

**THIRD FIVE-YEAR REVIEW REPORT FOR
CONSOLIDATED IRON AND METAL SUPERFUND SITE
ORANGE COUNTY, NEW YORK**



Prepared by

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

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Date

Table of Contents

LIST OF ABBREVIATIONS & ACRONYMS	ii
I. INTRODUCTION	2
FIVE-YEAR REVIEW SUMMARY FORM	3
II. RESPONSE ACTION SUMMARY	3
Basis for Taking Action	3
Response Actions	4
Status of Implementation	6
Institutional Controls (ICs) Summary Table	7
Systems Operations/Operation & Maintenance	7
III. PROGRESS SINCE THE LAST REVIEW	8
IV. FIVE-YEAR REVIEW PROCESS	8
Community Notification, Involvement & Site Interviews	8
Data Review	9
Site Inspection	11
V. TECHNICAL ASSESSMENT	11
QUESTION A: Is the remedy functioning as intended by the decision documents?	11
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?	12
VI. ISSUES/RECOMMENDATIONS	13
VII. PROTECTIVENESS STATEMENT	14
VIII. NEXT REVIEW	14
APPENDIX A-REFERENCE LIST	15
APPENDIX B-TABLES	16
APPENDIX C-FIGURES	22
APPENDIX D-CLIMATE CHANGE EVALUATION	30

LIST OF ABBREVIATIONS & ACRONYMS

AWQS	Ambient Water Quality Standards
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
COCs	Chemicals of Concern
EPA	United States Environmental Protection Agency
FS	Feasibility Study
FYR	Five-Year Review
HHRA	Human Health Risk Assessment
ICs	Institutional Controls
MCLs	Maximum Contaminant Levels
MTBE	Methyl tert-butyl ether
MW	Monitoring Well
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
O&M	Operation and Maintenance
OU	Operable Unit
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyl
PFAS	Per- and Polyfluoroalkyl Substances
PPM	Parts Per Million
PRG	Preliminary Remediation Goal
PRPs	Potentially Responsible Parties
RAOs	Remedial Action Objectives
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
RSLs	Regional Screening Levels
SLERA	Screening Level Ecological Risk Assessment
SMP	Site Management Plan
SVOCs	Semivolatile Organic Compounds
TAL	Target Analyte List
VOCs	Volatile Organic Compounds
UU/UE	Unlimited Use and Unrestricted Exposure

I. INTRODUCTION

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

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

This is the third FYR for the Consolidated Iron and Metal Superfund Site (the site). The triggering action for this statutory review is the completion date of the previous FYR, February 21, 2019. The FYR has been prepared due to the fact that hazardous substances, pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE). The site consists of one operable unit (OU) which will be addressed in this FYR.

The Consolidated Iron and Metal Superfund site FYR was led by Sherrel Henry, EPA Remedial Project Manager (RPM). Participants included Pietro Mannino (EPA Western New York Remediation Section Chief), Michael Scorca (EPA Hydrogeologist), Julie McPherson (EPA Human Health and Ecological Risk Assessor), Shereen Kandil (EPA Community Involvement Coordinator (CIC)), and Emily Barry, New York State Department of Environmental Conservation (NYSDEC) project manager. The relevant entities, such as the potentially responsible parties (PRPs), were notified of the initiation of the FYR. The review began on 7/30/2023.

Site Background

The Consolidated Iron and Metal site was a former car and scrap metal junk yard located at the foot of Washington Street, in the City of Newburgh, Orange County, New York. The site, which covers approximately eight acres, is bounded by a boat marina to the north, Conrail railroad tracks and South Water Street to the west, an inactive municipal incinerator and an active wastewater treatment plant to the south, and the Hudson River to the east. Downtown Newburgh is located approximately 500 feet west of the site.

The site occupies a mixed industrial, commercial, and residential area of the City of Newburgh. From World War I until the early 1940s, the Eureka Shipyard operated at the site. Consolidated Iron and Metal Company began scrap metal processing and storage operations in the mid-1950s and continued at the site for approximately 40 years before the facility's closure in 1999. A smelter was operated on-site between approximately 1975 and 1995 and was used primarily to melt aluminum-containing materials to produce aluminum ingots. Other metallic materials also were smelted, creating a lead-contaminated ash and slag by-product. Other site operations included sorting ferrous and non-ferrous metal for processing,

including automobile batteries. Additionally, over the course of time, cars and other metal materials were burned, crushed, baled, sheared, and flattened.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Consolidated Iron and Metal		
EPA ID: NYD0002455756		
Region: 2	State: NY	City/County: Newburgh/Orange
SITE STATUS		
NPL Status: Deleted		
Multiple OUs? No	Has the site achieved construction completion? Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name (Federal or State Project Manager): Sherrel Henry		
Author affiliation: EPA		
Review period: 7/30/2023 - 12/4/2023		
Date of site inspection: 11/2/2023		
Type of review: Statutory		
Review number: 3		
Triggering action date: 2/21/2019		
Due date (five years after triggering action date): 2/21/2024		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

In June 2004, EPA conducted a remedial investigation (RI) sampling program which included the collection and analysis of soil, groundwater, sediment, and surface water samples at the site. The RI determined site soils to be impacted site-wide with metals contamination, particularly lead, and volatile organic compound (VOC) and polychlorinated biphenyl (PCB) contamination in the soils of the former process area of the site (i.e., the area of the site where the smelting, shearing, and compacting occurred). Indicator contaminants were selected from analytical data collected during the RI based on frequency of detection and magnitude of exceedance of screening criteria, a review of the contaminants of potential concern from the Human Health Risk

Assessment (HHRA), and historical activities to determine which contaminants were related to site operations. Indicator contaminants selected for the site include the polycyclic aromatic hydrocarbons (PAHs), benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, ideno(1,2,3-c,d)pyrene, dibenzo(a,h)anthracene, as well as aroclor-1254, arsenic, cadmium, copper, iron, lead, mercury, vanadium, and zinc. Additionally, VOCs are considered indicator contaminants for groundwater.

As part of its studies, EPA evaluated the fate and transport of indicator contaminants at the site. Inorganics, PCBs, and PAHs are relatively insoluble in water, and show high tendencies to adsorb to soil or organic matter in soil or sediment. Analytical results for the various media supported this fate and transport scenario since many of the contaminants detected in soils and sediment did not exceed screening criteria in surface water or groundwater. As stated, VOCs are considered indicator contaminants in groundwater. These chemicals were likely released at the ground surface within the former process area during site operation and subsequently migrated to groundwater. However, the application of soil cleanup objectives based on protection of groundwater for both VOCs and PCBs and the successive removal of contaminated soils from a depth ranging from six feet to the water table, as discussed under the Response Actions section below, has since eliminated this migration pathway.

A baseline HHRA and a Screening Level Ecological Risk Assessment (SLERA) were conducted by EPA to provide a quantitative assessment of the health risks to human receptors and a qualitative assessment of risk to ecological receptors under current and future land-use scenarios if no remedial action were taken at the site. Although the risk assessment evaluated all contaminants identified in the groundwater, soils, sediment, and surface water, the conclusions of the risk assessment indicated significant risks and hazards associated with PAHs, PCBs, and lead in the soil at the site, primarily from direct contact by potential future site workers, construction workers, and residents.

The SLERA conducted for the site indicated a potential for ecological risk from exposure to site soils. Because a potential risk was established in the SLERA, a more thorough assessment was conducted. Based on the more detailed evaluation, it was determined that exposure to contaminants in soil could have an adverse impact to human and ecological receptors through ingestion, inhalation or dermal contact. The ecological risk assessment also evaluated sediments in the Hudson River and determined that remediation of the sediments in the Hudson River adjacent to the site is not warranted.

Response Actions

Remedy Selection

A Feasibility Study (FS) was developed in 2005 to evaluate potential alternatives to address the widespread soil contamination at the site. A preferred alternative was presented to the public for review and comment in July 2006. A Record of Decision (ROD) was issued by EPA on October 4, 2006, documenting the selected remedial action for the site. The following remedial action objectives (RAOs) were established for each medium evaluated at the site:

Soils

The RAOs established for site soil are: (1) prevent or minimize exposure to human and ecological receptors through ingestion and inhalation of or dermal contact with contaminated soils; and (2) minimize or eliminate contaminant migration from site soils to groundwater and surface water.

Groundwater

Due to the limited risks and exposure to the groundwater at this site, institutional controls were deemed adequate to address any potential future exposure. Specifically, deed restrictions have been imposed to prevent the use of groundwater as a source of potable or process water unless groundwater quality standards are met. As a result, no RAO was established for groundwater.

Surface Water and Sediment

Results from the RI indicate that contamination at the site has not significantly impacted the surface water of the adjacent Hudson River and sediment above background levels. The HHRA and SLERA indicate that exposure to surface water and sediment does not contribute to elevated risk or hazard. As a result, no RAO was established for surface water.

