RECORD OF DECISION AMENDMENT

Cosden Chemical Coatings Corp. Superfund Site

City of Beverly, Burlington County, New Jersey

United States Environmental Protection Agency
Region 2
New York, New York
September 2022

638482

DECLARATION STATEMENT
RECORD OF DECISION AMENDMENT

SITE NAME AND LOCATION

Cosden Chemical Coatings Corp. Superfund Site
City of Beverly, Burlington County, New Jersey
EPA ID# NJD000565531
Operable Unit 1, Groundwater

STATEMENT OF BASIS AND PURPOSE

The United States Environmental Protection Agency (EPA) issued a Record of Decision (ROD) for the Cosden Chemical Coatings Corp. Superfund Site (Site) on September 30, 1992, as modified by the 1998 Explanation of Significant Differences (ESD), which addressed contaminated soil and groundwater at the Site, located in the City of Beverly, Burlington County, New Jersey. This decision document presents the remedy amendment for the contaminated groundwater.

EPA selected the remedy amendment in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) as amended, 42 U.S.C. §§9601-9675, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. The decision is based on the administrative record for the Site, an index for which can be found in Appendix IV.

The State of New Jersey concurs with this ROD Amendment. A copy of the State's concurrence letter can be found in Appendix V.

ASSESSMENT OF THE SITE

The response action selected in this ROD Amendment is necessary to protect the public health, welfare, or the environment from actual or threatened releases of hazardous substances from the Site into the environment.

DESCRIPTION OF THE SELECTED REMEDY AMENDMENT

The Site cleanup is being addressed in one phase or Operable Unit. The response action described in this document amends the groundwater remedy selected in the 1992 ROD, as modified by the 1998 ESD. The major components of the remedy amendment include the following:

- In-situ groundwater treatment targeting remaining groundwater source area contamination, and
- Long-term groundwater monitoring to assess the progress of lowering the concentration of contaminants in groundwater over time.

The remaining groundwater source area contamination will be addressed through in-situ treatment. The in-situ treatment consists of In-Situ Chemical Oxidation (ISCO) which utilizes oxidants injected into the contaminant source areas in the groundwater aquifer to transform harmful contaminants into less toxic byproducts. At the Site, a pilot study was performed between 2017 and 2021 to determine the effectiveness of ISCO in reducing levels of remaining source area contamination. Based on the findings of the ISCO pilot study, the amended remedy consists of an estimated five rounds of in-situ chemical injections targeting the remaining groundwater source area contamination with sampling to be completed before, between, and after each round of injections. After all injection rounds are completed, a period of monitoring will follow to allow for re-equilibration of metal concentrations and evaluate whether additional injections are not needed. The remedy also calls for institutional controls (ICs), such as a Classification Exception Area/Well Restriction Area (CEA/WRA), which would restrict groundwater uses or activities that could result in direct contact with contaminated groundwater. The estimated total present worth cost for the selected remedy is $1,409,900.

DECLARATION OF STATUTORY DETERMINATIONS

Part 1: Statutory Requirements

The remedy amendment is protective of human health and the environment, complies with federal and state requirements that are applicable or relevant and appropriate to the remedial action, and is cost-effective. EPA has determined that the amended remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at the Site.

Part 2: Statutory Preference for Treatment

The remedy amendment satisfies the statutory preference for treatment as a principal element of the remedy (i.e., reduces the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal element through treatment).

Part 3: Five-Year Review Requirements

A policy five-year review for the Site was completed on May 31, 2022. The selected remedy, including actions taken pursuant to the 1992 ROD, as modified by the 1998 ESD and this ROD Amendment, will not result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, but is anticipated to take more than five years to attain remedial action objectives and cleanup levels, and therefore a policy review will continue to be required.

ROD DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary section of this ROD Amendment. Additional information can be found in the administrative record for this Site.

- Chemicals of concern and their respective concentrations can be found in the “Site Characteristics” section.

- Baseline risk represented by the chemicals of concern can be found in the “Summary of Risks” section.

- The source reduction goal for the chemical of concern, xylene, and the basis for this goal can be found in the “Remedial Action Objectives” section.

- Current and reasonably anticipated future land use assumptions and current and potential future uses of groundwater used in the baseline risk assessment and ROD can be found in the “Current and Potential Future Site and Resource Uses” section.

- Estimated capital, operation, and maintenance (O&M), and total present worth costs, discount rate, and the number of years over which the remedy amendment cost estimates are projected can be found in the “Description of Alternatives” section.

- Key factors that led to selecting the remedy amendment can be found in the "Comparative Analysis of Alternatives" and "Statutory Determinations" sections.

Pat Evangelista Digitally signed by Pat Evangelista Date: 2022.09.28 14:01:44 -04'00'

09/28/2022

Pat Evangelista, Director
Superfund and Emergency Management Division
EPA Region 2

Date

RECORD OF DECISION AMENDMENT

DECISION SUMMARY

Cosden Chemical Coatings Corp. Superfund Site

City of Beverly, Burlington County, New Jersey

United States Environmental Protection Agency
Region 2
New York, New York
September 2022

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SITE NAME, LOCATION AND BRIEF DESCRIPTION

The Cosden Chemical Coatings Corp. Superfund Site (Site), United States Environmental Protection Agency (EPA) ID# NJD000565531, is located within a residential area in the City of Beverly, Burlington County, New Jersey at the intersection of Manor Road and Cherry Street (Figure 1). It is bounded on the north and east by residential streets, on the south by Conrail tracks and farmland, and on the west by undeveloped land. The nearest residence is approximately 300 feet to the north of the Site. The Beverly Elementary School is located 0.2 miles to the northeast. The neighboring area is suburban with some light industry. The Delaware River is approximately 4,000 feet to the north, and Rancocas Creek is approximately 1.5 miles to the southwest of the Site. The population within a one-mile radius of the Site is approximately 800 people. The local water utility provides drinking water, and the Delaware River is the source of the potable water supply.

The Site encompasses approximately 6.7 acres of a former paint formulation and manufacturing facility that operated from 1945 until 1989. The facility produced coatings for industrial applications. In the manufacturing process, pigments were combined with resins and solvents and then placed into a mixing tank where other ingredients were added to produce the final coating products. The mixing tanks were then washed out with solvents, and the used solvents were transferred to drums. Organic solvents used in the manufacturing process were recycled until 1974. After 1974, drums containing spent solvents were stored on-site; some of these drums leaked their contents onto the ground and caused soil and groundwater contamination. Solvents were also stored in underground storage tanks, which also leaked their contents.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

A grass fire that occurred at the Site on April 22, 1980, prompted the Burlington County Department of Public Safety to report the Site conditions to the New Jersey Department of Environmental Protection (NJDEP). Subsequent visits by the NJDEP revealed the presence of surface spills and several hundred unsecured drums. Various court actions and negotiations undertaken by NJDEP against Cosden Chemical Coatings Corporation resulted in a judicial consent order on February 5, 1985, that ordered Cosden Chemical Coatings Corporation to clean up the facility. Cosden Chemical Coatings Corporation initiated the cleanup in February 1985, but abandoned cleanup efforts after 88 of 695 drums were removed. In January 1986, NJDEP then undertook an emergency removal of the drummed material and cleanup of surface spills around the drum storage areas.

EPA placed the Site on the National Priorities List (NPL) in July 1987 and began a remedial investigation and feasibility study (RI/FS) in April 1988. In June 1989, EPA initiated emergency cleanup activities at the Site by constructing a fence around areas of soil contamination and began removing the remaining drums, paint cans, pigment bags, mixing tanks, and underground storage tank contents. On May 28, 1990, as the removal action was nearly completed, a fire occurred inside the process building which consumed a majority of the building. On May 31, 1990, the building was condemned by the Beverly City building inspector.

Based on the RI/FS that was conducted by EPA from April 1988 until September 1992, a Record of Decision (ROD) selecting a remedy for the Site was issued by EPA on September 30, 1992. Subsequently, the contaminated soil component of the remedy was reviewed during the remedial design stage, including a pre-design investigation, which uncovered conditions that led EPA to issue an Explanation of Significant Differences (ESD) in September 1998 for the soils at the Site.

Building Demolition

EPA decontaminated and demolished the remnants of the former Cosden Chemical process building. All demolition debris, including asbestos, was disposed of off-site. This work was conducted between July 1995 and January 1996.

Soils

The contaminated soils remediation was conducted by the EPA Region 2 Removal Action Branch with technical support provided by EPA's Environmental Response Team (ERT). ERT performed an extensive screening effort at the Site employing x-ray fluorescence (XRF) technology to identify the concentrations and depths of inorganic contamination (principally lead and chromium). The data were used to define the area and depth of the excavation. The soil remediation was accomplished in phases between June 1999 and March 2002.

The soil cleanup was conducted to meet a remediation goal based on the NJDEP Residential Direct Contact Soil Cleanup Criterion (RDCSCC) for lead in effect at that time, 400 milligrams per kilogram (mg/kg). For PCBs, the soil remediation goal was based on the EPA PCB cleanup policy, which recommended a residential cleanup goal of 1 mg/kg for unrestricted residential use. However, post-excavation sampling indicated that the soil remediation ultimately met NJDEP's more stringent RDCSCC in effect at that time of 0.49 mg/kg for PCBs.

All contaminated soils, underground storage tanks, and residual liquids were sent off-site for disposal and/or treatment, as necessary. EPA's remedial action report, dated September 2003, documents the soil portion of the cleanup, which included the excavation and disposal of 13,000 tons of contaminated soil, solid waste, and debris, four underground storage tanks, and 2,600 gallons of liquid waste (Figure 2).

A soil vapor extraction (SVE) system was installed, including three banks of SVE wells and collection lines that allowed contaminated vapors to be extracted from the vadose zone, the subsurface area that extends from the ground surface to the groundwater table. A fence was installed around the treatment facilities to provide security and prevent trespassing. The SVE system started operation in 2007, and was shut down in June 2010, after groundwater levels increased when the nearby public supply wells were closed, thus submerging the SVE wells underwater.

Groundwater

EPA entered into an Interagency Agreement with the United States Army Corps of Engineers (USACE) Baltimore District to prepare the remedial design for the groundwater remediation and oversee remedial construction. The largest element of the remedial design/remedial construction was the groundwater extraction and treatment system (GETS). Construction of the GETS began in July 2006 and was completed in July 2007. Award of the long-term remedial action (LTRA) contract was made in June 2009, at which time the LTRA began.

Data indicated that the GETS efficiently removed contaminants from the groundwater prior to on-site reinjection. The primary contaminants of concern in groundwater, as identified in the 1992 ROD, are ethylbenzene, toluene, xylene, trichloroethene (TCE), lead, and chromium. The GETS reduced levels of all contaminants present in extracted groundwater to meet the New Jersey Class II-A Groundwater Quality Standards (GWQS) before the groundwater was reinjected back into the aquifer.

EPA began a pilot study in August 2017 to test the effectiveness of In-Situ Chemical Oxidation (ISCO) in reducing volatile organic compound (VOC) concentrations in groundwater. The pilot study was conducted to address remaining contamination that EPA had identified using a Membrane Interface Probe/Hydraulic Profiling Tool (MIPHPT). The revised conceptual Site model for soil and groundwater includes a fairly uniform layer of soil impacted largely by xylenes. This layer ranges from 20-24 feet deep and two to four feet thick; however, most of the contamination is located in the interval of 20-22 feet below the ground surface (bgs). Some evidence suggests that a shallow lower permeability unit could be present resulting in a shallow perched water-bearing unit in some portions of the Site. It appears that in limited areas, high concentrations of VOCs or limited immobile solvent material could be sorbed to soil particles beneath the water table particularly in the area where the Cosden Chemical production plant underground storage tanks were once located. EPA and USACE determined that ISCO could more quickly address this remaining contamination than the GETS. The GETS was shut down in May 2018, due in part to the potential for ISCO treatment materials to enter the treatment plant during the pilot study.

During the pilot study, EPA installed 16 monitoring wells to focus monitoring activities where VOC concentrations are highest, including monitoring wells MW-103, MW-105, MW-109 and MW-110. Four rounds of injections of persulfate with a sodium hydroxide activator were performed between 2017 and 2021. Groundwater monitoring was conducted before and after each injection event to establish baseline concentrations that could be used to evaluate treatment effectiveness.

Vapor Intrusion

Vapor intrusion can occur when volatile contaminants in groundwater volatilize and enter commercial and residential buildings as contaminated vapors. Since the primary contaminants of concern at the Site are VOCs, vapor intrusion was evaluated in March 2004 via groundwater sampling to determine if vapor intrusion would be a concern. EPA determined that the vapor intrusion pathway was not complete because no VOCs were detected above EPA's screening criteria. The results of this evaluation remain valid since the concentrations of VOCs in groundwater have continued to decline since 2004 and no VOCs are detected above screening levels in off-site wells. The only buildings on the Site are related to the extraction/treatment/reinjection system.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The Focused Feasibility Study (FFS) report and the Proposed Plan for the remedy amendment were released to the public for comment on July 29, 2022. These documents were made available to the public in the administrative record file on the EPA Region 2 website at https://www.epa.gov/superfund/cosden-chemical. The notice of availability for these documents was published in the *Burlington County Times* on July 29, 2022. A public comment period was held from July 29, 2022 through August 29, 2022. EPA also maintains a local repository at the Beverly Municipal Building, which is located at 446 Broad Street, Beverly, NJ 08010, and phone number (609) 387-1881. In addition, on August 16, 2022, EPA conducted a virtual public meeting to discuss the findings of the FFS and to present EPA's Proposed Plan for the ROD Amendment to local officials and the community. There were several questions or comments from the audience and EPA received additional comments in writing during the public comment period.

Responses to the questions and comments received at the public meeting and in writing during the public comment period are included in the Responsiveness Summary section of this ROD Amendment (see Appendix III).

SCOPE AND ROLE OF THE RESPONSE ACTION

The Site cleanup is being addressed in one phase or Operable Unit (OU), which addresses three distinct components, namely the building, soils and groundwater. Based on the RI/FS that was conducted by EPA at the Site from April 1988 until September 1992, a ROD was issued by EPA on September 30, 1992. The 1992 ROD identified the following Remedial Action Objectives (RAOs) for the remedy:

- Prevent exposure to contaminant sources that present a significant human health risk; and,
- Restore contaminated groundwater to drinking water standards.

The major components of the selected remedy in the 1992 ROD included:

- Decontamination and demolition of the building on the Site with disposal of the building debris at an appropriate off-site facility;
- In-situ stabilization of soil contaminated with inorganic compounds and PCBs; and,
- Extraction of contaminated groundwater with on-site treatment and recharge to the underlying aquifer.

The 1992 ROD was modified by an ESD that EPA issued in 1998. As a result of the 1992 ROD and 1998 ESD, the remedy included the following components to meet the Site RAOs:

- Decontamination and demolition of the building on the Site with disposal of the building debris at an appropriate off-site facility;
- Excavation of soils with off-site treatment (if necessary) and disposal;
- Construction of a soil vapor extraction system to address the remaining contaminants

present in soil above the water table (the vadose zone); and,

- Extraction of contaminated groundwater with on-site treatment and recharge to the underlying aquifer.

This ROD Amendment adds an additional RAO to the existing remedy, which is to address the remaining groundwater source area contamination where concentrations are the highest, including in the vicinity of monitoring wells MW-03, MW-103, MW-105, MW-109 and MW-110 at the Site. This RAO supplements the existing Site RAOs and remediation goals.

The Site's building demolition and soil remedy, which were conducted in accordance with the 1992 ROD and 1998 ESD, are complete and are not being modified by this ROD Amendment. The remedy amendment to the 1992 ROD selected herein is expected to be the final action for the Site.

SUMMARY OF SITE CHARACTERISTICS

The Site is located within a residential area at the intersection of Manor Road and Cherry Street in the southeastern corner of the City of Beverly in Burlington County, New Jersey. The property is bounded on the north and east by residential streets, on the south by Conrail tracks and farmland, and on the west by undeveloped land. The nearest residence is approximately 300 feet to the north of the Site. The Beverly Elementary School is located 0.2 miles to the northeast. The neighboring area is suburban with some light industry.

According to EPA's EJSCREEN, there are no demographic indicators for the City of Beverly that identify it as a community with environmental justice concerns. South of the Site, there are some demographic indicators that this area is above the 80th percentile when compared to national percentiles for communities over age 64, low income, and linguistically isolated.

The Delaware River is approximately 4,000 feet to the north of the Site, and Rancocas Creek is approximately 1.5 miles to the southwest of the Site. The population within a one-mile radius of the Site is approximately 800 people.

Two former public supply wells owned and operated by New Jersey American Water Company are located approximately 3,200 feet north of the Site but are no longer in use. New Jersey American Water Company closed the two supply wells more than twenty years ago and replaced them with a larger surface water treatment plant along the Delaware River.

The hazardous substances still present at the Site are VOCs and metals in groundwater. Specifically, the VOCs consist of total xylenes, ethylbenzene, toluene, and trichloroethene and the metals are lead and chromium. The Conceptual Site Model for the Site indicates that these contaminants are currently located only in a groundwater plume on the Site estimated to be approximately 9,000 square feet (0.21 acres) in size and located 20 to 25 feet bgs.

Site Geology and Hydrology

The Site is located in the Atlantic Coastal Plain physiographic province of southern New Jersey. Unconsolidated sediments in the shallow subsurface soil at the Site are alluvial deposits consisting mainly of sand and gravel with minor amounts of silt and clay. The Potomac-Raritan-Magothy (PRM) aquifer is the primary aquifer in the area of the Site and a significant source of municipal water for the region. This regional aquifer system is composed of three sandy aquifers (designated Lower, Middle, and Upper) that are separated by intervening confining units composed of silt and clay. The Upper PRM aquifer is not present at the Site. The contaminated aquifer at the Site is the Middle PRM aquifer.

North of the Site property, regional groundwater flows northward towards the Delaware River. The Delaware River is the major surface water feature located approximately 4,000 feet north of the property. The projected 100-year flood of the Delaware River is expected to extend no closer than 3,000 feet north of the property. The closest distance that the 500-year flood is expected to occur is approximately 1,900 feet to the north.

Current water-level data collected during non-pumping conditions indicate a groundwater divide at the northern limit of the Site. Groundwater at the Cosden property has a west/northwest flow direction (Figure 3), possibly influenced by the nearby Bog's Ditch and its unnamed tributary, while groundwater off-property flows north/northwest towards the Delaware River. The low hydraulic gradient measured at the Site, permeabilities measured during MIPHPT probes, dye injections, and movement of oxidant as part of the ISCO pilot study all indicate that groundwater moves slowly through the Site.

Static groundwater levels collected during the past five years as part of the ISCO pilot study indicates that the water table is located approximately 17 feet bgs on the Site property. An EPA well survey conducted in May 1991 found no private wells used for drinking water in the vicinity of the Site, and since that time, EPA has not identified any private wells used for drinking water near the Site. Two public supply wells owned by New Jersey American Water Company (Wells No. 15 and 16) are located approximately 3,200 feet north of the Site but are no longer in use. New Jersey American Water closed the two supply wells more than twenty years ago and replaced them with a larger surface water treatment plant along the Delaware River.

Current Nature and Extent of Contamination

In 2015 and 2016, EPA performed MIPHPT investigations at the Site to identify where contamination was still present in groundwater and found that contamination was generally present at depths between 20 and 25 feet bgs. Sixteen new monitoring wells were installed on the Site to target this depth. As described above, EPA initiated an ISCO pilot study to determine if ISCO could address the remaining contamination. Field work took place between August 2017 and May 2021. Thousands of individual groundwater contaminant analyses obtained during the ISCO pilot study can be found in Appendix D-2 of the Summary Report for In-Situ Chemical Oxidation Pilot Study, which is in the administrative record. Groundwater analytical results for ethylbenzene, toluene and total xylene are shown for the duration of the pilot study from 2017 to 2021 (Figure 4).

Recent concentrations of contaminants in the new monitoring wells after four rounds of ISCO pilot study injections are summarized below:

Ethylbenzene – After injections, some of the new monitoring wells did not report any detectable concentrations of ethylbenzene (non-detect). The highest detected concentration was 13,800 micrograms per liter (μg/L) in 2021. This is a reduction from the previous maximum concentration of 25,200 μg/L in 2018.

Toluene – Concentrations in 2021 ranged from non-detect to 957 μg/L. This is a reduction from the maximum concentration of 3,220 μg/L in 2018.

Total Xylenes – Concentrations in 2021 ranged from 1.1 μg/L to 59,100 μg/L. This is a reduction from the previous maximum concentration of 114,000 μg/L in 2018. The highest concentrations include monitoring wells MW-03, MW-103, MW-105, MW-109 and MW-110.

Trichloroethene – Concentrations in 2021 ranged from non-detect to 53.3 μg/L.

Total Lead – Concentrations in 2021 ranged from non-detect to 15 μg/L.

Total Chromium – Concentrations in 2021 ranged from non-detect to 1,500 μg/L.

With the exception of total chromium in a single monitoring well, total lead and total chromium concentrations were below NJDEP GWQS in groundwater before the ISCO pilot study. Total lead and total chromium concentrations are now above NJDEP GWQS primarily in portions of the Site where ISCO injections were concentrated. This is due to the oxidizing conditions created by the persulfate that was injected for the ISCO treatment. These increases in metal concentrations due to ISCO are typically transitory and are expected to re-equilibrate after injections cease, so that the metal concentrations return to the pre-injection levels over time.

The area of residual higher levels of toluene, ethylbenzene, and total xylenes (TEX) contamination generally coincides with groundwater total xylene concentrations greater than 1,000 μg/L and was reduced from 0.77 acres prior to the ISCO pilot study to 0.21 acres post-pilot study. This is the remaining source area at the Site (Figure 5).

In addition, four monitoring wells, MW-10I, PZ-10S, MW-108, and MW-114, are located on the Cosden property near the property boundary, in the downgradient direction of groundwater flow. EPA uses these wells to monitor whether groundwater contamination is leaving the property. These monitoring wells were installed in response to changes in the direction of groundwater flow when groundwater pumping ceased at the two downgradient public supply wells. The monitoring wells have reported single detections of VOCs above the remediation goals established in the ROD and NJDEP GWQS standards in the past five years, specifically single detections of ethylbenzene, total xylenes, and trichloroethene. Recent sampling in April 2021 indicates that concentrations of ethylbenzene and trichloroethene may no longer be above the standards, though EPA will continue to sample these monitoring wells to confirm this.

Major Conclusions of the Pilot Study

- The 16 new monitoring wells installed during the pilot study helped to delineate the extent of TEX and the magnitude of the remaining TEX groundwater contamination at the Site. In addition, water-level elevations measured using new and existing monitoring wells confirmed the direction of shallow groundwater flow was westerly across the Site.

- Overall, the ISCO injections were successful in eliminating or reducing TEX concentrations at monitoring wells within targeted treatment zones. Fourteen monitoring wells showed significant declines (greater than 50%) in TEX compound concentrations between initial sampling in 2017 and the May 2021 sampling.

- Total xylene concentrations in groundwater remained high in some monitoring wells. For example, the total xylene concentration at MW-103 was 37,400 µg/L in May 2021 and the total xylene result for MW-110 was 28,600 µg/L in October 2020 indicating additional injections will be necessary to achieve the remediation goals.

- Ethylbenzene levels during the same period decreased by nearly 50%. At well MW-105, total xylene concentrations decreased from 59,000 µg/L (November 2017) to 5,160J (estimated) µg/L (May 2021), and ethylbenzene concentrations showed a similar approximate 10-fold decrease.

- Based upon pilot study calculations, the volume of contaminated groundwater was reduced by the four rounds of ISCO injections by approximately 73%. This calculation used the saturated aquifer thickness of 25 feet and the square footage of the total xylene plume greater than 1,000 µg/L before and after injections. More specifically, the plume was estimated as roughly 33,500 ft^2 (0.77 acres) prior to ISCO injections and about 9,000 ft^2 (0.21 acres) after ISCO injections. The average concentration of individual contaminants has also been reduced by more than 70% (Table 1).

Off-Property Monitoring Wells

Eight off-property monitoring wells were installed in 2001 as part of an off-property groundwater investigation. They are located outside of the Cosden property boundaries (Figure 6). Though these monitoring wells were historically located downgradient from the Site, these monitoring wells are now located hydraulically downgradient and side-gradient from the source area due to the elimination of the effects from the aquifer pumping at the former public supply wells. The off-property monitoring wells were sampled in September 2017, March 2018, and April 2021. The off-property monitoring wells have not reported any exceedances of NJDEP GWQS or ROD levels for VOCs or metals in the past five years.

Emerging Contaminants

Per- and polyfluoroalkyl substances (PFAS) – Six monitoring wells were sampled for PFAS in April 2021. NJDEP has developed GWQS for three specific PFAS chemicals: Perfluorononanoic Acid (PFNA, 13 nanograms per liter (ng/L)), Perfluorooctane Sulfonate (PFOS, 13 ng/L), and

Perfluorooctanoic Acid (PFOA, 14 ng/L). PFNA concentrations ranged from non-detect at MW-10I to 19 ng/L at MW-8S. MW-8S is the most hydraulically upgradient monitoring well on the Site. PFOS concentrations ranged from non-detect at MW-9S to 66.8 ng/L at MW-3. PFOA concentrations ranged from 41.8 ng/L at MW-10I to 253 ng/L at MW-8S. MW-10I and PZ-10S, the most downgradient Site wells, reported detections of PFAS above NJDEP GWQS. The highest reported concentrations of PFAS at PZ-10S was PFOA at 81 ng/L.

1,4-Dioxane - Four on-site monitoring wells were sampled for 1,4-dioxane in November 2019. All of the monitoring wells sampled reported non-detect values. Downgradient monitoring well MW-10I did not report detections of 1,4-dioxane, but downgradient monitoring well MW-108 reported 1.3J µg/L in November 2019. In 2021, eight on-site monitoring wells, including downgradient monitoring well MW-108, were sampled for 1,4-dioxane, with a detection limit below NJDEP GWQS (0.4 µg/L). MW-108 reported 0.406 µg/L in April 2021. All other monitoring wells reported non-detect values in 2021.

1,2,3-Trichloropropane - Four on-site monitoring wells (MW-103, MW-104, MW-105, and MW-110) were sampled for 1,2,3-tricholoropropane in March 2021. All monitoring wells were non-detect for 1,2,3-trichloropropane with a detection limit below the 0.03 µg/L NJDEP GWQS.

Additional investigation of PFAS contamination is required in order to determine the nature and extent of that contamination and whether the PFAS contaminants are Site-related. This ROD Amendment does not address PFAS contamination.

