FIRST FIVE-YEAR REVIEW REPORT FOR SOLVENT SAVERS SUPERFUND SITE CHENANGO COUNTY, NEW YORK

Prepared by

U.S. Environmental Protection Agency
Region 2
New York, New York

Angela Carpenter, Acting Director
Emergency and Remedial Response Division

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LIST OF ABBREVIATIONS & ACRONYMS

AO	Administrative Order
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CRA	Conestoga-Rovers & Associates
ESD	Explanation of Significant Differences
EPA	United States Environmental Protection Agency
FYR	Five-Year Review
GHD	GHD Limited
HDPE	High-Density Polyethylene
ICs	Institutional Controls
ISVE	In-Situ Vapor Extraction
LTTE	Low Temperature Thermal Extraction
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NPL	National Priorities List
OU	Operable Unit
O&M	Operation and Maintenance
PRP	Potentially Responsible Party
PTW	Principal Threat Waste
RAOs	Remedial Action Objectives
RI/FS	Remedial Investigation and Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SMP	Site Management Plan
TAGM	Technical and Administrative Guidance Memorandum
TCE	Trichloroethene
UU/UE	Unlimited Use and Unrestricted Exposure
VOCs	Volatile Organic Compounds
PCBs	Polychlorinated Biphenyls

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR review pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP)(40 CFR Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the first FYR for the Solvent Savers Superfund Site (Site). The triggering action for this statutory review is the on-Site construction start date of the soil remedial action (RA), September 24, 2012. The FYR has been prepared due to the fact that hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site consists of one Operable Unit (OU), which will be evaluated in this FYR. OU1 addresses the soil and groundwater remedy. The soil remediation consisted of in-situ vapor extraction (ISVE) treatment and excavation, stabilization/immobilization, and off-Site treatment/disposal of contaminated soils. This soil cleanup work was completed in 2014 and will be the focus of this FYR. The groundwater remedial design (RD) is underway and the RA is projected to begin in 2019. Although this remedy is not under review in this FYR, data collected during the pre-design investigation is referenced for purposes of identifying some potential changes in the conceptual site model.

The Site's FYR was led by Lisa Wong, EPA Remedial Project Manager. Participants included Sharissa Singh, EPA hydrogeologist, Marian Olsen, EPA human health risk assessor, Michael Clemetson, EPA ecological risk assessor, and Larisa Romanowski, EPA community involvement coordinator.

The relevant entities, such as the potentially responsible parties (PRPs) were notified of the initiation of the FYR. The review began on March 24, 2017.

Site Background

The Site includes an approximately 13-acre parcel located on Union Valley Road, in the Town of Lincklaen, Chenango County, New York (see Figure 1; see Appendix D for all of the referenced figures). This property is enclosed by an 8-foot high chain-link fence. The closest existing residence is located approximately 1,250 feet south of the parcel.[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 parcel, 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.

[1] A residence which was located directly on the parcel (Lindsey residence) was demolished by the PRPs in 1994. Residences located to the north and west of the parcel along Union Valley Road (Springer and Parkin residences) were demolished by the PRPs in 1996 and 1997, respectively.

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 the precise disposal locations are not fully known.

The Site was placed on the National Priorities List of Superfund Sites in September 1983.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Solvent Savers		
EPA ID: NYD980421176		
Region: 2	**State:** NY	**City/County:** Lincklaen/Chenango
SITE STATUS		
NPL Status: Final		
Multiple OUs? No	**Has the site achieved construction completion?** No	
REVIEW STATUS		
Lead agency: EPA *[If "Other Federal Agency", enter Agency name]*:		
Author name (Federal or State Project Manager): Lisa Wong		
Author affiliation: EPA		
Review period: 9/24/2012 - 9/24/2017		
Date of site inspection: 6/20/2017		
Type of review: Statutory		
Review number: 1		
Triggering action date: 9/24/2012		
Due date *(five years after triggering action date)*: 9/24/2017		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

In 1981, the New York State Department of Environmental Conservation (NYSDEC) conducted an initial Site characterization, which included the sampling of surface soils, water in Mud Creek, and three private wells in the immediate vicinity of the former facility. Sample analysis indicated that the groundwater, surface water, sediments, and soil were contaminated with volatile organic compounds (VOCs), including,

primarily, tetrachloroethene, trichloroethene (TCE), and 1,1,1-trichloroethane, as well as polychlorinated biphenyls (PCBs). The soil also contained inorganics, including arsenic, barium, cadmium, chromium, and lead.

EPA's risk assessment 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. Ingestion of groundwater also posed an unacceptable risk and hazard to a potential on-site future resident, primarily from TCE and PCBs.

A bioassessment was performed to determine whether contaminants from the Site were causing adverse ecological impacts to the fish and wildlife resources in the Mud Creek. No PCBs were detected in surface water, sediment or fish samples. The levels of VOCs detected in surface water, sediment, and fish tissues did not pose a significant threat to aquatic organisms. VOCs are rapidly biodegraded and exhibit a low potential for bioaccumulation.

An assessment on terrestrial wildlife found that the estimated PCB intake by robins and shrews far exceeded both acute and chronic toxicity reference values derived for these species, therefore acute effects as well as reproductive effects in some members of the population might be occurring. However, such effects might have negligible impact on the area's population of robins and shrews, given the likely small numbers of individuals of these species using or inhabiting the site, the availability of good habitat in surrounding areas, and considering that reduced reproduction in a few members of any population would have inconsequential ecological effects on the reproduction of the population.

Response Actions

In 1984, several of the PRPs entered into a consent agreement with New York State, which among other items, provided for the performance of a remedial investigation and feasibility study (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 from 1987 to 1990.

In 1989, during the supplemental RI/FS field work, 127 drums were excavated and were overpacked (placed in leak-proof outer drums). In 1990, pursuant to an Administrative Order (AO) issued by EPA in 1989, the PRPs removed the overpacked drums for off-Site treatment and/or 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 and/or disposal in 1991. Approximately 200 cubic yards of contaminated soil, which was excavated in conjunction with the exhumation of the drums and drum parts, was removed for off-Site treatment and/or disposal by the PRPs in 2000.

