RECORD OF DECISION

Diamond Alkali Superfund Site Operable Unit 1 (OU1)

80 and 120 Lister Avenue, Newark, New Jersey

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

January 2025

747012

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION
Diamond Alkali Superfund Site (OU1)
Newark, Essex County, New Jersey
EPA Superfund Site Identification Number NJD980528996

STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the final selected remedy to address the soils and shallow groundwater at Operable Unit (OU) 1 of the Diamond Alkali Superfund Site. The U.S. Environmental Protection Agency (EPA) selected the remedy in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601-9675 (CERCLA), and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300. This decision document explains the factual and legal basis for selecting the remedy. The Administrative Record for the Site, established pursuant to the NCP, 40 CFR 300.800, contains the documents that form the basis for EPA's selection of the remedial action (see Appendix III).

The state of New Jersey has been consulted on the proposed remedy in accordance with CERCLA §121(f), 42 U.S.C. §9621(f), and it concurs with the selected remedy (see Appendix IV).

ASSESSMENT OF THE SITE

The Diamond Alkali Superfund Site (Site) was the location of pesticide and herbicide production, including Agent Orange, which led to widespread contamination of soil, groundwater, and nearby areas with hazardous substances, particularly dioxins, dichlorodiphenyltrichloroethane (DDT) and volatile organic compounds (VOCs). Actual or threatened releases of hazardous substances, if not addressed by the remedial action, present an imminent and substantial endangerment to human health and the environment.

DESCRIPTION OF THE SELECTED REMEDY

The remedial action described in this document addresses soils and groundwater at OU1, which is comprised of the property at 80 and 120 Lister Avenue, Newark, New Jersey, and the groundwater that overlies the organic silt layer beneath those properties. In addition to OU1, EPA has designated three other operable units for the Site. Refer to Figure 1.

In 1987, EPA issued a ROD selecting an interim containment remedy (the interim remedy or IR) for OU1, which is the current remedy in place. The IR consisted of placing soil, remediation waste and building demolition debris within a containment cell, capping the properties with a multi-layered cap, constructing subsurface slurry walls on three sides of the OU1 properties and a floodwall on the fourth side adjoining the Lower Passaic River to contain waste and contaminated fill, and construction and operation of a groundwater extraction and treatment system. Construction of the IR was completed in 2001. This ROD selects the final remedy for OU1.

EPA selected a remedy for Operable Unit 2 (OU2), the lower 8.3 miles of the Lower Passaic River, in 2016. The remedial design was prepared by Occidental Chemical Corporation (OCC) under EPA oversight and approved by EPA in 2024. The OU2 remedy includes construction of a cap over the bottom of the river, bank-to-bank, to isolate the contaminated sediment from the rest of the river system, with dredging to accommodate the cap. Under the design of the cleanup plan, approximately 2.5 million cubic yards of sediment will be dredged from the river before the cap is installed, so that the cap does not worsen existing flooding issues and to accommodate the federally authorized navigation channel in the 1.7 miles of the river closest to Newark Bay. The dredged materials will be barged or pumped to an upland processing facility, where they will be mechanically dried and sent off-site for disposal at licensed disposal facilities.

OU3 is the Newark Bay Study Area and includes approximately 3,900 acres of Newark Bay and portions of the Hackensack River, Kill van Kull and Arthur Kill; these areas experience tidal exchange of surface water and solids with the Lower Passaic River Study Area (LPRSA). OCC performed the remedial investigation for this OU, approved by EPA in 2022, and is currently preparing a feasibility study.

OU 4 covers 17 miles of the Lower Passaic River extending from Dundee Dam to Newark Bay, otherwise known as the LPRSA. In September 2021, EPA selected an interim cleanup plan for the upper 9 miles of the Lower Passaic River that calls for addressing specific areas of sediment that serve as sources of contamination to the rest of the river and to the food chain. The OU4 cleanup is intended to complement the OU2 cleanup plan, the two working together to address the human health and ecological risk posed by the Site-related contamination in the Lower Passaic River.

The selected final remedy for OU1 consists of upgrading the interim remedy selected in the 1987 OU1 ROD (as further specified in the judicial consent decree that EPA entered into with OCC in 1990 requiring implementation of the OU1 remedy). The major components of the selected final remedy include the following:

- Replacing groundwater extraction wells (EWs) EW-1 through EW-6, located along the floodwall bordering the Lower Passaic River, to position the well screens more accurately in the fill layer beneath the multi-layered cap and improve their effectiveness in achieving hydraulic containment;
- Replacing existing constant head pumps in the extraction wells with variable speed pumps and controls.
- Reactivating extraction well EW-9 on the south side of OU1;
- Redesigning and replacing portions of the groundwater conveyance system, as needed;

- Upgrading the Groundwater Withdrawal System (GWWS) and Groundwater Treatment System (GWTS), as needed;
- Investigating the integrity of the existing multi-layered cap via a site-wide electrical resistivity survey and performance of subsequent repairs, as needed;
- Installing additional groundwater monitoring wells, as needed, including Point of Compliance (POC) wells.
- Removing dense nonaqueous phased liquids (DNAPL), as needed.
- Maintaining the OU1 cap, the GWWS and GWTS, other engineering controls, and performing long-term Site monitoring in perpetuity; and
- Maintaining institutional controls as necessary to protect the integrity of the remedial components and to also protect against releases and human exposures.

The estimated present worth of the selected remedy is $16,000,000.

The environmental benefits of the selected remedy may be improved by considering, during remedy design or implementation, technologies and practices that are sustainable in accordance with EPA Region 2's Clean and Green Energy Policy.

DECLARATION OF STATUTORY DETERMINATIONS

Part 1: Statutory Requirements

The selected remedy meets the requirements for remedial actions set forth in Section 121 of CERCLA, 42 U.S.C. § 9621, because it meets the following requirements: 1) it is protective of human health and the environment; 2) it meets a level or standard of control of the hazardous substances, pollutants, and contaminants that at least attains the legally applicable or relevant and appropriate requirements (ARARs) under federal and state laws, with a few exceptions described below; 3) it is cost-effective; and 4) it utilizes permanent solutions and alternative treatment or resource recovery technologies to the maximum extent practicable. In addition, Section 121 of CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous substances as a principal element.

EPA is invoking ARAR waivers under Section 121(d)(4)(B), which allows for waivers when compliance will result in greater risk to human health and the environment than other alternatives, for requirements of the Resource Conservation and Recovery Act (RCRA) pertaining to (1) the placement of off-site remediation wastes in Areas A and B beneath the multi-layered cap system, and (2) the design and construction of the containment cell. The waivers are consistent with the ARAR waivers documented in the 1987 ROD, specifically, land disposal restrictions (LDRs) and best demonstrated available treatment (BDAT) before placement of waste (40 CFR Part 268, Subparts C and D, respectively) and standards for landfill design pertaining to bottom liners and leachate collection systems (40 CFR Part 264, Subpart N). The basis for these waivers is to avoid the construction-related exposure risks associated with excavation of the dioxin-contaminated soils and wastes previously buried at OU1, due to the elevated concentrations and significant toxicity of dioxin in the waste and the potential for transportation incidents associated with off-site disposal.

Part 2: Statutory Preference for Treatment

CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous substances as a principal element (or justify not satisfying the preference). The manufacturing operations that occurred at 80 Lister Avenue generated dioxin wastes subject to LDRs that require that the threat posed by the waste must be fundamentally changed by treatment to identified standards prior to disposal in a domestic landfill, as well as other wastes subject to multiple RCRA requirements relating to treatment and disposal. Because of the risk associated with excavation and on-site treatment and because some of the material could not safely be excavated and some of the debris would not be amenable to treatment, it is not practicable to treat the hazardous substances, pollutants or contaminants contained at OU1. Since the groundwater is being treated, the selected remedy partially meets the statutory preference for treatment.

The existing IR removed contaminant mass from OU1 since its construction in 2001 through the extraction and treatment of contaminated groundwater, which reduced the toxicity, mobility and volume of contaminants at OU1. In recent years, the mass removal rate achieved by the IR has been approximately 1,000 lbs/year, most of this consisting of VOCs, semivolatile organic contaminants, and herbicides. Principal threat wastes comprised of soils containing mobile DNAPL and high concentrations of DDT and dioxins were not directly treated by the IR; however, contaminants leaching from these soils to groundwater are captured and treated by the GWWS and GWTS. The final remedy is expected to improve hydraulic containment of the area where principal threat wastes were detected and to continue removing and treating contaminants from the groundwater at OU1.

Part 3: Five-Year Review Requirements

This final remedy will result in hazardous substances remaining on-site above health-based levels that allow for unlimited use and unrestricted exposure. Because of this, a review of the final remedial action pursuant to CERCLA Section 121(c), 42 U.S.C. §9621(c), will be conducted every five years in perpetuity to ensure that the remedy continues to provide adequate protection to human health and the environment.

ROD DATA CERTIFICATION CHECKLIST

The ROD contains the remedy selection information noted below. More details may be found in the Administrative Record file for this Site.

- Contaminants of concern and their respective concentrations may be found in the "Summary of Site Characterizations" section;
- Current and reasonably anticipated future land use assumptions and current and potential future beneficial uses of groundwater used in the baseline risk assessment and ROD are discussed in the "Current and Potential Future Land and Resource Uses" section;
- Baseline risk represented by the contaminants of concern may be found in the "Summary of Site Risks" section;
- Cleanup levels established for contaminants of concern and the basis for these levels maybe be found in the "Remedial Action Objectives" section;
- Estimated capital, annual operation and maintenance (O&M), and total present-worth costs are discussed in the "Description of Remedial Alternatives" section;
- A discussion of principal threat waste (PTW) may be found in the "Principal Threat Waste" section;
- Key factors used in selecting the remedy (*i.e.*, how the selected remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria, highlighting criteria key to the decision) may be found in the "Comparative Analysis of Alternatives" and "Statutory Determinations" sections.

AUTHORIZING SIGNATURE

Pat Evangelista Digitally signed by Pat Evangelista
Date: 2025.01.17 10:07:41 -05'00'

January 17, 2025

Pat Evangelista, Director
Superfund & Emergency Management Division

Date

RECORD OF DECISION
DECISION SUMMARY
80 and 120 Lister Avenue
Diamond Alkali Superfund Site – Operable Unit 1

Essex County, New Jersey

United States Environmental Protection Agency
Region 2
New York, New York
January 2025

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SITE NAME, LOCATION AND DESCRIPTION

The Diamond Alkali Superfund Site, Operable Unit 1 (OU1), is located at 80 and 120 Lister Avenue, within the Ironbound District of Newark, Essex County, New Jersey. Historically, 80 Lister Avenue was the location of a facility that produced herbicides and pesticides, including Agent Orange, beginning in the 1940s. These industrial activities resulted in the release of dioxins, dichlorodiphenyltrichloroethane (DDT), volatile organic compounds (VOCs), and other hazardous substances into the soil and groundwater.

OU1 is composed of two parcels – 80 Lister Avenue and 120 Lister Avenue, with a combined size of approximately 5.8 acres located adjacent to the Lower Passaic River (see Figure 2), which is an essential consideration for addressing contamination migration. Due to the severity of contamination and proximity to residential and commercial areas, the Site was added to the National Priorities List (NPL) in 1984. The adjacent industrial properties have also been contaminated by past operations and are being investigated under cleanup programs overseen by the New Jersey Department of Environmental Protection (NJDEP).

The current land use for the area is industrial and includes ongoing operation and maintenance activities associated with the interim remedy currently in place at OU1. See Figures 3 and 4. A deed notice is in place for OU1 to provide notice of conditions at the properties and ensure that the existing multi-layered cap constructed over the property as part of the interim remedy is not disrupted. The immediate area surrounding OU1 is zoned for industrial use and will continue to be so designated, according to the 2023 Newark Zoning Maps. See Figure 5.

Nearby areas have a dense residential population, including public housing constructed by the City of Newark. See Figure 6. The Ironbound section of Newark is highly industrialized but also densely populated and is burdened with numerous environmental issues, such as comparatively poor air quality, higher proximity to heavy traffic, higher incidence of lead paint and higher proximity to Superfund sites and other waste sources. The Ironbound neighborhood is located in the East Ward of the city and houses approximately 50,000 of Newark's 275,000 residents. This neighborhood encompasses approximately four-square miles and is home to a sizeable population with Portuguese American, Brazilian American, and Latin American ethnicity.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

The property located at 80 Lister Avenue was used for manufacturing purposes by numerous industrial companies for over 100 years. The mid-1940s marked the beginning of the manufacturing operations related to the conditions that require cleanup, including the production of DDT and phenoxy herbicides by Kolker Chemical Works, Inc. The Diamond Alkali Company acquired the northeastern portion of the 80 Lister Avenue property in 1951 and produced various chemicals and pesticides, including sodium trichlorophenol, 2,4-dichlorophenol, monochloroacetic acid, and the byproduct hydrochloric acid; 2,4-dichlorophenoxyacetic acid (2,4-D), 2,4,5-trichlorophenoxyacetic acid (2,4,5-T), and their esters and amines; as well as sodium 2,4,5-trichlorophenate (Na-TCP). The Diamond Alkali Company also manufactured agricultural chemicals, including the defoliant known as Agent Orange, which is a mixture of 2,4-D and 2,4,5-T. A by-product of these manufacturing processes was the dioxin congener 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD), which is extremely toxic.

In February 1960, an explosion destroyed a large five-story building on the 80 Lister Avenue property. Following the explosion, the remaining, southwestern portion of the 80 Lister Avenue property was leased by the Diamond Alkali Company to rebuild the plant at a larger scale. Plant operations were later discontinued in August 1969.

In September 1969, the Diamond Shamrock Corporation, corporate successor to the Diamond Alkali Company, decommissioned the plant. The plant was listed for sale and remained idle until it was purchased by Chemicaland Corporation (Chemicaland) in March 1971. Chemicaland carried out final manufacturing activities, including manufacturing of benzyl alcohol and the herbicide 2,4-D at the 80 Lister Avenue property from 1971 through 1977. Between 1977 and 1983, various owners operated on the property.

In May 1983, EPA and NJDEP conducted soil and groundwater sampling at the Site under the National Dioxin Strategy, which targeted facilities that produced 2,4,5-trichlorophenol (TCP) and its pesticide derivatives (such as 2,4,5-T) for investigation. Sampling results revealed high levels of dioxin, in particular 2,3,7,8-TCDD, at the 80 Lister Avenue property. Pesticides, VOCs, and other hazardous substances were also present. Contaminants were found in both soil and groundwater at OU1, with a lesser degree of contamination detected at the 120 Lister Avenue property. In 1984, Diamond Shamrock Chemicals Company (DSCC), the corporate successor to the Diamond Shamrock Corporation and Diamond Alkali Company, acquired 120 Lister Avenue to assist with the cleanup. In 1986, DSCC repurchased the property at 80 Lister Avenue.

EPA proposed the addition of the Site to the NPL in September 1983, and this addition was finalized on September 21, 1984. Also in 1984, NJDEP issued two administrative consent orders (ACOs) to DSCC: the first required DSCC to undertake the investigation and immediate response work conducted at 80 Lister Avenue, and the second encompassed the investigation and response work conducted at 120 Lister Avenue.

From 1984 to 1987, with oversight by NJDEP, DSCC, and later Occidental Chemical Corporation (OCC), the corporate successor to the Diamond Alkali/Diamond Shamrock Company, completed Site Investigations and a Feasibility Study (FS) for 80 and 120 Lister Avenue. The Site Investigations and FS showed that the 80 and 120 Lister Avenue properties were contaminated by numerous hazardous substances including dioxin, semi-volatile organic compounds (SVOCs), VOCs, herbicides, pesticides, polychlorinated biphenyls (PCBs), and metals. The contamination was widespread and affected site soils, groundwater, ambient air, surface water, and building structures. The chemicals that were determined to present the greatest risks due to their toxicities and concentrations were 2,3,7,8-TCDD and DDT.

Based on the initial investigations in 1983-1984, EPA and NJDEP initiated several emergency response actions to control and limit access to the Lister Avenue properties:

- The properties at 80 and 120 Lister Avenue were secured with a 24-hour guard service;
- Exposed soils on the property were covered with geofabric to prevent contaminant migration; and
- Dioxin-contaminated soils and debris from other properties, including nearby residences, were removed via excavation, vacuuming, and other means and transferred to 120 Lister Avenue for storage.

Over the years, multiple remediation steps have been taken, including demolishing structures, constructing containment walls, and installing groundwater extraction and treatment systems. In August 1987, EPA issued the Proposed Plan for the interim remedy for OU1, and on September 30, 1987, EPA issued a ROD selecting the interim containment remedy, also referred to as a cleanup plan, which provided for containment of highly contaminated materials on an interim basis. The IR consisted of placing soil, remediation waste and building demolition debris within a containment cell, capping the OU1 properties with a multi-layered cap, constructing subsurface slurry walls on three sides of the OU1 properties and a floodwall on the fourth side, to contain waste and contaminated fill, and constructing and operating a groundwater extraction and treatment system. See Figures 7 and 8. After the remedy was selected, OCC entered into a judicial consent decree with the United States to perform the remedy, which was approved by the court in 1990. The IR was completed in 2001 by OCC under EPA oversight.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The Diamond Alkali Superfund Site has generated a high level of public interest since it was first identified, beginning with EPA's actions in the 1980s to remove dioxins from the neighborhoods around the Lister Avenue facility. With the expansion of EPA's CERCLA response to encompass the entire LPRSA and Newark Bay (OUs 2, 3 and 4), EPA's community outreach efforts have also expanded. A more detailed history of community involvement at the Site is provided in the Community Involvement Plan for Diamond Alkali Superfund Site Operable Unit 1 (OU1) dated July 2024. To foster community involvement at the Site, beginning in 2004, EPA convened quarterly Project Delivery Team (PDT) meetings with stakeholders, including the Partner Agencies (NJDEP, the National Oceanic and Atmospheric Administration [NOAA], the U.S. Fish and Wildlife Service [FWS] and USACE), municipalities, potentially responsible parties (PRPs), and other interested parties and members of the public. At the PDT meetings, EPA reported progress on various aspects of the LPRSA investigation and cleanup work that was underway. In 2009, EPA facilitated the formation of a Community Advisory Group (CAG), composed of stakeholders with a broad range of interests. Between 2009 and 2011, both PDT and CAG meetings occurred. In 2011, PDT meetings were phased out, replaced by CAG meetings. Representatives of EPA, NJDEP, and the other partner agencies routinely attend CAG meetings, which are open to the public and generally held every other month. Any stakeholder may be invited by the CAG to share Diamond Alkali Superfund Site/Passaic River-related information with the community. In 2004, EPA awarded a Technical Assistance Grant (TAG) to the Passaic River Coalition (PRC) to assist the community in the interpretation of technical documents generated by the study of the LPRSA. The PRC was the TAG recipient until 2013. In 2013, the New York/New Jersey Baykeeper applied for and was awarded the TAG and continues to be the TAG recipient. The TAG advisor also provides technical assistance to the CAG. In 2014, at the CAG's request, EPA provided the CAG with a Technical Assistance Services for Communities (TASC) contractor to respond to the CAG's technical questions related to the lower 8.3-mile RI/FFS. Updates to work going on at OU1 have been provided to the community through these meetings.

OU1 is located in an area of Newark known as the Ironbound community, which is generally considered to be a community with environmental justice (EJ) concerns. This community has experienced various negative environmental consequences from multiple industrial and commercial operations. According to an analysis of the local community in proximity to OU1 using EJ Screen, EPA's online screening tool, 50 percent of the population is considered low income, as compared to 22 percent of the population in the State of New Jersey.

In 2021, EPA invited the CAG to provide comments to the National Remedy Review Board (NRRB), as part of the Region's meeting with this national advisory board to provide feedback on remedy scoping. The CAG submitted comments to the NRRB and also presented their ideas and vision for how the site might be used in the future. These comments were carefully considered by the NRRB in their recommendations to the Region. The NRRB recommendations and the Region's responses to the recommendations can be found in the Administrative Record (Administrative Record Index in Appendix III).

EPA released the *Final Feasibility Study: Diamond Alkali Superfund Site* (July 2024) (2024 FS Report), and the Proposed Plan for the final remedy for OU1, as well as other documents considered by EPA in selecting the remedy to the public for comment on September 10, 2024. These documents were made available to the public as part of the Administrative Record file at the EPA Superfund Records Room in Region 2 office, in New York City, New York; the information repositories at the main branch of the Newark Public Library, 5 Washington Street, in Newark, New Jersey; and online at EPA's website for the Diamond Alkali Site: https://www.epa.gov/superfund/diamond-alkali. The notice of availability for these documents was published via press release on September 10, 2024 and in the *StarLedger* published on September 10. The public comment period on these documents was initially scheduled for September 10, 2024 to October 10, 2024, and was extended to November 26, 2024.

On September 19, 2024, EPA conducted a public meeting at NJIT (New Jersey Institute of Technology), Newark, NJ to inform local officials and members of the public about the Superfund process, present information regarding the alternatives considered in the FS and EPA's Proposed Plan to the community, review current and planned remedial activities at the Site, receive public comments, and respond to questions from area residents and other attendees. The public meeting was conducted in person and via Zoom, to allow for participation in person or remotely. The meeting was translated into Spanish, Portuguese, and French Creole, to facilitate communication and understanding with the community. EPA responses to the comments received at the public meeting and in writing during the public comment period are included in the Responsiveness Summary (see Appendix V). A stenographer was present at the meeting, and a transcript of the meeting is included in Appendix V.

In response to a request from the public, on September 12, 2024, EPA extended the public comment period for an additional 30-day period, ending on November 12, 2024. This was announced via a press release issued on October 10, 2024 and in the *Star Ledger*, published on September 20 2024.

EPA again extended the public comment period to November 26, 2024, in response to a request from the public. The extension was announced via a press release issued on November 7, 2024 and in a notice in the *Star Ledger*, published on November 8, 2024.

SCOPE AND ROLE OF RESPONSE ACTION FOR OU1

The selected response action addresses contamination at OU1 of the Diamond Alkali Superfund Site, located at 80 and 120 Lister Avenue in Newark, New Jersey. The contamination is primarily the result of historical pesticide and herbicide manufacturing, which began in the 1940s and continued during the 1950s and 1960s, which led to the release of hazardous substances such as dioxins, DDT, and VOCs into the soil and groundwater.

This is the final planned action for OU1, and will address soils, remediation waste, building demolition debris and other wastes placed in Areas A and B; the underlying and surrounding contaminated soils on 80 and 120 Lister Avenue; and groundwater in the fill material above the organic silt layer that are contaminated with DDT, 2,3,7,8-TCDD and other contaminants of concern (COCs). The primary COCs in OU1 soils are 2,3,7,8- TCDD, hexachlorobenzene and DDT. (The 1985 Site Evaluation Reports for 80 and 120 Lister Avenue document the full extent of contaminants detected at those properties.) These chemicals were released during the manufacturing operations at the former Diamond Alkali facility beginning in the late 1940s.

Erosion and transport of contaminated soils from the former Diamond Alkali facility via storm run-off and transport as fugitive dust was controlled initially by the placement of a geotextile over the 80-120 Lister Avenue properties and later by the construction of the OU1 cap system for the interim remedy in 2000-2004. Migration of contaminated groundwater has been largely controlled by the construction of the floodwall and slurry walls and the operation of the GWWS and GWTS intended to maintain hydraulic control and encourage inward and upward gradients across the slurry walls and organic silt layer, respectively.

Although the construction of the interim remedy has prevented direct contact exposures to contaminated soil and dust and reduced the discharge of contaminated groundwater to the Lower Passaic River and to the underlying glaciofluvial sands, a significant volume of contaminated soil and debris remains below the cap system at OU1 and must be managed and monitored in perpetuity. The OU1 COCs are persistent and do not degrade readily under most conditions. Given these conditions, it is necessary for EPA to select an appropriate final remedial alternative for OU1.

This response action is part of a broader strategy to address contamination across multiple OUs at the Diamond Alkali Superfund Site, including cleanup of the adjacent Lower Passaic River. The Diamond Alkali Superfund Site includes three additional OUs: OU2, which consists of the lower 8.3 miles of the Lower Passaic River, and for which the remedial design was recently completed; OU3, which consists of the Newark Bay Study Area, and which is currently in the feasibility study stage; and OU4, which consists of the entire 17 miles of the Lower Passaic River and within which an interim remedy for the upper 9 miles is in the remedial design stage. EPA also anticipates that potential impacts to groundwater in the deeper sand aquifer below the organic silt layer will be evaluated as part of a future OU.

SUMMARY OF SITE CHARACTERISTICS

The 80 and 120 Lister Avenue properties are in a highly industrialized area of Newark, NJ. The 5.8-acre property formerly contained manufacturing buildings and associated facilities, demolished as part of the IR. Past investigations carried out at OU1 beginning in 1984 revealed contaminated fill material containing dioxins, DDT, VOCs, and SVOCs. Groundwater beneath the property flows towards the Lower Passaic River, posing a risk of contaminant migration into the river.

Of the 5.8 acres, 3.5 acres are at 80 Lister Avenue and 2.3 acres are at 120 Lister Avenue. The containment cell constructed as part of the interim remedy, with two sections referred to as Areas A and B, spans both the 80 and 120 Lister Avenue properties. The properties are currently fenced and secured with an electronic, automated security system to prevent unauthorized access. Contaminated soils and debris are contained within the fenced area under an impermeable cap system, the surface layer of which is composed of gravel. On the west, south, and east sides of the Lister Avenue properties, all cap layers extend across the top of the slurry wall where runoff/lateral drainage is collected in and conveyed to the stormwater collection system. A wedge of compacted clay was placed on top of the slurry wall prior to construction of the cap to form a low permeability connection to the cap. On the north side of the Lister Avenue properties, cap layers terminate at the floodwall. Additional features at the OU1 properties include equipment and structures associated with the operation of the interim remedy in place at OU1. These include a groundwater withdrawal system (GWWS), a groundwater treatment system (GWTS), an office support building, and access roads. Subsurface features include groundwater monitoring wells, groundwater extraction wells, gas vents, piezometers, a groundwater conveyance system, slurry trench cutoff walls, and a floodwall. A pictorial figure of the floodwall and slurry wall features is provided as Figure 4.

Geology and Hydrogeology

The geology of OU1 consists of an upper layer of non-native fill that was placed throughout the property and on adjacent properties in the late 1800s; below the fill is an organic silt layer comprised of native wetland soils and river bottom sediments with glaciofluvial sand deposits located below the silt layer. The top of the fill layer was the former site grade before the interim remedy was constructed. See Figure 9. The thickness of the nonindigenous fill varies, and it is thickest where the organic silt layer is thinnest, near the property boundary with the Lower Passaic River.

The thickness of both the non-indigenous fill layer and the native organic silt layer varies, with the silt layer generally decreasing in thickness moving from the south to the north. See Figure 10. Results of recent investigations indicate that the silt layer appears continuous beneath the property, although its upper surface elevation varies by several feet. The organic silt layer reduces the hydraulic connection between the fill layer and the underlying sand layer, reducing the downward migration of contaminants. The glaciofluvial deposits underlying the organic silt layer include sands, silty sands, and silty gravels, with minor interbedded silt and clay, gravel, and sandy gravel.

Groundwater at OU1 occurs in the fill layer above the organic silt layer and in the sand layer below the organic silt layer. The groundwater above the organic silt layer is addressed by the OU1 cleanup. The dominant groundwater flow direction is to the north towards the Lower Passaic River. EPA anticipates that potential impacts to groundwater in the deeper sand aquifer below the organic silt layer will be evaluated as part of a future OU.

Previous Sampling Efforts and Results

OU1 has been evaluated though investigations carried out under the oversight of EPA and NJDEP. The results of these studies are detailed in the 1985 FS Report, the 1985 Site Evaluation Reports for 80 and 120 Lister Avenue, the Site Evaluation Report Addendum (October 23, 2020) and the Annual Groundwater Reports submitted by Glenn Springs Holdings on behalf of OCC. The February 1985 Site Evaluation Report included data and a conceptual site model of OU1 based on physical characteristics of the area and the nature and extent of contamination.

At the time the IR was implemented, the fill layer (including the surface soils) at the OU1 properties was (and remains) highly contaminated with dioxins and DDT, which have been classified by EPA as a PTW (Principal Threat Waste) in areas of OU1 where they are both present in high concentrations and accompanied by DNAPL, consisting largely of VOCs, which has the potential to cause the dioxins and DDT to become mobile in the subsurface via co-solvency. The other PTW identified at OU1 consists of soil below the water table that contains hexachlorobenzene at concentrations greater than 430,000 ug/kg, due to the toxicity and potential for mobility associated with this material and with the DNAPL itself. The National Oil and Hazardous Substances Pollution Contingency Plan (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 ground water may be viewed as source material. PTW are those source materials considered to be highly toxic and/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. Dioxins are persistent organic pollutants with significant risks to human health including cancer and endocrine disruption. The groundwater in both the fill and underlying sand layer contains VOCs and dioxins, which have the potential to migrate off-site into the Passaic River. Monitoring wells installed as part of the IR have provided data that confirms that contaminants are generally being contained, but that upgrades are necessary to maintain this containment long-term.

Much of the contaminant mass present at OU1 was released to the soils during the late 1940s through l960s from manufacturing operations at the Diamond Alkali facility. Over time, soil contaminants migrated into the groundwater within the fill located above the organic silt layer.

The 1985 Site Evaluation Report for the 80 Lister Avenue property documented that detected dioxin concentrations vary by depth in the fill:

- In the surface soils (0-6 inches below grade), dioxin concentrations ranged from 0.39 to 9,050 parts per billion (ppb).
- In near-surface soil (6-12 inches below grade), dioxin concentrations were detected between 1.2 and 3,690 ppb.
- In the 12–24-inch depth interval, dioxins were detected at concentrations ranging from 0.92 ppb to 19,500 ppb.

- Soil samples collected from the fill immediately above the organic silt layer contained dioxins ranging from non-detect to 71.8 ppb.

Other soil contaminants present at OU1 exceeding the 10^{-3} toxicity risk threshold include DDT and hexachlorobenzene.

At 120 Lister Avenue, site investigations performed by DSCC in the 1980s revealed six areas of dioxin contamination greater than 7 ppb, a value established in the ACO NJDEP issued to DSCC in December 1984 for purposes of the early response actions required by NJDEP. These areas were excavated to depths ranging from six to 24 inches below grade, at the direction of NJDEP. The excavated soil was containerized and later placed in the containment cell; however, in several of the areas, the underlying soils still contained dioxins in excess of 7 ppb, as per the 1985 Site Evaluation Report for 120 Lister Avenue. See Figure 16a.

Groundwater COCs within the fill layer include 2,3,7,8-TCDD, VOCs, and metals. Based on the analytical results of groundwater sampling conducted by OCC in December 2023, primary groundwater COCs within the fill unit beneath the OU1 multi-layered cap and inside the containment features (slurry walls and floodwall) consist of VOCs (benzene, hexachlorobenzene, toluene, chlorobenzene [CB], 1,4- dichlorobenzene [1,4-DCB], 1,2,4-trichlorobenzene [1,2,4-TCB], and trichloroethene [TCE]), metals (antimony, arsenic, lead, and mercury), and 2,3,7,8-TCDD. COCs (i.e., VOCs and 2,3,7,8-TCDD) also occur in the fill on the OU1 properties outside the area contained by the slurry wall. Detected concentrations ranged up to 3,830 micrograms per liter (ug/L) for benzene; 2,790 ug/L for toluene; 58,800 ug/L for CB; 452 ug/L for arsenic; and 44,000 picograms per liter for 2,3,7,8- TCDD. See Table 1.

The slurry wall was installed as close to the OU1 property boundary as practicable given constructability limitations at the time. This resulted in roughly 10 to 15 feet of fill material, on average, surrounding the waste management area not being included in the interim remedy. In general, concentrations of COCs in groundwater in fill wells outside the slurry wall/floodwall boundary are stable or decreasing and EPA expects optimization of the interim remedy to improve the groundwater conditions because it will further prevent migration of contaminants from the waste management area.

Any impacts from fill material outside the slurry wall to the deeper aquifer will be evaluated as part of a future OU. Residual contaminated fill material that remains outside the slurry wall is covered by the cap or by pavement that extends beyond the slurry wall to the OU1 boundary, and is therefore not available for exposure.

Implementation of the Interim Remedy

In 1987, when the interim remedy was selected for OU1, few remedial options existed for disposal of remediation waste contaminated with dioxin classified under RCRA as listed waste[1]. The manufacturing operations at OU1 generated listed dioxin (F020) wastes under RCRA and its implementing regulations. During investigation activities, phosphorus was identified as being present in a limited area of subsurface soils. The origin of the soil containing phosphorus is not known; however, because the material reacted on contact with air, it is considered a characteristic (reactive) waste under RCRA and assigned a classification of D003. The 1987 ROD identified that F020 and D003 wastes were subject to Land Disposal Requirements (LDRs) under RCRA, which required that the threat posed by the waste must be fundamentally changed by treatment to identified standards prior to disposal in a domestic landfill:

- F020 waste contaminant levels must be reduced by at least 90 percent of their initial concentration via treatment and to less than ten times the Universal Treatment Standard (UTS) for the hazardous constituents; and
- D003 waste must be "de-characterized" to remove the hazardous characteristic.

Given the sparse options for disposal, EPA and NJDEP selected an interim remedy in the 1987 ROD, stating that the contaminated materials would be secured and contained at OU1 until an appropriate technology becomes available.

CERCLA Section 121(d) specifies that a remedial action must require a level or standard of control of the hazardous substances, pollutants, and contaminants that at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA Section 121(d)(4). As noted, the manufacturing operations at OU1 generated RCRA-listed dioxin wastes, as well as other wastes subject to multiple RCRA requirements relating to treatment and disposal. The 1987 ROD and the 1990 consent decree governing the cleanup explain and document that EPA waived several provisions of RCRA concerning best demonstrated available treatment (BDAT), LDRs, and landfill requirements pertaining to liners and leachate collection systems, invoking the greater risk associated with attempted excavation of the waste (CERCLA Section 121(d)(4)(B)) and the equivalent standard of performance (CERCLA Section 121(d)(4)(D)). While not explicitly cited as a basis for a waiver, the 1987 ROD also referred to the interim nature of the remedy.

The judicial consent decree by which OCC carried out the interim remedy calls for a periodic reevaluation of the remedy, the primary purpose of which is to develop, screen, and assess remedial

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[1] "Listed wastes," as that term is used under RCRA, are wastes found on one of four lists in RCRA regulations at 40 CFR Part 261, generated by certain manufacturing and industrial processes and specific industries, and can be generated from discarded commercial products.

alternatives, and to assess the performance of the selected remedy, until a final remedy could be selected for OU1.

A Remedy Evaluation Work Plan (REWP), which is attached to the 2024 FS Report as Appendix A, was developed in 2015 to guide the required evaluation of the interim remedy. OCC submitted several iterations of a Remedy Evaluation Report (RER) to EPA by January 2021. Following EPA review of the January 2021 Draft RER, EPA determined that the January 2021 Draft RER satisfied the consent decree requirement to perform a remedy evaluation and that it should be revised into an FS to comparatively evaluate remedial alternatives, which led to the submission of the 2024 FS Report. The RER and correspondence are included in the administrative record.

The OU1 interim remedy, as implemented by OCC, consists of the following components:

- A slurry trench cutoff wall encircling the 80-120 Lister Avenue properties and tied into the silt layer underlying the properties.
- A floodwall along the Lower Passaic River to protect the properties from a 100-year flood.
- Demolition of former plant buildings and equipment, followed by decontamination of non-porous materials to the maximum extent practicable for off-site reuse, recycling or disposal.
- Transportation off-site for treatment or disposal of drums containing hazardous substances but containing less than 1 ppb of dioxin.
- Stabilization and immobilization of the contents of the remaining drums of dioxin-contaminated materials.
- Containment of all materials contaminated above 1 ppb of 2,3,7,8-TCDD on-site, including contaminated materials recovered from off-site locations, demolition debris, and other remediation wastes. Secured materials were separated to the maximum extent practicable based on contaminant concentrations into Area A or Area B, to afford access to and facilitate removal of the more highly contaminated materials, should such removal be selected as a remedy at a later date.
- Hauling, emptying, spreading and compacting the contaminated materials previously stored at 120 Lister Avenue, and decontaminating the shipping containers previously used to store waste material generated during the cleanup for off-site reuse, recycling or disposal.
- Locating and plugging inactive underground conduits and rerouting active systems.
- Installation, operation, and maintenance of a GWWS (ground water withdrawal system) designed to maintain an inward and upward hydraulic gradient to prevent the migration of groundwater from within the slurry wall.
- Installation, operation, and maintenance of a treatment system for groundwater and other aqueous liquids.
- Capping of OU1 with an engineered, multi-layer cap consisting of, from bottom up (see cap system cross-section illustration below):
    - 6-inch subgrade layer covered with nonwoven geotextile fabric

    - 12-inch gas venting layer of crushed stone covered with geosynthetic clay liner (GCL)
    - 60-milimeter high-density polyethylene (HDPE) textured geomembrane
    - Geocomposite drainage layer (triplanar HDPE geonet sandwiched between 2 layers of geotextile fabric)
    - 18-inch Select Fill layer covered by GCL covered by non-woven geotextile fabric layer
    - 6-inch crushed stone surface layer

- Implementation of suitable monitoring, contingency, operation and maintenance, and site security plans to ensure the protection of human health and the environment during and after the construction of the Interim Remedy.
- Design, construction and operation of the remedy to attain the cleanup standards listed in Tables III, V, VII of Section VIII of the 1987 ROD.

The floodwall infrastructure consists of tie-rods, tiebacks, and concrete anchor walls.

While the 1987 ROD also required performing a Feasibility Study every 24 months following the installation of the selected interim remedy to develop, screen and assess remedial alternatives and to assess the performance of the selected remedy, as described above, EPA determined that the remedy evaluation that began in 2015 and was completed in 2021 met this requirement.

Based on monitoring data and observed trends, operation of the GWWS resulted in the following:

- A decrease in groundwater levels within the slurry wall since construction of the interim remedy was completed;
- Generally inward horizontal gradients across the slurry wall; and
- Separation of hydraulic systems inside and outside of the slurry wall.

Since 2001, as a result of the remedy evaluation process, EPA has conducted additional review of the above trends. The results are documented in the annual groundwater monitoring reports prepared by OCC, as well as in the Five Year Review reports prepared by EPA, and the 2020 Site Evaluation Report Addendum. While inward gradients have generally been established within the area contained by the slurry walls and floodwall, upward hydraulic gradients, though required as part of the 1987 interim remedy, are not being and will not be fully achieved in significant portions of OU1 due to a number of issues, including the construction of several of the existing extraction wells (which are not screened at an optimal stratum/depth). Additionally, the evaluation in the 2020 Site Evaluation Report Addendum noted that there may be a need for additional maintenance/repair of the cap system.

Much of the contaminant mass present at OU1 was released to the Site soils (the fill layer) during the late 1940s through l960s by manufacturing operations at the Diamond Alkali facility. Over time, soil contaminants migrated to groundwater within the fill located above the organic silt layer. A summary of contamination within each of the major environmental media at OU1 is provided below.

Soil and Buried Impacted Materials

Impacts in the fill material at OU1that existed prior to implementation of the interim remedy were characterized in the mid-1980s and summarized in the 1985 Site Evaluation Report for 80 Lister Ave. The fill was found to contain 2,3,7,8-TCDD, VOCs, SVOCs, pesticides, herbicides, PCBs, and metals. These investigation activities indicated that the highest impacts to the fill occurred in the north-central and northwestern portions of OU1, which is where the former Chemical Manufacturing Building and Process Building were located prior to demolition. The implementation of the interim remedy from 2000 to 2001 resulted in the redistribution of some impacted portions of the fill within OU1.

Six areas at 120 Lister Avenue with dioxin concentrations in excess of 7 ppb, the value established in the ACO NJDEP issued to DSCC for this property, were excavated to depths ranging from six to 24 inches below grade, containerized on site and place in Areas A and B (see Figure 14); however, in several areas, the underlying soils still contained dioxins in excess of 7 ppb, as documented in the 1985 Site Evaluation Report for 120 Lister Avenue.

Most of the impacted fill material was placed in Areas A and B in the central portion of OU1 (see Figure 14) during the implementation of the Interim Remedy along with other impacted materials, followed by compaction and grading before constructing the surficial cap to contain the contaminants and wastes. In addition, impacted materials generated by OU1 demolition activities (i.e., building debris) were also placed in Areas A and B during Interim Remedy construction.

It is important to note that the OU1 soils surrounding and beneath Areas A and B are also contaminated with dioxins at concentrations that required remediation. The present-day areas of greatest impacts generally occur in the central to northwestern portions of OU1 which largely correspond with 80 Lister Avenue. This includes impacts to: 1) contaminated fill beneath the floodwall anchorage structures from former operations; and 2) contaminated fill within and beneath Areas A and B in the central portion of OU1, which were contaminated by former operations and may have been further contaminated by placement of impacted materials in Areas A and B during construction of the Interim Remedy. To clarify, remediation wastes that were added to Areas A and B were placed and compacted above existing contaminated soils and in shallow trenches, such that both the wastes and fill material below the cap system at 80-120 Lister Avenue are contaminated from the bottom cap layer to the surface of the organic silt layer. The tiebacks and anchor structures of the floodwall were also constructed above existing contaminated soils. Soils located to the south of Areas A and B, primarily at 80 Lister Avenue, are less contaminated than the central to northwestern portions of OU1; the area to the east of Areas A and B, located at 120 Lister Avenue, is also characterized by contaminated soil, but to a lesser degree than that at 80 Lister Avenue.

Groundwater

Groundwater COCs within the fill unit beneath OU1 include 2,3,7,8- TCDD, VOCs, and metals. Based on the results of the most recent groundwater sampling event conducted by OCC in December 2023, primary groundwater COCs within the fill unit beneath the OU1 cap and inside the containment features (slurry walls and floodwall) consist of VOCs (benzene, hexachlorobenzene, toluene, chlorobenzene [CB], 1,4- dichlorobenzene [1,4-DCB], 1,2,4-trichlorobenzene [1,2,4-TCB], and trichloroethene [TCE]), metals (antimony, arsenic, lead, and mercury), and 2,3,7,8- TCDD. Site-related COCs (i.e., VOCs and 2,3,7,8- TCDD) also occur in the fill on the OU1 properties, outside the area contained by the slurry wall. Detected concentrations ranged up to 3,830 ug/L for benzene; 2,790 ug/L for toluene; 58,800 ug/L for CB; 452 ug/L for arsenic; and 44,000 picograms per liter for 2,3,7,8- TCDD.

The slurry wall was installed as close to the OU1 boundary as practicable given constructability limitations at the time. This resulted in roughly 10 to 15 feet of fill material, on average, outside of the slurry walls/floodwall, but on the OU1 properties, not being included in or addressed by the interim remedy. While COCs measured in the fill outside of the slurry walls may be due, in part, to past releases from the historic Site operations, in the case of VOCs, there are indications that many of these same VOCs are comingled with upgradient off-Site sources as well. In general, concentrations of COCs in groundwater wells installed in fill outside the slurry wall/floodwall boundary are stable or decreasing and EPA expects optimization of the interim remedy to improve the groundwater conditions because it will further prevent migration of contaminants from the slurry walls/floodwall.

Any impacts from fill material outside the slurry wall to the deeper aquifer below the organic silt layer will be evaluated as part of a future OU. Contaminated fill material that remains outside the slurry wall is covered by the cap, which extends beyond the slurry wall to the OU1 boundary, and is therefore not available for exposure.

Dense Non-Aqueous Phase Liquid (DNAPL)

As part of OCC's ongoing operation and maintenance of the groundwater remedy at OU1, high-viscosity DNAPL has been observed in two groundwater EWs, EW-2 and EW-4, which are located along the floodwall in the northwestern and north-central portions of OU1. Trace, unrecoverable amounts of DNAPL are routinely observed in EW-2 during monthly gauging of the OU1 monitoring wells and EWs. DNAPL is generally present in measurable and recoverable amounts in EW-4. A few gallons of DNAPL are removed from EW-4 every year during one or two targeted removal events. Although EPA has concluded that this DNAPL likely originated from former activities at OU1, its specific source or sources are unknown.

CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USES

Land Uses

The current land use for OU1 is industrial and includes ongoing operation and maintenance activities associated with the interim remedy currently in place. The immediate area surrounding OU1 is zoned for industrial use and will continue to be so, according to the 2023 Newark Zoning Maps. Nearby areas have a dense residential population including public housing constructed by the City of Newark. The Ironbound section of Newark is highly industrialized but is also densely populated and houses approximately 50,000 of Newark's 275,000 residents.

During the next 10-20 years the Lister Avenue property is anticipated to be used to support the remedial construction work to be performed for the Lower Passaic River OU2 and OU4 remedies.

Groundwater and Surface Water Use

Groundwater at OU1 is designated as potable; however, in 2021 NJDEP established a Classification Exception Area/Well Restriction Area (CEA/WRA), an institutional control established under New Jersey law documenting an area where water quality standards cannot be met and which limits installation of groundwater extraction wells in the contaminated area.

Environmental Justice

EPA conducted a review of the project vicinity using EPA's EJSCREEN online tool and via review of aerial imagery (accessed through Google Maps) to identify the locations of residential areas. EPA completed this screening to create a common starting point between the agency and the public when looking at issues related to environmental justice (EJ). Screening is a useful first step in understanding or highlighting locations that may be candidates for further review; however, it is essential to remember that screening-level results do not, by themselves, determine the existence or absence of EJ concerns at a given location. The EJ and supplemental indexes are a combination of environmental and socioeconomic information.

There are thirteen EJ indexes and supplemental indexes in EJSCREEN reflecting twelve environmental indicators. Particularly elevated environmental indicators found at OU1 and the surrounding area (as compared to national averages) include poor air quality, cancer risk, traffic density, lead paint prevalence, proximity to sites with chemical management plans and hazardous waste facilities, and occurrence of wastewater discharges.

A one-mile buffer and five-mile buffer surrounding OU1 were applied for the generation of the EJSCREEN reports. The one-mile buffer screening offers demographic information on the immediate project area, while the 5-mile buffer screening provides a larger, regional context for those demographics. See Figures 11 and 12. Demographic indicators from the one-mile buffer screening indicate there are people of color, low-income populations, and linguistically isolated populations in the immediate project area, where the percentages of these populations are greater than the state averages by margins of 20 percentage points or greater. See Table 2.

Climate Change

A climate change vulnerability assessment was performed as part of the FS to examine the potential impact of climate change on long-term remedial measures at OU1. The assessment focused on key climate indicators: rising temperatures, sea level rise, extreme weather, and heavy precipitation and yielded the following conclusions, documented in the 2024 FS Report.

- Rising Temperatures: Predicted temperature increases in New Jersey are not expected to impact the remedial alternatives, which do not depend on vulnerable materials like asphalt or vegetation that could be negatively affected by heat, invasive species, or wildfires.
- Sea Level Rise: The remedial alternatives evaluated in the 2024 FS Report and Proposed Plan are not vulnerable to a sea level rise of 2.6 feet, which is at the higher end of the range of sea level rise anticipated by the year 2050 (projected at a 5 percent probability of occurring), as the water levels would remain below the property's lowest elevation (10 feet NAVD88[2]).
- Extreme Weather: The remedial alternatives may be moderately vulnerable to extreme weather events due to storm surges, power outages and wind. The OU1 property may experience partial flooding during extreme weather events, such as storm surges from hurricanes and nor'easters; however, the existing floodwall and backup systems are expected to protect key components. Vulnerability exists in the treatment building during severe storm surges (e.g., 500-year floods), such that a shutdown might be necessary, but operations would resume relatively quickly after repairs. The cap structure could withstand a temporary inundation and would shed the water away from OU1 as the flood waters receded, due to its sloped design. If the storm surge was accompanied by a power outage lasting for days or weeks following the storm, the remediation systems at OU1 could be powered by the backup generator already present at OU1, if needed, that is connected to the existing natural gas supply to the property. Potential damage to OU1 would likely be limited to scouring of the surficial gravel layer of the cap and/or damage to ground level equipment in the treatment building, both of which could be repaired easily.
- Heavy Precipitation: OU1's engineered multi-layered cap is designed to be resilient to heavy rainfall, with minor erosion of the surficial gravel layer expected to occur only in the most severe events, such as Hurricane Ida. The overall effectiveness of the remedial alternatives is expected to remain intact.

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[2] North American Vertical Datum of 1988, or NAVD88, is a leveling network on the North American Continent, ranging from Alaska, through Canada, across the United States, affixed to a single origin point on the continent.

In conclusion, while some vulnerabilities to extreme weather and storm surges exist, the remedial measures are generally resilient to climate change impacts, with mitigation plans in place for potential damage. Each of the alternatives would include development of a severe weather preparedness plan that includes a portable temporary treatment system that would be used in the event that the groundwater pump and treat system would need repairs. Climate change impacts are discussed in more detail in the Comparative Analysis of Alternatives below.

SUMMARY OF SITE RISKS

The results of the site investigations completed in the 1980s for 80 and 120 Lister Avenue indicated that OU1 was contaminated by a large number of hazardous substances including dioxin, DDT, SVOCs, VOCs, herbicides, pesticides, and metals. The contamination was widespread and affected most media, including soils, groundwater, air, surface water and building structures.

The chemicals that were determined to present the greatest risks at OU1 due to their toxicities and concentrations were 2,3,7,8-TCDD and DDT, based on potential exposure to contaminated groundwater. The greatest potential for human exposure to 2,3,7,8-TCDD was identified as direct contact with surface soils and the risk assessment recommended that this exposure pathway be controlled. Other routes of exposure to the hazardous substances included migration of hazardous substances to the Lower Passaic River, migration of hazardous substances to groundwater, and migration of airborne hazardous substances.

A quantitative evaluation of direct risks to on-site workers was not performed since these risks had been controlled by the initial response actions that had already been taken, including early efforts to cover the OU1 surface soils with geofabrics and the establishment of security measures to prevent access to the contaminated area. The total excess cancer risks from exposure to groundwater were quantified for 2,3,7,8-TCDD (9.5×10^{-5} to 8×10^{-3}) and DDT (6.5×10^{-5} to 8.8×10^{-4}) and the total combined risks exceeded the risk range of 10^{-4} to 10^{-6} (one in ten thousand to one in one million) identified in the NCP.

Contaminants of Concern

Seventy chemicals were identified in soil and groundwater at OU1 during the investigation. From this list, a group of 15 chemicals was selected to be representative of the larger group, to facilitate the development of the risk assessment. These 15 representative COCs were selected based on factors such as toxicity and physical and chemical properties. The 15 representative COCs examined in the risk assessment were: arsenic, benzene, benzo(a)anthracene, bis(2-ethylhexyl)phthalate, β-BHC (Lindane), chloroform, cyanide, 2,4-dimethylphenol, DDT, 2,3,7,8-TCDD, hexachlorobenzene, 2-hexanone, phenol, 2,4,5-T, and 2,4,6-trichlorophenol (TCP).

Ecological Risk Assessment

A screening-level ecological risk assessment was not conducted as part of the remedy selection leading to the 1987 ROD. The Lister Avenue properties and surrounding areas consist of industrial properties. The industrial nature of OU1 and surrounding properties significantly limits the amount of available ecological habitat and influences the quality of that habitat. Further, EPA and NJDEP concluded that remediation of OU1 was likely to remove or alter any potential existing ecological resources. Given that the primary terrestrial ecological issue is contaminated surface soil, no ecological risk evaluation was required, since the remedial alternatives that were evaluated to address the human health risk would also address the soils likely to contribute to ecological risk and be protective of potential ecological receptors. Ecological risks from contaminated media in the Lower Passaic River are evaluated under other OUs for the Diamond Alkali Superfund Site. Control of migration of contaminated soil and groundwater from OU1 is necessary to ensure ecological risks in the Lower Passaic River are mitigated.

Summary of Risk Assessments

Construction of the IR has eliminated, to the extent practicable, potential exposure to on-site soils and contaminant releases from buildings and structures. Further, treated groundwater collected in the groundwater extraction system installed as part of the IR is monitored prior to being discharged into the Lower Passaic River, to ensure that it meets current surface water discharge requirements, which are protective of ecological receptors. However, material within the containment cell represents PTW and would pose significant risk should exposure occur. Therefore, actual or threatened releases of hazardous substances from OU1, if not addressed by implementing the response action selected in the ROD, may present an imminent and substantial endangerment to the public health, welfare, or the environment.

REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) are specific goals to protect human health and the environment. Achieving the RAOs relies on the remedial alternatives' ability to meet final remediation goals/cleanup levels derived from preliminary remediation goals (PRGs), which are generally chemical-specific goals for each medium and/or exposure route that are established to protect human health and the environment.

These objectives are based on available information and standards such as ARARs, to-be-considered (TBC) advisories, criteria and guidance, and site-specific risk-based levels. The primary objective of any remedial strategy is overall protectiveness.

Based on the human health risk assessment findings, DDT and 2,3,7,8-TCDD contamination in soil and groundwater would pose an unacceptable risk through direct contact and ingestion if these exposure pathways had not been mitigated by the interim remedy. The 1987 ROD contemplated that the risks would be further addressed by additional remedial actions in the future. Therefore, the RAOs described below were developed for a final remedy to address the human health and possible ecological risks posed by DDT and 2,3,7,8-TCDD contaminated soil and debris at OU1.

Soil RAO:

- Prevent exposure (via ingestion, dermal contact, and inhalation) of human receptors (onsite and offsite commercial/industrial workers, construction/utility workers, and trespassers) to contaminated soil at concentrations exceeding remedial goals within the waste management area.

Groundwater RAOs:

- Prevent exposure (via ingestion, dermal contact, and inhalation) to Site-related contaminants in groundwater in the waste management area at concentrations greater than the applicable federal and state standards.
- Prevent the migration of Site-related DNAPL beyond the point of compliance (POC).
- Prevent the migration of Site-related contamination in groundwater that exceeds the applicable federal and state standards beyond the POC.

Remediation Goals

To achieve the RAOs, EPA has selected remedial goals (RGs) for OU1 COCs in soils and groundwater within the fill unit, derived from PRGs in the Proposed Plan. RGs (also referred to as cleanup levels) are generally chemical-specific remediation goals for each medium and/or exposure route that are established to protect human health and the environment. They can be based on ARARs, risk-based levels (human health and ecological), and from comparison to background concentrations, where appropriate.

For OU1, the Proposed Plan identified groundwater PRGs based on the New Jersey Groundwater Quality Standards for Class II-A aquifers, with consideration of national primary maximum contaminant levels (MCLs) for the Site-related contaminants in groundwater in the waste management area (WMA), and PRGs for soil based on the Non-residential New Jersey Soil Remediation Standards for the Ingestion-Dermal Pathway identified in N.J.A.C. 7:26D, Appendix 1 for hexachlorobenzene, 2,3,7,8-TCDD and 4,4'-DDT, which are the soil contaminants that are present at concentrations considered to be PTW. PRGs become final RGs when EPA selects a remedy after taking into consideration all public comments. The final RGs for OU1 can be found in Table 3 and a complete list of ARARs can be found in Tables 4, 5 and 6.

Waste Management Area/POC

The NCP preamble language sets forth the EPA's policy that, for groundwater, "remediation levels generally should be attained throughout the contaminant plume, or at and beyond the edge of the waste management area when waste is left in place." The NCP preamble also indicates that, in certain situations, it may be appropriate to address the contamination as one WMA for purposes of the groundwater POC. For OU1, the WMA is defined as the area bounded by the slurry walls and floodwall, above the naturally occurring organic silt layer and capped by the multilayer cap.

The POC for meeting ARARs is defined by the outside faces of the slurry walls, the riverside face of the floodwall located between the OU1 properties and the Lower Passaic River, and the bottom of the organic silt deposit that underlies 80 and 120 Lister Avenue. The POC is shown on Figure 13. The material within the WMA includes contaminated soil, stabilized drum and tank contents, debris from the demolition of structures, disassembled shipping containers, asbestos-containing material, and phosphorous-containing material which had been allowed to react with the atmosphere before placement in a vault.

SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA Section 121(b)(1), 42 U.S.C. §9621(b)(1), requires that a remedial action 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, as a principal element, treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants and contaminants at a site. CERCLA Section 121(d), 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 at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA Section 121(d)(4), 42 U.S.C. §9621(d)(4).

Potential technologies applicable to soil and groundwater remediation were identified and screened using the effectiveness, implementability, and cost criteria, with emphasis on effectiveness. Those technologies that passed the initial screening were assembled into alternatives.

This ROD evaluates in detail five remedial alternatives for addressing the contamination associated with OU1. Detailed information regarding the alternatives can be found in the 2024 FS Report.

Alternatives Screening

The 2024 FS Report assembled and screened eight alternatives for potential remediation of OU1. Several site-wide alternatives (3, 5, and 7) were not retained for further evaluation due to the challenges associated with attempting to excavate or treat in-situ the contaminated soil adjacent to the floodwall. At this location, the contaminated soils are located below the tiebacks and anchors that support the floodwall. Site-wide excavation and off-site disposal, site-wide in-situ stabilization (ISS) and site-wide in-situ thermal treatment are each too challenging to implement due to the difficulties of working in and around the tie-rods and anchors associated with the floodwall constructed at the northern boundary of OU1, adjacent to the Lower Passaic River, and the associated expense. When the floodwall was constructed between June and December 2000, the tie-rods were placed at approximately the pre-remedy ground surface, with little or no excavation. The anchors were excavated approximately 5 feet into the pre-remedy ground surface (FS Section 1.5.5, Construction of Floodwall, page 1- 13). Additional anchors installed in 2012, intended to stabilize the wall during the non-time critical removal action that resulted in sediment dredging adjacent to the OU1 properties, were drilled from the exterior of the floodwall approximately 85 feet into the OU1 properties at a downward angle of approximately 31.5 degrees, within grouted boreholes to protect against migration of contaminants through the organic silt layer that underlies the waste. According to Section 1.6.4.2 of the 2024 FS Report, Impacted Materials Placed Beneath the Cap, the present-day areas of highest COC concentrations are the soils and fill located beneath/between the floodwall anchorage structures and also below the central portion of OU1, where contaminated materials were intentionally placed beneath the Interim Remedy cap system in Areas A and B.

The alternatives retained for the detailed comparative evaluation (Alternatives 1, 2, 4, 6 and 8) in the FS and Proposed Plan do not include the need to access contaminated soils beneath the tiebacks and anchors and are therefore implementable. The estimated costs for each remedial alternative to be comparatively evaluated are expressed as net present value, using a 7% discount rate. The construction time for each alternative reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy, negotiate the performance of the remedy with any potentially responsible parties, or procure contracts for design and construction. Annual operation and maintenance (O&M) costs are associated with routine maintenance, while periodic costs include the replacement of remedy components to maintain their long-term integrity and effectiveness.

Description of Common Elements of All Alternatives

Remedial alternatives 1, 2, 4, 6 and 8 each include institutional controls, maintenance of the OU1 multi-layered cap, maintenance of the GWWS and GWTS, and long-term monitoring in perpetuity. The institutional controls (currently in place) consist of a deed restriction that allows for only industrial/commercial use of the property and a NJDEP CEA/WRA, an institutional control established under New Jersey law documenting an area where water quality standards cannot be met and which limits installation of groundwater extraction wells. Alternatives 2, 4, 6, and 8 each include similar upgrades to the GWWS and GWTS. All five alternatives leave waste on-site (due to the infeasibility of removing/treating waste beneath the tie backs and anchor structures of the floodwall) and therefore require maintenance of the cap and GWWS/GWTS and the preparation of five-year review reports to monitor ongoing remedy effectiveness. A 30-year site maintenance period was used for cost-estimating purposes, but the remedy would need to be maintained in perpetuity.

Because the interim remedy left contamination in place above levels that allow for unlimited use and unrestricted exposure, EPA has already been conducting reviews of the remedial action pursuant to CERCLA Section 121(c), 42 U.S.C. §9621(c). These began five years after the completion of the interim remedial action and will continue to be conducted every five years to ensure that the final remedy continues to provide adequate protection to human health and the environment, because this remedy will result in hazardous substances remaining on-site above health-based levels that allow for unlimited use and unrestricted exposure.

Description of Remedial Alternatives

Alternative 1 - No Further Action

Capital Cost	$ 0
Annual O&M Cost	$ 963,000
Total Present Value	$ 12,000,000
Construction Time Frame	0 years

Alternative 1, the "No Further Action" alternative, is required by the NCP to provide an environmental baseline against which impacts of the other remedial alternatives can be compared. Under this alternative, no further action would be taken to remediate contaminated media or otherwise mitigate the migration of contamination that poses unacceptable risks to human health and the environment by modifying or enhancing the existing remedy; however, the existing IR would remain in place and continue to be operated and maintained in its current form.

Alternative 1 consists of O&M of the current IR, including the low permeability multi-layered cap and stormwater management system, floodwall, slurry walls, GWWS for hydraulic containment, GWTS with discharge of treated groundwater to the Lower Passaic River, DNAPL recovery as needed, ongoing groundwater monitoring, perimeter fence, security controls, and institutional controls. Given the site conditions and the presence of the existing IR, EPA replaced the typical 'No Action' Alternative (required under CERCLA) with this 'No Further Action' Alternative.

Alternative 2: Optimized Containment Remedy

Capital Cost	$ 3,640,000
Annual O&M Cost	$ 963,000
Total Present Value	$ 16,000,000
Construction Time Frame	1 year

Alternative 2 is a modification of Alternative 1, under which the IR that is currently operating at OU1, would be optimized to improve its effectiveness. In addition to the improvements summarized below, all other components of Alternative 1 would be retained, operated, and maintained. The optimizations consist of:

- Replacement of extraction wells EW-1 through EW6, located along the floodwall, to locate their screened intervals more accurately in the fill layer beneath the cap. In addition, variable speed pumps will be provided to replace the constant head pumps.

- Reactivation of extraction well EW-9 on the south side of OU1 to enhance the hydraulic capture of the system across OU1 and reduce the potential for downward migration of COCs to the underlying glaciofluvial sands.
- Redesign and replacement of portions of the groundwater conveyance system, as needed.
- Upgrade of the GWTS, as needed to improve metals removal and meet discharge requirements, along with optimization based on groundwater modeling to improve hydraulic containment.
- Investigation of the integrity of the existing impermeable cap layer via a site-wide electrical resistivity survey and subsequent repairs, if needed.
- Installation of additional groundwater monitoring wells, if needed.
- DNAPL removal as needed.
- Maintaining the OU1 cap, the GWWS and GWTS, other engineering controls, and performing long-term site monitoring in perpetuity.
- Maintaining institutional controls as necessary to protect the integrity of the remedial components and to protect against releases and human exposure.

Based on groundwater modeling results, the optimization measures to the GWWS as described in Alternative 2 would improve hydraulic containment. Extracting groundwater from the fill layer only (as opposed to from both the fill and the glaciofluvial sand as is occurring currently) would achieve more consistent upward hydraulic gradients in the northern third of OU1where the current IR does not consistently maintain an inward gradient. The groundwater conveyance system and GWTS would be upgraded or redesigned as needed to accommodate any additional flow and influent contaminant concentrations.

Alternative 4: Targeted Excavation with Off-site Disposal, Backfill with Imported Fill, Capping, and Containment

Capital Cost	$ 119,000,000
Annual O&M Cost	$ 963,000
Total Present Value	$ 132,000,000
Construction Time Frame	3 years

Alternative 4 would involve the opening of the OU1 cap to conduct targeted excavation of contaminated fill materials from above the organic silt layer. Targeted excavation would be designed to avoid the location of the tiebacks and anchor structures for the floodwall and to maintain a setback from the slurry walls, where excavation is not feasible. Alternative 4 would include removing about 69,000 cy of waste (more than 50 percent of the estimated in-place volume of waste) from the central/southern portion of OU1, where it is difficult to consistently maintain upward hydraulic gradients, followed by off-site disposal of the waste. Although the material to be excavated has not been classified for disposal, it is anticipated that based on the history of the Site and the type of COCs present in the media, the waste material would most likely have to be managed as F-listed waste. In addition, a significant portion of the impacted media volume is impacted with COC concentrations in excess of the universal treatment standards (UTSs). Disposal options for excavated impacted media would likely be limited to a potential disposal facility in Canada.

The slurry walls and floodwall would be retained. After backfilling the excavation with clean imported fill, the multilayer cap would be restored over the work area and the GWWS and GWTS would be replaced/reactivated and optimized, including the re-installation of the six extraction wells located along the floodwall and the reactivation of EW-9, as described in Alternative 2. The GWTS would be modified with the addition of ion exchange treatment.

O&M of site controls would continue in perpetuity along with DNAPL removal as needed.

Alternative 6: Targeted ISS, Capping, and Containment

Capital Cost	$ 34,290,000
Annual O&M Cost	$ 963,000
Total Present Value	$ 47,000,000
Construction Time Frame	3 years

Alternative 6 would involve the opening of the OU1 cap to allow for the use of bucket mixing to introduce stabilizing agents, such as Portland cement, into a 10 to 22 foot below ground surface (bgs) mixing zone, to reduce the potential for migration of COCs away from the OU1 limits. A laboratory study would need to be performed prior to full-scale in situ solidification/stabilization (ISS) implementation to assess whether an effective ISS mixture could be achieved.

The intent of Alternative 6 would be to stabilize approximately 69,000 cy of contaminated soil and waste located above the organic silt layer in the central and southern portions of OU1, away from the sensitive infrastructure of the floodwall. Large debris encountered in the subsurface would require excavation and disposal off-site. Due to swell volumes following the addition of reagents, some of the stabilized waste might require off-site disposal at one of the identified facilities in Canada that could accept the waste.