CURRENT AND POTENTIAL FUTURE SITE AND RESOURCE USES

Land Use

The Site is located in the southeastern corner of the City of Beverly, Burlington County, New Jersey, approximately one-half mile southeast of the Delaware River. The Site address is 1023 Cherry Street, and the property encompasses approximately 6.7 acres. Two buildings, a soil vapor extraction system building and the groundwater extraction and treatment system building, are currently located on the property. The Site is bounded on the north by Cherry Street, on the east by Manor Road, on the south by railroad tracks, and on the west by undeveloped land. The neighboring area is suburban residential with some light industry.

Groundwater Use

The PRM aquifer is the primary aquifer in the area of the Site and a significant source of municipal water for the region. This regional aquifer system is composed of three sandy aquifers (designated Lower, Middle, and Upper) which are separated by intervening confining units composed of silt and clay. The Upper PRM aquifer is not present at the Site. The contaminated aquifer at the Site is the Middle PRM aquifer.

North of the Cosden property, regional groundwater flows northward towards the Delaware River. The Delaware River is the major surface water feature located approximately 4,000 feet north of the property.

Two former public supply wells owned and operated by New Jersey American Water Company are located approximately 3,200 feet north of the Site but are no longer in use. New Jersey American Water closed the two supply wells more than twenty years ago and replaced them with a larger surface water treatment plant along the Delaware River. Residents in the Site vicinity are currently connected to a municipal drinking water supply. Groundwater is used for irrigation and potable water supply in the adjacent Edgewater Park Township.

BASIS FOR REMEDY MODIFICATION

This is an amendment to the 1992 ROD as modified by the 1998 ESD. The 1992 ROD addressed groundwater contamination by selecting extraction and treatment, which EPA implemented until 2018, shortly after EPA began performing the ISCO pilot study. Through this ROD Amendment, the remaining groundwater source area contamination will be addressed through in-situ treatment. The in-situ treatment consists of ISCO, which utilizes oxidants injected into the groundwater aquifer in the source areas to transform harmful contaminants into less toxic byproducts. The pilot study was performed between 2017 and 2021 to determine ISCO's effectiveness in reducing levels of remaining source area contamination. Based on the findings of the ISCO pilot study, the source area of TEX contamination was reduced from 0.77 acres prior to the ISCO pilot study to 0.21 acres post-pilot study. This area is the remaining source area at the Site subject to this ROD Amendment.

SUMMARY OF SITE RISKS

As part of the 1988-1992 Remedial Investigation, EPA conducted a baseline risk assessment to determine the current and future effects of contaminants on human health and environment. A baseline risk assessment is an analysis of the potential adverse human health and ecological effects caused by hazardous substance exposure in the absence of any actions to control or mitigate these exposures under current and future site uses. It provides the basis for taking an action and identifies the contaminants and exposure pathways to be addressed by the remedial action. This section of the ROD Amendment specifically focuses on the results of the 1992 risk assessment associated with the groundwater, since the remedy selected in the 1992 ROD and modified by the 1998 ESD successfully addressed soil contamination at the Site.

In the human health risk assessment (HHRA), cancer risk and noncancer health hazard estimates are based on current reasonable maximum exposure (RME) scenarios. The estimates were developed by taking into account various health protective estimates about the concentrations, frequency and duration of an individual's exposure to chemicals selected as contaminants of potential concern (COPCs), as well as the toxicity of these contaminants.

Human Health Risk Assessment

A four-step process is utilized for assessing site-related human health risks for a reasonable maximum exposure scenario:

- *Hazard Identification* – uses the analytical data collected to identify the contaminants of potential concern at the site for each medium (e.g., groundwater), with consideration of a number of factors explained below;

- *Exposure Assessment* - estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (e.g., ingesting contaminated well-water) by which humans are potentially exposed;

- *Toxicity Assessment* - determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response); and

- *Risk Characterization* - summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks. The risk characterization also identifies contamination with concentrations which exceed acceptable levels, defined by the NCP as an excess lifetime cancer risk greater than $1 \times 10^{-6} – 1 \times 10^{-4}$, an excess of lifetime cancer risk greater than 1×10^{-6} (i.e., point of departure) combined with site-specific circumstances, or a Hazard Index (HI) greater than 1; contaminants at these concentrations are considered chemicals of concern (COCs) and are typically those that will require remediation at the site. Also included in this section is a discussion of the uncertainties associated with these risks.

Hazard Identification

In this step, the COPCs[1] in each medium were identified based on such factors as toxicity, frequency of occurrence, fate and transport of the contaminants in the environment, concentrations, mobility, persistence and bioaccumulation. The 1992 risk assessment focused on the groundwater at the Site that may pose significant risk to human health. The HHRA began with selecting COPCs in groundwater that could potentially cause adverse health effects in exposed populations. COPCs are typically selected by comparing the maximum detected concentrations of each chemical identified with state and federal risk-based screening values. In the 1992 HHRA, however, all positively detected compounds for which toxicological data was available were conservatively retained as COPCs. Analytical information that was collected to determine the nature and extent of contamination revealed the presence of VOCs, SVOCs, metals, pesticides and PCBs. Tables listing COPCs can be found in Table 3.2-2 of the HHRA and tables listing the COCs can be found in Table 2 of the 1992 ROD in the administrative record. Table 2 is also provided in Appendix II of this ROD Amendment.

Exposure Assessment

Consistent with Superfund policy and guidance, the HHRA is a baseline human health risk assessment and therefore assumes no remediation or institutional controls to mitigate or remove hazardous substance releases. Cancer risks and noncancer hazard indices were calculated based on an estimate of the reasonable maximum exposure (RME) expected to occur under current and future conditions at the Site. The RME is defined as the highest exposure that is reasonably expected to occur at a site.

[1] Note that the 1992 HHRA referenced COPCs and COCs synonymously.

The HHRA assumed that future land use at the Site could include residential development. Thus, the HHRA focused on health effects for both children and adults resulting from future direct contact with contaminated groundwater (e.g., through ingestion of volatile contaminants) in the event a well was installed at the Site for potential use as tap water. Tables listing exposure pathways can be found in Table 3.3-1 of the HHRA and Table 3 of the 1992 ROD in the administrative record. Table 3 is also provided in Appendix II of this ROD Amendment.

Toxicity Assessment

In this step, the types of adverse health effects associated with contaminant exposures and the relationship between magnitude of exposure and severity of adverse health effects were determined. Potential health effects are contaminant-specific and may include the risk of developing cancer over a lifetime or other noncancer health effects, such as changes in the normal functions of organs within the body (*e.g.*, changes in the effectiveness of the immune system). Some contaminants are capable of causing both cancer and noncancer health effects.

Under current EPA guidelines, the likelihood of carcinogenic risks and noncancer hazards due to exposure to site chemicals are considered separately. Consistent with current EPA policy, EPA assumed that the toxic effects of the Site-related chemicals would be additive. Thus, cancer and noncancer risks associated with exposures to individual COPCs were summed to indicate the potential risks and hazards associated with mixtures of potential carcinogens and noncarcinogens, respectively. Tables listing toxicity data can be found in Tables 3.4-1 to 3.4-2 of the HHRA and Table 4 of the 1992 ROD in the administrative record. Table 4 is also provided in Appendix II of this ROD Amendment.

Risk Characterization

This step summarized and combined outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks. Exposures were evaluated based on the potential risk of developing cancer and the potential for noncancer health hazards.

Noncarcinogenic risks were assessed using an HI approach, based on a comparison of expected contaminant intakes and benchmark comparison levels of intake (reference doses, reference concentrations). Reference doses (RfDs) and reference concentrations (RfCs) are estimates of daily exposure levels for humans (including sensitive individuals) which are thought to be safe over a lifetime of exposure. The estimated intake of chemicals identified in environmental media (*e.g.*, the amount of a chemical ingested from contaminated drinking water) is compared to the RfD or the RfC to derive the hazard quotient (HQ) for the contaminant in the particular medium. The HI is obtained by adding the hazard quotients for all compounds within a particular medium that impacts a particular receptor population.

The HQ for oral and dermal exposures is calculated below. The HQ for inhalation exposures is calculated using a similar model that incorporates the RfC, rather than the RfD.

HQ = Intake/RfD

Where: HQ = hazard quotient
Intake = estimated intake for a chemical (mg/kg-day)
RfD = reference dose (mg/kg-day)

The intake and the RfD will represent the same exposure period (i.e., chronic, subchronic, or acute).

As previously stated, the HI is calculated by summing the HQs for all chemicals for likely exposure scenarios for a specific population. An HI greater than 1 indicates that the potential exists for noncarcinogenic health effects to occur as a result of Site-related exposures, with the potential for health effects increasing as the HI increases. When the HI calculated for all chemicals for a specific population exceeds 1, separate HI values are then calculated for those chemicals which are known to act on the same target organ. These discrete HI values are then compared to the acceptable limit of 1 to evaluate the potential for noncancer health effects on a specific target organ. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single medium or across media.

For carcinogens, risks are generally expressed as the incremental probability of an individual developing cancer over a lifetime as a result of exposure to a carcinogen, using the cancer slope factor (SF) for oral and dermal exposures and the inhalation unit risk (IUR) for inhalation exposures. Excess lifetime cancer risk for oral and dermal exposures is calculated from the following equation, while the equation for inhalation exposures uses the IUR, rather than the SF:

Risk = LADD x SF

Where: Risk = a unitless probability (1×10^{-6}) of an individual developing cancer
LADD = lifetime average daily dose averaged over 70 years (mg/kg-day)
SF = cancer slope factor, expressed as [1/(mg/kg-day)]

These risks are probabilities that are usually expressed in scientific notation (such as 1×10^{-4}). An excess lifetime cancer risk of 1×10^{-4} indicates that one additional incidence of cancer may occur in a population of 10,000 people who are exposed under the conditions identified in the exposure assessment. Current Superfund guidance identifies the range for determining whether a remedial action is necessary as an individual lifetime excess cancer risk of 1×10^{-4} to 1×10^{-6} (corresponding to a one-in-ten-thousand to a one-in-a-million excess cancer risk), with 1×10^{-6} being the point of departure.

In summary, EPA determined that ingestion of contaminated groundwater in a future use scenario presented an elevated risk to human health since the hazard indices were estimated to be 16 for children and 11 for adults, exceeding EPA's noncancer hazard threshold (i.e., HI of 1). Additionally, residential adult ingestion of groundwater as drinking water yielded a cancer risk of 3×10^{-4}, exceeding EPA's target risk range of 1×10^{-6} to 1×10^{-4}. Tables for cancer and noncancer risk associated with groundwater can be found in Tables 3.5-19 to 3.5-22 of the

HHRA and Table 5 of the 1992 ROD in the administrative record. Table 5 is also provided in Appendix II of this ROD Amendment, and is summarized below:

Summary cancer risks and hazard indices associated with groundwater

Receptor	**Cancer Risk**	**Hazard Index**
Future Resident Ingestion (Adult)	**$3x10^{-4}$**	**11**
Future Resident Ingestion (Child)	$9x10^{-5}$	**16**

The majority of risk and hazard identified in the 1992 risk assessment and displayed in the summary table above was driven by inorganic compounds (i.e., beryllium, antimony, arsenic and manganese) in shallow groundwater, which was impacted by contamination in overlying soils and has since been addressed. However, the concentrations of the following contaminants continue to be found in groundwater above promulgated federal and/or state Maximum Contaminant Levels (drinking water standards) and also contributed to the human health risk: toluene, ethylbenzene, xylene and trichloroethene. As an effect of the pilot study, chromium and lead currently exceed drinking water standards. These exceedances are expected to be transitory and will re-equilibrate so that the metal concentrations return to the pre-injection levels over time. The most recent sampling data from April and May 2021 showed concentrations of these VOCs and metals above drinking water standards, as well as the New Jersey GWQS, and can be found in Table 6.

As mentioned in the "Site History" section above, vapor intrusion exposure was evaluated in March 2004 via groundwater sampling. EPA determined that the vapor intrusion pathway was not complete because no VOCs were detected above EPA's screening criteria.

Uncertainties

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

- environmental chemistry sampling and analysis;
- environmental parameter measurement;
- fate and transport modeling;
- exposure parameter estimation; and
- toxicological data.

Uncertainty in environmental sampling arises in part from the potentially uneven distribution of chemicals in the media sampled. Consequently, there is significant uncertainty as to the actual levels present. Environmental chemistry analysis error can stem from several sources including the errors inherent in the analytical methods and characteristics of the matrix being sampled.

Uncertainties in the exposure assessment are related to estimates of how often an individual would actually come in contact with the COCs, the period of time over which such exposure would occur, and in the models used to estimate the concentrations of the COCs at the point of exposure.

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as from the difficulties in assessing the toxicity of a mixture of chemicals. These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the risk assessment provides upper-bound estimates of the risks to populations near the Site, and is highly unlikely to underestimate actual risks related to the Site.

More specific information concerning uncertainty in the health risks is presented in the HHRA in the administrative record.

Ecological Risk Assessment

The environmental evaluation provides a qualitative assessment of the actual or potential impacts associated with the Site on plants and animals (other than people or domesticated species). The primary objectives of this assessment are to identify the ecosystems, habitats, and populations likely to be found at the Site and to characterize the contaminants, exposure routes and potential impacts on the identified environmental components.

The ecological risk assessment portion of the 1992 risk assessment did not identify any endangered species, sensitive ecosystems, or sensitive habitats on the Site and concluded that adverse impacts to on-site plants and animals from site related contamination are not likely.

The response action selected in this decision document is necessary to protect the public health, welfare or the environment from actual or threatened releases of contaminants into the environment.

REMEDIAL ACTION OBJECTIVES

RAOs were developed to address the human health risks and environmental concerns posed by Site-related contamination in the 1992 ROD and remain unchanged in this ROD Amendment. The 1992 ROD identified the following RAOs for the remedy:

- Prevent exposure to contaminant sources that present a significant human health risk; and,
- Restore contaminated groundwater to drinking water standards.

This ROD Amendment adds an additional RAO to the existing remedy by addressing the remaining groundwater source area contamination where concentrations are the highest, including in the vicinity of monitoring wells MW-03, MW-103, MW-105, MW-109 and MW-110 at the Site. This source area RAO supplements the existing Site RAOs:

- Reduce contaminant mass in the source area such that the maximum dissolved-phase concentration of xylene is lowered between 97-98 percent.

DESCRIPTION OF REMEDIAL ALTERNATIVES

Section 121(b)(1) of CERCLA, 42 U.S.C. § 9621(b)(1), mandates that remedial actions be protective of human health and the environment, cost-effective, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. Section 121(b)(1) of CERCLA also establishes a preference for remedial actions that employ, as a principal element, treatment to reduce permanently and significantly the volume, toxicity, or mobility of the hazardous substances, pollutants, and contaminants at a site. Section 121(d) of CERCLA, 42 U.S.C. § 9621(d), further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants, and contaminants which assures protection of human health and the environment and that at least attain applicable or relevant and appropriate requirements (ARARs) under federal and state laws, unless a waiver can be justified pursuant to Section 121(d)(4) of CERCLA, 42 U.S.C. § 9621(d)(4).

Based on the FFS Report, and as presented in the Proposed Plan, the alternatives for modifying the remedy selected in the 1992 ROD, as modified by the ESD, are described below. The time frames presented below for construction do not include the time for pre-design investigations, remedial design, or contract procurements. For each alternative, a review would be conducted every five years after the initiation of the remedial action, until remediation goals were achieved.

This ROD Amendment is only for the remaining groundwater source area contamination where concentrations are the highest at the Site. All other elements of the 1992 ROD remain in effect and are unchanged.

Common Elements for the Alternatives

Both alternatives described below include institutional controls (ICs) consisting of a Classification Exception Area/Well Restriction Area (CEA/WRA), which is a restriction established under New Jersey regulations that will provide notice that the groundwater does not meet designated use requirements and will restrict groundwater uses or activities which could result in direct contact with contaminated groundwater. A NJDEP CEA/WRA would restrict future groundwater use activities that would expose users to contaminants at levels that may pose human health risk, until the RAO for groundwater restoration is met. Long-Term Monitoring (LTM) will be used as a basis for evaluating the terms of the CEA/WRA and monitoring the progress of lowering the concentration of COCs.

Original Remedy – Groundwater Extraction and Treatment

Capital Cost:	$555,650
Annual O&M Cost:	$747,000
Total Present Worth Cost:	$10,322,320
Time to attain RAO:	30 years
Construction Timeframe:	1 year

The Groundwater Extraction and Treatment remedial alternative consists of groundwater collection, treatment, and reinjection of the treated groundwater. This alternative also includes a LTM program. As part of the remedy selected in 1992, a groundwater extraction and treatment system was constructed at the Site and operated from July 2009 through June 2018. Contaminated groundwater was pumped from the subsurface through two extraction wells, identified as RW-1 and RW-2, and conveyed to the treatment system, which is located within a dedicated building on the Site. The treatment system includes a pretreatment system for metals removal by addition of hydrogen peroxide and multi-media filtration. The water then passes through two granular activated carbon (GAC) vessels, in series, to remove VOC contamination. The treated water then is routed to a tank for filter and GAC vessel backwashing or is discharged to the reinjection trenches. The reinjection trenches consist of two banks and each bank contains two trenches for a total of four possible reinjection trenches. The system was shut down in June 2018 when EPA decided to perform the ISCO pilot study.

This alternative consists of repairing the treatment plant, and would include supervisory control and data acquisition (SCADA) system upgrades, replacement of media in both the multi-media and carbon filters, other general repairs, and the installation of two new extraction wells that would be placed to target the remaining source area contamination. The treatment plant would then be operated for an estimated 30 years to attain groundwater RAOs.

Preferred Alternative – In-Situ Treatment

Capital Cost:	\$913,500
Annual O&M Cost:	\$40,000
Total Present Worth Costs:	\$1,409,900
Time to attain RAO:	~5 years
Construction Timeframe:	N/A

This in-situ treatment alternative consists of ISCO which utilizes oxidants injected into the groundwater aquifer in the source areas to transform harmful contaminants (specifically, VOCs) into less toxic byproducts. This alternative also includes an LTM program. At the Site, the ISCO pilot study involved the injection of sodium persulfate oxidant and sodium hydroxide activator into the subsurface to determine the effectiveness in reducing levels of remaining VOC contamination in the groundwater. This remedial alternative involves several rounds of additional ISCO injections, followed by sampling after each injection event. Additional sampling and analysis will need to be performed to evaluate if additional injection treatment, such as in-situ alternative chemical oxidants or in-situ chemical reduction, will be required to fully address the residual contaminants at the Site. EPA does not expect it will be necessary to treat metals that may become elevated after the ISCO injections because such ISCO-induced increases are typically transitory, with the metal concentrations returning to their pre-injection levels over time.

Based on the findings of the ISCO pilot study, this alternative will consist of an estimated five rounds of ISCO injections targeting the remaining source areas, followed by an estimated 10 years of monitoring to ensure additional injections are not needed and metal concentrations re-equilibrate.

COMPARATIVE ANALYSIS OF ALTERNATIVES

In selecting a remedy, EPA considered the factors set out in CERCLA Section 121, 42 U.S.C. §9621, by conducting a detailed analysis of the viable remedial response measures pursuant to the NCP, 40 CFR §300.430(e)(9) and EPA's *Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA* (OSWER Directive 9355.3-01). The detailed analysis consisted of an assessment of the individual response measure against each of nine evaluation criteria in the NCP and a comparative analysis focusing upon the relative performance of each response measure against the criteria.

Threshold Criteria - The first two criteria are known as "threshold criteria" because they are the minimum requirements that each response measure must meet in order to be eligible for selection as a remedy.

1. Overall Protection of Human Health and the Environment

Overall protection of human health and the environment addresses whether each alternative provides adequate protection of human health and the environment and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled, through treatment, engineering controls, and/or institutional controls.

Both alternatives are considered equally protective of human health. The Original Remedy achieves protection through groundwater collection, treatment, and reinjection of the treated groundwater into the aquifer. The Preferred Alternative reduces contaminant concentrations through in-situ treatment consisting of ISCO injections into the groundwater aquifer targeted at the source areas. The exposure pathways to human receptors will be eliminated by restrictions placed on the use of groundwater within the area of groundwater contamination.

2. Compliance with applicable or relevant and appropriate requirements (ARARs)

Section 121(d) of CERCLA and NCP § 300.430(f)(1)(ii)(B) require that remedial actions at CERCLA sites at least attain legally applicable or relevant and appropriate federal and state requirements, standards, criteria, and limitations which are collectively referred to as "ARARs," unless such ARARs are waived under CERCLA section 121(d)(4).

<u>*Applicable requirements*</u> *are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those state standards that are identified by a state in a timely manner and that are more stringent than federal requirements may be applicable.* <u>*Relevant and appropriate requirements*</u> *are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site. Only those state standards that are identified in a timely manner and are more stringent than federal requirements may be relevant and*

appropriate.

Compliance with ARARs addresses whether a remedy will meet all the applicable or relevant and appropriate requirements of federal and state environmental statutes or provides a basis for invoking a waiver. ARARs are divided into three broad categories. These categories are chemical-specific, location-specific and action-specific. The full list of ARARs for this remedy amendment can be found in Table 7 of Appendix II.

The 1992 ROD identified state and federal drinking water standards as chemical-specific ARARs. Both source area alternatives are expected to help the remedy achieve compliance with these standards (as well as the New Jersey GWQS). In the Original Remedy, the contaminants would be removed by the groundwater extraction and treatment system. In the Preferred Alternative, the contaminants in the remaining source area would be reduced through in-situ treatment to meet the RAO.

Action-specific ARARs are determined by the specific technology of each alternative. Both alternatives will comply with action-specific ARARs, such as those applicable to managing stormwater runoff; minimizing land disturbances; installation, operation, and abandonment of wells; waste characterization and storage; air quality control; and noise pollution. No location-specific ARARs were identified.

Primary Balancing Criteria - The next five criteria, criteria 3 through 7, are known as "primary balancing criteria." These criteria are factors with which tradeoffs between response measures are assessed so that the best option will be chosen, given site-specific data and conditions.

3. Long-term effectiveness and permanence

A similar degree of long-term effectiveness and permanence refers to expected residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup levels have been met. This criterion includes the consideration of residual risk that will remain on-site following remediation and the adequacy and reliability of controls.

Both alternatives are expected to be protective in the long-term and permanent because they both will permanently treat groundwater contamination. The Original Remedy treats the contaminated groundwater by collection, treatment, and reinjection of the treated groundwater into the aquifer and the Preferred Alternative treats the contaminant mass in the source area using in-situ treatment. However, the Preferred Alternative is estimated to attain the RAO for reducing source area contaminant mass in a significantly shorter time than the Original Remedy, so that long-term effectiveness could be achieved more quickly.

Long-term monitoring and ICs, including a CEA/WRA, will help ensure that each alternative remains effective in preventing exposure to contaminants. Although residents in the Site vicinity are currently connected to a municipal drinking water supply, ICs, such as groundwater use restrictions, will be used to prevent the installation of any private wells within the area of the aquifer covered by the restrictions, until the RAO for groundwater restoration is met. A deed notice would be recorded in property records if it is determined that future land use at the Site would result in exposure leading to unacceptable risk.

Potential impacts to the Site 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.

4. Reduction of toxicity, mobility, or volume

Reduction of toxicity, mobility, or volume through treatment refers to the anticipated performance of the treatment technologies that may be included as part of a remedy.

Both alternatives reduce toxicity, mobility, and volume of the VOCs in groundwater through treatment of COCs. The Original Remedy will treat less contaminant mass than the Preferred Alternative since direct treatment with injection will directly target the primary source areas of contamination. During the treatment process for the Original Remedy, contaminants are removed from the groundwater by chemical precipitation and filtration in the pretreatment stage and carbon adsorption in the treatment stage resulting in wastes in the form of sludge and spent carbon. Treatment residuals will be transferred off-site for further treatment (if necessary) and disposal.

For the Preferred Alternative, in-situ treatment transforms harmful contaminants into less toxic byproducts, thereby significantly eliminating or reducing VOCs, as demonstrated in the pilot study, which showed a volume reduction of approximately 73% after four rounds of injections. Increases in the metal concentrations that occurred during the pilot study are expected to be transitory, with metal concentrations returning to their pre-injection levels over time.

5. Short-Term Effectiveness

Short-term effectiveness addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to workers, the community and the environment during construction and operation of the remedy until cleanup levels are achieved.

The Preferred Alternative is expected to attain the RAO for reducing source area contaminant mass in approximately five years, whereas the Original Remedy is expected to attain the RAO in 30 years. Both alternatives rely on ICs, including a CEA/WRA, to protect human health until the RAO for groundwater restoration is achieved.

There are no significant short-term risks to the community or the environment associated with either alternative although there is normal construction related health and safety risks for construction workers performing upgrades to the groundwater extraction and treatment system as part of the Original Remedy. Workers performing in-situ treatment injections under the Preferred Alternative and groundwater sampling/monitoring under both alternatives have the potential to be exposed temporarily to contaminants, but this risk will be minimized by the use of personal protective equipment and implementation of a Health and Safety Plan.

6. Implementability

Implementability addresses the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered.

Both alternatives are implementable. There are no significant technical implementability issues associated with either alternative. The goods and services needed to implement both alternatives are readily available. However, the Original Remedy has greater implementability challenges associated with start-up and long-term operation of the groundwater extraction and treatment system. There are no implementation issues associated with the Preferred Alternative since the treatment system is temporary and relatively easy to construct, operate and remove at completion. Pursuant to the permit exemption at Section 121(e)(1) of CERCLA, 42 U.S.C. § 9621(e)(1), no permits will be required for on-site work although substantive requirements of otherwise required permits will be met.

7. Cost

Includes estimated capital and O&M costs, and net present worth value of capital and O&M costs.

Cost includes estimated capital and annual O&M costs, as well as the total present worth cost. A present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent. The cost estimates are based on the best available information and assumes a seven percent discount rate.

The Original Remedy has a higher cost for groundwater extraction and treatment, with a total present worth cost of $10.3 million over a period of 30 years. The total present worth cost for the Preferred Alternative is substantially lower than the Original Remedy, with a total present worth cost of $1.4 million over a period of five years.

Cost Summary

Alternative	Capital Cost	O&M Cost	Total Present Worth Cost
Original Remedy	$556,000	$747,000	$10.3 million
Preferred Alternative	$914,000	$40,000	$1.4 million

Modifying Criteria - The final two evaluation criteria, criteria 8 and 9, are called "modifying criteria" because new information or comments from the state or the community on the Proposed Plan may modify the preferred response measure or cause another response measure to be considered.

8. State acceptance

Indicates whether based on its review of the FFS report and the Proposed Plan, the state supports, opposes, and/or has identified any reservations with the selected response measure.

The State of New Jersey concurs with this ROD Amendment.

