UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

MODIFICATION TO
HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984
PERMIT

Permittee: Ortho-Clinical Diagnostics, Inc.
1001 U.S. Route 202 North
Raritan, New Jersey 08869

EPA I.D. Number: NJD068715424
Effective Date: May 30, 2026
Expiration Date: May 29, 2036

The United States Environmental Protection Agency ("EPA") Region 2 is issuing this proposed Permit Modification to the Hazardous and Solid Waste Amendments of 1984 ("HSWA") Permit that the EPA issued for the facility located at 1001 U.S. Route 202 North, Raritan, New Jersey 08869 on September 19, 1988. The facility is currently owned by Ortho-Clinical Diagnostics, Inc. ("OCD"). With this HSWA Permit Modification, EPA has selected the corrective measures for the facility and OCD, as the permittee, is required to implement the selected corrective measures.

The HSWA Permit modification consists of:

- This Cover Page
- Module II-Supplement
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- Attachments
    - Supplement Attachment 1. Site Location and Monitoring Well Maps
    - Supplement Attachment 2. AOC/SWMU/TCE Plume Status Summary and Selected Corrective Measures with references
    - Supplement Attachment 3. TCE Plume
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    - Supplement Attachment 5. Corrective Measures Implementation Scope of Work
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MODULE II – SUPPLEMENT: FACILITY DESCRIPTON

This Module II- Supplement updates the Facility description set forth in Module II of the September 19, 1988 HSWA Permit.

Background Information

Ortho-Clinical Diagnostics, Inc. ("OCD" or "Permittee") owns and/or operates a facility, located at 1001 U.S. Route 202 North in Raritan Borough, Somerset County, New Jersey ("Facility"). The Facility manufactures hospital and laboratory reagents used primarily for blood chemistry clinical products, which are usually packaged into "diagnostic kits." The property occupies Lot 4 on Block 31 of the Raritan Borough tax map and encompasses an area of approximately 66 acres. Approximately 9 acres of the Facility are covered by buildings, 16 acres are roadways, parking lots, and other paved surfaces, 11 acres are wooded areas, and 30 acres are landscaped areas. Security measures at the Facility include a chain-link fence, surveillance cameras, and ongoing surveillance by security guards.

The Facility is located in an industrially zoned area. The area surrounding the site consists of a mix of industrial and residential land usage. Route 202 is located immediately north of the site; the New Jersey Transit Raritan Maintenance Yard is located south and southeast of the site; the former North American Products facility and residential properties are located to the east; and the Johnson & Johnson Networking and Computer Services building is located to the west. The Raritan Industrial Park is situated south of the New Jersey Transit Raritan Maintenance Yard and south-southeast of the Facility. See Supplement Attachment 1 -Site Location Map.

Site History

Ortho Products, Inc. acquired the site from the Township of Bridgewater at a public auction in 1945. The corporate name of the company was changed to Ortho Pharmaceutical Corporation ("OPC"), a division of Johnson & Johnson Company ("J&J"), following the purchase of the property. In December 1973, Ortho Diagnostics Inc. ("ODI") was formed from OPC as a separate subsidiary of J&J. From 1972 to 1976, ODI coexisted on the property with OPC. OPC moved its operations to the northern side of Route 202 in 1976, off of the Facility's property. ODI changed its name in July 1980 to Ortho Diagnostic Systems, Inc. ("ODSI"). Effective January 1, 1998, the name of the Facility's operating entity was changed from ODSI to OCD with no change in ownership. The Carlyle Group acquired OCD from J&J on June 30, 2014 and OCD later became a stand-alone publicly offered company in February 2021. On May 27, 2022, OCD became a wholly owned subsidiary of QuidelOrtho Corporation following a business combination with Quidel Corporation.

Since 1973, operations on the Facility property have focused on research and production operations related to transfusion medicine (donor screening and immunohematology) products.

Current Operations

OCD manufactures between 200 to 300 hospital and laboratory reagents used primarily for transfusion medicine products. These products are usually packaged into "diagnostic kits." OCD uses chemical products and compounds as part of its production and research and development activities and generates hazardous wastes from these operations as a large quantity generator. The primary solvent used in production is methanol, which was used to manufacture RhoGAM. The Facility ceased RhoGAM manufacturing operations in December 2023. The majority of the hazardous wastes generated at the Facility are spent organic solvents, with the remainder comprised of metals and other inorganic wastes.

Operations at the site also include cleaning and maintenance of the equipment. Cleaning is accomplished with detergents and chemicals that include potassium hydroxide. Alcohol is used to clean and disinfect equipment. Maintenance operations include changing of oils used in the machinery and in sustaining the refrigeration systems.

Environmental Setting:

The site is relatively flat lying with a slight slope to the south. The site is situated approximately 1.2 miles east of the North Branch of the Raritan River, which flows south to its confluence with the South Branch forming the main branch of the Raritan River. The main branch of the Raritan River flows to the east and is approximately 0.75 miles south of the site. A small drainage ditch transmits stormwater flow southward in the western portion of the site, eventually leading to an unnamed tributary of the Raritan River. Stormwater is conveyed in the eastern and central portions of the site to either the East Storm Sewer Outfall 001 or the West Storm Sewer Outfall 002, respectively, pursuant to a New Jersey Pollutant Discharge Elimination System (NJDPES)-Basic Industrial Stormwater Permit (5G2) (NJPDES # NJG0122262). Both outfalls discharge into a drainage ditch that runs along the New Jersey Transit railroad tracks, immediately south of the site. A divide in the drainage ditch results in the flow of stormwater toward the west and toward the east, each pathway ultimately leading to an endpoint at the Raritan River.

The site lies within the Piedmont Physiographic Province (Triassic Lowlands) which is characterized mainly by gently rounded lowland hills separated by wide valleys. The site is underlain by the Passaic Formation, which consists of non-marine, reddish-brown mudstone, shale, siltstone, and fine-grained sandstone interbedded with a lesser amount of gray to black siltstone, shale, and mudstone. Bedrock composed predominantly of weathered reddish-brown shale and siltstone is encountered at an approximate depth of 3 to 12 feet below grade. More competent bedrock zones are typically encountered below a depth of 30 feet.

The Passaic Formation is composed primarily of relatively impermeable material and derives its water-bearing properties mostly due to secondary porosity in the form of bedding plane fractures, near-vertical joints, and weathered zones within the formation. Two water-bearing zones have been identified at the site. The first water-bearing zone typically occurs in the shallow weathered bedrock within a depth of approximately 40 feet. The depth to water in monitoring wells screened within this zone varies from 6 to 28 feet below grade. The predominant groundwater flow direction in the shallow bedrock zone is toward the south. The shallow water-bearing unit appears to be separated from a deeper water-bearing zone by more competent beds in the Passaic Formation as evidenced by a hydraulic head differential of approximately 40 feet between the two zones. The depth to water in monitoring wells screened in the deep bedrock zone ranges from 48 to 67 feet below grade. Where fractures are encountered, the deeper bedrock zone is typically characterized by a higher permeability than the shallower zone.

A detailed evaluation of groundwater usage in the vicinity of the Facility determined that there were no active domestic wells located within a half-mile distance downgradient of the site. The focused well search indicated that all residences were connected to the Elizabethtown Water Company's supply. No public supply wells exist within a one-mile radius of the site. One active industrial supply well was identified at a location within the Raritan Industrial Park, approximately 600 feet south of the property boundary.

Site Regulatory History:

Environmental conditions at the Facility have been evaluated in conjunction with investigative and monitoring activities completed pursuant to regulatory permits issued by the New Jersey Department of Environmental Protection ("NJDEP") and the United States Environmental Protection Agency ("EPA"), as described below.

Ortho Diagnostic Systems, Inc., a predecessor of the current Permittee OCD, submitted a RCRA Part B permit application to EPA for the Facility on December 5, 1984. EPA issued a HSWA Permit for the Facility on September 19, 1988. NJDEP issued a Hazardous Waste Management ("HWM") Permit for the Facility on September 30, 1988. The two permits collectively constituted a Resource Conservation and Recovery Act ("RCRA") Permit for the Facility. The HWM Permit authorized the Permittee to operate a hazardous waste facility with four regulated units: one incinerator, two container storage areas, and one aboveground vaulted tank. The four units were closed in accordance with NJDEP procedures and NJDEP terminated the HWM Permit on July 22, 1991.

A NJDPES Discharge to Groundwater ("DGW") Permit was issued to OCD on April 4, 1990 which was modified in 1992. Since 1992, the NJPDES-DGW Permit has also required the Facility to perform quarterly groundwater monitoring throughout the site and to evaluate trends in volatile organic compounds ("VOCs") on a quarterly basis. Following the implementation of a successful enhanced reductive dechlorination ("ERD") pilot study in 2002, Permittee initiated

the full-scale ERD remediation program in 2004 to address the TCE Plume in groundwater that extends from the Facility in the vicinity of Buildings J and R, southward to the NJ Transit property, located south of the Facility. Full-scale ERD activities continue following a Discharge to Groundwater Permit-by-Rule (DGW-PBR) by NJDEP, which was renewed in May 2024.

The remaining HSWA Permit, including the Module III Supplement, requires Permittee to, among other things, implement corrective action requirements for the Facility, which includes conducting an investigation to determine the extent to which hazardous waste and/or constituents have been released to the environment from the Facility and, if necessary, implementing corrective measures to cleanup any such releases, including those that might have migrated off-site. Pursuant to the HSWA Permit, Permittee has conducted remedial investigations and determined that the manufacturing operations and hazardous waste management activities at the Facility caused soil and groundwater contamination.

The investigations have resulted in characterizing the contamination for 13 Solid Waste Management Units ("SWMUs") and 19 Areas of Concern ("AOCs"), 5 Industrial Site Recovery Act Areas of Concern, and a groundwater plume contaminated primarily with trichloroethylene ("TCE Plume") at the Facility. Pursuant to the HSWA Permit, Permittee has also implemented interim corrective measures ("ICMs") to address soil and groundwater contamination at the Facility. Soil-related ICMs included the excavation and off-site disposal of waste and contaminated soil and the decontamination of manholes and repair of process and sewer pipelines. Additionally, as stated above, in 2004 the Permittee initiated an ERD remediation program as a groundwater ICM to remediate the TCE Plume near Buildings J, R, and G.

The results of the remedial investigations indicated that a No Further Action ("NFA") determination is warranted for SWMUs 1 to 7, SWMU-9, SWMUs 11 to 13, AOCs 1 to 15, AOCs 17 to 19, and ISRA-AOCs 1 to 5. Active corrective measures are required for the TCE Plume, SWMU-8, SWMU-10, and AOC-16. See Supplement Attachment 2 (AOC/SWMU/TCE Plume Status Summary and Selected Corrective Measures).

As indicated above, the Permittee has been conducting ICMs for SWMUs 8 and 10 and the TCE Plume, which have been effective. Corrective measures for these areas, as well as AOC-16, shall continue under this Permit as final remedial measures.

MODULE III - SUPPLEMENT: CORRECTIVE ACTION REQUIREMENTS

A. Introduction

1. This Module III-Supplement modifies Module III of the 1988 Hazardous and Solid Waste Amendments of 1984 ("HSWA") Permit and sets forth the requirements to implement certain corrective measures at the Facility.

2. Specifically, this Module III-Supplement contains the corrective measures for the groundwater impact associated with the Trichloroethylene ("TCE") Plume, Solid Waste Management Unit ("SWMU")-8, and SWMU-10 and the soil impact associated with SWMU-10 and Area of Concern ("AOC")-16. This Module III-Supplement also identifies SWMUs and AOCs which require no further action.

3. The provisions of Module III of the November 1988 HSWA Permit remain in effect, except as modified or supplemented herein.

B. Corrective Action Criteria and Objectives

1. Permittee shall conduct corrective measures for the TCE Plume, SWMU-8, SWMU-10, and AOC-16 pursuant to the terms of this Module III-Supplement. The corrective measures must meet the following corrective action criteria: (1) protection of human health and the environment based on current and reasonably anticipated land use; (2) attainment of applicable media standards for constituents of concern ("COCs"); and (3) control of sources of release(s). Additionally, the corrective measures must attain all of the applicable Corrective Action Objectives ("CAOs") identified below in Section B.2 of this Module III-Supplement or as otherwise designated in this Supplement. The corrective action criteria and CAOs jointly ensure that the corrective measures are protective of human health and the environment by setting protective standards or concentration levels for hazardous waste and/or hazardous constituents in each medium, and by controlling sources of releases so as to reduce or eliminate, to the maximum extent practicable, any further releases of hazardous waste and/or hazardous constituents that might pose a threat.

2. CAOs: The Facility is located in an industrially zoned area. The groundwater beneath and near the Facility is not used for drinking water.

    a. The CAOs for the TCE Plume, SWMU-8, and SWMU-10 are:

        i. Attainment of the NJDEP Class IIA Ground Water Quality Standards ("GWQS") for the contaminants detected in groundwater impacted by the TCE Plume and SWMUs 8 and 10;

ii. Prevention of human exposure to groundwater exceeding the NJDEP GWQS; and

iii. Prevention of vapor intrusion of volatile organic compounds ("VOCs") above the NJDEP indoor air remediation standards from groundwater located beneath occupied buildings.

b. The CAOs for SWMU-10 and AOC-16 (areas with soil impact) are:

i. Attainment of NJDEP soil remediation standards ("SRS") for the COCs in soil impacted by SWMU-10 and AOC-16; and

ii. Prevention of human exposure to soil with COCs exceeding the standards.

C. Corrective Measures ("CMs")

Descriptions of the SWMUs and AOCs referenced above and the corrective measures selected for each, are set forth below. Additionally, the corrective measures must meet the corrective action criteria and attain the applicable CAOs identified in Sections B.1 and B.2 of this Module III-Supplement. Permittee shall develop and implement the corrective measures pursuant to EPA approved workplans, developed pursuant to Section D of this Module III-Supplement.

1. TCE Plume:

The remedial investigations conducted at the Facility delineated a groundwater plume contaminated with dissolved chlorinated aliphatic hydrocarbons ("CAHs"). The contamination source appears to be beneath Building G, which is located near the central portion of the Facility. TCE was historically used as a secondary refrigerant in a lyophilizer unit located in Building G. Since 2004, the Facility has been operating an Enhanced Reductive Dechlorination ("ERD") remediation program in this area as an Interim Corrective Measure ("ICM") under the EPA HSWA Permit. The ERD remediation program, which was first initiated as a pilot study in 2002 pursuant to an NJDEP Discharge to Ground Water Permit-by-Rule ("DGW-PBR"), establishes an in-situ reactive zone in groundwater which enhances the degradation of CAHs. The ERD remediation program continues to be implemented jointly under the HSWA Permit and the DGW-PBR, which was renewed in May 2024. Sampling data indicate that the ERD remediation program has been effective in stabilizing the plume and the continued degradation of CAHs in groundwater. Continuation of the ERD remediation program is necessary to maintain the in-situ reactive zone conditions within this groundwater area. See Supplement Attachments 2 and 3 for additional information.

The following CAHs have been detected at concentrations above the NJDEP standards in the TCE Plume: perchloroethylene ("PCE" also known as tetrachloroethylene); TCE, 1,1-dichloroethylene ("1,1-DCE"); cis-1,2-dichloroethylene ("cis-1,2-DCE"); and vinyl chloride ("VC").

The NJDEP GWQS for these compounds which must be met are:

Chemical Name	NJDEP GWQS (ug/L)
PCE	1
TCE	1
1,1-Dichloroethylene ("1,1-DCE")	1
cis-1,2-dichloroethylene ("cis-1,2-DCE")	70
vinyl chloride ("VC")	0.035

Corrective Measures

To attain the CAOs, including the above- referenced GWQS, identified in Section B of this Module Supplement, Permittee shall perform the following corrective measures for the TCE Plume:

- Continue the ERD Remediation Program (injection) pursuant to the NJPDES DGW-PBR;
- Design and implement a groundwater monitoring program pursuant to 40 CFR §264.100 and provide EPA with monitoring data; and
- Establish a Classification of Exceptions Area ("CEA") pursuant to applicable State requirements.

Permittee must prepare and submit a Corrective Measures Implementation Workplan for EPA approval pursuant to Section E of this Module III-Supplement.

2. SWMU-8 (Southwest Leach Field):

The Southwest Leach Field is located approximately 400 feet southwest of Building K under an existing paved parking lot. The Leach Field is approximately 30-feet long and 30-feet wide and is constructed of six-inch diameter vitrified clay pipe set within a bed of two-inch to five-inch diameter gravel. The Leach Field operated from 1966 until 1971.

Permittee conducted site investigations in 1987, 1988, 1989, 1991, 1997, and 2008, which included soil borings, soil gas survey, geophysical survey, test pits, and groundwater monitoring. These investigations identified and delineated the soil and groundwater impacts by benzene, PCE, TCE, and VC in this area. During the investigation in 1997, Permittee discovered a 10,000-gallon waste solvent underground storage tank ("UST") located approximately 30 feet northeast of the Southwest Leach Field. The UST and surrounding impacted soil were disposed of off-site on June 7, 1997.

After the 1997 removal and disposal of the UST tank and surrounding impacted soils, supplemental investigations indicated that the remaining soil impact did not exceed the EPA and NJDEP soil standards for industrial usage, so that no further soil remediation is warranted unless usage changes. The groundwater data indicates that the VOCs contamination in groundwater is localized and warrants monitoring and groundwater institutional controls with no active remediation. Groundwater is impacted primarily with benzene, PCE, TCE and VC. See Supplement Attachment 2 for additional information.

The NJDEP GWQS for these compounds which must be met are:

Chemical Name	NJDEP GWQS (ug/L)
Benzene	1.0
PCE	1.0
TCE	1.0
VC	0.035

Corrective Measure

To attain the CAOs, including the above- referenced GWQS, identified in Section B of this Module Supplement, Permittee shall perform the following corrective measures for SWMU-8:

- Design and implement a groundwater monitoring program pursuant to 40 C.F.R. § 264.100 and provide EPA with monitoring data; and
- Establish a CEA pursuant to applicable State requirements.

Permittee must prepare and submit a Corrective Measures Implementation Workplan for EPA approval pursuant to Section E of this Module III-Supplement.

3. SWMU-10 (Three No. 6 Fuel Oil USTs):

SWMU-10 is comprised of three abandoned No. 6 fuel oil USTs located in Building C: two 10,000-gallon USTs and one 20,000-gallon UST. Related piping is located beneath both Building C and Building H. The three USTs were taken out of service in 1986. In 1993, following the removal of residual content and surrounding impacted soil, all three tanks were filled with cement grout and abandoned in place.

In August 2017, petroleum hydrocarbons were observed at the East Storm Sewer Outfall, leading to an investigation. Based on the investigation, it was determined that the presence of the fuel oil-related compound, Light Non-Aqueous Phase Liquid (“LNAPL”), at the outfall was tied to SWMU-10. Perched groundwater conditions and nearby leaky pipe/sewer line facilitated the migration of the LNAPL from the SWMU-10 area to the outfall.

The Facility implemented a two-tiered ICM, which consisted of using a passive absorption method (application of absorbent socks) and an active method (high-vacuum extraction and recovery program) at impacted wells, catch basins, and manholes to collect LNAPL. Groundwater data indicates that the ICM was effective and that the LNAPL extraction and recovery system should be continued as a final corrective measure. Institutional control is warranted for the area with the three abandoned tanks. See Supplement Attachment 2 for additional information.

The contaminants of concern at SWMU-10 are LNAPLs and petroleum hydrocarbons in the groundwater. The NJDEP GWQS and soil remediation standards for these compounds which must be met are:

Chemical Name	NJDEP GWQS (ug/L)	NJDEP Non-residential Ingestion-Dermal Exposure Soil Remediation Standards [mg/kg] (SRS)
Benzo(a)anthracene	0.1	23.0
Benzo(a)pyrene	0.1	2.3
Benzo(b)fluoranthene	0.2	23.0
Benzo(k)fluoranthene	0.5	230.0
Dibenz(a,h)anthracene	0.3	2.3
Indeno(1,2,3-cd)pyrene	0.2	23.0

Corrective Measures

To attain the CAOs, including the above- referenced GWQS and soil remediation standards, identified in Section B of this Module Supplement, Permittee shall perform the following corrective measures for SWMU-10:

- Implement the LNAPL extraction and recovery program;
- Design and implement groundwater monitoring program pursuant to 40 C.F.R. § 264.100 and provide EPA with monitoring data;
- Establish a deed notice and a CEA pursuant to applicable EPA and State requirements; the deed notice must reference the USTs formerly in Building C and the piping located beneath Buildings C and H; and
- Assess the potential for vapor intrusion of contaminants detected in groundwater and LNAPL into Buildings C and H;

Permittee must prepare and submit a Corrective Measures Implementation Workplan for EPA approval pursuant to Section E of this Module-Supplement.

4. AOC-16 (Soil in Building Basement):

AOC-16 is an unpaved 180' x 120' area at the basement level of Building B. This soil area extends throughout most of the Building B basement. Plumbing, electrical, and utility lines that service the building are suspended from the ceiling. Air handling and air conditioning equipment, electrical transformers and equipment, refrigeration compressors, vacuum pumps and boilers are also located in the building. This area is unoccupied, except for occasional maintenance personnel conducting maintenance and repair activities. The remedial investigation detected constituents in the soil, including polychlorinated biphenyls ("PCBs"), lead, mercury, antimony, beryllium, and polyaromatic hydrocarbons ("PAHs"). Additional soil samples were collected in March and May 2023 to delineate areas where the extent of lead concentrations above 2,000 mg/kg were detected. See Supplement Attachments 2 and 4 for additional information.

Chemical Name	NJDEP Non-residential Ingestion-Dermal Exposure Soil Remediation Standards [mg/kg] (SRS)
PCBs	1.1
Lead	800.0
Mercury	390.0
Antimony	520.0
Beryllium	2600.0
PAHs	varies according to specific compounds

Corrective Measure:

Permittee shall perform the following corrective measures for AOC-16, which are further described in Supplement Attachment 4:

- Installation of a cover system over 3 targeted areas contaminated with lead above 2,000 ppm. The targeted areas are set forth in Supplement Attachment 4.
- Installation and maintenance of fencing around AOC-16;
- Placement and maintenance of warning signage; and
- Placement of deed restriction for preventing human exposure to the soil impact; and
- Compliance with the engineering controls set forth in Supplement Attachment 4;

This area may be subject to further remedial requirements subject to zoning changes or demolition of, or modification, to the building resulting in greater accessibility to the area. In the event that AOC-16 becomes fully accessible, Permittee must notify EPA of such accessibility and must prepare and submit a Corrective Measures Implementation Work Plan for EPA approval pursuant to Section E of this Module III Supplement, which when implemented shall meet the soil remediation standards set forth above, unless otherwise approved by EPA.

D. SWMUs and AOCs with No Further Action (NFA) Determinations:

Under the RCRA corrective action program, EPA may make a No Further Action ("NFA") determination when a SWMU or AOC has been remediated to levels which are protective of human health and the environment. A NFA determination may also be made if an investigation shows that there were no releases from the SWMU or AOC or if releases did not result in risks to human health or the environment.