Following completion of the ISS effort, the multilayer cap would be reconstructed/replaced above the stabilized waste and the monitoring well network re-established. The slurry walls and floodwall would be retained. The GWWS and GWTS would be replaced/reactivated and optimized, including the re-installation of the six extraction wells located along the floodwall. O&M of site controls would continue in perpetuity, along with DNAPL removal as needed, to further reduce the potential for mass transport of COCs from remaining impacted media located near the floodwall infrastructure that are not subjected to stabilization.

Alternative 8: Targeted Excavation with Ex-Situ Thermal Treatment, Backfill of Treated Media, Capping, and Containment

Capital Cost	$ 53,640,000
Annual O&M Cost	$ 963,000
Total Present Value	$ 66,000,000
Construction Time Frame	3 years

Alternative 8 would also employ targeted excavation of contaminated fill materials from above the organic silt layer. Similar to Alternative 4, the targeted excavation would be designed to avoid the location of the tiebacks and anchor structures for the floodwall, removing about 69,000 cy of waste from the central/southern portion of OU1. The excavated waste would be subjected to on-site, ex-situ thermal treatment and the treated media would be returned to the excavation. The ex-situ thermal treatment would be designed such that the treated media would comply with the LDRs in 40 CFR 268 Subpart C. Laboratory and/or pilot studies may be required to establish the details of the treatment design. Some excavated materials not amenable to ex-situ thermal treatment, such as large debris items and phosphorus-contaminated soil, would be disposed of off-site.

The slurry walls and floodwall would be retained. After backfilling the excavation with the treated media, the cap would be restored over the work area and the GWWS and GWTS would be replaced/reactivated and optimized, including the re-installation of the six extraction wells located along the floodwall and the reactivation of EW-9. The GWTS would be modified with the addition of ion exchange treatment.

O&M of site controls would continue in perpetuity along with DNAPL removal as needed to further reduce the potential for mass transport of COCs from remaining impacted media located outside the thermal treatment area.

SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

In selecting a remedy, EPA considered the factors set out in CERCLA Section 121, 42 U.S.C. §9621, conducting a detailed analysis of the viable remedial alternatives pursuant to the NCP, 40 CFR §300.430(e)(9), EPA's Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA (Office of Solid Waste and Emergency Response (OSWER) Directive 9355.3-01) and EPA's A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents, OSWER 9200.1-23.P. The detailed analysis consisted of an assessment of the individual alternatives against each of nine evaluation criteria and a comparative analysis focusing upon the relative performance of each alternative against those 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* addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

2. *Compliance with ARARs* addresses whether a remedy would meet all of the applicable (legally enforceable), or relevant and appropriate (requirements that pertain to situations sufficiently similar to those encountered at a Superfund site such that their use is well suited to the site) requirements of federal and state environmental statutes and requirements or provide grounds for invoking a waiver. Other federal or state advisories, criteria, or guidance may be identified by EPA as "to be considered or "TBCs". While TBCs are not required to be adhered to under the NCP, they may be useful in determining what is protective or how to carry out certain actions or requirements.

The following "primary balancing" criteria are used to make comparisons and to identify the major trade-offs between alternatives:

3. *Long-term effectiveness and permanence* refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met. It also addresses the magnitude, effectiveness and reliability of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.

4. *Reduction of toxicity, mobility, or volume via treatment* refers to a remedial technology's expected ability to reduce the toxicity, mobility, or volume of hazardous substances, pollutants or contaminants at the site through treatment.

5. *Short-term effectiveness* addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed to workers, the community and the environment during the construction and implementation periods until cleanup goals are achieved.

6. *Implementability* refers to the technical and administrative feasibility of a remedy, from design through construction and operation, including the availability of materials and services needed, administrative feasibility, and coordination with other governmental entities.

7. *Cost* includes estimated capital and operation and maintenance costs, and the net present-worth calculated using a 7% discount rate [per current guidance].

The following "modifying" criteria are considered fully after the formal public comment period on the Proposed Plan is complete:

8. *State acceptance* indicates whether, based on its review of the FS and the Proposed Plan, the State supports, opposes, and/or has identified any reservations with the preferred alternative.

9. *Community acceptance* refers to the public's general response to the alternatives described in the Proposed Plan and the RI/FS reports. Factors of community acceptance to be discussed include support, reservation, and opposition by the community.

A comparative analysis of the remedial alternatives based upon the evaluation criteria noted above follows.

- Overall Protection of Human Health and the Environment

A primary requirement of CERCLA is that the selected remedial alternative be protective of human health and the environment. An alternative is protective if it reduces current and potential future risks associated with each exposure pathway at a site to acceptable levels.

Alternative 1 (No Further Action) is currently protective of human health and the environment in the short-term. In order for the remedy to be protective in the long-term, a plan to implement recommendations resulting from the review of the 2021 RER report would have to be developed. The existing IR multi-layered cap prevents contact with OU1 wastes and the slurry walls, floodwall, GWWS/GWTS mitigate the spread of groundwater contamination by reducing potential discharge to the Lower Passaic River and migration into the underlying sand aquifer; however, while inward gradients have generally been established, upward hydraulic gradients are not being and will not be fully achieved in significant portions of OU1 due to a number of issues, including the construction of a number of the existing extraction wells (which are not screened at an optimal stratum/depth).

Alternative 2 (Optimized Containment Remedy) is protective of human health and the environment. As with the Alternative 1 (No Further Action), the multi-layered cap will prevent contact with site wastes and the slurry walls, floodwall, GWWS and GWTS mitigate the spread of groundwater contamination by reducing potential discharge to the Lower Passaic River and migration into the underlying sand aquifer. In the case of Alternative 2, the current inward gradients would be maintained, and the upward hydraulic gradients are expected to be improved due to the re-installation of six extraction wells along the floodwall, the reactivation of EW-9, and other improvements to the GWWS. Groundwater modeling suggests that Alternative 2 would achieve consistent upward hydraulic gradients in and throughout OU1. EPA anticipates that the majority of the groundwater would ultimately be captured as it flows northward to the line of extraction wells near the floodwall (Section 8.1.2, Alternative 2 – Optimized Current Remedy (Optimized Capping and Containment), page 8-3).

Alternative 4 (Targeted Excavation with Off-Site Disposal, Backfill with Imported Fill, Capping, and Containment) is protective of human health and the environment. A portion of the impacted materials (more than 50 percent) would be removed from OU1 and transported to a secure disposal facility. Further, the excavation boundaries would correspond with locations where it is difficult for the current GWWS to consistently maintain upward hydraulic gradients.

Alternative 6 (Targeted ISS, Capping, and Containment) is protective of human health and the environment. A portion of the impacted materials would be treated via ISS to mitigate migration of the COCs (though comparatively highly-contaminated material would still remain in place untreated below the floodwall tie-rods and anchors in the northern portion of OU1). ISS would be implemented at locations where it is difficult for the current GWWS to consistently maintain upward hydraulic gradients.

Alternative 8 (Targeted Excavation with Ex-Situ Thermal Treatment, Backfill of Treated Media, Capping, and Containment) is protective of human health and the environment in that a similar quantity of contaminated materials would be removed and treated ex-situ to reduce the concentration of COCs prior to the placement of treated media back into the on-site excavation as under Alternatives 4 and 6. Consistent with Alternatives 2, 4, and 6, an optimized GWWS, GWTS, and multi-layered cap system would be retained to remediate contaminated material outside the targeted excavation and treatment area.

- Compliance with ARARs

The 1987 ROD and the 1990 consent decree documented the basis for EPA's waiver of several provisions of RCRA that were identified as action-specific ARARs, concerning BDAT, LDRs and landfill requirements pertaining to bottom liners and leachate collection systems, based on the greater risk anticipated with attempted excavation of the waste for treatment or off-site disposal. Under Section 121(d)(4)(B) of CERCLA, EPA may select a remedy that does not comply with particular ARARs if compliance with such requirements would result in greater risk to human health and the environment than alternative options. As set forth in the 1987 ROD and Responsiveness Summary, EPA based its waiver of the RCRA requirements on the significant additional risks associated with excavation and transport of the hazardous substances at OU1, including the risk resulting from airborne releases. EPA also referred to the interim nature of the remedy in the Responsiveness Summary, noting that "[t]here are no commercial facilities, either currently or in the near future, available for the treatment or disposal of dioxin-contaminated wastes." For those reasons, in 1987 EPA concluded that the only viable alternative available was to secure and contain all contaminated materials on-site until an appropriate technology became available, and that the remedy could be supplemented by additional actions in the future, if feasible.

Alternative 1 (No Further Action), Alternative 2 (Optimized Containment Remedy) and Alternative 6 (Targeted ISS, Capping, and Containment) would require the same ARAR waivers as the 1987 ROD, specifically waiver of BDAT and LDR before placement of waste (40 CFR Part

268, Subparts D and C, respectively) and standards for landfill design (40 CFR Part 264, Subpart N). Alternative 8 (Targeted Excavation and Ex-Situ Thermal Treatment, Backfill of Treated Media, Capping, and Containment) would treat impacted media in the targeted excavation area to concentrations below the standards specified in the LDRs. Alternatives 4 and 8 would not require waiver of 40 CFR Part 268 requirements because under Alternative 4, contaminated material subject to handling as RCRA listed waste would be removed for off-site disposal; under Alternative 8, this material would be treated on-site to comply with BDAT and LDRs. Alternatives 4 and 8 would, however, require waivers from the landfill design standards due to the fact that impacted media outside the targeted excavation area would remain on-site and untreated. All other ARARs would be met by the alternatives.

A waiver of the RCRA provisions cited above would be justified under Section 121(d)(4)(B), as in 1987. The basis for waiving the requirements would be to avoid the construction-related exposure risks associated with excavation of the dioxin-contaminated soils and wastes, due to the elevated on-site concentrations and significant toxicity of dioxin. Excavating the waste for off-site disposal would entail transport of contaminated soil and there would be a risk of a transportation incident. Conducting ex-situ thermal treatment would require on-site handling of contaminated soil for an extended period, prior to replacement of treated soil on-site. While EPA would require state-of-the-art controls to reduce the potential for exposure to contaminants during remedial construction, the Ironbound neighborhood is a densely populated area of Newark, NJ, and exposure risks must be considered while evaluating the potential effectiveness of Alternatives 4, 6, and 8. For example, if controls intended to prevent the migration of contaminants failed during waste excavation and handling, highly toxic, dioxin-contaminated dust could become airborne and cause exposures to both on-site remediation workers and off-site workers and residents. In addition, even with the removal and treatment opportunities afforded by these alternatives, highly contaminated waste would still remain on-site beneath the floodwall tiebacks and anchors.

- Long-Term Effectiveness and Permanence

This evaluation takes into account the residual risk remaining at the conclusion of remedial activities, the adequacy and reliability of containment systems and institutional controls, and climate change.

All five of the alternatives rely on the existing GWTS building, which was designed to sustain wind speeds comparable to a Category 2 hurricane. Although storm intensity is expected to increase in the coming decades as a result of climate change, EPA assumes that current building codes are sufficient to address future vulnerabilities due to wind; changes in building codes addressing climate change-related predictions can be accommodated with building improvements since the interior of the building is open construction. The groundwater pump and treat components of the existing remedy and associated infrastructure have withstood the impacts of three tropical storms since 2012 (Superstorm Sandy in October 2012, Hurricane Henri in August 2021, and Hurricane Ida in September 2021), all of which resulted in significant rainfall at the Site. Each of the alternatives would include development of a severe weather preparedness plan that would include a portable temporary treatment system that would be used in the event that the groundwater pump and treat system would need repairs.

While most storm scenarios considered in the 2024 FS Report would not result in flooding at OU1, the cap system can withstand inundation. Upon cessation of storm surge, the sloped cap would shed water as the floodwaters receded. Storm surge is also expected to temporarily increase groundwater elevations in the fill and underlying sand, while the cap would limit the volume of water from entering the fill within the slurry wall/floodwall boundary, effectively minimizing any impact to the water within the WMA. This would enhance the inward and upward gradients across the organic silt layer and slurry wall during the storm surge.

Alternative 1 (No Further Action) provides protection of human health and the environment in the short term because all exposure pathways are addressed by engineering and access controls. However, in order for the remedy to be protective in the long-term, a plan to implement recommendations resulting from the review of the 2021 RER report would have to be developed. Alternative 2 (Optimized Containment Remedy) provides long term protection of human health and the environment. Ongoing O&M activities of the cap, GWWS, and GWTS help maintain the protectiveness by preventing contact with the waste and reducing the migration of groundwater contamination. Under Alternative 1, while inward gradients have generally been established, upward hydraulic gradients are not being and will not be fully achieved in significant portions of OU1 due to a number of issues, including the construction of a number of the existing extraction wells (which are not screened at an optimal stratum/depth). Alternative 2 has several advantages over Alternative 1 regarding containing groundwater contamination, as described in the Summary of Remedial Alternatives, such as the reinstalled and reactivated extraction wells.

The long-term effectiveness and permanence of some aspects of Alternative 4 (Targeted Excavation with Off-Site Disposal, Backfill with Imported Fill, Capping, and Containment) are superior to that offered by Alternative 2 because a significant portion of the contaminated material would be removed from OU1 and disposed at an appropriate facility. However, Alternatives 2 and 4 would be ultimately equivalent in terms of long-term effective and permanence because replacement and ongoing O&M of the impermeable cap, GWWS, and GWTS would be the same for the waste that would remain on-site.

The long-term effectiveness and permanence of some aspects of Alternative 6 (Targeted ISS, Capping, and Containment) are superior to Alternative 2 because a significant portion of the highly contaminated material would be treated via ISS in a portion of OU1 that is not well-addressed by the current GWWS. However, Alternatives 2 and 6 would be ultimately equivalent in terms of long-term effective and permanence because replacement and ongoing O&M of the cap, GWWS, and GWTS would be the same for the waste remaining untreated in the northern portion of OU1.

Some aspects of Alternative 8 (Targeted Excavation with Ex-Situ Thermal Treatment, Backfill of Treated Media, Capping, and Containment) provide similar long-term effectiveness and permanence to Alternatives 4 and 6, and like those two alternative are superior to Alternative 2 in that regard, because it would include excavation and treatment of a significant portion of the contaminated material prior to replacing it on-site, as well as replacing and maintaining the cap, GWWS, and GWTS.

- <u>Reduction in Toxicity, Mobility, or Volume via Treatment</u>

This criterion addresses the statutory preference for selecting remedial actions that employ treatment technologies that permanently and/or significantly reduce the toxicity, mobility or volume of hazardous substances as their principal element.

Under Alternative 1 (No Further Action) and Alternative 2 (Optimized Containment Remedy), hydraulic control would reduce mobility, toxicity, and volume of groundwater contaminants through capture and treatment. They would also continue to control the mobility of contaminated soil. Alternative 2 would provide greater reduction of toxicity, mobility, or volume through treatment than Alternative 1 because it includes the reinstallation of extraction wells along the floodwall to optimize the capture and treatment of contaminated groundwater. The optimized GWWS and GWTS would continually remove and treat contaminant mass from OU1 (about 1,000 pounds (lbs) of SVOCs, herbicides, and VOCs per year).

Under Alternative 4 (Targeted Excavation with Off-Site Disposal, Backfill with Imported Fill, Capping, and Containment), the volume of COCs at OU1 would be reduced via removal, not treatment (though excavated waste may require pre-treatment prior to land disposal at one of the Canadian waste disposal facilities so additional reduction of mobility, toxicity, and volume of the waste could be achieved). Ongoing hydraulic control would also reduce the mobility of groundwater contaminants. The optimized GWWS and GWTS would continually remove and treat contaminant mass from OU1 (about 1,000 lbs of SVOCs, herbicides and VOCs per year).

Alternatives 6 and 8 best meet this criterion. Under Alternative 6 (Targeted ISS, Capping, and Containment), the mobility of soil COCs would be reduced via ISS treatment in the central and southern areas of OU1. Ongoing hydraulic control would also reduce the mobility of groundwater contaminants. The optimized GWWS and GWTS would continually remove and treat contaminant mass from OU1 (about 1,000 lbs of SVOCs, herbicides and VOCs per year). Alternative 8 (Targeted Excavation with Ex-Situ Thermal Treatment, Backfill of Treated Media, Capping, and Containment) would provide a significant reduction in volume, mobility and toxicity by treating excavated waste with ex-situ thermal technology. Similar to Alternatives 2, 4, and 6, it would also continue to remove and treat contaminant mass via the GWWS and GWTS.

- <u>Short Term Effectiveness</u>

This criterion addresses the effects of each alternative during construction and implementation until RAOs are met. It considers risks to the community, on-site workers and the environment, available mitigation measures and time frame for achieving the response objectives.

No short-term impacts are associated with Alternative 1 (No Further Action) since no construction is required to continue to operate and maintain the existing Interim Remedy systems. For Alternative 2 (Optimized Containment Remedy), minor short-term impacts would be associated with the re-installation of the extraction wells; however, the construction timeframe is short, and the work is generally routine and contained to a small area. More extensive construction may be required depending on potential changes to the GWWS and the need to repair the impermeable cap based on the findings of the resistivity survey; however, the construction would not involve exposing the waste below the cap.

Under Alternative 4 (Targeted Excavation with Off-Site Disposal, Backfill with Imported Fill, Capping, and Containment), high short-term exposure and safety risks would be created during the handling and transportation of a significant volume of contaminated waste to be excavated from OU1. Traffic, and air quality impacts due to the potential for contaminated soil particles becoming airborne during excavation and waste handling, could be significant and would require special mitigation measures, such as wetting (including specially formulated water/chemical additive mixes), application of sprayed foam or slurry blankets to excavated areas and stockpiles, deployment of screens and physical covers, etc. The high toxicity of the waste and debris to be excavated, the challenges with managing these wastes and materials in such a densely populated area, and the heterogeneity of the placement of waste and materials in the containment cell would all significantly contribute to the short-term risks associated with an effort to remove contaminated soil and debris from the containment cell.

Under Alternative 6 (Targeted ISS, Capping, and Containment), comparatively high short-term exposure and safety risks would be created during the disturbance of a significant volume of contaminated waste to be uncovered and mixed with ISS agents. Air quality impacts due to contaminated particles becoming airborne during mixing could be significant and would require special mitigation measures such as those described above for Alternative 4. Although large debris items would require off-site disposal, the transportation risks would be less than those associated with Alternative 4.

Alternative 8 (Targeted Excavation with Ex-Situ Thermal Treatment, Backfill of Treated Media, Capping, and Containment) would entail lower short-term exposure and safety risks than Alternative 4, because although the same volume of waste would be excavated, Alternative 8 incorporates treating the waste on-site, so a much smaller amount of waste (large debris items and phosphorus-contaminated soil) would require transportation and off-site disposal. It does however share with Alternatives 4 and 6 the risk associated with contaminated particles becoming airborne during treatment processes and would require some special mitigation measures to control migration as described for Alternative 4 above.

- <u>Implementability</u>

This criterion considers the technical and administrative feasibility of implementing each alternative, including availability of services and materials needed during construction.

Alternative 1 (No Further Action) has been proven to be implementable since it is a continuation of the already-implemented existing Interim Remedy. Alternative 2 (Optimized Containment Remedy) is readily implementable since it is a continuation of the existing Interim Remedy with upgrades that can be constructed and maintained with commonly available, standard construction techniques.

Under Alternative 4 (Targeted Excavation with Off-Site Disposal, Backfill with Imported Fill, Capping, and Containment), a significant shoring and construction dewatering effort would be required during removal of the contaminated soil, given the depth of the excavation. Continuous dewatering and water treatment would exceed the capacity of the existing GWTS, requiring alternative treatment to be provided. The logistical and permitting challenges associated with transporting a significant volume of waste to Canada would need to be managed and are expected to be complex. The components of Alternative 4 that are common with Alternative 2 (replacing extraction wells, O&M of the GWWS and GWTS, O&M of the cap system) can be constructed/maintained with commonly available, standard construction techniques. During interim remedy construction, the phosphorous-containing material within Area A was allowed to react with the atmosphere prior to its placement in the containment area, compaction, and encapsulation using clay. Excavation and disposal of this material would require careful planning and execution, especially in an area with nearby residential populations, but it could be accomplished with standard equipment.

Implementation of Alternative 6 (Targeted ISS, Capping, and Containment) is technically feasible, although challenging. The major challenges are the existing subsurface structures and debris, size of the area to be stabilized, and potential for groundwater displacement. Optimization and continued operation of the capping and containment portion of this alternative is highly implementable. Compliance with federal and Canadian regulations would be required for transporting the debris not suitable for ISS off-site for disposal. Like the buried debris, the phosphorous-containing material located in Area A is not suitable for ISS and would require excavation and disposal. This would require careful planning and execution especially in an area with nearby residential populations but could be accomplished with standard equipment. The full implementation of this alternative (regulatory approval, pre-design investigation, design, contractor procurement and construction) would require several years.

Implementation of Alternative 8 (Targeted Excavation with Ex-Situ Thermal Treatment, Backfill of Treated Media, Capping, and Containment) would need to address the same shoring and construction dewatering challenges posed by Alternative 4; however, the logistical and permitting needs for the transportation and off-site disposal would be much more manageable due to a smaller volume of waste requiring off-site disposal. Laboratory and pilot studies might also be required for Alternative 8 to establish the details of the ex-situ treatment design. Apart from mercury, ex-situ thermal treatment would not address metals present in the historic fill that was placed in the 1800s to reclaim the OU1 property from the Lower Passaic River; those would have to be controlled in perpetuity via the cap, slurry walls, floodwall, GWWS, and GWTS.

- Cost

Cost includes estimated capital and operation and maintenance costs, as well as a calculation of the present worth. The present worth is an estimate of the total cost (construction and O&M costs over a 30 year operating life) of an alternative that is then discounted based on an interest rate established by EPA guidance to represent its value in today's dollars. Cost estimates are expected to be accurate within a range of +50 to -30 percent. This is a standard assumption in accordance with EPA guidance.

The estimated capital, operation and maintenance costs, and present worth costs using a 7 percent discount rate over a period of 30 years are discussed in detail in the 2024 FS Report and are summarized below. The cost estimates are based on the best available information.

Alternative	**Estimated Cost**
1. No Further Action	$12M
2. Optimized Containment Remedy	$16M
4. Targeted Excavation, Off-site Disposal, Backfill, Capping and Containment	$132M
6. Targeted ISS, Capping, and Containment	$47M
8. Targeted Excavation, Ex-Situ Thermal Treatment, Backfill of Treated Media, Capping and Containment	$66M

- State Acceptance

The State of New Jersey concurs with EPA's selected remedy.

- Community Acceptance

"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.

On September 19, 2024, EPA held a public meeting on the Proposed Plan for the final remedy for OU1. All written and oral comments are addressed in detail in Appendix V, which is the Responsiveness Summary for this ROD.

Comments and questions received by EPA generally expressed some reservations about the remedy, asking how the final remedy complied with CERCLA and the NCP, how the remedy would be funded and its protectiveness maintained, and how EPA had considered the long-term protectiveness. Comments asked about selecting a remedy that would remove more material from OU1 for off-site management, what kind of groundwater monitoring would be performed, and potential impacts from climate change.

PRINCIPAL THREAT WASTE

The NCP establishes an expectation that the EPA will use treatment to address the principal threats posed by a site whenever 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 the migration of contamination to groundwater, surface water, or air, or act as a source for direct exposure. PTW 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 in the event that exposure should occur. The decision to treat these wastes is made on a site-specific basis through a detailed analysis of alternatives, using the remedy selection criteria described above. The manner in which PTW are addressed provides a basis for making a statutory finding that the remedy employs treatment as a principal element.

The investigations conducted at OU1 have documented highly elevated concentrations of contaminants in multiple media. Based on the toxicity and mobility characteristics described above, the following source materials present at OU1 are considered PTW:

- Free product DNAPL in groundwater based on its potential for mobility.

- Soil occurring below the water table containing hexachlorobenzene at concentrations greater than its 10^{-3} toxicity-based risk threshold (430,000 µg/kg) based on its potential for mobility and toxicity. Soil occurring below the water table containing 4,4'-DDT at concentrations greater than its 10^{-3} toxicity-based risk threshold (1,900,000 µg/kg) when in the presence of DNAPL based on its potential for mobility and toxicity.
- Soil occurring below the water table containing 2,3,7,8-TCDD in the presence of DNAPL based on its potential for mobility.

SELECTED REMEDY

Based upon considerations of the results of the 2020 Site Evaluation Report, the FS, the requirements of CERCLA, the detailed analyses of the response measures and public comments, EPA has determined that Alternative 2 is the appropriate remedy for OU1, because it best satisfies the requirements of CERCLA Section 121, 42 U.S.C. §9621, and the NCP's nine evaluation criteria for remedial alternatives, 40 CFR §300.430(e)(9).

Description of the Selected Remedy

The selected remedy for OU1 includes the following key components:

- Replacing extraction wells EW-1 through EW-6, located along the floodwall bordering the Lower Passaic River, to position the well screens more accurately in the fill layer beneath the multi-layered cap and improve their effectiveness in achieving hydraulic containment.
- Replacing existing constant head pumps in the extraction wells with variable speed pumps and controls.
- Reactivating extraction well EW-9 on the south side of OU1.
- Redesigning and replacing portions of the groundwater conveyance system, as needed.
- Upgrading the GWWS and GWTS, as needed.
- Investigating the integrity of the existing multi-layered cap via a site-wide electrical resistivity survey and performance of subsequent repairs, as needed.
- Installing additional groundwater monitoring wells, as needed, including POC wells.
- DNAPL removal, as needed.
- Maintaining the OU1 cap, the GWWS and GWTS, other engineering controls, and performing long-term site monitoring in perpetuity.
- Maintaining institutional controls as necessary to protect the integrity of the remedial components and also to protect against releases and human exposures.

The estimated present-worth cost of the selected remedy is $16,000,000.

Summary of the Rationale for the Selected Remedy

Based on the evaluation described above, remedial alternatives requiring significant excavation/disturbance of waste from the subsurface, whether for off-site disposal, ISS, or ex-situ thermal treatment, would result in significant short-term risks and implementability challenges due to the need to:

- Handle, transport, and potentially treat large volumes of highly contaminated soils (and, under Alternatives 6 and 8, the handling and off-site disposal of large debris items).
- Handle, treat, and discharge large volumes of excavation dewatering effluent that would exceed the capacity of the existing Interim Remedy GWTS and require an alternative dewatering effluent treatment system to be designed and provided (for Alternatives 4 and 8).
- Protect against releases of dust and vapors to the atmosphere that could cause exposures to workers and the surrounding community, either during excavation or in-situ soil mixing for ISS.
- Transport dioxin-contaminated waste to a Canadian waste disposal facility due to the lack of domestically available capacity.

The Optimized Containment Remedy was selected after careful evaluation of its ability to meet the nine criteria used to assess remedial actions:

- Overall Protection of Human Health and the Environment: The remedy effectively prevents exposure through containment and treatment systems.
- Compliance with ARARs: The remedy complies with federal and state cleanup standards, including those for groundwater and soil contamination, except for RCRA requirements pertaining to the placement of off-site remediation wastes in Areas A and B beneath the cap system, and construction of the containment cell, specifically, BDAT, LDRs and landfill requirements pertaining to bottom liners and leachate collection systems, which EPA is waiving under Section 121(d)(4)(B) of CERCLA.
- Long-Term Effectiveness: The containment system is designed for long-term operation and can be maintained with periodic reviews and adjustments.
- Reduction of Toxicity, Mobility, or Volume: While the selected remedy focuses on containment, it also includes treatment of contaminated groundwater, reducing the mobility of VOCs.
- Short-Term Effectiveness: The remedy presents minimal short-term risks compared to other alternatives, as it avoids large-scale excavation of highly contaminated soil that could result in contaminant release during excavation and transport.
- Implementability: The technology and materials required for the remedy are readily available, and the site conditions are suitable for the proposed containment approach.
- Cost: The estimated present-worth of the selected remedy is $16,000,000, making its costs

proportional to its overall effectiveness.

The “targeted” alternatives (Alternatives 4, 6, and 8) consist of removal and off-site disposal, ISS, or removal and ex-situ thermal treatment of soil in the central and southern areas of OU1 only, safely distant from the slurry walls and floodwall anchor structures. While Alternatives 4, 6 and 8 would provide greater long-term protectiveness and permanence than Alternatives 1 and 2, highly contaminated fill would still remain on-site/untreated below the floodwall anchor structures; therefore, these alternatives would require maintenance of the impermeable cap system, GWWS, and GWTS, Site monitoring and other features, for an indeterminate time. To varying degrees, the targeted alternatives still generate comparatively high short-term risks and implementation challenges (for example, excavation and off-site disposal of 69,000 cy of waste). The presence of significant quantities of large metal debris below the cap system in Areas A and B (e.g., the components of numerous shipping containers that were used to temporarily contain dioxin-contaminated waste prior to Interim Remedy construction and building demolition debris) also present a significant challenge to conducting soil mixing for ISS and ex-situ thermal treatment. In these cases, the cap system, parts of the GWWS, and monitoring system must also be temporarily removed to conduct the work and then reconstructed or repaired.

Based upon the information currently available, EPA believes that Alternative 2 meets the threshold criteria and provides the best balance of tradeoffs compared to the other alternatives with respect to the balancing criteria. EPA expects the remedy to satisfy the following statutory requirements of Section 121(b) of CERCLA: 1) it is protective of human health and the environment; 2) it complies with ARARs, except several ARARs for which there is a basis for waiver; 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, through treatment of contaminated groundwater. The selected remedy will be readily implementable using technologies proven to be effective at this Site. The short-term effects of the remedy include potential impacts to workers and the nearby community, but these would be mitigated using the appropriate health and safety measures.

Expected Outcomes of the Selected Remedy

Based on a detailed analysis of the alternatives, the EPA selected Alternative 2: Optimized Containment Remedy for OU1, which is designed to provide long-term protection of human health and the environment by maintaining containment of hazardous materials at OU1 and preventing further migration of contaminated groundwater into the Passaic River.

Green Remediation

EPA Region 2 Clean and Green Policy (Policy)[3] provides guidance for the implementation of green remediation for response actions in the region. The goal of the Policy is to enhance the environmental benefits of federal cleanup programs by promoting technologies and practices that are sustainable, while complying with all applicable laws and regulations. The objectives of green remediation are to: protect human health and the environment by achieving remedial action goals; support human and ecological use and reuse of remediated land; minimize impacts to water quality and water resources; reduce air emissions and greenhouse gas production; minimize material use and waste production; and conserve natural resources and energy.

This Policy establishes touchstone practices that are both quantifiable and reportable. Region 2 uses reporting requirements in enforcement instruments, grants, and contracts to collect and report metrics annually. Examples of touchstone practices that may be used during the implementation of the selected remedy are:

- Use of renewable energy, and energy conservation and efficiency approaches including EnergyStar equipment
- Cleaner fuels and clean diesel technologies and strategies
- Water conservation and efficiency approaches including WaterSense products
- Sustainable site design
- Industrial material reuse or recycling within regulatory requirements
- Recycling applications for materials generated at or removed from the site
- Environmentally Preferable Purchasing
- Greenhouse gas emission reduction technologies

STATUTORY DETERMINATIONS

As previously noted, CERCLA Section 121(b)(1), 42 U.S.C. § 9621(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), 42 U.S.C. § 9621(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), 42 U.S.C. § 9621(d)(4).

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[3] https://www.epa.gov/greenercleanups/epa-region-2-clean-and-green-policy

For the reasons discussed below, EPA has determined that the selected remedy meets the requirements of CERCLA Section 121, 42 U.S.C. §9621:

Protection of Human Health and the Environment

Alternative 2 (Optimized Containment Remedy) is protective of human health and the environment. As with the Alternative 1 (No Further Action), the maintained cap will prevent contact with site wastes and the slurry walls, floodwall, GWWS and GWTS mitigate the spread of groundwater contamination by reducing potential discharge to the Lower Passaic River and migration into the underlying sand aquifer. The inward gradients will be maintained, and the upward hydraulic gradients are expected to improve due to the extraction well re-installations, the reactivation of EW-9 and other improvements to the GWWS. Groundwater modeling suggests that Alternative 2 will achieve consistent upward hydraulic gradients throughout most of OU1. EPA anticipates that the remainder of the groundwater will ultimately be captured as it flows northward to the line of extraction wells near the floodwall.

The selected remedy meets the threshold criteria of protecting human health and the environment and compliance with ARARs, with a basis for waiver of specific ARARs based on the fact that implementing the alternatives that involve opening the cap to dispose of material off-site, or to solidify or treat it at OU1, ex-situ, will create greater risk to human health and the environment than continued on-site containment. The Optimized Containment Remedy includes components intended to address the two primary concerns regarding the performance of the current No Further Action Alternative (Alternative 1), specifically, that the Interim Remedy does not consistently maintain inward and upward hydraulic gradients within the area enclosed by the floodwall and slurry walls and underlain by the native organic silt layer (the points of compliance for OU1), and that there may be a need for additional maintenance/repair of the multi-layered cap system.

Alternative 2 avoids the short-term risks and implementability challenges associated with Alternatives 4, 6, and 8 (Targeted Excavation and Off-Site Disposal, Targeted ISS, and Targeted Excavation with Ex-Situ Thermal Treatment, respectively). The major components of Alternative 2 consist of reinstallation of six groundwater extraction wells, reactivation of an existing extraction well in the southern portion of OU1, associated upgrades to the GWWS and GWTS and site-wide investigations to check the condition and function of the cap system and make repairs, as appropriate, and long-term O&M of engineering controls and site monitoring.

Compliance with ARARs

The 1987 ROD and the 1990 Consent Decree documented that the basis for EPA's waiver of several provisions of RCRA that were identified as action-specific ARARs, concerning BDAT, LDRs and landfill requirements pertaining to bottom liners and leachate collection systems, based on the greater risk anticipated with attempted excavation of the waste for treatment or off-site disposal. Under Section 121(d)(4)(B) of CERCLA, EPA may select a remedy that does not comply with particular ARARs if compliance with such requirements would result in greater risk to human health and the environment than alternative options. In the 1987 ROD and Responsiveness Summary, EPA based its waiver of the RCRA requirements on the significant additional risks associated with excavation of the hazardous substances at OU1, including the risk resulting from airborne releases. EPA also referred to the interim nature of the remedy in the Responsiveness Summary, noting that "[t]here are no commercial facilities, either currently or in the near future, available for the treatment or disposal of dioxin-contaminated wastes." For those reasons, in 1987 EPA concluded that the only viable alternative available was to secure and contain all contaminated materials on-site until an appropriate technology became available, and that the remedy could be supplemented by additional actions in the future, if feasible.

Alternative 2 (Optimized Containment Remedy) requires the same ARAR waivers as the 1987 ROD, specifically waiver of BDAT and LDR before placement of waste (40 CFR Part 268, Subparts D and C, respectively) and standards for landfill design (40 CFR Part 264, Subpart N).

A waiver of the RCRA provisions cited above is justified under Section 121(d)(4)(B), as in 1987. The basis for waiving the requirements is to avoid the construction-related exposure risks associated with excavation of the dioxin-contaminated soils and wastes, due to the elevated on-site concentrations and significant toxicity of dioxin. Excavating the waste for off-site disposal would entail transport of contaminated soil and there would be a risk of a transportation incident. Conducting in-situ solidification or ex-situ thermal treatment would require on-site handling of contaminated soil for an extended period, prior to replacement of treated soil on-site. While EPA would require state-of-the-art controls to reduce the potential for exposure to contaminants during remedial construction, the Ironbound neighborhood is a densely populated area of Newark, NJ, and exposure risks must be considered while evaluating the potential effectiveness of Alternatives 4, 6, and 8. In addition, even with the removal and treatment opportunities afforded by these alternatives, highly contaminated waste would still remain on-site beneath the floodwall tiebacks and anchors. In addition, disposal options remain extremely limited.

Cost-Effectiveness

A cost-effective remedy is one in which costs are proportional to its overall effectiveness (40 C.F.R. § 300.430(f)(1)(ii)(D)). Overall effectiveness is based on the evaluations of long-term effectiveness and permanence, reduction in toxicity, mobility, and volume through treatment, and short-term effectiveness. Overall effectiveness was evaluated by assessing three of the five balancing criteria in combination (long-term effectiveness and permanence; reduction in toxicity, mobility, and volume through treatment; and short-term effectiveness). Overall effectiveness was then compared to costs to determine cost-effectiveness.

Each of the alternatives underwent a detailed cost analysis. In that analysis, capital and operation and maintenance costs were estimated and used to develop present-worth costs. In the present-worth cost analysis, operation and maintenance costs were calculated for the estimated life of each alternative. The total estimated present worth cost for implementing the selected remedy is $16,000,000.

Based on the comparison of overall effectiveness to cost, the selected remedy meets the statutory requirement that Superfund remedies be cost effective (40 C.F.R. § 300.430(f)(1)(ii)(D)) in that it represents reasonable value for the money to be spent. A 30-year timeframe was used for planning and estimating purposes to remediate groundwater, although remediation timeframes could exceed this estimate.

Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

The selected remedy utilizes permanent solutions and treatment technologies to the maximum extent practicable. The selected remedy provides the best balance of trade-offs among the alternatives with respect to the evaluation criteria with respect to the balancing criteria set forth in Section 300.430(f)(1)(i)(B) of the NCP and represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at OU1. Ongoing O&M activities of the cap, GWWS, and GWTS will maintain the long-term effectiveness and permanence of the remedy by preventing contact with the waste and reducing the migration of groundwater contamination.

Preference for Treatment as a Principal Element

CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous substances as a principal element. The manufacturing operations at OU1 generated RCRA-listed dioxin wastes, as well as other wastes subject to multiple RCRA requirements relating to treatment and disposal. Consistent with the 1987 ROD EPA is invoking the waiver under CERCLA Section 121(d)(4)(B) to waive the RCRA requirements associated with treatment for listed waste, that is, the LDRs and BDAT. The manufacturing operations that occurred at 80 Lister Avenue generated dioxin wastes subject to LDRs that require that the threat posed by the waste must be fundamentally changed by treatment to identified standards prior to disposal in a domestic landfill, as well as other wastes subject to multiple RCRA requirements relating to treatment and disposal. Because of the risk associated with excavation and on-site treatment and because some of the material could not safely be excavated and some of the debris would not be amenable to treatment, it is not practicable to treat the hazardous substances, pollutants or contaminants contained at OU1. Since the groundwater is being treated, the selected remedy partially meets the statutory preference for treatment.

Five-Year Review Requirements

This final remedy will result in hazardous substances remaining on-site above health-based levels that allow for unlimited use and unrestricted exposure. Because of this, a review of the final remedial action pursuant to CERCLA Section 121(c), 42 U.S.C. §9621(c), will be conducted every five years in perpetuity to ensure that the remedy continues to provide adequate protection to human health and the environment.

DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for OU1 was released on September 10, 2024. The Proposed Plan identified Alternative 2 as the preferred alternative and solicited public comment. EPA reviewed all written (including electronic formats such as e-mail) and verbal comments received during the public comment period and has determined that no significant changes to the remedy, as originally proposed in the Proposed Plan, are necessary or appropriate.

There are no significant changes from the preferred alternative presented in the Proposed Plan.

<u>APPENDIX I</u>

FIGURES

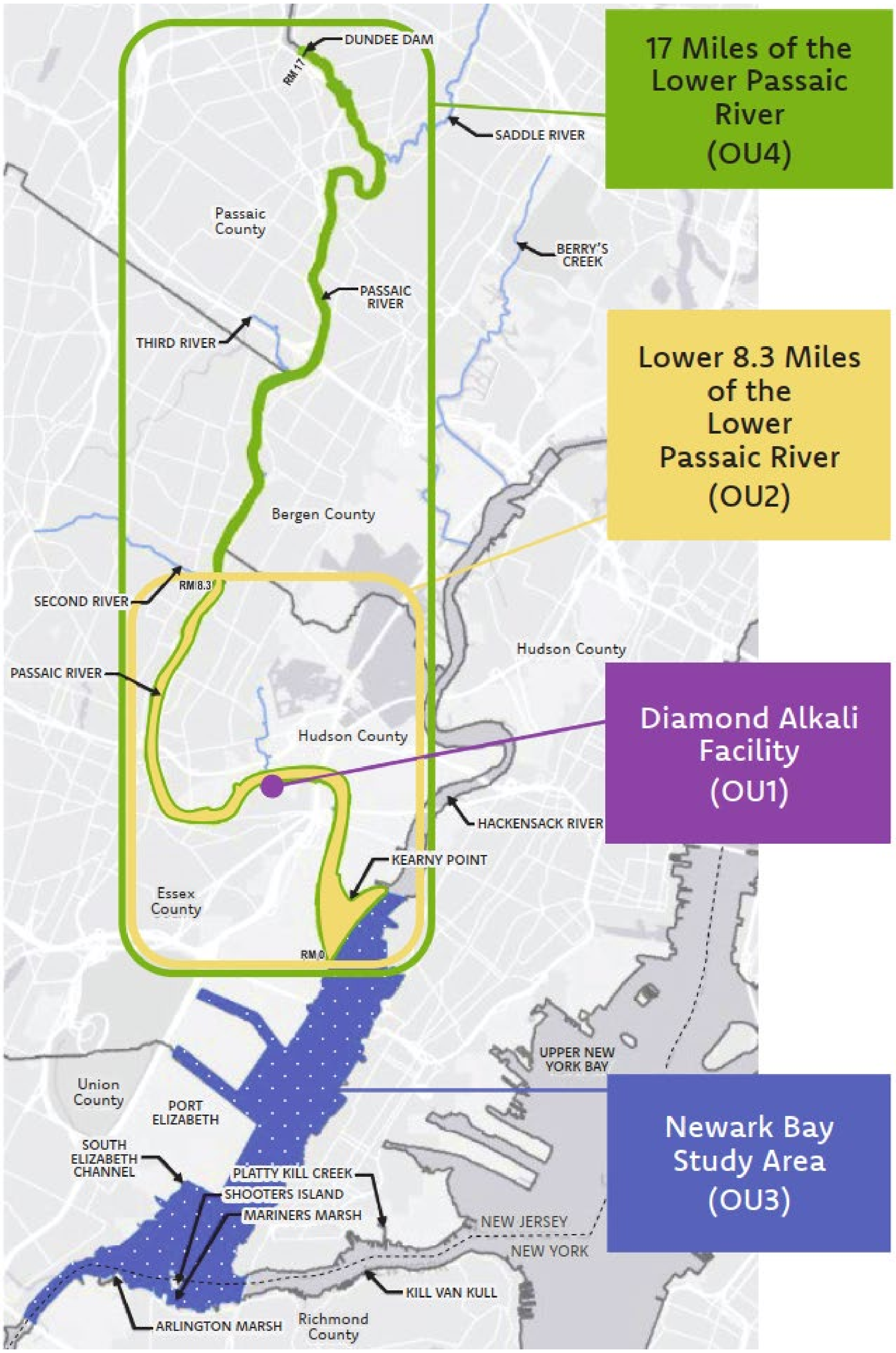


Figure 1
Map of Diamond Alkali Superfund Site Operable Units
Record of Decision
80 and 120 Lister Avenue, Newark, NJ
Diamond Alkali OU1

Figure 2
OU1 Location
Record of Decision
80 and 120 Lister Avenue, Newark, NJ
Diamond Alkali OU1

Figure 3
Current Land Use
Record of Decision
80 and 120 Lister Avenue, Newark, NJ
Diamond Alkali OU1

Figure 4
Adjacent Properties
Record of Decision
80 and 120 Lister Avenue, Newark, NJ
Diamond Alkali OU1

Existing Land Use	Acreage	Percentage of City
Vacant Land	604.9	5.0%
Residential (1-4 units)	2,278.7	18.8%
Commercial/Mixed Use	1,283.3	10.6%
Industrial	1,345.8	11.1%
Apartments (5+ units)	292.8	2.4%
Railroad	815.4	6.7%
Public Schools	380.3	3.1%
Other Schools	51.9	0.4%
Public Property	3,906.3	32.3%
Church and Charitable	270.4	2.2%
Cemetery	303.9	2.5%
Other Tax-exempt Property	567.7	4.7%

Figure 5
Existing Land Use
Record of Decision
80 and 120 Lister Avenue, Newark, NJ
Diamond Alkali OU1

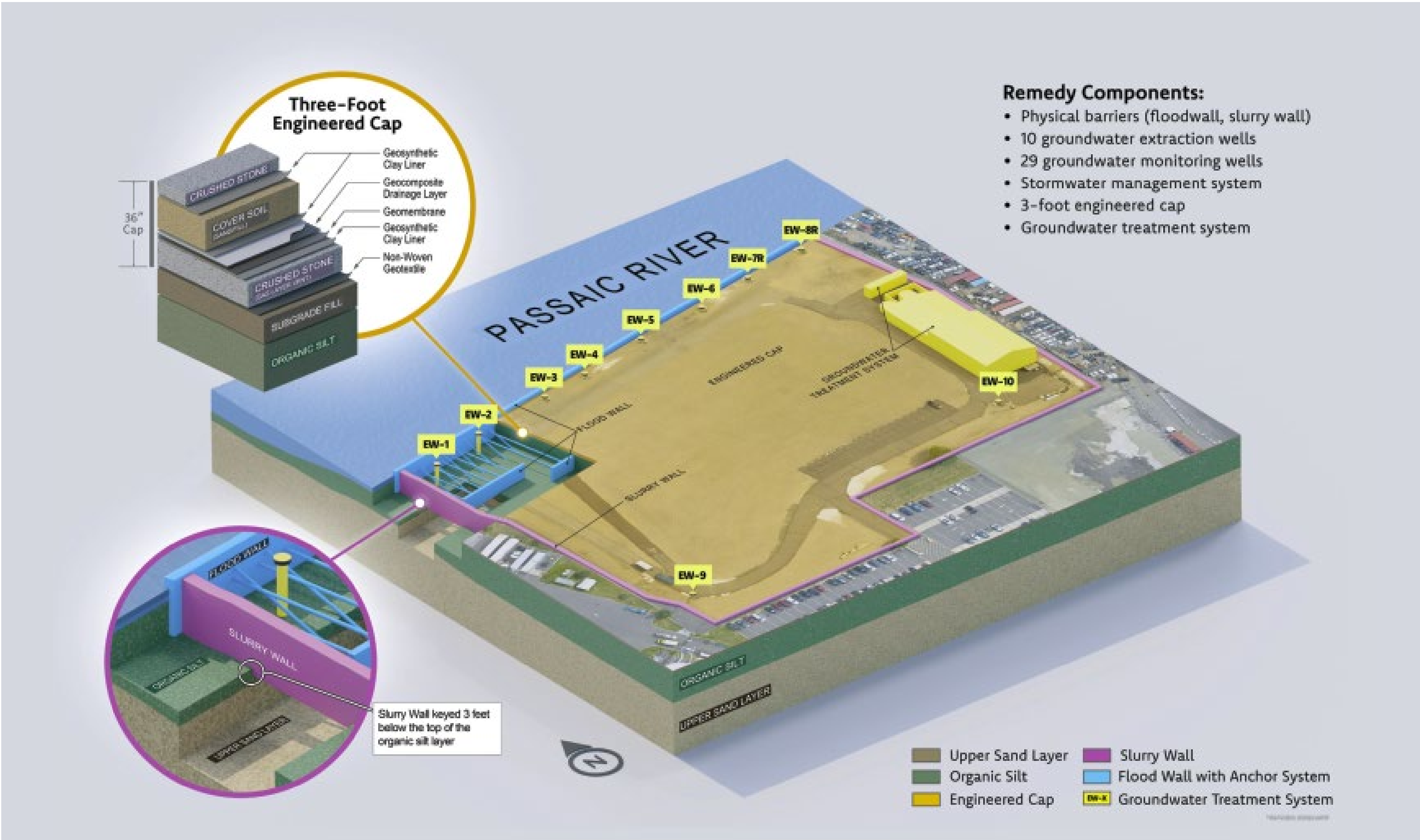


Figure 6
In-Place Interim Remedy
Record of Decision
80 and 120 Lister Avenue, Newark, NJ
Diamond Alkali OU1

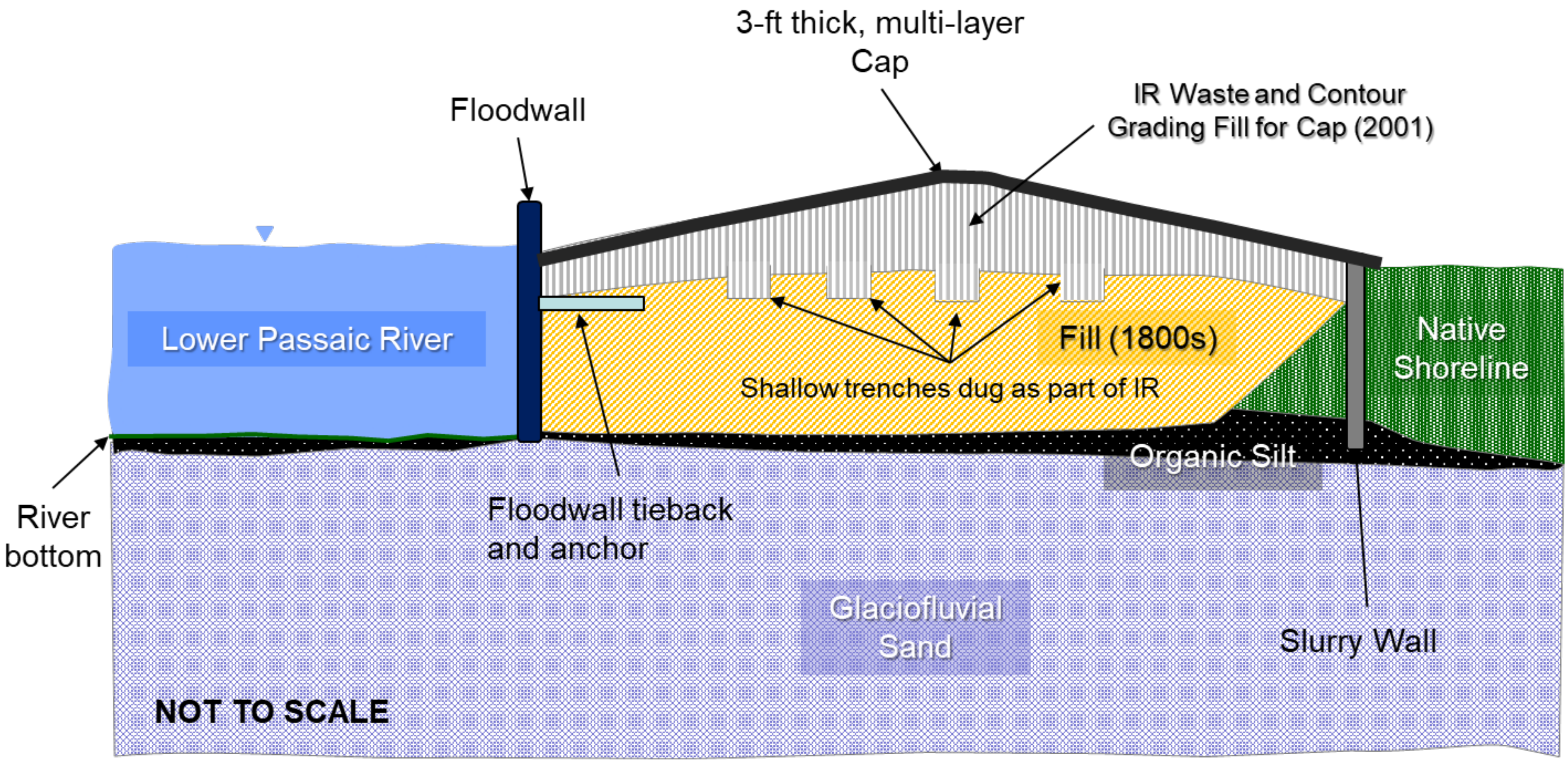


Figure 7
OU1 Cross-Section
Record of Decision
80 and 120 Lister Avenue, Newark, NJ
Diamond Alkali OU1

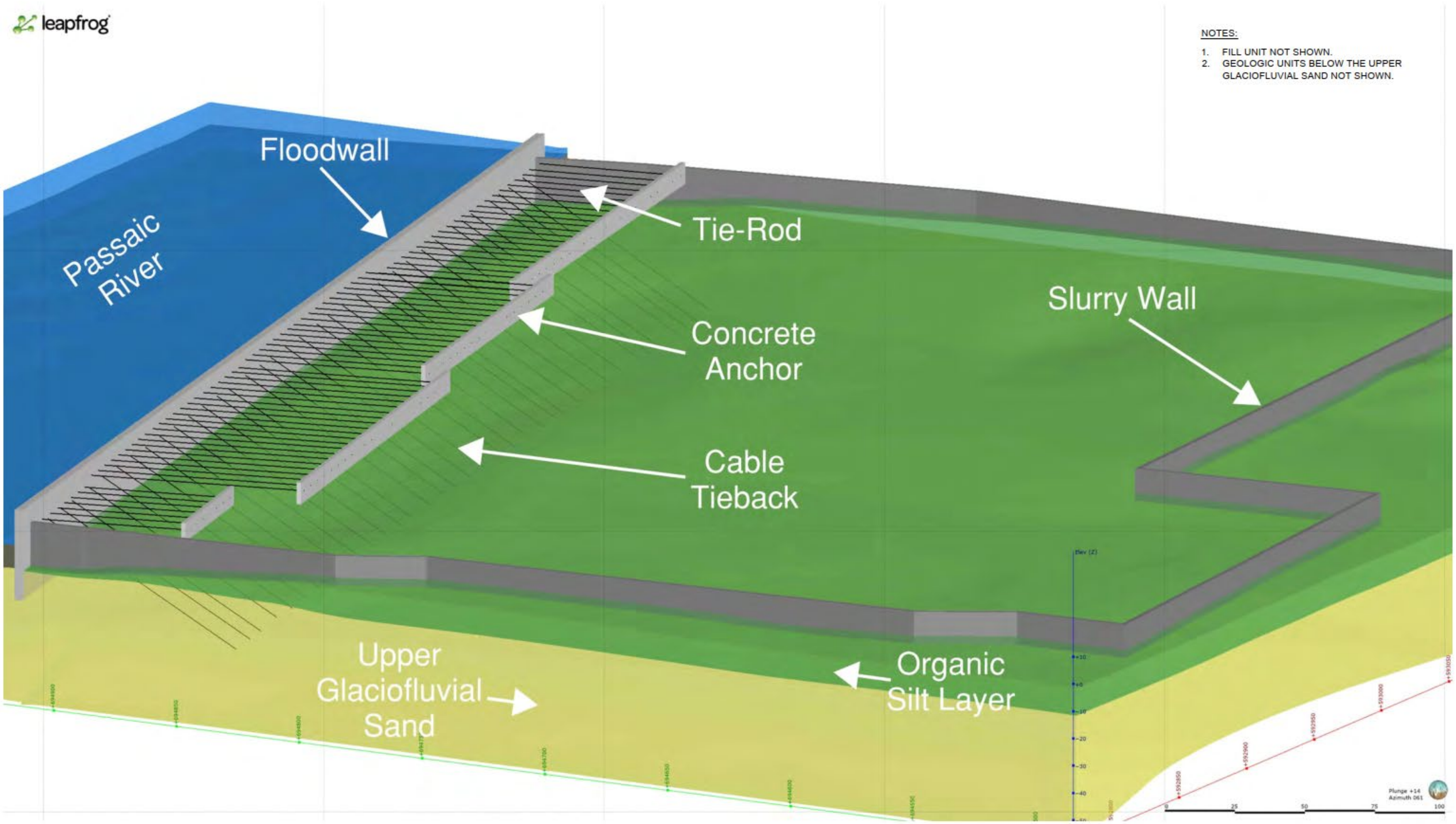
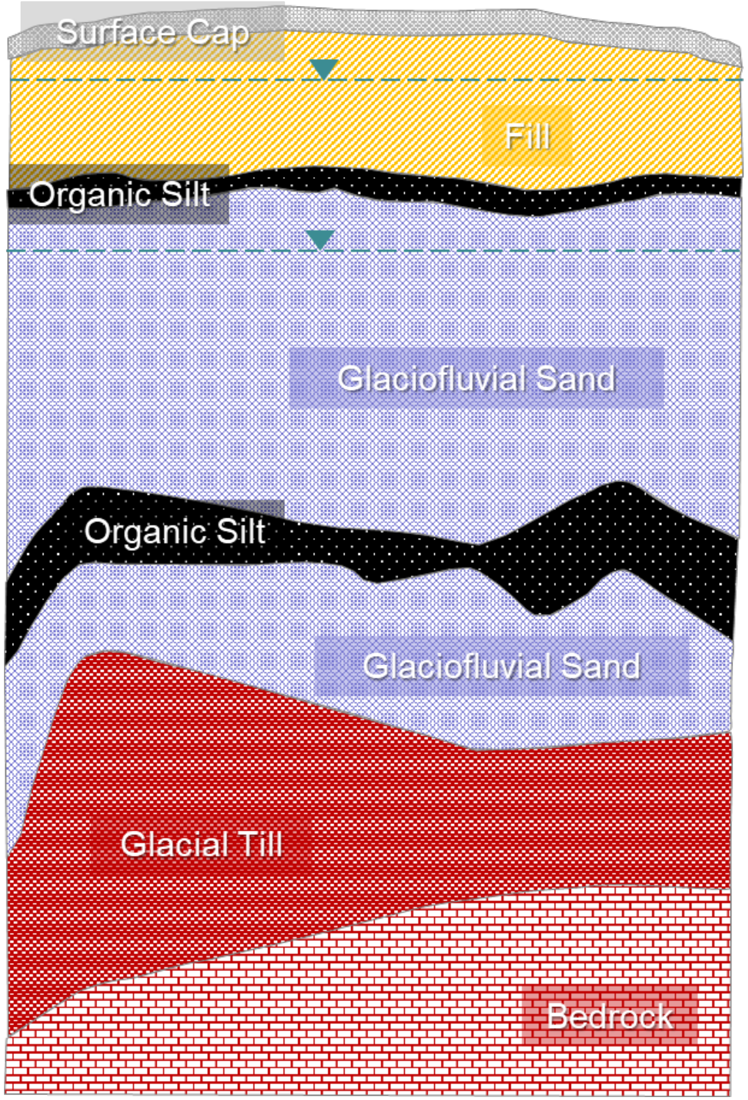


Figure 8
Slurry and Flood Walls
Record of Decision
80 and 120 Lister Avenue, Newark, NJ
Diamond Alkali OU1



Surface Cap: Impermeable layer to prevent surface water infiltration and solids transport.

Fill: Non-indigenous fill, placed with its top elevation consistent with the pre-remediation site elevation.

Organic Silt: Native layer comprising native wetland and river bottom sediments, which is continuous beneath the property, with its thickness generally decreasing from south to north.

Glaciofluvial Sand: Deposits consisting of sand, silty sands, and silty gravels, with minor interbedded silt and clay, gravel, and sandy gravel.

Groundwater occurs in both the fill and glaciofluvial sand layer below the highest organic silt layer with a dominant flow direction north toward the Passaic River.

