UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY

UNITED STATES OF AMERICA,	)	
	)	
Plaintiff,	)	SW/HC OU3 MODIFICATION TO CONSENT DECREE
	)	
v.	)	
	)	
THE SHERWIN-WILLIAMS COMPANY,	)	Civil Action No. 1:19-cv-01907-ESK-EAP
	)	
Defendant.	)	

WHEREAS, prior to September 27, 2018, the United States of America ("United States") and The Sherwin-Williams Company ("Sherwin-Williams") (collectively, the "Parties") engaged in negotiations to resolve Sherwin-Williams' alleged liability under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA") regarding the Sherwin-Williams/Hilliards Creek Superfund Site ("SW/HC Site"), the United States Avenue Burn Superfund Site ("Burn Site"), and the Route 561 Dump Site ("Dump Site") in Gibbsboro and Voorhees, Camden County, New Jersey (collectively, the "Sites"), in a cooperative manner, without the transaction costs associated with protracted litigation;

WHEREAS, as a result of these negotiations, an agreement was reached and embodied in a consent decree (the "Remedial Design/Remedial Action Consent Decree" or "RD/RA Decree"), which resolved certain claims alleged by the United States against Sherwin-Williams under CERCLA;

WHEREAS, the RD/RA Decree required that Sherwin-Williams conduct certain remedial design and remedial actions at the Sites and pay certain response costs incurred by EPA;

WHEREAS, this Court entered the RD/RA Decree on April 16, 2019 (Docket # 5), and, under Section XXI of the RD/RA Decree, has retained jurisdiction over implementation and enforcement of the RD/RA Decree;

WHEREAS, Paragraph 14.a. of the RD/RA Decree provides that, after issuance by EPA of a Record of Decision ("ROD") for an additional Operable Unit ("OU") at the Sites, the parties may engage in a process to incorporate the remedial work for the additional OU into the RD/RA Decree;

WHEREAS, Paragraphs 14.a(3) and 95 of the RD/RA Decree allows the Decree to be amended to add a SOW modification to implement the ROD for an additional OU by written agreement of the Parties, effective upon approval by the Court after notice and opportunity for public comment;

WHEREAS, on August 4, 2020, the EPA issued a ROD for the Sherwin-Williams/Hilliards Creek Superfund Site Operable Unit 2 ("SW/HC OU2 ROD");

WHEREAS, following the issuance of the SW/HC OU2 ROD, the Parties agreed on a SOW modification for the implementation of the SW/HC OU2 ROD, which was attached to the SW/HC OU2 Modification to Consent Decree (the "first amendment to the RD/RA Decree") that was approved and signed by the Court on April 5, 2021 (Docket # 10);

WHEREAS, on September 28, 2021, the EPA issued a ROD for the Sherwin-Williams/Hilliards Creek Superfund Site Operable Unit 4 ("SW/HC OU4 ROD");

WHEREAS, following the issuance of the SW/HC OU4 ROD, the Parties agreed on a SOW modification for the implementation of the SW/HC OU4 ROD, which was attached to the SW/HC OU4 Modification to Consent Decree (the "second amendment to the RD/RA Decree") that was approved and signed by the Court on September 26, 2022 (Docket # 17);

WHEREAS, on September 26, 2025, the EPA issued a ROD for the Sherwin-Williams/Hilliards Creek Superfund Site Operable Unit 3 ("SW/HC OU3 ROD"), which addresses the remediation of groundwater at the SW/HC Site;

WHEREAS, the Parties agreed on a SOW modification for the implementation of the SW/HC OU3 ROD (the attached "SW/HC OU3 SOW Modification");

WHEREAS, since the SW/HC OU3 ROD estimates the cost of the remedy under the SW/HC OU3 ROD to be $4,220,000 Sherwin-Williams will adjust the financial assurance amount required under Section IX of the RD/RA Decree to include enough funds to cover the cost of this work (in addition to already required work) within 30 days of the Court's entry of this CD modification;

WHEREAS, Sherwin-Williams and the United States have agreed to this Sherwin-Williams/Hilliards Creek Operable Unit 3 Consent Decree Modification ("SW/HC OU3 CD Modification") to add the SW/HC OU3 SOW Modification to the RD/RA Decree;

WHEREAS, under Paragraphs 14.a(3) and 95 of the RD/RA Decree, the Decree may be amended to add the SW/HC OU3 SOW Modification to implement the Sherwin-Williams/Hilliards Creek Site OU3 ROD, by written agreement of the Parties, effective upon approval by the Court after notice and opportunity for public comment;

WHEREAS, the Parties agree, and the Court by entering this SW/HC OU3 CD Modification of the RD/RA Decree finds, that the amendments to the RD/RA Decree set forth herein are fair, reasonable, and in the public interest;

NOW THEREFORE, it is hereby ORDERED, ADJUDGED, and DECREED that the RD/RA Decree in this matter is modified as follows:

1. This SW/HC OU3 CD Modification shall apply to, and be binding upon, the Parties as an amendment to the RD/RA Decree (the "third amendment to the RD/RA Decree").

2. This SW/HC OU3 CD Modification shall not be construed to alter, affect or amend the RD/RA Decree in any way other than provided herein.

3. It is the purpose of the Parties in entering into this SW/HC OU3 CD Modification to further the objectives of the Parties as provided in the RD/RA Decree.

4. Unless otherwise defined herein, terms used in this SW/HC OU3 CD Modification shall have the meaning given to those terms in the RD/RA Decree, CERCLA, and the regulations promulgated thereunder.

5. The attached SW/HC OU3 SOW Modification is hereby incorporated into the RD/RA Decree.

6. Sherwin-Williams shall increase the amount of financial assurance provided under Section IX of the RD/RA Decree within 30 days of entry of this CD Modification as follows: Sherwin-Williams shall secure financial assurance, initially in the amount of $4,220,000 ("Estimated Cost of the SW/HC OU3 Work"), for the benefit of EPA, for the SW/HC OU3 Work, in accordance with Paragraphs 28 and 31 of the RD/RA Decree. This amount of financial assurance shall be in addition to the amount of financial assurance provided under Section IX of the RD/RA Decree for the Burn Site Work, the SW/HC OU2 Work, and the SW/HC OU4 Work, and the provisions of Section IX of the RD/RA Decree shall apply to financial assurance for the SW/HC OU3 Work as well as the Burn Site Work, SW/HC OU2 Work, and the SW/HC OU4 Work.

7. This CD Modification shall be lodged with the Court for at least 30 days for public notice and comment in accordance with Section 122(d)(2) of CERCLA, 42 U.S.C. § 9622(d)(2), and 28

C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent to this CD Modification if the comments regarding the CD Modification disclose facts or considerations that indicate that the CD Modification is inappropriate, improper, or inadequate. Sherwin-Williams consents to the entry of this CD Modification without further notice. Sherwin-Williams agrees not to oppose entry of this CD Modification or challenge any provision of this CD Modification unless the United States has notified Sherwin-Williams in writing that it no longer supports entry of this CD Modification. If for any reason the Court declines to approve this CD Modification in the form presented, this CD modification is voidable at the sole discretion of any Party and the terms of the agreement may not be used as evidence in any litigation between the Parties.

Dated and entered this _____day of _____, _____.

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_____
UNITED STATES DISTRICT JUDGE

The Undersigned Party, the United States of America, on behalf of the U.S. Environmental Protection Agency, Enters into this SW/HC OU3 Modification to Consent Decree in the case of *United States of America v. The Sherwin-Williams Company,* Civil Action No. 1:19-cv-01907-ESK-EAP.

FOR THE UNITED STATES OF AMERICA

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The Undersigned Party, The Sherwin-Williams Company, Enters into this SW/HC OU3 Modification to Consent Decree in the case of *United States of America v. The Sherwin-Williams Company,* Civil Action No. 1:19-cv-01907-ESK-EAP.

FOR THE SHERWIN-WILLIAMS COMPANY

Stephen J. Perisutti
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STATEMENT OF WORK

FOR THE

REMEDIAL DESIGN/REMEDIAL ACTION

SHERWIN-WILLIAMS/HILLIARDS CREEK SUPERFUND SITE

Operable Unit 3 - Groundwater
Gibbsboro, Voorhees, and Lindenwold
Camden County, State of New Jersey

EPA Region 2

SW/HC OU3 SOW Modification under Paragraph 14(a) of Consent Decree in United States v. The Sherwin-Williams Company, D.N.J. Civil Action No. 1:19-cv-01907

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1. INTRODUCTION

1.1 **Purpose of SOW**. This Statement of Work ("SOW") sets forth the procedures and requirements for implementing the Sherwin-Williams/Hilliards Creek Superfund Site ("SW/HC") Operable Unit 3 ("OU3") Work.

In accordance with Paragraph 14.a of the Consent Decree ("CD") in the United States v. The Sherwin-Williams Company, D.N.J. Civil Action No. 1:19-cv-01907, this SOW also states the amount of Financial Assurance that Settling Defendant ("SD") must have in effect for the SW/HC OU3 Work within 30 days of approval by the Court of the CD modification to which it is attached. This Financial Assurance amount is $4,220,000, the Estimated Cost of the SW/HC OU3 Work.

1.2 The Scope of the SW/HC OU3 Remedy includes the actions described in the Selected Remedy Section of the SW/HC OU3 Record of Decision ("SW/HC OU3 ROD"), which was signed on September 26, 2025. A copy of the Declaration Statement and Decision Summary of this ROD is attached hereto; the complete ROD, including appendices, can be found at the following link: https://semspub.epa.gov/work/02/758114,pdf. The major components of the SW/HC OU3 ROD, include the following activities:

- Assumption of implementation of the OU2 remedy;
- Pre-Design Investigation;
- Institutional Controls ("ICs");
- Installation of injection points and performance of injections in the area surrounding the secondary source at MW-30.
- Installation of additional monitoring wells to approximately 75 feet below the ground surface to supplement the existing monitoring well network for long-term monitoring ("LTM") purposes;
- Attenuation processes, including biodegradation, dilution, dispersion, sorption, volatilization, and precipitation, as the primary mechanism for contaminant reduction for areas where active groundwater remediation is not implemented.
- Long Term Monitoring ("LTM") of shallow, intermediate, and deep groundwater;
- Five-year reviews.

1.3 The terms used in this SW/HC OU3 SOW that are defined in CERCLA, in regulations promulgated under CERCLA, or in the CD, have the meanings assigned to them in CERCLA, in such regulations, or in the CD, except that the term "Paragraph" or "¶" means a paragraph of the SW/HC OU3 SOW, and the term "Section" means a section of the SW/HC OU3 SOW, unless otherwise stated.

2. COMMUNITY INVOLVEMENT

2.1 As requested by EPA, SD shall conduct community involvement activities under EPA's oversight as provided for in, and in accordance with this Section. Such activities must include designation of a Community Involvement Coordinator ("CI Coordinator").

2.2 Community Involvement Responsibilities

(a) EPA has the lead responsibility for developing and implementing community involvement activities at the Sherwin-Williams/Hilliards Creek Superfund Site ("Site"), United States Avenue Burn Site, and the Route 561 Dump Site (collectively called the "Sites"). Previously during the Remedial Investigation and Feasibility Study ("RI/FS") phase, EPA developed a Community Involvement Plan ("CIP") for the Site. In accordance with 40 C.F.R. § 300.435(c), EPA shall review the existing CIP and determine whether it should be revised to describe further public involvement activities during the SW/HC OU3 Work that are not already addressed or provided for in the existing CIP.

(b) **Settling Defendants' Community Involvement Coordinator**. As requested by EPA, SD shall, within 15 days, designate and notify EPA of SD's Community Involvement Coordinator ("SD's CI Coordinator"). SD may hire a contractor for this purpose. SD's notice must include the name, title, and qualifications of the SD's CI Coordinator. SD's CI Coordinator shall coordinate his/her activities with EPA's CI Coordinator, provide support regarding EPA's community involvement activities and, as requested by EPA's CI Coordinator, provide draft responses to the public's inquiries including requests for information or data about the Site. The SD's CI Coordinator has the responsibility to ensure that when it communicates with the public, SD protects any "Personally Identifiable Information" ("PII") (*e.g.* sample results from residential properties) in accordance with "EPA Policy 2151.0: Privacy Policy."

(c) As requested by EPA, SD shall participate in community involvement activities, including participation in: (1) public meetings that may be held or sponsored by EPA to explain activities at or relating to the SW/HC OU3 Work (with interpreters present for community members with limited English proficiency); and (2) the preparation of information regarding the SW/HC OU3 Work for dissemination to the public, with consideration given to include mass media and/or Internet notification. SD's support of EPA's community involvement activities may include providing online access to initial submissions and updates of deliverables to: (1) any Community Advisory Groups, (2) any Technical Assistance Grant ("TAG") recipients and their advisors, and (3) other entities to provide them with a reasonable opportunity for review and comment. EPA may describe in its CIP SD's responsibilities for community involvement activities. All community involvement activities conducted by SD at EPA's request are subject to EPA's oversight. Upon EPA's request, SD shall establish, as early as is feasible, a community information repository at or near the Site, as provided in the CIP, to house one copy of the administrative record.

(d) **Information for the Community**. As requested by EPA, SD shall develop and provide to EPA information about the design and implementation of the SW/HC OU3 remedy including: (1) any validated data from monitoring of impacts to communities as provided in the Community Mitigation Plan under ¶ 7.7(f); (2) a copy of the Community Mitigation Plan required under ¶ 7.7(f); (3) schedules prepared under Section 8; (4) dates that SD completed each task listed in the schedules; and (5) digital photographs of the SW/HC OU3 Work being performed, together with

descriptions of the SW/HC OU3 Work depicted in each photograph, the purpose of the SW/HC OU3 Work, the equipment being used, and the location of the Work. The EPA Project Coordinator may use this information for communication to the public via EPA's website, social media, or local and mass media. The information provided to EPA should be suitable for sharing with the public and the education levels of the community. Translations should be in the dominant language(s) of community members with limited English proficiency.

3. COORDINATION AND SUPERVISION

3.1 Selection of Project Coordinators and Supervising Contractor

(a) SD's Project Coordinator and Supervising Contractor each: (i) must have sufficient technical expertise to carry out their responsibilities; (ii) may not be attorneys representing any SD in this matter; (iii) may not be the same person; and (iv) may not have a conflict of interest regarding the project. The Supervising Contractor must have a quality assurance system that complies with the most recent version of Quality Systems for Environmental Data and Technology Programs -- Requirements with Guidance for Use (American National Standard), ANSI/ASQC E4 (Feb. 2014).

(b) SD shall notify EPA, within 14 days after the Effective Date, of the name, title, contact information, and qualifications of their proposed Project Coordinator and Supervising Contractor.

(c) EPA shall issue a notice of disapproval and/or authorization to proceed regarding any proposed Project Coordinator and Supervising Contractor, as applicable. Any EPA disapproval must be based on the criteria under ¶ 3.1(a).

(d) Notwithstanding ¶¶ 3.1(a) through 3.1(c), SD has proposed, and EPA has authorized Settling Defendant to proceed, regarding the following Project Coordinator and Supervising Contractor: [name and contact information to be added by SW during draft review].

(e) SD shall follow the procedures of ¶¶ 3.1(a) through 3.1(c): (1) to select an alternate Project Coordinator or Supervising Contractor, as applicable, if EPA issues a notice of disapproval; or (2) to change their Project Coordinator or Supervising Contractor.

(f) SD may assign other representatives, including other contractors, to assist in coordinating the SW/HC OU3 Work.

3.2 EPA has designated Brian Montroy as its Remedial Project Manager ("RPM"). EPA may, with notice to SD, designate an alternate RPM. EPA may designate other representatives, including contractors or consultants, to oversee the SW/HC OU3 Work.

3.3 The State shall designate and notify the Parties of its Project Coordinator. The State may designate other representatives, including contractors or consultants, to oversee the SW/HC OU3 Work.

3.4 Project Coordinator and RPM Responsibilities

(a) SD's Project Coordinator shall communicate with the RPM at least monthly.

(b) The RPM has the authorities described in the NCP, 40 C.F.R. § 300.120.

(c) The State's Project Coordinator may participate in any meeting or inspection in which the RPM participates. SD shall notify the State reasonably in advance of any such meetings or inspections.

4. REMEDIAL DESIGN

4.1 Remedial Design Work Plan ("RDWP"). SD shall submit a SW/HC OU3 RDWP for EPA approval. The RDWP must include:

(a) Plans for implementing all Remedial Design ("RD") activities identified in this SW/HC OU3 SOW, in the RDWP, or required by EPA to be conducted to develop the Remedial Design;

(b) A description of the overall management strategy for performing the SW/HC OU3 RD, including a proposal for phasing of design and construction. The description will include a proposal of how the OU3 RD activities will be phased and for which phases SD anticipates preparing an Intermediate (60%) RD in addition to the Preliminary (30%) RD. This proposal will also include a schedule for submitting Pre-Design Investigation Work Plans (PDI WPs), Site Wide Monitoring Plans (SWMPs), Preliminary (30%) RDs, Intermediate (60%) RDs, Pre-Final (90%) RDs, and Final (100%) RDs;

(c) A description of the proposed general approach to contracting, construction, operation, maintenance, and monitoring of the Remedial Action ("RA") as necessary to implement the SW/HC OU3 Work;

(d) A description of the responsibility and authority of all organizations and key personnel involved with the development of the RD;

(e) Descriptions of any areas requiring clarification and/or anticipated problems (*e.g.*, data gaps);

(f) Description of any proposed pre-design investigation ("PDI");

(g) Description of any proposed treatability study;

(h) Descriptions of any applicable permitting requirements and other regulatory requirements;

(i) Description of plans for obtaining access in connection with the SW/HC OU3 Work, such as property acquisition, property leases, and/or easements; and

(j) The following supporting deliverables described in ¶ 7.7 (Supporting Deliverables): Health and Safety Plan, Emergency Response Plan, Field Sampling Plan, and Quality Assurance Project Plan.

4.2 **Institutional Controls Implementation and Assurance Plan ("ICIAP")**. SD shall submit a proposed ICIAP for EPA approval. The ICIAP should describe plans to implement, maintain, monitor, and enforce the Institutional Controls ("ICs") at SW/HC OU3 as described in the SW/HC OU3 ROD. The ICIAP shall include plans to commence implementing ICs as early as is feasible, including before EPA approval of the 100% RD under ¶ 4.9. The ICIAP also should include procedures for effective and comprehensive review of implemented ICs, procedures for the solicitation of input from affected communities regarding the implementation of ICs, procedures to periodically review and determine if the ICs are having their intended effect, and if not, procedures for the development, approval and implementation of alternative, more effective ICs. SD shall develop the ICIAP in accordance with *Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites*, OSWER 9355.0-89, EPA/540/R-09/001 (Dec. 2012), and *Institutional Controls: A Guide to Preparing Institutional Controls Implementation and Assurance Plans at Contaminated Sites*, OSWER 9200.0-77, EPA/540/R-09/02 (Dec. 2012). SD also shall consider including in the ICIAP the establishment of effective Long-Term Stewardship procedures including those described in EPA Memorandum: *Advanced Monitoring Technologies and Approaches to Support Long-Term Stewardship* (July 20, 2018). The ICIAP must include the following additional requirements:

(a) Locations of recorded real property interests (*e.g.*, easements, liens) and resource interests in the property that may affect ICs (*e.g.*, surface, mineral, and water rights) including accurate mapping and geographic information system ("GIS") coordinates of such interests; and

(b) Legal descriptions and survey maps that are prepared according to current American Land Title Association ("ALTA") Survey guidelines and certified by a licensed surveyor.

