ORIGINAL

# FIFTH FIVE-YEAR REVIEW REPORT FOR INDUSTRIAL LANE SUPERFUND SITE NORTHAMPTON COUNTY, PENNSYLVANIA

**SEPTEMBER 2018**

**Prepared by**

**U.S. Environmental Protection Agency**
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SEP 19 2018

**Date**

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# LIST OF ABBREVIATIONS AND ACRONYMS

| | |
|---|---|
| ARAR | Applicable or Relevant and Appropriate Requirement |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| CFR | Code of Federal Regulations |
| CIC | Community Involvement Coordinator |
| DCE | Dichloroethylene |
| EPA | United States Environmental Protection Agency |
| ESD | Explanation of Significant Differences |
| FFS | Focused Feasibility Study |
| FYR | Five-Year Review |
| IC | Institutional Control |
| MCL | Maximum Contaminant Level |
| µg/L | Micrograms per liter |
| MSC | Medium Specific Concentration |
| NCP | National Oil and Hazardous Substances Pollution Contingency Plan |
| NPDES | National Pollutant Discharge Elimination System |
| NPL | National Priorities List |
| O&M | Operation and Maintenance |
| OU | Operable Unit |
| PADEP | Pennsylvania Department of Environmental Protection |
| PCE | Tetrachloroethylene |
| PRP | Potentially Responsible Party |
| RAO | Remedial Action Objective |
| RI | Remedial Investigation |
| ROD | Record of Decision |
| RPM | Remedial Project Manager |
| TCE | Trichloroethylene |
| UU/UE | Unlimited Use and Unrestricted Exposure |
| VOC | Volatile Organic Compound |

# 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 Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the fifth FYR for the Industrial Lane Superfund site (the Site). The triggering action for this statutory review is the completion date of the previous FYR. The FYR has been prepared because hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure.

This FYR addresses both of the Site's operable units (OUs). OU1 addresses provision of an alternate drinking water supply and OU2 addresses the former landfill and contaminated groundwater.

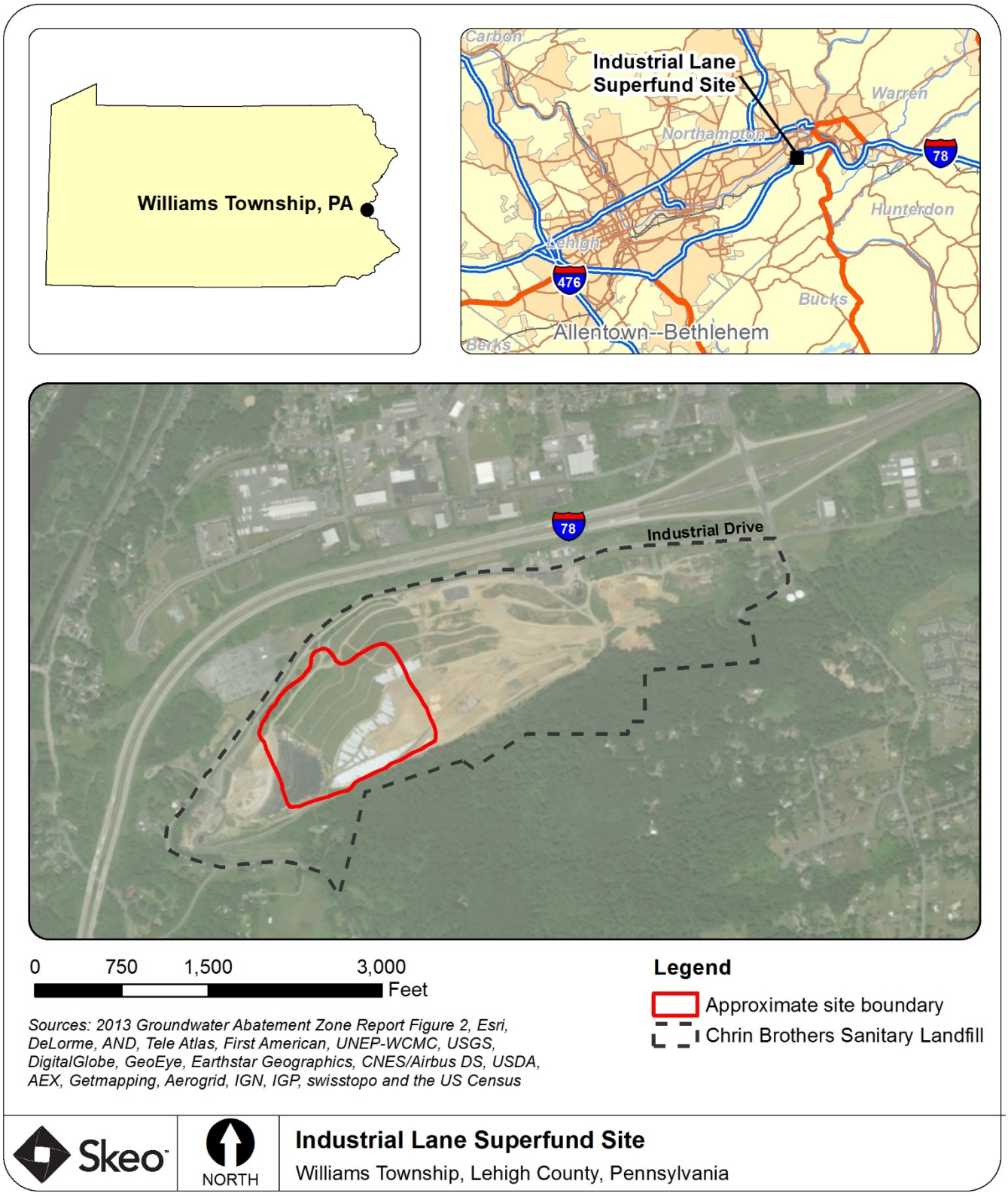
EPA Region 3 Remedial Project Manager (RPM) led the FYR. Participants included EPA Community Involvement Coordinators (CICs), EPA geologist, representatives from the Pennsylvania Department of Environmental Protection (PADEP), and EPA FYR contractor Skeo. The review began on September 15, 2017.

Site Background

The Site is located in Williams Township, Northampton County, Pennsylvania (Figure 1). The 30-acre Site is an inactive and unlined landfill, located within and beneath the active Chrin Brothers Sanitary Landfill (Chrin Landfill). The Chrin Landfill began operations in 1961 and currently operates under a permit issued by PADEP in June 1975. The Site borders the city limits of Easton, Pennsylvania, and is about 15 miles east of Allentown, Pennsylvania. The Lehigh River and the Lehigh Canal are northwest of the Site. The communities of Glendon Borough and Lucy's Crossing are northwest and west of the Site, respectively. Land use near the Chrin Landfill includes various active, inactive and abandoned industrial facilities.

Groundwater in the Site area flows primarily under unconfined conditions. Groundwater flows generally following topography in a north/northwest direction. Seasonal fluctuations affect the water table elevation, but do not affect groundwater flow direction.

**Figure 1. Site Vicinity**




Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

**FIVE-YEAR REVIEW SUMMARY FORM**

| SITE IDENTIFICATION | | |
|---|---|---|
| **Site Name: Industrial Lane** | | |
| **EPA ID: PAD980508493** | | |
| **Region:** 3 | **State:** PA | **City/County:** Williams Township / Northampton |
| **SITE STATUS** | | |
| **NPL Status:** Final | | |
| **Multiple OUs?** Yes | **Has the Site achieved construction completion?** Yes | |
| **REVIEW STATUS** | | |
| **Lead agency:** EPA | | |
| **Author name:** Roy Schrock, with additional support provided by Skeo | | |
| **Author affiliation:** EPA Region 3 | | |
| **Review period:** 9/6/2017 - 9/25/2018 | | |
| **Date of site inspection:** 10/26/2017 | | |
| **Type of review:** Statutory | | |
| **Review number:** 5 | | |
| **Triggering action date:** 9/25/2013 | | |
| **Due date *(five years after triggering action date)*:** 9/25/2018 | | |

# II. RESPONSE ACTION SUMMARY

**Basis for Taking Action**

Groundwater contamination was detected in local wells in 1983. In 1984, EPA added the Site to the National Priorities List (NPL). The remedial investigation (RI) concluded that local groundwater was contaminated with low levels of volatile organic compounds (VOCs), including: vinyl chloride; methylene chloride; trans-l,2-dichloroethylene (DCE); cis-l,2-DCE; 1, 2-dichloroethane; carbon tetrachloride; trichloroethylene (TCE); benzene; tetrachloroethylene (PCE); chlorobenzene; and 1,1-DCE. These contaminants were also detected in leachate samples from the Chrin Landfill and in groundwater immediately downgradient of the unlined portion of the landfill.

**Response Actions**

EPA selected a remedy in a Record of Decision (ROD) on September 29, 1986 that focused on private well users near the Site (OU1). The OU1 remedy consists of the following components:

- Providing a public drinking water supply to homes with private wells containing site contaminants.

EPA selected a remedy in a ROD on March 29, 1991 for contaminated groundwater at the Site and the potential for continued release of contaminants (OU2) and then revised the remedy in two Explanation of Significant Differences (ESD) in 1996 and 2015. The remedial action objectives (RAOs) of the OU2 remedy include:

- Eliminate the threat to human health and the environment from the continuing contamination of groundwater by chemicals disposed of in the landfill; and
- Restore the groundwater to its beneficial use.

