Joint Application for Permit

Submitted to New York State Department of Environmental Conservation Region 7

Onondaga County Industrial Wastewater Treatment Plant Project

Town of Clay, Onondaga County, New York

Prepared for:

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JOINT APPLICATION FOR PERMIT FORM

NEW YORK STATE | Department of Environmental Conservation | Office of General Services | Department of State

US Army Corps of Engineers

JOINT APPLICATION FORM

For Permits for activities activities affecting streams, waterways, waterbodies, wetlands, coastal areas, sources of water, and endangered and threatened species.

You must separately apply for and obtain Permits from each involved agency before starting work. Please read all instructions.

1. **Applications To:**

>NYS Department of Environmental Conservation ☑ Check here to confirm you sent this form to NYSDEC.

Check all permits that apply:

- ☐ Stream Disturbance
- ☐ Excavation and Fill in Navigable Waters
- ☐ Docks, Moorings or Platforms
- ☐ Dams and Impoundment Structures
- ☑ 401 Water Quality Certification*
- ☑ Freshwater Wetlands
- ☐ Tidal Wetlands
- ☐ Wild, Scenic and Recreational Rivers
- ☐ Coastal Erosion Management
- ☐ Water Withdrawal
- ☐ Long Island Well
- ☐ Incidental Take of Endangered / Threatened Species

* See Instructions (page 3)

>US Army Corps of Engineers ☑ Check here to confirm you sent this form to USACE.

Check all permits that apply: ☑ Section 404 Clean Water Act ☐ Section 10 Rivers and Harbors Act

Is the project Federally funded? Yes ☑ No

If yes, name of Federal Agency:

General Permit Type(s), if known:

Preconstruction Notification: Yes No

>NYS Office of General Services ☐ Check here to confirm you sent this form to NYSOGS.

Check all permits that apply:

- ☐ State Owned Lands Under Water
- ☑ Utility Easement (pipelines, conduits, cables, etc.)
- ☐ Docks, Moorings or Platforms

>NYS Department of State ☐ Check here to confirm you sent this form to NYSDOS.

Check if this applies: ☐ Coastal Consistency Concurrence

2. **Name of Applicant**

Onondaga County Deptartment of Water Environment Protection

Taxpayer ID (if applicant is NOT an individual)

Mailing Address	Post Office / City	State	Zip
650 Hiawatha Blvd W	Syracuse	NY	13204

Telephone 315-435-2260 Email odeandyer@ongov.net

Applicant Must be (check all that apply): ☐ Owner ☑ Operator ☐ Lessee

3. **Name of Property Owner (if different than Applicant)**

Mailing Address	Post Office / City	State	Zip

Telephone Email

For Agency Use Only	Agency Application Number:

4. **Name of Contact / Agent**

Michael Tamblin, Environmental Design & Research, D.P.C.

Mailing Address	Post Office / City	State	Zip
217 Montgomery Street, Suite 1100	Syracuse	NY	13202

Telephone: 315-471-0688 x644 Email: mtamblin@edrdpc.com

5. **Project / Facility Name**

Onondaga County Industrial Wastewater Treatment Plant

Property Tax Map Section / Block / Lot Number:

Project Street Address, if applicable	Post Office / City	State	Zip
4300 Oak Orchard Road	Clay	NY	13041

Provide directions and distances to roads, intersections, bridges and bodies of water

See Sections 1.0 and 2.0 in the Project Narrative.