(c) Upon the approval of the ICIAP, EPA shall issue a Notice of Authorization to Proceed regarding the ICs.

4.3 SD shall communicate regularly with EPA to discuss design issues as necessary, as directed or determined by EPA.

4.4 **Pre-Design Investigation ("PDI")**. The purpose of the PDI is to address data gaps by conducting additional field investigations.

(a) **PDI Work Plan**. SD shall submit a SW/HC OU3 PDI Work Plan ("PDIWP") for EPA approval. The PDIWP must include:

(1) An evaluation and summary of existing data and description of data gaps;

(2) A sampling plan including media to be sampled, contaminants or parameters for which sampling will be conducted, location (areal extent and depths), and number of samples; and

(3) Cross references to quality assurance/quality control ("QA/QC") requirements set forth in the Quality Assurance Project Plan ("QAPP") as described in ¶ 7.7(d).

(b) Following the PDI, SD shall submit a SW/HC OU3 PDI Evaluation Report for approval. This report must include:

(1) Summary of the investigations performed;

(2) Summary of investigation results;

(3) Summary of validated data (*i.e.*, tables and graphics);

(4) Data validation reports and laboratory data reports;

(5) Narrative interpretation of data and results;

(6) Results of statistical and modeling analyses;

(7) Photographs documenting the work conducted; and

(8) Conclusions and recommendations for RD, including design parameters and criteria.

(c) EPA may require SD to supplement the PDI Evaluation Report and/or to perform additional pre-design studies.

4.5 Treatability Study ("TS").

(a) SD shall perform a TS for the purpose of optimizing the SW/HC OU3 remedy.

(b) SD shall submit a TS Work Plan ("TSWP") for EPA approval. SD shall prepare the TSWP in accordance with EPA's *Guide for Conducting Treatability Studies under CERCLA, Final* (Oct. 1992), as supplemented for Remedial Design by the *Remedial Design/Remedial Action Handbook*, EPA 540/R-95/059 (June 1995).

(c) Following completion of the TS, SD shall submit a TS Evaluation Report for EPA comment.

(d) EPA may require SD to supplement the TS Evaluation Report and/or to perform additional treatability studies.

4.6 Preliminary (30%) Remedial Design. SD shall submit a SW/HC OU3 Preliminary (30%) RD for EPA's comment. The SW/HC OU3 Preliminary RD must include:

(a) A design criteria report, as described in the *Remedial Design/Remedial Action Handbook*, EPA 540/R-95/059 (June 1995);

(b) Preliminary drawings and specifications;

(c) Descriptions of permit requirements, if applicable;

(d) Preliminary Operation and Maintenance ("O&M") Plan and O&M Manual;

(e) A description of how the RA will be implemented in a manner that minimizes environmental impacts in accordance with EPA's *Principles for Greener Cleanups* (Aug. 2009);

(f) A description of monitoring and control measures to protect human health and the environment, such as air monitoring, and measures to reduce and manage traffic, noise, odors, and dust, during the RA, in accordance with the Community Involvement Handbook pp. 53-66 (text box on p. 55) to minimize potential effects in the community as detailed in the Community Mitigation Plan required under Section 7.7(f)(7);

(g) Any proposed revisions to the RA Schedule that is set forth in ¶ 8.3 (RA Schedule); and

(h) Updates of all supporting deliverables required to accompany the RDWP and the supporting deliverables described in ¶ 7.7.

4.7 **Intermediate (60%) RD.** SD shall submit the SW/HC OU3 Intermediate (60%) RD for EPA's comment. The intermediate Design must : (a) be a continuation and expansion of the Preliminary RD; (b) address EPA's comments regarding the Preliminary RD; and (c) include the same elements as required from the Preliminary (30%) RD. SD may request and EPA may authorize the SD to proceed directly to the Pre-Final (90%) RD from the Preliminary (30%) RD. Absent such request and authorization SD shall proceed with the Intermediate (60%) RD.

4.8 **Pre-final (90%) RD**. SD shall submit the SW/HC OU3 Pre-final (90%) RD for EPA's comment. The SW/HC OU3 Pre-final RD must be a continuation and expansion of the previous design submittal and must address EPA's comments regarding the Preliminary RD or, if applicable, the Intermediate RD. The SW/HC OU3 Pre-final RD will serve as the approved Final (100%) RD if EPA approves the Pre-final RD without comments. The SW/HC OU3 Pre-final RD must include:

(a) A complete set of construction drawings and specifications that are: (1) certified by a registered professional engineer; (2) suitable for procurement; and (3) follow the Construction Specifications Institute's MasterFormat 2020;

(b) A survey and engineering drawings showing existing SW/HC Site features, such as elements, property borders, easements, and Site conditions;

(c) Pre-final versions of the same elements and deliverables as are required for the Preliminary RD;

(d) A specification for photographic documentation of the RA; and

(e) Updates of all supporting deliverables required to accompany the Preliminary (30%) RD.

4.9 **Final (100%) RD**. SD shall submit the SW/HC OU3 Final (100%) RD for EPA approval. The SW/HC OU3 Final RD must address EPA's comments on the Pre-final RD and must include final versions of all Pre-final RD deliverables.

4.10 **Notice of Authorization to Proceed**. Upon the approval of the SW/HC OU3 RD, EPA shall issue a Notice of Authorization to Proceed regarding the SW/HC OU3 RA.

5. REMEDIAL ACTION

5.1 **RA Work Plan ("RAWP")**. SD shall submit a SW/HC OU3 RAWP for EPA approval that includes:

(a) A proposed RA Construction Schedule in the Gantt chart format;

(b) An updated health and safety plan that covers activities during the RA; and

(c) Plans for satisfying permitting requirements, if any, including obtaining permits for off-site activity and for satisfying substantive requirements of permits for on-site activity.

5.2 **Meetings and Inspections**

(a) **Preconstruction Conference**. SD shall hold a preconstruction conference with EPA and others as directed or approved by EPA and as described in the *Remedial Design/Remedial Action Handbook*, EPA 540/R-95/059 (June 1995). SD shall prepare minutes of the conference and shall distribute the minutes to all Parties.

(b) **Periodic Communications**. During the construction portion of the SW/HC OU3 RA ("SW/HC OU3 RA Construction"), SD shall communicate weekly with EPA, and others as directed or determined by EPA, to discuss construction issues. SD shall distribute an agenda and list of attendees to all Parties prior to each meeting or telephone call. SD shall prepare minutes of the meetings or calls and shall distribute the minutes to all Parties.

(c) **Inspections**

(1) EPA or its representative shall conduct periodic inspections of, or have an on-site presence during, the SW/HC OU3 Work. At EPA's request, the Supervising Contractor or other designee shall accompany EPA or its representative during inspections.

(2) SD shall provide office space for EPA personnel to perform their oversight duties. The minimum office requirements are a private office with at least 150 square feet of floor space, an office desk with chair, a four-drawer file cabinet, and a telephone with a private line, reproduction, and personal computer equipment, wireless internet access, and sanitation facilities.

(3) SD shall provide personal protective equipment needed for EPA personnel and any oversight officials to perform their oversight duties.

(4) If EPA concludes that the SW/HC Site OU3 RA Construction is deficient for a phase, EPA shall provide written notice to SD. EPA's notice must include a description of any deficiencies. EPA's notice may include a schedule for addressing such deficiencies or may require SD to submit a schedule for EPA approval. SD shall take all necessary steps to correct the deficiencies and/or bring the SW/HC Site OU3 RA Construction into compliance with the approved Final SW/HC Site OU3 RD, any approved design changes, and/or the approved RAWP pursuant to the EPA provided or approved schedule. SD shall perform all activities described in the notice in accordance with the EPA provided or approved schedule.

5.3 Permits

(a) As provided in CERCLA § 121(e), and Section 300.400(e) of the NCP, no permit is required for any portion of the SW/HC OU3 Work conducted entirely on-site *(i.e.*, within the areal extent of contamination or in very close proximity to the contamination and necessary for implementation of the SW/HC OU3 Work). Where any portion of the SW/HC OU3 Work that is not on-site requires a federal or state permit or approval, SD shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals.

(b) SD may seek relief under the provisions of Section **XII** (Force Majeure) of the CD for any delay in the performance of the SW/HC OU3 Work resulting from a failure to obtain, or a delay in obtaining, any permit or approval referenced in ¶ 5.3(a) and required for the SW/HC OU3 Work, provided that it has submitted timely and complete applications and taken all other actions necessary to obtain all such permits or approvals.

(c) Nothing in the CD or this SOW constitutes a permit issued under any federal or state statute or regulation.

5.4 Emergency Response and Reporting

(a) **Emergency Action**. If any event occurs during performance of the SW/HC OU3 Work that causes or threatens to cause a release of Waste Material on, at, or from the Site and that either constitutes an emergency situation or that may present an immediate threat to public health or welfare or the environment, SD shall: (1) immediately take all appropriate action to prevent, abate, or minimize such release or threat of release; (2) immediately notify the authorized EPA officer (as specified in ¶ 5.4(c)) orally; and (3) take such actions in consultation with the authorized EPA officer and in accordance with all applicable provisions of the Health and Safety Plan, the Emergency Response Plan, and any other deliverable approved by EPA under the SOW.

(b) **Release Reporting**. Upon the occurrence of any event during performance of the SW/HC OU3 Work that SD is required to report under CERCLA § 103 or Section 304

of the Emergency Planning and Community Right-to-Know Act ("EPCRA"), Settling Defendants shall immediately notify the authorized EPA officer orally.

(c) For SW/HC OU3, the "authorized EPA officer" for purposes of immediate oral notifications and consultations under ¶ 5.4(a) and ¶ 5.4(b) is the RPM (Brian Montroy), the New Jersey Remedial Branch Manager (Jeff Josephson), the Alternate RPM (if the RPM is unavailable), or the EPA Emergency Response Unit, Region 2 (if neither RPM is available).

(d) For any event covered by ¶ 5.4(a) and ¶ 5.4(b), SD shall: (1) within 14 days after the onset of such event, submit a report to EPA describing the actions or events that occurred and the measures taken, and to be taken, in response thereto; and (2) within 30 days after the conclusion of such event, submit a report to EPA describing all actions taken in response to such event.

(e) The reporting requirements under ¶ 5.4 are in addition to the reporting required by CERCLA § 103 or EPCRA § 304.

5.5 Off-Site Shipments

(a) SD may ship hazardous substances, pollutants, and contaminants from the Site to an off-Site facility only if it complies with CERCLA § 121(d)(3), and 40 C.F.R. § 300.440. SD will be deemed to be in compliance with CERCLA § 121(d)(3) and 40 C.F.R. § 300.440 regarding a shipment if SD obtains a prior written determination from EPA that the proposed receiving facility for such shipment is acceptable under the criteria of 40 C.F.R. § 300.440(b).

(b) SD may ship Waste Material from the Site to an out-of-state waste management facility only if, prior to any shipment, they provide notice to the appropriate state environmental official in the receiving facility's state and to the RPM. This notice requirement will not apply to any off-Site shipments when the total quantity of all such shipments does not exceed 10 cubic yards. The notice must include the following information, if available: (1) the name and location of the receiving facility; (2) the type and quantity of Waste Material to be shipped; (3) the schedule for the shipment; and (4) the method of transportation. SD also shall notify the state environmental official referenced above and the RPM of any major changes in the shipment plan, such as a decision to ship the Waste Material to a different out-of-state facility. SD shall provide the notice after the award of the contract for RA construction and before the Waste Material is shipped.

(c) SD may ship Investigation Derived Waste ("IDW") from the Site to an off-Site facility only if, prior to any shipment, they comply with CERCLA § 121(d)(3), 40 C.F.R. § 300.440, *EPA's Guide to Management of Investigation Derived Waste*, OSWER 9345.3-03FS (Jan. 1992), and any IDW-specific requirements contained in the ROD. Wastes shipped off-Site to a laboratory for characterization, and RCRA hazardous wastes that meet the requirements for an exemption from RCRA under 40 C.F.R. § 261.4(e) shipped off-Site for treatability studies, are not subject to 40 C.F.R. § 300.440.

5.6 Remedial Action Construction Completion

(a) For purposes of this ¶ 5.6, "RA Construction" includes the installation of injection points and performance of injections in the area surrounding the secondary source at MW-30 and the installation of additional monitoring wells to approximately 75 feet below the ground surface to supplement the existing monitoring well network for long-term monitoring purposes. For any RA component that involves the construction and operation of a system to achieve Performance Standards (for example, the installation of a system for the injection of amendments through well points into the deep groundwater for the purposes of reducing Site related groundwater contamination to restore the groundwater to its most beneficial use as a drinking water source), this includes the construction of such system and the performance of all activities necessary for the system to function properly and as designed.

(b) **Inspection of Constructed Remedy**. SD shall schedule an inspection to review the construction and operation of the system installed for the injection of amendments through well points into the groundwater in the area surrounding the secondary source at MW-30 and to review whether the system is functioning properly and as designed. The installation of the additional monitoring wells to supplement the existing monitoring well network shall also be inspected. The inspection must be attended by SD and EPA and/or their representatives. Following this inspection, SD shall submit a Pre-final Inspection Report. A reinspection must be conducted if requested by EPA. Following an inspection or reinspection that establishes that the system for injection of amendments into the groundwater through well points is functioning properly and as designed, the active source control (full scale) injections shall commence.

(c) **RA Report**. SD shall submit a "RA Report" requesting EPA's determination that RA Construction has been completed after the injection system and additional monitoring wells and the active source control injections have been completed. The RA Report must: (1) include statements by a registered professional engineer and by SD's Project Coordinator that the construction of the injection system is complete and that the system is functioning properly and as designed, that the additional monitoring wells are installed as designed, and the active source control injections have been completed; (2) include a demonstration, and supporting documentation, that construction of the injection system is complete and that the system is functioning properly and as designed; (3) include as-built drawings signed and stamped by a registered professional engineer; (4) include a description, with supporting documentation, of the active source control amendment injections that were performed, including information on number and locations and types of amendments utilized; (5) be prepared in accordance with Chapter 2 (Remedial Action Completion) of EPA's *Close Out Procedures for NPL Sites* guidance (May 2011), as supplemented by *Guidance for Management of Superfund Remedies in Post Construction*, OLEM 9200.3-105 (Feb. 2017); and (6) be certified in accordance with ¶ 7.5 (Certification).

(d) If EPA determines that the SW/HC OU3 RA Construction is not complete, EPA shall so notify SD. EPA's notice must include a description of, and schedule for, the activities that SD must perform to complete RA Construction. EPA's notice may include a schedule for completion of such activities or may require SD to submit a proposed schedule for EPA approval. SD shall perform all activities described in the EPA notice in accordance with the schedule.

(e) If EPA determines, based on the initial or any subsequent SW/HC OU3 RA Report, that RA Construction is complete, EPA shall so notify SD.

5.7 Certification of SW/HC OU3 RA Completion

(a) **RA Completion Inspection**. The SW/HC OU3 RA is "Complete" for purposes of this ¶ 5.7 when it has been fully performed and the SW/HC OU3 ROD Performance Standards have been achieved. SD shall schedule an inspection for the purpose of obtaining EPA's Certification of SW/HC OU3 RA Completion. The inspection must be attended by SD and EPA and/or their representatives.

(b) **RA Report/Monitoring Report**. Following the inspection, SD shall submit the SW/HC OU3 RA Report and Monitoring Report to EPA requesting EPA's Certification of the SW/HC OU3 RA Completion. The report must: (1) include certifications by a registered professional engineer and by SD's Project Coordinator that the RA is complete; (2) include as-built drawings signed and stamped by a registered professional engineer; (3) be prepared in accordance with Chapter 2 (Remedial Action Completion) of EPA's *Close Out Procedures for NPL Sites* guidance (May 2011), as supplemented by *Guidance for Management of Superfund Remedies in Post Construction*, OLEM 9200.3-105 (Feb. 2017); (4) contain monitoring data to demonstrate that Performance Standards have been achieved; and (5) be certified in accordance with ¶ 7.5 (Certification).

(c) If EPA concludes that the SW/HC OU3 RA is not Complete, EPA shall so notify SD. EPA's notice must include a description of any deficiencies. EPA's notice may include a schedule for addressing such deficiencies or may require SD to submit a schedule for EPA approval. SD shall perform all activities described in the notice in accordance with the schedule.

(d) If EPA concludes, based on the initial or any subsequent RA Report and Monitoring Report requesting Certification of SW/HC OU3 RA Completion, that the SW/HC OU3 RA is Complete, EPA shall so certify to SD. This certification will constitute the Certification of SW/HC OU3 RA Completion for purposes of the CD. Certification of RA Completion will not affect SD's remaining obligations under the CD.

5.8 Periodic Review Support Plan ("PRSP"). SD shall submit the SW/HC OU3 PRSP for EPA approval. The PRSP addresses the studies and investigations that SD shall conduct to support EPA's reviews of whether the SW/HC OU3 RA is protective of human health and the environment in accordance with CERCLA § 121(c) (also known as "Five-Year Reviews"). SD shall develop the plan in accordance with *Comprehensive Five-year Review Guidance*,

OSWER 9355.7-03B-P (June 2001), and any other relevant five-year review guidance documents.

5.9 Certification of SW/HC OU3 Work Completion

(a) **Work Completion Report**. When certification of completion of the SW/HC OU3 Work is sought and, if EPA determines an inspection is necessary, following an inspection, SD shall submit a report to EPA requesting EPA's Certification of the SW/HC OU3 Work Completion. The report must: (1) include certifications by a registered professional engineer and by SD's Project Coordinator that the SW/HC OU3 Work, including all O&M activities, is complete; and (2) be certified in accordance with ¶ 7.5 (Certification). If the SW/HC OU3 RA Report and Monitoring Report submitted under ¶ 5.7(b) includes all elements required under this ¶ 5.9(a), then the SW/HC OU3 RA Report and Monitoring Report suffices to satisfy all requirements under this ¶ 5.9(a).

(b) If EPA concludes that the SW/HC OU3 Work is not complete, EPA shall so notify SD. EPA's notice must include a description of the activities that SD must perform to complete the SW/HC OU3 Work. EPA's notice must include specifications and a schedule for such activities or must require SD to submit specifications and a schedule for EPA approval. SD shall perform all activities described in the notice or in the EPA-approved specifications and schedule.

