FOURTH FIVE-YEAR REVIEW REPORT FOR ROSEN BROTHERS SCRAP YARD SITE CORTLAND COUNTY, NEW YORK

Prepared by

U.S. Environmental Protection Agency
Region 2
New York, New York
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John Prince, Acting Director
Emergency and Remedial Response Division

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Date

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LIST OF ABBREVIATIONS & ACRONYMS

bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DCA	Dichloroethane
EPA	U.S. Environmental Protection Agency
FS	Feasibility Study
FYR	Five-Year Review
ICs	Institutional Controls
MCL	Maximum Contaminant Level
MNA	Monitored Natural Attenuation
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
O&M	Operation and Maintenance
OU	Operable Unit
PPA	Prospective Purchaser Agreement
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
SDS	Subslab Depressurization System
SVI	Soil Vapor Intrusion
TAGM	Technical and Administrative Guidance Memorandum
TCA	Trichloroethane
TCE	Trichloroethene
UU/UE	Unlimited Use and Unrestricted Exposure
VOCs	Volatile Organic Compounds

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy 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 pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (40 CFR Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the fourth FYR for the Rosen Brothers Scrap Yard site. The triggering action for this statutory FYR is the signature date of the last review, September 30, 2013. 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 work at the site has been conducted as a single operable unit.

The site's fourth FYR team was led by Mark Granger, the EPA Remedial Project Manager (RPM). Participants included Edward Modica (EPA hydrogeologist), Ula Kinahan (EPA human-health risk assessor), Michael Clemetson (EPA ecological risk assessor), and Larisa Romanowski (EPA community involvement coordinator). The City of Cortland (the current owner of the property) and the potentially responsible parties (PRPs) were notified of the initiation of the FYR. The FYR began on December 7, 2017.

Site Background

The Rosen Brothers site, an abandoned scrap-metal processing facility, occupies approximately twenty acres on the southern side of the City of Cortland, New York. Access to the site is restricted by a seven-foot-high fence with two locked gates. To the east of the site are the building and parking lot of the former Kirby Company, Pendleton Street, a vacant lot and a small residential area consisting of approximately 13 apartment buildings. To the north is Perplexity Creek (an eastward-flowing, seasonally-intermittent stream), railroad tracks associated with the New York, Susquehanna & Western Railroad, several industries, Huntington Street, a small residential area consisting of approximately 20 houses and a school. To the west are a vacant lot, several industries, and South Main Street. To the south is Perplexity Creek Tributary (a northeastward-flowing, seasonally-intermittent stream), Valley View Drive and the Cortland City Junior and Senior High Schools. Please see **Figure 1** for a site layout.

Rosen Brothers began their scrap-metal operations at the site in the early 1970s. Operations included scrap-metal processing and automobile crushing. The property was used to stage large quantities of abandoned vehicles, appliances, steel tanks, drums, truck bodies, and other scrap materials. Municipal waste, industrial waste, and construction waste were allegedly

intermittently disposed of in or on the former cooling pond. Drums were routinely crushed on-site, the contents spilling onto the ground surface. The Rosen Brothers were cited for various violations throughout this period, including illegally dumping into Perplexity Creek Tributary, improperly disposing of waste materials, and operating a refuse disposal area without a permit. Operations on the site ceased in 1985 and the site was abandoned.

Appendix A, attached, summarizes the site's topography, hydrology, and geology/hydrogeology. For more details related to site background, physical characteristics, geology/hydrogeology, land/resource use, and history related to the site, please refer to:

https://semspub.epa.gov/src/collections/02/SC/NYD982272734

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Rosen Brothers Scrap Yard Superfund Site		
EPA ID: NYD982272734		
Region: 2	**State:** NY	**City/County:** Cortland, New York
SITE STATUS		
NPL Status: Final		
Multiple OUs? No	**Has the site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: EPA ***[If "Other Federal Agency", enter Agency name]*:**		
Author name (Federal or State Project Manager): Mark Granger		
Author affiliation: EPA		
Review period: 9/30/2013 - 8/10/2018		
Date of site inspection: 6/27/2018		
Type of review: Statutory		
Review number: 4		
Triggering action date: 9/30/2013		
Due date *(five years after triggering action date)*: 9/30/2018		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

On March 30, 1989, the site was added to the Superfund National Priorities List. Overhead Door, Monarch, and Niagara Mohawk agreed to conduct a remedial investigation and feasibility study (RI/FS) in accordance with an Administrative Order on Consent (Index Number II CERCLA-00204) with EPA in January 1990. Keystone, Cooper Industries, Inc., and Potter Paint Co., Inc. assisted in the performance or funding of the RI/FS pursuant to the terms of a Unilateral Administrative Order (Index Number II CERCLA-00205) issued in February 1990. The companies completed the RI/FS in 1997. The results of the RI indicated the presence of elevated levels of PCBs, volatile organic compounds (VOCs), semi-volatile organic compounds, and inorganics in on-site soils and VOCs in the groundwater. The risk assessment concluded that the contaminated surface soils and groundwater at the site posed an unacceptable risk to human health due, primarily, to the presence of VOCs, semi-volatile organic compounds, PCBs, and metals. The ecological risk assessment concluded that metals and PCBs exceeded the available Lowest-Observed-Adverse-Effect Levels[1] and No-Observed-Adverse-Effect-Levels[2] for raccoons and deer mice. The primary route of exposure was bioaccumulation of contaminants through the food chain.

Response Actions

In 1986, the New York State Department of Environmental Conservation (NYSDEC) conducted a Phase II investigation, which included a site inspection, geophysical studies, installation of soil borings and monitoring wells, and sampling and analysis of groundwater, soils, sediments, and waste materials. The site inspection concluded that hazardous materials were present on the site, including several hundred full and/or leaking drums, transformers filled with polychlorinated biphenyls (PCBs), and pressurized cylinders of unknown content. The results of sampling efforts indicated elevated levels of 1,1,1-trichloroethane (TCA), PCBs, anthracene, pyrene, lead, and chromium in site-related soil, sediment, and groundwater.