In September 1990, a Record of Decision (1990 ROD) was issued, selecting a remedy for the Site. The 1990 ROD called for:

- Excavation and removal of an estimated 300 buried drums for off-site treatment and disposal at an approved Resource Conservation and Recovery Act (RCRA) hazardous waste facility;
- Excavation of approximately 59,000 cubic yards of contaminated soil (including 1,000 cubic yards of PCB-contaminated soil);
- On-site treatment, using low temperature thermal extraction, of the soil highly contaminated with VOCs;
- Backfilling of the excavated areas with the treated soil and approximately 1,000 cubic yards of clean fill (if removal of the PCB-contaminated soil for off-site incineration is deemed necessary);
- Performance of treatability studies during the RD to determine whether the low temperature thermal extraction process is an appropriate treatment method for the PCB-contaminated soil. If the treatability study results indicate that low temperature thermal extraction is an appropriate treatment method, then this technology will be utilized to treat the excavated soil contaminated with PCBs on-site. Should the findings of the treatability studies indicate that the on-site low temperature thermal extraction process will not provide the desired degree of treatment, then the excavated PCB-contaminated soil will be removed for off-site incineration;
- Performance of treatability studies during the RD to determine whether the soil flushing and/or vapor extraction processes are appropriate treatment methods for the excavated soil contaminated with low level VOCs. If the treatability study results indicate that one or both of these technologies are appropriate treatment methods, then one or both of these technologies will be utilized to treat the excavated soil contaminated with low level VOCs. Should the findings of the treatability studies indicate that these on-site treatment processes will not provide the desired degree of treatment, then the contaminated soil will be treated on-site using low temperature thermal extraction.
- Extraction and on-site treatment, using chemical precipitation, air stripping and carbon adsorption, of the contaminated groundwater in the underlying aquifer;
- Reinjection of the treated water into the ground, and/or discharge of the treated water to surface water; and
- Disposal of the treatment residuals at an off-site approved RCRA hazardous waste facility.

The remedial action objectives (RAOs) related to the groundwater are:

- Protect human health and the environment from current and potential future migration of contaminants in groundwater; and
- Restore on-Site groundwater to levels consistent with federal and state groundwater standards.

The RAOs related to the soil were to:

- Prevent current or future exposure to the contaminated soil; and
- Protect the groundwater, air, and surface water from the continued release of contaminants from the soil.

At the time that the 1990 ROD was issued, there were no federal or New York State promulgated standards for contaminant levels in soils. The soil 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.

Based on EPA's PCB policy (Guidance on Remedial Actions for Superfund Sites with PCB Contamination, EPA/540/G- 90/007, Office of Solid Waste and Emergency Response Directive 9355.4-01) and a risk assessment, a 1 milligrams per kilogram (mg/kg) PCB action level associated with residential exposures was selected for the Site.

Subsequently, as documented in a September 2006 Amendment to the ROD (2006 Amended ROD), NYSDEC's Technical and Administrative Guidance Memorandum No. 98-HWR-4046, January 1994 (TAGM) soil cleanup objectives (the TAGM objectives are summarized in Table C-1; Appendix C) were utilized for the VOC- and PCB-contaminated soils.

The 2006 ROD Amendment called for:

- Excavation down to the water table of approximately 600 cubic yards of VOC-contaminated soils (tetrachloroethylene, TCE, 1,1,1-trichioroethane, 1,1,2-trichloroethane, toluene, 1,2-dichloroethylene and total xylenes) exceeding NYSDEC TAGM cleanup objectives, for the individual VOCs noted, approximately 4,600 cubic yards of PCB-contaminated soils exceeding NYSDEC TAGM objectives for PCBs, and approximately 1,400 cubic yards of VOC- and PCB-contaminated soils exceeding the respective TAGM objectives. The excavation will be undertaken during seasonal low water level conditions. PCB-contaminated soils within the fluctuating water table zone which are considered principal threat waste (PTW) (i.e., they contain greater than 100 mg/kg) will 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. The contaminated soils in the saturated zone (below the water table) will be addressed as part of the groundwater remedy.
- Performance of VOC treatability studies to determine if on-Site pretreatment will be effective in reducing VOC levels to below the concentrations required by the RCRA land disposal restrictions in soils contaminated with both PCBs and VOCs.
- Depending on the results of the VOC treatability studies, on-Site pretreatment of the soils prior to off-Site disposal or, if pretreatment will not provide the desired degree of treatment, then excavation and removal for off-Site treatment (e.g., incineration) of the VOC-contaminated soils.
- Performance of treatability studies to determine if off-Site stabilization/immobilization will be effective in reducing the mobility of the PTW waste soils by 90% or greater. Depending on the results of the PTW waste treatability studies, either off-Site treatment (e.g., incineration) of all PTW soils (approximately 630 cubic yards of PCB-contaminated soils exceeding 100 mg/kg) or if the treatability studies show that stabilization/immobilization will provide the desired reduction in mobility, then the PTW soils may be subject to off-Site stabilization/immobilization followed by off-Site disposal at an EPA-approved facility(ies).
- Off-Site disposal of the PCB-contaminated soils with PCB concentrations less than 100 mg/kg in an EPA-approved facility(ies).
- Installation of a readily-visible and permeable subsurface demarcation delineating the interface between soils containing 1 mg/kg PCBs and higher PCB levels (i.e., greater than 1 mg/kg) before backfilling.

- Backfilling, with clean fill, and revegetation of all excavated areas.
- Implementation of institutional controls. Specifically, an environmental easement/restrictive covenant to be filed in the property records of Chenango County in an effort to limit exposure to contaminated soil by prohibiting excavation or disturbance of soil below two feet by any interested party unless such disturbance follows a Site Management Plan (see below). The easement/covenant will instruct any 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 two feet will be necessary.
- Development of a Site Management Plan (SMP) to be included as part of operation and maintenance of the Site which provides for the proper sampling, handling, and treatment and/or disposal (if required) of subsurface soils containing PCBs greater than 1 mg/kg if such soils are disturbed following the completion of the remedial action. The plan will include an inventory of the use restrictions on the Site and will delineate measures that will be taken for the protection of on-Site workers, the public, and the environment in the event of future subsurface soil disturbance. The plan will also describe procedures to confirm that the requisite engineering (subsurface demarcation) and institutional controls are in place and that nothing has occurred that will impair the ability of said controls to protect public health or the environment. The plan will also provide for periodic certification by the performing party(ies) that the engineering and institutional controls are in place and remain protective.
- Sampling of surface water, sediment and biota in Mud Creek, prior to implementation of the soil remedy to determine a baseline of PCB levels in these media. In addition, depending upon the results of the baseline sampling, periodic sampling of surface water, sediment, and biota of Mud Creek if necessary.

The 2006 ROD Amendment also clarified the RAOs as follows:

- 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.

Status of Implementation

Subsequent to finalization of the 1990 ROD, a second AO was issued to the PRPs for the design and implementation of the selected remedy. Under this AO, the ISVE was piloted, installed, and operated.

Following the approval of the 2006 amended ROD, a third AO was issued to the PRPs to undertake soil design activities in accordance with the amended ROD. Negotiations with the PRPs were completed in 2008, which resulted in a 2009 consent decree for the completion of the remaining work on the soil and groundwater remedy design and construction.

