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Fact Sheet .HW.709002. 2004-01-01. Purpose_of_Proposed_Plan

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Solvent Savers Superfund Site

Chenango County, New York

EPA

Region 2

January 2004

PURPOSE OF THE PROPOSED PLAN

In accordance with Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA") of 1980, as amended, 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 in a Record of Decision ("ROD"), a component is fundamentally altered, the Environmental Protection Agency ("EPA") must propose an amendment to the ROD. EPA's proposed changes to the ROD must be made available for public comment in a Proposed Plan.

This Proposed Plan proposes changes to the remedy selected by EPA in a ROD signed on September 28, 1990 for the polychlorinated biphenyl ("PCB")-contaminated soils and adopts a modified remedy for the volatile organic compound ("VOC")-contaminated soils at the Solvent Savers site ("Site").

This Proposed Plan was developed by EPA in consultation with the New York State Department of Environmental Conservation ("NYSDEC"). The alternatives summarized herein are described in *Focused Feasibility Study for PCB-Impacted Vadose Zone Soil*, *Focused Feasibility Study for VOC-Impacted Vadose Zone Soils* and other documents contained in the Administrative Record file for this Site. 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 as a supplement to the above-noted documents to inform the public of EPA and NYSDEC's preferred remedy modification and to solicit public comments pertaining to all the remedial alternatives evaluated, as well as the preferred remedy.

EPA proposes to change the soil remedy for the PCB-contaminated soils from excavation and off-Site incineration to excavation and off-Site treatment/disposal. The modified remedy would also include engineering controls, institutional controls, and the development of a site management plan. VOC-contaminated soils in two hot spot areas would be excavated in conjunction with the PCB-contaminated soils. Additionally, EPA proposes to change the soil clean-up level for PCBs from 1 milligram per kilogram ("mg/kg") at the surface (top two feet of soil) and subsurface (below two feet) to 1 mg/kg of PCBs at the surface and 10 mg/kg of PCBs in the subsurface. Also, EPA is documenting the change of the remedy for the VOC-contaminated soils from excavation, on-Site low temperature thermal extraction ("LTTE"), and backfilling to in-situ soil vapor extraction ("ISVE") and adopting NYSDEC's Technical and Administrative Guidance Memorandum No. 98-HWR-4046, January 1994 ("TAGM") soil cleanup objectives for the VOC-contaminated soils. With the exception of the two hot spot areas noted above, an ISVE system has been effectively treating VOC-contaminated soils at the Site since 1995.

The remedy described in this Proposed Plan is the preferred 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 selected 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 the detailed analysis of the above-noted documents because EPA and NYSDEC may select a remedy other than the preferred remedy.

MARK YOUR CALENDAR

XX XX, 2004 - XX XX, 2004: Public comment period on the Proposed Plan.

XX XX, 2004 at 7:00 p.m.: Public meeting at the Lincklaen Town Hall, Lincklaen, NY.

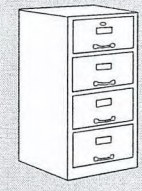
COMMUNITY ROLE IN SELECTION PROCESS

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 1990 remedial investigation and feasibility study ("RI/FS") report, 1990 ROD, *Focused Feasibility Study for PCB-Impacted Vadose Zone Soil,* and this document have been made available to the public for a public comment period which begins on XX XX, 2004 and concludes on XX XX, 2004.

A public meeting will be held at XX on XX XX, 2004 at 7:00 P.M. to discuss the proposed changes to the soil remedy, to elaborate further on the reasons for recommending the changes, 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 ROD.

The administrative record file, which contains this document, as well as all other information upon which the selection of the modified soil response actions will be based, is available at the following locations:



Ponds Store
Star Route
DeRuyter, NY 13052

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

Hours: Monday-Friday, 9:00 a.m. - 5:00 p.m.

Written comments on this document should be addressed to:

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SCOPE AND ROLE OF ACTION

The primary objectives of these actions are to control the sources of soil contamination at the Site, to minimize the migration of contaminants, and to minimize any potential future health and environmental impacts.

SITE BACKGROUND

Site Description

The Site, located on Union Valley Road, includes an approximately 13-acre parcel in the Town of Lincklaen, Chenango County, New York (see Figure 1 [site map]). This property is enclosed by an 8-foot high chain-link fence. The closest residence is located approximately 500 feet to the north[1]. Public water supplies do not exist in the general area; the residents rely on private wells. The Town of Lincklaen has a population of approximately 500 people. Fifteen dairy farms are located in the Town. Mud Creek, which is adjacent to the Site, is classified as a trout stream by the State and is used for recreational activities and livestock watering (pastures for dairy cows are located 2 miles downstream from the Site). In addition, alfalfa, corn, and other crops for human and livestock consumption are grown in the vicinity of the Site.

Site History

Solvent Savers Inc. operated a chemical waste recovery facility at the Site for reprocessing or disposal of industrial solvents and other wastes from about 1967 to 1974. Operations included distillation to recover solvents for reuse, drum reconditioning, and burial of liquids, solids, sludges, and drums in several on-Site areas. The quantities and types of wastes disposed of at the Site and their locations are not fully known.