Based on the results of the remedial investigations and ICMs previously conducted, EPA has concluded that NFA determinations are appropriate for the following SWMUs and AOCs: SWMUs 1 to 7, SWMU-9, SWMU-11 to 13, AOCs 1 to 15, AOC-17 to 19, and ISRA-AOCs 1 to 5. See Attachment 2 for a more detailed description of these SWMUs and AOCs determinations.

E. Corrective Measure Implementation Requirements

1. Preparation of Corrective Measure Implementation Workplan ("CMI WP"):

Permittee shall prepare a CMI WP for the corrective measures identified above for the TCE Plume, SWMU-8, and SWMU-10. Should AOC-16 become accessible, Permittee shall prepare a CMI WP for that area as well. To the extent these SWMUs and/or AOCs already have approved ICMs in place, the CMI WP may reference the approved ICM, and then add provisions related to the scheduling and the completion of remediation (*i.e*., implementation of groundwater monitoring and engineering controls). Permittee may submit one CMI WP covering all areas or separate WPs as it deems appropriate. If Permittee submits a Remedial Action Workplan to EPA which will satisfy the requirements of the CMI WP, it must be indicated as such.

a. Permittee shall submit a CMI WP to EPA for its review and approval within ninety (90) calendar days from the effective date of this Permit Modification, or as otherwise agreed to by EPA.

1) Permittee shall reference the CMI WP Scope of Work as provided in Supplement Attachment 5 to this HSWA Permit Modification as guidance in developing the CMI WP(s).
2) The CMI WP must include a compliance schedule.
3) Permittee shall employ green policies pursuant to Section I.4 of this Module III-Supplement.
4) If desired, Permittee may arrange a meeting or teleconference with EPA within twenty (20) calendar days of the effective date of this Permit Modification, or as otherwise agreed to by EPA, to discuss scoping of the CMI WP.

b. Permittee shall provide a written response and/or modified CMI WP within sixty (60) calendars days, or as otherwise agreed to by EPA, from receipt of EPA's review comments on the CMI WP submittal.

2. Implementation: Unless otherwise agreed, Permittee shall implement the approved CMI WP within 30 calendar days from receipt of EPA approval. EPA may sequentially approve portions of the CMI WP, and implementation shall begin for any approved portions within 30 days of receipt of approval.

3. CMI Report: Permittee shall submit the CMI Report pursuant to the schedule contained within the approved CMI WP. The CMI Report shall follow the guidance set forth in Supplement Attachment 5 to the HSWA Permit modification.

4. Annual Meeting/Teleconference
   a. Permittee shall initiate arranging and scheduling a meeting or teleconference at least once a year with EPA program staff overseeing this Permit.
   b. The Agenda shall include, at a minimum, the following items
      1) Corrective Action Progress Report including data update, new information learned, concerns, *etc*.
      2) Changes or anticipated changes to site conditions that may impact corrective measures including, but not limited to:
         i. any change that may present opportunity to enhance and/or improve corrective measures and/or source control and/or
         ii. any changes that are obstacles to corrective action program

      (At a minimum, the TCE Plume source area and AOC-16 soil area should be included as topic in the annual meeting.)
      3) Environmental Indicators – Confirmation that, at current site environmental conditions, the RCRA corrective action environmental indicators CA725 (Current Human Exposures Under Control) and CA750 (Migration of Contaminated Groundwater Under Control) are still being met.
      4) Other items

F. Amendment of RFI, CMS, or CMI Plan

1. If, at any time, the Director of the Land, Chemicals and Redevelopment Division, EPA Region 2 determines that a RCRA Facility Investigation ("RFI"), Corrective Measures Study ("CMS"), or Corrective Measures Implementation ("CMI") Plan required by this Module III-Supplement, or which have been previously submitted to EPA or performed by Permittee, no longer satisfy the requirements of Section 3004 of RCRA, as amended (42 U.S.C. § 6924), and/or 40 C.F.R. § 264.101, or this Permit, for prior or continuing releases of hazardous waste and/or hazardous constituents from SWMUs or AOCs, Permittee must submit amended plan(s) to the Director within ninety (90) days of Permittee's receipt of written notice of such determination.

G. Financial Assurance for Corrective Measures

1. Permittee shall comply with the financial assurance requirements for cleanup (also referred to as corrective action) set forth in 40 C.F.R. § 264.101, Section 3004 of RCRA, as amended (42 U.S.C. § 6924) and this Permit.

2. Within 30 days of the EPA's approval of the CMI Workplan(s) for the TCE Plume, SWMU-8, SWMU-10, and/or AOC-16, as well as for any newly-identified corrective measure, unless otherwise directed by EPA, Permittee shall: i) establish financial assurance for corrective action activities required by this Permit; and ii) submit to the Director an updated cost estimate for all remaining corrective action activities and a demonstration that financial assurance in an amount no less than such cost estimate has been established. Financial assurance mechanisms which Permittee may use are:

    a. a surety bond unconditionally guaranteeing performance of the corrective action activities required under this Permit or payment at the direction of EPA of such performance costs into a standby trust fund for the benefit of EPA;

    b. one or more irrevocable letters of credit, payable at the direction of EPA of such performance costs into a standby trust fund for the benefit of EPA;

    c. a trust fund for the benefit of EPA;

    d. a written corporate guarantee, by an entity that demonstrates to EPA's satisfaction that it meets the financial test set forth in 40 C.F.R. § 264.143(f), to perform the corrective action activities required by this Permit; or

    e. an insurance policy by a licensed carrier where the insurer shall make payments as EPA directs in writing: (1) to reimburse Permittee for expenditures made by Permittee for the corrective action activities; or (2) to pay any other person or entity, including EPA, whom EPA has determined performed or will perform the corrective action activities required under this Permit. The insurance policy must increase annually to

cover inflation. The policy must stipulate that the insurer may not cancel, terminate, or fail to renew the policy, unless Permittee fails to pay the premium, and then only after 120 days' prior written notice sent to the Director by certified mail.

Permittee should refer to 40 C.F.R. Part 264, Subpart H for guidance regarding the acceptable use of the above mechanisms. EPA reserves the right to require modification of the financial assurance instrument(s) submitted (including updated demonstrations submitted pursuant to Section G.3 immediately below) if EPA finds that Permittee's mechanism(s) do(es) not assure adequate funding or that such funds will not be accessible to EPA, or other entity selected by EPA, to complete the corrective action activities deemed necessary and appropriate by EPA. Such instruments shall remain in force until EPA releases Permittee from the financial assurance obligation in writing, subject to EPA's approval of the completion of the corrective action activity(ies).

3. Cost estimates and financial assurance demonstrations shall be reviewed at least annually and updated as necessary and submitted to EPA as appropriate. At a minimum, Permittee shall update the cost estimate and the financial assurance demonstration whenever any of the following occur: to account for changes in inflation, when requested by EPA, upon the conclusion of the CMS, whenever proposed or selected corrective action plans are modified, or other available information indicates that there may be an increase in the anticipated costs.

H. Access to Financial Assurance

1. In the event that EPA determines that Permittee has failed to perform approved corrective measures, is seriously or repeatedly deficient or late in its performance of corrective action, or is implementing corrective action in a manner that may cause endangerment to human health or the environment, EPA may issue a written notice (Performance Failure Notice) to Permittee.

2. Any Performance Failure Notice issue by EPA (which writing may be electronic), will specify the grounds upon which such a notice was issued and will provide Permittee with a period of 20 days within which to remedy the circumstances giving rise to the issuance of such notice, or such additional time period that EPA may determine reasonable in the then existing circumstances.

3. If Permittee fails to remedy the circumstances giving rise to the Performance Failure Notice to EPA's satisfaction before the expiration of the period to remedy specified in Section H. 2 above, then in accordance with any applicable financial assurance mechanism, EPA is entitled to

a. Require that any funds guaranteed by a financial assurance mechanism be deposited into a Standby Trust or newly created trust fund approved by EPA, and
b. Permittee shall grant access to the Facility site to contractors and/or consultants engaged to perform corrective action.

4. Permittee may invoke the procedures for Dispute Resolution set forth in HSWA Permit Module I, Section M to dispute EPA's determination concerning any circumstances giving rise to EPA's issuance of a Performance Failure Notice specified in Section H.2, above.

I. Additional Corrective Action Requirements

1. Planned Facility Alterations or Additions at SWMUs or AOCs

Permittee shall give notice to the Director of the Land, Chemicals and Redevelopment Division, EPA Region 2 within 60 days of any planned physical alterations or additions to the permitted Facility in accordance with HSWA Permit Module I, Section F.10. Additionally, if the alteration or addition will be conducted in, at, or close to a SWMU or AOC identified in this Permit, Permittee shall also provide the Director with a description of how the SWMU or AOC or relevant portion thereof, will be remediated to accommodate for the planned addition or alteration. No alterations or additions shall be made in or at SWMUs or AOCs, including those given a NFA determination, identified in this Permit without prior EPA approval.

2. A determination of No Further Action ("NFA")

A NFA determination shall not preclude EPA from requiring Permittee to perform further investigations, studies, or corrective measures at a later date if information or subsequent analysis indicates a release or likelihood of a release from a SWMU or AOC at or from the Facility may pose a threat to human health or the environment, and/or if the zoning for the area is modified.

3. Notifications:

a. Notification of Possible Off-Site Groundwater Contamination. If at any time Permittee discovers that hazardous wastes and/or hazardous constituents in groundwater have been released from a SWMU or AOC at the Facility, and have migrated, or are migrating, beyond the Facility boundary in concentrations that exceed background levels, Permittee shall:

1) Within ten (10) calendar days of discovery, provide written notice to EPA of the condition, and implement appropriate remedial response(s) as approved by EPA; and
2) If requested by EPA, provide written notice to any person who owns or resides on the land which overlies the contaminated groundwater.

b. Notification of Surface Water Contamination. If at any time Permittee discovers that hazardous wastes and/or hazardous constituents have been released from a SWMU or AOC at the Facility to surface waters, and have migrated, or are migrating, to areas beyond the Facility boundary in concentrations that exceed standards given at 40 C.F.R. § 141.61 and § 141.62, Permittee shall:

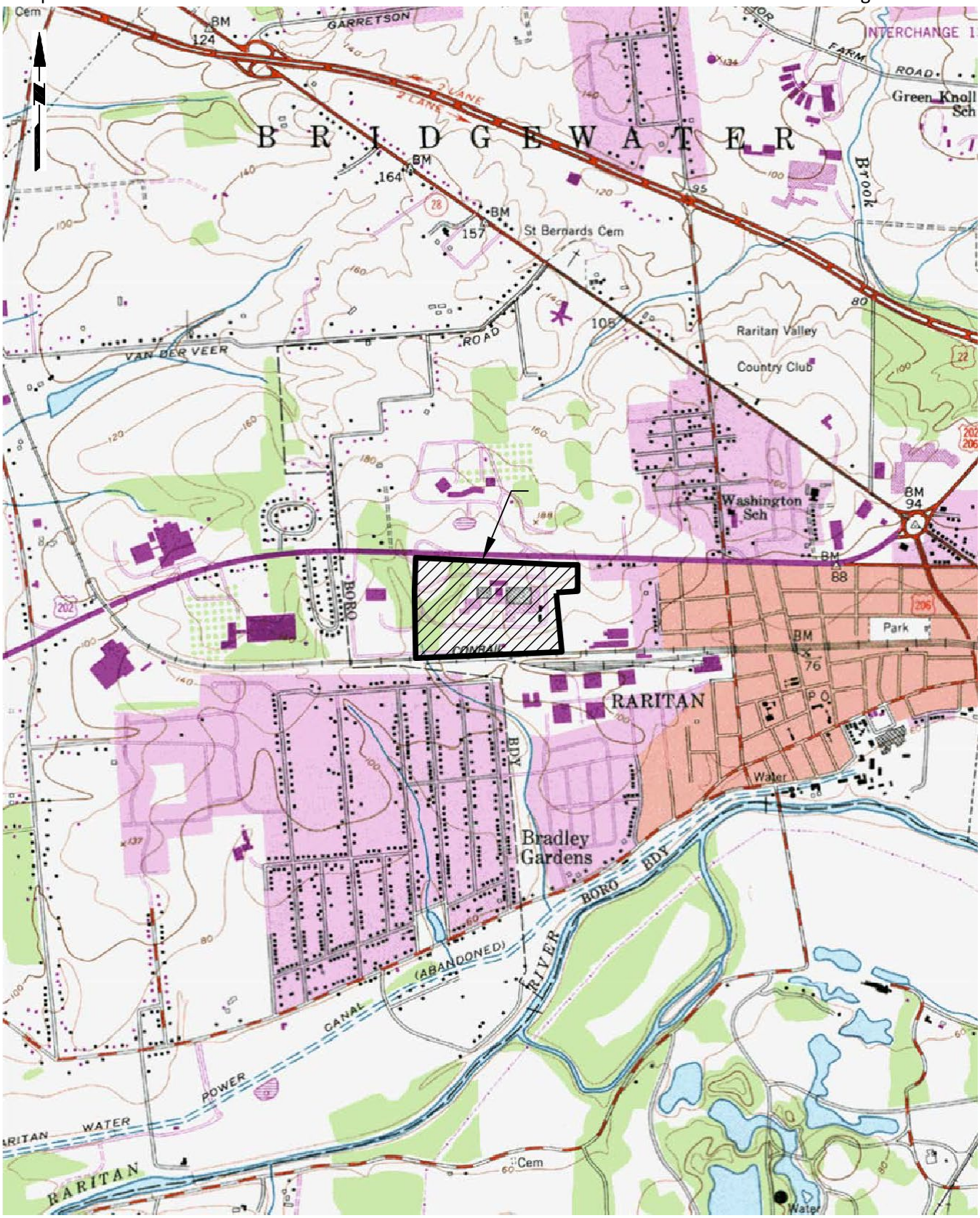
1) Within ten (10) calendar days of such discovery, provide written notification to EPA of the condition, and implement appropriate remedial response(s) as approved by EPA; and
2) If requested by EPA, initiate any actions that may be necessary to provide notice to all individuals who have or may have been subject to such exposure.

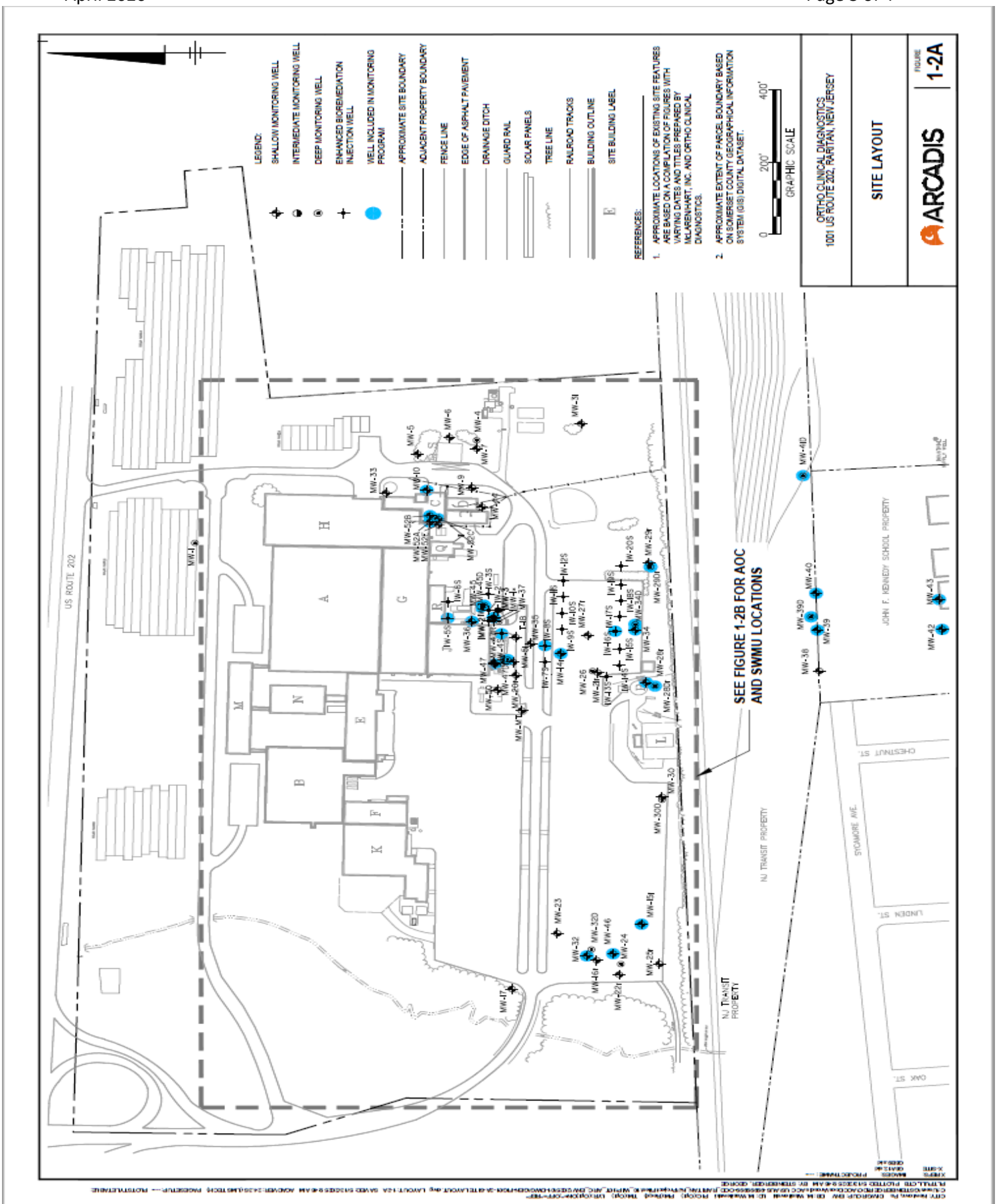
c. Notification of Residual Contamination. If hazardous wastes and/or hazardous constituents in SWMUs or AOCs, or which have been released from SWMUs or AOCs, will remain in or on the land, including groundwater, after the term of this Permit has expired, at concentrations that may pose an actual or potential threat to human health or the environment with a risk in the range of 10^{-4} to 10^{-6} or greater, EPA may require Permittee to record, in accordance with New Jersey law, a notation in the deed to the Facility property or in some other instrument which is normally examined during title search that will, in perpetuity, notify any potential purchaser of the property of the types, concentrations, and locations of such hazardous wastes and/or hazardous constituents. EPA may also require such notice for particular SWMUs and/or AOCs as part of the corrective measure selection/implementation process for particular units.

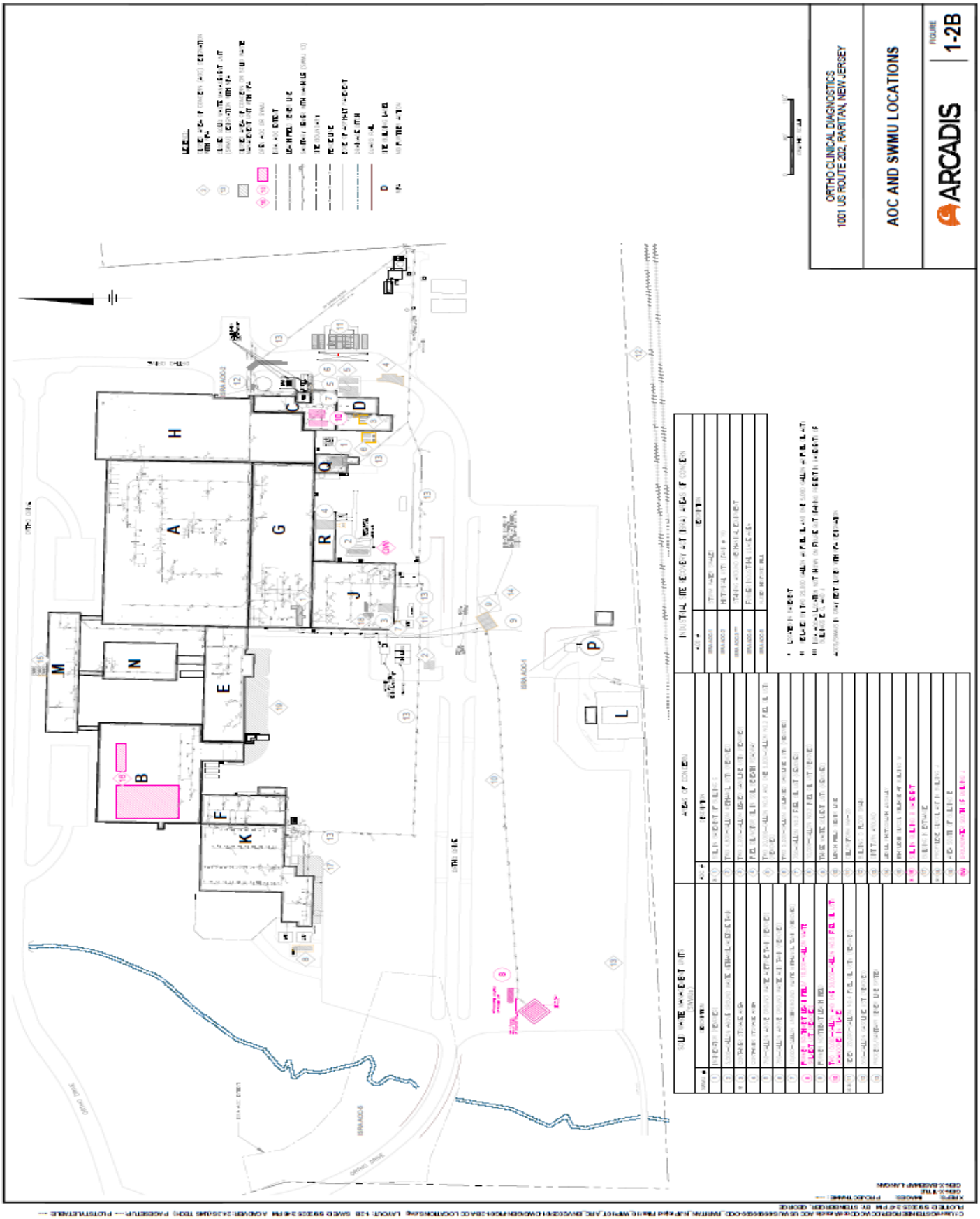
d. Notification of Air Contamination. If at any time Permittee discovers that hazardous waste and/or hazardous constituents in the air have been released from a SWMU or AOC at the Facility and have migrated, or are migrating, to areas beyond the Facility boundary in concentrations that exceed relevant air standards and that residences or other places at which continuous, long-term exposure to such constituents might occur are located within such areas, Permittee shall immediately take measures to protect human health and the environment from such release. Permittee shall also:

1) Within ten (10) calendar days of such discovery, provide written notice to EPA; and
2) Initiate any actions that may be necessary to provide notice to all individuals who have or may have been subject to such exposure.