The major components of the selected remedy include the following:

- A remedial design program to provide the details necessary for the construction and monitoring of the remedial program;
- removal and off-site disposal of surface debris and demolition, removal, and off-site disposal of the foundations/basements of the former process area buildings and of the former garage in its entirety;
- excavation and off-site disposal of contaminated soil exceeding the residential preliminary remediation goal (PRG) for lead (400 parts per million (ppm)) down to six feet below ground surface (bgs);
- excavation and off-site disposal of contaminated soil exceeding the PRG for VOCs and PCBs in subsurface soils (10 ppm total for each) to the water table;
- placement of a readily-visible demarcation material at the interface between the excavations and backfill;
- backfilling the excavated soil with clean fill, meeting the PRG values, to grade;
- imposition of institutional controls in the form of an environmental easement and/or restrictive covenant that will at a minimum require: (a) restricting any excavation below the soil cover's demarcation layer of six feet unless the excavation activities are in compliance with an EPA- approved site management plan (SMP); (b) restricting new construction at the site unless an evaluation of the potential for vapor intrusion is conducted and mitigation, if necessary, is performed in compliance with an EPA-approved SMP; and (c) restricting the use of groundwater as a source of potable or process water unless groundwater quality standards are met;
- development of a site management plan that provides for the proper management

of all site remedy components post-construction, such as institutional controls, and that shall also include: (a) monitoring of site groundwater to ensure that, following the soil excavation, the contamination is attenuating and groundwater quality continues to improve; (b) an inventory of any use restrictions on the site; (c) necessary provisions for ensuring the easement/covenant remains in place and is effective; (d) provision for any operation and maintenance required of the components of the remedy, and (e) the requirement that the owner or person implementing the remedy submit periodic certifications that the institutional and engineering controls are in place; and

- periodic reviews by EPA to ensure that the remedy continues to be protective of public health and the environment.

Status of Implementation

In early 2007, EPA provided notice to the PRPs identified for the site, offering them the opportunity to undertake the work. Negotiations concluded in 2008 with a Consent Decree cash out settlement entered by certain PRPs and EPA, with EPA performing the work with a combination of PRP and federal funding. The Consent Decree was entered by the Court in February 2009.

From September through November 2008, EPA conducted certain preparatory activities at the site to facilitate the remedial construction. These activities included the demolition and removal of the garage, the demolition and removal of the remaining building foundations, the removal of scrap metal and debris, and the dismantling and removal of a truck frame and metal barges from the shoreline of the site. The former building foundation areas were backfilled with clean material and the truck frame and barge areas of the site were replaced with boulders to restore the shoreline. The contaminated soil associated with the building foundation removal was sampled for disposal purposes and shipped to an appropriate facility in December 2008.

The remedial action commenced on July 6, 2009. The remedy was implemented by EPA in two phases. Phase One involved the excavation and off-site disposal of 60,000 tons of site soils across the southern half of the site to a depth of six feet and backfilling with clean fill. Phase One was completed in October 2009.

Phase Two involved the excavation and off-site disposal of approximately 30,000 tons of PCB and VOC impacted soils to the water table and the excavation and offsite disposal of remaining site soils, approximately 27,000 tons, covering the northern third of the site to a depth of six feet and backfilling with clean fill. Phase Two work was completed in August 2010.

Backfilling was performed concurrently with the excavation, maintaining an adequate buffer zone to avoid cross contamination. Backfill material was tested for suitability before placement, meeting the guidelines set by NYSDEC for restricted residential use and the screening values required by the ROD to be met for backfill. Prior to placement of the backfill, the base of the excavation was sampled on a 50-foot grid to characterize and document the soil contamination remaining on site; samples were analyzed for VOCs, semivolatile organic compounds (SVOCs),

PCBs, and metals. Geotextile fabric was then placed to demarcate the interface between potentially contaminated soil and clean backfill material. Following reaching final grade with backfill soil, the entire site was covered with a minimum of six inches of topsoil and hydroseeded to provide a vegetative cover to ensure dust and erosion control.

In addition to the work performed on the site, at the request of the New York State Department of Health (NYSDOH), EPA removed soils just beyond the north and south property boundaries to a depth of approximately two feet (where not hindered by utilities) and backfilled with clean fill. This was done to ensure that any contaminated soil that may have migrated beyond the site property was also mitigated.

EPA completed its Remedial Action Report (RAR) for the site on March 16, 2012. The RAR documented all the remedial activities conducted at the site and included as-built drawings to document site conditions at completion. The City of Newburgh, as current property owner, is responsible for management of the site in accordance with the SMP developed for post-remediation uses of the site. Site management responsibilities will be transferred to any future site owner.

Institutional Controls (ICs) Summary Table

Table 1: Summary of Planned and/or Implemented ICs

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater and Subsurface Soils	Yes	Yes	Entire site	Restrict installation of groundwater wells and groundwater use; employ site management plan for excavation below demarcation layer; employ site management plan to address potential soil vapor intrusion.	Environmental Protective Easement and Declaration of Restrictive Covenants, September 2012.

Systems Operations/Operation & Maintenance

The ROD called for the development of a SMP to provide for the proper management of all postconstruction remedy components. The SMP was completed in June 2014.

The SMP includes operation and maintenance (O&M) activities required for the site. Because there are no mechanical systems installed at the site, O&M activities consist of periodic inspections of the site property (minimally once per year and additionally following severe weather events) to note general site conditions and to ensure that the security fence and monitoring wells are in good repair. Groundwater sampling of the on-site monitoring wells is conducted in accordance with the schedule established in the SMP to verify that the low levels of

contamination in site groundwater are attenuating and that groundwater quality improves because of the site remediation.

In addition to media monitoring, O&M activities include periodic certification that the ICs established in the environmental easement attached to the site property are unchanged and that nothing has occurred that would impair the ability to protect public health and the environment or otherwise constitute a violation or failure to comply with site controls. This certification is provided in the Periodic Review Report, to be submitted annually by the site owner.

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 (see Appendix D).

III. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determinations and statements from the last FYR as well as the recommendations and other findings from the last FYR and the current status of those recommendations and other findings.

Table 2: Protectiveness Determinations/Statements from the 2018 FYR

OU #	Protectiveness Determination	Protectiveness Statement
1	Protective	The remedy is protective of human health and the environment.
Sitewide	Protective	The remedy is protective of human health and the environment.

There were no issues and recommendations identified in the last FYR.

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Involvement & Site Interviews

On August 7, 2023, EPA Region 2 posted a notice on its website indicating that it would be reviewing site cleanups and remedies at Superfund sites in New York, New Jersey, Puerto Rico, and the U.S. Virgin Islands, including the Consolidated Iron and Metal site. The announcement can be found at the following web address: <https://www.epa.gov/superfund/R2-fiveyearreviews>.

In addition to this notification, the EPA CIC (Shereen Kandil), posted a public notice on the EPA site webpage: <https://www.epa.gov/superfund/consolidated-iron> and provided the notice to the City of Newburgh by email on November 13, 2023 with a request that the notice be posted on the city's webpage. This notice indicated that a FYR would be conducted at the Consolidated Iron and Metal site to ensure that the cleanup at the site continues to be protective of people's health and the environment. Once the FYR is completed, the results will be made available at the following repository: Newburgh Free Library, 124 Grand Street, Newburgh, New York.

A copy of the final report will be provided to town officials and posted on the following EPA website: <https://www.epa.gov/superfund/consolidated-iron>. Efforts will be made to reach out to local public officials to inform them of the results.

Data Review

The detailed requirements for the management of the site are specified in the SMP and include the following:

- Periodic visual inspection of approved Engineering Controls and appropriate maintenance as warranted;
- Compliance with the approved Institutional Controls with appropriate notification and implementation of protective measures if site uses are altered;
- Periodic monitoring of environmental media to evaluate the continued effectiveness of the remedy; and,
- Periodic reporting.

Based on the currently approved schedule included in the SMP, each of the above tasks is completed once annually. This FYR covers the sampling period from 2018 through 2023.

Groundwater

Due to the limited risks and exposure to the groundwater at this site, institutional controls are deemed adequate to address any potential future exposure. Specifically, deed restrictions have been imposed to prevent the use of groundwater as a source of potable or process water unless groundwater quality standards are met. As discussed above, an environmental easement was filed in the County Clerk's office on September 11, 2012, which restricts the use of groundwater as a source of potable or process water unless groundwater quality standards are met. Long-term monitoring is conducted to ensure that the selected site remedy is protective of human health and the environment. The groundwater is monitored as part of the post-construction response action to ensure that the contamination is attenuating, and groundwater quality continues to improve.

Groundwater sampling events were conducted in October 2018, May 2020, March 2021, April 2021, October 2021, and April 2023. The monitoring well network consisted of monitoring wells (MW)-01 through MW-10 (refer to Appendix C, Figure 2). Based on the higher-than-normal results for SVOCs and lead in the March 2021 sampling event, monitoring wells MW-03, MW-07 and MW-08 were resampled for SVOCs and MW-03 and MW-08 were resampled for lead in the April 2021 sampling event.

Groundwater samples were collected from all ten monitoring wells in October 2018. Two wells, MW-05 and MW-10 were removed from the monitoring network in September 2019 because the concentrations of site-related chemicals of concern (COCs) at these wells had remained either undetected or below standards in the previous three sampling events.

Beginning in 2020, samples were collected from eight wells except for the April 2021 sampling event, discussed above. Groundwater samples were analyzed for VOCs, SVOCs,

PCBs, and inorganics (target analyte list (TAL) metals) until 2019, when analysis of PCBs was eliminated. Groundwater sampling results for the indicator contaminants reported in the ROD are provided in table format attached to this report (Appendix B). The main COCs identified in the ROD were VOCs and lead.