The OU2 remedy consists of the following components:

- Proper closure of the Site landfill;
- Extraction, treatment, and discharge of groundwater to the Lehigh River or other appropriate discharge location;
- Long-term monitoring of groundwater quality to attain cleanup goals (Table 1) and
- Institutional controls.

The 1996 ESD consisted of the following components:

- Defined cap requirements;
- Provide other possible discharge locations for the NPDES permit; and
- Revised groundwater cleanup from background concentrations to maximum contaminant levels (MCLs)and Pennsylvania Act 2 Medium Specific Concentrations (MSCs) (Table 1).

In 2015, EPA issued a second ESD to require institutional controls as part of the OU2 remedy.

**Table 1: Revised Groundwater Cleanup Goals**

| COC | Cleanup Goal (µg/L)[a] |
|---|---|
| Vinyl chloride | 2 |
| Methylene chloride | 5 |
| 1,1-Dichloroethane | 31b |
| Trans-1,2-DCE | 100 |
| Cis-1,2-DCE | 70 |
| Chloroform | 70c |
| 1,2-Dichloroethane | 5 |
| 1,1,1-Trichloroethane | 200 |
| Carbon tetrachloride | 5 |
| 1,2-Dichloropropane | 5 |
| Benzene | 5 |
| PCE | 5 |
| 1.4-Dichlorobenzene | 75 |
| Chlorobenzene | 100 |
| 1,1-DCE | 7 |
| TCE | 5 |
| *Notes:*<br>a. 1996 ESD, Attachment 2<br>b. Revised to newer PADEP MSCs<br>c. Revised to newer MCL<br>µg/L = microgram per liter | |

## Status of Implementation

*OU1 Drinking Water Supply*
The local water authority provided an alternate drinking water supply to 95 properties. This remedial action was completed by June 1989.

*OU2 Landfill Closure*
The landfill operator, Chrin Brothers Inc. (Chrin), designed and implemented the remedy under PADEP and EPA oversight. In 1993, Chrin lined, capped and properly closed about 25.1 acres of the 30-acre Site with a geosynthetic overlay liner system. The remaining 4.9 acres were covered with a 2-foot low-permeability soil layer. This complied with the Pennsylvania Municipal Waste Management Regulations, and the 1996 ESD.

On March 12, 2013, landfill materials in two areas of the active and permitted Chrin Landfill, the northern half of which is on the Superfund area, suddenly shifted about 60 feet at the top of the landfill and about 80 feet at the base of the landfill, affecting about 10 acres near the perimeter of the facility. Chrin removed the liner under the waste, the waste materials, and the cover over the waste from the slide area and placed them in a new area that is part of the landfill. This work started on March 13, 2013 and was completed on March 9, 2018. Monitoring wells that were part of the network for the Superfund portion of the landfill were damaged by the slide and now have been rehabilitated and are used in sampling events.

*OU2 Groundwater*
Chrin constructed the groundwater extraction and treatment system in 1999. The groundwater treatment system included three groundwater extraction wells in the Site Abatement Zone Area (the Superfund portion of the landfill); and treatment uses a perforated tray air stripper and backwash sand filters. The extraction wells are pumped at about 80 gallons per minute and the groundwater is treated to meet National Pollutant Discharge Elimination System (NPDES) standards and discharged to a tributary leading to the Lehigh River (shown in Appendix C). The Site achieved construction completion status when the Preliminary Close-Out Report was

signed by EPA on June 29, 1999. The groundwater treatment system was moved from the older plant facility to a new building located on the Chrin property north of the Abatement Zone Area in 2010. Long-term monitoring of groundwater quality and landfill closure maintenance is incorporated into the Waste Management Permit issued by PADEP.

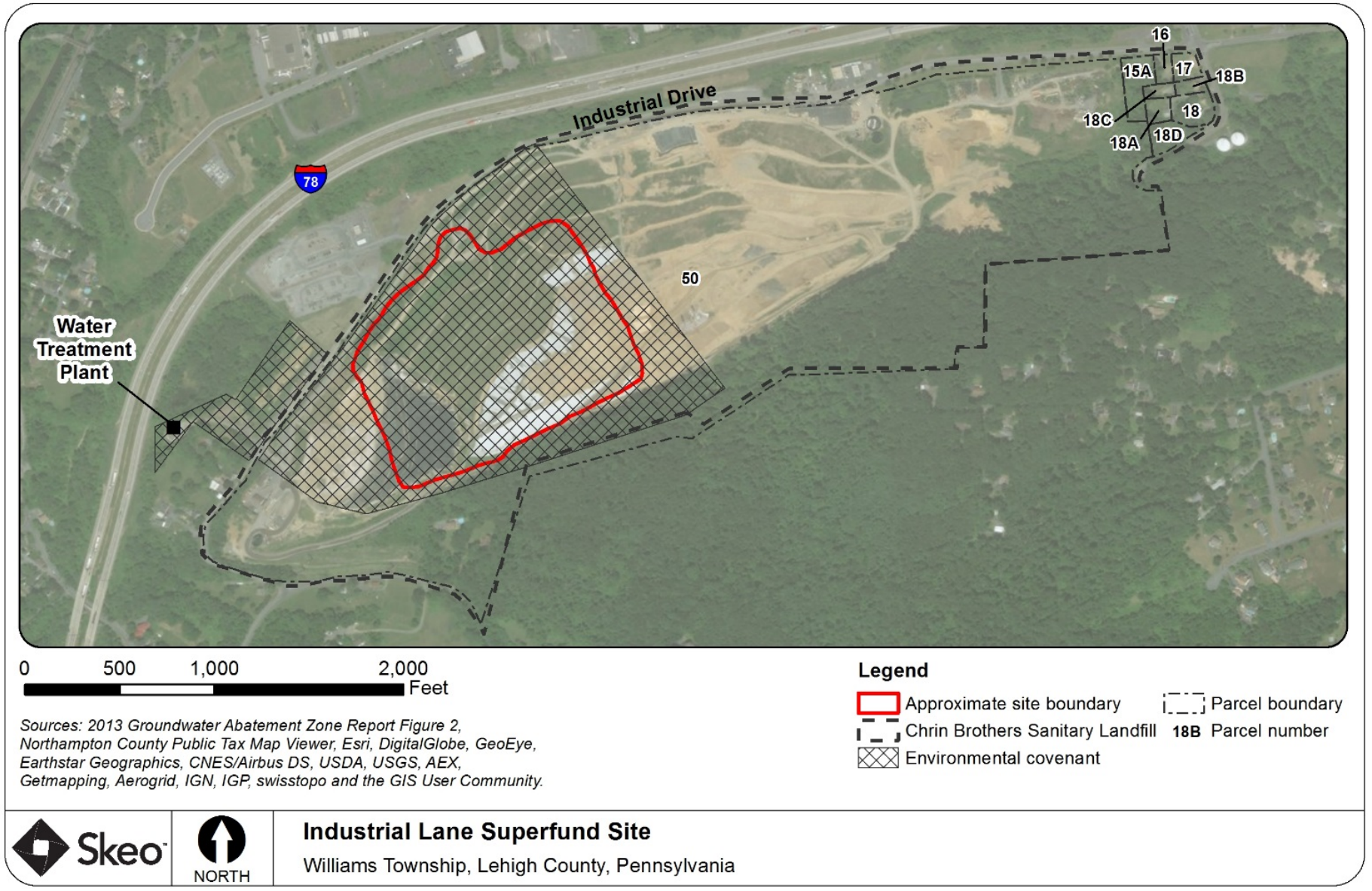
**Institutional Control (IC) Review**

EPA issued an ESD on December 29, 2015 **(**2015 ESD) that added institutional controls as part of the landfill and groundwater remedy in the OU2 ROD. An Environmental Covenant was recorded on September 23**,** 2016, in the office of the Northampton County Recorder of Deeds to implement the institutional controls requirements in the 2015 ESD. Table 2 summarizes the objectives of the ICs. Figure 2 (Institutional Controls Map) shows the area covered by the Environmental Covenant, which lines up with the approximate Abatement Zone Area.

**Table 2: Summary of Planned and/or Implemented Institutional Controls (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) |
|---|---|---|---|---|---|
| Soils | Yes | Yes | See Figure 2 | Require maintenance of the landfill cap and prohibit activities that could disturb or otherwise adversely affect the cap | Environmental Covenant, September 2016 |
| Groundwater | Yes | Yes | See Figure 2 | Prohibit installation of new wells, use of treated groundwater for any purpose except landfill operation, and activities that could disturb the operation or maintenance of the OU2 groundwater treatment remedial action | Environmental Covenant, September 2016 |

**Figure 2: Institutional Control Map**




*Disclaimer:* This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

**Systems Operations/Operation and Maintenance (O&M)**

O&M requirements include sampling of the monitoring wells and the discharge from the treatment plant as well as routine maintenance of the wells and the treatment system. The Groundwater Sampling and Analysis Plan, Abatement Zone (dated November 30, 1993; revised March 1998), requires that reports on the groundwater be submitted annually to PADEP and EPA.

# III. PROGRESS SINCE THE PREVIOUS REVIEW

This section includes the protectiveness determinations and statements from the previous FYR as well as the recommendations from the previous FYR and the status of those recommendations.

