred modified remedy would also meet the statutory preference for the use of treatment (of the contaminated groundwater and leachate) as a principal element. Finally, the preferred modified remedy would provide overall protection to human health and the environment.

APPENDIX I

Figures



NOTE: OLD LEY CREEK IS NOT PART OF THE SITE. IT IS A SEPERATE CLASS 2 INACTIVE HAZARDOUS WASTE SITE.

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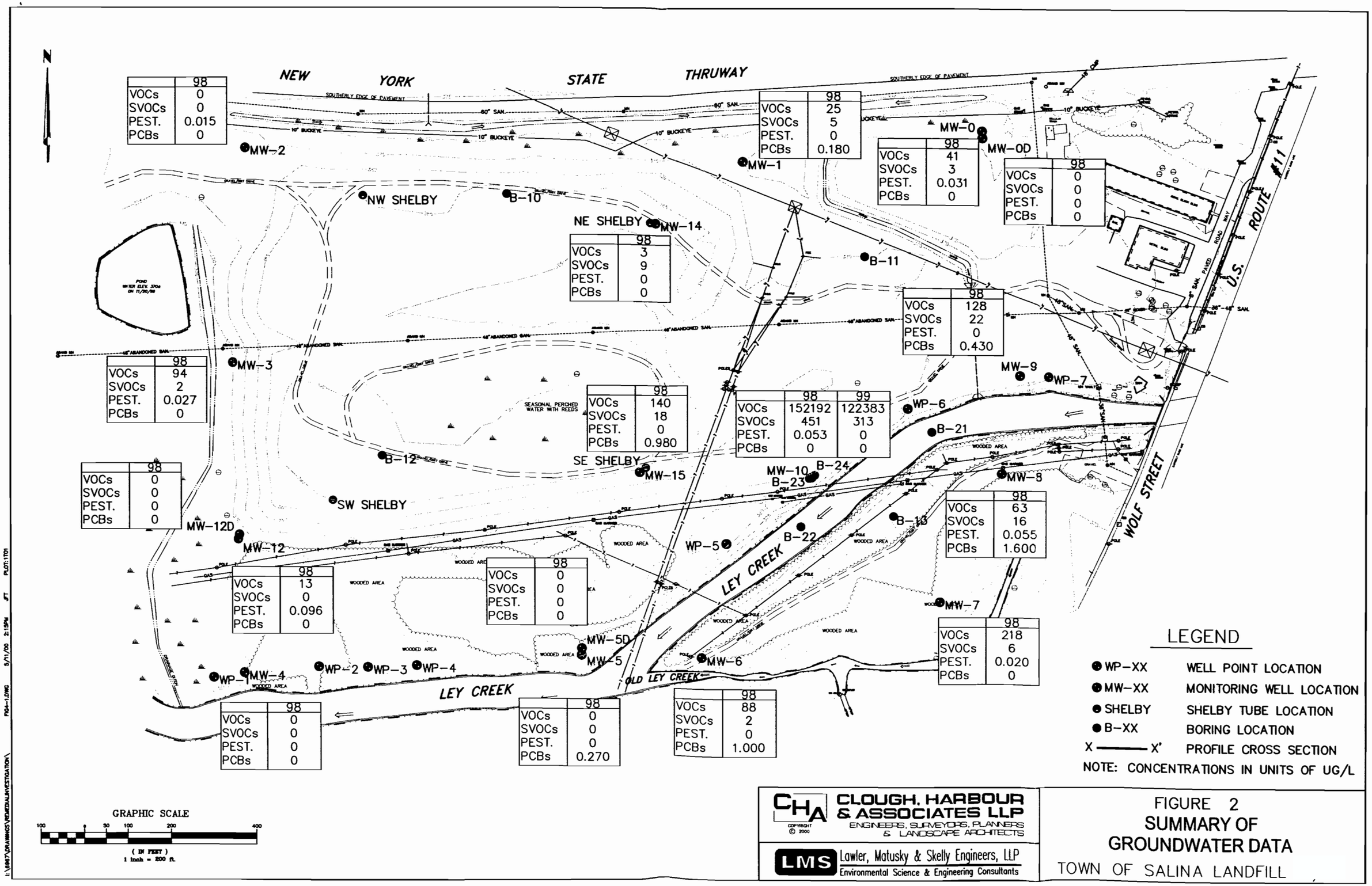
FIGURE 1