The highest levels of VOCs were detected in well MW-01, but VOCs are generally at very low concentrations or not detected in the remaining monitoring wells, suggesting a past spill in the area of MW-01. Benzene concentrations at well MW-01 (Appendix C, Figure 3) have decreased from 37 ug/L in 2015 to less than 2 ug/L in 2023. Ethylbenzene is another COC that is detected at well MW-01, where it has ranged from 55 ug/L in 2015 to 400 ug/L in 2018, before decreasing to 120 ug/L in 2023 (Appendix C, Figure 4). Low levels of a few other VOCs are also present at well MW-01. Toluene has ranged between 0.42 ug/L and 6.2 ug/L since 2015. Total xylenes have ranged from as high as 17 ug/L in 2017 to non-detect in 2023. Isopropylbenzene ranged between 5.8 and 110 ug/L during the last five years. During each of the sampling events, concentrations of benzene were detected in well MW-09 increasing slightly from 1.2 ug/L in 2015 to 4.7 ug/L in 2022 before decreasing to 2.0 ug/L in April 2023.

Concentrations of some SVOCs (specifically PAHs) at well MW-08, located near the shoreline, have consistently exceeded their applicable standards. The specific reason for the elevated PAH concentrations at MW-08 is not known, but this condition is likely not related to the functioning of the remedy. It should be noted that a decrease in SVOC concentrations was observed in several wells, including MW-08, from 2018 – 2023. There have been no changes in site activities or condition of the engineering controls.

Naphthalene, a gasoline-range SVOC, has also been detected above its criterion in well MW-01 (Appendix C, Figure 5). SVOCs are otherwise below standards in other wells across the site.

The inorganic elements iron, magnesium, manganese, and sodium exceeded the screening criteria in most wells. However, these metals occur in high concentrations naturally in New York State and the levels measured are comparable to levels measured in 2004. After the 2018 sampling event, sampling for Target Analyte List (TAL) metals was replaced with sampling for lead which is the only identified site-related COC reported in groundwater. In 2021, analysis of arsenic was resumed at MW-02 to track changes in concentration at this location.

Concentrations of lead consistently exceeded the screening criterion in groundwater samples from six wells at the site. The trends of lead concentrations have been somewhat variable in wells MW-03 (Appendix C, Figure 6) and MW-07 (Appendix C, Figure 7), but have shown general declines in MW-01 (Appendix C, Figure 8), MW-04 (Appendix C, Figure 9), and MW-06 (Appendix C, Figure 10). Well MW-08 (Appendix C, Figure 11) had one highly anomalous value (742 ug/L in 2021), but concentrations returned to historical levels (below 50 ug/L) in the three subsequent sampling rounds and therefore the unusually high value likely reflected a sampling or analytical issue.

In summary, data support the ROD assumption that the groundwater contamination is

localized and the decrease in frequency of detections of some contaminants indicates that limited residual groundwater contamination has mostly attenuated. Groundwater quality will continue to be monitored in accordance with the SMP.

Per- and Polyfluoroalkyl Substances (PFAS) and 1,4-Dioxane Groundwater Sampling

Groundwater sampling for 1,4-dioxane and PFAS was conducted in October 2018 at the request of NYSDEC to evaluate the presence/absence of 1,4-dioxane and PFAS at the site. To evaluate conditions, one upgradient monitoring well (MW-01) and two downgradient monitoring wells (MW-06 and MW-07) were selected.

1,4-dioxane was only detected in one monitoring well, MW-07, at a concentration of 3.3 ug/L. Total PFAS concentrations were reported at 211 nanograms/liter (ng/L) (MW-01), 222 ng/L (MW-07), and 740 ng/L (MW-06). Based on the exceedances present at the site, NYSDEC has requested that additional samples for 1,4-dioxane and PFAS be collected by the PRP's contractor to delineate the nature and extent of these contaminants at the site. It is expected that additional samples will be collected during the 2024 periodic monitoring sampling event.

Site Inspection

The inspection of the site was conducted on 11/02/2023. In attendance were Sherrel Henry, EPA RPM, Emily Barry, NYSDEC Project Manager, and Jason Morris, City Engineer for the City of Newburgh. The purpose of the inspection was to assess the protectiveness of the remedy. During the site inspection, there were no problems or deviations observed with respect to the ongoing operation and maintenance activities. Currently, the site is available for public use as a waterfront park and the walkway around the site perimeter is part of the City of Newburgh Hudson River Waterfront Trail.

V. TECHNICAL ASSESSMENT

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

The remedy is functioning as intended by the 2006 ROD. Soils exceeding cleanup levels selected in the ROD have been excavated and disposed of at an off-site location. A demarcation layer has been placed at the bottom of the excavation as required by the ROD and remedial design. Post-excavation samples confirm that the ROD cleanup levels have been met and document the levels of contamination remaining on-site.

An institutional control, in the form of an environmental easement, has been placed on the property which a) restricts any excavation below the soil cover's demarcation layer of approximately six feet unless the excavation activities are in compliance with an EPA-approved SMP; b) restricts new construction at the site unless an evaluation of the potential for vapor intrusion is conducted and mitigation, if necessary, is performed in accordance with an EPA-approved SMP; and c) restricts the use of groundwater as a source of potable or process water unless groundwater quality standards are met.

Groundwater samples collected after the excavation confirm the ROD assumption that the site-related groundwater contamination was localized, and that soil remediation activities and institutional controls would prevent unacceptable use and exposure to residual contamination. Groundwater samples taken in 2018, 2020, 2021, and 2023 show isolated exceedances of lead, benzene, ethylbenzene, toluene, xylenes and some SVOCs. Although trends of chemical concentrations have been somewhat variable, several wells have shown decreasing trends. It is expected that residual contamination in groundwater should continue to attenuate. Nevertheless, sampling in 2018 identified PFAS at the site. Although elevated concentrations were observed in an upgradient well, higher levels were identified in one of the on-site wells. NYSDEC has requested additional samples for PFAS to be collected to delineate these contaminants and to determine if their impacts are related to the site, which would have implications as to whether groundwater quality is improving because of the remediation implemented (i.e., soil excavation). In the meantime, however, the aforementioned ICs will successfully interrupt human exposure until the groundwater quality standards are met.

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?

There are no changes in the physical conditions of the site or site uses that would affect the protectiveness of the selected remedy. The exposure assumptions and the toxicity values that were used to estimate the potential risks and hazards to human health followed general risk assessment practice at the time the risk assessment was performed and are consistent with current practice.

Soils across the site were excavated to a depth of six feet or the water table if shallower than six feet. In the process area, excavation went to 10 feet. An additional excavation to two feet occurred to the north and south of the site until physical barriers, such as drainage pipes or paved roads, were encountered. The western boundary of the site is the Conrail railroad line. Therefore, there is no current exposure to contaminated soils at depth. Future exposure to subsurface site soils is prevented by implementation of the SMP required by the environmental easement. Since the direct exposure to contaminated soil has been interrupted, the remedy is protective. Although multiple COCs continue to exceed their respective screening criteria/standards in groundwater, an environmental easement is in place to prevent the use of groundwater for potable purposes. There are no residential or public supply wells in the contaminated area or downgradient. Therefore, the pathway is incomplete.

The only RAOs established for the site are for soil. These RAOs, as described in Section II, remain valid.

Soil Vapor Intrusion

The environmental easement in place also includes a prohibition on development on the site without a vapor intrusion investigation. Based on the most recent groundwater sampling event performed in 2023, benzene (2.0 ug/L) and ethylbenzene (120 ug/L) exceed the EPA vapor intrusion screening levels of 1.6 and 3.5 ug/L, respectively, in MW-01. However, there are no buildings currently located onsite and the easement will continue to prevent the vapor intrusion pathway from becoming complete if buildings are constructed at the site in the future.

Ecological Risk Assessment Evaluation

With respect to ecological risk, although the ecological risk assessment screening values used to support the 2006 ROD may not necessarily reflect the current values, the exposure assumptions remain appropriate and thus the remedy remains protective of ecological resources. The Hudson River is the immediately downgradient receptor receiving groundwater discharge from the site. There are no known or previously identified sensitive ecological resources downgradient of the site that could be impacted by the migration of the groundwater. As noted in the ROD, based on the conclusions of the Ecological Risk Assessment, remediation of the sediments in the Hudson River is not warranted. The terrestrial exposure pathway has been addressed by the removal of contaminated surface soil.

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

Issues/Recommendations	
OU(s) without Issues/Recommendations Identified in the Five-Year Review:	
None	

Issues and Recommendations Identified in the Five-Year Review:				
OU(s): OU1	Issue Category: Monitoring			
	Issue: Wells in the vicinity of the Consolidated Iron and Metal property are showing PFAS impacts, and it is unclear whether these impacts are from the site.			
	Recommendation: Collect data needed to delineate the nature and extent of PFAS contaminants at the site and determine whether the site is the source.			
Affect Current Protectiveness	Affect Future Protectiveness	Party Responsible	Oversight Party	Milestone Date
No	Yes	PRP	EPA	2024

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)	
<i>Operable Unit:</i> OU1	<i>Protectiveness Determination:</i> Short-term Protective
<i>Protectiveness Statement:</i> The remedy for the Consolidated Iron and Metal site is protective of human health and the environment in the short term since there are currently no exposures. To be protective in the long-term, additional data needs to be collected and evaluated to delineate the nature and extent of PFAS contaminants at the site and determine whether the site is the source.	