Supplement Attachment 1 – Site Location and Monitoring Well Maps




LEGEND:
SHALLOW MONITORING WELL
INTERMEDIATE MONITORING WELL
DEEP MONITORING WELL
ENHANCED BIOREMEDIATION INJECTION WELL
WELL INCLUDED IN MONITORING PROGRAM
APPROXIMATE SITE BOUNDARY
ADJACENT PROPERTY BOUNDARY
FENCE LINE
EDGE OF ASPHALT PAVEMENT
DRAINAGE DITCH
GUARD RAIL
SOLAR PANELS
TREE LINE
RAILROAD TRACKS
BUILDING OUTLINE
SITE BUILDING LABEL
REFERENCES:
1. APPROXIMATE LOCATIONS OF EXISTING SITE FEATURES ARE BASED ON A COMPILATION OF FIGURES WITH VARYING DATES AND TITLES PREPARED BY MCLAREN/HART, INC. AND ORTHO CLINICAL DIAGNOSTICS.
2. APPROXIMATE EXTENT OF PARCEL BOUNDARY BASED ON SOMERSET COUNTY GEOGRAPHICAL INFORMATION SYSTEM (GIS) DIGITAL DATASET.
0
200'
400'
GRAPHIC SCALE
ORTHO CLINICAL DIAGNOSTICS
1001 US ROUTE 202, RARITAN, NEW JERSEY
SITE LAYOUT
FIGURE 1-2A
ARCADIS
SEE FIGURE 1-2B FOR AOC AND SWMU LOCATIONS
US ROUTE 202
NJ TRANSIT PROPERTY
JOHN F. KENNEDY SCHOOL PROPERTY
CHESTNUT ST.
SYCAMORE AVE.
LINDEN ST.
OAK ST.


ORTHO CLINICAL DIAGNOSTICS
1001 US ROUTE 202, RARITAN, NEW JERSEY
AOC AND SWMU LOCATIONS
FIGURE
1-2B
ARCADIS

Supplement Attachment 2 – AOC/SWMU/TCE Plume Status Summary and Corrective Measures

LOCATION	DESCRIPTION	CONSTITUENTS OF CONCERN (COC)	CORRECTIVE MEASURES
AOC-1 – Soil in Basement of Building G	During construction activities in September 1995, No. 2 fuel oil was discovered in soil beneath the basement of Building G AOC-1 encompasses an area along the wall separating Building G from Building J. The source of the fuel oil in soils was likely heating oil that entered the sanitary sewer line system through floor drains and released into soils at three locations where breaches were observed. The impacted soil was removed and disposed off-site, post-excavation soil samples collected, and the leaking portions of the sanitary sewer line fixed/replaced. Documentation in Soil Remedial Action Report (7/1/96) Ref: [May 2001], [December 2008]	Petroleum hydrocarbon; fuel oil; heating oil; TPH	No further action Impacted soil was removed and post-excavation sampling conducted Soil sampling results indicate there were no constituents at concentrations exceeding NJDEP 1999 soil cleanup criteria (SCC).
AOC-2 – Two 4800-Gallon Methanol USTs	Contractors removed two 4,800-gallon methanol underground storage tanks (USTs) from the site during January 1992. The methanol USTs were designated as AOC-2. (Copy of Dames & Moore's June 19, 1992 Site Assessment Plan Report - Methanol Tank Closure was submitted as Appendix IX of the July 1, 1996 RFI Work Plan Addendum.) Ref: [May 2001], [December 2008]	Methanol	No further action The USTs were removed in 1992.
AOC 3 – Gasoline USTs Near Building D	Petroleum hydrocarbon-impacted soil was discovered on June 10, 1996 during construction of an addition to the western side of Building D. The impacts appeared to have resulted from the operation of former gasoline USTs, piping and an associated fuel dispenser near Building D. This area was subsequently designated as AOC-3. Although the USTs were removed in April 1986, the soils near the foundation of Building D were noticeably impacted by remnants of the gasoline product. As a result, OCD contacted the New Jersey Spill Hotline to provide notification of the release, and Spill Number 96-6-10-1516-02 was assigned. All of the gasoline-impacted soil was excavated during June 1996 and post-excavation soil samples were collected to provide confirmation of the remediation. Sampling results less than NJ SCC. The two USTs contained leaded gasoline and had a capacity of 2,000-gallons each. The two leaded gasoline USTs (AOC-3) were installed in 1964 and were removed in April of 1986, along with the two 5,000-gallon unleaded gasoline USTs (designated as AOC-6). Ref: [May 2001], [December 2008]	Leaded gasoline; Petroleum hydrocarbon	No further action OCD has completed UST evaluation activities to the extent practical and has remediated gasoline-impacted soils at AOC-3. The results of post-excavation soil sampling and historic groundwater monitoring of former monitoring wells immediately down-gradient of AOC-3 show no gasoline-related constituents at concentrations exceeding NJDEP criteria.
AOC-4 – Fuel Oil/Motor Oil in Soil Beneath Roadway	- Petroleum hydrocarbon-impacted soil was identified during the construction of a waterline across the facility access road on the eastern side of the site during June 1997. Notified New Jersey Spill Hotline and Spill Number 97-6-3-1616-44 was assigned. This area was designated as AOC-4. Approximately 42' L, 6' – 20' W, 2.5' – 3.5' depth. - A fingerprint analysis of the petroleum hydrocarbon-impacted soil indicated that the hydrocarbon was a mixture of fuel oil #2 and motor oil. - The impacted soil was excavated and post-excavation soil samples were collected. - Analytical results from soil sampling confirmed that the soil used to backfill the AOC-4 excavation was not contaminated pursuant to NJDEP's 1999 SCC. VOCs, SVOCs, metals, pesticides, PCBs, TPH, cyanide and phenols were not detected at concentrations exceeding NJDEP 1999 SCC.	Petroleum hydrocarbon; fuel oil #2; motor oil; lead	No further action - Conducted additional soil sampling to confirm that TPH impacts in soil have been remediated and the backfill used in the excavation is not contaminated pursuant to NJDEP 1999 SCC.

	Ref: [May 2001], [December 2008]		
AOC-5 – Three Fuel Oil USTs (former) east of Building D	- Includes the area of three former fuel oil USTs locate east of Building D, at the eastern portion of the site. - Tanks EA and EB were each 20,000-gallon steel USTs, installed during 1971, and used for the storage of No. 6 fuel oil prior to their removal on August 2, 1990. USTs EA and EB supplied fuel oil to the boilers in Building C and each UST measured 31 feet in length and 10.5 feet in diameter. - Tank EC was a 5,000-gallon steel UST, installed during 1972, and used for the storage of No. 2 fuel oil prior to its removal on August 2, 1990. UST EC supplied fuel oil to the incinerator and measured 24 feet in length and 6 feet in diameter. - A shallow monitoring well (MW-9) was installed on May 26, 1989 at a location immediately south (and downgradient) of the USTs. - The results from the December 10, 2002 sampling effort did not identify any VOCs or Base Neutrals in the groundwater at concentrations exceeding the NJDEP Class IIA Groundwater Quality Standard (GQS)[1], and no constituents indicative of a fuel oil release. - There were no constituents detected in soil at concentrations exceeding NJDEP 1999 SCC for the backfill characterization soil samples. - Post-excavation soil samples had TPH results ranging from non-detect to 71.8 mg/kg, which are all below NJDEP's total organic cap of 10,000 mg/kg. - Supplemental investigation activities conducted in May 2006, June 2006, October 2006, and April 2008. The investigation activities included soil sampling, soil boring, excavation of impacted soil, and ground water investigation. - PAH-Impacted soil was delineated and excavated for off-site disposal. - There were no PAH constituents detected in the fuel oil piping soil samples above NJDEP's 1999 SCC. - For the soil samples to complete backfill soil characterization, TPH was not detected above NJDEP 10,000 mg/kg total organic cap. - For groundwater grab sample collected from the water encountered in the UST excavation, the analytical results did not indicate any detection of VOCs or SVOCs. - Groundwater samples collected from the downgradient monitoring well, MW9, did not detect constituents associated with the former fuel oil USTs at concentrations above NJDEP Class IIA GQS[1]. Ref: [May 2001], [December 2008], [April 2016]	- PAH, carbon tetrachloride, fuel oil #6 and #2,	No further action warranted – - Additional post-excavation soil samples were collected from the UST excavation and no constituents were detected above NJDEP's 1999 SCC; - PAH-impacted soil detected around the location of the former fill port pad were excavated and removed on May 8, 2008; - There were no constituents detected above NJDEP's 1999 SCC in post-excavation soil samples; - There were no constituents detected above NJDEP's Class IIA GQS[1] in the groundwater grab sample collected in the former UST excavation; and - Monitoring well MW9 did not detect constituents associated with the former fuel oil USTs at concentrations above NJDEP Class IIA GQS[1].
AOC-6 – Two 5,000-Gallon USTs (former) west of Building D and AOC 3 See also AOC-3	- AOC-6 includes the area of two former unleaded gasoline USTs (Tanks 3 and 4) located immediately west of Building D, in the eastern portion of the site. The tanks were constructed of carbon steel, had a capacity of 5,000- gallons each, and were installed during 1980 for the storage of unleaded gasoline for a short period of time (6 years) prior to their removal during April 1986. - Conducted soil investigation in May 2004 to obtain soil quality in the area of the former 5,000-gallon USTs. - Soil samples were collected to provide post-excavation sampling data and characterize the fill material used to backfill the excavation. - Analytical results for fill characterization and post-excavation soil samples did not indicate the presence of any constituents at concentrations exceeding the NJDEP SCC.	- unleaded gasoline	No further action warranted – - The additional soil sampling results do not exceed NJDEP Total Organic Cap or 1999 SCC.

	- Supplemental investigation was conducted in June 2006 to provide post-excavation soil sampling data for the two 5,000-gallon USTs and to characterize material within the excavation. - The results of the post-excavation and fill characterization soil sampling did not identify the presence of any constituents at concentrations exceeding the 1999 NJDEP SCC. Ref: [May 2001], [December 2008]		
AOC-7 – 750-Gallon UST	- AOC-7 includes the area of a former fuel oil UST (tank EG) located immediately south of Building J, in the central portion of the site. Tank EG was a 750-gallon welded carbon steel UST measuring eight feet long and four feet in diameter. The UST was installed in 1973 to store No. 2 fuel oil for emergency generators J1 and J2 located in Building J. - Removal and disposal off-site were completed in April 24, 1986, at which time a 550-gallon aboveground storage tank was installed in the basement of Building J to replace the 750-gallon UST. The tank was removed prior to the adoption of N.J.A.C. 7-26E (Technical Requirements for Site Remediation) on June 7, 1993. Ref: [May 2001], [December 2008]		No further action warranted – - Investigative results did not indicate any impacts that warrant remedial actions, as all constituent concentrations were below the NJDEP SCC. - Tank was removed.
AOC-8 – 10,000-Gallon UST (former) west of Building K	- AOC-8 includes the area of a former fuel oil UST (Tank EH) located west of Building K, at the western portion of the site. Tank EH was a 10,000-gallon UST, installed in 1968, and used for the storage of No. 2 fuel oil prior to its removal during November 1985. - The tank was 8 feet in diameter and 27 feet 7 inches long and was reportedly contained within a concrete structure. Investigation in May 2004 showed the UST was not contained in a concrete vault, but was rather submerged up to its midpoint in a concrete cradle. - Investigations in May 2004 included soil borings and collecting soil samples to characterize the backfill - Supplemental investigation conducted in April 2008 to: (1) provide post excavation soil quality data and (2) complete characterization of backfill material within the excavation area. - The December 2014 investigation used geophysical survey and soil sampling to determine the impact from the abandoned piping. - The results of the post-excavation and fill characterization soil sampling indicate that soils within the area of the former UST and abandoned fuel oil piping were not impacted. Ref: [May 2001], [December 2008], [April 2016]	No. 2 fuel oil	No further action warranted – - The results of the post-excavation and fill characterization soil sampling indicate that soils within the area of the former UST and abandoned fuel oil piping were not impacted. - Facility consultant completed UST evaluation activities and has not identified any constituent concentrations exceeding NJDEP 1999 SCC or Total Organic Cap.
AOC-9 – Three former USTs in vicinity of Northeast Leach Field	- AOC-9 includes the reported area of three former solvent USTs located in the paved parking area south of Building J. The only information available pertaining to the former solvent USTs is a historic figure entitled "Master Site Plan", dated 06/09/75 (OCD Dwg. #E-74-030-G), which depicts "3 Abandoned Solvent Tanks" and "Abandoned 5-inch" piping. No other documentation can be found regarding the tanks. - Investigations in 1997, 1998, 2004, 2008 included geophysical surveys, soil borings, soil sampling, and test pits. - After several investigations and file reviews, it is concluded that the USTs were never installed for the following reasons: (1) Two geophysical surveys were conducted in the estimated area of the solvent USTs during the 1997 - 1998 RFI. A geophysical survey was also conducted in the area during the 2008 Supplemental RFI. The geophysical surveys did not identify the presence of USTs or an area potentially backfilled as a result of an excavation. The geophysical survey did identify the presence of a linear feature that was initially suspected to be a pipe, but this was not confirmed through “test pitting” activities in 2008.	VOCs, TPH	No further action warranted - Extensive file reviews did not locate information to support the existence of the reported abandoned solvent USTs. The only reference within OCD's files was the June 9, 1975 "Master Site Plan for EPA", which indicated the USTs were abandoned in place. - Three geophysical surveys were conducted in the vicinity of the estimated location of the solvent USTs - The soil boring and test pit investigations did not identify the location of backfill material

	(2) The soil boring investigation conducted in May 2004 did not identify the presence of backfill material indicative of an excavation. (3) A "test pit" investigation conducted in April 2008 did not identify the presence of USTs, backfill material for a UST excavation, or the linear feature identified during the geophysical survey, which was initially suspected to be a pipe associated with the suspected solvent USTs. (4) An extensive review of NJDEP, EPA and OCD files did not reveal any other information regarding the potential USTs. - There were no VOCs detected in the post-excavation soil samples at concentrations exceeding the NJDEP SCC. - The results of the test pit and soil boring investigation did not identify the presence of USTs or backfill material at or within the vicinity of the estimated location of the reported solvent USTs. - The results of the soil samples collected from the soil boring and test pit investigations indicate that soils within the area of the estimated location of the solvent USTs are not impacted Ref: [May 2001], [December 2008]		- The investigative results show no indication that the USTs ever existed at AOC 9. It is possible that the area of the "abandoned solvent USTs" may have been referring to the former Northeast Leach Field, which is located in the same approximate area.
AOC-10 -- Leach Field Sewer Line See also: SWMU 8, SWMU 9, and SWMU 13	- AOC-10 (Leach Field Sewer Line) includes the sewer line connecting Building J or G to manhole MH-3 at the Northeast Leach Field and the section of sewer line that runs from the Southwest Leach Field to MH-3 at the Northeast Leach Field. The leach field sewer line is a four-inch vitrified clay pipe that formerly served as conveyance piping for the solvent leach fields. - Investigations in 1997 and 1998 – video inspection of the line, soil boring, soil sampling, and excavation of test pits - No VOCs constituents were detected in any of the soil samples at concentrations exceeding NJDEP's 1999 SCC. - Soil borings advanced adjacent to a potential break and offset joint in the leach field sewer line identified during the 1997 video survey. Both soil samples were analyzed for VOCs, but none were detected in soil at concentrations above NJDEP's 1999 SCC. - There were no detections of VOCs, SVOCs, or metals in soil sample LS-5-O at concentrations exceeding NJDEP's SCC. - Supplemental investigation activities were conducted in March and April 2008. Soil samples were analyzed for VOCs, but none were detected in soil at concentrations above NJDEP 1999 SCC. - Further evaluation of the location of the underground utilities, including a new geophysical survey and utility mark-out, and a review of soil boring technologies with low clearance that would allow for the collection of soil samples at locations in the vicinity of the overhead wires. - Supplemental RFI activities were conducted in December 2014 to complete characterization of the soil along the leach field sewer line. - A detailed geophysical survey was conducted on December, 2014 to identify subsurface utilities in the vicinity of the proposed soil boring locations. - The results of the soil sampling along the abandoned fuel oil piping indicate that soils within the area are not impacted. The only VOC detected in the soil samples was acetone, which was detected in all three soil borings. The concentrations of acetone detected in the soil samples are well below the most stringent NJDEP SCC. - As part of the groundwater investigation, monitoring well MW-50 was installed in January 2015 for delineation of light non-aqueous phase liquid (LNAPL) in MW-47.	VOCs, SVOCs	No further action warranted – - The investigative findings indicate no constituents in soil at concentrations exceeding NJDEP 1999 SCC. - Groundwater monitoring results from MW-20r to assess potential impacts from AOC-10, in the 2007 Annual Groundwater Monitoring Report, there have been no detections of VOCs in MW-20r at concentrations exceeding the NJDEP Class IIA GQS[1]. - Groundwater monitoring results from MW-50 to assess potential impacts from AOC-10, there have been no detections of VOCs in groundwater samples collected from MW-50.

	- Groundwater monitoring results from MW-50 to assess potential impacts from AOC-10. There have been no detections of VOCs in groundwater samples collected from MW-50. MW-50 was sampled during April and June 2015. Results from the sampling of groundwater at MW-50 did not identify any VOCs at detectable concentrations. Ref: [December 2008], [April 2016]		
AOC-11 -- Chloroform in MW-20	- AOC-11 includes the area south of Building J that McLaren/Hart investigated during 1997 in an attempt to identify the source of elevated concentrations of chloroform that were historically detected in groundwater monitoring well MW-20. - Chloroform was first detected in MW-20 at a concentration of 6,800 ug/L in February of 1991. Elevated chloroform concentrations continued to be detected during subsequent sampling rounds, prompting further investigation of soil and groundwater. - Sampling of nearby monitoring well MW-MT and completion of a soil investigation program in the July 1, 1996 RCRA Facility Investigation Work Plan Addendum in an attempt to identify a source of the chloroform concentrations in groundwater. - Five test soil borings (C-1 through C-5) were advanced in an area south of Building J during April 1997 as part of the chloroform source investigation. - Groundwater samples were also collected from monitoring wells MW-20 and MW-MT on April 8, 1997 and analyzed for VOCs. - Further investigation of chloroform concentrations was accomplished through the installation and sampling of 24 (G-1 through G-24) temporary well points. - Analytical results indicated no detections of chloroform in any of the soil samples collected during the April 1997 investigation. - The results of the source investigation activities did not identify a source of chloroform in groundwater. - Groundwater sampling results from monitoring wells and temporary well points indicated that elevated chloroform concentrations were localized in the area around MW-20 and MW-35. - Recent groundwater sampling data from monitoring wells MW-20 and MW-35. Chloroform concentrations in both wells have been below NJDEP's Class IIA GQS[1] of 70 ug/L since at least 2005 and have been non-detect in 2007. Ref: [December 2008]	chloroform	No further action warranted – - Monitoring results for MW-20 and MW-35 showed chloroform concentration below NJDEP Class IIA GQS[1].
AOC-12 -- Building D Floor Drains See also: SWMU 5, 6, storm water	- AOC-12 includes a system of floor drains formerly present in Building D which reportedly discharged to the East Storm Sewer Outfall (DSN 001) at the southern property boundary. Building D was originally used as a garage and later expanded for its current use of housing chiller equipment. The floor drains originally present in the building are no longer in use and have been sealed. - Investigation considers potential impacts from the former 750-gallon above-ground waste acetone tank (SWMU 5) and the former 750-gallon above-ground waste acid tank (SWMU 6) under AOC-12 because stormwater accumulated in the secondary containment structures for these ASTs was reportedly pumped into the storm sewer system. The outfall (DSN 001) that drained the former Building D floor drains also drained stormwater run-off from the areas around Buildings C, D and H, and would have included accumulated stormwater from SWMUs 5 and 6 at the time the ASTs were operational. - McLaren/Hart collected a sediment sample (D-1-A) from the East Outfall (DSN 001) on April 8, 1997 to investigate the discharge point of the Building D Floor Drains.	- PAH, waste acetone, waste acids	No further action warranted – - Impacted sediment removed and disposed off-site. - Drains inspected and sealed.

	- Analytical results for sediment sample DSN1-1 (0-0.5) indicated the presence of six PAHs at concentrations exceeding NJDEP's 1999 SCC: benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; dibenz(a, h)anthracene; and indeno(1,2,3-cd)pyrene. - Concentrations ranged from 1.97 mg/kg to 7.19 mg/kg. There were no detections of VOCs, metals, or TPH in the sediment (soil) sample at concentrations exceeding the NJDEP SCC. - Langan collected an additional sediment sample (DSN1-1 (0-0.5)) from the depositional area beneath the discharge point of Outfall 001 on October 7, 2008. The sediment sample was collected to reassess the sediment quality since the original sediment sampling conducted by McLaren/Hart during 1997. - LNAPL was observed 8/14/2017 at the East Storm Sewer Outfall. Impacted soil at the outfall was immediately excavated and oil-only absorbent booms and pads were installed in the outfall drainage channel that leads to a ditch along an active NJ Transit rail line. Confirmation samples were also collected at this time. Excavation activities, sample locations, and results are discussed in the Soil Remedial Action Report for the East Storm Sewer Outfall (AOC-12), submitted to NJDEP in May 2018 (Langan 2018). - A video inspection was completed of the storm sewer line. The inspection scoped the sewer line from up-gradient of the former UST pit area to the outfall. The video identified staining and LNAPL seeping through joints in the storm sewer pipe in the vicinity of the UST pit (SWMU 10), which likely permeated during high water table events. No other staining or observations of LNAPL were observed along the storm sewer piping during the video inspection, suggesting that the leaks were limited to the section of piping running adjacent to the SWMU 10 area, where the staining and LNAPL was observed. - Oil-only absorbent booms and pillows were placed in five storm sewer manholes and catch basins between the location where LNAPL was observed to be entering the storm sewer line and the East Storm Sewer Outfall. - October 23, 2017, the storm sewer line was pressure-washed, cleaned, and lined to prevent migration of LNAPL to the downstream sewer outfall, via the leaking joints found during the video inspection. To prevent further migration of possible residual LNAPL, absorbent socks and pillows were placed in manholes and catch basins along the storm sewer line. Absorbent socks and pillows were monitored for a one-month period, post installation of the storm sewer liner, to confirm that LNAPL was no longer migrating into the main storm sewer line; as such, no LNAPL was observed in that timeframe. - The impacted sediment from the drainage channel was removed and disposed off-site to address the PAH exceedances observed beneath the Outfall 001 discharge pipe. Ref: [December 2008], [August 2018]		
AOC-13 -- Dirt Turnaround Area	- AOC-13 consists of an area identified on a 1956 aerial photograph in the southwestern portion of the site that is speculated to be an unpaved area where vehicles turned around. - Investigation included excavation of four test pits (T-1 through T-4) in the southwestern portion of the site during April 1997. The test pits were excavated in the area south of MW-15 and MW-25. The depth of the test pits ranged from 8 to 9 feet below grade. - Two soil samples (T-1-N and T-1 A-H) were collected from the sidewalls of test pit TP-1 at different depth intervals. One soil sample was collected from the sidewalls of each of the remaining excavations (T-2 through T-4) within two feet of the top of the weathered shale.	unknown	No further action warranted – - Investigative results (test pit observations and soil and groundwater sampling) did not indicate any release impact in this area.

