Superfund Proposed Plan

U.S. Environmental Protection Agency, Region II

Nepera Chemical Company, Inc. Superfund Site

Hamptonburgh, Orange County, New York

May 2011

EPA ANNOUNCES PROPOSED PLAN

This Proposed Plan describes the proposed change to the September 28, 2007 Record of Decision (ROD) issued by the U.S. Environmental Protection Agency (EPA) in consultation with the New York State Department of Environmental Conservation (NYSDEC) for the Nepera Chemical Company Superfund Site (Site) located in Hamptonburgh, New York. The proposed change applies to the soil remedy component of the ROD.

The remedy described in the 2007 ROD required:

- excavation of the soil in the source area (former lagoon area),
- the design and construction of an on-site biocell to contain the excavated soil,
- the installation of a soil vapor extraction (SVE) system within the biocell, and
- operation of the SVE and the biocell systems to remediate contaminated soil.

In addition, the ROD included a groundwater remedy whereby groundwater in the overburden would be treated with oxygenating compounds (e.g., Oxygen Releasing Compounds), which will flow radially outward from the former lagoon area and also downward to create an aerobic environment and, thereby, stimulate biodegradation within the area of elevated groundwater contamination. As the excavated soils would remain on-Site, the ROD also included a requirement for institutional controls, namely, that an environmental easement/restrictive covenant would be filed in the property records of Orange County noting restrictions on the use of the property.

Based on new data collected during the implementation of the 2007 remedy, EPA is proposing that the contaminated soils in the source area (former lagoon area) be excavated and transported to an off-site facility for treatment and/or disposal. All of the other components of the 2007 remedy, including the treatment of groundwater with oxygenating compounds, remain unchanged. This Proposed Plan was developed by EPA in consultation with the NYSDEC.

MARK YOUR CALENDAR

May 20, 2011 – June 20, 2011: Public comment period related to this Proposed Plan.

June 15, 2011 at 7:00 P.M.: Public meeting at the Town of Hamptonburgh Town Hall in Campbell Hall, New York.

EPA is issuing this Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended (commonly known as the federal "Superfund" law), and Sections 300.430(f) and 300.435(c) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The nature and extent of the contamination at the Site and the alternatives summarized in this Proposed Plan are further described in the September 28, 2007 Record of Decision (ROD), June 16, 2006 Remedial Investigation (RI) Report, the June 26, 2007 Feasibility Study (FS) Report, and the 2011 Final Remedial Design Report. EPA and NYSDEC encourage the public to review these documents to gain a more comprehensive understanding of the Site and Superfund activities that have been conducted at the Site.

This Proposed Plan is being provided to inform the public of EPA's preferred amendment to the soil remedy and to solicit public comments pertaining to the remedial alternatives evaluated, including the preferred alternatives. EPA's preferred amendment to the soil remedy consists of the excavation of the soil in the source area (former lagoon area) and transportation of the contaminated soils to an off-site

INFORMATION REPOSITORIES

Copies of the Proposed Plan and supporting documentation are available at the following Information repositories:

Town of Hamptonburgh Town Hall
18 Bull Road
Campbell Hall, New York 10916
Telephone: (845) 427-2424

Hours: Monday – Friday: 9:00 AM to 3:30 PM

USEPA-Region II
Superfund Records Center
290 Broadway, 18th Floor
New York, New York 10007-1866
(212) 637-4308

Hours: Monday – Friday: 9:00 AM to 5:00 PM

The Proposed Plan can also be found under "Additional Documents" on EPA's Nepera Chemical Company website:
www.epa.gov/region02/superfund/npl/nepera

facility for treatment and/or disposal. This soil remedial alternative is referred to in this Proposed Plan as Soil Alternative 2. The groundwater remedy was previously selected by EPA in a Record of Decision issued on September 28, 2007. The groundwater remedy remains unchanged and, therefore, is not discussed at length in this Proposed Plan. The groundwater remedy will be followed by a long-term groundwater monitoring program where groundwater samples would be collected and analyzed regularly to verify that the concentrations and extent of groundwater contaminants are diminishing.

The amendment to the soil remedy described in this Proposed Plan is the preferred soil remedy for the Site. Changes to the preferred remedy or a change from the preferred 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 selection of the amended soil remedy will be made after EPA has taken into consideration all public comments. EPA is soliciting public comment on all of the alternatives considered in this Proposed Plan

COMMUNITY ROLE IN SELECTION PROCESS

EPA and NYSDEC 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 RI and FS reports and this Proposed Plan continue to be available to the public for a public comment period which begins on May 20, 2011.

A public meeting will be held during the public comment period at Town of Hamptonburgh Town Hall on June 15, 2011 at 7:00 P.M. to present the history and facts pertaining to the Site, to elaborate further on the reasons for recommending the preferred remedy and to receive public comments.

Comments received at the public meeting, as well as written comments, will be documented in the Responsiveness Summary section of an Amended Record of Decision, the document which will formalize the selection of any change to the remedy.

Written comments on this Proposed Plan should be addressed to:

Mark Dannenberg
Remedial Project Manager
U.S. Environmental Protection Agency
290 Broadway, 20th Floor
New York, New York 10007-1866
Telephone: (212) 637-4251
Fax: (212) 637-3966
Email: Dannenberg.mark@epa.gov

SCOPE AND ROLE OF ACTION

This primary objective of this Proposed Plan is to present an Amendment to the ROD for the Nepera Chemical Company Superfund Site. This Proposed Plan presents a remedial action focusing on the cleanup of contaminated soils at the Site. The proposed remedy would excavate and remove contaminated soil from the Site for off-site treatment and/or disposal, which would eliminate the potential for direct contact with contaminated soils, minimize the migration of contaminants from the soils to the groundwater, restore groundwater quality, and minimize any potential future health and environmental impacts.