Source Control

The ISVE pilot system was expanded and modified several times such that it eventually encompassed all of the unsaturated contaminated soil. The data generated indicated that the ISVE system was effective in

removing the VOCs from the unsaturated soils in most areas, with VOCs remaining in two hot spot areas that were predominantly mixed with PCBs. Based upon these results and the findings of the *Remediation Re-Evaluation for VOC-lmpacted Vadose Zone Soil* completed in 2005, EPA adopted ISVE as the remedy for the VOC-contaminated soils. This modification was documented in a June 2006 Explanation of Significant Differences (ESD).

The ISVE system consisted of 106 vertical wells and five horizontal wells, covering an approximately 145,000-square foot area of the Site. The ISVE system operated between 1995 and 2009, during which time approximately 16,790 pounds of VOCs were removed from Site soils and the volume of soil that was contaminated with VOCs was reduced from approximately 135,000 cubic yards to about 8,200 cubic yards. The remaining VOCs located in two hot spot areas that were predominantly mixed with PCBs were addressed by the soil excavation and stabilization component of the amended remedy. All of the ISVE system components were dismantled, removed, decontaminated, and recycled or disposed of off-Site.

The 2006 Amended ROD also included the performance of treatability studies to determine if off-Site stabilization/immobilization would be effective in reducing the mobility of PCB-contaminated PTW soils by 90% or greater. Despite a nationwide search, a facility that would be able to perform off-Site stabilization/immobilization for the Site's PTW soils could not be found. Therefore, the viability of on-Site stabilization/immobilization was assessed. Based upon the results of stabilization/immobilization treatability studies completed in 2012, it was determined that the most effective stabilization/immobilization reagent mixture (5% cement kiln dust/5% lime) achieved a reduction of 57% in PCB mobility, not the target goal of a 90% reduction in PCB mobility. Treatment of the PTW soils with this reagent mixture followed by disposal of the stabilized/immobilized PTW soils at an EPA-approved off-Site disposal facility would satisfy the objectives of reduction of the mobility and treatment of these wastes. Consequently, in an ESD issued in March 2012, the amended ROD soil remedy was changed to on-Site stabilization/immobilization and use of the most effective stabilization/immobilization reagent mixture (5% cement kiln dust/5% lime) for the PTW soils, prior to off-Site disposal.

For the soil that was to be excavated, pre-excavation cut lines were established based on soil sampling conducted during the design so that the sheetpiles planned for installation during the excavation would not have to be moved. Soil excavation at the Site began in September 2012. The soil contaminated with VOCs and PCBs was excavated and treated/disposed of off-Site at EPA-approved facilities. Excavated PTW soil that had high levels of PCBs was stabilized/immobilized before it was disposed of off-Site. All excavated areas were backfilled with clean fill and revegetated. Prior to backfilling the excavated areas, a readily-visible and permeable subsurface demarcation layer was installed delineating the interface between soils containing 1 mg/kg PCBs and higher PCB levels. During the cleanup, approximately 15,000 cubic yards of contaminated soil was excavated, stabilized/immobilized, and subsequently treated and/or disposed of off-Site. A concrete pad was used for the stabilization of the PTW PCB-impacted soil during the soil cleanup. When the soil cleanup was completed, the pad was cleaned and coated with two solvent-resistant and water-repellent coatings. Subsequently, a 60-mil textured high-density polyethylene (HDPE) liner was placed over the painted pad when some of the paint peeled off during pressure washing. The pad remains on-Site for potential reuse during the implementation of the groundwater remedy. When the pad is no longer needed, it will be removed off-Site for treatment/disposal at an EPA-approved facility.

Construction work was completed in August 2014.

The excavation areas were backfilled with 20 inches of clean fill (clean Site soil, imported clean soil, and/or ISVE cover material) placed over the demarcation layer. Then the entire Site was regraded with 4 inches of top soil and then revegetated.

Groundwater

It is anticipated that the groundwater extraction and treatment design will be completed in 2018 and that the implementation of the groundwater remedy will be completed in 2019. Therefore, this component of the remedy will not be evaluated in this FYR. However, during the pre-design investigation, a number of site conditions and assumptions may have changed. These are summarized in Appendix E and are identified as an issue and recommendation to be considered as the groundwater design progresses.

Institutional Controls

An Environmental Easement and Declaration of Restrictive Covenants was approved by EPA and NYSDEC and will be filed in the property records of Chenango County by the PRPs. The Environmental Easement and Declaration of Restrictive Covenants requires that for soil excavation or intrusive activities greater than two feet below the ground surface, evaluation of the potential for vapor intrusion and mitigation, if necessary, for any new construction, as well as managing the concrete pad, be performed consistent with the SMP.

Under NYSDOH's Health Drinking Water Regulations, new water wells cannot be located in a direct line of flow from a hazardous waste disposal area, nor in any contaminant plume created by this area, except with additional measures, including water treatment, as needed, thereby preventing the installation of new wells at the Site until the groundwater cleanup is completed. Also, New York State law requires that NYSDEC be notified prior to the commencement of drilling a water well in the State. Additionally, the Environmental Easement and Declaration of Restrictive Covenants to be filed by the PRPs includes restrictions on the use of groundwater at the Site as a source of potable or process water unless groundwater quality standards are met.

IC Summary Table

Table 1, below, summarizes the planned and/or implemented ICs.

Table 1: Summary of Planned and/or Implemented ICs

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Soil	Yes	Yes	Site Property	To limit exposure to soil containing PCBs greater than 1 mg/kg by prohibiting excavation or disturbance of such soil below two	Environmental Easement and Declaration of Restrictive Covenants planned for 2018

				feet of ground surface by any interested party unless such excavation/disturbance follows a SMP	
Groundwater	Yes	No	Site Property	To prevent the potential exposure to the contaminated groundwater and vapor	NYSDOH Drinking Water Regulations, Part 5, Subpart 5-1 Standards for Water Wells: https://www.health.ny.gov/regulations/nycrr/title_10/part_5/appendix_5b.htm#b2 NYS water well pre-drilling notification requirement: http://www.dec.ny.gov/lands/4997.html Environmental Easement and Declaration of Restrictive Covenants planned for 2018
Concrete Pad	Yes	No	Site Property	To prevent the potential exposure to the contaminated concrete pad	Environmental Easement and Declaration of Restrictive Covenants planned for 2018

Systems Operations/Operation & Maintenance

In January 2014, a draft soil operation and maintenance (O&M) manual, which included a draft SMP, was submitted by the PRPs. In October 2014, comments on the document were provided to the PRPs. The PRPs submitted a revised draft O&M manual in November 2014. The document will be finalized upon incorporation of unaddressed comments, addressing the management of the concrete pad, and filing the environmental easement/restrictive covenant. When planned usage of the concrete pad is finalized during the groundwater design, the procedures to follow for using the pad during the groundwater remediation need to be incorporated into an updated SMP.