SALINA LANDFILL SITE MAP

TOWN OF SALINA LANDFILL



	98
VOCs	0
SVOCs	0
PEST.	0.015
PCBs	0

	98
VOCs	25
SVOCs	5
PEST.	0
PCBs	0.180

	98
VOCs	41
SVOCs	3
PEST.	0.031
PCBs	0

	98
VOCs	0
SVOCs	0
PEST.	0
PCBs	0

	98
VOCs	3
SVOCs	9
PEST.	0
PCBs	0

	98
VOCs	128
SVOCs	22
PEST.	0
PCBs	0.430

	98
VOCs	94
SVOCs	2
PEST.	0.027
PCBs	0

	98
VOCs	140
SVOCs	18
PEST.	0
PCBs	0.980

	98	99
VOCs	152192	122383
SVOCs	451	313
PEST.	0.053	0
PCBs	0	0

	98
VOCs	0
SVOCs	0
PEST.	0
PCBs	0

	98
VOCs	63
SVOCs	16
PEST.	0.055
PCBs	1.600

	98
VOCs	13
SVOCs	0
PEST.	0.096
PCBs	0

	98
VOCs	0
SVOCs	0
PEST.	0
PCBs	0

	98
VOCs	218
SVOCs	6
PEST.	0.020
PCBs	0

	98
VOCs	0
SVOCs	0
PEST.	0
PCBs	0

	98
VOCs	0
SVOCs	0
PEST.	0
PCBs	0.270

	98
VOCs	88
SVOCs	2
PEST.	0
PCBs	1.000

LEGEND

● WP-XX	WELL POINT LOCATION
● MW-XX	MONITORING WELL LOCATION
● SHELBY	SHELBY TUBE LOCATION
● B-XX	BORING LOCATION
X ——— X'	PROFILE CROSS SECTION