In 1981, NYSDEC conducted an initial Site characterization, which included sampling of surface soils, water in Mud Creek, and three private wells in the immediate vicinity of the facility. Sample analysis indicated that the groundwater, surface water, sediments, and soil are contaminated with VOCs, including, primarily, tetrachloroethene (PCE), trichloroethene (TCE), and 1,1,1-trichloroethane (TCA). The soil also contains inorganics, including arsenic, barium, cadmium, chromium, and lead. Based upon these findings and a subsequent investigation by EPA in 1982, the Site was placed on the National Priorities List of uncontrolled hazardous waste sites in 1983.

In 1984, several of the potentially responsible parties ("PRPs") entered into a Consent Agreement with the New York State, which among other items, provided for the performance of an RI/FS.

In 1985, the PRPs' consultant submitted an RI/FS report to NYSDEC, the New York State Department of Health (NYSDOH), and EPA. The agencies found that the information as presented in the report was inadequate to characterize the nature and extent of contamination at the Site, and determined that a supplemental RI/FS was required to formulate a cleanup strategy. Despite negotiations with the PRPs, an agreement on the additional work could not be reached. Thus, EPA performed the supplemental RI/FS.

In 1989, during the supplemental RI/FS field work, 127 drums were excavated and were overpacked (placed in leakproof outer drums). In December 1990, pursuant to an administrative order issued by EPA, the PRPs removed the overpacked drums for off-Site treatment/disposal at an EPA-approved facility. The PRPs also excavated 33 drums and drum parts buried on-Site, which were removed for off-Site treatment/disposal in September 1991. Approximately 200 cubic yards of contaminated soil, which was excavated in conjunction with the exhumation of the drums and drum

[1] Several of the closest residences have been demolished. The former Lindsey residence (which was located on-Site) was demolished in 1994. The former Parkin and Springer residences, located west and north of the Site along Union Valley Road, were demolished in 1996 and 1997, respectively.

parts, was removed for off-Site treatment/disposal by the PRPs in November-December 2000.

In 1990, following the completion of the supplemental RI/FS, EPA issued a ROD, selecting a remedy for the Site. The selected remedy called for the extraction and treatment of contaminated groundwater, excavation of the PCB- and VOC-contaminated soil[2], treatment of PCB-contaminated soil via off-Site incineration, and treatment of the VOC-contaminated soils with on-Site LTTE[3]. The ROD also called for the performance of treatability studies to determine whether the low level VOC-contaminated soils could be treated using ISVE[4]. If such treatability studies showed that ISVE would be an effective means of treatment, then the remedy would be so changed.

Since negotiations with the PRPs related to the design and implementation of the selected remedy did not result in a settlement, in May 1991, EPA issued an administrative order to the PRPs, requiring them to undertake design and cleanup activities. The PRPs initiated the preparation of a work plan for the performance of design and treatability study activities related to the remedy in late 1991. However, numerous revisions to the document were necessary before field sampling and treatability study work could commence. Following the completion of field sampling to better define the extent of the soil contamination, a pilot full-scale ISVE treatment system was designed and constructed to treat a portion of the VOC-contaminated soil. Since the completion of its construction in 1995, the pilot full-scale system has been expanded and modified several times such that it now encompasses all of the unsaturated (above the water table) VOC-contaminated soil[5]. The data that has been generated indicates that the ISVE system has been effective in removing the VOCs[6] from the unsaturated soils in most areas (the volume of VOC-contaminated soil has decreased from approximately 135,000 cubic yards to approximately 2,000 cubic yards)[7]. Sample results show that the VOCs in all but 8 of 302 soil samples are below the VOC cleanup level. VOCs remain in two hot spot areas that are predominantly collocated with PCBs.

In 1993, on their own initiative, the PRPs entered into an agreement with the Site property owner to prohibit residential use of the property and prohibit any use of groundwater beneath the property.

Anticipated Future Site Work

The design related to the PCB-contaminated soils will be finalized once the amended ROD is finalized and soil samples defining the boundaries of the soil excavation are collected[8]. It is anticipated that implementation of the PCB remedy will commence in Fall 2004.

The groundwater is being addressed under the requirements on the 1990 ROD. It is anticipated that pre-design groundwater investigation field work will be completed in Fall 2004. This effort will allow the subsequent completion of the design related to the groundwater[9].

EXTENT OF PCB AND VOC SOIL CONTAMINATION

Based upon the results of 385 surface and subsurface soil samples collected since the RI/FS, it was determined that PCB-contaminated soils extend over an approximately 27,000-square foot area to a maximum depth of 29 feet

2 While semi-volatile organic compounds, polyaromatic hydrocarbons, and metals were detected in soil samples, for the most part, these constituents are present at relatively low concentrations, near the detection limits, or in the case of metals, within the background ranges.

3 LTTE involves the feeding of excavated soil into a mobile treatment unit where hot air volatilizes the VOCs. The VOCs that are extracted from the soil are then either condensed, transferred to another medium (such as activated carbon), or thermally treated to ensure their complete destruction. The off-gases are filtered through a carbon vessel. Following treatment, the soils are then used as backfill material for the excavated area.

4 ISVE involves drawing air through a series of wells to volatilize the solvents contaminating the unsaturated (above the water table) soils. The extracted vapors are then treated in an activated carbon unit and monitored before being vented to the atmosphere. ISVE leaves the soils in place while they are being remediated.

5 The pilot full-scale ISVE system consists of 106 vertical wells and five horizontal wells and covers an approximately 145,000-square foot area.

