FOURTH FIVE-YEAR REVIEW REPORT FOR NASCOLITE CORPORATION SUPERFUND SITE CUMBERLAND COUNTY, NEW JERSEY

Prepared by

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

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Date

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Table of Contents

FIGURES

APPENDICES

LIST OF ABBREVIATIONS & ACRONYMS

BLLs	Blood Lead Levels
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COCs	Contaminants of Concern
DWS	Drinking Water Standards
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Differences
FYR	Five-Year Review
HQ	Hazard Quotient
ICs	Institutional Controls
MCL	Maximum Contaminant Limit
MMA	Polymethyl Methacrylate
MNA	Monitored Natural Attenuation
MTBE	Methyl Tert-Butyl Ether
MW	Monitoring Well
µg/L	micrograms/Liter
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NJDEP	New Jersey Department of Environmental Protection
NJGWQS	New Jersey Groundwater Quality Standards
ng/L	Nanograms/liter
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PPM	Parts Per Million
PRP	Potentially Responsible Party
RAO	Remedial Action Objective
RI / FS	Remedial Investigation / Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
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 CFR Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the fourth FYR for the Nascolite Corporation Superfund Site (Site). The triggering action for this statutory review is the completion date of the previous FYR report, on September 25, 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 two operable units (OUs), and both will be addressed in this FYR. OU 1 involved implementation of a remedy to address the contaminated groundwater at the Site. OU 2 involved implementing a remedy for other contaminated source areas, i.e., buildings, soil and debris at the Site.

The Nascolite Corporation Superfund Site FYR was led by Lawrence Granite, EPA's Remedial Project Manager (RPM) for the Site. Participants included Rachel Griffiths (hydrogeologist), Natalie Loney (community involvement coordinator), Abbey States (human health risk assessor), and Dr. Detbra Rosales (ecological risk assessor). The Potentially Responsible Party (PRP) Group was notified of the initiation of the FYR. The review began on January 12, 2023.

Site Background

The Site is located at the western end of Doris Avenue on the municipal boundary of the cities of Millville and Vineland, Cumberland County, New Jersey (see Figure 1). The Maurice River is located approximately one mile to the southwest of the Site. The river runs north to south, feeding and draining the man-made Union Lake approximately 1.5 miles west of the Nascolite property, located in Cumberland County. Wetlands are located in the southern portion of the Site.

The underlying geology at the Site consists of alternating layers of sand and silt of the Cohansey Formation. The permeable zones include the "Upper Zone" extending to a depth of approximately 25 feet, "Zone A" from approximately 38 to 65 feet deep, and "Zone B" from approximately 80 to 120 feet deep. These permeable zones are separated by finer-grained deposits of silt and clay that restrict, to a degree, the vertical movement of water. Lateral groundwater flow at the Site is from north/northeast to south/southwest in all three aquifer zones.

The Nascolite property covers an area of about 17.5 acres. Seven dilapidated structures that were formerly occupied by the Nascolite Corporation were demolished from 1999 to 2000 as part of EPA's remedial action at the Site. Access to the groundwater remediation system constructed at the Site is limited by a gated fence. The remediation system includes groundwater extraction wells, underground conveyance piping to a treatment plant building, tanks, and groundwater injection wells. In addition, an access road and groundwater monitoring wells are present. Conrail railroad tracks lie on the Site's western border. The area surrounding the Site is zoned for both residential and industrial use.

EPA issued an Administrative Determination in June 2011 which documented that certain parcels owned by the Nascolite Corporation were not considered by EPA to be part of the Site. These parcels, which largely consist of forested land, are hydraulically upgradient of the groundwater contamination. Subsequently, a Deed of Conservation Easement (conservation easement) was placed on these portions of the property, as well as a portion of the property that is considered to be part of the Site.

During its operation, the Nascolite Corporation was a manufacturer of polymethyl methacrylate (MMA) sheets, commonly known as acrylic or plexiglass and operated between 1953 and 1980. In its production of MMA, the Nascolite Corporation used both scrap acrylic and liquid MMA monomer. The scrap material was reclaimed through a depolymerization or "cracking" process, which included several distillation steps. Wastewaters from non-contact cooling water and other on-site sources were discharged to a ditch southwest of the plant along the Conrail railroad tracks. Waste residues from the distillation were found in several previously buried tanks in the north plant area during subsequent Site investigations. Perforations in one of the excavated tanks indicated the likelihood of liquid waste leaking into the soils.

NJDEP began investigating the Site in 1981. Analysis of groundwater samples collected in 1981 and 1983 showed significant concentrations of volatile organic compounds. During the 1983 effort, a strong "sweet" odor emanated from one groundwater monitoring well. In addition, the aqueous sample contained a red plastic material which hardened after being extracted from the well. A strong fuel-like odor was evident in other groundwater monitoring wells. NJDEP had identified more than one hundred 55-gallon drums and several buried tanks on the Site.

The Site was proposed to, and finalized on, the National Priorities List (NPL) on September 8, 1983, and September 21, 1984, respectively.

For more details related to the Site background, physical characteristics, geology/hydrogeology, and land/resource use please see documents in the Site repositories or at: https://epa.gov/superfund/Nascolite (see section on webpage titled Site Documents and Data). Document references used to complete this FYR are included in Appendix A. Additional information pertaining to Site events is included in Appendix B.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: NASCOLITE CORPORATION		
EPA ID: NJD002362705		
Region: 2	**State:** NJ	**City/County:** Cities of Millville and Vineland/Cumberland
SITE STATUS		
NPL Status: Final		
Multiple OUs? Yes	**Has the site achieved construction completion?** Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name (Federal or State Project Manager): Lawrence A. Granite, CHMM		
Author affiliation: EPA		
Review period: 1/12/2023 - 11/30/2023		
Date of site inspection: 5/17/2023		
Type of review: Statutory		
Review number: 4		
Triggering action date: 9/25/2019		
Due date *(five years after triggering action date)*: 9/25/2024		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

Following the listing of the Site on the NPL, EPA began a remedial investigation/feasibility study (RI/FS) to determine the nature and extent of contamination at the Site and to develop and evaluate remedial alternatives. The RI/FS concluded that the groundwater underlying the Site was contaminated, particularly with MMA, benzene, toluene, ethylbenzene and trichloroethene, and there was a potential for the contamination to migrate to downgradient potable wells. In addition, hazardous substances were found in the surface soils, which provided an exposure pathway through dermal contact and incidental ingestion. The primary contaminant of concern in soils was lead. Due to the high concentrations of metals in soils, it was determined that surface soils may pose a risk to burrowing animals.

Response Actions

EPA performed a removal action at the Site from November 1987 to March 1988. It included removal of drums and storage tanks containing waste material at the Site. EPA's removal action also included soil excavation. Twenty cubic yards (yd^3) of MMA-contaminated soil were excavated and 30 yd^3 of asbestos insulation were removed from abandoned buildings at the Site. The wastes were transported off site for disposal at EPA-approved facilities. Fencing was installed at the Site and a plastic tarpaulin was placed over soils contaminated with inorganic compounds.

OU 1 Remedy Selection

At the conclusion of the initial RI/FS, both the NJDEP and EPA determined that a remedy could be selected for the contaminated groundwater at the Site, but that additional data were necessary to assess contaminated source areas. Therefore, the Site was divided into two OUs: OU 1 addressed the contaminated groundwater, and OU 2 addressed other contaminated source areas, such as buildings, soil and debris.

On March 31, 1988, EPA issued a Record of Decision (ROD) for OU 1. The ROD required the following actions:

- provision for an alternate water supply for potentially affected residents; and
- groundwater extraction with on-site treatment and reinjection.

The Remedial Action Objective (RAO) was to control the waste disposal areas and to manage contamination migration.

OU 2 Remedy Selection

A supplemental RI/FS was initiated by EPA in March 1988 to identify remedial alternatives for Site soils and structures. On-site structures were in a dilapidated condition and portions of them were contaminated with asbestos and asbestos-contaminated materials, which were in a friable state. On June 28, 1991, EPA issued a ROD for OU 2. The major components of the selected remedy for OU 2 were:

- structure demolition including asbestos abatement with appropriate disposal;
- excavation and solidification/stabilization of unsaturated and wetlands soils contaminated above cleanup standards;
- replacement of solidified soils on the Site;
- restoration of affected wetlands; and
- appropriate environmental monitoring to ensure the effectiveness of the remedy.

The RAOs were focused on controlling migration of lead-contaminated soil, reducing exposure to surficial soils contaminated with lead, and protecting the sensitive environment of the wetlands.

The 1991 ROD called for excavation and solidification/stabilization of unsaturated and wetlands soils contaminated above cleanup standards, with replacement of solidified soils on the Site. The ROD anticipated that the majority of Site soils would meet regulatory levels after treatment. However, the ROD also anticipated that there would be a volume of wetlands soils that would not be amenable to solidification/stabilization. The ROD stated that this volume would be determined during field activities and that it would be transported for appropriate off-site treatment and disposal. The ROD further stated that localized areas of soil contaminated with organic compounds may be excavated and disposed of off-site at an appropriate facility if they were determined to interfere with or be unaffected by the solidification/stabilization process. The ROD indicated that, for cost estimation purposes, 10 percent of the contaminated soils would not be amenable to solidification/stabilization treatment and would have to be disposed of off-site.

The 1991 ROD also stated that approximately 8,000 yd^3 of soil exceeded the remediation goal for lead of 500 parts per million (ppm). However, sampling performed in November and December 2000 and in July 2002 indicated that the volume of contaminated soil (lead and other Site COCs) at the Site was approximately 21,000 yd^3 and that it was somewhat more widely distributed than originally anticipated. In addition, the sampling indicated that soils were more significantly contaminated with MMA than previously believed. EPA determined that it would be more economical to treat contaminated soils off site in lieu of incurring costs associated with mobilizing and demobilizing a solidification/stabilization unit at the Site. With no solidified material remaining on the Site, operation and maintenance (O&M) costs also would not be required and there was no expected need for institutional controls. For these reasons, EPA issued an Explanation of Significant Differences (ESD) in September 2004 to explain a change to the remedy selected in the 1991 ROD. This change was related to that portion of the remedy which addressed the treatment of soil and was the result of information obtained subsequent to the 1991 ROD. The other components of the remedy selected in the 1991 ROD did not change. The major components of the ESD for OU 2 were:

- excavation and solidification/stabilization of unsaturated and wetlands soils contaminated above cleanup standards was changed to excavation of contaminated soils with off-site treatment and/or disposal; and
- the cleanup goal for lead in soils was changed from 500 ppm to 400 ppm.