EPA performed a removal action at the site in 1987 to address immediate threats to the public health and the environment. The removal action included fencing the site, sampling, excavating visibly-contaminated soil, and securing and temporarily staging drums, tanks, cylinders, transformers, and the excavated soil.

Based on materials observed on the site and other evidence, EPA issued Administrative Orders

[1] The highest exposure level/dose level/concentration of a substance under defined conditions of exposure, an observable/detectable effect (alteration) on morphology, functional capacity, growth, development, or life span of the test animals is observed.

[2] Denotes the level of exposure of an organism, found by experiment or observation, at which there is no biologically or statistically significant (*e.g.,* alteration of morphology, functional capacity, growth, development or life span) increase in the frequency or severity of any adverse effects in the exposed population when compared to its appropriate control.

to six PRPs in 1988 and 1989 requiring them to remove the materials previously staged during the EPA removal action. This work was completed in April 1990.

These companies voluntarily undertook the demolition and removal of structurally unsound buildings and a 150-foot high smoke stack in December 1992. They also removed and recycled 200 tons of scrap materials in December 1993. In November 1994, the companies emptied and disposed of the contents of an abandoned underground storage tank and removed a small concrete oil pit. In August 1997, EPA removed and recycled more than 500 tons of scrap metal and more than 20 tons of tires from the site.

Based upon the results of the RI/FS, in March 1998, EPA signed a Record of Decision (ROD) selecting a remedy for the site. The following remedial action objectives (RAOs) were selected:

- Prevent human contact with contaminated soils, sediments, and groundwater;
- Prevent ecological contact with contaminated soils and sediments;
- Mitigate the migration of contaminants from soils/fill to groundwater:
- Mitigate the off-site migration of contaminated groundwater;
- Restore groundwater quality to levels which meet federal and state drinking-water standards; and
- Control surface water runoff and erosion.

The key components of the selected remedy include:

- Excavation of all 1,1,1-trichloroethane (TCA)-contaminated soils above NYSDEC's recommended soil cleanup objective of 1 milligram per kilogram (mg/kg) identified in the Technical and Administrative Guidance Memorandum (TAGM) in two VOC hot-spot areas and PCB-contaminated soils above the TAGM objective of 10 mg/kg in two hot-spot areas. Clean or treated material would be used as backfill in the excavated areas.
- Consolidation of all excavated soils with PCB concentrations less than 50 mg/kg onto the former cooling pond. Those soils with PCB concentrations above 50 mg/kg would be sent off-site for treatment/disposal at a Toxic Substances Control Act-compliant facility. All excavated 1,1,1-TCA-contaminated soils would either be sent off-site for treatment/disposal or treated on-site to 1 mg/kg for 1,1,1-TCA and used as backfill in the excavations.
- Removal and consolidation onto the former cooling pond of nonhazardous debris located on surface areas where the site-wide surface cover will be installed and/or is commingled with the excavated soil.
- Placement of a cap meeting the requirements of New York State 6 NYCRR Part 360 (Part 360) regulations over the three-acre former cooling pond. Prior to the construction of the cap, the consolidated soils, nonhazardous debris, and existing fill materials would be regraded and compacted to provide a stable foundation and to promote runoff.
- Construction of a chain-link fence around the former cooling pond after it is capped.
- Placement of a surface cover over the remaining areas of the site (approximately 17 acres) to prevent direct contact with residual levels of contaminants in site soils. The nature of the surface cover would be determined during the remedial design phase.
- Monitored natural attenuation (MNA) to address the residual VOC groundwater contamination in downgradient areas. As part of a long-term groundwater monitoring

program, sampling would be conducted to verify that the level and extent of groundwater contaminants are declining from baseline conditions and that conditions are protective of human health and the environment.

- Implementation of regrading and storm-water management improvements to protect the integrity of the cap/site-wide surface cover.
- Long-term monitoring to evaluate the remedy's effectiveness.
- Institutional controls in the form of deed restrictions and contractual agreements, as well as local ordinances, laws, or other government action, for the purpose of restricting the installation and use of groundwater wells at and downgradient of the site, restricting excavation or other activities which could affect the integrity of the cap/site-wide surface cover, and restricting residential use of the property in order to reduce potential exposure to site-related contaminants.

Response Action Implementation

On March 6, 1998, in anticipation of planned on-site redevelopment activities, EPA issued a Unilateral Administrative Order to the six PRPs noted above and nine additional PRPs to expedite the implementation of a portion of the selected remedy (specifically the excavation of approximately 1,000 cubic yards of PCB-contaminated soils from the two PCB-contaminated soil hot-spot areas, backfilling of the excavations with clean fill, and the installation of a surface cover on a five-acre portion of the site). A total of 850 cubic yards of the excavated soils with PCB concentrations less than 50 mg/kg was consolidated onto the former cooling pond and 150 cubic yards of the excavated soils (greater than 50 mg/kg PCBs) were shipped off-site for disposal. This work was performed from September to December 1998.

In September 1998, EPA entered into a Consent Decree with fifteen PRPs to design and implement the remaining portions of the remedy selected in the ROD (*i.e.*, excavation of 1,1,1-TCA-contaminated soils, construction of the cooling pond cap and site-wide surface cover, and implementation of MNA of the groundwater). The Consent Decree was entered in May 1999. The remedial design (RD) for this effort was initiated in August 2001; it was approved by EPA in April 2002.

From July 2002 to July 2003, approximately 900 cubic yards of 1,1,1-TCA-contaminated soils were excavated from the two hot spots, the excavations were backfilled with clean fill, and the excavated soils were shipped off-site for disposal. In addition, an 11.5-acre site-wide cover, consisting of a permeable geotextile overlain by a one-foot protection/topsoil layer was installed and a 3.5-acre Part 360 cap was installed over the cooling pond.