9. Community acceptance

Summarizes the public's general response to the response measures described in the Proposed Plan and the FFS report. This assessment includes determining which of the response measures the community supports, opposes, and/or has reservations about.

EPA received input from the community on the two alternatives proposed for amending the ROD. The Proposed Plan was released for public comment on July 29, 2022. The comment period closed on August 29, 2022. A virtual public meeting took place on August 16, 2022. A transcript of the public meeting is included at Appendix III. Comments submitted during the public comment period and EPA's responses are included in the Responsiveness Summary in Appendix III. Overall, the community was supportive of EPA's Preferred Alternative.

PRINCIPAL THREAT WASTES

Principal threat wastes are considered source materials, *i.e.,* materials that include or contain hazardous substances, pollutants or contaminants that act as a reservoir for migration of contamination to groundwater, surface water, or as a source for direct exposure. This ROD Amendment addresses groundwater. Contaminated groundwater is generally not considered to be source material and is therefore not categorized as a "principal threat." No non-aqueous phase liquid (NAPL) has not been found in wells since 2010, and NAPL was not visually noted in any boring in at least the past five years. In addition, contaminated soil, a source of groundwater contamination was removed from the Site during remedial action activities between June 1999 and March 2002.

SELECTED REMEDY AMENDMENT

Based upon consideration of the results of Site investigations, the requirements of CERCLA, and the detailed analysis of the remedial alternatives and public comments, EPA has determined that the Preferred Alternative, In-Situ Treatment, is the appropriate remedy to address the remaining groundwater source area contamination. This remedy amendment best satisfies the requirements of CERCLA Section 121 and the NCP's nine evaluation criteria for remedial alternatives at 40 CFR § 300.430(e)(9).

This remedy amendment modifies the groundwater remedy selected in the 1992 ROD to include in-situ treatment. The major components of the remedy amendment include the following:

- In-situ groundwater treatment targeting remaining groundwater source area contamination, and

- Long-term groundwater monitoring to assess the progress of lowering the concentration of contaminants in the groundwater over time.

The remaining groundwater source area contamination will be addressed through in-situ treatment. The in-situ treatment consists of ISCO which utilizes oxidants injected into the groundwater aquifer in the source areas to transform harmful contaminants into less toxic byproducts. At the Site, a pilot study was performed between 2017 and 2021 using in-situ treatment to determine the effectiveness in reducing levels of remaining source area contamination. Based on the findings of the ISCO pilot study, the remedy consists of an estimated five rounds of in-situ chemical injections targeting the remaining groundwater source area contamination, with sampling to be completed before, between, and after each round of injections. After all injection rounds are completed, a period of monitoring will follow to allow for re-equilibration of metal concentrations and ensure that additional injections are not needed.

The remedy includes ICs, consisting of a CEA/WRA, which will restrict groundwater uses or activities which could result in direct contact with contaminated groundwater. The estimated total present worth cost for the selected remedy is $1,409,900.

Based on all available information, EPA and the State of New Jersey believe that the selected remedy amendment provides the best balance of trade-offs among the response measures with respect to the nine evaluation criteria. The selected remedy amendment will be protective of human health and the environment, will comply with ARARs, will be cost effective, and will utilize permanent solutions to the maximum extent practicable.

Consistent with EPA Region 2's Clean and Green policy, EPA will evaluate the use of sustainable technologies and practices with respect to the selected remedy amendment.

Expected Outcomes of the Selected Remedy Amendment

Implementation of the selected remedy amendment will reduce the remaining groundwater source area contamination where concentrations are the highest and is expected to achieve the source area RAO established in this remedy amendment within five years after an estimated five rounds of in-situ treatment.

Summary of the Rationale for the Selected Remedy Amendment

EPA has determined that the selected remedy amendment is appropriate because a pilot study was performed at the Site to determine the effectiveness in reducing levels of remaining source area contamination and found that the in-situ treatment was successful in eliminating or reducing contaminant concentrations at monitoring wells within targeted treatment zones. EPA estimates that the remedy amendment will achieve the source area RAO within five years, as opposed to the estimated 30 years for the original groundwater remedy.

STATUTORY DETERMINATIONS

As was previously noted, CERCLA Section 121(b)(1) mandates that a remedial action must be protective of human health and the environment, cost-effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants, or contaminants at a site. CERCLA Section 121(d) further specifies that a remedial action must attain a degree of cleanup that satisfies ARARs under federal and state laws unless a waiver can be justified pursuant to CERCLA Section 121(d)(4).

Protection of Human Health and the Environment

The selected remedy amendment will be protective of human health and the environment because in-situ treatment will reduce the remaining groundwater source area contamination where concentrations are the highest. Implementation of the selected remedy amendment will not pose unacceptable short-term risks or adverse cross-media impacts.

Compliance with ARARs

EPA expects that the selected remedy amendment for the remaining groundwater source area contamination will help the Site remedy achieve compliance with chemical-specific ARARs, consistent with the ROD. It will be implemented in compliance with action-specific ARARs.

Cost Effectiveness

EPA has determined that the selected remedy amendment is cost-effective and represents a reasonable value for the money to be spent. In making this determination, the following definition was used: "A remedy shall be cost-effective if its costs are proportional to its overall effectiveness." (40 C.F.R. §300.430(f)(1)(ii)(D)). EPA evaluated the "overall effectiveness" of the alternatives that satisfied the threshold criteria (i.e., were both protective of human health and the environment and ARAR-compliant). Overall effectiveness was evaluated by assessing three of the five balancing criteria in combination (long-term effectiveness and permanence; reduction in toxicity, mobility, or volume through treatment; and short-term effectiveness). Overall effectiveness was then compared to costs to determine cost-effectiveness. The relationship of the overall effectiveness of the selected remedy amendment was determined to be proportional to costs and hence, the selected remedy amendment represents a reasonable value for the money to be spent. The selected remedy amendment is cost-effective, as EPA has determined that its overall protectiveness is proportional to its present-worth cost.

Utilization of Permanent Solutions and Alternative Treatment Technologies

EPA has determined that the selected remedy amendment utilizes permanent solutions and treatment technologies to the maximum extent that is practicable. The selected remedy amendment will permanently address groundwater contamination through in-situ treatment, the effectiveness of which has been documented.

Preference for Treatment as a Principal Element

The selected remedy amendment meets the statutory preference for the use of remedies that involve treatment as a principal element.

Five-Year Review Requirements

A policy five-year review for the Site was completed on May 31, 2022. The selected remedy, including actions taken pursuant to the 1992 ROD, as modified by the 1998 ESD and this ROD Amendment, will not result in hazardous substances, pollutants, or contaminants remaining on-site above levels that allow for unlimited use and unrestricted exposure, but is anticipated to take more than five years to attain remedial action objectives and cleanup levels, and therefore a policy review will continue to be required.

DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for the ROD Amendment was released for public comment on July 29, 2022. The comment period closed on August 29, 2022. Comments were submitted during the public comment period. Based on these comments, no changes to the remedy amendment, as presented in the Proposed Plan, are warranted. The comments are addressed in the Responsiveness Summary in Appendix III.

APPENDIX I

FIGURES

Figure 1. Location Map of the Cosden Chemical Coatings Corp. Superfund Site

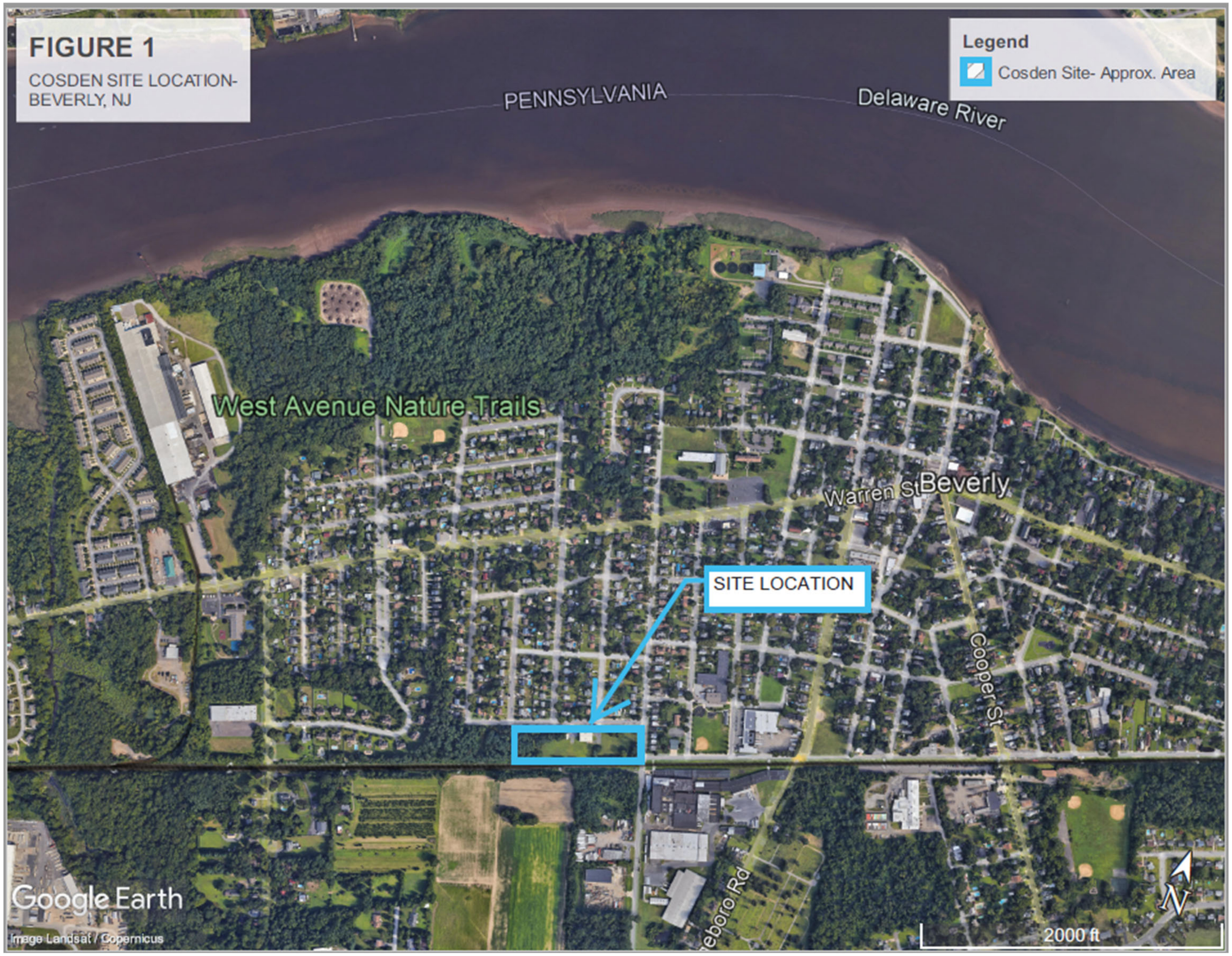


Figure 2. Soil Removal locations at the Cosden Chemical Coatings Corp. Superfund Site, 2003 Remedial Action Report

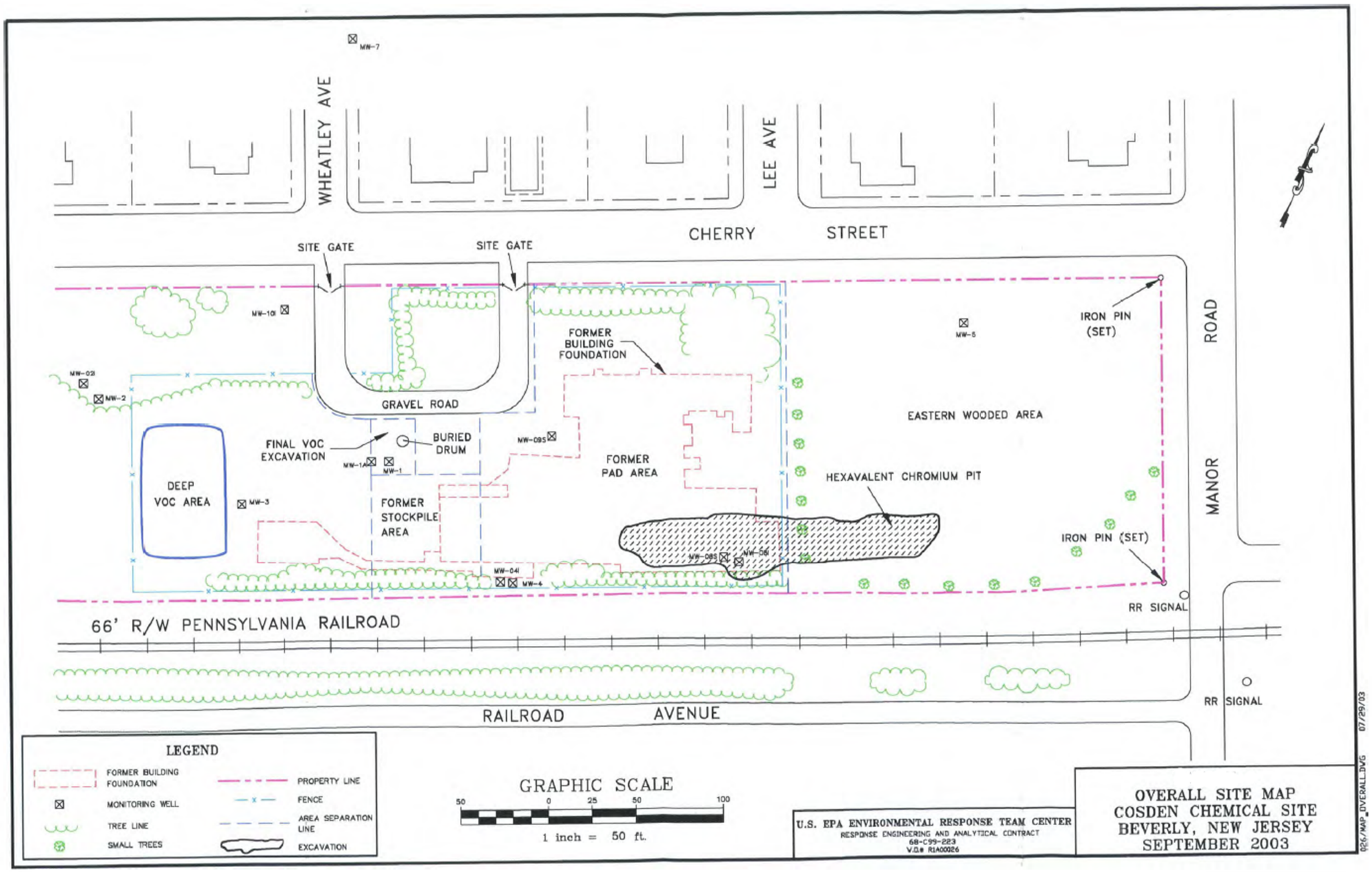


Figure 3. Groundwater Flow Map at Cosden Chemical Coatings Corp. Superfund Site, May 2021

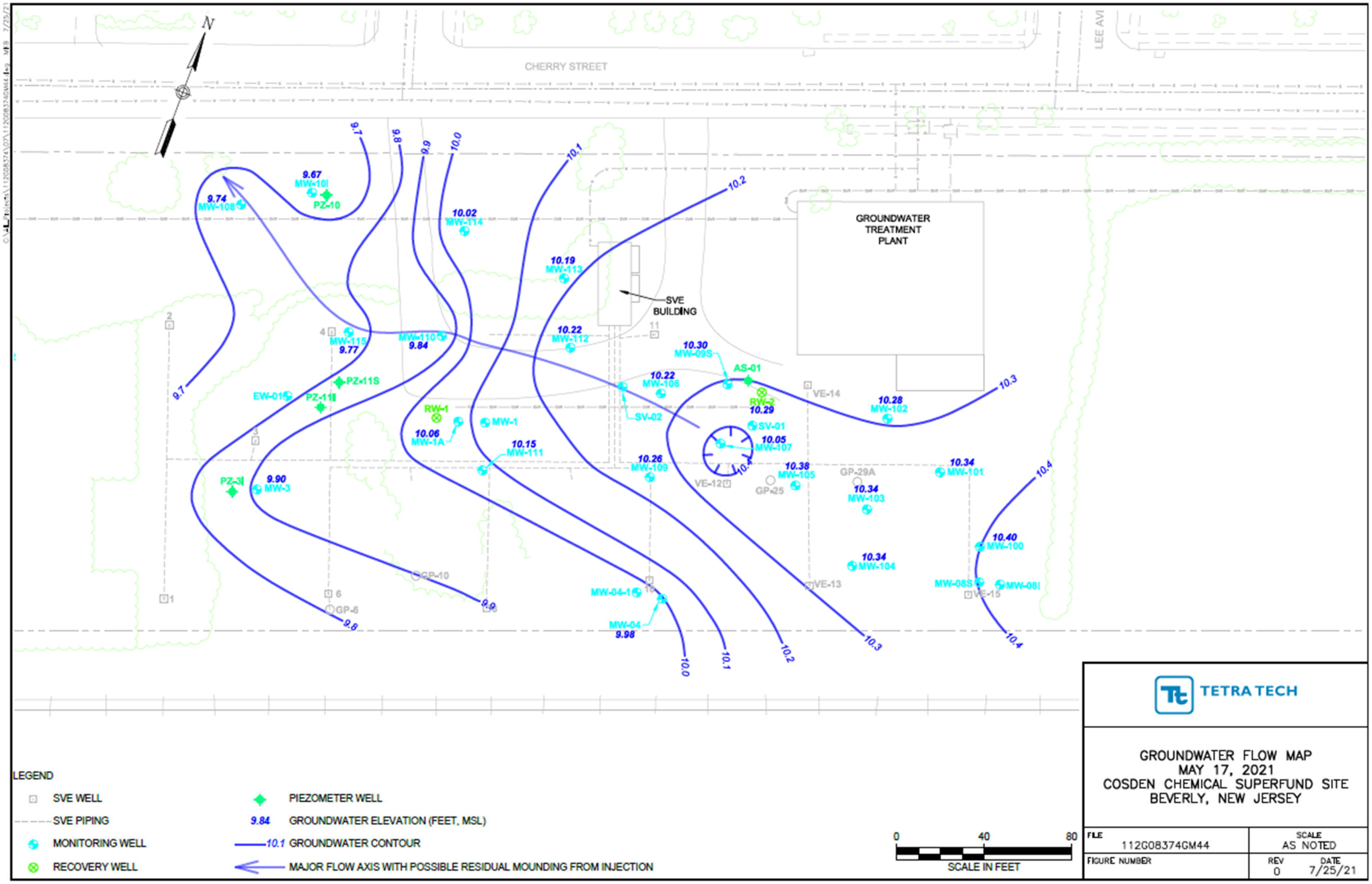


Figure 4. Groundwater Analytical Results for Ethylbenzene, Toluene and Total Xylene during ISCO Pilot Study

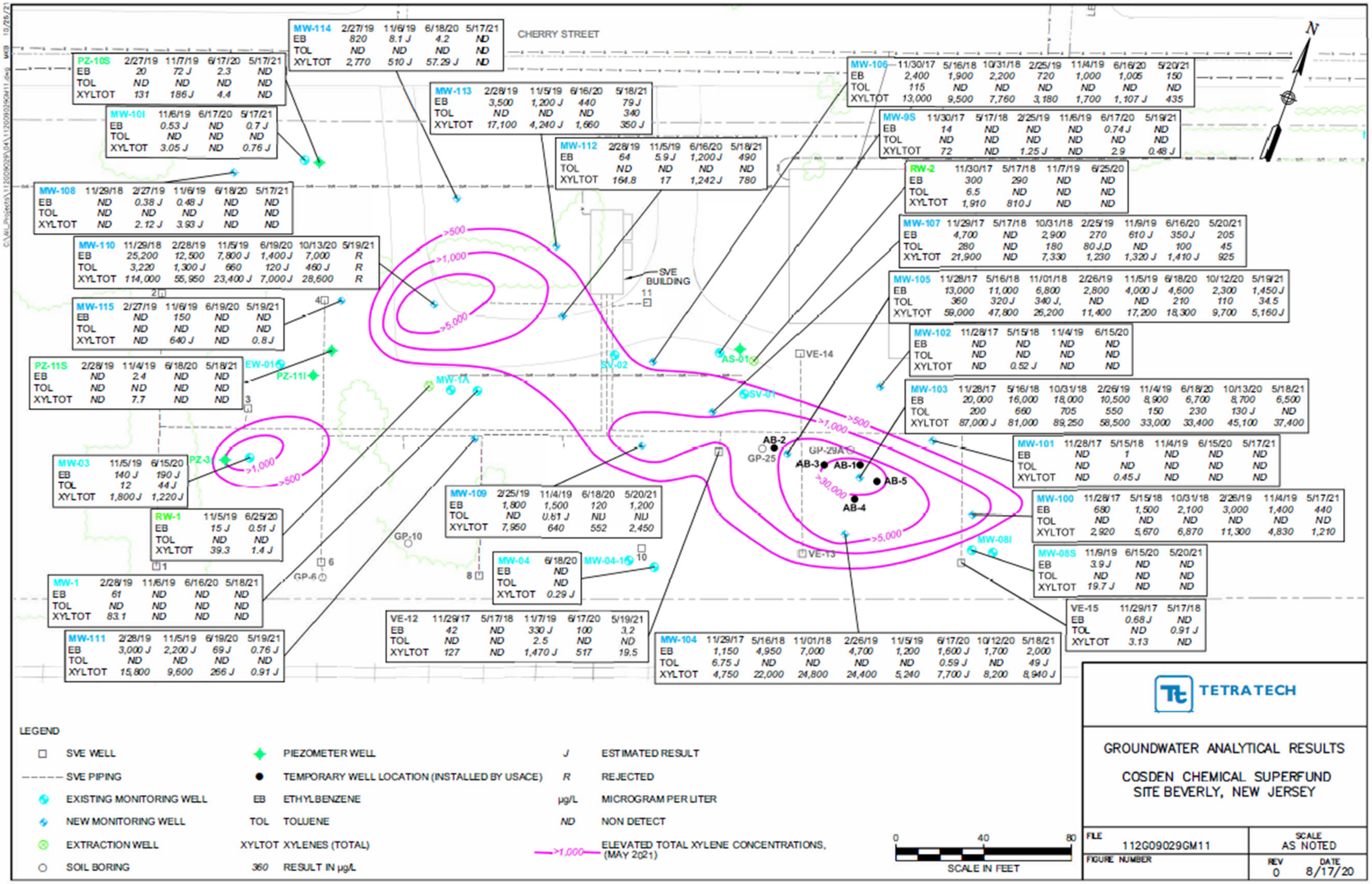


Figure 5. Total Xylene Concentrations in Groundwater Before and After ISCO Pilot Study

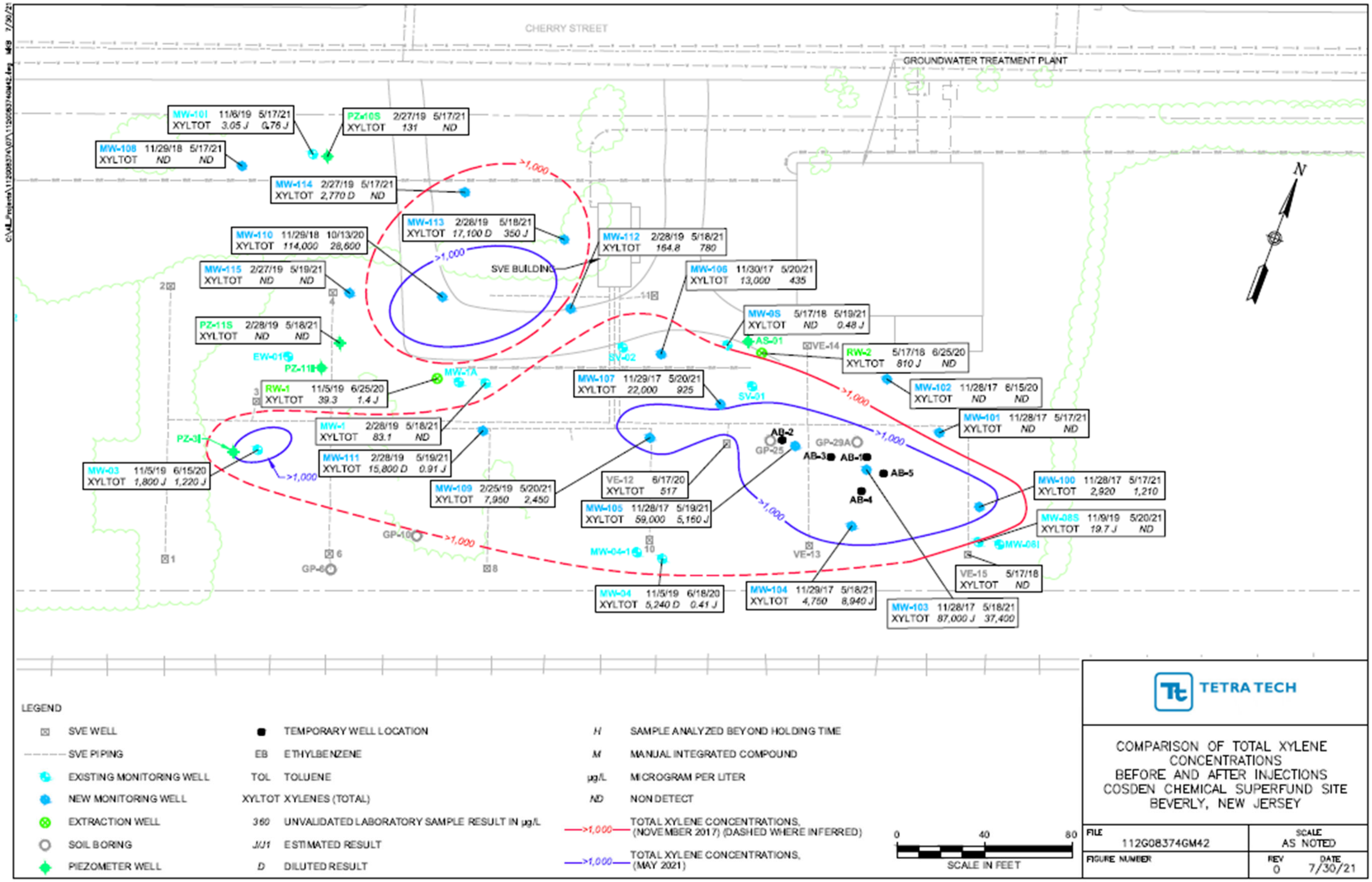


Figure 6. Off-Property Monitoring Well Locations

APPENDIX II

TABLES

Table 1. Calculated Percent Change and Concentrations of Individual Contaminants Before and After the ISCO Pilot Study