Although the O&M manual has not been approved, the periodic inspection and maintenance of the vegetated top soil, perimeter security fencing, concrete pad, and groundwater monitoring wells called for in the document have been performed at the Site.

In 2015 and 2016, following the soil RA completion, annual top soil inspection has been performed. These activities include determining the presence of burrowing animals, vegetative distress, surface erosion and sloughing, ponding of water, and subsidence or settlement. The inspections also include a turf reinforcement mat installed along a steep excavation side slope. Drainage patterns are noted and assessed to ensure drainage is not eroding the top soil. The only ground intrusive activity was drilling that occurred during installation of new monitoring wells in 2016.

The perimeter security fencing inspection activities include checking the gates to ensure functionality, locks are oiled as needed, and addressing any erosion, holes or damage along the fence perimeter, as needed. The Site groundwater monitoring wells are inspected to ensure their integrity, identify any blockage/obstructions and needed repairs, and to determine if sediment has accumulated at the bottom. The inspection includes checking the well surface seal, cap condition, casing and inner rise pipe level and structure, and testing to verify the well's yield. As needed, wells are repaired and/or redeveloped.

In early 2014, when pressure-washing the concrete pad surface to remove accumulated pollen/detritus, some of the paint peeled off in some areas of the pad. Paint chips and wash water were containerized and then a 60-mil textured HDPE cover was installed over the concrete pad to prevent stormwater from contacting the surfaces where the paint had peeled off. Sampling of the wash water collected in the sump indicated the presence of low levels of VOCs and PCBs. Subsequently, this water and the paint chips were removed for off-Site treatment/disposal at EPA-approved facilities. Since the installation of the HDPE cover, HDPE panels and the welded seams have been inspected to determine the integrity of the HDPE cover. During an inspection performed in July 2015, a breach of the pad liner was identified. To determine PCB and VOC concentrations for assessing potential future use of the pad and restoration of the pad, if necessary, or potential disposal off-Site, samples of the paint and concrete were collected in December 2015. The liner was also repaired. Sampling of water that had collected under the liner indicated low levels of VOCs and PCBs. This water was collected and subsequently disposed of off-Site at an EPA-approved facility. The paint and concrete samples showed the presence of VOCs and PCBs. The stormwater that has accumulated above the liner has been sampled since it was installed. This water has shown no VOCs or PCBs except during the sampling in May 2017 and follow-up sampling in July 2017. The May 2017 sampling results indicated very low VOC and PCB levels. The July 2017 sampling results indicated detections of PCBs at essentially the same very low levels. Planning for pumping the water above the liner in order to conduct a comprehensive visual inspection of the liner is underway.

Climate Change

Potential Site impacts from climate change have been assessed, and the performance of the remedy is currently not at risk due to the expected effects of climate changes in the region and near the Site.

III. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

On November 14, 2016, EPA Region 2 posted a notice on its website indicating that it would be reviewing site cleanups and remedies at 38 Superfund sites in New York and New Jersey, including the Site. The announcement can be found at the following web address: https://www.epa.gov/sites/production/files/2016-11/documents/five_year_reviews_fy2017_final.pdf.

In addition to this notification, a notice of the commencement of the FYR was sent to local public officials. The notice was provided to the Town of Lincklaen by email on May 23, 2017 with a request that the notice be posted in the municipal offices and on the Town of Lincklaen webpage. The purpose of the public notice was to inform the community that the EPA would be conducting a FYR to ensure that the remedy implemented at the Site remains protective of public health and is functioning as designed. In addition, the notice included contact information, including addresses and telephone numbers, for questions related to the FYR process or the Site.

Once the FYR is completed, the results will be made available at the Site information repositories. The information repositories are maintained at the Lincklaen Town Hall, 1521 County Route 12, DeRuyter, New York and the EPA Region 2 Superfund Records Center, 290 Broadway, 18th Floor, New York, New York. In addition, efforts will be made to reach out to local public officials to inform them of the results.

Data Review

Soil

The cleanup of the VOC- and PCB-contaminated soil at the Site was completed in 2014. Aside from the VOCs remaining in two hot spot areas that were later excavated with the PCB-contaminated soils, post-ISVE treatment sampling confirmed that the VOC soil cleanup objectives had been met in the areas outside the hot spots. For the soil that was excavated, post-excavation sampling was not performed. Instead, pre-excavation cut lines were established based on soil sampling conducted during the design to ensure that cleanup goals were met.

Concrete Pad

Subsequent to the pad liner breach identified during the July 2015 inspection, six paint chip samples and 12 concrete core samples[2] were collected from the pad in December 2015. The results showed the presence of low levels of VOCs. The results for PCBs showed detections ranging from 90 to 660 mg/kg in the paint and 0.044 to 13 mg/kg in the concrete.

The stormwater that has accumulated above the HDPE liner covering the pad has been sampled since the liner's installation. Contaminants were not detected in the water except for the recent sampling of this water in May and July 2017, which showed very low VOC and PCB levels in May and very low PCB level in July 2017, respectively. The levels were below the New York State Ambient Water Quality Standards. However, the PCB levels slightly exceeded the Federal Ambient Water Quality value for PCBs.

[2] The concrete core samples were collected at 0.5 to 2 centimeters from the surface of the concrete.

Mud Creek

2012 pre-soil cleanup and 2013 post-soil cleanup sampling of Mud Creek's surface water, sediment, and fish was performed to determine baseline PCB levels in the creek and whether the implementation of the soil cleanup impacted the creek, respectively. PCBs were not detected in the surface water and sediment samples from either sampling event. PCBs were either not detected or detected at very low concentrations below the detection limit in the fish samples. VOC samples were not collected during these sampling events, as the levels of VOCs found in surface water, sediment, and fish tissues during the supplemental RI did not pose a significant ecological threat.

Groundwater

Although the groundwater remedy is currently under design, a number of potential issues have been identified and are outlined in Appendix E and should be considered as the design progresses.

Site Inspection

An inspection of the Site was conducted on June 20, 2017. In attendance were Ms. Wong, Ms. Singh, Jessica LaClair, NYSDEC Project Manager, Demetrios Klerides, EPA oversight contractor HDR Engineering, Inc., Project Manager, Rod Sutch, PRP Project Coordinator, de maximis, inc., Ed Roberts, PRPs' supervising contractor GHD project manager, Jason Davenport, GHD Site engineer, and John Uruskyj, General Electric representative. The purpose of the inspection was to assess the protectiveness of the remedy.

The inspection found the Site to be maintained in good condition. The top soil, including the turf reinforcement mat installed along the Area D side steep slope, remains in place and undisturbed.