SITE BACKGROUND

Site Description

The property is located on the south side of Orange County Highway 4 in Hamptonburgh, Orange County, New York, approximately 1.5 miles southwest of the Village of Maybrook (see Figure 1). The Site is owned by Nepera Chemical Company, Inc. (Nepera). The Site property is 29.3 acres in area; approximately 5 acres of the Site were used for the operation of industrial wastewater disposal lagoons (see Figure 2). The Site is located in a rural residential/agricultural area, bounded by Orange County Highway 4 to the north, Beaverdam Brook to the west, the Otter Kill to the south, and an undeveloped tract of land to the east. Three residences exist in the immediate vicinity of the Site, one to the southwest, one to the north and one to the northeast (on the other side of Orange County Highway 4).

Approximately 7,000 people live within three miles of the Site, with the closest residences located approximately 250 feet to the west-southwest and 175 feet to the northeast. Public water supply wells for the Village of Maybrook are located approximately 800 feet to the northeast of the Site property. All residences in the immediate vicinity of the Site rely on private wells for the potable water supply. Based on annual monitoring conducted for the private wells nearest the Site, the private wells continue to meet drinking water quality standards for public water supplies.

Site Geology/Hydrogeology

The Site is in an area of rolling hill topography and is located within a 4.5 square mile watershed consisting of Beaverdam Brook and its tributaries, which discharge to the Otter Kill, located approximately 500 feet to the south of the property. The geologic units at the Site are divided into two primary units, the overburden (comprised of topsoil, fill, and gravel) and the bedrock (comprised of shale). Ground surface topography is generally bedrock controlled, meaning that the ground surface generally follows the bedrock surface topography. The overburden thickness at the Site is also related to bedrock topography in that it is generally thinner (or absent) over bedrock ridges, while greater overburden thicknesses have been deposited in bedrock depressions and valleys. The overburden ranges in thickness from 0 to 20 feet.

Most of the Site is forested. The former lagoon area, which was stripped of vegetation while in use, is now covered with grasses, wild flowers, and mixed brush.

There are two aquifers that exist beneath the Site, the overburden aquifer and the bedrock aquifer. The overburden aquifer is the surficial unit which overlies the bedrock aquifer. The deeper bedrock aquifer is the primary source for public water in the area. No significant layers of impeding clays were observed between the two aquifers within the study area. An east to west trending groundwater divide is present in the bedrock aquifer underlying (and transecting) the lagoon area. As such, groundwater flow has a northerly and a southerly component radiating from this divide.

Three public water supply wells in Maybrook are located in the bedrock aquifer at depths of over 200 feet below ground surface (bgs).

Site History

The Site was used for the disposal of industrial wastewater generated at the Nepera Chemical Company facility in Harriman, New York, located approximately 25 miles from the Site. Wastewater was trucked to the Site and disposed of in six constructed lagoons from 1953 through December 1967. Approximately 5 acres of the Site were used for these lagoon operations. No wastewater disposal has occurred at the Site since December 1967. Three of the lagoons were backfilled with clean soil in 1968: the remaining three lagoons were backfilled with clean soil in 1974.

Beginning in 1967, numerous investigations were conducted by various consultants for Nepera to determine the extent of contamination at the Site. Based on the results of these investigations, NYSDEC placed the Site on the New York Registry of Inactive Hazardous Waste Disposal Sites. On August 17, 1984, the State of New York entered into a Consent Decree with Nepera to conduct a remedial investigation to determine the nature and extent of contamination at the Site.

On June 1, 1986, the EPA placed the Site on the National Priorities List (NPL) of sites under the Comprehensive Environmental Response Compensation and Liability Act 1980 (CERCLA), as amended. NYSDEC continued as the lead regulatory agency overseeing the implementation of the RI/FS.

Under an Administrative Order with NYSDEC, signed on March 21, 1988, Nepera hired a contractor to conduct a RI/FS of the Site in 1988. The first draft RI was submitted in March 1996. NYSDEC and EPA determined that further work was necessary to define the type and extent of soil contamination at the Site

and to determine the downgradient extent of groundwater contamination at the Site. The finding of this additional investigation were documented in the June 2006 Final RI Report.

In 2007, at the conclusion of the RI/FS, the lead agency for the Site was re-designated from NYSDEC to EPA. A ROD was issued by EPA on September 28, 2007. Under a Consent Agreement entered on October 8, 2008, and signed by EPA and Nepera, Nepera hired a contractor to perform the Remedial Design (RD). The Final Remedial Design Report was approved by EPA in February 2011.

RESULTS OF THE REMEDIAL INVESTIGATION

Major field activities performed during the RI included: on-Site soil borings, soil sampling, monitoring well drilling and installation, groundwater sampling, and residential well sampling. Since EPA is proposing to amend only the Soils Remedy Alternative, and not the other components of the remedy selected in the 2007 ROD, this section will only focus on the nature and extent of soil contamination. The results of the RI are summarized below. For further information on the groundwater remedy at the Site, as well as additional information pertaining to other aspects of the Site, see the 2007 ROD (which is still on file at both public repositories).