✔ Town	Village	City	County	Stream/Waterbody Name
Clay			Onondaga	Mud Creek and Oneida River

Project Location Coordinates: Enter Latitude and Longitude in degrees, minutes, seconds:

Latitude: 43 ° 12 ' 13.82 " Longitude: 76 ° 12 ' 32.87 "

6. **Project Description:** Provide the following information about your project. Continue each response and provide any additional information on other pages. **Attach plans on separate pages.**

a. Purpose of the proposed project:

The proposed Project, which includes the construction of a new industrial wastewater treatment plant (IWWTP), will be developed to support the proposed Micron Technology, Inc. (Micron) semiconductor manufacturing campus in the Town of Clay, Onondaga County, NY (Figure 1 in Appendix A). See Section 1.0 of the Project Narrative for further details.

b. Description of current site conditions:

The new IWWTP will be located on the existing Oak Orchard Municipal Wastewater Treatment Plant Site (Oak Orchard Site), which includes an existing municipal wastewater treatment plant, solar panel array, and radio tower. The proposed Project is located in the northern portion of the Oak Orchard Site near the Oneida River (Figure 2 in Appendix A). See Sections 1.0 and 2.0 of the Project Narrative for further details.

c. Proposed site changes:

The majority of the proposed IWWTP site has already been disturbed. The existing solar panel array and radio tower will be demolished prior to the construction of the IWWTP. Additional grading and clearing of existing herbaceous fields and forest will be required for the IWWTP. See Section 2.0 of the Project Narrative for further details.

d. Type of structures and fill materials to be installed, and quantity of materials to be used (e.g., square feet of coverage, cubic yards of fill material, structures below ordinary/mean high water, etc.):

The Project Site will be fully cleared and graded before the installation of Project components. Clearing requires the removal of the existing solar array, existing radio tower, and trees/grassland. Project components consist of wastewater treatment structures including, but not limited to: equalization tanks, diversion tanks, anoxic tanks, aeration tanks, and condensate/effluent storage area (see Site Plans [Appendix C] for location of all proposed wastewater treatment components). Components will be skid mounted and modular equipment systems.

e. Area of excavation or dredging, volume of material to be removed, location of dredged material placement:

The Applicant anticipates potential material removal from the clearing process. The specification of volume of removed material, if required, is still being determined through the design process.

f. Is tree cutting or clearing proposed? ✔ Yes If Yes, explain below. No

Timing of the proposed cutting or clearing (month/year): Winter 2026

Number of trees to be cut: Refer to acreage Acreage of trees to be cleared: 10.3

g. Work methods and type of equipment to be used:

See Section 3.0 of the Project Narrative.

h. Describe the planned sequence of activities:

See Section 3.0 of the Project Narrative.

i. Pollution control methods and other actions proposed to mitigate environmental impacts:

See Section 6.1 of the Project Narrative.

j. Erosion and silt control methods that will be used to prevent water quality impacts:

See Section 6.1 of the Project Narrative.

k. Alternatives considered to avoid regulated areas. If no feasible alternatives exist, explain how the project will minimize impacts:

See Section 5.0 of the Project Narrative and the Engineering Report (Section 3.0, Appendix B).

l. Proposed use: ☐ Private ☐ Public ☑ Commercial

m. Proposed Start Date: November 2026 Estimated Completion Date: August 2028

n. Has work begun on project? Yes If Yes, explain below. ☑ No

o. Will project occupy Federal, State, or Municipal Land? ☑ Yes If Yes, explain below. ☐ No

The new IWWTP will be located on the existing Oak Orchard Site, which is owned by Onondaga County.

p. List any previous DEC, USACE, OGS or DOS Permit / Application numbers for activities at this location:

q. Will this project require additional Federal, State, or Local authorizations, including zoning changes?

☑ Yes If Yes, list below. ☐ No

New York State Pollutant Discharge Elimination System (SPDES) Permit

7. **Signatures.**

Applicant and Owner (If different) must sign the application. If the applicant is the landowner, the **landowner attestation form** can be used as an electronic signature as an alternative to the signature below, if necessary. Append additional pages of this Signature section if there are multiple Applicants, Owners or Contact/Agents.

I hereby affirm that information provided on this form and all attachments submitted herewith is true to the best of my knowledge and belief.