Status of Implementation

OU 1

An alternate water supply, which provides potable water to six residences on Doris Avenue, as per the OU 1 ROD, was constructed in 1989 by two PRPs under an Administrative Order on Consent with EPA.

The design of the groundwater remediation system was initially undertaken and funded by EPA. The design was subsequently completed by the PRPs (the Nascolite PRP Group) under a Unilateral Administrative Order, with EPA oversight. The design of the groundwater remediation system was completed in June 1995. The PRPs began construction of the groundwater remediation system in

September 1995 and completed the construction in August 1996. The system included extraction with on-site treatment and reinjection of the treated effluent. The on-site treatment included equalization, filtration, chemical precipitation and air stripping. Operation of the groundwater remediation system was performed by the PRPs. Approximately 966 million gallons of groundwater were treated at the Site from 1996 through 2016. The treated groundwater was reinjected back into the aquifer. Operation of the groundwater extraction and treatment system was suspended in September 2016 to allow the Nascolite PRP Group to perform a Monitored Natural Attenuation (MNA) evaluation. A total of eight rounds of quarterly groundwater sampling were conducted by the Nascolite PRP Group between 2017 and 2018 to help determine if MNA could be an appropriate remedy for the remaining contamination in OU 1. Although the results of the MNA evaluation found that the aquifer is capable of attenuating the remaining COCs (benzene and ethylbenzene), the investigation also indicated other off-site sources were likely contributing to the observed residual concentrations of these contaminants, in addition to vinyl chloride. The PRPs submitted a technical report to EPA and NJDEP on October 20, 2023 to summarize groundwater monitoring results and evaluate whether all of the remaining benzene and ethylbenzene could be attributed to off-site groundwater contaminant sources. The report is under review. The PRP Group also continues to monitor the groundwater.

OU 2

Under an Interagency Agreement (IA) with the U.S. Army Corps of Engineers (USACE), starting in November 1999, seven dilapidated structures were demolished (Phase I of the OU 2 remedial action). This generated approximately 1,256 tons of material which were transported off site for disposal at approved facilities. The work also included asbestos abatement. A final inspection held in May 2000 determined that the work related to the structures had been successfully completed.

In the second phase of the OU 2 remedial action, contaminated soil was excavated and sent off site for treatment and/or disposal. Construction activities began in December 2002 and were completed in September 2003. Additional quantities of contaminated soil containing lead and other Site COCs were discovered during construction. A total of approximately 42,000 yd^3 of contaminated soil were excavated and transported off site for treatment and/or disposal at approved facilities. The change from the OU 2 ROD's estimate of the volume of lead-contaminated soil that exceeded the remediation goal (approximately 8,000 yd^3) to the actual volume of contaminated soil that was excavated and transported off site for treatment and/or disposal (approximately 42,000 yd^3 up from remedial design estimate of 21,000 yd^3) could be attributed to the change in the cleanup standard for lead from 500 ppm to 400 ppm; the post-ROD supplementary soil sampling performed prior to initiation of the soil cleanup; and rigorous confirmation sampling performed during the remedial action to assure the quality of the cleanup. Site restoration activities were completed in 2003.

In certain areas, excavation could not be performed without compromising the structural integrity of the Conrail railroad tracks. The limits of excavation in these areas were coordinated with Conrail as noted in the 2004 ESD. Contamination levels left do not pose an unacceptable risk under current exposure scenarios. However, the 2004 ESD noted that NJDEP requested the filing of a deed notice to alert future

developers of the presence of contaminated material on a small portion of the adjacent Conrail property. The deed notice was recorded in May 2021.

Institutional Controls

Table 1: Summary of 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 Document	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date
Groundwater	Yes	No	NJDEP Program Interest Number: PI# G000001919	Restrict installation of groundwater wells and groundwater use	Classification Exception Area Established by NJDEP on December 14, 2007
Soils	Yes	Yes	Portion of Block 700 Lot 1	Provide notice of contamination in a Restricted Area which is owned by the Consolidated Rail Corp.	Deed Notice Recorded May 7, 2021

Systems Operations/Operation & Maintenance

There is no operation, maintenance or monitoring associated with the soil remedy (OU 2), as contaminated soil was excavated and disposed of off-site.

For OU 1, the groundwater cleanup activities were conducted by the Nascolite PRP Group pursuant to a Consent Decree entered on April 21, 1997. The groundwater remedy included extraction of the contaminant plume, treatment of contaminated groundwater on site, and reinjection of the treated effluent back into the aquifer. On-site treatment of groundwater included equalization, filtration, chemical precipitation, and air stripping. Extracted groundwater was treated to meet federal and state discharge levels. Cleanup activities included monitoring of the groundwater extraction wells which are addressed in an approved O&M Manual.

Operation of the groundwater extraction and treatment system occurred from August 1996 to September 2016, when it was suspended to allow the Nascolite PRP Group to perform an MNA Evaluation. However, the plant remains functional should it need to be restarted.

Prior to the suspension of operation of the groundwater remediation system in 2016, the system was fully automated. During this time, the PRP Group staffed monitoring of the groundwater treatment plant at the Site five days per week and monitored the treatment plant every evening, and twice per day on weekends and holidays, via a remote system to verify optimum operation. After the suspension of the groundwater remediation system, Site visits have been conducted by a PRP Group contractor. The Site

visits are conducted approximately three times per year to ensure Site security and inspect the overall Site conditions. To date the Site is being properly maintained.

Climate Change

Potential Site impacts from climate change were assessed. 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. Additional information related to the climate change assessment is included in 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 from the last FYR and the current status of those recommendations.

Table: Protectiveness Determinations/Statements from the 2019 FYR

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

OU #	Protectiveness Determination	Protectiveness Statement
2	Short-term Protective	The soil remedy at OU 2 protects human health and the environment in the short-term. In order for the remedy to be protective in the long-term, a deed notice for the contamination on the Conrail property needs to be filed.

OU #	Protectiveness Determination	Protectiveness Statement
Sitewide	Short-term Protective	The remedies at the site protect human health and the environment in the short-term. In order for the soil remedy to be protective in the long-term, a deed notice for the contamination on the Conrail property needs to be filed.

Table 2: Status of Recommendation from the 2019 FYR

OU #	Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date (if applicable)
2	An IC has not been implemented for the Conrail property	IC needs to be implemented	Completed	A deed notice was recorded	May 7, 2021

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, and Puerto Rico, including the Nascolite Corporation 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 Community Involvement Coordinator (CIC) for the Site, Natalie Loney, provided a notice to the cities of Millville and Vineland by email on October 10, 2023 and November 1, 2023, respectively, with a request that the notice be posted to their webpages. This notice indicated that a FYR would be conducted at the Nascolite Corporation site to ensure that the cleanup at the Site continues to be protective of human health and the environment. Once the FYR is completed, the results will be made available at EPA Region 2 (290 Broadway, 18th floor, New York, New York 10007) and at the Millville Public Library (210 Buck Street, Millville, New Jersey 08332). In addition, the final report will be posted on the following website: www.epa.gov/superfund/nascolite. Efforts will be made to reach out to local public officials to inform them of the results.

Data Review

The groundwater monitoring program at the Site currently includes annual sampling of ten monitoring wells screened in the Upper Zone, Zone A, and Zone B (Figure 2). Throughout the review period, EPA has approved reductions to the monitoring network, including reductions of both the number of monitoring wells and frequency of sampling, as concentrations have continued to decline. Groundwater has been sampled nine times during this five-year review period between March 2019 and July 2023, and the earlier monitoring events included up to 25 monitoring wells. This review includes monitoring well data through August 2022. The July 2023 data were included in the technical report submitted by the PRP in October 2023, and are still under review. Operation of the groundwater extraction and treatment system has been suspended since 2016.

During the review period, benzene, ethylbenzene, and vinyl chloride have been detected most frequently in groundwater above their respective New Jersey Groundwater Quality Standards (GWQS) of 1 microgram per liter (µg/L), 700 µg/L, and 1 µg/L. Benzene and ethylbenzene are considered to be site-related contaminants; however, vinyl chloride is unrelated to past Site activities. Overall, contaminant concentrations and plume extent have significantly decreased since the groundwater extraction and treatment system became operational in 1996 (Figures 3-5). Benzene is the most prevalent contaminant in groundwater and was detected at a maximum concentration of 240 µg/L at MW-7D in December 2021. During the sampling event in August 2022, ethylbenzene exceeded its GWQS at one location (MW-7D; 1,800 µg/L). Vinyl chloride, though not a site-related contaminant, has also been detected throughout the review period with a maximum concentration of 19 µg/L at MW-11D in August 2022.

The observed contamination tends to be transient and exhibits fluctuating concentration trends (Appendix C).

The on-site data trends coupled with documented off-site contaminant sources suggest that off-site sources are contributing to the current observed groundwater contamination, including benzene, ethylbenzene, and vinyl chloride. The presence of methyl tert-butyl ether (MTBE) in the groundwater at the Site is also indicative of off-site contamination sources since the chemical came into use after operations at the Nascolite property ceased. Confirmatory sampling for contaminants, including MTBE, occurred on July 11, 2023 at the Site and the data will be used to evaluate the contribution from off-site contaminant sources. If MTBE is found to be co-located with other contaminants, it would indicate the impact of off-site groundwater contaminant sources. Final determinations related to the contribution of off-site groundwater contaminant sources may be made after EPA's review of the October 2023 report, submitted by the PRP group, is completed.

