



# Geddes Brook Interim Remedial Measure

## Geddes Brook/Ninemile Creek Site

Onondaga County, New York



November 2008

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### **PURPOSE OF THIS DOCUMENT**

This document describes the response actions considered for the disposal of contaminated soil and sediment that will be excavated under an Interim Remedial Measure (IRM) associated with Geddes Brook<sup>1</sup> and its adjacent floodplain and identifies the preferred response action for management of excavated contaminated soil and sediment with the rationale for this preference.

This document was developed by the New York State Department of Environmental Conservation (NYSDEC) and the U.S. Environmental Protection Agency (EPA). NYSDEC and EPA are issuing this document as part of its public participation responsibilities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The response actions summarized here are described in more detail in Parson's October 2008 Engineering Evaluation/Cost Analysis (EE/CA), Geddes Brook Interim Remedial Measure. NYSDEC and EPA encourage the public to review the EE/CA to gain a more comprehensive understanding of the site and the proposed response action.

This document is being provided as a supplement to the EE/CA to inform the public of NYSDEC and EPA's preferred response action and to solicit public comments pertaining to the response actions that were evaluated, as well as the preferred response action.

NYSDEC and EPA's preferred response action consists of placing the excavated channel sediment and floodplain soil/sediment within the former Linden Chemicals and Plastics (LCP) Bridge Street subsite containment system.

The response action described in this document is the *preferred* response action for the site. Changes to the preferred response action or a change from the preferred response action to another response action 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 response action will be made after NYSDEC and EPA has taken into consideration all public comments. NYSDEC and EPA are soliciting public comment on all of the response actions considered in the detailed analysis of the EE/CA because NYSDEC and EPA may select a response action other than the preferred response action.

### **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 response action for each Superfund site. To this end, the EE/CA and this document have been made available to the public for a public comment period which begins on November 19, 2008 and concludes on January 2, 2009.

A public meeting will be held during the public comment period in conjunction with the Geddes Brook/Ninemile Creek Proposed Plan public meeting at the Martha Eddy Room in the Art and Home Center at the New York State Fairgrounds on December 10, 2008 at 7:00 p.m. to present the conclusions

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<sup>1</sup> Geddes Brook and the adjacent floodplain are part of the Geddes Brook/Ninemile Creek site. This site is being addressed as part of the Onondaga Lake National Priorities List site.

of the EE/CA, further elaborate on the reasons for recommending the preferred response action, and to receive public comments.

Comments received at the public meeting, as well as written comments, will be documented as part of the decision document which will formalize the selection of the response action.

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

**Onondaga County Public Library**

Syracuse Branch at the Galleries  
447 South Salina Street  
Syracuse, NY 13202-2494

Hours: M, Th, F, Sat, 9:00 a.m. – 5:00 p.m.; Tu, W, 9:00 a.m. – 8:30 p.m.  
Telephone: (315) 435-1800

**Atlantic States Legal Foundation**

658 West Onondaga Street  
Syracuse, NY 13204-3711  
(315) 475-1170

Please call for hours of availability

**NYSDEC Central Office**

625 Broadway  
Albany, NY 12233-7013  
(518) 402-9676

Hours: M – F 8:30 a.m. – 4:45 p.m.  
Please call for an appointment

**NYSDEC Region 7 Office**

615 Erie Boulevard West  
Syracuse, NY 13204-2400  
(315) 426-7400

Hours: M – F 8:30 a.m. – 4:45 p.m.  
Please call for an appointment

Written comments should be addressed to:

Tracy Smith  
Geddes Brook IRM – Public Comments  
New York State Department of Environmental Conservation  
625 Broadway, 12<sup>th</sup> Floor  
Albany, New York 12233-7013

e-mail: [DERweb@gw.dec.state.ny.us](mailto:DERweb@gw.dec.state.ny.us)  
(Indicate "Geddes Brook IRM Comments" in the subject line of the e-mail)

**SITE BACKGROUND****Site Description**

Geddes Brook is located in Onondaga County, New York on the southwest side of Onondaga Lake. Geddes Brook originates in the Town of Camillus and flows approximately 3 miles northeast to its confluence with the West Flume, and then an additional 1,600 ft to Ninemile Creek. The area subject to the IRM consists of lower Geddes Brook, which is located downstream of the confluence with the West Flume, and the adjacent floodplain (see Figure 1-1).

Lower Geddes Brook receives surface water inflow from the West Flume and from an unnamed tributary that conveys storm water from the west. Before entering Geddes Brook, the West Flume flows through the former LCP Bridge Street facility, which produced chlor-alkali products and was the subject of a separate remedial action. Geddes Brook also receives surface discharge from numerous sources, including residential neighborhoods and road runoff. The State of New York has classified the lower reaches of Geddes Brook as Class C water (best usage is fishing; water is suitable for fish survival and propagation) and the upper reaches above the abandoned Erie Canal as Class C (T) (best usage is fishing; water is suitable for cold water fish species survival and propagation).