Permission to Inspect - I hereby consent to Agency inspection of the project site and adjacent property areas. Agency staff may enter the property without notice between 7:00 am and 7:00 pm, Monday - Friday. Inspection may occur without the owner, applicant or agent present. If the property is posted with "keep out" signs or fenced with an unlocked gate, Agency staff may still enter the property. Agency staff may take measurements, analyze site physical characteristics, take soil and vegetation samples, sketch and photograph the site. I understand that failure to give this consent may result in denial of the permit(s) sought by this application.

False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the NYS Penal Law. Further, the applicant accepts full responsibility for all damage, direct or indirect, of whatever nature, and by whomever suffered, arising out of the project described herein and agrees to indemnify and save harmless the State from suits, actions, damages and costs of every name and description resulting from said project. In addition, Federal Law, 18 U.S.C., Section 1001 provides for a fine of not more than $10,000 or imprisonment for not more than 5 years, or both where an applicant knowingly and willingly falsifies, conceals, or covers up a material fact; or knowingly makes or uses a false, fictitious or fraudulent statement.

Signature of Applicant | Date: 9/4/25

Applicant Must be (check all that apply): ☑ Owner ☑ Operator ☐ Lessee

Printed Name: Odean Dyer, PE | Title: Commissioner

Signature of Owner (if different than Applicant) | Date:

Printed Name: | Title:

Signature of Contact / Agent | Date: 9/4/25

Printed Name: Michael E. Tamblin, PE | Title: Principal

For Agency Use Only **DETERMINATION OF NO PERMIT REQUIRED**

Agency Application Number:

(Agency Name) has determined that No Permit is required from this Agency for the project described in this application.

Agency Representative:

Printed Name: | Title:

Signature: | Date:

1.0 INTRODUCTION

The Onondaga County Department of Water Environment and Protection (OCDWEP) (the Applicant) is proposing to construct the Onondaga County Industrial Wastewater Treatment Plan (the Project), which includes a new industrial wastewater treatment plant (IWWTP; the Facility) in the Town of Clay, Onondaga County, New York (Figure 1 in Appendix A [All figures are in Appendix A]). The proposed Project will be developed to support the proposed Micron Technology, Inc. (Micron) semiconductor manufacturing campus (Micron Site) at the White Pine Commerce Park in the Town of Clay, Onondaga County, New York. The new IWWTP will be located on the existing Oak Orchard Municipal Wastewater Treatment Plant Site (Oak Orchard Site) (Figure 2). The Oak Orchard Site includes the existing Oak Orchard Municipal Wastewater Treatment Plant (Municipal WWTP), existing solar panel array, and a radio tower.

Onondaga County through the OCDWEP is working with Micron to provide sanitary and process wastewater treatment and reclaimed water for cooling water and UPW makeup water. The proposed IWWTP will be constructed to serve the industrial discharge from the new Micron Facility, which will be directed from the Micron Site to the IWWTP through a new Conveyance Corridor.

The IWWTP will be built and operated in two phases which will align with Micron's projected discharges from two of their four proposed Fabrication Facilities (Fabrication 1 [FAB1], and Fabrication 2 [FAB2]; see Section 3.1.1). Overall, the Micron facility will include a total of four Fabrication Facilities (FAB1 through FAB4). An initial IWWTP will be designed to serve FAB1 with additional IWWTP capabilities added for FAB2. Further details are provided in Section 3.2.

Wetlands anticipated to be under state jurisdiction exist throughout the proposed IWWTP. Construction of the proposed IWWTP is anticipated to result in permanent impacts to freshwater wetlands anticipated to be under state jurisdiction and associated state-regulated 100-foot adjacent areas subject to jurisdiction by the New York State Department of Environmental Conservation (NYSDEC) under Article 24 (Freshwater Wetlands Act) of the Environmental Conservation Law (ECL). The construction of the IWWTP is anticipated to result in approximately 1.85 acres of permanent impacts to wetlands that are anticipated to be under state jurisdiction and 4.72 acres of permanent impacts to associated state-regulated 100-foot adjacent areas for the construction of the IWWTP (Figure 4).