Sitewide Protectiveness Statement	
<i>Protectiveness Determination:</i> Short-term Protective	
<i>Protectiveness Statement:</i> The remedy for the Consolidated Iron and Metal site is protective of human health and the environment in the short term since there are currently no exposures. To be protective in the long-term, additional data needs to be collected and evaluated to delineate the nature and extent of PFAS contaminants at the site and determine whether the site is the source.	

VIII. NEXT REVIEW

The next FYR report for the Consolidated Iron and Metal Superfund site is required five years from the completion date of this review.

APPENDIX A-REFERENCE LIST

Table A: Documents, Data and Information Reviewed in Completing the Five-Year Review	
Document Title, Author	Date
Record of Decision, Consolidated Iron and Metal Site	October 2006
Preliminary Site Close Out Report	September 2010
Final Remedial Action Report	March 2012
Site Management Plan	June 2014
Periodic Review Report	December 2018
Periodic Review Report	June 2020
Periodic Review Report	May 2021
Periodic Review Report	December 2021
Periodic Review Report	June 2023

APPENDIX B-TABLES

Consolidated Iron and Metal Site, Newburgh, New York Summary of Groundwater Sample Analytical Results detected above AWQS and/or MCLs- October 2018

Chemical Name	Screening Criteria	MW- 1	MW- 2	MW- 3	MW- 4	MW- 5	MW- 6	MW- 7	MW- 8	MW- 9	MW- 10
VOCs											
Benzene	1	26	U	U	U	U	U	1.3	U	-	U
Ethylbenzene	5	400 D	U	U	U	U	U	-	U	U	U
isopropylbenzene	5	110						U			
m,p-Xylenes	5	9.2	U	U	U	U	U	U	U	U	U
MTBE	10	-	-	-	-	-	U	-	-	U	-
Napthalene	10	14	U	U	U	U	U	U	U	U	
Toluene	5	6.2	-	-	U	U	U	-	U	U	U
SVOCS											
Benzo(a)anthracene	0.002	U	-	0.0385	U	U	U	0.0615	0.0846	U	U
Benzo(a)pyrene	0.002	U	U	0.0385	0.0385	U	U	U	0.0769	U	U
Benzo(b)fluoranthene	0.002	U	U	0.0385	U	U	U	U	0.0692	U	U
Benzo(k)fluoranthene	0.002	U	-	0.0385	U	U	U	U	0.0692	U	U
Chrysene	0.002	U	-	0.0538	U	U	U	0.0538	0.0846	U	U
Napthalene	10	14	U	-	U	-	U	-	-	U	U
INORGANICS											
Antimony	3	U	U	U	U	U	-	U	U	U	U
Arsenic	10	U	86	-	10.7	-	-	-	-	U	15.3
Iron	300	6,460	52,100	6,740	9,930	10,400	2,160	7,420	4,160	1,230	19,300
Lead	15	2,380	U	23.8	53.3	-	99.6	-	32.1	U	U
Magnesium	35,000	-	48,800	-	46,900	41,800	35,300	-	41,800	46,900	-
Manganese	300	3,050D	2,890D	-	-	397	-	512	512	681	897
Sodium	20,000	364,000	89,000	35,700	68,800	73,300	23,400	55,300	73,300	68,800	106,000
Thallium	0.5	U	U	U	U	U	U	U	U	U	U
Zinc	2000	-	-	-	-	-	-	-	-	-	-

Notes:

All values are in micrograms per liter (ug/L)

Screening Criteria are most stringent of federal MCLs or state standards

U = non-detected value

NA= not Analyzed

D = result is from an analysis that required a dilution- = Parameters detected below AWSQ and/or MCLs

**Consolidated Iron and Metal Site, Newburgh, New York Summary of Groundwater Sample Analytical Results
detected above AWQS and/or MCLs- May 2020**

Chemical Name	Screening Criteria	MW- 1	MW- 2	MW- 3	MW- 4	MW- 6	MW- 7	MW- 8	MW- 9
VOCs									
Benzene	1	2.1	U	U	U	U	U	U	2.3
Ethylbenzene	5	23	U	U	U	-	U	U	U
isopropylbenzene	5	5.8	U	U	U	-	U	U	U
m,p-Xylenes	5	U	U	U	U	-	U	U	U
MTBE	10	-	-	-	-	-	-	U	U
Napthalene	10	-	U	U	U	U	U	U	U
Toluene	5	-	U	U	U	-	U	U	U
SVOCs									
Benzo(a)anthracene	0,002	U	U	U	U	U	U	U	U
Benzo(a)pyrene	0,002	U	U	U	U	U	U	U	U
Benzo(b)fluoranthene	0,002	U	U	U	U	U	U	U	U
Benzo(k)fluoranthene	0,002	U	U	U	U	U	U	U	U
Chrysene	0,002	U	U	U	U	U	U	U	U
Napthalene	10	U	U	U	U	U	U	U	U
INORGANICS									
Lead	15	U	U	-	-	-	-	54	-

Notes:

All values are in micrograms per liter (ug/L)

Screening Criteria are most stringent of federal MCLs or state standards

U = non-detected value

NA= Not Analyzed

D = result is from an analysis that required a dilution

- = Parameters detected below AWSQ and/or MCLs

**Consolidated Iron and Metal Site, Newburgh, New York Summary of Groundwater Sample Analytical Results detected above AWQS and/or MCLs-
March/April 2021**

Chemical Name	Screening Criteria	MW- 1	MW- 2	MW- 3 (3/21)	MW-3 (4/21)	MW- 4	MW - 6	MW- 7 (3/21)	MW- 7 (4/21)	MW- 8 (3/21)_	MW- 8 (4/21)_	MW- 9
VOCs												
Benzene	1	2.0	U	U	NA	U	U	U	NA	U	NA	-
Ethylbenzene	5	32	U	U	NA	U	U	U	NA	U	NA	U
isopropylbenzene	5	6.9	U	U	NA	U	U	U	NA	U	NA	
m,p-Xylenes	5	-	-	-	NA	-	U	-	NA	U	NA	U
MTBE	10	-	-	-	NA	-	U	-	NA	U	NA	U
Napthalene	10	11	U	U	NA	U	U	U	NA	U	NA	U
Toluene	5	-	U	U	NA	U	U	U	NA	U	NA	U
SVOCs												
Benzo(a)anthracene	0,002	U	U	0.0947	0.0973	U	U	0.562	U	0.205	0,537	U
Benzo(a)pyrene	0,002	U	U	0.0842	0.0973	U	U	0.573	U	0.184	0.505	U
Benzo(b)fluoranthene	0,002	U	U	0.0632	0.0757	U	U	0.454	U	0.195	0.411	U
Benzo(k)fluoranthene	0,002	U	U	0.0737	0.0757	U	U	0.454	U	0.195	0.432	U
Chrysene	0,002	U	U	0.0947	0.1080	U	U	0.628	U	0.205	0.547	U
Napthalene	10	-	U	U	U	U	U	-	U	U	U	U
INORGANICs												
Arsenic	10	NA	45.8	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	15	U	U	50.9	57.6/52.7 Dis	U	-	17.2		742	45.1/39.5 Dis	U

Notes:

All values are in micrograms per liter (ug/L)

Screening Criteria are most stringent of federal MCLs or state standards.

U = analyte not detected or above the level indicated

NA- Not Analyzed

D- result is from an analysis that required a dilution

Dis-Dissolved

-= Parameters detected below AWSQ and/or MCLs

**Consolidated Iron and Metal Site, Newburgh, New York Summary of Groundwater Sample Analytical Results
detected above AWQS and/or MCLs- October 2021**

Chemical Name	Screening Criteria	MW- 1	MW- 2	MW- 3	MW- 4	MW- 6	MW- 7	MW- 8	MW- 9
VOCs									
Benzene	1	14	U	U	U	U	U	U	4.7
Ethylbenzene	5	100	U	U	U	U	U	U	U
m,p-Xylenes	5	-	U	U	U	U	U	U	U
MTBE	10	-	-	-	-	U	-	-	U
Napthalene	10	37	U	U	U	U	-	U	U
Toluene	5	-	U	U	U	U	U	U	U
SVOCs									
Benzo(a)anthracene	0,002	U	U	0.0947	U	U	0.562	0.389	U
Benzo(a)pyrene	0,002	U	U	0.0842	U	U	0.573	0.400	U
Benzo(b)fluoranthene	0,002	U	U	0.0632	U	U	0.454	0.316	U
Benzo(k)fluoranthene	0,002	U	U	0.0737	U	U	0.454	0.347	U
Chrysene	0,002	U	U	0.0947	U	U	0.628	0.368	U
Napthalene	10	19.2-	U	U	U	U	U	-	U
INORGANICS									
Arsenic	10	NA	89.6	NA	NA	NA	NA	NA	NA
Lead	15	-	U	-	-	-	45.4	-	-

Notes:

All values are in micrograms per liter (ug/L)

Screening Criteria are most stringent of federal MCLs or state standards.