Soil

Nepera performed the RI in several phases. Soil sampling activities were conducted in 1991 and 1996. Focused soil sampling identified contamination in the lagoon area and determined the lagoon area to be the primary source of the contaminants in the groundwater plume. The primary contaminants identified during soil sampling activities include benzene (maximum concentration of 13 milligrams per kilogram (mg/kg)), chlorobenzene (maximum concentration of 12 mg/kg), ethylbenzene (maximum concentration of 22 mg/kg), toluene (maximum concentration of 52 mg/kg), xylenes (maximum concentration of 300 mg/kg) and pyridine-related compounds (maximum concentration of 74 mg/kg of 2-amino pyridine). Each of these contaminants are considered as Contaminants of Concern (COCs) for the Site. An additional 120 soil samples were collected from the lagoon area in 2003 to evaluate concentration levels of metals. Soil samples were also collected from locations not impacted by the Site to determine Site-specific background levels for metals. Analytical data from the 2003 sampling activities indicated that the metals in the lagoon area were consistent with background concentrations and, as such, metals are not considered to be COCs.

RESULTS OF THE REMEDIAL DESIGN

Major RD activities included: on-Site soil borings, soil sampling, surveying activities, and recalculation of the volume estimates of the contaminated soil within the former source area. The results of the RD are summarized below.

Additional sampling was conducted in late 2010 to identify pyridine-related compounds that, in previous analytical studies, were tentatively identified. One pyridine-related tentatively identified compound (TIC) was positively identified, namely 2,4-bipyridine. This compound was added to the list of Contaminants of COCs for the Site, and a remediation goal was established for 2,4-bipyridine (see Table 1, below).
Surveying activities along with a thorough analysis of test pitting and boring information was performed. This work led to a better defined contamination source area. The projected volume of contaminated soils at the Site was recalculated. In addition, a waste characterization of the contaminated soils was conducted. Much of the soil is now expected to be classified as non-hazardous. As such, the capital cost for disposal will be significantly less than projected in the FS. In addition, Nepera identified three Treatment, Storage, and Disposal (TSD) facilities within close proximity of the Site willing to accept the waste. These facilities are much closer than projected in the FS. The calculation of the volume estimates for the contaminated soils is presented below.

The former lagoons are within an area approximately five acres in size, but the total area of the actual six lagoons is smaller. The total area of contaminated soils (i.e., the six lagoons) is estimated to be 128,850 square feet (approximately three acres). The volume calculations for contaminated soil are based on the actual surface area of each lagoon, the average depth of the overburden within each lagoon (down to bedrock), the thickness of a distinct black-stained layer observed during the completion of test pits, and the clean fill that was put into the lagoons when they were closed (in 1968 and 1974).

- The volume of the clean backfill in the lagoon area is conservatively estimated to be 11,000 cubic yards. This is based on a total surface area of the actual lagoons of 75,000 square feet and a depth of four feet. Sampling will be performed to validate this assumption during remedy implementation.
- The volume of the soil extending from the top

of the stained soils, which have typically been contaminated, down to the top of competent bedrock is conservatively estimated to be 24,000 cubic yards. Furthermore, it is conservatively estimated that approximately 50% of the soil below the 4-foot backfill material is stained. As such, approximately 12,000 cubic yards of the 24,000 cubic yards is assumed to be stained and 12,000 cubic yards is assumed to be non-stained. For a conservative estimate, one-third of this "non-stained" material (4,000 cubic yards) is assumed to exceed the soil cleanup objectives.

- Therefore, the total volume of contaminated material is estimated to be 16,000 cubic yards. The projected volume for offsite disposal is 16,000 cubic yards (which is approximately 21,600 tons).
- The estimate for the total volume of contaminated soil used in the September 28, 2007 ROD was 24,086 cubic yards.

Based on the updated information, the revised calculation for the projected volume of contaminated soils that will be transported from the Site for treatment and/or disposal is approximately 33% less than the previous calculation used in the September 28, 2007 ROD.

RISK SUMMARY

The purpose of the risk assessment is to identify potential cancer risks and noncancer health hazards at the Site assuming that no further remedial action is taken. A baseline human health risk assessment was performed to evaluate current and future cancer risks and noncancer health hazards based on the results of the RI. A baseline ecological risk assessment was also conducted to assess the risk posed to ecological receptors because of Site-related contamination. As the findings of the human health and ecological risk assessments have not changed since September 28, 2007, only a summary of the risk assessments is provided below. For further information on the human health risk assessment and the ecological risk assessment, see the September 28, 2007 ROD (which is still on file at both public repositories).

Human Health Risks

In the Human Health Risk Assessment, chemical data were used to calculate cancer risks and noncancer health hazards expressed as individual Hazard Quotients (HQ). These cancer and noncancer risks, for the most conservative scenario (namely, future residential use of the Site) are expressed below.

EPA's statistical analysis of the groundwater sampling data indicates that the probable exposure concentrations of benzene (330 micrograms per liter (ug/l)), xylenes (270 ug/l), 2-aminopyridine (189 ug/l), and aniline (16 ug/l), when evaluated under future residential exposure scenarios, are associated with noncancer hazard quotients of 21, 4, 570, and 23, respectively. In addition, the concentration of benzene is associated with an excess lifetime cancer risk of 1 in 1,000 ($1 \times 10^{-3)}$. All of these values exceed EPA's acceptable levels of noncancer hazard or excess lifetime cancer risk.

Similarly, EPA's evaluation of the soils indicates that direct exposure to the probable exposure concentrations of benzene (4,440 ug/kg), toluene (10,000 ug/kg), chlorobenzene (1,000 ug/kg), xylenes (69,000 ug/kg), and 2-aminopyridine (23,400 ug/kg) are associated with hazard quotients of 42, 7, 5, 61, and 2, respectively. All of these values exceed EPA's acceptable levels of noncancer hazard. In addition, the concentration of benzene is associated with an excess lifetime cancer risk of 1×10^{-4}.

These risk and hazard levels indicate that there is significant potential risk to receptors from direct exposure to contaminated soil and groundwater. These calculated risks to human health indicate that action is necessary by EPA to undertake remedial measures to reduce the risks associated with the observed contamination in soil and groundwater and restore the groundwater to beneficial use.