A primary source of mercury to Geddes Brook was the former LCP Bridge Street facility via the West Flume. Remedial construction was completed at Operable Unit 1 (OU-1) of the LCP Bridge Street site (LCP OU-1) in 2007. The remedial construction included the excavation of approximately 132,600 cy of soil and sediment from site upland and wetland areas, including 22,500 cy from the West Flume. The excavated material was placed in an onsite containment system, designed specifically to accommodate the LCP-related materials, and also with the flexibility to allow for the consolidation of materials from the Geddes Brook/Ninemile Creek site. Following the excavations, the LCP OU-1 site, including associated wetlands and the West Flume, was restored.

**Sediment Removal IRM**

In 2002, Honeywell International, Inc. and NYSDEC entered into an Order on Consent (Index #D7-0003-01-09) to conduct an IRM for Geddes Brook. The IRM includes the full bank-to-bank removal of channel sediments to the underlying clay (estimated to be 4,200 cubic yards) from the confluence of Geddes Brook with the West Flume to its confluence with Ninemile Creek, including any sediment within the Geddes Brook culverts. Floodplain soil/sediment will be excavated vertically to the underlying clay layer that is typically 2 to 4 ft below ground surface, and horizontally to a break in grade that bounds the floodplain (estimated to be 63,000 cubic yards). Following removal, approximately 1 ft of vegetated cover will be placed in areas where soil/sediment had been excavated, resulting in a lower overall elevation with the intent to establish an emergent wetland. In addition, the Geddes Brook channel will be relocated westward downstream of the culverts to provide improved sinuosity, increased length, better connectivity with the floodplain, ability for channel migration, and an increased buffer from the State Fair landfill.

**SUMMARY OF SITE RISKS**

A Streamlined Risk Evaluation (SRE) was prepared for the Geddes Brook portion of the Geddes Brook/Ninemile site. The objective of an SRE was to provide a concise evaluation of potential risks to human and ecological receptors, assuming no removal or clean-up actions are taken at a site.

The SRE consisted of screening mercury concentrations in channel sediment and floodplain soil/sediment against sediment and soil benchmarks. These benchmarks are screening values and should not be construed as clean-up criteria. Exceedance of these benchmarks indicates potential risk and the need for further evaluation.

The mercury concentration data assessed in the evaluation are from investigations conducted in 1998, 2001, and 2002. More recent data were collected in 2007.

Only mercury was assessed in this SRE because it is the primary contaminant of concern in Geddes Brook channel sediment and floodplain soil/sediment.

For evaluation of potential human health risks, concentrations of mercury in channel sediment and floodplain soil/sediment were compared with the conservative risk-based concentration derived by EPA Region 9. This value is derived to be protective of cumulative exposure through three potential exposure routes: ingestion, inhalation of particles (in the case of inorganic mercury), and dermal contact. The EPA Region 9 value for mercury is 23 mg/kg (based on a hazard quotient of 1 for residential exposure). It is derived assuming adults and children contact soil in a residential setting 350 days per year over 30 years. Because this scenario assumes more exposure than is expected to occur at the site, comparison to this value provides a protective means of evaluating site risks. No screening values for mercury were identified for protection of human health via bioaccumulation.

Sediment mercury data were compared to both NYSDEC sediment values and the EPA Region 9 soil value because the EPA Region 9 value was the only human health-based value available. Floodplain soil/sediment data were compared to both of these values because floodplain soil/sediment can become flooded during periods of high flow.

For evaluation of potential ecological risks, mercury concentrations in channel sediment and floodplain soil/sediment were compared with screening values from the NYSDEC's 1999 *Technical Guidance for Screening Contaminated Sediment* and from the State of Washington Department of Ecology (Washington State Department of Ecology, 2003).

The SRE results indicate that there is a potential threat to human health and the environment at the site. Based on the following factors from 40 CFR Section 300.415 (B) (2), a response action at the site is warranted:

- Potential threat of exposure to nearby human populations, animals, and the food chain from contaminants.
- Elevated levels of contaminants in soil/sediment at or near the surface with potential to migrate.
- Potential threat to public health, welfare, or the environment.

The SRE also includes, by reference, the baseline human health and ecological risk assessments conducted for the Geddes Brook/Ninemile Creek site which were completed in 2003. The assessments identified a number of contaminants of potential concern, including PCBs, polychlorinated dibenzo-*p*-dioxins/polychlorinated dibenzofurans, polycyclic aromatic hydrocarbons, mercury, and other metals. Unacceptable risks were identified for human consumption of fish and for all trophic levels in the environment, based on several lines of evidence. Affected media include Geddes Brook channel sediment, floodplain soil, and fish.