Figure 9
Description of Interim Remedy Geology and Hydrogeology
Record of Decision
80 and 120 Lister Avenue, Newark, NJ
Diamond Alkali OU1

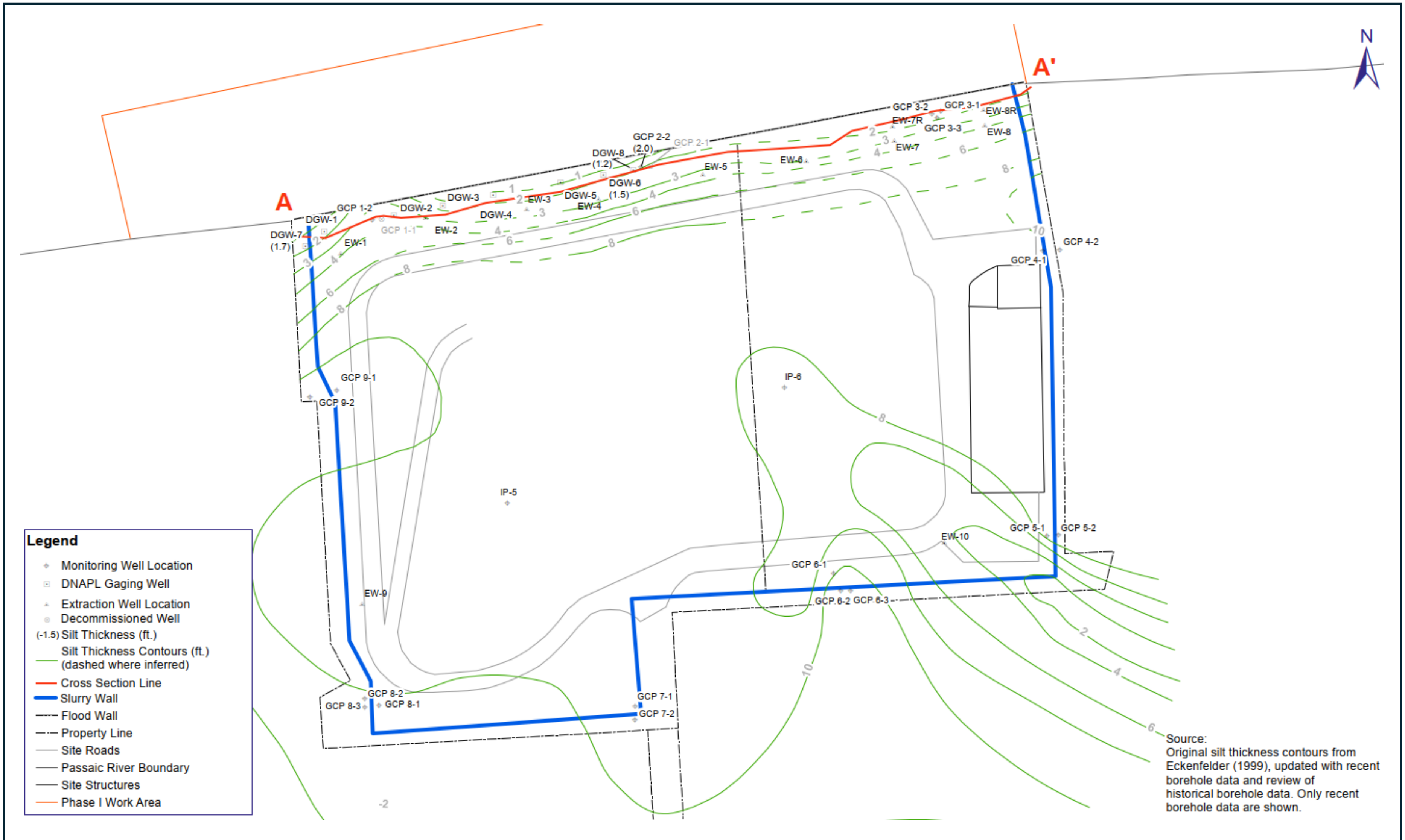


Figure 10
Organic Silt Layer Thickness Contour
Record of Decision
80 and 120 Lister Avenue, Newark, NJ
Diamond Alkali OU1

Figure Source: FS Figure 1-8

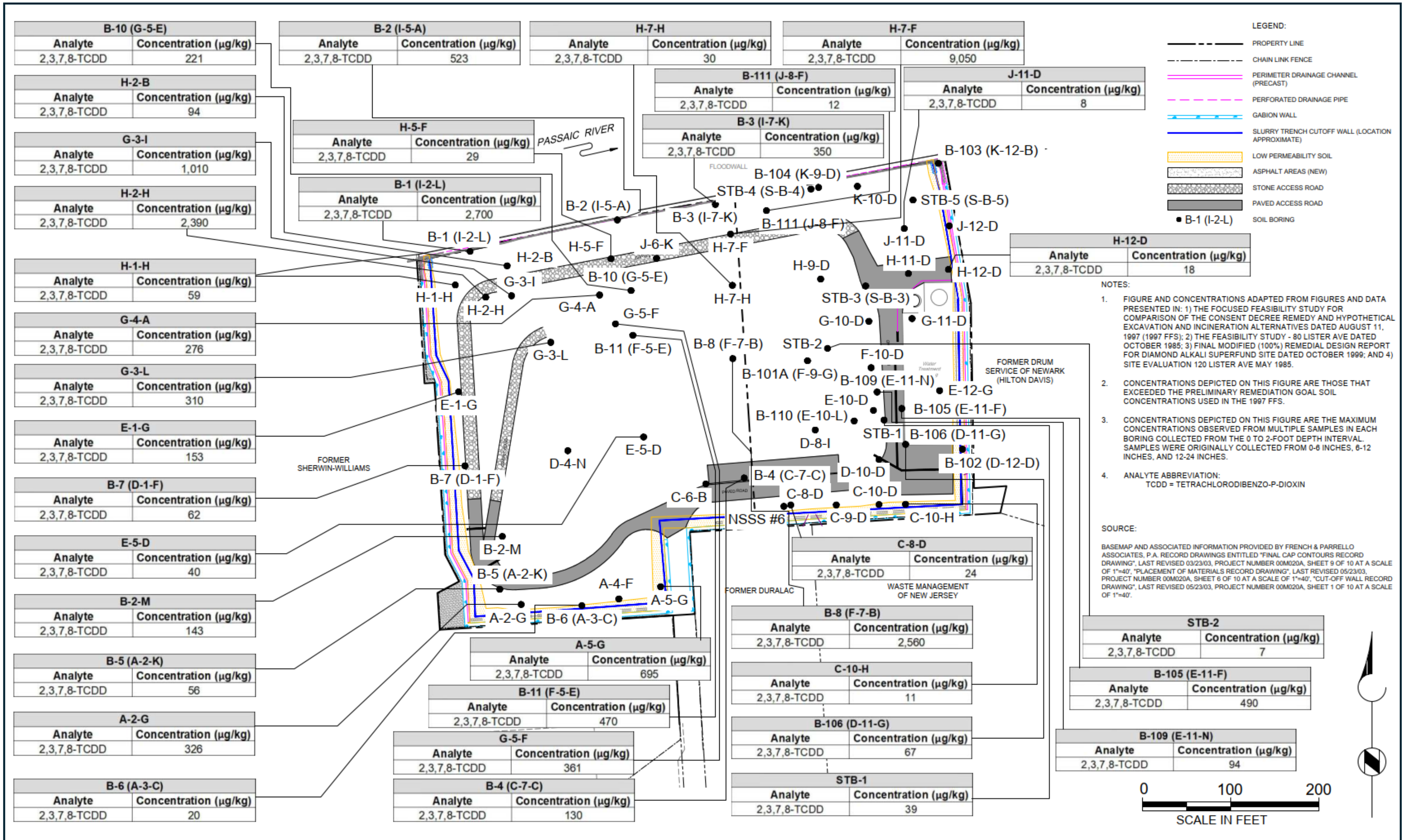


Figure 11
Pre-Interim Remedy Soil Concentrations of TCDD
0 to 2 feet bgs
Record of Decision
80 and 120 Lister Avenue, Newark, NJ
Diamond Alkali OU1

Figure Source: FS Figure 1-54

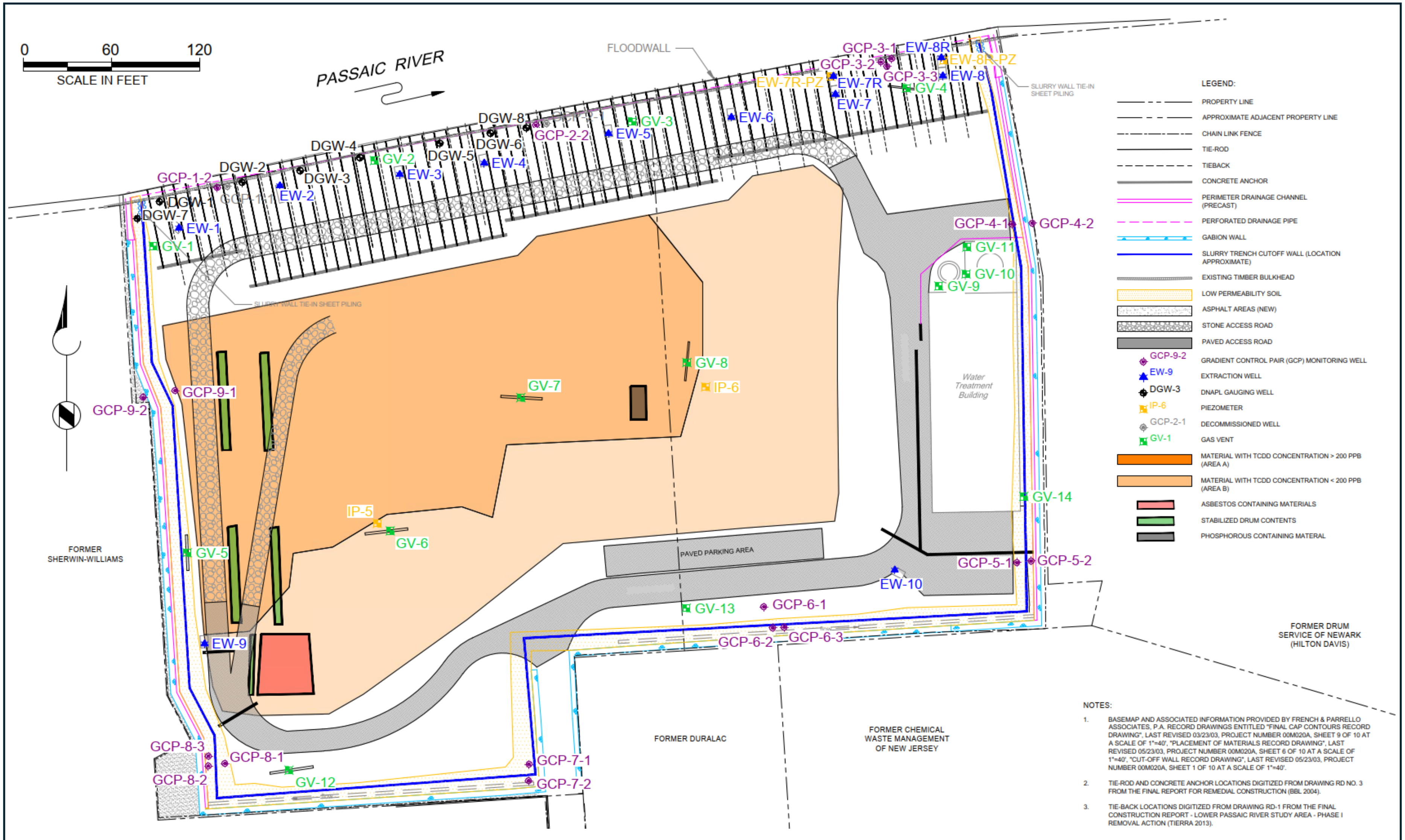


Figure 12
Areas A and B and
Floodwall Anchorage Structures
Record of Decision
80 and 120 Lister Avenue, Newark, NJ
Diamond Alkali OU1

Figure Source: FS Figure 1-12

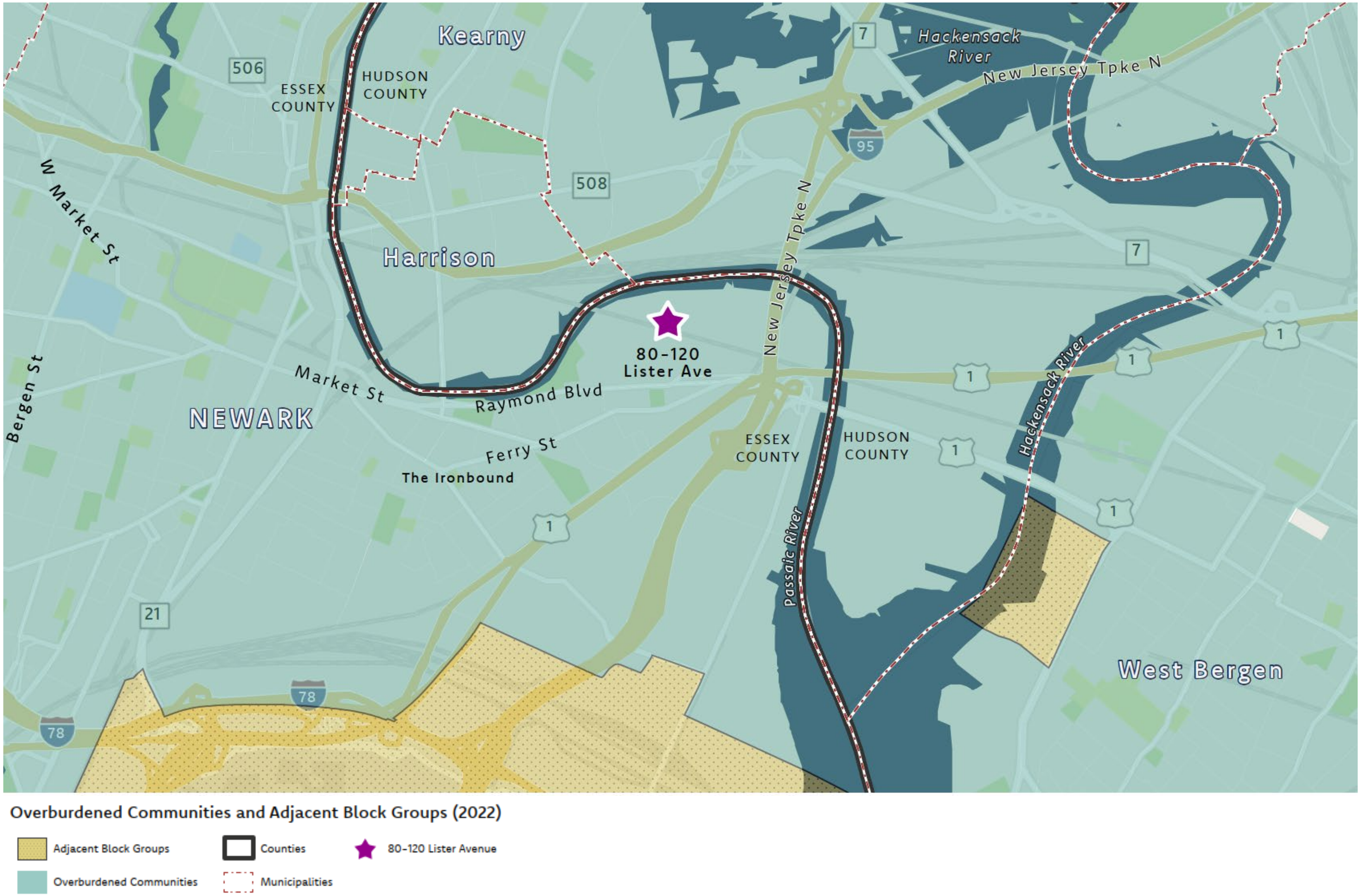
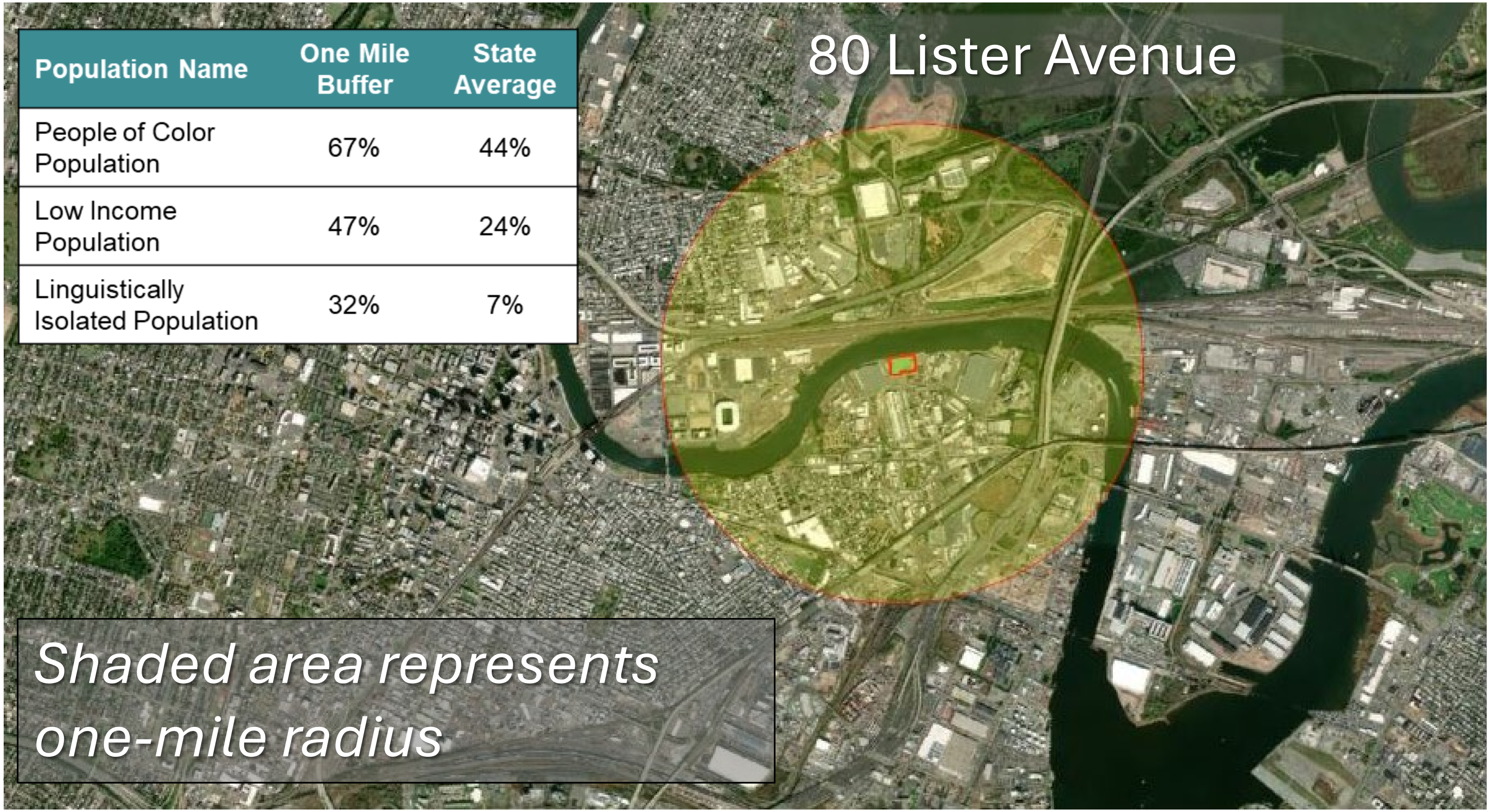


Figure 13
Overburdened Communities
Record of Decision
80 and 120 Lister Avenue, Newark, NJ
Diamond Alkali OU1



Population Name	One Mile Buffer	State Average
People of Color Population	67%	44%
Low Income Population	47%	24%
Linguistically Isolated Population	32%	7%

Figure 14
Project Vicinity Demographics
Record of Decision
80 and 120 Lister Avenue, Newark, NJ
Diamond Alkali OU1

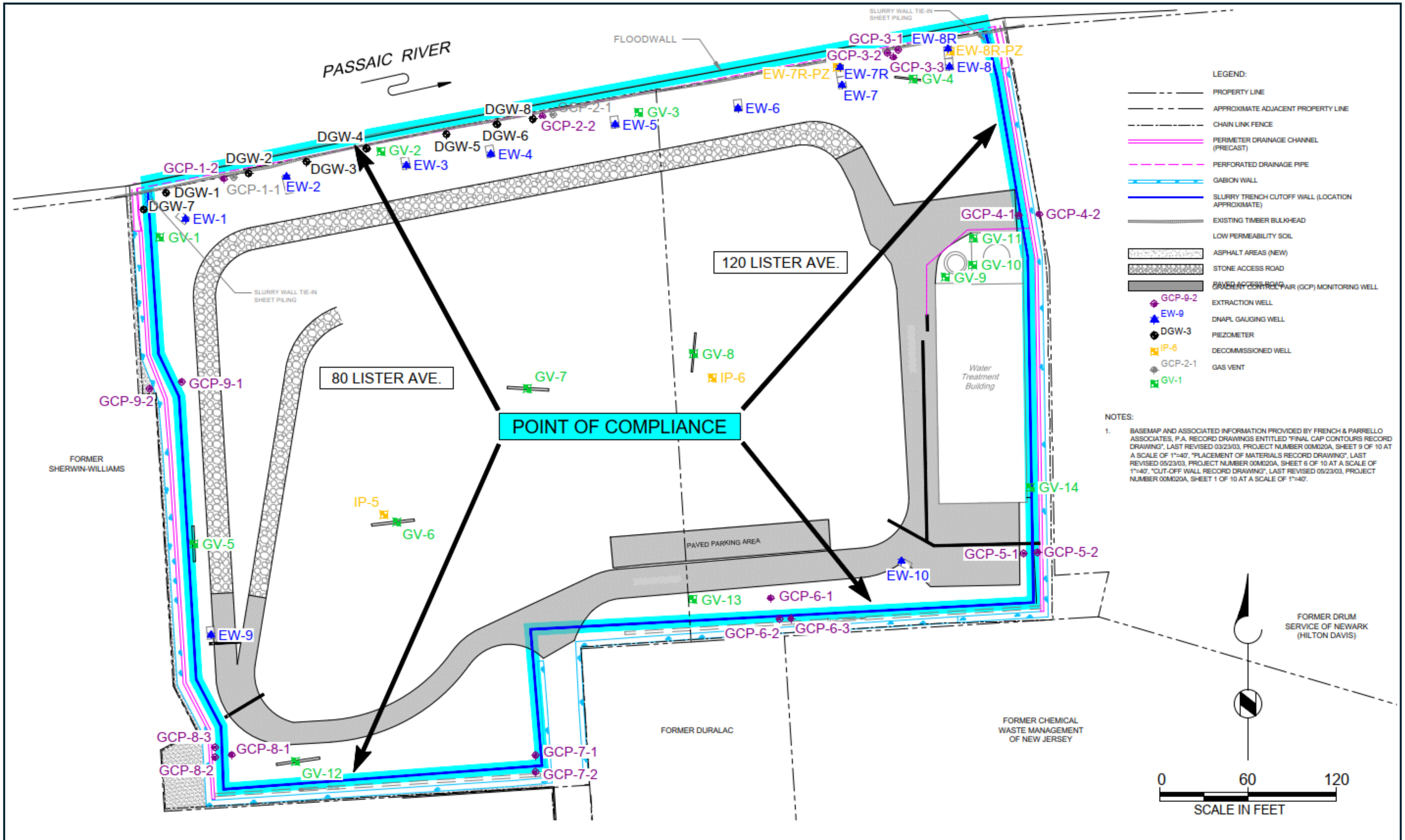


Figure 15
Point of Compliance – Plan View
Record of Decision
80 and 120 Lister Avenue, Newark, NJ
Diamond Alkali OU1

Figure Source: FS Figure 4-1

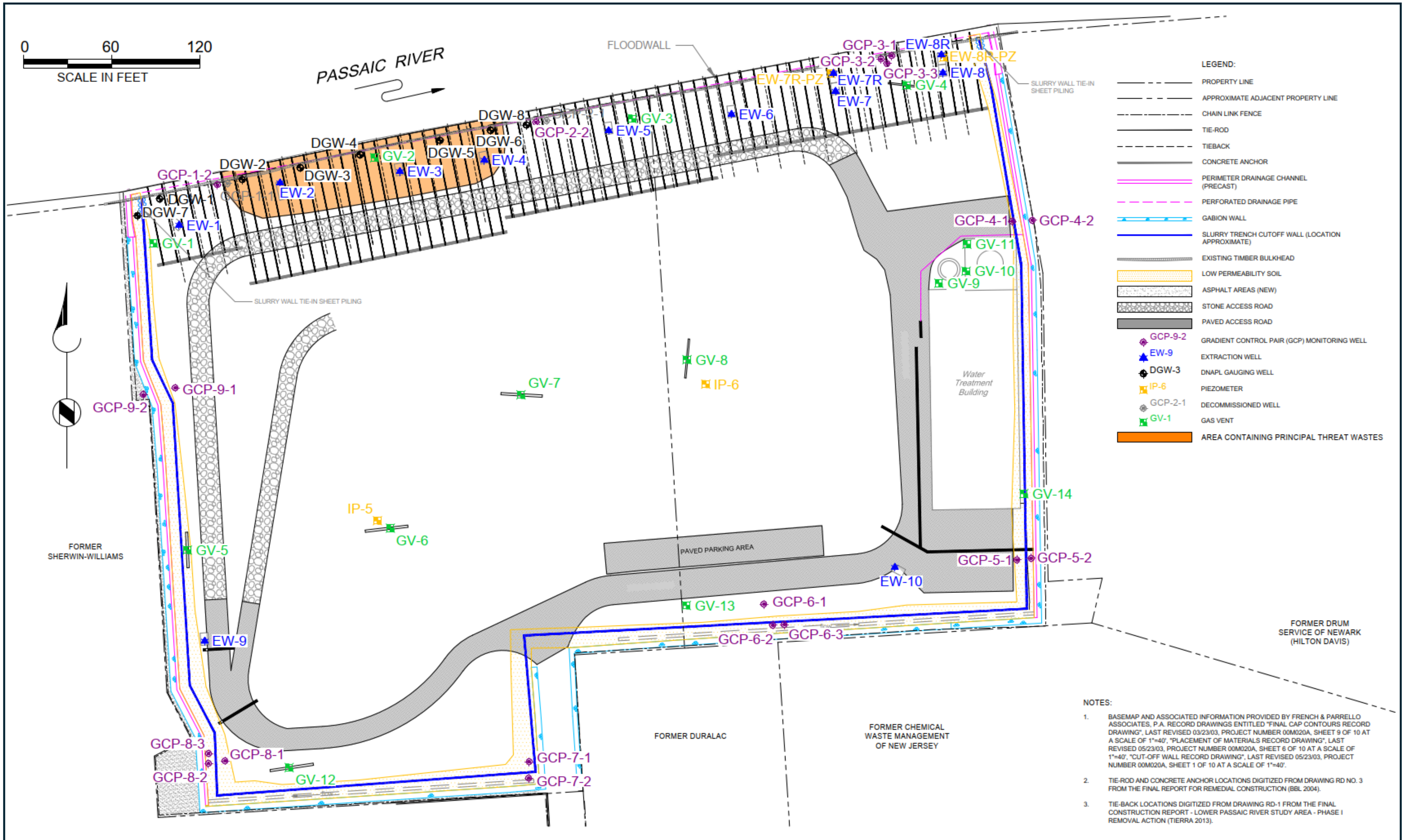


Figure 16
Area Containing Principal Threat Waste
Record of Decision
80 and 120 Lister Avenue, Newark, NJ
Diamond Alkali OU1

Figure Source: FS Figure 1-65

APPENDIX II

TABLES

Table 1. December 2023 Groundwater Quality Results

Parameters	Units	*Practical Quantitation Limit	**Project Action Limit	DGW-2 12/7/2023 Groundwater	DGW-2 (Dup) 12/7/2023 Groundwater	DGW-6 12/7/2023 Groundwater	DGW-7 12/7/2023 Groundwater	DGW-8 12/7/2023 Groundwater	GCP-1-2 12/7/2023 Groundwater	GCP-2-2 12/6/2023 Groundwater	GCP-3-2 12/8/2023 Groundwater
Dioxin Furans											
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/L	50		113000 J	142000 J	27600	48.6 J	300	24700	43400 J	107
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/L	50		2020	2560	8520	7.27 J	37.6 J	429	2590	9.89 J
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/L	25		70800 J	82200 J	5870	28.4 J	166	13800	58400 J	66.2
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/L	25		840	1000	515	49.5 U	4.28 J	159	333	51 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/L	25		3470	3700	207	49.5 U	4.27 J	572	2070	4.12 J
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/L	25		30900 J	34300 J	1130	13.3 J	42.1 J	5300	11800	23.7 J
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/L	25		161	164	89.4	49.5 U	50.5 U	26.4 J	22.7 J	51 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/L	25		5440	6010	408	1.94 J	13.9 J	991	5580	2.78 J
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/L	25		232	257	171	49.5 U	50.5 U	36.6 J	54.1 J	51 U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/L	25		55.6 U	49.7 U	48.5 U	49.5 U	50.5 U	49 U	50.6 U	51 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/L	25		100	112	86.9	49.5 U	50.5 U	16.3 J	26.5 J	51 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/L	25		793	855	69	49.5 U	3.3 J	123	432	51 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/L	25		213	230	120	49.5 U	2.19 J	26 J	15.9 J	51 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/L	25		2230	2530	114	2 J	4.47 J	371	1180	51 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/L	25		5400	5790	138	49.5 U	5.39 J	836	643	3.69 J
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/L	10		405	476	183	9.9 U	10.1 U	97.1	196	10.2 U
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/L	10	0.2	**12300 J**	**14200 J**	**44000 J**	7.16 J	**619**	**151**	**9300 J**	**28.4**
Total heptachlorodibenzofuran (HpCDF)	pg/L			84300 J	97400 J	7260 J	32 J	193 J	16600 J	72900 J	76.9 J
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/L			2320 J	2720 J	888 J	49.5 UJ	7.46 J	430 J	705 J	2.5 J
Total hexachlorodibenzofuran (HxCDF)	pg/L			62300 J	69600 J	4320 J	20.6 J	115 J	10600 J	48300 J	38.1 J
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/L			4100 J	4500 J	1380 J	49.5 UJ	50.5 UJ	677 J	464 J	2.89 J
Total pentachlorodibenzofuran (PeCDF)	pg/L			37500 J	39600 J	8070 J	49.5 UJ	298 J	5500 J	17400 J	22.6 J
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/L			5070 J	5560 J	1260 J	49.5 UJ	9.39 J	790 J	282 J	51 UJ
Total tetrachlorodibenzofuran (TCDF)	pg/L			29000 J	31000 J	13100 J	4.17 J	1420 J	5030 J	12100 J	29.4 J
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/L			19100 J	21100 J	48200 J	7.16 J	676 J	1220 J	10500 J	28.4 J
General Chemistry											
Conductivity, field	mS/cm			0.373	0.373	3.45	22.3	1.63	1.92	1.74	2.23
Dissolved oxygen (DO), field	mg/L			1.31	1.31	0	0.41	0.48	0	0.25	0
Oxidation reduction potential (ORP), field	millivolts			-210	-210	-119	-87	-85	-96	-70	-128
pH, field	s.u.			7.85	7.85	6.62	6.87	7.27	6.28	6.72	7.32
Temperature, ambient	Deg C			2.222	2.222	2.222	1.666	0.555	1.666	7.777	8.888
Temperature, sample	Deg C			14.92	14.92	14.76	11.96	13.49	14.11	10.26	15
Turbidity, field	NTU			11.6	11.6	60.2	11.7	13.1	15.8	67.4	2.1

Table 1. December 2023 Groundwater Quality Results

Parameters	Units	*Practical Quantitation Limit	**Project Action Limit	DGW-2 12/7/2023 Groundwater	DGW-2 (Dup) 12/7/2023 Groundwater	DGW-6 12/7/2023 Groundwater	DGW-7 12/7/2023 Groundwater	DGW-8 12/7/2023 Groundwater	GCP-1-2 12/7/2023 Groundwater	GCP-2-2 12/6/2023 Groundwater	GCP-3-2 12/8/2023 Groundwater
Metals											
Antimony	ug/L	2	6	2.0 U	2.0 U	**9.8**	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Arsenic	ug/L	1	0.02	**2.7**	**2.8**	**66.6**	**4.4**	1.0 U	**2.9**	1	**84.7**
Beryllium	ug/L	1	1	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Cadmium	ug/L	1	4	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chromium	ug/L	4	70	4.0 U	4.0 U	16.9	4.0 U	4.0 U	4.0 U	4.0 U	4.6
Copper	ug/L	4	1300	4.0 U	4.0 U	20.4	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Lead	ug/L	1	5	0.79	0.85	**216**	0.50 U	0.50 U	0.50 U	0.77	0.54
Mercury	ug/L	0.2	2	0.20 U	0.20 U	**11.1**	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel	ug/L	4	100	4.0 U	4.0 U	4.6	4.5	4.0 U	4.0 U	4.0 U	4.0 U
Silver	ug/L	2	40	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Zinc	ug/L	10	2000	10 U	10 U	32.4	10 U	10 U	10 U	10 U	10 U
Volatile Organic Compounds											
1,1,1-Trichloroethane	ug/L	1	30	1.0 U	1.0 U	20 U	250 U	1.0 U	200 U	25 U	4.0 U
1,1-Dichloroethane	ug/L	1	50	1.0 U	1.0 U	20 U	250 U	1.3	200 U	25 U	4.0 U
1,2,4-Trichlorobenzene	ug/L	2	9	**25.5**	**24.3**	40 U	500 U	2.0 U	**219 J**	50 U	8.0 U
1,2-Dichlorobenzene	ug/L	1	600	38.6	39.8	27.6	245 J	2	**968**	25 U	4.0 U
1,2-Dichloroethane	ug/L	1	0.3	1.0 U	1.0 U	20 U	250 U	**12.4**	200 U	25 U	4.0 U
1,3-Dichlorobenzene	ug/L	1	600	18.6	19.5	19.2 J	250 U	0.80 J	109 J	25 U	5.6
1,4-Dichlorobenzene	ug/L	1	75	55.4	59.1	**144**	**686**	6.6	**2800**	52.7	56.3
Benzene	ug/L	1	0.2	**3.7**	**3.6**	**3830**	**1720**	**1.1**	**2780**	**148**	**13.7**
Chlorobenzene	ug/L	1	50	**372**	**379**	**5250**	**58800**	26.7	**32700**	**3570**	**946**
Chloroform (Trichloromethane)	ug/L	1	70	11	11.3	20 U	250 U	1.0 U	200 U	25 U	4.0 U
cis-1,2-Dichloroethene	ug/L	1	70	16.9	16.6	20 U	250 U	**70.7**	200 U	25 U	4.0 U
Ethylbenzene	ug/L	1	700	9.3	9.6	20 U	250 U	1.0 U	200 U	25 U	4.0 U
Toluene	ug/L	1	600	16.6	17.2	**1810**	250 U	3.6	**2790**	25 U	4.0 U
trans-1,2-Dichloroethene	ug/L	1	100	0.73 J	0.60 J	20 U	250 U	7.1	200 U	25 U	4.0 U
Trichloroethene	ug/L	1	1	**3.7**	**3.9**	20 U	250 U	**194**	200 U	25 U	4.0 U
Vinyl chloride	ug/L	1	0.08	**1.2**	1	20 U	250 U	**3.4**	200 U	25 U	4.0 U

Table 1. December 2023 Groundwater Quality Results

Parameters	Units	*Practical Quantitation Limit	**Project Action Limit	GCP-3-3 12/8/2023 Groundwater	GCP-4-1 12/4/2023 Groundwater	GCP-4-2 12/4/2023 Groundwater	GCP-5-1 12/4/2023 Groundwater	GCP-5-2 12/4/2023 Groundwater	GCP-6-1 12/4/2023 Groundwater	GCP-6-2 12/4/2023 Groundwater	GCP-6-3 12/5/2023 Groundwater
Dioxin Furans											
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/L	50		213	37.8 J	38.1 J	22.8 J	52.6 J	60.1 J	174	30 J
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/L	50		35.2 J	98.4 U	100 U	102 U	31.7 J	99 U	19.4 J	99.5 U
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/L	25		134	22.1 J	21.6 J	14.8 J	26.3 J	27.4 J	126	23.5 J
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/L	25		4.99 J	49.2 U	50 U	50.8 U	50 U	49.5 U	50.4 U	49.7 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/L	25		4.59 J	49.2 U	50 U	50.8 U	50 U	49.5 U	50.4 U	49.7 U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/L	25		42.7 J	7.9 J	50 U	50.8 U	8.75 J	11.8 J	36 J	49.7 U
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/L	25		49.5 U	49.2 U	50 U	50.8 U	50 U	49.5 U	50.4 U	49.7 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/L	25		8.26 J	49.2 U	50 U	50.8 U	50 U	49.5 U	50.4 U	49.7 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/L	25		49.5 U	49.2 U	50 U	50.8 U	50 U	49.5 U	50.4 U	49.7 U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/L	25		49.5 U	49.2 U	50 U	50.8 U	50 U	49.5 U	50.4 U	49.7 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/L	25		49.5 U	49.2 U	50 U	50.8 U	50 U	49.5 U	50.4 U	49.7 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/L	25		2.14 J	49.2 U	50 U	50.8 U	50 U	49.5 U	50.4 U	49.7 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/L	25		49.5 U	49.2 U	50 U	50.8 U	50 U	49.5 U	50.4 U	49.7 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/L	25		3.2 J	49.2 U	50 U	50.8 U	50 U	49.5 U	50.4 U	49.7 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/L	25		8.31 J	49.2 U	50 U	50.8 U	50 U	49.5 U	50.4 U	49.7 U
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/L	10		9.91 U	9.84 U	10 U	10.2 U	10 U	9.9 U	10.1 U	9.95 U
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/L	10	0.2	**67.9**	**75.3**	**24.8 J**	10.2 U	**14.1**	9.9 U	**64.1**	9.95 U
Total heptachlorodibenzofuran (HpCDF)	pg/L			155 J	22.1 J	21.6 J	14.8 J	26.3 J	27.4 J	126 J	23.5 J
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/L			9.96 J	49.2 UJ	50 UJ	50.8 UJ	50 UJ	49.5 UJ	50.4 UJ	49.7 UJ
Total hexachlorodibenzofuran (HxCDF)	pg/L			92.3 J	7.9 J	50 UJ	50.8 UJ	16.1 J	11.8 J	57.8 J	49.7 UJ
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/L			49.5 UJ	49.2 UJ	50 UJ	50.8 UJ	50 UJ	49.5 UJ	50.4 UJ	49.7 UJ
Total pentachlorodibenzofuran (PeCDF)	pg/L			77.7 J	26.1 J	50 UJ	50.8 UJ	50 UJ	49.5 UJ	51 J	49.7 UJ
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/L			49.5 UJ	49.2 UJ	50 UJ	50.8 UJ	50 UJ	49.5 UJ	50.4 UJ	49.7 UJ
Total tetrachlorodibenzofuran (TCDF)	pg/L			152 J	175 J	98.5 J	12.4 J	27.4 J	9.9 UJ	56.7 J	9.95 UJ
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/L			111 J	75.3 J	24.8 J	10.2 UJ	14.1 J	9.9 UJ	64.1 J	9.95 UJ
General Chemistry											
Conductivity, field	mS/cm			0.349	0.514	0.15	0.288	0.107	0.762	1.26	0.714
Dissolved oxygen (DO), field	mg/L			0.33	1.53	1.54	2.66	0	6.4	0.14	3.48
Oxidation reduction potential (ORP), field	millivolts			-223	-140	-2	-123	-166	-297	-205	-292
pH, field	s.u.			8.18	7.44	7.71	7.33	9.24	6.83	7.09	6.21
Temperature, ambient	Deg C			5.555	8.333	8.888	10	10	10	10	5
Temperature, sample	Deg C			15.08	15.75	13.73	16.97	14.7	16.49	14.01	15.2
Turbidity, field	NTU			30.4	5.8	1.8	4	2.8	3.7	34.9	0

Table 1. December 2023 Groundwater Quality Results

Parameters	Units	*Practical Quantitation Limit	**Project Action Limit	GCP-3-3 12/8/2023 Groundwater	GCP-4-1 12/4/2023 Groundwater	GCP-4-2 12/4/2023 Groundwater	GCP-5-1 12/4/2023 Groundwater	GCP-5-2 12/4/2023 Groundwater	GCP-6-1 12/4/2023 Groundwater	GCP-6-2 12/4/2023 Groundwater	GCP-6-3 12/5/2023 Groundwater
Metals											
Antimony	ug/L	2	6	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Arsenic	ug/L	1	0.02	**25.3**	1.0 U	**8.5**	1.0 U	**8.2**	**452**	**37.2**	**191**
Beryllium	ug/L	1	1	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Cadmium	ug/L	1	4	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chromium	ug/L	4	70	4.2	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Copper	ug/L	4	1300	4	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 UJ
Lead	ug/L	1	5	2.2	0.54	0.50 U	0.50 U	1.1	0.50 U	0.50 U	1.4
Mercury	ug/L	0.2	2	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel	ug/L	4	100	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Silver	ug/L	2	40	2.0 U	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 U
Zinc	ug/L	10	2000	11.5	98.5	87.9	10 U	10 U	10 U	26.6	43.9 J+
Volatile Organic Compounds											
1,1,1-Trichloroethane	ug/L	1	30	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U
1,1-Dichloroethane	ug/L	1	50	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.46 J	20 U
1,2,4-Trichlorobenzene	ug/L	2	9	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	40 U
1,2-Dichlorobenzene	ug/L	1	600	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.1	230
1,2-Dichloroethane	ug/L	1	0.3	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U
1,3-Dichlorobenzene	ug/L	1	600	0.56 J	1.0 U	1.0 U	1.0 U	1.0 U	2.1	1.8	**4270**
1,4-Dichlorobenzene	ug/L	1	75	2	1.0 U	1.0 U	0.80 J	1.0 U	8.6	4.9	**17500**
Benzene	ug/L	1	0.2	**10.2**	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	**540**
Chlorobenzene	ug/L	1	50	**94.8**	1.0 U	1.0 U	**67.7**	5.4	**133**	13.7	**2900**
Chloroform (Trichloromethane)	ug/L	1	70	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U
cis-1,2-Dichloroethene	ug/L	1	70	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.68 J	20 U
Ethylbenzene	ug/L	1	700	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U
Toluene	ug/L	1	600	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U
trans-1,2-Dichloroethene	ug/L	1	100	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U
Trichloroethene	ug/L	1	1	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U
Vinyl chloride	ug/L	1	0.08	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	20 U

Table 1. December 2023 Groundwater Quality Results

Parameters	Units	*Practical Quantitation Limit	**Project Action Limit	GCP-7-1 12/5/2023 Groundwater	GCP-7-2 12/5/2023 Groundwater	GCP-8-1 12/5/2023 Groundwater	GCP-8-2 12/6/2023 Groundwater	GCP-8-3 12/6/2023 Groundwater	GCP-9-1 12/6/2023 Groundwater	GCP-9-2 (Dup) 12/6/2023 Groundwater	GCP-9-2 12/6/2023 Groundwater
Dioxin Furans											
1,2,3,4,6,7,8,9-Octachlorodibenzofuran (OCDF)	pg/L	50		257	40.5 J	40.3 J	103 U	478	123	228 J	122 J
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin (OCDD)	pg/L	50		28.1 J	99.6 U	98 U	103 U	32.6 J	23.5 J	11.9 J	100 U
1,2,3,4,6,7,8-Heptachlorodibenzofuran (HpCDF)	pg/L	25		175	57.6	25.3 J	51.4 U	307	49.1 J	148 J	59.7 J
1,2,3,4,6,7,8-Heptachlorodibenzo-p-dioxin (HpCDD)	pg/L	25		51 U	49.8 U	49 U	51.4 U	8.43 J	50.3 U	48.8 U	50.2 U
1,2,3,4,7,8,9-Heptachlorodibenzofuran (HpCDF)	pg/L	25		51 U	49.8 U	49 U	51.4 U	13.1 J	50.3 U	48.8 U	50.2 U
1,2,3,4,7,8-Hexachlorodibenzofuran (HxCDF)	pg/L	25		38.2 J	12.2 J	49 U	51.4 U	87.5	14.7 J	54.7	31.5 J
1,2,3,4,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/L	25		51 U	49.8 U	49 U	51.4 U	49.5 U	50.3 U	48.8 U	50.2 U
1,2,3,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/L	25		11.7 J	49.8 U	49 U	51.4 U	17.8 J	50.3 U	48.8 U	50.2 U
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/L	25		51 U	49.8 U	49 U	51.4 U	49.5 U	50.3 U	48.8 U	50.2 U
1,2,3,7,8,9-Hexachlorodibenzofuran (HxCDF)	pg/L	25		51 U	49.8 U	49 U	51.4 U	49.5 U	50.3 U	48.8 U	50.2 U
1,2,3,7,8,9-Hexachlorodibenzo-p-dioxin (HxCDD)	pg/L	25		51 U	49.8 U	49 U	51.4 U	49.5 U	50.3 U	48.8 U	50.2 U
1,2,3,7,8-Pentachlorodibenzofuran (PeCDF)	pg/L	25		51 U	49.8 U	49 U	51.4 U	49.5 U	50.3 U	48.8 U	50.2 U
1,2,3,7,8-Pentachlorodibenzo-p-dioxin (PeCDD)	pg/L	25		51 U	49.8 U	49 U	51.4 U	49.5 U	50.3 U	48.8 U	50.2 U
2,3,4,6,7,8-Hexachlorodibenzofuran (HxCDF)	pg/L	25		51 U	49.8 U	49 U	51.4 U	49.5 U	50.3 U	48.8 U	50.2 U
2,3,4,7,8-Pentachlorodibenzofuran (PeCDF)	pg/L	25		51 U	49.8 U	49 U	51.4 U	12.7 J	50.3 U	48.8 U	50.2 U
2,3,7,8-Tetrachlorodibenzofuran (TCDF)	pg/L	10		10.2 U	9.96 U	9.8 U	10.3 U	9.9 U	10.1 U	9.75 U	10 U
2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD)	pg/L	10	0.2	**13.7**	9.96 U	9.8 U	10.3 U	**56**	**226**	**392**	**345**
Total heptachlorodibenzofuran (HpCDF)	pg/L			192 J	57.6 J	25.3 J	51.4 UJ	355 J	49.1 J	148 J	59.7 J
Total heptachlorodibenzo-p-dioxin (HpCDD)	pg/L			51 UJ	49.8 UJ	49 UJ	51.4 UJ	16.7 J	50.3 UJ	48.8 UJ	50.2 UJ
Total hexachlorodibenzofuran (HxCDF)	pg/L			102 J	34.3 J	49 UJ	51.4 UJ	182 J	32.2 J	106 J	58.1 J
Total hexachlorodibenzo-p-dioxin (HxCDD)	pg/L			51 UJ	49.8 UJ	49 UJ	51.4 UJ	7.61 J	50.3 UJ	48.8 UJ	50.2 UJ
Total pentachlorodibenzofuran (PeCDF)	pg/L			20.8 J	8.88 J	49 UJ	51.4 UJ	95.8 J	29.5 J	225 J	127 J
Total pentachlorodibenzo-p-dioxin (PeCDD)	pg/L			51 UJ	49.8 UJ	49 UJ	51.4 UJ	49.5 UJ	50.3 UJ	11.6 J	50.2 UJ
Total tetrachlorodibenzofuran (TCDF)	pg/L			18.6 J	6.73 J	9.8 UJ	10.3 UJ	50.3 J	10.1 UJ	91.3 J	46.7 J
Total tetrachlorodibenzo-p-dioxin (TCDD)	pg/L			13.7 J	9.96 UJ	9.8 UJ	10.3 UJ	56 J	226 J	418 J	345 J
General Chemistry											
Conductivity, field	mS/cm			0.861	0.828	0.528	0.198	0.881	0.536	0.147	0.147
Dissolved oxygen (DO), field	mg/L			4.7	0.09	3	0.15	0.18	4.23	0.82	0.82
Oxidation reduction potential (ORP), field	millivolts			-131	-143	-103	-120	-137	-11	-155	-155
pH, field	s.u.			7.42	7.02	6.77	6.99	7.01	7.11	6.87	8.08
Temperature, ambient	Deg C			5.555	7.777	10	3.333	4.444	2.777	7.777	7.777
Temperature, sample	Deg C			15.17	16.17	16.37	14.62	13.79	15.44	13.92	13.92
Turbidity, field	NTU			20	6.1	19.6	12.5	71.6	28.6	7.4	7.4

Table 1. December 2023 Groundwater Quality Results

Parameters	Units	*Practical Quantitation Limit	**Project Action Limit	GCP-7-1 12/5/2023 Groundwater	GCP-7-2 12/5/2023 Groundwater	GCP-8-1 12/5/2023 Groundwater	GCP-8-2 12/6/2023 Groundwater	GCP-8-3 12/6/2023 Groundwater	GCP-9-1 12/6/2023 Groundwater	GCP-9-2 (Dup) 12/6/2023 Groundwater	GCP-9-2 12/6/2023 Groundwater
Metals											
Antimony	ug/L	2	6	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Arsenic	ug/L	1	0.02	**9.8**	**1.4**	**115**	**62**	**88.7**	**21**	**4.1**	**4.7**
Beryllium	ug/L	1	1	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Cadmium	ug/L	1	4	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U	0.50 U
Chromium	ug/L	4	70	6.8	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Copper	ug/L	4	1300	12.0 J-	4.0 UJ	4.0 UJ	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Lead	ug/L	1	5	**8.4**	4.1	**6.2**	2	1.5	0.97	0.99	1.3
Mercury	ug/L	0.2	2	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Nickel	ug/L	4	100	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
Silver	ug/L	2	40	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
Zinc	ug/L	10	2000	10 U	18.7 J+	10 U	14.6	12.3	10 U	10 U	10 U
Volatile Organic Compounds											
1,1,1-Trichloroethane	ug/L	1	30	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U
1,1-Dichloroethane	ug/L	1	50	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U
1,2,4-Trichlorobenzene	ug/L	2	9	2.0 U	2.0 U	2.0 U	2.0 U	20 U	2.0 U	2.0 U	2.0 U
1,2-Dichlorobenzene	ug/L	1	600	1.0 U	1.0 U	1.0 U	1.0 U	249	1.0 U	1.0 U	1.0 U
1,2-Dichloroethane	ug/L	1	0.3	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U
1,3-Dichlorobenzene	ug/L	1	600	1.0 U	0.58 J	1.0 U	1.0 U	80	3.2	0.64 J	0.54 J
1,4-Dichlorobenzene	ug/L	1	75	1.0 U	2.4	1.0 U	1.6	**1820**	13.2	2.1	2.2
Benzene	ug/L	1	0.2	1.0 U	1.0 U	1.0 U	**6.1**	**14.8**	**166**	**42.7**	**38.2**
Chlorobenzene	ug/L	1	50	1.0 U	1.0 U	1.0 U	**152**	**1660**	**342**	**188**	**179**
Chloroform (Trichloromethane)	ug/L	1	70	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U
cis-1,2-Dichloroethene	ug/L	1	70	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	ug/L	1	700	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U
Toluene	ug/L	1	600	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U
trans-1,2-Dichloroethene	ug/L	1	100	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U
Trichloroethene	ug/L	1	1	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U
Vinyl chloride	ug/L	1	0.08	1.0 U	1.0 U	1.0 U	1.0 U	10 U	1.0 U	1.0 U	1.0 U

Notes:

ug/L	Micrograms per liter
pg/L	Picograms per liter
mS/cm	MilliSiemens per centimeter
mg/L	Milligram per liter
s.u.	Standard unit
Deg C	Degrees Celsius
NTU	Nephelometric turbidity units
PQL	Practical Quantitation Limit
PAL	Project Action Limit
Dup	Duplicate
*	PQLs from Worksheet 15 of January 2020 Quality Assurance Project Plan (QAPP)
**	PALs from Worksheet 15 of January 2020 QAPP
-	Not reported in database
J	Estimated value (bias undetermined) - The analyte was positively identified; but the associated numerical value is the approximate concentration of the analyte in the sample.
J+	Estimated value (implied high bias) - The analyte was positively identified; but the associated numerical value is the approximate concentration of the analyte in the sample.
J-	Estimated value (implied low bias) - The analyte was positively identified; but the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	Estimated non-detect - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

PALs are set to the New Jersey Class II-A Groundwater Quality Criteria (N.J.A.C. 7:9C-1,4). For constituents that have a PAL, values in bold text indicate concentrations greater than the PAL. If the PQL is greater than the PAL, then values in bold text indicate concentrations greater than the PQL.

SELECTED VARIABLES	VALUE	STATE AVERAGE	PERCENTILE IN STATE	USA AVERAGE	PERCENTILE IN USA
POLLUTION AND SOURCES					
Particulate Matter (µg/m3)	8.77	8.05	86	8.08	67
Ozone (ppb)	63	63.9	29	61.6	63
Diesel Particulate Matter (µg/m3)	0.743	0.414	92	0.261	96
Air Toxics Cancer Risk* (lifetime risk per million)	30	27	33	25	52
Air Toxics Respiratory HI*	0.46	0.33	61	0.31	70
Toxic Releases to Air	2,300	1,100	93	4,600	74
Traffic Proximity (daily traffic count/distance to road)	310	210	81	210	84
Lead Paint (% Pre-1960 Housing)	0.33	0.44	38	0.3	60
Superfund Proximity (site count/km distance)	2.9	0.45	99	0.13	99
RMP Facility Proximity (facility count/km distance)	1.9	0.3	98	0.43	95
Hazardous Waste Proximity (facility count/km distance)	13	2.8	98	1.9	97
Underground Storage Tanks (count/km2)	39	15	88	3.9	99
Wastewater Discharge (toxicity-weighted concentration/m distance)	0.088	0.045	94	22	81
SOCIOECONOMIC INDICATORS					
Demographic Index	64%	33%	86	35%	86
Supplemental Demographic Index	27%	12%	93	14%	92
People of Color	79%	45%	79	39%	82
Low Income	50%	22%	88	31%	80
Unemployment Rate	12%	6%	85	6%	86
Limited English Speaking Households	32%	7%	95	5%	96
Less Than High School Education	22%	10%	88	12%	84
Under Age 5	7%	5%	68	6%	66
Over Age 64	8%	17%	19	17%	19
Low Life Expectancy	17%	18%	46	20%	31

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

COC Name	PRG
Soil[1] – units in mg/kg	
2,3,7,8-TCDD	0.00081
4,4'-DDT	9.5
Hexachlorobenzene	2.3
Fill Unit Groundwater – units in µg/L	
2,3,7,8-TCDD	0.00001
4,4'-DDT	0.1
Antimony (Total)	6
Benzene	1
Chlorobenzene	50
1,2-Dichlorobenzene (ortho)	600
1,3- Dichlorobenzene (meta)	600
1,4-Dichlorobenzene (para)	75
1,2,4- Trichlorobenzene	9
1,2-Dichloroethane	2
1,2-Dichloroethylene (cis)	70
Hexachlorobenzene	0.02
Toluene	600
Trichloroethylene	1
Vinyl Chloride	1
Arsenic (Total)	3
Lead (Total)	5
Mercury (Total)	2

1: Ingestion-dermal pathway value

TABLE 4
CHEMICAL-SPECIFIC ARARs
DIAMOND ALKALI SUPERFUND SITE - OPERABLE UNIT ONE
NEWARK, NEW JERSEY

	Citation	Classification	Summary of the Requirement	Additional Comments
Groundwater Regulations				
New Jersey Ground Water Quality Standards	N.J.A.C. 7:9C, Section 1.7	Applicable	Establishes the water quality standards for state's ground waters based on the type of groundwater use including narrative and constituent-specific standards.	Applicable to contaminated groundwater at OU1 or potential migration of COCs to groundwater. Section 1.7 of 7:9C describes the groundwater quality criteria for Class II-A areas that apply to OU1, with the specific criteria listed in Appendix Table 1. The selected remedy incorporates the New Jersey Ground Water Quality Standards as remediation goals (RGs) for the groundwater contaminants of concern specified in Table 3 of the ROD.. The selected remedy employs a cap system to reduce the potential for contaminants in the fill to mobilize to groundwater and extracts and treats groundwater from OU1 to address existing groundwater contaminants. The criteria will be compared to groundwater monitoring results to assess the effectiveness of the waste management area (WMA) containment on an ongoing basis.
National Primary Drinking Water Standards (Safe Drinking Water Act)	40 CFR 141, Subpart G	Applicable	Establishes federal drinking water standards (maximum contaminant levels [MCLs]).	Applicable to contaminated groundwater at OU1 or potential migration of COCs to groundwater. Subpart G (141.60-141.66) lists the MCLs.. The selected remedy incorporates the Federal Drinking Water MCLs as RGs for the groundwater contaminants of concern specified in Table 3 of the ROD. The selected remedy employs a cap system to reduce the potential for contaminants in the fill to mobilize to groundwater and extracts and treats groundwater from OU1 to address existing groundwater contaminants. The MCLs will be compared to groundwater monitoring results to assess the effectiveness of the WMA containment on an ongoing basis.

TABLE 4
CHEMICAL-SPECIFIC ARARs
DIAMOND ALKALI SUPERFUND SITE - OPERABLE UNIT ONE
NEWARK, NEW JERSEY

Surface Water Regulations				
New Jersey Surface Water Quality Standards	N.J.A.C. 7:9B	Applicable	Establishes the water quality standards for state's surface waters including narrative and constituent-specific standards.	Applicable to potential migration of COCs to the Passaic River. The surface water quality criteria will be employed to assess the effectiveness of the WMA containment on an ongoing basis.
Soil Regulations				
New Jersey Remediation Standards	N.J.A.C. 7:26D Subchapter 4	Relevant and Appropriate	Establishes the standards for soil remediation under New Jersey cleanup authorities.	Applicable to contaminated soil at the Site. The standards for the Ingestion-Dermal Exposure Pathway - Nonresidential (Appendix 1, Table 2) and Inhalation Exposure Pathway - Nonresidential (Appendix 1, Table 4) apply, with the more stringent criteria taking precedent. The selected remedy incorporates the New Jersey Soil Remediation Standards as RGs for 2,3,7,8-TCDD, 4,4' DDT and hexachlorobenzene. The presence of soil with contaminant concentrations above the RGs in the WMA is a basis for maintaining the cap system to prevent direct contact with and migration of contaminated soil.

TABLE 4
CHEMICAL-SPECIFIC ARARs
DIAMOND ALKALI SUPERFUND SITE - OPERABLE UNIT ONE
NEWARK, NEW JERSEY

Contaminant-Specific				
Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions	40 CFR Part 761 Subpart D	Applicable	Part 761.61 addresses PCB remediation waste and establishes cleanup standards.	PCBs are historical contaminants at OU1 and could be encountered during remedial action. The selected remedy includes the re-installation of groundwater extraction wells at OU1 and will require the management and disposal of soil cuttings (some of which will be generated from below the cap system) and the ongoing extraction, treatment and discharge of groundwater. PCB-contaminated remediation wastes will be managed in accordance with the requirements of 40 CFR Part 761, Subpart D.
New Jersey Disposal of Asbestos Containing Waste Materials (ACWM) Generator Requirements	N.J.A.C. 7:26-2.12	Applicable	Requires that generators of ACWM shall comply with the standards for waste disposal at 40 CFR 61.149-150.	Applicable to on-site activities during the remedial action that would disturb the asbestos containing materials beneath the existing cap. Specific standards provided in 40 CFR 61.149-150 govern required practices during on-site remediation such as mixing requirements, wetting requirements and prohibiting emissions. The selected remedy includes the re-installation of groundwater extraction wells at OU1 and will require the management and disposal of soil cuttings, some of which will be generated from below the cap system. Potential ACWM contained in soil cuttings will be managed in accordance with the requirements of NJAC 7:26-2.12.

The selected remedy includes institutional controls in the forms of a Classification Exception Area (CEA) and Deed Restriction, both of which restrict use of the OU1 properties and/or the groundwater beneath OU1. Groundwater quality standards and designated uses are suspended within the CEA [see N.J.A.C. 7:9C-1.4, -1.6(a), and -1.9(b)]. The Deed Restriction allows for contaminant concentrations in soil above the standards to remain on-site [N.J.A.C. 7:26E-5.2(a)4]. Therefore, the groundwater and soil ARARs would be attained.

TABLE 5
LOCATION-SPECIFIC ARARs
DIAMOND ALKALI SUPERFUND SITE – OPERABLE UNIT ONE
NEWARK, NEW JERSEY

Location-specific ARAR	Citation	Classification	Summary of the Requirement	Additional Comments
US/State Waters & Floodplain Regulations				
Clean Water Act Section 404 Requirements	33 U.S.C. § 1251 et seq.	Applicable	Establishes the regulation of discharges of pollutants into waters of the US.	Applicable to potential migration of contaminants of concern (COCs) to the Passaic River. The long-term monitoring program that is included in the selected remedy will allow EPA to evaluate the anticipated effectiveness of the remedy in preventing migration of contaminants to the Passaic River.
New Jersey Water Pollution Control Act of 1977	N.J.S.A. § 58:10A-1 et seq	Applicable	Regulates construction or other activities (including remedial action) that will have an impact on state waters.	Applicable to remedial actions that could affect the Passaic River. See above.
Coastal Zone Regulations				
Coastal Zone Management Program	N.J.A.C. 7:7E	Applicable	This program establishes standards for use and development of coastal resources in coastal waters to the limit of tidal influence.	OU1 is within the limit of tidal influence of coastal waters. Potential impacts under coastal zone regulations will be considered and mitigated during the design of the selected remedy; however, no adverse impacts are anticipated.
Coastal Zone Management Act (CZMA)	16 U.S.C. § 1451 et seq; CZMA § 307	Applicable	This program establishes standards for use and development of coastal resources in coastal waters to the limit of tidal influence.	
CZMA Federal Consistency Regulations	15 CFR Part 930 15 CFR Part 930.30	Applicable	Requirement that any Federal actions that are reasonably likely to affect any land or water use or natural resource of the coastal zone be consistent with enforceable policies of a state's federally- approved coastal management program.	
Wildlife Protection Regulations				
Fish and Wildlife Coordination Act	16 U.S.C. § 622 40 CFR 6.302(g)	Potentially Applicable	Regulates proposed Federal actions that affect any stream or other body of water and to provide recommendations to minimize impacts on fish and wildlife resources.	Consideration of potential impacts to fish and wildlife resources will be conducted during design of the selected remedy; however, no adverse impacts are anticipated.

TABLE 6
ACTION-SPECIFIC ARARs
DIAMOND ALKALI SUPERFUND SITE – OPERABLE UNIT ONE
NEWARK, NEW JERSEY

ARAR	Citation	Classification	Summary of the Requirement	Additional Comments
Monitoring Well Regulations				
Well Construction and Maintenance; Sealing of Abandoned Wells	N.J.A.C. 7:9D	Applicable	Establishes requirements and procedures for the construction, installation, operation, maintenance, and abandonment of wells.	Wells both installed and decommissioned as part of the selected remedy will meet the provisions applicable to construction, maintenance, or sealing of wells.
Erosion and Sediment Control / Stormwater Management / Effluent Discharge				
New Jersey Pollutant Discharge Elimination System (NJPDES)	N.J.A.C. 7:14A	Applicable	Establishes effluent discharge standards to protect water quality. N.J.A.C 7:14, Subchapter 12, Appendix B identifies effluent standards (for specified constituents) for remediation projects.	A NJPDES permit equivalency is in place for the existing treatment system. Permits are not required under Section 121(e)(1) of CERCLA. The State of New Jersey has primacy for administration of the NJPDES program.
New Jersey Stormwater Management	N.J.A.C. 7:8	Applicable	Contains general requirements for stormwater management plans and stormwater control ordinances. Provides the content requirements and procedures for adoption and implementation of regional stormwater management plans and municipal stormwater	Applicable to the extent the existing stormwater system will be modified as part of the selected remedy.
Hazardous and Solid Waste Management Regulations				
Discharges of Petroleum and Other Hazardous Substances Rules	N.J.A.C. 7:1E	Applicable	These rules set forth guidelines and procedures to be followed by all persons in the event of a discharge of a hazardous substance.	Applicable to the extent the selected remedy has a potential to discharge a hazardous substance.
New Jersey Solid Waste Management Act Regulations	N.J. S.A. § 13:1E-1 et seq. N.J.A.C. 7:26	Applicable	Establishes standards and procedures pertaining to, among other things, the management, treatment, and disposal of solid wastes. Also includes requirements for Beneficial Use Determinations. New Jersey hazardous waste management rules incorporate RCRA regulations by reference, with few significant differences.	Applicable to solid waste generated during implementation of the remedy. The selected remedy includes the re-installation of groundwater extraction wells at OU1 and will require the management and disposal of soil cuttings (some of which will be generated from below the cap). The selected remedy also requires the ongoing management and disposal of residuals from the groundwater treatment system.

TABLE 6
ACTION-SPECIFIC ARARs
DIAMOND ALKALI SUPERFUND SITE – OPERABLE UNIT ONE
NEWARK, NEW JERSEY

ARAR	Citation	Classification	Summary of the Requirement	Additional Comments
New Jersey Hazardous Waste Management Regulations	N.J.A.C. 7:26G	Applicable	Procedure for identifying and listing hazardous wastes. Applies to any person who generates, transports, stores, treats, or disposes of a hazardous waste. Establishes standards for disposal of hazardous wastes generated during remediation and the requirements for waste transporters, manifesting, and recordkeeping.	Applicable to hazardous waste generated during implementation of the remedy. See above regarding the management of remediation waste from the selected remedy.
Resource Conservation and Recovery Act (RCRA); Identification and Listing of Hazardous Wastes	40 CFR 261	Applicable	Describes methods for identifying hazardous wastes and lists known hazardous wastes.	Applicable to hazardous waste generated during implementation of the remedy . See above regarding the management of remediation waste from the selected remedy.
RCRA Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities – Landfill Requirements	40 CFR Subpart N (40 CFR 264.301, 40 CFR 264.310)	Applicable	Identifies standards for hazardous waste landfill design pertaining to bottom liners and leachate collection systems.	EPA is invoking a waiver under Section 122(d)(4)(B) of CERCLA for bottom liner and leachate collection system requirements, on the basis that excavating the waste contained within the OU1 containment cell in order to meet these requirements would result in greater risk to human health and the environment than the selected remedy.
RCRA Land Disposal Restrictions	40 CFR 268, Subparts C and D	Applicable	Identifies hazardous wastes restricted from land disposal (Subpart C) and provides treatment standards (Subpart D)	EPA is invoking a waiver under Section 122(d)(4)(B) of CERCLA for land disposal restrictions (LDRs) under Subpart C (40 CFR 268.31) and best demonstrated available technology requirements (BDAT) under Subpart D, on the basis that excavating the waste contained within the OU1 containment cell in order to meet these requirements would result in greater risk to human health and the environment than the selected remedy.

TABLE 6
ACTION-SPECIFIC ARARs
DIAMOND ALKALI SUPERFUND SITE – OPERABLE UNIT ONE
NEWARK, NEW JERSEY

Air Emissions Regulations				
Clean Air Act (CAA) National Emissions Standard for Hazardous Air Pollutants	40 CFR Part 63 Subpart GGGGG	Applicable	Subpart GGGGG establishes national emissions limitations and work practice standards for hazardous air pollutants emitted from site remediation activities.	Applicable to the extent implementation of the remedy generates emissions of hazardous air pollutants: for example, process vents, tanks, or surface impoundments.
Noise Control	N.J.S.A. § 13:1g-1et seq. N.J.A.C. 7:20	Applicable	Regulates noise levels for certain types of activities and facilities such as commercial, industrial, community service, and public service facilities.	Applicable to remedial activities with the potential to generate excessive noise levels.
General Site Remediation				
New Jersey Technical Requirements for Site Remediation	N.J.A.C. 7:26E	Relevant and Appropriate	Sets forth technical requirements for site remediation under New Jersey cleanup authorities, including preliminary assessments, remedial investigations, remedial action work plans, remediation, post-remediation monitoring, and institutional controls.	Substantive requirements may be relevant and appropriate and will be addressed during the design of the selected remedy, as appropriate.

Alternative and Description		Total Capital Cost	Annual O&M Cost	Present Worth of O&M Cost	Total Present Worth
Alternative 2 - Optimized Containment Remedy (Optimized Capping and Containment)	Alternative consists of capping and containment with continued groundwater extraction and treatment. Includes system optimization (replacement of six extraction wells, GWTS modifications).	$ 3,640,000	$ 963,000	$ 11,950,000	**$ 16,000,000**

Calculation Date: March 6, 2024

Item	Cost Component	Quantity	Units	Units Cost	Line Item Cost	Notes
	CONSTRUCTION CAPITAL COST					
1	MOBILIZATION/DEMOBILIZATION	1	LS	$0	$0	C1
2	HEALTH AND SAFETY	6	MONTH	$20,000	$120,000	C2
3	SITE PREPARATION AND TEMPORARY FACILITIES	N/A	LS	-	-	C3
4	TEMPORARY CONTROLS AND AIR MONITORING	6	MONTH	$30,000	$180,000	C4
5	SITE SECURITY	N/A	MONTH	-	-	C5
6	SURFACE COVER DEMOLITION	720	SF	$2.55	$1,800	C6
7	DEWATERING SYSTEM - INSTALLATION AND REMOVAL	N/A	LS	-	-	C7
8	DEWATERING SYSTEM - OPERATION	N/A	MONTH	-	-	C8
9	EXCAVATION SUPPORT	N/A	LS	-	-	C9
10	DESIGNATED SOIL REMOVAL (COVER)	86.4	TON	$50	$4,300	C10
11	ON-SITE SOIL MANAGEMENT AND PRE-TREATMENT	N/A	CY	-	-	C11
12	TRANSPORTATION AND DISPOSAL AT HAZARDOUS WASTE FACILITY (DRILL SPOILS)	6	TON	$445	$2,700	C12
13	BACKFILLING AND SUBGRADE PREPARATION	35	CY	$200	$7,000	C13
14	GROUNDWATER EXTRACTION SYSTEM MODIFICATIONS (includes GWTS)	1	LS	$1,070,000	$1,070,000	C14
15	SITE CAP RESTORATION	5000	SF	$200	$1,000,000	C15
16	SUBTOTAL CONSTRUCTION CAPITAL COST:				$2,386,000	
17	CONTINGENCY: (20% of construction capital cost)				$478,000	
18	**TOTAL CONSTRUCTION CAPITAL COST:**				**$2,870,000**	
	ENGINEERING, PERMITTING, AND DOCUMENTATION CAPITAL COST					
19	CAP RESISTIVITY SURVEY	1	LS	$100,000	$100,000	E1
20	PRE-CONSTRUCTION ENGINEERING AND PERMITTING	1	LS	$143,500	$143,500	E2
21	CONSTRUCTION OBSERVATION AND DOCUMENTATION					
	On-site inspector	1,056	HR	$150	$158,400	E3
	Engineering and office support	528	HR	$250	$132,000	E3
22	POST-CONSTRUCTION ENGINEERING AND PERMITTING	1	LS	$100,000	$100,000	E4
23	SUBTOTAL ENGINEERING, PERMITTING AND DOCUMENTATION CAPITAL COST:				$634,000	
24	CONTINGENCY (20% of ENGINEERING, PERMITTING AND DOCUMENTATION COST)				$127,000	
25	**TOTAL ENGINEERING, PERMITTING, AND DOCUMENTATION COST:**				**$770,000**	
26	**TOTAL CAPITAL COST:**				**$3,640,000**	

Item	Cost Component	Quantity	Units	Units Cost	Line Item Cost	Notes
	OPERATION AND MAINTENANCE COST					
27	SITE OPERATION AND MAINTENANCE					
	Utilities	1	LS	$120,000	$120,000	OM1
	System operation	1	LS	$700,000	$700,000	OM1
28	GROUNDWATER AND EFFLUENT SAMPLING AND ANALYTICAL	1	LS	$30,000	$30,000	OM1
29	WASTE TRANSPORTATION AND OFF-SITE DISPOSAL	1	LS	$12,500	$12,500	OM1
30	ANNUAL CEA CERTIFICATION	1	LS	$5,000	$10,000	OM1
	Item Subtotal (Annual O&M)				$872,500	
31	CONTINGENCY: (10% of O&M annual cost)				$90,000	
32	**TOTAL ANNUAL O&M COST:**				**$963,000**	
	TOTAL PRESENT WORTH					
		Number Years	**Yearly Int. Rate**	**O&M Present Worth**	**Total Present Worth**	
29	30 - Year Present Worth	30	7%	**$11,950,000**	**$16,000,000**	

Notes:

N/A - Not applicable
CY - Cubic yard
LS - Lump sum
SF - Square foot
Replacement of 6 extraction wells projected to be 2 months based on the duration of the 2021 replacement of two wells
C1 - Mobilization cost calculated as 3% of construction cost minus T&D
C2 - Unit cost for H&S based on experience on similar projects
C3 - The Site already includes the facilities
C4 - Unit cost for air monitoring based on experience on similar projects
C5 - Not required
C6 - Based on removal of cover for 6 new well vaults, 12' by 10' each, 720 sf total. Unit cost based on 2021 well replacement.
C7 - Not required
C8 - Not required
C9 - Not required
C10 - Based on removal of cover for 6 new well vaults, 12' by 10' each, 720 sf total, depth of 2 ft (720*2=4,800 cf, at 120 lbs/cf W=86.4 t).
Unit cost for removal of clean cover soil based on the 2021 well replacement project.
C11 - Not required
C12 - Based on 1 t of drill spoils per well, from 2021 well replacement project. Unit cost based on vendor quote.
C13 - Based on volume of soil removed less the volume of vaults. Unit cost based on 2021 well replacement.
C14 - Cost for replacement of wells based on the 2021 well replacement project, $150,000 per well (well, vault, infrastructure).
Cost for GWTS modification based on BC estimate, $170,000 to implement ion exchange:

Ion exchange vessels and resin (vendor's quote)	$56,000	includes freight and tax
Installation, piping, electrical	$12,000	BC estimate
Contingency and escalation	$30,000	BC estimate
	$98,000	
Factor of 1.7 for class 5 estimate (rounded)	$170,000	

C15 - Unit cost based on the 2021 well replacement.
E1 - Cost based on the cost of resistivity survey performed previously at the Site.
E2 - Assumed as 5% of the construction cost. Includes design, permitting, project management, construction management, bonding, insurance.
E3 - Assumed on-site inspector 22 days/mo, 8 hr/day, at $150/hr plus engineering office support and part time on-site 22days/mo, 4 hrs/day at $250/hr
E4 - Cost based on BC experience with similar projects.
OM1 - O&M costs are from the operation records of the current remedy. Waste disposal includes any NAPL recovered.