(c) If EPA concludes, based on the initial or any subsequent report requesting Certification of SW/HC OU3 Work Completion, that the SW/HC OU3 Work is complete, EPA shall so certify in writing to SD. Issuance of the Certification of SW/HC OU3 Work Completion does not affect the following continuing obligations: (1) obligations under the PRSP; (2) obligations under Sections **VIII** (Property Requirements), and **XIX** (Retention of Records) of the CD; (3) Institutional Controls obligations as provided in the SW/HC OU3 ICIAP; (4) reimbursement of EPA's Future Response Costs under Section **X** (Payments for Response Costs) of the CD; and (5) Work or other obligations relating to other OUs at the Sites.

6. REPORTING

6.1 Progress Reports. Commencing 30 days following lodging of the SW/HC OU3 Modification to the CD and until EPA approves the SW/HC OU3 RA Construction Completion, SD shall submit progress reports to EPA on a monthly basis on the 15th day of the following month, or as otherwise requested by EPA. The reports must cover all activities that took place during the prior reporting period, including:

(a) The actions that have been taken toward achieving compliance with the CD;

(b) A summary of all results of sampling, tests, and all other data received or generated by SD;

(c) A description of all deliverables that SD submitted to EPA;

(d) A description of all activities relating to RA Construction that are scheduled for the next 45 days;

(e) An updated RA Construction Schedule, together with information regarding percentage of completion, delays encountered or anticipated that may affect the future schedule for implementation of the SW/HC OU3 Work, and a description of efforts made to mitigate those delays or anticipated delays;

(f) A description of any modifications to the work plans or other schedules that Settling Defendant has proposed or that have been approved by EPA; and

(g) A description of all activities undertaken in support of the CIP during the reporting period and those to be undertaken in the next 30 days.

6.2 **Notice of Progress Report Schedule Changes**. If the schedule for any activity described in the Progress Reports, including activities required to be described under ¶ 6.1(d), changes, SD shall notify EPA of such change at least seven days before performance of the activity.

7. DELIVERABLES

7.1 **Applicability**. SD shall submit deliverables for EPA approval or for EPA comment as specified in the SOW. If neither is specified, the deliverable does not require EPA's approval or comment. Paragraphs 7.2 (In Writing) through 7.4 (Technical Specifications) apply to all deliverables. Paragraph 7.5 (Certification) applies to any deliverable that is required to be certified. Paragraph 7.6 (Approval of Deliverables) applies to any deliverable that is required to be submitted for EPA approval.

7.2 **In Writing**. As provided in **¶ 92** of the CD, all deliverables under this SOW must be in writing unless otherwise specified.

7.3 **General Requirements for Deliverables.** All deliverables must be submitted by the deadlines in the RD Schedule or RA Schedule, as applicable. SD shall submit all deliverables to EPA in electronic form. Technical specifications for sampling and monitoring data and spatial data are addressed in ¶ 7.4. All other deliverables shall be submitted to EPA in the electronic form specified by the RPM. If any deliverable includes maps, drawings, or other exhibits that are larger than 8.5" by 11", SD shall also provide EPA with paper copies of such exhibits.

7.4 **Technical Specifications**

(a) Sampling and monitoring data should be submitted in standard regional Electronic Data Deliverable ("EDD") format, which can be found at https://www.epa.gov/superfund/region-2-superfund-electronic-data-submission. Other delivery methods may be allowed if electronic direct submission presents a significant burden or as technology changes.

(b) Spatial data, including spatially-referenced data and geospatial data, should be submitted: (1) in the ESRI File Geodatabase format; and (2) as unprojected geographic coordinates in decimal degree format using North American Datum

1983 ("NAD83") or World Geodetic System 1984 ("WGS84") as the datum. If applicable, submissions should include the collection method(s). Projected coordinates may optionally be included but must be documented. Spatial data should be accompanied by metadata, and such metadata should be compliant with the Federal Geographic Data Committee ("FGDC") Content Standard for Digital Geospatial Metadata and its EPA profile, the EPA Geospatial Metadata Technical Specification. An add-on metadata editor for ESRI software, the EPA Metadata Editor ("EME"), complies with these FGDC and EPA metadata requirements and is available at https://edg.epa.gov/EME/.

(c) Each file must include an attribute name for each site unit or sub-unit submitted. Consult https://www.epa.gov/geospatial/geospatial-policies-and-standards for any further available guidance on attribute identification and naming.

(d) Spatial data submitted by SD do not, and are not intended to, define the boundaries of the Site.

7.5 Certification. All deliverables that require compliance with this paragraph must be signed (or electronically signed) by the SD's Project Coordinator, or other responsible official of SD, and must contain the following statement:

> I certify under penalty of perjury that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I have no personal knowledge that the information submitted is other than true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

7.6 Approval of Deliverables

(a) **Initial Submissions**

(1) After review of any deliverable that is required to be submitted for EPA approval under the CD or the SOW, EPA shall: (i) approve, in whole or in part, the submission; (ii) approve the submission upon specified conditions; (iii) disapprove, in whole or in part, the submission; or (iv) any combination of the foregoing.

(2) EPA also may modify the initial submission to cure deficiencies in the submission if: (i) EPA determines that disapproving the submission and awaiting a resubmission would cause substantial disruption to the SW/HC OU3 Work; or (ii) previous submission(s) have been disapproved and the deficiencies in the initial submission under consideration indicate a bad faith lack of effort to submit an acceptable deliverable.

(b) **Resubmissions**. Upon receipt of a notice of disapproval under ¶ 7.6(a) (Initial Submissions), or if required by a notice of approval upon specified conditions under ¶ 7.6(a), SD shall, within 35 days or such longer time as specified by EPA in such notice, correct the deficiencies and resubmit the deliverable for approval. After review of the resubmitted deliverable, EPA may: (1) approve, in whole or in part, the resubmission; (2) approve the resubmission upon specified conditions; (3) modify the resubmission; (4) disapprove, in whole or in part, the resubmission, requiring SD to correct the deficiencies; or (5) any combination of the foregoing.

(c) **Implementation**. Upon approval, approval upon conditions, or modification by EPA under ¶ 7.6(a) (Initial Submissions) or ¶ 7.6(b) (Resubmissions), of any deliverable, or any portion thereof: (1) such deliverable, or portion thereof, will be incorporated into and enforceable under the CD; and (2) SD shall take any action required by such deliverable, or portion thereof. The implementation of any non-deficient portion of a deliverable submitted or resubmitted under ¶ 7.6(a) or ¶ 7.6(b) does not relieve SD of any liability for stipulated penalties under Section **XIV** (Stipulated Penalties) of the CD.

7.7 **Supporting Deliverables**. SD shall submit each of the following supporting deliverables for EPA approval, except as specifically provided. SD shall develop the deliverables in accordance with all applicable regulations, guidances, and policies (see Section 10 (References)). SD shall update each of these supporting deliverables as necessary or appropriate during the course of the SW/HC OU 3 Work, and/or as requested by EPA.

(a) **Health and Safety Plan ("HASP")**. The HASP describes all activities to be performed to protect on-Site personnel and area residents from physical, chemical, and all other hazards posed by the SW/HC OU3 Work. SD shall develop the HASP in accordance with EPA's *Emergency Responder Health and Safety Manual* and Occupational Safety and Health Administration ("OSHA") requirements under 29 C.F.R. §§ 1910 and 1926. The HASP should cover RD activities and should be, as appropriate, updated to cover activities during the RA and updated to cover activities after RA completion. EPA does not approve the HASP but will review it to ensure that all necessary elements are included and that the plan provides for the protection of human health and the environment.

(b) **Emergency Response Plan ("ERP")**. The ERP must describe procedures to be used in the event of an accident or emergency at the Site (for example, power outages, water impoundment failure, treatment plant failure, slope failure, etc.). The ERP must include:

(1) Name of the person or entity responsible for responding in the event of an emergency incident;

(2) Plan and date(s) for meeting(s) with the local community, including local, State, and federal agencies involved in the cleanup, as well as local emergency squads and hospitals;

(3) Spill Prevention, Control, and Countermeasures ("SPCC") Plan (if applicable), consistent with the regulations under 40 C.F.R. part 112, describing measures to prevent, and contingency plans for, spills and discharges;

(4) Notification activities in accordance with ¶ 5.4(b) (Release Reporting) in the event of a release of hazardous substances requiring reporting under CERCLA § 103 or EPCRA § 304; and

(5) A description of all necessary actions to ensure compliance with ¶ 5.4 of the SOW in the event of an occurrence during the performance of the SW/HC OU3 Work that causes or threatens a release of Waste Material from the Site that constitutes an emergency or may present an immediate threat to public health or welfare or the environment.

(c) **Field Sampling Plan ("FSP")**. The FSP addresses all sample collection activities. The FSP must be written so that a field sampling team unfamiliar with the project would be able to gather the samples and field information required. SD shall develop the FSP in accordance with *Guidance for Conducting Remedial Investigations and Feasibility Studies*, EPA/540/G 89/004 (Oct. 1988).

(d) **Quality Assurance Project Plan ("QAPP")**. The QAPP must include a detailed explanation of SD's quality assurance, quality control, and chain of custody procedures for all treatability, design, compliance, and monitoring samples. SD shall develop the QAPP in accordance with EPA Directive CIO 2105.4 (Environmental Information Quality Policy, 2024), the most recent version of *Quality Management Systems for Environmental Information and Technology Programs – Requirements with Guidance for Use*, ASQ/ANSI E-4 (Feb. 2014), and *Guidance for Quality Assurance Project Plans*, EPA QA/G-5, EPA Office of Environmental Information (Dec. 2002). SD shall collect, produce, and evaluate all environmental information at the Site in accordance with the approved QAPP.

(e) **Site Wide Monitoring Plan ("SWMP")**. The purpose of the SWMP is to obtain baseline information regarding the extent of contamination in affected media at the Site; to obtain information, through short- and long- term monitoring, about the movement of and changes in contamination throughout the Site, before and during implementation of the RA; to obtain information regarding contamination levels to determine whether Performance Standards are achieved; and to obtain information to determine whether to perform additional actions, including further Site monitoring. The SWMP must include:

(1) Description of the environmental media to be monitored;

(2) Description of the data collection parameters, including existing and proposed monitoring devices and locations, schedule and frequency of monitoring, analytical parameters to be monitored, and analytical methods employed;

(3) Description of how performance data will be analyzed, interpreted, and reported, and/or other Site-related requirements;

(4) Description of verification sampling procedures;

(5) Description of deliverables that will be generated in connection with monitoring, including sampling schedules, laboratory records, monitoring reports, and monthly and annual reports to EPA and State agencies;

(6) Description of proposed additional monitoring and data collection actions (such as increases in frequency of monitoring, and/or installation of additional monitoring devices in the affected areas) in the event that results from monitoring devices indicate changed conditions (such as higher than expected concentrations of the contaminants of concern or groundwater contaminant plume movement); and

(7) A plan to expedite sampling and analysis in Community Areas as defined in ¶ 7.7(f) affected by the remedy, including procedures for expedited analysis, validation, and communication of sampling results, if any, to affected communities.

(f) **Community Mitigation Plan ("CMP")**. The CMP describes all activities to be performed: (1) to reduce and manage the potential effects from remedy implementation (*e.g.*, air emissions, traffic, noise, odor, temporary or permanent relocation) to residential areas, schools, playgrounds, healthcare facilities, or recreational or potentially effected public areas ("Community Areas") from and during remedy implementation, (2) to conduct monitoring in Community Areas of potential effects from remedy implementation, (3) to expeditiously communicate validated remedy implementation monitoring data, if any, from Community Areas, (4) to make adjustments during remedy implementation in order to further reduce and manage potential effects from remedy implementation to affected Community Areas, and (5) to expeditiously restore community resources potentially effected during remediation such as roads and culverts. The CMP should contain information about potential effects to Community Areas that is sufficient to assist the RPM in performing the evaluations recommended under the *Superfund Community Involvement Handbook*, OLEM 9230.0-51 (March 2020), pp. 53-56.

(g) **Construction Quality Assurance Plan ("CQAP") and Construction Quality Control Plan ("CQCP")**. The purpose of the CQAP is to describe planned and systemic activities that provide confidence that the SW/HC OU3 RA construction will satisfy all plans, specifications, and related requirements, including quality objectives. The purpose of the CQCP is to describe the activities to verify that SW/HC OU3 RA construction has satisfied all plans, specifications, and related requirements, including quality objectives. The CQAP/CQCP ("CQA/CP") must:

(1) Identify, and describe the responsibilities of, the organizations and personnel implementing the CQA/CP;

(2) Describe the SW/HC OU3 Performance Standards required to be met to achieve Completion of the RA;

(3) Describe the activities to be performed: (i) to provide confidence that Performance Standards will be met; and (ii) to determine whether Performance Standards have been met;

(4) Describe verification activities, such as inspections, sampling, testing, monitoring, and production controls, under the CQA/CP;

(5) Describe industry standards and technical specifications used in implementing the CQA/CP;

(6) Describe procedures for tracking construction deficiencies from identification through corrective action;

(7) Describe procedures for documenting all CQA/CP activities; and

(8) Describe procedures for retention of documents and for final storage of documents.

(h) **Transportation and Off-Site Disposal Plan ("TODP")**. The TODP describes plans to ensure compliance with ¶ 5.5 (Off-Site Shipments). The TODP must include:

(1) Proposed times and routes for off-site shipment of Waste Material;

(2) Identification of communities affected by shipment of Waste Material; and

(3) Description of plans to minimize impacts (*e.g.*, noise, traffic, dust, odors) on affected communities.

(i) **O&M Plan**. The O&M Plan describes the requirements for inspecting, operating, and maintaining the RA. SD shall develop the O&M Plan for SW/HC OU3 in accordance with *Guidance for Management of Superfund Remedies in Post Construction*, OLEM 9200.3-105 (Feb. 2017). The O&M Plan must include the following additional requirements:

(1) Description of Performance Standards required to be met to implement the SW/HC OU3 ROD;

(2) Description of activities to be performed: (i) to provide confidence that Performance Standards will be met; and (ii) to determine whether Performance Standards have been met;

(3) **O&M Reporting**. Description of records and reports that will be generated during O&M, such as daily operating logs, laboratory records, records of operating costs, reports regarding emergencies, personnel and maintenance records, monitoring reports, and monthly and annual reports to EPA and State agencies;

(4) Description of corrective action in case of systems failure, including: (i) alternative procedures to prevent the release or threatened release of Waste Material which may endanger public health and the environment or may cause a failure to achieve Performance Standards; (ii) analysis of vulnerability and additional resource requirements should a failure occur; (iii) notification and reporting requirements should O&M systems fail or be in danger of imminent failure; and (iv) community notification requirements; and

(5) Description of corrective action to be implemented in the event that Performance Standards are not achieved; and a schedule for implementing these corrective actions.

(j) **O&M Manual**. The O&M Manual serves as a guide to the purpose and function of the equipment and systems that make up the remedy. SD shall develop the O&M Manual in accordance with *Guidance for Management of Superfund Remedies in Post Construction*, OLEM 9200.3-105 (Feb. 2017). EPA may waive the O&M Manual requirement if it deems it unnecessary.

8. SCHEDULES

8.1 Applicability and Revisions. All deliverables and tasks required under this SW/HC OU3 SOW must be submitted or completed by the deadlines or within the time durations listed in the SW/HC OU3 RD and RA Schedules set forth below. SD may submit proposed revised SW/HC OU3 RD Schedules and RA Schedules for EPA approval. Upon EPA's approval, the revised SW/HC OU3 RD and RA Schedules supersede the SW/HC OU3 RD and RA Schedules set forth below, and any previously-approved SW/HC OU3 RD and RA Schedules.

8.2 Remedial Design Schedule

	Description of Deliverable, Task	¶ Ref.	Deadline
1	RDWP (including HASP, ERP, FSP, and QAPP)	4.1	60 days after EPA's Authorization to Proceed regarding Supervising Contractor (¶ 3.1(c)).
2	ICIAP	4.2	30 days after EPA Authorization to Proceed regarding Supervising Contractor (¶ 3.1(c)).
3	PDIWP	4.4(a)	60 days after EPA's Authorization to Proceed regarding Supervising Contractor (¶ 3.1(c)).
4	Start PDI		In accordance with the Schedule in the EPA approved PDIWP
5	Provide validated PDI sampling results		In accordance with the schedule in the EPA approved PDIWP
6	PDI Evaluation Report	4.4(b)	60 days after receipt of validated PDI sampling results
7	Treatability Work Plan	4.5(b)	60 days following EPA approval of PDI ER
8	Treatability Evaluation Report	4.5(c)	60 days after receipt of validated Treatability results
9	Preliminary (30%) Remedial Design	4.6	90 days after EPA approval of Final Treatability Evaluation Report
10	Intermediate (60%) Remedial Design	4.7	60 days following EPA comments on the Preliminary (30%) Remedial Design
11	Pre-final (90%) Remedial Design (Including CQA/QCP, TODP, O&M Plan, O&M Manual, and ICIAP)	4.8	60 days after EPA comments on the Intermediate (60%) Remedial Design or, where there has been written authorization from EPA to proceed directly from the Preliminary (30%) Remedial Design to the Pre-Final (90%) Remedial Design, 60 days following EPA comments on the Preliminary (30%) Remedial Design
12	Final (100%) Remedial Design	4.9	30 days after EPA comments on Pre-final Remedial Design

8.3 Remedial Action Schedule

	Description of Deliverable / Task	¶ Ref.	Deadline
1	Commence to Implement ICIAP	4.2	60 days after EPA Notice of Authorization to Proceed with ICIAP (¶ 4.2(c))
2	Award Remedial Action contract	4.10	45 days after EPA Notice of Authorization to Proceed with Remedial Action (¶ 4.10)
3	RAWP (including Section 7.7 Supporting Deliverables)	5.1	60 days after EPA Notice of Authorization to Proceed with Remedial Action (¶ 4.10)
4	Pre-Construction Conference	5.2(a)	30 days after Approval of RAWP
5	Start of Construction		60 days after Approval of RAWP
6	Completion of Construction		As per the schedule in the EPA approved RAWP
7	Pre-final Inspection	5.6(b)	15 days after completion of construction
8	Pre-final Inspection Report	5.6(b)	30 days after completion of Pre-final Inspection for construction
9	Final Inspection	5.6(b)	15 days after Completion of SW/HC OU3 Work identified in Pre-final Inspection Report for construction
10	Remedial Action Report	5.6(c)	60 days after completion of the active source control injections
11	Implement Operation, Maintenance, and Monitoring Requirements		As per the schedules in the approved O&M Plan and Site Wide Monitoring Plan
12	RA/Monitoring Report	5.7(b)	90 days after Final Inspection for RA completion
13	Work Completion Report	5.9(a)	60 days after Work completion certification is initially sought and (if applicable) Final Inspection for Work completion
14	Periodic Review Support Plan	5.8	Two years after Start of Remedial Action Construction

9. STATE PARTICIPATION

9.1 **Copies**. SD shall, at any time they send a deliverable to EPA, send a copy of such deliverable to the State. EPA shall, at any time it sends a notice, authorization, approval, disapproval, or certification to SD, send a copy of such document to the State.