6 To date, the ISVE system has removed an estimated 15,000 pounds of VOCs from the Site's soils.

7 The VOCs in the soil in most areas of the Site are being treated by the ISVE system to meet the soil cleanup objectives identified in NYSDEC's TAGM. The cleanup levels for the VOC-contaminated soils in the 1990 ROD were derived by determining the concentration in soil which would theoretically produce contaminant concentrations in the groundwater which would meet groundwater standards.

8 Since the PCBs can be mobile due to the presence of VOCs, final PCB soil samples will not be collected until the treatment of the VOCs via ISVE has been completed. It is anticipated that the treatment of the VOCs via ISVE will be completed this Fall.

9 The PRPs' evaluations related to the viability of natural attenuation of the groundwater and other treatment technologies, as compared to the selected groundwater remedy (groundwater extraction and treatment), has delayed the completion of the groundwater remedial design. The PRPs recently agreed to implement the groundwater extraction and treatment remedy.

WHAT IS A "PRINCIPAL THREAT?"

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a Site wherever practicable (NCP Section 300.430 (a)(1)(iii)(A)). The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for the migration of contamination to groundwater, surface water, or air, or acts as a source for direct exposure. 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. The decision to treat these wastes is made on a site-specific basis through a detailed analysis of alternatives, using the remedy selection criteria which are described below. This analysis provides a basis for making a statutory finding that the remedy employs

below the ground surface, ranging in concentration from nondetectable to 15,290 mg/kg.

Based upon the results of 468 surface and subsurface soil samples collected before the ISVE pilot full-scale treatment system was installed, it was determined that VOC-contaminated soils extended over a 145,000-square foot area to a maximum depth of 42 feet below the ground surface. The maximum detections were 13 mg/kg, 530 mg/kg, 400 mg/kg, 4,000 mg/kg, 3.5 mg/kg, 6,100 mg/kg, and 350 mg/kg for 1,2-dichloroethene, PCE, toluene, 1,1,1-TCA, 1,1,2-TCA, TCE, and xylene, respectively. Post-ISVE treatment surface and subsurface soil sample results (collected in November-December 2002) indicate that the ISVE system has removed the VOCs in the unsaturated soils in all but two areas(see Figure 2).

Based upon historic groundwater elevations, the groundwater table beneath much of the Site fluctuates seasonally anywhere from three to eight feet. The area in which these seasonal fluctuations occur is referred to as the "fluctuating water table zone" (see Figure 3 [FWTZ figure]) There are PCB hot spots in the fluctuating water table zone which represent a "principal threat waste" (*i.e.,* PCBs greater than 100 mg/kg[10]) (see inset, above). The typically immobile PCBs in these areas are believed to be mobile due to the presence of VOCs and the movement of the water table. They, therefore, are a continuing source of groundwater contamination and a potential ecological threat (the contaminated groundwater may be discharging to Mud Creek). In addition, non-aqueous phase liquid[11], also, a principal threat waste (and a continuing source of groundwater contamination), has been determined to be present in the fluctuating water table zone and below the water table.

SUMMARY OF SITE RISKS

The underlying Site-related risks[12] were identified in the 1990 ROD and have not substantially changed. EPA's risk assessment, which is part of the RI/FS report and was discussed in the 1990 ROD, determined that residents could potentially be exposed to unacceptable levels of contaminants (primarily PCBs) present in surface and subsurface soil through absorption and incidental ingestion resulting from activities such as gardening or playing. It was assumed that subsurface soils might be redistributed to the surface during grading or other soil-disturbing activities.

BASIS FOR CHANGING THE PCB-CONTAMINATED SOILS REMEDY

At the time the 1990 ROD was issued, NYSDEC's soil cleanup objectives for PCBs were not yet determined. EPA's PCB policy, OSWER Directive 9355.4-01, recommends a 1 mg/kg action level as a starting point for PCB cleanups in residential areas. Since the Site is located in a rural agricultural/residential area, on the basis of EPA's PCB policy, a 1 mg/kg PCB action level was selected for the Site.

EPA proposes to change the cleanup level for PCBs to 1 mg/kg PCB at the surface (top two feet of soil) and 10 mg/kg PCB in the subsurface as set forth in NYSDEC's TAGM objectives. EPA believes that a subsurface soil cleanup level of 10 mg/kg will be protective, particularly in light of the engineering controls, institutional controls, and site management plan that would be required under the proposed remedy to prevent the deposition of subsurface soils with PCB concentrations greater than 1 mg/kg on the

10 According to *A Guide on Remedial Actions at Superfund Sites With PCB Contamination*, Office of Solid Waste and Emergency Response (OSWER) Directive 9355.4-01 FS, "for residential Sites, principal threats will generally include soils contaminated at concentrations greater than 100 mg/kg PCBs."

11 Non-aqueous phase liquid forms when VOCs do not appreciably dissolve into groundwater, thereby creating distinct layers.

12 The Site is located in a primarily residential/agricultural area. Although the PRPs on their own initiative entered into an agreement with the property owner which prohibits residential use of the Site, it is EPA's expectation that sites such as this one will be restored to their reasonably anticipated future use, which EPA has determined is residential/agricultural. It is also the community's expectation that the Site will remain residential/agricultural. Consequently, possible future uses of the Site include development for residential purposes and/or agricultural uses.

ground surface in the event of future subsurface soil disturbances, thereby minimizing the risk of exposure.