In September 1998, EPA entered into a Prospective Purchaser Agreement (PPA) with the City of Cortland for the purchase, leasing, and redevelopment of the site. The PPA administratively cleared the way for the City of Cortland to take title to the property to effect redevelopment. The City of Cortland took title to the property in March 2003.

Institutional Controls

The ROD called for institutional controls to restrict the installation and use of groundwater wells at and downgradient of the site, to restrict excavation or other activities which could affect the integrity of the cap/site-wide surface cover, and to restrict residential use of the property to reduce potential exposure to site-related contaminants. Through the PPA, deed restrictions which prevent disturbing the cap over the former cooling pond, prevent disturbing or digging beneath the site-wide geotextile layer without EPA's prior authorization, prevent the installation of groundwater wells without the EPA's prior authorization, and prohibit residential use of the property were recorded on the deed for the property when the City of Cortland took title to the site on March 21, 2003.

Additionally, the Cortland County Sanitary Code (Article XII, §§ 1 and 2) restricts the installation of groundwater wells without a permit. Since the County is aware of the presence of groundwater contamination at and downgradient of the site, it is unlikely that a permit to install a well would be approved.

Table 1 summarizes the status of the ICs.

Table 1: **Summary of Implemented Institutional Controls**

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)
On-site Groundwater	Yes	Yes	Site property	Restrict groundwater use on the site property.	Deed Restriction March 2006
Downgradient Groundwater	Yes	Yes	Areas down-gradient of site property	Restrict groundwater use in areas down-gradient of the site property.	Cortland County Sanitary Code Article XII, §§ 1 and 2

Systems Operation/Operation & Maintenance

The operation and maintenance (O&M) manual for the site contains the procedures for inspecting and evaluating the cap and site-wide surface cover, maintaining the groundwater monitoring-well network, and long-term monitoring of groundwater. Repairs are to be made to the cap, drainage systems, and monitoring network, as necessary, to control the effects of settling, subsidence, erosion, vectors, or other events that might interfere with the performance of the remedy. Groundwater monitoring is being used to monitor the effectiveness of the MNA.

The site is inspected annually as follows:

- the Part 360 landfill cap is inspected for signs of erosion, excessive settlement, surface water ponding, seedling growth, and stressed vegetation;
- the surface water drainage system is inspected for signs of erosion and/or siltation, seedling growth, *etc*., in the swales and ditches;
- the landfill-gas venting system is inspected for any damage to the vents;
- the site is inspected for vectors;
- groundwater monitoring wells are inspected for ease of locating, operation of locks, damage/vandalism, and the condition of the surface seals;
- the site access gates and fence are inspected for operational locks, vandalism, and damage;
- the access roads are inspected for ruts, puddles, and drivability; and
- the site is inspected for debris, litter, and/or waste.

The groundwater remedy called for in the ROD required the reduction of VOC concentrations in the groundwater to groundwater standards by source removal in combination with MNA. Quarterly groundwater sampling was initiated in May 2003 as part of the assessment of MNA. After four quarters, sampling continued at a frequency of twice per year for one year and was conducted annually until 2014. Thereafter, VOC sampling has been conducted biennially.

Soil vapor intrusion (SVI) sampling is performed annually by EPA personnel.

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 change in the region and near the Site.

III. PROGRESS SINCE THE LAST REVIEW

The protectiveness determinations from the 2013 FYR, as well as a discussion of the 2013 FYR's recommendations and the current status of those recommendations, are summarized in **Tables 2 through-5**, respectively, below.

Table 2: **Protectiveness Determinations/Statements from the 2013 FYR**

OU	Protectiveness Determination	Protectiveness Statement
01 and Sitewide	**Protectiveness Deferred**	A protectiveness determination at the site cannot be made until further information is obtained. Specifically, vapor-intrusion investigations should be completed at properties located downgradient of the site. It is expected that these actions will take approximately three years to complete, at which time a protectiveness determination will be made.

Table 3: **Status of Recommendations from 2013 FYR**

OU(s)	Issue	Recommendations	Current Status	Current Implementation Status Description
01	Levels of VOCs in soil vapors are elevated beneath the subslabs of several nearby structures.	The **2013 FYR** recommended that vapor intrusion investigations should be continued in nearby structures along with any actions deemed necessary to mitigate or lessen potential exposure.	Completed	Based on the recommendation, an expanded SVI investigation was conducted in the expanded-areas residences. In summary, none of the indoor-air data collected from the expanded-area residences exceeded residential SVI screening levels for TCE. To ensure conditions do not change, these residences, along with several residences from the pre- and post-2013 FYR original study area, may be considered for resampling in the future. In addition, ongoing efforts to sample residences in the study area that have not yet been sampled will continue. This work was documented in the 2016 FYR Addendum.

Based on work done to address the recommendation a FYR addendum was completed in 2016. **Table 4**, below, outlines the protectiveness statement from the 2016 FYR Addendum:

Table 4: **Protectiveness Determinations/Statements from the 2016 FYR Addendum**

OU	Protectiveness Determination	Protectiveness Statement
01 and Sitewide	**Protective**	The implemented OU1 remedy is protective of human health and the environment.

Table 5, below, summarizes several suggestions that were made in the 2013 FYR and the status of those suggestions.