9.2 **Review and Comment**. The State will have a reasonable opportunity for review and comment prior to:

(a) Any EPA notice to proceed under ¶ 4.10;

(b) Any EPA approval or disapproval under ¶ 7.6 (Approval of Deliverables) of any deliverables that are required to be submitted for EPA approval; and

(c) Any approval or disapproval of the Construction Phase under ¶ 5.6 (RA Construction Completion), any disapproval of, or Certification of RA Completion under ¶ 5.7 (Certification of RA Completion), and any disapproval of, or Certification of Work Completion under ¶ 5.9 (Certification of Work Completion).

10. REFERENCES

10.1 The following regulations and guidance documents, among others, apply to the SW/HC OU3 Work. Any item for which a specific URL is not provided below is available on one of the three EPA web pages listed in ¶ 10.2:

(a) A Compendium of Superfund Field Operations Methods, OSWER 9355.0-14, EPA/540/P-87/001a (Aug. 1987).

(b) CERCLA Compliance with Other Laws Manual, Part I: Interim Final, OSWER 9234.1-01, EPA/540/G-89/006 (Aug. 1988).

(c) Guidance for Conducting Remedial Investigations and Feasibility Studies, OSWER 9355.3-01, EPA/540/G-89/004 (Oct. 1988).

(d) CERCLA Compliance with Other Laws Manual, Part II, OSWER 9234.1-02, EPA/540/G-89/009 (Aug. 1989).

(e) Guidance on EPA Oversight of Remedial Designs and Remedial Actions Performed by Potentially Responsible Parties, OSWER 9355.5-01, EPA/540/G90/001 (Apr.1990).

(f) Guidance on Expediting Remedial Design and Remedial Actions, OSWER 9355.5-02, EPA/540/G-90/006 (Aug. 1990).

(g) Guide to Management of Investigation-Derived Wastes, OSWER 9345.3-03FS (Jan. 1992).

(h) Permits and Permit Equivalency Processes for CERCLA On-Site Response Actions, OSWER 9355.7-03 (Feb. 1992).

(i) Guidance for Conducting Treatability Studies under CERCLA, OSWER 9380.3-10, EPA/540/R-92/071A (Nov. 1992).

(j) National Oil and Hazardous Substances Pollution Contingency Plan; Final Rule, 40 C.F.R. part 300 (Oct. 1994).

(k) Guidance for Scoping the Remedial Design, OSWER 9355.0-43, EPA/540/R-95/025 (Mar. 1995).

(l) Remedial Design/Remedial Action Handbook, OSWER 9355.0-04B, EPA/540/R-95/059 (June 1995).

(m) EPA Guidance for Data Quality Assessment, Practical Methods for Data Analysis, QA/G-9, EPA/600/R-96/084 (July 2000).

(n) Comprehensive Five-year Review Guidance, OSWER 9355.7-03B-P, EPA/540-R-01-007 (June 2001).

(o) Guidance for Quality Assurance Project Plans, EPA QA/G-5, EPA Office of Environmental Information (Dec. 2002) https://www.epa.gov/quality/guidance-quality-assurance-project-plans-epa-qag-5.

(p) Institutional Controls: Third-Party Beneficiary Rights in Proprietary Controls, OECA (Apr. 2004).

(q) EPA Guidance on Systematic Planning Using the Data Quality Objectives Process, QA/G-4, EPA/240/B-06/001 (Feb. 2006).

(r) EPA Requirements for Quality Management Plans, QA/R-2, EPA/240/B-01/002 (Mar. 2001, reissued May 2006).

(s) EPA National Geospatial Data Policy, CIO Policy Transmittal 05-002 (Aug. 2005), https://www.epa.gov/geospatial/epa-national-geospatial-data-policy.

(t) Summary of Key Existing EPA CERCLA Policies for Groundwater Restoration, OSWER 9283.1-33 (June 2009).

(u) Principles for Greener Cleanups (Aug. 2009), https://www.epa.gov/greenercleanups/epa-principles-greener-cleanups.

(v) Close Out Procedures for National Priorities List Sites, OSWER 9320.2-22 (May 2011).

(w) Groundwater Road Map: Recommended Process for Restoring Contaminated Groundwater at Superfund Sites, OSWER 9283.1-34 (July 2011).

(x) Recommended Evaluation of Institutional Controls: Supplement to the "Comprehensive Five-Year Review Guidance," OSWER 9355.7-18 (Sept. 2011).

(y) Construction Specifications Institute's MasterFormat 2020, available from the Construction Specifications Institute, http://www.csinet.org/masterformat.

(z) Updated Superfund Response and Settlement Approach for Sites Using the Superfund Alternative Approach, OSWER 9200.2-125 (Sept. 2012)

(aa) Institutional Controls: A Guide to Planning, Implementing, Maintaining, and Enforcing Institutional Controls at Contaminated Sites, OSWER 9355.0-89, EPA/540/R-09/001 (Dec. 2012), https://semspub.epa.gov/work/HQ/175446.pdf.

(bb) Institutional Controls: A Guide to Preparing Institutional Controls Implementation and Assurance Plans at Contaminated Sites, OSWER 9200.0-77, EPA/540/R-09/02 (Dec. 2012), https://semspub.epa.gov/work/HQ/175449.pdf.

(cc) EPA's Emergency Responder Health and Safety Manual, OSWER 9285.3-12 (July 2005 and updates), https://www.epaosc.org/_HealthSafetyManual/manual-index.htm.

(dd) Broader Application of Remedial Design and Remedial Action Pilot Project Lessons Learned, OSWER 9200.2-129 (Feb. 2013).

(ee) Guidance for Evaluating Completion of Groundwater Restoration Remedial Actions, OSWER 9355.0-129 (Nov. 2013).

(ff) Groundwater Remedy Completion Strategy: Moving Forward with the End in Mind, OSWER 9200.2-144 (May 2014).

(gg) Quality Management Systems for Environmental Information and Technology Programs -- Requirements with Guidance for Use, ASQ/ANSI E-4 (February 2014), available at https://webstore.ansi.org/.

(hh) Guidance for Management of Superfund Remedies in Post Construction, OLEM 9200.3-105 (Feb. 2017), https://www.epa.gov/superfund/superfund-post-construction-completion.

(ii) Advanced Monitoring Technologies and Approaches to Support Long-Term Stewardship (July 20, 2018), https://www.epa.gov/enforcement/use-advanced-monitoring-technologies-and-approaches-support-long-term-stewardship.

(jj) Superfund Community Involvement Handbook, OLEM 9230.0-51 (March 2020). More information on Superfund community involvement is available on the Agency's Superfund Community Involvement Tools and Resources web page at https://www.epa.gov/superfund/superfund-community-involvement-tools-and-resources.

(kk) EPA directive CIO 2105.4 (Environmental Information Quality Policy, 2024), https://www.epa.gov/sites/production/files/2021-04/documents/environmental_information_quality_policy.pdf.

10.2 A more complete list may be found on the following EPA web pages:

(a) Laws, Policy, and Guidance at https://www.epa.gov/superfund/superfund-policy-guidance-and-laws;

(b) Search Superfund Documents at https://www.epa.gov/superfund/search-superfund-documents; and

(c) Test Methods Collections at: https://www.epa.gov/measurements/collection-methods.

10.3 For any regulation or guidance referenced in the CD or SOW, the reference will be read to include any subsequent modification, amendment, or replacement of such regulation or guidance. Such modifications, amendments, or replacements apply to the SW/HC OU3 Work only after SD receives notification from EPA of the modification, amendment, or replacement.

Attachment to

SW/HC OU3 SOW Modification –

Sherwin-Williams/Hilliards Creek Site
Operable Unit 3 Record of Decision
Declaration Statement and Decision Summary

RECORD OF DECISION

Sherwin-Williams Superfund Site
Operable Unit 3 - Groundwater

Gibbsboro, Camden County, New Jersey

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

September 2025

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Sherwin-Williams/Hilliards Creek Superfund Site
Operable Unit 3 - Groundwater
Gibbsboro, Camden County, New Jersey
EPA Superfund Site Identification Number NJD980417976/0200516

STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the selected remedy to address contaminated groundwater at the Sherwin-Williams/Hilliards Creek Superfund Site (Site) – Operable Unit 3 (OU3) – Groundwater, located in Gibbsboro, Camden County, New Jersey (Figure 1). EPA selected the remedy in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. §§ 9601-9675, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Part 300. 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 C.F.R. Section 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 Department of Environmental Protection (NJDEP) has been consulted on the proposed remedy in accordance with CERCLA Section 121(f), 42 U.S.C. §9621(f), and it concurs with the selected remedy (see Appendix IV).

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances at or from OU3 of the Site, if not addressed by implementing the response action selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The OU3 remedial action described in this document addresses contaminated groundwater at the Site. OU3 is the third of four operable units for the Site.

The major components of the selected remedy for OU3 include the following:

- Assumption of the implementation of the OU2 remedy.
- Implementation of a Pre-Design Investigation and treatability study.
- Placement of Institutional Controls (ICs).

- Installation of injection points and performance of injections in the area surrounding the secondary source at MW-30.
- Installation of additional monitoring wells to 75 feet below the ground surface to supplement the existing monitoring well network for long-term monitoring (LTM) purposes.
- Attenuation processes, including biodegradation, dilution, dispersion, sorption, volatilization, and precipitation, as the primary mechanism for contaminant reduction for areas where active groundwater remediation is not implemented.
- LTM of shallow, intermediate, and deep groundwater.
- Five-year reviews.

The estimated present-worth cost of the selected remedy is $4,220,000.

Along with the selected OU3 remedy, the OU2 remedy is also instrumental in attainment of the groundwater goals since it includes: a combination of excavation and capping of soils above cleanup goals; excavation of saturated soils which act as sources to shallow groundwater contamination; and, excavation of shallow light non-aqueous phase liquid (LNAPL), passive and active recovery, in-situ bioremediation (nutrient injections), and vapor recovery of deep LNAPL, which acts as a source of contamination to the shallow, intermediate, and deep groundwater. As such, the selected remedy for OU3, along with implementation of the remedy for OU2, will constitute a comprehensive remedy for groundwater.

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 unless a statutory waiver is justified; 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.

Part 2: Statutory Preference for Treatment

The selected remedy for OU3 is a combination of attenuation via natural processes and focused in-situ groundwater treatment. In keeping with the statutory preference for treatment as a principal element of the remedy, the remedy provides for the treatment of contaminated deep

groundwater at the Site. Focused in-situ treatment for OU3 partially satisfies the statutory preference for treatment as a principal element of the remedy in that it includes treatment of the source of contamination in the deep aquifer. Additionally, the bioremediation of LNAPL that is part of the OU2 remedy will treat the shallow sources of contaminated groundwater at the Site. Together, these remedies, along with attenuation via natural processes, will address the remaining contaminated groundwater.

Part 3: Five-Year Review Requirements

Because the selected remedy will not result in hazardous substances remaining on-site above levels that allow for unlimited use or unrestricted exposure, but will take longer than five years to attain remedial action objectives (RAOs), a review of the remedial action pursuant to CERCLA Section 121(c) will be conducted five years after the completion of the remedial action (RA) 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.

- Chemicals of concern and their respective concentrations may be found in the "Summary of Site Characterization" 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 chemicals of concern may be found in the " Summary of Site Risks" section;
- Cleanup levels established for chemicals 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 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: 2025.09.26 15:36:00 -04'00'

September 26, 2025

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

Date

RECORD OF DECISION
DECISION SUMMARY

Sherwin-Williams/Hilliards Creek Superfund Site
Operable Unit 3 - Groundwater

Gibbsboro, Camden County, New Jersey

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

TABLE OF CONTENTS

LIST OF APPENDICES

SITE NAME, LOCATION AND DESCRIPTION

The Sherwin-Williams/Hilliards Creek Superfund Site (Site), EPA ID # NJD980417976 is one of three sites which collectively make up what is commonly referred to as the "Sherwin-Williams Sites (Sites). Located in Gibbsboro, Lindenwold, and Voorhees, Camden County, New Jersey, these Sites are the *Sherwin-Williams/Hilliard's Creek Superfund Site,* the *Route 561 Dump Site* (Dump Site) in Gibbsboro, and the *United States Avenue Burn Superfund Site* (Burn Site) in Gibbsboro. The Sites represent source areas from which contamination has migrated to downgradient areas within Gibbsboro, Voorhees, and Lindenwold.

Sherwin-Williams/Hilliards Creek Superfund Site: The Site has been divided into several OUs to remediate the contamination more efficiently. OU1 includes residential properties and was addressed under a ROD issued by EPA in September 2015. That cleanup has been completed, except for one property which EPA will address as part of OU4 because of its location within the flood plain. OU2 includes the Former Manufacturing Plant (FMP) Area which is approximately 20 acres in size and is comprised of commercial structures, undeveloped land, the southern portion of Silver Lake, and the upper portion of Hilliards Creek. The FMP Area extends from the south shore of Silver Lake in Gibbsboro and straddles the headwaters of Hilliards Creek. Hilliards Creek is formed by the outflow from Silver Lake. The outflow enters a culvert beneath a parking lot at the FMP and resurfaces on the south side of Foster Avenue, Gibbsboro. From this point, Hilliards Creek flows in a southerly direction through the FMP Area and continues downgradient through residential and undeveloped areas. OU2 is being addressed under a ROD issued in August 2020; the remedial designs and remedial actions (RD/RAs) for various areas within OU2 are in various stages of design and/or completion. OU4 (Waterbodies) includes Silver Lake, Bridgewood Lake, Kirkwood Lake, and the lower portion of Hilliards Creek, which starts at the culverted section at West Clementon Road, traveling approximately one mile before emptying into Kirkwood Lake. OU4 is being addressed under a ROD which EPA issued in September 2021. Much like OU2, various elements of OU4 are in various stages of RD and RA. OU3 addresses the Site-related contaminated groundwater at and associated with OU2, the FMP Area of the Site.

Route 561 Dump Site: The Dump Site is located approximately 700 feet to the east of the FMP Area and is approximately 19 acres. It includes retail businesses, a portion of a residential area, wooded vacant lots, and a small creek. A 2.9 acre fenced portion of the Dump Site is located at the base of an earthen dam that forms Clement Lake. The Dump Site includes portions of White Sand Branch, a small creek which originates at the Clement Lake dam and flows in a southwest direction for approximately 1,650 feet, where it enters the fenced portion of the United States Avenue Burn Site.

United States Avenue Burn Superfund Site: The Burn Site consists of a fenced area, a former landfill area, a railroad track area, and several other components. The fenced portion of the Burn Site and its associated contamination is approximately thirteen acres in size and includes the remaining 400 feet of White Sand Branch. A 500-foot portion of a small creek, Honey Run Brook, enters the Burn Site where it joins White Sand Branch, before it passes beneath United States Avenue and enters Bridgewood Lake in Gibbsboro. The six-acre Bridgewood Lake empties through a culvert beneath West Clementon Road and forms a 400-foot-long tributary that joins Hilliards Creek at a point approximately 1,000 feet downstream from the FMP Area.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

The former paint and varnish manufacturing plant property in Gibbsboro, New Jersey, was developed in the early 1800s as a sawmill, and later as a grain mill. In 1851, John Lucas & Co., Inc. (Lucas), purchased the property and converted the grain mill into a paint and varnish manufacturing facility that produced oil-based paints, varnishes, and lacquers. The Sherwin-Williams Company (Sherwin-Williams) purchased Lucas in the early 1930s and expanded operations at the facility. Historic features at the FMP Area included wastewater lagoons, above-ground storage tanks, a railroad line and spur, drum storage areas, and numerous production and warehouse buildings. The facility was closed in 1977 and was sold to a developer in 1981.

After plant operations ceased, NJDEP issued an administrative order on August 17, 1978, directing Sherwin-Williams to excavate and properly dispose of the waste material remaining in the lagoons. The property was sold to Robert Scarborough, a private developer, in early 1981. On May 19, 1981, NJDEP issued an administrative order to Sherwin-Williams to characterize and address groundwater contamination. In 1983, NJDEP received a report that petroleum-like seeps, detected at the former Sherwin-Williams facility, was discharging into Upper Hilliards Creek. On March 3, 1987, NJDEP issued Sherwin-Williams a “Telegram Order”, ordering Sherwin-Williams to immediately begin containment of the petroleum seeps and to submit a plan proposing additional actions to contain the contamination. Sherwin-Williams did not comply with the Telegram Order.

In 1990, Sherwin-Williams entered into an Administrative Consent Order (ACO) with NJDEP to investigate the extent of groundwater contamination, and to characterize a petroleum-like seep in the vicinity of the 1 and 5 Foster Avenue buildings. A Seep Area was identified and investigated. From 1991 until 2000, five phases of remedial investigation (RI) activities were performed by Sherwin-Williams, under NJDEP oversight. In 1997, the private developer sold the property to Brandywine Realty Trust (“Brandywine”).

During this time frame, NJDEP also discovered two additional source areas, the Dump Site, and

the Burn Site. Contamination in both areas is attributable to historic dumping activities associated with the FMP Area. In the mid-1990s, enforcement responsibilities for the Dump Site and the Burn Site were transferred from NJDEP to EPA. EPA issued several administrative orders to Sherwin-Williams in 1995 and 1997, directing Sherwin-Williams to further characterize and delineate the extent of contamination associated with these areas and to fence them off to minimize the potential for human exposure. EPA proposed the Dump Site to the National Priorities List (NPL) in 1998. The Burn Site was added to the NPL in 1999.

In 2001, the NJDEP terminated its ACO with Sherwin-Williams. In 2002, a new release of petroleum-like product was observed in the Seep Area and reported to state and federal agencies. In response to the observed seep, EPA issued Sherwin-Williams an "Expedia Notice" (Notice).

The 2002 Notice required Sherwin-Williams to perform interim actions to prevent seep-related discharges from reaching Hilliards Creek, as well as additional geophysical and soil investigations. Sherwin-Williams' activities under the EPA 2002 Notice were completed, and the Notice was closed out by EPA in 2007. In 2008, the Site was placed on the NPL. Under EPA oversight, Remedial Investigation/Feasibility Study (RI/FS) activities began at the Site, pursuant to the 1999 Administrative Order on Consent (AOC). EPA has been designated as the lead agency for cleanup of the Site, with the NJDEP functioning in a support role.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

EPA released the RI report, FS report, and the Proposed Plan for OU3 of the Site, as well as other documents considered by EPA, to the public for comment on July 27, 2025. EPA made these documents available to the public in the administrative record file at the EPA Superfund Records Room in Region 2, 290 Broadway, New York, New York, and online at: www.epa.gov/superfund/sherwin-williams. Additionally, the documents are also available at the following local repositories: Gibbsboro Borough Hall/Library, 49 Kirkwood Road, Gibbsboro, New Jersey 08026 and the M. Alan Vogelson Region Branch Library – Voorhees, 203 Laurel Road, Voorhees, New Jersey 08043. The notice of availability for these documents was published in the Courier-Post on July 27, 2025. The thirty-day public comment period on these documents was held from July 27, 2025, to August 26, 2025.