APPENDIX III

ADMINISTRATIVE RECORD INDEX

COMPREHENSIVE ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

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Site Name: DIAMOND ALKALI CO.
CERCLIS ID: NJD980528996
OUID: 01
SSID: 0296
Action:

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name/Organization:	Author Name/Organization:
239650	09/09/2024	COMPREHENSIVE ADMINISTRATIVE RECORD INDEX FOR OU1 FOR THE DIAMOND ALKALI COMPANY SITE	78	Administrative Record Index		(US ENVIRONMENTAL PROTECTION AGENCY)
101534	Undated	INDEX, DOCUMENT NUMBER ORDER, DIAMOND ALKALI DOCUMENTS.	91	List/Index		(US ENVIRONMENTAL PROTECTION AGENCY)
57565	06/27/1986	RESPONSE TO EPA COMMENTS ON FEASIBILITY STUDY (FS) (COVER SHEET ATTACHED)	93	Report	(Diamond Shamrock Chemicals Company)	(INTERNATIONAL TECHNOLOGY CORP (IT))
57566	08/24/1984	APPROVAL TO BEGIN SITE EVALUATION PLAN SUBJECT TO LISTED CONDITIONS	6	Letter	HUTTON,WILLIAM,C (Diamond Shamrock Chemicals Company)	BERKOWITZ,JORGE,H (NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION)
57567	10/15/1984	RESPONSE TO CONDITIONAL APPROVAL ON SITE EVALUATION PLAN	2	Letter	SENNA,RONALD,J (NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION)	HUTTON,WILLIAM,C (Diamond Shamrock Chemicals Company)
57568	09/17/1984	PROCEDURE FOR INSTALLATION OF INVESTIGATION BORINGS AND MONITOR WELLS	3	Report		
57569	09/17/1984	PROPOSAL TO INVESTIGATE DEEPER LAYERS FOR FUTURE PILE FOUNDATIONS	6	Report		

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57570	Undated	EXTENT OF DIOXIN AND PRIORITY POLLUTANT ANALYSIS	4	Report		
57571	Undated	PREPARATION OF WIPE TEST QUALITY CONTROL (QC) SAMPLE	3	Report		
57572	10/22/1984	SAMPLE DATA FROM SERGEANT SITE WITH RECOMMENDATIONS AND CONCLUSIONS	2	Letter	SENNA,RONALD,J (NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION)	NOBLE,EDWARD,E (Diamond Shamrock Chemicals Company)
57573	Undated	MAP OF SERGEANT PROPERTY	1	Figure/Map/ Drawing		(Diamond Shamrock Chemicals Company)
57574	Undated	PROPOSED LICENSE AGREEMENT	1	Letter	LEISTER,EDWIN,S (DURALAC CHEMICAL CORPORATION)	HUTTON,WILLIAM,C (Diamond Shamrock Chemicals Company)
57575	10/10/1984	DRAFT OF LICENSE AGREEMENT	3	Agreement		LEISTER,EDWIN,S (DURALAC CHEMICAL CORPORATION)
57576	Undated	SITE MAP WITH PROPOSED CHANGES	1	Figure/Map/ Drawing		(DURALAC CHEMICAL CORPORATION)

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57577	10/17/1984	SUMMARY OF WORK THROUGH 9/13/84	2	Letter	LIDSTROM,RAY (INTERNATIONAL TECHNOLOGY CORP (IT))	MECKSTROTH,SANDRA,C (INTERNATIONAL TECHNOLOGY CORP (IT))
57578	Undated	SERGEANT SITE WATER TREATABILITY TEST RESULTS COMPOUNDS DETECTED AT OR ABOVE QUANTITATION OR DETECTION LIMIT	1	Chart / Table		
57583	Undated	PILOT SCALE SYSTEM SERGEANT SITE WATER TREATABILITY	1	Other		
57585	Undated	SAMPLE RESULTS AND CERTIFICATE OF ANALYSIS	10	Report		
57586	Undated	SAMPLE RESULTS ORGANICS ANALYSIS DATA SHEET OF VOLATILE COMPOUNDS	8	Report		
57588	Undated	SAMPLE RESULTS ORGANICS ANALYSIS DATA SHEET OF VOLATILE COMPOUNDS	8	Report		

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57591	Undated	WORK PLAN FOR REMOVAL OF BRICK SMOKE STACK, DAMAGED ROOF SLAB, AND 600 DRUMS OF POSSIBLY HAZARDOUS MATERIALS	2	Report		
57595	Undated	SITE INVESTIGATION (SI) REPORT OUTLINE	4	Report		
57596	10/02/1984	SECTIONS AND DETAILS OF TEMPORARY WASTE CONTAINER STORAGE	8	Figure/Map/ Drawing	(Diamond Shamrock Chemicals Company)	WEICK,D (INTERNATIONAL TECHNOLOGY CORP (IT))
57598	10/23/1984	PROPOSED PAVEMENT CONSTRUCTION	10	Figure/Map/ Drawing	(Diamond Shamrock Chemicals Company)	
57601	12/20/1984	ADMINISTRATIVE ORDER ON CONSENT (AOC)	44	Legal Instrument	(Diamond Shamrock Chemicals Company)	(NJ DEPT OF ENVIRONMENTAL PROTECTION)
57602	Undated	MAP OF BRADY METALS, MORRIS CANAL, AND CONRAIL CLEANUP AREAS	1	Figure/Map/ Drawing		

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57604	10/24/1983	CERTIFICATION OF AN INVENTORY OF ASSETS	1	Letter		BRADY,JAMES,J (BRADY IRON & METALS COMPANY)
57610	10/22/1983	INVENTORY (10/24/83 COVER LETTER ATTACHED)	5	List/Index		BRADY,JAMES,J (BRADY IRON & METALS COMPANY)
57612	10/22/1983	GENERAL INVENTORY	5	Report		BRADY,JAMES,J (BRADY IRON & METALS COMPANY)
57613	Undated	APPENDIX B	2	Report		
57614	Undated	APPENDIX C	1	Figure/Map/ Drawing		(N U S CORPORATION)
57617	Undated	APPENDIX D	1	Figure/Map/ Drawing		

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57615	Undated	APPENDIX E	1	Report		
57616	Undated	APPENDIX E	1	Figure/Map/ Drawing		(N U S CORPORATION)
57618	03/13/1984	ADMINISTRATIVE ORDER ON CONSENT, IN THE MATTER OF DIAMOND SHAMROCK CHEMICALS COMPANY AND MARISOL, INC.	8	Legal Instrument		(NJ DEPT OF ENVIRONMENTAL PROTECTION)
57619	03/08/1984	SCOPE OF WORK SITE EVALUATION AND FEASIBILITY STUDY (FS)	7	Report		
57629	01/20/1987	DIAMOND SHAMROCK PHASE II ANALYTICAL AUDIT PLAN REVISION 1 (COVER SHEET AND 1/22/87 COVER LETTER ATTACHED)	123	Report	(Diamond Shamrock Chemicals Company)|KINDIG,DAVID (NJ DEPT OF ENVIRONMENTAL PROTECTION)	ERIKSON,CAROL,A (INTERNATIONAL TECHNOLOGY CORP (IT))
57630	Undated	HEALTH AND SAFETY PLAN HAZARDOUS WASTE OPERATIONS	34	Report		

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57631	02/20/1986	PUBLIC HEARING TO RECEIVE COMMENT ON FEASIBILITY STUDY (FS) AGENDA	1	Report	(NJ DEPT OF ENVIRONMENTAL PROTECTION)	
57635	02/20/1986	FACT SHEET ON FEASIBILITY STUDY (FS)	3	Report	(NJ DEPT OF ENVIRONMENTAL PROTECTION)	
57636	12/20/1986	PUBLIC HEARING TO RECEIVE COMMENT ON FEASIBILITY STUDY (FS) SIGN IN SHEET	7	List/Index	(NJ DEPT OF ENVIRONMENTAL PROTECTION)	
57638	02/20/1986	SPEAKERS AT 2/20/86 PUBLIC HEARING ON FEASIBILITY STUDY (FS)	1	Report		
57641	Undated	ATTACHMENT D	1	Other		
57645	02/21/1986	COMMENTS ON FEASIBILITY STUDY (FS) FOR FINAL REMEDIATION OF DIOXIN CONTAMINATION	2	Letter	CATANIA,MICHAEL,F (NJ DEPT OF ENVIRONMENTAL PROTECTION)	ZACH,ALVIN,L (NEWARK DEPT OF ENGINEERING)

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57648	03/04/1986	COMMENTS AGAINST USING LANDFILL TO GET RID OF WASTE	2	Letter	SINGER,GRACE,L (NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION)	LESTER,STEPHEN (CITIZENS CLEARINGHOUSE FOR HAZARDOUS WASTES INCORPORATED)
57649	Undated	STUDIES DOCUMENTING FAILURES OF LANDFILLS	1	Report		
57654	03/12/1986	COMMENT ON HOW DIOXIN SITUATION SHOULD BE RESOLVED	2	Letter	SINGER,GRACE,L (NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION)	DEL TUFO,MARIA,A (MARIA DEL TUFO CONSULTANT)
57664	03/18/1986	REQUEST FOR EXPLORATION OF FIRST REGISTERED DISPOSAL SITE FOR DIOXIN	1	Letter	DEWLING,RICHARD,T (US ENVIRONMENTAL PROTECTION AGENCY)	GIBSON,KENNETH,A (NEWARK CITY OF)
57668	03/18/1986	COMMENTS ON FEASIBILITY STUDY (FS)	5	Letter	BURKE,GERARD (NJ DEPT OF ENVIRONMENTAL PROTECTION)	GORDON,MICHAEL (GORDON AND GORDON)
57672	02/03/1986	OPINION OF IRONBOUND HEALTH RIGHTS ADVISORY COMMISSION VERSUS DIAMOND SHAMROCK CHEMICALS	7	Letter	BASS,PATRICIA,M (DUGHI & HEWIT)|BIRNBAUM,RHONDA,S (HOAGLAND LONGO OROPOLLO & MORAN)|DWYER,CONNELL (NONE)|ENGEL,RICHARD,F (NJ DEPT OF LAW	STANTON,REGINALD (SUPERIOR COURT OF NJ)

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57673	01/08/1986	ORDER GRANTING FINAL EQUITABLE RELIEF AND TRANSFERRING DAMAGE CLAIM TO LAW DIVISION	3	Legal Instrument		STANTON,REGINALD (SUPERIOR COURT OF NJ)
57674	04/07/1986	RECORD OF CONTACTS MADE TO DETERMINE POSSIBILITY OF FINDING OFF SITE DISPOSAL LOCATION FOR WASTE	1	Letter	KINDIG,DAVID (NJ DEPT OF ENVIRONMENTAL PROTECTION)	HALDEN,ROBERT,C (Diamond Shamrock Chemicals Company)
57677	04/03/1986	TRANSMITTAL OF POTENTIAL OFF SITE DISPOSERS OF TCDD	2	Letter	HALDEN,ROBERT,C (Diamond Shamrock Chemicals Company)	SOLE,TERRY,L (INTERNATIONAL TECHNOLOGY CORP (IT))
57680	04/23/1987	TRANSMITTAL OF COMMUNITY RELATIONS PLAN (CRP)	1	Form	JOSEPHS,JONATHAN (US ENVIRONMENTAL PROTECTION AGENCY)	HAVESON,JANICE (NJ DEPT OF ENVIRONMENTAL PROTECTION)
57681	02/01/1987	DRAFT COMMUNITY RELATIONS PLAN (CRP) FOR HAZARDOUS WASTE SITE REMEDIAL ACTION (RA)	26	Work Plan	JOSEPHS,JONATHAN (US ENVIRONMENTAL PROTECTION AGENCY)	HAVESON,JANICE (NJ DEPT OF ENVIRONMENTAL PROTECTION)
57687	Undated	NEWSPAPER ARTICLE : DIOXIN CLEAN UP PLAN OK D	1	Publication		BOXALL,BETTINA (NONE)

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57688	07/31/1986	TRANSMITTAL OF TRANSCRIPTS FROM 2/5/86 PUBLIC HEARING ON FEASIBILITY STUDY (FS)	1	Form	JOSEPHS,JONATHAN (US ENVIRONMENTAL PROTECTION AGENCY)	HAVESON,JANICE (NJ DEPT OF ENVIRONMENTAL PROTECTION)
57692	02/20/1984	TRANSCRIPT OF 2/5/86 PUBLIC HEARING ON FEASIBILITY STUDY (FS)	100	Report		
57695	09/01/1985	EARTH MOVEMENT MONITORING SYSTEM INTERIM STATUS REPORT (COVER SHEET ATTACHED)	26	Report	(NJ DEPT OF ENVIRONMENTAL PROTECTION)	(Diamond Shamrock Chemicals Company)|(INTERNATIONAL TECHNOLOGY CORP (IT))
57697	Undated	TRANSMITTAL OF ADDITIONAL COMMENTS ON FEASIBILITY STUDY (FS)	1	Letter	HALDEN,ROBERT,C (Diamond Shamrock Chemicals Company)	KINDIG,DAVID (NJ DEPT OF ENVIRONMENTAL PROTECTION)
57698	05/16/1986	TRANSMITTAL OF EPA COMMENTS ON FEASIBILITY STUDY (FS)	1	Letter	KINDIG,DAVID (NJ DEPT OF ENVIRONMENTAL PROTECTION)	JOSEPHS,JONATHAN (US ENVIRONMENTAL PROTECTION AGENCY)
57702	05/18/1986	EPA COMMENTS ON FEASIBILITY STUDY (FS)	3	Report		(US ENVIRONMENTAL PROTECTION AGENCY)

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57705	Undated	COMMENTS ON RISK ASSESSMENT (RA)	7	Report		
57707	04/23/1986	LIST OF TECHNICAL PROBLEMS IN FEASIBILITY STUDY (FS)	1	Letter	HUTTON,WILLIAM,C (Diamond Shamrock Chemicals Company)	BERKOWITZ,JORGE,H (NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION)
57709	Undated	COMMENTS ON FEASIBILITY STUDY (FS)	4	Report		
57712	08/12/1985	EVALUATION OF SOIL ANALYTICAL DATA (COVER SHEET ATTACHED)	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)
57713	Undated	ANALYSIS CHART OF SAMPLE RESULTS	2	Chart / Table		
57715	08/09/1985	REVIEW OF REGION II CONTRACT DATA SUMMARY OF DATA REVIEW	4	Report	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)

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57716	08/08/1985	EVALUATION OF SOIL ANALYTICAL DATA	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)
57717	Undated	ANALYSIS CHART OF SAMPLE RESULTS	7	Chart / Table		
57718	08/08/1985	REVIEW OF REGION I CONTRACT DATA SUMMARY OF DATA REVIEW	4	Report	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)
57719	08/14/1985	EVALUATION OF SOIL ANALYTICAL DATA	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)
57720	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57721	08/12/1985	REVIEW OF REGION II CONTRACT DATA SUMMARY OF DATA REVIEW	8	Report	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)

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57722	08/07/1985	EVALUATION OF SOIL ANALYTICAL DATA	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)
57723	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57724	08/22/1985	REVIEW OF ORGANIC DATA VALIDATION TWO SOIL SAMPLES	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57725	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57726	09/17/1984	INITIAL CALIBRATION DATA SEMIVOLATILE HSL COMPOUNDS	2	Report		
57727	09/05/1985	REVIEW OF ORGANIC DATA VALIDATION SOIL SAMPLES	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)

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57728	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	6	Report		
57729	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57730	08/08/1985	EVALUATION OF SOIL ANALYTICAL DATA	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)
57731	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57732	03/08/1985	REVIEW OF REGION II CONTRACT DATA SUMMARY OF DATA REVIEW	4	Report	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)
57733	09/03/1985	ORGANIC DATA VALIDATION THREE SOILS AND THREE WATERS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)

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57734	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57735	08/28/1985	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		
57736	10/04/1985	EVALUATION OF SOIL ANALYTICAL DATA	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)
57737	Undated	ANALYSIS CHART OF SAMPLE RESULTS	8	Chart / Table		
57738	10/02/1985	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	6	Report		
57739	09/16/1985	ORGANIC DATA VALIDATION TWO SOIL BORING BLANKS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)

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57740	Undated	ANALYSIS CHART OF SAMPLE RESULTS	1	Chart / Table		
57741	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		
57742	10/14/1985	EVALUATION OF SOIL ANALYTICAL DATA	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)
57743	Undated	ANALYSIS CHART OF SAMPLE RESULTS	5	Chart / Table		
57744	09/25/1984	ORGANICS ANALYSIS DATA SHEET BASE / NEUTRAL AND ACID COMPOUNDS SURROGATE SPIKE RECOVERIES	5	Report		
57745	10/09/1985	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	6	Report		

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57746	09/24/1985	ORGANIC DATA VALIDATION THREE SOIL AND TWO SOIL BORING BLANK SAMPLES	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57747	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57748	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		
57749	09/23/1985	EVALUATION OF SOIL ANALYTICAL DATA	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	(N U S CORPORATION)
57750	09/22/1985	REVIEW OF REGION I CONTRACT DATA SUMMARY OF DATA REVIEW	4	Report		
57751	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		

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57752	09/23/1985	ORGANIC DATA VALIDATION THREE SOILS AND THREE SOILS BORING BLANKS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57753	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57754	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	6	Report		
57755	09/17/1985	ORGANIC DATA VALIDATION TWO SOIL BORING BLANKS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57756	Undated	ANALYSIS CHART OF SAMPLE RESULTS	1	Chart / Table		
57757	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		

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57758	09/17/1985	ORGANIC DATA VALIDATION TWO SOIL BORING BLANKS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57759	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		
57760	Undated	ANALYSIS CHART OF SAMPLE RESULTS	1	Chart / Table		
57761	09/17/1985	ORGANIC DATA VALIDATION TWO SOIL BORING BLANKS	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57762	Undated	ANALYSIS CHART OF SAMPLE RESULTS	1	Chart / Table		
57763	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		

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57764	09/17/1985	ORGANIC DATA VALIDATION TWO SOIL BORING BLANKS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57765	Undated	ANALYSIS CHART OF SAMPLE RESULTS	1	Chart / Table		
57766	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		
57767	09/26/1985	EVALUATION OF SOIL ANALYTICAL DATA	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)
57768	Undated	ANALYSIS CHART OF SAMPLE RESULTS	1	Chart / Table		
57769	Undated	REVIEW OF REGION I CONTRACT DATA SUMMARY OF DATA REVIEW	4	Report	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)

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57770	09/24/1985	EVALUATION OF SOIL ANALYTICAL DATA	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)
57771	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57772	09/23/1985	REVIEW OF REGION I CONTRACT DATA SUMMARY OF DATA REVIEW	4	Report	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)
57773	09/25/1985	EVALUATION OF SOIL ANALYTICAL DATA	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)
57774	09/24/1985	REVIEW OF REGION I CONTRACT DATA SUMMARY OF DATA REVIEW	4	Report	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)
57775	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		

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57776	10/04/1985	ORGANIC DATA VALIDATION 11 WATER SAMPLES	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57777	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57778	10/10/1984	ORGANICS ANALYSIS DATA SHEET BASE / NEUTRAL AND ACID COMPOUNDS SURROGATE SPIKE RECOVERIES	16	Report		
57779	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		
57780	09/26/1985	ORGANIC DATA VALIDATION FOUR SOILS AND TWO SOIL BORING BLANKS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57781	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		

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57782	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	6	Report		
57783	09/26/1985	ORGANIC DATA VALIDATION SIX SOILS AND TWO NEAR SURFACE BLANKS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57784	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57785	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		
57786	10/01/1985	ORGANIC DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57787	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		

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57788	10/11/1984	ORGANICS ANALYSIS DATA SHEET BASE / NEUTRAL AND ACID COMPOUNDS SURROGATE SPIKE RECOVERIES	3	Report		
57789	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		
57790	09/16/1985	ORGANIC DATA VALIDATION TWO NEAR SURFACE BLANKS	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57791	Undated	ANALYSIS CHART OF SAMPLE RESULTS	1	Chart / Table		
57792	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		
57793	10/10/1985	ORGANIC DATA VALIDATION THREE NEAR SURFACE BLANKS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)

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57794	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57795	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		
57796	09/26/1985	ORGANIC DATA VALIDATION FOUR SOILS, TRIP BLANK, AND ONE FIELD BLANK	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)
57797	Undated	ANALYSIS CHART OF SAMPLE RESULTS	5	Chart / Table		
57798	10/16/1984	ORGANICS ANALYSIS DATA SHEET BASE / NEUTRAL AND ACID COMPOUNDS SURROGATE SPIKE RECOVERIES	3	Report		
57799	09/26/1985	SUMMARY OF DATA REVIEW	4	Report	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)

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57800	10/09/1985	ORGANIC DATA VALIDATION TWO SOILS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57801	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57802	10/17/1984	ORGANICS ANALYSIS DATA SHEET BASE / NEUTRAL AND ACID COMPOUNDS SURROGATE SPIKE RECOVERIES	2	Report		
57803	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		
57804	10/04/1985	ORGANIC DATA VALIDATION TWO SOILS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)
57805	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		

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57806	10/03/1985	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	6	Report		MCCRACKEN,RICHARD W (N U S CORPORATION)
57807	10/09/1985	ORGANIC DATA VALIDATION THREE BLANKS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)
57808	Undated	ANALYSIS CHART OF SAMPLE RESULTS	7	Chart / Table		
57809	10/17/1984	ORGANICS ANALYSIS DATA SHEET BASE / NEUTRAL AND ACID COMPOUNDS SURROGATE SPIKE RECOVERIES	1	Report		
57810	10/08/1985	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	6	Report		MCCRACKEN,RICHARD W (N U S CORPORATION)
57811	10/08/1985	ORGANIC DATA VALIDATION THREE SOIL SAMPLES	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)

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57812	Undated	ANALYSIS CHART OF SAMPLE RESULTS	5	Chart / Table		
57813	10/18/1984	ORGANICS ANALYSIS DATA SHEET BASE / NEUTRAL AND ACID COMPOUNDS SURROGATE SPIKE RECOVERIES	3	Report		
57814	10/07/1985	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	6	Report		MCCRACKEN,RICHARD W (N U S CORPORATION)
57815	09/09/1985	ORGANIC DATA VALIDATION FOUR SAMPLES	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57816	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57817	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	6	Report		

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57818	09/11/1985	ORGANIC DATA VALIDATION TWO SOIL SAMPLES AND TWO SOIL BLANKS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57819	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57820	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	6	Report		
57821	10/08/1985	ORGANIC DATA VALIDATION ONE SOIL AND TWO NEAR SURFACE BLANKS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57822	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57823	10/20/1984	ORGANICS ANALYSIS DATA SHEET BASE / NEUTRAL AND ACID COMPOUNDS SURROGATE SPIKE RECOVERIES	1	Report		

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57824	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		
57825	09/11/1985	ORGANIC DATA VALIDATION THREE SOILS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57826	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57827	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		
57828	09/27/1985	ORGANIC DATA VALIDATION ONE NEAR SURFACE BLANK	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57829	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		

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57830	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		
57831	09/30/1985	ORGANIC DATA VALIDATION FIVE SOILS AND TWO NEAR SURFACE BLANKS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57832	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		
57833	Undated	ANALYSIS CHART OF SAMPLE RESULTS	10	Chart / Table		
57834	08/22/1985	INORGANIC DATA VALIDATION TWO SOILS AND ONE WATER SAMPLE	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57835	Undated	ANALYSIS CHART OF SAMPLE RESULTS	1	Chart / Table		

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57836	Undated	RESULTS OF INORGANICS ANALYSIS	3	Chart / Table		
57837	10/04/1985	ORGANIC DATA VALIDATION THREE OFF SITE SOILS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57838	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57839	10/26/1984	ORGANICS ANALYSIS DATA SHEET BASE / NEUTRAL AND ACID COMPOUNDS SURROGATE SPIKE RECOVERIES	3	Report		
57840	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		
57841	10/09/1985	ORGANIC DATA VALIDATION ONE SOIL	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)

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57842	10/08/1985	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	6	Report		MCCRACKEN,RICHARD W (N U S CORPORATION)
57843	Undated	ANALYSIS CHART OF SAMPLE RESULTS	5	Chart / Table		
57844	10/24/1984	ORGANICS ANALYSIS DATA SHEET BASE / NEUTRAL AND ACID COMPOUNDS SURROGATE SPIKE RECOVERIES	1	Report		
57845	10/14/1985	ORGANIC DATA VALIDATION TWO SOILS AND TWO NEAR SURFACE BLANKS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57846	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57847	10/25/1984	ORGANICS ANALYSIS DATA SHEET BASE / NEUTRAL AND ACID COMPOUNDS SURROGATE SPIKE RECOVERIES	2	Report		

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57848	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	4	Report		
57849	10/03/1985	ORGANIC DATA VALIDATION NINE WELL WATER AND TWO BLANK WATER SAMPLES (COVER SHEET ATTACHED)	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57850	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57851	10/31/1984	ORGANICS ANALYSIS DATA SHEET VOLATILE COMPOUNDS SURROGATE SPIKE RECOVERIES	12	Report		
57852	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		
57853	09/12/1985	ORGANIC DATA VALIDATION TWO SURFACE BLANKS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)

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57854	Undated	ANALYSIS CHART OF SAMPLE RESULTS	1	Chart / Table		
57855	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		
57856	09/17/1985	ORGANIC DATA VALIDATION THREE SOILS AND TWO SOIL BLANKS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57857	Undated	ANALYSIS CHART OF SAMPLE RESULTS	6	Chart / Table		
57858	Undated	SITE OPERATIONS PROCEDURE SUMMARY SHEETS	5	Report		
57859	09/06/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)

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57860	08/20/1985	DIOXIN DATA VALIDATION	7	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57861	09/04/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57862	Undated	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57863	09/03/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57864	08/28/1985	DIOXIN DATA VALIDATION (COVER SHEET ATTACHED)	6	Chart / Table	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57865	09/17/1985	DIOXIN DATA VALIDATION (COVER SHEET ATTACHED)	4	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)

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57866	09/03/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57867	09/17/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57868	09/03/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57869	09/17/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57870	09/04/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57871	09/06/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)

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57872	Undated	L099 SAMPLE RECORDS	1	Chart / Table		
57873	09/03/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57874	09/06/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57875	08/29/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57876	09/17/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57877	08/09/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)

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57878	08/29/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57879	08/19/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57880	09/03/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57881	08/20/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57882	08/29/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57883	08/21/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)

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57884	09/17/1985	DIOXIN DATA VALIDATION	3	Letter	BYRNE,PATRICK,J (N U S CORPORATION)	BYRNE,PATRICK,J (N U S CORPORATION)
57885	09/16/1985	DIOXIN DATA VALIDATION	8	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57886	09/17/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57887	09/04/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57888	09/23/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57889	09/07/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)

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57890	09/24/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57891	09/17/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57892	09/24/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57893	09/19/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57894	09/25/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57895	09/23/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)

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57896	10/01/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	KIEDA,CHARLES,A (N U S CORPORATION)
57897	09/27/1985	DIOXIN DATA VALIDATION	6	Chart / Table		KIEDA,CHARLES,A (N U S CORPORATION)
57898	10/01/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	KIEDA,CHARLES,A (N U S CORPORATION)
57899	09/27/1985	DIOXIN DATA VALIDATION	6	Chart / Table		KIEDA,CHARLES,A (N U S CORPORATION)
57900	09/26/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57901	Undated	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)

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57902	09/26/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57903	09/25/1985	DIOXIN DATA VALIDATION	7	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57904	09/27/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57905	09/26/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57906	09/27/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57907	09/24/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)

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57908	10/15/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	KIEDA,CHARLES,A (N U S CORPORATION)
57909	10/09/1985	DIOXIN DATA VALIDATION	6	Chart / Table		KIEDA,CHARLES,A (N U S CORPORATION)
57910	10/09/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57911	10/08/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57912	10/11/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57913	Undated	DIOXIN BATCH L122	1	Chart / Table		

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57914	10/08/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57915	10/14/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57916	10/09/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57917	10/16/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57918	Undated	TABLE I BATCH L214	1	Chart / Table		
57919	10/10/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)

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57920	10/24/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57921	10/23/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57922	10/24/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57923	10/23/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57924	10/14/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57925	Undated	TABLE I BATCH L128	1	Chart / Table		

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57926	10/10/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57927	10/04/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57928	10/03/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57929	10/09/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57930	10/04/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57931	10/01/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)

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57932	09/29/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57933	10/02/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57934	09/29/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57935	09/30/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57936	09/26/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57937	10/03/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)

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57938	09/28/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57939	10/04/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57940	10/02/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57941	10/04/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	KIEDA,CHARLES,A (N U S CORPORATION)
57942	09/30/1985	DIOXIN DATA VALIDATION	6	Chart / Table		KIEDA,CHARLES,A (N U S CORPORATION)
57943	10/04/1984	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	KIEDA,CHARLES,A (N U S CORPORATION)

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57944	10/03/1985	DIOXIN DATA VALIDATION	6	Chart / Table		KIEDA,CHARLES,A (N U S CORPORATION)
57945	10/10/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	KIEDA,CHARLES,A (N U S CORPORATION)
57946	10/03/1985	DIOXIN DATA VALIDATION	6	Chart / Table		KIEDA,CHARLES,A (N U S CORPORATION)
57947	10/09/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57948	10/05/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57949	10/08/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)

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57950	10/07/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57951	10/08/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57952	10/07/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57953	10/09/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57954	Undated	TABLE I DIOXIN BATCH L169	1	Chart / Table		
57955	10/07/1985	DIOXIN DATA VALIDATION	7	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)

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57956	10/17/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	KIEDA,CHARLES,A (N U S CORPORATION)
57957	10/11/1985	DIOXIN DATA VALIDATION	6	Chart / Table		KIEDA,CHARLES,A (N U S CORPORATION)
57958	10/15/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57959	10/11/1985	DIOXIN DATA VALIDATION	8	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57960	10/16/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57961	10/12/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)

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57962	08/12/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57963	08/08/1985	DIOXIN DATA VALIDATION	17	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)
57964	10/16/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	KIEDA,CHARLES,A (N U S CORPORATION)
57965	10/11/1985	DIOXIN DATA VALIDATION	6	Chart / Table		KIEDA,CHARLES,A (N U S CORPORATION)
57966	10/16/1985	DIOXIN DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	KIEDA,CHARLES,A (N U S CORPORATION)
57967	10/11/1985	DIOXIN DATA VALIDATION	6	Chart / Table		KIEDA,CHARLES,A (N U S CORPORATION)

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57968	10/16/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	KIEDA,CHARLES,A (N U S CORPORATION)
57969	10/14/1985	DIOXIN DATA VALIDATION	6	Chart / Table		KIEDA,CHARLES,A (N U S CORPORATION)
57970	10/09/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	KIEDA,CHARLES,A (N U S CORPORATION)
57971	10/09/1985	DIOXIN DATA VALIDATION	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	KIEDA,CHARLES,A (N U S CORPORATION)
57972	08/08/1985	INORGANICS DATA VALIDATION	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57973	Undated	TABLE I FOR K18617	1	Chart / Table		

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57974	Undated	SUMMARY OF REVIEW INORGANIC DATA FOR ITEK 18617	2	Report		
57975	08/08/1985	INORGANIC DATA VALIDATION	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57976	Undated	TABLE I FOR ITEK 18626	1	Chart / Table		
57977	Undated	SUMMARY OF REVIEW INORGANIC DATA FOR K18626	3	Report		
57978	08/08/1985	INORGANIC DATA VALIDATION FIVE SEDIMENT SAMPLES K18627	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57979	Undated	TABLE I FOR ITEK 18627	1	Chart / Table		

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57980	Undated	SUMMARY OF REVIEW INORGANIC DATA	2	Report		
57981	10/10/1985	SURVEY OF CONTAINER ANALYTICAL RESULTS (11/6/85 LETTER ATTACHED)	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)
57982	11/06/1985	DATA VALIDATION BATCH K18638	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57983	11/06/1985	DATA VALIDATION BATCH K18737	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57984	11/06/1985	DATA VALIDATION BATCH K18737	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
57985	11/06/1985	DATA VALIDATION BATCH K18783	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)

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57986	10/11/1985	DATA VALIDATION TWO WATER LEACHABLE SULFATE SAMPLES AND SIX ORGANIC AIR TUBE SAMPLES BATCH K18694	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57987	10/14/1985	AIR TUBES DATA VALIDATION TWO SAMPLES AND TWO BLANKS BATCH K18744	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57988	08/12/1985	INORGANIC DATA VALIDATION 25 SOILS ITEK 18745	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57989	Undated	TABLE I FOR 18745 PAGES I-III	3	Chart / Table		
57990	Undated	SUMMARY OF REVIEW INORGANIC DATA FOR ITEK 18745	5	Report		
57991	10/11/1985	AIR TUBE ORGANIC DATA VALIDATION ONE SAMPLE AND ONE BLANK BATCH K18768	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)

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57992	08/12/1985	INORGANIC DATA VALIDATION THREE SOILS	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57993	Undated	TABLE I FOR ITEK 18778	1	Chart / Table		
57994	Undated	SUMMARY OF REVIEW INORGANIC DATA	1	Report		
57995	08/15/1985	INORGANIC DATA VALIDATION 11 WATERS ITEK 18782	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57996	Undated	TABLE I FOR ITEK 18782	1	Chart / Table		
57997	Undated	INORGANICS REPORT	3	Report		

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57998	08/15/1985	INORGANIC DATA VALIDATION SIX SOIL SAMPLES ITEK 18785	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
57999	Undated	TABLE I FOR ITEK 18785	1	Chart / Table		
58000	Undated	SUMMARY OF REVIEW INORGANIC DATA FOR ITEK 18785	2	Report		
58001	08/15/1985	INORGANIC DATA VALIDATION ITEK 18793 TWO WATER SAMPLES	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
58002	Undated	TABLE I FOR ITEK 18793	1	Chart / Table		
58003	Undated	SUMMARY OF REVIEW INORGANIC DATA FOR ITEK 18793	1	Report		

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58004	08/15/1985	INORGANIC DATA VALIDATION ITEK 18798 ONE WATER SAMPLE	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
58005	Undated	TABLE I	1	Chart / Table		
58006	Undated	SUMMARY OF REVIEW INORGANIC DATA	1	Report		
58007	08/20/1985	INORGANIC DATA VALIDATION SIX SOILS AND ONE WATER SAMPLE ITEK 18875	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
58008	Undated	TABLE I FOR ITEK 18875	1	Chart / Table		
58009	Undated	SUMMARY OF REVIEW INORGANIC DATA FOR ITEK 18875	1	Report		

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58010	10/10/1985	RESULTS OF ANALYSIS OF INORGANIC QUALITY ASSURANCE (QA) STANDARDS	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	MCCRACKEN,RICHARD W (N U S CORPORATION)
58011	11/29/1984	CERTIFICATE OF ANALYSIS	1	Report	COLCLOUGH,CAROL (INTERNATIONAL TECHNOLOGY CORP (IT))	(INTERNATIONAL TECHNOLOGY CORP (IT))
58012	11/29/1984	CERTIFICATE OF ANALYSIS	1	Report	COLCLOUGH,CAROL (INTERNATIONAL TECHNOLOGY CORP (IT))	(INTERNATIONAL TECHNOLOGY CORP (IT))
58013	11/29/1984	CERTIFICATE OF ANALYSIS	1	Report	COLCLOUGH,CAROL (INTERNATIONAL TECHNOLOGY CORP (IT))	(INTERNATIONAL TECHNOLOGY CORP (IT))
58014	08/15/1985	INORGANIC DATA VALIDATION FOUR SOILS AND TWO WATERS ITEK 18803	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
58015	Undated	TABLE I FOR ITEK 18803	1	Chart / Table		

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58016	Undated	SUMMARY OF REVIEW INORGANIC DATA FOR ITEK 18803	1	Report		
58017	08/15/1985	INORGANICS DATA VALIDATION THREE SOILS AND TWO WATER SAMPLES ITEK 18810	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
58018	Undated	TABLE I FOR ITEK 18810	1	Chart / Table		
58019	Undated	SUMMARY OF REVIEW INORGANIC DATA FOR ITEK 18810	1	Report		
58020	10/11/1985	AIR FILTER DATA VALIDATION 33 SAMPLES BATCH K18814 AND 10 SAMPLES BATCH K19114	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
58021	10/31/1984	CERTIFICATE OF ANALYSIS	1	Report	COLCLOUGH,CAROL (INTERNATIONAL TECHNOLOGY CORP (IT))	(INTERNATIONAL TECHNOLOGY CORP (IT))

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58022	10/11/1985	AIR DATA VALIDATION 33 SAMPLES BATCH K18814 AND 10 SAMPLES BATCH K19114	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
58023	11/07/1985	AIR DATA VALIDATION 66 SAMPLES BATCH K18814	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
58024	11/06/1985	AIR DATA VALIDATION 10 SAMPLES BATCH K19114	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
58025	08/15/1985	INORGANIC DATA VALIDATION FOUR SOIL SAMPLES ITEK 18815	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
58026	Undated	TABLE I FOR ITEK 18815	1	Chart / Table		
58027	Undated	SUMMARY OF REVIEW INORGANIC DATA FOR ITEK 18815	3	Report		

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58028	08/19/1985	INORGANIC DATA VALIDATION EIGHT SOIL SAMPLES ITEK 18831	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
58029	Undated	TABLE I FOR ITEK 18831	1	Chart / Table		
58030	Undated	SUMMARY OF REVIEW INORGANIC DATA FOR ITEK 18831	2	Report		
58031	08/20/1985	INORGANIC DATA VALIDATION SEVEN SOILS AND ONE WATER	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
58032	Undated	TABLE I FOR ITEK 18850	1	Chart / Table		
58033	Undated	SUMMARY OF REVIEW INORGANIC DATA FOR ITEK 18850	2	Report		

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58034	08/20/1985	INORGANIC DATA VALIDATION ONE SOIL AND TWO WATER SAMPLES ITEK 18858	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
58035	Undated	TABLE I FOR ITEK 18858	1	Chart / Table		
58036	Undated	SUMMARY OF REVIEW INORGANIC DATA FOR ITEK 18858	1	Report		
58037	08/19/1985	INORGANIC DATA VALIDATION FIVE SOILS	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
58038	08/19/1985	INORGANIC DATA VALIDATION 11 WATER SAMPLES ITEK 18919	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
58039	Undated	TABLE I	1	Chart / Table		

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58040	Undated	SUMMARY OF REVIEW INORGANIC DATA FOR ITEK 18919	3	Report		
58041	08/19/1985	INORGANIC DATA VALIDATION THREE SOILS ITEK 19015	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
58042	Undated	TABLE I FOR ITEK 19015	1	Chart / Table		
58043	Undated	SUMMARY OF REVIEW INORGANIC DATA FOR ITEK 19015	1	Report		
58044	10/10/1985	AIR TUBE DATA VALIDATION NINE SAMPLES FOR VOLATILE ORGANICS AND 10 SAMPLES FOR VINYL CHLORIDE BATCH K19069	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
58045	09/05/1985	INORGANIC DATA VALIDATION FOUR WATER SAMPLES BATCH 19192	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)

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58046	Undated	TABLE I FOR ITEK 19192	1	Chart / Table		
58047	Undated	SUMMARY OF REVIEW INORGANIC DATA FOR ITEK 19192	1	Report		
58048	10/11/1985	DATA VALIDATION 10 ORGANIC EXTRACTS AND ONE BLANK BATCH K19207	1	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	OLSZEWSKI,ARTHUR,J (N U S CORPORATION)
58049	10/30/1985	ASBESTOS DATA VALIDATION	2	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	GERLACH,RICHARD,C (N U S CORPORATION)
58050	10/10/1985	DIOXIN DATA VALIDATION 14 WIPES AND SOIL SAMPLES BATCH L132	3	Letter	GENICOLA,FLOYD,A (NJ DEPT OF ENVIRONMENTAL PROTECTION)	BYRNE,PATRICK,J (N U S CORPORATION)
58051	10/05/1985	DIOXIN DATA VALIDATION	6	Chart / Table		BYRNE,PATRICK,J (N U S CORPORATION)

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58052	11/25/1985	RISKS FROM CHEMICAL RELEASES ASSOCIATED WITH PROPOSED EXCAVATION OF LANDFILL	98	Report	GIANTI,SAMUEL,J (US ENVIRONMENTAL PROTECTION AGENCY)	POWELL,ROBERT,L (ENVIRON CORPORATION)|PUTZRATH,RESHA,M (ENVIRON CORPORATION)|RIETH,SUSAN,H (ENVIRON CORPORATION)|RODRICKS,JOSEPH,V (ENVIRON CORPORATION)
58053	10/01/1985	FEASIBILITY STUDY (FS)	338	Report	(NJ DEPT OF ENVIRONMENTAL PROTECTION)	(INTERNATIONAL TECHNOLOGY CORP (IT))
58054	10/26/1984	REVIEW OF TETRACHLORODIBENZODIOXIN CONTAMINATION IN IRONBOUND DISTRICT OF NJ (COVER MEMO ATTACHED AND COVER SHEET ATTACHED)	7	Memorandum	KNOROWSKI,DAVID,P (US ENVIRONMENTAL PROTECTION AGENCY)	(US DEPT OF HEALTH AND HUMAN SERVICES)
58055	Undated	STUDY AREA LOCATION MAP	1	Figure/Map/ Drawing		(N U S CORPORATION)
58056	Undated	MAP OF RESIDENTIAL ZONES, COMMERCIAL ZONES, AND AREAS OF CONCERN	1	Figure/Map/ Drawing		(N U S CORPORATION)
58057	11/18/1985	HYDE PARK LANDFILL EVALUATION OF EXCAVATION OPTION (CONFIDENTIAL)	1	Report		MASON,BENJAMIN,J (ETHURA)

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58058	09/20/1983	SAMPLING RESULTS (COVER SHEET ATTACHED AND 6/16/86 COVER LETTER ATTACHED)	337	Report		
58059	Undated	WORK PLAN (COVER SHEET ATTACHED)	1029	Report		
58060	06/20/1984	WORK PLAN (COVER SHEET ATTACHED AND COVER LETTER ATTACHED)	272	Report		
58061	Undated	ADDENDUM TO SITE EVALUATION REPORTS (COVER SHEET ATTACHED)	672	Report		
58062	05/01/1985	SITE EVALUATION REPORT VOLUME I (COVER SHEET ATTACHED)	165	Report	(NJ DEPT OF ENVIRONMENTAL PROTECTION)	(Diamond Shamrock Chemicals Company)
58063	05/01/1985	SITE EVALUATION REPORT VOLUME II (COVER SHEET ATTACHED)	307	Report	(NJ DEPT OF ENVIRONMENTAL PROTECTION)	(Diamond Shamrock Chemicals Company)

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58064	02/01/1985	SITE EVALUATION REPORT VOLUME II (COVER SHEET ATTACHED)	523	Report	(NJ DEPT OF ENVIRONMENTAL PROTECTION)	(Diamond Shamrock Chemicals Company)
58065	02/01/1985	SITE EVALUATION REPORT VOLUME III (COVER SHEET ATTACHED)	413	Report	(NJ DEPT OF ENVIRONMENTAL PROTECTION)	(Diamond Shamrock Chemicals Company)
58066	07/01/1986	DOW CHEMICAL WASTEWATER CHARACTERIZATION STUDY TITTABAWASSEE RIVER SEDIMENTS AND NATIVE FISH	309	Report		AMENDOLA,GARY,A (US ENVIRONMENTAL PROTECTION AGENCY)|BARNA,DAVID,R (US ENVIRONMENTAL PROTECTION AGENCY)
58067	Undated	PASSAIC VALLEY SEWERAGE COMMISSIONERS APPLICATION FOR A SEWER CONNECTION PERMIT AND INSTRUCTIONS	17	Form		
58068	Undated	HEALTH IMPLICATIONS OF 2,3,7,8-TETRACHLORODIBENZODIOXIN (TCDD) CONTAMINATION OF RESIDENTIAL SOIL (7/21/87 COVER MEMO ATTACHED)	107	Report		FALK,HENRY (CENTERS FOR DISEASE CONTROL (CDC))|FRIES,GEORGE (CENTERS FOR DISEASE CONTROL (CDC))|KIMBROUGH,RENATE,D (CENTERS FOR DISEASE CONTROL (CDC))|STEHR,PAUL (CENTERS FOR DISEASE CONTROL (CDC))

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58069	Undated	HANDWRITTEN NOTE (ILLEGIBLE) (COVER SHEET ATTACHED)	2	Notes		
58070	06/01/1983	ADMINISTRATIVE ORDER NO. E0-40-1	54	Legal Instrument		HUGHEY,ROBERT,E (NJ DEPT OF ENVIRONMENTAL PROTECTION)
58071	06/13/1986	RESPONSE TO NJ DEPT OF ENVIRONMENTAL PROTECTION (NJDEP) COMMENTS ON FEASIBILITY STUDY (FS)	72	Report	(Diamond Shamrock Chemicals Company)	(INTERNATIONAL TECHNOLOGY CORP (IT))
58072	04/01/1987	PHASE I ANALYTICAL AUDIT RESULTS FINAL RESPONSE	26	Report	(Diamond Shamrock Chemicals Company)	(INTERNATIONAL TECHNOLOGY CORP (IT))
58073	02/01/1985	SITE EVALUATION REPORT VOLUME I	321	Report	(NJ DEPT OF ENVIRONMENTAL PROTECTION)	(Diamond Shamrock Chemicals Company)|(ENVIRO - MEASURE INCORPORATED)|(INTERNATIONAL TECHNOLOGY CORP (IT))|(WOODWARD CLYDE CONSULTANTS)
58074	07/27/1987	AVAILABILITY OF TREATMENT AND DISPOSAL FACILITIES FOR DIOXIN WASTES	1	Report		JOSEPHS,JONATHAN (US ENVIRONMENTAL PROTECTION AGENCY)

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58075	07/01/1987	PROPOSED INTERIM REMEDIAL ACTION (RA) PLAN	1	Report		(US ENVIRONMENTAL PROTECTION AGENCY)
239628	09/06/1987	Letter to clarify unresolved matters from previous hearings	3	Letter	CATANIA,MICHAEL (NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION)	MONTAGUE,PETER (NONE)
239629	09/09/1987	Cover letter with tables of planned and existing transportable thermal treatment systems	6	Letter	(US ENVIRONMENTAL PROTECTION AGENCY)	JOSEPHS,JONATHAN (US ENVIRONMENTAL PROTECTION AGENCY)
239630	08/03/1987	Letter regarding mobile incineration design and construction	2	Letter	(US ENVIRONMENTAL PROTECTION AGENCY)	JOSEPHS,JONATHAN (US ENVIRONMENTAL PROTECTION AGENCY)
239631	07/30/1987	Letter regarding toxic pollutant effluent standards	2	Letter	(US ENVIRONMENTAL PROTECTION AGENCY)	JOSEPHS,JONATHAN (US ENVIRONMENTAL PROTECTION AGENCY)
239632	08/14/1987	Letter discussing conversation with West Germany concerning disposal of dioxin contaminated soil	1	Letter	CZAPOR,JOHN,V (US ENVIRONMENTAL PROTECTION AGENCY)	COURSEN,ROBIN (US ENVIRONMENTAL PROTECTION AGENCY)

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239633	07/21/1987	Letter indicating the refusal of West German authorities to approve the importation of waste from America	3	Letter	HUTTON,WILLIAM,C (Diamond Shamrock Chemicals Company)	EXNER,JURGEN,H (INTERNATIONAL TECHNOLOGY CORPORATION)
239634	08/17/1987	Letter with comments on Proposed Interim Remedial Action Plan	2	Letter	SINGER,GRACE,L (NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION)	GORDON,MICHAEL (GORDON AND GORDON)
239635	08/31/1987	Letter with comment on Proposed Remedial Action Plan	2	Letter	SINGER,GRACE,L (NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION)	SKAGGS, JR.,MERTON M. (MAXUS ENERGY CORPORATION)
239636	08/18/1987	Letter with supplemental comments and concerns about remedial plan	2	Letter	SINGER,GRACE,L (NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION)	SHARPE,JAMES (NEWARK CITY OF)
239637	09/25/1987	Attachments to Remedial Action Plan	3	Work Plan	(RANDOLPH BREYER & ASSOCIATES)	
239638	08/11/1987	Statement before public meeting on Proposed Dioxin Remediation Plan	12	Other		SHARPE,JAMES (NEWARK CITY OF)

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239639	08/31/1987	Letter regarding entombment and incineration of toxic waste	1	Letter	CRAIG,KATHLEEN (NONE)	FARRO,ANTHONY,J (NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION)
239640	08/13/1987	Transfer form for letter from resident requesting response	1	Letter	HAVESON,JANICE (NJ DEPT OF ENVIRONMENTAL PROTECTION)	
239641	08/10/1987	Transfer form for letter from resident and referred from governor	1	Letter	FARRO,ANTHONY,J (NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION)	(PEABODY CLEAN INDUSTRY INCORPORATED)
239642	08/10/1987	Referral slip for letter from resident	1	Letter	(NJ DEPT OF ENVIRONMENTAL PROTECTION)	(PEABODY CLEAN INDUSTRY INCORPORATED)
239643	07/27/1987	Letter regarding concerns about disposal of toxic waste	1	Letter	KEAN,TOM (PEABODY CLEAN INDUSTRY INCORPORATED)	CRAIG,KATHLEEN (NONE)
239644	Undated	Newspaper article titled: "Dioxin Cleanup Plan OK'D"	1	Letter		BOXALL,BETTINA (NONE)

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FINAL

09/09/2025

REGION ID: 02

Site Name: DIAMOND ALKALI CO.
CERCLIS ID: NJD980528996
OUID: 01
SSID: 0296
Action:

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name/Organization:	Author Name/Organization:
239645	Undated	Description regarding Ogden Environmental Services	2	Other		
239646	08/11/1987	Transcript of proceedings for Proposed Interim Remedial Action Plan	105	Meeting Document	(US ENVIRONMENTAL PROTECTION AGENCY)	O'CONNELL,ROBERT,J (RJ O'CONNELL ASSOCIATES)
239647	09/30/1987	Letter recommending the actions called for in the draft Record of Decision be implemented	2	Letter	DAGGETT,CHRISTOPHER,J (US ENVIRONMENTAL PROTECTION AGENCY)	DEWLING,RICHARD,T (US ENVIRONMENTAL PROTECTION AGENCY)
239648	09/29/1987	Cover letter for tables of the NJ State Applicable or Relevant and Appropriate Requirements	1	Letter	CZAPOR,JOHN,V (US ENVIRONMENTAL PROTECTION AGENCY)	FARRO,ANTHONY,J (NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION)
239649	Undated	Tables of NJ State ARAR's (plus additional cleanup standards)	33	Letter		(NJ DEPT OF ENVIRONMENTAL PROTECTION)
83052	09/30/1987	Record of Decision Remedial Alternative Selection	203	Report		DAGGETT,CHRISTOPHER,J (US ENVIRONMENTAL PROTECTION AGENCY)

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DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name/Organization:	Author Name/Organization:
88933	11/19/1990	ORDER SIGNED BY JUDGE BISSELL ON NOVEMBER 19, 1990, IN THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF NEW JERSEY. (ATTACHED CONSENT DECREE IN CIVIL ACTION NO. 89-5064 (JWB)).	167	Legal Instrument		BISSELL,JOHN,W (NONE)
109862	08/25/2004	FINAL REPORT FOR REMEDIAL CONSTRUCTION WITH REMOVED (DUE TO THE PRIVACY ACT INFORMATION) APPENDIX G	7531	Report	(US ENVIRONMENTAL PROTECTION AGENCY)	(BLASLAND, BOUCK & LEE, INCORPORATED)|(TIERRA SOLUTIONS, INCORPORATED)
110881	06/08/2011	THIRD FIVE-YEAR REVIEW REPORT FOR DIAMOND ALKALI SUPERFUND SITE, CITY OF NEWARK, ESSEX COUNTY, NEW JERSEY	26	Report		(US ENVIRONMENTAL PROTECTION AGENCY)
425447	06/23/2016	FOURTH FIVE-YEAR REVIEW REPORT FOR OU1 FOR THE DIAMOND ALKALI COMPANY SITE	24	Report		MUGDAN,WALTER,E (US ENVIRONMENTAL PROTECTION AGENCY)
585696	10/05/2018	SITE EVALUATION WORK PLAN FOR THE DIAMOND ALKALI COMPANY SITE	1458	Work Plan		(GLENN SPRINGS HOLDINGS INCORPORATED)
563374	10/23/2020	SITE EVALUATION REPORT ADDENDUM CONSENT DECREE CIVIL ACTION NO. 89-5064 FOR THE DIAMOND ALKALI SITE	180	Letter	NARANJO,EUGENIA (US ENVIRONMENTAL PROTECTION AGENCY)	(GLENN SPRINGS HOLDINGS INCORPORATED)

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DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name/Organization:	Author Name/Organization:
616053	12/22/2020	FIFTH FIVE-YEAR REVIEW REPORT FOR OU1 FOR THE DIAMOND ALKALI COMPANY SITE	27	Report		EVANGELISTA,PAT (US ENVIRONMENTAL PROTECTION AGENCY)
735459	01/28/2021	DRAFT REMEDY EVALUATION REPORT FOR OU1 FOR THE DIAMOND ALKALI COMPANY SITE	345	Report		(GLENN SPRINGS HOLDINGS INCORPORATED)
735462	06/10/2021	CORRESPONDENCE REGARDING NJDEP COMMENTS TO THE NATIONAL REMEDY REVIEW BOARD FOR OU1 FOR THE DIAMOND ALKALI COMPANY SITE	2	Email	NARANJO,EUGENIA (US ENVIRONMENTAL PROTECTION AGENCY)	NICKERSON,JAY (NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION)
630869	10/21/2021	US EPA REGION II RESPONSE TO THE NATIONAL REMEDY REVIEW BOARD'S RECOMMENDATIONS FOR OU1 FOR DIAMOND ALKALI COMPANY SITE	10	Memorandum	DOUCHAND,LARRY (US ENVIRONMENTAL PROTECTION AGENCY)	EVANGELISTA,PAT (US ENVIRONMENTAL PROTECTION AGENCY)
735463	02/09/2022	US EPA RESPONSE TO THE REQUEST FOR ADDITIONAL INFORMATION ABOUT THE PROCESS FOR SELECTING A FINAL REMEDY FOR OU1 FOR THE DIAMOND ALKALI COMPANY SITE	2	Letter	(GLENN SPRINGS HOLDINGS INCORPORATED)	NARANJO,EUGENIA (US ENVIRONMENTAL PROTECTION AGENCY)
735458	03/13/2024	US EPA REGION 2 RESPONSE TO THE NATIONAL REMEDY REVIEW BOARD RECOMMENDATIONS REGARDING THE DETAILED ALTERNATIVES ANALYSIS MEETING FOR OU1 FOR THE DIAMOND ALKALI COMPANY SITE	8	Memorandum	DOUCHAND,LARRY (US ENVIRONMENTAL PROTECTION AGENCY)	EVANGELISTA,PAT (US ENVIRONMENTAL PROTECTION AGENCY)

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DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Addressee Name/Organization:	Author Name/Organization:
704638	07/25/2024	COMMUNITY INVOLVEMENT PLAN FOR OU1 FOR THE DIAMOND ALKALI COMPANY SITE	76	Publication		(US ENVIRONMENTAL PROTECTION AGENCY)
735456	07/25/2024	FEASIBILITY STUDY REPORT FOR OU1 FOR THE DIAMOND ALKALI COMPANY SITE	678	Report		(BROWN AND CALDWELL)
735461	08/15/2024	NJDEP CONCURRENCE ON THE PROPOSED PLAN FOR OU1 FOR THE DIAMOND ALKALI COMPANY SITE	2	Letter	EVANGELISTA,PAT (US ENVIRONMENTAL PROTECTION AGENCY)	HAYMES,DAVID (NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION)
744505	09/09/2024	PROPOSED PLAN FOR OU1 - 80 AND 120 LISTER AVENUE FOR THE ROD AMENDMENT FOR THE DIAMOND ALKALI SITE	21	Publication		(US ENVIRONMENTAL PROTECTION AGENCY)
The document below has been added after the Proposed Plan						
748630	01/10/2025	FINAL FEASIBILITY STUDY FOR OU1 FOR THE DIAMOND ALKALI COMPANY SITE	680	Report	(GLENN SPRINGS HOLDINGS INCORPORATED)	(BROWN AND CALDWELL)

APPENDIX IV

STATE LETTER OF CONCURRENCE

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
CONTAMINATED SITE REMEDIATION & REDEVELOPMENT
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

PHILIP D. MURPHY
Governor

TAHESHA L. WAY
Lt. Governor

SHAWN M. LATOURETTE
Commissioner

January 13, 2025

Pat Evangelista, Director
Superfund and Emergency Management Division
USEPA Region 2
290 Broadway
New York, NY 1007-1866

RE: Diamond Alkali Superfund Site
Operable Unit 1 Record of Decision
80-120 Lister Avenue, Newark

Dear Mr. Evangelista:

The New Jersey Department of Environmental Protection (Department) has completed its review of the Record of Decision (ROD) for the Diamond Alkali Superfund Site Operable Unit 1 (OU1). EPA's selected remedy for OU1 is Alternative 2, Optimized Containment Remedy, which consists of the Interim Remedy that is currently operating at OU1 with improvements to optimize it, making it more effective and protective. These optimizations consist of the following:

- Replacement of extraction wells along the floodwall
- Reactivation of extraction well EW-9 on the south side of OU1
- Redesign and replacement of portions of the groundwater conveyance system as needed
- Upgrade of the groundwater treatment system, as needed
- Investigation of the integrity of the existing impermeable cap and subsequent repairs, if needed
- Installation of additional groundwater monitoring wells, if needed.

The selected remedy is consistent with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan and is protective of public health and the environment. Therefore, the Department concurs with the Record of Decision.

The Department appreciates the opportunity to participate in the decision-making process for the Diamond Alkali Superfund Site. Should you wish to discuss this matter further, please contact Gwen Zervas at (609) 940-4515, or via e-mail at Gwen.Zervas@dep.nj.gov.

Sincerely,

David E. Haymes
Assistant Commissioner

APPENDIX V

RESPONSIVENESS SUMMARY

APPENDIX V

RESPONSIVENESS SUMMARY

RESPONSIVENESS SUMMARY
FOR THE
RECORD OF DECISION
OPERABLE UNIT 1 OF THE DIAMOND ALKALI SUPERFUND SITE
80 AND 120 LISTER AVENUE
NEWARK, NEW JERSEY

INTRODUCTION

As required by the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) at 40 C.F.R. 300.430(f)(3)(i)(F), this Responsiveness Summary provides a summary of the significant comments and concerns submitted by the public regarding the Proposed Plan for Operable Unit 1 of the Diamond Alkali Superfund Site (OU1), and the U.S. Environmental Protection Agency's (EPA's) responses to those comments and concerns. All comments summarized in this document have been considered in EPA's final decision for selection of the remedy for OU1.

This Responsiveness Summary is divided into the following sections:

I. SUMMARY OF COMMUNITY RELATION ACTIVITIES: This section provides the history of community involvement and concerns regarding the Site.

II. COMPREHENSIVE SUMMARY OF MAJOR QUESTIONS, COMMENTS, AND CONCERNS, AND EPA's RESPONSES: This section includes summaries of comments received by EPA during the public comment period, including comments made at the September 19, 2024 public meeting and written comments, and EPA's responses to these comments.

The Responsiveness Summary includes attachments which document public participation in the remedy selection process for the Site. The attachments are as follows:

- Attachment A – Written comments Submitted During Public Comment Period
- Attachment B –September 2024 Proposed Plan for OU1 of the Diamond Alkali Superfund Site;
- Attachment C – Public Notice and comment period extension notices published in The Star Ledger;
- Attachment D – Transcript of the September 19, 2024 Public Meeting;

I. SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

An Interim Remedy (IR) was selected for OU1 in September 1987 and construction of the IR was completed in 2001. A Feasibility Study (FS) Report[1] to select a final remedy for OU1 was prepared under EPA oversight by Glenn Springs Holdings (GSH) on behalf of Occidental Chemical Corporation (OCC) and submitted on July 25, 2024 (2024 FS Report). During the preparation of the 2024 FS Report, EPA provided progress updates and presented findings to the Passaic River Community Advisory Group (CAG). The Passaic River CAG provides advice and recommendations to EPA and its Partner Agencies to help ensure a more effective and timely cleanup and restoration of the Passaic River. The CAG consists of stakeholders who represent a

[1] A FS identifies and evaluates remedial alternatives to address the contamination at OU1.

broad range of interests and locales potentially affected by the contamination and cleanup of the Diamond Alkali Superfund Site.

As part of EPA's public outreach efforts for OU1, a Community Involvement Plan (CIP) was developed and made available to the public in July 2024. EPA developed the CIP to facilitate communication between EPA and the communities affected by and interested in OU1, as well as to encourage community involvement in the selection of a final remedy for OU1. As described in the CIP, EPA and its consultant contacted a segment of the public that may be affected, or perceive they are affected, by OU1. The interviewees represented a broad spectrum of the community from a diverse group of categories and included local residents, organizations, activists, groups working with immigrants, elected officials, and cultural, historic, and civic associations. Five individuals were interviewed, with each interview taking approximately 45 minutes to one hour, depending on the interests, concerns, activities, and level of input provided by the individual interviewees. Information from the interviews was analyzed and incorporated into the CIP which generally included the local community's environmental concerns, concerns related to the Site, and communication preferences.

EPA's preferred remedial alternative and the basis for that preference were identified in the Proposed Plan for the final remedy for OU1.[2] The Administrative Record that is the basis for EPA's identification of a preferred alternative, including the 2024 FS Report, was made available to the public on September 10, 2024, when the Proposed Plan was released to the public for comment. The documents in the Administrative Record file were made available to the public at information repositories maintained at the EPA Region 2 Superfund Records Center, 290 Broadway, 18th Floor, New York, New York, 10007-1866; the main branch of the Newark Public Library, 5 Washington Street, Newark, New Jersey 07102 and online at EPA's website for the Diamond Alkali Site: https://www.epa.gov/superfund/diamond-alkali

A notice of availability for the above-referenced documents was published in the *Star Ledger* on September 10, 2024. The public comment period initially ran from September 10, 2024 to October 10, 2024 but two extensions were granted, extending the public comment period to November 26, 2024. Notices of the comment period extension were published on October 10, 2024 and November 7, 2024 in the *Star Ledger*. Announcements of the comment period and extensions were also posted on EPA's website.

At a public meeting on September 19, 2024, EPA staff presented to the public EPA's preferred remedial action alternative to address the contaminated wastes, fill material and soil present in the waste management area at OU1. The public meeting was a hybrid public meeting (virtual via Zoom and in person in a lecture hall at the New Jersey Institute of Technology) to inform local officials and members of the community about the Superfund process, present information regarding the alternatives considered in the Proposed Plan, including the preferred alternative, and respond to questions and comments from approximately 70 attendees (18 in-person and 52 via Zoom) including residents, media, local business people and local government officials.

[2] A proposed plan describes the remedial alternatives considered for a site and identifies the preferred alternative and the rationale for this preference.

II. COMPREHENSIVE SUMMARY OF MAJOR QUESTIONS, COMMENTS AND CONCERNS, AND EPA's RESPONSES

Oral comments were received and recorded at the public meeting and additional comments were submitted to EPA in writing. The transcript from the public meeting can be found in Appendix V-C and written comments received can be found in Appendix V-D. A summary of the comments provided at the public meeting and in writing, as well as EPA's responses to those comments, are provided below. Comments are grouped according to subject, regardless of whether they were received in writing or provided orally at the public meeting.