Ecological Risk Assessment

A baseline ecological risk assessment (BERA) was prepared to identify the potential environmental risks associated with surface water, groundwater, sediment, and soil. The results of the BERA suggested that there are contaminants in groundwater, soils, and sediment, but they are not present at levels posing significant risks to ecological receptors. The potential for risk to ecological receptors exposed to Site-related contaminants was limited to isolated locations, primarily in Lagoon 6, and the risk associated with this area used the conservative assumption that the ecological receptors (e.g., soil invertebrates, mammalian insectivores, and carnivores) spend 100% of their lives in the area of Lagoon 6. The contaminants that were identified in the BERA (outside of Lagoon 6) were determined not to pose a potential for adverse ecological effects because they

were common elements of soil that were not related to Site operations, the detected concentrations were lower than background levels, the frequency of detections was low, or the HQs were only slightly above 1 with no adverse impacts to populations expected. A detailed presentation of these data can be found in the RI Report.

Risk Summary Conclusion

Exposure to contaminated soil poses risks to human health. Furthermore, the contaminated soil continues to be a source of groundwater contamination. In addition, exposure to contaminated groundwater poses risks to human health. In the 2007 ROD, a determination was made that a remedial action should be taken to reduce contamination in the soil to levels below cleanup objectives and to restore the contaminated groundwater for future use. This determination has not changed since the 2007 ROD. The amended remedy proposed in this Proposed Plan still requires contamination in the soil to be reduced to levels below cleanup objectives.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) are media-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), to-be-considered (TBC) guidance, and risk-based levels established in the risk assessment.

The overall remedial action objective is to ensure the protection of human health and the environment. The general remedial action objectives identified for the Site are to:

1. prevent exposure of human and ecological receptors to contaminated soils and contaminated groundwater;
2. minimize migration of contaminants from soils to groundwater;
3. restore the aquifer(s) to beneficial use;
4. ensure that hazardous constituents within the soil meet acceptable levels consistent with reasonably anticipated future use; and
5. minimize potential human contact with waste constituents.

Preliminary Remediation Goals

Preliminary Remediation Goals (PRGs) were selected based on federal and state promulgated ARARs, risk-based levels, background concentrations, and guidance values. These PRGs were then used as a benchmark in the technology screening, alternative development and screening, and detailed evaluation of alternatives presented in the subsequent sections of the FS Report. The PRGs for soil are shown in Table 1 below.

Table 1: Preliminary Remediation Goals

Contaminant	PRG for Soils (ug/kg)
Benzene	60 [1]
Chlorobenzene	1,100 [1]
Ethylbenzene	1,000 [1]
Toluene	700 [1]
Xylenes	260 [1]
2-amino pyridine	400 [2]
Pyridine	400 [2]
Alpha picoline	575 [2]
Acetone	50 [1]
Aniline	1,510 [2]
2,4-bipyridine [3]	400 [2]

[1] The values shown are from *NYSDEC Subpart 375: Remedial Program Soil Cleanup Objectives*.

[2] The values shown were derived by NYSDEC based on the *Division Technical and Administrative Guidance Memorandum: Determination of Soil Cleanup Objectives and Cleanup Levels, Division of Hazardous Waste Remediation, January 24, 1994.*

[3] The parameter was determined to be present in Site soils as a result of a soil sampling survey performed in 2010.

SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA Section 121(b)(1), 42 U.S.C. Section 9621(b)(1), mandates that remedial actions must be protective of human health and the environment, cost-effective, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ, as a principal element, treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, and contaminants at a site. CERCLA Section 121(d), 42 U.S.C. Section 9621(d) further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants, and contaminants that at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA Section 121(d)(4), 42 U.S.C. Section 9621(d)(4).

The objective of the feasibility study (FS) as it pertains to soil contamination was to identify and evaluate cost-effective remedial action alternatives which would minimize the risk to public health and the environment resulting from soil contamination at the Site.

Detailed descriptions of the remedial alternatives for addressing the contamination associated with the Site can be found in the FS report and in the September 28, 2007 Record of Decision. During the RD, waste characterization, volume estimates, and cost information were refined; these refinements are reflected in the alternatives described below.

This Proposed Plan presents a summary of three soil remediation alternatives (including a "No-Action" alternative). The groundwater remedy remains unchanged and is, therefore, not addressed in this Proposed Plan.

SOIL REMEDIAL ALTERNATIVES

The two active soil remedies presented below would include institutional controls. Specifically, an environmental easement/restrictive covenant would be filed in the property records of Orange County. The easement/covenant would, at a minimum, require: (a) restricting new construction at the Site unless an evaluation of the potential for vapor intrusion is conducted and mitigation, if necessary, is performed in compliance with an EPA approved site management plan; (b) restricting the use of groundwater on the site property as a source of potable or process water unless groundwater quality standards are met; and (c) the owner/operator to complete and submit periodic certifications that the institutional and engineering controls are in place.

A Site Management Plan (SMP) would be developed to address groundwater at the site. The SMP would provide for the proper management of all Site remedy components post-construction, such as institutional controls, and shall also include: (a) monitoring of Site groundwater to ensure that, following the soil excavation, the groundwater quality continues to improve and contaminant levels are reduced to levels below Federal and State standards; (b) identification of any use restrictions on the Site; (c) necessary provisions for implementation of the requirements of the above easement/covenant; and (d) provision for any operation and maintenance required of the components of the remedy.

Finally, there is a requirement that those private wells (in the vicinity of the Site) and the Town of Maybrook Public Water Supply wells, all currently being monitored in relation to this Site, will continue to be monitored on an ongoing basis. The frequency of the residential well sampling will be periodically reevaluated.