Analyte	Percent Decrease	Pre-Injection Average Concentration	Post-Injection Average Concentration
Toluene	78%	336 µg/L	75 µg/L
Ethylbenzene	74%	5,881 µg/L	1,516 µg/L
Total Xylenes	75%	26,789 µg/L	6,728 µg/L

Table 2. Summary of Contaminants of Concern

TABLE 2

COSDEN CHEMICAL SITE
SUMMARY OF CONTAMINANTS OF CONCERN

Chlorinated Volatile Organics	
Chloroform	SG
Chloromethane	SG
cis-1,2-Dichloroethene	SG
Methylene Chloride	SG
Tetrachloroethene	SI, SS, SG, GAS
1,1,2-Trichloroethane	SG
Trichloroethene	SI, SS, SG, GAS
Nonchlorinated Volatile Organics	
Acetone	SG
Benzene	SG
Carbon Disulfide	SG
Ethylbenzene	SI, SS
Toluene	SI, SS, SG, GAS
Xylenes	SG
Semivolatile Organics	
CPAHs	SI, SO, SS
BEHP	SI, SG
2,4-Dimethylphenol	SG
2-Methylphenol	SG
4-Methylphenol	SG
Naphthalene	SI, SG
N-Nitrosodipropylamine	SS
Pesticides/PCBs	
Aroclor 1254	SI, SS
4,4'-DDT	SO

Table 2. Summary of Contaminants of Concern (cont'd)

TABLE 2 (Cont'd)

COSDEN CHEMICAL SITE
SUMMARY OF CONTAMINANTS OF CONCERN

Metals

Antimony	SI, SO, SS, SG
Arsenic	SI, SO, SS, SG
Barium	SI, SO, SS, SG
Beryllium	SI, SO, SS, SG
Cadmium	SI, SO, SG
Chromium	SI, SO, SS, SG
Copper	SI, SO, SS, SG
Manganese	SI, SO, SS, SG
Mercury	SI, SO, SS, SG
Nickel	SI, SO, SG
Selenium	SG
Silver	SG
Thallium	SI, SS
Vanadium	SI, SO, SS, SG
Zinc	SI, SO, SS, SG

SI = Surface Soil Inside Fence
SO = Surface Soil Outside Fence
SS = Subsurface Soil
SG = Shallow Aquifer Groundwater
GAS = Soil Gas Survey

Table 3. Potential Exposure Pathways and Populations

TABLE 3
COSDEN CHEMICAL SITE
POTENTIAL EXPOSURE PATHWAYS AND POPULATIONS

PATHWAY	POPULATION
CURRENT SITE LAND USE	
o Surface Soil	
Incidental Ingestion (inside and outside fence)	Trespassers on site
Dermal Contact (inside and outside fence)	Trespassers on site
o Air	
Inhalation of Airborne (vapor phase) chemicals (offsite)	Residents living near site
FUTURE SITE LAND USE	
o Surface Soil	
Incidental Ingestion	Residents living onsite
Dermal Contact	Residents living onsite
Inhalation of Airborne (vapor phase) chemicals	Residents living onsite
o Subsurface Soil	
Incidental Ingestion	Construction workers
Dermal Contact	Construction workers
Inhalation of Airborne (vapor phase) chemicals	Construction workers
o Groundwater	
Ingestion	Residents living onsite

Table 4. Summary of Toxicity Data for Noncarcinogenic and Carcinogenic Effects

TABLE 4

TOXICITY DATA FOR NONCARCINOGENIC EFFECTS
DOSE RESPONSE EVALUATION
COSDEN CHEMICAL SITE

For Groundwater

Chemical Name	Oral RfD (mg/kg/day)	Inhalation RfD (mg/m^3)
acetone	$1.0\ E^{-01}$	
carbon disulfide	$1.0\ E^{-1}$	$1.0\ E^{-02}$
chloroform	$1.0\ E^{-02}$	
methylene chloride	$6.0\ E^{-02}$	$3.0\ E^{+00}$
4-methyl-2-pentanone	$5.0\ E^{-02}$	$8.0\ E^{-02}$
Tetrachloroethylene	$1.0\ E^{-02}$	
toluene	$2.0\ E^{-01}$	$2.0\ E^{+00}$
1,1,2 - trichloroethane	$4.0\ E^{-03}$	
mixed xylenes	$2.0\ E^{+0}$	$3.0\ E^{-01}$
bis (2-ethylhexyl) phthalate	$2.0\ E^{-02}$	
2,4-dimethylphenol	$2.0\ E^{-02}$	
o-cresol	$5.0\ E^{-01}$	
p-cresol	$5.0\ E^{-02}$	
naphthalene	$4.0\ E^{-03}$	
antimony	$4.0\ E^{-04}$	
arsenic	1.0×10^{-3}	$3.0\ E^{-04}$
barium	5.0×10^{-2}	$5.0\ E^{-03}$
beryllium	$5.0\ E^{-03}$	
cadmium	$5.0\ E^{-04}$	
chromium	$5.0\ E^{-03}$	
copper	$3.7\ E^{-02}$	
DDT	$5.0\ E^{-04}$	
Ethylbenzene	$1.0\ E^{-01}$	$1.0\ E^{+00}$
manganese	$1.0\ E^{-01}$	4.0×10^{-4}
mercury	$3.0\ E^{-04}$	3.0×10^{-4}
nickel	$2.0\ E^{-02}$	
selenium	$5.0\ E^{-03}$	
silver	$3.0\ E^{-03}$	
vanadium	$7.0\ E^{-03}$	
zinc	$2.0\ E^{-01}$	

Note: Toxicity values are from "Risk Assistant", 1992.

Table 4. Summary of Toxicity Data for Noncarcinogenic and Carcinogenic Effects (cont'd)

TABLE 4

TOXICITY DATA FOR CARCINOGENIC EFFECTS
DOSE RESPONSE EVALUATION
COSDEN CHEMICAL SITE

Chemical Name	Cancer Potency Slope $(mg/kg/day)^{-1}$	Unit Risk $(mg/m3)^{-1}$
benzene	2.9×10^{-2}	8.3×10^{-6}
chloroform	6.1×10^{-3}	2.3×10^{-5}
methyl chloride	1.3×10^{-2}	1.8×10^{-6}
methylene chloride	7.5×10^{-3}	2.1×10^{-7}
perchloroethylene	5.1×10^{-2}	5.2×10^{-7}
1,1,2-trichloroethane	5.7×10^{-2}	1.6×10^{-5}
bis (2-ethylhexyl) phthalate	1.4×10^{-2}	
beryllium	4.3×10^{0}	
tricholoroethylene	1.1×10^{-2}	1.7×10^{-06}
3,4-benz (a) pyrene	$5.8\ E^{+00}$	
N-nitrosodi-n-propylamine	7.0×10^{0}	
Polychlorinated biphenyls	$7.7\ E^{+00}$	

Table 5. Summary of Risk Across Pathways

TABLE 5

COSDEN CHEMICAL SITE

SUMMARY OF RISKS ACROSS PATHWAYS

FUTURE-USE

RECEPTOR	PATHWAY	CARCINOGENIC RISKS		NONCARCINOGENIC HAZARD INDICES	
		ADULTS	CHILDREN	ADULTS	CHILDREN
On-site Residents	Soil Ingestion - Inside Fence (on-site)	1.4E-06	7.7E-06	8.6E-03	2.2E-01
	Soil Ingestion - Outside Fence (on-site)	6.6E-07	4.8E-06	3.3E-03	9.9E-02
	Dermal Contact with Soil - Inside Fence (on-site)	7.1E-06	9.8E-06	3.7E-04	2.2E-03
	Dermal Contact with Soil - Outside Fence (on-site)	-	-	1.2E-03	6.9E-03
	Inhalation of Volatiles (from soil) (1)	1.6E-05	8.6E-06	9.2E-02	1.9E-01
	Groundwater Ingestion	2.6E-04	9.0E-05	1.1E+01	1.6E+01
		3.1E-04	1.2E-04	1.1E+01	1.7E+01

Notes: (1) - Risks and hazard indices calculated using soil gas data to estimate emission rates.

Table 6. Summary of Contaminants of Concern

Contaminant	Maximum Contaminant Levels (µg/L)	NJDEP GWQS (µg/L)	2021 Maximum Concentration (µg/L)
Ethylbenzene	700	700	13,800
Toluene	1000	600	957
Xylenes (total)	44	1,000	59,100
Trichloroethene	1	1	53.3

Table 7. Action-Specific ARARs and TBCs for the Remedy Amendment

Action	Requirements	Prerequisite	Comments	Citation	Website
General Site Remediation					
NJ Technical Requirements for Site Remediation	Established to provide requirements for remedial activities under NJ cleanup programs.	**Substantive elements may be Relevant and Appropriate**	Overall state requirements for remedial investigation and action	N.J.A.C. 7:26E	https://www.nj.gov/dep/rules/rules/njac7_26e.pdf
Monitoring, Extraction and Injection Wells – Installation, Operation and Abandonment					
Construction of extraction, injection and monitoring wells Operation & Maintenance of extraction, injection and monitoring wells Abandonment of extraction, injection and monitoring wells and boreholes	Provides state standards for the siting, construction, operation, maintenance, and abandonment of wells and boreholes to protect public health and water resources of the State and requires certain permits and licenses.	Activities related to construction, operation, maintenance and abandonment of wells. **Applicable**	Activities related to wells necessary for the remedy, to comply with substantive requirements.	NJ Well Construction and Maintenance; Sealing of Abandoned Wells (N.J.A.C.7:9D) NJ Water Pollution Control Act (N.J.A.C. 7:14)	https://www.nj.gov/dep/rules/rules/njac7_9d.pdf https://www.nj.gov/dep/rules/rules/njac7_14.pdf
Activity associated with Class V injection wells (e.g., remediation injections)	Federal and state standards for injection activity to prevent the movement of fluid containing any contaminant into drinking water, if the presence of that contaminant may cause a violation of the primary drinking water standards under 40 CFR Part141, other health-based standards, or may otherwise adversely affect the health of persons.	Construction, operation, maintenance, conversion, plugging and closure of Class V injection wells associated with remedial activity. **Applicable**	Activities related to wells necessary for the remedy, to comply with substantive requirements.	40 CFR 144; Underground Injection Control, NJPDES, N.J.A.C.7:14A-1.9	https://www.law.cornell.edu/cfr/text/40/part-144/subpart-A https://www.state.nj.us/dep/dwq/714a.htm
Waste Characterization – Primary Waste (e.g., drill cuttings, purge water) and Secondary Waste (e.g., contaminated equipment or treatment residuals)					
Characterization of solid waste (all primary and secondary wastes)	Must determine if solid waste is a hazardous waste: -First determine if waste is excluded from regulation under 40 CFR 261.4; -Then determine if waste is listed as a hazardous waste under subpart D 40 CFR Part 261.	Generation of solid waste as defined in 40 CFR 261.2. **Relevant and Appropriate,** However, applies only if waste characterization results show RCRA Hazardous Waste was generated during remedial activities	Hazardous waste characterization	40 CFR 262.11(a) and (b)	https://www.law.cornell.edu/cfr/text/40/part-262
	Must determine whether the waste is characteristic waste identified in Subpart C of 40 CFR part 261 by either: (1) Testing the waste according to the methods set forth in subpart C of 40 CFR part 261, or according to an equivalent method approved by the Administrator under 40 CFR 260.21; or (2) Applying knowledge of the hazard characteristic of the waste in light of the materials or the processes used.	Generation of solid waste which is not excluded under 40 CFR 261.4(a). **Relevant and Appropriate,** However, applies only if waste characterization results show RCRA Hazardous Waste was generated during remedial activities	Hazardous waste characterization	40 CFR 262.11(c)	https://www.law.cornell.edu/cfr/text/40/part-262
	Refer to Parts 261, 262, 264, 265, 266, 268, and 273 of Chapter 40 for possible exclusions or restrictions pertaining to management of the specific waste.	Generation of solid waste which is determined to be hazardous waste. **Relevant and Appropriate,** However, applies only if waste characterization results show RCRA Hazardous Waste was generated during remedial activities	Hazardous waste characterization and management	40 CFR 262.11(d)	https://www.law.cornell.edu/cfr/text/40/part-262
	Must obtain a detailed chemical and physical analysis on a representative sample of the waste(s), which at a minimum contains all the information that must be known to treat, store, or dispose of the waste in accordance with pertinent sections of 40 CFR 264 and 268.	Generation of RCRA hazardous waste for storage, treatment or disposal. **Applicable**	Hazardous waste characterization and management	40 CFR 264.13(a)(1)	https://www.law.cornell.edu/cfr/text/40/part-264

Action	Requirements	Prerequisite	Comments	Citation	Website
Determination of waste code for management of hazardous waste	Must determine each EPA Hazardous Waste Number (waste code) is applicable to determine the applicable treatment standards under 40 CFR268 et seq. This determination may be made concurrently with the hazardous waste determination required in Sec. 262.11. Must comply with the special requirements of 40 CFR 268.9 in addition to any applicable requirements in CFR 268.7.	Accumulation of RCRA hazardous waste on site as defined in 40 CFR 260.10. **Relevant and Appropriate**, However, applies only if the waste generated during remedial activities is characterized as RCRA hazardous waste for storage, treatment or disposal.	Hazardous waste treatment	40 CFR 268.9(a), 40 CFR 268.7(a)	https://www.law.cornell.edu/cfr/text/40/part-268
Hazardous waste regulations	Established to manage the discovery, storage, treatment or disposal of hazardous waste.	Accumulation of 55 gal. or less of RCRA hazardous waste or one quart of acutely hazardous waste listed in 261.33(e) at or near any point of generation. **Relevant and Appropriate**, However, applies only if the waste generated during remedial activities is characterized as RCRA hazardous waste.	Hazardous waste management during remediation	NJ Waste Regulations (N.J.A.C. 7:26G)	https://www.state.nj.us/dep/dshw/resource/njac726g.pdf
Solid waste management	Established to manage the storage, treatment or disposal of solid waste.	Applies to Solid waste is generated during remedial activities. **Applicable**	Solid waste management during remediation	NJ Solid Waste Regulations (N.J.A.C. 7:26, N.J.S.A. 13:1E-1 et seq.)	https://www.nj.gov/dep/dshw/resource/26sch01.pdf
Hazardous Waste Storage – Primary Waste (e.g., drill cuttings, purge water) and Secondary Waste (e.g., contaminated equipment or treatment residuals)					
Temporary on–site storage of hazardous waste in containers	A generator may accumulate hazardous waste at the facility provided that:	Accumulation of RCRA hazardous waste on site as defined in 40 CFR 260.10. **Relevant and Appropriate**, However, applies only if RCRA Hazardous Waste is generated during remedial activities.	Hazardous waste storage during remediation	40 CFR 262.34(a);	https://www.law.cornell.edu/cfr/text/40/part-262
	Waste is placed in containers that comply with 40 CFR 265.171 – 180 (USDOT Hazardous Materials Transportation Regulations) and		Hazardous waste storage during remediation	40 CFR 262.34(a)(1)(i);	
	The date upon which accumulation begins is clearly marked and visible for inspection on each container; Container is marked with the words “hazardous waste”; or waste pending analysis which is update appropriately following the receipt of results.		Hazardous waste storage during remediation	40 CFR 262.34(a)(2) and (3)	
	Container may be marked with other words that identify the contents.	Accumulation of 55 gal. or less of RCRA hazardous waste or one quart of acutely hazardous waste listed in 261.33(e) at or near any point of generation. **Relevant and Appropriate**, However, applies only if RCRA Hazardous Waste is generated during remedial activities.	Hazardous waste storage during remediation	40 CFR 262.34(c)(1)	
Use and management of hazardous waste in containers	If container is not in good condition (e.g., severe rusting, structural defects) or if it begins to leak, must transfer waste from this container to a container that is in good condition.	If Hazardous Waste is generated, applies to the storage of RCRA hazardous waste in containers. **Relevant and Appropriate**, However, applies only if RCRA Hazardous Waste is generated during remedial activities.	Hazardous waste storage during remediation	40 CFR 265.171	https://www.law.cornell.edu/cfr/text/40/part-265
	Must use container made or lined with materials compatible with waste to be stored so that the ability of the container to contain is not impaired.		Hazardous waste storage during remediation	40 CFR 265.172	
	Containers must be closed during storage, except when necessary to add/remove waste.		Hazardous waste storage during remediation	40 CFR 265.173(a)	
	Container must not opened, handled and stored in a manner that may rupture the container or cause it to leak.		Hazardous waste storage during remediation	40 CFR 265.173(b)	
Storage of hazardous waste in container area	Area must have a containment system designed and operated in accordance with 40 CFR 264.175(b)	Applies to the storage of RCRA hazardous waste in containers with free liquids. **Relevant and Appropriate**, However, applies only if RCRA Hazardous Waste is generated during remedial activities.	Hazardous waste storage during remediation	40 CFR 264.175(a)	https://www.law.cornell.edu/cfr/text/40/part-264
	Area must be sloped or otherwise designed and operated to drain liquid resulting from precipitation, or Containers must be elevated or otherwise protected from contact With accumulated liquid.	Applies to the storage of RCRA hazardous waste in containers that do not contain free liquids (other than F020,F021, F022, F023,F026 and F027). **Relevant and Appropriate**, However, applies only if RCRA Hazardous Waste is generated during remedial activities.	Hazardous waste storage during remediation	40 CFR 264.175(c)(1) and (2)	
Closure of RCRA container storage unit	At closure, all hazardous waste and hazardous waste residues must be removed from the containment system. Remaining containers, liners, bases, and soils containing or contaminated with hazardous waste and hazardous waste residues must be decontaminated or removed.	If Hazardous waste is generated, applies to the storage of RCRA hazardous waste in containers in a unit with a containment system. **Relevant and Appropriate**, However, applies only if RCRA Hazardous Waste is generated during remedial activities.	Hazardous waste storage During remediation	40 CFR 264.178	

Action	Requirements	Prerequisite	Comments	Citation	Website
Waste Transportation – Primary Waste (e.g., treated groundwater, drill cuttings, purge water) and Secondary Waste (e.g., contaminated equipment or treatment residuals)					
Transportation of hazardous waste on-site	The generator manifesting requirements of 40 CFR 262.20-262.32(b) do not apply. Generator or transporter must comply with the requirements set forth in 40 CFR 263.30 and 263.31 in the event of a discharge of hazardous waste on a private or public right-of-way.	Transportation of hazardous wastes on a public or private right-of-way within or along the border of contiguous property under the control of the same person, even if such contiguous property is divided by a public or private right-of-way. **Relevant and Appropriate**, However, applies only if RCRA Hazardous Waste is generated during remedial activities.	Hazardous waste transport on-site	40 CFR 262.20(f)	https://www.law.cornell.edu/cfr/text/40/part-262
Transportation of hazardous waste off-site	Must comply with the generator standards of Part 262 including 40 CFR 262.20-23 for manifesting, Sect. 262.30 for packaging, Sect. 262.31 for labeling, Sect. 262.32 for marking, Sect. 262.33 for placarding,	Preparation and initiation of shipment of hazardous waste off-site. **Relevant and Appropriate**, However, applies only if RCRA Hazardous Waste is generated during remedial activities.	Hazardous waste transport off-site	40 CFR 262.10(h); 40 CFR 262, Subpart B and C	https://www.law.cornell.edu/cfr/text/40/part-262
Transportation of hazardous materials	Shall be subject to and must comply with all applicable provisions of the Hazardous Materials Transportation Act and Hazardous Materials Regulations at 49 CFR 171-180 related to marking, labeling, placarding, packaging, emergency response, etc.	Any person who, under contract with a department or agency of the federal government, transports "in commerce," or causes to be transported or shipped, a hazardous material. **Relevant and Appropriate**, However, applies only if RCRA Hazardous Waste is generated during remedial activities.	Hazardous waste transport off-site	49 CFR 171.(c); 40 CFR 262, Subpart B and C	https://www.law.cornell.edu/cfr/text/49/part-171
Transportation of samples (soil and wastewaters)	Are not subject to any requirements of 40 CFR Parts 261 through 268 or 270 when: -The sample is being transported to a laboratory for the purpose of testing; or -The sample is being transported back to the sample collector after testing -The sample is being stored by sample collector before transport to a lab for testing	Samples of solid waste or a sample of water, soil for purpose of conducting testing to determine its characteristics or composition. **Applicable**	Hazardous waste transport off-site	40 CFR 261.4(d)(1)(i)-(iii)	https://www.law.cornell.edu/cfr/text/40/part-261
Miscellaneous					
Noise Pollution	Established to set maximum limits of sound from any industrial, commercial, public service, or community service facility.	**To be considered (TBC)** for any noise generated during remedial activities.	Any noise generated during advancing injection points to target depths and ISCO injection will occur only on weekdays during normal business hours or as specified by local ordinance.	NJ Restrictions of Noise (N.J.A.C. 7:29)	https://www.nj.gov/dep/rules/rules/njac7_29.pdf

APPENDIX III

RESPONSIVENESS SUMMARY

APPENDIX III

RESPONSIVENESS SUMMARY

Cosden Chemical Coatings Corp. Superfund Site

City of Beverly, Burlington County, New Jersey

INTRODUCTION

This Responsiveness Summary provides a summary of the public's comments and concerns regarding the Proposed Plan for the Cosden Chemical Coatings Corp. Superfund Site (Site) remedy modification and the U.S. Environmental Protection Agency's (EPA) responses to those comments.

All comments summarized in this document have been considered in EPA's final decision for the selection of the cleanup response for the Site. This Responsiveness Summary is divided into the following sections:

I. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS: This section provides the history of the community involvement and interests regarding the Site.

II. SUMMARY OF SIGNIFICANT QUESTIONS, COMMENTS, CONCERNS, AND EPA's RESPONSES: This section contains summaries of oral and written comments received by EPA at the public meeting and during the public comment period, and EPA's responses to these comments.

The last section of this Responsiveness Summary includes attachments, which document public participation in the remedy selection process for this Site. They are as follows:

Attachment A contains the Proposed Plan that was distributed to the public for review and comment;

Attachment B contains the public notice that appeared in the *Burlington County Times*;

Attachment C contains the transcript of the public meeting; and

Attachment D contains the written comments received during the public comment period.

I. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

On July 29, 2022, EPA released the Proposed Plan for the ROD Amendment for public comment. The Proposed Plan and supporting analysis and information were made available to the public on the EPA Region 2 website at https://www.epa.gov/superfund/cosden-chemical. The notice of availability for these documents was published in the *Burlington County Times* on July 29, 2022. A public comment period was held from July 29, 2022 through August 29, 2022.

On August 16, 2022, EPA conducted a virtual public meeting to discuss the Proposed Plan to amend the groundwater remedy. The purpose of this meeting was to inform local officials and interested citizens about the Superfund process, to explain the proposed groundwater remedy amendment, and respond to questions and take comments from area residents and other attendees. At the meeting, EPA reviewed the history of the Site, the results of the remediation activities at the Site since the 1992 ROD, as modified by the 1998 ESD, were issued, and the basis for proposing to modify the groundwater remedy. The transcript of this public meeting is included in this Responsiveness Summary as Attachment C.

The meeting was attended by two members of the community. There were few comments or questions from the public at the meeting.

II. SUMMARY OF SIGNIFICANT QUESTIONS, COMMENTS, CONCERNS, AND EPA'S RESPONSES

Questions, comments, or concerns were expressed by the public at the public meeting. Written comments were submitted by one commenter during the public comment period, before the public meeting. These comments were discussed with the commenter during the public meeting.

A. **Written comments received during the public comment period**:

Comment 1: Will chromium levels fall within allowable limits after ISCO injections cease or will this heavy metal contaminant require other treatment alternatives to obtain levels below NJDEP GWQS?

EPA Response: Total chromium concentrations were below NJDEP GWQS in groundwater before the ISCO pilot study, with the exception of one monitoring well. Total chromium concentrations are now above NJDEP GWQS primarily in portions of the Site where ISCO injections were concentrated. This is due to the oxidizing conditions created by the persulfate that was injected for the ISCO treatment. These increases in chromium concentrations due to ISCO are typically transitory and are expected to re-equilibrate after injections cease, so that the metal concentrations return to the pre-injection levels over time.

Comment 2: Since the PFNA, PFOS, and PFOA are not being addressed in this ROD Amendment, is there a plan to address these contaminants at a later date and/or is it necessary to address them?

EPA Response: Additional investigation of PFAS contamination will be needed to determine the nature and extent of that contamination and whether the PFAS contaminants are Site-related.

This will not be addressed as part of this ROD Amendment but concurrently as a separate process. Additional investigation will first establish if the contamination was from the Site or from an off-site source. If the contamination is from the Site, EPA would evaluate the risk associated with the PFAS contaminants and, if necessary, go through a similar process as this ROD Amendment.

Comment 3: Will ISCO injections have any effect on PFNA, PFOS, PFOA levels or will these contaminants require alternative treatment method?

EPA Response: The ISCO injections have not been specifically designed or tested for the treatment of PFAS compounds at the Site, so EPA does not know if ISCO would affect PFAS levels. There are treatment options available for the treatment of PFAS compounds.

Comment 4: Are the PFNA, PFOS, PFOA and 1,4-dioxane contaminants from this Site or are they migrating from an off-site location; if determinable?

EPA Response: Additional investigation of PFAS contamination will be needed to determine the nature and extent of that contamination and whether the PFAS contaminants are Site-related. The highest reported concentration of PFAS was found at the most hydraulically upgradient monitoring well on the Site. Lower concentrations still above NJDEP GWQS were found at the most downgradient Site wells. Monitoring wells sampled for 1,4-dioxane were reported non-detect values with the exception of one sample that was slightly above the NJDEP GWQS.

Comment 5: Are there any related “off-site” monitoring wells in the community with any contaminant levels over NJDEP GWQS?

EPA Response: There are eight monitoring wells located outside the Cosden property boundaries. They were installed in 2001 as part of an “off-property” groundwater investigation. These off-property monitoring wells were most recently sampled in September 2017, March 2018, and April 2021. The off-property monitoring wells have not reported any exceedances of NJDEP GWQS or ROD standards for VOCs or metals in the past five years.

B. Verbal Comments received during the public meeting:

The commenter of the written comments above attended the public meeting. These comments were discussed throughout the public meeting. Additional comments are provided below:

Comment 6: A commenter was concerned about the PFAS levels found in Neshaminy Creek across the Delaware River and possibly migrating to the Site.

Response 6: EPA does not yet know the nature and extent of the PFAS contamination and whether the PFAS contaminants are Site-related. It is unlikely that PFAS compounds from Neshaminy Creek are migrating to the Site.

Comment 7: A commenter mentioned that vacant land in the City of Beverly was limited to 19 acres, which includes the Site. The commenter expressed support for the Preferred Alternative and having the property remediated and eventually returned to the tax roll.