During the inspection, around the southwest corner of the concrete pad, water was observed flowing to the ground from under the batten which holds the HDPE liner in place on the exterior surface of the curb.[3]

IV. TECHNICAL ASSESSMENT

QUESTION A: *Is the remedy functioning as intended by the decision documents?*

The excavation of drums, drum parts, and associated contaminated soils ensured that immediate threats associated with further migration of hazardous materials and contamination of the soil and groundwater at the Site were addressed.

Remediation of the surface soil to cleanup level of 1 mg/kg PCBs eliminated the direct contact exposure and minimized wildlife exposure threats associated with surface contaminated soils.

Potential direct contact exposure to subsurface soils (soils two feet or more below ground surface) with PCB concentrations greater than 1 mg/kg will be prevented by the existing engineering controls, and the forthcoming ICs and the SMP once finalized.

[3] Pumping of the water above the liner so to conduct a full inspection of the liner is being planned. Findings of this inspection should help in assessing the integrity of the pad.

Remediation of the unsaturated soil to the Site cleanup objectives significantly reduced contaminant migration to the underlying groundwater. The contaminants in the saturated zone will be addressed as part of the groundwater remedy.

The HDPE-covered contaminated concrete pad remaining on-Site for potential reuse during the implementation of the groundwater remedy has been periodically inspected to determine the integrity of the cover and maintenance repairs were made when a breach occurred.

The groundwater remedy has not yet been implemented and is currently in the remedial design phase.

QUESTION B: *Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?*

The 2006 amended ROD identified the TAGM objectives for PCBs and VOCs in soils. The cleanup objectives for PCBs were 1 mg/kg in surface (depths of 0 to 2 feet) and 10 mg/kg in subsurface soil at depths greater than 2 feet. The surface soils are within the risk range and at the noncancer Hazard Index (HI) of 1 for residential exposures.

The cleanup levels for soils to protect groundwater are within the risk range and below the levels for protection from direct contact under a residential scenario.

There are no changes in the remediation levels that will impact the protectiveness of the remedy.

Since the ROD was signed (1990), the cancer slope factor for PCBs was updated in 1995 and noncancer toxicity values were updated in 1993 and 1994. The changes in parameters for evaluation of residential soils exposures since 1990 include changes include skin surface area, bodyweight for adults and others. These changes in toxicity values do not change the protectiveness of the remedial action since the goal of 1 mg/kg is within the risk range and at the goal of protection of an HI of 1.

In addition, toxicity values for VOCs in soils that impact groundwater were updated since the ROD. The toxicity information for Site contaminants, including tetrachloroethylene, TCE, 1,1,1-trichloroethane, 1,1,2-trichloroethane, toluene, 1,2-dichloroethene, and total xylenes, were all developed and/or updated. Evaluation of the concentrations used for protection of groundwater indicates that based on the Regional Screening Levels for residential direct contact, the concentrations selected are protective for direct contact based on the latest toxicity information and therefore, the direct contact pathway is not a concern.

All habitable buildings on and in the immediate vicinity of the site were demolished. Therefore, there are no completed vapor intrusion pathways. In the event of new construction on or in the vicinity of the site, the vapor intrusion pathway should be evaluated and mitigation should be implemented, if necessary.

There has been a change in the exposure pathways at the Site that would impact the protectiveness of the remedy. Elevated concentrations of PCB were detected in paint chips collected from the concrete pad. EPA's September 2017 *Solvent Savers Site Stabilization Concrete Pad Risk Assessment* found that in the absence of actions to limit exposures *e.g.*, use of personal protective equipment (PPE), there is a potential for workers to be exposed to the paint on the pad at levels exceeding the risk range at a level of 10^{-4} (or one in ten thousand) and a noncancer HI of 1. This finding supports continued implementation of appropriate plans to limit or interrupt exposure to the paint chips through the use of PPE. In addition, it is important to prevent potential trespassing onto the Site where the trespasser may be exposed to the pad at levels above the risk range.

Although the ecological risk assessment screening values used to support the 1990 ROD may not necessarily reflect the current values for terrestrial receptors, the exposure assumptions remain appropriate as the surface soil pathway has been addressed. Additionally, based on the results of the 2012 and 2013 Mud Creek sampling, PCB contamination has not impacted the creek.

The water that has collected beneath the concrete pad liner was found to have contaminant concentrations and may pose ecological risks. However, if the HPDE liner is maintained, the potential for ecological exposure to the water beneath the liner would be eliminated. Ecological receptor use of the pad would not be very significant, since there is limited habitat in the immediate area (large area covered with stones). Additionally, an alternative water source is available in Mud Creek and the associated wetland area which would provide more attractive habitat with a potential food source, as well. Recent sampling results of the stormwater above the HDPE liner showed very low VOC and PCB levels. The PCB levels slightly exceed the Federal Ambient Water Quality value for PCBs. Monitoring of the water above the HDPE liner pad would need to continue to further evaluate the contaminant concentrations.

QUESTION C: *Has any other information come to light that could call into question the protectiveness of the remedy?*

There is no other information that calls into question the protectiveness of the remedy.

V. ISSUES/RECOMMENDATIONS

Table 2, below, presents an issue and recommendation.

Table 2: Issues/Recommendations

Issues and Recommendations Identified in the Five-Year Review:				
OU(s): 01	**Issue Category:** Institutional Controls			
	Issue: Institutional controls to limit exposure to soil containing PCBs greater than 1 mg/kg by prohibiting excavation or disturbance of such soil below two feet of ground surface unless such excavation/disturbance follows an SMP, to prevent the potential exposure to the contaminated groundwater and vapor, and to prevent the potential exposure to the contaminated concrete pad are needed.			
	Recommendation: An Environmental Easement and Declaration of Restrictive Covenants has been approved by EPA and NYSDEC. The Declaration of Covenants, Restrictions and an Environmental Easement should be executed and filed.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	12/31/2018

OU(s): 01	**Issue Category:** Changed Site Conditions			
	Issue: Data collected during the groundwater RD indicate potential changes to conceptual site model specific to groundwater contamination.			
	Recommendation: Evaluate conceptual site model and impact to design in light of these identified changes. Make necessary changes to addresses these issues in the final RD.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	12/31/2018

OTHER FINDINGS

Concrete Pad:

- Based on the elevated concentrations identified in the paint samples on the concrete pad, appropriate actions, including the use of personal protective equipment and limiting the number of days/year an individual is exposed should be implemented to limit or interrupt worker's exposure to the paint on the pad.
- Maintenance of Site security fencing needs to continue for deterring trespassers onto the Site where they may be exposed to the pad contamination. When a breach of the liner occurs, repair of the liner should be performed as soon as possible. Otherwise, security camera monitoring of the pad area during periods of inactivity until the liner repair is completed should be considered.
- Monitoring of the water above the liner should continue to further evaluate the contaminant concentrations.
- Water above the liner should be pumped out and a comprehensive visual inspection of the liner should be performed to assess the conditions of the liner. Based on the findings from this inspection, the integrity of the liner should be evaluated and, as appropriate, alternatives such as removal of the contaminated paint and concrete via scarifiers/grinders and demolition of the pad for off-Site disposal should be examined.
- When the planned usage of the concrete pad is finalized during the groundwater design, the procedures to follow for using the pad during the groundwater remediation need to be incorporated into an updated SMP.
- When the pad is no longer needed, it needs to be disposed of off-Site at a Toxic Substances Control Act facility. Surface soils surrounding the pad should be sampled for VOCs and PCBs to ensure that they were not impacted by releases from the soil stabilization operations conducted on the pad during the soil RA and/or from overflows of water from the pad potentially in contact with the contaminated paint/concrete after the soil RA. Impacted soil, if any, would need to be removed and disposed of off-Site in conjunction with the pad.