Table 5: Suggestions from the 2013 FYR

Suggestion	Update
Off-property vegetation continues to grow on fencing located along the northern and western sides of the property. The vegetation could impact the integrity of the fence if left unaddressed.	Trimming off-property vegetation from the fencing was completed and continues as part of O&M.
The gate in the northwest corner has been compromised such that it no longer precludes access to the site.	The northwest-corner gate was secured.
One of the monitoring wells that is infrequently sampled has been vandalized.	The monitoring well was repaired and secured and remains available for sampling in the future.
The area of the cap where vehicle tracks have created furrows on the surface should be inspected (and restored, as necessary) to assure that the cap permeability and drainage characteristics have not been compromised in that area.	The area of the cap where vehicle tracks were created on the surface was restored.
Monitoring of water-quality trends should continue in on- and off-site wells.	Monitoring of groundwater continues biennially.
A follow-up round of sediment sampling should be performed in Perplexity Creek.	Sediment sampling was performed in Perplexity Creek.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

On October 2, 2017, EPA Region 2 posted a notice on its website indicating that it would be reviewing site cleanups and remedies at 32 Superfund sites in New York and New Jersey, including the Rosen Brothers Scrapyard/Dump site. The announcement can be found at the following web address:

https://www.epa.gov/sites/production/files/2017-10/documents/five_year_reviews_fy2018_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 City of Cortland by email on August 9, 2018 with a request that the notice be posted in the respective municipal offices and on the City 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 FYR report will be made available online (www.epa.gov/superfund/rosen-brothers) and at the site information repositories. The information repositories are maintained at the Cortland Free Library, 32 Church Street, Cortland, New York and the EPA Region 2 Superfund Records Center, 290 Broadway, 18th Floor, New York, New York.

Data Review

Groundwater

The groundwater remedy called for the reduction of VOC concentrations in the groundwater to groundwater standards by source removal in combination with MNA. In contrast with the elevated contaminant concentrations detected in the RI-related samples (data collected from 1991 to 1996 had a maximum total VOC concentration of 5,400 micrograms per liter [µg/l]), the more-recent data consistently indicate the presence of extremely-low residual groundwater contaminants. Total VOC concentrations from the latest sampling event in August 2016 ranged from non-detect to 19 µg/l for all of the eleven monitoring wells included in the long-term monitoring program. Further, the concentrations of VOCs in the most recent round of sampling were either below or slightly above MCLs. Notably, historically-low concentrations (all below respective MCLs) continue to be reported for downgradient monitoring wells (W-01, W-02, and W-03) included in the long-term monitoring program (see **Figure 1**). In other monitoring wells on-site, there have been slight increases in VOC levels in recent sampling events following a period of decline. For example, for monitoring well W-08, located near northeastern corner of site and adjacent to the former PCB hotspot area, 1,1,1-TCA had shown a decreasing trend from 2008 to 2014 (down to 3 µg/L), but increased to 9 µg/L during the August 2016 sampling event. Similarly, 1,1-DCA showed a comparable pattern of concentration decline (not detected), but was present at 3 µg/L during the August 2016 sampling event.

Monitoring wells W-11 and W-12 are located along the northern boundary adjacent to Perplexity Creek. In monitoring well W-11, 1,1,1-TCA and 1,1-DCA have decreased from their maximum levels reported in 2003 and 2004 (15 µg/L and 18 µg/L, respectively) to their lowest levels reported in 2012 and 2014 (5 µg/L and not detected, respectively); there was an increase in concentrations reported for these constituents for the 2016 sampling event (to 9 µg/L and 5 µg/L, respectively). 1,1,1-TCA was reported as not detected in 2009 in monitoring well W-12 following a declining trend, but increased slightly to 3 µg/L during the 2014 and 2016 sampling events. While TCE has also been detected in monitoring well W-12 since sampling was initiated at an average concentration of 8 µg/L, during the review period, the concentrations have increased slightly to about 10 µg/L. 1,1-DCA has not been detected in monitoring well W-12 from 2008 to 2016. In summary, there are no discernable contamination patterns for monitoring wells W-11 and W-12.

The monitoring wells located along Huntington Street (monitoring wells W-16, W-18 and W-19) show slight decreasing trends in concentrations over time. Of the three wells, W-19 showed the greatest decreases over time. 1,1-DCA decreased from a high of 14 µg/l in 2004 to not detected in 2012. However, the concentration has increased slightly to 5 µg/L by 2016. Similarly, 1,1,1-TCA has also decreased from a maximum of 20 µg/l in 2003 to 10 µg/L in 2014, although there has been a slight increase to 13 µg/L as of the 2016 sampling event.

Figures 2 and 3 graphically illustrate the above-noted sample results.

In summary, the current and historic data suggest that the remedial action has resulted in significant improvements in groundwater quality with respect to total site-related VOC

concentrations. Specifically, it is likely that the reductions in VOC concentrations are the result of effective source removal in combination with natural attenuation via dilution and dispersion.

Soil Vapor Intrusion

After the September 2013 FYR was finalized, additional SVI sampling was conducted in areas downgradient of the property at commercial and residential structures and at a school in December 2013, March 2014, February 2015, and February 2016. Of the ten residences sampled in the original study area, eight were evaluated as part of the post-2013 FYR effort. Based on the sampling results it was determined that:

- One residence required a subslab-depressurization system (SDS). The SDS was installed in October 2015; post-installation SVI samples collected in February 2016 and in February 2018 indicate that the system is operating as designed, as TCE was not detected in the indoor air.
- Three residences should undergo further evaluation to ensure that indoor air remains below non-cancer screening levels for TCE. These residences have been included for further evaluation in the subsequent annual sampling efforts. Indoor air has remained below non-cancer screening levels for TCE.
- Another of the eight residences, where sub-slab and indoor-air TCE data was difficult to interpret, may require an evaluation of confounding indoor-air sources and/or resampling. This residence has been included for further evaluation in the subsequent annual sampling efforts. No confounding indoor-air sources have been identified.

The results of the data collected during the 2013 FYR review period indicated that the original study area should be expanded to the north. Thus, in addition to the ten residences from the original study area, eight residences in the expanded study area were evaluated as part of the post-2013 FYR SVI sampling effort. In summary, none of the indoor-air data collected from the expanded-area residences exceeded residential SVI screening levels for TCE.