	- Visual staining or PID detections were not observed in any of the test pits. - All soil samples were analyzed for VOCs. In addition, soil sample T-3-J was also analyzed for SVOCs and metals. - Groundwater grab samples (WT-2 and WT-3) were collected from the bottom of test pits T-2 and T-3, because these were the only excavations in which perched groundwater was encountered. The groundwater grab samples were analyzed for VOCs. - Analytical results did not indicate any constituents in soil or groundwater at concentrations exceeding the NJDEP SCC or Class IIA GQS[1], respectively. There were no VOCs or SVOCs detected in the soil samples. Ref: [December 2008]		
AOC-14 -- Aerial Photo Anomaly See also: SWMU 9	- AOC-14 is described as an area in the southern portion of the site where a "tonal pattern" in the vicinity of the Northeast Leach Field on a 1956 aerial photograph was observed. The area is located east and northeast of SWMU-9. - On April 11, 1997, the aerial photograph anomaly was investigated through the advancement of soil borings within the anomaly area. - Supplemental investigations were conducted in the area of AOC-14 during March and April 2008 to: (1) collect deeper soil samples from soil borings A-1 and A-3 through A-5; and (2) investigate the gravel identified in borings A-4 and A-5. - On April 9, 2008, two soil borings (A-1 R and A-3R) were advanced to collect soil samples. On April 17, 2008, two test pits were excavated to a depth of approximately 7.5 feet below grade in close proximity to the locations of 1997 soil borings A-4 and A-5 to further investigate the reported gravel layer. - The results of the soil samples collected from borings and test pits indicate that soils within the area of the photograph anomaly were not impacted. Soil analytical results did not indicate any VOCs in soil at concentrations exceeding NJDEP SCC. - In addition, there were no VOC constituents detected in the groundwater grab sample collected from test pit T14-1. The gravel identified in soil boring A-4 and A-5 was confirmed to be associated with the Northeast Leach Field, which is addressed under SWMU-9. - The results from the groundwater grab sample collected from test pit T14-1 indicate that perched groundwater within the vicinity of the Northeast Leach Field and aerial photograph anomaly was not impacted. Ref: [December 2008]	unknown	No further action warranted – - The soil sampling and groundwater grab sampling results indicate that there were no VOCs detected at concentrations exceeding NJDEP SCC.
AOC-15 – Ethylene Glycol Release at Building M	- The main entrance to Building M is constructed of two granite landing areas and stairs, and was equipped with a snow melting system to minimize the build-up of ice and snow during the winter season. The snow melting system distributed Dow-therm SR-1 heat transfer fluid through a series of pipes underneath the stairs and landings of the main entrance. Dow-therm SR-1 is comprised of 95% ethylene glycol and less than 3% dipotassium hydrogen phosphate. Ethylene glycol has a low freezing point and is therefore commonly used as a de-icing fluid. Dow-therm SR-1 was pumped from a small holding tank through the piping and back to the reservoir, creating a closed loop system. - In 2004, a maintenance employee informed OCD that the volume of heat transfer fluid in the reservoir had dropped, indicating a leak had occurred from the snow-melting system. OCD contacted NJDEP's spill hotline number on October 28, 2004 and informed NJDEP of the potential for a release of heat transfer fluid, containing ethylene glycol, to the environment. Case number 04-1 0-28-1648-59 was assigned. Use of the snow-melting system was discontinued in 2004.	ethylene glycol, dipotassium hydrogen phosphate	No further action is warranted -- • Ethylene glycol released from the pipes on the lower landing was fully-contained. • The visibly stained sand bedding was removed and disposed off–site. • The distribution pipes located outside of the main entrance were removed and the underlying soil was excavated as a conservative measure.

	- In 2006, OCD began a construction project to remove and replace the concrete sidewalk north of Building M. The bottom landing of the Building M main entrance, which was constructed of granite and a concrete base, was also scheduled for removal and replacement. On February 7, 2006, OCD's contractor (RVC) removed the granite from the bottom landing of Building M entrance and uncovered the snow melting system pipes and sand bedding. Following the granite removal, the sand bedding was visibly stained with a pink color, indicative of the Dowtherm SR-1 heat transfer fluid. RVC removed the snow-melting system piping under the bottom landing and capped the remaining piping located in the stairs. RVC additionally removed all of the sand bedding from the bottom landing, approximately 1.7 cubic yards, and contained the sand in seven 55-gallon drums. - Ethylene glycol was not detected in any of the three post-excavation soil samples (Bldg M-1 through Bldg M-3) collected from AOC-15. - The results from the post-excavation soil samples indicate no detections of ethylene glycol at concentrations above the referenced reporting limit (0.25 mg/kg), which is below the most stringent NJDEP guidance number tor ethylene glycol. Ref: [December 2008]		• Post-excavation soil sample results indicate that soils below the removed piping are not impacted by ethylene glycol.
AOC-16 – Soil in Building B	- The soil floor in the Building B basement is designated as AOC-16 after several constituents were detected in soil at concentrations exceeding NJDEP SCC. The "crawl space" extends throughout the majority of the Building B basement and has an approximate four to six feet of overheard clearance and an exposed dirt floor. Much of the plumbing, electrical, HVAC and utility lines that service the building are suspended from the ceiling of the crawl space. Air handling and air conditioning equipment, electrical transformers and equipment, refrigeration compressors, vacuum pumps and boilers for the building are also located in the Building B crawl space. - Maintenance personnel enter this portion of the facility on occasion to conduct maintenance and repair activities, but the area is, otherwise, unoccupied. - There is a fence along the concrete wall separating the crawl space from the remaining portion of the basement to restrict access to the area. Locking gates are also present at the two stairways leading up to the crawl space and at the entrance to the tunnel connecting Buildings A and B. - The policy is to allow only trained personnel into the restricted area. Health and safety precautions followed by maintenance personnel will include the donning of personal protective equipment to prevent direct dermal contact with soil. - Prior to conducting soil sampling in 2006, OCD stored equipment such as light fixtures, bulbs, ballasts, maintenance equipment, pipes and fittings, containers and plumbing supplies in the Building B crawl space. Material was primarily stored in the western portion of the crawl space in the Building B basement but extended toward the east as additional space was needed. Currently, fluorescent light fixtures are stored in the eastern portion of the basement. - Soil sampling was conducted in this area in February 2006, August 2006, and April 2008 to delineate impacted soils. - From the 0 to 0.5 foot depth interval below Building B (AOC-16) indicate the presence of several constituents at concentrations exceeding the NJDEP SCC. PCBs, lead, mercury, antimony, beryllium, and PAHs. - Additional sampling in May 2023 was conducted to delineate the areas of high lead concentrations. - The only pathway for which constituent concentrations exceed the Health-Based Criterion is the Ingestion-Dermal Pathway.	PCBs, lead, mercury, antimony, PAH,	Recommended action: - Implement engineering controls to address contaminated soil in Building B. Install barrier (cap) over areas of high lead concentrations. - Install and maintain fence around the soil area. - Post signage. - Institutional Control -- apply for Deed Notice.

	Ref: [December 2008]		
AOC 17 -- Building K Entrance	- AOC-17 encompasses an area located adjacent to the east side of Building K entrance where PAHs and pesticides were discovered in soil at concentrations exceeding NJDEP's 1999 SCC. The area was discovered as the result of waste classification soil sampling conducted during construction activities. - OCD planned to remove soil adjacent to the Building K entrance in order to construct a ramp for handicapped access and therefore collected a composite waste classification soil sample beforehand to characterize the soil. Results indicated the presence of PAHs and pesticides at concentrations exceeding NJDEP's 1999 SCC. - Results from the Supplemental RFI soil sampling indicated the following PAHs predominantly in shallow soils (0 to 0.5 foot below grade) at concentrations exceeding NJDEP's 1999 SCC: benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a, h)anthracene; and indeno(1,2,3-cd)pyrene - The pesticide dieldrin was detected at concentrations exceeding NJDEP's 1999 SCC in soil sample K-2(0-0.5) and its duplicate (D061708). - PAH impacts were found to extend laterally throughout the entire landscaped area, predominantly at shallow depths (0 to 0.5 foot below grade). Vertical delineation was completed at depths between one and three feet below grade. - OCD excavated and disposed of impacted soils from AOC-17 between August 18 and 19, 2008 to address PAHs and dieldrin in soil at concentrations exceeding NJDEP's 1999 SCC. - Between December 10, 2014 and June 15, 2016, 27 soil samples were collected from 15 soil borings (K-16 through K-30) advanced to investigate and delineate PAHs to the west side of the Building K entrance. - Analytical results from the supplemental soil sampling indicated the following PAHs, predominantly in shallow soils (0 to 1.5 foot below grade) at concentrations exceeding NJDEP SCC: Benzo(a)anthracene; Benzo(a)pyrene; Benzo(b)fluoranthene; Benzo(k)fluoranthene; Dibenzo(a,h)anthracene; and Indeno(1,2,3-cd)pyrene - OCD excavated the soil impacted with polynuclear aromatic hydrocarbons (PAHs) at AOC-17 (Building K Entrance) and AOC-19 (Area South of Building E) during the third quarter of 2018 and conducted post-excavation sampling. Ref: [December 2008], [September 2017],	PAHs, pesticides (dieldrin)	No Further Action warranted – - Impacted soil was excavated during August 2008 (east side of entrance) and October 2018 (west side of entrance) and post excavation sampling conducted.
AOC 18 -- Propylene Glycol AST – Building J Basement	- AOC-18 consists of a propylene glycol above-ground storage tank (AST) that was installed in the basement of Building J in 1989. The AST is a 1,100-gallon cylindrical steel tank and sits horizontally on three tank saddles on the concrete floor of Building J basement. The AST was originally installed and used as a hydraulic oil tank, although it was later used for storage of a mixture of water and propylene glycol since approximately 1994. The propylene glycol/water mix is used for the cold storage system for refrigerators and freezers located on the first floor of Building J. The propylene glycol/water mix is maintained at sub-freezing temperatures. - On April 27, 2009, OCD observed that the ice melt from allowing the AST to come to room temperature contained propylene glycol. OCD reported the release to the NJDEP Hotline on April 27, 2009 and NJDEP Case No. 090427100901 was assigned. Approximately 5 gallons of the propylene mixture leaked from the AST. - After identifying the leak, OCD completed the following actions: (1) removed the tank insulation; (2) cleaned and performed maintenance on the AST; (3) installed new insulation; (4) sealed the seam in the concrete floor around AST; and (5) installed secondary containment around the AST.	- propylene glycol	No further action warranted -- • The results of the soil sampling indicated VOCs and PAHs were not present in soil at concentrations above the 1999 NJDEP SCC and TPH was also below NJDEP's Total Organic Cap of 10,000 mg/kg. • Propylene glycol was not detected in any of the groundwater samples.

	- Soil sampling conducted in May 2009 and February 2010 to delineate the concentrations of propylene glycol detected in soil. The results of the soil sampling indicated VOCs and PAHs were not present in soil at concentrations above the 1999 NJDEP SCC and TPH was also below NJDEP's Total Organic Cap of 10,000 mg/kg. - Groundwater samples were collected from monitoring wells MW-14r and MW-35 during September 2012 and from MW-20R during October 2012. Propylene glycol was not detected in any of the groundwater samples. - A closer monitoring well MW-47 was installed on July 17, 2013 at a location immediately south of Building J and down-gradient of the propylene glycol AST. - Groundwater samples were collected from MW-47 in August and September 2013, but propylene glycol was not detected in groundwater on either date. Ref: [April 2016]		
AOC 19 – Area South of Building E	- AOC-19 encompasses an area located immediately south of Building E where PAHs were discovered in soil at concentrations exceeding the NJDEP SCC. The area was discovered as the result of waste classification soil sampling conducted during construction activities. OCD planned to remove soil adjacent to the entrance to Building E in order to construct a new entrance to the building that would provide handicap accessibility. Therefore, before construction, a composite waste classification soil sample was collected on October 3, 2009 from four soil borings to characterize the soil. Soil analytical results indicated the presence of polynuclear aromatic hydrocarbons (PAHs) at concentrations exceeding the NJDEP SCC. - Langan collected discrete soil samples concurrently with the composite waste classification soil sample on October 3, 2009 in the event that constituents were detected in the waste classification soil sample at concentrations above the NJDEP SCC. Two discrete soil samples from each soil boring (EEP-1 through EEP-4) were analyzed for PAHs. Analytical results indicated concentrations of PAHs exceeding the NJDEP SCC in three of the eight soil samples. - Langan conducted additional soil sampling for delineation of the PAHs over several phases of investigation between October 31, 2009 and May 15, 2014. - Analytical results from the soil sampling activities indicated the following PAHs predominantly in shallow soils (0 to 2.5 feet below grade) at concentrations exceeding the NJDEP 1999 SCC: Benzo(a)anthracene; Benzo(a)pyrene; Benzo(b)fluoranthene; Dibenzo(a,h)anthracene; and Indeno(1,2,3-cd)pyrene - PAH impacts were found to extend laterally throughout the entire landscaped area, predominantly at shallow depths (0 to 0.5 foot below grade). Vertical delineation was completed at depths ranging from one to three feet below grade. Delineation was completed at a depth of two feet below grade at most locations; however, vertical delineation of PAHs extended to three feet below grade at soil sample locations EEP-3, EEP-4, and EEP-11. On February 18, 2010, the PAH-impacted soil in front of the entrance to Building E was excavated to allow for construction of the new entrance. Approximately 900 square feet of soil was excavated to a depth of approximately four-feet below the ground surface. - OCD excavated the soil impacted with polynuclear aromatic hydrocarbons (PAHs) at AOC-17 (Building K Entrance) and AOC-19 (Area South of Building E) during the third quarter of 2018 and conducted post-excavation sampling.	- PAH	No further action warranted – - The impacted soil was excavated and disposed off-site.

	Ref: [April 2016], [February 2019]		
ISRA AOC 1 – Storm Water Swales	- Two rip-rap line swales to the east and west of firewater AST, locate at southern-central portion of site. - Swale receives storm water from adjacent parking lot. - No sheen or other indications of impact - Discoloration (from rust associated with sump pump from a manhole containing electrical equipment) - Langan conducted a site visit with a representative from OCD on November 20, 2015 to visually inspect and photo-document the drainage swales located to the east and west of the fire water AST. A rust-colored discoloration of the rip-rap was observed in the area of a one-inch diameter PVC discharge pipe in the swale located to the west of the fire water AST. After further review by the OCD representative, it was determined that the PVC pipe discharge was from a sump pump for a manhole containing electrical equipment located east and adjacent to this swale. Therefore, it was concluded that the discoloration was due to rust and not from a spill or discharge at the site. Ref: [September 2017]		No further action warranted – - No observation of staining or discoloration attributed to a release.
ISRA AOC 2 – Historical USTs (Tank #19) See also: SWMU-12	- ISRA AOC-2 was identified by ERM as an unknown underground storage tank (UST) at the OCD site. ERM conducted a review of files during the ESA and identified a UST Closure Plan Approval Application from 1995 (C95-1055) for UST #19, which the NJDEP approved. ERM state that the location and status of UST #19 could not be reconciled and therefore was identified as an AOC. - The unknown UST referenced by ERM corresponds to the former 550-gallon gasoline UST, previously designated as SWMU-12, which has already been investigated. - The UST was removed on September 14, 1995 under the supervision of McLaren/Hart, Inc. A description of the UST closure activities was provided in McLaren/Hart's June 1996 UST Closure Report for Former 550-Gallon UST, which was provided in Appendix V in Volume II of McLaren/Hart's July 1, 1996 RFI Work Plan Addendum. A comprehensive discussion of SWMU-12 was provided in the December 1, 2008 Supplement RFI Report. Although McLaren/Hart's September 13, 1995 UST closure plan application cover letter incorrectly referenced the UST capacity as an "estimated 300 gallon underground storage tank", the NJDEP UST Closure Plan Approval Application (C95-1055) correctly identified the UST capacity as 550 gallons. Ref: [September 2017]	xylene, ethylbenzene; gasoline	No further action warranted – - The former 550-gallon gasoline UST has already been investigated as SWMU-12. - The total xylenes concentration in soil is below the most stringent direct contact NJDEP SCC, and is localized. - Absence of gasoline-related compounds in downgradient monitoring wells MW-9, MW-10 and MW-33.
ISRA AOC 3 – Staining Around Mechanical Equipment	- During ESA, ERM observed staining around mechanical equipment at various locations in building basements - On 11/20/2015, a site walk was conducted to observe areas around mechanical equipment and document stains and sample or EPH. - Soil sampling indicates EPH not detected at 6 of 7 samples and one detect below NJDEP total organic cap. Ref: [September 2017]	Petroleum hydrocarbon	No further action warranted – - Site walk observation and soil sampling were conducted. - No evidence of release to soil or groundwater.
ISRA AOC 4 – Former Industrial Usage	- The issue of a potential historic industrial use of the NE portion of the site was raise and an evaluation was needed. - In 1930-40's there may have been light industrial building operated by Mayflower Publishing and Manufacturing. - No known releases. Ref: [September 2017]		No further action warranted – - No industrial or manufacturing activities could be verified for the former owner Mayflower Publishing and Manufacturing Company

ISRA AOC 5 -- NJDEP Historic Fill	- During the ESA, ERM identified historic fill area by reviewing NJDEP Land Use Management, NJ Geological Survey, 2004, Historical Fill of Raritan Quadrangle, Historic Fill Map HFM-59. According to map, historic fill is located along roadway entering SW portion of site. - The mapped historic fill (85,350 sq ft) is partially-covered by asphalt parking area and access road. The remaining portion is in grass and landscaped areas and partially wooded land. - A soil investigation was conducted in accordance with the NJDEP Historic Fill Material Technical Guidance document dated April 29, 2013. - Results from the soil sampling of the historic fill indicated no constituents in soil at concentrations exceeding the NJDEP SCC. Ref: [September 2017]		No further action warranted – - Results from the soil sampling of the historic fill indicated no constituents in soil at concentrations exceeding the NJDEP SCC.
SWMU 1 – Incinerator See also: SWMU-2, SWMU-7, and AOC 5:	- Installed at the southeast corner of Building Q in 1973. - Consist of a dual chambered "starved air" combustion unit, which used fuel oil as a secondary fuel to obtain proper combustion temperatures in the range of 1,400°F and 1,800°F. - Used for the disposal of pathological wastes (small animal carcasses), and the methanol/acetone waste, which was the only hazardous waste incinerated on-site and consisted of a blend of 60% water, 25% methanol, 10% acetone, and %5 proteins. - In February 1983, OCD filed for a RCRA Part B Permit for the purpose of incineration of methanol/acetone process waste. - August 3, 1988, a Hazardous Waste Facility Permit was issued incineration and storage and treatment. - In 1989, the use of the incinerator to process this waste was discontinued. -The incinerator was closed as documented on June 5, 1991 and removed in 1992. The NJDEP delisted the incinerator (letter dated July 22, 1991). Ref: [May 2001], [December 2008]	Pathological waste (animal carcass); waste methanol and waste acetone.	No further action warranted -- - The Incinerator was closed 6/5/1991, removed in 1992, and delisted 7/22/1991. - No spills are known to have occurred within Building Q.
SWMU 2 – 5000 Gallon AG Waste methanol/Acetone Tank	- 5,000-gallon waste methanol/acetone aboveground storage tank (AST) was installed in 1985 east of Building J and south of Building R - Closure certification for the 5,000-gallon AST submitted June 5, 1991. The AST was then delisted, dated July 22, 1991. The delisting of the AST and other units prompted the termination of the Hazardous Waste Facility Permit. Ref: [May 2001], [December 2008]	Waste methanol/acetone.	No further action warranted -- - Unit is closed (closure certificate 6/5/91, delisted 7/22/91) - No known releases from tank system
SWMU 3 – Container Storage Area Building J Basement	- Building J container storage area is located in the basement of Building J, near the southwest corner of the building in Room J-B-11. The room consists of a floor base of 6-inch concrete reinforced with steel mesh, cinder block walls and a bermed entryway. - The following waste materials were additionally stored in the container storage area: acid wastes, non-flammable solids, oxidizers, organic peroxides, and corrosives. Wastes were stored in small volume bottles and jars. Containers of compatible wastes were packed in absorbent material, placed in 55-gallon drums, and manifested for off-site disposal. Room J-B-11 has a total storage capacity of (161 55- gallon drums and a maximum of 850-gallons in the smaller containers. All empty, partially-filled, and filled 55-gallon drums were stored at floor level on wooden pallets. Smaller containers were housed in polypropylene containers on metal shelves above the floor level. The floor of the container storage area was constructed to meet a minimum permeability standard of 10-7 centimeter/second to ensure that potential spills would not enter the	Acids, nonflammable solids, oxidizer, organic peroxides, corrosives PCB Ballasts Non-PCB Ballasts Lead Acid Batteries Oily Rags	No further action warranted -- - There were no known releases from SWMU-3 to the environment; - The potential for releases to the environment is minimized by the presence of the impermeable floor surface in Building J and the berm, which was constructed to provide

	environment by permeating through the floor of the container storage area. - The Building J container storage area was formally closed in a June 5, 1991 submission to the NJDEP. NJDEP delisted SWMU-3 from treatment and storage status, as summarized in a July 22, 1991 letter. Ref: [May 2001], [December 2008]	Fluorescent Light Bulbs Asbestos-Containing Materials (temporary storage)	containment in the event of a spill inside the building; - The floor drain located inside Building J is located beneath the sink and discharges to the process/sanitary sewer line system, which OCD has investigated under SWMU-13. - Unit closed (6/5/91, delisted 7/22/91);
SWMU 4 – Container Storage Area Building R	- A container storage area located along the east wall of Building R on the first floor in Room R-1. - Stored 55-gallon drums of waste chlorinated solvents and non-chlorinated solvents. Waste organic solvents, other than waste methanol/acetone, were stored in containers in the Bldg. R container storage area. - Total drum storage capacity of (96) 55-gallon drums: 18 drums were dedicated for waste organic solvents and the remaining 78 drums were empty or dedicated for the storage of raw materials. - Secondary containment for spills in Room R-1 was provided by a floor and trench drain connected to a 550-gallon emergency solvent spill (ESS) underground tank located outside of Building R. This tank was an underground 550-gallon horizontal steel tank, approximately 3.5 feet below grade, resting on a 1.5-foot thick concrete pad approximately 7.5 feet below grade. The tank was installed in 1978. - Building R container storage area was closed in accordance as per the Hazardous Waste Facility Permit in 1991 (June 5, 1991 submission to the NJDEP). NJDEP delisted SWMU-4 from treatment and storage status (July 22, 1991 letter). - The 550-gallon steel ESS underground tank and associated piping was excavated on April 17, 2008. Additional backfill material surrounding the tank was excavated and the tank. EWMI removed the two-inches of water from the tank and cleaned the tank. -The excavation was backfilled and paved with asphalt on May 28, 2008. Ref: [May 2001], [December 2008]	- waste organic solvents	No further action warranted -- - There have been no known releases from SWMU-4 to the Environment. - The potential for releases to the environment is minimized by the presence of the impermeable floor surface in Building R and the bermed entryway, which was constructed to provide containment in the event of a spill inside the building. - The floor drain located inside Building R is sealed - The ESS underground tank that was previously abandoned in-place and historically connected to trench and floor drains in Building R was removed. - The ESS tank never received spills during its operation as an emergency spill containment unit. - Post-excavation soil samples identified no soil quality impacts and no evidence of a VOC source to groundwater. - Unit closed (6/5/91, delisted 7/22/91)
SWMU 5 – 750-Gallon AG Waste Acetone Tank	- The 750-gallon aboveground waste acetone tank (SWMU-5) was installed in 1972 outside of the east wall of Building C. - The tank was a cylindrical glass-lined carbon-steel tank situated vertically upon four support legs. - The waste acetone tank resided with the waste acid tank (SWMU-6) on a 15-foot by 11- foot concrete pad, surrounded by a 9-foot by 13-foot cinder block containment area. The containment area was approximately 2.5 feet deep and could contain approximately 2,100 gallons. - Tank stored hazardous mixed solvents, including methylene chloride and carbon tetrachloride, were also stored in this tank. The tank was in service from 1972 through February 1986.	Waste acetone; methylene chloride; carbon tetrachloride	No further action warranted -- - Unit closed (12/3/86, removed as per NJDEP closure plan 6/9/87 and certified 8/11/87, delisted 11/12/92 after soil sampling results (10/25/91 and 6/17/92); - There were no known releases.