### **SUMMARY OF RESPONSE ACTIONS**

Two potential response actions to manage the excavated contaminated soil and sediment were developed, as described below.

**Response Action D-1: Consolidation at LCP Bridge Street Site**

Capital Cost	\$8,900,000
Material Management Cost	\$3,600,000
Present-Worth O&M Cost	\$700,000
Total Present-Worth Cost	\$13,200,000

This response action would consist of placing the excavated channel sediment and floodplain soil/sediment within the containment system designed for the LCP Bridge Street site. The LCP containment system has been constructed. It consists of a barrier wall around the facility to contain site-impacted shallow and deep groundwater and a groundwater extraction and treatment system. The LCP containment system was designed with the flexibility to accommodate soil/sediment from the Geddes Brook/Ninemile Creek site. The material from the Geddes Brook/Ninemile Creek site would be placed within the containment system and covered with the low permeability cap that has been designed for the site.

**Response Action D-2: Removal to an Off-Site New York State Commercial Facility**

Capital Cost	\$8,900,000
Material Management Cost	\$11,600,000
Present-Worth O&M Cost	\$700,000
Total Present-Worth Cost	\$21,200,000

This response action would consist of disposing of the excavated channel sediment and floodplain soil/sediment at a commercial landfill facility within New York State, such as the High Acres Landfill (High Acres) or the Ontario County Landfill, both of which are near Rochester, New York.

***EVALUATION OF RESPONSE ACTIONS***

To select a response action for a site, NYSDEC and EPA conduct a detailed analysis of the viable response actions. The detailed analysis consists of an assessment of the individual response actions against each of three evaluation criteria (effectiveness, implementability, and cost) and a comparative analysis focusing upon the relative performance of each response action against those criteria.

**Effectiveness**

This criterion refers to a response action’s ability to meet the removal action objectives. The overall assessment of effectiveness is based on a composite of factors, including overall protection of public health and the environment, compliance with Applicable or Relevant and Appropriate Requirements (ARARs), long-term effectiveness and permanence, reduction of toxicity, mobility, and volume through treatment, and short-term effectiveness, as follows:

- Overall protection of human health and the environment assesses whether the response actions are protective of public health and the environment. The evaluation will focus on how each response action achieves adequate protection and describe how the response action will reduce, control, or eliminate risks at the site through the use of treatment, engineering, or institutional controls.
- Compliance with ARARs addresses whether or not a response action would meet all of the applicable or relevant and appropriate requirements of other federal and state environmental statutes.
- Long-Term Effectiveness and Permanence involves the evaluation of the extent and effectiveness of the controls that may be required to manage the risk posed by treatment residuals and/or untreated wastes at the site. This criterion also considers the adequacy and reliability of controls and addresses the need for post-removal site control.
- Reduction of Toxicity, Mobility, and Volume through Treatment includes evaluating the anticipated performance of specific treatment technologies. This evaluation addresses the statutory preference for selecting response actions that employ treatment technologies to permanently and significantly reduce toxicity, mobility, or volume of wastes. Factors that will be considered, as appropriate, include: the treatment or recycling processes the response actions employ and the materials they would treat; the amount of hazardous materials to be destroyed or treated; the degree of reduction expected in toxicity, mobility, or volume; the degree to which the treatment would be irreversible; the type and quantity of residuals that would remain after treatment; and whether the response action would satisfy the preference for treatment.
- Short-Term Effectiveness examines the effectiveness of response actions in protecting public health and the environment during the construction and implementation period until the removal action objectives have been met. The following factors will be considered: potential for short-term risks to the affected community as a result of the response action; potential impacts on workers during the response action, and the effectiveness and reliability of protective measures that would be taken; potential adverse environmental impacts of the response action, and the effectiveness and reliability of protective measures that would be taken; and time until protection is achieved.

### **Implementability**

Under this criterion, the ease of implementing the response actions will be assessed by considering the following factors: technical feasibility, including technical difficulties and unknowns associated with the construction and operation of a technology, the reliability of the technology, ease of undertaking additional response actions, the ability to monitor the effectiveness of the response action, and the extent to which the removal action contributes to the efficient performance of any long-term remedial action; administrative feasibility, including activities needed to coordinate with other offices and agencies, the ability to obtain necessary approvals and permits from other agencies (for off-site actions), and statutory limits on removal actions; availability of services and materials, including the availability of adequate on or off-site treatment, storage capacity, and disposal capacity and services; and the availability of necessary equipment and specialists, and provisions to ensure any necessary additional resources; and the availability of prospective technologies for full-scale application. This criterion will also assess support agency and community acceptance, as described below.