As part of the post-2013 FYR sample efforts, two commercial structures (a warehouse and a commercial facility) were further evaluated.

With respect to the warehouse, the data collected as part of the post-2013 FYR effort was consistent with data from the 2013 FYR review period. Although elevated sub-slab levels of TCE continue to be found in the south-eastern portion of the building, the results of indoor-air samples continue to be very low or not detected. This structure may be considered for resampling as part of routine sampling efforts in the future and will be included in periodic future site-related O&M inspections.

At the commercial facility, the data collected as part of the post-2013 FYR effort was also consistent with data from the 2013 FYR review period (i.e., indoor-air concentrations of TCE remain well below levels of concern). This structure may also be considered for resampling as part of routine sampling efforts in the future and will be included in periodic future site-related O&M inspections going forward.

With respect to the ongoing sampling conducted at the school, sub-slab, crawl space, and indoor-air samples were collected as part of the post-2013 FYR effort. Based on the results, it was recommended that a storage closet containing utility runs be sealed as a preventative measure to reduce the potential of these utility runs serving as a conduit for vapor transport. The sealing of these utility runs was completed in August 2016.

Site Inspection

On June 27, 2018, a FYR-related site inspection was conducted by EPA RPM Mark Granger, along with James Drumm of NYSDEC and Elaine Enfonde representing the PRP Group. Observations made during the inspection indicated that the remedy-related infrastructure was in good repair.

V. TECHNICAL ASSESSMENT

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

The remedy for the site called for the excavation of contaminated soils from hotspots with off-site and on-site treatment/disposal, capping and fencing of the former cooling pond area, a surface cover for the remainder of the site, and MNA of groundwater via a well network installed as part of a long-term monitoring program. All components of the remedy have been successfully implemented and the remedy is functioning as intended by the decision documents.

The soil excavation consisted of removing all soils contaminated with 1,1,1-TCA and PCBs from two on-site hotspots above the TAGM soil cleanup objective of 1 mg/kg and 10 mg/kg, respectively. Contaminated soils with concentrations above 50 mg/kg were sent off-site to a Toxic Substances Control Act-compliant facility for treatment/disposal, whereas PCB-contaminated soils with concentrations less than 50 mg/kg were consolidated over the former cooling pond area and were subsequently graded and capped. Excavated 1,1,1-TCA-contaminated soils were either sent off-site for treatment or treated on-site (to 1 mg/kg for 1,1,1-TCA) and used as backfill in the excavations. Post-excavation sampling confirmed that the remaining soils met the soil cleanup objectives.

An engineered cap, meeting the requirements of New York State 6 NYCRR Part 360, was installed over the former cooling pond. Prior to the installation of the cap, consolidated soils, nonhazardous debris (that were removed from the site's remaining surface area) and existing fill material were regraded and compacted on the area to be capped. A chain-link fence was constructed around the area after capping. A surface cover was also placed over the remaining part of the site to prevent direct contact with residual levels of contaminants in on-site soils. Institutional controls in the form of deed restrictions were also put into effect on the property to prevent the disturbance of the cap/cover and the use of groundwater.

Source removal has mitigated much of the potential impact to groundwater. The ROD calls for MNA to address residual groundwater contamination in the downgradient areas of the site. Water

quality data derived from groundwater samples collected since the initiation of the long-term monitoring program in 2003 show progressive decreases in levels of 1,1,1-TCA and DCA. In several monitoring wells, 1,1,1-TCA and DCA have not been detected in sampling events for the last few years. Further, as noted above, of the eleven wells included in the long-term monitoring program, five wells achieved historically-low concentrations of total VOCs in the most recent round of sampling. Notably, historically-low concentrations continue to be reported for downgradient monitoring wells W-01, W-02, and W-03 included in the long-term monitoring program.

Based on the results of the SVI sampling conducted at the residential properties, to date, one house required a subslab depressurization system (SDS), while eleven others continue to be monitored/resampled. To ensure the newly installed SDS system was functioning as intended, after its installation, indoor air samples from the basement and first floor of the home were collected. The results of the subsequent SVI sampling indicated non-detectable levels of TCE in indoor air. These results demonstrate that the newly installed SDS system is functioning as intended. Based on prior SVI sampling results collected within the nearby school, large utility runs that connected a storage closet to a dirt floor crawl space were sealed. During these sealing efforts, a six-inch floor drain was discovered in a basement storage closet. This floor drain will be sealed prior to the start of the 2018/2019 heating season. Other than this basement storage closet, where indoor-air concentrations were slightly elevated, concentrations found in the indoor air continue to fall well below levels of concern. SVI sampling in two adjacent commercial buildings has also continued since the completion of the past FYR. Although sampling results show TCE has accumulated below the slabs of these buildings, concentrations found in indoor air continue to fall well below levels of concern. To ensure continued protectiveness, the ongoing SVI investigation in nearby residential, school, and commercial structures should continue and, if necessary, actions to mitigate or lessen the potential exposure to site-related contamination would be performed, as necessary.

In addition, all residences and businesses within the immediate vicinity of the site and in the downgradient area receive drinking water from the City of Cortland's municipal water supply well, which is located approximately two miles upgradient of the site.

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

The exposure assumptions and toxicity values used to estimate potential cancer risks and noncancer hazards followed the Risk Assessment Guidance for Superfund used by the Agency at the time the risk assessment was finalized. Although specific parameters may have changed since the assessment was finalized, the process used to conduct the assessment remains valid. Potential risks from exposure to contaminated media via ingestion, dermal contact, and inhalation were evaluated in the risk assessment for the Site. Receptors assessed included potential trespassers, future off-site residents, future excavation workers, and future industrial workers.