**Table 3: Protectiveness Determinations/Statements from the 2013 FYR**

| OU # | Protectiveness Determination | Protectiveness Statement |
|---|---|---|
| 1 | Protective | All homes affected by the Site groundwater contamination are connected to the public water supply and therefore OU1 is protective of human health and the environment. |
| 2 | Protectiveness Deferred | The groundwater extraction and treatment system is operating according to the design and is meeting discharge limits. However, a protectiveness determination for OU2, closure of the unlined landfill and groundwater remediation, cannot be made at this time due to the landfill liner and cover slide that occurred in March 2013. EPA will receive further information on the condition of the cap in approximately 12 months and will then make a protectiveness determination. Additionally, confirmation sampling is necessary to determine the presence or absence of vapor intrusion in one building at the Site before making a protectiveness statement on vapor intrusion. EPA will issue a decision document to require institutional controls (ICs) to restrict activities that would interfere or damage the integrity of the remedy. |

**Table 4: Protectiveness Determinations/Statements from the 2017 FYR Addendum**

| OU # | Protectiveness Determination | Protectiveness Statement |
|---|---|---|
| 2 | Protectiveness Deferred | The remedy at the Industrial Lane Site is protective of human health and the environment. All homes affected by the groundwater contamination are connected to a public water supply. The groundwater extraction and treatment system is operating according to the design and is meeting discharge limits. A recent inspection reveals that the closure of the unlined landfill is intact following excavation of the landfill cover slide and documentation is expected from PADEP. Sampling confirms the vapor mitigation system is working effectively in the building at the Site. Institutional controls to restrict activities that would interfere or damage the integrity of the remedy have been implemented through a UECA. |

**Table 5: Status of Recommendations from the 2013FYR**

| OU # | Issue | Recommendation | Status | Current Implementation Status Description | Completion Date (if applicable) |
|---|---|---|---|---|---|
| OU2 | Landfill liner and cover slide over the Superfund cap preventing assessment of cap condition. | After excavation is completed, EPA and PADEP will inspect the condition of the cap and make recommendations on repairs. | Completed | PADEP is overseeing the cover slide assessment and repair work under the state Waste Management Permit requirements. In March 2017, Chrin notified PADEP that remaining waste has been excavated from the area. Construction of the sub-base and liner began in March 2018. | 3/9/2018 |
| OU2 | PRP must conduct additional VI sampling to determine if the potential risk from vapor intrusion has been resolved | Conduct additional VI sampling | Completed | Additional sampling determined that vapor intrusion is not occurring at on-site buildings at unsafe levels because vapor mitigation systems have been installed. | 2/6/2015 |
| OU2 | Institutional controls are needed but are not called for in a decision document. | Modify the remedy to require institutional controls to restrict groundwater use and prohibit activities that would interfere with the protectiveness of the remedies. | Completed | EPA issued an Explanation of Significant Differences in 2015 that required institutional controls as part of the remedy. An environmental covenant was recorded in September 2016. | 9/23/2016 |

# IV. FIVE-YEAR REVIEW PROCESS

**Community Notification, Community Involvement and Site Interviews**

A public notice was published in the Easton Times Express on June 22, 2018, stating that the FYR was underway and inviting the public to submit any comments to EPA. Appendix D provides a copy of the public notice. The results of the FYR and the report will be made available at the Site's information repository, located at the Mary Meuser Library, 1803 Northampton Street, Easton, Pennsylvania, and online at https://www.epa.gov/superfund/industriallane

On October 26, 2017 EPA's CICs, along with RPM, participated in a review of the Site with the Chrin Landfill owners and their technical consultants, as well as PADEP officials. During the on-site review, updates of the Site were provided and individuals were given an opportunity to express any concerns or recommendations. No concerns or suggestions regarding the project were raised at the meeting.

On April 25, 2018 the EPA CICs and the RPM met with Williams Township Officials to inform them of the FYR and discuss their knowledge and perception of EPA's activities at the Site. Interviews were also conducted as part of the outreach process to document any perceived problems or successes with the remedy.

Williams Township Officials reported being well informed about the Site and have no concerns or complaints. They rarely receive inquiries from residents, but feel well prepared to address them if they do arise. One concern that community members have raised in recent years is regarding the impact of the Superfund Site and landfill on property value. The township feels communication with EPA and PADEP is efficient and security at the Site is reliable. For future information dissemination needs, the township offered their resources to help inform the public, including the Landfill Advisory Committee, newsletters, and township website.

The interview questions and responses are included in appendix E.

**Data Review**

Chrin monitors groundwater on a quarterly basis. PADEP conducts annual split sampling to monitor compliance with the PADEP Waste Management Permit. Sampling for the Superfund portion of the landfill includes three types of wells: Abatement Zone extraction/pumping wells, monitoring wells and downgradient monitoring wells. Figure 3 shows the Superfund portion of the landfill shaded in gray and the well locations. The wells are sampled quarterly and are analyzed for the contaminants of concern in accordance with PADEP Waste Management Permit requirements. Groundwater contours indicate the groundwater is flowing in the north/northwest direction.

VOC concentrations in groundwater have decreased in the past five years (Tables 5, 6 and 7). The cleanup goals are MCLs with some revisions for updated MCLs and PADEP MSCs. In the most recent sampling event (January 2018), the only exceedance of an MCL was for TCE in well DM-2, which is an Abatement Zone pumping well. The Abatement Zone pumping wells are used to collect groundwater contamination from the regional aquifer underlying the Site. The groundwater is treated and then discharged or used for dust control according to the NPDES permit. All other VOC concentrations for all wells sampled in 2018 were below their respective MCL.

Appendix C includes a detailed map showing the Abatement Zone pumping wells, Abatement Zone monitoring wells, and current isoconcentation of TCE around well DM-2. Current sampling results for PCE do not show any isoconcentration plume location since all wells were below the MCL, but a figure is included to document the change from the previous FYR.

Appendix C also includes a satellite image of the area around the Industrial Lane Site showing the location for the NPDES discharge and the location of the Lehigh River which is approximately 1950 feet from the Site. Influent concentrations are shown in Table 5, Page 10. Effluent concentrations meet the NPDES permit requirements.