VI. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)		
Operable Unit: 1	*Protectiveness Determination:* Short-term Protective	*Planned Addendum Completion Date:* Click here to enter a date
Protectiveness Statement: The OU1 remedy is currently protective of human health and the environment because soil remediation activities completed addressed source contamination and there are no private wells in use in the area. In order to ensure protectiveness in the long term, ICs need to be implemented and changes in the groundwater conceptual site model need to be considered and appropriately addressed in the ongoing groundwater design.		

VII. NEXT REVIEW

The next FYR report for the Site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

Documents, Data, and Information Reviewed in Completing the Five-Year Review	
Document Title, Author	**Submittal Date**
Remedial Investigation Report, EBASCO, Services, Inc.	July 1990
Record of Decision, EPA	September 1990
Removal Action Report - Phase I to III, Conestoga-Rovers & Associates (CRA)	October 1992
Focused Feasibility Study for PCB-Impacted Vadose Zone Soil, CRA	March 2005
Remediation Re-Evaluation for VOC-lmpacted Vadose Zone Soil, CRA	August 2005
Explanation of Significant Differences, EPA	June 2006
Amendment to Record of Decision, EPA	September 2006
Stabilization/Immobilization Treatability Study Results, CRA	February 2012
Explanation of Significant Differences, EPA	March 2012
In Situ Soil Vapor Extraction System Remedial Action (RA) Report, CRA	September 2013
Soil RA Report, CRA	September 2014
Soil Operation and Maintenance Manual (Draft), CRA	November 2014
Site Management Plan (Draft), CRA	November 2014
Institutional Controls Implementation Plan, CRA	August 2014
Sealed Concrete Pad – Analytical Data, GHD Limited (GHD)	February 2016
Post Soil Remedial Action Periodic Review Reports, GHD	December 2015-November 2016
Declaration of Covenants, Restrictions and Environmental Easement (To Be Filed by The PRPs)	January 2016
Focused Work Plan – Groundwater Sampling Event, CRA	June 2015
Pre-Design Groundwater Sampling/Monitoring Report, GHD	March 2017
5th Groundwater Sampling Event Pre-Design Groundwater Sampling/Monitoring Report, GHD	August 2017
Soil Stabilization Concrete Pad Water Sampling Laboratory Results	2015-2017
Solvent Savers Site Stabilization Concrete Pad Risk Assessment, EPA	September 2017
EPA guidance for conducting FYRs and other guidance and regulations to determine if any new Applicable or Relevant and Appropriate	

Documents, Data, and Information Reviewed in Completing the Five-Year Review	
Requirements relating to the protectiveness of the remedy that have been developed since EPA issued the Record of Decision.	

APPENDIX B – CHRONOLOGY OF SITE EVENTS

Chronology of Site Events	
Event	**Date**
New York State Department of Environmental Conservation sampling and subsequent EPA investigation found volatile organic compounds (VOC) and polychlorinated biphenyls (PCB) in the Site groundwater, surface water, sediments, and soil	1981-1982
Site placed on National Priorities List	1983
Drums encountered during the supplemental Remedial Investigation and Feasibility Study field work were excavated and overpacked	1989
Overpacked drums were removed for off-Site treatment and disposal	1990
Record of Decision (ROD) for groundwater and soil	1990
Additional drums and drum parts were excavated and taken off-Site for disposal. Contaminated soil excavated in conjunction with the drums and drum parts was removed for off-Site treatment and disposal.	1991 and 2000
In-Situ Vapor Extraction (ISVE) pilot system operation and system expansion for VOC-contaminated soil	1995-1997
Full-scale ISVE treatment of VOC-contaminated soil	1996-2009
Explanation of Significant Differences (ESD) for soil	2006
ROD Amendment for soil	2006
Treatability studies conducted to determine if off-Site stabilization/immobilization would be effective in reducing the mobility of the principal threat waste soils by 90% or greater	2009
ESD for soil	2012
Remedial Design for PCB-contaminated and remaining VOC-contaminated soil excavation, stabilization, and treatment/disposal off-Site completed	2012
Remedial Action for soil completed	2014