Soil Remedial Alternatives

Alternative 1 - No Action

Capital Cost:	$0
Annual Cost:	$0
Present-Worth Cost:	$0
Construction Time:	Not Applicable

The "No Action" alternative is considered in accordance with NCP requirements and provides a baseline for comparison with other alternatives. If this alternative were implemented, the current status of the Site would remain unchanged. Institutional controls would not be implemented to restrict future Site development or use. Engineering controls would not be implemented to prevent Site access or exposure to Site contaminants. Although existing security fencing at the Site would remain, it would not be monitored or maintained under this alternative.

Alternative 2 – Excavation and Off-Site Disposal

Capital Cost:	$3,000,000
Annual Cost:	$25,000
Present-Worth Cost:	$3,026,900
Construction Time:	1 year

Alternative 2 involves the excavation of soils within the former lagoons containing COCs at concentrations exceeding NYSDEC Soil Cleanup Objectives for unrestricted land use. The excavated soils would be disposed of off-Site at a permitted TSD facility. Prior to off-Site land disposal, contaminated soils would be required to comply with federal Resource Conservation and Recovery Act (RCRA) land disposal requirements to the extent applicable.

The Capital Cost associated with Alternative 2 has been revised/updated since the FS Report. Sampling performed during the RA will define how much of the contaminated soil would be classified as hazardous waste, which may alter, somewhat, the cost to handle

and dispose of that material.

Alternative 2 would include the following major components:

- excavation of on-Site soils;
- disposal of excavated soils exceeding soil cleanup objectives for unrestricted use for the COCs at appropriate off-Site facility (or facilities);
- post excavation sampling to verify achievement of soil cleanup objectives;
- backfilling of excavated areas with clean soil meeting the requirements of 6NYCRR Subpart 375-6.

Alternative 3 – Excavation and On-Site SVE and Biocell

Capital Cost:	$2,388,000
Annual Cost:	$406,000
Present-Worth Cost:	$3,232,200
Construction Time:	2 years

This alternative would involve the excavation of the soils within the former lagoons and treatment of the soils with concentrations of COCs exceeding the NYSDEC Soil Cleanup Objectives (SCOs) for unrestricted land use utilizing soil vapor extraction (SVE) and biological degradation within an on-Site engineered below-grade biocell. Excavated soils would be treated to reach unrestricted land use SCOs.

The soils would be treated within the biocell by installing perforated pipes within multiple layers of the biocell. The perforated pipes would be connected to a blower unit to draw air through the piles; contaminants would be volatilized into this air. The air would be treated, if necessary, using carbon adsorption, prior to being recirculated or exhausted to the atmosphere. Nutrients would be added to the treatment layers as required to enhance biological degradation.

In general, the biocell would be operated in two primary modes: SVE mode (high air flow rate); and bioremediation mode (low air flow rate).

During the SVE mode, the system would be operated at higher air flow rates which would be selected to optimize the removal of the volatile organic compounds (VOCs) constituents using SVE. After the removal rate of the VOCs decreases to an asymptotic or nominal rate, the system would be switched over to the bioremediation mode. During the bioremediation mode, the system would be operated at an optimized air flow rate selected to sustain the aerobic biodegradation of the remaining VOCs and semi-volatile organic compounds.

In addition, physical controls, such as regular maintenance of the perimeter fence, would be implemented to restrict Site access and thereby prevent the potential exposure to chemicals present in the soils in the vicinity of the former lagoons.

COMPARATIVE ANALYSIS OF ALTERNATIVES

During the detailed evaluation of remedial alternatives, each alternative is assessed against the following nine evaluation criteria: overall protection of human health and the environment, compliance with ARARs, long-term effectiveness and permanence, reduction of toxicity, mobility or volume through treatment, short-term effectiveness, implementability, cost, and state 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.
- Compliance with ARARs addresses whether or not a remedy would meet all of the applicable or relevant and appropriate requirements of other Federal and state environmental statutes and requirements or provide grounds for invoking a waiver.
- Long-term effectiveness and permanence refers 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, that 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.
- State acceptance indicates if, based on its review of the RI/FS and Proposed Plan, the State concurs with the preferred remedy.
- Community acceptance will be assessed in the ROD and refers to the public's general response to the alternatives described in the Proposed Plan and the RI/FS reports.

Overall Protection of Human Health and the Environment

If no action were to be implemented, Alternative 1 would not provide any control of exposure to contaminated soils, offer no reduction in risk to human health posed by contaminated soils, and provide no groundwater protection. Alternative 2 would be protective of human health and the environment since all contaminated soils would be removed from the Site. Alternative 3 would also be protective of human health and the environment since all contaminated soils would be excavated and treated within a closed treatment system. Direct contact risks for both Alternatives 2 and 3 would be reduced by removing contaminated soils. In addition, Alternatives 2 and 3 would reduce or eliminate potential impacts to groundwater.

Compliance with ARARs and TBCs

If no action were to be implemented, Alternative 1 would not achieve ARARs and TBCs.

Alternatives 2 and 3 would both meet unrestricted use NYS Part 375 SCOs. However, Alternative 2 would meet the SCOs within 3 or 4 months, whereas Alternative 3 would most likely not meet these SCOs for 3 or more years.

Since Alternatives 2 and 3 would involve the excavation of contaminated soils, they would require compliance with fugitive dust and VOC emission requirements. In addition, Alternative 2 and Alternative 3, to a lesser extent, would be subject to Federal and state regulations related to the transportation and off-site treatment/disposal of wastes.