**Figure 3: Detailed Site Map**

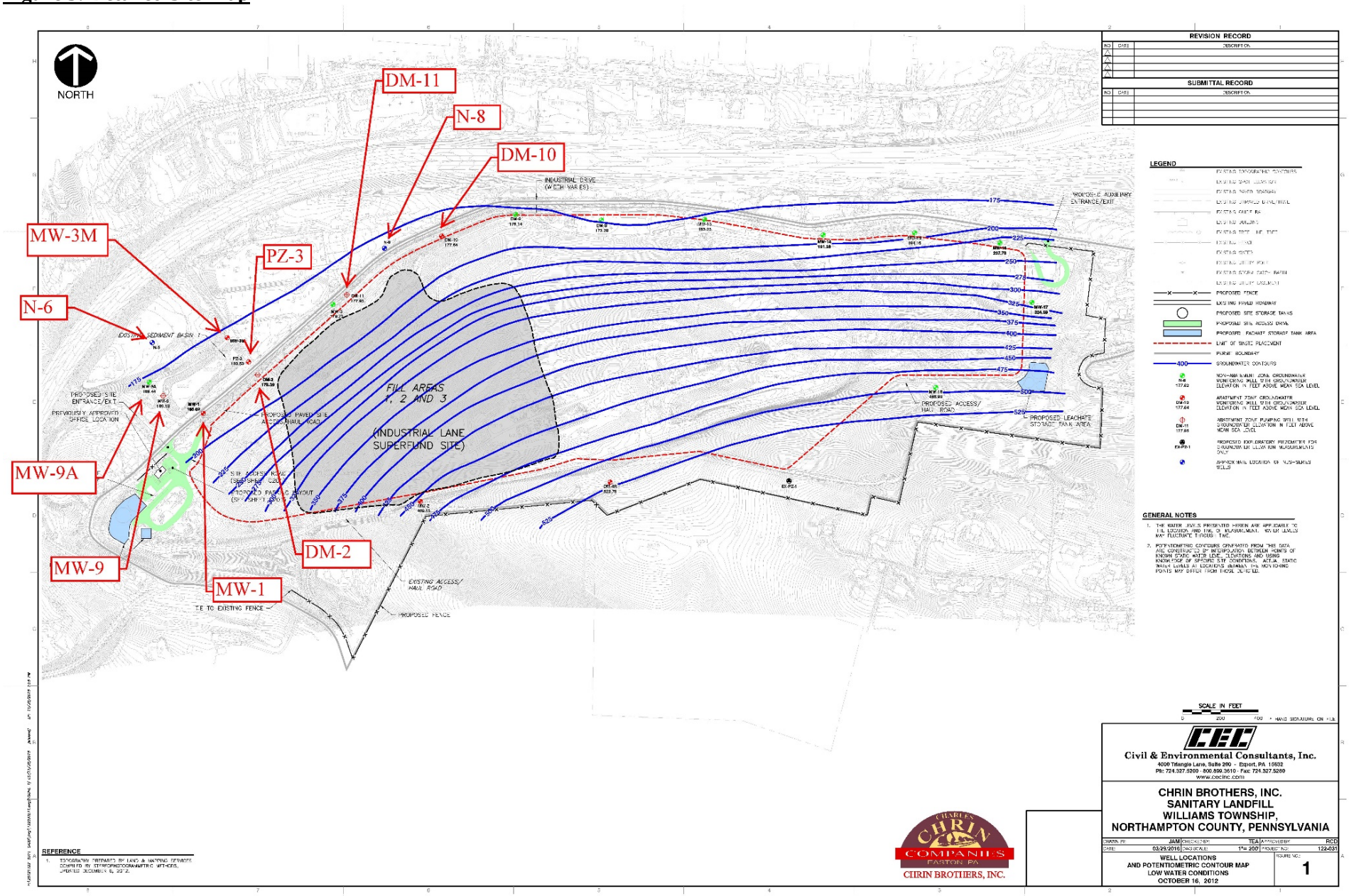


**Table 6. Abatement Zone Extraction Wells Data**

| DM-2 | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Units** | **Cleanup Level[1]** | **2008 5 Year Review** | | | | **2013 5 Year Review** | | | | **2018 5 Year Review** | | | |
| | | | **7/17/07** | **10/17/07** | **1/15/08** | **4/15/08** | **7/19/12** | **10/17/12** | **1/16/13** | **2Q13[2]** | **7/19/17** | **10/18/17** | **1/17/18** | **2Q18[3]** |
| PCE | µg/l | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | NS | < 5.0 | < 5.0 | < 5.0 | - - |
| TCE | µg/l | 5 | **8.2** | **9.6** | **9.8** | **9.8** | **9.8** | **9.9** | **9** | NS | **8.1** | **7.9** | **7.4** | - - |
| Vinyl Chloride | µg/l | 2 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | NS | < 2.0 | < 2.0 | < 2.0 | - - |
| **DM-11** | | | | | | | | | | | | | | |
| **Parameter** | **Units** | **Cleanup Level[1]** | **2008 5 Year Review** | | | | **2013 5 Year Review** | | | | **2018 5 Year Review** | | | |
| | | | **7/17/07** | **10/17/07** | **1/15/08** | **4/15/08** | **7/19/12** | **10/17/12** | **1/15/13** | **4/17/13** | **7/20/17** | **10/19/17** | **1/17/18** | **2Q18[3]** |
| PCE | µg/l | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.00 | < 5.0 | < 5.0 | < 5.0 | - - |
| TCE | µg/l | 5 | < 5.0 | **9.3** | **7.9** | **6.7** | **8.7** | **5.1** | **7.4** | **5.52** | < 5.0 | **5.2** | < 5.0 | - - |
| Vinyl Chloride | µg/l | 2 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.00 | < 2.0 | < 2.0 | < 2.0 | - - |
| **MW-1** | | | | | | | | | | | | | | |
| **Parameter** | **Units** | **Cleanup Level[1]** | **2008 5 Year Review** | | | | **2013 5 Year Review** | | | | **2018 5 Year Review** | | | |
| | | | **7/17/07** | **10/17/07** | **1/15/08** | **4/15/08** | **7/19/12** | **10/17/12** | **1/15/13** | **2Q13[2]** | **8/17/17** | **10/19/17** | **1/17/18** | **2Q18[3]** |
| PCE | µg/l | 5 | **15.1** | **10.1** | **18.4** | **16.4** | **11** | **15** | **12** | NS | < 5.0 | < 5.0 | < 5.0 | - - |
| TCE | µg/l | 5 | < 5.0 | < 5.0 | 5.2 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | NS | < 5.0 | < 5.0 | < 5.0 | - - |
| Vinyl Chloride | µg/l | 2 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | NS | < 2.0 | < 2.0 | < 2.0 | - - |
| 1,4-Dioxane | µg/l | - - | NA | NA | NA | NA | 41 | 62 | 31 | NS | < 50 | < 50 | < 50 | - - |
| **MW-9** | | | | | | | | | | | | | | |
| **Parameter** | **Units** | **Cleanup Level[1]** | **2008 5 Year Review** | | | | **2013 5 Year Review** | | | | **2018 5 Year Review** | | | |
| | | | **7/17/07** | **10/17/07** | **1/15/08** | **4/15/08** | **7/19/12** | **10/17/12** | **1/15/13** | **4/17/14** | **7/19/17** | **10/18/17** | **1/17/18** | **2Q18[3]** |
| PCE | µg/l | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | - - |
| TCE | µg/l | 5 | **9.5** | **10.2** | **8.5** | **10.4** | **9.1** | **9.8** | **8.9** | **5.4** | < 5.0 | < 5.0 | < 5.0 | - - |
| Vinyl Chloride | µg/l | 2 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | - - |

(1) Clean-up standards established by the Abatement Plan, the U.S. EPA Record of Decision, and subsequent U.S. EPA Explanation of Significant Differences.
(2) No sample was collected from DM-2 during the second quarter of 2013.
(3) Second quarter 2018 samples were not collected by the time of report submission.
NA - Analyte was not analyzed on that date.

**Table 7. Monitoring Wells Data**

| MW-9A | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Units** | **Cleanup Level[1]** | **7/30/07** | **8/04/10** | | | | | | | | | | |
| PCE | µg/l | 5 | < 1.0 | < 1.0 | | | | | | | | | | |
| TCE | µg/l | 5 | 3 | < 1.0 | | | | | | | | | | |
| Vinyl Chloride | µg/l | 2 | < 1.0 | < 1.0 | | | | | | | | | | |
| **DM-10** | | | | | | | | | | | | | | |
| **Parameter** | **Units** | **Cleanup Level[1]** | **2008 5 Year Review** | | | | **2013 5 Year Review** | | | | **2018 5 Year Review** | | | |
| | | | **7/17/07** | **10/17/07** | **1/15/08** | **4/15/08** | **7/19/12** | **10/17/12** | **1/15/13** | **4/16/13** | **7/19/17** | **10/18/17** | **1/17/18** | **2Q18[2]** |
| PCE | µg/l | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | - - |
| TCE | µg/l | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | - - |
| Vinyl Chloride | µg/l | 2 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | - - |
| | | | **PZ-3** | | | | | | | | | | | |
| **Parameter** | **Units** | **Cleanup Level[1]** | **2008 5 Year Review** | | | | **2013 5 Year Review** | | | | **2018 5 Year Review** | | | |
| | | | **7/18/07** | **10/17/07** | **1/16/08** | **4/16/08** | **7/19/12** | **10/18/12** | **1/15/13** | **3/20/13** | **7/20/17** | **10/19/17** | **1/18/18** | **2Q18[2]** |
| PCE | µg/l | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | 2 | < 5.0 | < 5.0 | < 5.0 | - - |
| TCE | µg/l | 5 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | < 5.0 | 3.3 | < 5.0 | < 5.0 | < 5.0 | - - |
| Vinyl Chloride | µg/l | 2 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 1.0 | < 2.0 | < 2.0 | < 2.0 | - - |

(1) Clean-up standards established by the Abatement Plan, the U.S. EPA Record of Decision, and subsequent U.S. EPA Explanation of Significant Differences.
(2) Second quarter 2018 samples were not collected by the time of report submission.
(3) MW-9A is not part of the monitoring network, which is why it's not sampled on a quarterly basis (and why there is empty space on Table 6

**Table 8. Downgradient Monitoring Wells Data**

| Parameter | Units | Cleanup Level[1] | N-6 | | |
|---|---|---|---|---|---|
| | | | 8/01/07 | 8/05/10 | 4/14/16 |
| PCE | µg/l | 5 | < 1.0 | < 1.0 | < 1.0 |
| TCE | µg/l | 5 | < 1.0 | < 1.0 | < 1.0 |
| Vinyl Chloride | µg/l | 2 | NA | < 1.0 | < 1.0 |
| | | | | | |
| **Parameter** | **Units** | **Cleanup Level[1]** | **N-8** | | |
| | | | **7/31/07** | **8/04/10** | **3/23/16** |
| PCE | µg/l | 5 | < 1.0 | 1.5 | < 5.0 |
| TCE | µg/l | 5 | < 1.0 | 2.3 | < 5.0 |
| Vinyl Chloride | µg/l | 2 | < 1.0 | 1.5 | < 2.0 |

| | | | MW-3 | | | | | | | | MW-3M[3] | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Parameter** | **Units** | **Cleanup Level[1]** | **2008 5 Year Review** | | | | **2013 5 Year Review** | | | | **2018 5 Year Review** | | | |
| | | | **7/17/07** | **10/16/07** | **1/15/08** | **4/15/08** | **7/18/12** | **10/17/12** | **1/15/13** | **2Q13[4]** | **7/19/17** | **10/19/17** | **1/18/18** | **2Q18[2]** |
| PCE | µg/l | 5 | 5.4 | 7.2 | 6.8 | 5.2 | < 5.0 | < 5.0 | < 5.0 | NS | < 5.0 | < 5.0 | < 5.0 | - - |
| TCE | µg/l | 5 | 12.4 | 17.2 | 15.9 | 12.9 | 8.1 | 7.6 | 6.5 | NS | < 5.0 | < 5.0 | < 5.0 | - - |
| Vinyl Chloride | µg/l | 2 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | < 2.0 | NS | < 2.0 | < 2.0 | < 2.0 | - - |

(1) Clean-up standards established by the Abatement Plan, the U.S. EPA Record of Decision, and subsequent U.S. EPA Explanation of Significant Differences.
(2) Second quarter 2018 samples were not collected by the time of report submission.
(3) In November 2016, MW-3M was installed and a request to decommission MW-3 was submitted in PADEP.
(4) No sample was collected from MW-3 during the second quarter of 2013.