This Joint Application for Permit, pursuant to and in accordance with Article 24 of the ECL is being submitted to NYSDEC Region 7 for review and authorization to construct the IWWTP. The anticipated impacts are associated with clearing and grading for the construction of the IWWTP. Based on the anticipated impacts to state wetlands and associated state-regulated 100-foot adjacent areas, the Applicant is seeking authorization under an Article 24 Freshwater Wetlands Permit. Unavoidable permanent wetland impacts are discussed in further detail in Section 4.0. Please note, while the Municipal WWTP, proposed Conveyance

Corridor[1], and proposed Micron Site are proximate to the IWWTP, this application does not address these individual projects. Separate and distinct permit applications are being prepared for the upgrades to the Municipal WWTP, the construction of the Conveyance Corridor, and the construction of the Micron Site.

2.0 PROJECT LOCATION & SITE DESCRIPTION

2.1 IWWTP Location

The proposed IWWTP will be constructed to serve the industrial discharge from the proposed Micron Facility, which will be directed from the proposed Micron Site to the IWWTP through a proposed Conveyance Corridor. The IWWTP will be located at the existing Oak Orchard Municipal WWTP at 4300 Oak Orchard Road which is loosely bounded by Oak Orchard Road to the north, Henry Clay Boulevard to the east, Verplank Road to the south, and Mud Creek to the west (Figure 2, Figure 3).

In order to identify wetlands, streams, and other surface water features within the Facility Site, Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. (EDR) defined a Wetland Study Area (Study Area) for the Project, including the proposed location of the IWWTP within the Oak Orchard Site. The Study Area totaled approximately 76.7-acres, of which approximately 28.2-acres encompass the proposed IWWTP. The IWWTP Wetland and Stream Delineation Memorandum (Appendix B) provides details regarding the presence of mapped and delineated wetland and streams within the Study Area and conclusions on their presumed jurisdictional status. Section 2.2 provides details on the delineated wetlands and streams within the IWWTP.

2.2 IWWTP Water Resources

As presented in the IWWTP Wetland and Stream Delineation Memorandum in Appendix B, five wetlands were delineated within the Study Area, totaling approximately 6.95 acres. In addition, five streams were delineated totaling approximately 2,837 linear feet. Additionally, two constructed wastewater treatment lagoons are located within the Study Area. The boundaries of these features were digitized based on arial imagery and verified in the field. The wastewater lagoons were determined by USACE to be non-jurisdictional features as wastewater treatment facilities are specifically listed by the USACE as exclusions from WOTUS (see Approved Jurisdictional Determination [AJD], Preliminary Jurisdictional Determination [PJD], and Delineation Verification No. LRB-2024-01037 [Appendix D]). Within the IWWTP, a total of 3 wetlands and one stream were delineated totaling approximately 2.65 acres and 31.63 linear feet, respectively. In some cases, delineated wetlands and streams extend beyond the boundaries of the IWWTP and/or Study Area and are larger than the acreage documented within the IWWTP and/or Study Area.

As a result of this delineation process and the associated consultation conducted in accordance with 16 New York Codes, Rules and Regulations (NYCRR) §1100-1.3(e), the Applicant submitted a jurisdictional determination (JD) request to NYSDEC for delineated wetlands and streams within the IWWTP on May 1,

[1] The Conveyance Corridor will ultimately provide the connection between the Micron Site and the IWWTP. While the Conveyance Corridor and the IWWTP are connected actions under the National Environmental Policy Act review of the Micron Site, separate permit applications are being submitted for review.

2025. At the date of this permit application submission, the JD request is still outstanding with NYSDEC. Additionally, as a result of this delineation process and the associated consultation conducted in accordance with 33 United States Code (USC) 401 et seq., an AJD and PJD were issued by USACE for the Facility Site and Conveyance Corridor on August 4, 2025, which confirmed there are no federally jurisdictional wetlands or streams within the IWWTP (Appendix B).