NOTE: CONCENTRATIONS IN UNITS OF UG/L

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FIGURE 2
SUMMARY OF GROUNDWATER DATA
TOWN OF SALINA LANDFILL

I:\8987\DRAWINGS\REMEDIALINVESTIGATION\ F004-1.DWG 5/11/00 2:15PM JFT PLOT:1T01

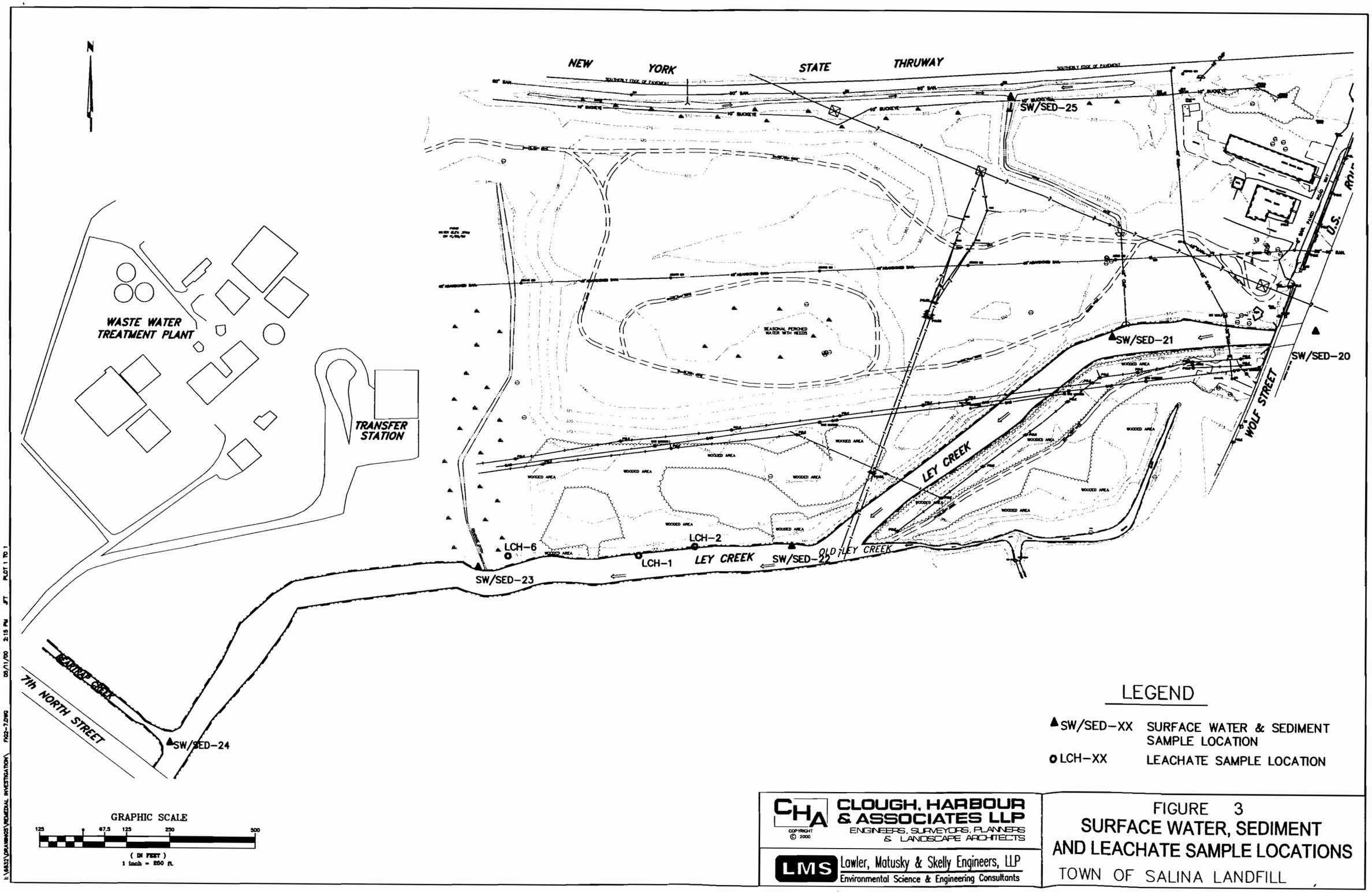
NEW YORK STATE THRUWAY
SOUTHERLY EDGE OF PAVEMENT
SW/SED-25
WASTE WATER TREATMENT PLANT
TRANSFER STATION
SEASONAL PERCHED WATER WITH WEEDS
WOODED AREA
SW/SED-21
SW/SED-20
WOLF STREET
U.S. ROUTE
LEY CREEK
LCH-6
LCH-2
LCH-1
SW/SED-22
OLD LEY CREEK
SW/SED-23
BEAVER CREEK
7th NORTH STREET
SW/SED-24
GRAPHIC SCALE
125 0 62.5 125 250 500
(IN FEET)
1 inch = 250 ft.
LEGEND
SW/SED-XX SURFACE WATER & SEDIMENT SAMPLE LOCATION
LCH-XX LEACHATE SAMPLE LOCATION
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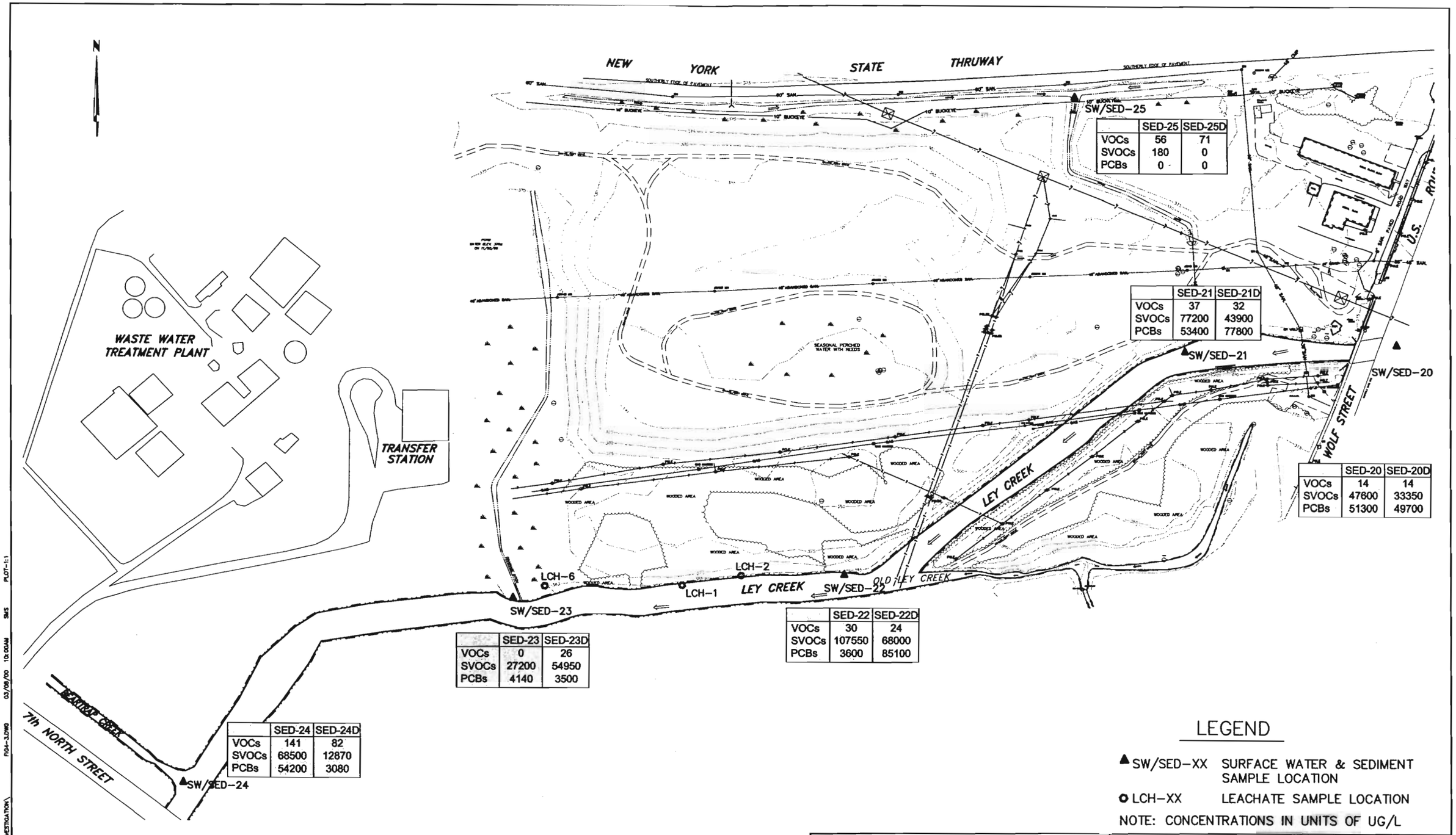
FIGURE 3
SURFACE WATER, SEDIMENT AND LEACHATE SAMPLE LOCATIONS
TOWN OF SALINA LANDFILL