The estimated volume of soil exceeding the original action level of 1 mg/kg PCBs, as determined in the 1990 ROD, was 1,000 cubic yards. Based upon the results of pre-design soil samples, the estimated volume of PCB-contaminated soils exceeding the original action level of 1 mg/kg PCBs increased to approximately 12,000 cubic yards. The volume of soil exceeding 1 mg/kg PCB at the surface and 10 mg/kg PCB in the subsurface is approximately 6,000 cubic yards.

At the time that the 1990 ROD was issued, much of the PCB-contaminated soil was also contaminated with VOCs. Off-Site disposal of the excavated VOC- and PCB-contaminated soils was previously evaluated, however, this alternative was ruled out because, in order to comply with Resource Conservation and Recovery Act ("RCRA") land disposal requirements, the soils would have to be treated to remove the high levels of spent solvents before disposal in a RCRA- and/or Toxic Substances Control Act ("TSCA")-compliant landfill. This would have made the cost of implementing this alternative an order of magnitude higher than the other source control alternatives. Because the VOCs, for the most part, have been removed from the PCB-contaminated soils by the pilot full-scale ISVE system, off-Site treatment/disposal appears to be a viable alternative. Therefore, the remedy for the PCB-contaminated soils was reassessed.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives are 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); other federal or state advisories, criteria, or guidance (To-Be-Considered guidance or "TBCs"); and Site-specific risk-based levels.

The following remedial action objectives have been established for the VOC- and PCB-contaminated soils:

- minimize or eliminate contaminant migration to the groundwater and surface waters to levels that ensure the beneficial use of these resources;
- reduce or eliminate the direct contact threat associated with contaminated soils; and
- minimize exposure of wildlife to contaminants in the soils.

SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA §121(b)(1), 42 U.S.C. §9621(b)(1), mandates that remedial actions must be protective of human health and the environment, cost-effective, comply with ARARS, 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 §121(d), 42 U.S.C. §9621(d), further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants, and contaminants, which at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA §121(d)(4), 42 U.S.C. §9621(d)(4).

The generated data indicates that the ISVE system has removed the VOCs from the unsaturated soils in most areas. Three alternatives to address the PCB- and remaining VOC-contaminated soils are discussed below. Detailed descriptions of these alternatives can be found in the *Focused Feasibility Study for PCB-Impacted Vadose Zone Soil*, which is in the public repositories located at the addresses set forth above.

The construction time for each alternative reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy, negotiate the performance of the remedy with any PRPs, or procure contracts for design and construction. The present-worth costs are calculated using a discount rate of seven percent and a thirty-year time interval.

The remedial alternatives are:

Alternative 1: No Further Action

Capital Cost:	$0
Annual Site Management Cost:	$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 further action remedial alternative does not include any physical remedial measures to address the PCB- and remaining VOC-contaminated soils.

Because this alternative would result in leaving in place approximately 6,600 cubic yards of contaminated soils (600 cubic yards of VOC-contaminated soils, 4,600 cubic yards of PCB-contaminated soils, and 1,400 cubic yards of VOC- and PCB-contaminated soils), 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 2: Excavation of Contaminated Soils Followed by Off-Site Incineration

Capital Cost:	$9,848,000
Annual Site Management Cost:	$1,000
Present-Worth Cost:	$9,860,000
Construction Time:	6 months

Under this alternative[13], approximately 6,600 cubic yards of contaminated soils (600 cubic yards of VOC-contaminated soils, 4,600 cubic yards of PCB-contaminated soils, and 1,400 cubic yards of VOC- and PCB-contaminated soils) exceeding NYSDEC TAGM objectives for PCBs (1 mg/kg PCB at the surface[14] and 10 mg/kg in the subsurface) and/or NYSDEC TAGM objectives for VOCs would be excavated to the water table at the time of excavation[15]. PCB-contaminated soils within the fluctuating water table zone which are considered principal threat waste (*i.e.*, greater than 100 mg/kg) would be excavated to the bottom of the fluctuating water table zone or the water table, whichever depth is lower at the time of the excavation effort. The areal limits of the excavation would be based on pre-excavation contaminant delineation sampling. Shoring of the excavation with sheet piling and extraction and treatment of any water that enters the trench would be necessary.

Engineering controls would be implemented such that before backfilling, a readily-visible and permeable subsurface demarcation delineating the interface between the 1 mg/kg PCBs and greater PCB zones (*i.e.*, more than 1 mg/kg, but no more than 10 mg/kg) would be installed.

The excavated areas would be backfilled with clean fill and revegetated.

All excavated material would be characterized and transported for incineration/disposal at an off-Site RCRA- and TSCA-compliant facility.

In addition, a site management plan would be developed to provide for the proper sampling, handling, and treatment and/or disposal (if required) if subsurface soils containing PCBs greater than 1 mg/kg are disturbed following the completion of the remedial action. The plan would delineate measures that may be necessary for the protection of on-Site workers, the public, and the environment in the event of future subsurface soil disturbance. This alternative would also include institutional controls. Specifically, an environmental easement/restrictive covenant would be filed in the property records of Chenango County which would instruct the interested party (such as a developer, contractor, utility, agricultural, or sewer company/worker, property owner, or resident that does excavation work on-Site) as to the appropriate steps to take if soil excavation below 2 feet will be necessary.