Response 7: Comment noted.

ATTACHMENT A

PROPOSED PLAN

Superfund Program
U.S. Environmental Protection Agency
Region 2
Proposed Plan for Remedy Modification

Cosden Chemical Coatings Superfund Site
City of Beverly, Burlington County, New Jersey
July 2022

EPA ANNOUNCES PROPOSED PLAN FOR REMEDY MODIFICATION

This Proposed Plan describes the alternatives that the United States Environmental Protection Agency (EPA) considered to remediate contaminated groundwater source areas at the Cosden Chemical Coatings Superfund Site (Site) located in the of City of Beverly, Burlington County, New Jersey, as an amendment to the remedy for contaminated groundwater selected in the 1992 Record of Decision (ROD), as modified by the 1998 Explanation of Significant Differences (ESD). This Proposed Plan also identifies EPA's preferred alternative for amending the ROD and provides the rationale for this preference.

The Site cleanup is being addressed in one phase or Operable Unit. In 1992, a ROD was issued for the Site building demolition and disposal; cleanup of contaminated soil with onsite treatment and disposal; and extraction, treatment, and reinjection of contaminated groundwater associated with the Site. In 1998, EPA issued an ESD to: 1) clarify that offsite disposal of polychlorinated biphenyl (PCB)-contaminated soil (estimated to be 3,700 cubic yards) would occur instead of onsite treatment; 2) require the excavation and offsite disposal of a relatively small amount of soil contaminated with volatile organic compounds (VOCs); 3) incorporate a soil vapor extraction (SVE) component in the remedy; and 4) clarify cleanup objectives. The lead soil cleanup goal was changed from 500 milligrams per kilogram (mg/kg) to 400 mg/kg. The Site's building demolition and soil remedy conducted in accordance with the 1992 ROD and 1998 ESD are complete and are not being modified by this Proposed Plan. This plan evaluates alternatives for addressing the remaining groundwater source area contamination where concentrations are the highest including in the vicinity of monitoring wells MW-03, MW-103, MW-105, MW-109 and MW-110 at the Site. The preferred alternative described in this Proposed Plan includes groundwater remediation using in-situ treatment in source areas.

This Proposed Plan was developed by EPA, the lead agency for the Site, in consultation with the New Jersey Department of Environmental Protection (NJDEP), the support agency. EPA is issuing this Proposed Plan as part of its public participation

MARK YOUR CALENDAR

PUBLIC COMMENT PERIOD:
July 29, 2022 - August 29, 2022
EPA will accept written comments on the Proposed Plan during the public comment period.

PUBLIC MEETING:
August 16, 2022 at 6:00 PM
EPA will hold a **Virtual Public Meeting** on **EST** to explain the Proposed Plan and the other alternatives presented in the Feasibility Study. To register for the public meeting, visit https://USEPACosdenChemical.eventbrite.com

To learn more about the public meeting, visit www.epa.gov/superfund/cosden-chemical or contact Natalie Loney, Community Involvement Coordinator at loney.natalie@epa.gov or (212) 637-3639.

Anyone interested in receiving materials for the public meeting in hard copy should either email or call Ms. Loney with such a request by August 11, 2022.

The Administrative Record file containing the documents used in developing the alternatives and preferred cleanup plan is available for public review at www.epa.gov/superfund/cosden-chemical

EPA's website for the Cosden Chemical Coatings Site:
www.epa.gov/superfund/cosden-chemical

responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA or Superfund) and Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). EPA will select a final remedy for contaminated groundwater source areas at the Site after reviewing and considering all information submitted during the 30-day public comment period.

This Proposed Plan summarizes information that can be found in greater detail in the Focused Feasibility Study (FFS) and other documents contained in the administrative record file for this Site. EPA and the State encourage the public to review these documents to gain a more comprehensive understanding of the Site and Superfund activities that have been conducted at the Site.

Community Role in Selection Process

EPA relies on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each Superfund site. To this end, the FFS report and this Proposed Plan have been made available to the public for a public comment period that begins on July 29, 2022 and concludes on August 29, 2022. A virtual public meeting will be held via webinar and telephone conference on August 16, 2022 at 6:00 PM to present the conclusions of the FFS, to elaborate further on the reasons for recommending the preferred alternative, and to receive public comments. Written comments on the Proposed Plan should be addressed to: Tamara Rossi, Remedial Project Manager, New Jersey Remediation Branch, U.S. Environmental Protection Agency, 290 Broadway, 19th floor, New York, NY 10007 or via e-mail at rossi.tamara@epa.gov. Comments received at the public meeting, as well as written comments, will be documented in the Responsiveness Summary section of the Amended ROD, the document that will formalize the selection of the remedy.

EPA may modify the preferred alternative or select another response action presented in this Proposed Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all the alternatives presented in this Proposed Plan.

SITE DESCRIPTION

The Cosden Chemical Coatings Corporation (Cosden Chemical) was a paint formulation and manufacturing company that began operating in 1945 and produced coatings for industrial applications. The company recycled solvents (substances that can dissolve other substances) used in the manufacturing process until 1974. After 1974, the company stored solvents onsite in drums and in underground tanks. Some of these drums and tanks leaked, causing soil and groundwater contamination. On April 22, 1980, the Burlington County Department of Public Safety reported the Site conditions to NJDEP after a grass fire occurred at the Site. Subsequent visits by the NJDEP revealed the presence of surface spills and several hundred unsecured drums.

NJDEP undertook various court actions against Cosden Chemical and engaged in negotiations with the company, resulting in a judicial consent order on February 5, 1985 that ordered Cosden Chemical to clean up the facility. Cosden Chemical initiated the cleanup in February 1985 but abandoned cleanup efforts after removing 88 of 695 drums. In January 1986, NJDEP undertook an emergency removal of the drummed material and cleanup of surface spills around the drum storage areas.

In June 1989, EPA initiated emergency cleanup activities at the Site by constructing a fence around areas of soil contamination and began removing the remaining drums, paint cans, pigment bags, mixing tanks, and underground storage tank contents. On May 28, 1990, as the removal action was nearly completed, a fire occurred inside the process building which consumed a majority of the building.

On May 31, 1990, the building was condemned by the Beverly City building inspector.

EPA placed the Site on the National Priorities List in July 1987. The additional actions EPA took to address Site contamination are discussed in the "Scope and Role of Response Action" section below.

The plant owner ceased operations in May 1989 and subsequently did not finance or undertake the remedial investigation or feasibility study (RI/FS) or remediation of the Site.

EPA issued the ROD in September 1992, selecting a remedy for contaminated buildings, soil, and groundwater, and the ESD in September 1998 to explain changes made to the remedy based on data EPA collected during the remedial design. The issuance of both included public meetings and public comment periods.

SITE CHARACTERISTICS

The Site is located in the southeastern corner of the City of Beverly in Burlington County, New Jersey (Figure 1) at the intersection of Manor Road and Cherry Street within a residential area of Beverly. The property is bounded on the north and east by residential streets, on the south by Conrail tracks and farmland, and on the west by undeveloped land. The nearest residence is approximately 300 feet to the north of the Site. The Beverly Elementary School is located 0.2 miles to the northeast. The neighboring area is suburban with some light industry.

According to EPA's EJSCREEN, there are no demographic indicators for the City of Beverly that identify it as a community with environmental justice concerns. South of the Site, there are some demographic indicators that indicated that this area is above the 80th percentile when compared to

Figure 1 Site Location City of Beverly, NJ

national percentiles for communities over age 64, low income, and linguistically isolated.

The Delaware River is approximately 4,000 feet to the north of the Site, and Rancocas Creek is approximately 1.5 miles to the southwest of the Site. The population within a one-mile radius of the Site is approximately 800 people.

Two former public supply wells owned and operated by New Jersey American Water Company are located approximately 3,200 feet north of the Site but are no longer in use. New Jersey American Water closed the two supply wells more than twenty years ago and replaced them with a larger surface water treatment plant along the Delaware River.

The hazardous substances still present at the Site are VOCs and metals in groundwater. Specifically, the VOCs consist of total xylenes, ethylbenzene, toluene, and trichloroethene and the metals are lead and chromium. The Conceptual Site Model for the Site indicates that these contaminants are currently located only in groundwater on the Site in a plume estimated to be approximately 9,000 square feet (0.21 acres) in size and located 20 to 25 feet below the ground's surface (bgs).

No non-aqueous phase liquid (NAPL) has been found in wells since 2010, and NAPL was not visually noted in any boring in at least the past five years (see "What is a Principal Threat" text box below). Only groundwater contamination from contaminated soils which have been removed from the Site remains. Thus, no principal threats currently exist at the Site.

SCOPE AND ROLE OF RESPONSE ACTION

EPA conducted an RI/FS between 1988 and 1992, after the Site was listed on the NPL. The 1992 ROD identified the following Remedial Action Objectives (RAOs) for the remedy:

- Prevent exposure to contaminant sources that present a significant human health risk; and,
- Restore contaminated groundwater to drinking water standards.

The 1992 ROD was modified by an ESD that EPA issued in 1998. As a result of the 1992 ROD and 1998 ESD, the remedy included the following components to meet the Site RAOs:

- Decontamination and demolition of the building on the Site with disposal of the building debris at an appropriate offsite facility;
- Excavation of soils with offsite treatment (if necessary) and disposal;
- Construction of a soil vapor extraction (SVE) system to address the remaining contaminants present in soil above the water table (the vadose zone); and,
- Extraction of contaminated groundwater with onsite treatment and recharge to the underlying aquifer.

WHAT ARE THE "CONTAMINANTS OF CONCERN?"

EPA identified Volatile Organic Compounds and metals as the contaminants that pose the greatest potential risk to human health at this site.

Volatile Organic Compounds (VOCs)- The primary VOCs of concern present on the Site are toluene, ethylbenzene, trichloroethene (TCE), and total xylenes. VOCs are colorless, highly flammable industrial chemicals that easily evaporate. They occur naturally in coal tar and petroleum. They are commonly used in paint, thinners, lacquer thinners, moth repellents, air fresheners, hobby supplies, wood preservatives, aerosol sprays, degreasers, automotive products, and dry cleaning fluids. They are also used in a variety of industrial processes, such as in the solvents that Cosden Chemical used. VOCs do not readily bind to soil, so it can easily move into groundwater. Health effects of VOCs can vary greatly according to the compound and can range from being highly toxic to having no known health effects. Some, such as TCE, are known to cause cancer. VOCs can cause damage to the liver, kidneys, and central nervous system. Short-term exposure can cause eye and respiratory tract irritation, headaches, dizziness, visual disorders, fatigue, loss of coordination, allergic skin reactions, nausea, and memory impairment.

Metals- The primary metals of concern present on the Site are lead and chromium. Metals are naturally occurring elements and are generally mined and concentrated or refined for use in industry. They are used in a wide range of applications, including to make paint pigments such as those made by Cosden Chemical. In very small amounts, many of these metals are necessary to support life. However, in larger amounts, they become toxic. They may build up in biological systems and become a significant health hazard.

This amendment described in this Proposed Plan adds an additional RAO (described below) to the existing remedy addressing the remaining groundwater source area contamination where concentrations are the highest, including in the vicinity of monitoring wells MW-03, MW-103, MW-105, MW-109 and MW-110 at the Site. This RAO supplements the existing Site RAOs.

SITE BACKGROUND

Building Demolition

In 1995 and 1996, EPA decontaminated and demolished the remnants of the former Cosden Chemical process building. All demolition debris, including asbestos, was disposed of offsite.

Soils

The contaminated soils remediation was conducted by the EPA Region 2 Removal Action Branch with technical support provided by EPA’s Environmental Response Team (ERT). ERT performed an extensive screening effort at the Site employing x-ray fluorescence (XRF) technology to identify the concentrations and depths of inorganic contamination (principally lead and chromium). The data were used to define the area and depth of the excavation. The soil remediation was accomplished in phases between June 1999 and March 2002.

WHAT IS A "PRINCIPAL THREAT"?

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (NCP Section 300.430(a)(1)(iii)(A)). The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for migration of contamination to ground water, surface water or air, or acts as a source for direct exposure. Contaminated groundwater generally is not considered to be a source material; however, Non-Aqueous Phase Liquids (NAPLs) in groundwater may be viewed as source material. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur. The decision to treat these wastes is made on a site-specific basis through a detailed analysis of the alternatives using the nine remedy selection criteria This analysis provides a basis for making a statutory finding that the remedy employs treatment as a principal element.

The soil cleanup was conducted to meet the NJDEP Residential Direct Contact Soil Cleanup Criterion (RDCSCC) for lead in effect at that time, 400 milligrams per kilogram (mg/kg). For PCBs, the soil cleanup objective was based on the EPA PCB cleanup policy recommending a residential cleanup goal of 1 mg/kg for unrestricted residential use. However, post-excavation sampling indicated that the soil remediation ultimately met NJDEP's more stringent RDCSCC in effect at that time of 0.49 mg/kg for PCBs.

All contaminated soils, underground storage tanks, and residual liquids were sent offsite for disposal and/or treatment, as necessary. A remedial action report, dated September 2003, was prepared to document the soil portion of the cleanup which included the excavation and disposal of 13,000 tons of contaminated soil, solid waste, and debris, four underground storage tanks, and 2,600 gallons of liquid waste.

Groundwater

EPA entered into an Interagency Agreement with the United States Army Corps of Engineers (USACE) Baltimore District to prepare the remedial design for the groundwater remediation and oversee remedial construction. The largest element of the remedial design/remedial construction was the groundwater extraction and treatment system (GETS). Construction of the GETS began in July 2006. The remedy achieved construction completion status in July 2007. Award of the long term remedial action (LTRA) contract was made in June 2009, at which time ten years of LTRA began.

In addition to the GETS, an SVE system was installed, including three banks of SVE wells and collection lines that allowed contaminated vapors to be extracted from the vadose zone, the subsurface area that extends from the ground surface to the groundwater table. A fence was installed around the treatment facilities to provide security and prevent trespassing. The SVE system started operation in 2007, and was shut down in June 2010, after groundwater levels increased when the nearby public supply wells were closed, thus submerging the SVE wells underwater.

Data indicated that the GETS efficiently removed contaminants from the groundwater prior to onsite reinjection. The primary contaminants of concern in groundwater, as identified in the 1992 ROD, are ethylbenzene, toluene, xylene, trichloroethene (TCE), lead, and chromium. The GETS reduced levels of all contaminants present in extracted groundwater to meet the New Jersey Groundwater Quality Standards (GWQS) Class IIa standards before the groundwater was reinjected back into the aquifer.

EPA began a pilot study in August 2017 to test the effectiveness of In-Situ Chemical Oxidation (ISCO) in reducing VOC concentrations in groundwater. The pilot study was conducted to address remaining contamination that had been identified using a Membrane Interface Probe/Hydraulic Profiling Tool (MIPHPT). The revised conceptual Site model for soil and groundwater includes a fairly uniform layer of soil impacted largely by xylenes. This layer ranges from 20-24 feet deep and two to four feet thick; however, most of the contamination is located in the interval of 20-22 feet bgs. Some evidence suggests that a shallow lower permeability unit could be present resulting in a shallow perched water-bearing unit in some portions of the Site. It appears that in limited areas, high concentrations of VOCs or limited immobile solvent material could be sorbed to soil particles beneath the water table particularly in the area where the Cosden Chemical production plant underground storage tanks existed. EPA and USACE determined that ISCO could more quickly address this remaining contamination than the GETS. The GETS was shut-down in May 2018, due in part to the potential for ISCO treatment materials to enter the treatment plant during the pilot study.

Since the pilot study began, EPA has installed 16 monitoring wells to focus monitoring activities where VOC concentrations are highest, including monitoring wells MW-03, MW-103, MW-105, MW-109 and MW-110. Four rounds of injections of persulfate with a sodium hydroxide activator were performed between 2017 and 2021. Groundwater monitoring was conducted before and after each injection event to establish baseline concentrations that could be used to evaluate treatment effectiveness.

Vapor Intrusion

Vapor intrusion can occur when volatile contaminants in groundwater underneath enter commercial and residential buildings volatilize and enter the buildings as contaminated vapors. Since the primary contaminants of concern at the Site are VOCs, vapor intrusion was evaluated in March 2004 via vapor intrusion sampling. There were no VOCs detected above EPA's screening criteria, and EPA determined that the vapor intrusion pathway was not complete. The results of this evaluation remain valid since the concentrations of VOCs in groundwater have continued to decline since 2004 and no VOCs are detected above standards in offsite wells. There are no buildings unrelated to the extraction/treatment/reinjection on the Site.

CURRENT NATURE AND EXTENT OF CONTAMINATION

In 2015 and 2016, EPA performed MIPHPT investigations at the Site to identify where contamination was still present in groundwater and found that contamination was generally present at depths between 20 and 25 feet bgs. Sixteen new monitoring wells were installed on the Site to target this depth. As described above, EPA initiated an ISCO pilot study to determine if ISCO could address the remaining contamination. Field work took place between August 2017 and May 2021. Thousands of individual groundwater contaminant analyses were obtained during the ISCO pilot study.

The most recent concentrations of contaminants in the new monitoring wells after four rounds of ISCO injections as part of the pilot study are summarized below:

Ethylbenzene – After injections, some of the new monitoring wells did not report any detectable concentrations of ethylbenzene (non-detect). The highest detected concentration was 13,800 micrograms per liter (µg/L) in 2021. This is a reduction from the previous maximum concentration of 25,200 µg/L in 2018.

Toluene – Concentrations ranged from non-detect to 957 µg/L in 2021. This is a reduction from the maximum concentration of 3,220 µg/L in 2018.

Total Xylenes – Concentrations in 2021 ranged from 1.1 µg/L to 59,100 µg/L. This is a reduction from the previous maximum concentration of 114,000 µg/L in 2018. The highest concentrations are around monitoring wells MW-03, MW-103, MW-105, MW-109 and MW-110.

Trichloroethene – Concentrations in 2021 ranged from non-detect to 53.3 µg/L. This is a reduction from the previous maximum concentration of 3,220 µg/L in 2018.

Total Lead – Concentrations in 2021 ranged from non-detect to 15 µg/L.

Total Chromium – Concentrations in 2021 ranged from non-detect to 1,500 µg/L.

With the exception of total chromium in a single monitoring well, total lead and total chromium concentrations remained below NJDEP GWQS in groundwater before the ISCO pilot study. Total lead and total chromium concentrations are now above NJDEP GWQS primarily in portions of the Site where ISCO injections were concentrated. This is due to the oxidizing conditions created by the persulfate that was injected for the ISCO treatment. These metal concentration increases due to ISCO are typically transitory and will re-equilibrate after injections cease, so that the metal concentrations will return to the pre-injection state.

The area of residual higher levels of toluene, ethylbenzene, and total xylenes (TEX) contamination generally coincides with groundwater total xylene concentration greater than 1,000 µg/L and was reduced from 0.77 acres prior to the ISCO pilot study to 0.21 acres post-pilot study. This area is the remaining source area at the Site. See Figure 2.

Major Conclusions of the Pilot Study

- The 16 new monitoring wells installed during the pilot study helped to delineate the extent of TEX and the magnitude of the remaining TEX groundwater contamination at the site. In addition, water-level elevations measured using new and existing monitoring wells confirmed the direction of shallow groundwater flow was westerly across the Site.

- Overall, the ISCO injections were successful in eliminating or reducing TEX concentrations at monitoring wells within targeted treatment zones. Fourteen monitoring wells showed significant declines (greater than 50%) in TEX compound concentrations between initial sampling in 2017 and the May 2021 sampling.

- Total xylene concentrations in groundwater remained high in some monitoring wells. For example, the total xylene concentration at MW-103 was 37,400 µg/L in May 2021 and the total xylene result for MW-110 was 28,600 µg/L in October 2020 indicating additional injections would be necessary to achieve drinking water standards (1,000 µg/L) established as cleanup levels.

- Ethylbenzene levels during the same period decreased by nearly 50%. At well MW-105, total xylene concentrations decreased from 59,000 µg/L (November 2017) to 5,160*J* (estimated) µg/L (May 2021), and ethylbenzene concentrations showed a similar approximate 10-fold decrease.

- Based upon pilot study calculations, the volume of contaminated groundwater was reduced by the four rounds of ISCO injections by approximately 73%. This calculation used the saturated aquifer thickness of 25 feet and the square footage of the total xylene plume greater than 1,000 µg/L before and after injections. More specifically, the plume was estimated as roughly 33,500 ft^2 (0.77 acres) prior to injections and about 9,000 ft^2 (0.21 acres) after injections.

Emerging Contaminants

Per- and polyfluoroalkyl substances (PFAS) – Six monitoring wells were sampled for PFAS in April 2021. NJDEP has developed GWQS for three specific PFAS chemicals: Perfluorononanoic Acid (PFNA, 13 nanograms per liter (ng/L)), Perfluorooctane Sulfonate (PFOS, 13 ng/L), and Perfluorooctanoic Acid (PFOA, 14 ng/L). PFNA concentrations ranged from non-detect at MW-10I to 19 ng/L at MW-8S. MW-8S is the most hydraulically upgradient monitoring well on the Site. PFOS concentrations ranged from non-detect at MW-9S to 66.8 ng/L at MW-3. PFOA concentrations ranged from 41.8 ng/L at MW-10I to 253 ng/L at MW-8S. MW-10I and PZ-10S, the most downgradient Site wells, reported detections of PFAS above NJDEP GWQS. The highest reported concentrations of PFAS at PZ-10S was PFOA at 81 ng/L.

1,4-Dioxane - Four on-site monitoring wells were sampled for 1,4-dioxane in November 2019. All of the monitoring wells sampled reported non-detect values. Downgradient monitoring well MW-10I did not report detections of 1,4-dioxane, but downgradient monitoring well MW-108 reported 1.3J µg/L in November 2019. In 2021, eight on-site monitoring wells, including downgradient monitoring well MW-108, were sampled for 1,4-dioxane, with a detection limit below NJDEP

WHAT IS RISK AND HOW IS IT CALCULATED?

A Superfund baseline human health risk assessment is an analysis of the potential adverse health effects caused by hazardous substance releases from a site in the absence of any actions to control or mitigate these releases. A four-step process is utilized for assessing site-related human health risks for reasonable maximum exposure scenarios.

Step 1. Hazard Identification: In this step, the chemicals of potential concern (COPCs) at the site in various media (i.e., soil, groundwater, surface water, and air) are identified based on such factors as toxicity, frequency of occurrence, fate and transport of the contaminants in the environment, concentrations of the contaminants in specific media, mobility, persistence, and bioaccumulation.

Step 2. Exposure Assessment: In this step, the different pathways through which people might be exposed to the contaminants identified in the previous step are evaluated. Examples of exposure pathways include incidental ingestion of and dermal contact with contaminated soil and/or groundwater. Factors relating to the exposure assessment include, but are not limited to, the concentrations in specific media that people might be exposed to and the frequency and duration of that exposure. Using these factors, a "reasonable maximum exposure" scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated.

Step 3. Toxicity Assessment: In this step, the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure and severity of adverse effects are determined. Potential health effects are chemical-specific and may include the risk of developing cancer over a lifetime or other noncancer health hazards, such as changes in the normal functions of organs within the body (e.g., changes in the effectiveness of the immune system). Some chemicals are capable of causing both cancer and noncancer health hazards.

Step 4. Risk Characterization: This step summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks for all contaminants of concern. Exposures are evaluated based on the potential risk of developing cancer and the potential for noncancer health hazards. The likelihood of an individual developing cancer is expressed as a probability. For example, a 10^{-4} cancer risk means a "one in ten thousand excess cancer risk;" or one additional cancer may be seen in a population of 10,000 people as a result of exposure to site contaminants under the conditions identified in the Exposure Assessment. Current Superfund regulations for exposures identify the range for determining whether remedial action is necessary as an individual excess lifetime cancer risk of 10^{-4} to 10^{-6}, corresponding to a one in ten thousand to a one in a million excess cancer risk. For noncancer health effects, a "hazard index" (HI) is calculated. The key concept for a noncancer HI is that a "threshold" (measured as an HI of less than or equal to 1) exists below which noncancer health hazards are not expected to occur. The goal of protection is 10^{-6} for cancer risk and an HI of 1 for a noncancer health hazard. Chemicals that exceed a 10^{-4} cancer risk or an HI of 1 are typically those that will require remedial action at the site.

GWQS (0.4 µg/L). MW-108 reported 0.406 µg/L in April 2021. All other monitoring wells reported non-detect values in 2021.

1,2,3-Trichloropropane - Four on-site monitoring wells (MW-103, MW-104, MW-105, and MW-110) were sampled for 1,2,3-tricholoropropane in March 2021. All monitoring wells were non-detect for 1,2,3-trichloropropane with a detection limit below the 0.03 µg/L NJDEP GWQS.

Additional investigation of PFAS contamination is required in order to determine the nature and extent of that contamination and whether the PFAS contaminants are Site-related. The amendment described in this Proposed Plan does not address PFAS contamination.

SUMMARY OF SITE RISKS

As part of the 1988-1992 Remedial Investigation, EPA conducted a baseline risk assessment to determine the current and future effects of contaminants on human health and environment. A baseline risk assessment is an analysis of the potential adverse human health and ecological effects caused by hazardous substance exposure in the absence of any actions to control or mitigate these exposures under current and future site uses.

In the human health risk assessment (HHRA), cancer risk and noncancer health hazard estimates are based on current reasonable maximum exposure (RME) scenarios. The estimates were developed by taking into account various health protective estimates about the concentrations, frequency and duration of an individual's exposure to chemicals selected as contaminants of potential concern (COPCs), as well as the toxicity of these contaminants. Since this Proposed Plan addresses groundwater and the remedy selected in the 1992 ROD and modified by the 1998 ESD successfully addressed soil contamination at the Site, this section specifically focuses on risks in the 1992 risk assessment associated with groundwater.

Human Health Risks

EPA conducted a four-step human health risk assessment (HHRA) to assess Site-related cancer risks and noncancer health hazards in the absence of any remedial action. The four-step process is comprised of: Hazard Identification, Exposure Assessment, Toxicity Assessment, and Risk Characterization (refer to the text box "What is Risk and How is it Calculated").

The HHRA began with selecting COPCs in groundwater that could potentially cause adverse health effects in exposed populations. COPCs are selected by comparing the maximum detected concentrations of each chemical identified with state and federal risk-based screening values. The COPCs identified included VOCs, SVOCs, metals, pesticides, and PCBs.

The HHRA assumed that future land use at the Site could include residential development. Thus, the HHRA focused on health effects for both children and adults resulting from future direct contact with contaminated groundwater (e.g., through ingestion of volatile contaminants) in the event a well was installed at the Site for potential use as tap water. A complete summary of all exposure scenarios can be found in the HHRA.