Emerging Contaminants Sampling

In 2021, groundwater at Nascolite was sampled and analyzed for emerging contaminants, including 1,4-dioxane, perchlorate, 1,2,3-trichloropropane, and per- and polyfluoroalkyl substances (PFAS). All Site monitoring wells were sampled for 1,4-dioxane in May and December 2021. In both sampling events, concentrations of 1,4-dioxane above its NJGWQS of 0.4 µg/L were limited to three Zone B wells (MW-21D, MW-35, and MW-36D). During both sampling events, 1,4-dioxane was co-located with transitory contaminants that are suspected to originate from off-site contaminant sources. The maximum 1,4-dioxane concentration was observed at MW-36D in December 2021 (5.69 µg/L). The data suggest that 1,4-dioxane is not site-related.

Six groundwater monitoring wells were sampled for perchlorate, 1,2,3-trichloropropane, and PFAS in May 2021. Perchlorate and 1,2,3-trichloropropane were not detected. Concentrations of perfluorooctanesulfonic acid (PFOS) were detected above its NJDEP GWQS of 13 nanograms per liter (ng/L) in two monitoring wells with a maximum concentration of 44.6 ng/L at MW-12S. Similarly, perfluorooctanoic acid (PFOA) exceeded its GWQS of 14 ng/L in five monitoring wells, with a maximum concentration of 22.8 ng/L at MW-12S. Detections of perfluorononanoic acid (PFNA) did not exceed its NJDEP GWQS of 13 ng/L. The highest PFAS concentrations were observed in upgradient monitoring well MW-12S which is indicative of a regional or upgradient source of PFAS (Figure 2). No further groundwater sampling for PFAS is necessary at this time.

Site Inspection

A Site inspection was conducted on May 17, 2023 by Lawrence Granite of EPA, David Mack of Solvay USA Inc., Bill Soukup of Cornerstone Engineering, Geology, and Land Surveying, PLLC, Nicole Bonsteel of WSP USA, and John Heller of WSP USA. All participants of the Site inspection, with the exception of Mr. Granite, participated on behalf of the PRP group. The inspection was completed to assess the protectiveness of the remedy. During the inspection, no issues were identified that impact

current or future protectiveness of the remedy. The Site fencing, which includes barbed wire, was in good condition and prevents unauthorized access. The Conrail railroad tracks at the eastern extent of the Site continue to be active. The topography of the Site is relatively flat and the vegetation consists primarily of grasses. Site surface drainage generally follows the Site topography and drains to the southwest. The only surface drainage feature in the immediate area is a drainage ditch on the eastern extent of the Site that runs parallel to the railroad tracks. There are wetlands located in the southwestern portion of the Site. The inspection indicated that current conditions of the Site remain protective of human health and the environment.

V. TECHNICAL ASSESSMENT

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

The OU 2 remedy is functioning as intended by the OU 2 ROD and the OU 2 ESD. The OU 1 groundwater extraction and treatment remedy, as memorialized in the OU 1 ROD, was suspended in 2016 to evaluate MNA and has remained non-operational.

The OU 1 remedy consisted of an on-site groundwater extraction and treatment system which commenced operation in 1996. The original groundwater extraction system consisted of a well-point system in the Upper Zone, one extraction well in the underlying Zone A and three extraction wells in the deeper Zone B. Since then, the Upper Zone extraction system was discontinued (2003), and two extraction wells in Zone B were removed from service (EW-4 in 2004 and EW-3 in 2006). In 2011, Zone A well EW-1 was replaced with EW-1R, leaving EW-1R and EW-2 as the active extraction wells. Operation of the groundwater extraction and treatment system was suspended in September 2016 to allow the Nascolite PRP Group to perform an MNA evaluation. In general, concentration trends have declined over the last five years with COCs being intermittently observed throughout the monitoring well network. The contamination is delineated, and sentinel wells show no detections of Site COCs.

A total of eight rounds of quarterly groundwater sampling and subsequent additional sampling were conducted by the Nascolite PRP Group to help determine if MNA could be an appropriate remedy. Although the results of the MNA evaluation found that the aquifer is capable of attenuating the remaining COCs, the investigation also indicated other off-site sources were likely contributing to the observed residual concentrations of these contaminants, in addition to vinyl chloride. Therefore, MNA is not likely to be considered a necessary remediation strategy at this site. Nevertheless, a determination related to the contribution of off-site groundwater contaminant sources will be made after EPA's review of the most recent technical report submitted by the PRP group in October 2023. In the meantime, the PRP group continues to monitor the groundwater.

A Classification Exception Area (CEA) was implemented for the plume area in 2007 and revised in 2017, and all nearby businesses and residents along Doris Avenue are connected to a municipal water supply.

OU 2 addressed soils and on-site structures through a 1991 ROD and a 2004 ESD. Remedial actions were completed in 2003, and included demolition of all dilapidated structures, and excavation and off-site treatment and/or disposal of contaminated soils. The Site is also protected by a locked perimeter fence that is in good condition. On May 7, 2021, a deed notice was recorded for soil contamination that remains on Conrail property due to inaccessibility during excavation. The contaminants found on the Conrail property (antimony, PCBs, bis(2-ethyhexyl) phthalate and MMA) are above residential standards included in the New Jersey Soil Cleanup Criteria dated May 12, 1999, but below non-residential standards, except for MMA, which did not have a promulgated cleanup standard. Five ppm was the cleanup level established for the Site at the time of the ROD and is considered protective of residential direct contact. MMA was found at concentrations greater than 5 ppm on the Conrail property. The May 2021 filing of the deed notice aids in preventing exposure in this area; for example, by helping to prevent future residential use. The remedy continues to prevent direct contact with contaminated groundwater and soils.

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

The exposure assumptions and toxicity values that were used to estimate the potential cancer risks and non-cancer hazards in the risk assessment followed the general risk assessment practice at the time and are still valid. The reference dose and associated screening values for MMA have been updated and increased since the original risk assessments were conducted, which does not affect the remedies' protectiveness. The remedial action objectives remain valid.

The soil remedial action for OU 2 was driven by lead with an original cleanup goal of 500 milligrams per kilogram (mg/kg); this was updated to 400 mg/kg in the 2004 ESD. The current EPA Region 2 target for lead is a residential area-wide average of 200 mg/kg, which was updated in 2017. The previous FYR evaluated post-excavation and backfill data from OU 2 and confirmed that the soil remedy is consistent with the updated lead values and remains protective for current land use or potential future redevelopment.

The 1988 ROD selected extraction and treatment to restore groundwater to drinking water standards (DWS). Contaminants included both volatile organic and inorganic compounds such as MMA, benzene, toluene, ethylbenzene, trichloroethene and lead. The cleanup levels remain the more stringent of the federal and state DWS, which are still considered protective. Concentrations of benzene, ethylbenzene, and vinyl chloride continued to exceed NJGWQS during the FYR period, however, there are no potable wells within the groundwater contaminant plume area and institutional controls prevent the installation of additional wells. Monitoring well results suggest contaminated groundwater has not significantly migrated since operation of the groundwater treatment plant was suspended in 2016 and that the remaining contamination is likely being contributed by other off-site groundwater sources. Additional sampling was conducted for 1,4-dioxane and PFAS during the FYR period which found several exceedances of NJGWQS/DWS, with maximum concentrations located upgradient or off-site.

Therefore, these emerging contaminants are determined to be not site-related. There is no known current exposure to groundwater and the remedy remains protective despite exceedances of DWS.

Soil and groundwater uses are not expected to change during the next FYR period. The potential for vapor intrusion was not included as part of the original risk assessment but was evaluated as part of the second FYR. Sub-slab and ambient air samples were collected in 2009 from an unoccupied residence on Doris Avenue, located east of the groundwater treatment plant. All detected contaminants in the sub-slab sample were below EPA's residential vapor intrusion screening levels (VISLs) set at a hazard quotient of 1 and a cancer risk of 10^{-6}. Shallow monitoring well concentrations from the FYR period were screened against residential groundwater VISLs. Ethylbenzene was detected in shallow groundwater at levels within the acceptable risk range (cancer risk of 10^{-6} to 10^{-4} with a hazard quotient of 1 for residential exposure). Benzene and vinyl chloride were detected in MW-41S and MW-11S (located along the western Site boundary) at levels above the upper bound 10^{-4} VISLs. There are currently no buildings within 100 feet of these wells; however, the potential for vapor intrusion should be reevaluated if any development of the Site is planned in the future.

Due to the limited terrestrial habitat available and the extensive soil excavation conducted and backfill placement, there is no pathway of concern to terrestrial receptors. Therefore, any potential risk from surface soil contaminants to terrestrial receptors has been addressed.

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

At this time there is no other information that could call into question the protectiveness of the remedy.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the Five-Year Review:
OU 1, OU 2

As mentioned earlier, a determination related to the contribution of off-site groundwater contaminant sources will be made after EPA's review of the most recent technical report submitted by the PRP group in October 2023. This determination will help to inform future remedial decisions at the site, but is not expected to affect current or future protectiveness.

VII. PROTECTIVNESS STATEMENT

Protectiveness Statement(s)	
Operable Unit: OU 1	*Protectiveness Determination:* Protective
Protectiveness Statement: The groundwater remedy at OU 1 is protective of human health and the environment.	

Protectiveness Statement(s)	
Operable Unit: OU 2	*Protectiveness Determination:* Protective
Protectiveness Statement: The soil remedy at OU 2 is protective of human health and the environment.	

Sitewide Protectiveness Statement
Protectiveness Determination: Protective
Protectiveness Statement: The remedies at the Site protect human health and the environment.