There is one traditionally navigable waters (TNW) within the Study Area, the Oneida River; however, the Oneida River is not located within the IWWTP and will not be impacted by Project activities. Therefore, Section 10 of the Rivers and Harbors Act is not applicable to the construction of the Facility Site. There are two potential state navigable waters (Oneida River and Mud Creek) within the Study Area; however, these waterways are not located within the IWWTP and will not be impacted by Project activities. Therefore, Article 15 (Protection of Waters) of the ECL will not be applicable to the Project.

3.0 PROJECT DESCRIPTION & CONSTRUCTION

3.1 IWWTP Components

The IWWTP will be located on the Oak Orchard Site which is located on private land owned by Onondaga County. The Oak Orchard Site is approximately 76.7-acres in size and includes the existing Municipal WWTP, solar panel array, and a radio tower. The IWWTP is proposed to occupy approximately 28.2-acres of the Oak Orchard Site, including undeveloped areas of grassland and forest and the land currently occupied by the solar panel array and radio tower. The solar panel array and radio tower will be removed prior to pre-construction activities associated with the construction of IWWTP (i.e., clearing, grading, etc.).

The IWWTP will treat industrial waste separately and in addition to the existing Municipal WWTP. The IWWTP treated effluent will be discharged to the existing Municipal WWTP outfall prior to leaving the Oak Orchard Site for ultimate combined discharge through the Municipal WWTP outfall to the Oneida River. The proposed IWWTP will include wastewater equipment to treat FAB1 discharges from the proposed Micron Site and expansion wastewater equipment to treat FAB2 discharges from the Micron Site. Specific components for wastewater treatment will include, but are not limited to: equalization tanks, diversion tanks, anoxic tanks, aeration tanks, and condensate/effluent storage area (see Site Plans [Appendix C] for location of all proposed wastewater treatment components; see Section 3.1.1 below). Additionally, the IWWTP will require a privacy wall, acoustic barrier, and several roads for vehicles within the fence line to access the equipment for operations and maintenance (O&M). The site grading and preparation will occur prior to the installation of any temporary access roads, temporary construction laydown areas, and temporary staging areas. There will be no disturbance from the installation of the temporary construction components. Once completed, the IWWTP would work in concert with industrial wastewater pretreatment facilities constructed on the proposed Micron Site.

3.2 IWWTP Construction

Pending the approval and receipt of all required construction and environmental permits, Facility construction is anticipated to begin in November 2026 and be completed by August 2028. The general sequence of the IWWTP construction consists of the following main elements and activities: (1) installation

of stormwater and erosion and sediment control measures; (2) removal of solar panel arrays and radio tower; (3) site preparation (i.e., tree removal, grading, clearing) and laydown yard construction; (4) construction of access roads and completion of all other civil construction; (5) installation of wastewater treatment equipment and associated structures; and (6) site restoration of temporarily disturbed around the perimeter, if applicable.

As stated in Section 1.0, the IWWTP will be built and operated in two phases. Phase 1 of the IWWTP will provide biological treatment for the wastewater generated during the operation of FAB1 of the Micron Site. This biological treatment consists of an equalization tank to provide constant volume equalization and a diversion tank to provide for the peak influent concentrations and/or off-specification water. The biological treatment includes the Modified Ludzack Ettinger (MLE) process which uses an anoxic tank upstream of the aerobic tank to provide nitrogen removal through nitrification and denitrification. The wastewater flow from the aerobic tanks then passes through a membrane bioreactor (MBR) where internal immersed hollow fiber ultrafiltration (UF) membranes provide solids removal. From the MBR, the flow passes through ultraviolet (UV) disinfection to treat potential pathogenic organisms before being discharged to the internal outfall 01B to the Oak Orchard Site outfall pipe. The waste activated sludge (WAS) from the MBR is thickened via a combination of gravity thickeners and centrifuges, and the solids produced from these processes are intended to be disposed of in a landfill. The majority of the tankage for the process is shared wall concrete construction to minimize the footprint of the treatment system. Locations of each of the proposed wastewater treatment components can be found in the Site Plans (Appendix C). Further details on the components and the process for the first phase of wastewater treatment can be found in Section 3.1 of the Engineering Report (Appendix C).