U = analyte not detected or above the level indicated

NA- Not Analyzed

D- result is from an analysis that required a dilution

Dis-Dissolved

-= Parameters detected below AWSQ and/or MCLs

**Consolidated Iron and Metal Site, Newburgh, New York Summary of Groundwater Sample Analytical Results
detected above AWQS and/or MCLs-April 2023**

Chemical Name	Screening Criteria	MW- 1	MW- 2	MW- 3	MW- 4	MW- 6	MW- 7	MW- 8	MW- 9
VOCs									
Benzene	1	U	U	U	U	U	U	U	2.0
Ethylbenzene	5	120	U	U	U	-	U	U	U
isopropylbenzene	5	38	U	U	U	U	U	U	U
m,p-Xylenes	5	U	U	U	U	U	U	U	U
MTBE	10	-	-	-	-	U	-	-	-
Napthalene	10	30	-	U	U	U	U	U	U
Toluene	5	-	U	U	U	U	U	U	U
SVOCs									
Benzo(a)anthracene	0,002	U	U	U	U	U	U	U	U
Benzo(a)pyrene	0,002	U	U	U	U	U	U	U	U
Benzo(b)fluoranthene	0,002	U	U	U	U	U	U	U	U
Benzo(k)fluoranthene	0,002	U	U	U	U	U	U	U	U
Chrysene	0,002	U	U	U	U	U	U	U	U
Napthalene	10	-	U	U	U	U	U	U	U
INORGANICS									
Arsenic	10	NA	16.7	NA	NA	NA	NA	NA	NA
Lead	15	U	U	-	-	-	-	26.5	U

Notes:

All values are in micrograms per liter (ug/L)

Screening Criteria are most stringent of federal MCLs or state standards.

U = non-detected value

NA = Not Analyzed

D = result is from an analysis that required a dilution.

- =Parameters detected below AWSQ and/or MCLs

APPENDIX C-FIGURES

FIGURE 1- SITE MAP

C:\VMS\GIS\ConsolidatedIron\GISProjectFile\ArcMap Projects\Figure_1_2_site_map.mxd



Figure 2-Monitoring Well Network



<p>THE CHAZEN COMPANIES Environmental Remediation Landscape Architecture</p>	<p>CHAZEN ENGINEERING, LAND SURVEYING & LANDSCAPE ARCHITECTURE CO., D.P.C.</p> <p>Dutchess County Office: 21 Fox Street Poughkeepsie, NY 12601 Phone: (845) 454-3680</p> <p>Capital District Office: 542 River Street Troy, NY 12180 Phone: (518) 273-0055</p> <p>North Country Office: 375 Bay Road Queensbury, NY 12904 Phone: (518) 812-0513</p>	<p>Former Consolidated Iron and Metal Site Groundwater Elevations November 2018</p> <p>Washington Street City of Newburgh, Orange County, New York</p> <p>Source: Orange County 2016 Parcel Data; NYS Department of Transportation 2006 Roads Dataset; NYS Office of Technology 2013 Orthophoto Data</p>	<p>Sheet: 017F</p> <p>Date: 11/28/2018</p> <p>Scale: 1 inch equals 100 feet</p> <p>Project: 41546.00</p> <p>Page: 5</p>
	<p><small>This map is a product of The Chazen Companies. It should be used for reference purposes only. Reasonable efforts have been made to ensure the accuracy of this map. The Chazen Companies expressly disclaims any responsibility or liability from the use of this map for any purpose other than for intended use.</small></p>		

source\Path: Z:\projects\41526-41546\41546.00 Newburgh Consolidated Iron site GIS\Map\41546-Orthophoto.mxd