On an annual basis, the Site would be inspected to determine whether soil excavation activities below 2 feet occurred and the building and property records would be reviewed to ascertain whether or not any filings had been made for such activities. An annual report summarizing the findings of the above-noted activities, along with a certification, would be prepared.

Because this alternative calls for engineering controls, institutional controls, and a site management plan, the Site would 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 3: Excavation of Contaminated Soils Followed by Off-Site Treatment and/or Disposal

Capital Cost:	$3,620,000
Annual Site Management Cost:	$1,000
Present-Worth Cost:	$3,632,000
Construction Time:	6 months

This alternative is the same as Alternative 2, except that instead of off-Site incineration, all excavated contaminated soils would be transported for treatment and/or disposal at an off-Site TSCA-compliant (and if necessary, RCRA-compliant) facility.

Engineering controls would be implemented such that before backfilling, a readily-visible and permeable subsurface demarcation delineating the interface between the 1 mg/kg PCBs and greater PCB zones (*i.e.*, more than 1 mg/kg, but no more than 10 mg/kg) would be installed.

All of the principal threat waste soils would require excavation and removal for off-Site treatment and/or disposal and the excavated PCB-contaminated soils exceeding 500 mg/kg would require off-Site treatment.

To facilitate the off-Site treatment/disposal of the contaminated soils, contingent upon the results of treatability studies, some of the VOC-contaminated soils to

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13 This alternative is similar to the selected remedy in EPA's 1990 ROD. The only difference is the cleanup level for PCBs changes from 1 mg/kg at the surface and subsurface to 1 mg/kg PCB at the surface and 10 mg/kg PCB in the subsurface, as set forth in NYSDEC's TAGM objectives. The 1 mg/kg PCB level for surface soils would be protective from both cancer risks and non-cancer hazards for residential land use; and the level of 10 mg/kg PCB for subsurface soils would be protective of the underlying groundwater. As long as subsurface soils with greater than 1 mg/kg PCBs stay at depth, there would not be an exposure and, therefore, there would not be a human health risk. Should subsurface soils with PCBs between 1 mg/kg and 10 mg/kg be disturbed in the future, implementation of the site management plan would ensure protectiveness.

14 Surface soil (top two feet of soil) is defined by the original ground surface (*i.e.*, it does not include the approximately 2-foot thick clean soil layer that was installed as part of the ISVE pilot full-scale system).

15 The excavation would be undertaken during seasonal low water level conditions.

be excavated might be subjected to on-Site pre-treatment (*e.g.*, chemical oxidation) for VOCs[16].

In addition, a site management plan would be developed to provide for the proper sampling, handling, and treatment and/or disposal (if required) if subsurface soils containing PCBs greater than 1 mg/kg are disturbed following the completion of the remedial action. The plan would delineate measures that may be necessary for the protection of on-Site workers, the public, and the environment in the event of future subsurface soil disturbance. This alternative would also include institutional controls. Specifically, an environmental easement/restrictive covenant would be filed in the property records of Chenango County which would instruct the interested party (such as a developer, contractor, utility, agricultural, or sewer company/worker, property owner, or resident that does excavation work on-Site) as to the appropriate steps to take if soil excavation below 2 feet will be necessary.

On an annual basis, the Site would be inspected to determine whether soil excavation activities below 2 feet occurred and the building and property records would be reviewed to ascertain whether or not any filings had been made for such activities. An annual report summarizing the findings of the above-noted activities, along with a certification, would be prepared.

Because this alternative calls for engineering controls, institutional controls, and a site management plan, the Site would 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: Excavation of Contaminated Soils, Followed by On-Site Low Temperature Thermal Extraction and Redeposition

Capital Cost:	$4,704,000
Annual Site Management Cost:	$1,000
Present-Worth Cost:	$4,716,000
Construction Time:	1 year

This alternative is the same as Alternative 2, except that instead of off-Site incineration, all excavated contaminated soils would be treated on-Site with a mobile LTTE unit.

LTTE involves the feeding of excavated soil into a mobile treatment unit where hot air volatilizes the organic contaminants. The vapors that are extracted from the soil would be either condensed, transferred to another medium (such as activated carbon), or thermally treated to ensure their complete destruction. The off-gases would be filtered through a carbon vessel. Following treatment, the soils would be used as backfill material for the excavated area. Once the treated soil achieved soil TAGM objectives, it would be tested in accordance with the Toxicity Characteristic Leaching Procedure (TCLP) to determine whether it constitutes a RCRA hazardous waste and, provided that it passes the test, it would be used as backfill material for the excavated area. Soil above TCLP levels would be either re-treated or disposed of at an approved off-Site facility, as appropriate.

Engineering controls would be implemented such that before backfilling, a readily-visible and permeable subsurface demarcation delineating the interface between the 1 mg/kg PCBs and greater PCB zones (*i.e.*, more than 1 mg/kg, but no more than 10 mg/kg) would be installed.

In addition, a site management plan would be developed to provide for the proper sampling, handling, and treatment and/or disposal (if required) if subsurface soils containing PCBs greater than 1 mg/kg are disturbed following the completion of the remedial action. The plan would delineate measures that may be necessary for the protection of on-Site workers, the public, and the environment in the event of future subsurface soil disturbance. This alternative would also include institutional controls. Specifically, an environmental easement/restrictive covenant would be filed in the property records of Chenango County which would instruct the interested party (such as a developer, contractor, utility, agricultural, or sewer company/worker, property owner, or resident that does excavation work on-Site) as to the appropriate steps to take if soil excavation below 2 feet will be necessary.