The results of the risk assessment indicated that ingestion, dermal contact and/or inhalation of vapors from surface soils and groundwater from beneath the site were associated with target cancer risk and noncancer hazard estimates that exceeded EPA's threshold criteria.

With respect to cleanup goals, the ROD called for the excavation of 1,1,1-TCA contaminated soils above 1 mg/kg and PCB-contaminated soils above 10 mg/kg in varying hot-spot areas of the site. The current NYSDEC Unrestricted Use Soil Cleanup Objectives for 1,1,1-TCA and PCBs are 0.68 and 0.1 mg/kg, respectively. Although the ROD-established cleanup values are higher than the currently-promulgated New York State standards, they do not exceed EPA's risk-based screening levels (set at a target cancer risk of 1×10^{-4} or a noncancer HI of 1) for either 1,1,1-TCA or PCBs, and therefore remain valid and are protective of human health.

With respect to cleanup goals, the groundwater component of the ROD called for restoration to levels that meet federal and state drinking water standards. When compared to currently promulgated NYSDEC Groundwater Quality standards, the ROD established groundwater cleanup goals for these constituents remain unchanged, and hence, remain valid and are protective of human health.

Since the completion of the 2013 FYR, the City of Cortland (the current owner of the property) has completed its plans of redeveloping the northern five acres of the site into a trans-modal rail spur. Along with the spur, new fencing and an office building, housed in a raised trailer, have been constructed on-site. The redevelopment of the site is consistent with the deed restrictions identified in the PPA. Past remedial activities along with current restrictions on site and groundwater use ensure potential exposure to any residual contamination at the site remains an incomplete exposure pathway. Further, the groundwater underlying the site is not used as a drinking water source and the potential for subsurface vapor intrusion into indoor air is not of concern because the office is housed in a raised trailer. Based on these considerations, it is concluded that the current use of the site is protective of human health.

As noted above, the following RAOs were established for the site: prevent human contact with contaminated soil, sediment, and groundwater; prevent ecological contact with contaminated soils and sediments; mitigate the migration of contaminants from soils/fill to groundwater; mitigate the off-site migration of contaminated groundwater; restore groundwater quality to levels which meet federal and state drinking standards; and control surface-water runoff and erosion. The RAOs for the site remain valid and protective of human health and the environment.

With respect to ecological risk, the primary ecological RAO is to "prevent ecological contact with contaminated soils and sediments." A potential route of ecological exposure is if the groundwater contaminants were transported to a surface water body. However, the twenty-acre cap/site-wide surface cover minimizes the exposure of ecological receptors to site-related contaminants and eliminates the migration of site-related contaminants to surface water and sediment in the intermittently-flowing Perplexity Creek and the Perplexity Creek Tributary. Although the ecological risk assessment screening values used to support the 1998 ROD may not necessarily reflect the current values, the exposure assumptions remain appropriate.

An exposure pathway not evaluated during the original human health risk assessment was the potential for SVI into indoor air. As part of previous FYR recommendations, an SVI investigation in nearby structures potentially affected by vapors emanating from the site was recommended. To date, eighteen residences located near the site on Cedar, Randall, Huntington, and Pendleton Streets have been investigated. Additionally, six rounds of data have been collected from a nearby school and five rounds have been collected from two adjacent commercial buildings near the site.

Although contaminant concentrations in the groundwater are much lower today than those found during the RI, the results of the SVI investigations of nearby structures indicate that elevated concentrations of vapors, particularly TCE, have collected beneath the slabs of these structures. To ensure continued protectiveness, the ongoing SVI investigation in nearby residential, school, and commercial structures should continue.

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

No other information has come to light that would call into question the protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

Table 5: Issues/Recommendations

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
OU1

Other Findings

The ongoing SVI investigation in nearby residential, school, and commercial structures should continue and, if necessary, actions to mitigate or lessen the potential exposure to site-related contamination would be performed, as necessary.

VII. PROTECTIVENESS STATEMENT

Table 6: Protectiveness Statements

Protectiveness Statement(s)	
Operable Unit:	*Protectiveness Determination:*
OU1 (Bedrock Groundwater)	**Protective**
Protectiveness Statement:	
The **remedy for OU1** is protective of human health and the environment.	
Sitewide Protectiveness Statement	
Protectiveness Determination:	
Protective	
Protectiveness Statement:	
The **sitewide remedy** is protective of human health and the environment.	

VIII. NEXT REVIEW

The next FYR report for the Rosen Brothers Scrap Yard Superfund site is required five years from the completion date of this review.

Appendix A--Site's Topography, Hydrology, and Geology/Hydrogeology

The site overlies the Cortland-Homer-Preble aquifer, a sole source aquifer, which is used as a supply of potable water for the City of Cortland.

The Rosen Brothers site is located on relatively flat terrain. Perplexity Creek Tributary converges with Perplexity Creek at the northeast corner of the site. At this point, Perplexity Creek continues through a culvert for approximately 2,000 feet, then flows freely for approximately a one-half mile interval before emptying into the Tioughnioga River. The area surrounding the site is characterized as residential, industrial, and commercial. Approximately 15,000 people live within a one-mile radius of the site. At present, all residences and businesses within the vicinity of the site and in downgradient areas receive water from the City of Cortland's municipal water-supply well. The City of Cortland's municipal water-supply well is located approximately two miles upgradient of the site.

Surficial geology at the site is comprised of glacial sand and gravel overlain by a silt unit and a fill unit. The silt unit appears to overlay the sand and gravel unit across most of the site, ranging from two to six feet in thickness. For most of the site, the fill ranges in thickness from one to six feet, typically consisting of gravels, sands, and silts mixed with various materials such as slag, cinders, and ash. Other materials observed in the fill consist of metal, wire, brick, wood, glass, railroad ties, pipes, asphalt, plastics, and concrete.