	- December 3, 1986, the waste acetone tank was closed. The tank was removed on June 9, 1987 in accordance with an NJDEP-approved closure plan and the closure certification submitted on August 11, 1987. NJDEP delisted the 750- gallon aboveground waste acetone tank (letter dated November 12, 1992). - Results from the investigations indicated carbon tetrachloride was detected at concentrations slightly above the NJDEP Class IIA GQS[1] in monitoring wells MW-9 and MW-10, located adjacent to and downgradient of the location of the former waste acetone tank. - MW-9 and MW-10 were sampled during the supplemental investigation to monitor carbon tetrachloride concentrations in groundwater. MW-9 was sampled during March 2009, November 2009, October 2012, August 2014, and August 2017. MW-10 was sampled during March 2009, November 2009 and October 2012. No VOCs were detected at concentrations above the NJDEP Class IIA GQS[1] in MW-10 during the three sampling events. Carbon tetrachloride was detected in MW-9 during all five sampling at concentrations ranging from 1.0 to 2.1 ug/L, which is slightly higher than the NJDEP Class IIA GQS[1] of 1 ug/L. Carbon tetrachloride was detected above the NJDEP Class IIA GQS[1] in two of the five sampling events. As allowed by NJDEP, concentrations of carbon tetrachloride were rounded down to the 1 ug/L NJDEP Class IIA GQS[1] in three of the five sampling events, including the last two sampling events in August 2014 and 2017. - The 2017 groundwater monitoring results for monitoring well MW-9, located downgradient of SWMU-5, indicate that carbon tetrachloride concentrations have not exceeded the NJDEP Class IIA GQS[1]. No additional groundwater monitoring for SWMU-5 is recommended. Ref: [May 2001], [December 2008], [February 2018]		- Soil sampling results did not indicate any constituent concentrations exceeding the most stringent NJDEP SCC. - 2017 groundwater sampling result for MW-9 indicates carbon tetrachloride concentrations have not exceeded the NJDEP Class IIA GQS[1].
SWMU 6 – 750-Gallon AG Waste Acid Tank	- The 750-gallon aboveground waste acid tank (SWMU-6) was installed in 1972 outside of Building C, immediately adjacent to and within the same secondary containment structure at the 750-gallon aboveground waste acetone tank (SWMU-5). The tank was a cylindrical glass-lined carbon-steel tank situated vertically upon four support legs. - The waste acid tank resided with the waste acetone tank on a 15-foot by 11-foot concrete pad, surrounded by a 9-foot by 13-foot cinder block containment area. The containment area was approximately 2.5 feet deep and could contain approximately 2,100 gallons. - Waste acids stored in the tank included chromic acid, hydrochloric acid and sulfuric acid. Manifests from 1983 indicate that the tank was used to store corrosive acids that were listed as D002 waste. In December 1983, the use of the tank was discontinued and the tank's interior was cleaned. - In February 1985, closure plan for the waste acid storage tank was approved in May 1985. A certification of closure was submitted in August 1985. -The waste acid tank was removed from the site in June 1987 concurrently with the removal of the 10,000-gallon underground waste methanol tank (SWMU-7) and the 750-gallon aboveground waste acetone tank. Ref: [May 2001], [December 2008], [4/29/2016]	-Waste acids, including chromic acid; HCl; sulfuric acid; corrosive acids; D002	No further action warranted -- - The discharge of potential constituents to the storm sewer outfall has been investigated under AOC-12. - Supplemental investigation did not indicate the presence of constituents in soil at concentrations exceeding the NJDEP SCC. - 12/83 discontinued use of tank; 2/85 submitted Closure Plan; 5/85 approved CP; closure certification submitted in 8/85
SWMU 7 – 10,000 Gallon Waste Methanol UST	- 10,000-gallon waste methanol UST (SWMU-7) was installed in 1970 for the temporary storage of waste materials prior to on-site incineration. The tank was located adjacent to SWMUs 5 and 6, next to the east wall of Building C. The waste methanol tank received waste methanol/acetone generated from a blood plasma/protein extraction process. The waste was a blend of approximately 60% water, 25% methanol, 10% acetone, and 5% protein. - Constructed of carbon steel and oriented horizontally, resting on a 3-foot thick concrete pad.	Waste methanol/acetone	No further action warranted -- - Monitoring wells located downgradient of SWMU-7 did not show any impact related to the former waste methanol UST

	- Waste methanol UST was removed on June 9, 1987 in accordance with an approved closure plan, dated June 1987. Closure certification submitted on August 11, 1987. NJDEP delisted the 10,000-gallon waste methanol tank (SWMU-7) in a letter dated November 12, 1992 following soil investigations to evaluate the soil quality in the vicinity of the former UST location. - Supplemental investigation conducted to evaluate the potential for soil quality impacts resulting from the UST and to characterize the clean fill used to backfill the 10,000-gallon UST excavation. Soil samples were collected from the former waste methanol UST and associated piping on four separate occasions: (1) May 31, 2006; (2) June 7, 2006; (3) October 6, 2006; and (4) December 8, 2006 - October 2008 -- Monitoring wells down-gradient of SWMU-7 were also sampled during the Supplemental investigation to confirm that there were no impacts to groundwater resulting from the former waste methanol UST. - Additional soil sampling in 2009 at locations along a portion of the underground waste methanol line during the removal of an adjacent condensate line and result indicates that methanol was not detected in any of the soil samples. Ref: [May 2001], [December 2008], [April 2016]		- Tank removed 6/9/87; certification 8/11/87; and delisted (11/12/92)
SWMU 8 – Southwest Leach Field/10,000-Gallon Waste Solvent UST	- The Southwest Leach Field (SWMU-8) is located approximately 400 feet southwest of Building K under the paved parking lot. - The Leach Field is approximately 30-feet by 30-feet, constructed of 6-inch diameter vitrified clay pipe set within a bed of 2-inch to 5-inch diameter gravel and operated from 1966 until 1971. - Site investigations (1987, 1988, 1989, 1991, 1997, and 2008), which included soil borings, soil gas survey, geophysical survey, test pits, and groundwater monitoring identified and delineated soil and groundwater impacts by VOCs (benzene, TCE, PCE, and chloroform) in this area. The investigation in 1997 discovered a 10,000-gallon waste solvent UST approximately 30 feet northeast of the Southwest Leach Field and this tank was included with the SWMU 8 study area. The UST was removed and disposed off-site on June 7, 1997. - After interim corrective measures were taken to remove the tank and impacted soils within the area, supplemental investigations showed that the soil impacts remaining do not exceed the NJDEP SCC and the VOCs contamination in groundwater is localized and warrants monitoring and institutional controls. - Backfill Characterization Sampling results for soil sample S8-1 (3.5 - 4) did not indicate any constituents at concentrations exceeding NJDEP 1999 SCC, confirming that the fill material used to backfill the excavation is not contaminated. - Supplemental investigation included re-sampling of Boring SW-5. VOCs were not detected in soil sample SW-5R (6 - 6.5), indicating that a VOC source is not present in the area. - Groundwater monitoring results from SWMU-8 (monitoring well MW-32) indicates persistent VOC concentrations exceeding the NJDEP Class IIA GQS[1] (benzene, PCE, TCE, and vinyl chloride). Ref: [May 2001], [December 2008], [April 2016], [February 2018]	- TCE, TCA, PCE, benzene, xylenes, chloroform, vinyl chloride from Bldg G and J - wastewater from Buildings G and J	Recommended Action -- - Soil: No further action warranted. Soil sampling data from the investigations have not identified the presence of constituents in soil at concentrations exceeding the NJDEP 1999 SCC. - Groundwater: Continue groundwater monitoring of VOCs in the area of SWMU-8 and establish groundwater institutional control.
SWMU 9 – Northeast Leach Field (Solvent Leach Field) See also: AOC-10	- The Northeast Leach Field is one of two leach fields, formerly operated by OCD in the paved parking area south of the facility. The Northeast Leach Field (SWMU-9) is located under a paved parking lot, approximately 150 feet south of Building J. The Northeast Leach Field was reportedly operated between 1956 and 1966. - The waste was reportedly conveyed via a sewer line from the west side of Building J to the leach field. The leach field sewer line was a clay pipe that discharged into the manhole (M H-3) and then south into two separate concrete distribution boxes before being discharged to the leach	TCE, DCE, vinyl chloride, benzene, xylenes; PCE; methanol	No further action warranted -- - Analytical results from soil samples collected during the test pit investigation did not indicate any constituent concentrations exceeding NJDEP 1999 SCC.

	field. As reported in the May 2, 2001 RFI Report, OCD conducted an investigation of the leach field sewer line, which EPA and NJDEP later designated as AOC-10. - The Northeast Leach Field is one of two leach fields, formerly operated in the paved parking area south of the facility. The Northeast Leach Field is located under a paved parking lot, approximately 150 feet south of Building J. - The Northeast Leach Field operated between 1956 and 1966. The waste was reportedly conveyed via a sewer line from the west side of Building J to the leach field. The leach field sewer line was a clay pipe that discharged into the manhole (M H-3) and then south into two separate concrete distribution boxes before being discharged to the leach field. - Recon's 1987 investigation included the advancement of eight soil borings. - In 1989, a soil-gas survey of the leach fields was conducted. The results of the investigation indicated the presence of low concentrations of methanol at isolated locations. - In 1991, Dames & Moore installed eight shallow bedrock monitoring wells (MW-14, MW-20, MW-21, MW-27, MW-28, MW-29, MW-30, MW-31), four deep bedrock monitoring wells (MW-26, MW-28D, MW-29D, MW-30D), and one piezometer (PZ-2) to assess the extent of groundwater quality impacts at the site. - Groundwater sampling following the installation of the wells indicated the presence of TCE, 1, 1-dichloroethene (1, 1-DCE), 1,2-DCE, vinyl chloride, and benzene in groundwater from the shallow well (MW-14) closest to the Northeast Leach Field. - In April 1997, McLaren/Hart investigated the Northeast Leach Field to identify the limits of the leach field and to characterize soils and groundwater within this area of the site. The investigation included a geophysical survey, excavation of one long test pit and the collection of soil and groundwater grab samples. - Bucks Geophysical Survey (Bucks) conducted a geophysical survey in the northeast parking lot in the vicinity of manhole MH-3 to identify subsurface utility lines or anomalies in the area and define the limits of the leach field. - During the April 1997 investigation, MH-3 was inspected and identified the presence of three lines connected to the manhole. - Test pit (NE-1) was excavated from manhole MH-3 southward along the abandoned section of pipe. - Soil and groundwater samples collected during the April 1997 investigation did not indicate any constituents at concentrations exceeding the NJDEP 1999 SCC or Class IIA GQS[1]. Ref: [May 2001], [December 2008], [April 2016]		- No VOCs were detected in the groundwater samples.
SWMU 10 – Three No. 6 Fuel Oil USTs	- SWMU-10 is comprised of three abandoned USTs located underneath the Boiler Room in Building C: two 10,000-gallon USTs (ED and EE) and one Building C that overlies USTs ED, EE, and EF did not exist when these USTs were installed. The northern portion of Building C was constructed in 1947 and was used as the boiler room before Building C was expanded to the south, where the abandoned USTs and boiler room are presently located. - USTs ED, EE, and EF were formerly used to supply No. 6 fuel oil to the facility boilers in Building C but were taken out of service in 1986 and abandoned in 1993. The USTs were filled with concrete and abandoned in place.	No. 6 fuel oil, TPH, PAH	Recommended action -- - A deed notice is recommended to address the localized soil impacts identified beneath UST EE. As a conservative measure, the proposed area of the deed notice will include the USTs and the piping located beneath Buildings C and H. - Continue recovery of LNAPL.

	- Results of the ICM activities indicated that a release of No. 6 fuel oil from the UST(s) had migrated into the fill between the bottom of the USTs and the bedrock interface. - Soil sampling results did not indicate any constituent concentrations exceeding NJDEP SCC. - Sampling of monitoring wells around SWMU-10 did not indicate groundwater quality impacts from the UST fuel oil release. - Groundwater samples did not indicate detectable concentrations of fuel-oil-related compounds. Absence of fuel oil related compounds in recently installed monitoring well MW-44. - No. 6 fuel oil had not migrated past the bedrock surface into groundwater due to the high viscosity of No. 6 fuel oil and the low permeability of the bedrock. - A deed notice is recommended to address the localized soil impacts identified beneath UST EE. As a conservative measure, the proposed area of the deed notice will include the USTs in Building C and the piping located beneath Buildings C and H. - The recent discovery of petroleum hydrocarbons at the East Storm Sewer Outfall during August 2017 has prompted the need for further evaluation and investigation at SWMU-10. LNAPL was observed 8/14/2017 at the East Storm Sewer Outfall. Impacted soil at the outfall was immediately excavated and oil-only absorbent booms and pads were installed in the outfall drainage channel that leads to a ditch along an active NJ Transit rail line. Confirmation samples were also collected at this time. - A video inspection was completed of the storm sewer line. The inspection scoped the sewer line from up-gradient of the former UST pit area to the outfall. The video identified staining and LNAPL seeping through joints in the storm sewer pipe in the vicinity of the UST pit (SWMU 10), which likely permeated during high water table events. No other staining or observations of LNAPL were observed along the storm sewer piping during the video inspection, suggesting that the leaks were limited to the section of piping running adjacent to the SWMU 10 area, where the staining and LNAPL was observed. - Oil-only absorbent booms and pillows were placed in five storm sewer manholes and catch basins between the location where LNAPL was observed to be entering the storm sewer line and the East Storm Sewer Outfall. - October 23, 2017, the storm sewer line was pressure-washed, cleaned, and lined to prevent migration of LNAPL to the downstream sewer outfall, via the leaking joints found during the video inspection. To prevent further migration of possible residual LNAPL, absorbent socks and pillows were placed in manholes and catch basins along the storm sewer line. Absorbent socks and pillows were monitored for a one-month period, post installation of the storm sewer liner, to confirm that LNAPL was no longer migrating into the main storm sewer line; as such, no LNAPL was observed in that timeframe. Ref: [May 2001], [December 2008], [April 2016], [August 2018]		- Continue monitoring LNAPL plume and establish groundwater institutional control
SWMU 11 – Seven No. 6 Fuel Oil USTs	- In 1974, seven 20,000-gallon USTs (E1-E7) were installed at the site for storage of a reserve supply of No. 6 heating oil for the facility boilers. The tank farm was located approximately 60 feet east of Buildings C and D. The USTs were 10.5 feet in diameter and 30.9 feet in length. The tops of the USTs were located approximately 3 feet below ground surface and therefore, the invert of the tank was located at approximately13.5 feet below ground surface. A concrete vault contained the pumping equipment for the USTs and was located in between USTs 2 and 3. Underground fuel oil lines extended from the concrete vault to Building C, where the fuel oil was used in the boilers. - In 1990, a new aboveground tank farm was installed at the location of the former No. 6 USTs (SWMU-11). The fuel oil storage system consists	TPH, BTEX, BNAs, No. 4 fuel oil	No further action warranted -- - Based on the soil sampling data completed during the Supplemental Investigation. - Groundwater monitoring data collected around the former USTs did not identify any impacts from the USTs.

	of two 25,000-gallon No. 6 fuel oil tanks (T-1 and T-2), one 5,000-gallon No. 2 fuel oil tank (T-3), and a 1,000-gallon tank for storing recovered oil from an oil/water separator. - The seven 20,000-gallon USTs, known as SWMU-11, were investigated during three separate phases between 1987 and 1988: Phase 1 - July 1987 soil boring investigation of the seven USTs Phase 2 - October and November 1987 soil excavation Phase 3 - Excavation and removal of the seven 20,000-gallon USTs In July 1987, OCD (Ortho Diagnostic Systems at the time) contracted Rutgers Enviro Sciences (RES) to investigate if oil had been released into the soil surrounding the seven 20,000-gallon fuel oil USTs. - Soil samples were obtained from a two-inch split spoon, which was driven from the 13 to 14 foot interval. The soil samples were analyzed for TPH, which was not detected in any of the soil samples, except for one at a concentration of 74 mg/kg. Although results from the soil samples did not indicate elevated concentrations of TPH, visual and olfactory observations during the drilling of soil borings OD-4, OD-5, OD-9, and OD-10 identified a possibility of hydrocarbon impacts at eight to nine feet below ground surface. - Supplemental remedial activities (June 2006 and October 2006) include soil boring and soil sampling in June 2006 to: (1) investigate potential impacts to soil from the seven 20,000-gallon USTs and (2) characterize backfill material within the excavation - Backfill characterization soil sample detected lead at a concentration (1,160 mg/kg) exceeding the NJDEP's 1999 SCC. - Additional soil samples collected to confirm and delineate the lead exceedance had lead concentrations below NJDEP 1999 SCC. Therefore, the lead exceedance was anomalous and lead is not believed to be an issue with respect to the backfill material at SWMU-11. - The results of the soil sampling around the former USTs and associated piping indicate that soils within the area of the former UST excavation are not impacted. - The two soil samples collected in the bermed area indicate that soils within the former bermed area are not impacted. TPH was not detected in soil sample S11-28 (6 - 6.5) and was detected at a concentration (10.8 mg/kg) well below the 100 mg/kg threshold and NJDEP total organic cap in soil sample S11-29 (4.5 - 5). Ref: [May 2001], [December 2008]		- The results of the soil sampling around the former USTs and associated piping indicate that soils within the area are not impacted. - The soil samples collected in the bermed area indicate that soils within the former bermed area are not impacted.
SWMU 12 – 550-Gallon Gasoline UST	- In September 1995, a petroleum odor was detected in a trench excavation during construction activities along Ortho Drive on the eastern portion of the site. The extent of impacted soil was estimated using a PID to screen the soil. The impacted soil was subsequently excavated and properly disposed of offsite. McLaren/Hart conducted interviews with OCD personnel and reviewed facility drawings to identify a source of the impacted soil. - A maintenance employee recalled a small underground storage tank near the construction activities and identified the fill pipe for the UST. The UST was discovered at a location approximately 20 feet east of Building H, immediately north of the water sphere. The capacity of the UST was 550 gallons and the purpose of the UST was to provide fuel (gasoline) to the former emergency generator located in Building C. Fingerprint analyses of the product in the UST and the petroleum-impacted soils identified the petroleum hydrocarbon as gasoline. - The UST was removed on September 14, 1995 by McLaren/Hart in accordance with an NJDEP-approved UST Closure Plan, dated September 13, 1995.	xylene, ethylbenzene; gasoline	No further action is warranted – - The total xylenes concentration in soil is below the most stringent direct contact NJDEP SCC, and is localized. - Total xylenes were detected in a 1995 groundwater sample collected from MW-33 at a maximum concentration of 93 ug/L, which is well below the NJDEP Class IIA GQS[1], declined to 2.5 ug/L during September 1999, and to non-detect during October and November 2008.