Figure 3 – Benzene Concentration Trends in MW-01

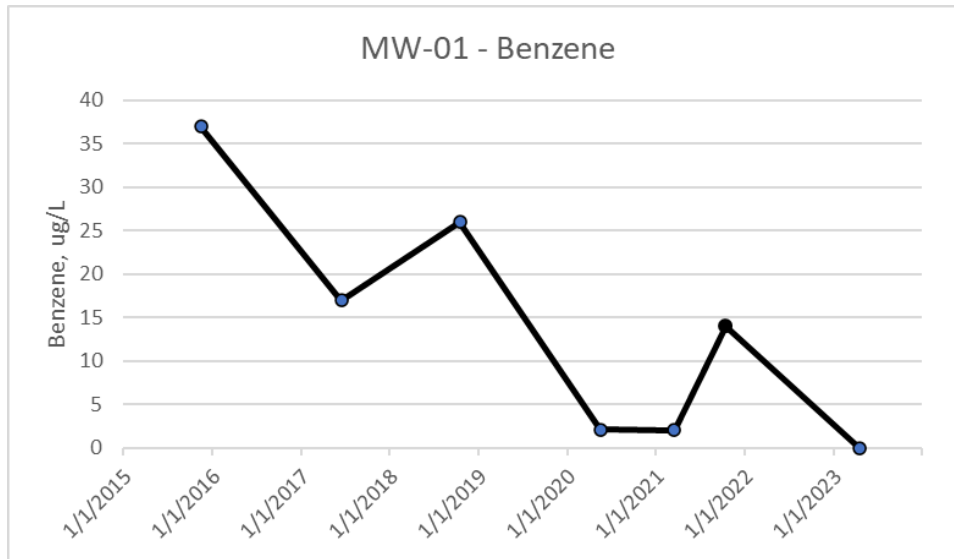


Figure 4 – Ethylbenzene Concentration Trends in MW-01

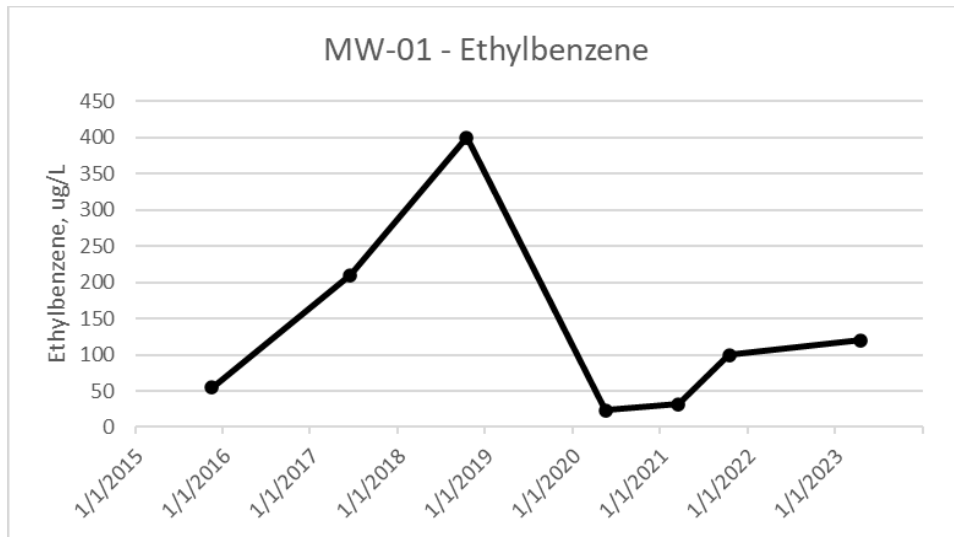


Figure 5-Naphthalene Concentration Trends in MW-01

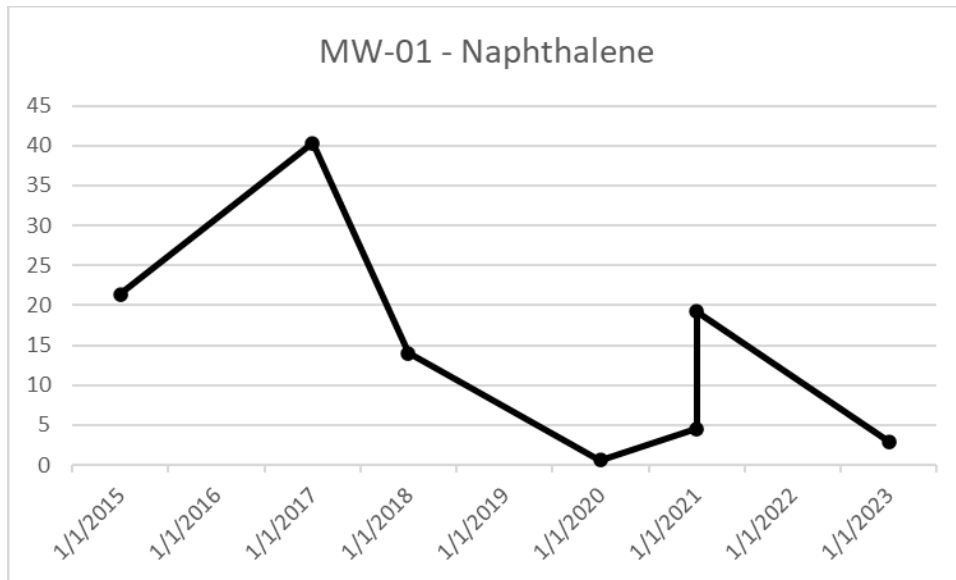


Figure 6– Lead Concentration Trends in MW-03

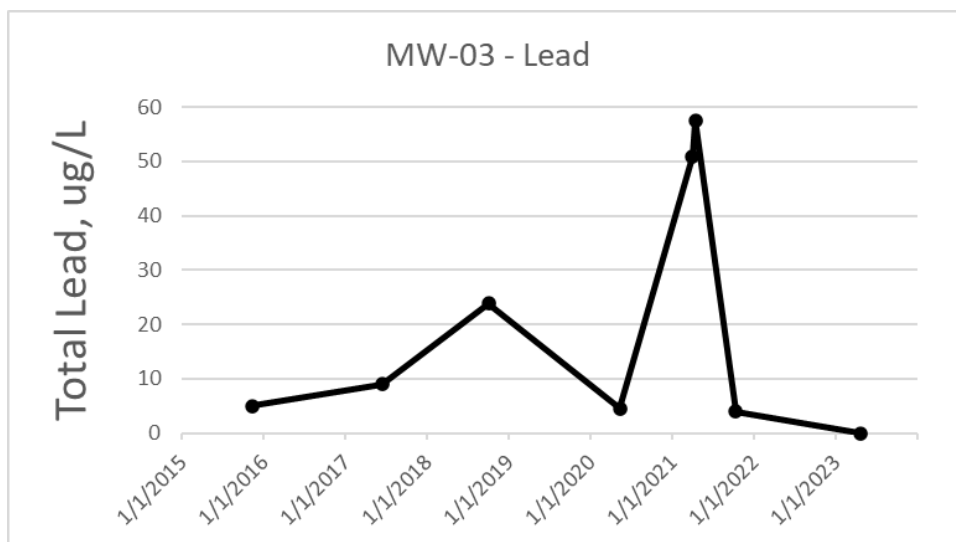


Figure 7 – Lead Concentration Trends in MW-07

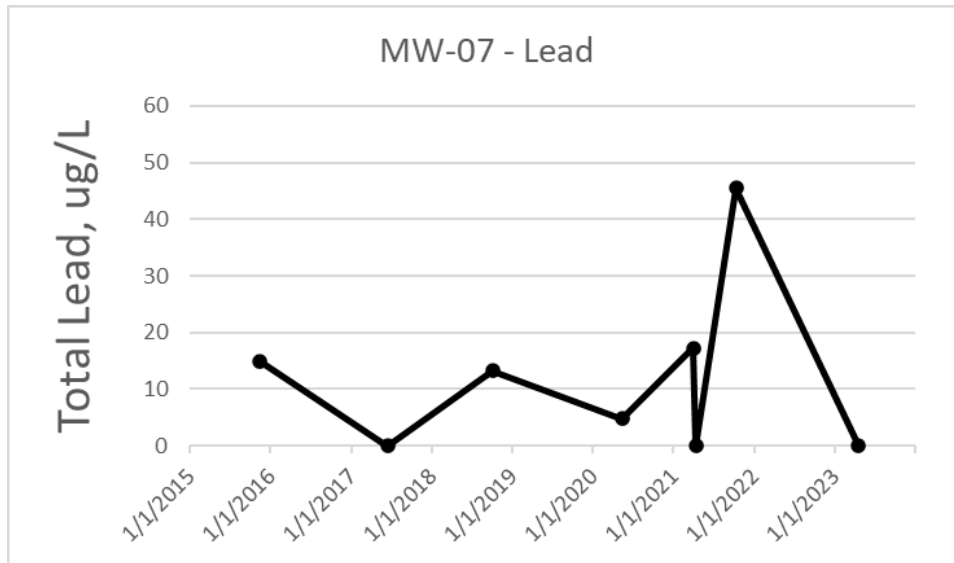


Figure 8– Lead Concentration Trends in MW-01

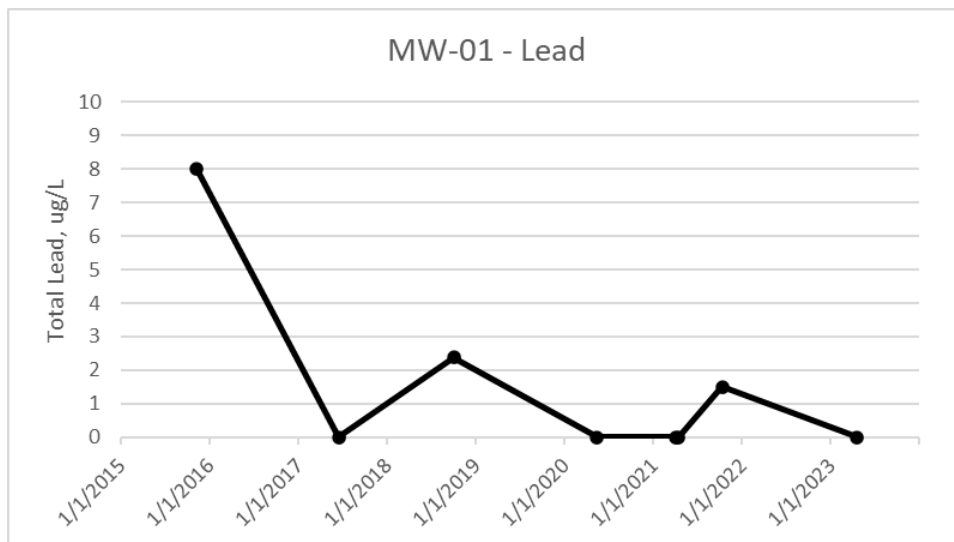


Figure 9 – Lead Concentration Trends in MW-04

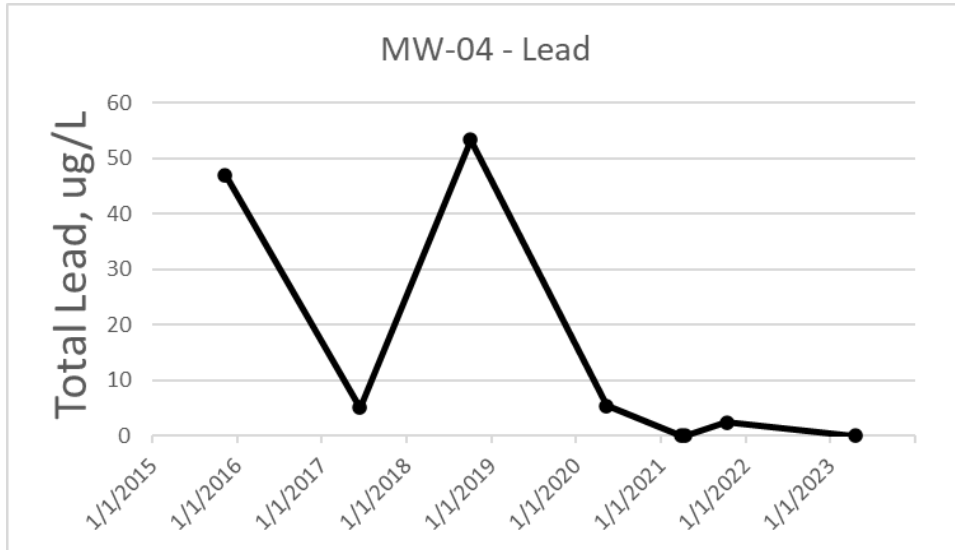


Figure 10 – Lead Concentration Trends in MW-06

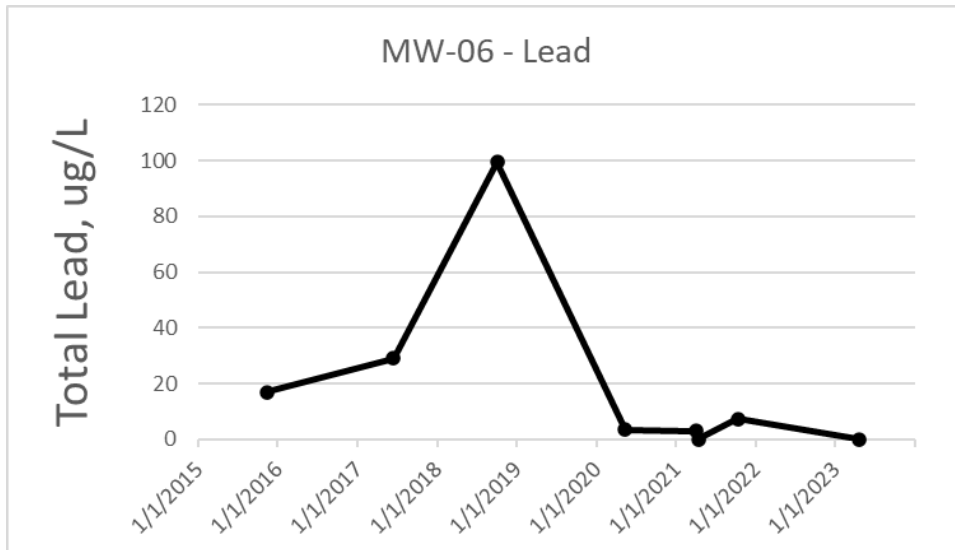
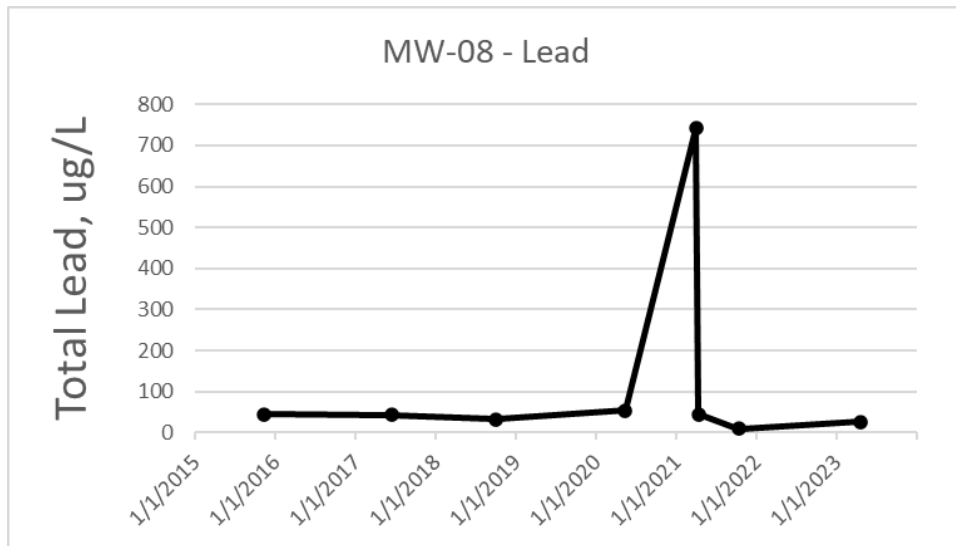