On an annual basis, the Site would be inspected to determine whether soil excavation activities below 2 feet occurred and the building and property records would be reviewed to ascertain whether or not any filings had been made for such activities. An annual report summarizing the findings of the above-noted activities, along with a certification, would be prepared.

Because this alternative calls for engineering controls, institutional controls, and a site management plan, the Site would 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.

EVALUATION OF ALTERNATIVES

In selecting a remedy for a site, EPA considers the factors set forth in CERCLA §121, 42 U.S.C. §9621, by conducting a detailed analysis of the viable remedial alternatives pursuant to 40 CFR §300.430(e)(9) and OSWER Directive 9355.3-01. The detailed analysis consists of an assessment of the individual alternatives against each of nine evaluation criteria and a comparative analysis focusing upon the relative performance of each alternative against those criteria. The nine evaluation criteria are as follows:

- Overall protection of human health and the environment addresses whether or not a remedy

[16] The volume of soil that will be subject to chemical oxidation would be determined based upon pre-excavation confirmatory sampling.

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 applicable or relevant and appropriate requirements 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 regulations 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 typically includes estimated capital and operation and maintenance costs, and net present-worth costs.
- State acceptance indicates whether, based on its review of the RI/FS reports and the Proposed Plan, the State concurs with, opposes, or has no comment on the preferred remedy at the present time.
- 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 focused feasibility study reports.

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

- Overall Protection of Human Health and the Environment

Alternative 1 (no further action) would be the least protective of human health and the environment, since it would not actively address the contaminated soils. The existing deed restrictions, ISVE soil cover[17], and perimeter fence would, however, provide some degree of protection of human health under current conditions, however, the potential would still exist for the migration of PCBs to surface water. No further action would not be protective of human health if the property were used in the future in accordance with the reasonably-anticipated future residential/agricultural land use.

Alternative 2 (off-Site incineration), Alternative 3 (off-Site treatment and/or disposal), and Alternative 3 (on-Site LTTE) would be protective of human health and the environment, since each alternative relies upon a strategy capable of removing the contaminated unsaturated soils at the Site.

Also, under these alternatives, engineering controls, consisting of a readily-visible and permeable subsurface demarcation delineating the interface between 1 mg/kg PCB and greater PCB concentrations would be required.

In addition, under these alternatives, a site management plan would be developed to provide for the proper sampling, handling, and treatment and/or disposal (if required) if subsurface soils containing PCBs greater than 1 mg/kg are disturbed following the completion of the remedial action. The plan would delineate measures that may be necessary for the protection of on-Site workers, the public, and the environment in the event of future subsurface soil disturbance. These alternative would also include institutional controls. Specifically, an environmental easement/restrictive covenant would be filed in the property records of Chenango County which would instruct the interested party (such as a developer, contractor, utility, agricultural, or sewer company/worker, property owner, or resident that does excavation workon-Site) as to the appropriate steps to take if soil excavation below 2 feet will be necessary.

- Compliance with ARARs

There are currently no federal or state promulgated standards for contaminant levels in soils, New York State soil cleanup objectives as specified in the TAGM.

Since the contaminated soils would not be addressed under Alternative 1 (no further action), this alternative would not meet soil cleanup objectives and would not be an effective or permanent means of mitigating risk. Alternative 2 (off-Site incineration), Alternative 3 (off-Site treatment and/or disposal), and Alternative 4 (on-Site LTTE) would, on the other hand, attain the soil cleanup objectives specified in the TAGM.

Alternatives 2 and 3 would be subject to New York State and federal regulations related to the transportation and off-Site treatment and/or disposal of wastes. Alternatives 2, 3, and 4 would require compliance with fugitive dust and VOC emission regulations. In the case of Alternative 4, compliance with air emission standards would be required at the LTTE unit, as well. Specifically, treatment of off-gases would have to meet the substantive requirements of New York State Regulations for Prevention and Control of Air Contamination and Air Pollution (6 NYCRR Part 200

17 ISVE involves drawing air through the contaminated soil to volatilize the VOCs. To minimize air losses through the ground surface, it includes an approximately 2-foot thick clean soil layer and polyethylene sheeting.

et.seq.) and comply with the substantive requirements of other state and federal air emission standards.

• Long-Term Effectiveness and Permanence

Alternative 1 (no further action) would involve no active remedial measures and, therefore, would not be effective in eliminating the potential for contaminants to continue to migrate in soil and groundwater. Alternative 2 (off-Site incineration), Alternative 3 (off-Site treatment and/or disposal), and Alternative 4 (on-Site LTTE) would be effective in the long-term and would provide permanent remediation by treating the wastes on-Site and/or removing the wastes and treating/disposing of them off-Site. Alternative 4 would generate treatment residuals which would have to be appropriately handled; the other alternatives would not generate treatment residues. Under Alternatives 2, 3, and 4, a site management plan would be developed to provide for the proper sampling, handling, and treatment and/or disposal (if required) if subsurface soils containing PCBs greater than 1 mg/kg are disturbed following the completion of the remedial action. The plan would delineate measures that may be necessary for the protection of on-Site workers, the public, and the environment in the event of future subsurface soil disturbance.