VIII. NEXT REVIEW

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

Figures

Figure 1 – Site Location Map

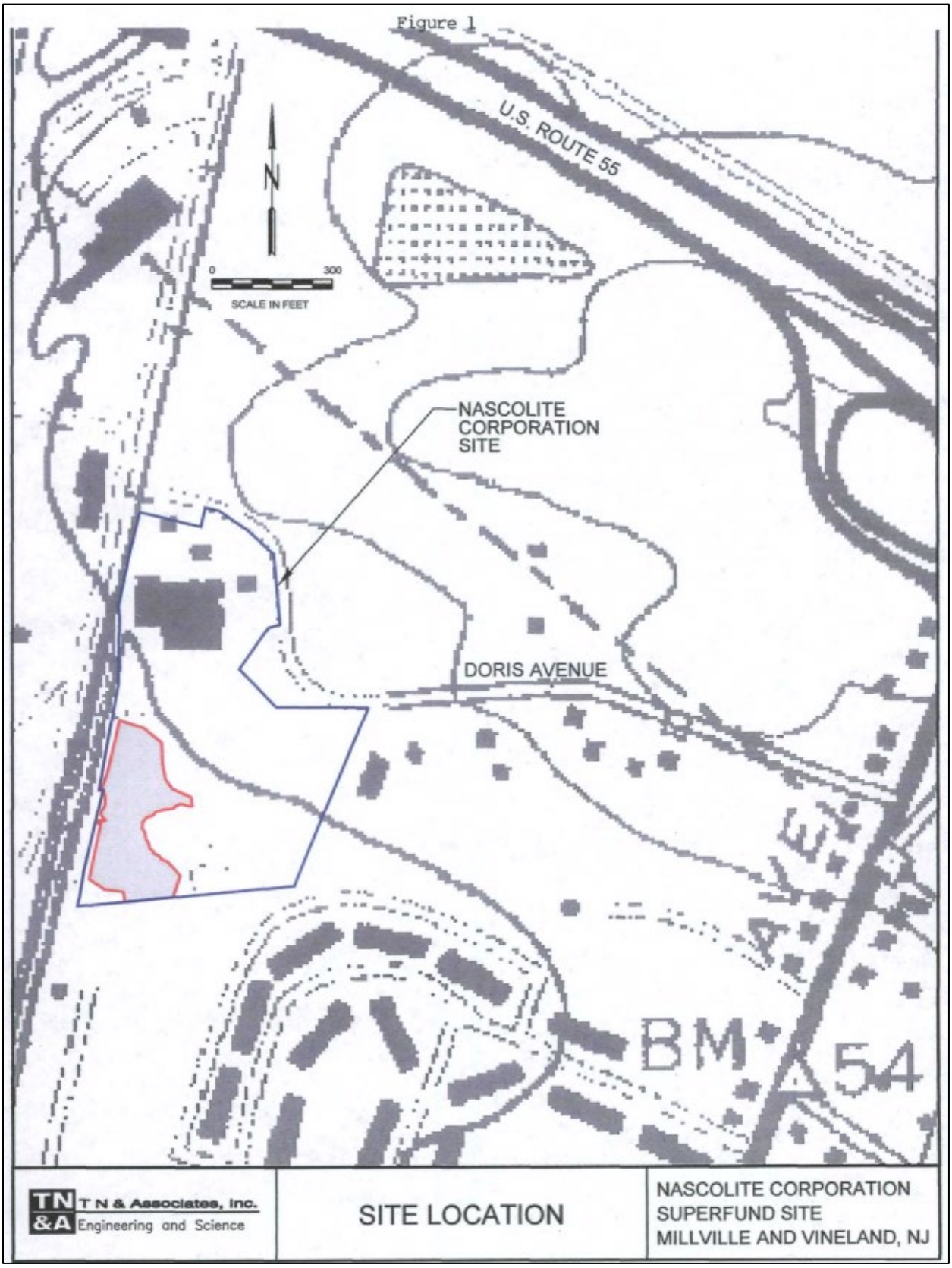


Figure 2 - Monitoring Well Locations and Groundwater Flow Direction

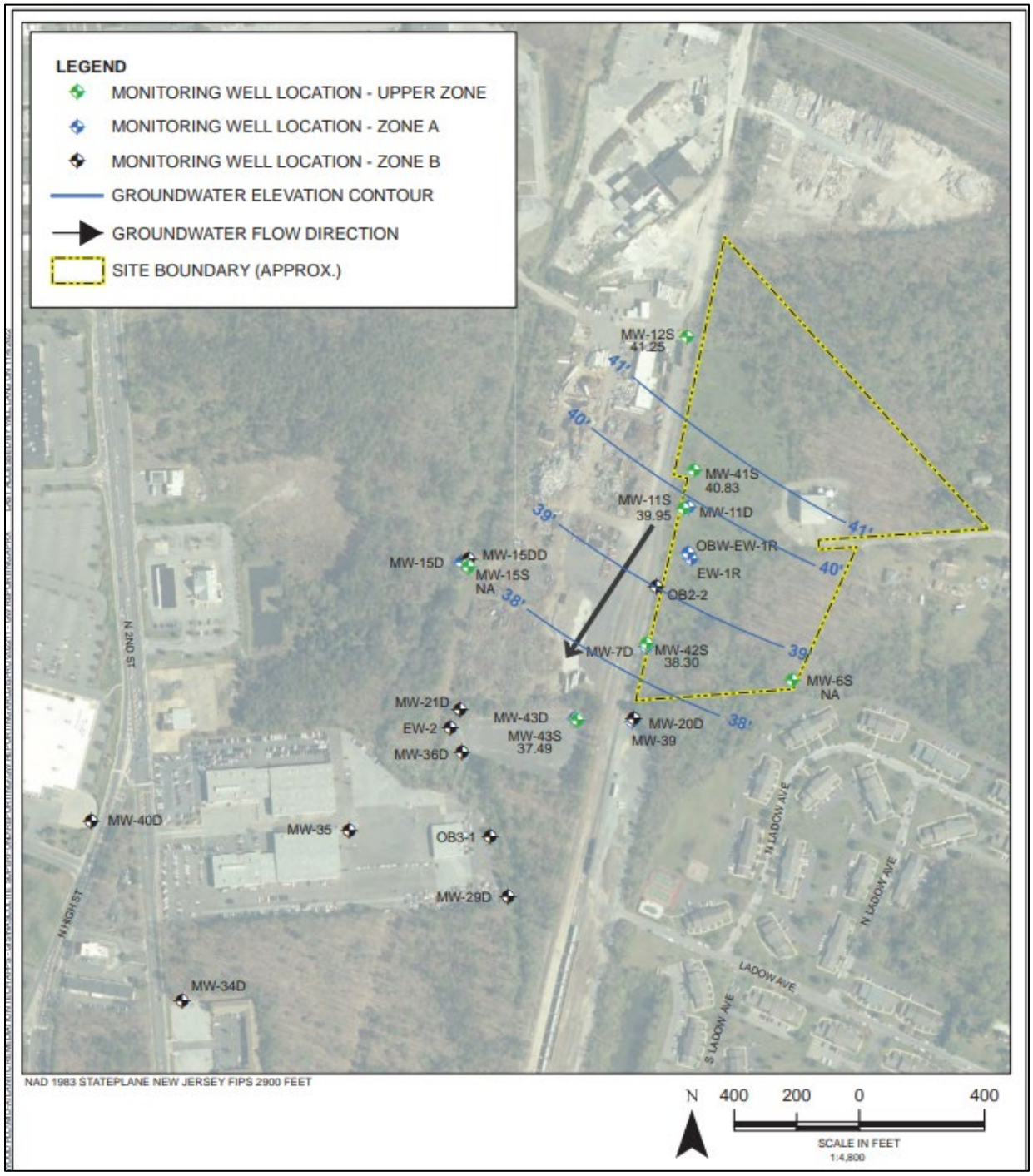


Figure 3 – 2022 Groundwater Sampling Results, Upper Zone Wells

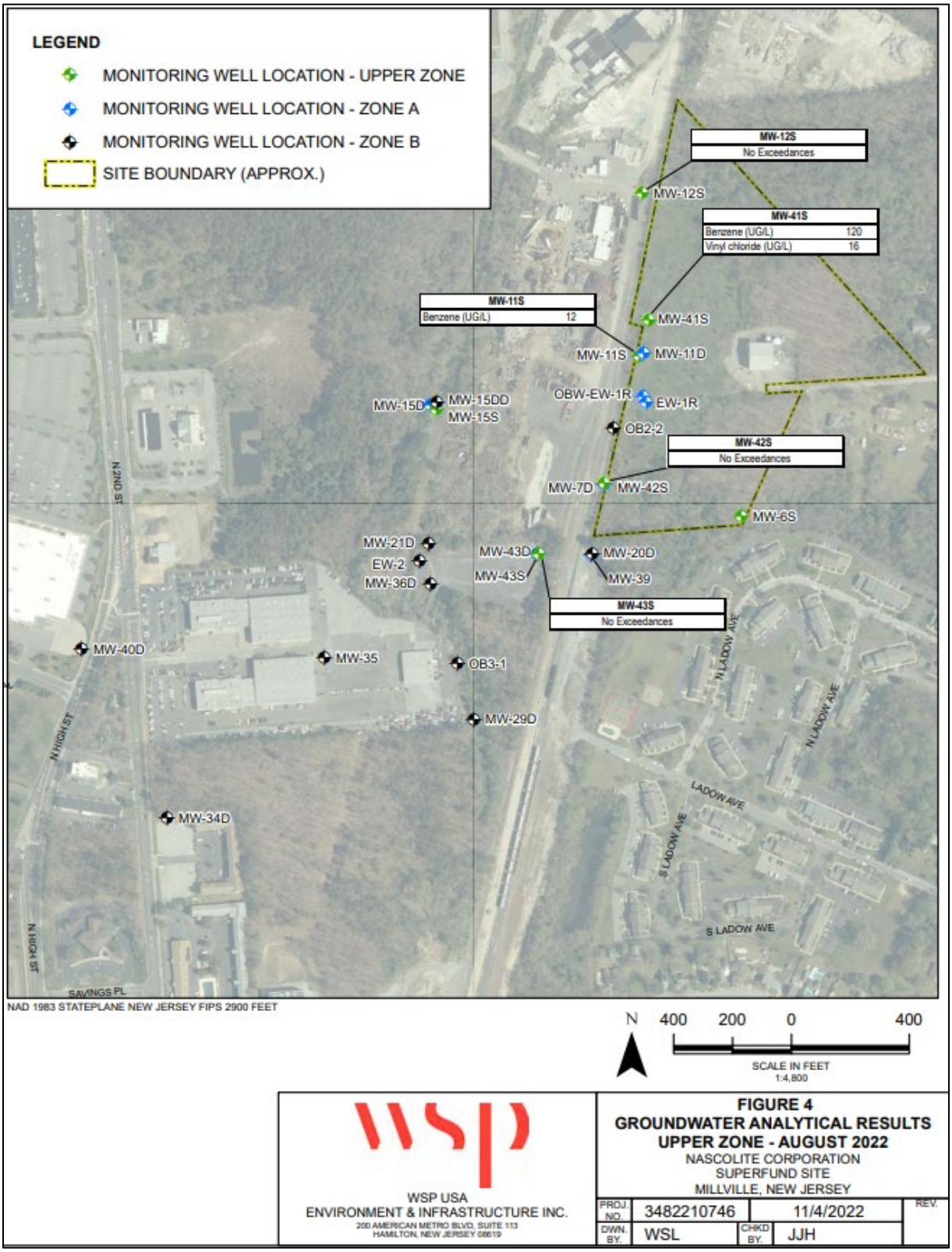
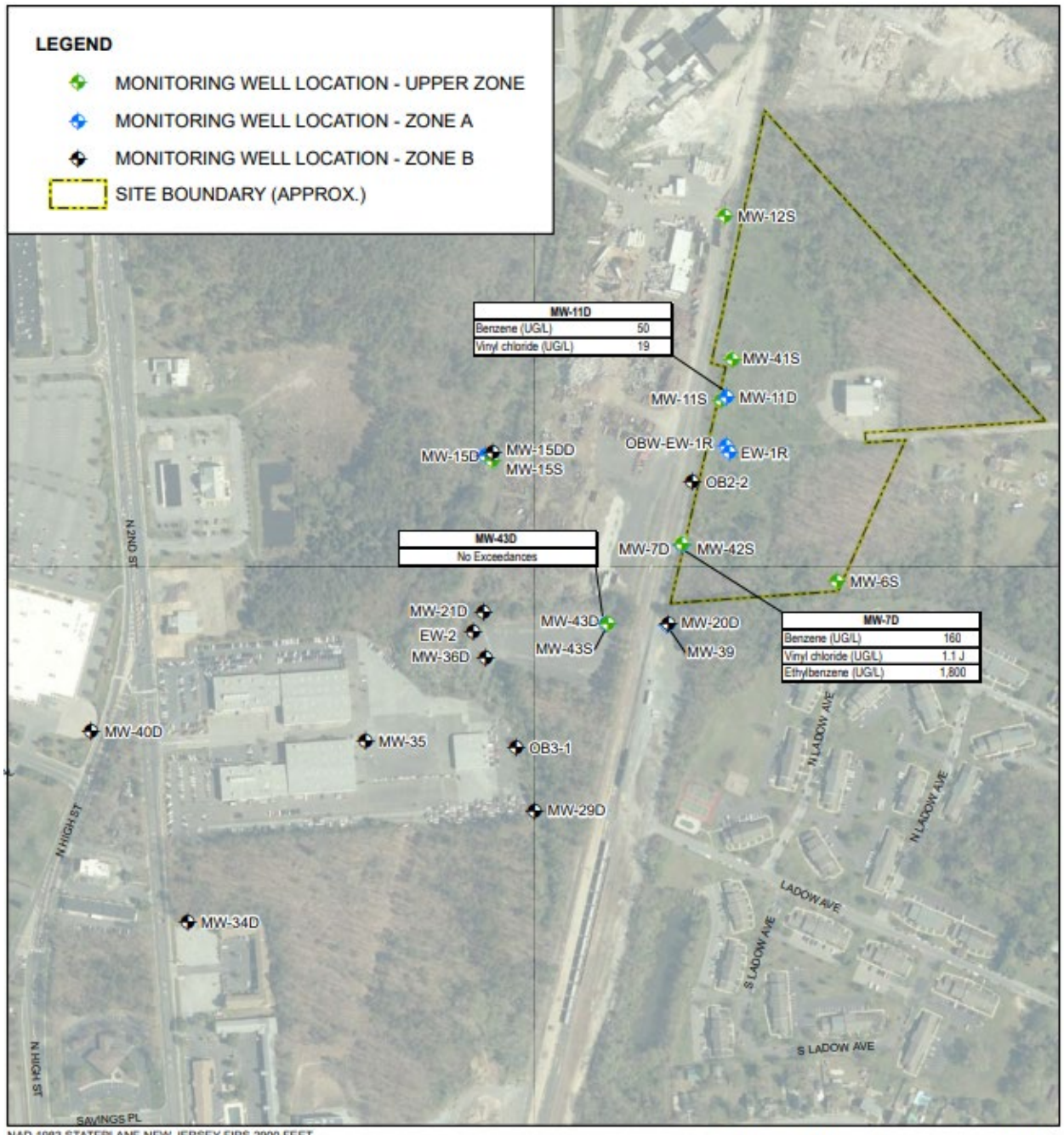


Figure 4 - 2022 Groundwater Sampling Results, Zone-A Wells

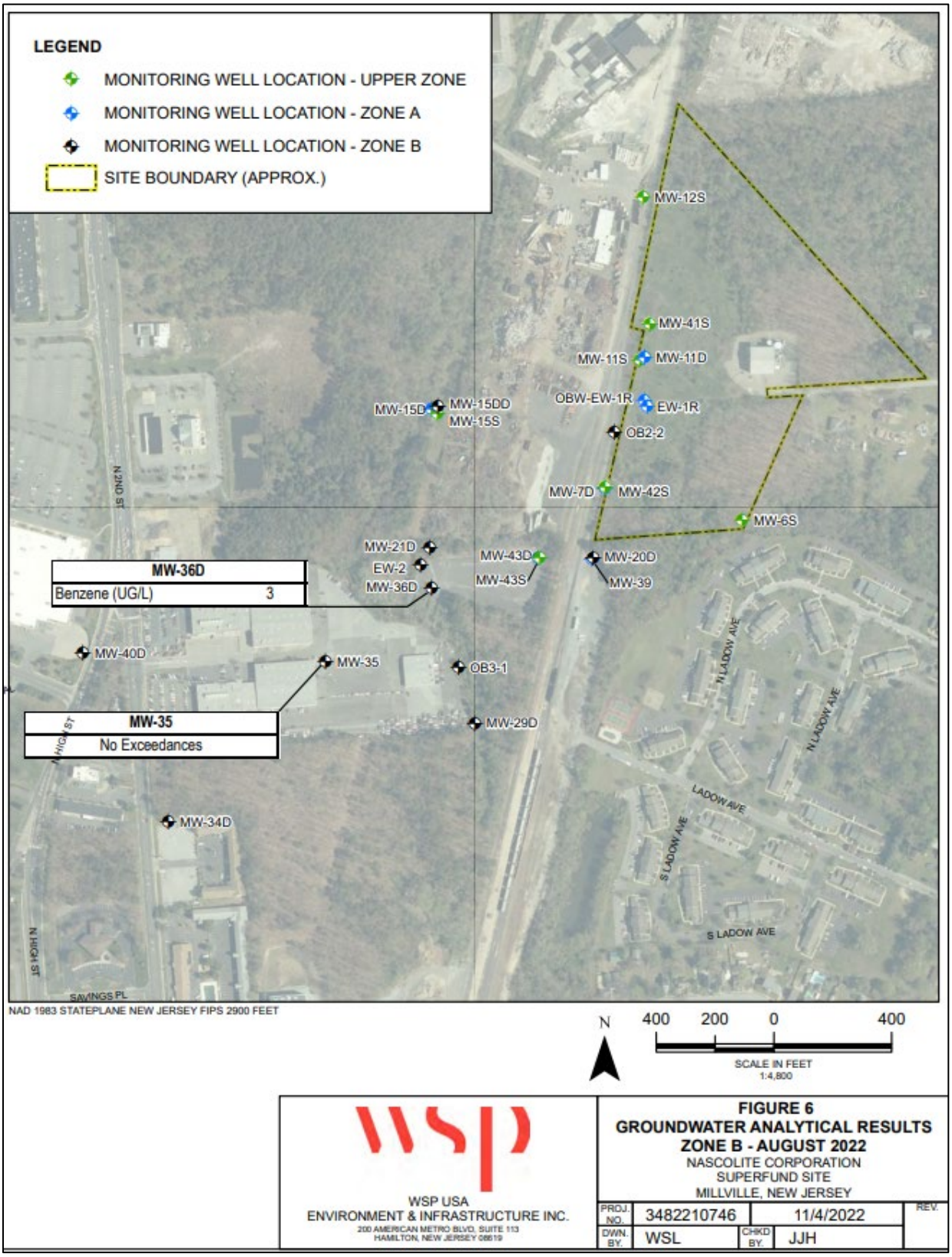


WSP USA
ENVIRONMENT & INFRASTRUCTURE INC.
200 AMERICAN METRO BLVD, SUITE 113
HAMILTON, NEW JERSEY 08619

FIGURE 5
GROUNDWATER ANALYTICAL RESULTS
ZONE A - AUGUST 2022
NASCOLITE CORPORATION
SUPERFUND SITE
MILLVILLE, NEW JERSEY

PROJ. NO.	3482210746	11/4/2022	REV.
DWN. BY.	WSL	CHKD BY.	JJH

Figure 5 - 2022 Groundwater Sampling Results, Zone-B Wells



APPENDIX A – Reference List

- Records of Decision, EPA, March 1988 and June 1991
- Administrative Order, Index No. II-CERCLA-00115, EPA, September 1990
- New Jersey Pollutant Discharge Elimination System Discharge to Groundwater Permit Equivalent, NJDEP, March 1996
- Request for Approval of a Proposed Settlement in the Nascolite Corporation, Millville and Vineland, NJ Superfund Site, EPA, September 1996
- Partial Consent Decree in the matter of U.S.A. v. American Optical Corporation, et al., April 1997
- Superfund Preliminary Close-Out Report for the Nascolite Corporation Site, EPA, September 2003
- Explanation of Significant Differences, EPA, September 2004
- Remedial Action Report, TN & Associates, Inc., December 2004
- Final Groundwater CEA Submittals, HydroQual, Inc., October 2007 and December 2007
- Five-Year Review Reports, EPA, August 2008, March 2014 and September 2019
- Administrative Determination, EPA, June 2011
- Deed Notice for Conrail Property, prepared by Lawrence Granite, May 2021