APPENDIX C – TABLES

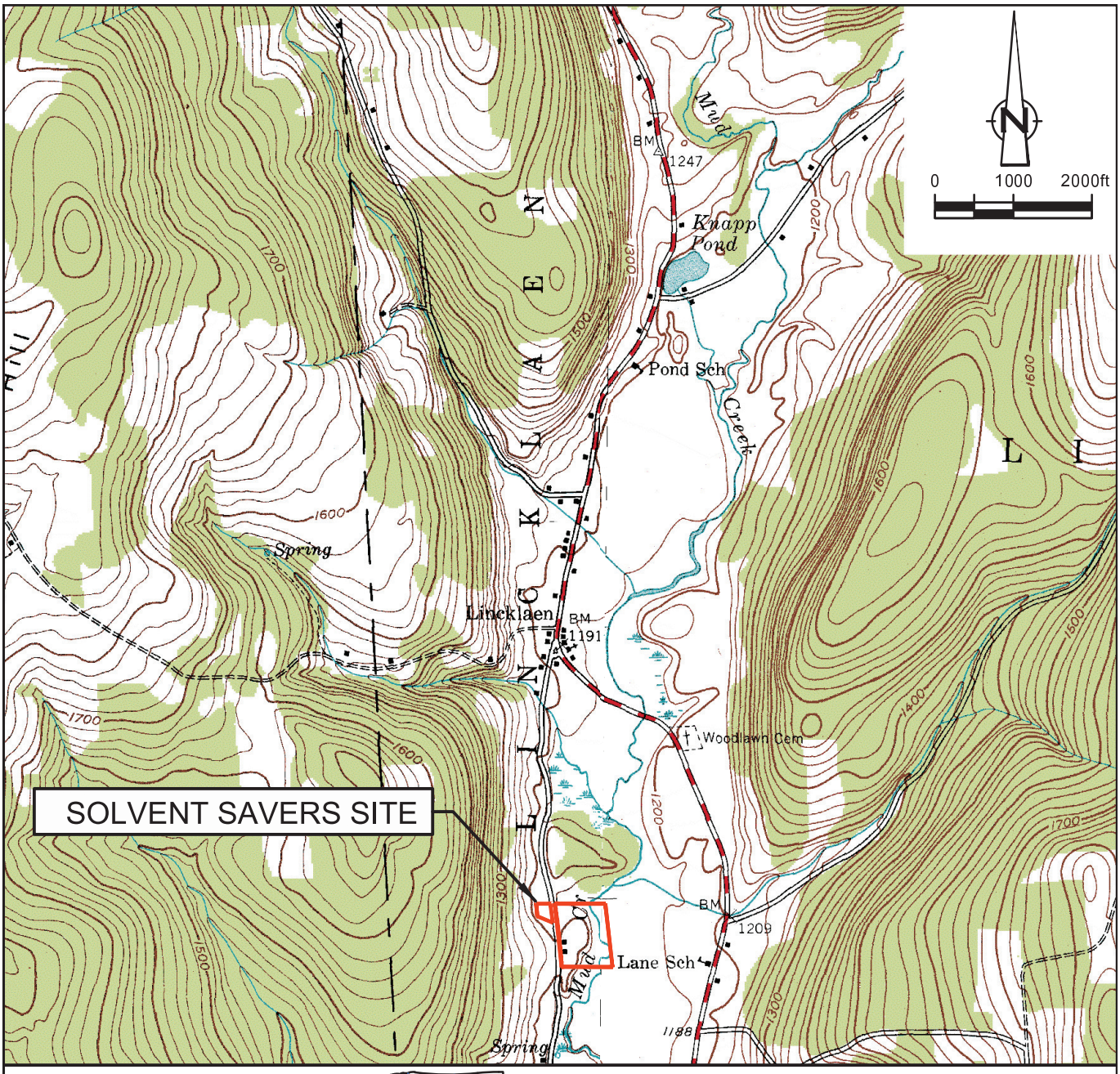
Table C-1: Soil Cleanup Levels Established for Contaminants of Concern

Soil Contaminant	TAGM Objective
PCBs (surface soil)[4]	1 mg/kg
PCBs (subsurface soil)	10 mg/kg
Tetrachloroethene	1.4 mg/kg
Trichloroethene	0.7 mg/kg
1,1,1-Trichloroethane	0.8 mg/kg
1,1,2-Trichloroethane	0.4 mg/kg[5]
Toluene	1.5 mg/kg
1,2-Dichloroethene	0.3 mg/kg
Xylenes (Total)	1.2 mg/kg

[4] Top two feet of soil.

[5] Since there was no TAGM objective for 1,1,2-trichloroethane, the original 1990 ROD cleanup level was used.