In the HHRA, two types of toxic health effects were evaluated for COPCs: cancer risk and noncancer hazard. Calculated cancer risk estimates for each receptor were compared to EPA's target risk range of $1x10^{-6}$ (one-in-one million) to $1x10^{-4}$ (one-in-ten thousand) for excess cancer risks. The calculated noncancer hazard index (HI) estimates were compared to EPA's target threshold value of 1. The following section provides an overview of the cancer risks and noncancer hazard associated with exposure to groundwater at the Site.

Groundwater - EPA determined that ingestion of contaminated groundwater in a future use scenario presented an elevated risk to human health since the hazard indices were estimated to be 16 for children and 11 for adults, exceeding EPA's noncancer hazard threshold (i.e., HI of 1). Additionally, residential adult ingestion of groundwater as drinking water yielded a cancer risk of $3x10^{-4}$, exceeding EPA's target risk range of $1x10^{-6}$ to $1x10^{-4}$.

Table 1: Summary cancer risks and hazard indices associated with groundwater.

Receptor	**Cancer Risk**	**Hazard Index**
Future Resident Ingestion (Adult)	**$3x10^{-4}$**	**11**
Future Resident Ingestion (Child)	$9x10^{-5}$	**16**

The majority of risk and hazard identified in the 1992 risk assessment and displayed in Table 1 was driven by inorganic compounds (i.e., beryllium, antimony, arsenic and manganese) in shallow groundwater, which was impacted by contamination in overlying soils and has since been addressed. However, the concentrations of the following contaminants were found in groundwater above promulgated federal and/or state Maximum Contaminant Levels (drinking water standards) and also contributed to the human health risk: toluene, ethylbenzene, xylene and trichloroethene. As a result of the pilot study, chromium and lead currently exceed drinking water standards. These exceedances are expected to be transitory and will re-equilibrate so that the metal concentrations will return to the pre-injection state over time.

As mentioned in the "Site Background" section above, vapor intrusion exposure was evaluated in March 2004 via vapor intrusion sampling. There were no VOCs detected above EPA's screening criteria, and it was determined that the vapor intrusion pathway was not complete.

Ecological Risks

The ecological risk assessment portion of the 1992 risk assessment did not identify any endangered species, sensitive ecosystems, or sensitive habitats on the Site and concluded that adverse impacts to onsite plants and animals from site related contamination are not likely.

Based on the findings of the HHRA, it is EPA's current judgment that the preferred alternative identified in this Proposed Plan is necessary to protect public health or welfare or the environment.

REMEDIAL ACTION OBJECTIVES

The following additional RAO is identified for the amended remedial action and supplements the existing Site RAOs:

- Reduce contaminant mass in the source area such that the maximum dissolved-phase concentration of xylene is lowered between 97-98 percent.

SUMMARY OF REMEDIAL ALTERNATIVES

Section 121(b)(1) of CERCLA, 42 U.S.C. § 9621(b)(1), mandates that remedial actions must be protective of human health and the environment, cost-effective, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. Section 121(b)(1) of CERCLA also establishes a preference for remedial actions that employ, as a principal element, treatment to reduce permanently and significantly the volume, toxicity, or mobility of the hazardous substances, pollutants, and contaminants at a site. Section 121(d) of CERCLA, 42 U.S.C. § 9621(d), further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants, and contaminants which assures protection of human health and the environment and that at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to Section 121(d)(4) of CERCLA, 42 U.S.C. § 9621(d)(4).

EPA is proposing to modify the remedy selected in the 1992 ROD, as modified by the 1998 ESD, to include alternatives for addressing the remaining groundwater source area contamination where concentrations are the highest including in the vicinity of monitoring wells MW-03, MW-103, MW-105, MW-109 and MW-110 at the Site.

Detailed descriptions of the remedial alternatives summarized in this Proposed Plan for addressing site-wide groundwater contamination are provided in the FFS report.

Common Elements for the Alternatives

Both alternatives described below would require ICs, such as a Classification Exception Area/Well Restriction Area (CEAs/WRA), which is a restriction established under New Jersey regulations that would provide notice that the groundwater does not meet designated use requirements and would restrict groundwater uses or activities which could result in direct contact with contaminated groundwater. A NJDEP CEA/WRA would be established to restrict future groundwater use activities that would expose users to contaminants at levels that may pose human health risk, until the RAO is met. Long Term Monitoring (LTM) would be used as a basis for evaluating the terms of the CEA/WRA and monitoring the progress of lowering the concentration of COCs.

Original Remedy – Groundwater Extraction and Treatment

Capital Cost:	$555,650
Annual O&M Cost:	$747,000
Total Present Worth Cost:	$10,322,320
Time to attain RAO:	30 years
Construction Timeframe:	1 year

The Groundwater Extraction and Treatment remedial alternative consists of groundwater collection, treatment, and reinjection of the treated groundwater. This alternative also includes a LTM program. As part of the remedy selected in 1992, a groundwater extraction and treatment system was constructed at the Site and operated from July 2009 through June 2018. Contaminated groundwater would be pumped from the subsurface through two extraction wells, identified as RW-1 and RW-2, and conveyed to the treatment system, which is located within a dedicated building on the Site. The treatment system includes a pretreatment system for metals removal by addition of hydrogen peroxide and multi-media filtration. The water then passes through two granular activated carbon (GAC) vessels, in series, to remove VOC contamination. The treated water then is routed to a tank for filter and GAC vessel backwashing or is discharged to the reinjection trenches. The reinjection trenches consist of two banks and each bank contains two trenches for a total of four possible reinjection trenches. The system was shut down in June 2018 when EPA decided to perform the ISCO pilot study.

This alternative consists of repairing the treatment plant, specifically supervisory control and data acquisition (SCADA) system upgrades, replacement of media in both the multi-media and carbon filters, other general repairs, and the installation of two new extraction wells that would be placed to target the remaining source area contamination. The treatment plant would then be operated for an estimated 30 years to attain groundwater RAOs.

Preferred Alternative – In-Situ Treatment

Capital Cost:	$913,500
Annual O&M Cost:	$40,000
Total Present Worth Costs:	$1,409,900
Time to attain RAO:	~5 years
Construction Timeframe:	N/A

This in-situ treatment alternative consists of ISCO which utilizes oxidants injected into the groundwater aquifer in the source areas to transform harmful contaminants into less toxic byproducts. At the Site, the ISCO pilot study involved the injection of sodium persulfate oxidant and sodium hydroxide activator into the subsurface to determine its effectiveness in reducing levels of remaining VOC contamination from the groundwater. This remedial alternative involves several rounds of additional ISCO injections, followed by sampling after each injection event. Additional sampling and analysis would need to be performed to evaluate if additional injection treatment, such as in-situ alternative chemical oxidants or in-situ chemical reduction, would be required to fully address the residual contaminants at the Site. EPA does not expect additional treatment for metals that may become elevated after the ISCO injections will be necessary because metal concentration increases due to ISCO are typically transitory and will re-equilibrate so that the metal concentrations will return to the pre-injection state over time.

Based on the findings of the ISCO pilot study, this alternative would consist of an estimated five rounds of ISCO injections targeting the remaining source areas, followed by an estimated 10 years of monitoring to ensure additional injections are not needed and metal concentrations re-equilibrate.

EVALUATION OF ALTERNATIVES

In evaluating the remedial alternatives, each alternative is assessed against nine evaluation criteria set forth in the NCP, namely overall protection of human health and the environment; compliance with ARARs; long-term effectiveness and permanence; reduction of toxicity, mobility, or volume through treatment; short-term effectiveness; implementability; cost; and state and community acceptance. See box entitled “The Nine Superfund Evaluation Criteria” for a more detailed description of these criteria.

This section of the Proposed Plan evaluates the relative performance of each alternative against the nine criteria, noting how each alternative compares to the other options under consideration. A more detailed analysis of alternatives can be found in the FFS report.

THE NINE SUPERFUND EVALUATION CRITERIA

1. Overall Protectiveness of Human Health and the Environment evaluates whether an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.

2. Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) evaluates whether the alternative meets federal and state environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.

3. Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.

4. Reduction of Toxicity, Mobility, or Volume (TMV) of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

5. Short-term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, the community, and the environment during implementation.

6. Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.

7. Cost includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.

8. State/Support Agency Acceptance considers whether the State agrees with the EPA's analyses and recommendations, as described in the RI/FS and Proposed Plan.

***9.* Community Acceptance** considers whether the local community agrees with EPA's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

Threshold Criteria

Overall Protection of Human Health and the Environment

Both alternatives would be equally protective of human health. The exposure pathways to human receptors would be eliminated by restrictions placed on the use of groundwater within the area of groundwater contamination, while groundwater is treated by either extraction and treatment (Original Remedy) or in-situ treatment (Preferred Alternative).

Compliance with ARARs

Both alternatives are expected to achieve compliance with chemical-specific ARARs for groundwater, consisting of New Jersey GWQS. Both alternatives also would comply with potential action-specific ARARs, such as those applicable to managing stormwater runoff; minimizing land disturbances; installation, operation, and abandonment of wells; waste characterization and storage; air quality control; and noise pollution. No location-specific ARARs were identified.

Balancing Criteria

Long-Term Effectiveness and Permanence

Both alternatives are expected to be protective in the long term and permanent because both alternatives would permanently treat groundwater contamination. Long-term monitoring, and ICs, including a CEA/WRA, would help ensure that each alternative remains effective in preventing exposure to contaminants. However, the Preferred Alternative is estimated to attain the RAO for reducing source area contaminant mass in a significantly shorter time than the Original Remedy, so that long-term effectiveness could be achieved more quickly.

Although residents in the Site vicinity are currently connected to a municipal drinking water supply, ICs, such as groundwater use restrictions, would be used to prevent the installation of any private wells within the area covered by the restrictions, until the RAO is met.

Potential impacts to the Site 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.

Reduction of Toxicity, Mobility, or Volume through Treatment

Both alternatives reduce toxicity, mobility, and volume of the VOCs in groundwater through treatment of COCs.

The Original Remedy would treat less contaminant mass than the Preferred Alternative since direct treatment with injection would directly target the primary source areas of contamination.

Short-Term Effectiveness

The Preferred Alternative is expected to attain the RAO for reducing source area contaminant mass in approximately 5 years, whereas the Original Remedy is expected to attain the RAO in 30 years. Both alternatives rely on ICs, including a CEA/WRA, to protect human health until the RAO is achieved.

There are no significant short-term risks to the community or the environment associated with either alternative although there are normal construction related risk for construction workers performing upgrades to the groundwater extraction and treatment system as part of the Original Remedy.

Workers performing ISCO injections under the Preferred Alternative and groundwater sampling/

monitoring under both alternatives have the potential to be exposed temporarily to contaminants, but this risk would be minimized by the use of personal protective equipment and implementation of a Health and Safety Plan.

Implementability

Both alternatives are implementable onsite. There are no significant technical implementability issues associated with either alternative. The goods and services needed to implement both alternatives are readily available. However, the Original Remedy has greater implementability challenges associated with start-up and long-term operation of the groundwater extraction and treatment system. There are no implementation issues associated with the Preferred Alternative since set up and operation of treatment system is temporary and relatively easy to construct, operate and remove at completion. Pursuant to the permit exemption at Section 121(e)(1) of CERCLA, 42 U.S.C. § 9621(e)(1), no permits would be required for on-site work although substantive requirements of otherwise required permits would be met.

Cost

The Original Remedy has a higher cost for groundwater extraction and treatment, with a total present worth cost of $10.3 million over a period of 30 years. The Preferred Alternative has a lower cost, with a total present worth cost of $1.4 million. The present worth calculation assumes that construction would begin in 2023 and assumes a 7 percent discount rate.

Alternative	Capital Cost	O&M Cost	Total Present Worth Cost
Groundwater Extraction and Treatment	$556,000	$747,000	$10.3 million
In-Situ Chemical Treatment	$914,000	$40,000	$1.4 million

State / Support Agency Acceptance

The State of New Jersey concurs with EPA's Preferred Alternative as presented in this Proposed Plan.

Community Acceptance

Community acceptance of the Preferred Alternative will be evaluated after the public comment period ends and will be described in the ROD Amendment for the Site.

SUMMARY OF THE PREFERRED ALTERNATIVE

Based upon an evaluation of the remedial alternatives, EPA proposes in-situ treatment as the preferred remedial alternative for the remaining source of groundwater contamination at the Cosden Chemical Coatings Superfund Site.

This Alternative consists of an estimated five rounds of in-situ chemical injections targeting the remaining groundwater contamination source areas with sampling rounds completed before, between, and after each round of injections. After all injection rounds are completed, a period of monitoring will follow to allow for re-equilibration of metal concentrations and ensure that additional injections are not needed.

ISCO injections would be designed to achieve the source area RAO by destroying the remaining COCs in their groundwater source areas. It is estimated that five injections would be required for concentrations to attain the RAO. The exact placement of the injections, concentrations of injection chemicals, and sampling plan would be determined based upon the ISCO pilot study results.

The LTM program would be implemented to track and monitor changes in the groundwater contamination to ensure the RAO is attained. The results from the long-term monitoring program would be used to evaluate the migration of contaminants and changes in site-related COCs over time.

Institutional controls in the form of a CEA/WRA would be established to ensure that the remedy remains protective until the RAO is achieved for protection of human health over the long term. Institutional controls such as a deed notice would be recorded in property records if it is determined that future land use at the Site would result in exposure leading to unacceptable risk.

The total estimated present worth cost for the Preferred Alternative is $1,409,900. Further details of the cost are presented in the FFS Report. This is an engineering cost estimate that is expected to be within the range of plus 50 percent to minus 30 percent of the actual project cost.

This alternative would ultimately result in a reduction of contaminant levels in groundwater within approximately five years to achieve the RAO.

Basis for the Remedy Preference

In-situ treatment uses proven technologies which are effective at reducing contaminant mass to achieve VOC reductions in groundwater, as was demonstrated by the ISCO Pilot Study performed at the Site. The Preferred Alternative will be more effective than the Original Remedy in eliminating the remaining source areas for the groundwater contamination by targeting ISCO injections precisely where the remaining contamination is located.

Furthermore, during implementation, EPA can adjust additional injection locations and concentrations to target the contamination depending on sampling results collected between injection rounds. This can be completed at a finer scale than could be achieved with the Original Remedy. Thus, the Preferred Alternative is expected to be more effective than the Original Remedy in achieving the desired results of treating the remaining sources of contamination in the groundwater.

EPA expects that the Preferred Alternative will not disrupt residences since it requires minimal, temporary infrastructure that will not need to be maintained, whereas the extraction and treatment equipment needed for the Original Remedy would require maintenance over time.

The Preferred Alternative is predicted to attain remediation goals in a shorter time frame than the Original Remedy, at a lower cost. Residents in the Site vicinity are currently connected to a municipal drinking water supply. This water supply is treated to meet federal and state drinking water standards before distribution.

The Preferred Alternative will achieve ARARs. While the Preferred Alternative will not treat metal concentrations in groundwater, metal concentration increases due to ISCO are typically transitory and will re-equilibrate so that the metal concentrations will return to the pre-injection state over time. Thus, the Preferred Alternative is expected to result in compliance with ARARs for VOCs and metals.

The LTM program would be implemented to track and monitor changes in the groundwater contamination to ensure the RAO is attained. The results from the LTM program will be used to evaluate the migration of contaminants and changes in site-related COCs over time.

ICs in the form of a CEA/WRA would be established to ensure that the remedy remains protective until the RAO is achieved for protection of human health over the long term.

The environmental benefits of the Preferred Alternative could be enhanced by giving consideration, during the remedial activities, to technologies and practices that are sustainable in accordance with EPA Region 2’s Clean and Green Energy Policy.

Though EPA proposes in-situ treatment as the preferred alternative, the groundwater extraction and treatment system would remain in place in its current condition, though not operating, until the effectiveness of the source remedy is determined to be fully successful.

Based upon the information currently available, EPA believes the preferred alternative meets the threshold criteria *(protection of human health and the environment*) and c*ompliance with ARARs*) and provides the best balance of tradeoffs among the other alternatives with respect to the balancing criteria. The preferred alternative satisfies the following statutory requirements of CERCLA: 1) the proposed remedy is protective of human health and the environment; 2) it complies with ARARs; 3) it is cost effective; 4) it utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and 5) it satisfies the preference for treatment as a principal element. LTM would be performed to assure the protectiveness of the remedy. With respect to the two modifying criteria of the comparative analysis (*state acceptance* and *community acceptance*), NJDEP concurs with the proposed remedy.

COMMUNITY PARTICIPATION

EPA and NJDEP provided information regarding the cleanup of the Site to the public through meetings, the administrative record file for the Site, and announcements published in the local newspaper. EPA and NJDEP encourage the public to gain a more comprehensive understanding of the Site and the Superfund activities that have been conducted.

The dates for the public comment period, the date, location and time of the public meeting, and the locations of the administrative record file are provided on the front page of this Proposed Plan.

For further information on the Cosden Chemical Coatings Superfund Site, please contact:

Tamara Rossi
Remedial Project Manager
(212) 637-4368
rossi.tamara@epa.gov

or

Natalie Loney
Community Involvement Coordinator
(212) 637- 3639
loney.natalie@epa.gov

Written comments on this Proposed Plan should be submitted on or before to Tamara Rossi at the address or email below.

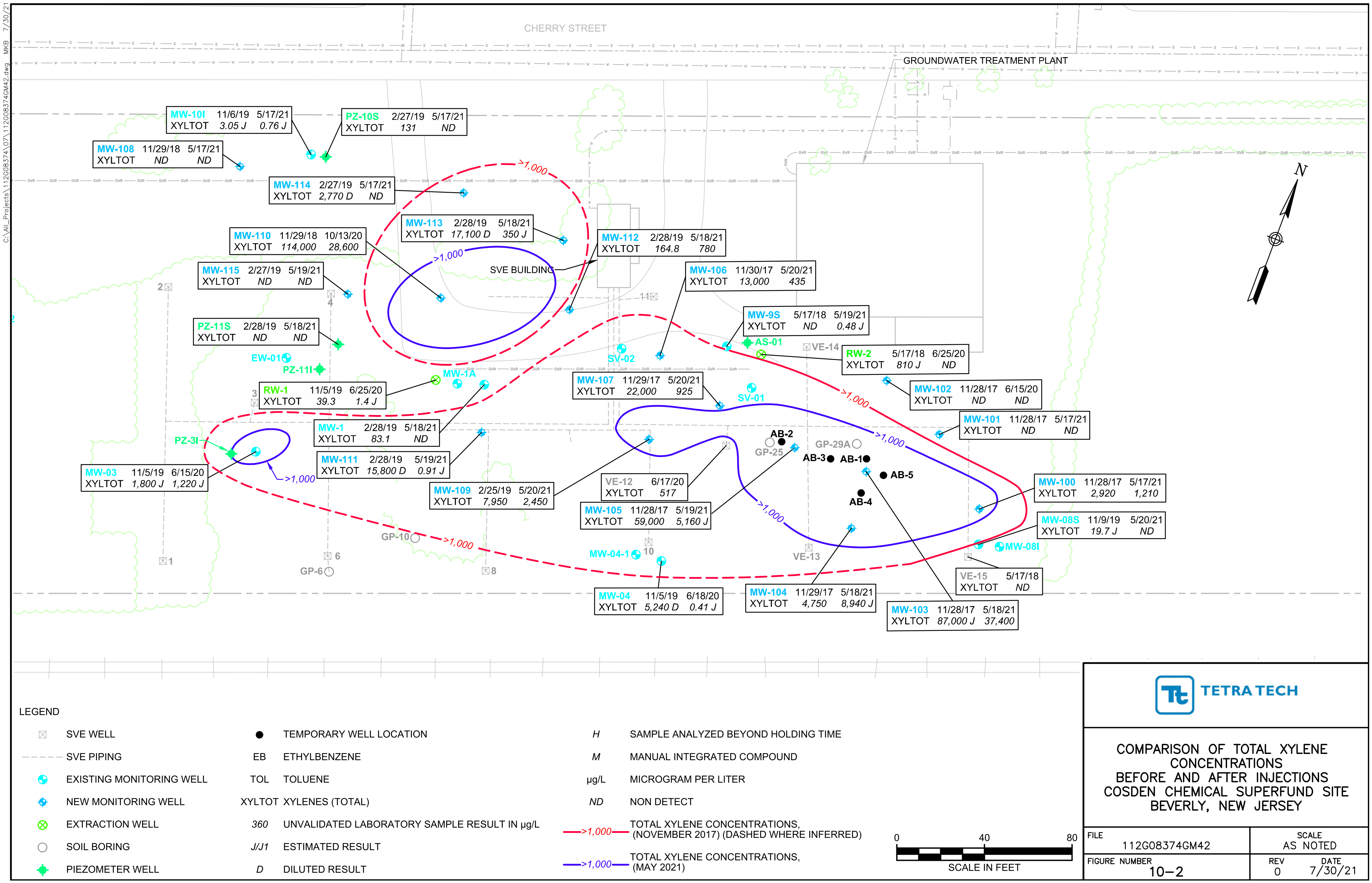
U.S. EPA
290 Broadway, 19th Floor
New York, New York 10007-1866
rossi.tamara@epa.gov

The public liaison for EPA's Region 2 is:

George H. Zachos
Regional Public Liaison
Toll-free (888) 283-7626
(732) 321-6621

U.S. EPA Region 2
2890 Woodbridge Avenue, MS-211
Edison, New Jersey 08837-3679

Figure 2. Total xylene concentrations in groundwater before and after ISCO pilot study



ATTACHMENT B

PUBLIC NOTICE

United States Environmental Protection Agency

EPA Invites Public Comment on a Proposed Cleanup Plan for the Cosden Chemical Superfund Site in Beverly, New Jersey

The U.S. Environmental Protection Agency (EPA) issued a **proposed update** to the original 1992 cleanup plan for the **Cosden Chemical Coatings Corporation Superfund site** on **July 29, 2022**. The Proposed Plan is available electronically at www.epa.gov/superfund/cosden-chemical.

EPA's preferred alternative uses a process called In-Situ Chemical Oxidation (ISCO) to address groundwater at the site that is contaminated with volatile organic compounds.

A **30-day public comment period** for the Proposed Plan will run from **July 29, 2022 to August 29, 2022**. EPA will host a **virtual public meeting on Tuesday, August 16, 2022 from 6:00pm–8:00pm EST**. To register for the public meeting, visit https://cosden-chemical.eventbrite.com. To learn more about the public meeting, visit www.epa.gov/superfund/cosden-chemical or contact Natalie Loney at loney.natalie@epa.gov or (212) 637-3639.

Anyone interested in receiving materials for the public meeting in hard copy should either email or call Ms. Loney with such a request by Thursday, August 11, 2022.

Relevant stakeholders are encouraged to review the Proposed Plan, attend the public meeting, and comment on the cleanup alternatives. **Written comments should be submitted by August 29, 2022** and emailed to Tamara Rossi, Remedial Project Manager, at rossi.tamara@epa.gov. The Administrative Record file containing the documents used in developing the alternatives and preferred cleanup plan is available for public review at **www.epa.gov/superfund/cosden-chemical.**

7/30/22 $34.02 10400091-01

ATTACHMENT C

PUBLIC MEETING TRANSCRIPT

COSDEN CHEMICAL COATINGS)
SUPERFUND SITE)
PROPOSED REMEDY)
MODIFICATION)

PUBLIC MEETING

REMOTELY VIA ZOOM

Tuesday, August 16, 2022

6:03 p.m. to 7:15 p.m.

Reported by:
Dawn Mack-Boaden
Registered Professional Reporter; CSR# 153120
APPEARING REMOTELY FROM NORFOLK COUNTY, MA

REMOTE APPEARANCES:

Natalie Loney
Community Involvement Coordinator

Perry Katz
Remedial Project Manager

Tamara Rossi
Remedial Project Manager

Jeff Josephson, EPA

Shereen Kandil, EPA

Emily Terjimanian
Army Corps of Engineers

P-R-O-C-E-E-D-I-N-G-S

MS. LONEY: Okay. It's now 6:04 and so we're going to get started. Thank you everyone for joining us for the Cosden Chemical Coatings proposed remedy modification. This, of course, is a virtual public meeting. My name is Natalie Loney. I'm the community involvement coordinator for the site.

And so just a quick overview of tonight's agenda. I'll be doing the introduction of the meeting itself, followed by Perry Katz, who will be doing the overview of the Superfund process along with the presentation of the proposed change to the remedy, after which I'll come back on and we will open up the floor for Q&A.

Since this is a public meeting, it is being recorded by a stenographer, and we ask that if you are called upon to ask a question, that you state your name for the record and ask your question as clearly as possible.

With us tonight, apart from myself, the community involvement coordinator, and Perry Katz, who is the remedial project manager for the site, we also have Tami Rossi, who is the RPM, or remedial project manager, for the site; Jeff Josephson; and Shereen Kandil, all from EPA who will be supporting this effort.

In addition, Emily Terjimanian from the Army Corps of Engineers is also here to help field any technical questions.

Before we go into the Superfund process, Rich, you really are the only individual who is following along online, and so I don't think we need to worry too much about all of the features of this platform. When you're ready to ask a question, you can just un-mute and, you know, you'll -- you can ask your question then.

Other than that, I think everything is pretty much standard in terms of remote access or virtual meeting platform. Is there anything that you need explained, Rich, or are you comfortable with the platform that we're presenting on?

MR. RICH: No. I'm very familiar with Teams.

MS. LONEY: Okay. So without further ado, I'm going to turn the presentation over to Perry. Perry.

MR. KATZ: Thanks, Natalie. So it's Rich and Robert; correct? Is that the audience as it currently stands?

MS. LONEY: Correct.

MR. KATZ: Okay. Well, this is an intimate setting then, I guess, even though it's Teams and virtual.

So, first, thanks for the interest in the ongoing cleanup at Cosden. This may be old hat for both of you, but what I wanted to start with was an overview of our environmental clean-up process, and I'll try to -- I assume you have familiarity to some level by virtue of Cosden, but it might serve to reaffirm what our process is.

Typically what happens is we have the initial phase of discovery where potential hazardous waste sites get identified, and there's a variety of ways that happens: Through historic records from state, local, federal records, citizen notifications, and other sources.

Once a potential hazardous waste site is identified, the first steps are a preliminary assessment and site inspection.

The preliminary assessment is really just a formal initial records review, and it's used in association with developing a sampling plan of the different environmental media: Groundwater, surface water, soil layer. And the purpose of that is to try to ascertain if the site warrants inclusion on EPA's Superfund National Priorities List. In this case, of course Cosden met that threshold and was -- is on the National Priorities List.

Once that happens, there's a characterization phase that includes what we call remedial investigation, and it's simply the environmental investigations that determine the nature and extent of the contamination in the various environmental media: Soil, sediment surface, water, groundwater, air.