	SED-25	SED-25D
VOCs	56	71
SVOCs	180	0
PCBs	0	0

	SED-21	SED-21D
VOCs	37	32
SVOCs	77200	43900
PCBs	53400	77800

	SED-20	SED-20D
VOCs	14	14
SVOCs	47600	33350
PCBs	51300	49700

	SED-22	SED-22D
VOCs	30	24
SVOCs	107550	68000
PCBs	3600	85100

	SED-23	SED-23D
VOCs	0	26
SVOCs	27200	54950
PCBs	4140	3500

	SED-24	SED-24D
VOCs	141	82
SVOCs	68500	12870
PCBs	54200	3080

LEGEND

▲ SW/SED-XX SURFACE WATER & SEDIMENT SAMPLE LOCATION

O LCH-XX LEACHATE SAMPLE LOCATION

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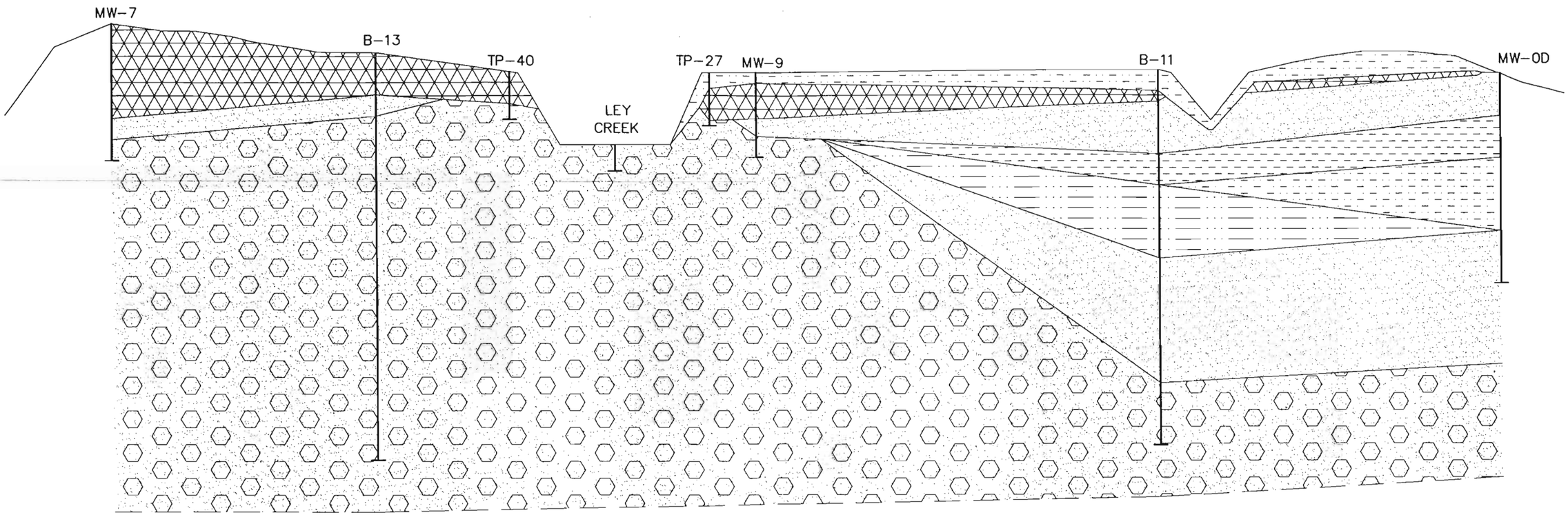
FIGURE 4
SUMMARY OF SEDIMENT DATA
TOWN OF SALINA LANDFILL