There are two primary hydrogeologic units beneath the site–the upper outwash unit and the lower sand and gravel unit. In the southern portion of the site, the upper unit directly overlies the lower unit and they tend to act as one unit. In the northern portion of the site, the upper outwash and lower sand and gravel units become separated by a lower-permeability lacustrine unit, forming two distinct hydrogeologic units. The lacustrine unit also restricts the downward migration of contaminants from the upper outwash unit to the lower sand and gravel unit. The upper outwash unit is about 40 feet thick and the general direction of groundwater flow is toward the northeast.

FIGURES

Figure 1: Site Layout

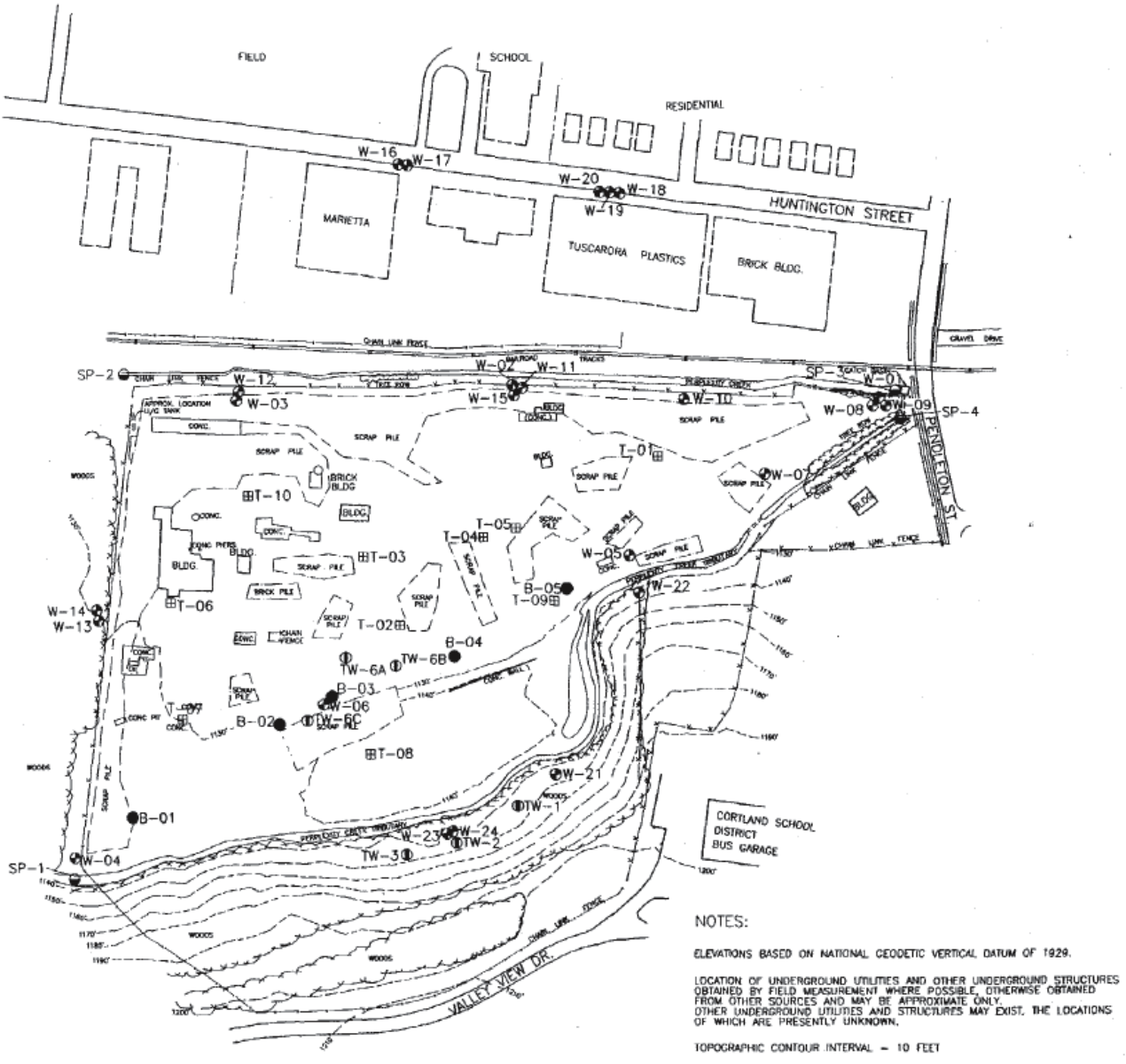
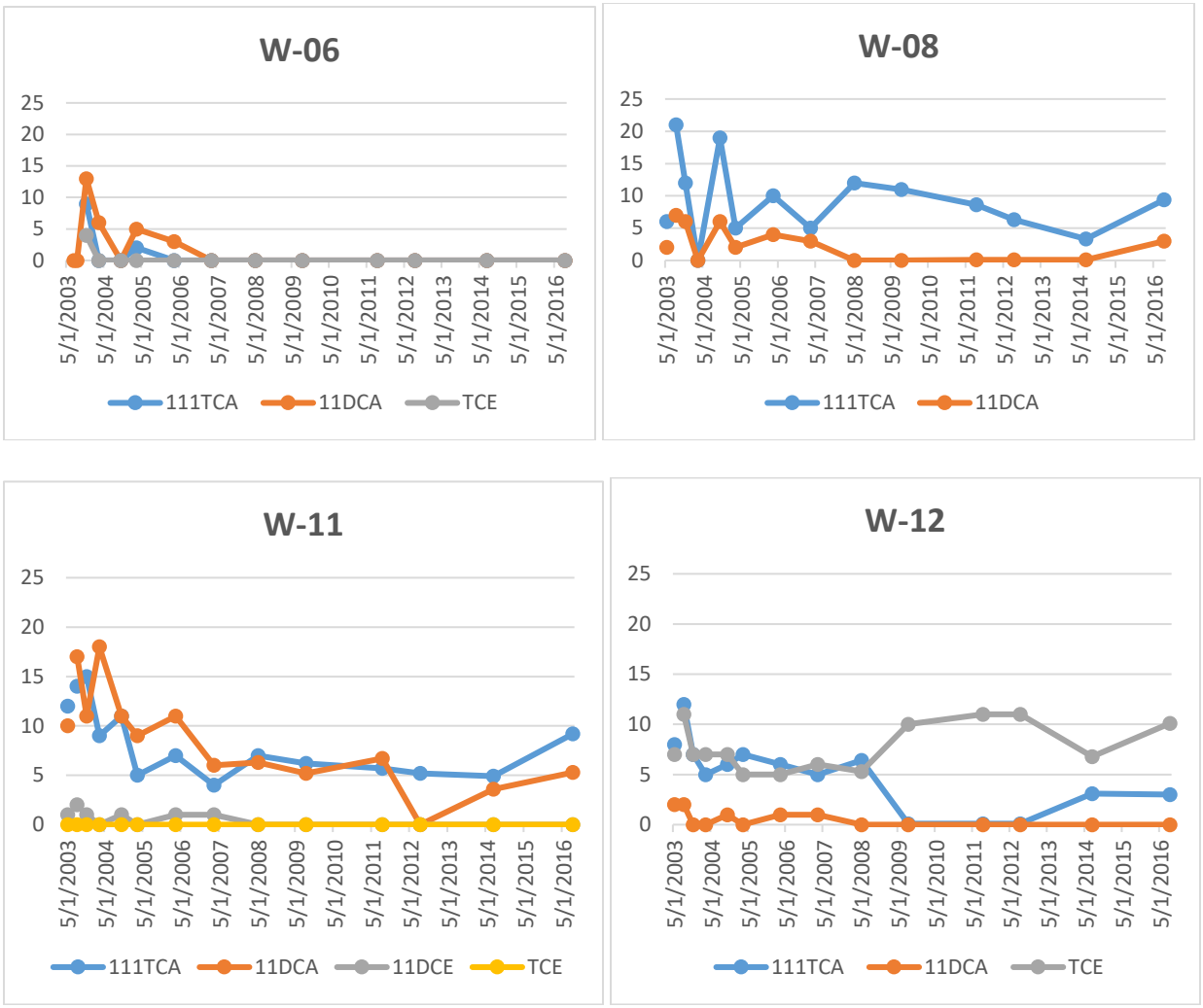
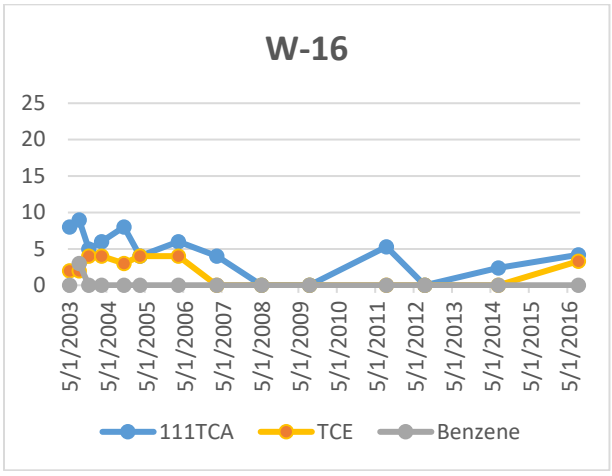