On August 7, 2025, EPA conducted a public meeting at the Gibbsboro Senior Center, located at 772 Pole Hill Park Drive, Gibbsboro, New Jersey, to inform local officials and members of the public about the Superfund process, present the findings of the RI/FS and EPA's Proposed Plan to the community, review current and planned remedial activities at the Site, and to respond to questions from area residents and other attendees. 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).

SCOPE AND ROLE OF OPERABLE UNIT

The Site has been divided into several OUs to remediate the contamination more efficiently. The first OU, OU1, includes the cleanup of soil contamination on the impacted residential properties. This remedy has been completed. The second OU, OU2, includes the soils, sediment, and LNAPL associated with the FMP Area, and the upper portion of Hilliards Creek. OU2 soil, sediment, and LNAPL are the primary sources of contamination to the groundwater and are being addressed under a ROD issued in August 2020. This remedy includes a combination of excavation and capping of soils with contamination above cleanup goals; excavation of saturated soils which act as sources to shallow groundwater; and, excavation of shallow light LNAPL, passive and active recovery, in-situ bioremediation (nutrient injections), and vapor recovery of deep LNAPL, which acts as a source of contamination to the shallow, intermediate, and deep groundwater. OU3 includes contaminated groundwater at and associated with OU2, the FMP Area of the Site. Groundwater contamination has been identified in the shallow, intermediate, and deep groundwater. This ROD addresses OU3 of the Site, which consists of contamination in the shallow, intermediate, and deep groundwater at and associated with OU2. The remedial designs and remedial actions (RDs/RAs) for various areas within OU2 are in different stages of design and/or completion. OU4 includes the contaminated soil, sediment, and surface water within the lower portion of Hilliards Creek, Silver Lake, Bridgewood Lake, and Kirkwood Lake, and is being addressed under a ROD issued in September 2021.

Both the Burn Site and the Dump Site have separate OU1, OU2, and OU3 designations that include residential properties, soil/sediment, and groundwater. The table below lists the decision documents for each of the Sites. The cleanups at the OUs that have RODs (or other decision documents) are in various stages of design and construction.

Sherwin Williams/Hilliards Creek Site

Operable Unit	Record of Decision	Status
1- Residential	2015	Complete
2- FMP Area Soils, Sediments, LNAPL	2020	In Progress
3- Groundwater at FMP	Anticipated 2025	Not Started
4- Waterbodies	2021	In Progress

United States Avenue Burn Site

Operable Unit	Record of Decision	Status
1- Residential	2015	Complete
2- Soil and Sediment	2017	Complete
3- Groundwater	TBD	TBD

Route 561 Dump Site

Operable Unit	Decision Document	Status
1- Residential	2015	Complete
2- Soil and Sediment	2016	Complete
3- Groundwater	TBD	TBD

SUMMARY OF SITE CHARACTERISTICS

Physical Setting

The FMP Area is bounded to the north by Silver Lake and Route 561, to the east by U. S. Avenue, to the west by East and West Clementon Road, and to the south by vacant land, a cemetery, and Bridgewood Lake.

The FMP Area currently comprises four buildings, the 1, 5, 7, and 10 Foster Avenue buildings, and the 2 and 4 Foster Avenue and 6 East Clementon (6EC) building slabs. The 1, 5, and 7 Foster Avenue buildings are located south of Foster Avenue, while the 10 Foster Avenue building and the 2 and 4 Foster Avenue and 6EC building slabs are located north of Foster Avenue. Most of the FMP Area is owned by Sherwin-Williams, with two lots, one at the corner of Foster Avenue and East Clementon Road, and the other immediately west of U.S. Avenue, owned by the Borough of Gibbsboro.

The topography of the FMP Area slopes from the northeast, where the elevations are highest, to the southwest. In the locations where the FMP Area is developed, surfaces such as parking lots

and building locations are relatively flat and graded towards stormwater collection points. In the vicinity of Hilliards Creek and Bridgewood Lake, the topographic gradient slopes gently towards these water bodies.

There are seven subareas in total that make up the FMP Area of the Site. Six subareas identified as OU2 source areas will be used to present the groundwater contamination associated with former Site operations, as described below (Figure 2):

- **Former Main Plant (MP):** This is the northwest part of the Site. This area consists of the former 6 East Clementon Road building slab, the parking area west of the 2 and 4 Foster Avenue building slabs, the 10 Foster Avenue building, and the Silver Lake conveyance system, which is located beneath the paved parking area.
- **The Former Resin Plant (FRP) and Tank Farm A (TFA)**: This is the area immediately north of Foster Avenue and west of U.S. Avenue. The area includes the 2 and 4 Foster Avenue and 3 U.S. Avenue building slabs, and the building slab from a former structure known as the red barn.
- **The Seep Area:** This is the area south of Foster Avenue, west of U.S. Avenue, and east of Hilliards Creek. This area includes the 1 and 5 Foster Avenue buildings. The Seep Area is bordered to the west by Hilliards Creek.
- **Former Tank Farm B (TFB)/7 Foster Avenue (7FA):** This area consists of the former Tank Farm B area, including the current location of the 7 Foster Avenue building and parking area located west of Hilliards Creek. To the east is the Seep Area, and to the west are residential properties B-1 through B-8, which have been the subject of a prior remedial action.
- **The Former Lagoon Area (FLA):** This is the area where the former wastewater lagoons were located. The lagoons were closed by Sherwin-Williams, under NJDEP oversight, in 1979. The FLA is located south of the Seep Area, east of Hilliards Creek and west of U.S. Avenue. Bridgewood Lake is located south of the FLA. The southern off-property area is located to the south of the FLA and is a small section of the Cedar Grove Cemetery.
- **The Eastern Off-Property Area (EOP):** This is the area east of U.S. Avenue where the residential properties designated as Properties E-1 and E-7 through E-11, and the former service station/tavern, are located.

The FMP Area is situated within the New Jersey Coastal Plain Physiographic Province. The New Jersey Coastal Plain extends from the Fall Line in the west, to the Atlantic Ocean in the east, and from the Raritan Bay in the northeast to the Delaware Bay in the southwest.

Geology and Hydrogeology

Observations during the RI were consistent with the description of the geologic and hydrogeologic units from the published geological literature:

- The first unit encountered is the Lower Kirkwood Formation. This formation consists of sand and clay. The upper sand is typically fine- to medium-grained, massive- to thick-bedded, locally cross-bedded, light-yellow to white, locally very micaceous, and extensively stained by iron oxides in near-surface beds.
- The lower 5 to 10 feet of the Lower Kirkwood Formation grades into darker grayish brown to greenish clay or clayey sand (the Lower Kirkwood Clay), which marks the boundary with the underlying Vincentown Formation.
- Below the Lower Kirkwood Clay is the Vincentown Formation which, along with the Hornerstown Formation and the Navesink Formation, forms the composite confining unit, a lower permeability unit separating the Lower Kirkwood Formation from the Mount Laurel Formation.
- Below the composite confining unit is the Mount Laurel Formation, a regional drinking water aquifer.

Groundwater at the FMP Area has historically been categorized into three zones: 1) shallow; 2) intermediate; and 3) deep. “Shallow” wells are those installed at depths up to 20 feet below ground surface (bgs) and “intermediate” wells are installed at depths from 20 to 37 feet bgs; both are set in the Lower Kirkwood Formation. The “deep” wells are those installed from the clay portion of the Lower Kirkwood Formation (approximately 55 feet bgs) and into the Vincentown, Hornerstown, Navesink, and Mount Laurel Formations. Both the stratigraphic column and the groundwater zones can be found on Figure 3.

Results of the Remedial Investigation

Prior to the FMP Area becoming part of the Sherwin-Williams/Hilliards Creek Site in 2007, Sherwin-Williams performed interim measures, beginning in 1979, and site investigations, beginning in the 1990’s. The earliest work was performed under the oversight of NJDEP, which transferred authority to the EPA Removal Branch in 2002. Sherwin-Williams initiated the groundwater investigation of the FMP Area in 2009, as part of the RI/FS work carried out under the September 1999 AOC. The following is a summary of these early interim actions and investigations, and how they relate to the groundwater contamination addressed by OU3.

Previous Interim Measures

The first interim measure was conducted by Sherwin-Williams in 1979, under the oversight of NJDEP. This measure included the excavation and disposal of approximately 8,100 cubic yards (CY) of impacted soil from the FLA. Subsequent interim measures focused on addressing and preventing LNAPL discharges at the Seep Area. These measures started in 1994, under NJDEP oversight (1994 to 2001), and continued, as needed, under EPA oversight (2001 to present), with the most recent measure occurring in October 2024.

In addition to the interim measures taken to address discharges to Hilliards Creek, Sherwin-Williams inspected all floors in buildings located within the FMP Area footprint, identifying and sealing any penetrations or cracks that were acting as pathways for subsurface vapor transport, and installed vents in subsurface sumps to provide a path for vapor transport to the outside.

Previous Investigations

The first monitoring wells were installed in the FMP Area prior to 1991. These were shallow monitoring wells designed to monitor the effectiveness of the interim measure performed in 1979 for the FLA, and to evaluate conditions upgradient of the FMP Area. Most of these investigation activities were performed under NJDEP oversight and were conducted from 1991 through 2000. During this time frame, Sherwin-Williams conducted five phases of work that focused on the former TFA Area, Seep Area, former TFB Area, and the FLA. Beginning in 2002, Sherwin-Williams conducted three site-wide investigations under the oversight of the EPA Region 2 Removal Branch. These efforts included a geophysical investigation to identify subsurface utilities, historic features, and possible transport pathways for LNAPL, a soil screening and confirmatory sampling program to delineate the extent of LNAPL in FMP Area soil, and a site-wide water level and monitoring well sampling program.

Groundwater Remedial Investigation

Further investigations of the FMP Area were incorporated as part of the RI for the Sherwin-Williams/Hilliards Creek Site. In March 2007, EPA requested that Sherwin-Williams prepare a work plan for characterization of the FMP Area. Since that time, numerous groundwater characterization activities and investigation activities have been conducted. These activities included the following work:

- Groundwater sampling (2009–2018), including:
    - Monitoring well installation;
    - Monitoring well development and redevelopment;
    - Groundwater level measurements; and,
    - Groundwater sample collection and analysis.
- Aquifer testing (2009–2018);
- Downhole natural gamma logging (2012–2018);

- Shallow and intermediate groundwater screening (2012);
- A survey of groundwater/surface water interactions (2017);
- An evaluation of biodegradation of LNAPL constituents in groundwater (2018);
- Installation and sampling of upgradient background wells (2020);
- Installation and sampling of replacement wells on a downgradient residential property (2021);
- Additional groundwater sampling conducted following EPA's review of the Draft Groundwater Remedial Investigation (RI) Report and in response to "*EPA and NJDEP Request for Additional Groundwater Sampling*" (2021);
- Several OU2 Pre-Design Investigation (PDI) sampling events were also used to support the OU3 Groundwater RI:
    - OU2 PDI sampling event conducted in support of the source removal actions at the FLA (2020–2022);
    - OU2 PDI sampling conducted in support of the LNAPL recovery and treatment activities in the FRP/TFA Area and the EOP Area (2022);
    - Sampling conducted as part of the baseline pre-RA sampling within the Burn Site (2022);
- Resampling of monitoring well MPMW0052 (December 2023); and
- Abandonment of monitoring well MPMW0052 and installation and sampling of replacement well MPMW0052R (2024).

Through the soil investigations conducted as part of the OU2 RI and later through the OU2 pe-design investigation, and the groundwater investigations conducted as part of the OU3 RI, a detailed understanding of the nature and extent of the chemicals of concern (COCs) in groundwater, their sources, and the factors that influence their fate and transport, was developed. Figure 4 shows the location of groundwater monitoring wells used during the RI, and Table 1 provides a summary of the identified groundwater COCs and their ranges of concentrations.

Below is a summary of the groundwater investigation results:

Light Non-Aqueous Phase Liquid

LNAPL is present on the surface of the shallow groundwater in the former TFA Area, EOP Area and Seep Area (Figure 5). The LNAPL is comprised primarily of degraded mineral spirits with some VOCs and semi-volatile organic compounds (SVOCs), including benzene, naphthalene, and VOC/SVOC Tentatively Identified Compounds (TICs), and is the direct source of contamination to shallow and intermediate groundwater above NJDEP Ground Water Quality Standards (GWQS) and Interim Generic Ground Water Quality Criteria (IGGWQC) for synthetic organic compounds (SOCs). Dissolution of the LNAPL is the primary mechanism by which benzene and VOC/SVOC TICs

come to be present in Site groundwater at concentrations greater than the GWQS and the IGGWQC. LNAPL is also an indirect source of some of the arsenic found in groundwater at concentrations greater than the GWQS. The reducing conditions created by the biodegradation of the LNAPL and dissolved-phase hydrocarbons mobilizes naturally occurring arsenic in the soil, resulting in dissolved-phase arsenic concentrations greater than the GWQS. The RI also found that on a site-wide basis the LNAPL is generally not mobile, with only a handful of wells showing signs of mobile LNAPL during periods of low groundwater levels. Recoverable LNAPL is limited to well HP-3, and recovered volumes continue to decline over time. The LNAPL discussed in this section is being addressed under the OU2 remedial action which is currently in the design phase. Since it is the primary source of the groundwater contamination discussed in this ROD, implementation of the OU2 remedy for LNAPL is expected to have a significant beneficial impact in reducing the groundwater contamination addressed under OU3.

Benzene

Benzene is a key primary constituent in shallow, intermediate, and deep groundwater at concentrations greater than the GWQS at the FMP Area. Benzene was transported horizontally in shallow groundwater through the former TFA and Seep Areas towards the FLA and EOP Area. In addition to the horizontal transport, contamination was also transported vertically from the former TFA Area into the Vincentown and Hornerstown Formations by the presence of a downward vertical gradient from the Lower Kirkwood Formation to the Vincentown Formation, where a thinning of the lower Kirkwood Clay has been observed. Based on the continued elevated benzene concentrations in MW-30 in the Lower Kirkwood Formation, it was concluded that back diffusion of benzene absorbed in the basal clay in this area acts as a secondary source of benzene in deep groundwater. The vertical extent of the benzene in deep groundwater is limited to the Vincentown and Hornerstown Formations. The Navesink Formation clay unit, identified during the RI, is an effective confining layer preventing groundwater flow into the deeper Mount Laurel Formation.

With the exception of a few locations, benzene concentrations in groundwater have declined across the Site since RI sampling was initiated in 2009. In instances where a decline was not noted, groundwater concentrations have remained stable or have increased. The increases were primarily in newer wells where only a few rounds of data were available for comparison; however, overall, many years of data show that benzene concentrations in the FMP Area groundwater have substantially declined, suggesting mass reduction of approximately 90% since 1990 (Figure 6).

Synthetic Organic Compounds (SOCs)

VOC/SVOC TICs are present in groundwater within the limits of the LNAPL plume (**Figure 5**) and in the FLA. There are no GWQS or maximum contaminant levels (MCLs) for VOC/SVOC TICs, but

NJDEP has established IGGWQCs for SOCs. SOCs are defined as any synthetic (not naturally occurring) organic chemical for which NJDEP has not established a GWQS.

In shallow groundwater, the highest total VOC/SVOC TICs are present within the inferred extent of the LNAPL plume. The VOC/SVOC TICs have been identified as primarily alkanes and methylated benzenes that have been attributed to the LNAPL. VOC/SVOC TICs are also present in the FLA at concentrations greater than the 500 micrograms per liter (µg/L) IGGWQC for total SOCs.

The VOC/SVOC TIC concentrations in the FLA are lower than those within the LNAPL plume, and the composition of the VOC/SVOC TICs is different than the composition in the LNAPL plume (alkanes and methylated benzenes vs. organic acids and phenolic compounds).

VOC/SVOC TIC concentrations within the LNAPL area in intermediate groundwater are much lower than in shallow groundwater. The extent of VOC/SVOC TICs in intermediate groundwater at concentrations greater than 500 µg/L is also less than in shallow groundwater. A similar pattern is observed in the FLA; higher VOC/SVOC TIC concentrations are present in shallow groundwater than in intermediate groundwater. As discussed above, the LNAPL, and the associated TICs, are being addressed under the OU2 remedial action. Implementation of the OU2 remedy is expected to have a significant beneficial impact in reducing the VOC/SVOC TIC contamination addressed under OU3.

The only location where VOC/SVOC TICs exceed 500 µg/L in deep groundwater is at MW-30, where a downward vertical hydraulic gradient and a thinning of the Lower Kirkwood Clay was identified. As such, like the transport of benzene, the downward transport of VOC/SVOC TICs from the Lower Kirkwood Formation to the Vincentown Formation, and horizontal transport through the Vincentown Formation, is the primary transport mechanism for the VOC/SVOC TICs.

Other VOC and SVOCs

In addition to the benzene and VOC/SVOC TICs discussed above, some additional VOCs and SVOCs were found at concentrations greater than the GWQS in various wells in the 2018 sampling, including 2-methylnaphthalene, naphthalene, 1,1,2,2-trichloroethane, trichloroethene, tetrachloroethene, vinyl chloride, 1,1,2-trichloroethane, and 1,2-dichloroethane.

Chlorinated VOCs

Chlorinated VOCs were found at concentrations greater than the GWQS in some wells. Except for one well, most exceedances are found in shallow and intermediate wells located within the Seep Area and FLA. In total, chlorinated compounds were detected in 9 wells: two in the Seep Area,

two in the EOP Area, and five in the FLA. The chlorinated VOCs detected, although above GWQS, are sporadic and are located within the footprint of the OU2 source area in which both soils and LNAPL are being treated as part of the OU2 remedy, and concentrations are expected to decrease post-OU2 remediation implementation.

Naphthalene/2-Methylnaphthalene

Naphthalene was found in two wells, including a shallow well in the FRP/TFA Area and a shallow well in the EOP Area, at concentrations greater than the GWQS during the OU3 RI and the LNAPL PDI sampling performed in 2022 for the OU2 RD. The OU2 ROD specifies that biological treatment of the LNAPL will be performed in both the FRP/TFA Area and the EOP Area. Since the LNAPL is the source of the naphthalene in groundwater, it is expected that the naphthalene concentrations in the shallow groundwater will decline when the remedy for the LNAPL is implemented as part of the OU2 remedy.

The Human Health Risk Assessment (HHRA) for OU3, discussed below, identified that 2-methylnaphthalene in groundwater contributes to an individual Hazard Quotient (noncancer) greater than one. Like naphthalene, 2-methylnaphthalene has been detected at concentrations greater than the GWQS in only one well, MW-24. Like naphthalene, the LNAPL is the source of the 2-methylnaphthalene in groundwater, and it is expected that the 2-methylnaphthalene concentrations will decline when the LNAPL remedy is implemented.