Long-Term Effectiveness and Permanence

Alternatives 1 would not reduce risk in the long term, since the contaminants would not be controlled, treated or removed. Alternative 2 provides the highest degree of long-term effectiveness and permanence, because the impacted soils are permanently removed from the Site. Alternatives 2 and 3 both involve long-term groundwater monitoring requirements.

Reduction of Toxicity, Mobility, or Volume of Contamination through Treatment

Alternatives 1 and 2 do not use any treatment technologies on-Site to reduce the toxicity, mobility or volume of contaminants through treatment. However, under Alternative 2, contaminated soils may undergo thermal treatment off-site at the TSD facility (if necessary based on compliance with RCRA land disposal requirements), which would reduce the toxicity, mobility or volume of contaminants through treatment. Alternative 3 involves treatment that would effectively reduce the toxicity, mobility, or volume of contaminants on-Site.

Short-Term Impacts and Effectiveness

There are no short-term impacts for the No Action alternative (Alternative 1). Under Alternatives 2 and 3, some particulate emissions may result during soil handling, excavation and/or removal. Dust control and soil erosion and sedimentation controls would reduce the short-term impacts. Safety techniques including alarmed perimeter air monitoring equipment and fencing would be used to minimize exposure risks. Alternative 2 requires the transportation of the contaminated soils to an off-site location, which would result in more truck traffic entering and leaving the Site. It is estimated that there would be no more than 20 truck trips per day. This impact would be minimized as it is subject to New York State and federal regulations related to the transportation and off-site treatment/disposal of wastes; trucks would be instructed to stay on roads designated as truck routes and the transportation plan will be shared with the Town of Hamptonburgh.

Implementability

Except for Alternative 1 which requires no action whatsoever, Alternative 2 would be the simplest to implement as no construction is necessary and there are no on-going operation and maintenance issues pertaining to treatment of the soils on Site. Long-term groundwater monitoring would be required under both Alternatives 2 and 3 to assess the effectiveness of the soils remedy in reducing the affect on the groundwater contamination. Each of the remedial technologies are well established and proven. However, it is not precisely known how long the on-Site biocell associated with Alternative 3 would need to be operated; specifically, the biocell may need to be

operated additional years to achieve the remediation goals for the pyridine compounds.

Cost

Alternative 1 (No-Action) has no cost because no activities are implemented. Alternative 3 has the lower capital cost ($2,388,000) of the two active soil alternatives followed by Alternative 2 ($3,000,000). However, Alternative 2 has lower annual costs ($25,000) than Alternative 3 ($405,000). As a result, Alternative 2 has the lower overall present value cost ($3,026,900) than Alternative 3 ($3,232,200). These present value costs for Alternatives 2 and 3 are virtually the same, but Alternative 2 would be completed, with certainty, in a much shorter time span then Alternative 3. If Alternative 3 takes longer than the projected two years, the cost associated with Alternative 3 will increase over $400,000 per year.

State Acceptance

NYSDEC concurs with the preferred remedy.

Community Acceptance

Community acceptance of the preferred alternative will be assessed in the ROD following review of the public comments received on the various reports and this Proposed Plan.

PROPOSED REMEDY

Based upon an evaluation of the various alternatives, EPA, in conjunction with NYSDEC, recommends Alternative 2 – Excavation and Offsite Treatment/Disposal of Contaminated Soils.

The preferred remedy consists of an amendment to the 2007 ROD as follows: 1) excavation of contaminated soils throughout the former lagoon area where contaminants in the soils exceed NYSDEC Soil Cleanup Objectives for unrestricted use, 2) transport of contaminated soils that exceed the SCOs to a permitted Treatment, Storage, and Disposal facility, and 3) backfilling the excavated areas with clean fill.

The groundwater remedy previously selected in the September 28, 2007 ROD remains unchanged and includes the component of long-term groundwater monitoring. Specifically, the groundwater remedy includes the initial application of oxygenating compounds and, if necessary, additional applications to groundwater in the future.

Alternative 2 effectively removes the sources of contamination in the soils, thereby eliminating further impacts to groundwater. Post-excavation sampling shall be performed to verify achievement of SCOs. Clean fill would be used to backfill all excavated areas. Prior to backfilling, the excavated area will be treated with oxygenating or oxygen-releasing compounds to create an aerobic environment and, thereby, stimulate biodegradation within the area of elevated groundwater contamination. After the initial treatment, additional applications of the oxygenating compounds may be necessary. During the initial phase, additional overburden and bedrock groundwater monitoring wells will be installed and incorporated into a Site-wide management plan which will include a groundwater monitoring program which is part of this preferred alternative. This program will be developed to determine and monitor the effects of the soils and groundwater remedies on both the overburden and bedrock aquifers to reduce contaminant levels to below Federal and State standards. Institutional controls, *i.e.*, groundwater well restrictions, will be put in place at the Site.

Institutional controls would be enacted at the Site which would include the development of an environmental easement/restrictive covenant to be filed in the property records of Orange County that would include groundwater use restrictions on the Site. Furthermore, new construction at the Site will be restricted unless an evaluation of the potential for vapor intrusion is conducted and mitigation, if necessary, is performed

This alternative involves the removal of contaminated soils from the Site, which are above health-based levels. If justified by post-excavation sampling or from future reviews, additional remedial actions may be implemented at the Site.