APPENDIX D – FIGURES



SOURCE: CUYLER AND SOUTH OSTELIC NEW YORK U.S.G.S. QUADRANGLE MAPS

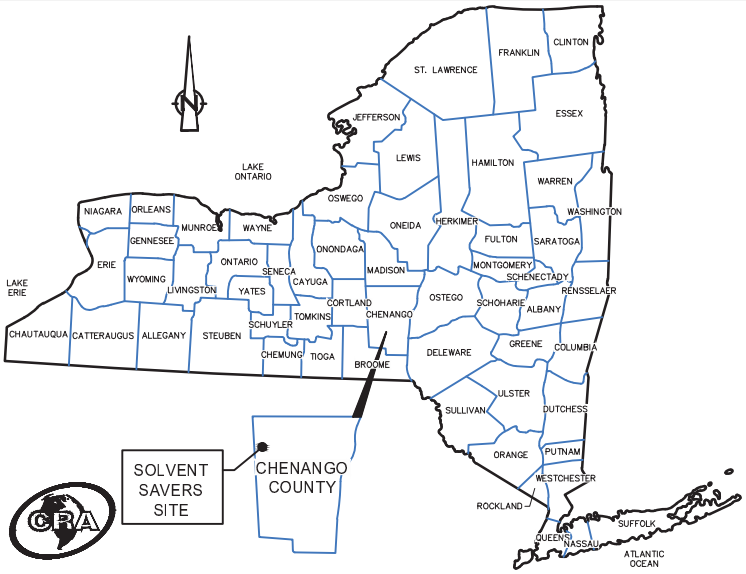


figure 1

SITE LOCATION
SOLVENT SAVERS SITE

Lincklaen, New York

02077-30(078)GN-WA001 JAN 24/2014

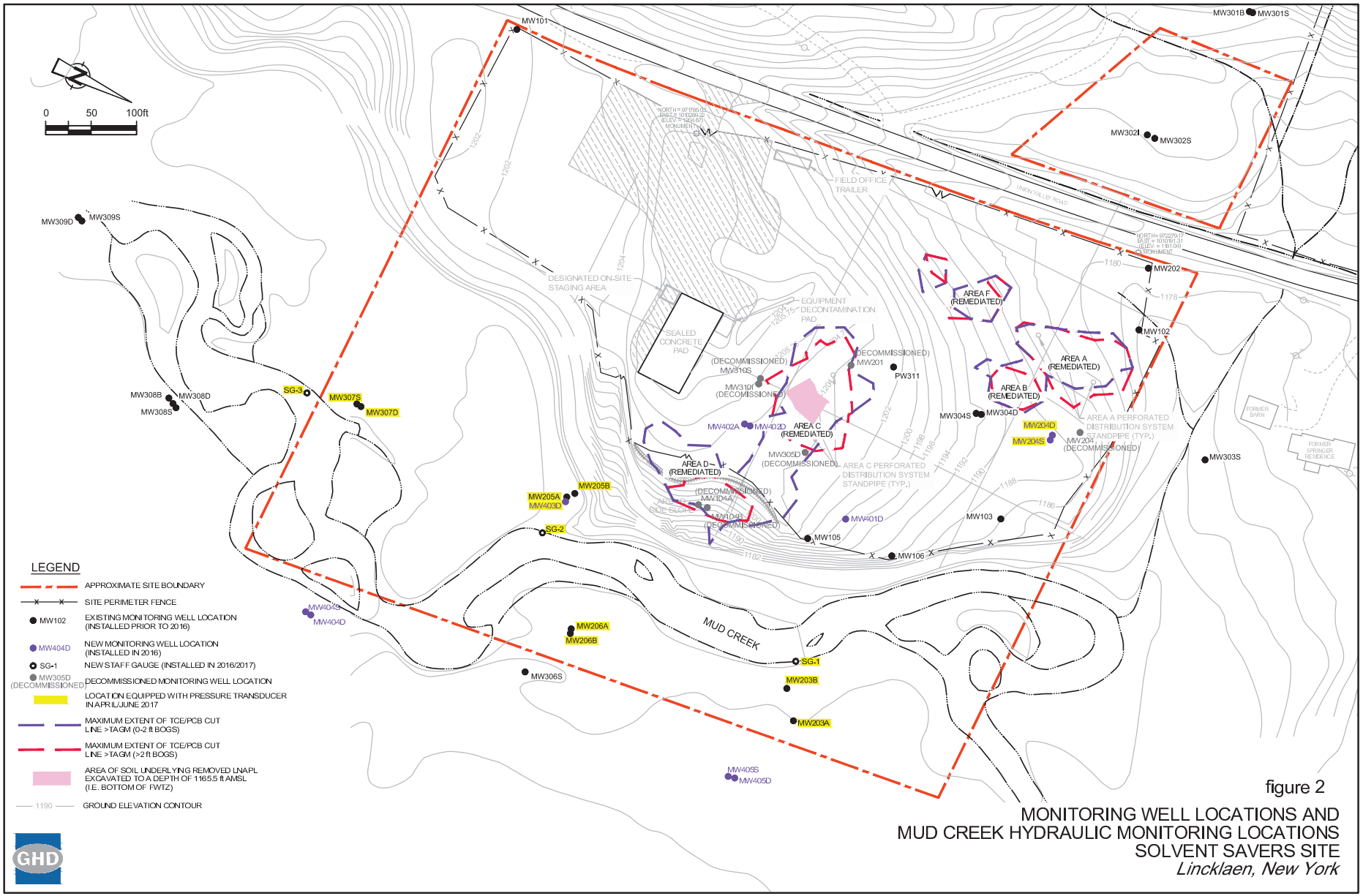


figure 2

MONITORING WELL LOCATIONS AND
MUD CREEK HYDRAULIC MONITORING LOCATIONS
SOLVENT SAVERS SITE
Lincklaen, New York

02077-40(097)GN-WA003 AUG 14, 2017

APPENDIX E – GROUNDWATER DATA REVIEW

Groundwater Data Review

During the review period, groundwater samples were collected in 2015, 2016, and 2017.

2015 Groundwater Sampling Event: This event included the sampling for VOCs and PCBs at 28 on-Site monitoring wells. The analytical results from this sampling event indicated that the maximum total VOC concentrations was detected at 12,013 micrograms per liter (µg/L) in monitoring well MW205A (see Figure 2), located in the western floodplain bank of Mud Creek. PCB samples were collected from all 28 wells and there were no detections in any of the samples.

2016 Groundwater Sampling Event: This event included the sampling for VOCs at 37 on-Site monitoring wells (10 new monitoring wells were installed in June/July 2016) and the private wells located at the vacant Springer and Parkin properties. PCB samples were also collected from these newly-installed wells. Monitoring well MW302S (see Figure 2) was dry at the time of the sampling event. The analytical results from this sampling event indicated that the maximum total VOC concentrations was detected at 5,668 µg/L in monitoring well MW205A, located in the western floodplain bank of Mud Creek. Only two out of the 10 new monitoring wells had PCB detections and the maximum concentration was 0.12 µg/L in monitoring well MW402A, which is located within the vicinity of excavation Area C (see Figure 2). Groundwater samples were also analyzed for 1,4-dioxane during this sampling event. The highest concentration of 1,4-dioxane was detected at 66 µg/L in monitoring well MW206A, which is located across Mud Creek on the eastern floodplain bank.

2017 Groundwater Sampling Event: This event included the sampling for VOCs in 38 monitoring wells. PCB samples were also collected from the newly-installed wells. The analytical results from this sampling event indicated that the maximum total VOC concentrations was detected at 15,607 µg/L in monitoring well MW205A. PCBs were detected with a maximum concentration of 0.49 µg/L in monitoring well MW204S. Only the monitoring wells that had 1,4-dioxane detections in 2016 were sampled in 2017.

The highest concentration of 1,4-dioxane was detected at 100 µg/L in monitoring well MW206A.

Data Summary

Total VOC concentrations still remain several orders of magnitude above federal and state drinking water and groundwater standards and appear to be increasing, specifically along the eastern perimeter of the Site along the escarpment, downgradient of the excavation areas that were remediated. In addition, total VOC concentrations along and across Mud Creek appear to be increasing, but contaminants are not detected in monitoring wells MW404S/D, MW306S and MW405S/D located further downgradient.

The federal drinking water standard for PCBs is 0.5 µg/L and the NYSDEC Class GA standard for PCBs is 0.09 µg/L. Recent (2015 through 2017) groundwater results indicate that PCBs were detected above the New York State standard in two monitoring wells, MW204S and MW402A. At this time, there is no federal drinking water standard for 1,4-dioxane, however, it is regulated as an Unspecified Organic Contaminant by NYSDOH at a standard of 50 µg/L. Groundwater results from 2016 and 2017 indicate that 1,4-dioxane was detected above the State regulatory standard and appears to be increasing in monitoring well MW206A, located across Mud Creek on the eastern floodplain bank.

Recommendations

The following recommendations would improve the data set for the groundwater design and monitoring of the Site contaminant plume until the groundwater remedy is implemented:

- Since 1,4-dioxane was detected above the state regulatory standards in a monitoring well off the Site property and only sampled from select wells, a more comprehensive sampling program to fully characterize 1,4-dioxane impacts to the groundwater should be implemented.
- The groundwater plume extends beyond the Site property, across Mud Creek, but is bounded by clean wells further downgradient. Based on the increasing concentrations of total VOCs in the monitoring wells across Mud Creek, sediment samples from Mud Creek adjacent to the seep locations (once identified by Thermal Imaging) for analysis of VOCs, 1,4-dioxane, and PCBs should be collected. Surface water samples from Mud Creek should be collected, as well. The locations should be biased near the seep areas (if identified);
- Since on-Site total VOC concentrations have increased after soil remedial activities were implemented at the Site, specifically, along the downgradient perimeter of the Site, excavation area wells should be installed in order to monitor residual source impacts to groundwater. A work plan for excavation area groundwater monitoring should be developed.
- Since extensive soil remediation activities were implemented and completed at the Site, the Site conceptual model should be updated to reflect Site specific changes to the geology and hydrogeology.
- A biannual groundwater monitoring program should be implemented during the groundwater RD until the groundwater RA is performed.
- The two private wells associated with the demolished residences at the Springer and Parkin properties should be decommissioned[6] and new monitoring wells should be installed at these locations.

[6] Inspection of these two private wells indicated that they unsuitable for the collection of groundwater samples during future groundwater sampling events due to, among other issues, unknown integrity of the well and absence of well record with information such as the well screen interval.