APPENDIX B

Chronology of Site Events	
Event	**Date(s)**
The Nascolite Corporation operated at the Site.	1953-1980
Nascolite Corporation site proposed to the National Priorities List.	1983
A remedial investigation and feasibility study (RI/FS) was performed.	1984-1988
EPA performed a removal action that addressed drums and storage tanks containing waste material at the Site.	1987-1988
EPA issued a ROD which embodied EPA's remedy selection process for OU 1.	1988
EPA conducted a supplemental RI/FS to identify remedial alternatives for Site soils, debris, and structures.	1988-1991
An alternate water supply, which provides potable water to residences on Doris Avenue, was constructed by two PRPs under an Administrative Order on Consent with EPA.	1989
EPA signed a ROD for OU 2.	1991
The PRP Group constructed the groundwater remediation system at the Site.	1995-1996
The PRP Group operated the groundwater remediation system with EPA oversight.	1997-2016
EPA demolished and disposed of the dilapidated structures at the Site.	1999-2000
Under an IA with the USACE, a remedial action contract for the cleanup of the contaminated soil at the Site was awarded.	2002
Cleanup of contaminated soils at the Site was completed.	2003
EPA issued an Explanation of Significant Differences which documented changes made to the remedy for the contaminated soil.	2004

Chronology of Site Events	
EPA issued a Five-Year Review Report for the Site.	2008
EPA signed an Administrative Determination which documented that certain parcels owned by the Nascolite Corporation were not considered by EPA to be part of the Site.	2011
EPA issued the Second Five-Year Review Report for the Site.	2014
Operation of the groundwater remediation system was suspended to allow the Nascolite PRP Group to perform an MNA Evaluation.	2016
EPA issued the Third Five-Year Review Report for the Site.	2019
A deed notice for the contaminated soil which could not be excavated, without compromising the structural integrity of the railroad tracks, was recorded.	2021

Appendix C – Groundwater Monitoring Data

APPENDIX C
HISTORIC VOC CONCENTRATIONS 2017 - 2022
NASCOLITE CORPORATION SUPERFUND SITE
MILLVILLE, NEW JERSEY

Screened Zone	Sample Location	Benzene	Vinyl chloride	Benzene	Vinyl chloride	Benzene	Vinyl chloride	Benzene	Vinyl chloride	Benzene	Vinyl chloride	Benzene	Vinyl chloride
		January/February 2017		April 2017		July 2017		October 2017		January 2018		April 2018	
	USEPA Reg II	5	2	5	2	5	2	5	2	5	2	5	2
	NJVIGWSL	20	1	20	1	20	1	20	1	20	1	20	1
	NJGWQS	1	1	1	1	1	1	1	1	1	1	1	1
	Units	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Upper Zone	MW-11S	21	0.2 U	20	0.4 UJ	15	0.17 J	22	0.2 U	21	0.2 U	27	0.2 U
Upper Zone	MW-12S	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U
Upper Zone	MW-15S	1.3	0.2 U	0.5 U	0.2 UJ			0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U
Upper Zone	MW-41S	120	9.2	120	10 J	100	6.3	130	12	79 J+	16 J+	41	23
Upper Zone	MW-42S	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 UJ
Upper Zone	MW-43S	0.5 U	0.2 U	0.5 U	0.2 UJ	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U
Upper Zone	MW-6S	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 UJ
Zone A	EW-1R	4.6	0.8 U	1.2	0.4 UJ	1.6	0.2 U	1.1	0.2 U	0.36 J	0.2 U	0.5 U	0.2 U
Zone A	MW-11D	0.73	0.2 U	1.5	0.49 J	1.2	0.2 U	7.9	8.1	20 J+	18 J+	25	26
Zone A	MW-15D	0.5 U	0.2 U	0.5 U	0.2 UJ			0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U
Zone A	MW-39	0.5 U	0.2 U	0.5 U	0.2 UJ	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 UJ
Zone A	MW-43D	18	0.15 J	10	0.2 UJ	5.3	0.2 U	12	0.2 U	9.9	0.2 U	9.8	0.1 J
Zone A	MW-7D	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U
Zone A	OBW-EW-1R	0.5 U	0.2 U	0.5 U	0.2 UJ	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U
Zone B	EW-2	20	0.2 U	11	0.2 UJ	5.2	0.2 U	9.2	0.2 U	10	0.2 U	14	0.2 UJ
Zone B	MW-15DD	0.5 U	0.2 U	0.5 U	0.2 U			0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U
Zone B	MW-20D	0.5 U	0.2 U	0.5 U	0.2 UJ	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 UJ
Zone B	MW-21D	64	0.4 U	49	0.2 UJ	57	0.2 U	53 J	0.2 UJ	21	0.2 U	35	0.2 U
Zone B	MW-29D	0.5 U	0.2 U	0.5 U	0.2 UJ	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 UJ
Zone B	MW-34D	1 U	0.4 U	0.33 J	0.2 UJ	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 UJ
Zone B	MW-35	0.5 U	0.2 U	0.5 U	0.2 UJ	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	2.7	0.2 UJ
Zone B	MW-36D	0.91	0.2 U	1.2	0.2 UJ	5.3	0.2 U			0.5 U	0.2 U	0.5 U	0.2 U
Zone B	MW-40D	1 U	0.4 U	0.5 U	0.2 UJ	0.24 J	0.2 U	2.8	0.2 U	1.8	0.2 U	0.5 U	0.2 UJ
Zone B	MW-OB2-2	0.5 U	0.2 U	0.5 U	0.2 UJ	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 UJ
Zone B	MW-OB3-1	0.5 U	0.2 U	0.5 U	0.2 UJ	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 UJ

APPENDIX C
HISTORIC VOC CONCENTRATIONS 2017 - 2022
NASCOLITE CORPORATION SUPERFUND SITE
MILLVILLE, NEW JERSEY

Screened Zone	Sample Location	Benzene July 2018	Vinyl chloride July 2018	Benzene October 2018	Vinyl chloride October 2018	Benzene March 2019**	Vinyl chloride March 2019**	Benzene May 2019**	Vinyl chloride May 2019**	Benzene June 2019	Vinyl chloride June 2019	Benzene December 2019	Vinyl chloride December 2019
	USEPA Reg II	5	2	5	2	5	2	5	2	5	2	5	2
	NJVIGWSL	20	1	20	1	20	1	20	1	20	1	20	1
	NJGWQS	1	1	1	1	1	1	1	1	1	1	1	1
	Units	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Upper Zone	MW-11S	18	0.4 U	18	0.2 U	25 J	2 U	21	0.2 U	21	0.2 U	14	0.2 U
Upper Zone	MW-12S	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U			0.5 U	0.2 U	0.5 U	0.2 U
Upper Zone	MW-15S	0.5 U	0.2 U	0.5 U	0.2 U	60	0.2 U			15	0.2 U	7.6	0.2 U
Upper Zone	MW-41S	58	9	59	4.5	77	12			99	3.8	6.6	12 J+
Upper Zone	MW-42S	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U			0.5 U	0.2 U	0.5 U	0.2 U
Upper Zone	MW-43S	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U			0.5 U	0.2 U	0.5 U	0.2 U
Upper Zone	MW-6S	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U			0.5 U	0.2 U	0.5 U	0.2 U
Zone A	EW-1R	1.2 U	0.5 U	0.21 J	0.2 U					0.5 U	0.2 U	0.5 U	0.2 U
Zone A	MW-11D	54	43	42	20	9.5	0.14 J	2.2	0.2 U	1.4	0.2 U	0.54	0.2 U
Zone A	MW-15D	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U			0.5 U	0.2 U	0.5 U	0.2 U
Zone A	MW-39	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U			0.5 U	0.2 U	0.5 U	0.2 U
Zone A	MW-43D	16	0.19 J	20	0.32	13	0.39			13	0.4	19	0.58
Zone A	MW-7D	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U			0.5 U	0.2 U	0.5 U	0.2 U
Zone A	OBW-EW-1R	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U			0.5 U	0.2 U	0.5 U	0.2 U
Zone B	EW-2	11	0.2 U	15	0.2 U	0.32 J	0.2 U			0.55	0.2 U	1.3	0.2 U
Zone B	MW-15DD	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U			0.5 U	0.2 U	0.5 U	0.2 U
Zone B	MW-20D	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U			0.5 U	0.2 U	0.5 U	0.2 U
Zone B	MW-21D	0.64	0.2 U	1.3	0.2 U	0.5 U	0.2 U			1.2	0.2 U	0.28 J	0.2 U
Zone B	MW-29D	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U			0.5 U	0.2 U	0.5 U	0.2 U
Zone B	MW-34D	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U			0.5 U	0.2 U	0.5 U	0.2 U
Zone B	MW-35	4.6	0.2 U	5	0.2 U	0.5 U	0.2 U					0.62	0.2 U
Zone B	MW-36D	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U			0.22 J	0.2 U	0.21 J	0.2 U
Zone B	MW-40D	0.5 U	0.2 U	0.5 U	0.2 U	0.36 J	0.2 U			0.5 U	0.2 U	0.5 U	0.2 U
Zone B	MW-OB2-2	0.5 U	0.2 U	0.5 U	0.2 U					0.5 U	0.2 U	0.5 U	0.2 U
Zone B	MW-OB3-1	0.5 U	0.2 U	0.5 U	0.2 U	0.5 U	0.2 U			0.5 U	0.2 U	0.5 U	0.2 U