- Support Agency Acceptance indicates whether, based on its review of the EE/CA and this document, the New York State Department of Health (NYSDOH) agrees with, opposes, or has no comment on the preferred response action at the present time.
- Community Acceptance, which will be assessed in the Action Memorandum, refers to the public's general response to the response actions described in the EE/CA and this document.

### **Cost**

The costs that will be assessed include the capital costs, including both indirect and direct costs; post-removal site control costs, which include annual maintenance and residual disposal costs; and present-worth costs, which include the capital costs plus the present value of 30 years of post-removal site control costs (calculated at a 7 percent discount rate).

### **Comparative Analysis of Response Actions**

A comparative analysis of the response actions based upon the evaluation criteria noted above follows:

#### **Effectiveness**

Consolidation of the excavated materials within the LCP Bridge Street site containment system under Response Action D-1 would be protective of human health and the environment by effectively containing excavated channel sediment and floodplain soil/sediment beneath a low-permeability cap. Containment would reduce or eliminate the potential exposure risk to human and ecological receptors. The ROD issued by NYSDEC for the LCP Bridge Street site determined that the LCP Bridge Street site containment system would provide overall protectiveness of human health and the environment. This containment system has been designed and constructed specifically to accumulate LCP-related materials, such as those present at the Geddes Brook/Ninemile Creek site.

Consolidation of excavated materials at an approved commercial facility under Response Action D-2 would also be protective of human health and the environment by effectively containing materials under a low-permeability cap. Containment would reduce or eliminate the potential exposure risks to human and ecological receptors.

One difference between the two response actions is that the transport route to the LCP Bridge Street site under Response Action D-1 would be 2.5 miles or less along non-residential roads, versus 80 miles under Response Action D-2. Associated with the transport of materials is the risk of an accident during transit; the potential for transportation-related fatalities during implementation was evaluated. It was concluded that Response Action D-1 would have a lower risk of vehicular accidents and increased public safety due to shorter material transport distance to the LCP containment system. The lower risk is roughly proportional to the distances traveled (2.5 miles for consolidation at the LCP site under Response Action D-1, compared to 80 miles for consolidation at a Rochester area commercial facility under Response Action D-2). It was concluded, however, that no unacceptable short-term risks to human health and the environment would be presented by either of the response actions.

The analysis of environmental impact is largely focused on protectiveness (risk to human health and the environment) of the remedy, and both response actions are protective. A further analysis of sustainability, including energy use and carbon footprint, also favors the shorter transportation route.

**Implementability**

Response Action D-1 is implementable both technically and administratively. The LCP Bridge Street site is located within 2.5 miles of the Geddes Brook/Ninemile Creek site and is easily accessible via non-residential roads suitable for truck traffic. Material consolidation and containment are routinely applied remedial strategies. Flexibility has been built into the design of the LCP Bridge Street site containment system to allow for consolidation of materials from the Geddes Brook/Ninemile Creek site; similar materials from the West Flume and adjoining wetlands have already been successfully consolidated at this location.

Response Action D-2 is implementable both technically and administratively for the High Acres facility, which is located approximately 80 miles from Geddes Brook/Ninemile Creek and accessible via non-residential roads suitable for truck traffic.

NYSDOH provided input on the EE/CA during its preparation and agrees with the preferred response action.

Community acceptance of the preferred response action will be assessed in a decision document following review of the public comments received on the EE/CA and this document.

**Cost**

The estimated capital, annual post-removal site control costs, and present-worth costs for each of the response actions are presented below.

Response Action	Capital Cost	Material Management Cost	Present-Worth O&M Cost	Present-Worth Cost
D-1	\$8,900,000	\$3,600,000	\$700,000	\$13,200,000
D-2	\$8,900,000	\$11,600,000	\$700,000	\$21,200,000

As can be seen by the cost estimates, Response Action D-1 is the least costly response action with a present-worth cost of \$13,200,000. Response Action D-2 is the most costly response action at an estimated present-worth cost of \$21,200,000

***PREFERRED RESPONSE ACTION***

NYSDEC and EPA's preferred response action includes consolidation of the excavated soil/sediment at the LCP Bridge Street site. Consolidation at the LCP Bridge Street site, which was specially designed and constructed to manage LCP-related soil/sediment such as that from the Geddes Brook/Ninemile Creek site, is cost effective, represents a more sustainable approach than disposal at a more distant facility, would have a lower risk of vehicular accidents and increased public safety when compared to disposal at a more distant facility, and would be long-term protective of human health and the environment.

NYSDEC and EPA believe that the preferred response action would provide the best balance of tradeoffs among the response actions with respect to the evaluating criteria. NYSDEC and EPA also believe that the preferred response action would be protective of human health and the environment, would comply with ARARs, would be cost-effective, and would utilize permanent solutions and response action treatment technologies or resource recovery technologies to the maximum extent practicable.