A. Compliance with CERCLA and NCP, EPA Policies and Guidance

1. Comment: A commenter noted that EPA's Proposed Plan indicated that "[t]he estimated costs for each remedial alternative to be comparatively evaluated are expressed as net present value, using a 7% discount rate." The commenter referenced the preamble to the March 8, 1990 revisions to the NCP, 55 FR 8666, 8722 (March 8, 1990) and EPA Guidance Memorandum "Revision to OMB Circular A-94 on Guidelines and Discount Rates for Benefit-Cost Analysis," OSWER Directive No. 9355.3-20, pointing out that EPA stated that the agency "would follow [Office and Budget Management] Circular A-94 and that if OMB revised Circular A-94, then EPA would address the matter in program guidance to ensure consistency with Circular A-94." The commenter stated that Appendix D of A-94 (revised November 9, 2023) sets forth the 2023-2025 discount rate that should be used in projecting a 30-year CERCLA response actions as 3.1%, not 7%. The commenter asked that EPA explain its selection of a 7% discount rate in the estimation of the cost of remedial alternatives.

   Response: According to the NCP's nine criteria that EPA is required to use to select a remedy, cost effectiveness is evaluated by balancing "cost" with the other criteria. Overall effectiveness of a remedial alternative is determined by evaluating long-term effectiveness and permanence; reduction in toxicity, mobility and volume through treatment; and short-term effectiveness. Overall effectiveness is then compared to cost to determine whether the remedy is cost-effective. As discussed in the ROD, the selected remedy is cost-effective.

   The cost estimates in the Proposed Plan were prepared consistent with CERCLA, the NCP and relevant guidance documents and calculated following EPA's guidance. As explained in EPA guidance, *A Guide to Developing and Documenting Cost Estimates During the Feasibility Study* (EPA 540-R-00-002, 2000) (Cost Estimating Guide) there may be circumstances in which it would be appropriate to consider the use of a lower or higher discount rate than 7 percent for the present value analysis. For example, for Federal facility sites being cleaned up using Superfund authority, it is generally appropriate to apply a discount rate based on interest rates from Treasury notes and bonds. Because the Federal government has a different "cost of capital" than the private sector, these lower rates are appropriate to use for adjusting future year expenditures in a present value calculation for

Federal facility remediation projects. Similarly, if there were no possibility that financially viable PRPs might exist to perform or fund the remedial action, it might be appropriate to use a lower discount rate to reflect the lower returns on government investments. However, the Cost Estimate Guide clearly states that the 7 percent discount rate should generally be used in calculating net present value for all non-Federal sites. For OU1, the circumstances did not dictate deviating from the 7 percent discount rate.

The cost estimates presented in the Proposed Plan are primarily for the purposes of comparing remedial alternatives. While use of a 7 percent discount rate was appropriate, EPA calculated the cost estimates using the suggested discount rate of 3.1% for illustrative purposes to respond to this comment. The results show that while net present values calculated using a discount rate of 3.1% would be higher than the values calculated with the 7% discount rate, the present value varies in a similar manner among the alternatives with the changes in the discount rate. The table below presents a comparison of the present worth of the remedial alternatives calculated with both rates.

Alternative	Total Capital Cost	Annual O&M Cost	**Discount Rate = 7%**		**Discount Rate = 3.1%**	
			Present Worth of O&M Cost	Total Present Worth	Present Worth of O&M Cost	Total Present Worth
1	$0	$963,000	$11,950,000	$12,000,000	$18,634,000	$19,000,000
2	$3,640,000	$963,000	$11,950,000	$16,000,000	$18,634,000	$23,000,000
4	$119,280,000	$963,000	$11,950,000	$132,000,000	$18,634,000	$138,000,000
6	$34,290,000	$963,000	$11,950,000	$47,000,000	$18,634,000	$53,000,000
8	$53,640,000	$963,000	$11,950,000	$66,000,000	$18,634,000	$72,000,000

Note: Capital and O&M costs are round to nearest $1,000. Total present worth is rounded up to the nearest $1,000,000.

The relationship among the alternatives is not meaningfully affected by use of the lower discount rate and does not change the NCP analysis of overall effectiveness in relation to cost.

2. Comment: A commenter noted that EPA's press release stated that the final remedy "builds on the previously completed work and would avoid the short-term risks associated with other options such as digging up and removing the contaminated material outright." The commenter asked where EPA finds legal authority and Congressional policy direction for a risk management policy that allows EPA to "avoid short term risks" as a rationale for ignoring the statutory policy that establishes a preference for permanent remedies and mandates that EPA "utilize permanent solutions ... to the maximum extent practicable?" The commenter opined that EPA's stated approach undermines the primary remedial objective of Superfund, which establishes a preference for permanent remedies. The commenter stated that the "maximum extent practicable" is a technology-based decision rule, not a risk management decision rule, and opined further that EPA has improperly combined a risk management approach with a technology-based approach.

Response: Alternative 2, the selected remedy, provides long-term effectiveness and permanence. The construction of an engineered cap to isolate and prevent exposure to wastes is a permanent remedy that has been selected at numerous Superfund sites across the United States, with the understanding that the cap system must be properly monitored and maintained for as long as the underlying wastes have the potential to present an unacceptable risk to human health or the environment. Alternative 2 provides for maintaining the currently constructed containment system, comprised of a cap, slurry walls and a floodwall, and systems to contain, capture, and treat groundwater within the containment area, or waste management area (WMA). Ongoing O&M activities of the cap, ground water withdrawal system (GWWS), and groundwater treatment system (GWTS) help maintain protectiveness by preventing contact with the waste and reducing migration of groundwater contamination.

The NCP [40 CFR 300.430(e)(9)] sets forth the process for the detailed analysis of remedial alternatives in a FS report via consideration of nine evaluation criteria. Short-term effectiveness is one of the nine criteria and is to be assessed by considering (1) short-term risks that might be posed to the community during implementation of an alternative, (2) potential impacts on workers during remedial action and the effectiveness and reliability of protective measures, (3) potential environmental impacts of the remedial action and the effectiveness and reliability of mitigative measures during implementation and (4) time until protection is achieved. In conformance with the NCP, EPA considered the short-term effectiveness of each of the OU1 remedial alternatives evaluated in the 2024 FS Report as part of the comparative evaluation of alternatives. Excavation of waste from OU1, whether for ex-situ treatment or immediate off-site disposal, posed significantly higher short-term effectiveness concerns compared to the other alternatives since it would result in the greatest potential for site worker and community exposure to contaminants during removal, handling, and transportation, as applicable, extending over a greater period of time. For example, opening the multilayer cap to carry out excavation, in-situ solidification, or ex-situ treatment would create the potential for airborne releases of hazardous substances, including elevated concentrations of highly-toxic dioxin, to the densely-populated surrounding community.

3. Comment: Newark is a NJ state law designated "environmental justice community." Please provide the EPA analysis of how EPA considered that NJ law as a Superfund Applicable or Relevant and Appropriate Requirement (ARAR). Did the NJDEP sign off on this approach and remedial action?

   Response: EPA concurs with the commenter's statement that the community surrounding OU1 has been designated as an Overburdened Community under the New Jersey Environmental Justice Law (New Jersey Statutes Annotated [N.J.S.A.] 13:1D-157). This law was passed by New Jersey in 2020, and the state finalized the implementing rules on April 17, 2023. The rules require the New Jersey

Department of Environmental Protection (NJDEP) to consider how certain facilities that are being constructed in overburdened communities will contribute to public health issues and environmental and health stressors on the populations surrounding the facilities, through use of a comparative analysis. The rules apply (1) if the proposed or existing facility is one of eight specific facility types, (2) if the applicant seeks an individual permit under NJDEP regulations, and (3) the facility is located or proposed to be located in an overburdened community. Neither the Diamond Alkali Superfund Site, nor the remedy constructed for OU1 of the Site, fits within the categories of facilities regulated by the law and rules, nor is EPA an applicant seeking an individual permit under NJDEP law.

EPA is sensitive to the burdens experienced by the Ironbound community. As noted in the ROD, this is a community that has experienced various negative environmental consequences from multiple industrial and commercial operations, giving rise to EJ concerns. As explained in the ROD, EPA conducted a review of the project vicinity using EPA's EJSCREEN online tool and via review of aerial imagery (accessed through Google Maps) to identify the locations of residential areas. EPA completed this screening to create a common starting point between the agency and the public when looking at issues related to EJ. EPA takes EJ concerns into account in its public outreach and community involvement efforts.

The 2024 FS Report discusses EJ concerns in the area surrounding OU1 (refer to Section 1.2.5) and evaluates how the various alternatives would impact EJ concerns with respect to the seven threshold criteria used to evaluate remedial alternatives (refer to Section 9.2.2). The 2024 FS Report indicated that EPA's preferred alternative would result in only minor alterations of the existing conditions; therefore, the remedial action would not affect EJ indices for the surrounding community.

State acceptance is one of the NCP's modifying criteria for the evaluation of remedial alternatives. As noted in the Proposed Plan, NJDEP was consulted throughout the development of the FS and concurs with EPA's preferred alternative for OU1.

4. Comment: A commenter asked if EPA has the latitude to consider the most conservative criteria available for human health protection in addition to NJDEP's criteria when evaluating the concentrations of site contaminants during future monitoring.

   Response: The monitoring criteria that EPA will require as part of long-term operation, monitoring, and maintenance will be tied to the cleanup objectives. In developing cleanup objectives, or remedial action objectives, EPA considers the alternatives' ability to meet remediation goals/cleanup levels, which are generally chemical-specific goals for each medium and/or exposure route that are established to protect human health and the environment. Objectives are based on available information and standards such as ARARs, to-be-considered (TBC) advisories, criteria and guidance, and site-specific risk-based levels. The primary objective of any remedial strategy is overall protectiveness.

When chemical-specific ARARs are available, it is EPA's practice to set cleanup levels at the lowest of the available ARARs for the media of concern since compliance with chemical-specific ARARs is generally considered protective. For OU1, the Proposed Plan identified groundwater cleanup goals based on the New Jersey Groundwater Quality Standards for Class II-A aquifers, with consideration of national primary maximum contaminant levels (MCLs) for the Site-related contaminants in groundwater in the WMA. Cleanup goals for soil are based on the Non-residential New Jersey Soil Remediation Standards for the Ingestion-Dermal Pathway identified in N.J.A.C. 7:26D. Hexachlorobenzene, 2,3,7,8-TCDD and 4,4'-DDT are considered the COCs for soil because they are present at concentrations considered to be principal threat waste.

Alternative 2, the selected remedy, will be monitored by collecting data through the existing monitoring well network, though this could be supplemented with additional wells. The monitoring program/well network and monitoring frequency have not been developed yet, but will be described and developed in a work plan prior to implementation of the final remedy. At present, EPA assumes that the monitoring program would include, at minimum, the following:

- Pairs of monitoring wells in the fill inside and outside the slurry walls along the east, west, and south boundaries of the property to assess horizontal gradients across the slurry walls.
- Pairs of monitoring wells within the interior of the Site to monitor vertical gradients between the fill and sand units. Pairs will likely be spaced uniformly throughout OU1, with one well in the fill unit and one in the underlying sand.
- A series of wells screened in the fill unit along the floodwall to monitor horizontal gradients between the river and the fill.
- Wells located immediately outside of the slurry walls and wells in the sand unit underlying the fill and organic silt strata will be sampled for point of compliance water quality monitoring.

The objective of the monitoring will be to confirm that the implementation and operation of the final remedy has effectively eliminated the migration of OU1-related contamination below cleanup levels to the groundwater outside the area of containment and to the Passaic River.

B. Remedy Selection and Implementation

1. Comment: A commenter asked EPA to identify the source of the funding that would be required to construct the final OU1 remedy and whether taxpayers would be funding the remedy. The commenter also asked about the annual maintenance costs for the various remedial alternatives and how those costs were considered in the comparative evaluation of alternatives. The commenter asked if the scope and cost

of maintenance was similar across each of the alternatives that retained the containment cell and cap system.

Response: It is EPA's policy to have Superfund cleanups performed by the parties legally responsible for the contamination, consistent with EPA's September 20, 2002 memorandum "Enforcement First for Remedial Action at Superfund Sites".[3] EPA will therefore seek to have the potentially responsible parties (PRPs) prepare the remedial design and perform the cleanup under EPA oversight.

In the 2024 FS Report, Proposed Plan, and ROD, operation, monitoring and maintenance costs are included as a line item in each of the cost estimates. Because these costs are not one-time costs, but recurring future costs, they are calculated for cost estimating purposes using a discount rate, consistent with EPA guidance. EPA estimated that the costs would be the same under each of the alternatives because Alternatives 1, 2, 4, 6 and 8 each require the cap system and institutional controls to be maintained, such that the ongoing O&M cost component is equivalent for each alternative (present value with 7% discount rate of $11,950,000).

2. Comment: A commenter asked EPA whether the OU1 remedy decision is to be revisited every 10 to 15 years in the future.

   Response: In issuing the ROD for OU1, EPA is selecting a final remedy for OU1 and will not revisit the remedy in the same way that the agency had re-evaluated the interim remedy in the past. However, because the final remedy will result in hazardous substances remaining on-site above health-based levels that allow for unlimited use and unrestricted exposure, EPA will continue to evaluate site monitoring and maintenance data and prepare Five-Year Review Reports to evaluate the performance and protectiveness of the selected final remedy and communicate its findings to the public on an ongoing basis.

3. Comment: A commenter asked why an interim remedy was initially selected instead of a final remedy for OU1.

   Response: The 1987 ROD Responsiveness Summary stated that there were no land disposal facilities permitted for the disposal of dioxin waste at the time of its preparation and that the then-pending the Resource Conservation and Recovery Act (RCRA) land disposal restrictions (which became effective on 8 November 1988) would set treatment standards for land disposal of dioxin waste that would be achievable by incineration. The 1987 ROD anticipated that new treatment/disposal options would become available, and selecting an interim remedy allowed for the contaminated materials to be secured until an appropriate technology became available, which would be determined by additional evaluations over time. However, the off-site disposal options for RCRA-listed dioxin waste have not greatly increased since the promulgation of the regulations in 1987 prohibiting land

[3] https://www.epa.gov/sites/default/files/documents/enffirst-mem.pdf

disposal of listed dioxin wastes after November 8, 1988; at present the OU1 waste material containing listed dioxin waste can only be disposed of outside the United States.

4. Comment: A commenter stated that the estimated $16 million cost of the preferred remedy seemed low, given the need to maintain and potentially replace the remedy components over an extended time period. The commenter asked EPA to describe the duration and net present value discounting to arrive at the costs and asked how the PRP has financially secured the interim remedy to date.

   Response: The capital cost for the preferred alternative, which EPA is selecting as the final remedy, is $3,640,000 and the annual operation and maintenance (O&M) cost, including long-term monitoring, is $963,000. The total present value of $16,000,000 was calculated based on an operating period of 30 years using a discount rate of 7 percent. This operating period and discount rate were selected for cost-estimating purposes to provide a comparative analysis of alternatives. In reality, O&M will need to be performed in perpetuity or for as long as wastes at the site could pose a risk to human health or the environment. The detailed cost estimate of the selected remedy can be found in Table 7b. For a detailed presentation of the cost estimates for each alternative, refer to Appendix E of the 2024 FS Report, "Engineer's Opinion of Probable Cost."

   EPA entered into a judicial consent decree with OCC in 1990 that required implementation of the OU1 interim remedy. The consent decree required that OCC provide evidence that it could fund the performance of the remedy, also known as financial assurance, in the amount of $16 million, which OCC did provide. Specifically, OCC already had in place financial assurance in the amount of $16 million for the benefit of NJDEP. Within 14 days of the effective date of the consent decree, OCC modified the letters of credit held by OCC to be for the benefit of EPA as well as NJDEP to satisfy the requirements of the consent decree.

5. Comment: A commenter asked why EPA hasn't required the construction of remedy enhancements under the current IR and consent decree.

   Response: EPA has required enhancements of elements of the IR when the Agency determined a need for them, supported by evaluation of monitoring data from OU1 that are pertinent to remedy performance. For example, based on the regular evaluation of hydrogeological data from the operation of the OU1 interim remedy, EPA determined that extraction wells EW-7 and EW-8 were not extracting groundwater from the target unit (the fill layer above the organic silt layer) and therefore were not achieving the desired inward and upward hydraulic gradients in the northeast corner of the OU1 properties, and directed OCC to replace them. In October 2021, new extraction wells EW-7R and EW-8R were installed by OCC as replacements for the existing wells. Significant improvements in hydraulic gradients have been observed in the site data since the reinstallation of the extraction wells, and this observation is part of the basis for EPA's selection of

Alternative 2, Optimized IR, which includes replacement of the remainder of the groundwater extraction wells adjacent to the floodwall, along with other improvements to the groundwater extraction and treatment system.

6. Comment: A commenter asked how Alternatives 3, 5 and 7 were removed from consideration in the FS Report.

   Response: Alternatives 3, 5, and 7 each address contaminated fill material and wastes on a property-wide basis at OU1, either by excavation and off-site disposal (Alternative 3), in-situ stabilization (Alternative 5), or excavation and ex-situ thermal treatment (Alternative 7). Alternatives 3, 5 and 7 were developed to provide a comprehensive assessment of remedial alternatives, but they were screened out prior to the full, comparative evaluation of alternatives because EPA concluded it would be infeasible to excavate the material, as contemplated under Alternatives 3 and 7, or to mix reagents in-situ (Alternative 5) between and beneath the floodwall tiebacks and anchors without risking damage to the floodwall. A similar concern applied to excavation immediately adjacent to the slurry walls, which could compromise their integrity. Alternatives 3, 5 and 7 were therefore removed from the FS due to implementability concerns. Note that each of alternatives that was screened out is 'mirrored' by a similar alternative (Alternatives 4, 6 and 8) that apply the same remedial technologies on a 'targeted' basis, encompassing the majority of the OU1 properties but avoiding the areas that contain the floodwall tiebacks and anchors, the locations of the groundwater extraction and treatment system components, and the area immediately adjacent to the perimeter slurry walls.

7. Comment: A commenter asked if EPA can require or stipulate the creation of a trust or fund that would ensure that there is available funding in perpetuity to accompany the operation and maintenance schedule for OU1, even if the responsible parties become bankrupt.

   Response: EPA's standard approach when a PRP implements a remedy is to include in the enforcement document a financial assurance component, as described above in response to Comment B.4. Further discussion of the specific elements in a yet to be established enforcement document would be speculative and beyond the scope of remedy selection.

8. Comment: A commenter asked about the comparative evaluation of short-term and long-term effectiveness for the FS alternatives and submitted the following specific questions:

   i. Have the short-term and long-term risks of the remedial alternatives been quantified by EPA? If so, please provide the analyses.
   ii. How did EPA 'balance' the comparison of short-term and long-term risks between the remedial alternatives to select the preferred remedy?

The commenter urged EPA to excavate and remove all the contaminated material as a permanent remedy for OU1.

Response: The way the comparative evaluation works is explained in the Proposed Plan and also in the ROD. Relevant to this question, the NCP and EPA guidance identify the nine criteria for evaluation and explain how EPA should consider them. Consistent with the NCP and guidance, the detailed analysis consisted of an assessment of the individual alternatives against each of nine evaluation criteria and a comparative analysis focusing upon the relative performance of each alternative against those criteria. For example, EPA's *Guidance for Conducting Remedial Investigations and Feasibility Studies* explains that the level of detail required to analyze each alternative against these evaluation criteria will depend on the type and complexity of the site, the type of technologies and alternatives being considered, and other project-specific considerations. The presentation of differences among alternatives can be measured either qualitatively or quantitatively, as appropriate, and should identify substantive differences (e.g., greater short-term effectiveness concerns, greater cost, etc.). For the analysis of the OU1 alternatives, EPA performed a qualitative analysis, as reflected in the 2024 FS Report and the Proposed Plan (as well as this ROD), which highlighted the greater short-term effectiveness concerns posed by Alternatives 4, 6 and 8, as compared to Alternative 2.

With respect to the second element of the comment, the NCP analysis does not include a balancing of short-term effectiveness against long-term effectiveness as suggested by the commenter. The nine criteria from the NCP are subdivided into two threshold criteria that provide the minimum requirements for an alternative to be eligible for selection (overall protection of human health and the environment, compliance with ARARs), five primary balancing criteria used to make comparisons and to identify the major trade-offs among the alternatives (long-term effectiveness or permanence; reduction of toxicity, mobility and volume; short-term effectiveness; implementability; and cost) and two modifying criteria considered after the comment period (state and community acceptance). The comment focused on two of the five balancing criteria, that is, long-term effectiveness or permanence, and short-term effectiveness, whereas EPA's analysis involves first evaluating each alternative with respect to each criterion, and then also considering overall effectiveness based on the evaluations of long-term effectiveness and permanence, reduction in toxicity, mobility and volume, and short-term effectiveness, and comparing that to cost.

Through this analysis, EPA concluded that the Alternative 2 provides the best balance of tradeoffs compared to the other alternatives with respect to all the balancing criteria. This takes into account that selected remedy will be effective in the long-term, and avoids the significant short-term risks associated with large-scale excavation, or in-situ treatment, of highly-contaminated material.

9. Comment: A commenter noted that based on the construction of the IR, some 2,3,7,8-tetrachlorodibenzodioxin (2,3,7,8-TCDD)-contaminated soils are present outside the slurry walls. The commenter also noted that groundwater contamination may extend into the glaciofluvial sand aquifer below the organic silt layer and that the Proposed Plan states that both of these potential concerns may be addressed under a future Diamond Alkali Superfund Site OU. The commenter asked if EPA had a timeline for addressing this contamination. The commenter recommended that EPA re-evaluate the floodwall and groundwater containment system to determine if further enhancements might be needed to prevent migration of contaminants.

   Response: As described in the Proposed Plan and supporting documents, such as the 2024 FS Report, the slurry wall that encircles three sides of the OU1 properties was designed to encompass the contaminated soil and debris that exceeded cleanup standards specified in the 1987 ROD and the judicial consent decree entered into by EPA and Occidental Chemical Corporation, or, where this type of material extended to the OU1 boundary, the slurry wall was to extend as close as is practicable to the property boundary. To maintain remedial construction activities within the OU1 properties and to be sure that the slurry wall would be protected from potential future off-site activities, the slurry wall was constructed approximately 15 feet inside the western, southern and eastern property boundaries (please refer to Figure 13a). The edge of the cap system extends about 5-7 feet beyond the slurry wall (refer to Figure 1-16 in the 2024 FS Report). The interim remedy, and the final remedy for OU1 address the contaminated material inside the slurry walls and floodwall, and above the naturally occurring organic silt layer, capped with multilayer cap. Material outside the slurry wall that is not covered by the multilayer cap is covered with pavement, eliminating direct contact.

   EPA has not yet established a timeline for investigating potential groundwater contamination in the glaciofluvial sand unit below the organic silt layer. However, as discussed in the Proposed Plan and ROD, EPA will continue to assess annual monitoring and maintenance data from OU1 following final remedy construction, as it has done since construction of the IR, and will employ the Five-Year Review (FYR) process to evaluate whether the performance of the final remedy remains protective of human health and the environment. The FYR process will include regular assessment of the function of the floodwall, GWWS, GWTS, and other remedy components to meet the RAOs and prevent the migration of contamination.

10. Comment: A commenter opined that EPA has avoided presenting details backing up its findings and remedies, focusing instead on top level, public-facing determinations only

    Response: The key details that EPA considered in its selection of a final remedy are documented in the Administrative Record, including the Proposed Plan and the 2024 FS Report. Additional information includes the annual groundwater monitoring reports, the Five-Year Review Reports, the Remedy Evaluation Report, and the Site Evaluation Report Addendum. The Administrative Record file was made available to the public on September 10, 2024, when the Proposed Plan was released to the public for comment. The Administrative Record documents were made available to the public at information repositories maintained at the EPA-Region 2 Superfund Records Center, 290 Broadway, 18th Floor, New York, New York, 10007-1866; the main branch of the Newark Public Library, 5 Washington Street, Newark, New Jersey 07102 and online at EPA's website for the Diamond Alkali Site: https://www.epa.gov/superfund/diamond-alkali.

11. Comment: A commenter requested that the Proposed Plan not be categorized as selecting a final remedy but that the remedy selection remain an additional interim remedy decision. The commenter stated the concern that pending cleanup activities along the Lower Passaic River may further impact OU1; therefore, further assessment of OU1 should be conducted after the remediation of the lower 8 miles and upper 9 miles of the river is completed, prior to selecting a final remedy for OU1.

    The commenter further opined that while there is a need for ongoing review and maintenance of the OU1 IR, the upgrades that constitute the preferred alternative do not constitute a final remedy for OU1, but seem more like maintenance and upkeep that should be implemented regularly rather than a comprehensive, final and protective clean-up.

    The commenter expressed the concern that the designation of a final remedy forecloses the possibilities for more carefully deliberating on economies of scale and more protective measures to shore up OU1 in perpetuity, especially as time advances, the site evolves, and as science and capabilities advance. Similarly, another commenter also asked whether EPA would consider waiting another decade prior to selecting a final remedy in case future technological advances prove advantageous.

    Response: While the suggestion that EPA could wait additional years to select a final remedy, rather than selecting an optimized version of the existing interim remedy, is understandable, EPA is acting now because the years of study have provided a solid record for selecting the final remedy now. Through five Five-Year Reviews, EPA found that the interim remedy was protective in the short term; the optimizations will increase the long-term effectiveness and permanence.

    To protect against potential impacts to the OU1 properties from the planned cleanup activities in the Lower Passaic River, EPA will require that the design documents for the OU1 final remedy include a long-term Site Management Plan that identifies protocols for equipment stored at OU1, and other operational issues associated with any usage of the OU1 properties to support cleanup activities in the river, and specify routine remedy inspections (both pre- and post-use). EPA also anticipates that the design documents for the final OU1 remedy will require a site-wide electrical resistivity survey to check the condition of the cap and facilitate any maintenance that might be required.

The OU2 design[4] that EPA approved in May 2024 includes an evaluation of the OU1 cap and slurry walls to ensure that they would be able to withstand 1) the forces exerted by construction equipment moving over them and 2) the weight of equipment and capping material expected to be stored at OU1. Before the start of construction for OU2, EPA will require that the performing party prepare a Simultaneous Operations Plan and an Upland Installed Construction Protection Plan that specify how the OU2 construction work will be performed without interfering with OU1 remedy operations and how the contractor implementing the OU2 work will protect, monitor and maintain the OU1 remedy during OU2 construction. As to the dredging and capping to be implemented next to the OU1 floodwall, such work was done at much greater depths during the removal action performed in the river in 2012 without any impact to OU1. (Prior to the 2012 dredging, additional anchors were installed by drilling 85 feet into the OU1 properties at a downward angle, with grouted boreholes to protect against migration of contaminants.) EPA will apply the lessons learned from overseeing the 2012 removal to ensure that OU1 will be fully protected during OU2 construction.

Waiting another decade for potential innovations in treatment technologies is unlikely to resolve the constraints at OU1 that led EPA to select Alternative 2 as the final remedy. For the remedial alternatives considered in the detailed evaluation but ultimately not selected, EPA found substantial challenges to their implementability related to physical site constraints (e.g., the difficulty of shoring and dewatering a sizeable excavation adjacent to the Lower Passaic River, obstacles to in-situ treatment due to the presence of a significant debris layer including building demolition wastes and dismantled shipping containers beneath the cap), as well as some treatment technology challenges (e.g., the inability of thermal treatment to address all inorganic contaminants present in the fill). Again, while the wish to wait for innovative treatment technologies to be developed for contaminated media is understandable, this is also speculative and not a sound basis for delaying a decision.

During the remedy selection process, EPA Region 2 made a presentation to its National Remedy Review Board (NRRB) about the Site history and project status. The NRRB, drawing upon its national (and even international) experience with the full spectrum of Superfund remediation challenges and innovations, recommended that both in-situ and ex-situ thermal treatment be evaluated in the OU1 FS. As recommended by NRRB, EPA directed that thermal treatment and other technologies be assessed, and the results are included in Appendix B to the 2024 FS Report. Only ex-situ thermal treatment, which would require excavation of the

[4] OU2 is the lower 8.3 miles of the Lower Passaic River, from the river's mouth at Newark Bay to approximately the Newark-Belleville line. In 2016, EPA selected a cleanup plan for that stretch of the river that includes dredging and capping the river bottom bank-to-bank. The OU2 design lays out the engineering details of how to carry out that cleanup plan.

waste prior to treatment, passed the technology screening and was included in the FS as Alternative 8. Through the technology assessment, EPA concluded that the potential success of the technology would be hampered by the presence of metal contaminants in the OU1 fill layer which do not volatilize from the soil during thermal treatment, in contrast to dioxins, dichlorodiphenyltrichloroethane (DDT) and volatile and semivolatile contaminants; therefore, thermally-treated soil residues would still be considered contaminated.

C. Groundwater Containment and Treatment

1. Comment: A commenter asked for more information about the groundwater treatment system, including the source and volume of groundwater treated and the point of discharge for the treated groundwater.

   Response: The groundwater that is conveyed to the GWTS is generally extracted from the portion of the contaminated fill layer contained within the floodwall and slurry walls at OU1. Under the current IR, groundwater is collected via eight extraction wells located adjacent to the floodwall and one extraction well in the southeastern corner of OU1. The extraction wells run nearly continuously, cycling on and off to maintain water levels in the wells at a near constant elevation. Extracted groundwater is conveyed to a 30,000 gallon capacity equalization tank. The GWTS generally operates 4 days per week to treat the accumulated water in the equalization tank. Summaries of the total volumes of groundwater pumped from the extraction wells and treated by the GWTS are provided in Tables 1-3 and 1-4 of the OU1 FS Report.

   Treated effluent is discharged to the Lower Passaic River consistent with the requirements of the National Pollutant Discharge Elimination System (NPDES), as administered by NJDEP, which establishes discharge limits for contaminants in the effluent. Between the start of GWWS and GWTS operations in 2001 and the end of 2022, the GWTS processed 19,386,960 gallons of contaminated groundwater.

2. Comment: A commenter noted that the 2024 FS Report indicated that net inward horizontal hydraulic gradients are maintained along ~85% of the Site's perimeter, and net upward vertical hydraulic gradients are maintained across the organic silt layer in the north-central and northeastern portions of OU1 and encompass about 20% of the OU1 area. The commenter also noted the following 2024 FS Report findings: 1) groundwater modeling confirmed that the upward vertical gradient would not be achieved in the southern portion of OU1; 2) under current conditions, 85% of groundwater in the southern portion of OU1 would flow north horizontally to extraction wells located along the floodwall; 3) the remaining 15% in the southern portion would eventually migrate downward through the organic silt layer to deeper groundwater zones.

   The commenter also noted that groundwater in deeper zones of OU1 (upper sand, lower sand, and bedrock) are outside the scope of the IR and, accordingly, the

Proposed Plan, and that net horizontal and vertical gradients needed to prevent downward and lateral migration of contaminants in groundwater are not consistent at OU1 and historical issues with Extraction Wells EW-7 and EW-8 may have limited the performance of the GWWS. The commenter concluded that it is unclear how these deficiencies have impacted the migration of contaminants to deeper groundwater zones, which are outside of the scope of the interim remedy.

The commenter asked what are the ramifications of not providing adequate groundwater containment through extraction from the fill layer and what is the possibility that deeper groundwater zones (i.e., underlying sand layers) have been impacted with contaminants?

Response: At present (under the interim remedy), net-inward and upward hydraulic gradients are achieved through a combination of the engineered hydraulic barriers (slurry walls and floodwall), natural hydraulic barriers (the organic silt underlying the OU1 properties), and the operation of extraction wells. As noted by the commentor, inward gradients are maintained across the majority of OU1 due to the engineered barriers but upward gradients are maintained in only the north-central and northeastern portions of OU1. While 85% of groundwater in the southern portion of OU1 would flow north horizontally to extraction wells located along the floodwall, the remaining 15% in the southern portion could eventually migrate downward through the organic silt layer.

During the remedy re-evaluation, EPA considered the installation of additional extraction wells in the central and southern portions of OU1 to maintain an upward vertical gradient across the majority of the OU1 properties. In evaluating this option, EPA found that the total saturated thickness available in the fill layer for a potential pumping well in the southern portion of OU1 is limited, such that an attempt to extract groundwater from the fill layer in that area would be insufficient to create a net upward head. Further, the comparatively larger thickness of the naturally occurring organic silt layer in the southern portion of OU1, where vertical gradients are not net-upward (as compared to the thickness in the northern portion of OU1, where vertical gradients were net-upward between 96 and 100 percent of the time in 2022) is sufficient to retard vertical migration of contaminants.

Net downward vertical gradients also occur at present in the northwestern portion of OU1 (please see the 2024 FS Report, Figure 1-51). EPA anticipates that the selected remedy will reverse this condition by improving the performance of the existing extraction well network through the replacement of the existing extraction wells and modifications to the piping system that transfers the extracted groundwater to the GWTS from that area.

Due to the tidal nature of the Passaic River, there may be intermittent losses of hydraulic capture at this location (i.e., during low tide following significant recharge events). However, maintaining net-inward hydraulic gradients approximately 90% of the time will minimize the potential for mass flux from OU1 because the hydraulic conductivities in the subsurface fill material, while variable, are on the order of feet per year, and the travel times through the hydraulic barriers are on the order of approximately an inch per year ($1x10^{-7}$ cm/sec).

For context, it is important to note that a hydraulic gradient represents only a potential for migration of contaminated groundwater out of OU1 and not a complete pathway for contamination to move off the OU1 properties. For example, under the hydraulic gradient scenario described in the 2024 FS Report, net-inward hydraulic gradients occur up to 90% of the time. The intervals during which the inward gradient is lost usually span a few hours (due to tidal effects), and on rare occasions could persist for as much as a day (storm events). In an unlikely, hypothetical scenario in which a molecule of a contaminant was allowed a full 36 day period (10% of a year) to travel outward, it could advance up to 2.5 mm through a hydraulic barrier. Finally, upon reestablishing net-inward gradients, the molecule of contaminant from the example above would flow back out of the slurry wall and toward the containment system. In practice, the short-lived (on the order of hours to a few days) loss of inward gradients do not persist long enough to facilitate the significant loss of contaminants.

The OU1 remedy, once the optimization has been completed, will include monitoring of long-term performance and operation. The potential migration of contaminants to deeper groundwater zones, e.g., the underlying sands (glacio-fluvial aquifer), will be evaluated in a future OU.

3. Comment: A commenter noted that the July 2024 FS Report states that the Preferred Alternative would increase groundwater capture from 85% to 90%. The FS also states that an operations and maintenance and monitoring plan will be developed to monitor and track the performance of the final remedy over time. The commenter asked what thresholds will be used to define the acceptable operation and performance of the final remedy. Specifically: 1) what information does EPA expect to receive and evaluate in the Five-Year Review process to ensure that 2,3,7,8-TCDD is contained within OU1 and does not reach the Lower Passaic River; 2) will EPA require any additional sampling to evaluate the amount of 2,3,7,8-TCDD entering the river from within, under, or outside the slurry wall and floodwall structures; and 3) if so, how would those sampling results be addressed in the Five-Year Review process? The commenter also asked how EPA would address the lack of complete containment of OU1 in the context of the remediation and future operation and maintenance of the other Diamond Alkali Superfund Site OUs.

   Similarly, a commenter asked how OU1 will continue to be monitored and how frequently. The CAG requested details on the timing of monitoring and potential replacement/repair of remedy components including capital funds for future upgrades and oversight of monitoring and maintenance activities by EPA. The CAG also asked what the criteria would be for assessing the success (or failure) of the final remedy, what EPA's response effort would be if it determined the remedy was failing, and how would the community be informed and engaged.

Response: EPA will use the RAOs and cleanup levels established in this ROD to develop appropriate long-term monitoring requirements and performance criteria for the operation of the final remedy during the remedial design (RD) phase that follows publication of the ROD. If EPA's ongoing monitoring and data evaluation efforts indicate that the final remedy requires further enhancements to remain protective of human health and the environment, appropriate action will be taken.

4. Comment: A commenter requested that additional groundwater and porewater data be collected to demonstrate whether the preferred remedy would effectively reduce migration of OU1 contaminants to the Lower Passaic River. The commenter noted the following items in support of their request:

   i. With reference to the remedial objective to reduce mass transport of contaminants from OU1 to the Lower Passaic River, it should be noted that the IR ROD for OU1 identified that concentrations of dioxin and DDT in groundwater would need to meet RAOs in the nearest off-site well. The commenter stated that EPA has not provided groundwater monitoring data for OU1 contaminants from any off-site wells that could demonstrate that dioxins and DDT are not continuing to migrate to the Lower Passaic River.
   ii. The commenter referenced its prior correspondence with EPA dated April 11, 2007 and stated that given the limited permeability of the cap, slurry trench cut-off walls, floodwall and underlying organic silt layer, and recognizing the ongoing GWWS and GWTS operation, additional groundwater data should be collected from both sides of the slurry wall to ensure that groundwater is not flowing back and forth between OU1 and the Lower Passaic Rover during each tidal cycle.
   iii. Ground water contamination data, collected across OU1, indicates that the highest concentrations of contaminants (including VOCs, metals, and dioxins/furans) are located adjacent to the floodwall. Pore water on the river side of the floodwall in the mudflats next to the site and in a nearby reference area needs to be collected at low tide (e.g., water collected from stainless steel mini-piezometer push probes with a peristaltic pump) and analyzed for key contaminants identified in groundwater on the landward side of the slurry wall.

   Response: EPA agrees that additional groundwater data should be collected. As described in the Proposed Plan and ROD, the point of compliance (POC) for EPA to determine that the groundwater quality standards identified as Applicable or Relevant and Appropriate Requirements (ARARs) for OU1 are being achieved is defined by the outside faces of the slurry walls, the riverside face of the floodwall located between OU1 and the Lower Passaic River, and the bottom of the naturally occurring organic silt deposit that underlies the OU1 fill soils. The performance of the remedy will be monitored by the existing monitoring well network, with additional wells to be installed if EPA determines that is necessary. The monitoring program/well network will be described and developed in a work plan prior to implementation of the remedy. The monitoring program designed for the selected remedy will include, at minimum, the following:

- Pairs of monitoring wells in the fill inside and outside the slurry walls along the east, west, and south to assess horizontal gradients across the slurry walls.
- Pairs of monitoring wells within the interior of the OU1 properties to monitor vertical gradients between the fill and sand units, likely spaced uniformly throughout the properties, with one well in the fill unit and one in the underlying sand.
- A series of wells screened in the fill unit along and inside the floodwall to monitor horizontal gradients between the river and the fill.
- Wells located immediately outside of the slurry walls and wells in the sand unit, which will be sampled for POC water quality monitoring.

The objective of the monitoring will be to confirm that the operation of the optimized containment system has effectively eliminated the migration of Site-related contamination to the groundwater outside the area of containment and to the Passaic River. This will involve evaluating concentration trends. The monitoring program will also assess the potential contribution of off-site groundwater contaminant plumes in evaluation of results from the other side of the OU1 slurry walls. The wells inside the floodwall, and on either side of the slurry wall are sufficient to allow EPA to determine whether OU1 contaminants of concern are migrating to the river, so we have not found it necessary to collect data from wells off-site the OU1 property.

As discussed in response to comment C.2 above, net-inward and upward hydraulic gradients are achieved through a combination of engineered hydraulic barriers (slurry wall and floodwall), natural hydraulic barriers (the organic silt underlying the site), and groundwater extraction wells. The hydraulic gradient only represents a potential for the migration of contaminants – it does not mean that contaminants are necessarily migrating. In addition, a hydraulically transmissive pathway must exist to allow for contaminant mass to flow from inside the containment area to outside, and the floodwall, slurry walls and underlying organic silt act as hydraulic barriers to mitigate, or slow down, the potential for transport of contaminants out of the OU1 waste management area.

Hydraulic conductivities in the subsurface fill material (that is, how easily fluid can pass through the material), while variable, are on the order of feet per year, and the travel times through the hydraulic barriers are on the order of approximately an inch per year ($1x10^{-7}$ cm/sec). However, contaminant movement through the hydraulic barriers can only be achieved with net-outward hydraulic gradients and would be on the order of cm per year even without the established hydraulic controls. The remedy includes improved hydraulic controls (replacing extraction wells along the floodwall) that will maintain a net-inward hydraulic gradient.

EPA sampled pore water throughout the lower 8.3 miles of the Lower Passaic River as part of the OU2 pre-design investigation. The design of the sediment cap for the Lower Passaic River in the vicinity of OU1 consists of a 14-inch thick layer of sand mixed, or amended, with granular activated carbon (GAC) in the mudflat area adjacent to OU1, and a 9-inch thick layer of GAC-amended coarse sand elsewhere in the vicinity of OU1 where there is no mudflat. This cap design will provide another barrier to stop the potential transport of groundwater contaminants via porewater discharge from river sediments to the rest of the river ecosystem. The cap will be monitored and maintained in perpetuity to ensure that it remains protective. EPA will consider the need for a porewater monitoring program as part of the long-term operation and maintenance program to be developed during the remedial design phase of the OU1 final remedy, including, if appropriate, monitoring within a nearby mudflat and with consideration of a reference area.

D. Waste Management Area

1. Comment: A commenter asked EPA to describe the extent of cap removal and excavation required for EPA's preferred remedy and how the proposed groundwater withdrawal and treatment system upgrades would be constructed without opening the cap.

   Response: Relatively small, discrete penetrations through the multi-layered cap will be required at the location of each of the six existing groundwater extraction wells (EW-1 through EW-6) to replace the wells; the cap will be repaired at the conclusion of the well reinstallation. EPA oversaw extraction well replacement work conducted in 2021 and has learned from that experience. The gravel and soil layers of the cap were removed using hand tools and mechanical methods (as needed) to expose the underlying geosynthetic materials. The geosynthetic materials were cut in an "H" pattern or similar method to allow the material to be temporarily pulled back and out of the way and subsequently reused during cap restoration. An 18-inch diameter HDPE pipe sleeve was then inserted through the cut openings, and the new extraction wells were installed via that pipe. The geosynthetic materials and liner were subsequently sealed to the pipe sleeve (using a 'boot' to fusion weld the liner to the pipe), and the cap reconstructed following the completion of the new extraction well. EPA expects to follow a similar approach for the upgrades needed as part of the selected remedy.

   Once the wells have been replaced, the geomembrane component of the cap will be patched and reseamed as necessary where cut. The size of the cap opening will be restricted to the minimum area necessary to drill, install and attach the piping to each new well. Changes to the piping for the groundwater conveyance system can be implemented by running new piping within the existing pipe conduits.

2. Comment: A commenter asked if the targeted excavation described in some of the remedial alternatives was focused on the removal of "hot spots" of contamination below the cap and whether such action would be preferable to managing contaminated wastes at OU1 in perpetuity.

   Response: The targeted excavation or in-situ treatment described in Alternatives 4, 6 and 8 is not focused on "hot spots" of contamination below the cap but instead encompasses Areas A and B outside of the tiebacks and anchors for the floodwall as shown on Figure 1-12 in the 2024 FS Report. The highest concentrations of dioxin in the OU1 soils are generally located in the northwest corner of OU1. The tiebacks and anchors for the floodwall were constructed above the existing contaminated soils and now restrict access to the highly contaminated soils in the northwest corner of OU1; attempts to excavate or treat soil in that location would be infeasible due to the risk of damage to the floodwall. When waste materials and demolition debris were placed on top of the existing soils or in shallow trenches excavated into the existing soils prior to construction of the cap, they were broadly segregated as wastes contaminated with dioxins above 200 ug/kg (Area A) or below 200 ug/kg (Area B). Area A was positioned closest to the northwest corner of OU1, so that the most highly contaminated waste materials were placed proximal to the most highly contaminated soils. The references to "targeted excavation" and "targeted in-situ treatment" in the Proposed Plan descriptions of Alternatives 4 and 8 are referring to activities that are targeted in the sense that they address only Areas A and B and the contaminated soils below those areas, and therefore avoid the locations that contain floodwall support infrastructure, groundwater extraction and treatment system components and areas directly adjacent to the perimeter slurry wall. The targeted remedial alternatives address approximately 2.5 acres and 53% of the total volume of contaminated material at OU1.

   Because highly contaminated fill would still remain onsite/untreated below the floodwall anchor structures under any of the targeted alternatives, these alternatives would require maintenance of the impermeable cap system, GWWS, and GWTS, Site monitoring and other features, for an indeterminate time. Based on EPA's analysis, EPA concluded that overall, Alternative 2 meets the threshold criteria for remedy selection and provides the best balance of tradeoffs compared to the other alternatives with respect to the balancing criteria.

3. Comment: A commenter asked about the service life of the remedy components, for example, the containment cell features and the floodwall anchors and tiebacks, given that the preferred remedy would require maintaining these features in perpetuity. A commenter asked EPA to identify the projected service life of each key component of the OU1 remedy infrastructure.

   Response: EPA expects the design life of the cement-bentonite slurry wall and floodwall to be approximately 100 years; the service life of these components can and will be extended with appropriate monitoring, maintenance and repairs. Numerous Superfund capping remedies have been in service for 30-40 years and while the service life of the cap components is expected to be measured in a span of several decades, the function of the remedy can be extended indefinitely with appropriate monitoring, maintenance and repairs. According to the Superfund Remedy Report (17th Edition, January 2023), on-site containment was selected as a remedy for 39% of the source remedies selected by EPA from FY2018 to FY2020 (278 total decision documents).

4. Comment: A commenter noted that the Proposed Plan references the presence of principal threat waste at OU1 and asked how this was addressed in the context of EPA's preferred remedy. The commenter asked if a Technical Impracticability waiver was required for the preferred final remedy.

   Response: The selected remedy will provide hydraulic containment in the area where principal threat waste (PTW) is present (see Figure 15). The source mass of PTW (comprised of mobile DNAPL, soil occurring below the water table containing concentrations of hexachlorobenzene greater than 430,000 µg/kg, and soil occurring below the water table containing high concentrations of 4,4'-DDT and 2,3,7,8-TCDD where contaminant mobility is enhanced by the presence of VOCs in the fill) will be treated to the extent contaminants leach into groundwater in the fill and are captured and treated by the GWWS and GWTS. The mass removal rate of the GWWS/GWTS will be small compared to the total COC mass in soil and groundwater and the GWWS/GWTS will need to be operated in perpetuity or as long as hazardous substances are present at OU1.

   EPA is not invoking a Technical Impracticability ARAR waiver for OU1. The remedy addresses the groundwater within the limits of OU1 by containment, pumping and treating, and EPA expects the remedial action objectives, including groundwater ARARs, to be achieved at the POC. EPA anticipates addressing groundwater contaminants outside the limits of OU1 (i.e., in the underlying sand aquifer and in the soils outside the slurry walls) in a separate OU at a later date.

5. Comment: Commenters asked about the preferred remedy's ability to withstand potential flooding during significant storms and expressed a related concern about the potential for storms to become more frequent and more intense in the future. A commenter asked if OU1 flooded during Superstorm Sandy. A commenter asked if EPA's Proposed Plan took into account New Jersey's State of the Climate report and projected flooding scenarios under the proposed NJ PACT REAL draft rules.

   A commenter asked for further clarification on the extent to which climate change impacts have been modeled in determining the expected long-term performance of remedial alternatives, including the severity, frequency and intensity of flooding, sea level rise, extreme heat, etc. The CAG asked EPA to characterize the capacity of the cap, slurry walls, and other containment infrastructure to withstand heavy storms and flooding.

A commenter noted that the floodwall was designed to protect OU1 from a 100-year flood at time of its construction in 2000. Referring to the 2024 FS Report, the commenter summarized that the top of the floodwall is at 13.8 feet (NAVD88[5]) above mean sea level (msl) along the northern boundary of OU1 and the floodwall does not extend onto adjacent properties so there is the possibility of flooding on neighboring properties flowing onto the OU1 properties. The commenter noted that modeling for the 2024 FS Report predicted that a 100-year storm surge with climate change would reach 12.98 feet msl (NAVD88) and as such, the OU1 floodwall at 13.8 feet (NAVD88) would not be overtopped, but the perimeter walls along the east, west and south boundaries at ~10.5 feet MSL (NAVD88) could be overtopped. Also, NJDEP/United States Army Corps of Engineers (USACE) estimated a 100-year flood elevation at 11.82 feet msl (NAVD88) and 500-year flood elevation at 14.84 feet msl (NAVD88). The commenter pointed out that areas of OU1 could be inundated by these flood scenarios.

Further, the commenter stated that resiliency of the floodwall to a predicted 100-year storm surge with climate change of 12.98 feet (NAVD88) is only ~10 inches below the top of the floodwall at 13.8 feet (NAVD88). However, the floodwall could be overwhelmed by a potential 500-year flood (as modeled by NJDEP/USACE). In addition, the perimeter concrete walls at ~10.5 feet (NAVD88) could be overtopped, resulting in portions of OU1being inundated during storm surge events. Based on the above, the commenter asked why EPA did not evaluate improving the resiliency of the floodwall and perimeter walls by increasing their heights as part of the remedial alternatives?

<u>Response</u>: The floodwall has protected OU1 from flooding during four severe storm events that have occurred since 2011: Hurricane Irene (August 2011), Superstorm Sandy (October 2012), Hurricane Henri (August 2021), and Hurricane Ida (September 2021). During those storms, the floodwall and elevated topography of OU1 prevented the Passaic River from damaging the OU1 remedial components. Although the floodwall does not extend onto the adjacent properties along the Passaic River, over 20 years of routine monthly observations have not identified any damage or erosion where the floodwall transitions to neighboring properties due to major storm events, wave action, and/or seasonal ice breakup.

The storm surge from Superstorm Sandy in 2012, for example, resulted in an approximate 8 to 10-foot surge of water that raised the level of the Passaic River to the 1-percent flood level (100-year flood equivalent) in the vicinity of OU1. The flood elevation during that storm was raised to 11.82 feet NAVD88. Despite the storm surge, OU1 did not experience extensive flooding or damage from Superstorm Sandy as the floodwall and other infrastructure protected OU1.

The potential for flooding in the vicinity of OU1 has been evaluated by NJDEP and USACE. The NJDEP/USACE-estimated 100-year flood elevation is 11.82 feet

[5] North American Vertical Datum of 1988, or NAVD88, is a leveling network on the North American Continent, ranging from Alaska, through Canada, across the United States, affixed to a single origin point on the continent.

mean sea level (msl) NAVD88, while the estimated 500-year flood elevation is 14.84 feet msl NAVD88. Based on this evaluation, during a 100-year storm event, even reflecting the climate change 100-year storm surge scenario, the following conditions are likely to be seen at OU1:

- Only the portions of OU1 near the property perimeter with elevations less than 12.98 feet msl NAVD88 would potentially be inundated. This represents a small fraction of the property.
- The duration of the inundation would be brief. Hydraulic modeling predicted a duration of 1.5 hours of inundation for the present-day 100-year storm surge scenario and 4.5 hours for the climate change 100-year storm surge scenario. Note that it is EPA's standard practice for the remedial design to take into account the 100-year storm surge scenario.
- Upon cessation of the storm surge, the sloped cap would shed water away from the Site once the flood waters recede. As such, shutdown of the GWWS/GWTS, if necessary, would be brief. If the storm surge was accompanied by a power outage lasting for days or weeks following the storm, the remediation systems at OU1 could be powered by the backup generator already present at OU1, if needed, that is connected to the existing natural gas supply to the property.
- Potential damage to the cap would likely be limited to scouring of the surficial gravel layer of the cap and/or damage to ground level equipment in the treatment building, both of which could be repaired.

Based on the USACE/NJDEP evaluations, the conclusions described above for 100-year flood scenarios would also apply to a 500-year flood scenario, except for potential impacts to system operations within the groundwater treatment building. Like the 100-year flood, much of the property would remain above the 500-year flood level of 14.84 feet msl NAVD88. During such an event, the operation and integrity of the engineered cap and the groundwater extraction system would be unaffected. The EW pumps are submersible pumps and, therefore, are designed to operate while underwater. In the case of a power outage, power could continue to be provided by the Site's backup generator. If necessary, the elevation of the backup generator could be raised to remain operable during a 500-year flood.

The GWTS, however, may be vulnerable to a 500-year flood based on the flood elevation, which could result in four feet of water within the treatment building. This projected elevation would result in a need to replace and repair certain system components such as the treatment building's process pumps and transformers, which would result in a pause in operations. The selected remedy will include development of a severe weather preparedness plan that includes a portable temporary treatment system, to be used in the event that the groundwater pump and treat system need repairs. Once these systems are replaced or repaired, routine operations can resume.

The Proposed Plan did not specifically consider flooding scenarios under the draft proposed NJ PACT REAL rules, given that the public comment period on the rule only recently closed (November 7, 2024) and the rules are not yet final. Also see response to comment D.7 below for additional information on the potential effects of rising temperatures.

6. Comment: Several commenters asked if the OU1 remedy, including the cap system, is designed to withstand potential earthquake impacts or seismic events.

   Response: The region of the United States that includes New York City and Newark is situated far from active tectonic plate boundaries, and the area is considered a low seismicity area (infrequent damaging earthquakes) with a moderate risk of an earthquake of any size (Tantala, et al, in Soil Dynamics and Earthquake Engineering Volume 28, Issues 10–11, October–November 2008, Pages 812-835). The United States Geological Survey (USGS) expects 10-20 occurrences of damaging shaking every 10,000 years (USGS, Introduction to the National Seismic Hazard Maps). Landfill cap performance during seismic events has been evaluated elsewhere and none of the sites evaluated experienced major earthquake induced damage. The findings of this evaluation revealed that landfills were resilient to ground-shaking events (Performance of Solid Waste Landfills in Earthquakes, Neven Matasovic, M.EERI, et. al, CLU-IN, 1971).

   The material contained at OU1, consisting of soil, demolition debris, shipping container components, and other non-soil waste, likely has even higher shear strength than that found in a typical solid waste municipal landfill (a much more heterogeneous waste mass than OU1) and is likely to withstand successfully the stresses expected during a seismic event of the magnitude expected for the region that includes Newark. In addition, the fill in Areas A and B is mounded with relatively flat slopes, which limits the potential for slope failure or slump. The groundwater extraction system lowers the water table which reduces the potential for failures due to liquification (i.e., shaking-induced loss of soil cohesion) of the soil at the toe of the OU1 cap slope. EPA will require cap inspections following any major seismic event to evaluate the impact to the OU1 containment system. EPA will evaluate appropriate requirements for post-seismic event monitoring in the development of long-term operation and maintenance planning during remedial design.

7. Comment: A commenter asked about the cap system's ability to withstand high temperatures, given that the Ironbound has been characterized as a significant urban 'heat island.' The commenter asked if there will be any ongoing reevaluation of the effectiveness of the cap system in the face of potential climate change. A commenter asked EPA to characterize the capacity of the cap, slurry walls, and other containment infrastructure to withstand extreme temperatures.

   Response: As summarized in Section 2.2 of the 2024 FS Report, EPA estimates that mean temperatures in Essex County, New Jersey will increase by 1.7 to 2.9

degrees Fahrenheit (ºF) between 2023 and 2053, and other projections estimate that the mean average temperature in New Jersey could rise by 6ºF by the year 2050. Such increases in temperatures could impact asphalt and vegetative covers of some cap systems; however, as discussed in the ROD, the predicted temperature increases in New Jersey are not expected to affect the remedy as it does not as it does not rely on vulnerable materials such as asphalt or vegetative covers or other features that could be stressed by increased temperatures. Rather, the engineered cap's upper layer would continue to consist of a surficial gravel drainage layer, and provide protection to the underlying cap layers (e.g., soil and geotextiles). The absence of a vegetative cover eliminates the risk of wildfire and the introduction of invasive species. Where asphalt pavement is present, it is intended to facilitate vehicular traffic on OU1 and is not an integral part of the remedy design nor is it necessary for the engineered cap to be effective. EPA concluded that the remedial alternatives evaluated in the Proposed Plan would not be vulnerable to extreme temperatures potentially induced by climate change.

Also see response to comment D.5 for a discussion of the final remedy's ability to withstand the impact of storms and flooding.

8. Comment: A commenter asked EPA to discuss the cap system's impermeability with regard to potential air releases from OU1.

   Response: The bottom layers of the multi-layer cap at OU1 consist of a non-woven geotextile that separates the cap system from the underlying fill and waste. Overlying the geotextile is a 12-inch thick passive gas venting layer of gravel/crushed stone that also contains piping and electrical wiring for the GWWS. There are fourteen gas vents installed in the gas venting layer that are shown on Figure 13a, which will remain in place. At present, performing party Occidental Chemical Corporation conducts monthly gas monitoring for methane and total volatile organics using direct reading field equipment, which are reported to EPA under the consent decree between EPA, the State of New Jersey, and Occidental Chemical Corporation. Dioxins have very low volatility and if airborne, are generally attached to soil particles as airborne dusts; therefore, dioxin releases through the cap or the gas venting system are not a concern.

9. Comment: A commenter asked why a coordinated removal of contaminated sediments from the Lower Passaic River and contaminated soil from OU1 would not achieve economies of scale. The commenter asked what documentation was used to determine that the contaminated materials at OU1 need to be disposed of in a different manner than the contaminated sediments from the river, including the 40,000 cy of sediment that was dredged from the river adjacent to OU1 in 2010?

   Response: Economies of scale assume a savings in cost based on greater efficiency associated with larger production rates. For construction projects, this is potentially true because fixed costs can be spread out over a larger number of units. However, this assumes that the same processes are used throughout the project, which would not be possible for OU1 and OU2 for the following reasons:

- Contaminated sediment from OU2 is to be removed by dredging and barged or pumped to a processing facility for dewatering. Contaminated soil from OU1 would have to be dewatered in-place before being removed by excavating on dry land, which involves different equipment than the in-river dredging required for OU2. These differences eliminate the economies of scale associated with processing and handling of the waste materials.
- Under RCRA and its implementing regulations, waste material contained at OU1 belongs to a category called "listed hazardous waste." This is documented in the 1987 OU1 ROD and discussed in the Proposed Plan and ROD for the final OU1 remedy. In contrast, in 2008, EPA determined that the OU2 contaminated sediment does not belong in that category. As a result of the listed hazardous waste categorization of the material at OU1, there are only two facilities in North America (in Canada) that may accept OU1 waste, while there are more options for disposing of OU2 contaminated sediment in the U.S. This difference eliminates a potential economy of scale associated with disposal of wastes from the two OUs.[6] For the cost estimates prepared for both OU1 and OU2, a large part of the remediation costs are associated with the transportation and disposal of the contaminated media and, as discussed above, the two materials must be handled separately. For this reason, the concept of economies of scale would not apply to a joint OU1 and OU2 remediation project.

10. Comment: The commenter asked EPA to further characterize the potential risks due to the lack of an engineered landfill liner beneath OU1.

    Response: As documented in the 2024 FS Report, the organic silt layer underlying the contaminated fill material within the waste containment cell has a measured average hydraulic conductivity of 1.3 x 10^{-7} cm/s, which is comparable to the characteristics of the slurry walls installed on the perimeter of OU1 to contain contaminated groundwater and the floodwall. In addition to the semi-confining organic silt layer that underlies OU1, the function of the groundwater pump-and-treat systems is to capture and treat contaminated groundwater from within the fill. The combination of pumping and treating to control migration of contaminated groundwater, the action of the organic silt as a semi-confining layer, and the effect of the GWWS to induce inward and upward flow gradients, act in concert to address the risks that would be controlled by a bottom liner and leachate collection system intended to mitigate the potential migration of contaminated groundwater from OU1.

[6] The memo documenting EPA's determination that the OU2 sediments do not need to be managed as listed hazardous waste under RCRA is in the OU2 Administrative Record: https://semspub.epa.gov/src/document/02/206834.

As discussed in the Proposed Plan and the OU1 ROD, the manufacturing operations at OU1 generated RCRA-listed dioxin wastes, as well as other wastes subject to multiple RCRA requirements relating to treatment and disposal. The 1987 ROD and the 1990 consent decree governing the cleanup explain and document that EPA waived several provisions of RCRA, including landfill requirements pertaining to liners and leachate collection systems, invoking the greater risk associated with attempted excavation of the waste (CERCLA Section 121(d)(4)(B)) and the equivalent standard of performance (CERCLA Section 121(d)(4)(D)). In the final OU1 ROD, EPA is invoking the waiver based on the greater risk associated with excavation of the waste material.

11. Comment: The commenter asked the following questions about the nature and extent of contamination at OU1:

    i. Is the contaminated soil on site uniformly dispersed throughout the site or are there pockets of high contamination in specific areas that could be permanently removed?
    ii. What is the level of and characteristics of contamination outside the slurry wall? Is there a plan to identify and address contamination beyond the slurry wall?
    iii. What is the non-aqueous phase liquid (NAPL) impacting the site and is it coming from within the cap or from an outside source of concern?

    Response: The nature and extent of contaminants of concern in the soils and groundwater at OU1 is discussed in the Proposed Plan and ROD, and also summarized in Section 1.6.4 of the 2024 FS Report.

    - As discussed in the Proposed Plan and ROD, some of the most heavily dioxin-contaminated soils are located in the northwest corner of OU1, below the floodwall's anchor structures and therefore relatively inaccessible to excavation or treatment without risk of destabilizing the wall during construction. See Figures 16a through 16f, which depict pre-IR contaminant concentrations in near-surface soils and at the bottom of the fill stratum (right above the organic silt layer). See responses to comments B.6 and D.2.
    - The material outside the slurry wall was not included in limits of OU1 due to the need to provide a setback from the adjacent property to protect the slurry wall from future activities on those properties, but is partially covered by the cap, which extends beyond the slurry wall, and beyond that, by pavement. EPA expects to address impacts from this material to the deeper aquifer under a separate OU in the future, as discussed in the response to comment B.9.
    - As part of the ongoing operation and maintenance of the groundwater remedy at OU1, high-viscosity DNAPL has been observed in two groundwater EWs (EW-2 and EW-4), which are located along the floodwall in the northwestern and north-central portions of OU1. Trace, unrecoverable amounts of DNAPL are routinely observed in EW-2 during monthly gauging of OU1 monitoring wells and EWs. DNAPL is generally

present in measurable and recoverable amounts in EW-4. A few gallons of DNAPL are removed from EW-4 every year during one or two targeted removal events. Although EPA has concluded that this DNAPL likely originated from former activities at OU1, its specific source or sources are unknown. The composition of the DNAPL was found to differ between the two well locations, but it generally contained constituents found in OU1 groundwater such as benzene, chlorobenzene, 1,2-dichlorobenzene (1,2-DCB), 1,4-DCB, 1,2,4-trichlorobenzene, and toluene.

E. Risk Assessment

1. Comment: A commenter urged EPA to collect additional groundwater and porewater characterization data to assess potential migration of contaminants from OU1 to the Lower Passaic River and evaluate the risks posed to ecological receptors in the river from contaminated media within OU1.

   Response: The optimized final remedy will prevent the migration of groundwater contamination from OU1 into the Lower Passaic River. EPA will determine the appropriate scope of groundwater and porewater monitoring for long-term monitoring of the remedy during the forthcoming remedial design phase. Two ecological risk assessments were conducted for the ecological receptors in the Lower Passaic River (one for the 2014 OU2 remedial investigation and focused feasibility study and another for the 2021 OU4 remedial investigation and feasibility study). The remedies selected for OU2 and OU4 address the unacceptable ecological risks posed by all of the contaminants of concern for the Lower Passaic River.

2. Comment: A commenter stated that controlling the migration of contaminated soil and groundwater from OU1 is necessary to ensure that ecological risks in the Lower Passaic River are mitigated. The commenter stated that potential risks to ecological receptors within the Lower Passaic River (stemming from OU1) have not been sufficiently evaluated and requested that a separate ecological risk assessment for OU1 be prepared prior to identifying a final remedy for OU1.

   Response: The capping system, floodwall and slurry walls constructed for the IR at OU1 prevents any migration of contaminated soil from OU1 by establishing physical barriers between OU1 wastes and the environment. Contaminated groundwater flowing northward towards the Lower Passaic River is captured by a line of extraction wells adjacent to the floodwall for conveyance to the GWTS for treatment and the treated water that is discharged to the Lower Passaic River meets current effluent requirements, which are protective of ecological receptors. The OU2 design includes a long-term monitoring program that requires the collection of fish and crab tissue and sediment samples from the Lower Passaic River to assess whether contaminant levels in fish, crab and sediment are going down as expected and remedial action objectives are being achieved. EPA will consider the need for a porewater monitoring program as part of the long-term operation and maintenance program to be developed during the remedial design phase of the OU1 final remedy; however, preparation of an ecological risk assessment to assess potential impacts of OU1 contaminants on OU2 ecological receptors is not required since those impacts are captured in the risk assessment for OU2.

F. Community Safety

1. Comment: A commenter asked about the plans to keep the surrounding community safe during implementation and long-term maintenance of the remedy. The commenter asked EPA to discuss whether contamination could escape from OU1.

   Response: EPA is aware that of community concerns with air quality, traffic and environmental justice concerns. During the remedial design for the OU1 final remedy, EPA will ensure that construction activities are designed and planned to mitigate air emissions, including dust and odor, and other impacts to air quality. The party performing the remedy will also develop a Community Impacts Mitigation Plan, which EPA will review, approve and make available to the public. Among other things, this plan will describe the air monitoring that will occur during construction and any corrective actions that would be undertaken if air quality standards are exceeded due to Site-related construction.

2. Comment: A commenter asked EPA to characterize specific risks to site workers and the community during construction and maintenance of the final remedy. The commenter asked if there would be an alert system or mechanism to provide notice to the community, given the proximity of residences such as the Terrell Homes.