APPENDIX C
HISTORIC VOC CONCENTRATIONS 2017 - 2022
NASCOLITE CORPORATION SUPERFUND SITE
MILLVILLE, NEW JERSEY

Screened Zone	Sample Location	Benzene May 2020	Vinyl chloride May 2020	Benzene May 2021	Vinyl chloride May 2021	Benzene December 2021	Vinyl chloride December 2021	Benzene August 2022	Vinyl chloride August 2022
	USEPA Reg II	5	2	5	2	5	2	5	2
	NJVIGWSL	20	1	20	1	20	1	20	1
	NJGWQS	1	1	1	1	1	1	1	1
	Units	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
Upper Zone	MW-11S	**11**	0.2 U	**7.8**	0.5 U	**18**	0.4 U	**12**	0.4 U
Upper Zone	MW-12S	0.5 U	0.2 U	0.5 U	0.2 U	1 U	1 U	0.5 U	2 U
Upper Zone	MW-15S	0.3 J	0.2 U	1.4	0.2 U	0.5 U	0.2 U	NS	NS
Upper Zone	MW-41S	**57**	**11**	**81**	**7.2**	**120**	**11**	**120**	**16**
Upper Zone	MW-42S	0.5 U	0.2 U	0.5 U	0.2 U	NS	NS	0.5 U	2 U
Upper Zone	MW-43S	0.5 U	0.2 U	0.5 U	0.2 U	NS	NS	0.5 U	2 U
Upper Zone	MW-6S	0.5 U	0.2 U	0.5 U	0.2 U	NS	NS	NS	NS
Zone A	EW-1R	0.5 U	0.2 U	0.5 U	0.2 U	NS	NS	NS	NS
Zone A	MW-11D	**17**	**6**	1.5	0.2 U	0.96	0.17 J	**50**	**19**
Zone A	MW-15D	0.5 U	0.2 U	0.5 U	0.2 U	NS	NS	NS	NS
Zone A	MW-39	0.5 U	0.2 U	0.5 U	0.2 U	NS	NS	NS	NS
Zone A	MW-43D	**9.2**	0.38	4	0.24	4	0.4	0.9	0.15 J
Zone A	MW-7D	0.34 J	0.2 U	**32**	1.5	**240**	**4.3**	**160**	1.1 J
Zone A	OBW-EW-1R	0.4 J	0.2 U	0.5 U	0.2 U	NS	NS	NS	NS
Zone B	EW-2	0.74	0.2 U	0.27 J	0.2 U	1 U	1 U	NS	NS
Zone B	MW-15DD	0.5 U	0.2 U	0.5 U	0.2 U	NS	NS	NS	NS
Zone B	MW-20D	0.5 U	0.2 U	0.5 U	0.2 U	NS	NS	NS	NS
Zone B	MW-21D	1.2	0.2 U	0.82	0.2 U	0.23 J	0.2 U	NS	NS
Zone B	MW-29D	0.5 U	0.2 U	0.5 U	0.2 U	NS	NS	NS	NS
Zone B	MW-34D	0.5 U	0.2 U	0.5 U	0.2 U	NS	NS	NS	NS
Zone B	MW-35	3.2	0.2 U	3.1	0.2 U	1.5	0.2 U	0.9	0.2 U
Zone B	MW-36D	**24**	0.2 U	**72**	0.2 U	0.23 J	0.2 U	3	0.2 U
Zone B	MW-40D	0.39 J	0.2 U	0.88	0.2 U	NS	NS	NS	NS
Zone B	MW-OB2-2	0.5 U	0.2 U	0.5 U	0.2 U	NS	NS	NS	NS
Zone B	MW-OB3-1	0.5 U	0.2 U	0.5 U	0.2 U	NS	NS	NS	NS

Notes:

USEPA Reg II	United States Environmental Protection Agency Region II Action Levels
NJVIGWSL	New Jersey Vapor Intrusion Groundwater Screening Levels
NJGWQS	New Jersey Groundwater Quality Standards
UG/L	Micrograms per Liter
U	Not Detected, Method detection Limit Shown
J	Estimated concentration
J+	Estimated concentration biased high
NC	No Criteria
NS	Not Sampled
Bold Cells	Exceeds USEPA Reg II
Grey Background	Exceeds NJVIGWSL
Outlined cells	Exceeds NJGWQS
**	Shows Results from March 2019 and resampling from May 2019 for Wells MW-11S and MW-11D

Appendix D – Climate Change Assessment

Potential climate change impacts to the groundwater remediation system, as well as MNA, were evaluated. The evaluations were completed in accordance with the *Region 2 Guidance for Incorporating Climate Change Considerations in Five-Year Reviews* (V.2). Per the *Guidance,* the following resources were used in the evaluations:

- The Climate Explorer – for temperature, precipitation, and drought impacts
- Flood Factor Hazard Layers – for inland flooding
- NOAA Sea Level Rise Viewer – for sea level impacts
- USGS National Landslide Inventory – for landslide impacts

Screenshots of each of these tools are displayed below.

The first tool used to assess Millville (Cumberland County) was *The Climate Explorer*. As can be seen from Figure D1, there is a projected increase of days per year with maximum temperatures > 100 °F. Figure D2 shows there is a slight increase in potential drought conditions. A summary of the Top Climate Concerns from the tool can be seen as Figure D3. This summary indicates coastal flooding may increase as global sea level rises 0.5-2 feet. Intense rainstorms in the area are projected to range between a 1% decrease and 4% increase, with an average of one intense rainstorm per year in Millville.

The second tool utilized is called the *Flood Factor*, as shown in Figure D4. According to this assessment tool, there are 1,364 properties in Millville that have greater than a 26% chance of being severely affected by flooding over the next 30 years which gives the area a rating of "Minor." The Site is more than a mile north of the Maurice River which would be most likely to flood.

The third tool utilized is called *Sea Level Rise*. The city of Millville is moderately vulnerable to sea level rise due to its location near the Maurice River. However, the Site is located further north of the river compared to the town. Figure D5 shows the area with a 10-foot sea level rise and Figure D6 shows flooding frequency of the Maurice River. Both figures show the Site is more than one mile north of areas impacted by sea level rise.

The fourth tool utilized was *USGS National Landslide Inventory*. The Inventory shows no recorded landslides in Cumberland County or any county in New Jersey south of Burlington County.

Table 1 (*Site Remedies and Vulnerability to Climate Change Impacts*) of the *Guidance* indicates that Pump-and-Treat remedies include major vulnerability to flooding and sea level rise impacts (due to water damage to electrical equipment associated with groundwater extraction wells) and minor vulnerability to drought. As noted above, the distance of the Site from the Maurice River mitigates the potential for climate-related flood impacts.

Table 1 of the *Guidance* also indicates that in general, MNA remedies have minor vulnerability to flooding and drought, and major vulnerability to sea level rise. In some cases, sea level rise could impact monitoring wells and prevent effective monitoring of the contamination. However, as noted above, sea level rise is not a risk at the Site.