	- Groundwater samples from monitoring wells MW-9, MW-10, and MW-33 on October 6 and 7, 2008 and November 7, 2008 to evaluate groundwater quality downgradient of SWMU-12. Analytical results indicate that the former 550-gallon gasoline UST has not impacted groundwater. - Total xylenes were detected in a 1995 groundwater sample collected from MW-33 at a maximum concentration of 93 ug/L, which is below the NJDEP Class IIA GQS[1], declined to 2.5 ug/L during September 1999, and to non-detect during October and November 2008. - No further action for groundwater with respect to SWMU-12 based on the absence of gasoline-related compounds in downgradient monitoring wells MW-9, MW-10 and MW-33. Ref: [May 2001], [December 2008]		- Absence of gasoline-related compounds in downgradient monitoring wells MW-9, MW-10 and MW-33.
SWMU 13 – Process Sanitary Sewer line	- The process/sanitary sewer line system, designated as SWMU-13, was used to convey sanitary waste and process wastewater to the Somerset-Raritan Valley Sewage Authority. The process/sanitary sewer line system is comprised of the northern sanitary main, the southern sanitary main, and the pH equalization/neutralization system. The northernmost line is an 8-inch diameter line constructed of cast iron that conveys process wastewater and sanitary sewer waste from Buildings A, B, C, E, G, H, M and N. - Prior to renovations to this line in 1995, the 8-inch diameter sewer line ran eastward to a manhole outside of Building H, and then at a 45-degree angle southeastward to a manhole before running eastward again off-site. As part of a previous pH equalization project for combined process/sanitary sewer wastewater {unrelated to the RCRA program), the 8-inch diameter line was plugged at the manhole outside of Building H. A new 8-inch diameter fiberglass-reinforced plastic (FRP) pipeline was then installed running south from the manhole to a new 10-inch diameter FRP line located southeast of Building D. - The southernmost line conveys wastewater and sanitary sewer waste from Buildings F, K, J and O and varies in diameter. A sewage lift station that is part of the process/sanitary sewer line system is located approximately 25 feet south of Building K. The sewage lift station was constructed in 1968 and is presently operational. - Investigated NAPA property in 1996 – Results Report for Investigation of Sewer Line on NAPA Property (dated 10/10/97). - 12/2000 – completed abandonment of sewer line at NAPA property. - On April 11, 2006, OCD discovered a break in the three-inch diameter process/sanitary sewer line immediately east of Building C during an inspection of a blockage. This portion of the process/sanitary sewer line receives discharge water from the boiler room, which is comprised of boiler blow-down. - OCD informed NJDEP of the break in the process/sanitary sewer line. NJDEP Case No. 06-04-18-1658-43 was assigned. - The process/sanitary sewer line to the east of Building C was repaired from May 30, 2006 through June 2, 2006, - A blockage was also identified in the process/sanitary sewer line beneath Building C on April 11, 2006. During investigation of the blockage using a camera, the sanitary sewer line was inadvertently punctured. This portion of the process/sanitary sewer line also receives discharge water from the blow-downs of the boilers. The discharge water to this portion of the process/sanitary sewer was re-routed to the floor drains in Building D. - On December 6, 2006, GPSG, the company contracted by OCD to maintain and service the facility, notified OCD of a break in a three-inch process/sanitary sewer line adjacent to Building C. The break was discovered during excavation for the 2007 installation of the Cogeneration facility. OCD immediately notified NJDEP of the break in the process/sanitary sewer line and NJDEP Case No. 06-12-06-1618-54 was	- boiler blowdown (additives: Adjunct HL, Advantage Plus 1400, and Amersite 11)	No further action is warranted – - The investigation of the process/sanitary sewer line system did not indicate any impacts to the surrounding soils. - The groundwater sampling results from monitoring well MW-5, which is more representative of the groundwater quality showed no BN or lead concentrations exceeding the NJDEP Class IIA GQS[1].

	assigned. The break identified on December 6, 2006, was approximately 36 feet south of the break identified on April 11, 2006. Similar to the break identified on April 11, 2006, this portion of the process/sanitary sewer line receives discharge water from the blow-down of the boilers. All discharges to the sanitary sewer line located upstream of the break were temporarily re-directed to the sanitary sewer drains in Building D. The sanitary sewer line was repaired during construction activities for the Cogeneration facility in 2007. - Based on the low concentrations of the chemical additives and the groundwater sampling results for down-gradient monitoring wells, OCD recommends no further action for NJDEP Case Numbers 06-04-18-1658-43 and 06-12-06-1618-54. - From May 2010 to January 2016, video surveys of the interior process/sanitary sewer were conducted at Buildings A, B, C, D, E, F, G, H, J, K, M, and Q. - The process/sanitary sewer sumps were cleaned and observations of the sump integrity were conducted during periods of low flow on April 12, 2014 and January 16, 2016. The sump observations included visual examination of the interior of the sumps for the Building G, H, J, M, Q - Observations from the video survey and sump inspection were used to select sample locations to evaluate the soil quality surrounding the interior process/sanitary sewer lines and sumps, biased toward features of potential integrity issues (holes, sags or separated joints). Soil boring and sampling were conducted at process sewer line at Buildings A, B, E, G. J, Exterior Line East of Building C, and Exterior Line South of Building J. - The results of the soil sampling indicated VOCs, SVOCs, and metals were not present in soil at concentrations exceeding the NJDEP SCC. - The following SVOCs were detected in the groundwater grab sample from location PS-2R at concentrations exceeding the NJDEP Class IIA GQS[1]: benzo(a)anthracene (3.95 ug/L, benzo(a)pyrene (2.10 ug/L, benzo(b)fluoranthene (1.78 ug/L, benzo(k)fluoranthene (2.22 ug/L), bis(2-ethylhexyl)phthalate (4.3 ug/L), chrysene (8.6 ug/L, dibenzo(a,h)anthracene (0.537 ug/L, and indeno(1,2,3-cd)pyrene (1.19 ug/L). This is attributed to perched water conditions. Nearby down-gradient MW-5 is more representative of the local groundwater. - The investigation of the process/sanitary sewer line system did not indicate any impacts to the surrounding soils. Eight base neutral compounds and lead were detected in a groundwater grab sample (PS-2R) at concentrations exceeding the NJDEP Class IIA GQS[1]. - However, OCD believes that groundwater grab sample PS-2R was representative of perched water (4 to 9 feet below grade) and highly-influenced by the turbidity. The groundwater sampling results from monitoring well MW-5, which is more representative of the groundwater quality, indicate no BN or lead concentrations exceeding the NJDEP Class IIA GQS[1]. Ref: [May 2001], [December 2008], [September 2017]		
TCE Plume	- Groundwater investigations at the site have identified a primary area of groundwater quality impact -- a groundwater plume of dissolved chlorinated aliphatic hydrocarbons in the eastern portion of the site. - This area is named the Trichloroethylene (“TCE”) Plume.” The contamination source appears to be beneath Building G, which is located near the central portion of the facility. TCE was historically used as a secondary refrigerant in a lyophilizer (freeze drying) unit located in Building G. - The TCE Plume area CEA is approximately 469,650 square feet (10.8 acres) in area and extends from the central portion of the site near Buildings G, J, and R to the off-site area south of the site as depicted.	tetrachloroethylene (“PCE”); Trichloroethylene (TCE), 1,1-Dichloroethylene (“1,1-DCE”); cis-1,2-dichloroethylene (“cis-1,2-DCE”); and vinyl chloride (“VC”).	Recommended Action -- - Continue long-term groundwater monitoring of the TCE plume and establish groundwater institutional control. - Continue ERD and develop into Corrective Measure Implementation Plan - Continue groundwater monitoring of LNAPL in the area surrounding MW-47

	- The interim remedial action for the TCE plume is an enhanced reductive dechlorination (ERD) program. - Also includes South of Building J area. This area is within proximity of the TCE footprint. - The groundwater quality in the Area South of Building J has been further characterized through the installation of MW-47, MW-47r, MW-47Dr, MW-50, and MW-51. - Results from the groundwater monitoring program indicate elevated concentrations of cis-1,2-DCE and vinyl chloride in MW-47 that warrant further evaluation to assess if the ERD remediation program should be modified to include limited treatment of the area immediately south of Building J (See AOC Groundwater South of Building J) - Light Non-Aqueous Liquid (LNAPL) was first identified in monitoring well MW-47 on April 2, 2014 at a thickness of 0.95 foot. Monitoring well MW-47 was originally installed to investigate propylene glycol in groundwater in response to the detection of propylene glycol concentrations in soil at AOC-18. - A sample of the LNAPL was fingerprinted and found to be a weathered middle distillate (kerosene, jet fuel, or similar like winter diesel fuel). - The extent of LNAPL has been delineated by the following monitoring wells surrounding MW-47: MW-47r, MW-50, MW-51, and T-1B. - OCD has been regularly monitoring MW-47 for the presence of LNAPL since the initial detection using an oil-water interface probe, and removing LNAPL when a sufficient volume accumulates to allow for recovery. (An oil-absorbent sock was installed in MW-47 in October 2016 as a result of the consistently low LNAPL thickness observed). - The LNAPL investigation and monitoring south of Building J indicate that the LNAPL is delineated and limited in extent. Continued monitoring and recovery of the LNAPL is recommended. Ref: [May 2001], [December 2008], [September 2017]		and establish groundwater institutional control

[1]Note that all references made in this document to the NJDEP Class IIA Groundwater Quality Standard (GQS) do not incorporate the updated standards; most notably, the vinyl chloride standard of 0.035 ug/L updated as of February 3, 2025 is not reflected herein.

References:

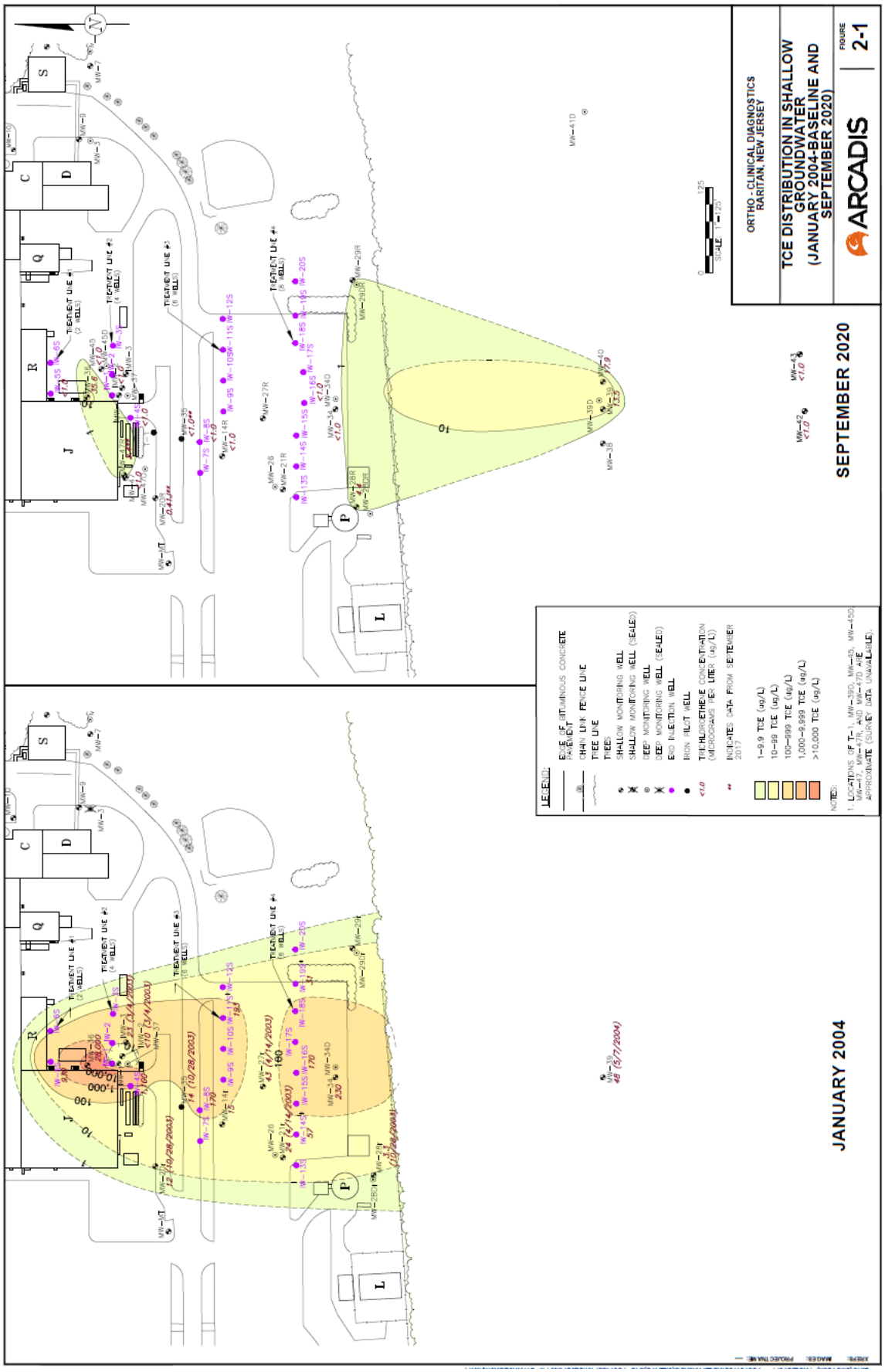
The proposed corrective measures and NFA determinations cited above are principally based on the following reports and documents:

- May 2, 2001 – RCRA Facility Investigation (RFI) Report of investigation by McLaren/Hart 1995-2000
- October 13, 2004 – RFI Report Addendum
- December 1, 2008 – Supplemental RFI Report/Soil Remedial Action Report – Ortho-Clinical Diagnostics
- March 2, 2001 – Report of closure of the off-site process and sanitary sewer line
- January 23, 2014 – EPA Letter to Ortho-Clinical Diagnostics, Comments on the Supplemental RCRA Facility Investigation Report/Soil Remediation Report – Ortho-Clinical Diagnostics-Raritan, NJ-EPA ID No. NJD068715424 (December 1, 2008)
- April 1, 2015 – LNAPL IRM Report
- April 29, 2016 – Supplemental RCRA Facility Investigation Report for SWMUs and AOCs

- September 13, 2017 – Supplemental RCRA Facility Investigation Report Addendum for SWMUs and AOCs
- February 9, 2018 – Supplemental RCRA Facility Investigation Report for Groundwater and Vapor Intrusion.

- 2018 – Soil Remedial Action Report
- August 17, 2018 – Light Non-Aqueous Phase Liquid Interim Remedial Measures Report, Ortho-Clinical Diagnostics, Raritan, New Jersey
- October 29, 2018 – Review of the Light Non-Aqueous Phase Liquid Interim Remedial Measures Report, Ortho-Clinical Diagnostics, Raritan, New Jersey, (August 2018), USEPA
- November 30, 2018 – Response to Comments to Light Non-Aqueous Phase Liquid Interim Remedial Measures Report, Arcadis
- February 2019 – Soil Remedial Action Report for Building K Entrance (AOC 17) and Area South of Building E (AOC 19)
- August 25, 2023 – Email from Michael Pague to EPA, dated August 25, 2023

Supplement Attachment 3 – TCE Plume


JANUARY 2004
SEPTEMBER 2020
ORTHO - CLINICAL DIAGNOSTICS
RARITAN, NEW JERSEY
TCE DISTRIBUTION IN SHALLOW GROUNDWATER
(JANUARY 2004-BASELINE AND SEPTEMBER 2020)
FIGURE 2-1
ARCADIS
LEGEND:
EDGE OF BITUMINOUS CONCRETE PAVEMENT
CHAIN LINK FENCE LINE
TREE LINE
TREES
SHALLOW MONITORING WELL
SHALLOW MONITORING WELL (SEALED)
DEEP MONITORING WELL
DEEP MONITORING WELL (SEALED)
BIO INJECTION WELL
BIO PILOT WELL
TRICHLOROETHENE CONCENTRATION (MICROGRAMS PER LITER (ug/L))
INDICATES DATA FROM SEPTEMBER 2017
1-9.9 TCE (ug/L)
10-99 TCE (ug/L)
100-999 TCE (ug/L)
1,000-9,999 TCE (ug/L)
>10,000 TCE (ug/L)
NOTES:
1. LOCATIONS OF T-1, MW-39D, MW-45, MW-45D, MW-46D, MW-47R, AND MW-47D ARE APPROXIMATE (SURVEY DATA UNAVAILABLE).

Supplement Attachment 4 – Interim Corrective Measure for AOC-16

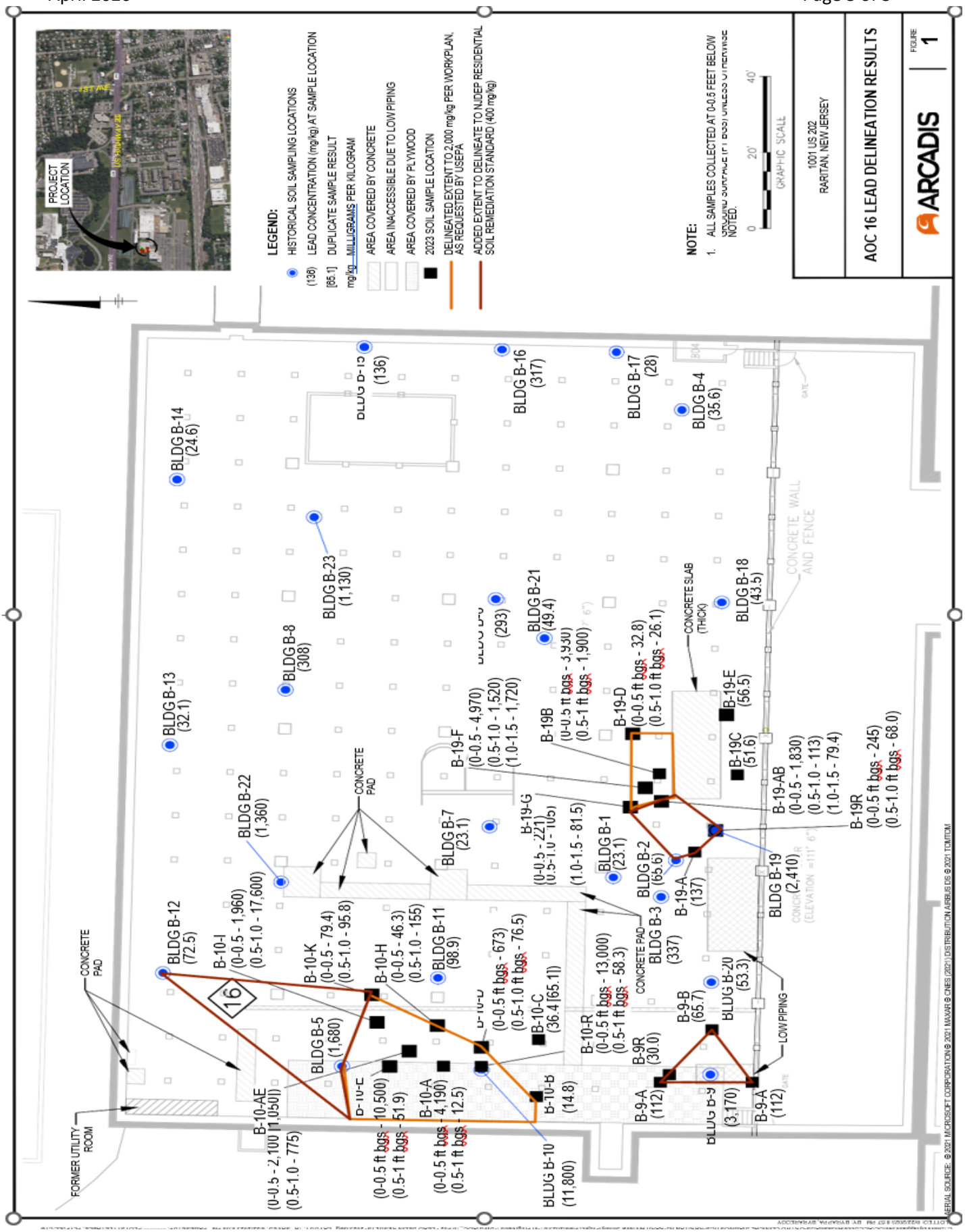
Interim Corrective Measure for AOC-16

Permittee shall place a cover material (e.g., tarp) over the areas in orange and areas in brown. See Figure 1, below.

The surface covers shall be extended to delineation points which meet the NJDEP Residential Soil Remediation Standards (shown in brown).

In those areas where surface covers exist, the existing surface covers shall be used as the engineering controls. The surface covers serve to supplement the additional engineering controls in place or proposed for this AOC-16, including:

- Establishing and maintaining a Deed Notice, with a restricted area encompassing the entirety of the basement.
- Existing fencing to prevent unauthorized access to the basement.
- Badged key card access to allow the control of those employees who may enter the basement.
- Training and PPE to be required of all employees prior to granting badged access to this area.


PROJECT LOCATION
LEGEND:
HISTORICAL SOIL SAMPLING LOCATIONS
LEAD CONCENTRATION (mg/kg) AT SAMPLE LOCATION
DUPLICATE SAMPLE RESULT
mg/kg - MILLIGRAMS PER KILOGRAM
AREA COVERED BY CONCRETE
AREA INACCESSIBLE DUE TO LOW PIPING
AREA COVERED BY PLYWOOD
2023 SOIL SAMPLE LOCATION
DELINEATED EXTENT TO 2,000 mg/kg PER WORKPLAN, AS REQUESTED BY USEPA
ADDED EXTENT TO DELINEATE TO NJDEP RESIDENTIAL SOIL REMEDIATION STANDARD (400 mg/kg)
NOTE:
1. ALL SAMPLES COLLECTED AT 0-0.5 FEET BELOW GROUND SURFACE (FT BGS) UNLESS OTHERWISE NOTED.
GRAPHIC SCALE
1001 US 202
RARITAN, NEW JERSEY
AOC 16 LEAD DELINEATION RESULTS
FIGURE 1
ARCADIS
BLDG B-14 (24.6)
BLDG B-13 (32.1)
BLDG B-12 (72.5)
B-10-I (0-0.5 - 1,960) (0.5-1.0 - 17,600)
BLDG B-22 (1,360)
BLDG B-8 (308)
BLDG B-23 (1,130)
BLDG B-16 (317)
BLDG B-17 (28)
BLDG B-4 (35.6)
BLDG B-21 (49.4)
BLDG B-18 (43.5)
CONCRETE WALL AND FENCE
CONCRETE SLAB (THICK)
CONCRETE PAD
CONCRETE PAD
B-19-F (0-0.5 - 4,970) (0.5-1.0 - 1,520) (1.0-1.5 - 1,720)
B-19B (0-0.5 ft bgs - 3,930) (0.5-1 ft bgs - 1,900)
B-19-D (0-0.5 ft bgs - 32.8) (0.5-1.0 ft bgs - 26.1)
B-19-E (56.5)
B-19C (51.6)
B-19-AB (0-0.5 - 1,830) (0.5-1.0 - 113) (1.0-1.5 - 79.4)
B-19R (0-0.5 ft bgs - 245) (0.5-1.0 ft bgs - 68.0)
BLDG B-7 (23.1)
B-19-G (0-0.5 - 221) (0.5-1.0 - 105) (1.0-1.5 - 81.5)
BLDG B-1 (23.1)
BLDG B-2 (65.6)
BLDG B-3 (337)
B-19-A (137)
BLDG B-19 (2,410)
CONCRETE PAD
CONCRETE PAD
BLDG B-11 (98.9)
B-10-K (0-0.5 - 79.4) (0.5-1.0 - 95.8)
B-10-H (0-0.5 - 46.3) (0.5-1.0 - 155)
B-10-G (0-0.5 ft bgs - 673) (0.5-1.0 ft bgs - 76.5)
B-10-C (36.4 [65.1])
B-10-R (0-0.5 ft bgs - 13,000) (0.5-1 ft bgs - 58.3)
B-9-B (65.7)
BLDG B-20 (53.3)
B-9R (30.0)
B-9-A (112)
B-9-A (3,170)
B-9-A (112)
LOW PIPING
BLDG B-5 (1,680)
B-10-E (0-0.5 ft bgs - 10,500) (0.5-1 ft bgs - 51.9)
B-10-A (0-0.5 ft bgs - 4,190) (0.5-1 ft bgs - 12.5)
B-10-B (14.8)
BLDG B-10 (11,800)
B-10-AE (0-0.5 - 2,100 [1,050]) (0.5-1.0 - 775)
FORMER UTILITY ROOM
16
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Supplement Attachment 5: CMI Scope of Work

CORRECTIVE MEASURES IMPLEMENTATION SCOPE OF WORK

With certain exceptions, the provisions set out in Sections I through XI below are intended as guidance, and these provisions should be justifiable and tailored to site-specific conditions. The exceptions are certain provisions which are based on specific regulatory or statutory requirements applicable to permitting.

Regulatory and statutory requirements are binding and do not require site-specific justification.

Information used to comply with NJDEP requirements, including the Remedial Action Work Plan, Remedial Action Report, and Remedial Action Permit Application may be used to comply with the requirements, recommendations, and guidance in this attachment.

In addition, these requirements will be satisfied when equivalent. As such, duplicative submittals covering these elements will not be required to both US EPA and NJDEP.

Scope of Work for Corrective Measures Implementation

Purpose

The purpose of the Corrective Measures Implementation (CMI) program is to design, construct, operate, maintain and monitor the performance of the corrective measure or measures selected by the implementing agency. Corrective measures are intended to protect human health and/or the environment from releases from the facility. The Permittee will furnish all personnel, materials and services necessary to implement the corrective measures program.