•Reduction in Toxicity, Mobility, or Volume Through Treatment

Alternative 1 (no further action) would provide no reduction in toxicity, mobility, or volume. Under Alternative 2 (off-Site incineration) and Alternative 4 (on-Site LTTE), the toxicity, mobility, and volume of the contaminants would be significantly reduced through treatment. Alternative 3 (off-Site treatment and/or disposal) would reduce the mobility of the contaminants by removing the contaminated soil from the Site for treatment and/or disposal; soils not requiring treatment would not reduce their toxicity and volume.

•Short-Term Effectiveness

Alternative 1 (no further action) does not include any physical construction measures and, therefore, would not present any potential adverse impacts to on-Site workers or the community as a result of its implementation. Alternative 2 (off-Site incineration), Alternative 3 (off-Site treatment and/or disposal), and Alternative 4 (on-Site LTTE) could result in some adverse impacts to on-Site workers through dermal contact and inhalation related to the excavation activities. The risks to on-Site workers under these alternatives could, however, be mitigated by utilizing proper protective equipment.

Alternatives 2 and 3 would increase vehicle traffic and impact the local roadway system, and could subject nearby residents to increased noise levels. Alternatives 2 and 3 would require the off-Site transport of contaminated soils, which may pose the potential for traffic accidents, which could result in releases of hazardous substances.

Under Alternatives 2, 3, and 4, disturbance of the land during excavation activities could affect the surface water hydrology of the Site. There is a potential for increased stormwater runoff and erosion during excavation and construction activities that would have to be properly managed to prevent or minimize any adverse impacts. For these alternatives, appropriate measures would have to be taken during excavation activities to prevent transport of fugitive dust and exposure of workers and downgradient receptors to volatile organic compounds and PCBs.

Under Alternatives 2, 3, and 4, the areal limits of the excavation would be based on pre-excavation contaminant delineation sampling. Shoring of the excavation with sheet piling would be necessary. Monitoring the effectiveness of the LTTE system under Alternative 4 would be accomplished through post-treatment soil sampling and analysis.

Since no further actions would be performed under Alternative 1, there would be no implementation time. It is estimated that Alternatives 2 and 3 would require 6 months to excavate and transport the contaminated soils to an EPA-approved treatment and/or disposal facility. It is estimated that it would take one year to excavate and treat the contaminated soils under Alternative 4.

•Implementability

Alternative 1 (no further action) would be easy to implement, as there are no activities to undertake. Alternative 2 (off-Site incineration), Alternative 3 (off-Site treatment and/or disposal), and Alternative 4 (on-Site LTTE) would employ technologies known to be reliable and can be readily implemented. In addition, equipment, services, and materials needed for these alternatives are readily available, and the actions under these alternatives would be administratively feasible. Sufficient facilities are available for the treatment and/or disposal of the excavated soils under Alternatives 2, 3, and 4.

• Cost

Under Alternatives 2, 3, and 4, baseline sampling of the surface water, sediment, and biota of Mud Creek would be conducted prior to implementation of the soil remedy. In addition, surface water, sediment, and biota of Mud Creek would be sampled annually for PCBs under these alternatives. The costs associated with the above-noted monitoring are not included in this analysis, since the monitoring would be performed as part of baseline and long-term monitoring associated with the groundwater remedy.

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

The estimated capital, site management, and present-worth costs for each of the alternatives are presented below.

Alt.	Capital Cost	Annual Site Management	Present-Worth
1	$0	$0	$0
2	$9,848,000	$1,000	$9,860,000

Alt.	Capital Cost	Annual Site Management	Present-Worth
3	$3,620,000	$1,000	$3,632,000
4	$4,704,000	$1,000	$4,716,000

As can be seen by the cost estimates, Alternative 1 (no further action) is the least-costly alternative at $0. Alternative 2 (off-Site incineration), is the most-costly alternative at approximately $9,860,000. The estimated capital cost for Alternative 3 (off-Site treatment and/or disposal) is $3,632,000 and the estimated cost for Alternative 4 (on-Site LTTE) is $4,716,000.

- State Acceptance

NYSDEC concurs with the modified remedy for the contaminated soils.

- Community Acceptance

Community acceptance of the preferred remedy will be assessed in the amended ROD following review of the public comments received on *Focused Feasibility Study for PCB-Impacted Vadose Zone Soil*, *Focused Feasibility Study for VOC-Impacted Vadose Zone Soils*, and this document.

PREFERRED REMEDY

Description of the Preferred Remedy

Based upon an evaluation of the various alternatives, EPA and NYSDEC recommend that the 1990 ROD be amended by requiring Alternative 3, excavation of contaminated soils and off-Site treatment and/or disposal to address the contaminated soils.

Under Alternative 3, approximately 6,600 cubic yards of contaminated soils (600 cubic yards of VOC-contaminated soils, 4,600 cubic yards of PCB-contaminated soils, and 1,400 cubic yards of VOC- and PCB-contaminated soils) exceeding NYSDEC TAGM objectives for PCBs (1 mg/kg PCB at the surface[18] and 10 mg/kg in the subsurface) and NYSDEC TAGM objectives for VOCs would be excavated down to the water table at the time of excavation (the excavation would be undertaken during seasonal low water level conditions). PCB-contaminated soils within the fluctuating water table zone which are considered principal threat waste (*i.e.*, greater than 100 mg/kg) would be excavated to the bottom of the fluctuating water table zone or the water table, whichever is lower at the time of the excavation effort[19] (see Figure 3).