Figure 11 – Lead Concentration Trends in MW-08



APPENDIX D-CLIMATE CHANGE EVALUATION

According to the *Region 2 Guidance for Incorporating Climate Change Considerations in the Five Year Reviews*, three climate change tools were utilized to assess the Consolidated Iron and Metal Superfund Site in Newburgh, Orange County, New York (NY). Screenshots from each of the tools assessed are included below.

The first tool used to assess Newburgh; NY was *The Climate Explorer*. According to this tool, average daily temperatures are projected to increase. Appendix D, Figure 1 shows that the projected increases in seasonal patterns, increases in intense rainstorms, and increases of maximum temperature are noted as top climate concerns. There is a projected increase in the average temperature and number of days per year with maximum temperatures > 100 °F (Appendix D, Figures 2 and 3). Variations in the annual number of dry days and days with greater than 1 inch of rain are shown in Appendix D, Figures 4 and 5.

The second tool utilized is called the *Flood Factor*. According to this assessment tool, there are 415 properties in Newburgh, NY that have greater than a 26% chance of being severely affected by flooding over the next 30 years which gives Newburgh a flood risk rating of “Major” (Appendix D, Figure 6). The current and 30-year flood risks for Newburgh, NY are shown in Appendix D, Figures 7 and 8, respectively. The site is located along the Hudson River and may be subject to flooding.

The final tool utilized is called *Sea Level Rise*. Appendix D, Figure 9 shows the current mean higher high water (MHHW) elevation while Appendix D, Figures 10 and 11 show the impacts of sea level rise of 5 feet and 10 feet, respectively. This tool shows the site may be impacted by sea level rise.

Despite the changing climate trends, increases in flooding, and potential for sea level rise indicated above, there is no active remedy at this site. O&M consists of periodic site inspections and groundwater monitoring. Additional inspections of the site are performed after severe weather events as well and this will continue into the future. Therefore, 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.

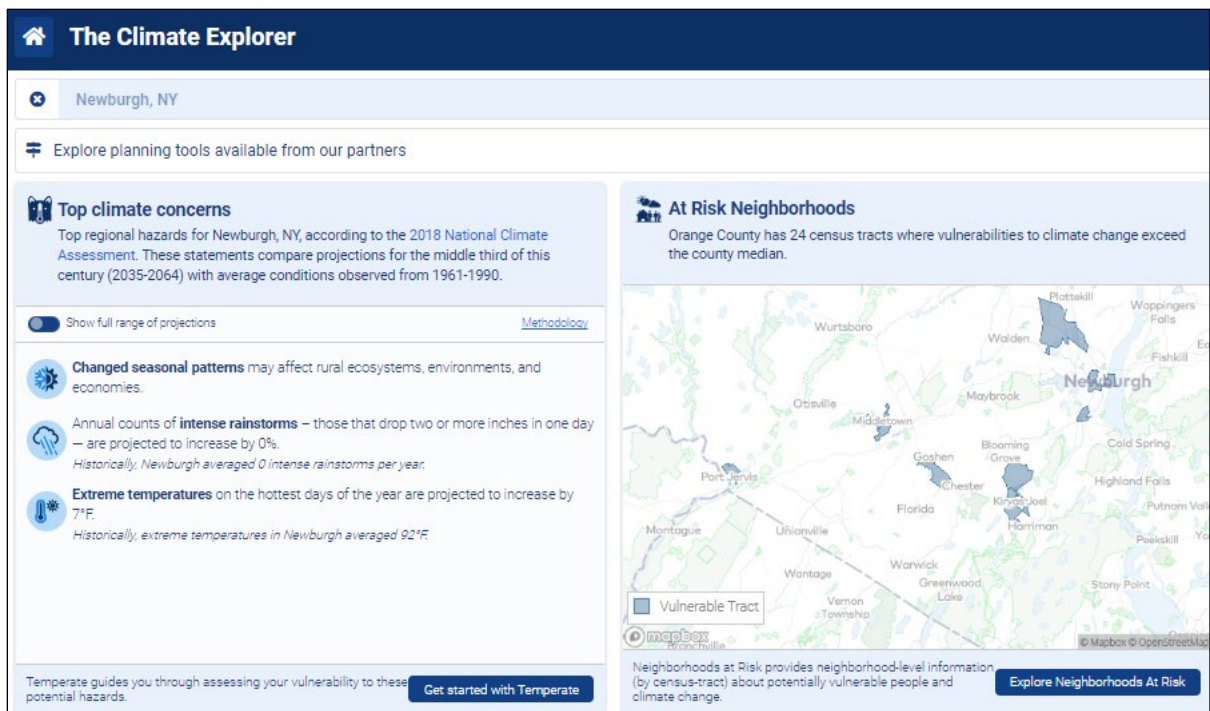


Figure 1: The Climate Explorer - Top Climate Concerns for Newburgh, NY

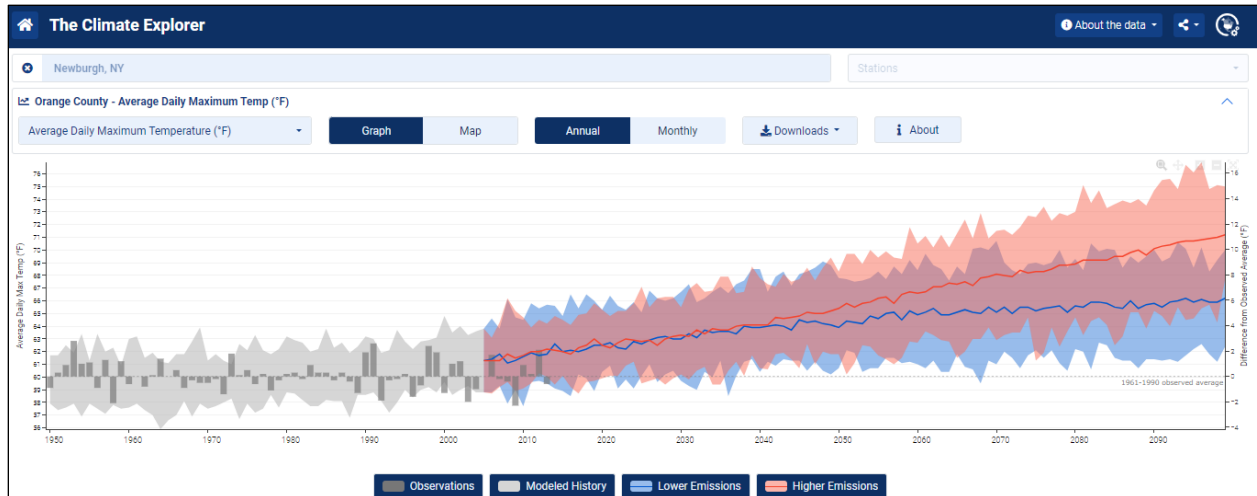


Figure 2: The Climate Explorer - Average Daily Maximum Temperature (°F) for Orange County, NY