**Site Inspection**

The site inspection took place on October 26, 2017. Participants included: EPA RPM, EPA CICs, EPA geologist, representatives from PADEP, representative from Earthres, representatives from Chrin Brothers, representative from Civil & Environmental Consultants, Inc. and EPA support contractor Skeo. The purpose of the inspection was to assess the protectiveness of the remedy. The inspection checklist and photographs are available in Appendices F and G, respectively.

Participants began the site inspection at the groundwater treatment plant. The air stripper was operational and the building was in good condition. Participants inspected several monitoring wells and the NPDES discharge location. Both the wells and the NPDES discharge location were, well maintained. The site inspection included an office building and a residence for an employee of the landfill where VI mitigation systems were installed based on a FYR issue and recommendation.

Participants observed the landfill operators installing a new liner and cover on the Superfund portion of the landfill where the slide occurred. No signs of trespassing were evident, and security is maintained as part of current landfill operations.

# V. TECHNICAL ASSESSMENT

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

The public water supply connected 95 properties to a safe source of drinking water. The Superfund portion of the Chrin Landfill was lined, capped and properly closed. The material from the landfill slide (the liner, the waste materials, and the cover) was excavated and placed in a different lined part of the Chrin landfill. All waste that affected the Superfund portion of the landfill has been removed, the monitoring wells have been reinstalled, and a new landfill liner is being constructed over the Superfund portion as described in the PADEP Waste Management Permit with PADEP supervision. The groundwater treatment system treats the contamination and meets the NPDES requirements. As of 2016, an environmental covenant restricts groundwater use and disturbing the landfill closure remedy. The groundwater remediation system has effectively reduced contaminant concentrations in on-site extraction and monitoring wells. There has only been one MCL exceedance in 2018. Based on the current groundwater data, the clean-up goals have been met in all the monitoring wells and only one Abatement Area extraction/pumping well detects TCE above its MCL

**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?

Yes, updated MCLs and PADEP MSCs are now used as the cleanup goals (Table 1) as described in the 1996 ESD. The exposure assumptions and RAOs to eliminate the threat to human health and the environment from the continuing contamination of groundwater by chemicals disposed of in the landfill; and to restore the groundwater to its beneficial use at the time of the remedy selection are still valid. The closure and capping of the landfill eliminated potential unacceptable exposures. The Site underlies an active landfill and is therefore secure; land use is not expected to change. Groundwater cleanup goals are based on federal and state standards and remain valid. Chrin sampled for 1,4-dioxane in the monitoring wells/treatment plant in 2012 and based on the results EPA determined that 1,4-dioxane is not an issue. The vapor intrusion pathway has been assessed and EPA determined it does not pose an unacceptable risk to potential downgradient residents. Furthermore, the PRP installed a vapor mitigation system in the office building and the one residential building on the Chrin Landfill property.

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

The operators of the landfill intend to expand its permitted landfill area to cover the entire 30-acre portion of the Superfund Site. EPA will provide oversight to ensure no expansion or construction activities affect the remedy.

## VI. ISSUES/RECOMMENDATIONS

| Issues/Recommendations |
|---|
| **OU(s) without Issues/Recommendations Identified in the FYR:** |
| OU1, OU2 |
| No issues or recommendations are presented in this FYR. |

## VII. PROTECTIVENESS STATEMENT

| Protectiveness Statement(s) | |
|---|---|
| *Operable Unit:* OU1 | *Protectiveness Determination:* Protective |
| *Protectiveness Statement:* The remedy at OU1 is protective of human health and the environment. All properties affected by the groundwater contamination are connected to the public water supply. | |

| Protectiveness Statement(s) | |
|---|---|
| *Operable Unit:* OU2 | *Protectiveness Determination:* Protective |
| *Protectiveness Statement:* The remedy at OU2 is protective of human health and the environment. The landfill has been closed appropriately, groundwater monitoring is being performed, and institutional controls are in place to prevent exposures to contaminated soil and groundwater. | |

| Sitewide Protectiveness Statement |
|---|
| *Protectiveness Determination:* Protective |
| *Protectiveness Statement:* Because the remedial actions at all OUs are protective, the Site is protective of human health and the environment. |

**GPRA Measure Review**
As part of this FYR, the GPRA (Government Performance Results Act) Measures have also been reviewed. The GPRA Measures and their status are provided as follows:

**Environmental Indicators**
Human Health: HEID = Current Human Exposure Under Control
Groundwater Migration: GMUC = Groundwater Migration Under Control

**Sitewide RAU** The Site achieved Sitewide Ready for Anticipated Use (SWRAU) on September 30, 2016.

# VIII. NEXT REVIEW

The next FYR Report for the Industrial Lane Superfund Site is required five years from the completion date of this review.

# APPENDIX A – REFERENCE LIST

Environmental Covenant for Chrin Brothers Landfill. Instrument Number 2016025153. Recorded by Northampton County Recorder of Deeds, Book 2016-1, Page 204195. September 23, 2016.

Explanation of Significant Differences: Industrial Lane OU2, EPA ID: PAD980508493, Williams Township, PA, December 5, 1996. EPA.

Explanation of Significant Differences: Industrial Lane OU2, EPA ID: PAD980508493, Williams Township, PA, December 29, 2015. EPA.

Five-Year Review Follow-Up Action Report. Indoor and Outdoor Ambient Air Analytical Data, Industrial Lane Site, Williams Township, Northampton County, Pennsylvania. Prepared by Civil and Environmental Consultants Inc. February 6, 2015.

Five-Year Review Report for Industrial Lane, EPA ID: PAD980508493, Williams Township, PA, June 10, 1997. EPA.

Five-Year Review Report for Industrial Lane, EPA ID: PAD980508493, Williams Township, PA, September 29, 2003. EPA.

Five-Year Review Report for Industrial Lane, EPA ID: PAD980508493, Williams Township, PA, September 30, 2008. EPA.

Five-Year Review Report for Industrial Lane, EPA ID: PAD980508493, Williams Township, PA, September 25, 2013. EPA.

Focused Feasibility Study for Private Well Users: Industrial Lane OU1, EPA ID: PAD980508493, Williams Township, PA, September 01, 1986. EPA.

Groundwater Abatement Zone Report; (Chrin Brothers Sanitary Landfill; Williams Township, Northampton County, Pennsylvania. Prepared by Civil & Environmental Consultants Inc. July 25, 2013.

Indoor Air Sampling and Analysis Plan; Chrin Brothers Sanitary Landfill; Williams Township, Northampton County, Pennsylvania. Prepared by Civil & Environmental Consultants, Inc. July, 26, 2013.

Preliminary Close-Out Report: Industrial Lane, EPA ID: PAD980508493, Williams Township, Pennsylvania Operable Unit 2. June 29, 1999. EPA.

Record of Decision: Industrial Lane OU1, EPA ID: PAD980508493, Williams Township, PA, September 21, 1986. EPA.

Record of Decision: Industrial Lane OU2, EPA ID: PAD980508493, Williams Township, PA, March 29, 1991. EPA.

Remedial Investigation and Feasibility Study: Industrial Lane Site. EPA ID: PAD980508493, Williams Township, PA, March 3, 1991. EPA.

Remedial Investigation: Industrial Lane OU1, EPA ID: PAD980508493, Williams Township, PA, June 13, 1986. EPA.

# APPENDIX B – SITE CHRONOLOGY

**Table B-1: Site Chronology**

| Event | Date |
|---|---|
| Chrin Landfill began accepting wastes | 1961 |
| Groundwater contamination was detected in local wells | 1983 |
| EPA added the site to the NPL | September 21, 1984 |
| EPA issued a ROD for Operable Unit 1 (OU1) for Public Drinking Water Supply | September 29, 1986 |
| Remedial Action (RA) for OU1 Public Water Supply completed | June 15, 1989 |
| EPA issued ROD for Operable Unit 2 (OU2) for landfill closure and groundwater extraction, treatment and discharge | March 29, 1991 |
| PRP completed remedial design for OU2 groundwater treatment system | August 2, 1996 |
| EPA issued ESD for soil cap, discharge location and groundwater clean-up standards | December 5, 1996 |
| EPA signed Preliminary Close Out Report<br>Construction for OU2 was completed and operation began | June 29, 1999 |
| EPA signs third FYR | September 28, 2008 |
| A slide of the liner and cover occurred on the Site | March 12, 2013 |
| EPA signs fourth FYR | September 25, 2013 |
| EPA issued ESD for institutional controls | December 29, 2015 |
| PRP records environmental covenant | September 23, 2016 |
| PRP completed removal of the slide and liner | March 9. 2018 |