Arsenic

Soil representing sources of arsenic to groundwater was identified during the RI and subsequent PDI for the 6EC and MP subareas of OU2 as identified below:

- Beneath and adjacent to the former 6EC building slab,
- In the southeast corner of the 10 Foster Avenue building on both sides of the Silver Lake conveyance,
- Beneath the parking area of the 2 and 4 Foster Avenue buildings north of Foster Avenue and east of the Silver Lake conveyance system, and
- South of Silver Lake, east of the Silver Lake conveyance system.

The depths at which arsenic is present at concentrations at or exceeding 50 milligrams per kilograms (mg/kg) in saturated soil ranged from approximately 6 ft bgs to more than 20 ft bgs.

Arsenic is found at concentrations greater than the NJDEP GWQS in shallow groundwater throughout the FMP Area, because of two primary mechanisms:

1. **Sources of arsenic present in soil** – Although not specifically addressed in OU3, arsenic sources to groundwater have been identified in the FMP Area. The OU2 ROD defines sources of arsenic as locations where saturated soil contains arsenic at concentrations of

50 mg/kg or more. These areas were fully characterized as part of the PDI for the MP, 6EC, and 7 Foster Avenue subareas of OU2. The MP and 6EC arsenic sources have already been removed as part of the OU2 remedial action that has been completed for the MP and 6EC subareas. The arsenic source areas identified in the 7 Foster Avenue subarea will be addressed in a future excavation. The excavation cut lines for this area are currently being designed and excavation of this subarea will be implemented in early 2026.

2. **Mobilization of naturally occurring arsenic –** Due to the reducing conditions caused by the biodegradation of the LNAPL and dissolved phase organic constituents in groundwater, naturally-occurring arsenic in soil has been mobilized. "Reductive dissolution" and "reductive desorption" of the aquifer formations result in releases of the naturally occurring arsenic in soil into the groundwater.

In some instances, both these mechanisms described above may be responsible for the presence of the arsenic in groundwater.

The highest concentrations of arsenic are found in two shallow groundwater wells near where the OU2 arsenic soil source areas have been identified. The highest concentrations of arsenic have been found in well MPSB0049, immediately south of the 6EC building slab and within a large arsenic source area. The other well with high concentrations is well MPMW0009, which is located in the Seep Area, downgradient of the identified soil arsenic source areas detailed above. In locations other than these two well locations, arsenic concentrations range from less than the GWQS to approximately 10 µg/L, which is the MCL.

Arsenic is generally not present at concentrations greater than the GWQS in deep groundwater. The one location where arsenic is routinely found in deep groundwater at concentrations greater than the GWQS is MW-30, which is located within the former TFA Area. As a result of the presence of the LNAPL, reducing conditions in this area extend to deep groundwater. As such, EPA attributes the presence of arsenic at concentrations greater than the GWQS to the reducing conditions at this location.

The OU3 GW RI concluded that the dissolved-phase arsenic is in a "steady-state" condition because the hydrocarbon plume that is the source of the reducing conditions is not expanding, the extent of arsenic present at concentrations greater than the GWQS is stable, and there is little transport of the arsenic beyond the influence of the reducing conditions. Beyond the zones of reducing conditions the groundwater returns to ambient geochemical conditions, returning arsenic concentrations to ambient conditions. Similar to other contaminants, it is expected that the arsenic concentrations will decline when the LNAPL remedy is implemented.

Lead

Lead is not extensively found at concentrations greater than the GWQS 5 µg/L at the FMP Area. Lead was reported at a concentration greater than the GWQS in only four locations in 2018: MW-38 (16.1 µg/L), MPMW0017 (24.1 µg/L), MPMW0030 (18.7 µg/L), and MPMW0032 (31.3 µg/L). In 2021, Sherwin-Williams implemented another groundwater sampling event. The sampling results from this event showed that lead was not present at concentrations greater the GWQS in any of the wells except for MW-38, where lead was detected at 51 µg/L and 19 µg/L in the unfiltered and filtered samples, respectively. From the information collected during the OU2 and OU3 RIs, EPA has concluded that the most likely explanation for the lead in MW-38 is the entrainment of solids rather than groundwater contamination. Lead was not detected above GWQS in any of the deep wells.

Other Metals

In addition to the compounds listed above, concentrations of aluminum, iron, manganese, sodium, beryllium, cadmium, chlorides, thallium, and zinc were also detected at concentrations greater than their respective GWQS in shallow and intermediate groundwater. A detailed account of these metals can be found in the OU3 RI report. Although these compounds were detected above their respective GWQS, concentrations were sporadic and not indicative of an anthropogenic source, or they were determined to be naturally occurring; however, due to the reducing conditions caused by the biodegradation of the LNAPL, naturally occurring iron and manganese in soil has been mobilized. “Reductive dissolution” and “reductive desorption” of the aquifer formations result in releases of the naturally occurring iron and manganese in soil into the groundwater.

Pentachlorophenol (PCP)

Soil representing sources of pentachlorophenol (PCP) to groundwater was identified during the RI and subsequent PDI sampling events for the 7 Foster Avenue/Tank Farm B (7FA/TFB) and the FLA subareas of OU2. The sources of PCP impacts to groundwater are identified for removal as part of the 7FA/TFB and FLA remedial effort as part of the OU2 remedial action currently underway. PCP has also been found in shallow groundwater at concentrations greater than the NJDEP GWQS. These exceedances in shallow groundwater have been identified primarily in the former 7FA/TFB Area and in the shallow and intermediate groundwater in the FLA. Potential PCP source areas will be addressed during the OU2 source area soil remedial action. Once the source area soils have been removed, concentrations are expected to decline. PCP is not found in deep groundwater.

Perfluorooctanoic acid and Perfluorooctanesulfonic acid (PFOA and PFOS)

Limited sampling for perfluorooctanoic acid (PFOA) and perfluorooctanesulfonic acid (PFOS) was performed during the OU3 RI. The NJDEP GWQS for PFOA (14 nanograms per liter [ng/L]) was

exceeded in two locations, MW-30 (18.6 ng/L) and MPMW0046 (18.8 ng/L). In addition to MW-30 and MPMW0046, PFOA was also present at concentrations greater than the federal MCL of 4 ng/L in MW-11 (4.59 ng/L) and MPMW0009 (13.7 ng/L). The federal MCL for PFOA was also exceeded in upgradient shallow well MW-28 (5.55 ng/L). The NJDEP GWQS for PFOS (13 ng/L) was exceeded in only MPMW0046 (33 ng/L). The federal MCL for PFOS (4 ng/L) was also exceeded in MW-11 (7.43 ng/L) and MPMW0009 (12.7 ng/L). Both PFOA and PFOS were found in upgradient deep wells MPMW0060 and MPMW0061 at concentrations below the GWQS and the federal MCL. Concentrations of both PFOA and PFOS are below the GWQS and MCL in the most downgradient sampling location (MW-41).

EPA is not aware of any history of use of PFOA/PFOS at the FMP Area during historic operations. Further, soil source area removals during the OU2 remedial actions will be performed in the locations where the highest concentrations of PFOA/PFOS were found in the groundwater. Given the relatively low concentrations of PFOA/PFOS, once the OU2 source removal activities are conducted, EPA expects that PFOA/PFOS concentrations will decline to background levels. Additional sampling for PFOA and PFOS will be performed following implementation of the OU2 remedy as part of the long-term monitoring program for the Sites.

1,4-Dioxane

1,4-dioxane was reported at concentrations greater than the NJDEP GWQS of 0.4 µg/L in several intermediate monitoring wells throughout the FMP Area in the 2018 sampling. Sampling conducted in 2017 and 2018 for the existing wells, and 2021 for the newly installed upgradient wells, are the only events in which 1,4-dioxane was included as an analyte. Where reported, the 1,4-dioxane concentrations in intermediate groundwater ranged from approximately 1 µg/L to 3 µg/L. The highest concentrations (approximately 3 µg/L) were found in MW-20, located in the parking area west of the 2 Foster Avenue building, and MPMW0035, located south of the FLA. In the wells sampled between these two wells, 1,4-dioxane concentrations were approximately 1 µg/L to 1.5 µg/L. EPA has not identified the source(s) of the 1,4-dioxane. EPA is not aware of any documentation of the use of chlorinated solvents, particularly 1,1,1-trichloroethane, at the FMP Area and there is no indication of a source of chlorinated solvents at the FMP Area that are common co-contaminants associated with 1,4-dioxane usage. The relatively low concentrations of 1,4-dioxane present in intermediate groundwater also suggest that there was no significant or centralized release of 1,4-dioxane at the FMP during historic operations. Additionally, there are no public sewers in the vicinity of the FMP Area. The 1,4-dioxane may be present in septic systems because of its use as a component of consumer products, such as laundry detergents or shampoos, or because it was a component of a septic tank degreasing agent.

Summary of RI Results

As discussed above, groundwater is characterized into three zones – shallow, intermediate, and deep. Shallow and intermediate groundwater is contaminated with arsenic, PCP, and LNAPL constituents (SOC, naphthalene, 2-methylnaphthalene, and benzene). The source areas for contamination in the shallow and intermediate zones will be addressed by the OU2 remedial actions. Contaminants from the shallow and intermediate zones have migrated to the deep groundwater through a preferential pathway caused by a downward gradient in the vicinity of MW-30. While several contaminants are present in the deep groundwater, the primary one is benzene, with the highest concentrations observed at MW-30. Elsewhere in the deep groundwater, contamination is more heterogenous and diffuse. Monitoring data collected since 2009 show rapid degradation in downgradient wells, and the size of the benzene plume has decreased significantly.

Lines of Evidence to Support Attenuation via Natural Processes

An evaluation of natural attenuation conditions was conducted as part of the RI and further evaluated during the FS. Overall, the analyses indicated that some level of natural attenuation of Site-related contaminants is occurring. Lines of evidence (LOE) for the use of attenuation via natural processes at the FMP Area have been developed in several different studies and are summarized in the technical memorandum, "Lines of Evidence Supporting Attenuation via Natural Processes" which is Attachment 1 to the FS. The primary natural processes at work are biodegradation, dispersion, dilution, sorption, volatilization, and precipitation. A more detailed summary of these LOE is presented below:

- Direct evidence in the form of reduction in concentration and mass for benzene and other COCs over time shows that attenuation via natural processes is occurring.
- Assessment of post-source removal groundwater data for the adjacent Dump Site shows direct evidence of the reduction in arsenic concentrations following the source removal. Conditions at the Dump Site are similar to the Sherwin Williams/Hilliards Creek Site, therefore similar results can be expected at the FMP Area following the arsenic source removal.
- Hydrogeologic (field indicator parameters, site specific seepage velocity) and geochemical (biogenic heat signatures showing biological activity, electron donors and acceptors, dissolved gasses, arsenic speciation data, and organic carbon content) data support the conclusion that following source removal and treatment, attenuation via natural processes will be an effective remedial approach for the LNAPL-related COCs, arsenic, and pentachlorophenol.
- Microbial studies performed as part of the OU2 LNAPL PDI document the ongoing biodegradation of LNAPL and dissolved hydrocarbons in groundwater at the FMP Area.

CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USES

Land Uses

The FMP Area is a large parcel of land that is currently in use with a variety of land uses, including commercial, residential, and undeveloped land. North of Foster Avenue is zoned as Office/Technical Park. This area is currently used as an office and industrial park, although many of the buildings are vacant, and the likely future use will be for commercial/industrial purposes. EPA's understanding of the future use of the FMP Area is based on its long experience at the Site, including consultation with local officials and community outreach.

South of Foster Avenue and west of U.S. Avenue, the land use is commercial through the developed portions of the 7 Foster Avenue and the 1 and 5 Foster Avenue building areas. South of these developed areas, the Upper Hilliards Creek flood plain and the FLA are mostly undeveloped, with a portion being used for a cemetery. The off-property area to the southwest of the FMP Area is zoned as Office/Residential; thus, it could potentially be developed for either commercial office or residential use, but based on the current use, the likely future use is as a cemetery and undeveloped land.

The EOP Area located east of U.S. Avenue is primarily residential, except for one commercial property which is the former location of a service station/tavern. The former building has been razed, and the property is currently vacant and undeveloped. Future use of this area is likely to remain residential.

Groundwater and Surface Water Use

Site groundwater, although classified by NJDEP as Class IIA Groundwater for Potable Water Supply, which is consistent with the federal groundwater classification, is not currently used as a drinking water source. Properties located in the vicinity of the Site are connected to the municipal water supply and it is not likely that groundwater will be used as a drinking water source in the foreseeable future.

SUMMARY OF SITE RISKS

As part of the OU3 RI/FS, EPA conducted a baseline risk assessment to estimate the current and future effects of contaminants on human health and the environment. A baseline risk assessment is an analysis of the potential adverse human health and ecological effects of releases of hazardous substances from a site in the absence of any actions or controls to mitigate such releases, under current and future land and groundwater uses. The baseline risk assessment

typically includes a human health risk assessment (HHRA) and a screening level ecological risk assessment (SLERA). It provides the basis for taking action and identifies the contaminants and exposure pathways that need to be addressed by the remedial action. This section of the ROD summarizes the results of the baseline HHRA for OU3 of the Site. As discussed below in more detail, a SLERA was not performed for OU3.

Human Health Risk Assessment

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

- *Hazard Identification* – uses the analytical data collected to identify the contaminants of potential concern at the Site for each medium, with consideration of a number of factors explained below;
- Exposure Assessment - estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (e.g., inhalation, ingestion, or dermal contact with contaminated well-water) by which humans are potentially exposed;
- Toxicity Assessment – determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response); and
- Risk Characterization – summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks. The risk characterization also identifies contamination with concentrations which exceed acceptable levels, defined by the NCP as an excess lifetime cancer risk greater than 1×10^{-6} to 1×10^{-4} or a noncancer Hazard Index greater than 1; contaminants at these concentrations are considered COCs and are typically those that will require remediation at the Site. Also included in this section is a discussion of the uncertainties associated with these risks.

Hazard Identification

In this step, the contaminants of potential concern (COPCs) in each medium were identified based on such factors as toxicity, frequency of occurrence, fate and transport of the contaminants in the environment, concentrations, mobility, persistence, and bioaccumulation. Analytical information that was collected to determine the nature and extent of contamination was evaluated to determine the presence of contaminants exceeding concentrations of potential concern. Based on this information, the risk assessment focused on Site groundwater, and contaminants which may pose significant risk to human health.

The COPCs identified in OU3 groundwater include: 14 metals, cyanide, 4 pesticides, 11 SVOCs, 12 VOCs, and 6 TICs. Not all contaminants were retained as COPCs in every depth evaluated. A comprehensive list of COPCs can be found in the OU3 HHRA in the administrative record for the Site. Only the COCs, or those chemicals requiring remediation at the Site, are listed in Table 2.

Exposure Assessment

Consistent with Superfund policy and guidance, the HHRA is a baseline human health risk assessment and therefore assumes no remediation has been performed and no institutional controls are in place to mitigate or remove hazardous substance releases. Cancer risks and noncancer hazard indices were calculated based on an estimate of the reasonable maximum exposure (RME) expected to occur under current and future conditions at the Site. The RME is defined as the highest exposure that is reasonably expected to occur at a site.
The FMP Area is currently in use with a variety of uses, including commercial, residential, and undeveloped land. North of Foster Avenue is zoned as Office/Technical Park. This area is currently used as an office and industrial park, although many of the buildings are vacant, and the likely future use will be for commercial/industrial purposes.

South of Foster Avenue and west of U.S, Avenue, the land use is commercial through the developed portion of the 7 Foster Avenue and the 1 and 5 Foster Avenue building areas. South of these developed areas, the upper Hilliards Creek Flood Plain and the FLA are mostly undeveloped, with a portion being used for a cemetery. The off-property area to the southwest of the FMP Area is zoned as Office/Residential; thus, it could potentially be developed for either commercial office or residential use, but based on the current uses, the likely future uses are as a cemetery and undeveloped land.

The EOP Area located east US Avenue is primarily residential, except for one commercial property which is the former location of a service station/tavern. The former building has been razed, and the property is currently vacant and undeveloped. Future use of this area is likely to remain residential.

The HHRA evaluated potential risks to populations associated with both current and potential future land uses.

As discussed above, although the groundwater is classified for a potable water supply it is not currently used as a drinking water source. Properties located in the vicinity of the Site are connected to the municipal water supply, and it is not likely that groundwater will be used as a drinking water source in the foreseeable future.

Exposure pathways were identified for each potentially exposed population and each potential exposure scenario for the groundwater. Due to subsurface groundwater conditions below the FMP Area, shallow, shallow/intermediate, and deep groundwater were screened and evaluated separately in the HHRA. COCs were determined for each depth zone by comparing detected concentrations to conservative screening criteria as described in the HHRA for OU3**.** A summary of the exposure pathways included in the HHRA can be found in Table 3. Typically, exposures are evaluated using a statistical estimate of the exposure point concentration (EPC), which is usually an upper bound estimate of the average concentration for each contaminant, but in some cases may be the maximum detected concentration. A summary of the EPCs for the COCs in groundwater can be found in Table 1, while a comprehensive list of the EPCs for all COPCs can be found in the HHRA.

Toxicity Assessment

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

Under current EPA guidelines, the likelihood of carcinogenic risks and noncancer hazards due to exposure to site chemicals are considered separately. Consistent with current EPA policy, it was assumed that the toxic effects of the site-related chemicals would be additive. Thus, cancer and noncancer risks associated with exposures to individual COPCs were summed to indicate the potential risks and hazards associated with mixtures of potential carcinogens and noncarcinogens, respectively.

Toxicity data for the HHRA were provided by the Integrated Risk Information System (IRIS) database, the Provisional Peer Reviewed Toxicity Database (PPRTV), or another source that was identified as an appropriate reference for toxicity values. This information is presented in Table 4 (noncancer toxicity data summary) and Table 5 (cancer toxicity data summary). Additional toxicity information for all COPCs is presented in the baseline HHRA.

Risk Characterization

This step summarized and combined outputs of the exposure and toxicity assessments to provide a quantitative assessment of OU3 risks. Risks and hazard were evaluated based on the potential

risk of developing cancer and potential for noncancer health hazards under current/future exposure to groundwater beneath the FMP Area by a utility worker, construction worker, and a child and adult resident. Even though current exposure was quantitatively evaluated in the HHRA, it should be noted that no one is currently drinking contaminated Site groundwater beneath the FMP Area. However, consistent with the NCP, future potable use of groundwater was evaluated in the absence of any actions or controls to mitigate such releases under current and future groundwater uses.