I:\1667\DRAWINGS\REMEDIALINVESTIGATION\ FIG4-3.DWG 03/09/00 10:00AM SMS PLOT-1:1



SCALE

HORIZONTAL: 1"=80'

VERTICAL: 1"=20'

LEGEND

SAND

SILT AND CLAY

SAND AND SILT

CLAY

DEBRIS/WASTE

TILL

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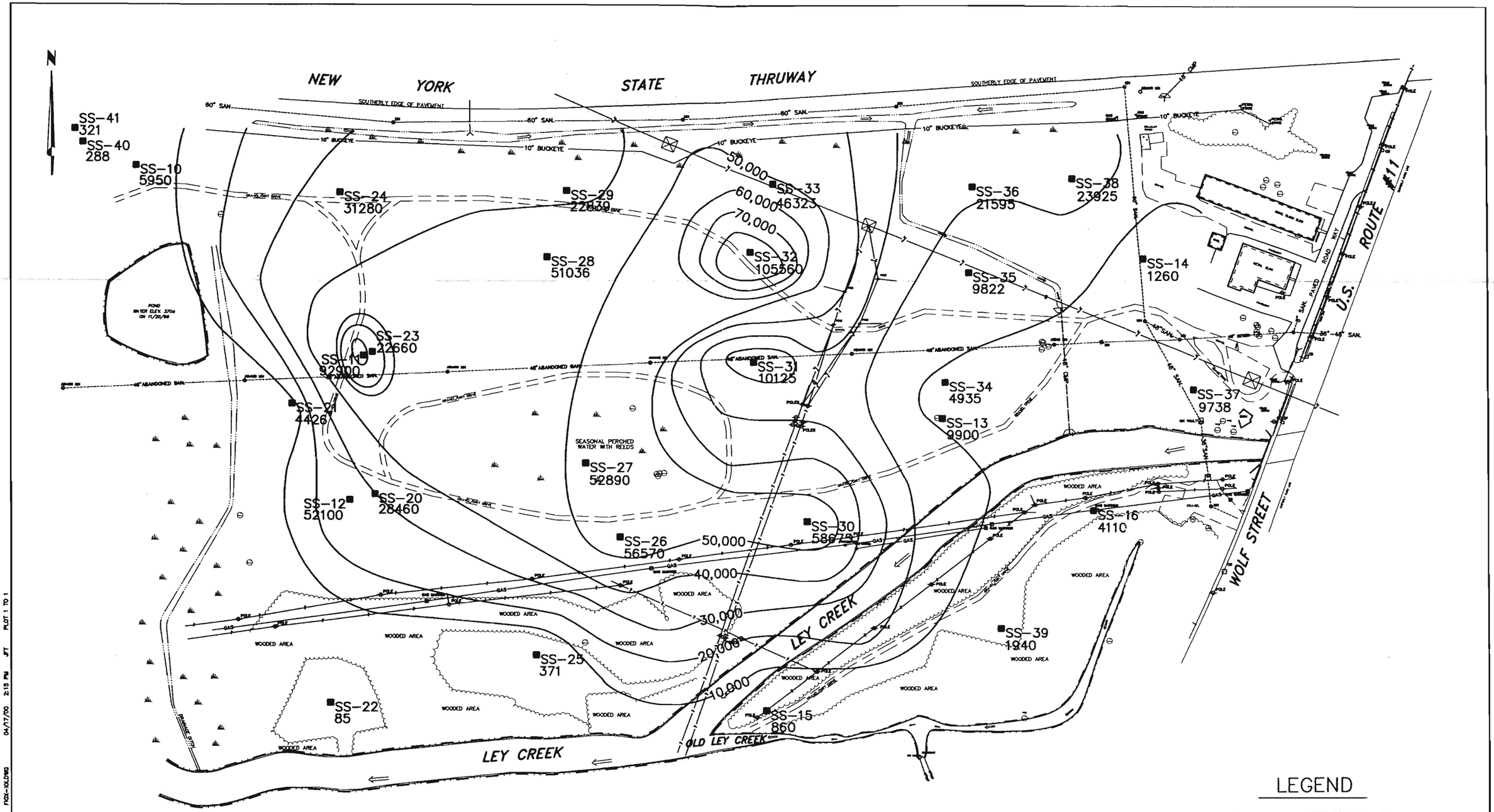
FIGURE 5
GEOLOGIC CROSS-SECTION
C-C'
TOWN OF SALINA LANDFILL