# APPENDIX C – SITE MAPS

**Figure C-1. 2018 Data for TCE Plume Above MCL Around Well DM2**

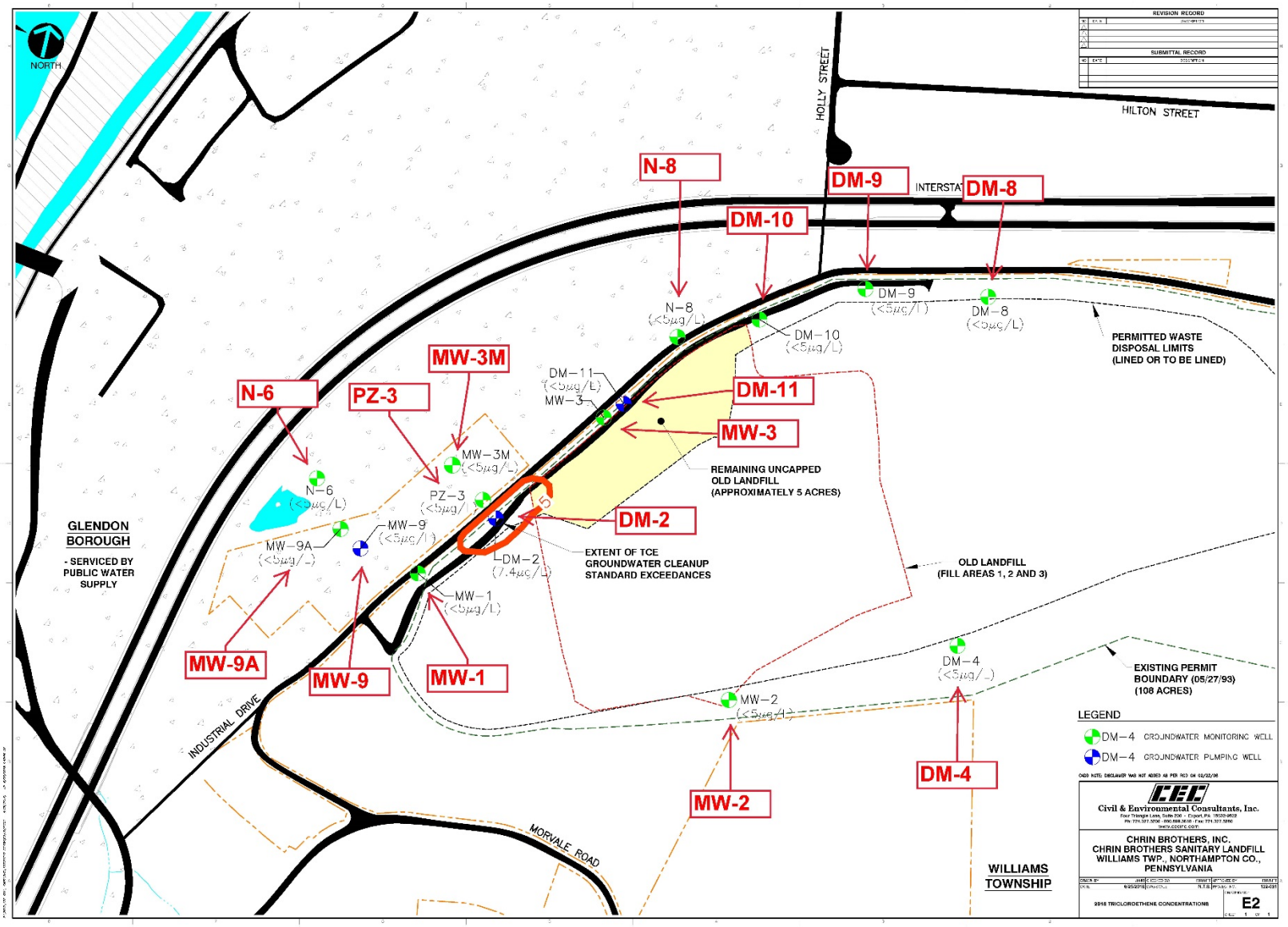


**Figure C-2. 2018 Data for PCE (no exceedances of MCL)**

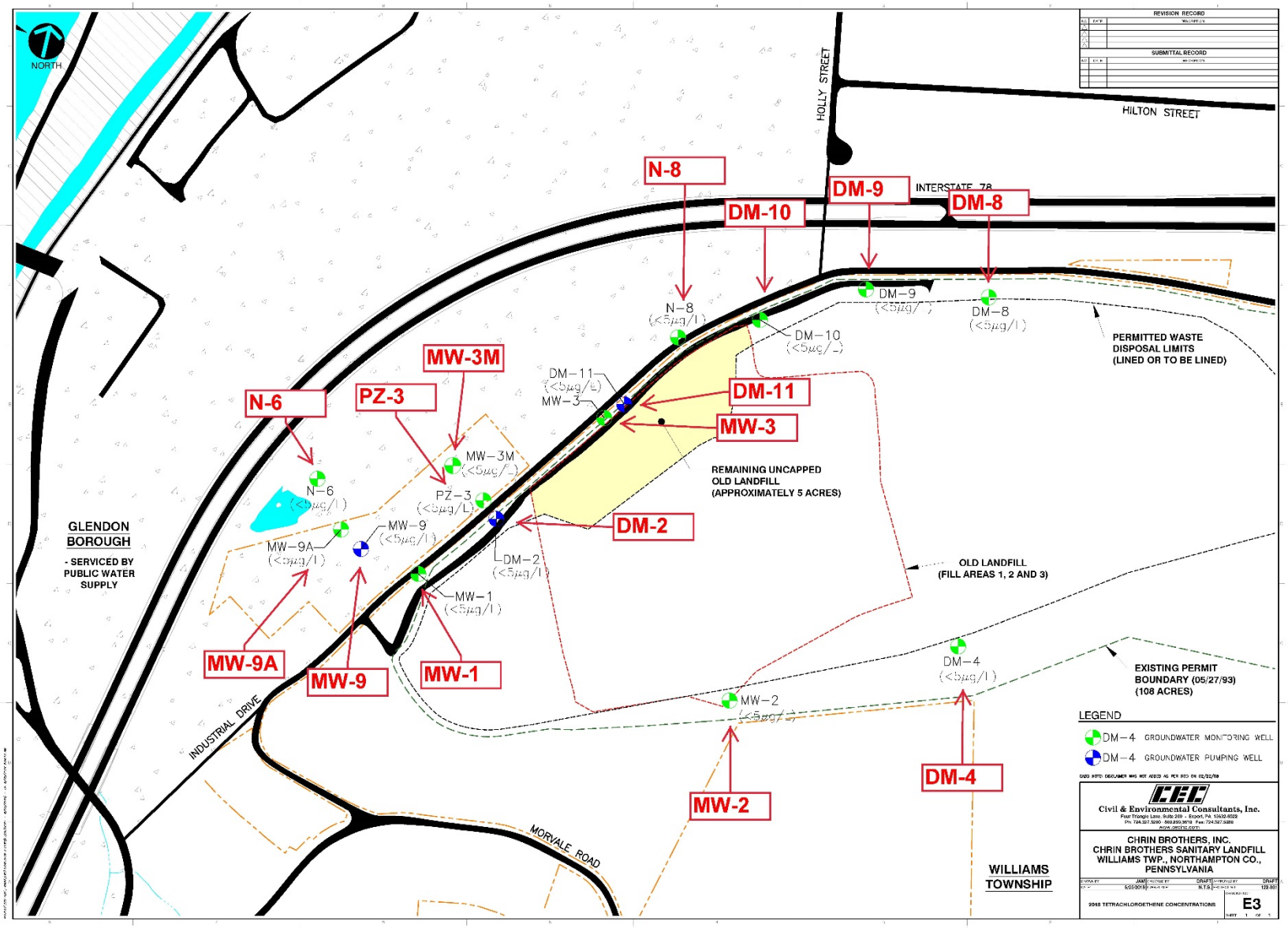


**Figure C-3. NPDES Discharge Point**

# APPENDIX D – PRESS NOTICE

# EPA REVIEWS CLEANUP

## Industrial Lane Superfund Site

The U.S. Environmental Agency is reviewing the cleanup that was conducted at the Industrial Lane Superfund Site located in Easton. EPA inspects sites regularly to ensure that cleanups conducted remain protective of public health and the environment. EPA's previous review of the site in 2013 determined that the remedy was working as designed and remained protective. Findings from the current review that is being conducted will be available September 2018.

**For questions or to provide site-related information for the review:**

**Contact:** Amanda Miles, *Community Involvement Coordinator*
**Phone**: 215-814-5557
**Email**: miles.amanda@epa.gov

**To access detailed site information including the Review Report once finalized:** https://www.epa.gov/superfund/industriallane

**Protecting public health and the environment**

# APPENDIX E – INTERVIEW FORMS

**Industrial Lane 4/25/18, 2:00pm, Williams Township Hall**
**5YR Interview Questions**
**Rich Adams, HMI,** radams@williamstwp.org
**Jennifer Smethers, Township Manager,** jsmethers@williamstwp.org
**Ray Abert, Supervisor,** rabert@williamstwp.org
**Lavar Thomas, EPA, CIC**
**Amanda Miles, EPA, CIC**
**Roy Schrock, EPA, RPM**

1. **What is your overall impression of the project and the effectiveness of the cleanup?**
   The project has run smoothly and there are no current concerns regarding the Site.

2. **What effects have the current site operations had on the surrounding community?**
   We received several phone calls/inquiries when the slide at the landfill occurred years ago. Occasionally we receive odor complaints from residents but we work with Chrin Landfill and PADEP to address these concerns immediately.

3. **Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.**
   Jennifer: The only concerns received from community members are concerning property value, from impacts from both the Superfund site and the Landfill.

   Rich: Questions I have received are from residents who are uninformed about the Landfill and Superfund Site. Once explained, they feel comfortable and satisfied with information.