And once the nature and extent of contamination is determined, then the next step is a feasibility study. And that evaluates clean-up technologies. It develops clean-up alternatives and we are required to use nine evaluation criteria to select a clean-up alternative or propose a clean-up alternative.

In conjunction with those steps, we do a risk assessment, which the purpose of that is to figure out the nature and the extent of human health and/or ecological risk posed by the site conditions.

Once we do those things and we are ready to, as we are tonight, go out to the public, we issue a proposed plan that was issued ahead of this virtual public meeting and it summarizes those steps: The remedial investigation, feasibility study, the risk assessment. And we present our preferred approach to clean up the site. And that is subject to state input as well as input from the community and the greater public.

Once we go through that process, we document our decision making in a record of decision. Again, I'm guessing both of you are somewhat familiar with these processes, but I'll go through them.

The record of decision documents EPA's selection of a preferred clean-up approach, and it also summarizes any questions and provides responses that were obtained during the public comment period -- whether they were written or presented, for example, tonight, orally.

Once we have that decision made about our approach to the environmental cleanup, we have to design that remedy, basically. And that engineering design is -- basically, it's a design of what's described in the record of decision.

Once it's designed, we go ahead and implement that design. That's literally the physical construction of the action, and it's based on the design and it's based on the alternative that's described in the record of decision.

Once the remedy's constructed, there are post-construction activities. They can involve operation and maintenance, as is the case at Cosden where there was a groundwater treatment plant constructed and there was an ongoing operation, and then maintenance of that facility. It could be maintenance of a cap -- not the case at Cosden -- but where things like maintaining a security fence, cutting the grass, making sure any monitoring wells that are on landfill, for example, are intact and functioning properly.

There are some other -- those stages that I described to you all were part of what went on at Cosden. Then there are some other features. There are some other features in the Superfund process, just to wrap up the overview of that. Ultimately, and we know the wheels of progress can move slow with these environmental cleanups to say the least, but we ultimately get to a point where we can delete the site from the

National Priorities List and that's when the requirements and the record of decision are met and the technical evaluations that we do would support the decision that the site is, in fact, cleaned up. And it does happen.

And there are a couple of other things as part of our process. There are five-year reviews, which is a tool we use to deal with sites where waste is left behind. We go back and take a look at it every five years to ensure that the remedy or the cleanup is progressing the way we envisioned it and we're moving towards trying to meet our clean-up goals.

And then just a couple of things that go on throughout this process. There's community involvement. Natalie is going to talk more about that, but it is done throughout our process, and it's our efforts to try to engage the community and get their input regarding milestone decisions that we make about the site.

And then, finally, probably in the more recent past, EPA has tried to incorporate considerations regarding site reuse and redevelopment, and you've probably heard or read stories, throughout New Jersey certainly, where a landfill is being repurposed for soccer fields or recreational fields after a cleanup has been complete or, more recently, land -- I'm using landfills as an example; but, you know, solar arrays are put on these landfills and alternative energy, you know, is being generated through solar array, for example. The one thing -- so that's an overview of the process.

One thing that's really important to note in the case of Cosden that I think, you know, as I delved into this -- I'm relatively new to the project -- is that, you know, clean-up work at Cosden has been going on literally since the mid 1980's. And I know, on the one hand, that's a long time, but what we're talking about tonight in terms of an amendment to the record of decision, it really supplements the previous work and will help us complete the restoration of groundwater that's an aspect of the environmental cleanup out here.

So I know it's probably obvious to both of you, but, you know, we're not starting from scratch with our first decision tonight. This is much further along in the process with regard to what we're going to talk about tonight.

So just a brief overview of the cleanup. The site was listed on the National Priorities List in '87.

Again, this is a little bit of the history with the overall scope of things. There were early actions in the early '90s to secure the site and remove drums and tanks.

The remedial investigation feasibility study that I described earlier was completed in '92.

The record of decision -- the initial first record of decision was issued in 1992, and as you're probably well aware, included building demolition and disposal, the construction -- the design and construction of the groundwater and extraction treatment system. At that time, it also included disposal of on-site soil as well.

In 1998, we had a -- we have a formal mechanism when we make changes; in this case, it was an explanation of significant differences. It did some things to clarify the original clean-up plan. It clarified that we would use excavation off-site disposal of a class of compounds called polychlorinated biphenyls that were in the soil versus what we originally had described in the record of decision regarding on-site treatment, and we also incorporated, among a couple of other things, a soil vapor extraction component in the remedy that wasn't previously there.

And based on some additional information about lead at that time, the clean-up level for lead in soil was modified to a more stringent level from 500 parts per million to 400 parts per million.

And so, again, I just want to re-emphasize that the clean-up work has been going on for a long period of time. The ROD amendment that we're talking about tonight supplements previous work to complete really the groundwater restoration piece.

The ROD amendment doesn't deal with anything with regard to the building and the soil because that work has been completed. It just adds an additional remedial action -- and Jeff and I'll talk a little bit more about that -- to the existing groundwater cleanup so that we can address what we identified as some remaining areas -- source areas of groundwater contamination.

Some brief background. Again, I'm guessing both of you are familiar. Cosden originally manufactured paint for coating industrial equipment and operated from the mid '40s to the late '80s and also stored solvents on site after -- in the 1970s. The Burlington County Department of Public Safety had reported those site conditions in conjunction with when a grass fire occurred at the site in 1980, and this is how the site was identified. If you recall, I talked about ways sites were discovered.

For myself, I've worked at local, state, and federal levels of government over the course of my career. I worked for the health department at one point in time. And I'm probably a little older than most folks on the phone tonight, but I go back to the '80s and late '70s and, you know, health departments played a role in identifying some of these sites. This was the Department of Public Safety; but, similarly, they surfaced this site based on what happened back in 1980.

So I don't know this for certain, but my guess is that the county interfaced with the State of New Jersey who followed up and did inspections and found the condition of the surface spills and un-secure drums, et cetera.

They initially interacted with Cosden through the issuance of a court order in the mid '80s and Cosden apparently initiated but never completed the cleanup. Then the state took it on in, roughly, 1986 and they did an emergency removal of drum material and the cleanup of surface spills at that time.

I mentioned that the site ultimately got on the National Priorities List in 1987 and then EPA, the federal government, initiated a second emergency action in '89. They constructed a fence around the area of the soil contamination, again, removing the remaining drums and containers that were still on site. I had mentioned in '82, we issued a record of decision for the building, the soil, and the groundwater.

So that ROD for the building and the soil included, as I mentioned, a demolition of off-site disposal of the building and building debris, cleanup of soils containing lead, chromium, and polychlorinated biphenyls, and that occurred in phases between 1999 and 2002.

And you can see on the slide -- well, Rich, you can. Robert, you should be able to if you have it now.

There were various volumes of waste materials removed from the site at that time, and there was a report that documented that work that was completed in '03. 2003, I should say. With regard to the groundwater --

MR. LOWDEN: I'm following along there.

MR. KATZ: Okay. Excellent. So with regard to the groundwater environmental clean-up approach in the decision, there was a groundwater and extraction treatment system that was constructed -- a plant was constructed in 2007, and it was intended to address the volatile organic compounds that were present at the site. The soil removal largely involved metals -- chromium, for example, and polychlorinated biphenyls.

The long-term remedial option and the operation of the groundwater treatment plant began in 2009. And in 2007, as part of the explanation of significances that I spoke about a little earlier, the soil vapor extraction system was installed in 2007, and that was to address vapors that contained contaminants between the ground surface and the groundwater table.

There was a -- vapor intrusion was addressed as well. And I probably should take a quick digression to explain what vapor intrusion is if you're not familiar with that term. It's really the movement of volatile organic compounds, those vapors, from the groundwater through forced spaces in the soil; and these vapors find their way through a bunch of pathways, like foundational cracks or basement sumps, into the living space of buildings, and they can impact indoor air. You may be familiar with the term vis-à-vis radon. Same idea.

So it's not just confined to volatile organic compounds, but that is the case -- that was the case here in terms of the evaluation. The evaluation that was done indicated that there weren't any volatile organic compounds detected above EPA-screening levels. Therefore, there really wasn't a pathway to expose any building -- it wasn't considered complete. So vapor intrusion is not an issue at this point.

So with regard to the current nature and the extent of contamination, this is a summary of the work that led EPA to propose a modification to it's current environmental clean-up approach.

It includes some additional groundwater investigation, sampling, and analysis. And as you can see on the slide, there was an area identified roughly 20 to 25 feet below the ground surface where there was contamination still present. Mainly, we're speaking about volatile organic compound.

There were 16 new wells installed to target evaluating the extent of this contamination.

And then there was one study done in 2017. And you can see the in-situ chemical oxidation was the nature of a pilot study.

Let me just explain a little bit about what that is. It's a technology that -- well an oxidant, which is a substance that can use oxygen to break down other chemicals, is injected or mechanically mixed into a treatment -- in this case, the soil, and it promotes the chemical breakdown of those contaminants into less -- less harmful by-products.

The pilot study -- again, the definition of that, if you're not familiar, it's a smaller-scale study that's done in the field that, I'll say, test drives the technology and assesses its performance. And what happens is when we do these types of things, if the pilot study is successful, then the potential exists to ramp up the pilot scale study into something full scale.

And so the purpose of the in-situ chemical oxidation pilot study was to determine if these injections using a particular compound, persulfate, would be effective at degrading volatile organic concentrations more quickly than if we continue to operate the groundwater and extraction treatment system.

There were four rounds of injections done over time, and we evaluated and monitored the performance of this particular compound, persulfate, and we completed a final report in 2021.

The next slide is a summary of the key results. You can see the numbers on the slide, but the bottom line is the volume of the contaminated groundwater was significantly reduced. The original footprint of the groundwater plume was substantially reduced after the injections. And the contaminants of concern in the sentinel wells were not detected.

Again, just by way of definition, a sentinel well is a monitoring well that is usually placed between the groundwater plume and a receptor to determine whether the plume has migrated beyond what its predicted boundaries would be. So that's what a sentinel well is. So we didn't have -- that indicated nothing had moved off site.

The table really quantifies the percent change in the concentrations pre- and post injection. And, as you can see, anywhere from 74 to 78 percent change in the concentrations of the three chemicals that are listed: Toluene, Ethylbenzene, and total xylenes, which are -- we focus on xylenes, but all of those are -- those three are contaminants of concern.

So I know this looks like a little bit of an eye exam, I suspect, but what this figure is is a depiction that shows the reduction of one of the primary contaminants of concern, the volatile organic compound xylene and -- pre- and post injection. And what I'll convey to you is that the red line, both solid and dashed, represent xylene concentrations preinjection in, roughly, 2017; and the blue or purple, depending on how you perceive that color, that line represents xylene concentrations post injection in 2021.

And what you should be able to see is that there's a reduced footprint of contamination due to the effect on the in-situ treatment injections. That's really the net of this figure.

So the conclusions and the recommendations that you see on this slide are based on the pilot study. The ISCO injections -- I'll just paraphrase. The ISCO injections -- in-situ chemical oxidation injections -- reduced the volatile organic compound concentrations. The recommendation from the pilot study was to continue to perform these injections and focus on those areas that still had higher levels of contamination that are in the groundwater.

And the pilot study concluded that the in-situ chemical oxidation is a potential treatment option in addition to the groundwater and extraction treatment system.

So during the course of this work, there was some additional investigative work that was sampling and analysis performed on what we call emerging contaminants. And by emerging contaminant, we define that as either a synthetic or a naturally occurring chemical that isn't commonly monitored in the environment but has potential to enter the environment and cause adverse health or ecological impacts.

And you're probably familiar with per-and polyfluoroalkyl substances, PFAS, and the related compounds. 1,4 dioxane is another compound that's considered an emerging contaminant, and 1,2,3 trichloropropane falls under the same category.

With regard to the PFAS compounds, they were detected above New Jersey's Department of Environmental Protection's groundwater quality standards, and we are going to need to do some additional investigation into that class of compounds.

You know, I know, Rich, you raised a question about them. While we conveyed the, you know, the results in our proposed plan, there is going to be a plan to address these contaminants at a later time. It will be in conjunction with our design, you know, the preferred remedy that we're going to talk about here.

And then I know you had a couple of other related questions to it about the ISCO injections having any affect on this class of compounds, and they -- you know, there's

some uncertainty associated with that.
     Jeff, I think I'm going to ask you to elaborate a little bit on it because I think I'm going to stumble through the details on that.
     But, in short, you know, there are treatment options for this class of compounds. We just have to do more work to establish whether or not they come from the Cosden site. The data we have right now indicates that it's possible that there's an off-site source because there are higher contaminations on the more up gradient portions of the Cosden property. But that will all be wrapped up in our investigation on that.
     Jeff, do you mind taking a second to elaborate on the whole thing with the treatment?
     MR. JOSEPHSON: Yeah, no problem. The treatment with ISCO, those materials have never been tested specifically for treatment with the PFAS compounds at the site. And so we don't know if it has an effect or not.

You know, the compounds -- the ISCO materials were not designed to treat PFAS compounds.

However, there are ways to treat it if it turns out they are site-related. As Perry indicated, you know, the wells where we found the PFAS are right around the fence line that is up against the railroad tracks, and the water flow is towards the north in that area, towards the Delaware River.

And so we don't -- we just don't know if it's for sure at the site or not or if it's coming from the other side of the fence, basically. And so that's where we are right now, and that's partially due to the fact that we just started to monitor for it, you know, as it became a more common contaminant and the state developed standards for it.

MR. KATZ: Thanks, Jeff. Rich, is that -- and I know you had some other questions. I'm going to try to circle -- you know, as we go through the rest of the presentation, I believe I'll pick those up and respond to those as well. But did that answer your question about that at least for the moment, Rich?

MR. RICH: Yeah. And just, you know, I'm pretty familiar with the PFAS and the PFAS family.

MR. KATZ: Okay.

MR. RICH: The concern there is we know that the Neshaminy Creek, which is right across the river from us, was finding levels of PFAS.

And so we're trying to figure out if it actually was something that came from the site or something that maybe is just in the area. We know it's an emerging contaminant, and I knew there was -- the ISCO isn't something that normally would oxidize that. It's one of those forever chemicals. So it would probably -- we'd have to use some other methodology.

MR. KATZ: Rich, I actually live in Bucks County and, you know, I don't know if this is what you were suggesting. I may have misheard you. But this class of compounds, you know, are turning up

ridiculously, if that's a word.
And that's a long haul between Beverly and Willow Grove. I live in between, actually, right near Yardley.
MR. RICH: Well -- well aware of that, but we know the levels seen in the Neshaminy Creek and -- and I know the Delaware River likes to exfiltrate and push out into eluvial layers and so forth and just didn't know -- it's a pretty long haul to get from there; but, you know, we didn't think it was any of the chemicals that might have been on site. That's why I raised the concern.
Same thing with the 1,4 dioxane. I know they picked up levels of that at the New Jersey American War surface treatment plant a couple of years ago, and they were working with DEP to come up with a treatment option for that. But, again, that one looks like it's going to fall within the limits once this process continues.
MR. KATZ: Yeah. We didn't -- you know, just to close the loop on that emerging contaminant discussion, we didn't find any

levels of 1,4 dioxane or 1,2,3 trichloropropane above New Jersey's groundwater quality standards. So that was good.

MR. RICH: Actually, in one of the documents I think the limit is .4, and the level that was detected was .406. So it was at background levels or nondetectable levels or quality levels back then, and that all attenuated.

MR. KATZ: Okay. So that takes care of that one.

So then the next part of the process. I'm going to try to zip through this, gentlemen, because it sounds like you may both have some familiarity.

But, you know, as we try to determine the nature and extent of the risk out there, as we tried to do that, we go through a standard four-step process to evaluate human health and -- potential human health and ecological risk.

And the steps are, first, hazard identification. You know, we're trying to identify potential chemicals of concern in various environmental media, looking at the toxicity and frequency of occurrence, their ability to move through the environment.

Once we identify them, there's an exposure of assessment step for different pathways that people could be exposed. For example, dermal contact, ingestion, inhalation. And those are evaluated.

And then the third step is assessment of toxicity, meaning the types of adverse health effects and what their relationship is between the magnitude of exposure and the severity of the health effects. And we typically look at end points of cancer as well as noncancer health effects.

And the final step is we try to characterize the risk and we look at the first -- well, the exposure and toxicity, and we perform a quantitative assessment of the risk. And that's our -- that's basically our process.

So at Cosden, we evaluated the current and future land use, including future residential redevelopment, for example, direct contact, ingestion, drinking water well on site.

Now, you know, if you're not already aware, we use fairly conservative assumptions when we do these risk assessments, very conservative assumptions in many cases. So sometimes they're realistic; sometimes they're less realistic.

But, in this case, we looked at the potential in a future-use scenario of somebody drinking contaminated water from a well on site. And once we went through our steps, we concluded that in a future-use scenario where an adult or a child was exposed to contaminated groundwater on site, that did result in a potential elevated risk to cancer and noncancer health effects.

On the ecological side, there was a determination that an elevated risk to the ecological receptors, plants and animals, was unlikely. So that's a short summary of the risk assessment piece.

Trying to get a little more into where

we are today, we have to establish remedial action objectives, and, as you know, we have existing ones. There are media-specific goals that are established to protect human health and the environment. Then we may use, for example, a value established by EPA, maximum contaminant level, or something from the state, New Jersey Groundwater Clean-up Standards -- both cases for groundwater -- for a particular contaminant concern as our basis for determining whether we achieve a cleanup or not.

For Cosden, as I mentioned, there were existing remedial action objectives. They were established when the ROD was prepared and they're listed in the first bullet. This ROD amendment adds -- it supplements what already exists, and it establishes an additional remedial action objective that targets the remaining source areas of groundwater contamination that contain VOCs, mainly xylenes.

So we've established the remedial action objectives that exist and how we propose to supplement it, and then we turn towards evaluating clean-up alternatives. And given that an existing cleanup was in place at Cosden, we really just looked at two alternatives that were evaluated as part of this ROD amendment. Before we talk about each one of them, there are some common elements to both alternatives, and they're listed here.

One is institutional controls in the form of a classification exception area/well restriction area. And that's a control established and utilized in New Jersey to delineate an area of groundwater contamination where there's restrictions for the groundwater's use as well as preventing the installation of wells within that delineated area.

That's a tool -- you might already be familiar with this. That's a tool that the state uses and we incorporate into our cleanups where it's appropriate.

And then like on many of our sites, there's a long-term groundwater monitoring component that evaluates -- it will evaluate both the requirements of the classification exception area/well restriction area and, of course, it will monitor the progress of the groundwater cleanup.

And then there is a third common element, which would be five-year reviews, which I mentioned earlier are done, as we, you know, move through the cleanup of the site.

So the two clean-up alternatives are really as follows. There's the original clean-up action that included the groundwater extraction and treatment system and monitoring. What we would do there is supplement that with repairs to the existing treatment facility and add two additional extraction wells that would be targeted to the groundwater treatment -- it would target groundwater treatment in the remaining source areas. And that duration for cleanup is estimated to require about 30 more years of operation to reach the remedial action objectives.

The existing groundwater and extraction treatment system, which is not currently operating, was estimated they were treating almost 300-million gallons of contaminated groundwater from 2009 to 2018, and it removed approximately 13,000 pounds of total volatile organic compounds.

So it was successful during the time of its operation. We did shut it down because the equipment was aging and we saw the results of the in-situ chemical oxidation pilot study and, as I'll talk a little bit more about, is the preferred clean-up alternative. Those two factors move us towards the preference of using in-situ treatment.

As I've already talked about, that involves injections into the groundwater. It will transform the groundwater contaminants to less toxic by-products. They'll be more stable and less mobile. There would be several rounds of injections and there would be associated sampling and analysis to monitor the performance of those injections.

So we have these two alternatives. And, again, part of our standard process is to evaluate -- whether it's two alternatives or nine alternatives -- to evaluate them against -- under the Superfund legislation, there are nine evaluation criteria that we use and we perform a comparative analysis of the alternatives, and that informs us on how to select a ROD -- environmental clean-up approach.

So, briefly, I'll go through them and how they -- how the two alternatives square up against each other. The first criteria has to do with overall protectiveness of human health and the environment. And that, as it sounds, addresses threats to public health and the environment through treatment engineering controls and institutional controls.

And, in this case, these two alternatives, the groundwater extraction and treatment system with the associated repairs or upgrades and in-situ treatment, were considered equally protective in our analysis.

We also look at the ability of these alternatives to comply with what we call applicable or relevant appropriate requirements. And that is an evaluation of the ability of an alternative to meet federal, state environmental statutes and regulations. And, again, in the case of both of these alternatives, we expect that they would both achieve those requirements.

We also looked at long-term effectiveness, and that evaluates the ability of a clean-up alternative to protect human health and the environment over time. And there is a difference here, as you can see.

The in-situ treatment is going to achieve the remedial action objective in a significantly shorter period of time. We're estimating five years versus what I had mentioned earlier that it would be 30 years for the groundwater extraction and treatment system. You know, you don't need a degree in math to know that that's a significant difference. Right? So that's noteworthy.

The other criteria -- next criteria we look at is reduction of toxicity, mobility in volume of contaminants via treatment. And, in our analysis here, we note that the groundwater extraction and treatment system is going to treat less contaminant mass versus in-situ treatment, which will have the capability of really directly targeting where the remaining sources of groundwater contamination are. So that's also, I would say, a significant difference.

So the remaining criteria include what we call short-term effectiveness. And that just considers the time it takes to implement the cleanup, and it looks at potential risks to the community or on-site workers and the environment during the construction of an environmental clean-up alternative. And there weren't really any significant short-term risks associated with either alternative either to the community or the environment.

In terms of implementability, that looks at technical and administrative factors. For example, the availability of materials and services and, administratively, the degree of permitting involved, for example, during the implementation of a clean-up alternative.

And we consider both of these alternatives implementable. The groundwater extraction and treatment system option has some grayer implementability challenges compared to the in-situ treatment because typically with groundwater extraction and treatment systems, there's a ramp-up or start-up period and so the level of effort involved in that is greater than what we anticipate would happen with in-situ treatment.

Cost is a consideration as well for the evaluation criteria. We estimate capital and annual operation and maintenance costs as well as a calculation of present worth. And what you can see there -- hopefully that's reasonably easy to follow. The first numbers represent -- are associated with the groundwater extraction and treatment system. The second number is -- obviously is looking at in-situ treatment.

And, again, the net on this is that it is substantially more cost-effective to use the in-situ treatment on the present work basis, but what you see is the capital costs are greater for what we would be required to do to the existing groundwater extraction and treatment system; and given that we anticipate that the in-situ treatment may only take upwards of five injections compared to 30 years of operating and maintaining a groundwater extraction and treatment system, that's why you see that cost differential of, for example, $747,000 versus $40,000. So that's, in a nutshell, the cost analysis.

And then finally -- next slide. The two remaining evaluation criteria have to do with whether the state -- where the state falls out on accepting our proposed environmental clean-up alternative. And the state has concurred with us on the in-situ treatment as a preferred alternative.

And as far as community acceptance goes, we evaluate that after we go through our public comment period, have this virtual public meeting. We look at input that's provided and provide responses to any questions that are posed, and we gauge what the level of community acceptance is for our proposed approach. So that's a comparative analysis based on our required evaluation criteria.

And as you can see on the next slide where we fall out is -- and I don't think I'm breaking any news at this meeting; but we do prefer in-situ treatment to address the remaining source areas of groundwater contamination. It will involve an estimated five rounds of injections targeting those source areas, and we would be doing sampling before, during, and after to monitor the performance after each injection.

Rich, here you raised another question, so I'll touch on it. You had asked about chromium levels, would they fall within allowable limits after the injection ceased.

And the short answer is yes, that there's -- in the technical documents, there's reference to some of the scientific literature that we utilized to, you know, in our assessment of things. But that information indicates that those levels would re-equilibrate once the injections are done. So that was another one of your -- another one of your questions that you had raised with us.

And then our preferred approach would also incorporate, of course, long-term monitoring to make sure there is no migration or any changes in the site related to contamination that's in the groundwater.

And then, finally, there would be institutional controls in the form of a classification exception area/well restriction area and a deed notice implemented as part of this approach.

So you can see the bullet at the bottom is that the clean-up action will result in reduction of the levels within approximately five years to reach the remedial action objective that we've established.

As I mentioned -- well, maybe -- I don't think I did mention it. There weren't any exceedances of New Jersey's Groundwater Quality standards for metals or VOCs in any of the off-site property wells during the ISCO pilot study. So we don't have any data to suggest that there's any off-site contamination at this point. Related to the site, that is.

Rich, that was another one of your questions, and I want to make sure I touched on that as well.

So I believe this is my final slide. So just, in sum, the basis for our preferred approach is really summed up in these bullets. You know, the in-situ treatment is a proven clean-up technology. We truthed it with a pilot study which deals with the site-specific conditions.

We believe it will be more effective than the groundwater extraction and treatment system in terms of upgrading that and restarting that up by virtue of the in-situ treatment being able to target the contamination more effectively.

When we do the design in this, there will be flexibility to adjust the number and location of the objectives -- excuse me, injections if we need to. There is less maintenance in the in-situ treatment alternative versus the groundwater extraction and treatment system.

As I mentioned a couple of times, we'll retain the remedial action objective in a much short time rate and at lower cost.

And the groundwater extraction and treatment system will remain in place until we achieve the remedial action objective in case things don't go as we expect them to go or we anticipate them to go.

The bottom bullet there that's highlighted, you'll see it in every one of our decision documents. Preferred alternative -- for the option that we select, I should say -- it really provides the best balance of tradeoffs against EPA's evaluation criteria.

So that ends the technical portion of it. Natalie's got just a few more slides. You don't have to hear me talk anymore unless you have a question for me. Thanks for listening. Natalie.

MS. LONEY: Thank you, Perry. So just to kind of give a quick overview of the next step, the information in this meeting is provide -- will be the responses to questions that are raised in this meeting, along with the transcript and EPA's final decision with regard to this proposed plan, will be published in the administrative record.

The comment period for this particular remedy, the comment period is a 30-day comment period. So it closes on the 29th of August. You have until August 29th to submit your comments, written either via e-mail or they can be mailed regular U.S. mail. You can send that directly to the project manager for this site, which Tamara

Rossi.

And, again, the questions that are raised that are submitted to us either through e-mail or even the questions that are raised tonight, we will be responding to them formally as part of that record of decision in a document called a responsiveness summary.

As I said, you can submit your comments in writing. They need to be submitted to EPA. They should be postmarked no later than August 29th, and you can send them to Tamara Rossi, who's the project manager, or you can e-mail them to her if you don't remember -- if you don't have a question tonight but remember it later on, you have until the 29th of August to submit it to her.