   Response: EPA anticipates that risks to site workers and the community associated with implementing the selected final remedy will be extremely low, as compared to the other alternatives. The penetrations to the cap required to reinstall the extraction wells will be small and the amount of construction required will be minor. The contractor working for the performing party will prepare a Site Safety and Health Plan to protect site workers and the Community Impacts Mitigation Plan will address mechanisms for notifications to the community for emergency response, as appropriate.

3. Comment: A commenter asked if EPA is monitoring the levels of toxins in air and groundwater and whether EPA is tracking potential changes to the criteria for contaminant concentrations that may cause adverse human health effects.

   Response: Groundwater monitoring is conducted regularly and an annual report of trends and findings is submitted to EPA by Occidental Chemical Corporation. Ambient air monitoring is not currently required / conducted for OU1. As part of the Five-Year Review, EPA is required to evaluate whether the exposure assumptions, toxicity data, cleanup levels and remedial action objectives used at the time of remedy selection are still valid. Any changes to relevant criteria would be identified and evaluated through that process. All five Five-Year Reviews conducted to date for OU1 have concluded that the remedy is functioning as intended.

G. Future Use

1. Comment: A commenter asked whether OU1 could be converted into green space in the future or landscaped to be more aesthetically pleasing.

   Response: As noted above, under Superfund law, EPA's goal is to reduce risks to human health and the environment from exposure to hazardous substances identified as COCs to target ranges defined in the law and EPA guidance documents. EPA does not have the authority to require landscaping or greening of the OU1 properties. The property owner will control long term use of OU1 within the constraints associated with the operation and maintenance of the final remedy, and such other zoning or use requirements that local authorities may impose.

2. Comment: A commenter asked if EPA had sought engagement with Newark property and housing developers and City of Newark officials with regard to area waterfront development plans, particularly those with development projects near Penn Station.

   Response: The Proposed Plan was publicized through EPA press releases and public announcements in The *Star Ledger* and public comments were solicited for a 74-day period, such that all interested parties were able to provide input, if they desired to do so. Representatives of the City of Newark are included in the CAG distribution list and receive information that way and a representative of the City of Newark attended the OU1 public meeting.

3. Comment: A commenter asked which remedial alternatives could lead to a future, long-term reuse of OU1 as passive green or blue infrastructure, rather than as an active industrial site that might continue to pose a risk to the community.

   Response: The OU1 properties and neighboring properties are currently zoned for industrial use by the City of Newark. Access to 80 and 120 Lister Avenue requires the maintenance of an easement across another industrial property and Lister Avenue itself is subject to heavy truck traffic associated with the industrial property uses that surround OU1. Given these constraints and the fact that the property is privately owned, for purposes of the remedial alternatives evaluation in the remedy selection process, EPA identified that the reasonably anticipated future use of OU1 would continue to be industrial. That would not necessarily prevent the owner from allowing a use as passive green infrastructure, so long as the use did not have a negative impact on the integrity, or operation and maintenance, of the remedy. Note that as currently used, the OU1 properties do not pose a risk to the community.

H. Public Comment Period

1. Comment: Several commenters requested that EPA extend the public comment period beyond the originally announced date of October 10, 2024 to allow for a thorough review of the Proposed Plan and EPA's preferred alternative.

   Response: EPA provided an initial 30-day public comment period from September 10, 2024 to October 10, 2024, after which EPA granted one 30-day extension to November 12, 2024 and another 14-day extension to November 26, 2024.

2. Comment: A commenter noted that it was difficult to find location and scheduling information for the public meeting and asked that there be a more robust campaign in the future to inform the public of OU1 site activities (transcript pg. 61).

   Response: EPA posted advertisements in The Star Ledger announcing the initial comment period and then the extensions. In addition, EPA emailed elected officials and other governmental leaders in Newark, Harrison, Kearny, and East Newark. An email list of several hundred people was also notified. In addition, EPA posted on Facebook and X (formerly Twitter) announcing the initial public comment period and extensions. EPA is committed to continuous improvement, including in its outreach efforts. If any members of the public would like to provide additional ideas, they should email the Community Involvement Coordinators for the Site, using the contact information found on EPA's webpage at www.epa.gov/superfund/diamond-alkali. These are: curtis.malcolm@epa.gov and kandil.shereen@epa.gov. People can also ask to be added to EPA's existing mailing list.

APPENDIX V

RESPONSIVENESS SUMMARY
ATTACHMENT A

WRITTEN COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD

From:	Bill WOLFE
To:	Naranjo, Eugenia
Cc:	Jon Hurdle; ferencem@njspotlightnews.org; shawn.latourette@dep.nj.gov; Seppi, Pat; senbsmith
Subject:	Public comment Diamond Alkali
Date:	Thursday, November 7, 2024 11:56:07 AM

Dear EPA:

According to today's EPA press release on extension of the public comment period for the Diamond Alkali Superfund Site in Newark, NJ, EPA wrote (emphasis mine):

"This approach builds on the previously completed work and would **avoid the short-term risks associated with other options such as digging up and removing the contaminated material outright."**

1. Where does EPA find legal authority and Congressional policy direction for a risk management policy that allows EPA to "avoid short term risks" as a rationale for ignoring the statutory policy that establishes a preference for permanent remedies and mandates that EPA "utilize permanent solutions ... to the maximum extent practicable"?

The EPA's stated approach undermines the primary remedial objective of Superfund, which establishes a preference for permanent remedies.

The "maximum extent practicable" is a technology based decision rule, not a risk management decision rule. The EPA has improperly combined a risk management approach with a technology based approach.

2. Have the alleged "short term risks" been quantified by EPA? If so, please provide that analysis.

3. Have the short and long term risks of a permanent remedy been quantified by EPA? If so, please provide that analysis.

4. Have the alleged "short term risks" been quantified and compared to short and long term risks of a permanent remedy? IF so please provide that analysis.

6. How did EPA "balance" short term risks of a permanent remedy with the risks of a permanent remedy to determine a superior approach? Please provide that analysis.

7. Newark is a NJ state law designated "environmental justice community". Please provide the EPA analysis of how EPA considered that NJ law as a Superfund ARAR (applicable or relevant and appropriate).

Did the NJ DEP sign off on this approach and remedial action?

Please follow the law and "dig up and remove ALL the contaminated material outright." Implement a permanent remedy.

Respectfully,

Bill Wolfe

Lowenstein Sandler

Thomas E Mesevage
Counsel

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Via Email

November 12, 2024

Eugenia Naranjo
Remedial Project Manager
U.S. EPA Region 2
290 Broadway, 18th Floor
New York 10007-1866
Naranjo.eugenia@epa.gov

Re: Comments on Proposed Plan: Diamond Alkali Superfund Site OU1

Dear Ms. Naranjo:

Please accept these comments regarding the Proposed Plan to address contaminated soil and groundwater at Operable Unit 1 (OU1) of the Diamond Alkali Superfund Site (Site) located at 80-120 Lister Avenue in Newark, New Jersey.

Groundwater Containment

The July 2024 Feasibility Study, Diamond Alkali Superfund Site (DASS) Operable Unit 1 (OU-1) ("FS Report") indicated that net *inward horizontal* hydraulic gradients are maintained along ~85% of the Site's perimeter. Net *upward vertical* hydraulic gradients are maintained across the organic silt layer in the north-central and northeastern portions of the Site and encompass only 20% of the Site's area (FS Report Section 2.1.1).

Groundwater modeling confirmed that the upward vertical gradient would not be achieved in the southern portion of the Site. The FS Report concluded that under current conditions, 85% of groundwater in the southern portion would flow north horizontally to extraction wells located along the floodwall (FS Report Section 2.1.1.1). The FS Report concluded that the remaining 15% in the southern portion would eventually migrate downward through the organic silt layer to deeper groundwater zones (FS Report Section 2.1.1.1). Groundwater in deeper zones of the Site (upper sand, lower sand, and bedrock) are outside the scope of the Interim Remedy (FS Report Section 1.2.3) and, accordingly, the Proposed Plan.

Net horizontal and vertical gradients needed to prevent downward and lateral migration of contaminants in groundwater are not consistent at the Site and historical issues with Extraction Wells EW-7 and EW-8 may have limited the performance of the groundwater withdrawal system. It is unclear how these deficiencies have impacted the migration of contaminants to deeper groundwater zones, which are outside of the scope of the interim remedy.

What are the ramifications of not providing adequate groundwater containment through extraction from the fill layer and the possibility that deeper groundwater zones (i.e., underlying sand layers) have been impacted with contaminants?

Flooding Risk and Climate Change

The Site's floodwall was designed to protect the Site from a 100-year flood at time of its construction in 2000. The top of the floodwall is at 13.8 feet (NAVD88) above msl along the northern boundary of Site (FS Report Section 1.5.5). Notably, the floodwall does not extend onto adjacent properties so there is the possibility of flooding on neighboring properties flowing onto the Site (FS Report Section 2.1.1).

Modeling for the FS Report predicted that a 100-year storm surge with climate change would reach 12.98 feet msl (NAVD88) (FS Report Section 2.2). As such, the Site floodwall at 13.8 feet (NAVD88) would not be overtopped. However, the perimeter walls along the east, west and south boundaries of the Site at ~10.5 feet MSL (NAVD88) could be overtopped.

Also, NJDEP/USACE estimated a 100-year flood elevation at 11.82 feet msl (NAVD88) and 500-year flood elevation at 14.84 feet msl (NAVD88). Areas of the Site could be inundated by these flood scenarios (FS Report Section 2.2).

Resiliency of the floodwall to a predicted 100-year storm surge with climate change of 12.98 feet (NAVD88) is only ~10 inches below the top of the floodwall at 13.8 feet (NAVD88). However, the floodwall could be overwhelmed by a potential 500-year flood (as modeled by NJDEP/USACE). In addition, the perimeter concrete walls at ~10.5 feet (NAVD88) could be overtopped, resulting in portions of the Site being inundated during storm surge events. Why was improved resiliency of the floodwall and perimeter walls by increasing their heights not evaluated by the FS alternatives?

Cost Estimates of Remedial Alternatives

The September 2024 Proposed Plan notes that "[t]he estimated costs for each remedial alternative to be comparatively evaluated are expressed as net present value, using a 7% discount rate." Alternative 2, the proposed final remedy for OU1, is estimated by the Agency to cost $16 million.

In the preamble to the March 8, 1990 revisions to National Oil and Hazardous Substances Contingency Plan, 55 FR 8666, 8722 (March 8, 1990) and in EPA Guidance Memorandum "Revision to OMB Circular A-94 on Guidelines and Discount Rates for Benefit-Cost Analysis," OSWER Directive No. 9355.3-20,[1] EPA has stated its position that the agency "would follow [Office and Budget Management] Circular A-94 and that if OMB revised Circular A-94, then EPA would address the matter in program guidance to ensure consistency with Circular A-94." *Id.*

Circular A-94 was revised in November 2023.[2] Appendix D of A-94 (revised November 9, 2023)[3] sets forth the 2023-2025 social discount rate that should be used in projecting a 30-year CERCLA response actions, namely 3.1%, not 7%.

Please explain the EPA's selection of a 7% discount rate in the estimation of the cost of remedial alternatives. If the EPA is deviating from its prior position to "follow OMB Circular A-94," please provide the technical and legal basis for doing so.

Thank you for your consideration.

With kind regards,

Thomas E Mesevage

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[1] https://semspub.epa.gov/work/11/174414.pdf

[2] *See* https://www.whitehouse.gov/wp-content/uploads/2023/11/CircularA-94.pdf

[3] https://www.whitehouse.gov/wp-content/uploads/2023/11/CircularA-94DiscountHistory.pdf

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Office of Response and Restoration
Assessment and Restoration Division
26 Federal Plaza, Room 2-130
New York, NY 10278

MEMORANDUM

TO: Eugenia Naranjo, EPA Region II Remedial Project Manager

FROM: Reyhan Mehran, Regional Resource Coordinator

SUBJECT: Diamond Alkali Superfund Site, Operable Unit One (OU1)

Proposed Plan, OU1, 80-120 Lister Avenue, Newark, NJ, US Environmental Protection Agency, September 2024

DATE: November 26, 2024

Thank you for the opportunity to review the document referenced above. The following comments are provided, on behalf of the National Oceanic and Atmospheric Administration (NOAA), for consideration by the US Environmental Protection Agency (EPA).

Background:
The interim Record of Decision (ROD) for Operable Unit 1 (OU1) at the Diamond Alkali Superfund Site (80 and 120 Lister Avenue) was signed on 9/30/87, the remedy was implemented between April 2000 and June 2004, and the Final Report for Remedial Construction (documenting completion of all construction activities) was approved by EPA on 7/24/06. Based on the Remedial Investigation/Feasibility Study, OU1 was contaminated with a large number of hazardous substances including dioxin, semi-volatile organic compounds, volatile organic compounds, herbicides, insecticides, polychlorinated biphenyls, and metals. Some of the components of the interim remedy included:

- Capping of contaminated soils and debris (with stabilization of drum and tank contents) onsite,
- Construction of a slurry trench cutoff wall and floodwall,
- Pumping and treating of contaminated groundwater with discharge to the Passaic River,
- Groundwater level monitoring,
- Installation of security measures and landscaping,
- Implementation of a suitable monitoring plan to ensure protection of human health and the environment after the installation of the selected alternative, and
- Performance of a Feasibility Study every two years after implementation of the remedy to assess performance and re-evaluate remedial alternatives.

In preparing these comments, the following document was also reviewed: 2023 DASS OU-1 Annual Groundwater Report, Groundwater Sampling Event No. 14, Groundwater Withdrawal System/Hydraulic Gradient Update, Diamond Alkali Superfund Site, Newark, New Jersey, Prepared for Glenn Springs Holdings, Inc., Two Tower Center Blvd., 8th Floor, East Brunswick, NJ, April 30, 2024.

Comments:
1. Controlling migration of contaminated soil and groundwater from OU1 is necessary to ensure ecological risks in the Passaic River are mitigated. We do not agree that potential ecological

risk posed to receptors within the river from contaminated media within OU1 are sufficiently evaluated under the other OUs. A separate ecological risk assessment for OU1 is needed prior to identifying a final remedy for OU1.

2. One of the remedial objectives of the OU1 remedy is to reduce mass transport of contaminants from OU1 to the Passaic River. The interim ROD identified that the concentrations of dioxin and DDT in groundwater would need to meet the RAOs in the nearest offsite well. We have not been provided with groundwater monitoring for site-related contaminants from any offsite wells demonstrating that dioxin and DDT is not continuing to enter the river. Data collected from the river side of the slurry wall should be collected and evaluated.

3. As we have recommended in previous correspondence with the EPA (e.g., memorandum from NOAA to EPA dated April 11, 2007), given the limited permeability of the surficial cap (gas venting layer, geosynthetic clay liner, textured high-density polyethylene geomembrane, geocomposite drainage layer, and a geosynthetic soil cover) and the limited permeability of the slurry trench cutoff wall (attapulgite combined with cement to create a self-hardening slurry) and the floodwall (master pile and sheetpiling with excavation of material in between replaced with tremie concrete, construction of curbwall, and installation of a floodwall anchorage system), both of which are keyed into an underlying silt layer and tied into the cap, and the ongoing groundwater withdrawal and treatment system (in operation since 2001), data should be collected on both sides of the slurry wall to ensure that river water is not entering the site on each tidal cycle.

4. We are concerned that sufficient information has not been collected to demonstrate that the interim remedy is effectively reducing, or that the proposed improvements to the system would effectively reduce, migration of site-related contamination to the Passaic River. Ground water contamination data, collected across OU1, indicates that the highest concentrations of contaminants (including VOCs, metals, and dioxins/furans) are located adjacent to the slurry wall. Pore water on the river side of the floodwall in the mudflats next to the site and in a nearby reference area needs to be collected at low tide (*e.g.*, water collected from stainless steel mini-piezometer push probes with a peristaltic pump) and analyzed for key contaminants identified in groundwater on the landward side of the slurry wall.

5. For the reasons identified above, we do not support the current proposed plan.

We hope these comments will be useful to you. NOAA remains interested in offering technical support on this site. If you have any questions regarding these comments or if I can be of further assistance, please feel free to contact me at (206) 915-4139 or at *reyhan.mehran@noaa.gov*.

cc: Sean Bugel, USDOI/USFWS/NJFO
Katie Smith, NJDEP/ONRR

Naranjo, Eugenia

From: S & N Yafet [redacted]
Sent: Tuesday, November 26, 2024 10:27 AM
To: doug@forumfg.com
Cc: Elizabeth Balladares; baptista@newschool.edu; Lisa Baron; Kirk Barrett; Sean Bugel; Arnold Cohen; Curtis, Drew; Dave E. DeGhetto; PRRA President; Marcy S. DePina; scott.dvorak; Galayda, Julia; Galbreath, Dana [DEP]; Christopher Gliwa; Kozlowski, Nicole; Kandil, Shereen (she/her/hers); Michele Langa; Mengyan Li; Anthony Marrone; Jay Meegoda; Cynthia Mellon; Naranjo, Eugenia; Joe Novak; Mehran, Reyhan (NOAA); srubin@greatswamp.org; Salkie, Diane; bsandinj [redacted] Jorge Santos; Sivak, Michael (he/him/his); Smeraldi, Josh; Erica Snyder; Jennifer Terwilliger; Lenny Thomas; Vanessa Thomas; Vaughn, Stephanie; Yeh, Alice; Zizila, Frances
Subject: Re: Passaic CAG letter on the OU 1 Remedy

Caution: This email originated from outside EPA, please exercise additional caution when deciding whether to open attachments or click on provided links.

Hi Doug,

@Ana brava. Your scientifically considered comments, from the very first, announced their source.

Indeed the presenters have avoided presenting details backing up their findings and remedies, focusing instead on top level public-facing determinations only. They have cited "ongoing litigation" and other "internal" reasons for not engaging as deeply as you have wished. I am resigned to accept they will not respond any differently now and I just hope for the best for all affected in this imperfect world.

I wonder all the time at the apparent non-involvement of housing developers and political leaders who are planning massive new construction along the river, close to Penn Station. Details about the cleanup should matter the most to them. Perhaps they have a separate CAG and comments.

All the best
Steven Yafet

On Tue, Nov 26, 2024, 12:46 AM Doug Sarno <doug@forumfg.com> wrote:

> Correction, the comments are due to EPA Tuesday 11/25, if you do have a chance to read in the morning send along any thoughts, the committee has worked hard and did a great job on the comments.
>
> Thanks again
> Doug
>
> > On Nov 25, 2024, at 7:17 PM, Doug Sarno <doug@forumfg.com> wrote:
> >
> > Hi all, please see the attached final draft CAG comments, as noted these need to get to EPA this week so please make any proposed changes before Thanksgiving if you can.

November 26, 2024

Eugenia Naranjo
Remedial Project Manager
U.S. EPA Region 2
290 Broadway, 18th Floor
New York, New York 10007-1866
[Submitted via email to: Naranjo.eugenia@epa.gov]

Re: Comments on the OU1 Proposed Plan

Dear Ms. Naranjo,

The Passaic River Community Advisory Group (CAG) appreciates the opportunity to comment on the EPA's proposed final cleanup plan for the 80-120 Lister Avenue, Newark, NJ, portion of the Diamond Alkali Superfund site.

The Passaic River CAG has been working to understand and provide community input on the Superfund Cleanup since 2009. We represent a broad spectrum of stakeholders from throughout the region. Our core values center on protecting public health and the environment and restoring the Passaic River to its full environmental, community, economic, and recreational potential. We have always worked with EPA with a spirit of respect and collaboration and approach this input accordingly. In preparation for these comments, the CAG was provided a public presentation and a written summary of the preferred alternative plan. The CAG appreciates the opportunity to share the community's observations, concerns, and questions based on what we know and understand to date. Based upon the information provided and the CAG's familiarity with the Lister Avenue site, we submit the following comments to EPA for consideration.

First, we request that this proposed plan <u>not be categorized as a final remedy</u>, but instead <u>remain listed as an interim remedy.</u> We strongly believe that a final remedy designation is premature due to the pending cleanup activities along the river that may impact the OU1 site at Lister Avenue. A more holistic assessment of the final remedy should be performed once critical aspects of the cleanup in the lower 8 miles of the river and the upper 9 miles of the river are finalized or significantly underway. While there is a need for ongoing review and maintenance of the existing remedy, the upgrades to the site that are the core of the preferred alternative do not constitute elevating this proposed remedy to final status

Several issues warrant further consideration and clarification before designating a final remedy. These outstanding questions or areas of concern include;

(1) The extent to which climate change impacts are projected or have been modeled in the determination of alternatives. The risk of increasing severity, frequency, and intensity of the climate-related effects, which include flooding, sea level rise, extreme heat, etc, may impact how proposed remedies perform at the site over time in perpetuity.
(2) While the EPA has previously indicated to CAG members that the contaminants on site cannot be removed and disposed of in the same manner as the river sediment due to the levels of pollutants and available disposal options, the CAG would like further clarification and evidence of why coordinated removal of contaminated sediments and soil at OU1 would not achieve economies of scale. What documentation was used to determine that the contaminated materials at OU1 are distinct or should be treated and disposed of differently than the contaminated river sediment, even the 40,000 cubic yards of contaminated sediment dredged adjacent to OU1 back in 2010?
(3) Should the proposed preferred alternative move forward, what are the detailed contingency plans, financing requirements, or remedies in case of failures or underperformance of the controls on site in perpetuity? What assurances do communities have that these emergency provisions and plans will be funded or implemented in perpetuity?
(4) What are the potential risks from the lack of a bottom, impermeable liner at the site?
(5) What are the alternatives that could lead to the future long-term use of the site as passive green or blue infrastructure, rather than an active industrial site that would create more risk to the community in the future?

In addition to these overarching questions and concerns, we have some specific technical questions about the proposed preferred alternative. The following are questions that the CAG would like to learn more in-depth about before the selection of the final remedy:

- Is the contaminated soil on site uniformly dispersed throughout the site or are there pockets of high contamination in specific areas that could be permanently removed?
- Is the site designed to withstand potential seismic events?
- What is the capacity of the cement cap, slurry walls, and other containment infrastructures on site to withstand heavy storms, flooding, and extreme temperatures? What is the projected life of each of these key components of the site's infrastructure?
    - How will the site be monitored and how frequently?

    - What would the criteria be for determining whether the remedy put in place is successful or failing? If it is determined that elements (or all) of the remedy are failing what would the repair/replacement look like and how would the community be informed and engaged in that event?
    - What kind of cap wear and tear is expected and what is the present condition of the cap? What is the nature of the repairs planned for this remedy?
- What is the level of and characteristics of contamination outside the slurry wall?
    - Is there a plan to identify and address contamination beyond the slurry wall?
- What is the non-aqueous phase liquid (NAPL) impacting the site and is it coming from within the cap or from an outside source of concern?
- What is the logic behind the timing of monitoring, replacement, and reinforcement of site protections?
    - Capital funds to upgrade the site
    - Frequency of monitoring and maintenance of the site
    - Oversight of these monitoring activities by EPA

In conclusion, we are especially concerned that the designation of a final remedy forecloses the possibilities for more carefully deliberating on economies of scale and more protective measures to shore up the OU1 site in perpetuity, especially as time advances, the site evolves, and as science and capabilities advance. Furthermore, the proposed final remedy seems more like regular maintenance and upkeep of the site that should be implemented regularly rather than a comprehensive and final clean-up that protects communities from the significant hazards at the site for all time. Finally, there remain many questions as to the preparedness of the site for future risks from climate change, sea level rise, tectonic instability, and the long-term ability to maintain a maximum level of protection against contamination for the surrounding community.

We look forward to the EPA's response to our concerns and a deeper discussion about plans for the OU1 site.

Sincerely,
Ana Isabel Baptista, PhD, Co-Chair, Passaic River Superfund CAG
Michelle Langa, Co-Chair, Passaic River Superfund CAG
Cynthia Mellon, member of the Passaic River Superfund CAG
Vanessa Thomas, member of the Passaic River Superfund CAG
On behalf of the Passaic River Superfund CAG

Arnold & Porter

Jeff Talbert
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November 26, 2024

VIA EMAIL

Eugenia Naranjo
Remedial Project Manager
U.S. Environmental Protection Agency
Region 2
290 Broadway, 19th Floor
New York, NY 10007-1866
Naranjo.eugenia@epa.gov

Re: Comments on Proposed Final Cleanup Plan for OU1 of the Diamond Alkali Superfund Site, Newark, NJ

Dear Ms. Naranjo:

The Lower Passaic River Small Parties Group (the "SPG") respectfully submits these comments on the proposed final cleanup plan for 80-120 Lister Avenue ("OU1" or the "Diamond Alkali facility") within the Diamond Alkali Superfund Site (the "Site"). *See* U.S. Environmental Protection Agency, *Superfund Program Proposed Plan, Diamond Alkali Superfund Site OU1 80-120 Lister Avenue, Newark, NJ* (Sept. 2024) ("Proposed Plan").

As background, members of the SPG have long been involved in the study and remediation of the Lower Passaic River (the "River") within the Site. The SPG appreciates EPA's decision to require additional remedial measures with the goal of enhancing containment of toxic contaminants within OU1, primarily 2,3,7,8-TCDD, which has historically impacted the River, Newark Bay, and their environs. The Proposed Plan recognizes that additional measures are necessary to reduce contaminant contributions from the Diamond Alkali facility, which is directly adjacent to and hydrologically connected to the River. Proposed Plan at 8-9.

The SPG supports EPA's plan to improve the Interim Remedy, but because EPA proposes to leave 2,3,7,8-TCDD and other contaminants within OU1 and the enhanced measures will not result in 100% containment, the SPG has the following questions and comments regarding the Proposed Plan.

The Interim Remedy left in place 2,3,7,8-TCDD-contaminated soils and groundwater outside of the floodwall and slurry walls at OU1, including in the deep aquifer. Proposed Plan at 8-9. The Proposed Plan states that this will be evaluated as part of a future operable unit. *Id.* at 9. Is there an estimated timeline for addressing this contamination as part of a future operable unit? As part of that work, the existing floodwall and containment system should be reevaluated to determine if enhancements can be made to reduce off-site migration of contaminants, including the high levels of contaminants that are in contact with the River below the floodwall.

The Feasibility Study for OU1 dated July 25, 2024 (the "FS") notes that, under the Preferred Alternative, groundwater capture would increase from 85% to 90%. FS at 8-3. The FS also states that an operations and maintenance and monitoring plan will be developed to monitor and track the performance of the final remedy over time. *See* FS at 8-4. What thresholds will be used to define the acceptable operation and performance of the final remedy? What information does EPA expect to receive and evaluate in the Five-Year Review process to ensure that 2,3,7,8-TCDD is contained within OU1 and does not reach to the River? In particular, will EPA require any additional sampling to evaluate the amount of 2,3,7,8-TCDD entering the River from within, under, or outside the slurry wall and floodwall structures? If so, how would those sampling results be addressed in the Five-Year Review process?

Finally, how will EPA address the lack of complete containment of 2,3,7,8-TCDD in OU1 in the context of the remediation and future operation and maintenance of the other operable units at the Site?

Thank you for your attention to this matter.

Sincerely,

/s/ *Jeffrey D. Talbert*

ARNOLD & PORTER KAYE SCHOLER LLP
One Gateway Center, Suite 1025
Newark, NJ 07102
Telephone: 973.776.1888
Jeffrey D. Talbert, Esq.

APPENDIX V

RESPONSIVENESS SUMMARY

ATTACHMENT B - PROPOSED PLAN

Superfund Program
Proposed Plan

U.S Environmental Protection Agency
Region 2

Diamond Alkali Superfund Site OU1

80-120 Lister Avenue, Newark, NJ

September 2024

EPA ANNOUNCES SUPERFUND PROPOSED PLAN

This Proposed Plan describes the remedial alternatives considered to address contaminated soil and groundwater at Operable Unit 1 (OU1) of the Diamond Alkali Superfund Site (Site) located at 80-120 Lister Avenue in Newark, New Jersey (Figure 1) and identifies EPA's preferred remedial alternative along with the rationale for this preference.

An interim remedy to secure and contain contamination is currently in place at OU1 and includes a slurry wall and floodwall to contain subsurface contamination, a cap to prevent contact with contaminated material and also to prevent surface water infiltration, and a groundwater extraction system to prevent the migration of contamination. The interim remedy has been in operation since completion in 2004 and the performance monitored via groundwater sample collection and analysis. The preferred remedial alternative would be a final remedy for OU1 and would be an improved, optimized version of the current existing interim remedy.

Figure 1 – Site Location

MARK YOUR CALENDARS

Public Comment Period
September 10, 2024 to October 10, 2024
EPA will accept written comments on the Proposed Plan during the public comment period. To request an extension, send a request in writing to Eugenia Naranjo by 5:00 PM on October 9, 2024.

Public Meeting
September 19, 2024 at 6:00 P.M.
EPA will hold a hybrid public meeting to explain the Proposed Plan and the alternatives presented in the Feasibility Study. Oral and written comments will also be accepted at the meeting. The meeting will be held at NJIT (New Jersey Institute of Technology), Central King Building, room 303, 100 Summit St, Newark, NJ 07103.Newark, New Jersey. Zoom link: https://bit.ly/listerave91924

EPA's website for the Diamond Alkali Site is:
https://www.epa.gov/superfund/diamond-alkali
For more information, see the Administrative Record at the following locations:

EPA Records Center, Region 2
290 Broadway
New York, New York 10007-1866
(212) 637-3000
Hours: Monday-Friday – 9 A.M. to 5 P.M.

Newark Public Library
Van Buren Branch
140 Van Buren Street
Newark, New Jersey 07105
(973) 733-7750
Please refer to website for hours:
https://www.npl.org/community-libraries/van-buren-branch/

This Proposed Plan was developed by the U.S. Environmental Protection Agency (EPA), the lead agency for the Site, in consultation with the New Jersey Department of Environmental Protection (NJDEP), the support agency. EPA, in consultation with NJDEP, will select the final OU1 remedy after reviewing and considering all information submitted during the 30-day public comment period. EPA, in consultation with NJDEP, may modify the preferred alternative or select another response action presented in this Proposed Plan. Therefore, the public is encouraged to review and comment on the alternatives presented in this Proposed Plan.

EPA is issuing the Proposed Plan as part of its public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), and Section 300.430(f)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The remedial alternatives summarized in this Proposed Plan are described in greater detail in the *Final Feasibility Study: Diamond Alkali Superfund Site* (June 2024) (2024 FS Report). This report and other documents are part of the administrative record file for the Site and are publicly available as electronic documents from EPA's website, which can be found in the "Mark Your Calendars" text box, and at the designated information repositories. EPA and NJDEP encourage the public to review these documents to gain a more comprehensive understanding of the Site and the Superfund activities that have been completed at the Site to date.

EPA's preferred plan for OU1 is Alternative 2, the Optimized Containment Remedy, which consists of the Interim Remedy that is currently operating at OU1 with a number of improvements to optimize it, making it more effective and protective. These optimizations consist of:

- Replacement of extraction wells EW-1 through EW-6, located along the floodwall bordering the Lower Passaic River, to position the well screens more accurately in the fill layer beneath the site's cap and improve their effectiveness in achieving hydraulic containment.
- Reactivation of extraction well EW-9 on the south side of the Site.
- Redesign and replacement of the groundwater conveyance system, as needed.
- Upgrade of the Groundwater Treatment System (GWTS), as needed.
- Investigation of the integrity of the existing cap layers via a Site-wide electrical resistivity survey and subsequent repairs, if needed.
- Installation of additional groundwater monitoring wells, if needed.

  Maintenance of the OU1 cap, maintenance of the GWWS and GWTS, and long-term monitoring in perpetuity
- Institutional Controls

The OU1 site features are shown on Figure 2, located at the end of this Proposed Plan.

COMMUNITY ROLE IN THE REMEDY SELECTION PROCESS

This Proposed Plan is being issued to inform the public of EPA's preferred alternative and to solicit public comments pertaining to all of the remedial alternatives evaluated, including the preferred alternative. Changes to the preferred alternative, or a change from the preferred alternative to another alternative, may be made if public comments or additional data indicate that such a change would result in a more appropriate remedial action. The final decision regarding the selected remedy will be made after EPA, in consultation with NJDEP, has taken into consideration all public comments. This Proposed Plan has been made available to the public for a public comment period that concludes on October 10, 2024.

A public meeting will be held during the comment period on September 19, 2024 to provide information regarding the alternatives considered and the preferred alternative, as well as to receive public comments. The public meeting will include a presentation by EPA of the preferred alternative and other cleanup options evaluated for OU1. Information on the public meeting and submitting written comments can be found in the "Mark Your Calendars" text box on Page 1 of this document. Comments received at the public meeting, as well as written comments, will be documented in the Responsiveness Summary Section of the Record of Decision (ROD), along with EPA's responses.

A community involvement plan has been developed and it is part of the administrative record. It can be found at the EPA website listed in the "Mark Your Calendar" box and at www.ourpassaic.org.

SITE DESCRIPTION

The OU1 of the Diamond Alkali Superfund Site consists of two properties located at 80 and 120 Lister Avenue in the Ironbound neighborhood of Newark, NJ, comprising 5.8 acres of land adjacent to the Lower Passaic River. OU1 is bordered by industrial properties to the east, west, and south and by the Lower Passaic River to the north. The adjacent industrial properties have also been contaminated by past operations and are being investigated under cleanup programs overseen by the NJDEP.

The current land use for the area is industrial and includes ongoing operation and maintenance activities associated with the interim remedy currently in place at OU1. A deed notice is in place for OU1 to provide notice of conditions at the properties and ensure that the cap placed over the property as part of the interim remedy is not disrupted. The immediate area surrounding OU1 is zoned for industrial use and will continue to be so, according to the 2015 Newark Zoning and Land Use Regulations.

Nearby areas have a dense residential population, including public housing constructed by the City of Newark. The Ironbound section of Newark is highly industrialized but also densely populated and is burdened with numerous environmental concerns. The Ironbound neighborhood is located in the East Ward of the city and houses approximately 50,000 of Newark's 275,000 residents. This neighborhood encompasses approximately four square miles and is home to a sizeable population of Portuguese-American and Brazilian-American ethnicity.

ENVIRONMENTAL JUSTICE

EPA conducted a review of the project vicinity using EPA's EJSCREEN online tool and via review of aerial imagery (accessed through Google Maps) to identify the locations of residential areas. EPA completed this screening to create a common starting point between the agency and the public when looking at issues related to environmental justice (EJ). Screening is a useful first step in understanding or highlighting locations that may be candidates for further review; however, it is essential to remember that screening-level results do not, by themselves, determine the existence or absence of EJ concerns at a given location. The EJ and supplemental indexes are a combination of environmental and socioeconomic information. There are thirteen EJ indexes and supplemental indexes in EJSCREEN reflecting twelve environmental indicators. Particularly elevated environmental indicators found at OU1, and the surrounding area (as compared to national averages) include poor air quality, cancer risk, traffic density, lead paint prevalence, proximity to sites with chemical management plans and hazardous waste facilities, and occurrence of wastewater discharges.

A one-mile buffer and five-mile buffer surrounding OU1 were applied for the generation of the EJSCREEN reports. The one-mile buffer screening offers demographic information on the immediate project area, while the 5-mile buffer screening provides a larger, regional context for those demographics. Demographic indicators from the one-mile buffer screening indicate there are people of color, low-income populations, and linguistically-isolated populations in the immediate project area, where the percentages of these populations are greater than the state averages by margins of 20 percentage points or greater (see table below).

Demographic Indicator (Population Percentage)	1-mile Buffer	5-mile Buffer	NJ State Average
People of Color	67%	80%	44%
Low Income	47%	41%	24%
Linguistically Isolated	32%	14%	7%

The findings of this analysis will be used to ensure that the outreach efforts EPA is making are reasonable and appropriate.

SITE HISTORY

The property located at 80 Lister Avenue was used for manufacturing purposes by numerous industrial companies for over 100 years. The mid-1940s marked the beginning of the manufacturing operations related to the conditions that require cleanup, including the production of dichloro-diphenyl-trichloroethane (DDT) and phenoxy herbicides by Kolker Chemical Works, Inc. The Diamond Alkali Company acquired the northeastern portion of the 80 Lister Avenue property in 1951 and produced various chemicals and pesticides, including sodium trichlorophenol, 2,4-dichlorophenol, monochloroacetic acid, and the byproduct hydrochloric acid; 2,4-dichlorophenoxyacetic acid (2,4-D), 2,4,5-trichlorophenoxyacetic acid (2,4,5-T), and their esters and amines; as well as sodium 2,4,5-trichlorophenate (Na-TCP). The Diamond Alkali Company also manufactured agricultural chemicals, including the defoliant known as Agent Orange, which is a mixture of 2,4-D and 2,4,5-T. A by-product of these manufacturing processes was the dioxin congener 2,3,7,8-tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD), which is extremely toxic.

In February 1960, an explosion at the Site destroyed a large five-story building. At the time of the explosion, the remaining, southwestern portion of the 80 Lister Avenue property was leased by the Diamond Alkali Company to rebuild the plant at a larger scale. Plant operations were later discontinued in August 1969.

In September 1969, the Diamond Shamrock Corporation, corporate successor to the Diamond Alkali Company, decommissioned the Site. The plant was listed for sale and remained idle until it was purchased by Chemicaland Corporation (Chemicaland) in March

1971. Chemicaland carried out final manufacturing activities, including manufacturing of benzyl alcohol and 2,4-D at the 80 Lister Avenue property from 1971 through 1977. Between 1977 and 1983, various owners operated on the property.

In May of 1983, EPA and NJDEP conducted sampling at the Site under the National Dioxin Strategy, which targeted facilities that produced 2,4,5-trichlorophenol (TCP) and its pesticide derivatives (such as 2,4,5-T) for investigation. Sampling results revealed high levels of dioxin, in particular 2,3,7,8-TCDD, at the 80 Lister Avenue property. Pesticides, volatile organic compounds (VOCs), and other hazardous substances were also present. Contaminants were found in both soil and groundwater at OU1, with a lesser degree of contamination detected at the adjacent 120 Lister Avenue property. In 1984, Diamond Chemicals Company acquired 120 Lister Avenue to assist with the cleanup. In 1986, by then known as Diamond Shamrock Chemicals Company (DSCC), it repurchased the property at 80 Lister Avenue.

Based on these investigations, EPA and NJDEP initiated several emergency response actions to control and limit access to the Site:

- The properties at 80-120 Lister Avenue were secured with a 24-hour guard service;
- Exposed soils on the property were covered with geofabric to prevent contaminant migration; and
- Dioxin-contaminated soils and debris from other properties were removed via excavation, vacuuming, and other means and transferred to 120 Lister Avenue for storage.

EPA proposed the addition of the Site to the National Priorities List (NPL) in September 1983, and this addition was finalized on September 21, 1984. Also in 1984, NJDEP issued two Administrative Consent Orders to DSCC: the first required DSCC to undertake the investigation and immediate response work conducted at 80 Lister Avenue, and the second encompassed the investigation and response work conducted at 120 Lister Avenue.

From 1984 to 1987, with oversight by NJDEP, DSCC, and later Occidental Chemical Corporation (OCC), the corporate successor to the Diamond Alkali/Diamond Shamrock Company, completed Site Investigations and a Feasibility Study (FS) for 80-120 Lister Avenue. The Site Investigations and FS showed that the 80-120 Lister Avenue properties were contaminated by numerous hazardous substances including dioxin, semi-volatile organic compounds (SVOCs), VOCs, herbicides, pesticides, polychlorinated biphenyls (PCBs), and metals. The contamination was widespread and affected site soils, groundwater, ambient air, surface water, and building structures. The chemicals that were determined to present the greatest risks due to their toxicities and concentrations were 2,3,7,8-TCDD and DDT.

On August 1, 1987, EPA issued the Proposed Plan for OU1 of the Site, and on September 30, 1987, EPA issued a ROD selecting an interim containment remedy (the current Interim Remedy). The Interim Remedy consisted of placement of remediation waste and building demolition debris within a containment cell, capping of the OU1 properties, construction of subsurface slurry walls and a floodwall to surround the OU1 properties, and a groundwater collection and treatment system. The Interim Remedy prevents exposure to contaminated media and debris and prevents further releases to the Lower Passaic River.

Once the remedy had been selected, OCC entered into a judicial Consent Decree with EPA to perform the Remedy Design/Remedial Action (RD/RA), which was approved by the court in 1990. OCC performed the RD between 1990 – 1999, with EPA approving the final design report in 1999. During this time, OCC explored the potential for implementing an alternative to the interim remedy selected in the 1987 ROD, but a viable alternative was not found. OCC constructed the remedy under EPA supervision between 2000 and 2004. Construction of the Interim Remedy at the Site was carried out by OCC under EPA oversight and was completed in 2001. The Interim Remedy is described in more detail in the 1985 FS Report (October 1985) and the *Final Report for Remedial Construction* (August 2004)

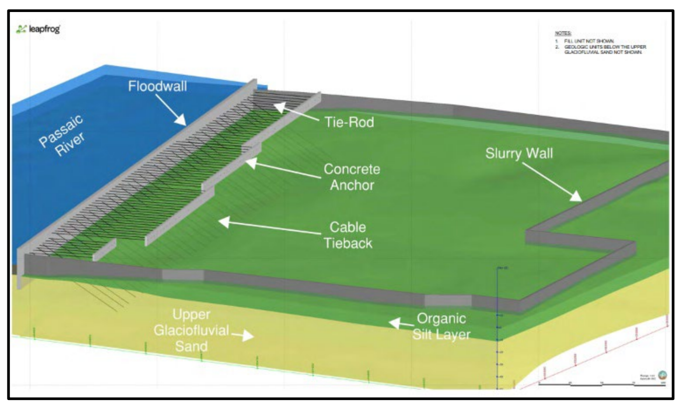


Figure 3 – Floodwall and Slurry Wall Features

Since 2001, five reviews of the performance and the protectiveness of the interim remedy have been completed and documented in Five-Year Reviews, with the most recent review concluding that the interim remedy is generally functioning as designed and remains protective of public health and the environment.

SITE CHARACTERISTICS

Previous Sampling Efforts and Results

OU1 has been methodically evaluated through various investigations carried out under the oversight of EPA and NJDEP. The results of these studies are detailed in the 1985 FS Report, the 1985 Site Evaluation Reports for 80 and 120 Lister Avenue, the Site Evaluation Report Addendum (October 23, 2020) and the Annual Groundwater Reports submitted by Glenn Springs Holdings on behalf of OCC. The February 1985 Site Evaluation Report included data and a conceptual site model of OU1 based on physical characteristics of the area and the nature and extent of contamination.

Physical Characteristics of the Site

The 80-120 Lister Avenue properties have a total size of 5.8 acres; this acreage represents the geographical area designated as OU1. Of these 5.8 acres, 3.5 acres are at 80 Lister Avenue and 2.3 acres are at 120 Lister Avenue. The containment cell constructed as part of the interim remedy, with two sections referred to as Areas A and B, spans both the 80 and 120 Lister Avenue properties.

The properties are currently fenced and secured with an electronic, automated security system to prevent unauthorized access. Contaminated soils and debris are contained within the fenced area under an impermeable cap system, the surface layer of which is composed of gravel. On the west, south, and east sides of the Lister Avenue properties, all cap layers extend across the top of the slurry wall where runoff/lateral drainage is collected in and conveyed to the stormwater collection system. A wedge of compacted clay was placed on top of the slurry wall prior to construction of the cap to form a low permeability connection to the cap. On the north side of the Lister Avenue properties, cap layers terminate at the floodwall. Additional features at the OU1 properties include equipment and structures associated with the operation of the interim remedy in place at the Site. These include a groundwater withdrawal system (GWWS), a groundwater treatment system (GWTS), an office support building, and access roads. Subsurface features include groundwater monitoring wells, groundwater extraction wells, gas vents, piezometers, a groundwater conveyance system, slurry trench cutoff walls, and a floodwall. A pictorial figure of the floodwall and slurry wall features is provided as Figure 3.

Site Geology and Hydrogeology

The geology of OU1 consists of non-native fill that was placed in the late 1800s, below which is an organic silt layer comprising native wetland and river bottom sediments, and glaciofluvial deposits that are below the silt layer. The top of the fill layer was the former site grade before remediation. The thickness of the non-indigenous fill varies, and it is thickest where the organic silt layer is thinnest. The thickness of the native organic silt layer also varies, but it generally decreases from the

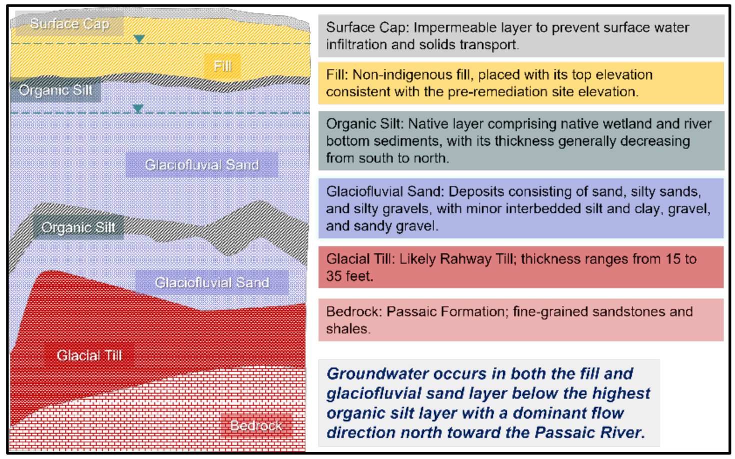


Illustration – OU1 Geology and Hydrogeology

south to the north. Results of recent investigations indicate that the silt layer is continuous beneath the property, although its upper surface elevation varies by several feet. The organic silt reduces the hydraulic connection between the fill and the underlying sand layer, reducing the downward migration of contaminants. The glaciofluvial deposits underlying the organic silt layer include sands, silty sands, and silty gravels, with minor interbedded silt and clay, gravel, and sandy gravel.

Groundwater at OU1 occurs in the fill layer above the organic silt layer and in the sand layer below the organic silt layer. The dominant groundwater flow direction is to the north towards the Lower Passaic River. OU1 geology and hydrogeology are illustrated above.

Components of the Interim Remedy

In 1987, when the interim remedy was selected for OU1, few remedial options existed for disposal of remediation waste contaminated with dioxin classified under the Resource Conservation and Recovery Act (RCRA) as listed waste. The manufacturing operations at OU1 had generated listed dioxin (F020) wastes under RCRA and its implementing regulations. The origin of the soil containing phosphorus is not known; however, because the material reacted on contact with air, it is considered a characteristic (reactive) waste under RCRA and assigned a classification of D003. The 1987 ROD identified that F020 and D003 wastes were subject to Land Disposal Requirements (LDRs) under RCRA, which required that the threat posed by the waste must be fundamentally changed by treatment to identified standards prior to disposal in a domestic landfill:

- F020 waste contaminant levels must be reduced by at least 90 percent of their initial concentration via treatment and to less than ten times the Universal Treatment Standard (UTS) for the hazardous constituents; and
- D003 waste must be "de-characterized" to remove the hazardous characteristic.

Given the sparse options for disposal, EPA and NJDEP selected an interim remedy in the 1987 ROD, stating that the contaminated materials would be secured and contained at OU1 until an appropriate technology becomes available.

CERCLA Section 121(d) specifies that a remedial action must require a level or standard of control of the hazardous substances, pollutants, and contaminants that at least attains applicable or relevant and appropriate requirements (ARARs) under federal and state laws, unless a waiver can be justified pursuant to CERCLA Section 121(d)(4). As noted, the manufacturing operations at OU1 had generated RCRA-listed dioxin wastes, as well as other wastes subject to multiple RCRA requirements relating to treatment and disposal. The 1987 ROD and the 1990 Consent Decree governing the cleanup explain and document that EPA waived several provisions of RCRA concerning best demonstrated available treatment (BDAT), LDRs, and landfill requirements pertaining to liners and leachate collection systems, invoking the greater risk associated with attempted excavation of the waste (CERCLA Section 121(d)(4)(B)) and the equivalent standard of performance (CERCLA Section 121(d)(4)(D)). While not explicitly cited as a basis for a waiver, the 1987 ROD also referred to the interim nature of the remedy.

The judicial Consent Decree calls for a periodic re-evaluation of the remedy, the primary purpose of which is to develop, screen, and assess remedial alternatives, and to assess the performance of the selected remedy, until a final remedy could be selected for OU1.

A Remedy Evaluation Work Plan (REWP), which is attached to the 2024 FS Report as Appendix A, was developed in 2015 to guide the required evaluation of the interim remedy. OCC submitted several iterations of a Remedy Evaluation Report (RER) to EPA by January 2021. Following EPA review of the January 2021 Draft RER, EPA determined that the January 2021 Draft RER satisfied the Consent Decree requirement to perform a remedy evaluation and that it should be revised into an FS to comparatively evaluate remedial alternatives, which led to the submission of the 2024 FS Report. The RER and correspondence are included in the administrative record.

The OU1 interim remedy, as implemented by OCC, consists of the following components:

- A slurry trench cutoff wall encircling the 80-120 Lister Avenue properties and tied into the silt layer underlying the properties.
- A floodwall along the Lower Passaic River to protect the properties from the 100-year flood.
- Demolition of former plant buildings and equipment, followed by decontamination of non-porous materials to the maximum extent practicable for off-site reuse, recycling or disposal.
- Transportation off-site for treatment or disposal of drums containing hazardous substances but containing less than 1 part per billion (ppb) of dioxin.
- Stabilization and immobilization of the contents of the remaining drums of dioxin-contaminated materials.
- Containment of all materials contaminated above 1 ppb of 2,3,7,8-TCDD on-site, including contaminated materials recovered from off-site locations, demolition debris, and other remediation wastes. Secured materials were separated to the maximum extent practicable based on contaminant concentrations to Area A or Area B, to afford access to and facilitate removal of the more highly contaminated materials, should such removal be selected as a remedy at a later date.
- Hauling, emptying, spreading and compacting the contaminated materials previously stored at 120 Lister Avenue, and decontaminating the shipping containers for off-site reuse, recycling or disposal.
- Locating and plugging inactive underground conduits and rerouting active systems.
- Installation, operation, and maintenance of a GWWS designed to maintain an inward hydraulic gradient to prevent the migration of groundwater from within the slurry wall.
- Installation, operation, and maintenance of a treatment system for groundwater and other aqueous liquids.
- Capping of the entire OU1 with an engineered, multi-layer cap consisting of, from bottom up (see cap system cross-section illustration below):
    - 6-inch subgrade layer covered with non-woven geotextile fabric
    - 12-inch gas venting layer of crushed stone covered with geosynthetic clay liner (GCL)
    - 60-mil high-density polyethylene (HDPE) textured geomembrane
    - Geocomposite drainage layer (triplanar HDPE geonet sandwiched between 2 layers of geotextile fabric)

- 18-inch Select Fill layer covered by GCL covered by non-woven geotextile fabric layer
    - 6-inch crushed stone surface layer
- Implementation of suitable monitoring, contingency, operation and maintenance, and site security plans to ensure the protection of human health and the environment during and after the construction of the Interim Remedy.
- On-site placement and capping of all sludge generated from the wastewater treatment processes until such time that an alternative method of sludge management is approved.
- Design, construction and operation of the remedy to attain the cleanup standards listed in Tables III, V, VII of Section VIII of the 1987 ROD.

The floodwall infrastructure consists of tie-rods, tiebacks, and concrete anchor walls.

While the 1987 ROD also required performing a Feasibility Study every 24 months following the installation of the selected interim remedy to develop, screen and assess remedial alternatives and to assess the performance of the selected remedy, as described above, EPA determined that the remedy evaluation that began in 2015 and was completed in 2021 met this requirement.

Please see Figure 2 at the end of this document for a current plan showing OU1 of the Site, including the Interim Remedy features that were constructed from 2000-2004.

Based on monitoring data and observed trends, operation of the GWWS resulted in the following:
- A decrease in groundwater levels within the slurry wall since construction of the interim remedy was completed;
- Generally inward horizontal gradients across the slurry wall; and
- Separation of hydraulic systems inside and outside of the slurry wall.

Since 2001, as a result of the remedy evaluation process, EPA has conducted additional review of the above trends. The results are documented in the annual groundwater monitoring reports, as well as in the Five-Year Reviews and the Site Evaluation Report Addendum. While inward gradients have generally been established, upward hydraulic gradients are not being and will not be fully achieved in significant portions of OU1 due to a number of issues, including the construction of several of the existing extraction wells (which are not screened at an optimal stratum/depth). Additionally, the evaluation noted that there may be a need for additional maintenance/repair of the cap system.

NATURE AND EXTENT OF CONTAMINATION

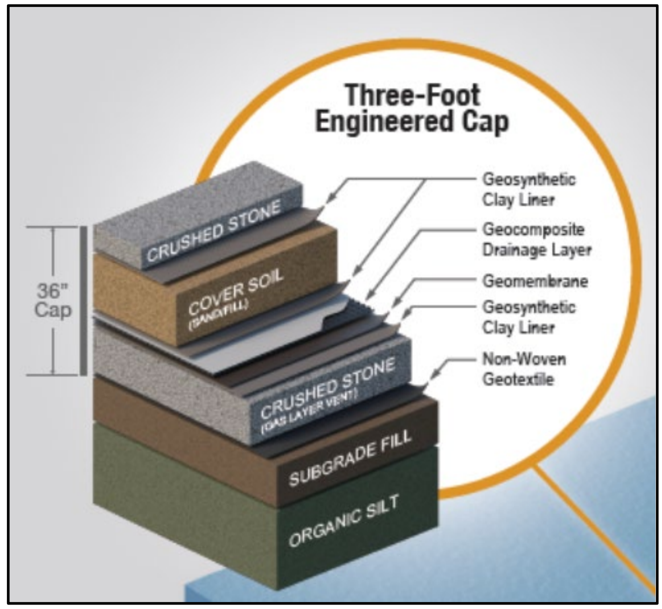


Illustration - Cap System Cross-Section

Much of the contaminant mass present at OU1 was released to the Site soils during the late 1940s through l960s by manufacturing operations at the Diamond Alkali facility. Over time, soil contaminants migrated to groundwater within the fill located above the organic silt layer. A summary of contamination within each of the major environmental media at OU1 is provided below.

Soil and Buried Impacted Materials

Impacts in the fill material at the Site that existed prior to implementation of the Interim Remedy were characterized in the mid-1980s and summarized in the 1985 Site Evaluation Report for 80 Lister Ave. The fill was found to contain 2,3,7,8-TCDD, VOCs, SVOCs, pesticides, herbicides, PCBs, and metals. These investigation activities indicated that the highest impacts to the fill occurred in the north-central and northwestern portions of the Site, which is where the former Chemical Manufacturing Building and Process Building were located prior to demolition. The implementation of the Interim Remedy from 2000 to 2004 resulted in the redistribution of some impacted portions of the fill within the Site.

The 1985 Site Evaluation Report for the 80 Lister Avenue property documented that detected dioxin concentrations in the surface soils (0-6 inches below grade) ranged from 0.39 to 9,050 ppb. For the 6–12-inch depth, dioxin concentrations were detected between 1.2 to 3,690 ppb. The detected concentrations in the 12–24-inch depth interval were 0.92 ppb to 19,500 ppb. Samples collected immediately above the organic silt layer contained dioxins ranging from non-detect to 71.8 ppb.

At 120 Lister Avenue, site investigations performed by DSCC in the 1980s revealed six areas of dioxin contamination greater than 7 ppb, a value established in the administrative consent order NJDEP issued to Diamond Shamrock in December 1984. These areas were excavated to depths ranging from six to 24 inches below grade, at the direction of NJDEP. The excavated soil was containerized on site and later placed in Areas A and B (see Figure 2); however, in several of the areas, the underlying soils still contained dioxins in excess of 7 ppb, as per the 1985 Site Evaluation Report for 120 Lister Avenue.

Most of the impacted fill material was placed in Areas A and B in the central portion of OU1 (see Figure 2) during the implementation of the Interim Remedy along with other impacted materials, followed by compaction and grading before constructing the surficial cap to contain the contaminants and wastes. In addition, impacted materials generated by OU1 demolition activities (i.e., building debris) were also placed in Areas A and B during Interim Remedy construction.

It is important to note that the Site soils surrounding and beneath Areas A and B are also contaminated with dioxins at concentrations that required remediation. The present-day areas of greatest impacts generally occur in the central to northwestern portions of OU1 which largely correspond with 80 Lister Avenue. This includes impacts to: 1) contaminated fill beneath the floodwall anchorage structures from former operations; and 2) contaminated fill within and beneath Areas A and B in the central portion of OU1, which were contaminated by former operations and may have been further contaminated by placement of impacted materials in Areas A and B during construction of the Interim Remedy. To clarify, remediation wastes that were added to Areas A and B were placed and compacted above existing contaminated soils and in shallow trenches, such that both the wastes and fill material below the cap system at 80-120 Lister Avenue are contaminated from the bottom cap layer to the surface of the organic silt layer. The tiebacks and anchor structures of the floodwall were also constructed above existing contaminated soils.

Soils located to the south of Areas A and B, primarily at 80 Lister Avenue, are less contaminated than the central to northwestern portions of OU1; the area to the east of Areas A and B, located at 120 Lister Avenue, is also characterized by contaminated soil, but to a lesser degree than that at 80 Lister Avenue.

Groundwater

Groundwater contaminants of concern (COCs) within the fill unit beneath OU1 includes 2,3,7,8- TCDD, VOCs, and metals.

Based on the results of the most recent groundwater sampling event from December 2023, primary groundwater COCs within the fill unit beneath the OU1 cap and inside the containment features (slurry walls and floodwall) consist of VOCs (benzene, hexachlorobenzene, toluene, chlorobenzene [CB], 1,4-dichlorobenzene [1,4-DCB], 1,2,4-trichlorobenzene [1,2,4-TCB], and trichloroethene [TCE]), metals (antimony, arsenic, lead, and mercury), and 2,3,7,8-TCDD. Site-related COCs (i.e., VOCs and 2,3,7,8-TCDD) also occur in the fill outside the area contained by the slurry wall. Detected concentrations ranged up to 3,830 micrograms per liter (ug/L) for benzene; 2,790 ug/L for toluene; 58,800 ug/L for CB; 452 ug/L for arsenic; and 44,000 picograms per liter for 2,3,7,8-TCDD.

WHAT IS A "PRINCIPAL THREAT"?

The National Oil and Hazardous Substances Pollution Contingency Plan (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 ground water generally is not considered to be a source material; however, Non-Aqueous Phase Liquids (NAPLs) in ground water may be viewed as source material. Principal threat wastes are those source materials considered to be highly toxic and/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 slurry wall was installed as close to the OU1 boundary as practicable given constructability limitations at the time. This resulted in roughly 10 to 15 feet of fill material, on average, surrounding the WMA not being included in the interim remedy. While COCs measured in the fill outside of the slurry walls may be due, in part, to past releases from the historic Site operations, in the case of VOCs, there are indications that many of these same VOCs are comingled with upgradient off-Site sources as well. In general, concentrations of COCs in groundwater in fill wells outside the slurry wall/floodwall boundary are stable or decreasing and EPA expects optimization of the interim remedy to improve the groundwater conditions because it will further prevent migration of contaminants from the WMA.

Any impacts from fill material outside the slurry wall to the deeper aquifer will be evaluated as part of a future OU. Residual contaminated fill material that remains outside the slurry wall is covered by the cap, which extends beyond the slurry wall to the OU1 boundary and is therefore not available for exposure.

Dense Non-Aqueous Phase Liquid (DNAPL)

As part of OCC's ongoing operation and maintenance of the groundwater remedy at OU1, high-viscosity DNAPL has been observed in two groundwater extraction wells (EWs), EW-2 and EW-4, which are located along the floodwall in the northwestern and north-central portions of OU1. Trace, unrecoverable amounts of DNAPL are routinely observed in EW-2 during monthly gauging of the OU1 monitoring wells and EWs. DNAPL is generally present in measurable and recoverable amounts in EW-4. A few gallons of DNAPL are removed from EW-4 every year during one or two targeted removal events. Although EPA has concluded that this DNAPL likely originated from former activities at OU1, its specific source or sources are unknown.

Principal Threat Waste

The NCP establishes an expectation that EPA will use treatment to address the principal threats posed by a site wherever practicable (40 CFR § 300.430(a)(1)(iii)(A)). The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. Source material includes or contains hazardous substances, pollutants, or contaminants that act as a reservoir for migration of contamination to groundwater, surface water, or air, or acts as a source for direct exposure. Principal threat wastes are 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. Contaminated groundwater is generally not considered to be source material. Please refer to the text box "What is a Principal Threat" for more information on the principal threat concept.

The investigations conducted at OU1 have documented highly elevated concentrations of contaminants in multiple media. Based on the toxicity and mobility characteristics described above, the following source materials present at OU1 are considered principal threat wastes:

- Free product DNAPL in groundwater based on its potential for mobility.
- Soil occurring below the water table containing hexachlorobenzene at concentrations greater than its 10^{-3} toxicity-based risk threshold (430,000 µg/kg) based on its potential for mobility and toxicity.
- Soil occurring below the water table containing 4,4'-DDT at concentrations greater than its 10^{-3} toxicity-based risk threshold (1,900,000 µg/kg) when in the presence of DNAPL based on its potential for mobility and toxicity.
- Soil occurring below the water table containing 2,3,7,8-TCDD in the presence of DNAPL based on its potential for mobility.

SCOPE AND ROLE OF ACTION

This is the final planned action for OU1, and will address soils, remediation waste, building demolition debris and other wastes placed in Areas A and B; the underlying and surrounding contaminated soils; and groundwater in the fill material above the organic silt layer that are contaminated with DDT, 2,3,7,8-TCDD and other COCs. The primary COCs in Site soils are 2,3,7,8-TCDD, and DDT. (The 1985 Site Evaluation Reports for 80 and 120 Lister Avenue document the full extent of contaminants detected at those properties.) These chemicals were released during the manufacturing operations of the former Diamond Alkali facility.

Erosion and transport of contaminated soils from the former Diamond Alkali facility via storm run-off and transport as fugitive dust was controlled initially by the placement of a geotextile over 80-120 Lister Avenue properties and later by the construction of the OU1 cap system for the Interim Remedy in 2000-2004. Migration of contaminated groundwater was controlled by the construction of the floodwall and slurry walls and the operation of the GWWS and GWTS intended to maintain hydraulic control and encourage inward and upward gradients across the slurry walls and organic silt layer, respectively.

Although the construction of the interim remedy prevented direct contact exposures to contaminated soil and dust and reduced the discharge of contaminated groundwater to the Lower Passaic River and to the underlying glaciofluvial sands, a significant volume of contaminated soil and debris remains below the cap system at OU1 and must be managed and monitored in perpetuity. The Site contaminants are persistent and do not degrade readily under most conditions. Given these conditions, it is necessary for EPA to select an appropriate final remedial alternative for OU1.

The Diamond Alkali Superfund Site includes three additional OUs: OU2, which consists of the lower 8.3 miles of the Lower Passaic River, and for which the remedial design was recently completed; OU3, which consists of the Newark Bay Study Area, and which is currently in the feasibility study stage; and OU4, which consists of the entire 17 miles of the Lower Passaic River and which is in the remedial design stage. Deep groundwater below the organic silt layer at OU1 may be addressed as part of a future OU.

SUMMARY OF SITE RISKS

The results of the site investigations completed in the 1980s for 80-120 Lister Avenue indicated that OU1 was contaminated by a large number of hazardous substances including dioxin, SVOCs, VOCs, herbicides, pesticides, and metals. The contamination was widespread and affected most media, including soils, groundwater, air, surface water and building structures.

The chemicals that were determined to present the greatest risks at OU1 due to their toxicities and concentrations were 2,3,7,8-TCDD and DDT, based on exposure to contaminated groundwater. The greatest potential for human exposure to 2,3,7,8-TCDD was identified as direct contact with surface soils and the risk assessment recommended that this exposure pathway be controlled. Other routes of exposure to the hazardous substances included migration of hazardous substances to the Lower Passaic River, migration of hazardous substances to groundwater, and migration of airborne hazardous substances.

A quantitative evaluation of direct risks to on-site workers was not performed since these risks were controlled by the initial response actions that had already been taken. The total excess cancer risks from exposure to groundwater were quantified for 2,3,7,8-TCDD (9.5×10^{-5} to 8×10^{-3}) and DDT (6.5×10^{-5} to 8.8×10^{-4}) and the total combined risks exceeded the risk range of 10^{-4} to 10^{-6} (one in ten thousand to one in one million) identified in the NCP.

Contaminants of Concern

Seventy chemicals were identified in soil and groundwater at the site during the investigation. From this list, a group of 15 chemicals was selected to be representative of the larger group, to facilitate the development of the risk assessment. These 15 representative COCs were selected based on factors such as toxicity and physical and chemical properties. The 15 representative COCs examined in the risk assessment were: arsenic, benzene, benzo(a)anthracene, bis(2-ethylhexyl)phthalate, β-BHC (Lindane), chloroform, cyanide, 2,4-dimethylphenol, DDT, 2,3,7,8-TCDD, hexachlorobenzene, 2-hexanone, phenol, 2,4,5-T, and 2,4,6-trichlorophenol (TCP).

Ecological Risk Assessment

A screening-level ecological risk assessment was not conducted as part of the remedy selection leading to the 1987 ROD. The Lister Avenue properties and surrounding areas consist of industrial properties. The industrial nature of OU1 and surrounding properties significantly limits the amount of available ecological habitat and influences the quality of that habitat. Further, EPA and NJDEP concluded that remediation of OU1 was likely to remove or alter any potential existing ecological resources. Given that the primary terrestrial ecological issue is contaminated surface soil, no ecological risk evaluation was required, since the remedial alternatives that were evaluated to address the human health risk would also address the soils likely to contribute to ecological risk and be protective of potential ecological receptors. Ecological risks from contaminated media in the Lower Passaic River are evaluated under different OUs. Control of migration of contaminated soil and groundwater from OU1 is necessary to ensure ecological risks in the Lower Passaic River are mitigated.