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

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

HQ = Intake/RfD

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

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

The HI is calculated by summing the HQs for all chemicals for likely exposure scenarios for a specific population. The noncancer HI is a “threshold level”, set at an HI of less than 1, below which noncancer health effects are not expected to occur. An HI greater than 1 indicates that the potential exists for noncarcinogenic health effects to occur due to site-related exposures, with the potential for health effects increasing as the HI increases. When the HI calculated for all chemicals for a specific population exceeds 1, separate HI values are then calculated for those chemicals which are known to act on the same target organ. These discrete HI values are then compared to the acceptable limit of 1 to evaluate the potential for noncancer health effects on a specific target organ. The HI provides a useful reference point for gauging the potential

significance of multiple contaminant exposures within a single medium or across media. A summary of the noncarcinogenic risks associated with these chemicals for each exposure pathway is contained in Table 6.

It can be seen in Table 6 that when considering risk from all COPCs, the HIs for noncancer effects exceeded EPA's threshold of 1 for the construction worker exposed to shallow groundwater (12), child resident exposed to shallow/intermediate groundwater (561), child resident exposed to deep groundwater (237), adult resident exposed to shallow/intermediate groundwater (878), and adult resident exposed to deep groundwater (395). Table 5 also shows total HI estimates per receptor based on exposure to the COCs only; although lower in comparison to the total hazard estimates from all COPCs, the conclusion that the noncancer threshold of 1 is exceeded remains unchanged. Noncarcinogenic risks may occur from the exposure routes evaluated in the risk assessment. The noncarcinogenic risks for both populations was attributable primarily to arsenic, cadmium, cobalt, cyanide, iron, manganese, thallium, vanadium, hexavalent chromium, 1,1-biphenyl, 2-methylnapthalene, benzo(a)pyrene, naphthalene, pentachlorophenol, 1,2-dichloroethane, benzene, ethylbenzene, trichloroethylene, o-xylene, and m & p-xylenes. The following TICs also exceeded noncancer risk thresholds: 1,2,3-trimethylbenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and amylene hydrate. The compounds that contribute most to hazard, by percentage, and are widespread in OU3 groundwater, include pentachlorophenol in shallow groundwater; naphthalene and pentachlorophenol in shallow/intermediate groundwater; and benzene in deep groundwater. Additionally, arsenic, iron and manganese are present in groundwater as a result of the reducing conditions created by the LNAPL.

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

Risk = LADD x SF

Where: Risk = a unitless probability ($1x10^{-6}$) of an individual developing cancer
LADD = lifetime average daily dose averaged over 70 years (mg/kg-day)
SF = cancer slope factor, expressed as [1/(mg/kg-day)]

These risks are probabilities that are usually expressed in scientific notation (such as $1x10^{-4}$). An excess lifetime cancer risk of $1x10^{-4}$ indicates that one additional incidence of cancer may occur in a population of 10,000 people who are exposed under the conditions identified in the

assessment. Again, as stated in the NCP, the acceptable risk range for site-related exposure is $1x10^{-6}$ to 10^{-4}.

The results of the HHRA presented in Table 7 indicate that cancer risks estimates for all receptors evaluated exceeded EPA's threshold range of $1x10^{-6}$ to $1x10^{-4}$ with risk estimates ranging from $3x10^{-4}$ to $8x10^{-2}$. The greatest contributor to groundwater risks varied by receptor, cancer endpoint, and groundwater depth, but those chemicals that caused the cancer risk to exceed 10^{-4} were: arsenic, hexavalent chromium, benzo(a)pyrene, naphthalene, pentachlorophenol, 1,2-dichlorothane, benzene, ethylbenzene, and vinyl chloride. The compounds that contribute most to cancer risk, by percentage and are widespread in OU3 groundwater, include arsenic and pentachlorophenol in shallow groundwater; naphthalene and pentachlorophenol in shallow/intermediate groundwater; and benzene in deep groundwater.

Risk from exposure to lead in groundwater was evaluated separately for the child resident using the Integrated Exposure and Uptake Biokinetic (IEUBK) model. Lead was evaluated using the IEUBK model for the child resident exposed to shallow/intermediate groundwater only, because lead was not retained as a COPC in deep groundwater. Results of the IEUBK model are shown in Table 8. Model results were compared to EPA's risk reduction goal, which is to limit the probability of having a Blood Lead level (BLL) greater than 5 µg/dL to 5% or less. In the baseline IEUBK run, the predicted geometric mean (GM) BLL for the child resident, with a default concentration of 4 µg/L in drinking water, is 2.9 µg/L, and the probability of exceeding 5 µg/dL was 12%. The predicted GM BLL for the child resident exposed to shallow/intermediate groundwater (with an EPC of 13 µg/L) was 3.6 µg/dL, and the probability of the BLL exceeding 5 µg/dL was 25%. As such, lead was retained as a COC in the shallow/intermediate groundwater zone.

Due to the presence of VOCs in groundwater (OU3) and soil at OU2, several investigations have been conducted to date to evaluate the potential for subsurface vapor intrusion (VI) into indoor air of overlying structures. As discussed in the HHRAs for OU2 and OU3, results from residential property sampling were evaluated and discussed separately from the commercial property sampling at properties in the FMP Area. Results of the VI sampling in all nearby residential structures showed sub-slab results below EPA' s Vapor Intrusion Screening Levels (VISLs) and the NJDEP Residential Soil Gas Screening Levels, indicating the potential for subsurface VI is unlikely. However, sampling conducted in the sub-slab and indoor air properties at the FMP Area showed exceedances of non-residential state and EPA VISLs in the sub-slab and indoor air sampling results. The OU2 and OU3 HHRAs identified benzene and ethylbenzene as the only analytes with exceedances in both sub-slab and indoor air and concluded that the potential for subsurface VI exists for commercial workers. Further, the OU2 and OU3 HHRAs concluded that if the commercial properties in the FMP Area were to be redeveloped into residential use, there could

be potential risk to the future resident. There are currently no commercial operations at the FMP Area, and redevelopment into residential uses is unlikely.

In summary, direct contact exposure to groundwater by all potential human health receptors evaluated showed unacceptable risk and or hazard stemming from exposure to the COCs arsenic, iron, manganese, lead, benzene, pentachlorophenol, 2-methylnaphthalene, naphthalene, and VOC/SVOC TICs as detailed above.

Ecological Risk Assessment

An ecological risk assessment is generally completed to evaluate the potential for adverse ecological effects. The ecological assessment process begins with an evaluation of completed exposure pathways to determine which media, contaminants and ecological receptors to evaluate within the SLERA. As part of this process, it was identified that the groundwater does not discharge to the surface water, therefore there are no completed ecological pathways. Because of this, a SLERA was not conducted and EPA concluded that there were no unacceptable ecological risks associated with the groundwater as part of the OU3 investigation.

Uncertainties

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

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

A site-specific area of uncertainty in the HHRA for OU3 is that a total of 535 TICs were reported in groundwater samples; however, only 21 of them have published toxicity factors. Eight of these TICs were retained after the COPC screening process and the remaining TICs were not quantitatively evaluated in the HHRA due to a lack of published toxicity factors. If the unevaluated TICs contribute to risk, then the risks presented in the HHRA could be underestimated.

Additionally, analytical methods are not designed to accurately quantify TICs, especially at low levels, as they do not have detection limits established by the methods. For this reason, the EPCs for TICs are likely to be biased high and may overestimate risk.

More specific information concerning public health risks, including a quantitative evaluation of the degree of risk associated with various exposure pathways, is presented in the OU3 HHRA report.

Basis for Taking Action

Actual or threatened releases of hazardous substances from OU3, 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 media-specific goals to protect human health and the environment; they specify the COCs, the exposure routes, receptors, and acceptable contaminant levels for each exposure route. 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 and background (i.e., reference area) concentrations.

The following RAOs have been established for OU3:

1. Restore groundwater to the most beneficial use as a source of drinking water by reducing Site-related contaminant levels to the more stringent of the state and federal MCLs or NJDEP GWQS.
2. Prevent potential current and future unacceptable risks to human receptors resulting from ingestion, inhalation or dermal contact with groundwater containing Site-related contaminants above levels of concern.
3. Prevent further migration of Site-related contaminants in groundwater above levels of concern.
4. Prevent potential vapor intrusion of Site-related VOCs and SVOCs in groundwater to indoor air at concentrations above levels of concern.

EPA expects that the OU2 remedy will primarily address the vertical migration of contamination from the shallow and intermediate aquifers. Horizontal migration of the deep benzene plume will be the focus of the OU3 remedy.

Remediation Goals

Achieving the RAOs relies on the remedial alternatives' ability to meet final remediation goals (also referred to as 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. They can be based on such factors as ARARs, risk, and from comparison to background levels of contaminants in the environment that occur naturally or are from other industrial sources. In the Proposed Plan, the PRGs identified for the COCs are based on achieving NJDEP GWQS. Due to the nature of the LNAPL at the Site (i.e., high concentrations of VOC and SVOC compounds without specific standards), the PRGs for the constituents of the LNAPL, which are primarily TICs, are based on NJDEP's IGGWQS for SOCs in groundwater. No occupied buildings currently exist in the FMP Area. Any VI data collected as part of sampling efforts related to future development would be compared to the applicable EPA and New Jersey VISLs and Indoor Air Remediation Standards. PRGs become final remediation goals (RGs) when EPA selects a remedy after taking into consideration all public comments. A complete list of ARARs can be found in Appendix II (Tables 09 to Table 12) and the final RGs for OU3 can be found in Appendix II (Tables 13a and 13b).

SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA Section 121(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 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 four remedial alternatives for addressing the groundwater contamination associated with the Site. The time to implement a remedial alternative reflects

only the time required to construct or implement the remedy and does not include the time required to negotiate with any responsible parties, design the remedy, procure contracts for design and construction, or conduct operation and maintenance at the Site. Detailed information regarding the alternatives can be found in the FS Report.

Description of Common Elements of All Alternatives

With the exception of the No Action alternative (Alternative 1), all of the alternatives include the following common components:

1. Assumption that implementation of the OU2 remedy will be completed and will remove the source to the shallow, intermediate, and deep groundwater. As stated in the 2020 OU2 ROD, "This selected remedy will also remove contaminated saturated soil, which acts as a source to shallow groundwater contamination. By removing these saturated soils, the concentrations of contaminants in groundwater that exceed ground water quality standards are anticipated to be reduced." Attenuation via natural processes following completion of the OU2 source control activities is expected to occur in the shallow and intermediate groundwater. Additionally, in accordance with the OU2 ROD, the OU2 remedy includes that engineering controls (ECs) and ICs will be established for any new structure built within the commercial property of the FMP Area.
2. Pre-Design Investigation (PDI) - The objective of a PDI would be to fill data gaps and obtain design parameters for the completion of the remedial design. A PDI could include groundwater screening, well installation and sampling, and hydraulic testing to further delineate the vertical and lateral extent of the treatment zones in the overburden aquifers. Models could be developed using the OU3 RI and PDI results to visualize contaminant distribution and evaluate the aquifer characteristics to assist in the remedial design.
3. Institutional Controls - ICs such as a groundwater Classification Exception Area (CEA) and Well Restriction Area (WRA), which provide notice of groundwater contamination exceeding standards and well drilling restrictions, would be implemented to eliminate the exposure pathways of contaminated groundwater to receptors. ICs would be implemented during and after the remedial action until the groundwater quality meets the NJDEP GWQS. EPA will finalize the CEA/WRA based on the results of the PDI and post-OU2 RA sampling.
4. Long-term Monitoring – A long-term monitoring (LTM) program would be established for shallow, intermediate, and deep groundwater to evaluate the concentration changes and ensure contamination is not migrating.

Five-year reviews will be conducted as a component of the alternatives that would leave contamination in place above levels that allow for unlimited use and unrestricted exposure. Pursuant to CERCLA Section 121(c), 42 U.S.C. §9621(c), a review of the RA will be conducted five years after the completion of the RA to ensure that the 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 Action

Alternative 1, the "No Action" alternative, is required by the NCP to provide an environmental baseline against which impacts of the other remedial alternatives can be compared. No action would be initiated to remediate contaminated groundwater or otherwise mitigate the migration of contamination that poses unacceptable risks to human health and the environment. This alternative also does not include monitoring or institutional controls.

Capital Cost:	$0
Annual O&M Costs:	$0
Present-Worth Cost:	$0
Construction Time:	Not Applicable
Estimated time to reach RAOs:	Not Applicable

Alternative 2 – Attenuation via Natural processes with ICs and LTM

Capital Cost:	$540,000
Total O&M Cost:	$773,000
Present-Worth Cost:	$1,310,000
Construction Time:	0 years
Estimated time to reach RAOs:	20 years

This alternative relies on natural processes, including physical, chemical, or biological processes, to reduce mass, toxicity, mobility, volume, or concentrations of contaminants in groundwater without human intervention. As described above, these processes include biodegradation, dispersion, dilution, sorption, volatilization, and precipitation.

This alternative would consist of the installation of new monitoring wells to supplement the existing monitoring well network. For cost estimating purposes, it is assumed that monitoring to

evaluate contaminant levels in Site groundwater would be conducted for a period of 20 years. This is based on regression analyses documenting the linear decline of benzene from the later 1990s to 2018, as detailed in Attachment 1 of the FS, assuming OU2 source areas are addressed. Because benzene is the most widespread and prevalent groundwater contaminant and extends beyond the influence of the OU2 remedy, its attenuation is expected to be representative of other Site-related contaminants.

Alternative 3 – Focused In-Situ Treatment with Attenuation via Natural Process, ICs and LTM

Capital Cost:	$3,402,312
Total O&M Cost:	$841,183
Present-Worth Cost:	$4,220,000
Construction Time:	2 years
Estimated time to reach RAOs:	10 years

Under this alternative, the residual mass of VOCs, SVOCs, and associated TICs in the MW-30 area would be treated with in-situ treatment technologies. Three technologies were evaluated during the OU3 FS: in-situ chemical oxidation (ISCO), in-situ chemical reduction (ISCR) with bioremediation, and sequestration and enhanced bioremediation. All were found to be effective at reducing residual concentrations of COCs within the MW-30 secondary source area. The effectiveness of the in-situ treatment technology depends on the amendment/reagent type and dosage rates, delivery and distribution in the treatment area, and the ability of the amendments/reagents to degrade COCs. Based on the evaluation of the three in-situ treatment technologies, sequestration and enhanced bioremediation was the most promising given existing site conditions, and for its use of non-hazardous amendments that would effectively and quickly treat benzene.

A PDI would be required to fully understand the extent of the MW-30 secondary source area and subsurface heterogeneities. Additionally, bench-scale testing would be needed for the selection of dosage rates, and pilot testing would be required to optimize amendment/reagent delivery into the subsurface. If the PDI phase yielded evidence of less-than-optimal results using sequestration and enhanced bioremediation, testing ISCO and ISCR with bioremediation alternative would be evaluated.

During and following implementation of active source treatment technologies, monitoring would be used to evaluate source area treatment, its effectiveness and duration, and attenuation via natural processes, to ensure the RAOs are attained both inside and outside the treatment area. The integration of in-situ treatment and attenuation via natural processes would enhance the effectiveness of the overall cleanup efforts for OU3.

This alternative would require:

- Re-installation of additional groundwater monitoring wells removed during the OU2 RA.
- Installation of injection points and performance of injections in the area surrounding the secondary source at MW-30. The treatment area is estimated to be approximately 25,000 square feet, at depths ranging from elevation 45 ft to 65 ft above mean sea level (approximately 55 to 75 feet bgs). For cost estimating purposes, it was assumed 20 days of drilling would be needed for the placement of the amendment and 2 injection events would be needed.
- Installation of additional wells to supplement the existing monitoring well network.

As presented in Attachment 1 of the FS (and Figure 6), the decline in benzene concentrations in wells beyond the influence of the secondary source has been rapid. In some wells, the GWQS for benzene has been achieved in a time frame of approximately 10 years. Therefore, it is assumed that the LTM following the in-situ injections would be conducted for 10 years. Because benzene is the most widespread and prevalent groundwater contaminant and extends beyond the influence of the OU2 remedy, its attenuation is expected to be representative of other Site-related contaminants.

For cost estimating purposes, it is assumed that planning, reporting and PDI would take three years to complete, and construction and implementation of the source control measure (two injections) would take two years. Based on data presented in Attachment 1 of the FS, it is estimated that it would take approximately 10 years to reach RGs following the second injection.

Alternative 4 – Groundwater Extraction and Treatment, ICs and LTM

Capital Cost:	$12,236,936
Total O&M Cost:	$11,525,200
Present-Worth Cost:	$ 23,760,000
Construction Time:	2 years
Estimated time to reach RAOs:	13 years

This alternative, groundwater extraction and treatment, ICs, and LTM, would consists of extraction wells pumping contaminated deep groundwater to the surface for treatment. Extraction and treatment is a well-established technology with known design standards and performance criteria, and the extraction system design for this alternative would need to be supported using groundwater modeling and field-testing to determine extraction well positioning

and flow rates, as well as bench and pilot-scale testing for water treatment before discharge or disposal of the treated water.

In addition to the modeling and bench and pilot testing, a PDI would be needed to support the number and location of wells, to determine soil properties, well design, capture zones from field pumping tests, groundwater/surface water interaction, and treatability testing to determine the appropriate methods and treatment efficiency.

For cost-estimating purposes, a conceptual groundwater extraction and treatment design would include:

- Construction of a groundwater extraction and treatment system, including obtaining access from landowners for extraction and monitoring well installation, installation of conveyance piping, and LTM of the extraction and treatment system. This could include:
    - 20 extraction wells, with up to 20-foot screens, installed at depths greater than 100 feet bgs.
    - Pumping rates for the wells are assumed to be 3 gallon per minute (gpm) across OU3, for total treatment system capacity of 60 gpm.
    - Centralized treatment plant would be constructed at 1 Foster Avenue and would include two lift stations and approximately 2,500 linear feet of trenching and conveyance piping.
    - Filtered groundwater would be treated using chemical oxidation, ion exchange, chemical reduction/precipitation, or a combination thereof. A filter press would reduce liquids and produce a solid for off-site disposal. Treated groundwater would be transferred into an air stripper, granular activated carbon (GAC), and/or membrane filtration system for VOC and SVOC treatment as a polishing step prior to a metered surface water discharge.
    - O&M would consist of monitoring influent/effluent flows and concentrations, air discharges, and groundwater conditions in the LTM network.

Figure 7 provides the conceptual layout of the extraction well system as developed for Alternative 4. Given the low hydraulic conductivity in the MW-30 area, the extraction and treatment system would need to be designed to cover a larger area to effectively treat the dissolved phase contaminants from the secondary source area.

The planning, reporting, and pre-design investigation would take five years to complete. Given the complexity of the system to build, it is estimated that that it would take two years to construct. Based on data presented in Attachment 1 of the FS, it is estimated that it would take approximately 13 years to reach RGs.

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 C.F.R. § 300.430(e)(9), EPA's Guidance for Conducting Remedial Investigations and Feasibility Studies under CERCLA (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 or not 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 costs 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 RI/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

Alternative 1, No Action, would not be protective of human health and the environment since it does not include measures to prevent exposure to groundwater containing COCs at concentrations greater than the RGs. Further, there would be no LTM of deep groundwater to document when the RGs are achieved.