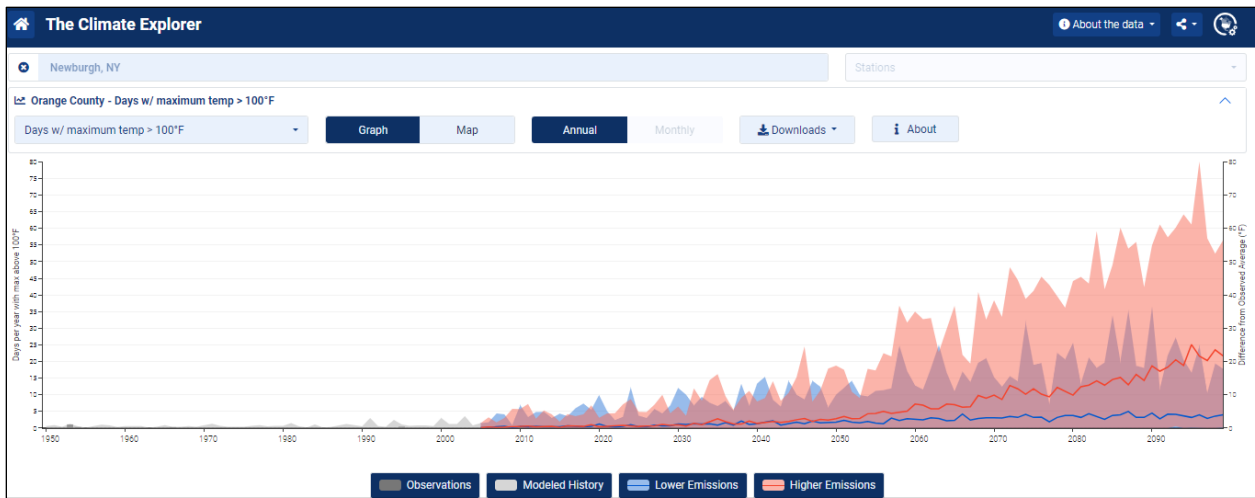


Figure 3: The Climate Explorer - Days W/ Maximum Temperature > 100 °F for Orange County, NY



Figure 4: The Climate Explorer - Dry Days for Orange County, NY



Figure 5: The Climate Explorer - Days w/ > 1" of Precipitation for Orange County, NY

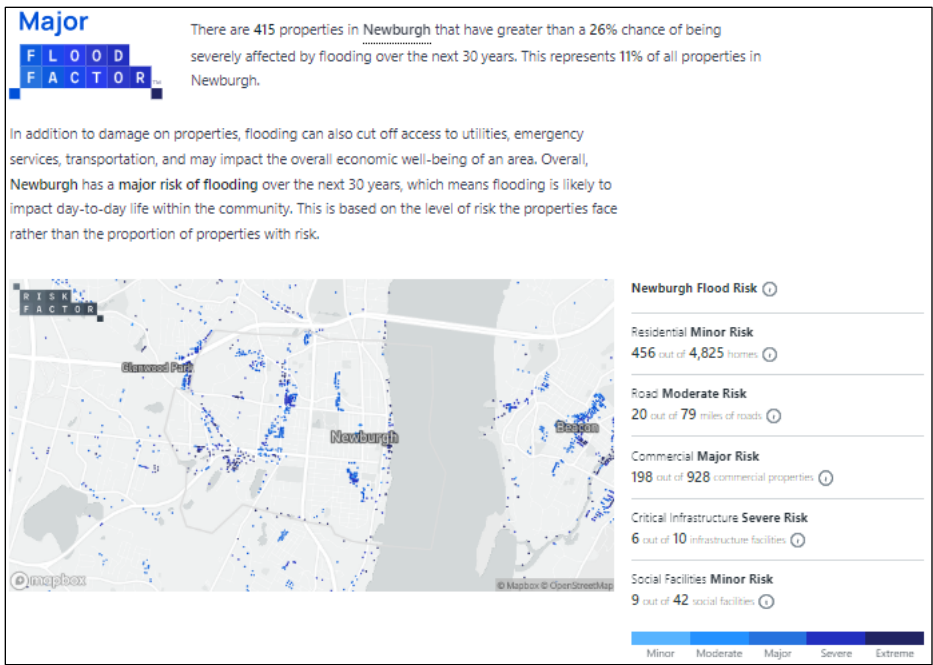


Figure 6: Flood Factor for Newburgh, NY

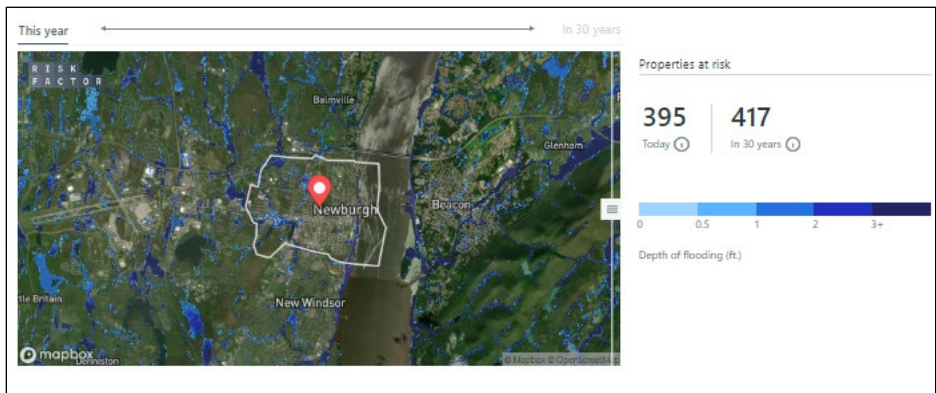


Figure 7: Flood Risk - Current

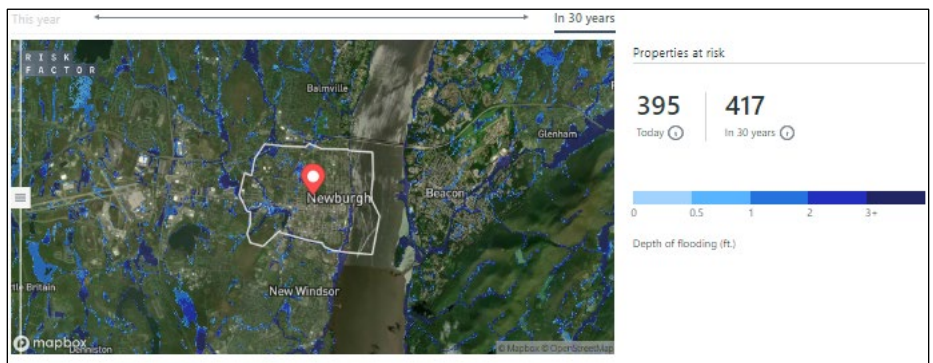


Figure 8: Flood Risk - In 30 Years



Figure 9: NOAA Sea Level Rise Viewer - Current Sea Levels



Figure 10: NOAA Sea Level Rise Viewer - 5ft Sea Level Rise

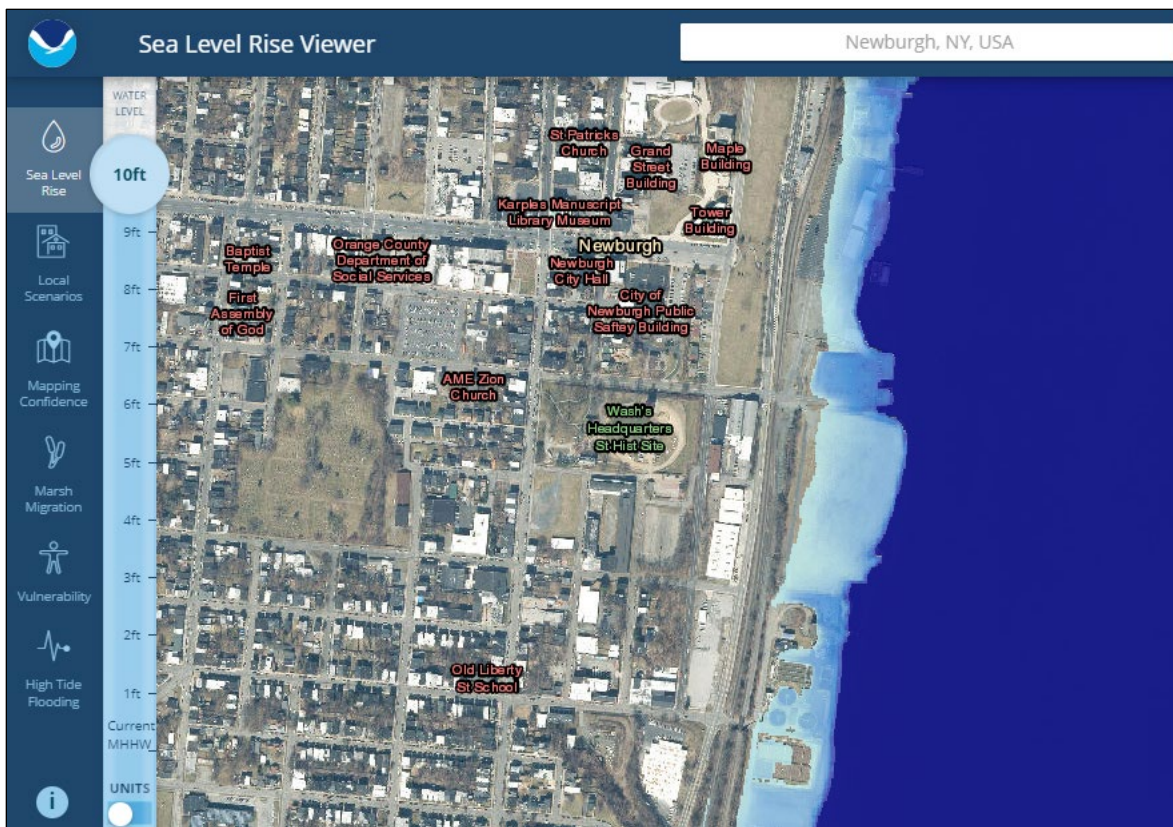


Figure 11: NOAA Sea Level Rise Viewer - 10ft Sea Level Rise