Scope

The documents required for Corrective Measures Implementation are, unless the implementing agency specifies otherwise, a Conceptual Design, Operation and Maintenance Plan, Intermediate Plans and Specifications, Final Plans and Specifications, Construction Workplan, Construction Completion Report, Corrective Measure Completion Report, Health and Safety Plan, Public Involvement Plan, and Progress Reports. The scope of work (SOW) for each document is specified below. The SOWs are intended to be flexible documents capable of addressing both simple and complex site situations. If the Permittee can justify, to the satisfaction of the implementing agency, that a plan and/or report or portions thereof are not needed in the given site-specific situation, then the implementing agency may waive that requirement.

The implementing agency may require the Permittee to conduct additional studies beyond what is discussed in the SOWs in order to support the CMI program. The Permittee will furnish all personnel, materials and services necessary to conduct the additional tasks.

The CMI consists of the following components, which are designated as sections in this Scope of Work.

Section I: Conceptual Design (15% Design Point)

A. Introduction/Purpose
B. Corrective Measures Objectives
C. Conceptual Model of Contaminant Migration
D. Description of Corrective Measures
E. Project Management
F. Project Schedule
G. Design Criteria
H. Design Basis
I. Waste Management Practices
J. Required Permits
K. Long-lead Procurement Considerations
L. Appendices

Section II: Operation and Maintenance Plan

A. Introduction/Purpose
B. Project Management
C. System Description
D. Personnel Training
E. Start-up Procedures
F. Operation and Maintenance Procedures
G. Replacement Schedule for Equipment and Installed Components
H. Waste Management Practices
I. Sampling and Analysis
J. Corrective Measure Completion Criteria
K. Operation and Maintenance Contingency Procedures
L. Data Management and Documentation Requirements

Section III: Intermediate Plans and Specifications (30, 50, 60, 90 and/or 95% Design Point)

Section IV: Final Plans and Specifications (100% Design Point)

Section V: Construction Workplan

A. Introduction/Purpose
B. Project Management
C. Project Schedule

D. Construction Quality Assurance/Quality Control Programs
E. Waste Management Procedures
F. Sampling and Analysis
G. Construction Contingency Procedures
H. Construction Safety Procedures
I. Documentation Requirements
J. Cost Estimate/Financial Assurance

Section VI: Construction Completion Report

Section VII: Corrective Measure Completion Report

Section VIII: Health and Safety Plan

Section IX: Public Involvement Plan

Section X: Progress Reports

Section XI: Proposed Schedule

Section I: Conceptual Design (15% Design Point)

The Permittee shall prepare a Conceptual Design (CD) that clearly describes the size, shape, form, and content of the proposed corrective measure; the key components or elements that are needed; the designer's vision of the corrective measure in the form of conceptual drawings and schematics; and the procedures and schedules for implementing the corrective measure(s). It should be noted that more than one conceptual design may be needed in situations where there is a complex site with multiple technologies being employed at different locations. The implementing agency may require approval of the CD prior to implementation. The CD must, at a minimum, include the following elements:

A. Introduction/Purpose: Describe the purpose of the document and provide a summary description of the project.

B. Corrective Measures Objectives: Discuss the corrective measure objectives including applicable media cleanup standards.

C. Conceptual Model of Contaminant Migration: Present a conceptual model of the site and contaminant migration. The conceptual model consists of a working hypothesis of how the contaminants may move from the release source to the receptor population. The conceptual model is developed by looking at the applicable physical parameters (e.g., water solubility, density, Henry's Law Constant, etc.) for each contaminant and assessing how the contaminant may migrate given the existing site conditions (geologic features, depth to groundwater, etc.). Describe the phase (water, soil, gas, non-aqueous) and location where contaminants are likely to be found. This analysis may have already been done as part of earlier work (e.g., Current Conditions Report). If this is the case, then provide a summary of the conceptual model with a reference to the earlier document.

D. Description of Corrective Measures: Considering the conceptual model of contaminant migration, qualitatively describe what the corrective measure is supposed to do and how it will function at the facility. Discuss the feasibility of the corrective measure and its ability to meet the corrective measure objectives.

E. Data Sufficiency: Review existing data needed to support the design effort and establish whether or not there is sufficient accurate data available for this purpose. The Permittee must summarize the assessment findings and specify any additional data needed to complete the corrective measure design. The implementing agency may require or the Permittee/ may propose that sampling and analysis plans and/or treatability study workplans be developed to obtain the additional data. Submittal times for any new sampling and analysis plans and/or treatability study workplans will be determined by the implementing agency and will be included in the project schedule.

F. Project Management: Describe the management approach including levels of authority and responsibility (include organization chart), lines of communication and the qualifications of key personnel who will direct the corrective measure design and the implementation effort (including contractor personnel).

G. Project Schedule: The project schedule must specify all significant steps in the process and when all CMI deliverables (e.g., Operation and Maintenance Plan, Corrective Measure Construction Workplan, etc.) are to be submitted to the implementing agency.

H. Design Criteria: Specify performance requirements for the overall corrective measure and for each major component. The Permittee must select equipment that meets the performance requirements.

I. Design Basis: Discuss the process and methods for designing all major components of the corrective measure. Discuss the significant assumptions made and possible sources of error. Provide justification for the assumptions.

    1. Conceptual Process/Schematic Diagrams.
    2. Site plan showing preliminary plant layout and/or treatment area.
    3. Tables listing number and type of major components with approximate dimensions.
    4. Tables giving preliminary mass balances.
    5. Site safety and security provisions (e.g., fences, fire control, etc.).

J. Waste Management Practices: Describe the wastes generated by the construction of the corrective measure and how they will be managed. Also discuss drainage and indicate how rainwater runoff will be managed.

K. Required Permits: List and describe the permits needed to construct and operate the corrective measure. Indicate on the project schedule when the permit applications will be submitted to the applicable agencies and an estimate of the permit issuance date.

L. Long-Lead Procurement Considerations: The Permittee shall prepare a list of any elements or components of the corrective measure that will require custom fabrication or for some other reason must be considered as long-lead procurement items. The list must include the reason why the items are considered long-lead items, the length of time necessary for procurement, and the recognized sources of such procurement.

M. Appendices including:
    1. Design Data - Tabulations of significant data used in the design effort;

2. Equations - List and describe the source of major equations used in the design process;
3. Sample Calculations - Present and explain one example calculation for significant or unique design calculations; and
4. Laboratory or Field Test Results.

Section II: Operation and Maintenance Plan

The Permittee shall prepare an Operation and Maintenance (O&M) Plan that outlines procedures for performing operations, long term maintenance, and monitoring of the corrective measure.

A draft Operation and Maintenance Plan shall be submitted to the implementing agency simultaneously with the draft Plans and Specifications (see Section III). A final Operation and Maintenance Plan shall be submitted to the implementing agency simultaneously with the final Plans and Specifications. The O&M plan shall, at a minimum, include the following elements:

A. Introduction/Purpose: Describe the purpose of the document and provide a summary description of the project.

B. Project Management: Describe the management approach including levels of authority and responsibility (include organization chart), lines of communication and the qualifications of key personnel who will operate and maintain the corrective measures (including contractor personnel).

C. System Description: Describe the corrective measure and identify significant equipment.

D. Personnel Training: Describe the training process for O&M personnel. The Permittee shall prepare, and include in the technical specifications governing treatment systems, the contractor requirements for providing: appropriate service visits by experienced personnel to supervise the installation, adjustment, start up and operation of the treatment systems, and training covering appropriate operational procedures once the start-up has been successfully accomplished.

E. Start-Up Procedures: Describe system start-up procedures including any operational testing.

F. Operation and Maintenance Procedures: Describe normal operation and maintenance procedures including:

1. Description of tasks for operation;
2. Description of tasks for maintenance;
3. Description of prescribed treatment or operation conditions; and
4. Schedule showing frequency of each O&M task.

G. Replacement Schedule for Equipment and Installed Components.

H. Waste Management Practices: Describe the wastes generated by operation of the corrective measure and how they will be managed. Also discuss drainage and indicate how rainwater runoff will be managed.

I. Sampling and Analysis: Sampling and monitoring activities may be needed for effective operation and maintenance of the corrective measure. To ensure that all information, data and resulting decisions are technically sound, statistically valid, and properly documented, the Permittee shall prepare a Quality Assurance Project Plan (QAPP) to document all monitoring procedures, sampling, field measurements and sample analyses performed during these activities. The Permittee shall use quality assurance, quality control, and chain-of-custody procedures approved by the implementing agency. These procedures are described in the most recently released EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations, as amended.

J. Corrective Measure Completion Criteria: Describe the process and criteria (e.g., groundwater cleanup goal met at all compliance points for 1 year) for determining when corrective measures have achieved media cleanup goals. Also describe the process and criteria for determining when maintenance and monitoring may cease. Criteria for corrective measures such as a landfill cap must reflect the need for long-term monitoring and maintenance. Satisfaction of the completion criteria will trigger preparation and submittal of the Corrective Measures Completion Report.

K. O&M Contingency Procedures:

1. Procedures to address system breakdowns and operational problems including a list of redundant and emergency back-up equipment and procedures;

2. Alternate procedures to be implemented if the corrective measure suffers complete failure. The alternate procedures must be able to prevent release or threatened releases of hazardous wastes or constituents which may endanger human health and/or the environment or exceed media cleanup standards;

3. The O&M Plan must specify that, in the event of a major breakdown and/or complete failure of the corrective measure (includes emergency situations), the Permittee will orally notify the implementing agency within 24 hours of the

event and will notify the implementing agency in writing within 72 hours of the event. Written notification must, at a minimum, specify what happened, what response action is being taken and/or is planned, and any potential impacts on human health and/or the environment; and

4. Procedures to be implemented in the event that the corrective measure is experiencing major operational problems, is not performing to design specifications and/or will not achieve the cleanup goals in the expected time frame. For example, in certain circumstances both a primary and secondary corrective measure may be selected for the Facility. If the primary corrective measure were to fail, then the secondary would be implemented. This section would thus specify that if the primary corrective measure failed, then design plans would be developed for the secondary measure.

L. Data Management and Documentation Requirements: The O&M Plan shall specify that the Permittee collect and maintain the following information:

1. Progress Report Information
2. Monitoring and laboratory data;
3. Records of operating costs; and
4. Personnel, maintenance and inspection records.

This data and information should be used to prepare Progress Reports and the Corrective Measure Completion Report.

See Section X for guidance on what kind of information may be required in progress reports.

Section III: Intermediate Plans and Specifications (30, 50, 60, 90 and/or 95% Design Point)

[NOTE: The Permittee may propose or the implementing agency may require the submittal of several intermediate plans and specifications (e.g., at the 60% Design Point) or none at all.]

The Permittee shall prepare draft Plans and Specifications that are based on the Conceptual Design but include additional design detail. A draft Operation and Maintenance Plan and Construction Workplan shall be submitted to the implementing agency simultaneously with the draft Plans and Specifications. The draft design package must include drawings and specifications needed to construct the corrective measure. Depending on the nature of the corrective measure, many different types of drawings and specifications may be needed. Some of the elements that may be required are:

- General Site Plans
- Process Flow Diagrams
- Mechanical Drawings

- Electrical Drawings
- Structural Drawings
- Piping and Instrumentation Diagrams
- Excavation and Earthwork Drawings
- Equipment Lists
- Site Preparation and Field Work Standards
- Preliminary Specifications for Equipment and Material

General correlation between drawings and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the project specifications to the implementing agency, the Permittee shall:

- Proofread the specifications for accuracy and consistency with the conceptual design and
- Coordinate and cross-check the specifications and drawings.

Section IV: Final Plans and Specifications (100% Design Point)

The Permittee shall prepare Final Plans and Specifications that are sufficient to be included in a contract document and be advertised for bid. A final Operation and Maintenance Plan and Construction Workplan shall be submitted to the implementing agency simultaneously with the final Plans and Specifications. The final design package must consist of the detailed drawings and specifications needed to construct the corrective measure. Depending on the nature of the corrective measure, many different types of drawings and specifications may be needed. Some of the elements that may be required are:

- General Site Plans
- Process Flow Diagrams
- Mechanical Drawings
- Electrical Drawings
- Piping and Instrumentation Diagrams
- Structural Drawings
- Excavation and Earthwork Drawings
- Site Preparation and Field Work Standards
- Construction Drawings
- Installation Drawings
- Equipment Lists
- Detailed Specifications for Equipment and Material

General correlation between drawings and technical specifications is a basic requirement of any set of working construction plans and specifications. Before submitting the final project specifications to the implementing agency, the Permittee shall proofread the specifications for accuracy and consistency with the preliminary design; and coordinate and cross-check the specifications and drawings.

Section V: Construction Workplan

The Permittee shall prepare a Construction Workplan which documents the overall management strategy, construction quality assurance procedures and schedule for constructing the corrective measure. A draft Construction Workplan shall be submitted to the implementing agency simultaneously with the draft Plans and Specifications and draft Operation and Maintenance Plan. A final Construction Workplan shall be submitted to the implementing agency simultaneously with the final Plans and Specifications and final Operation and Maintenance Plan. Upon receipt of written approval from the implementing agency, the Permittee shall commence the construction process and implement the Construction Workplan in accordance with the schedule and provisions contained therein. The Construction Workplan must be approved by the implementing agency prior to the start of corrective measure construction. The Construction Workplan must, at a minimum, include the following elements:

A. Introduction/Purpose: Describe the purpose of the document and provide a summary description of the project.

B. Project Management: Describe the construction management approach including levels of authority and responsibility (include organization chart), lines of communication and the qualifications of key personnel who will direct the corrective measure construction effort and provide construction quality assurance/quality control (including contractor personnel).

C. Project Schedule: The project schedule must include timing for key elements of the bidding process, timing for initiation and completion of all major corrective measure construction tasks as specified in the Final Plans and Specifications, and specify when the Construction Completion Report is to be submitted to the implementing agency.

D. Construction Quality Assurance/Quality Control Programs: The purpose of construction quality assurance is to ensure, with a reasonable degree of certainty, that a completed corrective measure will meet or exceed all design criteria, plans, and specifications. The Construction Workplan must include a complete Construction Quality Assurance Program to be implemented by the Permittee.

E. Waste Management Procedures: Describe the wastes generated by construction of the corrective measure and how they will be managed.

F. Sampling and Analysis: Sampling and monitoring activities may be needed for construction quality assurance/quality control and/or other construction related purposes. To ensure that all information, data and resulting decisions are technically

sound, statistically valid, and properly documented, the Permittee shall prepare a Quality Assurance Project Plan (QAPP) to document all monitoring procedures, sampling, field measurements and sample analysis performed during these activities.

The Permittee shall use quality assurance, quality control, and chain-of-custody procedures approved by the implementing agency. These procedures are described in the most recently issued EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations, as modified.

G. Construction Contingency Procedures:

1. Changes to the design and/or specifications may be needed during construction to address unforeseen problems encountered in the field. Procedures to address such circumstances, including notification of the implementing agency, must be included in the Construction Workplan;

2. The Construction Workplan must specify that, in the event of a construction emergency (e.g. fire, earthwork failure, etc.), the Permittee will orally notify the implementing agency within 24 hours of the event and will notify the implementing agency in writing within 72 hours of the event. The written notification must, at a minimum, specify what happened, what response action is being taken and/or is planned, and any potential impacts on human health and/or the environment; and

3. Procedures to be implemented if unforeseen events prevent corrective measure construction. For example, in certain circumstances both a primary and secondary corrective measure may be selected for the Facility. If the primary corrective measure could not be constructed, then the secondary would be implemented. This section would thus specify that if the primary corrective measure could not be constructed, then design plans would be developed for the secondary measure.

H. Construction Safety Procedures: Construction safety procedures should be specified in a separate Health and Safety Plan. [See Section VIII]

I. Documentation Requirements: The Permittee shall describe how analytical data and results will be evaluated, documented, and managed. [See Appendix B]

J. Cost Estimate/Financial Assurance: Financial assurance for corrective measures required. See the Module III-Supplement of the Permit.

Section VI: Construction Completion Report

The Permittee shall prepare a Construction Completion (CC) Report which documents how the completed project is consistent with the Final Plans and Specifications. A CC Report shall be submitted to the implementing agency when the construction and any operational tests have been completed. The CC Report shall, at a minimum, include the following elements:

1. Purpose;

2. Synopsis of the corrective measure, design criteria, and certification that the corrective measure was constructed in accordance with the Final Plans and Specifications;

3. Explanation and description of any modifications to the Final Plans and Specifications and why these were necessary for the project;

4. Results of any operational testing and/or monitoring, indicating how initial operation of the corrective measure compares to the design criteria;

5. Summary of significant activities that occurred during construction. Include a discussion of problems encountered and how they were addressed;

6. Summary of any inspection findings (include copies of key inspection documents in appendices);

7. As built drawings or photographs; and

8. Schedule indicating when any treatment systems will begin full scale operations.

Section VII: Corrective Measure Completion Report

The Permittee shall prepare a Corrective Measure Completion (CMC)
Report when the Permittee believes that the corrective measure completion criteria have been satisfied. The purpose of the CMC Report is to fully document how the corrective measure completion criteria have been satisfied and to justify why the corrective measure and/or monitoring may cease. The CMC Report shall, at a minimum, include the following elements:

1. Purpose;

2. Synopsis of the corrective measure;

3. Corrective Measure Completion Criteria: Describe the process and criteria for determining when corrective measures, maintenance and monitoring may cease. Corrective measure completion criteria were given in the final Operation and Maintenance (O&M) Plan;

4. Demonstration that the completion criteria have been met. Include results of testing and/or monitoring, indicating how operation of the corrective measure compares to the completion criteria;

5. Summary of work accomplishments (e.g., performance levels achieved, total hours of treatment operation, total treated and/or excavated volumes, nature and volume of wastes generated, etc.);

6. Summary of significant activities that occurred during operations. Include a discussion of problems encountered and how they were addressed;

7. Summary of inspection findings (include copies of key inspection documents in appendices); and

8. Summary of total operation and maintenance costs.

Section VIII: Health and Safety Plan

The Permittee shall submit a Health and Safety Plan for all field activity, although it does not require review and approval by the implementing agency. The Health and Safety Plan shall be developed as a stand-alone document but may be submitted with the CMI Workplan. The Health and Safety Plan must, at a minimum, include the following elements:

1. Objectives: Describe the goals and objectives of the health and safety program (must apply to on-site personnel and visitors). The health and safety plan must be consistent with the Facility Contingency Plan, OSHA Regulations, NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, as currently modified, all state and local regulations and other implementing agency guidance as provided.

2. Hazard Assessment: List and describe the potentially hazardous substances that could be encountered by field personnel during construction and/or operation and maintenance activities. Discuss the following:
    - Inhalation Hazards
    - Dermal Exposure
    - Ingestion Hazards
    - Physical Hazards
    - Overall Hazard Rating

3. Include a table that, at a minimum, lists: known contaminants, highest observed concentration, media, symptoms/effects of acute exposure.

4. Personal Protection/Monitoring Equipment
    - Describe personal protection levels and identify all monitoring equipment for each operational task.
    - Describe any action levels and corresponding response actions (i.e., when will levels of safety be upgraded).
    - Describe decontamination procedures and areas.

5. Site Organization and Emergency Contacts
    - List and identify all contacts (include phone numbers). Identify the nearest hospital and provide a regional map showing the shortest route from the facility to the hospital. Describe site emergency procedures and any site safety organizations. Include evacuation procedures for neighbors (where applicable).

Include a facility map showing emergency station locations (first aid, eye wash areas, etc.).

Section IX: Public Involvement Plan

Public involvement is an important part of RCRA corrective action. The public must be notified of significant changes to permits and orders regarding corrective action. In some cases, they also must be provided with the opportunity to review and comment on the changes. Further guidance on this process is in the document entitled RCRA Public Involvement Manual (EPA/530-R-93-006, September 1993), as modified.

All Public Involvement Plans prepared by the Permittee shall be submitted to the implementing agency for comment and approval prior to use. Permittee must never appear to represent or speak for the implementing agency before the public, other government officials, or the media. Public Involvement activities that may be required of the Permittee include the following:

1. Conducting an open-house or informal meeting (i.e., availability session) in a public location where people can talk to agency officials and Permittee on a one-to-one basis;

2. Preparing fact sheets summarizing current or proposed corrective action activities (all fact sheets should be reviewed by the implementing agency prior to public distribution);

3. Communicating effectively with people who have vested interest in the corrective action activities, (e.g., providing written or verbal information in the foreign language of a predominantly non-English-speaking community); and

4. Maintaining an easily accessible repository (such as a town hall or public library or the facility itself, in some limited circumstances) of information on the facility-specific corrective action program, including the order or permit, approved workplans, and/or other reports.

A schedule for community relations activities shall be included in the Public Involvement Plan.

Section X: Progress Reports

The Permittee will, at a minimum, provide the implementing agency with signed quarterly progress reports during corrective measure design, construction, operation and maintenance. The implementing agency may adjust the frequency of progress reporting to address site-specific needs. For example, more frequent progress reports may be needed to track critical activities such as corrective measure construction and start-up. Progress reports must, at a minimum, include the following elements:

1. A description of significant activities (e.g., sampling events, inspections, etc.) and work completed/work accomplishments (e.g., performance levels achieved, hours of treatment operation, treated and/or excavated volumes, concentration of contaminants in treated and/or excavated volumes, nature and volume of wastes generated, etc.) during the reporting period;

2. Summary of system effectiveness. Provide a comparison of system operation to predicted performance levels (applicable only during operation of the corrective measure);

3. Summaries of all findings (including any inspection results);

4. Summaries of all contacts with representatives of the local community, public interest groups or State government during the reporting period;

5. Summaries of all problems or potential problems encountered during the reporting period;

6. Actions being taken and/or planned to rectify problems;

7. Changes in personnel during the reporting period;

8. Projected work for the next reporting period; and

9. If requested by the implementing agency, the results of any sampling tests and/or other data generated during the reporting period.

Section XI: Proposed Schedule

The Permittee will provide the implementing agency with the schedules implementing activities required to complete CMI reports:

Reference:
RCRA Corrective Action Plan, May 1994, OSWER Directive 9902.3-2A

Supplement Attachment 6 – EPA Response to Public Comments

EPA's Response to Comments
Regarding EPA's Proposed Permit Modification to the RCRA Permit for
Ortho-Clinical Diagnostics' Facility in Raritan, New Jersey

Background

On September 5, 2025, the Environmental Protection Agency ("EPA") public noticed a proposed permit modification to the RCRA Hazardous and Solid Waste Permit for the Ortho-Clinical Diagnostics ("OCD") facility located in Raritan, New Jersey (hereinafter "proposed Permit Modification"). The notice advised the public that EPA had issued the proposed Permit Modification and tentatively selected certain corrective measures for the facility, subject to public comment.

The public comment period lasted from September 5, 2025 through October 20, 2025, during which time any person could submit written comments to EPA regarding EPA's tentative determinations and/or request a public hearing on the matter pursuant to 40 C.F.R. 124.12. An informational public meeting was held on October 6, 2025.

By e-mails dated October 3, 19, and 20 2025, the State of New Jersey and members of the public (hereinafter referred to as Commenters A and B), respectively, submitted comments on the proposed Permit Modification.