Phase 2 of the IWWTP, which will align with Micron's projected discharges for FAB2, will double the capacity of the biological treatment and biosolids management systems, with the addition of chemical and physical treatment for appropriate total dissolved solids (TDS) and other water quality criteria removal. Additionally, a WRF will be constructed to meet Micron's reclaim water requirements. Following MBR treatment, the wastewater flow goes through an ion exchange (IX) process using a strong acid cation to remove magnesium and calcium alkalinity in addition to magnesium and calcium non-alkalinity to reduce scaling in the reverse osmosis (RO) treatment. Following the IX process, a decarbonization stripper is used to remove carbon dioxide in the wastewater to further reduce corrosion and scaling tendencies in the downstream processes. The carbon dioxide stripped wastewater then passes through RO treatment where the permeate is sent through UV treatment and can be either discharged in the Oneida River or reused by Micron as reclaim water. The RO concentrate is further treated through an evaporator and crystallizer system to reduce the amount of overall brine for hauling and disposal offsite. Specific details of the disposal of brine solids separated through dewatering will be developed as this design is progressed. The condensate from the evaporator and crystallizer systems can be blended with the RO permeate before being sent through UV disinfection and either discharged or used for reclaimed purposes. Locations of each of the proposed wastewater treatment components can be found in the Site Plans (Appendix C). Further details on the components and the process for the second phase of wastewater treatment can be found in Section 3.2 of the Engineering Report (Appendix C).

Permanent impacts to wetlands anticipated to be under state jurisdiction and associated state-regulated 100-foot adjacent areas are anticipated to result from the construction of the IWWTP. These impacts are anticipated to occur as a result of clearing, grading, and ground preparation for the installation of wastewater treatment equipment, in areas that have not been previously disturbed and/or occupied by existing facilities (i.e., solar array). Construction and installation of other facility components (i.e., wastewater treatment tanks, privacy wall and acoustic barrier, temporary laydown areas, access roads, etc.) will not result in impacts to jurisdictional features as they will be constructed within areas previously disturbed from clearing, grading, and ground preparation. It is anticipated that the IWWTP construction will result in approximately 10.3 acres of tree removal; 1.73 acres of which constitutes the permanent impacts to two forested wetlands.

3.2.1 Pre-Construction Activities

Prior to construction, a field visit will be conducted by the construction contractor to stake out the exact locations of proposed Facility components and limits of disturbance. Two weeks prior to the start of construction, at any given area, the construction contractor will conduct a walkover of areas to be affected, or potentially affected, by proposed construction activities. This pre-construction walk-over will focus on the previously identified sensitive resources to avoid (e.g., wetlands, streams, archaeological resources), as well as the limits of clearing, limits of construction activity, location of wetland and stream crossings, location of drainage features (e.g., culverts, ditches), location of underground utilities, and layout of erosion and sediment control measures. Upon identification of these features, they will be marked in the field with stakes, pin flags, and/or fencing.

3.2.2 Wastewater Treatment Equipment Installation

Where applicable, the treatment plan will include skid mounted and modular type equipment systems to improve constructability efficiencies and schedule. The equipment includes, but is not limited to, equalization tanks, diversion tanks, anoxic tanks, aeration tanks, and condensate/effluent storage area. All of the wastewater treatment equipment will be installed within the cleared, graded, and prepared footprint of the IWWTP.