Basis for the Remedy Preference

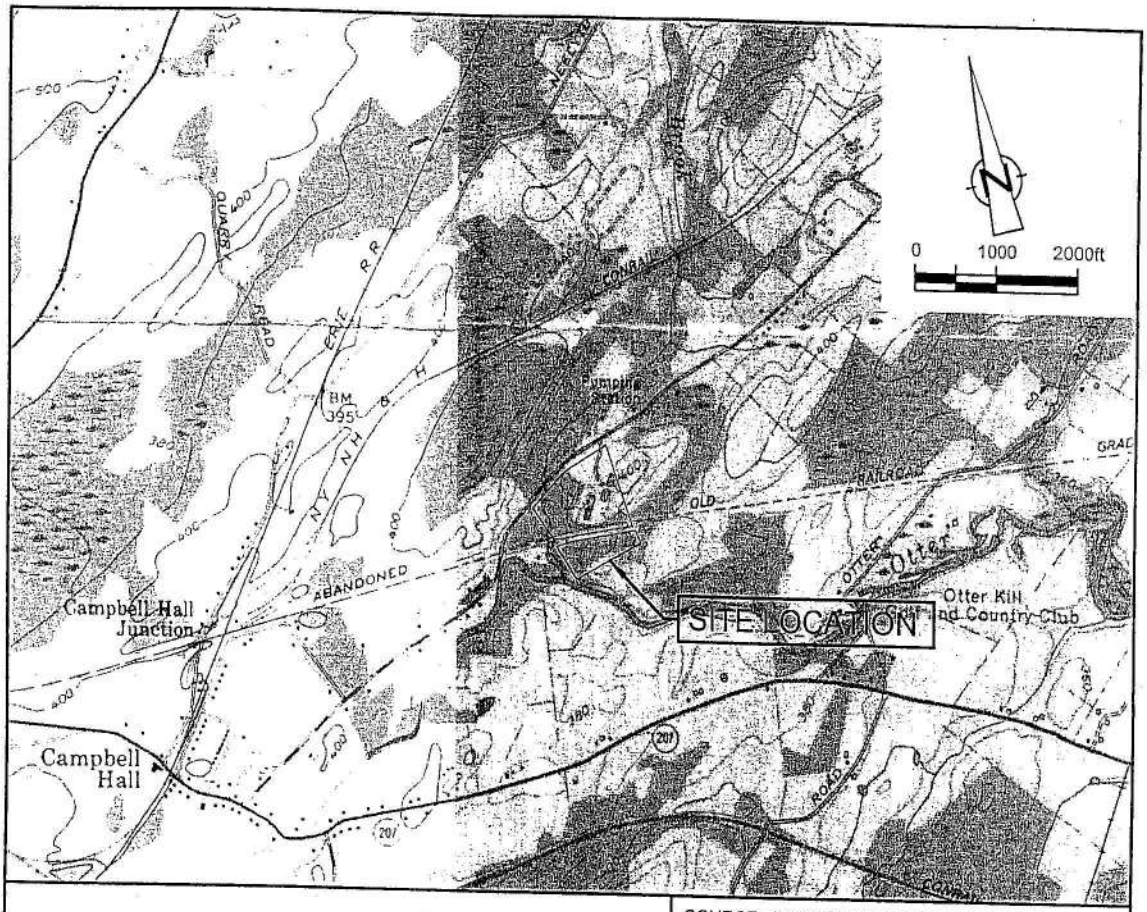
EPA believes that Alternative 2 is the most cost-effective option for the contaminated soils given the evaluation criteria and reasonably anticipated future land use. Alternative 2 is protective of human health and the environment, would provide a permanent solution, and would achieve soil cleanup objectives for the Site-related COCs in the shortest amount of time and in the most cost-effective manner. Therefore, EPA and NYSDEC believe that Alternative 2 would effectuate the soil cleanup while providing the best balance of tradeoffs with respect to the evaluating criteria.

Alternative 1 was not identified as the preferred alternative because it calls for no action and would not be protective of human health and the environment. Similarly, Alternative 3 is not proposed because it is more expensive than Alternative 2 and will take several years longer to realize cleanup objectives. Alternative 2 will result in the removal of the source of groundwater contamination which will work, in conjunction with the groundwater action at the Site, to attain the performance standards for groundwater.

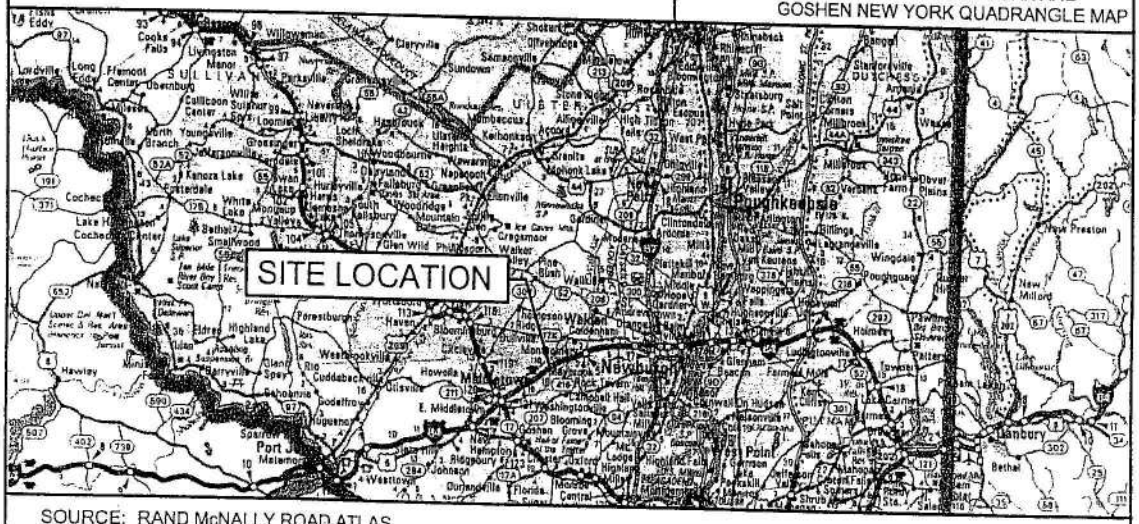
The preferred remedy would be protective of human health and the environment, provide long-term effectiveness, achieve ARARs in a reasonable time frame and be cost-effective among alternatives with respect to the evaluation criteria.