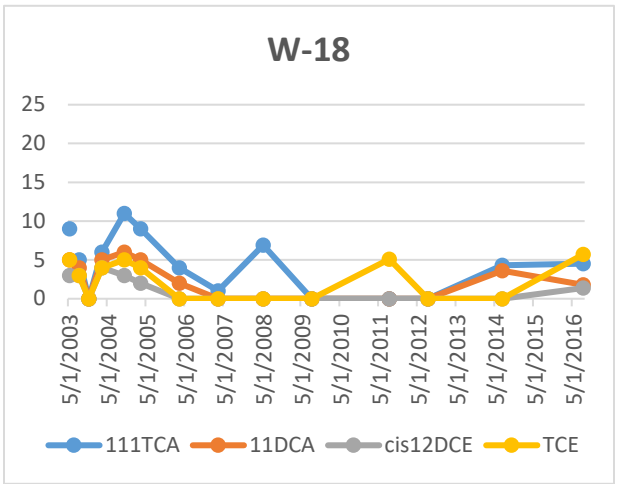
Figure 2: Groundwater VOC Trends in Select On-Site Monitoring Wells

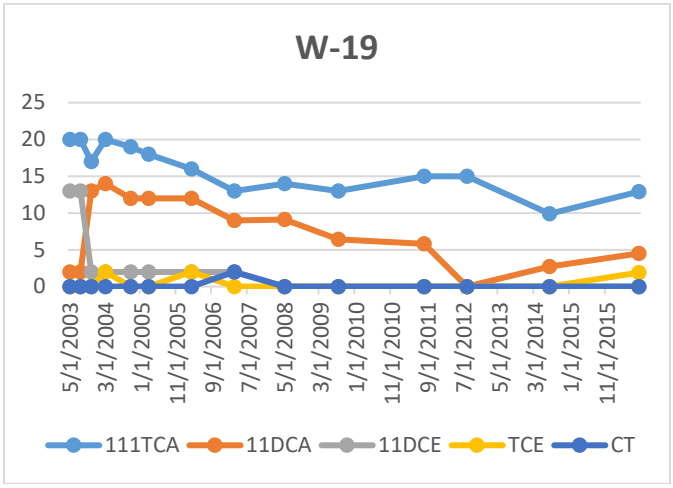


All concentrations are reported in micrograms per liter (µg/l).

Figure 3: Groundwater VOC Trends in Select Off-Site Monitoring Wells







All concentrations are reported in micrograms per liter (µg/l).