Alternatives 2, 3, and 4 would be protective of public health and the environment under current conditions, assuming that the OU2 soil remedy has been implemented. Attenuation via Natural Processes with ICs and LTM (Alternative 2) would be protective because the CEA/WRA would prevent use of the groundwater containing COCs at concentrations greater than the RGs, and LTM would be performed to document when the RGs are achieved. However, without treatment of the source at MW-30, achieving the RGs would require an extended time frame.

The two remaining alternatives, Focused In-Situ Treatment with Attenuation via Natural Processes and ICs (Alternative 3), and Groundwater Extraction and Treatment (Alternative 4), would be protective of public health and the environment and would include the same IC as Alternative 2, a CEA/WRA to prevent use of groundwater until the RGs are achieved, which would occur in a less extended time frame. They would also include LTM to document the progress towards and achievement of the RGs.

· Compliance with ARARs

Although the RGs may eventually be achieved under Alternative 1 (No Action), because deep groundwater would not be monitored, EPA could not assess progress towards RGs. Therefore, this alternative would not comply with the chemical-specific ARARs, consisting of the NJDEP GWQS or the state and federal MCLs. Because no action would be taken, no action-specific or location-specific ARARs would apply. Because Alternative 1 does not meet the threshold criterion of compliance with ARARs, it is not further evaluated.

Attenuation via Natural Processes with ICs and LTM (Alternative 2) would achieve the RGs and eventually comply with chemical-specific ARARs and meet the RAOs. The ICs would aid in preventing use of the groundwater containing COCs at concentrations greater than the GWQS. Attenuation via Natural Processes with ICs and LTM is expected to require 20 years to achieve the GWQS for benzene in deep groundwater.

In-Situ Treatment with Attenuation via Natural Processes, ICs and LTM (Alternative 3) would comply with chemical-specific ARARs (NJDEP GWQS or state and federal MCLs) and action-specific ARARs and meet RAOs. Alternative 3 would include all of the components of Alternative 2 but would add a focused in-situ treatment for the secondary source of benzene in deep groundwater (area around MW-30). This treatment would minimize the migration of COCs. The time to achieve the RGs would be reduced compared to Alternative 2 (10 years compared to 20 years). LTM of deep groundwater would be performed to track progress of the remedy as required by NJDEP regulation.

Alternative 4 would meet chemical-specific ARARs (NJDEP GWQS or state and federal MCLs). Following the OU2 source area actions, groundwater extraction and treatment would achieve the NJDEP GWQS for benzene in deep groundwater in a time frame similar to that for attenuation alone, approximately 13 years. ICs in the form of a CEA/WRA would be established to aid in preventing the use of groundwater until the RGs are achieved, and LTM would be performed to document progress toward achieving the standards.

· Long-Term Effectiveness and Permanence

Alternative 2 would provide long-term effectiveness and permanence, though in a longer time frame than Alternatives 3 and 4. The concentrations of groundwater COCs in shallow and intermediate groundwater would decline to the GWQS following completion of the OU2 source control actions and benzene concentrations in deep groundwater would decline to the GWQS in approximately 20 years. Once the GWQS for groundwater COCs were achieved, there would be no potential for exposure.

For Alternative 3, EPA evaluated three in-situ treatment alternatives, all of which would provide long-term effectiveness and permanence. Each would reduce the concentrations in MW-30, providing for attenuation via natural processes to be effective for dissolved-phase benzene in deep groundwater. Based on the evaluation of the three in-situ treatment technologies, sequestration and enhanced bioremediation was the most promising given existing site conditions, and for its use of non-hazardous amendments that would effectively and quickly treat benzene. In combination with the OU2 remedy, all sources will be removed, preventing additional contributions to the groundwater. Of the three treatment technologies, ISCO would require the most controls and injection events to be effective given the site conditions. ISCR would maintain the existing anaerobic/reducing conditions that have been successful to date from a natural source zone depletion (natural attenuation) perspective and add amendments to facilitate mass removal. Sequestration would adsorb and concentrate benzene within PAC or CAC and allow biological activity to increase within the treatment zone.

Alternative 4, Groundwater Extraction and Treatment, would also provide long-term effectiveness and permanence, although the time needed to achieve the GWQS would be slightly longer than Alternative 3. However, if treatment was terminated prior to the source of benzene being depleted, rebound might occur.

· Reduction in Toxicity, Mobility, or Volume via Treatment

Under Alternative 2, natural processes would result in reduction of the toxicity, mobility, and volume of COCs through dispersion, dissolution, precipitation, sorption, and biodegradation in

groundwater. However, these natural attenuation processes associated with Alternative 2 are not treatment, and it is projected that 20 years or longer would be required for groundwater concentrations to achieve the RGs in the MW-30 area.

The in-situ treatment technologies associated with Alternative 3 would reduce toxicity, mobility, and volume of COCs through treatment. One would oxidize the benzene in the MW-30 area. The other two technologies would enhance anaerobic biodegradation of the benzene.

Alternative 4, Groundwater Extraction and Treatment, would reduce the mobility and volume over an extended period of time. The reduction in toxicity in groundwater would occur; however, the COCs would not be destroyed or degraded, only transferred/aerated, and concentrated on filter media, which would not reduce the toxicity to the environment as the media would require disposal or incineration.

· Short-term Effectiveness

Alternative 2 would have the least amount of impact on the public and the environment during implementation.

The In-Situ Treatment and Attenuation via Natural Processes alternative (Alternative 3) would have moderate impacts on the environment and public during implementation. Impacts could be from pressure build-up, which could lead to chemical releases. Additionally, daylighting or breakout of the injected amendment could also be released into sensitive areas (catch basins, drainage culverts, etc.) outside the treatment area. The balance of lower injection pressures and monitoring of the area surrounding the injection is an effective way to mitigate these issues. Additionally, transportation and storage of the amendments at the FMP Area during treatment activities could have short term impacts on the surrounding area. Spills and other incidents could have an effect on workers or the environment. If phased injection events were necessary as part of Alternative 3, this would cause added impacts on the community. Consideration of both worker and passers-by safety would occur during remedy implementation and be addressed in the health and safety plan.

Groundwater Extraction and Treatment (Alternative 4) would have the greatest impacts on the community, construction workers, and the environment. Construction of the extraction and treatment system would consist of well installation, installation of conveyance piping and trenching, pump station construction, and installation of access roads for well and piping installation. Utilities, including electricity and water, would need to be provided to the system. Water treatment chemicals would be transported to the Site, and sludge would be transported away from the Site for off-Site disposal. Noise and nuisance dust would also be a concern for the

community during the time it takes to construct the extraction and treatment system. Discharges from the treatment system may have difficulty achieving discharge limits for metals that are present in groundwater. Operation of the treatment system would also have adverse impacts. There is the potential for spills of water treatment chemicals and breaks in conveyance lines.

· Implementability

Because EPA expects that the OU3 groundwater RA would be implemented at the same time and in the same area that the OU2 LNAPL treatment remedy is being performed, coordination between these activities would be required.

Alternative 2 (ICs with LTM) would be simple to implement, as it includes no construction activities. There is a moderate difficulty in establishing the CEA/WRA, but that is a well understood administrative process in New Jersey.

The in-situ treatment, Alternative 3, has an overall moderate degree of difficulty to implement. However, in-situ treatment technologies are known to be available and successful at achieving project goals. Engineering/construction services, materials, and supplies are readily available. Regulatory agency knowledge of these technologies has grown, and this technology is widely accepted such that agency approvals are generally routine once the appropriate documentation is provided.

Once the PDI and bench-scale study has identified the best in-situ treatment technology, the remedial design would be completed. Monitoring of site conditions after injection events would be necessary to evaluate potential contaminant mobilization and/or migration. Phased injection events may be necessary.

The Groundwater Extraction and Treatment alternative, Alternative 4, would be the most difficult to implement due to the areal extent of COCs requiring capture, the need for multiple road crossings to bring infrastructure to a centralized spot, the low-flow extraction rates necessary to prevent dewatering of extraction wells, and the technologies needed to treat COCs. The presence of high concentrations of metals has the potential to foul all components of the treatment system, including the pumps, conveyance lines and treatment system components. Long-term operation of the system would require ongoing maintenance and repairs. Although the extraction and treatment technology has been used over decades to remediate groundwater at numerous contaminated sites, under certain conditions, it has been found that, as a result of factors such as back diffusion, once a system has been turned off, achieving goals may take longer than originally predicted and therefore, be less effective at targeting areas of matrix diffusion.

· Cost

Cost includes estimated capital and operation 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. This is a standard assumption in accordance with EPA guidance.

The estimated capital, operation and maintenance costs, and present worth costs assuming a 7% discount rate over a period of 30 years are discussed in detail in the FS Report. The cost estimates are based on the best available information. Detailed estimates for each of the alternatives can be found in Appendix II Table 14 to Table 17.

Alternative	Capital Cost	Total O&M Cost	Total Present-Worth Cost
1	$0	$0	$0
2	$540,000	$773,000	$1,310,000
3	$3,402,313	$841,183	$4,220,000
4	$12,236,936	$11,525,200	$23,760,000

· State Acceptance

The State of New Jersey concurs with the selected alternative for Site groundwater.

· Community Acceptance

EPA solicited input from the community on the remedial alternatives proposed for OU3, Site groundwater. EPA received written and oral comments from residents as well as elected officials. Comments from the community members generally indicated support of groundwater Alternative 3. Comments received during the public comment period and EPA responses are in the attached Responsiveness Summary, Appendix V.

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 (40 C.F.R. § 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. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment 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 principal threat wastes are addressed provides a basis for making a statutory finding that the remedy employs treatment as a principal element. There are no principal threat wastes associated with OU3.

SELECTED REMEDY

Based upon considerations of the results of the RI/FS, the requirements of CERCLA, the detailed analyses of the response measures and public comments, EPA has determined that Alternative 3 – Focused In-Situ Treatment with Attenuation via Natural Processes, ICs and LTM is the appropriate remedy for OU3, 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 C.F.R. § 300.430(e)(9).

Description of the Selected Remedy

The major components of the selected remedy are as follows:

- Assumption of implementation of the OU2 remedy;
- Implementation of a PDI and treatability study;
- Placement of ICs;
- Installation of injection points and performance of injections in the area surrounding the secondary source at MW-30.
- Installation of additional monitoring wells to 75 feet below the ground surface to supplement the existing monitoring well network for LTM purposes;
- Attenuation processes, including biodegradation, dilution, dispersion, sorption, volatilization, and precipitation, as the primary mechanism for contaminant reduction for areas where active groundwater remediation is not implemented.
- LTM of shallow, intermediate, and deep groundwater;
- Five-year reviews.

The total estimated present-worth cost for the selected remedy is $4,220,000, based on the assumption that sequestration with enhanced bioremediation is the most effective technology given existing site conditions, and therefore would be the technology used for in-situ treatment. A PDI will be required to fully understand the extent of the MW- 30 source area and subsurface

heterogeneities. Additionally, bench-scale testing will be needed for the selection of dosage rates, and pilot testing will be required to optimize amendment/reagent delivery into the subsurface. If during the PDI phase this study yields less than optimal results, EPA may evaluate other technologies, i.e., ISCO and ISCR with bioremediation. It is EPA's expectation that the OU2 source remedy will have a significant and beneficial impact on the OU3 groundwater. As such, the selected remedy for OU3, along with implementation of the remedy for OU2, constitute a comprehensive remedy for groundwater and will ensure that the RAOs are attained.

Implementation of a long-term groundwater monitoring program for both the shallow/intermediate and deep groundwater will track and monitor changes in the groundwater contamination to ensure the RAOs are attained both inside and outside the treatment area. The sampling program will also monitor groundwater quality including geochemical conditions and degradation byproducts generated by the treatment processes. The results from the long-term monitoring program will be used to evaluate the migration and changes in contaminants over time outside the treatment area.

Summary of the Rationale for the Selected Remedy

Site-related COCs are present in shallow, intermediate, and deep groundwater. The source areas are being addressed through a combination of the OU2 remedial action source control activities and LTM under the OU2 ROD. These source control activities include excavation of soils to expedite attainment of groundwater clean-up levels, and the removal and treatment of LNAPL. Attenuation via natural processes following completion of the OU2 source control activities is expected to occur in the shallow and intermediate groundwater. Once source area removal for OU2 has been completed, an IC in the form of a CEA/WRA will be established.

Three in-situ treatment technologies have been evaluated to attain RGs in deep groundwater: 1) in-situ chemical oxidation (ISCO), 2) chemical reduction/biological treatment, and 3) sequestration and biological degradation. Each of these three approaches has advantages and potential shortcomings. The selected remedy includes a PDI and treatability studies, which will be used to confirm the use of sequestration and enhanced bioremediation as the optimal in-situ technology.

The in-situ treatment technology will be capable of reducing dissolved-phase benzene concentrations and treating any residual source material that may be present. Once EPA determines that the in-situ treatment technology is no longer necessary based on post-injection monitoring, it will be followed by attenuation via natural processes for benzene in deep groundwater and accompanied by an IC in the form of a CEA/WRA with LTM, until such time as RGs are achieved. Because benzene is the most widespread and prevalent groundwater

contaminant and extends beyond the influence of the OU2 remedy, its attenuation is expected to be representative of other Site-related contaminants.

Alternative 3 will be protective of human health and the environment and will comply with ARARs. The time period for the RG for benzene to be achieved is less than the time period under the other alternatives considered, and the CEA/WRA with LTM will prevent groundwater use until such time as drinking water standards are achieved. The focused treatment will meet the RAO of minimizing migration of contamination.

Alternative 3 will provide permanence and long-term protectiveness. With the sources removed or treated as part of the OU2 and OU3 remedies, there will be no ongoing contribution to groundwater contamination, so once the cleanup goals are achieved, there is little risk of groundwater concentrations increasing in the future.

The in-situ treatment technology will also provide a reduction of toxicity, mobility, and volume through treatment. The treatment in the secondary source area will reduce both the benzene and VOC/SVOC TIC concentrations in the treatment area, as well as downgradient benzene concentrations. Lower benzene concentrations equate to a smaller volume of benzene, and the lower concentrations will limit the transport of benzene at concentrations greater than the RGs.

The in-situ technologies have a moderate degree of short-term impacts. These risks are primarily associated with transportation of the treatment chemicals. However, any risks to community members, workers and environment from the in-situ technologies will be addressed by having a robust health and safety plan. Finally, the in-situ technologies are implementable. The equipment and reagents are readily available.

Based upon the information currently available, EPA, in conjunction with NJDEP, believes that the selected remedy 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; 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 partially satisfies the preference for treatment as a principal element. 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 will be mitigated using the appropriate health and safety measures. With respect to the two modifying criteria, state acceptance and community acceptance, NJDEP concurs with the selected remedy, and comments received from community members indicated support of the selected remedy.

Expected Outcomes of the Selected Remedy

The selected remedy will reduce the back diffusion of VOC mass from the deep clay source area which continues to serve as a source of deep groundwater contamination. Therefore, EPA expects that implementation of this remedy will facilitate achievement of the OU3 groundwater RAOs and restore the shallow, intermediate, and deep groundwater quality to the NJDEP GWQS, within a reasonable time frame.

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).

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

The selected groundwater remedy will be protective of human health and the environment by utilizing Focused In-Situ Treatment, Attenuation via Natural Processes, ICs and LTM to treat the groundwater. ICs in the form of CEA/WRA will be established to prevent use of contaminated groundwater until the NJDEP GWQS are achieved. LTM will be used to document the progress towards and achievement of the RGs.

Although the selected remedy could have moderate unacceptable short-term risks on the environment and public during implementation, these impacts will be mitigated by the implementation of a health and safety plan, and therefore it will be protective of human health and the environment.

Compliance with ARARs

EPA expects that the selected remedy for groundwater will comply with federal and New Jersey ARARs. A complete list of ARARs and TBCs can be found in Appendix II-B, Tables 09 – 12.

Location-specific ARARs (Appendix II-B, Table 9) apply to work being conducted in areas regulated by NJDEP Division of Land Resource Preservation, such of flood hazards and wetlands. Location-specific ARARs include the federal Fish and Wildlife Coordination Act and the New Jersey Freshwater Wetlands Protection Act and Clean Water Act.

The action-specific ARARs (Appendix II-B Table 10) for the Site groundwater include the federal Resource Conservation and Recovery Act.

Chemical-specific ARARs (Appendix II-B, Table 11) for site-related COCs in groundwater include the New Jersey Ground Water Quality Standards, and Federal Safe Drinking Water Act Maximum Contaminant Levels.

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 $4,220,000.

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 15-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 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 OU3 of the Site. The selected remedy satisfies the criteria for long-term effectiveness and permanence by effectively removing the sources to the shallow and intermediate groundwater and effectively reducing the mass of the deep groundwater source area, thereby reducing the toxicity, mobility, and volume of 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. Focused in-situ treatment for OU3 partially satisfies the statutory preference for treatment as a principal element of the remedy in that it includes treatment of the source of contamination in the deep aquifer. Additionally, the bioremediation of LNAPL that is part of the OU2 remedy will treat the shallow sources of contaminated groundwater at the Site. Together, these remedies, along with attenuation via natural processes, will address the remaining contaminated groundwater.

Five-Year Review Requirements

Because the selected remedy will not result in hazardous substances remaining on-site above levels that allow for unlimited use or unrestricted exposure, but will take longer than five year to attain RAOs, a review of the remedial action pursuant to CERCLA Section 121(c) will be conducted five years after the completion of the remedial action to ensure that the remedy continues to provide adequate protection to human health and the environment.

DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for OU3 of the Site was released for public comment on July 27, 2025. The comment period closed on August 26, 2025. The Proposed Plan identified Alternative 3 as the preferred alternative to address groundwater contamination. Upon review of all comments submitted, EPA determined that no significant changes to the selected remedy, as it was presented in the Proposed Plan, are warranted.

However, errors were noted on page 20 and page 24 of the Proposed Plan. On page 20, the construction time for Alternative 2 was shown as 2 years in the Proposed Plan, but no construction would be needed for this alternative. In the text above, the construction time is correctly shown as 0 years. Additionally, on page 20, the estimated time to reach RAOs for Alternative 3 was shown incorrectly as 12 years. This time frame included the time required to construct and implement the alternative. The estimated time frame to reach RAOs has been corrected in the text above to reflect 10 years. Time frames throughout the document have been updated accordingly. Since the relative time to reach RAOs remains the same as what was presented in the Proposed Plan, EPA's comparison of alternatives is unchanged by this correction.

Also, while the Proposed Plan Section "Basis for the Remedy Preference" discussed the long-term effectiveness and permanence of Alternative 3, the comparative analysis of the alternatives omitted a comparison of Alternatives 2, 3, and 4 in terms of this NCP balancing criterion. A full discussion of the long-term effectiveness and permanence criterion, showing that Alternative 3 is somewhat superior to Alternatives 2 and 4, is in the ROD text above, and was also available to the public in the FS Report, as indicated in the Proposed Plan.