Therefore, EPA and NYSDEC believe that the combination of Alternative 2 and the current groundwater remedy would successfully remediate the contaminated soils and expedite the remediation of contaminated groundwater at the Site, while providing the best balance of tradeoffs among the alternatives with respect to the evaluation criteria. Furthermore, the preferred remedy relating to soils would utilize permanent solutions and treatment technologies to the maximum extent practicable.

In accordance with EPA Region 2's Clean and Green policy and in order to maximize the net environmental benefits, EPA will evaluate the use of sustainable technologies and practices when performing the remedial activities associated with the selected remedy. Furthermore, pursuant to Section 121(c) of CERCLA, EPA will review site remedies no less often than every five years. As long as hazardous substances remain at this Site above levels that would not allow for unlimited use and unrestricted exposure, EPA will continue to review the Site remedy no less often than every five years.



SOURCE: USGS MAYBROOK NEW YORK AND GOSHEN NEW YORK QUADRANGLE MAP



SOURCE: RAND McNALLY ROAD ATLAS

HAMPTONBURGH
NEW YORK

figure 1

SITE LOCATION
FORMER LAGOON SITE
Hamptonburgh, New York

03698-00(032)GN-WA014 JUN 23/2006

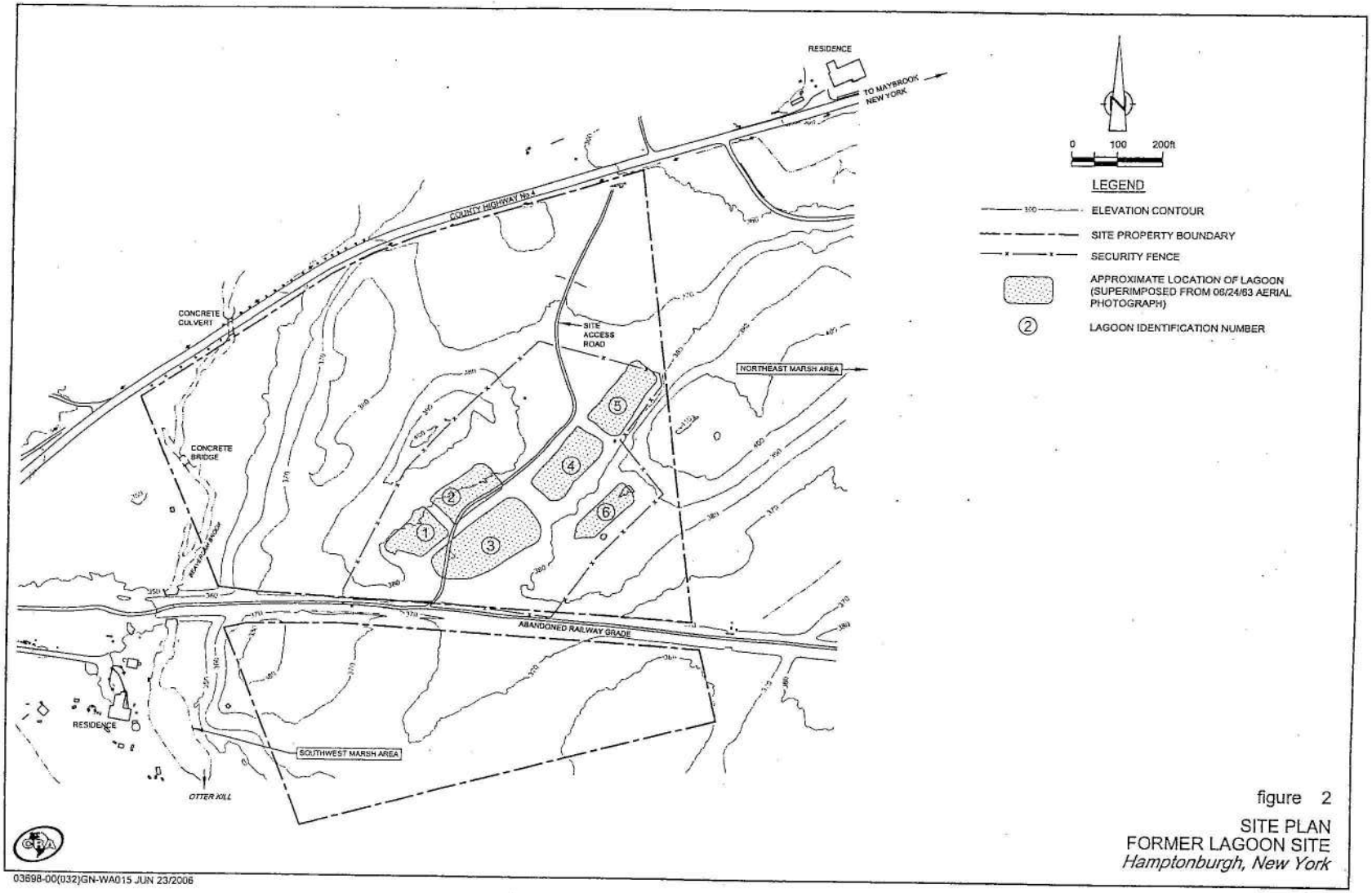


figure 2

SITE PLAN
FORMER LAGOON SITE
Hamptonburgh, New York

03698-00(032)GN-WA015 JUN 23/2006