E:\6967\DRAWINGS\REMEDIAL INVESTIGATION\ FIG3-11.DWG 06/11/00 2:15 PM JFT PLOT 1 TO 1



LEGEND

■SS-XX SURFACE SOIL SAMPLE LOCATION

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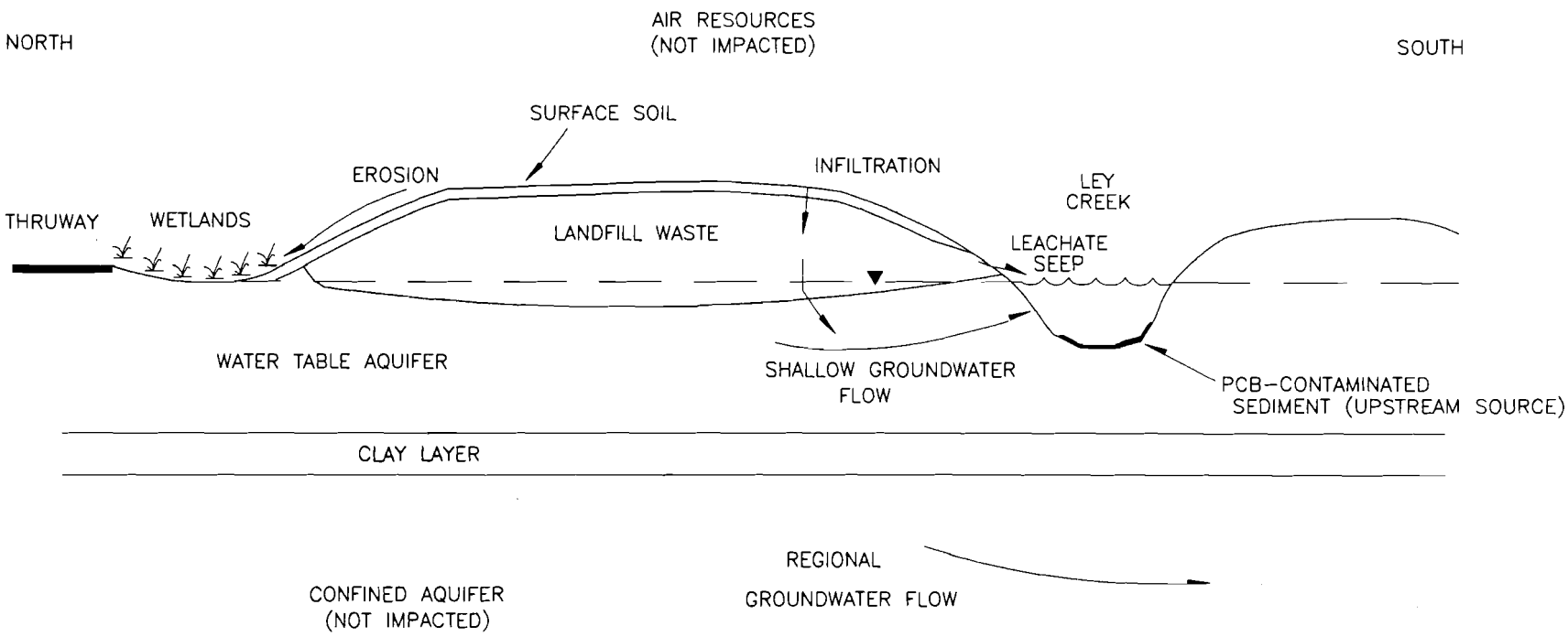
FIGURE 6