Engineering controls would be implemented such that before backfilling, a readily-visible and permeable subsurface demarcation delineating the interface between the 1 mg/kg PCBs and greater PCB zones (*i.e.*, more than 1 mg/kg, but no more than 10 mg/kg) would be installed.

All of the excavated PCB-contaminated soils exceeding 500 mg/kg would require off-Site treatment. The remaining PCB-contaminated soils would be disposed of in a TSCA-compliant facility. To facilitate the off-Site treatment and/or disposal of the PCB-contaminated soils in areas where VOC concentrations are above the RCRA land disposal restrictions, contingent upon the results of treatability studies, some of the excavated soils might be subject to on-Site treatment (*e.g.*, chemical oxidation) for VOCs[20].

Under the proposed modified remedy, a site management plan would be developed to provide for the proper sampling, handling, and treatment and/or disposal (if required) if subsurface soils containing PCBs greater than 1 mg/kg are disturbed following the completion of the remedial action. The plan would delineate measures that may be necessary for the protection of on-Site workers, the public, and the environment in the event of future subsurface soil disturbance. This alternative would also include institutional controls. Specifically, an environmental easement/restrictive covenant would be filed in the property records of Chenango County which would instruct the interested party (such as a developer, contractor, utility, agricultural, or sewer company/worker, property owner, or resident that does excavation workon-Site) as to the appropriate steps to take if soil excavation below 2 feet will be necessary.

On an annual basis, the Site would be inspected to determine whether soil excavation activities below 2 feet occurred and the building and property records would be reviewed to ascertain whether or not any filings had been made for such activities. An annual report summarizing the findings of the above-noted activities, along with a certification, would be prepared.

Because this alternative calls for engineering controls, institutional controls, and a site management plan, the Site would 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.

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18 Surface soil (top two feet of soil) is defined by the original ground surface (*i.e.*, it does not include the approximately 2-foot thick clean soil layer that was installed as part of the ISVE system).

19 Based upon 1997 sample results, the bottom of the fluctuating water table zone in Area A ranges from approximately 4 to 18 feet below the ground surface (see Figure 3).

20 A treatability study work plan for treatment of VOC-impacted soils by chemical oxidation is currently under development by the PRPs.

Basis for the Remedy Preference

While Alternative 2 (off-Site incineration) and Alternative 4 (on-Site LTTE) would be just as protective of public health and the environment, would achieve the remedial action objectives, and would be able to achieve ARARs as quickly as Alternative 3 (off-Site treatment and/or disposal), Alternative 2 and Alternative 4 are more expensive than Alternative 3. Therefore, EPA believes that Alternative 3 would effectuate the remaining contaminated soil cleanup while providing the best balance of trade-offs among the alternatives with respect to the evaluation criteria.

DOCUMENTATION OF MODIFIED REMEDY FOR VOC-CONTAMINATED SOIL

The 1990 ROD called for the treatment of the VOC-contaminated unsaturated soils with LTTE and the performance of treatability studies to determine whether low-level VOCs in the soils could be treated using ISVE. A pilot full-scale ISVE treatment system has been treating the entire area of VOC-contaminated soil at the Site since 1995. The data that has been generated indicates that the system is removing the VOCs from the unsaturated soils in most areas (where it does not appear that the ISVE system will treat the soils to the cleanup objectives for VOCs in a reasonable time frame, the soils would be excavated and treated and/or disposed of in conjunction with the PCB-contaminated soils as part of the preferred remedy). Based upon the results of the treatability study and the findings of the draft *Focused Feasibility Study for VOC-Impacted Vadose Zone Soils*, it has been concluded that ISVE (in combination with the preferred remedy) will achieve the remedial action objectives and is as effective as LTTE, the remedy selected in the 1990 ROD. In addition, with an estimated cost of $6,158,000[21], ISVE is significantly less costly than the estimated $38,140,000 to implement LTTE. Since ISVE has been determined to be a cost-effective means of treating the VOC-contaminated soil, by this document, EPA is documenting the change of the remedy for the VOC-contaminated soils from excavation, on-Site LTTE, and backfilling to ISVE. VOC-contaminated soils in two hot spot areas would be excavated in conjunction with the PCB-contaminated soils. EPA is also adopting TAGM soil cleanup objectives for the VOC-contaminated soils.

Since ISVE can only effectively remove VOCs from unsaturated soils, it is unlikely that soils within the fluctuating water table zone will achieve soil cleanup objectives with the existing ISVE system in a reasonable time frame. To enhance the removal of VOCs in Area A (see figure) fluctuating water table zone soils (where overlying PCB-contaminated soils will be excavated), contingent upon the results of treatability studies, following the excavation of the PCB-contaminated soils, in-situ chemical treatment would be applied in this area. Any remaining VOC-contaminated soils in the fluctuating water table zone areas will be addressed by groundwater extraction and treatment.

The groundwater extraction and treatment system will be constructed following the remediation of the contaminated soils.

Δ IN REMEDY?

21 The estimated costs for ISVE also include the costs for excavation and off-Site treatment/disposal of the VOC-contaminated soils from the unsaturated areas where they cannot be effectively removed via ISVE.