All the site-related information is available on EPA's site profile page for the Superfund site, which is listed here. Epa.gov/superfund/cosden. All of the site-related information is housed there, or you can contact me for a hard copy.

Rich called me earlier today to get some information about tonight's meeting, so, Rich, I know you already have my number. And, Robert, if you need to reach out to me as well, my information is -- we'll provide my information to you.

So that's it. That's it for the formal part of EPA's presentation. We're now going to open up the floor for Q&A. Don't everyone rush to ask their questions all at once.

MR. RICH: I want to say thank you so much to Perry and Jeff and Natalie for just a phenomenal -- going over all those slides.

I have to go back and revisit something. When we did talk about the PFAS chemicals, understanding that it's something that we have to address at a later time, the question is are we going to attempt to address that concurrent with the ISCO injections or is this going to be do five years and then go back and visit the PFAS?

MR. JOSEPHSON: I'll answer. What we would do is we have to establish if there's a source on the site or if it's an off-site source. So that's going to be the first thing we do because if it's an off-site source that's coming on, no matter what we do, it will never be taken care of.

MR. PERRY: Right. Yes.

MR. JOSEPHSON: As long as you understand that.

The second part is that we would do that -- we would do installation of wells kind of over towards the railroad track area. It's not towards the town and city center area and -- because that's where it seems to be the highest concentrations and just, you know, determine is there something -- there are commercial facilities on the other side of the railroad tracks, you know, is it coming from that direction or for some reason did it end up that was where material was dumped on the Cosden site.

Some of the historic monitoring raw data we have shows that the wells where there were the highest levels of PFAS didn't really ever necessarily have the highest levels or, in some cases, there were no levels of the VOCs. And so that's another kind of, you know, more confusing information about it. So we have to establish that.

The second part would be to determine if there's really -- what kind of a risk exists from it if it is from the site. The levels are above the state standard, but they're not really, really very high above it. And so we would -- the risk assessment information we have presented today was based on the CVOC type contaminants. We probably would have to relook at a risk assessment and determine what kind of a risk exists from this.

We know that nobody is really drinking the water here, and we know that this isn't a highly volatile material. And so it's likely that the risk isn't going to be all that high.

But we would probably want to, if we need to, you know, come up with some -- either a plan for monitoring, if they're not that high and they're not really presenting a real risk, to ensure that they are, you know, maintaining a stable low level.

Or if we feel as though treatment would be effective, you know, we would have to go through a process similar to this and establish what we're going to do.

But it can happen concurrently. If we get the data and we get it early enough and it's clear, we can do that at the same time and try not to have to do it sequentially, you know, rather, to do it concurrently.

MR. RICH: Okay. And would that be another remedy modification or is that going to be something separate?

MR. JOSEPHSON: If we had to do another remedy modification, we would do that.

MR. RICH: Okay.

MR. JOSEPHSON: That would be a result of what the risk assessment says, really.

MR. RICH: Right. Understand. And that was really the only real other question.

I'll put a statement out just so everybody on this call and this Teams meeting understands. The reason that Beverly is so interested in this property, aside from the environmental issues that that site has posed for decades, you know, Cosden is about 6.7 acres. The City of Beverly only has 19.1 acres of vacant land, and Cosden is 6.7 acres of that.

So from our perspective, we're only a half square mile. So we are very geographically constrained. So any available property that can be used for economic development and redevelopment obviously is very important to us, even aside from the environmental aspect of it. It's something that we'd like to see remediated.

And, quite frankly, it's a no-brainer to do ISCO versus the groundwater extraction. It's a much better process. It's much more effective. The longer the contaminant sits there, it's not going to stay in one place; it's going to migrate. So it's always better to try to mitigate that as quickly as possible.

So we appreciate everything everybody is doing. This is a great plan. We're happy to see you guys on are on top of the PFAS and also the heavy metal contaminant loads. Hopefully we can get this remediated and clear the site sooner rather than later. So thank you for everybody who allowed us to join this evening.

MR. JOSEPHSON: You're welcome. Thank you for attending.

MR. KATZ: Thanks for your interest, Rich.

MR. RICH: Bob, do you have anything?

MR. KATZ: Maybe not. We might have lost him three-quarters of the way through. The Phillies started at 6:40. So, I don't know, Robert, maybe -- did you dual task?

MR. LOWDEN: I'll be watching it, but not yet.

I appreciate, you know, all the information tonight. Rich and I have gone over different things that were given to us, but from day one, I've been following. It sounds like it's finally coming to a close.

And like Rich said, we would -- you know, we'll be happy to start thinking of what we could put there. Definitely no housing, no parks or anything like that, but something to help, you know, a little bit -- get some taxes for that property. It's not going to make or break us, but it's going to be -- it's a pretty significant size compared to everything else we have.

But I do appreciate, you know, all the work you're putting into this and we're -- I'm also the chairman of the sewer authority. So we -- I mean, we get hit from different things with all these contaminants too, and sometimes you scratch your head, you know, like, we have to cave out so much. Well, we found out the water company is putting that much in, you know, so it's, like, okay.

But that property is definitely something we'd like to get back on the tax roles in a few years. Hopefully I'm still around then.

MR. RICH: And just for context for the

people on the call, Bob was born and raised in Beverly and he was our mayor for many years. In fact, he was our mayor when a lot of this went on with Cosden and the initial plaintiffs and so forth. He's joining us again as a council person and he's been on council again since 2013. So he's been one of our community's leaders for very many years.

MS. LONEY: Thank you for that. So I don't think there are any more questions since the team members of the audience asked their questions. We're going to close out the meeting.

Again, the comment period closes on the 29th. Any questions, concerns, issues that may come up between now and then, please make sure to send that to us.

And, again, I think that's pretty much it for the night. So thank you so much for participating, and this officially ends the public meeting. Thank you.

(PUBLIC MEETING CONCLUDED AT 7:05 p.m.)

C E R T I F I C A T E

COMMONWEALTH OF MASSACHUSETTS
Norfolk, SS.

I, DAWN MACK-BOADEN, CSR #153120, RPR, and a Notary Public duly qualified in and for the Commonwealth of Massachusetts, do hereby certify that:

THE ABOVE PUBLIC MEETING NOTES are a true and correct transcription of my original stenographic notes taken in the forgoing matter, to the best of my knowledge, skill and ability.

I further certify that I am neither attorney or counsel for, nor related to or employed by any of the parties to the action in which this deposition is taken; and furthermore, that I am not a relative or employee of any attorney or counsel employed by the parties thereto or financially interested in the action.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my Notarial seal this 22nd day of August, 2022.

Dawn Mack-Boaden, RPR
Notary Public

My Commission Expires: August 26, 2027

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ATTACHMENT D

WRITTEN COMMENTS

Rossi, Tamara

From: Rich Wolbert <rwolbert@thecityofbeverly.com>
Sent: Friday, August 05, 2022 9:26 AM
To: Rossi, Tamara
Cc: Loney, Natalie
Subject: RE: COSDEN PROPOSED CLEANUP PLAN - NOTIFICATION

Tamara,

After reviewing the information Natalie sent out for the upcoming public meeting, "we", the City, have a few questions.

1. Will chromium levels fall within allowable limits after ISCO injections cease or will this heavy metal contaminant require other treatment alternatives to obtain levels below NJDEP GWQS?

2. Since the PFNA, PFOS, PFOA, PFAS are not being addressed in this Remedy Plan Modification, is there a plan to address these contaminants at a later date and/or is it necessary to address them?

3. Will ISCO injections have any effect on PFNA, PFOS, PFOA, PFAS levels or will these contaminants require alternative treatment methods?

4. Are the PFNA, PFOS, PFOA, PFAS, and 1,4 Dioxane contaminants from this site or are they migrating from an off-site location; if determinable?

5. Are there any related "off-site" monitoring wells in the community with any contaminant levels over NJDEP GWQS?

Thanks,
Rich Wolbert
City Administrator
Public Safety Director

City of Beverly
446 Broad Street
Beverly, NJ 08010
Tel: (609) 747-4090
Fax: (609) 387-3558
Cell: (609) 680-3638
Email: rwolbert@thecityofbeverly.com
www.thecityofbeverly.com

APPENDIX IV

ADMINISTRATIVE RECORD INDEX

COMPREHENSIVE ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

08/24/2022

REGION ID: 02

Site Name: COSDEN CHEMICAL COATINGS CORP.
CERCLIS ID: NJD000565531
OUID: 01
SSID: 02P8
Action:

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name/Organization:	Author Name/Organization:
336553	08/24/2022	COMPREHENSIVE ADMINISTRATIVE RECORD INDEX FOR OU1 FOR THE COSDEN CHEMICAL COATINGS CORPORATION SITE	9	Administrative Record Index		(US ENVIRONMENTAL PROTECTION AGENCY)
38842	Undated	INDEX, DOCUMENT NUMBER ORDER, COSDEN CHEMICAL COATINGS CORPORATION SITE DOCUMENTS.	9	List/Index		(US ENVIRONMENTAL PROTECTION AGENCY)
101293	Undated	COSDEN CHEMICAL COATINGS CORPORATION, OPERABLE UNIT ONE, EXPLANATION OF SIGNIFICANT DIFFERENCES, ADMINISTRATIVE RECORD FILE UPDATE, INDEX OF DOCUMENTS.	1	List/Index		(US ENVIRONMENTAL PROTECTION AGENCY)
109345	Undated	(Maps, graphic drawings, and a geological description pertaining to the Cosden Coatings Corporation site)	8	Figure/Map/ Drawing		
109346	Undated	(Newspaper article entitled:) 2 Agencies investigate paint dump	2	Publication		LERNER,GAIL,C (BURLINGTON COUNTY TIMES)
109351	Undated	(Map of the Cosden Chemical Coatings Corporation site area)	1	Figure/Map/ Drawing		
109347	07/18/1984	(Newspaper article entitled:) Agencies probe paint dump in Beverly	1	Publication		LERNER,GAIL,C (BURLINGTON COUNTY TIMES)
109348	08/14/1984	(Memo detailing a July, 1984, NJDEP inspection of the Moleta - Cosden Chemical Coatings Drum site)	1	Memorandum	(NEW JERSEY DEPARTMENT OF LAW AND PUBLIC SAFETY)	BONANNI,DANIEL,J (NEW JERSEY DEPARTMENT OF LAW AND PUBLIC SAFETY)

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109349	08/14/1984	(Memo detailing an August 10, 1984, NJDEP inspection of the Moleta - Cosden Chemical Coatings site)	1	Memorandum	(NEW JERSEY DEPARTMENT OF LAW AND PUBLIC SAFETY)	BONANNI,DANIEL,J (NEW JERSEY DEPARTMENT OF LAW AND PUBLIC SAFETY)
109350	08/14/1984	(Memo discussing an August 13, 1984, surveillance at Cosden Industrial Coatings site)	1	Memorandum	(NEW JERSEY DEPARTMENT OF LAW AND PUBLIC SAFETY)	BONANNI,DANIEL,J (NEW JERSEY DEPARTMENT OF LAW AND PUBLIC SAFETY)
109344	06/07/1985	Potential Hazardous Waste Site, Site Inspection Report, Part 1, Site Location and Inspection Information (for the Cosden Chemical Coatings Corporation site)	14	Report		MAZUR,DEBORAH (NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION)
109368	12/17/1987	(Special Notice Letter)	10	Letter	OLLER,LOUIS (COSDEN CHEMICAL COATINGS CORPORATION)	LUFTIG,STEPHEN (US ENVIRONMENTAL PROTECTION AGENCY)
109369	02/25/1988	(104 (e) Request for Information Letter)	2	Letter	OLLER,LOUIS (COSDEN CHEMICAL COATINGS CORPORATION)	UZZO,THOMAS (US ENVIRONMENTAL PROTECTION AGENCY)
109354	09/01/1988	(Letter forwarding the enclosed Final Field Operations Plan for the Cosden Chemical Coatings Corporation site)	2	Letter	ALVI,M SHAHEER (US ENVIRONMENTAL PROTECTION AGENCY)|BREVILLE,MAGGIE (US ENVIRONMENTAL PROTECTION AGENCY)	SACHDEV,DEV,R (EBASCO SERVICES INCORPORATED)

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109355	09/01/1988	Final Field Operations Plan (FOP), Remedial Investigation Phase I, Cosden Chemical Coatings Corporation Site, Beverly, New Jersey	117	Work Plan		WEISS,JONATHAN (EBASCO SERVICES INCORPORATED)
109360	09/01/1988	Final Work Plan, Remedial Investigation - Phase I, Cosden Chemical Coatings Corporation Site, Beverly, New Jersey	81	Work Plan	(US ENVIRONMENTAL PROTECTION AGENCY)	WEISS,JONATHAN (EBASCO SERVICES INCORPORATED)
109359	09/21/1988	(Letter forwarding the enclosed Final Work Plan for the Cosden Chemical Coatings Corporation site)	2	Letter	ALVI,M SHAHEER (US ENVIRONMENTAL PROTECTION AGENCY)|BREVILLE,MAGGIE (US ENVIRONMENTAL PROTECTION AGENCY)	SACHDEV,DEV,R (EBASCO SERVICES INCORPORATED)
109352	10/01/1988	Site Analysis, Cosden Chemical Coatings Corp., Beverly, New Jersey	7	Report	GAROFALO,DONALD (ENVIRONMENTAL PHOTOGRAPHIC INTERPRETATION CENTER (EPIC))	WARNER,ERIC,D (BIONETICS CORPORATION)
109356	10/01/1988	Final Field Operations Plan (FOP) Remedial Investigation Phase I, Cosden Chemical Coatings Corporation Site, Beverly, New Jersey	99	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(EBASCO SERVICES INCORPORATED)
109373	11/01/1988	Final Community Relations Plan, Cosden Chemical Coatings Corporation Site, City of Beverly, Burlington County, New Jersey	20	Work Plan	(US ENVIRONMENTAL PROTECTION AGENCY)	RUMPP,JAMES,H (EBASCO SERVICES INCORPORATED)

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109372	11/30/1988	(Letter forwarding the enclosed Final Community Relations Plan for the Cosden Chemical Coatings Corporation site)	4	Letter	PETERSON,LISA (US ENVIRONMENTAL PROTECTION AGENCY)	SACHDEV,DEV,R (EBASCO SERVICES INCORPORATED)
109353	02/01/1989	Site Analysis, Cosden Chemical Coatings Corporation, Beverly, New Jersey	20	Report	GAROFALO,DONALD (ENVIRONMENTAL PHOTOGRAPHIC INTERPRETATION CENTER (EPIC))	WARNER,ERIC,D (BIONETICS CORPORATION)
109361	10/01/1989	Final Interim RI Report, Cosden Chemical Coatings Corp. Site, Beverly, New Jersey	256	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(EBASCO SERVICES INCORPORATED)
109375	01/01/1990	Draft Public Information Meeting Summary, Cosden Chemical Coatings Corporation Site, City of Beverly, New Jersey	21	Meeting Document	(US ENVIRONMENTAL PROTECTION AGENCY)	ZANZALARI,GERRY (EBASCO SERVICES INCORPORATED)
109374	01/12/1990	(Letter forwarding the enclosed Draft Public Information Meeting Summary for the Cosden Chemical Coatings Corporation site)	3	Letter	JOHNSON,LILLIAN (US ENVIRONMENTAL PROTECTION AGENCY)	SACHDEV,DEV,R (EBASCO SERVICES INCORPORATED)
109358	09/01/1990	Final Field Operations Plan, Remedial Investigation Phase II, Cosden Chemical Coatings Corporation Site, Beverly, New Jersey	196	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(EBASCO SERVICES INCORPORATED)

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109357	09/28/1990	(Letter forwarding the enclosed Final Phase II Field Operations Plan for the Cosden Chemical Coatings Corporation site)	2	Letter	ALVI,M SHAHEER (US ENVIRONMENTAL PROTECTION AGENCY)|MARSENISON,PAUL (US ENVIRONMENTAL PROTECTION AGENCY)	SACHDEV,DEV,R (EBASCO SERVICES INCORPORATED)
109363	06/01/1992	Final Contaminant Fate and Transport Study/Risk Assessment - Cosden Chemical Coatings Corporation Site, Beverly, New Jersey	333	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	SIELSKI,MARK (EBASCO SERVICES INCORPORATED)
109365	06/01/1992	Final Phase II Results Report - Cosden Chemical Coatings Corporation Site, Beverly, New Jersey	340	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	SIELSKI,MARK (EBASCO SERVICES INCORPORATED)
109362	06/30/1992	(Letter forwarding the Final Contaminant Fate and Transport Study/Risk Assessment Report for the Cosden Chemical Coatings Corporation site)	2	Letter	HACKER,JILL (US ENVIRONMENTAL PROTECTION AGENCY)|MARSENISON,PAUL (US ENVIRONMENTAL PROTECTION AGENCY)	SACHDEV,DEV,R (EBASCO SERVICES INCORPORATED)
109364	06/30/1992	(Letter forwarding the Final Phase II Results Report for the Cosden Chemical Coatings Corporation site)	2	Letter	HACKER,JILL (US ENVIRONMENTAL PROTECTION AGENCY)|MARSENISON,PAUL (US ENVIRONMENTAL PROTECTION AGENCY)	SACHDEV,DEV,R (EBASCO SERVICES INCORPORATED)
109367	07/01/1992	Draft Final Feasibility Study Report - Cosden Chemical Coatings Corporation Site, Beverly, New Jersey	421	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	SIELSKI,MARK (EBASCO SERVICES INCORPORATED)

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109378	07/01/1992	Superfund Proposed Plan - Cosden Chemical Coatings Site, City of Beverly, Burlington County, New Jersey	13	Work Plan		(US ENVIRONMENTAL PROTECTION AGENCY)
109366	07/15/1992	(Letter forwarding the revised Draft Final Feasibility Study Report for the Cosden Chemical Coatings Corporation site)	3	Letter	HACKER,JILL (US ENVIRONMENTAL PROTECTION AGENCY)|MARSENISON,PAUL (US ENVIRONMENTAL PROTECTION AGENCY)	SACHDEV,DEV,R (EBASCO SERVICES INCORPORATED)
109370	07/29/1992	(Notice Letter for the Cosden Chemical Coatings Corporation site)	5	Letter	OLLER,LOUIS (COSDEN CHEMICAL COATINGS CORPORATION)	CALLAHAN,KATHLEEN (US ENVIRONMENTAL PROTECTION AGENCY)
109371	07/29/1992	(Notice Letter for the Cosden Chemical Coatings Corporation site)	5	Letter	OLLER,LOUIS (COSDEN CHEMICAL COATINGS CORPORATION)	CALLAHAN,KATHLEEN (US ENVIRONMENTAL PROTECTION AGENCY)
109376	08/06/1992	(Public Meeting Transcript for a hearing on the Cosden Chemical Coatings Corporation Proposed Plan)	88	Meeting Document		JOHNSON CAHILL,MARY (DEGNAN & BATEMAN COURT REPORTERS)
109377	08/10/1992	(Letter providing comments on the proposed plan for the Cosden Chemical Coatings Corporation site)	4	Letter	MARSENISON,PAUL (US ENVIRONMENTAL PROTECTION AGENCY)	

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109379	09/28/1992	(Letter forwarding the enclosed State Letter of Concurrence and the Record of Decision for the Cosden Chemical Coatings Corporation site)	1	Letter	SIDAMON-ERISTOFF,CONSTANTINE (US ENVIRONMENTAL PROTECTION AGENCY)	CALLAHAN,KATHLEEN (US ENVIRONMENTAL PROTECTION AGENCY)
109380	09/29/1992	State Letter of Concurrence with the selected remedy for the Cosden Chemical Company Superfund site	2	Letter	SIDAMON-ERISTOFF,CONSTANTINE (US ENVIRONMENTAL PROTECTION AGENCY)	WEINER,SCOTT (NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION)
109381	09/30/1992	Declaration for the Record of Decision (for the Cosden Chemical Coatings Corporation site)	90	Report		SIDAMON-ERISTOFF,CONSTANTINE (US ENVIRONMENTAL PROTECTION AGENCY)
109382	09/24/1998	EXPLANATION OF SIGNIFICANT DIFFERENCES, COSDEN CHEMICAL COATINGS CORPORATION	6	Report		(US ENVIRONMENTAL PROTECTION AGENCY)
114852	07/12/1999	REMOVAL ADMINISTRATIVE RECORD INDEX AND DOCUMENTS FOR THE COSDEN CHEMICAL COATINGS CORPORATION SITE	87	List/Index		(US ENVIRONMENTAL PROTECTION AGENCY)
496518	09/18/2003	FINAL REMEDIAL ACTION REPORT (SOIL) FOR THE COSDEN CHEMICAL COATINGS CORPORATION SITE	127	Report		

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548595	11/16/2005	FINAL GROUNDWATER REMEDIAL DESIGN FOR THE COSDEN CHEMICAL COATINGS CORPORATION SITE	45	Figure/Map/ Drawing		
533772	08/01/2009	FINAL INTERIM REMEDIAL ACTION REPORT FOR THE COSDEN CHEMICAL COATINGS CORPORATION SITE	3645	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(US ARMY CORPS OF ENGINEERS)
622004	10/21/2015	DATA ASSESSMENT - VALIDATED ANALYTICAL DATA PACKAGE FOR PROJECT NO. P-1509035 FOR THE COSDEN CHEMICAL COATINGS CORPORATION SITE	64	Report		
622005	04/14/2016	DATA ASSESSMENT - VALIDATED ANALYTICAL DATA PACKAGE FOR PROJECT NO. P-1603004 FOR THE COSDEN CHEMICAL COATINGS CORPORATION SITE	66	Report		
622006	10/18/2016	DATA ASSESSMENT - VALIDATED ANALYTICAL DATA PACKAGE FOR PROJECT NO. P-1609019 FOR THE COSDEN CHEMICAL COATINGS CORPORATION SITE	64	Report		
622007	05/19/2017	DATA ASSESSMENT - VALIDATED ANALYTICAL DATA PACKAGE FOR PROJECT NO. P-1703012 FOR THE COSDEN CHEMICAL COATINGS CORPORATION SITE	65	Report		
622008	10/26/2017	DATA ASSESSMENT - VALIDATED ANALYTICAL DATA PACKAGE FOR PROJECT NO. P-1709026 FOR THE COSDEN CHEMICAL COATINGS CORPORATION SITE	66	Report		

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622094	04/19/2018	DATA ASSESSMENT - VALIDATED ANALYTICAL DATA PACKAGE FOR PROJECT NO. P-1803014 FOR THE COSDEN CHEMICAL COATINGS CORPORATION SITE	39	Report		
645020	10/01/2021	SUMMARY REPORT FOR THE IN-SITU CHEMICAL OXIDATION PILOT STUDY FOR OU1 FOR THE COSDEN CHEMICAL COATINGS SITE	134	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(US ARMY CORPS OF ENGINEERS)
645031	10/01/2021	SUMMARY REPORT FOR THE IN-SITU CHEMICAL OXIDATION PILOT STUDY - APPENDICES A - L FOR OU1 FOR THE COSDEN CHEMICAL COATINGS SITE	547	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(US ARMY CORPS OF ENGINEERS)
609939	05/31/2022	THIRD FIVE-YEAR REVIEW REPORT FOR THE COSDEN CHEMICAL COATINGS SITE	40	Report		EVANGELISTA,PAT (US ENVIRONMENTAL PROTECTION AGENCY)
645019	07/22/2022	FOCUSED FEASIBILITY STUDY REPORT FOR OU1 FOR THE COSDEN CHEMICAL COATINGS SITE	75	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(US ARMY CORPS OF ENGINEERS)
645021	07/28/2022	PROPOSED PLAN FOR OU1 FOR THE COSDEN CHEMICAL COATINGS SITE	17	Publication		(US ENVIRONMENTAL PROTECTION AGENCY)
645272	07/08/2021	FINAL SAMPLING TRIP REPORT FOR PROJECT NO. P-2104002 - SAMPLING DATES 04/12/2021 - 04/15/2021 FOR THE COSDEN CHEMICAL COATINGS CORPORATION SITE	1453	Report		(US ENVIRONMENTAL PROTECTION AGENCY)

APPENDIX V

STATE LETTER OF CONCURRENCE

State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION

CONTAMINATED SITE REMEDIATION & REDEVELOPMENT PROGRAM
401 East State Street
P.O. Box 420, Mail Code 401-06
Trenton, New Jersey 08625-0420
Tel. (609) 292-1250 • Fax (609) 777-1914
www.nj.gov/dep
www.nj.gov/dep/srp/

PHILIP D. MURPHY
Governor

SHEILA Y. OLIVER
Lt. Governor

SHAWN M. LATOURETTE
Commissioner

September 28, 2022

Mr. Pat Evangelista, Director
Emergency and Remedial Response Division
U.S. Environmental Protection Agency
Region II
290 Broadway
New York, NY 10007-1866

Re: Cosden Chemical Coatings Corp. Superfund Site
Operable Unit 1 Record of Decision Amendment Concurrence

Dear Mr. Evangelista,

The New Jersey Department of Environmental Protection (Department) has completed its review of the "Record of Decision Amendment, Cosden Chemical Coatings Corp. Superfund Site, OU1, City of Beverly, Burlington County, New Jersey" prepared by the U.S. Environmental Protection Agency (EPA) Region II. The Department concurs with the selected remedy to address contaminated groundwater.

The major components of the amended OU1 selected remedy include in-situ groundwater treatment targeting remaining groundwater source area contamination, long-term groundwater monitoring, and establishing a Classification Exception Area and a Well Restriction Area.

EPA selected the remedy amendment in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended, 42 U.S.C. §§ 9601-9675, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300.

The Department supports keeping the on-site groundwater plant idle while the remaining groundwater source areas are addressed through continued in-situ treatment and emerging contaminants are evaluated.

In addition, EPA prepared a Superfund State Contract amendment for the Cosden site for this project using Infrastructure Investment and Jobs Act of 2021 funding that will not require a 10 percent cost share. The Department appreciates that EPA designated this site to receive funding under this Act.

The Department appreciates the opportunity to participate in the decision-making process for the Cosden Superfund Site. Should you wish to discuss this matter further, please contact Gwen Zervas at (609) 292-1251, or email at Gwen.Zervas@dep.nj.gov.

Sincerely,

David E. Haymes
Acting Assistant Commissioner

c: Gwen Zervas, Director, Division of Remediation Management, NJDEP
Frederick A. Mumford, Bureau Chief, Bureau of Site Management, NJDEP
Paul Signore, Bureau of Site Management, NJDEP
Jeff Josephson, Acting Chief, New Jersey Remediation Branch, EPA Region II
Perry Katz, Remedial Project Manager, New Jersey Remediation Branch, EPA Region II