Summary of Risk Assessments

Construction of the Interim Remedy has eliminated, to the extent practicable, potential exposure to on-site soils and contaminant releases from buildings and structures. Further, treated groundwater is monitored to ensure that it meets current surface water discharge requirements, which are protective of ecological receptors, prior to being discharged into the Lower Passaic River. However, material within the containment cell represents principal threat waste and would pose significant risk should exposure occur.

It is EPA's current judgment that the Preferred Alternative identified in this Proposed Plan, or one of the other active measures considered in the Proposed Plan, is necessary to protect public health or welfare and the environment from actual or threatened releases of hazardous substances into the environment.

REMEDIAL ACTION OBJECTIVES

Remedial Action Objectives (RAOs) are specific goals to protect human health and the environment. These objectives are based on available information and standards such as ARARs, to-be-considered (TBC) advisories, criteria and guidance, and site-specific risk-based levels. The primary objective of any remedial strategy is overall protectiveness.

Based on the human health risk assessment findings, DDT and 2,3,7,8-TCDD contamination in soil and groundwater would pose an unacceptable risk through direct contact and ingestion of groundwater if these exposure pathways had not been mitigated by the interim remedy. The 1987 ROD contemplated that the risks would further be addressed by additional remedial actions in the future. Therefore, the RAOs described below were developed for a final remedy to address the human health and possible ecological risks posed by DDT- and 2,3,7,8-TCDD contaminated soil and debris at OU1.

Soil RAO:

- Prevent exposure (via ingestion, dermal contact, and inhalation) of human receptors (onsite and offsite commercial/industrial workers, construction/utility workers, and trespassers) to contaminated soil at concentrations exceeding remedial goals within the waste management area.

Groundwater RAOs:

- Prevent exposure (via ingestion, dermal contact, and inhalation) to Site-related contaminants in groundwater in the waste management area at concentrations greater than the applicable federal and state standards.
- Prevent the migration of Site-related DNAPL beyond the point of compliance (POC).
- Prevent the migration of Site-related contamination in groundwater that exceeds the applicable federal and state standards beyond the POC.

Preliminary Remediation Goals

To achieve the RAOs, EPA has selected preliminary remediation goals (PRGs) for OU1 COCs in soils and groundwater within the fill unit. PRGs are generally chemical-specific remediation goals for each medium and/or exposure route that are established to protect human health and the environment. They can be derived from ARARs, risk-based levels (human health and ecological), and from comparison to background concentrations, where appropriate.

For OU1, the groundwater PRGs are the New Jersey Groundwater Quality Standards for Class II-A aquifers, with consideration of national primary maximum contaminant levels (MCLs) for the Site-related contaminants in groundwater in the WMA. The PRGs for soil are the Non-residential New Jersey Soil Remediation Standards for the Ingestion-Dermal Pathway identified in N.J.A.C. 7:26D, Appendix 1 for hexachlorobenzene, 2,3,7,8-TCDD and 4,4'-DDT, which are the soil contaminants that are present at concentrations considered to be PTW.

COC Name	PRG
Soil[1] – units in mg/kg	
2,3,7,8-TCDD	0.00081
4,4'-DDT	9.5
Hexachlorobenzene	2.3
Fill Unit Groundwater – units in µg/L	
2,3,7,8-TCDD	0.00001
4,4'-DDT	0.1
Antimony (Total)	6
Benzene	1
Chlorobenzene	50
1,2-Dichlorobenzene (ortho)	600
1,3- Dichlorobenzene (meta)	600
1,4-Dichlorobenzene (para)	75
1,2,4- Trichlorobenzene	9
1,2-Dichloroethane	2
1,2-Dichloroethylene (cis)	70
Hexachlorobenzene	0.02
Toluene	600
Trichloroethylene	1
Vinyl Chloride	1
Arsenic (Total)	3
Lead (Total)	5
Mercury (Total)	2

1: Ingestion-dermal pathway value

Waste Management Area/POC

The NCP preamble language sets forth the EPA's policy that, for groundwater, "remediation levels generally should be attained throughout the contaminant plume, or at and beyond the edge of the waste management area when waste is left in place." The NCP preamble also indicates that, in certain situations, it may be appropriate to address the contamination as one waste management area (WMA) for purposes of the groundwater point-of-compliance (POC). The POC for meeting ARARs is defined by the outside faces of the slurry walls, the riverside face of the floodwall located between the OU1 properties and the Lower Passaic River, and the bottom of the naturally occurring organic silt deposit that underlies 80-120 Lister Avenue. The material within the WMA includes contaminated soil, stabilized drum and tank contents, debris from the demolition of structures, disassembled shipping containers, asbestos-containing material, and phosphorous-containing material which had been allowed to react with the atmosphere before placement in a vault.

The POC is shown on Figure 2 at the end of the Proposed Plan, identified by the blue line that represents the slurry wall.

SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA Requirements

Section 121(b)(1) of CERCLA, 42 U.S.C. § 9621(b)(1), requires that remedial actions must be protective of human health and the environment, be cost-effective, and use permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. CERCLA Section 121(d), 42 U.S.C. § 9621(d), further specifies that a remedial action must require a level or standard of control of the hazardous substances, pollutants, and contaminants that at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA Section 121(d)(4), 42 U.S.C. § 9621(d)(4). Detailed information about the remedial alternatives is provided in the 2024 *Feasibility Study Report*.

Alternatives Screening

The 2024 *Feasibility Study Report* assembled and screened eight alternatives for potential remediation of OU1. Several site-wide alternatives (3, 5, and 7) were not retained for further evaluation due to the challenges associated with attempting to excavate or treat in-situ the contaminated soil adjacent to the floodwall. At this location, the contaminated soils are located below the tiebacks and anchors that support the floodwall. Site-wide excavation and off-site disposal, site-wide in-situ stabilization (ISS) and site-wide in-situ thermal treatment are each too challenging to implement due to the difficulties of working in and around the tie-rods and anchors associated with the floodwall constructed at the northern boundary of OU1, adjacent to the Lower Passaic River and the associated expense.

When the floodwall was constructed between June and December 2000, the tie-rods were placed at approximately the pre-remedy ground surface, with little or no excavation. The anchors were excavated approximately 5 feet into the pre-remedy ground surface (FS Section 1.5.5, Construction of Floodwall, page 1-13). Additional anchors installed in 2012, intended to stabilize the wall during the Lower Passaic River Phase 1 Removal Action sediment dredging efforts, were drilled from the exterior of the floodwall approximately 85 feet into the OU1 properties at a downward angle of approximately 31.5 degrees, within grouted boreholes to protect against migration of contaminants through the organic silt layer that underlies the waste. According to Section 1.6.4.2 of the 2024 FS Report, Impacted Materials Placed Beneath the Cap, the present-day areas of highest COC concentrations are the soils and fill located beneath/between the floodwall anchorage structures and below the central portion of OU1, where contaminated materials were intentionally placed beneath the Interim Remedy cap system in Areas A and B.

The alternatives retained for the detailed comparative evaluation (Alternatives 1, 2, 4, 6 and 8) do not include the need to access contaminated soils beneath the tiebacks and anchors and are therefore implementable and are described below.

The estimated costs for each remedial alternative to be comparatively evaluated are expressed as net present value, using a 7% discount rate. The construction time for each alternative reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy, negotiate the performance of the remedy with any potentially responsible parties, or procure contracts for design and construction. Annual operation and maintenance (O&M) costs are associated with routine maintenance, while periodic costs include the replacement of remedy components to maintain their long-term integrity and effectiveness.

Common Elements for Alternatives

Remedial alternatives 1, 2, 4, 6 and 8 each include institutional controls, maintenance of the OU1 cap, maintenance of the GWWS and GWTS, and long-term monitoring in perpetuity. The institutional controls (currently in place) consist of a deed restriction that allows for only industrial/commercial use of the property and a NJDEP Classification Exception Area/Well Restriction Area (CEA/WRA), an institutional control established under New Jersey law documenting an area where water quality standards cannot be met and which limits installation of groundwater extraction wells. Alternatives 2, 4, 6, and 8 each include similar upgrades to the GWWS and GWTS. All five alternatives leave waste on-site (due to the infeasibility of removing/treating waste beneath the tie backs and anchor structures of the floodwall) and therefore require maintenance of the cap and GWWS/GWTS and the preparation of five-year review reports to monitor ongoing remedy effectiveness. A 30-year cap maintenance period was used for cost-estimating purposes, but the cap would need to be maintained in perpetuity.

Alternative 1: No Further Action

Capital Cost	$0
Annual O&M Cost	$963.000
Total Present Value Cost	$12,000,000
Construction Time Frame	0 years

Regulations governing the Superfund program require that the "no action" alternative be evaluated to establish a baseline for comparison to other alternatives. Under this alternative, EPA would take no action to modify or enhance the existing interim remedy.

Alternative 1 consists of O&M of the current Interim Remedy, including the low permeability cap and stormwater management system, floodwall, slurry walls, GWWS for hydraulic containment, GWTS with discharge of treated groundwater to the Lower Passaic River, DNAPL recovery as needed, ongoing groundwater monitoring, perimeter fence, and security controls. Given the site conditions and the existing Interim Remedy, EPA replaced the typical 'No Action' Alternative (required under CERCLA) with this 'No Further Action' Alternative.

Alternative 2: Optimized Containment Remedy

Capital Cost	$3,640,000
Annual O&M Cost	$ 963,000
Total Present Value Cost	$16,000,000
Construction Time Frame	1 year

Alternative 2 is a modification of Alternative 1, the Interim Remedy that is currently operating at OU1, in that it adds several optimizations to the current Interim Remedy to improve its effectiveness. In addition to the optimizations summarized below, all other components of Alternative 1 would be retained, operated, and maintained. The optimizations consist of:

- Replacement of extraction wells EW-1 through EW-6, located along the floodwall, to locate their screened intervals more accurately in the fill layer beneath the cap. In addition, variable speed pumps will be provided to replace the constant head pumps.
- Reactivation of extraction well EW-9 on the south side of OU1 to enhance the hydraulic capture of the system across OU1 and reduce the potential for downward migration of COCs to the underlying glaciofluvial sands.
- Redesign and replacement of portions of the groundwater conveyance system, as needed.
- Upgrade of the GWTS, as needed to improve metals removal and meet discharge requirements, along with optimization based on groundwater modeling to improve hydraulic containment.
- Investigation of the integrity of the existing impermeable cap layer via a site-wide electrical resistivity survey and subsequent repairs, if needed.
- Installation of additional groundwater monitoring wells, if needed.
- DNAPL removal as needed.
- O&M of engineering controls for an indeterminate period.

Based on groundwater modeling results, the optimization measures to the GWWS as described in Alternative 2 would improve hydraulic containment. Extracting groundwater from the fill layer only (as opposed to from fill and glaciofluvial sand as it occurs currently) would achieve consistent upward hydraulic gradients in the northern third of the Site where the current Interim Remedy does not consistently maintain an inward gradient. The groundwater conveyance system and GWTS would be upgraded or redesigned as needed to accommodate any additional flow and influent contaminant concentrations.

Alternative 4: Targeted Excavation with Off-site Disposal, Backfill with Imported Fill, Capping, and Containment

Capital Cost	$119,000,000
Annual O&M Cost	$ 963,000
Total Present Value Cost	$132,000,000
Construction Time Frame	3 years

Alternative 4 would require the opening of the OU1 cap and the targeted excavation of contaminated fill materials from above the organic silt layer. Targeted excavation would be designed to avoid the location of the tiebacks and anchor structures for the floodwall, where excavation is not feasible. Alternative 4 would remove about 69,000 cy of waste (more than 50 percent) from the central/southern portion of OU1, where it is difficult to consistently maintain upward hydraulic gradients, followed by off-site disposal of the waste. Although the material to be excavated has not been classified for disposal, it is anticipated that based on the history of the Site and the type of COCs present in the media, they would most likely be F-listed waste. In addition, a significant portion of the impacted media volume is impacted with COC concentrations in excess of the (universal treatment standards) UTSs. Disposal options for excavated impacted media would likely be limited to a potential disposal facility in Canada.

The slurry walls and floodwall would be retained. After backfilling the excavation with clean imported fill, the cap would be restored over the work area and the GWWS and GWTS would be replaced/reactivated and optimized, including the re-installation of the six extraction wells located along the floodwall and the reactivation of EW-9, as described in Alternative 2. The GWTS would be modified with the addition of ion exchange treatment.

O&M of site controls would continue for an indeterminate period along with DNAPL removal as needed.

Alternative 6: Targeted ISS, Capping, and Containment

Capital Cost	$34,290,000
Annual O&M Cost	$ 963,000
Total Present Value Cost	$47,000,000
Construction Time Frame	3 years

Alternative 6 would require the opening of the OU1 cap to allow for the use of bucket mixing to introduce stabilizing agents, such as Portland cement, into a 10 to 22 foot below ground surface (bgs) mixing zone, to reduce the potential for migration of COCs away from OU1. A laboratory study would need to be performed prior to full-scale ISS implementation to assess whether an effective ISS mixture could be achieved.

The intent of Alternative 6 is to stabilize approximately 69,000 cy of contaminated soil and waste located above the organic silt layer in the central and southern portions of OU1, away from the sensitive infrastructure of the floodwall. Large debris encountered in the subsurface would require excavation and disposal off-site. Due to swell volumes, some of the stabilized waste may require off-site disposal at one of the identified facilities in Canada that could accept the waste.

Following completion of the ISS effort, the cap would be reconstructed/replaced above the stabilized waste and the monitoring well network re-established. The slurry walls and floodwall would be retained. The GWWS and GWTS would be replaced/reactivated and optimized, including the re-installation of the six extraction wells located along the floodwall. O&M of site controls would continue for an indeterminate period, along with DNAPL removal as needed, to further reduce the potential for mass transport of COCs from remaining impacted media located near the floodwall infrastructure that are not subjected to stabilization.

Alternative 8: Targeted Excavation with Ex-Situ Thermal Treatment, Backfill of Treated Media, Capping, and Containment

Capital Cost	$53,640,000
Annual O&M Cost	$ 963,000
Total Present Value Cost	$66,000,000
Construction Time Frame	3 years

Alternative 8 would also employ targeted excavation of contaminated fill materials from above the organic silt layer. Similar to Alternative 4, the targeted excavation would be designed to avoid the location of the tiebacks and anchor structures for the floodwall, removing about 69,000 cy of waste from the central/southern portion of OU1. The excavated waste would be subjected to on-site, ex-situ thermal treatment and the treated media would be returned to the excavation. The ex-situ thermal treatment would be designed such that the treated media would comply with the LDRs in 40 CFR 268 Subpart C. Laboratory and/or pilot studies may be required to establish the details of the treatment design. Some excavated materials not amenable to ex-situ thermal treatment, such as large debris items and phosphorus-contaminated soil, would be disposed of off-site.

The slurry walls and floodwall would be retained. After backfilling the excavation with the treated media, the cap would be restored over the work area and the GWWS and GWTS would be replaced/reactivated and optimized, including the re-installation of the six extraction wells located along the floodwall and the reactivation of EW-9. The GWTS would be modified with the addition of ion exchange treatment.

O&M of site controls would continue for an indeterminate period along with DNAPL removal as needed to further reduce the potential for mass transport of COCs from remaining impacted media located outside the thermal treatment area.

EVALUATION OF ALTERNATIVES

The NCP identifies nine criteria that EPA uses to evaluate the remedial alternatives individually and against each other in order to select a remedy. This section of the Proposed Plan profiles the relative performance of each alternative against the nine criteria, noting how it compares to the other options under consideration. The nine evaluation criteria are discussed below. A detailed analysis of alternatives can be found in the 2024 FS Report, all the alternatives considered would be protective of human health and the environment.

Threshold Criteria

1. Overall Protection of Human Health and the Environment

A primary requirement of CERCLA is that the selected remedial alternative be protective of human health and the environment. An alternative is protective if it reduces current and potential future risks associated with each exposure pathway at a site to acceptable levels.

Alternative 1 (No Further Action) is protective of human health and the environment. The existing Interim Remedy cap prevents contact with OU1 wastes and the slurry walls, floodwall, GWWS, and GWTS mitigate the spread of groundwater contamination by reducing potential discharge to the Lower Passaic River and migration into the underlying sand aquifer. While inward gradients have generally been established, upward hydraulic gradients are not being and will not be fully achieved in significant portions of OU1 due to a number of issues, including the construction of a number of the existing extraction wells (which are not screened at an optimal stratum/depth).

EVALUATION CRITERIA FOR SUPERFUND REMEDIAL ALTERNATIVES
Overall Protectiveness of Human Health and the Environment evaluates whether and how an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.
Compliance with ARARs evaluates whether the alternative meets federal and state environmental statutes, regulations, and other requirements that are legally applicable, or relevant and appropriate to the site, or whether a waiver is justified.
Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.
Reduction of Toxicity, Mobility, or Volume 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.
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.
Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
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.
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.
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.

Alternative 2 (Optimized Containment Remedy) is protective of human health and the environment. As with the Alternative 1 (No Further Action), the maintained cap will prevent contact with site wastes and the slurry walls, floodwall, GWWS and GWTS mitigate the spread of groundwater contamination by reducing potential discharge to the Lower Passaic River and migration into the underlying sand aquifer. In the case of Alternative 2, the inward gradients would be maintained, and the upward hydraulic gradients are expected to be improved due to the extraction well re-installations, the reactivation of EW-9 and other improvements to the GWWS. Groundwater modeling suggests that Alternative 2 would achieve consistent upward hydraulic gradients in throughout OU1. EPA anticipates that the remainder of the groundwater would ultimately be captured as it flows northward to the line of extraction wells near the floodwall (Section 8.1.2, Alternative 2 – Optimized Current Remedy (Optimized Capping and Containment), page 8-3).

Alternative 4 (Targeted Excavation with Off-Site Disposal, Backfill with Imported Fill, Capping, and Containment) is protective. A portion of the impacted materials (more than 50 percent) would be removed from OU1 and transported to a secure disposal facility. Further, the excavation boundaries would correspond with locations where it is difficult for the current GWWS to consistently maintain upward hydraulic gradients.

Alternative 6 (Targeted ISS, Capping, and Containment) is protective of human health and the environment. A portion of the impacted materials would be treated via ISS to mitigate migration of the COCs (though comparatively highly-contaminated material would still remain in place and untreated below the floodwall tie-rods and anchors in the northern portion of OU1). ISS would be implemented at locations where it is difficult for the current GWWS to consistently maintain upward hydraulic gradients.

Alternative 8 (Targeted Excavation with Ex-Situ Thermal Treatment, Backfill of Treated Media, Capping, and Containment) is protective in that a similar quantity of contaminated materials would be removed and treated ex-situ to reduce the concentration of COCs prior to the placement of treated media back into the on-site excavation as under Alternatives 4 and 6. Consistent with Alternatives 2, 4 and 6, an optimized GWWS, GWTS, and cap system would be retained to remediate contaminated material outside the targeted excavation and treatment area.

2. Compliance with ARARs

The 1987 ROD and the 1990 consent decree documented that the basis for EPA's waiver of several provisions of RCRA that were identified as action-specific ARARs, concerning BDAT, LDRs and landfill requirements pertaining to bottom liners and leachate collection systems, based on the greater risk anticipated with attempted excavation of the waste for treatment or off-site disposal. Under Section 121(d)(4)(B) of CERCLA, EPA may select a remedy that does not comply with particular ARARs if compliance with such requirements would result in greater risk to human health and the environment than alternative options. In the 1987 ROD and Responsiveness Summary, EPA based its waiver of the RCRA requirements on the significant additional risks associated with excavation of the hazardous substances at OU1, including the risk resulting from airborne releases. EPA also referred to the interim nature of the remedy in the Responsiveness Summary, noting that "[t]here are no commercial facilities, either currently or in the near future, available for the treatment or disposal of dioxin-contaminated wastes." For those reasons, in 1987 EPA concluded that the only viable alternative available was to secure and contain all contaminated materials on site until an appropriate technology became available, and that the remedy could be supplemented by additional actions in the future, if feasible.

Alternative 1 (No Further Action), Alternative 2 (Optimized Containment Remedy) and Alternative 6 (Targeted ISS, Capping, and Containment) would require the same ARAR waivers as the 1987 ROD, specifically waiver of BDAT and LDR before placement of waste (40 CFR Part 268, Subparts D and C, respectively) and standards for landfill design (40 CFR Part 264, Subpart N). Alternative 8 (Targeted Excavation and Ex-Situ Thermal Treatment, Backfill of Treated Media, Capping, and Containment) would treat impacted media in the targeted excavation area to concentrations below the standards specified in the LDRs. Alternatives 4 and 8 would still require waivers from the landfill design standards due to the fact that impacted media outside the targeted excavation area would remain on-site and untreated. All other ARARs would be met by the alternatives.

A waiver of the RCRA provisions cited above would be justified under Section 121(d)(4)(B), as in 1987. The basis for waiving the requirements would be to avoid the construction-related exposure risks associated with excavation of the dioxin-contaminated soils and wastes, due to the elevated on-site concentrations and significant toxicity of dioxin. Excavating the waste for off-site disposal would entail transport of contaminated soil and there would be a risk of a transportation incident. Conducting ex-situ thermal treatment would require on-site handling of contaminated soil for an extended period, prior to replacement of treated soil on-site. While EPA would require state-of-the-art controls to reduce the potential for exposure to contaminants during remedial construction, the Ironbound is a densely populated area of Newark, NJ, and exposure risks must be considered while evaluating the potential effectiveness of Alternatives 4, 6, and 8. In addition, even with the removal and treatment opportunities afforded by these alternatives, highly contaminated waste would still remain on-site beneath the floodwall tiebacks and anchors.

Balancing Criteria

3. Long-Term Effectiveness and Permanence

This evaluation takes into account the residual risk remaining at the conclusion of remedial activities, the adequacy and reliability of containment systems and institutional controls, and climate change.

All five of the alternatives rely on the existing GWTS building, which was designed to sustain wind speeds comparable to a Category 2 Hurricane. Although storm intensity is expected to increase because of climate change, EPA assumes that current building codes are sufficient to address future vulnerabilities due to wind. The existing remedy, specifically the groundwater pump and treat remedy and associated infrastructure, has withstood the impacts of three tropical storms since 2012 (Superstorm Sandy in October 2012, Hurricane Henri in August 2021, and Hurricane Ida in September 2021), all of which resulted in significant rainfall at the Site. Alternatives include plans to develop a severe weather preparedness plan that includes a portable temporary treatment system that would be used in the event that the groundwater pump and treat system would need repairs. Changes in building codes resulting from climate change-related predictions can be accommodated with building improvements since the interior of the building is open construction. While most storm scenarios considered in the 2024 FS Report did not result in flooding at OU1, the cap system can withstand inundation. Upon cessation of storm surge, the sloped cap would shed water as the floodwaters receded. Storm surge is also expected to temporarily increase groundwater elevations in the fill and underlying sand, while the cap would limit the volume of water from entering the fill within the slurry wall/floodwall boundary, effectively minimizing any impact to the water within the WMA. This would enhance the inward and upward gradients across the organic silt layer and slurry wall during the storm surge.

Alternative 1 (No Further Action) and Alternative 2 (Optimized Containment Remedy) both provide long term protection of human health and the environment. Ongoing O&M activities of the cap, GWWS, and GWTS help maintain the protectiveness by preventing contact with the waste and reducing the migration of groundwater contamination. Alternative 2 has several advantages over Alternative 1 with regard to containing groundwater contamination, as described in the Summary of Remedial Alternatives, such as the reinstalled and reactivated extraction wells.

The long-term effectiveness and permanence of Alternative 4 (Targeted Excavation with Off-Site Disposal, Backfill with Imported Fill, Capping, and Containment) is superior to that offered by Alternative 2 because a significant portion of the contaminated material would be removed from OU1 and disposed at an appropriate facility. Replacement and ongoing O&M of the impermeable cap, GWWS, and GWTS would yield an equivalent level of protection to Alternative 2 for the risk of exposure to the waste that would remain on-site.

The long-term effectiveness and permanence of Alternative 6 (Targeted ISS, Capping, and Containment) is superior to Alternative 2 because a significant portion of the highly contaminated material would be treated via ISS in a portion of OU1that is not well-addressed by the current GWWS. Replacement and ongoing O&M of the cap, GWWS, and GWTS would yield an equivalent level of protection to Alternative 2 for the risk of exposure to the waste remaining untreated in the northern portion of OU1.

Alternative 8 (Targeted Excavation with Ex-Situ Thermal Treatment, Backfill of Treated Media, Capping, and Containment) provides similar long-term effectiveness and permanence to Alternatives 4 and 6 because it would include excavation and treatment of a significant portion of the contaminated material prior to replacing it on-site, as well as replacing and maintaining the cap, GWWS, and GWTS.

4. Reduction of Toxicity, Mobility, and Volume through Treatment

This criterion addresses the statutory preference for selecting remedial actions that employ treatment technologies that permanently and/or significantly reduce the toxicity, mobility or volume of hazardous substances as their principal element.

Under Alternative 1 (No Further Action) and for Alternative 2 (Optimized Containment Remedy), hydraulic control would reduce mobility, toxicity, and volume of groundwater contaminants. They would also continue to control the mobility of contaminated soil. Alternative 2 would provide greater reduction of toxicity, mobility, or volume through treatment than Alternative 1 because it includes the reinstallation of extraction wells along the floodwall. The optimized GWWS and GWTS would continually remove contaminant mass from the Site (about 1,000 pounds (lbs) of SVOCs, herbicides, and VOCs per year).

Under Alternative 4 (Targeted Excavation with Off-Site Disposal, Backfill with Imported Fill, Capping, and Containment), the volume of COCs at OU1 would be reduced via removal, and if the excavated waste is treated prior to land disposal at one of the Canadian waste disposal facilities (though it is not known if pre-treatment would be required) additional reduction of mobility, toxicity, and volume of the waste could be achieved. Ongoing hydraulic control would also reduce the mobility of groundwater contaminants. The optimized GWWS and GWTS would continually remove contaminant mass from the Site (about 1,000 lbs of SVOCs, herbicides and VOCs per year).

Under Alternative 6 (Targeted ISS, Capping, and Containment), the mobility of soil COCs would be reduced via ISS treatment in the central and southern areas of OU1. Ongoing hydraulic control would also reduce the mobility of groundwater contaminants. The optimized GWWS and GWTS would continually remove contaminant mass from OU1 (about 1,000 lbs of SVOCs, herbicides and VOCs per year).

Alternative 8 (Targeted Excavation with Ex-Situ Thermal Treatment, Backfill of Treated Media, Capping, and Containment) would provide a significant reduction in volume, mobility and toxicity by treating excavated waste with ex-situ thermal technology. Similar to Alternatives 2, 4, and 6, it would also continue to remove contaminant mass via the GWWS and GWTS.

5. Short-Term Effectiveness

This criterion addresses the effects of each alternative during construction and implementation until RAOs are met. It considers risks to the community, on-site workers and the environment, available mitigation measures and time frame for achieving the response objectives.

No short-term impacts are associated with Alternative 1 (No Further Action) since no construction is required to continue to operate and maintain the existing Interim Remedy systems. For Alternative 2 (Optimized Containment Remedy), minor short-term impacts would be associated with the re-installation of the extraction wells; however, the construction timeframe is short, and the work is generally routine. More extensive construction may be required depending on potential changes to the GWWS and the need to repair the impermeable cap (based on the findings of the resistivity survey).

For Alternative 4 (Targeted Excavation with Off-Site Disposal, Backfill with Imported Fill, Capping, and Containment), high short-term exposure and safety risks would be created during the handling and transportation of a significant volume of contaminated waste to be excavated from OU1. Traffic and air quality impacts could be significant and would require special mitigation measures. The high toxicity of the waste and debris to be excavated, the challenges with managing these wastes and materials in such a densely populated area, and the heterogeneity of the placement of waste and materials in the containment cell would all significantly contribute to the short-term risks associated with an effort to remove contaminated soil and debris from the containment cell.

Under Alternative 6 (Targeted ISS, Capping, and Containment), comparatively high short-term exposure and safety risks would be created during the disturbance of a significant volume of contaminated waste to be uncovered and mixed with ISS agents. Air quality impacts could be significant and would require special mitigation measures. Although large debris items would require off-site disposal, the transportation risks would be less than those associated with Alternative 4.

Alternative 8 (Targeted Excavation with Ex-Situ Thermal Treatment, Backfill of Treated Media, Capping, and Containment) would entail lower short-term exposure and safety risks than Alternative 4, because although the same volume of waste would be excavated, Alternative 8 would treat the waste on-site and a much smaller amount of waste (large debris items and phosphorus-contaminated soil) would require transportation and off-site disposal.

6. Implementability

This criterion considers the technical and administrative feasibility of implementing each alternative, including availability of services and materials needed during construction.

Alternative 1 (No Further Action) is proven to be implementable since it is a continuation of the existing Interim Remedy. Alternative 2 (Optimized Containment Remedy) is readily implementable since it is a continuation of the existing Interim Remedy with upgrades that can be constructed and maintained with commonly available, standard techniques.

Under Alternative 4 (Targeted Excavation with Off-Site Disposal, Backfill with Imported Fill, Capping, and Containment), a significant shoring and construction dewatering effort would be required during removal of the contaminated soil, given the depth of the planned excavation. Continuous dewatering and water treatment would exceed the capacity of the existing GWTS, requiring alternative treatment to be provided. The logistical and permitting challenges associated with transporting a significant volume of waste to Canada would need to be managed and are expected to be complex. The components of Alternative 4 that are common with Alternative 2 (replacing extraction wells, O&M of the GWWS and GWTS, O&M of the cap system) can be constructed/maintained with commonly available, standard techniques. During remedy construction, the phosphorous-containing material within Area A was allowed to react with the atmosphere prior to placement in pit, compaction, and encapsulation using clay. Excavation and disposal of the material would require careful planning and execution, especially in an area with nearby residential populations but could be accomplished with standard equipment.

Implementation of Alternative 6 (Targeted ISS, Capping, and Containment) is technically feasible, although challenging. The major challenges are the existing subsurface structures and debris, size of the area to be stabilized, and potential for groundwater displacement. Optimization and continued operation of the capping and containment portion of this alternative is highly implementable. Compliance with the US and Canadian regulations would be required for transporting the debris not suitable for ISS for disposal. Like the buried debris, the phosphorous-containing material located in Area A is not suitable for ISS and would require excavation and disposal. This would require careful planning and execution especially in an area with nearby residential populations but could be accomplished with standard equipment. The full implementation of this alternative (regulatory approval, pre-design investigation, design, contractor procurement and construction) would require several years.

Implementation of Alternative 8 (Targeted Excavation with Ex-Situ Thermal Treatment, Backfill of Treated Media, Capping, and Containment) would need to address the same shoring and construction dewatering challenges posed by Alternative 4; however, the logistical and permitting needs for the transportation and off-site disposal would be much more manageable due to a smaller volume of waste requiring off-site disposal. Laboratory and pilot studies may also be required for Alternative 8 to establish the details of the ex-situ treatment design. Apart from mercury, ex-situ thermal treatment does not address metals and these contaminants, already present in the historic fill that was placed in the 1800s to reclaim the OU1 property from the Lower Passaic River, will have to be controlled in perpetuity via the cap, slurry walls, floodwall, GWWS, and GWTS.

7. Cost

Cost estimates for the five alternatives are summarized in the table below. A discount rate of 7 percent was used to develop the net present value costs, consistent with EPA guidance.

Alternative	**Estimated Cost**
1. No Further Action	$12M
2. Optimized Containment Remedy	$16M
4. Targeted Excavation, Off-site Disposal, Backfill, Capping and Containment	$132M
6. Targeted ISS, Capping, and Containment	$47M
8. Targeted Excavation, Ex-Situ Thermal Treatment, Backfill of Treated Media, Capping and Containment	$66M

Modifying Criteria

8. State Acceptance
NJDEP concurs with EPA's preferred alternative.

9. Community Acceptance
Community acceptance of the preferred alternative will be evaluated after the public comment period ends. Comments received on the Proposed Plan during the comment period will be addressed in the Responsiveness Summary section of the ROD.

PREFERRED ALTERNATIVE

Based upon the comparative analysis of the remedial alternatives, EPA proposes Alternative 2, Optimized Containment, as the preferred alternative for a final remedy for OU1.

The preferred remedy for OU1 includes the following components:

- Replacement of extraction wells EW-1 through EW-6, located along the floodwall, to locate their screened intervals more accurately in the fill layer beneath the cap. In addition, variable speed pumps will be provided to replace the constant head pumps.
- Reactivation of extraction well EW-9 on the south side of OU1.
- Redesign and replacement of portions of the groundwater conveyance system, as needed.
- Upgrade of the GWTS, as needed.
- Investigation of the integrity of the existing impermeable cap layer via a Site-wide electrical resistivity survey and subsequent repairs, if needed.
- Installation of additional groundwater monitoring wells, if needed.
  Maintenance of the OU1 cap, maintenance of the GWWS and GWTS, and long-term monitoring in perpetuity
- ICs

Basis for the Remedy Preference
Based on the evaluation described above, remedial alternatives requiring significant excavation/disturbance of waste from the subsurface, whether for off-site disposal, ISS, or ex-situ thermal treatment, would result in significant short-term risks and implementability challenges due to the need to:
• Handle, transport, and potentially treat large volumes of highly contaminated soils (and, under Alternatives 6 and 8, the handling and off-site disposal of large debris items).
• Handle, treat, and discharge large volumes of excavation dewatering effluent that would exceed the capacity of the existing Interim Remedy GWTS and require an alternative dewatering effluent treatment system to be designed and provided (for Alternatives 4 and 8).
• Protect against releases of dust and vapors to the atmosphere that could cause exposures to workers and the surrounding community, either during excavation or in-situ soil mixing for ISS.
• Transport dioxin-contaminated waste to a Canadian waste disposal facility due to the lack of domestically-available capacity.

The "targeted" alternatives (Alternatives 4, 6, and 8) consist of removal and off-site disposal, ISS, or removal and ex-situ thermal treatment of soil in the central and southern areas of OU1 only, safely distant from the slurry walls and floodwall anchor structures. While Alternatives 4, 6 and 8 would provide greater long-term protectiveness and permanence than Alternatives 1 and 2, highly contaminated fill would still remain onsite/untreated below the floodwall anchor structures; therefore, these alternatives would require maintenance of the impermeable cap system, GWWS, and GWTS, Site monitoring and other features, for an indeterminate time. To varying degrees, the targeted alternatives still generate comparatively high short-term risks and implementation challenges (for example, excavation and off-site disposal of 69,000 cy of waste). The presence of significant quantities of large metal debris below the cap system in Areas A and B (e.g., the components of numerous shipping containers that were used to temporarily contain dioxin-contaminated waste prior to Interim Remedy construction and building demolition debris) also present a significant challenge to conducting soil mixing for ISS and ex-situ thermal treatment. In these cases, the cap system, parts of the GWWS, and monitoring system must also be temporarily removed to conduct the work and then reconstructed or repaired.

EPA's Preferred Alternative is Alternative 2, Optimized Containment Remedy. It meets the threshold criteria of protecting human health and the environment and compliance with ARARs, with a basis for waiver of specific ARARs as described. The Optimized Containment Remedy includes components intended to address the two primary concerns regarding the performance of the current Interim Remedy (Alternative 1), specifically that the current Interim Remedy doesn't consistently maintain inward and upward hydraulic gradients within the area enclosed by the floodwall and slurry walls and underlain by the native organic silt layer (the points of compliance for OU1) and that there may be a need for additional maintenance/repair of the cap system.

Alternative 2 avoids the short-term risks and implementability challenges associated with Alternatives 4, 6, and 8 (Targeted Excavation and Off-Site Disposal, Targeted ISS, and Targeted Excavation with Ex-Situ Thermal Treatment, respectively). The major components of Alternative 2 consist of reinstallation of six groundwater extraction wells, reactivation of an extraction well in the southern portion of OU1, associated upgrades to the GWWS and GWTS and site-wide investigations to check the condition and function of the cap system and make repairs, as appropriate.

EPA intends to invoke ARAR waivers under Section 121(d)(4)(B) of requirements pertaining to the placement of off-site remediation wastes in Areas A and B beneath the cap system, and construction of the containment cell, specifically, BDAT, LDRs and landfill requirements pertaining to bottom liners and leachate collection systems. The waivers would be consistent with the ARAR waivers documented in the 1987 ROD, specifically BDAT and LDR before placement of waste (40 CFR Part 268, Subparts D and C, respectively) and standards for landfill design (40 CFR Part 264, Subpart N).

As previously summarized, the basis for waiving the ARARs would be to avoid the construction-related exposure risks associated with excavation of the dioxin-contaminated soils and wastes, due to the elevated on-site concentrations and significant toxicity of dioxin and the potential for transportation incidents associated with off-site disposal alternatives.

COMMUNITY PARTICIPATION

EPA encourages the public to gain a more comprehensive understanding of OU1 of the Site and the Superfund activities that have been conducted there.

The dates for the public comment period, the date, location and time of the public meeting, and the locations of the Administrative Record files, are provided on the front page of this Proposed Plan. Written comments (either by mail or e-mail) on the Proposed Plan should be addressed to the Remedial Project Manager Eugenia Naranjo at the address noted in the text box.

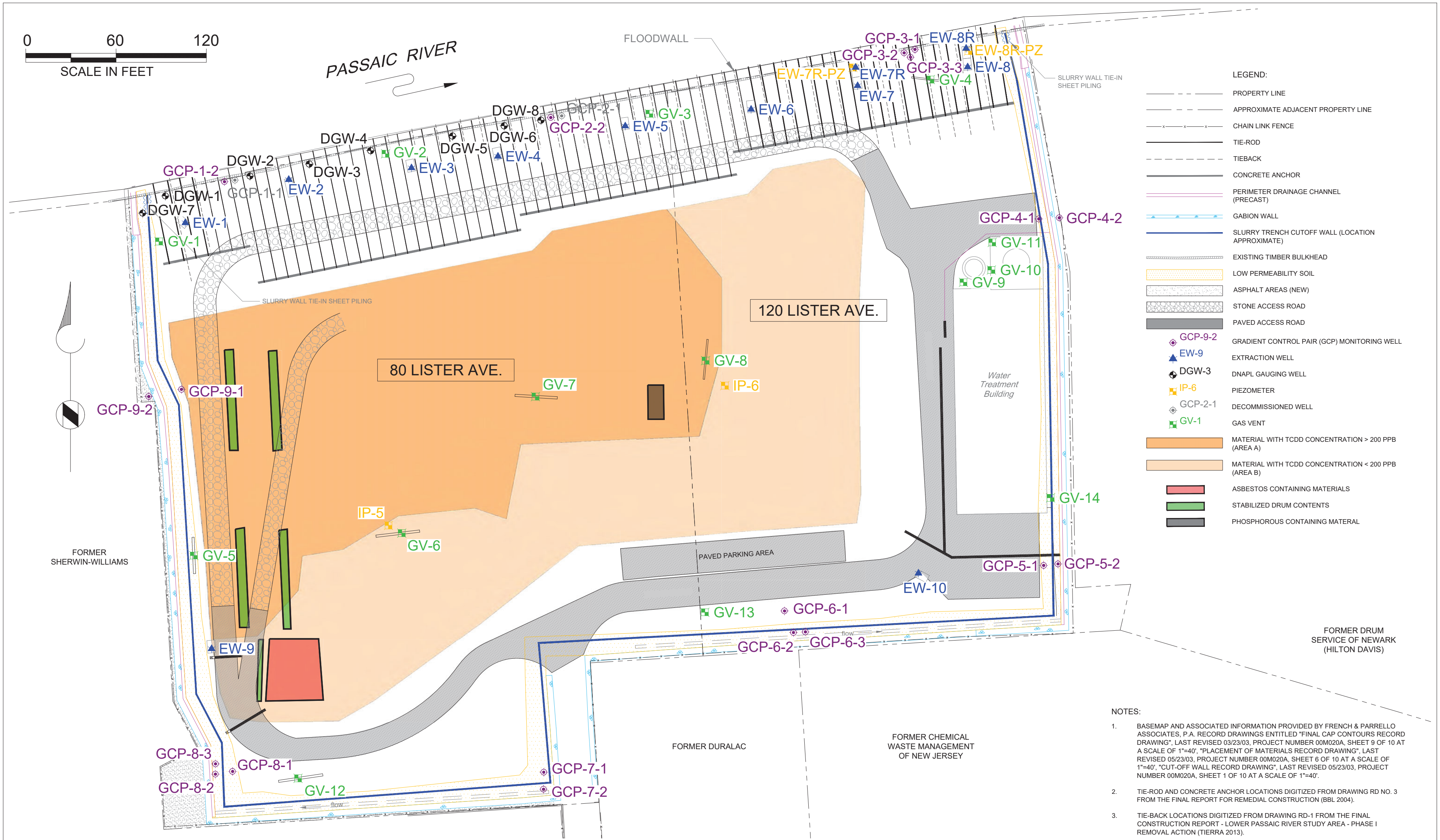
For further information on OU1 of the Diamond Alkali Superfund Site, please contact:

Eugenia Naranjo
Remedial Project Manager
(212) 637-3467
naranjo.eugenia@epa.gov

Drew Curtis
Community Involvement Coordinator
(212) 637-3726
curtis.malcolm@epa.gov

Written comments on this Proposed Plan should be submitted to Ms. Naranjo via mail or e-mail by October 10, 2024.

Eugenia Naranjo
Remedial Project Manager
U.S. EPA Region 2
290 Broadway, 18th Floor
New York, New York 10007-1866
Naranjo.eugenia@epa.gov



Path: C:\bcpwi\d2605533 File Name: 2022_FS_BuriedImpactedMaterialEmplacement&FloodwallAnchorageStructures Plot Date: March 5, 2024 3:20 PM Cadd User: Richard Johnson

Brown AND Caldwell

SCALE: 1" = 60'
JOB NUMBER: 158044
DATE: March 5, 2024

DIAMOND ALKALI SUPERFUND SITE
80-120 LISTER AVENUE
NEWARK, ESSEX COUNTY, NEW JERSEY

IMPACTED MATERIAL EMPLACEMENT AND FLOODWALL ANCHORAGE STRUCTURES

FIGURE
2

APPENDIX V

RESPONSIVENESS SUMMARY

ATTACHMENT C - PUBLIC NOTICE

VOTE BY MAIL

NOTICE TO PERSONS WANTING MAIL-IN BALLOTS

If you are a qualified and registered voter of the State who wants to vote by mail in the **General Election**, to be held on **November 5, 2024**, the following applies:

You must complete the application form below and send it to the county clerk where you reside or write or apply in person to the county clerk where you reside to request a mail-in ballot.

The name, address, and signature of any person who has assisted you to complete the mail-in ballot application must be provided on the application, and you must sign and date the application.

No person may serve as an authorized messenger or bearer for more than three qualified voters in an election, but a person may serve as such for up to five qualified voters in an election if those voters are immediate family members residing in the same household as the messenger or bearer.

No person who is a candidate in the election for which the voter requests a mail-in ballot may provide any assistance in the completion of the ballot or serve as an authorized messenger or bearer.

A person who applies for a mail-in ballot must submit his or her application at least seven days before the election, but such person may request an application in person from the county clerk up to 3 p.m. of the day before the election.

Voters who want to vote by mail in all future elections will, after their initial request and without further action on their part, be provided with a mail-in ballot until the voter requests otherwise in writing, or beginning with the 2020 general election cycle, if the voter does not vote by mail in four consecutive years, then the voter shall no longer be furnished with a mail-in ballot for future elections and the voter shall be notified in writing of the change.

Application forms may be obtained by applying to the undersigned either in writing or by telephone, or the application form provided below may be completed and forwarded to the undersigned.

Dated: September 10, 2024

Ann F. Grossi, Esq.
Morris County Clerk
P. O. Box 315
Morristown, New Jersey 07963-0315
(973) 285-6066

VOTER INFORMATION

1. Fill out application. Print and sign your name where indicated.
2. Mail or Deliver application to the County Clerk. Do not fax or e-mail unless you are a Military or Overseas voter.
3. You must be a registered voter in order to apply for a Mail-In Ballot.
4. Once you apply for a Mail-In Ballot, you will not be permitted to vote by machine at your polling place in the same election.
5. You will receive instructions with your ballot.
6. If returning your Mail-In Ballot in person it must be received by the County Board of Elections before close of polls on Election Day. If returning your Mail-In Ballot by mail, it must be postmarked no later than Election Day and received by the County Board of Elections no later than 144 hours (6 days) after the time for the closing of the polls of the election.
7. Do not submit more than one application for the same election.
8. You must apply for a Mail-In Ballot for each election, unless you designate otherwise under Section 1.

PLEASE NOTE
A voter may apply for a Mail-In Ballot by mail up to 7 days prior to the election. He or she may also apply in person to the County Clerk until 3 P.M. the day before the election.
Voters now have an option of automatically receiving a Mail-In Ballot for all future elections. If such voter no longer wants this option, the County Clerk's office must be notified in writing.

WARNING
This application must be received by the County Clerk not later than 7 days prior to the election, unless you apply in person or via an authorized messenger during County Clerk's office hours, but no later than 3 P.M. the day prior to the election.

APPLICATION FOR VOTE BY MAIL BALLOT

Please type or print clearly in ink. All information required unless marked optional.

1 I hereby apply for a Mail-In Ballot for:
(CHECK ONLY ONE)
❒ ALL FUTURE ELECTIONS, until I request otherwise in writing.
Or for ONLY ONE of the following: ❒ General (November)
❒ Primary (June) ❒ Municipal ❒ School ❒ Fire
❒ Special ________ (Specify) To be held on __/__/__ (MM / DD / YYYY)

MILITARY/OVERSEAS VOTER ONLY
I request Vote-By-Mail Ballots for all elections in which I am eligible to vote and I am **(CHECK ONLY ONE)**
❒ A Member of the Uniformed Services or Merchant Marine on active duty, or an eligible spouse or dependent.
❒ A U.S. Citizen residing outside the U.S. and I intend to return.
❒ A U.S. Citizen residing outside the U.S. and I do not intend to return.
❒ A U.S. Citizen residing outside the U.S. and I have never lived in the U.S.

PLEASE NOTE: Your ballot can only be sent to the mailing address supplied on this application. If your mailing address changes, you must notify the County Clerk in writing.

2 Last Name (Type or Print) | First Name (Type or Print) | Middle Name or Initial | Suffix (Jr., Sr., III)

3 Address at which you are registered to vote:
Street Address or RD# | Apt.
Municipality (City/Town) | State | Zip

4 Mail my ballot to the following address:
❒ Same Address as Section 3
Please include any PO Box, RD#, State/Province, Zip/Postal Code & Country (if outside US)

5 Date of Birth (MM / DD / YYYY) / /
6 Day Time Phone Number ( )
7 E-Mail Address

PLEASE NOTE: This contact information will be used to contact you concerning the acceptance or rejection of your ballot and how you may cure a defect.

8 **Signature:** I affirm that I am the person who is applying for this ballot and I live at the address designated in box 3 of this form. X
9 Today's Date (MM / DD / YYYY) / /

OPTIONAL - ONLY COMPLETE SECTIONS 10 OR 11 IF APPLICABLE

10 **Assistor:** *Any person providing assistance to the voter in completing this application must complete this section.*
Name of Assistor (Type or Print) | Signature of Assistor X | Date (MM / DD / YYYY) / /
Address | Apt. | Municipality (City/Town) | State | Zip

11 **Authorized Messenger:** *Any voter may apply for a Mail-In Ballot by Authorized Messenger. Messenger shall be a family member or a registered voter of this County. No Authorized Messenger can (1) be a Candidate in the election for which the voter is requesting a Mail-In Ballot or (2) serve as messenger for more than THREE qualified voters per election, except that an authorized messenger or bearer may serve as such for up to five qualified voters in an election if those voters are immediate family members residing in the same household as the messenger or bearer.*

I designate ____________ **to be my Authorized Messenger.**
Print Name of Authorized Messenger
Address of Messenger | Apt. | Municipality (City/Town) | State | Zip | Date of Birth (MM / DD / YYYY) / /
Signature of Voter X | Date (MM / DD / YYYY) / /

STOP Authorized Messenger must sign application and show photo ID in the presence of the County Clerk or County Clerk designee.

"I do hereby certify that I will deliver the Mail-In Ballot directly to the voter and no other person, under penalty of law."
Signature of Messenger X | Date (MM / DD / YYYY) / /

OFFICE USE ONLY
Voter Reg # ________
Muni Code # ________ Party ________
Ward ________ District ________

NJ Division of Elections - 02/28/21

09/10/24 $495.04

10908106-01

The EPA Invites the Public to Comment on the Proposed Cleanup Plan Addressing Soil, Groundwater, and Debris at a Portion of the Diamond Alkali Superfund Site in Newark, Essex County, New Jersey

EPA United States Environmental Protection Agency

The EPA Invites the Public to Comment on the Proposed Cleanup Plan Addressing Soil, Groundwater, and Debris at a Portion of the Diamond Alkali Superfund Site in Newark, Essex County, New Jersey

The U.S. Environmental Protection Agency has issued a proposal to finalize the cleanup plan for a portion of the Diamond Alkali Superfund site located at 80-120 Lister Avenue in Newark, Essex County, New Jersey.

The EPA is asking the public to comment on the plan during a 30-day public comment period, which begins on September 10, 2024, and ends on October 10, 2024. The proposed plan identifies the cleanup alternatives and the EPA's preferred proposed cleanup plan. In 1987, the EPA selected an interim cleanup plan for this portion of the site that included, among other components, a slurry trench cutoff wall around three sides of properties at 80-120 Lister Avenue and a floodwall along the Lower Passaic River which together contained contaminated groundwater, soil, and debris at Lister Avenue; the floodwall also protects the Lister Avenue property from flooding. The EPA's preferred alternative is to continue operating the existing cleanup along with improvements to optimize its performance. These improvements would include reinstalling six groundwater extraction wells, reactivating an extraction well in the southern portion of the site, upgrades to the groundwater withdrawal and treatment systems, and making repairs to the cap, if needed. The performance and protectiveness of the interim cleanup, which was completed in 2001, has been reviewed in five Five-Year Review reports prepared by the EPA. In the Five-Year Review reports, the EPA concluded that the interim cleanup is working as intended and remains protective of people's health and the environment. The EPA chose the proposed alternative for the final cleanup plan because it would be effective in the long-term and would avoid some of the short-term risks and challenges associated with other options like excavating or removing contaminated material and then treating that contamination on-site or transporting it to an offsite disposal facility.

The EPA will hold a hybrid public meeting at 6:00 p.m. on September 19, 2024, at the New Jersey Institute of Technology, Central King Building, Room 303 located at 100 Summit Street, Newark, NJ 07203. At the meeting, the EPA will present information on its investigation, elaborate further on the reasons for recommending the preferred cleanup option, and solicit public comment on the proposed cleanup plan. For those interested in participating virtually, please register at https://bit.ly/listerave91924,

The proposed cleanup plan can be found online at: https://www.epa.gov/superfund/diamond-alkali. You may also find it at the following repositories: Newark Public Library, New Jersey Reference Section, 5 Washington Street, Newark, New Jersey 07101; Elizabeth Public Library, 11 South Broad Street, Elizabeth, New Jersey, 07202; EPA, Region 2, Superfund Records Center, 290 Broadway, 18th Floor, New York, NY 10007-1866

Written comments regarding the proposed plan must be submitted no later than October 10, 2024 to Eugenia Naranjo, Remedial Project Manager, EPA 290 Broadway, 18th Floor, New York, NY 10007, or via email: Naranjo.Eugenia@epa.gov.

The public can also contact Drew Curtis, EPA's Community Involvement Coordinator at 212-637-3726 or curtis.malcolm@epa.gov with any questions.

09/10/24 $124.60

10909708-01

United States Environmental Protection Agency

The EPA Invites the Public to Comment on the Proposed Cleanup Plan Addressing Soil, Groundwater, and Debris at a Portion of the Diamond Alkali Superfund Site in Newark, Essex County, New Jersey

The U.S. Environmental Protection Agency has issued a proposal to finalize the cleanup plan for a portion of the Diamond Alkali Superfund site located at 80-120 Lister Avenue in Newark, Essex County, New Jersey.

The EPA is asking the public to comment on the plan during a public comment period, which began on September 10, 2024. The public comment period, which initially ended on October 10, 2024, has been extended and now closes on November 12.

The proposed plan identifies the cleanup alternatives and the EPA's preferred proposed cleanup plan. In 1987, the EPA selected an interim cleanup plan for this portion of the site that included, among other components, a slurry trench cutoff wall around three sides of properties at 80-120 Lister Avenue and a floodwall along the Lower Passaic River which together contained contaminated groundwater, soil, and debris at Lister Avenue; the floodwall also protects the Lister Avenue property from flooding. The EPA's preferred alternative is to continue operating the existing cleanup along with improvements to optimize its performance. These improvements would include reinstalling six groundwater extraction wells, reactivating an extraction well in the southern portion of the site, upgrades to the groundwater withdrawal and treatment systems, and making repairs to the cap, if needed. The performance and protectiveness of the interim cleanup, which was completed in 2001, has been reviewed in five Five-Year Review reports prepared by the EPA. In the Five-Year Review reports, the EPA concluded that the interim cleanup is working as intended and remains protective of people's health and the environment. The EPA chose the proposed alternative for the final cleanup plan because it would be effective in the long-term and would avoid some of the short-term risks and challenges associated with other options like excavating or removing contaminated material and then treating that contamination on-site or transporting it to an offsite disposal facility.

The proposed cleanup plan can be found online at: https://www.epa.gov/superfund/diamond-alkali. You may also find it at the following repositories: Newark Public Library, New Jersey Reference Section, 5 Washington Street, Newark, New Jersey 07101; EPA, Region 2, Superfund Records Center, 290 Broadway, 18th Floor, New York, NY 10007-1866

Written comments regarding the proposed plan must be submitted **no later** than November 12, 2024 to Eugenia Naranjo, Remedial Project Manager, EPA 290 Broadway, 18th Floor, New York, NY 10007, or via email: Naranjo.Eugenia@epa.gov.

The public can also contact Drew Curtis, EPA's Community Involvement Coordinator at 212-637-3726 or curtis.malcolm@epa.gov with any questions.

9/20/24 $0.00

10914321-01

City of NEWARK
NEW JERSEY

The City of Newark, New Jersey announces the 2024 Tax Sale for Delinquent 2023 and/ or prior years delinquent Taxes and other municipal charges through an on-line auction to be conducted Friday, December 6, 2024 at 8:00 AM

For a listing of all parcels, delinquencies & Costs, along with biding instructions, please visit:

https://newark.newjerseytaxsale.com

Information can be viewed free of charge

11/1/24, 11/8/24, 11/15/24, 11/22/24, 11/29/24 $ 873.60

10924222-01

LEGAL NOTICE

MORRIS COUNTY VOCATIONAL SCHOOL DISTRICT BOARD OF EDUCATION
400 EAST MAIN STREET
DENVILLE, NEW JERSEY 07834

REGULAR MEETING SCHEDULE OF THE BOARD OF EDUCATION 2024-2025

The following dates shall constitute the schedule of regular meetings of the Board of Education of the Morris County Vocational School District. All meetings will be held at the Morris County School of Technology, 400 East Main Street, Denville, New Jersey:

December 10, 2024	6:30 P.M.	July 15, 2025 (Third Tuesday)	7:30 A.M.
January 14, 2025	6:30 P.M.	August 12, 2025	7:30 A.M.
February 11, 2025	6:30 P.M.	September 9, 2025	6:30 P.M.
March 11, 2025	6:30 P.M.	October 14, 2025	6:30 P.M.
April 8, 2025	6:30 P.M.	*November 3, 2025 (Monday)	6:30 P.M.
May 13, 2025	6:30 P.M.	Annual Reorganization and	
June 10, 2025	6:30 P.M.	Regular Business Meeting	

**Reorganization Meeting (1st day of November by State Statute 18A:54-18)*

BY ORDER OF THE BOARD OF EDUCATION OF THE
MORRIS COUNTY VOCATIONAL SCHOOL DISTRICT

Michael Davison
Business Administrator/Board Secretary

Dated: November 4, 2024

11/8/2024 $86.40

10932684-01

EPA United States Environmental Protection Agency

The EPA Invites the Public to Comment on the Proposed Cleanup Plan Addressing Soil, Groundwater, and Debris at a Portion of the Diamond Alkali Superfund Site in Newark, Essex County, New Jersey

The U.S. Environmental Protection Agency has issued a proposal to finalize the cleanup plan for a portion of the Diamond Alkali Superfund site located at 80-120 Lister Avenue in Newark, Essex County, New Jersey.

The EPA is asking the public to comment on the plan during a public comment period, which began on September 10, 2024. The public comment period, which was scheduled to end on November 12, 2024, has been extended and now closes on November 26.

The proposed plan identifies the cleanup alternatives and the EPA's preferred proposed cleanup plan. In 1987, the EPA selected an interim cleanup plan for this portion of the site that included, among other components, a slurry trench cutoff wall around three sides of properties at 80-120 Lister Avenue and a floodwall along the Lower Passaic River which together contained contaminated groundwater, soil, and debris at Lister Avenue; the floodwall also protects the Lister Avenue property from flooding. The EPA's preferred alternative is to continue operating the existing cleanup along with improvements to optimize its performance. These improvements would include reinstalling six groundwater extraction wells, reactivating an extraction well in the southern portion of the site, upgrades to the groundwater withdrawal and treatment systems, and making repairs to the cap, if needed. The performance and protectiveness of the interim cleanup, which was completed in 2001, has been reviewed in five Five-Year Review reports prepared by the EPA. In the Five-Year Review reports, the EPA concluded that the interim cleanup is working as intended and remains protective of people's health and the environment. The EPA chose the proposed alternative for the final cleanup plan because it would be effective in the long-term and would avoid some of the short-term risks and challenges associated with other options like excavating or removing contaminated material and then treating that contamination on-site or transporting it to an offsite disposal facility.

The proposed cleanup plan can be found online at: https://www.epa.gov/superfund/diamond-alkali. You may also find it at the following repositories: Newark Public Library, New Jersey Reference Section, 5 Washington Street, Newark, New Jersey 07101; EPA, Region 2, Superfund Records Center, 290 Broadway, 18th Floor, New York, NY 10007-1866

Written comments regarding the proposed plan must be submitted no later than November 26, 2024 to Eugenia Naranjo, Remedial Project Manager, EPA 290 Broadway, 18th Floor, New York, NY 10007, or via email: Naranjo.Eugenia@epa.gov.

The public can also contact Drew Curtis, EPA's Community Involvement Coordinator at 212-637-3726 or curtis.malcolm@epa.gov with any questions.

11/8/24 $110.36

10932691-01

THE PORT AUTHORITY OF NEW YORK AND NEW JERSEY
REQUEST FOR BIDS

The Port Authority has temporarily ceased public bid openings and will allow for the electronic submission of bids via Bonfire only. Please refer to the solicitation document for specific bid submission instructions.

#6000002525 - Supply and Deliver TWINCO PS-1 Electric Train Stops and Related Items to PATH. **BID DUE DATE:** 11/15/2024

NIGP CODE(S): 55900 – Mass Transportation – Rail Vehicle Parts and Accessories
99883 – Rail Equipment and Accessories

The Port Authority of New York and New Jersey (Port Authority), in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 USC §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders or offerors that it will affirmatively ensure that for any contract entered into pursuant to this advertisement, businesses will be afforded full and fair opportunity to submit bids in response to this invitation and no businesses will be discriminated against on the grounds of race, color, national origin (including limited English proficiency), creed, sex (including sexual orientation and gender identity), age, or disability in consideration for an award.

Additionally, all bidders (including proposers, and respondents, as applicable) are notified that the Port Authority will ensure that, with respect to any contract/agreement entered into pursuant to this advertisement, disadvantaged business enterprises, minority business enterprises and woman-owned business enterprises, as applicable, will be afforded full and fair opportunity to submit bids, proposals and responses, as applicable, in response to this invitation, and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

The solicitation document is available on-line at http://www.panynj.gov/business-opportunities/bid-proposal-advertisements.html?tabnum=5. Addenda to the Bid, if any, will be available on Bonfire and The Port Authority website. Monitor the advertisement on these sites to ensure your awareness of any changes. If you have any technical problems accessing the documents online, email us at askforbids@panynj.gov or call us at (212) 435-4600 for assistance.

10933085-01

APPENDIX V

RESPONSIVENESS SUMMARY

ATTACHMENT D - PUBLIC MEETING TRANSCRIPT

Transcript of Video File:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

EPA PUBLIC MEETING

THURSDAY, SEPTEMBER 19, 2024

6:00 P.M.

Video Runtime: 1 Hour 48 Minutes

APPEARANCES

On behalf of the UNITED STATES ENVIRONMENTAL PROTECTION AGENCY:

FRANCES M. ZIZILA, ESQ.
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
290 Broadway
New York, New York 10007
212-637-3135
zizila.frances@epa.gov
APPEARED VIA IN-PERSON

On behalf of the HACKENSACK RIVERKEEPER, INC.:

MICHELE D. LANGA, ESQ.
HACKENSACK RIVERKEEPER, INC.
206 Main Street
Hackensack, New Jersey 07601
201-968-0808
michele@nynjbaykeeper.org
APPEARED VIA VIDEOCONFERENCE

On behalf of JOHN M. PINHO, ESQ.:

JOHN M. PINHO, ESQ.
LAW OFFICE OF JOHN M. PINHO
301 North F.E. Rodgers Boulevard
Harrison, New Jersey 07029
973-481-4364
jpinho@lawjw.com
APPEARED VIA IN-PERSON

APPEARANCES (CONT.)

Also present:

Drew Curtis, EPA Region 2 Community Involvement Coordinator

Eugenia Naranjo, EPA Region 2 Remedial Project Manager

Michael Sivak, Passaic, Hackensack, and Newark Bay Branch Manager

Diane Salkie Sharkey, Remedial Project Manager for OU4

Shereen Kandil, Community Involvement Coordinator

Alice Yeh, Project Manager for OU2

Angela Garrison, New Jersey Institute of Technology

Ana Baptista, New Jersey Environmental Justice Alliance NJEJA/Member of Public Attending

Dianne, Resident/Member of Public Attending

Vanessa Thomas, Resident/Member of Public Attending

Tom Mesevage, Member of Public Attending

S. Muthukrishnan, Member of Public Attending

Leah Ives, Member of Public Attending

Sharon Tramutola, Resident/Member of Public Attending

(Beginning of Audio Recording.)

MR. CURTIS: All right. Thanks again. Good evening. Can everyone hear me and online too?

UNIDENTIFIED SPEAKER: Yes.

MS. KANDIL: Yep. You sound good.

MR. CURTIS: Thank you.

Oh, good evening. My name is Drew Curtis, the -- the community involvement coordinator for the Diamond Alkali Superfund site at the Environmental Protection Agency Region 2. We are here this evening to talk about the Diamond Alkali Superfund site at 80 and 120 Lister Avenue, which we call Operable Unit 1 of the Superfund site. And we're going to talk about our proposed final cleanup plan.

There'll be a presentation from my colleague, Eugenia, followed by an opportunity for everyone here in person, as well as on Zoom, to ask questions and make comments, too, that we will take into account as we finalize the plan, before we finalize the plan and -- which we are also accepting written comments until November 12th, because we extended the original comment deadline for an extra 30 days to make sure folks have enough time.

So before we get started, I want to thank Angela Garrison from the New Jersey Institute of

Technology for hosting us this evening. They've been tremendous hosts here, too. It's a beautiful space here for those of you online. Hopefully, we'll see you here next time. But with -- with that, we'll turn it over to Eugenia.

MS. NARANJO: Okay. Oh, you want to introduce the team?

MR. CURTIS: Oh, sure. I'm sorry about that. So this is Eugenia Naranjo. We have in the room Michael Sivak, who is the branch manager for the -- I mean for this area, which includes the Superfund site. Diane Salkie, who is a project manager for the upper 9 miles or OU4. In the hallway, I -- oh, no. Alice is -- is back. She is the project manager for OU2, which is the lower 8 miles, too. And online, we have Shereen Kandil, who is also who is our community involvement supervisor -- section supervisor. So if you have any questions online or any tech difficulties, send her a message or -- or let her know, too. We also have members of our office of Regional Council online, too. And then in here in the room, we have some of our other project consultants. Thank you.

MS. NARANJO: All right. Thank you. So on to the technical presentation and good evening, and thank you for joining us today. My name is Eugenia

Naranjo, and I am a remedial project manager with the EPA Region 2. And as Drew said, tonight, we will be discussing the proposed plan for the Diamond Alkali Superfund site, specifically what we call Operable Unit 1 or OU1, which is located at 80 and 120 Lister Avenue in Newark.

This meeting is an opportunity for you to learn about EPA's preferred alternative for remediation of this site and provide your comments. Written comments, as Drew said, will also be accepted until November 12th. And this meeting is being transcribed, and the transcription will be part of the administrative record.

Okay. So my presentation. I'm going to give an introduction up to Diamond Alkali Operable Unit 1 and description of the site, talk a little bit about the operational history of the facility, risks to human health and the -- and the environment, description of current remedy that we have in place, which is a containment cell. And we call it an interim remedy. So you're going to hear me talking about interim remedy. Then evaluations that we have been doing through the years of the remedy performance. Then we're going to talk about what -- what is the feasibility study and how do we look at different remedial alternatives. And finally, what is EPA's preferred alternative.

So the Diamond Alkali has multiple operable units and also called OUs. And this presentation is focused on OU1, which is --

MR. CURTIS: Hey, Eugenia?

MS. NARANJO: Yes.

MR. CURTIS: We actually have to stop.

MS. NARANJO: Why?

MR. CURTIS: No -- we are waiting on the stenographer.

MS. KANDIL: It's okay, Drew. We're recording, so we can share that with the stenographer.