Commenters A and B Comments

EPA summarizes and responds to Commenters A and B's comments on the proposed Permit Modification.

1. **Commenter A and B both expressed concerns about elevated levels of volatile organic compounds ("VOCs") in Monitoring Wells 39 and 40 south of the OCD facility which are near an unnamed tributary that flows to the Raritan River. They commented that, at the public meeting in October 2025, OCD's contractor claimed that the unnamed tributary had been sampled in the past and they did not detect VOCs. Commenters A and B are seeking information about when, where, and under what conditions (e.g. rainy, dry, etc.) this sampling occurred.**

EPA Response: EPA is not aware of any surface water samples collected from the unnamed tributary, by OCD or any other party, in carrying out the RCRA permit requirements. In a written statement to EPA, OCD's contractor clarified that historic sediment samples were collected

from a surface drainage ditch on site, unrelated to the unnamed tributary referenced in the comment. See Attachment A (OCD Letter to EPA).

2. Commenters A and B recommend that EPA amend the proposed Permit Modification to require NJDEP or an organization with an NJDEP-approved Quality Assurance Project Plan to conduct seasonal sampling for VOCs in the unnamed tributary for five years (Commenter A) or 10 years (Commenter B).

EPA Response: EPA does not believe that there is a hydraulic connection between the unnamed tributary and the trichloroethylene ("TCE")-contaminated groundwater plume at or from the site, as there is between 6-10 feet of elevation difference between the tributary bed and the groundwater at or near the unnamed tributary at any given time. Therefore, EPA will not require OCD to sample the tributary at this time. However, to better monitor and delineate the extent of TCE contamination in the groundwater to the south of the property, EPA recognizes that it would be beneficial to have additional monitoring wells close to the unnamed tributary. The proposed Permit Modification requires OCD to develop and implement a groundwater monitoring program and submit a Corrective Measures Implementation Workplan to EPA for review and approval. EPA will ensure that these submittals include a process for the installation and sampling of additional groundwater monitoring wells closer to the unnamed tributary as deemed necessary. EPA has the authority to require sampling of the surface water of the unnamed tributary in the future if the data indicates that the groundwater plume is potentially impacting the surface water.

This Permit is being issued to OCD. As such, EPA cannot require NJDEP or any other entity other than OCD to conduct sampling at the unnamed tributary via this Permit.

3. Commenter B asks what EPA is doing to resolve the elevated levels of VOCs reporting in Monitoring Well 39.

EPA Response: As described in the proposed Permit Modification, OCD has been and will continue implementing the Enhanced Reductive Dechlorination ("ERD") remediation program to address TCE and other aliphatic hydrocarbons in the groundwater plume. OCD must prepare and submit an ERD Corrective Measures Implementation Workplan for EPA approval.

NJDEP Comment

1. NJDEP commented that the new Class II Groundwater Standard for vinyl chloride effective February 3, 2025 is 0.035 ug/l.

EPA Response: The proposed Permit Modification will be revised to reflect the new standard for vinyl chloride.

Attachment A – OCD Letter to EPA

DAY PITNEY LLP

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January 22, 2026

VIA E-MAIL AND FIRST-CLASS MAIL

Lauren Charney, Esq.
Attorney, Office of Regional Counsel
U.S. Environmental Protection Agency, Region 2
290 Broadway, 17th Floor
New York, NY 10007-3181
Email: Charney.Lauren@epa.gov

Re: Ortho- Clinical Diagnostics
1001 US Route 202, Raritan, NJ 08869
EPA ID: NJD068715424

Dear Ms. Charney:

We write on behalf of Ortho-Clinical Diagnostics ("Ortho") in connection with the pending HSWA Permit Modification for Ortho's Raritan Borough Facility. Please find enclosed Arcadis' letter report which is being submitted herewith to facilitate EPA's review of and response to certain written public comments submitted following the virtual public hearing for the Permit Modification held on October 6, 2025. We trust that Arcadis' submission addresses any concerns or questions raised by the public comments, and we respectfully reiterate Ortho's prior requests that the Final HSWA Permit be issued as soon as possible.

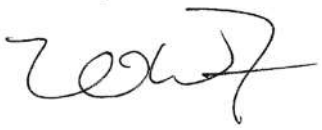
Ortho appreciates the comments and positions raised by members of the public and is hopeful that the data compiled and summarized by Arcadis will provide clarity and reassurance to the surrounding community that Ortho places a high priority on remediating the Property. Since no material issues have been raised necessitating changes to the proposed remedial approach, Ortho respectfully requests that EPA issue the final Modified HSWA Permit as soon as possible given the extensive delays to date.

If, following further review of Arcadis' letter report, EPA has questions or otherwise believes that additional information is necessary to address the public comments, Ortho would appreciate the opportunity to have a call or a meeting with the EPA to better understand any

additional information that is needed to support issuance of the Final Permit. We are hopeful that this process will continue to move forward and appreciate the EPA's willingness to work collaboratively in these final stages of the permitting process.

Please do not hesitate to contact us if you would like to discuss this matter further.

Sincerely,



Todd W. Terhune

TWT/

Memo

SUBJECT
Response to Public Comments on HSWA Permit Modification
Ortho Clinical Diagnostics Facility
Raritan, NJ

DATE
January 21, 2026

TO
Paul Csonka
Global Operations Management

PROJECT NUMBER
30311367

COPIES TO
File

NAME
Purvee Mittal and Darren Scillieri
Purvee.Mittal@arcadis.com
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Dear Mr. Csonka,

On October 6, 2025, US EPA conducted a public meeting to provide the surrounding community with an opportunity to review and ask questions about a HSWA Permit Modification prepared for the Ortho Clinical Diagnostics facility (Site), which is shown on Figure 1.

During the public comment period, US EPA received several comments, similar in nature, which were provided to Ortho Clinical Diagnostics, Inc. (Ortho) through a FOIA request on December 17, 2025. In general, the comments inquire about the impact of potential groundwater discharges to an unnamed stream, classified as FW-NT. The unnamed stream is located approximately 200 feet south of the Site and originates between the New Jersey Transit property and the JFK School. This unnamed stream is fed by a combined drainage ditch. The comments are included below.

Through correspondence over the last several months, US EPA has requested that Ortho resubmit any relevant data to allow US EPA to appropriately respond to these comments. To that end, and on behalf of Ortho, Arcadis has provided a technical response below each comment.

COMMENT #1:

[Redacted] is concerned about elevated levels of VOCs reported in monitoring wells 39 and 40 south of the Ortho site in close proximity to the stream (unnamed tributary to the Raritan River) that runs next to JFK School. Although TCE levels have decreased over time, concentrations are still an order of magnitude higher than regulatory limits and appear to have leveled off since 2018 above 10 ppb. During the virtual public meeting held on October 6, 2025, Ortho's contractor claimed that when they sampled the stream in the past, they did not detect VOCs. However, they did not provide details about how long ago that sampling was conducted, the time of year samples were collected, and whether any sampling has occurred more recently. It is possible that the chemicals had not yet migrated via groundwater to the stream when sampling occurred, or that sampling occurred when water levels were unseasonably high, thus leading to a diluting effect.

RESPONSE:

No sampling of the combined drainage ditch, nor the unnamed stream, has been conducted. During the public meeting the participant posed a question regarding sampling; however, it was not clear which surface water feature was being referenced. Since it was not clear as to what feature the participant was inquiring about, Arcadis referenced historic sediment samples collected from a surface drainage ditch associated with another area of the site, unrelated to the stream being referenced in the comment.

COMMENT #1 (continued):

[REDACTED] strongly recommends that the revised permit include a requirement that Ortho regularly sample the stream, which is a tributary to the Raritan River and in close proximity to a public school. We recommend repeated sampling of VOCs in the stream over a period of five years on a seasonal basis or more frequently, with groundwater samples collected from MW39 and MW40 on the same sampling dates and also analyzed for VOCs. At least some of these samples should be collected after large rain events that could cause groundwater to discharge to the stream. Hydric soils in the streambed should also be sampled and analyzed for VOCs on a seasonal basis. Sample collection should be conducted by NJDEP or an organization with a DEP-approved Quality Assurance Project Plan. The resulting data should be made publicly available.

RESPONSE:

As shown on Figure 1, MW-38 is the closest monitoring well to the unnamed stream, approximately 60 feet away. Figure 2 summarizes MW-38 groundwater elevation data collected as compared to precipitation over the last 16 years. As shown on Figure 2, the base of the unnamed stream is approximately 85 feet above mean sea level (ft amsl). This elevation is 6-10 feet above the groundwater elevation of MW-38, which fluctuates between 75 and 79 ft amsl. Elevation data for MW-38 is provided in Table 1. Accordingly, due to this 6–10 ft elevation difference between the stream base and MW-38 groundwater elevations, there is no hydraulic connection between groundwater and the unnamed stream, even during 500-year storm events and periods of heavy precipitation.

These data demonstrate the basis for the lack of hydraulic connectivity between groundwater and the unnamed stream and show that that the stream is a “losing” stream (i.e., the stream discharges to groundwater, not the reverse). Therefore, the migratory pathway from groundwater to surface water is incomplete, and there is no risk posed to the unnamed stream. As such, sampling of the stream is not warranted.

Further, any data collected from the requested surface water sampling would not be representative of impacts from the Site. Therefore, including a sampling requirement in this HSWA Permit Modification for surface water would not be justified.

COMMENT #2:

As a residents with property directly impacted by runoff from Ortho, I am concerned about elevated levels of VOCs reported in monitoring well 39 [sic] south of the Ortho site in close proximity to the stream that runs through my back yard and is a tributary to the Raritan River as well as directly on site of our elementary school. Concentrations of VOCs are an order of magnitude higher than regulatory limits.

RESPONSE:

As shown in Figure 2, and presented above, the migratory pathway from the groundwater to the surface water is incomplete and, therefore, there is no risk posed to the unnamed stream.

COMMENT #3:

Ortho's Contractor claimed they sampled the stream in the past for VOCs. What were the methods of the process? What are the dates of sampling? How long ago was the sampling? What are the details of sampling methods conducted? What were the conditions during sampling, rainy, dry etc? What time of year were the samples collected? When was the last sampling? Is it possible that the chemicals have not yet migrated via groundwater to the stream when sampling occurred? Did sampling occur[sic] when water levels were unreasonably high? Thus, leading to a diluting effect. What is the exact location of the samples taken? Were samples of both water and soil taken?

RESPONSE:

No sampling of the combined drainage ditch, nor the unnamed stream, has been conducted. During the public meeting a participant posed a question regarding sampling; however, it was not clear which surface water feature was being referenced. Since it was not clear as to what feature the participant was inquiring about, Arcadis referenced historic sediment samples collected from a surface drainage ditch associated with another area of the site, unrelated to the stream being referenced in the comment.

COMMENT #4:

As a concerned citizen, I hope the EPA sees fit to revise[sic] the permit to include a requirement that Ortho regularly sample the stream, and soil which is a tributary to the Raritan River a water source for over 1.5 billion New Jerseyans. I urge for the sake of our health that repeated sampling of VOCs in the stream over a period of a decade on a seasonal basis or more frequently Is done, but with groundwater samples collected from MW39 and MW40 on the same sampling dates and also analyzed for VOCs. At least some of these samples should be collected after large rain events that could cause groundwater to discharge to the stream. Hydric soils in the streambed should also be sampled and analyzed for VOCs on a seasonal basis. Sample collected should be conducted by NJDEP or an organization with a DEP-approved Quality Assurance Project Plan. The resulting data should be made publicly available.

RESPONSE:

As discussed above, the migratory pathway from the groundwater to the unnamed stream is incomplete, and the groundwater does not pose a risk to the unnamed stream. Because there is no interaction between groundwater and surface water, inclusion of a surface water sampling requirement to this permit is not warranted.

Attachments:

Figure 1 – Aerial View Near Unnamed Stream
Figure 2 – MW-38 and Streambed Elevations vs. Precipitation
Table 1 – Historical MW-38 Groundwater Elevations - 2009 through 2025

REFERENCES:

1. APPROXIMATE LOCATIONS OF EXISTING SITE FEATURES ARE BASED ON A COMPILATION OF FIGURES WITH VARYING DATES AND TITLES PREPARED BY McLAREN/HART, INC. AND ORTHO CLINICAL DIAGNOSTICS.
2. APPROXIMATE EXTENT OF PARCEL BOUNDARY BASED ON SOMERSET COUNTY GEOGRAPHICAL INFORMATION SYSTEM (GIS) DIGITAL DATASET.
3. AERIAL PHOTO SOURCE: ©2025 MICROSOFT CORPORATION ©2025 MAXAR ©CNES (2025) DISTRIBUTION AIRBUS DS.

LEGEND:

- SHALLOW MONITORING WELL
- INTERMEDIATE MONITORING WELL
- DEEP MONITORING WELL
- ENHANCED BIOREMEDIATION INJECTION WELL
- GROUND SURFACE ELEVATION AT WELL
- UNNAMED STREAM (FW2-NT)
- APPROXIMATE SITE BOUNDARY
- ADJACENT PROPERTY BOUNDARY
- FENCE LINE
- EDGE OF ASPHALT PAVEMENT
- DRAINAGE DITCH
- GUARD RAIL
- SOLAR PANELS
- TREE LINE
- RAILROAD TRACKS
- BUILDING OUTLINE
- E — SITE BUILDING LABEL

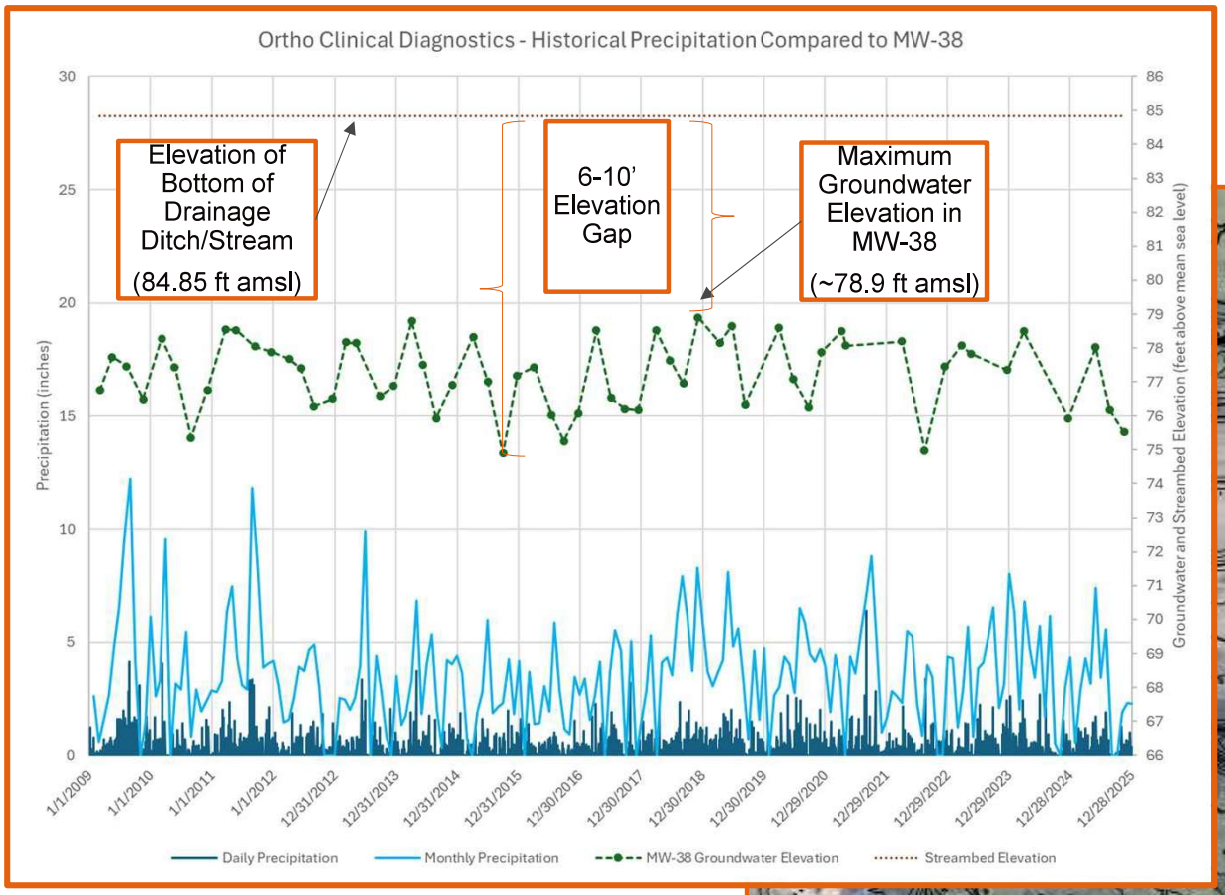
0 150' 300'
GRAPHIC SCALE

ORTHO - CLINICAL DIAGNOSTICS
RARITAN, NEW JERSEY

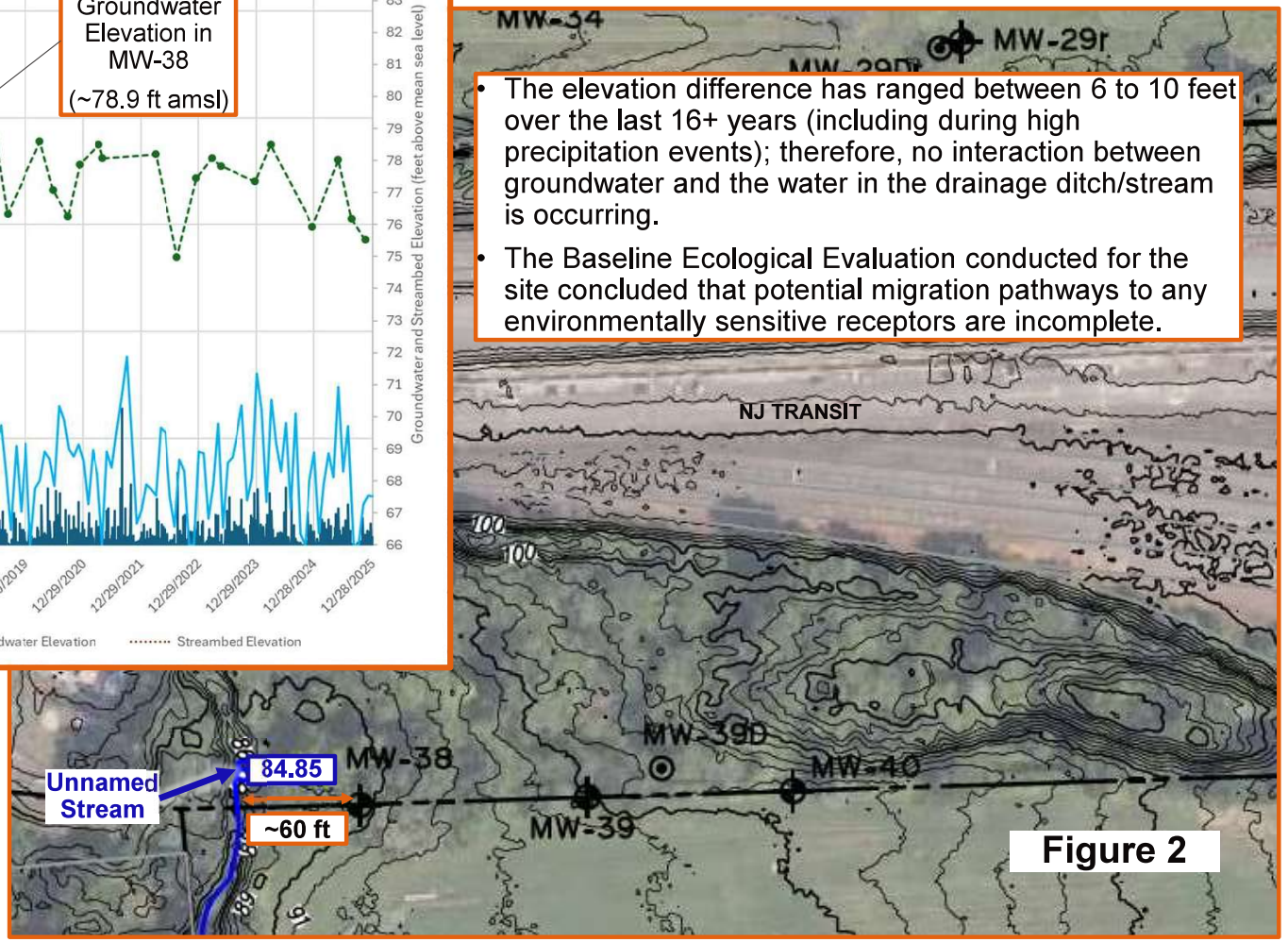
AERIAL VIEW NEAR UNNAMED STREAM

ARCADIS

FIGURE 1



- No risk of groundwater migration to drainage ditch/unnamed stream due to elevation difference
- Unnamed stream is a "losing stream".



- The elevation difference has ranged between 6 to 10 feet over the last 16+ years (including during high precipitation events); therefore, no interaction between groundwater and the water in the drainage ditch/stream is occurring.
- The Baseline Ecological Evaluation conducted for the site concluded that potential migration pathways to any environmentally sensitive receptors are incomplete.

Figure 2

Table 1
Historical MW-38 Groundwater Elevations - 2009 through 2025
Ortho Clinical Diagnostics, Inc. Facility
Raritan, New Jersey

Date	MW -38 Groundwater Elevation (feet above mean sea level)
3/5/2009	76.75
5/18/2009	77.74
8/12/2009	77.46
11/18/2009	76.49
3/8/2010	78.28
5/25/2010	77.44
8/30/2010	75.36
12/6/2010	76.76
3/22/2011	78.55
5/24/2011	78.53
9/15/2011	78.05
12/22/2011	77.88
4/4/2012	77.67
6/13/2012	77.40
8/30/2012	76.29
12/19/2012	76.50
3/6/2013	78.17
5/6/2013	78.14
9/23/2013	76.58
12/16/2013	76.88
4/2/2014	78.80
6/11/2014	77.50
8/27/2014	75.94
12/2/2014	76.91
4/7/2015	78.33
6/30/2015	77.01
9/29/2015	74.91
12/22/2015	77.18
3/31/2016	77.44
7/16/2016	76.03
9/27/2016	75.27
12/21/2016	76.09
4/7/2017	78.52
7/5/2017	76.52
9/27/2017	76.21
12/13/2017	76.18
3/28/2018	78.53
6/20/2018	77.64
9/5/2018	76.95
12/4/2018	78.91
4/11/2019	78.16
6/24/2019	78.66
9/10/2019	76.32
4/1/2020	78.60
6/23/2020	77.08
9/23/2020	76.25
12/9/2020	77.88
4/9/2021	78.51
5/4/2021	78.07
3/31/2022	78.20
8/15/2022	74.99
12/13/2022	77.45
3/21/2023	78.07
5/16/2023	77.84
12/22/2023	77.35
3/29/2024	78.49
12/17/2024	75.94
5/28/2025	78.02
8/20/2025	76.19
11/12/2025	75.53