4. **Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details.**
   No, not aware of any concerns. The security at the site is well maintained and there are cameras currently in place.

5. **Do you feel well informed about EPA's activities and progress?**
   Yes, we feel well informed and have no concerns at this point.

6. **Do you have any comments, suggestions, or recommendations regarding EPA's management or operation of the site?**
   No.

7. **How do you want to be informed about upcoming work at the site?**
   You can let us know about updates here at the Township- call or email the township manager (Jennifer Smethers). The township has resources to reach the community: Landfill Advisory Committee, newsletters, township website, etc.

8. **Do you consent to have your name included along with your responses to this questionnaire in the FYR report?**
   Yes.

# APPENDIX F – SITE INSPECTION CHECKLIST

## FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

### I. SITE INFORMATION

| | |
|---|---|
| **Site Name: Industrial Lane** | **Date of Inspection: 10/26/17** |
| **Location and Region: Williams Township, PA 3** | **EPA ID: PAD980508493** |
| **Agency, Office or Company Leading the Five-Year Review: EPA** | **Weather/Temperature: 60s and cloudy** |

**Remedy Includes**: (Check all that apply)

- ☒ Landfill cover/containment
- ☐ Access controls
- ☒ Institutional controls
- ☒ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☐ Other: _____
- ☐ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls

**Attachments:** ☐ Inspection team roster attached ☐ Site map attached

### II. INTERVIEWS (check all that apply)

1. **O&M Site Manager** _____ (Name) _____ (Title) _____ (Date)
   Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____
   Problems, suggestions ☐ Report attached: _____

2. **O&M Staff** _____ (Name) _____ (Title) _____ (Date)
   Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____
   Problems/suggestions ☐ Report attached: _____

3. **Local Regulatory Authorities and Response Agencies** (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices). Fill in all that apply.

   Agency _____
   Contact _____ (Name) _____ (Title) _____ (Date) _____ (Phone No.)
   Problems/suggestions ☐ Report attached: _____

   Agency _____
   Contact _____Name _____ (Title) _____ (Date) _____ (Phone No.)
   Problems/suggestions ☐ Report attached:_____

   Agency _____
   Contact _____ (Name) _____ (Title) _____ (Date) _____ (Phone No.)
   Problems/suggestions ☐ Report attached:_____

   Agency _____
   Contact _____ (Name) _____ (Title) _____ (Date) _____ (Phone No.)
   Problems/suggestions ☐ Report attached: _____

   Agency _____
   Contact _____ _____ _____ _____

| | | | | | |
|---|---|---|---|---|---|
| | Name | Title | Date | Phone No. | |
| | Problems/suggestions ☐ Report attached:_____ | | | | |
| 4. | **Other Interviews** (optional) ☐ Report attached: _____ | | | | |
| | | | | | |
| | | | | | |
| | **III. ON-SITE DOCUMENTS AND RECORDS VERIFIED** (check all that apply) | | | | |
| 1. | **O&M Documents** | | | | |
| | ☐ O&M manual | ☐ Readily available | ☐ Up to date | ☒ N/A | |
| | ☐ As-built drawings | ☐ Readily available | ☐ Up to date | ☒ N/A | |
| | ☐ Maintenance logs | ☐ Readily available | ☐ Up to date | ☒ N/A | |
| | Remarks: _____ | | | | |
| 2. | **Site-Specific Health and Safety Plan** | ☐ Readily available | ☐ Up to date | ☒ N/A | |
| | ☐ Contingency plan/emergency response plan | ☐ Readily available | ☐ Up to date | ☒ N/A | |
| | Remarks: _____ | | | | |
| 3. | **O&M and OSHA Training Records** | ☐ Readily available | ☐ Up to date | ☒ N/A | |
| | Remarks: _____ | | | | |
| 4. | **Permits and Service Agreements** | | | | |
| | ☐ Air discharge permit | ☐ Readily available | ☐ Up to date | ☒ N/A | |
| | ☒ Effluent discharge | ☒ Readily available | ☒ Up to date | ☐ N/A | |
| | ☐ Waste disposal, POTW | ☐ Readily available | ☐ Up to date | ☒ N/A | |
| | ☐ Other permits: _____ | ☐ Readily available | ☐ Up to date | ☒ N/A | |
| | Remarks: _____ | | | | |
| 5. | **Gas Generation Records** | ☐ Readily available | ☐ Up to date | ☒ N/A | |
| | Remarks: _____ | | | | |
| 6. | **Settlement Monument Records** | ☐ Readily available | ☐ Up to date | ☒ N/A | |
| | Remarks: _____ | | | | |
| 7. | **Groundwater Monitoring Records** | ☒ Readily available | ☒ Up to date | ☐ N/A | |
| | Remarks: _____ | | | | |
| 8. | **Leachate Extraction Records** | ☐ Readily available | ☐ Up to date | ☒ N/A | |
| | Remarks: _____ | | | | |
| 9. | **Discharge Compliance Records** | | | | |
| | ☐ Air | ☐ Readily available | ☐ Up to date | ☒ N/A | |
| | ☒ Water (effluent) | ☐ Readily available | ☐ Up to date | ☐ N/A | |
| | Remarks: _____ | | | | |
| 10. | **Daily Access/Security Logs** | ☐ Readily available | ☐ Up to date | ☒ N/A | |

Remarks: _____

## IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for state

☒ PRP in-house ☐ Contractor for PRP

☐ Federal facility in-house ☐ Contractor for Federal facility

☐ _____

2. **O&M Cost Records**

☐ Readily available ☐ Up to date

☐ Funding mechanism/agreement in place ☐ Unavailable

Original O&M cost estimate: _____ ☐ Breakdown attached

Total annual cost by year for review period if available

| | | | |
|---|---|---|---|
| From: _____ Date | To: _____ Date | _____ Total cost | ☐ Breakdown attached |
| From: _____ Date | To: _____ Date | _____ Total cost | ☐ Breakdown attached |
| From: _____ Date | To: _____ Date | _____ Total cost | ☐ Breakdown attached |
| From: _____ Date | To: _____ Date | _____ Total cost | ☐ Breakdown attached |
| From: _____ Date | To: _____ Date | _____ Total cost | ☐ Breakdown attached |

3. **Unanticipated or Unusually High O&M Costs during Review Period**

Describe costs and reasons: _____

## V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

### A. Fencing

1. **Fencing Damaged** ☐ Location shown on site map ☒ Gates secured ☐ N/A

Remarks: entry gates and fencing present around the Chrin Brothers Sanitary Landfill

### B. Other Access Restrictions

1. **Signs and Other Security Measures** ☐ Location shown on site map ☐ N/A

Remarks: private property signs present at entry

### C. Institutional Controls (ICs)

1. **Implementation and Enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (e.g., self-reporting, drive by): N/A

Frequency: _____

Responsible party/agency: _____

Contact _____ _____ _____ _____

Name Title Date Phone no.

Reporting is up to date ☐ Yes ☐ No ☒ N/A

Reports are verified by the lead agency ☐ Yes ☐ No ☒ N/A

Specific requirements in deed or decision documents have been met ☒ Yes ☐ No ☐ N/A

Violations have been reported ☐ Yes ☒ No ☐ N/A

Other problems or suggestions: ☐ Report attached

2. **Adequacy** ☒ ICs are adequate ☐ ICs are inadequate ☐ N/A

Remarks: _____

**D. General**

1. **Vandalism/Trespassing** ☐ Location shown on site map ☒ No vandalism evident

Remarks: _____

2. **Land Use Changes On Site** ☒ N/A

Remarks: _____

3. **Land Use Changes Off Site** ☐ N/A

Remarks: Chrin Brothers Sanitary Landfill is expanding to the east

## VI. GENERAL SITE CONDITIONS

**A. Roads** ☒ Applicable ☐ N/A

1. **Roads Damaged** ☐ Location shown on site map ☒ Roads adequate ☐ N/A

Remarks: _____

**B. Other Site Conditions**

Remarks: _____

## VII. LANDFILL COVERS ☒ Applicable ☐ N/A

**A. Landfill Surface**

1. **Settlement** (low spots) ☐ Location shown on site map ☒ Settlement not evident

Area extent: _____ Depth: _____

Remarks: landfill operators are currently repairing 2013 liner and cover slide

2. **Cracks** ☐ Location shown on site map ☒ Cracking not evident

Lengths: _____ Widths: _____ Depths: _____

Remarks: _____

| | | | |
|---|---|---|---|
| 3. | **Erosion** | ☐ Location shown on site map | ☒ Erosion not evident |
| | Area extent: _____ | | Depth: _____ |
| | Remarks: _____ | | |
| 4. | **Holes** | ☐ Location shown on site map | ☒ Holes not evident |
| | Area extent: _____ | | Depth: _____ |
| | Remarks: _____ | | |
| 5. | **Vegetative Cover** | ☒ Grass | ☒ Cover properly established |
| | ☒ No signs of stress | ☒ Trees/shrubs (indicate size and locations on a diagram) | |
| | Remarks: trees and shrubs are present on the northernmost part of Site, where clay cover is present | | |
| 6. | **Alternative Cover** (e.g., armored rock, concrete) | | ☒ N/A |
| | Remarks: _____ | | |
| 7. | **Bulges** | ☐ Location shown on site map | ☒ Bulges not evident |
| | Area extent: _____ | | Height: _____ |
| | Remarks: _____ | | |
| 8. | **Wet Areas/Water Damage** | ☒ Wet areas/water damage not evident | |
| | ☐ Wet areas | ☐ Location shown on site map | Area extent: _____ |
| | ☐ Ponding | ☐ Location shown on site map | Area extent: _____ |
| | ☐ Seeps | ☐ Location shown on site map | Area extent: _____ |
| | ☐ Soft subgrade | ☐ Location shown on site map | Area extent: _____ |
| | Remarks: _____ | | |
| 9. | **Slope Instability** | ☐ Slides | ☐ Location shown on site map |
| | ☐ No evidence of slope instability | | |
| | Area extent: landfill cover slide currently being repaired | | |
| | Remarks: _____ | | |
| **B. Benches** | | ☒ Applicable ☐ N/A | |
| | (Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.) | | |
| 1. | **Flows Bypass Bench** | ☐ Location shown on site map | ☒ N/A or okay |
| | Remarks: _____ | | |
| 2. | **Bench Breached** | ☐ Location shown on site map | ☒ N/A or okay |
| | Remarks: _____ | | |
| 3. | **Bench Overtopped** | ☐ Location shown on site map | ☒ N/A or okay |
| | Remarks: _____ | | |
| **C. Letdown Channels** | | ☐ Applicable ☒ N/A | |
| | (Channel lined with erosion control mats, riprap, grout bags or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill | | |

cover without creating erosion gullies.)