MR. CURTIS: Oh, it's okay, then?

MR. SIVAK: Thank you.

MS. KANDIL: Yep.

MR. CURTIS: All right.

MS. KANDIL: We can continue. We're recording.

MR. CURTIS: Wanted to be sure.

MS. KANDIL: Yep. Thank you.

MR. CURTIS: It's a requirement, for folks who are wondering, that we have a stenographer to record this meeting in detail, too, and they're running late, unfortunately.

MS. KANDIL: We'll share the recording with them.

MS. NARANJO: This stage --

MS. KANDIL: Hopefully, they'll get here pretty soon.

MS. NARANJO: All of our meetings are recorded, and then can be transcribed. So hopefully, the stenographer wouldn't miss a lot.

MS. KANDIL: I think this is fine.

MS. NARANJO: I -- we are going to make these slides available for anyone to download, so no need for pictures. Oh, that's okay. You can take pictures.

So as I said before, we divide the site into different operable units or areas that make it more easy or -- administratively or less than -- technically less complicated to manage the site. And OU1 is the facility located at Lister Avenue in -- in Newark. OU2 is the lower 8 miles of the Passaic River. OU4 is the upper 9 miles of the Passaic River. And then OU3 is the Newark Bay. So this is four operable units that constitute our site.

Okay. So the closeup. Diamond Alkali Superfund Site is located in the Ironbound -- Ironbound neighborhood of Newark, adjacent to the Passaic River.

It covers the properties at 80 and 120 Lister Avenue. These properties were historically used for chemical production. The approximate area of the site is about 5.8 acres. And again, we call them OU1. Chemicals such as DDT and Agent Orange were manufactured there, resulting in the release of toxic byproducts, like dioxin, which have contaminated -- which contaminated the soil and the groundwater.

Potential risks of OU1 have been mitigated by an interim remedy. You're going to hear me talking about the interim remedy, and I'm going to describe what the remedy is. To evaluate the potential impact on the local communities, EPA has this tool, which is called EPA EJ screen and allows us to understand what are the demographics within a mile -- a one-mile radius of the site. So for example, we used it, and we identified that there are linguistically isolated populations in the area. Therefore, we -- we translate all our materials, translated them in Spanish and Portuguese and Haitian Creole so that we can reach out to all those communities, but recognize the importance of addressing the environmental impact of this project on the [inaudible 00:28:35] communities. Oh, I want to show a movie.

MR. CURTIS: Who doesn't like movies?

MS. NARANJO: He's going to have to help me with --

MR. CURTIS: (crosstalk)

MS. NARANJO: Do I move this to -- do I move it?

MS. GARRISON: (crosstalk)

MR. CURTIS: I think you just slide it over.

MS. NARANJO: Okay. So I'm going to apply this and then go back to the presentation with my notes.

MR. CURTIS: Yeah.

MS. NARANJO: So play. Just so this is the Diamond Alkali site, as I said, in the Ironbound neighborhood in Newark. As you can see, it is a cell covered -- cap, covered by gravel. Passaic River to the north, which we are looking at right now. And as we fly through, we can see that the area is heavily industrial and a lot of traffic in the area, warehouses, trucks. It is an area designated as industrial by the City of Newark. I imagine people on the Zoom are (crosstalk) --

MR. CURTIS: (crosstalk)

MS. NARANJO: -- okay?

MS. KANDIL: We saw the video fine. Thank you. Eugenia.

MS. NARANJO: Thank you. So let's talk a little bit. I'm going to talk a little bit about the site history and the contamination. The site has a long operational history from the 1940s through the '60s. Various companies operated here producing different chemicals that left the site heavily contaminated. Following an explosion in 1960, the Lister Avenue plant was decommissioned in 1969, and various companies used the site for different manufacturing operation through '70s. And this is just the timeline of the various companies that have operated in -- in site -- in the Diamond Akali Lister Avenue site. So then in 1983, EPA and the New Jersey DEP conducted soil and groundwater sampling finding really high and dangerous levels of dioxin and other hazardous substances in the site.

Therefore, the site was subsequently added to the National Priorities Lists. And you're going to ask me: What is the National Priorities List? Well, that is a list of sites that EPA creates that have known releases or threat -- threat of releases of hazardous substances and pollutants. And once a site is added into that list, then that site becomes a priority for cleanup. And over the years at the Diamond Alkali, we've taken multiple remediation steps, including covering the exposed soils, constructing containment walls and installing different groundwater treatment systems to contain contamination so that it doesn't spread.

Again, like I said, the site was added to the National Priorities List in 1984. So it became a priority site for a cleanup. Then EPA and DEP worked together gathering data to understand the extent of the contamination and the risks that it poses to human health that -- it posed to human health and the environment. We call that process a remedial investigation and a feasibility study. In 1987, EPA selected an interim remedy to address that contamination. That interim remedy was completed in 2004. And you're going to ask me: What is an interim remedy? So an interim remedy is a temporary or partial solution implemented by the EPA to address the immediate risks at the site that is contaminated.

While in -- at the same time, we are developing a more comprehensive long-term study and solution for cleanup of the site. So the purpose of an interim remedy is: secure the site, make sure the spread of contaminants is stopped and controlled, and there are no risks to the population and the ecology. So as I said before, investigations in the '80s revealed extensive contamination at OU1 affecting the soil, the groundwater, the air, and the surface water. And the primary contaminants of concern are dioxin or 2, 3, 7, 8-TCDD and DDT. These chemicals were identified, exposing significant risks, including cancer, primarily through direct contact with surface soils, migration -- or migration to -- to groundwater.

However, because of the response actions that have already been taken to secure and isolate the contaminants at the site, many of the risks are considered under control. So groundwater contamination continues to pose a significant risk in the area as it is classified as suitable for drinking water. However, to mitigate this New Jersey DEP has established what it's called Classification Exception Area 2021 to prevent the installation of drinking water wells in contaminated area. Risks to the ecology -- the interim remedy, securing the site, covering the soils and debris successfully eliminated any potential ecological risks and to the area. Plus, there's really no habitats in the surrounding area.

So what am I talking about? I'm talking about OU1, and it is a containment cell. What is it? And this is a picture of our current remedy. It's a cap that it contained with a groundwater extraction system. And it consists of, let's see -- flood wall that has been designed for the 100-year storm along the northern boundary of the OU1, which is held by tie rods or steel rods next to the site. Then we have a slurry wall surround in the perimeter of the site. What is this slurry wall? A slurry wall is a mix of cement built into a trench, a wall built into a trench. And we have a groundwater withdrawal system that pumps and treats the groundwater. So the groundwater won't leave the site. Everything is contained between slurry wall, the flood wall, and the cap.

Again, another picture. So it's here to see from the cartoon. This is the cap, and we have the contaminated soil and debris underneath the cap and the boundaries of -- of the cell, the Passaic, and the slurry wall, which is just a wall in -- dug in -- mixture of cement dug in a trench. So -- so as I said before, just currently OU1 for the Diamond Alkali facility is the subject of an interim remedy, which was implemented by Occidental Chemical Corporation under EPA oversight as required by federal judicial consent decree. As I said before -- so the remedy constitutes a multi-layer, impermeable cap and storm water control system, a flood wall along the Passaic, which is designed for the 100-year storm, the slurry walls, and groundwater withdrawal system and a groundwater treatment system to prevent the groundwater migrating.

It's also site fencing and security measures. It's secure it s not easy to access or come on-sites. And while these measures have significantly mitigated the risks of the site, they were always intended as temporary solutions back in the '80s when this remedy was selected. So a little bit of geology and hydrogeology, and at the surface cap, at the top, covering the contaminated soil and debris -- and we have the fill. And in the bottom, the natural organic layer, which is the organic silt, that it is -- is -- is natural.

So this kind of creates a -- a cell. Or as Michael calls it, a bathtub. And then groundwater occurs in the fill and also in glaciofluvial sand. And I should say that the dominant flow of the groundwater is towards the north, towards the Passaic River.

The groundwater treatment has contained that and mitigated contaminants from moving from leaving the site. Another cross -- cross section. So again, another picture. We have a cap, the remedy waste and soils and debris covered by the three foot, like, multi-layer cap. We have the fill, the flood wall against the Passaic River, the slurry wall, and then in

-- in the bottom, organic silt.

So we selected this in '87. It was completed in 2004. How do we evaluate if the remedy is performing as -- as intended? So we, at EPA, have a formal evaluation that is required by law that we call a five-year review. And well, while we are collecting data regularly, every five years, we do an analysis and document how the remedy is performing. EPA has been doing the evaluations on this site since 2001. So we have performed five five-year reviews to assess the protectiveness of the interim remedy. So this five-year review and to evaluate whether the remedy is protective, we try to answer those three questions that are in the slide.

So is the remedy functioning as intended? Are the assumptions that took remedial objectives -- I'm going to talk to about that in a little bit -- still valid? And do we have any new information or data that calls into question the protectiveness -- the protectiveness of the remedy?

So the last review, and I wrote that, that was in 2020, concluded that the interim remedy is protective of human health and the environment in the short term. However, for the long-term protectiveness, improvements need to be done, in particularly to the groundwater pump and treat system. So the five-year review findings analysis is the remedy -- the conclusion -- the remedy is functioning as it is intended. Assumptions about toxicity data and cleanup levels are still valid. And we have no new information that calls into question the protectiveness of the remedy.

And we continue to collect monitoring data to track the remedy performance and look for a permanent solution. Okay. So we have to follow a process like the -- an interim remedy, we by law are required to do every -- five-year reviews, but then we have to decide what are remedial -- we have to decide, what are objectives of the remedy? And we call these -- because we work for the government and we have an acronym for everything, they're called remedial -- remedial action objectives or RAOs.

So these are developed. The RAOs, or remedial action objectives, are developed to identify what are the goals of a remediation or a cleanup. For example, if there's unacceptable risk from ingestion of soil at a site, then the remedial action objective might be to reduce the contact to that contaminated soil. So these are the remedial action objectives for OU1.

For the groundwater, because we are containing the groundwater within the cell, the goals of the cleanup are to prevent people from drinking, using the groundwater, and to prevent the groundwater from flowing or moving outside the cell in the area. For the soil, the goal is to prevent people from having contact or any exposure to the soil in the cell. Those are our remedial objectives.

Then we have to write a feasibility study, which is another document. And what is a feasibility study? Well, it is a process that the agency developed for a cleanup strategy so that we can eliminate unacceptable potential human health and ecological risks. So how does this process work?

So we identify what is the contamination. We develop our remedial objectives or RAOs that is going to help -- that are going to help us achieve our remediation goals. Then we look at different technologies that are going to help us clean up the site. And we don't call it technologies, we call it alternatives, I guess, or -- well, it -- they're called alternatives, but it's technologies, really.

So we compare those technologies and screen out those that do not meet our objectives. And then we evaluate different cleanup options and the alternatives using what we call a CERCLA Superfund criteria, which is established. And I'm going -- and I'm going to go through how we evaluate our technologies or alternatives through the criteria. And then EPA identifies a preferred alternative or preferred option, preferred technology.

So this is what we call -- this is our evaluation criteria. This is called the CERCLA evaluation criteria. So every remedial action must be protective of human health and the environment, it has to be cost-effective. And it has to use permanent solutions and alternative treatment technologies to the maximum extent practicable.

There has to be -- state has to be on board with the federal government. So we work together with the state and communities. Community acceptance is also important. That's why we do public outreach, public meetings, and put our plans out for the public to comment on. So we went through this process that we call the feasibility study, results in a report. And in the feasibility, the feasibility study assessed any potential technologies or alternatives, of which five were retained for detailed evaluation of the CERCLA criteria.

And, again, I'm going to walk through them.

So alternative one is no further action, which is required by the CERCLA criteria, which means don't do anything in the site. We leave it as it is. Walk away.

Alternative two is optimized interim remedy or optimized containment, which is current interim remedy but with enhancements that include reinstallation and reactivation of some of the groundwater extraction wells, upgrades and improvements to the groundwater system, and regular investigations and surveys to the cap as well as repair. That is EPA's preferred alternative. So you're going to hear me talking about optimized interim remedy, which is alternative two.

Targeted excavation with offsite disposal. Anything that required excavation is very complicated because we would have to open the cap, and that will be exposing the community to that material that has been covered since the '80s.

Targeted in situ stabilization. And that is just like adding chemicals or cement to immobilize the contaminants. Again, it would require opening the cap and possible risks to the community as well as workers.

Targeted excavation with ex situ thermal treatment. Again, same problem while you're opening the cap and possibly exposing the community as well as workers. So these were the ones that we didn't screen out and made it to the evaluation of the nine criteria that you saw in the slide book.

The feasability study evaluated other alternatives, including site-wide excavation or site-wide in situ stabilization. EPA does -- did not identify those options primarily because there's a lot of technical challenges, as you saw. There is a wall with tie rods. And the soil and debris is buried underneath those tie rods. So that couldn't possibly be excavated or eliminated.

So excavation will also require -- you can read more in the feasibility study, which is available -- publicly available online, but would also require significant dewatering and shoring and a lot of technical challenges. So in -- in EPA's view, the optimized interim remedy, the optimized containment, provides the best balance between effective, implementability, and cost while minimizing any risks to the surrounding community.

Okay. So preferred alternative, preferred technology, optimized containment, this approach builds on what already exists there. But it would optimize groundwater extraction wells, and it'll upgrade the system in -- in general. Additionally, the cap will be surveyed and inspected regularly and any -- any necessary repairs will be made to make sure the storm water is properly managed. And by reactivating and installing new extraction wells along the flood wall, we aim to improve the groundwater capture/containment, and prevent any contamination from migrating from the site.

Some facts here. It is protective. The optimized containment is protective and meets our remedial objectives. It complies with federal and state regulations. Few exceptions, you can read more of those details in the proposed plan. It minimizes short-term risks. It doesn't pose any risks to the community or workers that are going to be working there and by optimizing the existing systems. So we would definitely improve the methods to contain and prevent any contamination from spreading or -- or leaving the site.

Cost, about $16 million, and construction time, apparently approximately a year. So just another illustration here. Another figure. The -- what the OU1 looks like. And, again, we would -- it will build on the existing remedy and containment cell that we have at OU1, but it'll be enhanced. It'll be optimized to maintain an optimal groundwater withdrawal system and optimal gradients.

So why are we here today? Because for the EPA, public involvement is a crucial part of this process. We encourage everyone to review the proposed plan and submit comments, either by regular mail or e-mail no later than November 12th. Based on public comments and public feedback, we -- the EPA, in consultation with New Jersey DEP, may adjust the preferred remedy, final remedy, or confirm our preferred alternatives.

The up -- the -- the documents are available. EPA's record centers, they are available online, the local libraries. We encourage public to please review the documents and submit your comments by mail or e-mail on November 12th. As part of our community involvement, we developed community involvement plan, where we interviewed our residents as well, the residents and members of the community. That has been translated into Spanish and Portuguese and -- into Spanish and Portuguese. It is a -- it is publicly available. I encourage you take a look at that.

Conclusions and next step: So if I didn't make it clear, EPA's alternative is -- EPA's preferred alternative is Alternative number 2, which is an optimized interim remedy. It provides long-term protection for both human health and the environment, which is our primary -- our primary mission in -- in -- in our program. And again, EPA, in consultation with DEP, can modify this preferred alternative, select another response action based on the comments that we receive from public -- from the public. So -- and as I said before, public comment is a very important part of the remedy selection. EPA could modify cleanup or select another in consultation with DEP based on your comments.

Again, this meeting is being recorded, so any questions or comments that you have today will be taken into consideration, and we will -- would be responded in a responsiveness summary. You can send comments by e-mail or by regular mail and any information -- these are just some links where we have all the documents, our administrative record, and the history of all our studies and investigations that we've been doing at the site.

And I would like to open the floor for any questions. And Michael and myself and Drew are here to answer, and we will be capturing your comments and will be considered as we move forward with analyzing.

MR. CURTIS: Yeah. Just -- we will -- we

will also be moving back and forth between Zoom and in person. It looks like the folks who are transcribing the meeting have a question first, though.

THE COURT REPORTER: Yeah. So if -- if everyone speaking could just state your name first and then your comments.

MR. CURTIS: Yes. Very helpful. So we'll start with in the room, and I saw a hand right here up front.

DIANNE: Do we have a mic or should I just say it?

MR. CURTIS: Say it.

DIANNE: Just say it? My name --

MS. NARANJO: We can hear you clearly online.

DIANNE: Okay. My name --

MR. CURTIS: It's a good room. It's wired for sound.

DIANNE: My name is Dianne. I live in Harrison. Well -- or I own a property in Harrison. I have three questions, but I'll just do the first one now. The groundwater extraction system -- can you explain more of, like, the scope of water that you're pulling, and you -- are -- are you also saying that you're definitely not putting the groundwater back into the outside?

MS. NARANJO: Yes. The groundwater is pumped, and it's treated, and then it is discharged back into the river.

DIANNE: Oh, it's discharged back into the river?

MS. NARANJO: Yeah. Well, once it's treated.

MR. SIVAK: And it meets all discharge requirements.

MS. NARANJO: And it meets the discharge requirements from the State.

MR. CURTIS: You have two more? You might as well.

DIANNE: What are the funding sources for -- like, you're saying that the Option 2 is $16 million, and I saw in the documentation there's other prices for the other options.

MS. NARANJO: Right.

DIANNE: But, like, who is -- like, who is paying for all of it?

MR. SIVAK: Sure. So the current interim remedy, we -- that's in place right now is being operated and maintained by the responsible parties. So we have identified a -- companies that -- the -- a company that is responsible for the contamination at the site, and through a legal agreement that we -- that is in place between EPA and that party, they have implemented the interim remedy, and they're operating the interim remedy.

Superfund, the program that we are -- that we work under operates under the premise of the polluter pays. So whenever we work on a site, we always try to find, is there a viable company or are there multiple viable companies who have responsibility for the contamination? And so when we are able to find and locate those parties, we work with them to negotiate agreements where they would perform the work, and they would pay for the work under EPA supervision. And we would anticipate that under the final remedy that EPA selects, we would pursue or we would negotiate with those parties -- with that party to implement the final remedy for the site.

DIANNE: So even for the option -- there was one option that was like $134 million. I forget which option that was. That still would be paid by whoever you find to be at blame?

MR. SIVAK: So whatever alternative EPA concludes is the most appropriate alternative for the site after all -- we evaluate all of the criteria that we evaluate, including public comment, and we select that remedy, and we identify that in what we call a Record of Decision. We would then negotiate with those parties to fund and implement that remedy. So yes.

DIANNE: But it's not -- it's not taxpayer?

MR. SIVAK: Oh, no.

DIANNE: Okay.

MR. SIVAK: No.

DIANNE: Amazing.

MR. CURTIS: Do you have a third question?

DIANNE: Well, I guess my third question is, like, what are the annual maintenance costs for each option, and has that been taken into consideration? Like, if we're going to lower maintenance cost for the future, if we take -- like, if we take the higher priced option now, but the -- then it lowers costs over the long-term, maybe we're saving money? I don't know.

MR. SIVAK: So all of the alternatives that are in the feasibility study, all of the alternatives that we retained require that the -- the -- the containment cell stay and that the groundwater pump and treat stay, right? So the EPA's preferred alternative involves keeping the material contained where it is with no additional treatment to the material that is inside the containment cell, right?

The -- the improvements that are part of that optimization effort are improvements to increase the performance of the groundwater pump and treat entry --

MS. NARANJO: (Crosstalk).

MR. SIVAK: -- and to -- you know, perhaps to improve the -- the -- the climate resiliency of the -- of the remedy, you know, by allowing for --

MS. NARANJO: Regular surveys of the cap.

MR. SIVAK: Right.

MS. NARANJO: Regular maintenance of the cap.

MR. SIVAK: Right.

MS. NARANJO: And improve the storm water drainage of the cap.

MR. SIVAK: Right. So the other three alternatives that were retained for the more in-depth analysis, Alternatives 4, Alternative 6, and Alternative 8 are all targeted actions inside the containment cell. There's targeted in situ stabilization, which means we're adding some sort of -- of amendment to certain portions of the material inside the containment cell, like a -- like a cement or something like that to kind of create sort of a monolith inside the containment cell, but not all of the material inside the containment cell can be contained.

There's a lot of building material in there. There's a lot of irregular material in there, and to create -- to add an amendment to homogenize all of that and create a monolith with an amendment is -- is -- is too difficult to do. Plus, we have the tiebacks and other material that are part of the infrastructure of the containment cell and there s soil in -- in -- integrated inside of those tiebacks, and we simply can't get to that as part of any sort of a remedy that -- that -- that addresses material inside the cell. So that's the -- the in-situ stabilization remedy -- targeted ISS remedy.

We still have to maintain the cell. We still have to maintain the groundwater pump and treat. The targeted excavation, we can't excavate -- we're not excavating all of the material. We would only be excavating certain components of the material. Again, we would still have to maintain the cell. The groundwater pump and treat would still need to be operational.

And the other alternative -- what was the third one? The ISS -- the -- the excavation?

MS. NARANJO: (Crosstalk).

MR. SIVAK: (Crosstalk) oh, yeah, and the thermal. Right. So there is an option where we would apply in situ thermal. And in situ just means that we are applying the technology with the material in its current location. Ex situ means we remove it from the current location, and we would treat it outside of the containment cell. So the -- the targeted -- targeted thermal, the targeted excavation, and the targeted excavation with ex situ thermal treat, we would take that material out. We would treat some of it. We would take some of the material out. We would treat some of it with incineration on site and we would require that the material that isn't taken out or can't be treated with thermal treatment would main -- be maintained inside the containment cell with the groundwater pump and treat system still operational. So all of these systems, all of these alternatives still require the containment cell and the groundwater pump and treat.

DIANNE: So it's like similar maintenance?

MR. SIVAK: Correct. Yeah. That we -- yes. I'm sorry. That was, like, the most long-winded answer. Thank you. Because I saw you -- you were sort of following me, and I very much appreciate that. It was very long-winded, but I wanted to explain that.

Yes.

DIANNE: Okay. Got it.

MR. SIVAK: Thank you.

MR. CURTIS: All right. So we'll look to Zoom now. We'll take a question there. Shereen, do you have -- do we have a question online?

MS. KANDIL: We do. We have a hand raise, and we have a couple questions online, which we'll wait for next. So I'm just going to turn to Ana Baptista -- Ana Baptista.

Ana, if you can just unmute yourself and ask your question.

MS. BAPTISTA: Yeah. Thanks, Shereen.

Thanks, all, for the presentation. Sorry I can't be there in person. I have a bunch of questions that maybe you can help clarify, but beginning with, like, the -- some of the upgrades you discussed for the preferred alternative, do those not require the -- you know, some excavation or removal of the cap to get at doing those upgrades? Because I -- I -- I noticed you said for some of the other alternatives, there was a concern about removing the cap and having to do excavation. So wondering how -- what's the extent of excavation, if any, required for the preferred alternative?

MS. NARANJO: You are correct. For the preferred alternative, we do not have to open the cap. We do not have to remove the cap. We do not have to expose the community or the workers to that material. It would just -- it would just improve the existing cap as well as the groundwater pump and treat system.

MS. BAPTISTA: So you would get at the pump and treat system how? How would you do those improvements without breaking the cap?

MS. NARANJO: Install -- you would install additional wells, and you would improve -- reactivate some of the existing wells that are not active at the moment. And you -- but you do not need to open the cap.

MS. BAPTISTA: I -- I understood that the -- some of the mixed debris that's on the site, that's entombed there, includes not only, like, construction debris but barrels and some really hotspot debris -- mixed debris. And one of the thing -- you know, I'm assuming that one of the worries is, by removing the cap -- is the -- is the concern that it -- it's going to volatilize or that the -- that workers just will come into contact with it in a short period of time while the excavation is targeted, excavation would be happening.

I'm trying to understand, like, what is the relative risk of a short-term targeted excavation versus keeping really contaminated things there in perpetuity, you know, with the hope that the institutional controls live and last, you know.

So one of my questions is, like, what is the estimated lifetime of the -- of the cell, of the -- the tieback rods, of the containment? You know, what is -- you know, if we're talking about something that's in perpetuity, how long is that life -- estimated life of all of those components as opposed to maybe taking out the most targeted hotspot stuff?

MR. SIVAK: So -- so one of the -- one of the -- the -- probably the main concern with -- with excavating any of that material is the airborne threat of that material being -- being released into the air and -- and being transported offsite. That was one of the big concerns identified back in the day, back in the '80s when the -- when the site was being investigated initially, that there was a concern that this material would become airborne and migrate offsite.

The material is currently entombed. It -- there is no potential for that material to become airborne. Could we engineer some sort of process to excavate the material and -- you know, and -- and make sure that, you know, in -- in -- in applying engineering controls to make sure that or -- or to try to minimize the potential for the offsite migration? Of course we could. And if we do choose that option, that's what we would have to do.

But there the -- this material is -- is, you know, quite toxic through inhalation. We -- it has, you know, it has been in the community and, you know, we've scraped all that up and -- and -- and brought that back. We want to make sure that we don't -- that if there is an alternative that -- that doesn't require that -- that was a that was one of the criteria that we look at, right, short term risks. And that's one of the -- the -- balancing criteria that we look at. And those alternatives that include exposing that material and opening up the cell and exposing that material ranked lower in -- in -- in that category.

The other concern that we have with the offsite excavation is disposal --

MS. NARANJO: Disposal, yes.

MR. SIVAK: Right. This there is there are very few places that are likely to take this material. And in fact, it looks like currently Canada is probably what -- the option where we would have to look for a disposal facility for it. So there's very limited opportunities for where this material would have to be ultimately placed if it were to be removed from where it currently is. As far as the lifespan of the -- of the current components of the remedy, I don't have that information offhand.

MS. NARANJO: We'll have --

MR. SIVAK: Ana, we can -- we can provide that in the responsiveness summary. (Crosstalk). Yeah, I apologize for that. I don't have that -- that information available.

MS. BAPTISTA: Yeah. Because it's -- I agree with the comment in the chat that 16 million seems awfully low to maintain this type -- these types of institutional controls in perpetuity. And what I'm assuming will have to eventually be upgrades or replacements for some of these materials as they begin to weather over time.

MR. SIVAK: Yeah, there will be a there will be an O&M plan, an operation and maintenance plan that -- that we have one out there now that requires upgrades when things need to be replaced. You know, currently, like, if there's a well that needs to be reestablished or something like that, if there's material equipment in the groundwater pump and treat that needs to be replaced, all of that is part of the operation and maintenance plan. That also includes inspections of the cap every time there is a storm. Every time there is some sort of -- of event that might impact the cap as well as regular, you know, regular inspections of the cap, you know, just because it's that time. So there will be an O&M plan as -- as you know, perhaps big ticket replacement items come into play, they will be -- they will be taken care of. And that's just that -- that's part of that's part of what the long term requirements of this remedy are.

MS. NARANJO: And we'll continue to do our five-year reviews every five years, making sure that the remedy is functioning as intended.

MR. SIVAK: Right. We -- we have an -- an O&M plan that requires the wells be sampled regularly. The reports are submitted yearly.

MS. NARANJO: Yes.

MR. SIVAK: And so you know, we review those reports when they come in every year. And when we start to see information that is -- that is not consistent with what we have seen in the past, we look at that, we start to pay attention to that. Obviously, we're not going to react with, you know, one, perhaps, one round of data that is not consistent, but when we start to see trends or something is of concern to us, we pay attention to that. And so it's not like we only pay attention every five years. We pay attention every time data are generated.

MS. NARANJO: Right.

MR. SIVAK: But we memorialize all of that information in the five-year review report --

MS. NARANJO: Every five years, correct.

MR. SIVAK: In the five-year review report, correct.

MS. KANDIL: And sorry to interrupt here, but I just want to inform those who don't know. O&M is operation and maintenance.

MR. SIVAK: Thank you.

MR. CURTIS: Ana, was that the end of your questions?

MS. BAPTISTA: Yeah, I -- I want to give time for the -- some of the questions in the chat and others.

MR. CURTIS: All right. So we'll -- we'll bring it back into the room now. And I see Michele's hand.

MS. LANGA: So just to piggyback off of what Ana was asking, I understand why this was the alternate between something that long-term [inaudible 01:00:21] site happen every 10 or 20 years [inaudible 01:00:25] fix, or is this a site that [inaudible 01:00:30] has -- has something else that I don't [inaudible 01:00:38].

MR. SIVAK: So -- when --

MS. KANDIL: You -- Michael, sorry to interrupt. Can you repeat the question? It was hard to hear Michele's question.

MR. SIVAK: Sure. The question was asked by Michele Langa, because we're supposed to give our names and -- and -- and the question was, is this remedy something that is revisited every 10 or 15 years, or is this something where in the future it could be turned into green space? That -- is that a fair characterization of your question?

MS. LANGA: By and large.

MR. SIVAK: Okay.

MS. NARANJO: Let me -- whether this could be turned into green space, the City of Newark has zoned that area as industrial. So there -- it is very restricted of what you can do in that area. Even if the owner operator of the site wanted to do a park, they can't. There's restrictions - is an industrial - - it's zoned as industrial.

MS. LANGA: So I -- I don't mean as like active --

MS. NARANJO: So that's -- or --

MS. LANGA: Yeah, something that looks nicer.

MS. NARANJO: A nice warehouse, but I -- it -- it is zoned as industrial. So there's restrictions on what you could develop there. The other thing that I was going to say, oh, I forgot.

MR. SIVAK: It's -- it's going to be in use as a --

MS. NARANJO: Oh. For the next 10 to 15 years -- years, we're going to be using a -- 80 Lister Avenue and 120 Lister Avenue properties as support for the clean -- to support the cleanup of the Passaic River, both the lower eight miles and the upper nine miles. So that'll be, yes, maybe next 10, 20 years of the site. After that, we will continue doing our reviews and O&M operations and maintenance and our reviews to make sure that the site is functioning as intended and that it's -- it is protective and there are no risks to the community.

MR. SIVAK: Right. As long as the future use of the site does not impact the operation of and the protectiveness and the performance of the remedy, the property is privately owned, right. So the United States can't go in and tell a private property owner what they can do with their with their property that doesn t go over well -- could -- could the private property owner decide to put something there that's perhaps more attractive than the gravel cover, you know, as long as it doesn't interfere with a performance or the protectiveness of the remedy, EPA doesn't really have a -- a -- a say in that.

MS. KANDIL: Yeah. And I'll -- I'll just mention that industrially zoned lots in, you know, in the City of Newark are not prohibited from being, you know, for example, many of the lots in that area are actually turned over to Blue Acres, the Blue Acres program and turned into passive green, you know, green -- green spaces. So there -- there's nothing that prohibits industrially zoned lots from being greened or landscaped.

MR. SIVAK: Yeah, that's a -- thank you for that clarification, both of you. When I first heard the question, I thought it was, can that be the future use and or can, you know, can that be part of the remedy? More like but it's more of like, is there anything that would prohibit that from happening in the future? And again, as long as the future use of that property does not affect the performance or the protectiveness of that remedy. You know, EPA doesn't really have a say in that.

MS. CURTIS: Okay. Shereen, we'll look back to Zoom. If you have any questions in the chat or anyone who is there in person has a question.

MS. KANDIL: Yeah, we have a question in the chat that came up and we have a hand raised. I'm going to read the question in the chat. It's been here for a while. There are several actual questions from the one individual, the name -- and I'm sorry for butchering anyone's name -- is Tom Mesevage. So M-E-S-E-V-A-G-E.

Why was an interim remedy and not a final remedy initially selected? What has changed, and I have follow-up to that, but I'll stop right there to respond to that question.

MS. NARANJO: You can.

MR. SIVAK: So back in the -- back in the '80s, when the site was being investigated and the -- the -- the building materials and the other debris that had been identified was -- was identified as having an unacceptable risk. We were -- the technologies that were evaluated -- there were very limited technologies that existed to address that material. One technology was to bring an incinerator in on site and to treat the material onsite with an incinerator.

And when that was brought to the -- to the public, there was significant public concern about that as a technology. And so EPA did not select that -- that -- that is an example, again of community input resulting in EPAs, changing the remedy. Right. So because there were no technologies that existed back in the '80s, other than that on onsite incineration to permanently deal with this material. And as Eugenia said, we look for our alternatives.

When there are technologies to deal with this material on a on a permanent basis, a decision was made to select an interim remedy to contain this material inside, you know, in -- in this containment cell and evaluate technologies over the over the years to see if any new technologies were developed or identified that could permanently treat this material. So you know, up to 37 years in the future, and we are here today and our you know, we've worked with the responsible party who is who is implementing the remedy and ask them to evaluate the -- the state of technology that is out there to deal with this particular kind of material that is in this containment cell. And they developed what was called a remedy evaluation report that listed a -- a -- a bunch of technologies. That includes many of the things that we talked about today, right?

The in-situ stabilization/solidification option, the -- the -- the thermal the -- the excavation, all of those technologies, we then decided EPA decided, you know what? This is a very thorough list, but we want to make sure that we've captured everything that's out there. Everything that's new, anything that's in development.

And so we consulted with EPA s National Remedy Review Board, which is a national panel of experts. The -- they're expert project managers. They're senior project managers. They are expert engineers and scientists that deal with all of this sort of cutting edge technology that's out there. All. They -- we have material scientists. We have different kinds of civil engineers and environmental -- environmental engineers on this work group. And we brought this remedy evaluation report in this feasibility study. We brought this to the board and we asked them to review it and comment on it. We presented these technologies to them.

They gave us feedback, their comment memo to EPA and our -- to Region 2. And our responses to those comments are in the administrative record that is available online at our website. So we encourage you to check that out as well. One of their comments, for example, asked us to add the in-situ thermal technology to our evaluation. And so we looked at the pros and cons of that. We looked at how that could be implemented at the site.

And so the -- the result of that was the addition of the of the targeted in-situ thermal. We can't really apply it as a as a site-wide technology to address material all across the containment cell. But it can, you know, it -- it potentially could be effective in certain locations for certain types of -- of contaminants, not all of the contaminants. That's why the containment cell would still need to be in place.

And we would have to operate the groundwater pump and treat even under that technology. But we got their input. We looked at those technologies. And if after 37 years, this is it. This is all that there is available for us to treat this material. And so we -- we made the decision -- EPA Region 2 made the decision that we were going to evaluate these technologies and determine, is there a is there an alternative that can effectively deal with this -- this material on a long-term basis? And -- and we believe there is we believe alternative two is the best alternative for those issues and to address the protectiveness to human health and the environment.

MR. MESEVAGE: Thank you. Did you consider waiting another decade to see how technology progresses?

MR. SIVAK: We've waited. The original ROD was signed in 1989? '87. 1987. So it's been 37 years and we've been looking at the technologies over time, and there really hasn't been, you know, anything really new that can treat this material --

MS. NARANJO: Record of Decision.

MR. SIVAK: Yeah. The Record of Decision was -- the original record of decision that memorialized the interim remedy was issued in 1987. Thank you.

MR. MESEVAGE: Thank you.

MS. KANDIL: Tom, I know that you -- you just unmuted yourself, and I know you had several other questions in the chat. Do you want to -- do you want to speak them out loud or would you like me to read them?

MR. MESEVAGE: You're welcome to read them. Thank you very much.

MS. KANDIL: Okay. Sure. So just to continue, just because it's coming from the same individual.

The public summary of the proposed plan references principal threat waste. Can you discuss how this principle has been applied in the context of this containment final remedy? For example, has there been a technical impracticability waiver?

MR. SIVAK: Oh, that's the end of the sentence.

MS. KANDIL: Yeah. Sorry. I lost my breath.

MR. SIVAK: I know. But you -- you kind of uptick there at the end, so I thought there was something.

MS. KANDIL: I know.

MR. SIVAK: Okay. This is all going to go on the transcript, isn't it?

MR. CURTIS: It will.

MS. KANDIL: Yes.

MR. SIVAK: Okay. My transcripts are the worst for people who have to review them. Okay. So principal threat waste is a -- is a way the EPA categorizes a certain type of material that is -- that is waste, that is highly toxic and/or highly mobile. And when material has those specific characteristics, we call that principal threat waste, and the agency has a preference for treatment of that material rather than containment of that material.

Because of the high toxicity of the material that is inside the containment cell, that -- that label of principal threat waste applies to some of the material that we have -- that we have at the site. So we -- the feasibility study does document the presence of principal threat waste at the -- in -- at operable unit 1. And then the feasibility study also talks about the different treatment technologies that would be applied to the various components of the -- or the various components of the containment cell in that targeted -- in that targeted area.

So we did consider treatment of that principal threat waste. Again, there are a lot of challenges with implementing it. Some of the principal threat waste can't be treated by certain technologies. For example, the in-situ thermal would be targeting mostly the -- the VOCs that are in the -- that are the Volatile Organic Chemicals that are in the containment cell, not necessarily some of the other contaminants that we have in there. So -- you know, it's -- it -- it we did consider treatment for that principal threat waste. Even with that consideration, our preferred alternative remains Alternative Two to the optimized containment remedy.

MS. KANDIL: I have just a few more follow up questions from Tom. The cost of the proposed final remedy is -- 16 point -- million seems low, given the need for perpetually operation -- operating and maintaining. Can you discuss the duration and discounting? How has Occidental -- Occidental financially secured the interim remedy, and why has enhancements not been imposed under the -- under the interim remedy and current consent decree?

MR. SIVAK: So I can start some of that while Eugenia is looking for some of the --

I -- I have to be honest with you, Tom, I'm not going to be able to explain the discounting part of it. I -- that -- that -- I've never -- that -- I don't have to do that in -- in my role. And I'm very thankful that -- that I can do that. We will probably respond to that in the responsiveness summary. I'm not sure that we're going to actually be able to get into the details of that.

But to get back to the other the other part of your question, which is the -- the -- how has Occidental been able to fund this and what improvements have been made or have -- have optimizations been introduced in -- throughout the life of the project? Occidental continues to fund the project. They do not submit bills to EPA. We -- they -- they're not required to under the consent decree.

They are -- they were -- they're required to operate and maintain the remedy so that it remains protective and it meets its objectives. We -- like we said earlier, we get performance monitoring in there -- into the agency regularly, certainly on a yearly basis. At a minimum, we get their results reported to us. We review that. There have been tweaks along the way, certainly, when we notice information in those reports that starts to not be consistent with the information that we've received in the past.

We may change pumping rates, for example. We may install or we'll redevelop certain wells to increase the pumping in certain areas of the site. So we are constantly evaluating the performance of the remedy to improve it throughout the process. And that five-year review is a good sort of touch-base for us so -- touchpoint for us so that when we find that there are -- there are trends in the data that we are looking at, the five-year review also requires us to identify issues, right?

We've started to see perhaps that the -- the containment component of the remedy needs to be looked at because we are not -- we are not seeing the -- the -

- the -- the information that we need to confirm that we have hydraulic containment all the time. And so we -- the five-year review requires us to identify issues and also to identify recommendations. So what will we do about that? That's the recommendation.

We will -- in -- we will look into improving the pumping rates in that area of the site. We will pump more frequently. We may have to install an additional well in that area because we need more capture. So we are constantly improving the site. This optimization is just sort of, like, an -- an additional level of improving the existing remedy that is out there. The remedy continues to function. You can look -- go back and look at the five-year reviews that we've done over the last, you know, over the last two decades-plus.

The remedy continues to function. It remains protective of public health and the environment, but there are opportunities that we have to make sure that it functions perhaps more efficiently, and to make it perhaps a little bit more climate resilient as we are starting to get more information about those types of impacts on -- on -- on the -- the remedy as well. So that's sort of what this optimized remedy is designed to -- to take on.

MS. KANDIL: Thank you, Michael. I have a few comments and then we'll turn it over to the room. I do have some hands up here, but we'll turn it over to the room. First, the presentation is no longer showing.

So if you can maybe just put the slide up with your e-mail address, Eugenia, that would be great.

And then the other thing is for those of you who heard Michael say EPA Region 2, we are the region that covers the New York, New Jersey, Puerto Rico, Virgin Islands, and eight tribal nations. So that's what we're referring to when we say EPA Region 2.

So Drew, I'm going to turn it back to you. And then we have some few -- a few hands up here in the room -- in the -- in the Zoom room.

MR. CURTIS: Thank you, Shereen. So any questions here?

We'll go over here because you haven't spoken yet, too.

MR. PINHO: What happened to alternatives 3, 5, and 7? They were missing on the -- what was -- what were those?

MR. SIVAK: We really don't like odd numbers. No. So --

MR. PINHO: Very good.

MR. SIVAK: So --

MS. NARANJO: Alternatives 3, 5, and 7 required opening the cap, and that would expose the community and the workers short -- to risks, so --

MR. SIVAK: Right. They were -- they -- weren't they also screened out at part -- we have a two-step screening process, correct, and they were screened out in that first step?

MR. PINHO: 3, 5, and 7?

MR. SIVAK: Right. Right. They -- they were -- were screened out in that first step, correct?

UNIDENTIFIED SPEAKER: Your name, sir?

MR. CURTIS: Yeah. If you don't mind stating your name for the record.

MR. PINHO: I'm sorry. My name is John Pinho (phonetic). It's, P-I-N-H-O.

MR. SIVAK: Yeah. So -- so EPA's feasibility study has a two-step screening process once we identify these alternatives. The first step is sort of -- kind of a -- a very broad screening level, and we screen against three criteria: long -- per --

What are the three criteria? I can't think of them right now.

MR. PINHO: It's effectiveness --

MS. KANDIL: Effectiveness.

MR. PINHO: -- implementability --

MR. SIVAK: And cost. Yes. So it's effectiveness, implementability, and cost. And --

MR. PINHO: I'm -- I'm good with the answer.

MR. SIVAK: Okay.

MR. PINHO: And can this meeting be opened up, the questions on all -- OU2?

MR. SIVAK: Yeah.

MS. NARANJO: No. This is about a facility at Lister Avenue.

MR. SIVAK: Right. And -- and EPA's preferred alternative, and the other alternatives that we presented tonight.

MR. CURTIS: Well, there -- there will be other meetings for --

MS. KANDIL: There will be other meetings for OU2.

MR. CURTIS: And our -- if you're on our mailing list, you will get the notification for those.

MR. PINHO: Okay. Thank you.

MR. CURTIS: Is that all, John?

MR. PINHO: Well, I -- they're all OU2, so I --

MR. CURTIS: For OU1 --

MR. PINHO: At this point, I don't have any other questions, right?

MR. SIVAK: Thank you. This -- this meeting is part of our -- the -- the -- CERCLA and the NCP require that we hold a public meeting that is recorded, and as -- when we are announcing our preferred alternative for an operable unit for a site. So that's -- that's the role that this meeting is playing. We are soliciting feedback on the alternatives specific to this operable unit. So I just want to clarify why we are sort of saying we're not going to -- we're not going to entertain questions about other operable units tonight. Thank you for understanding that.

MR. PINHO: All right. I -- I -- that's fine. I had questions that were related to -- with -- but I -- I'll hold them, I guess, to -- to the next meeting on OU2. All right. I -- I heard that there weren't going to be any more meetings on OU2, that's why.

MR. CURTIS: No, that's --

MS. NARANJO: That's not correct.

MR. CURTIS: Absolutely not.

MR. SIVAK: Okay. Let's -- let's -- can we please --

MR. CURTIS: We -- we -- we'll -- we'll continue on.

So Shereen, you said you had some hands raised on --

MS. KANDIL: Yes. I have some hands raised, but I just wanted to clarify something.

So CERCLA stands for Comprehensive Environmental Response Compensation and Liability Act, better known as Superfund Law. So that's a law that we're -- that we're following. And NCP stands for National Oil and Hazardous Substances Pollution. I think that's the entirety of the pollution -- pollution contingency plan. So I just -- because we -- we tend to use a lot of acronyms, so I just want to make sure we all are following when we -- when we're saying these acronyms.

So I'm going to turn to Sharon Tramutola. Sharon, if you can just unmute your line and -- and I see that you asked a question online, too. So if you want to ask that one as well, please feel free to.

MS. TRAMUTOLA: Actually, that's the one I do want to ask. Could you hear me?

MS. KANDIL: Yes, we hear you fine. Thank you.

MS. TRAMUTOLA: Okay. I've lived in now -- Ironbound for like, 70 years. And in the past on cleanups, the community got screwed really bad. There was no follow up on your health. What are the plans to keep the community safe? Is there a written plan for this?

MR. SIVAK: I'll get it back.

MS. KANDIL: Did you all hear the question?

Eugenia and Michael? Drew?

MR. SIVAK: I think maybe the power is out.

MS. KANDIL: Oh, maybe there was a power outage.

Sharon, we might have to ask you to ask it again.

MS. TRAMUTOLA: Can you hear me now?

MS. KANDIL: I hear you online.

But can you guys hear us now? Can you hear Sharon?

MR. SIVAK: Yes. We left off with Sharon living in the Ironbound for 70 years.

MS. TRAMUTOLA: Okay. Could you hear me?

MR. CURTIS: I can. Sorry about that, Sharon.

MS. TRAMUTOLA: Can you hear me?

MR. CURTIS: Yes.

MS. TRAMUTOLA: Okay. What's the plan to keep the community safe? In the past, the community got screwed. They were sitting outside watching people with hazmat suits cleaning up where -- they weren't even removed from the area, told about the dangers. There was no follow up healthcare for people. There has to be a plan for this.

MS. NARANJO: Yes. That was -- yes. That was in '87. That material is contained. It is not migrating. The community has no access or there are no risks from it. So back in the '80s, it was different. Right now, we know what we have. We have contained the -- we have selected a remedy that contains the material that avoids migration or spread or anybody to come into contact with that material. It is buried there.

MS. TRAMUTOLA: I -- I have another question. The gentleman said, though, it is possible for some of this to escape.

MR. SIVAK: So the -- some of the other alternatives that we are -- that we considered, and that we presented tonight, and that are included in the proposed plan, primarily alternatives 4, 6 and 8 include components of those remedies that require the containment cell to be opened so that different technologies can be applied to that material. Opening that containment cell runs the risk of some of that of -- of -- of the potential for the material that is currently entombed in -- in that containment cell to migrate into the community.

We would -- if we were to open the cell, we would have to design the appropriate engineering controls and the appropriate community health and safety plan to ensure that we took every step possible so that -- that -- that material does not escape and migrate into the community. But where it currently is, there is no opportunity for it to migrate into the community or for anyone to become in -- to come into contact with it, as Eugenia said.

MS. NARANJO: And that's why that is our preferred alternative, and none of the other ones that require opening the cap and excavating that material.

MS. TRAMUTOLA: I have another question. I'll make it short. I read a report that said that that part of the river, right, was so polluted and too expensive to clean it all up. What happens now with global warming and -- it -- if that stuff overflows? Does the whole community get contaminated again?

MR. SIVAK: So we --

MS. NARANJO: So we have a flood wall that is designed for the 100-year storm so that the site doesn't get flooded.

MS. TRAMUTOLA: Okay.

MR. SIVAK: Also, in the feasibility study report that -- that was that contains a lot of the information that we considered when selecting a Preferred Alternative, we did a -- we did a climate vulnerability assessment in that -- in that report. And that climate vulnerability assessment looked at environmental factors that are -- that are -- that are made worse because of climate change, including things like flooding and storms. And we evaluated based on the past performance of this containment cell through some of the storms that -- that it's -- that it's been through. It's been through Super Storm Sandy. It's been through Hurricane Henri (sic) right? Henri?

MR. CURTIS: I -- Irene.

MR. SIVAK: Irene and -- and what was the third one, Rita? No --

MS. TRAMUTOLA: Ida.

MR. SIVAK: Ida. Thank you. Thank you very much. I apologize for -- for not remembering those. It -- those three storms have happened, you know, in the last X number of years, and this -- and this containment cell that is currently in place was in place for all of those. And after each one of those events, there was an inspection of this event -- of the -- the containment cell, and it continued to function and there was -- bless you. There was very little damage in one of the events, or maybe in two of the events, there was some gravel that had been moved, but that was quickly replaced. The gravel covers the cap. The cap was not impacted at all.

So the -- the existing remedy has shown that it is resilient to climate change and that climate vulnerability assessment identifies some things that can be done to improve it. And those are part of this optimization that will be implemented if this is the remedy that EPA selects. So we did think about climate change. We did think about increased flooding. That -- those are very good points, and we did take those into account. Thank you for bringing those up.

MS. TRAMUTOLA: This is not even a question and I'll go after this. This is a statement. This meeting for me, I heard a -- a very short announcement about this meeting on ABC. They didn't give any details in the meeting, where to find it. City -- I called City Hall. They were saying like, what are you talking about? I called the Councilman from Ironbound, they didn't know what we were talking about. Before you start this, is -- can't there be a campaign -- campaign to inform people in the area what's going on and how to get to these meetings.

UNIDENTIFIED SPEAKER: Agreed.

MR. CURTIS: That's a great question, Sharon. I did e-mail both the mayor's office and the entire City Council as well. So they have heard about it. I'm glad you're here. And I hope we have your contact info so we can make sure you're on our list moving forward, but we will be continuing an aggressive outreach effort. And if you want to talk to me more, if you have ideas to share, we will move this forward or -- back

MS. NARANJO: What do you want?

MR. CURTIS: Just go to the slide with my contact. My contact info is on the next slide, I think.

MS. KANDIL: It's not being shared, but I'll put the e-mail addresses in a -- in the chat.

MR. CURTIS: Oh, okay.

MS. TRAMUTOLA: Thank you.

MR. CURTIS: Oh, sorry.

MS. KANDIL: Thank you. That's Eugenia's contact information, and there's Drew's. And I'll put it in the chat as well.

MR. CURTIS: If you want to talk -- if you want ideas for outreach, I'd love to talk to you about that, too.

MS. TRAMUTOLA: Okay. Thank you. I'll

contact you.

MR. CURTIS: Thanks, Sharon.

All right. We're going to bring it back to in person. I think I saw a question over there?

MS. IVES: I just had a follow-up question to the resiliency question.

MR. CURTIS: Sure. State your name though, if you don't mind.

MS. IVES: Leah Ives, Ironbound Community. I know earthquakes are not generally something we think about in this region, but they've become a little more frequent. And I'm curious, if you can speak to the health of the cap in case of increase in those.

MR. SIVAK: Sure. We -- I'm -- I'm -- I am not. So our climate vulnerability assessment looked at the climate factors that are most reasonable to occur in this area of the country. It looks at wildfires. It looks at, you know, other -- it looks at earthquakes. I don't know, specifically, if earthquakes were included in this climate vulnerability assessment. We will respond to that in the responsiveness summary when we produce that. I apologize for not having that information available.

THE COURT REPORTER: Could you repeat your name?

MS. IVES: Leah Ives.

MR. SIVAK: Leah Ives. Thank you.

MR. CURTIS: Okay. Thanks, Leah.

Shereen, who's next up online?

Go on.

MS. KANDIL: We have a hand raised. Vanessa Thomas. Vanessa. If you can please unmute yourself and ask your question or make your comment.

MS. THOMAS: Hi. Is everyone able to hear me all right?

MS. NARANJO: I hear you.

MS. THOMAS: Okay. Hi, everyone. Glad to be here and have the opportunity to make a comment today. My name is Vanessa Thomas. I'm a resident of the Ironbound, and live about two miles from Operable Unit 1. I'm glad that we've kind of brought climate change into the conversation, and it kind of, you know, vaguely answers my questions. But, you know, we heard earlier that the cap and remedy is built to withstand in, you know, sustain a hundred-year storms.

But my concern is that with climate change, you know, a hundred-year storms aren't a hundred-year storms anymore. They're getting more frequent and more intense. And it's also getting more hot every year. I'm sure many of, you know, the Ironbound is one of the worst urban heat islands in the United States. So you know, given those factors, is there going to be any kind of continuous reevaluation of the effectiveness of the cap and specifically its ability to withstand climate change, you know, storms, disasters and especially heat.

And then I have a -- a -- a another question after that.

MS. NARANJO: Okay. Like Michael said, the cap did okay during Superstorm Sandy, Irene, and Hurricane Ida. It did what it's supposed to do. And the flood wall is protecting the property. Whether a hundred-year storms are not a hundred -- are not happening every hundred years, and are happening every three years, that's the number that we work with, based on what FEMA tells us is the hundred-year storm and what we designed -- what the flood wall for.

MR. SIVAK: Right. And -- and going back to something that we talked about a little bit earlier, is that we do have an operation and maintenance plan in effect for this containment cell, including the cap and the groundwater pump and treat system. So we -- there are inspections that are done periodically at the frequency that's identified in the -- in the O&M plan, the operation maintenance plan. I don't -- that -- see off the top of my head.

And it also requires inspections after certain types of events such as flooding, such as hurricanes and things like that to ensure that the cap is not -- has not been damaged to ensure that things continue to operate as -- as they are designed to do. So yes, there will be monitoring to ensure that -- that as climate change factors perhaps become even more common that the -- the remedy continues to perform. And if the remedy needs to be modified in the future in order to function the way it is supposed to function, and meet the objectives, we talked about those remedial action objectives, Eugenia had a slide up about them, to ensure that groundwater isn't migrating, to ensure that -- that soil isn't migrating, to ensure that there's no contact with those contaminated materials and debris.

We will ensure that those objectives of the remedy continue to be met and that the remedy continues to perform.

MS. THOMAS: Great. Thank you. My next question is, I -- I guess it's a question and a comment as well, and it's sim -- similar to Sharon's concern, but what are the, if any, specific risk to workers or community when the construction and maintenance is happening? I'm asking because, you know, we keep saying that it's an industrial zone, but if you keep going down Lister Avenue, there are several homes on Chapel Street, right down the street, including affordable housing, like Terrell Homes. Is there going to be, you know, any kind of alert system or immediate notice to the community in the case that there are any issues like exposure and you know, what -- what would those alerts look like?

MS. NARANJO: There's going to be no exposure to the community. It's only going to be, like, workers and maybe some traffic -- truck traffic and equipment -- traffic going in and out of the site. But no exposure or risk or anything different to the community.

MR. SIVAK: Right. Under -- under EPA's Preferred Alternative, we -- we're optimizing right under -- under EPA's Preferred Alternative, right? Our Preferred Alternative is we take this existing containment cell and we improve its performance and we ensure that its protectiveness remains in place. And that's one of the -- we have five criteria, specifically that -- that are very important where we weigh these different alternatives against each other.

One of them is short term risks. One of

those five criteria, and we put a slide up that shows what those are earlier. So those will be in the slides that are made available. One of them is short term risks. And the and the definition of short term risks is what are the risks to the community while the remedy is being implemented? Under this alternative, because the material will remain encapsulated in the containment cell, there are incredibly low risks that -- that alternative weighed very high.

When compared to the other alternatives that we looked at, that included opening up the containment cell to -- to address some of the material that is encapsulated in there on a targeted basis. Whether it's an whether we are treating the material that's still in the containment cell, or whether we're taking that material out of the containment cell and treating it above ground, we still have to open up the containment cell. And there is a there is a there is a potential for contamination that is currently -- encapsulated to migrate.

As we said earlier, if those are -- if one of those are the alternatives that we ultimately select, we would have to design an engineering plan to minimize that potential to the greatest extent possible. Any of these alternatives that we select will have a community health and safety plan. And when that is developed, or we currently have one in place right now, and we will look to enhance that, and we will -- we will present that certainly to the Community Advisory Group and ask for their feedback to make sure that we're covering the things that are important to the community.

And we will present that to the community as well. So there will be a community health and safety plan associated with the long-term remedy. The final remedy that -- that EPA selects for the site.

MR. CURTIS: What's the Community Advisory Group?

MR. SIVAK: So the Community Advisory Group is an organized group of community members that EPA is -- does not run, we are not a part of, although we are invited to provide updates to that group. It is a -- the concurrent Community Advisory Group for the Passaic River is a nationally award-winning group that advocates for the community. They serve as a conduit to identify information from EPA and disseminate that to the community. And they also serve as a way for EPA to hear about the concerns of the community.

So it is a -- it is a -- a true two-way communication avenue. The current chairs of the

Community Advisory Group are Ana Baptista, who is on the phone who's -- who offered some questions earlier, and Michele Langa, who is here in the room with us who also offered some questions earlier. There is information available to contact them and you can get that information from Drew whose contact information is up on the board right now.

So Ana and Michele, you know, you -- I gave you your little plug. They're -- they're they have advocated for the community and they have advocated to EPA on -- on behalf of the community on all of these components of the Diamond Alkali site, including Operable Unit 1.

MS. KANDIL: And for those online, I posted the link to the -- the Community Advisory Group website. I also posted the links to the community update fact sheets that -- in -- in -- in multiple languages. And we can share that with the -- the folks that are in person.

MR. CURTIS: We have copies of those in outside at the registration table. If you didn't get one, you can grab one on your way out.

Vanessa, did you have any more questions?

MS. THOMAS: Nope, that's it. Thank you.

MR. CURTIS: You're welcome.

All right. We're going to bring it back to the room and I'm just reminding folks. We want to -- make sure anyone who hasn't spoke, we'll let everyone speak once before we go back to repeat customers. So anyone who hasn't spoken yet have any comments or questions here in the room? Okay. Well then I know we had some extra -- other questions up here.

State your name again, though.

DIANNE: My name is Dianne. My question is, I know in -- your -- I would assume that in your monitoring, you're -- you're testing, like, levels of toxins and the air quality around as well as the groundwater, correct?

MS. NARANJO: Correct.

DIANNE: And so you probably have, like, a minimum amount, like a certain threshold amount of these toxins in air or water that you know would hurt human health or the environment or the animals, or whatever. Are you guys in tune with what is the healthy threshold? Like, meaning, there could be new news coming out that, like, certain levels should actually -- the threshold should actually be lower because we noticed some cancer someplace in somebody that's nearby, or whatever. So are you guys in tune with, like, updates to what the threshold should be?

MS. NARANJO: So --

MS. HARRISON: Does that make sense?

MS. NARANJO: Sure. We go by what is required by the state.

MS. HARRISON: Okay.

MR. SIVAK: Right. I'm not -- I'm not sure. Do we have -- is there air monitoring that is currently in place at the site? Not -- I'm not sure. We can -- I don't -- I don't believe -- I don't believe we currently have air monitoring, because again, all of the material is encapsulated. We will confirm --

MS. HARRISON: The cap is -- you're saying is impermeable?

MR. SIVAK: Sorry?

MS. HARRISON: The site cap was impermeable?

MS. NARANJO: It's impermeable. Yeah.

MS. HARRISON: So it's, like, impossible for anything to go past it.

MR. SIVAK: Unless there is damage to it, yes.

MS. HARRISON: Yeah.

MR. SIVAK: We will confirm that in the responsiveness summary, though. We do have values for groundwater that we are looking at to make sure that we have containment or to make sure that the -- the site is not leaking. Those values are provided to us by the New Jersey Department of Environmental Protection. They are constantly evaluating their levels and updating them as new information becomes available, should information on what our safe levels is -- is made available to them.

MS. NARANJO: Okay.

MR. CURTIS: Got it. Last question? Or no? Good.

Shereen, do we have any other questions online?

MS. KANDIL: We do. We have several questions that came into the chat that I believe several were answered. I'm just going to read them for the public record. And if we've answered them, you can just say, we've answered. If we need to wait until the responsiveness summary, we can just say that. But I do want to read them for the public record.

So Tom Mesevage, M-E-S-E-V-A-G-E, asked, did the site flood during Hurricane Sandy? That was answered. We have Ana Baptista who asked, how will the controls hold up to earthquake events or heat stressed -- heat stress over time, and I believe it was answered, but I'll turn it to you, Eugenia or Michael.

MS. NARANJO: We answered that.

MS. KANDIL: Okay.

MR. SIVAK: We did answer that, yes. Earthquake part, I think we're going to defer to the responsiveness summary --

MS. NARANJO: We have the other (crosstalk).

MR. SIVAK: -- because I don't remember if the climate vulnerability assessment considered earthquake.

MS. NARANJO: (crosstalk)

MS. KANDIL: Great. And then and I'm -- I'm -- I'm just going to spell this -- the name. It's -- S is the first initial last name is M-U-T-H-U-K-R-I-S-H-N-A-N. Did the plan take into account New Jersey's State of the Climate report and projected flooding scenarios under the proposed New Jersey PACT REAL draft rules?

UNIDENTIFIED SPEAKER: I don't recall that. I know that -- we can look at Section 2.2 of the feasibility study in the report --

MR. SIVAK: Okay. Yeah, so --

UNIDENTIFIED SPEAKER: It looks at a 500-year storm.

MR. SIVAK: So we can we -- we -- we will respond to that. Thank you. We will respond to that. In the responsiveness summary. I'm not aware -- I don't I don't have enough of familiarity with the information that's in the feasibility study to respond to that accurately. So we will wait until the responsiveness summary so we can provide the appropriate response that is factually correct. Thank you.

MS. KANDIL: Thank you. Michael.

Drew, I do have a few more, but if you want to turn to the room right now?

MR. CURTIS: Do we have any questions in the room? I'm not sure that we did, but if there -- anyone has one, raise your hand. Yes?

MS. IVES: I have a follow-up question. Leah Ives.

You mentioned that you go by the New Jersey numbers for the contaminants, and is there any, you know, legal obstacle to just doing -- going by best numbers possible, not just the minimum that's required by state of New Jersey? Or, you know, evaluating based on the -- the state with the highest restriction, for example. There anything legally that restricts you to those numbers?

MS. NARANJO: I don't know that legally we can require the operator of site to go above or below the required -- the required -- permitted numbers.

MS. IVES: Operator of the site, which is the --

MS. NARANJO: The owner of the site, Occidental Chemicals.

MR. SIVAK: So -- so EPA's remedy is protective of public health and the environment, right? So when we are containing the groundwater inside the containment cell, we need to ensure that the water that we are containing -- or that there's no leakage of that outside of the containment cell, right? And so we need it -- you know, we need to make sure that -- that -- that the material that's in the containment cell stays in the containment cell, and it doesn't migrate out whether it's contaminated groundwater, whether it's contaminated soil, or other -- or other material.

We comply with environmental regulations that are put in place and go through a public comment period that are developed by the state of New Jersey to ensure that they are protective of public health and the environment. So any one of those standards always has some sort of factor of safety built into it, right? I -- my background is in toxicology, so I know that -- that a lot of times, the -- the information includes a lot of assumptions that are all based on the protection of public health. So just meeting the number that the state of New Jersey has promulgated or has identified for us is -- is a very protective approach. The -- the -- those numbers have a very high level of -- of conservatism and protectiveness built into them. And those are the numbers that -- that are part of our decision making and that -- that are part of our -- our engineering to make sure that the site remains protective.

MR. CURTIS: Thank you, Leah.

Shereen, who is up next online?

MS. KANDIL: Yes, we have another question online from Ana Baptista: Can the EPA require or stipulate the creation of a trust or fund that can ensure there is available funding in the perpetuity to accompany the operation and maintenance schedule and make sure there is funding, even if the responsible parties go bankrupt?

MR. SIVAK: I -- that would be a question for our attorneys to answer. Sarah or Frances, are you on the line and can you unmute yourselves?

MS. ZIZILA: Yes, I'm here. This is Frances Zizila. I'm the site attorney for Operable Unit 1. Our consent decrees require that the defendant establish financial assurance. And in this case, the consent decree does require that. So that is -- that protects in -- in the event that for some reason, there -- there needs to be a takeover of the remedy. We have to implement it on our own. So financial assurance is a -- a general requirement of our legal agreements.

MR. SIVAK: Thank you, Frances.

MR. CURTIS: Okay. Any questions in the room?

Okay, Shereen?

MS. KANDIL: Just for the public record, Tom responded to Ana's initial comment saying, I expect something in place already for the interim remedy, a bond or other form of financial assurance.

And then Ana added a comment saying, if anyone would like to consider joining the CAG, which is the Community Advisory Group, especially if you are a community resident along the river, please let us know. Ana left her e-mail address. I also added the Community Advisory Group new webpage on the chat, and we can certainly share it with everyone in the meeting.

I don't see any other comments or questions in the chat nor any hands raised.

MR. CURTIS: We'll do a final call both in person and online. And this doesn't end tonight. You have until November 12th to review the plan in more detail and send in comments to Eugenia either online or via mail, or in person even. You can bring it to our offices in person, I think, if you want to see us again.

MS. KANDIL: Come to New York.

MR. CURTIS: Yeah. It's a nice place, right by the World Trade Center. All right. Well, it sounds like that's all the questions then. Any closing words, Michael or Eugenia?

MS. NARANJO: No. Thank you very much. Thank you very much for your comments and questions. We'll -- we'll make sure to address those in the responsiveness summary once the agency issues a Record of Decision.

MR. CURTIS: Yeah.

MS. NARANJO: Anything else?

MR. CURTIS: Thank you again, all -- all of you online.

MS. KANDIL: We will be sharing the presentation as well as the recording of the meeting on our site profile page, if you can go back to the link? Yes. So that's the one that says www.epa.gov/superfund/diamond-alkali. I've -- I've also put it in the chat. The recording will be linked to our Facebook site -- Facebook page that has the recording of this meeting, and we'll post our presentation there as well.

MR. CURTIS: Thanks everyone. Thank you, Shereen, for all your help online.

MS. NARANJO: Thank you.

MS. KANDIL: Thank you.

MR. CURTIS: Thanks to our translators.

MR. SIVAK: Thank you all.

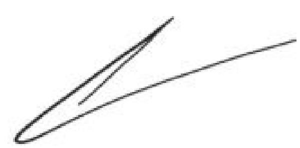
MS. KANDIL: Thank you to our interpreters, our Spanish, Portuguese, and Haitian Creole interpreters. Appreciate everyone. And our technicians, thank you so much.

(PROCEEDING CONCLUDED AT 7:54 P.M.)

CERTIFICATE

I, John Sheffield, do hereby certify that I was authorized to and transcribed the foregoing recorded proceedings, and that the transcript is a true record, to the best of my ability.

Dated this 23rd day, of September, 2024.



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John Sheffield