SURFACE SOIL SAMPLE SVOC CONCENTRATIONS

TOWN OF SALINA LANDFILL

I:\16832\DRAWINGS\REMEDIAL INVESTIGATION\ FIG2-VOLDWG 04/17/00 2:15 PM JFT PLOT 1 TO 1



LEGEND

WATER TABLE

CONTAMINANT MIGRATION PATHWAYS

NOT TO SCALE

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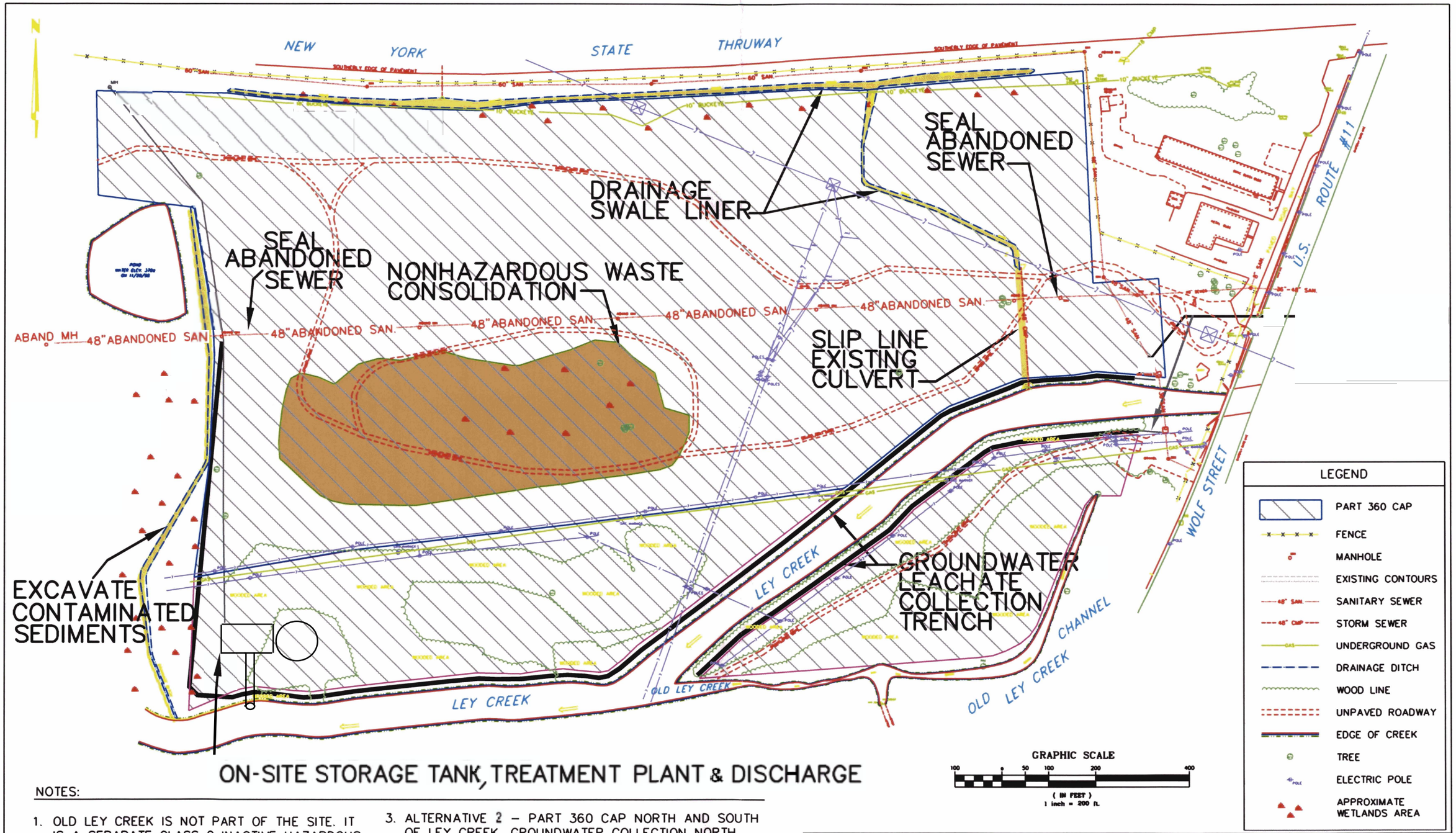
FIGURE 7
CONCEPTUAL CONTAMINANT MIGRATION PATHWAYS
TOWN OF SALINA LANDFILL

I:\1596 7\DRAWINGS\REMEDIAL INVESTIGATION\ FIGS-1.DWG 5/24/00 3:37PM JFT PLOT:1T01



ON-SITE STORAGE TANK, TREATMENT PLANT & DISCHARGE

NOTES:

1. OLD LEY CREEK IS NOT PART OF THE SITE. IT IS A SEPARATE CLASS 2 INACTIVE HAZARDOUS WASTE SITE.
2. LOCATIONS OF REMEDIAL COMPONENTS ARE APPROXIMATE AND SUBJECT TO CHANGE DURING REMEDIAL DESIGN.
3. ALTERNATIVE 2 – PART 360 CAP NORTH AND SOUTH OF LEY CREEK, GROUNDWATER COLLECTION NORTH AND SOUTH OF LEY CREEK.
4. NON-HAZARDOUS WASTE CONSOLIDATION FROM EXCAVATION OF LEACHATE COLLECTION TRENCHES

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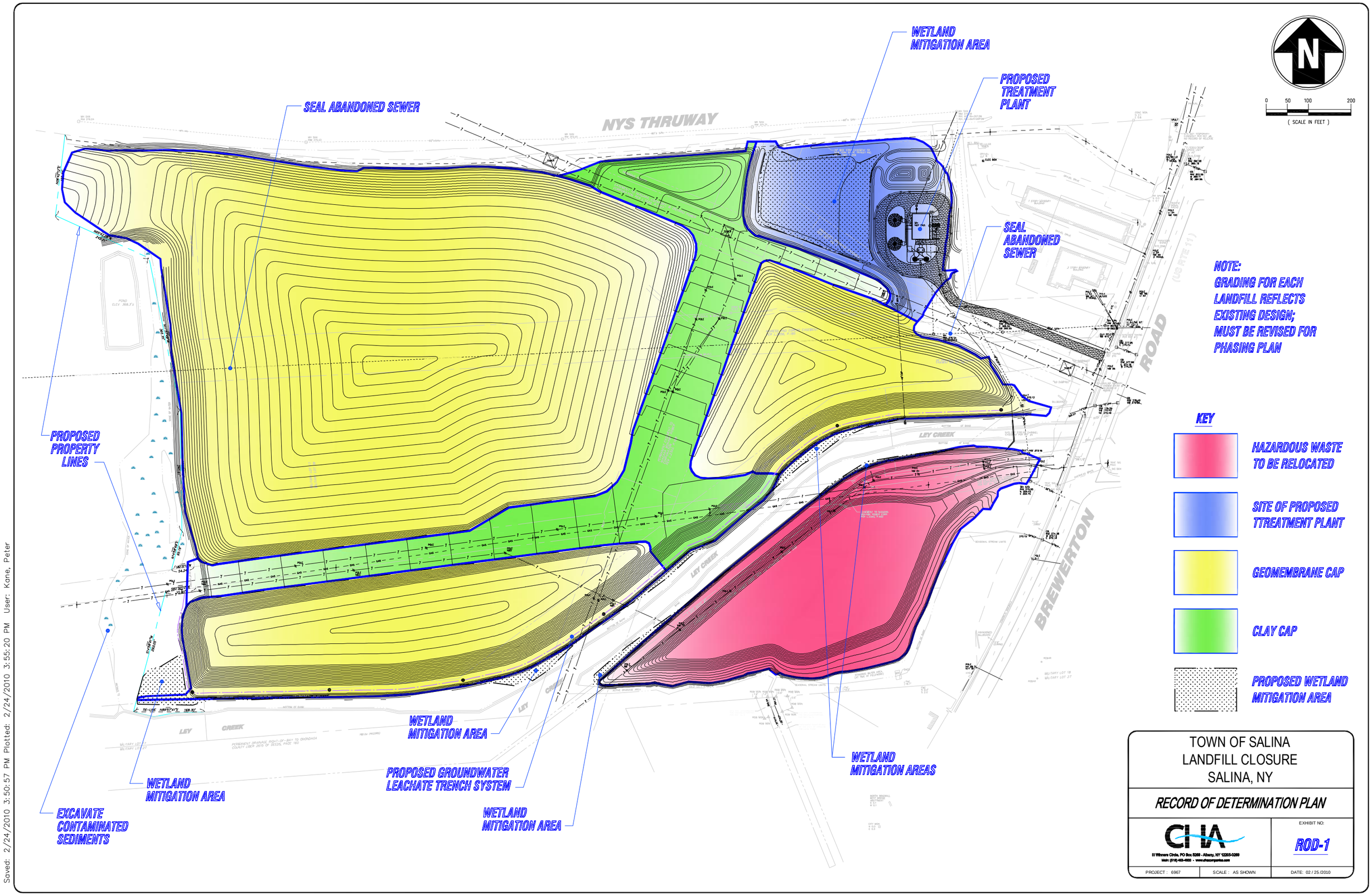
FIGURE 8

ALTERNATIVE 2

TOWN OF SALINA LANDFILL



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