Figure D1. Days Over 100°F – Millville (Cumberland County), NJ

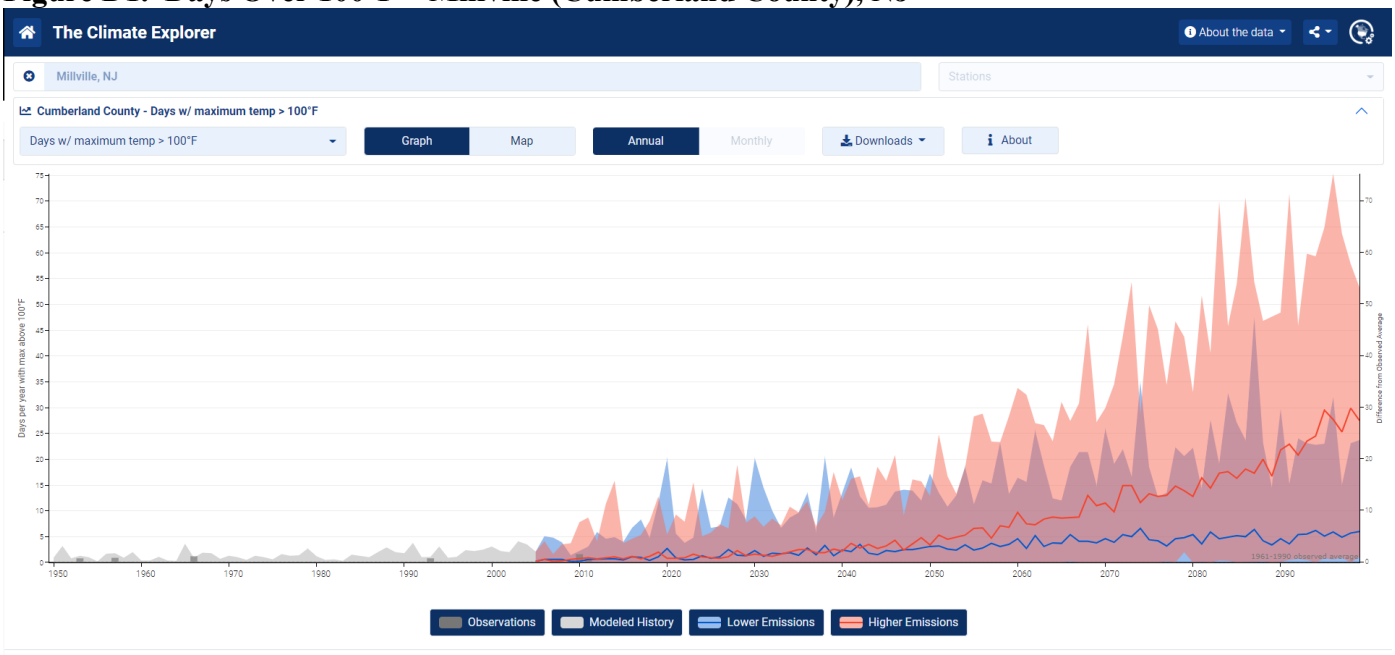


Figure D2. Dry Days – Millville (Cumberland County), NJ

Figure D3. Top Climate Concerns – Millville, NJ

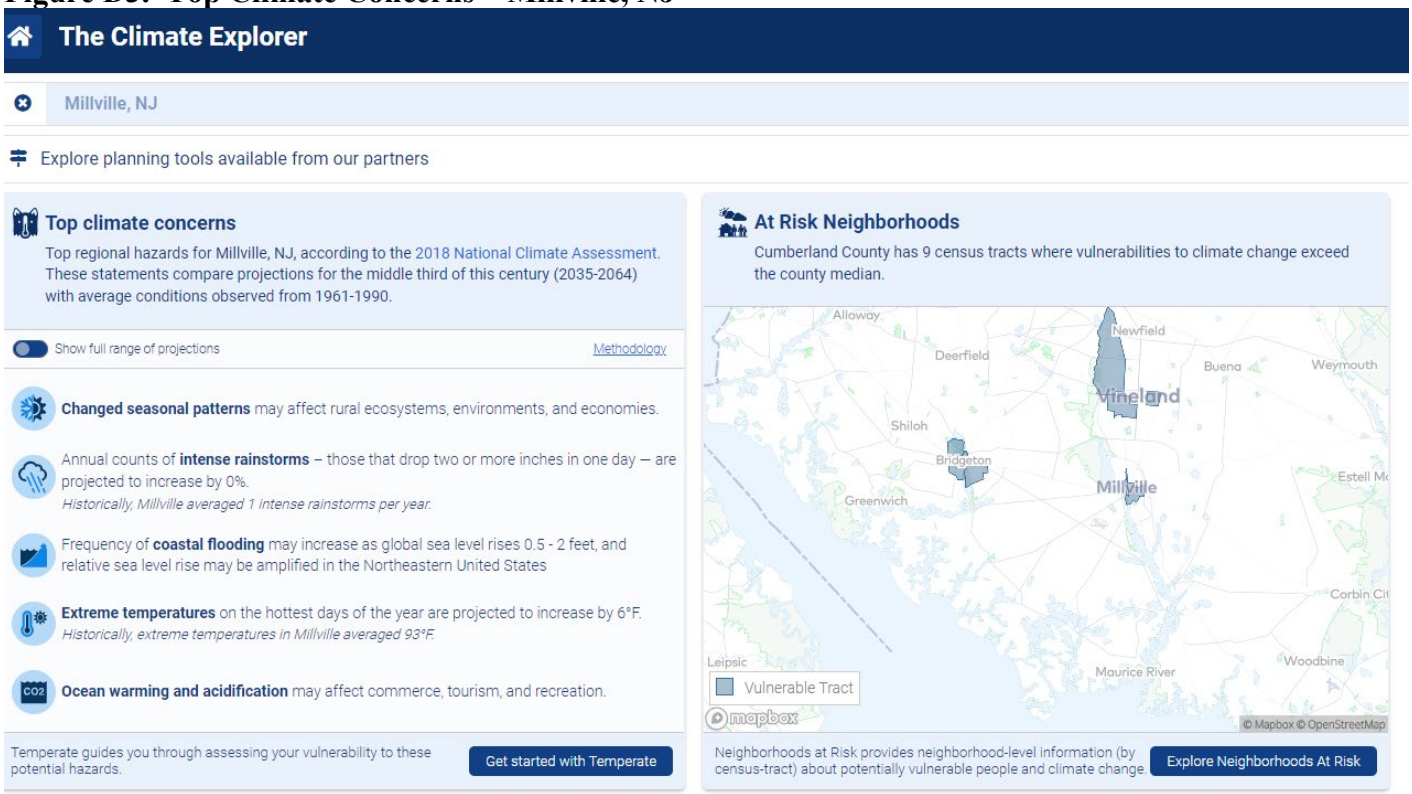


Figure D4. Flood Factor – Millville, NJ

Figure D5. Ten-Foot Sea Level Rise – Millville, NJ and Nascolite Site (denoted by red circle)

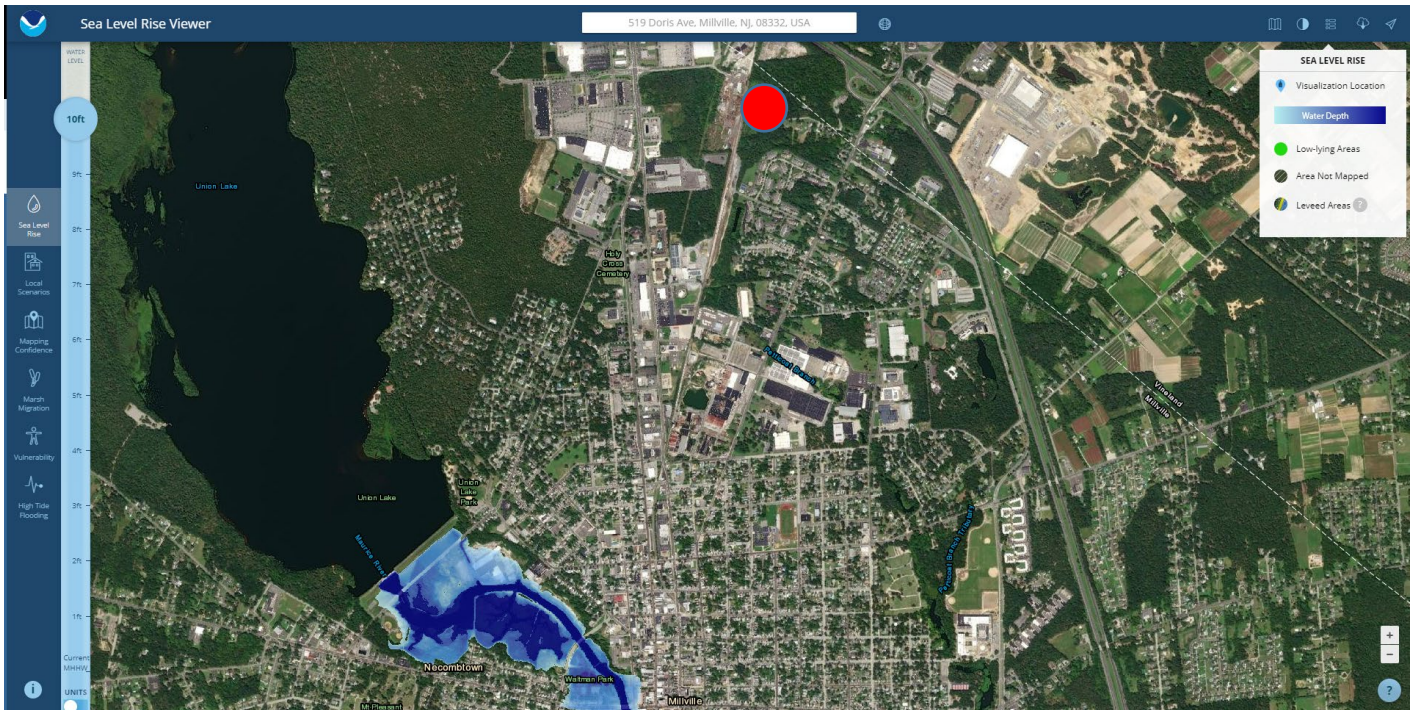


Figure D6. Flood Frequency – Millville, NJ and Nascolite Site

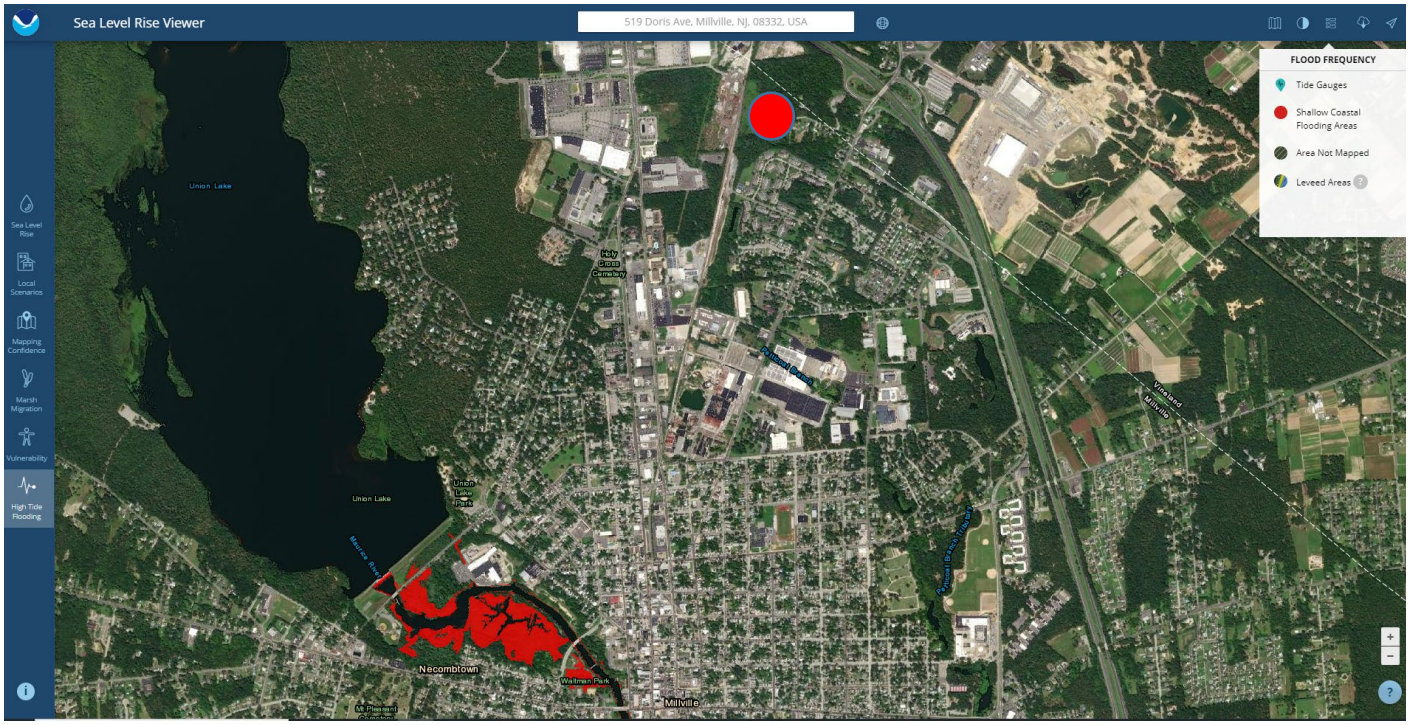


Figure D7. Landslide Inventory – Southern New Jersey