**D. Cover Penetrations** ☐ Applicable ☒ N/A

1. **Gas Vents** ☐ Active ☐ Passive
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

2. **Gas Monitoring Probes**
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

3. **Monitoring Wells** (within surface area of landfill)
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

4. **Extraction Wells Leachate**
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A
   Remarks: _____

**E. Gas Collection and Treatment** ☐ Applicable ☒ N/A

1. **Gas Treatment Facilities**
   ☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
   ☐ Good condition ☐ Needs maintenance
   Remarks: _____

2. **Gas Collection Wells, Manifolds and Piping**
   ☐ Good condition ☐ Needs maintenance
   Remarks: _____

3. **Gas Monitoring Facilities** (e.g., gas monitoring of adjacent homes or buildings)
   ☐ Good condition ☐ Needs maintenance ☐ N/A
   Remarks: _____

**F. Cover Drainage Layer** ☐ Applicable ☒ N/A

**G. Detention/Sedimentation Ponds** ☐ Applicable ☒ N/A

**H. Retaining Walls** ☐ Applicable ☒ N/A

**I. Perimeter Ditches/Off-Site Discharge** ☐ Applicable ☒ N/A

**VIII. VERTICAL BARRIER WALLS** ☐ Applicable ☒ N/A

**IX. GROUNDWATER/SURFACE WATER REMEDIES** ☒ Applicable ☐ N/A

**A. Groundwater Extraction Wells, Pumps and Pipelines** ☒ Applicable ☐ N/A

1. **Pumps, Wellhead Plumbing and Electrical**

   ☒ Good condition ☐ All required wells properly operating ☐ Needs maintenance ☐ N/A

   Remarks: _____

2. **Extraction System Pipelines, Valves, Valve Boxes and Other Appurtenances**

   ☒ Good condition ☐ Needs maintenance

   Remarks: _____

3. **Spare Parts and Equipment**

   ☒ Readily available ☒ Good condition ☐ Requires upgrade ☐ Needs to be provided

   Remarks: _____

**B. Surface Water Collection Structures, Pumps and Pipelines** ☐ Applicable ☒ N/A

**C. Treatment System** ☒ Applicable ☐ N/A

1. **Treatment Train** (check components that apply)

   ☐ Metals removal ☐ Oil/water separation ☐ Bioremediation

   ☒ Air stripping ☒ Carbon adsorbers

   ☐ Filters: _____

   ☐ Additive (e.g., chelation agent, flocculent): _____

   ☐ Others: _____

   ☒ Good condition ☐ Needs maintenance

   ☒ Sampling ports properly marked and functional

   ☒ Sampling/maintenance log displayed and up to date

   ☒ Equipment properly identified

   ☐ Quantity of groundwater treated annually: _____

   ☐ Quantity of surface water treated annually: _____

   Remarks: _____

2. **Electrical Enclosures and Panels** (properly rated and functional)

   ☐ N/A ☒ Good condition ☐ Needs maintenance

   Remarks: _____

3. **Tanks, Vaults, Storage Vessels**

   ☐ N/A ☒ Good condition ☒ Proper secondary containment ☐ Needs maintenance

   Remarks: _____

4. **Discharge Structure and Appurtenances**

   ☐ N/A ☒ Good condition ☐ Needs maintenance

   Remarks: _____

5. **Treatment Building(s)**

☐ N/A ☒ Good condition (esp. roof and doorways) ☐ Needs repair

☒ Chemicals and equipment properly stored

Remarks: _____

6. **Monitoring Wells** (pump and treatment remedy)

☒ Properly secured/locked ☒ Functioning ☐ Routinely sampled ☒ Good condition

☐ All required wells located ☐ Needs maintenance ☐ N/A

Remarks: _____

**D. Monitoring Data**

1. **Monitoring Data**

☒ Is routinely submitted on time ☒ Is of acceptable quality

2. **Monitoring Data Suggests:**

☒ Groundwater plume is effectively contained ☒ Contaminant concentrations are declining

**E. Monitored Natural Attenuation**

1. **Monitoring Wells** (natural attenuation remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs maintenance ☒ N/A

Remarks: _____

## X. OTHER REMEDIES

If there are remedies applied at the site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

## XI. OVERALL OBSERVATIONS

**A. Implementation of the Remedy**

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions).

The remedy currently appears to be functioning as intended. Homes affected by groundwater contamination were connected to the public water supply. The inactive landfill is covered with non-Superfund landfill material or vegetation. Groundwater is currently treated and discharged to a nearby tributary, and vapor mitigation systems were installed in on-site buildings. Institutional controls were required per the 2015 ESD and have since been implemented.

**B. Adequacy of O&M**

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

O&M currently appears adequate; the treatment plant, NPDES discharge location, and landfill were all in good condition during the site inspection.

**C. Early Indicators of Potential Remedy Problems**

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

The landfill cover and liner slide indicated shifting of landfill materials; this area has since been excavated, is currently being covered, and will continue to be monitored.

**D. Opportunities for Optimization**

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

There are no opportunities for optimization at this time.

# APPENDIX G – SITE INSPECTION PHOTOS

Groundwater treatment plant

Groundwater treatment plant

Groundwater treatment plant control panel

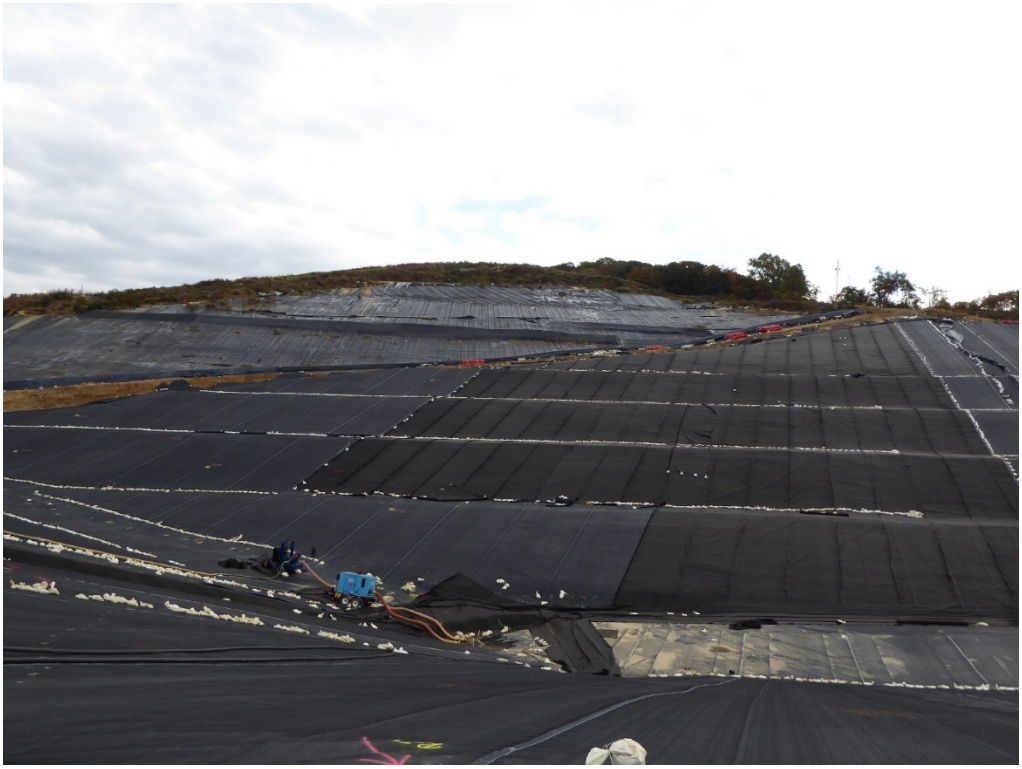

Home with vapor intrusion mitigation system on Chrin property

Monitoring well MW-3M

NPDES discharge point into unnamed tributary

View of landfill on southern access road, facing west

Forested northwestern section of inactive landfill



Construction area on former landfill liner and cover slide


Signs at landfill entrance