4.0 ANTICIPATED FEDERAL AND STATE JURISDICTIONAL IMPACTS

The Applicant has avoided or minimized impacts to delineated wetlands and steams to the maximum extent practicable (see discussion in Section 6.1). Where full avoidance was not practicable, impacts to wetland and stream resources were minimized by utilizing previously disturbed areas including areas where existing facilities currently exist (i.e., solar array panels) and compacting the limit of disturbance from the initial design. However, in siting certain infrastructure, it was infeasible to avoid wetlands and streams entirely. Permanent impacts to wetlands anticipated to be under state jurisdiction and associated state-regulated 100-foot adjacent areas are anticipated to occur as a result of the construction of the IWWTP. These impacts are anticipated to total 1.85 acres of permanent wetland impacts and 4.72 acres of permanent impacts to associated state-regulated 100-foot adjacent areas. These permanent impacts to wetlands and associated state-regulated adjacent areas are described in more detail in Section 4.1 and Table 1.

4.1 Jurisdictional Wetland Impacts

To avoid impacts to wetlands anticipated to be under state jurisdiction to the greatest extent practicable, the Applicant utilized data collected during wetland and stream delineations to inform siting and design of the IWWTP. The Applicant sited and designed the IWWTP to utilize previously disturbed areas and compacted the limit of disturbance to avoid or minimize impacts to regulated wetlands to the maximum extent practicable. Table 1 provides a summary of the impact evaluation to wetlands anticipated to be under state jurisdiction and associated state-regulated 100-foot adjacent areas. Section 6.0 provides a discussion of proposed mitigation measures being proposed to offset the anticipated permanent wetland impacts. Additionally, Figure 4 in Appendix A provides locations and details of impacts to wetlands anticipated to be under state regulated wetlands jurisdiction and associated state-regulated 100-foot adjacent areas within the IWWTP.

The majority of the Facility will be constructed on previously disturbed land where facilities currently exist, specifically the solar array panels and radio tower. However, regulated impacts are anticipated to result from the construction of the Facility, specifically from clearing, grading, and ground preparation for the installation of wastewater treatment equipment, in areas that have not been previously disturbed and/or occupied by existing facilities (i.e., herbaceous fields, forests). Construction and installation of other facility components (i.e., wastewater treatment tanks, privacy wall and acoustic barrier, laydown areas, access roads, etc.) will not result in impacts to jurisdictional features as they will be constructed within areas previously disturbed from clearing, grading, and ground preparation. The construction of the IWWTP is anticipated to result in 1.85 acres of permanent wetland impacts and 4.72 acres of permanent impacts to associated state-regulated 100-foot adjacent areas (Figure 4).

Table 1. Impacts to Anticipated State Jurisdictional Wetlands

Wetland ID[1]	Wetland Type[2]	Federal Jurisdiction[2]	Anticipated State Jurisdiction	Permanent Impact (acres)	Permanent State Regulated Adjacent Area Impact (acres)[3]	Construction Activity	Figure 4 Sheet #
05-W001	PEM/PFO	No	Yes	1.81	-	Clearing and Grading	1
05-W006	PFO	No	Yes	0.04	-	Clearing and Grading	1
Total:				**1.86**	**4.72**	-	-

[1] Delineation ID assigned by EDR

[2] Wetland community types are based upon Cowardin et al. (1979): PFO = palustrine forested, PEM = palustrine emergent wetland, PSS = palustrine scrub/shrub wetland.

[2] See Approved Jurisdictional Determination [AJD], Preliminary Jurisdictional Determination [PJD], and Delineation Verification No. LRB-2024-01037 (Appendix D)

[3] As shown on Figure 4, the state-regulated 100-foot adjacent area associated with the wetlands anticipated to be under state jurisdiction overlap for both wetlands. Therefore, only the total is provided in the table.

4.2 Jurisdictional Stream Impacts

The construction of the IWWTP will not result in impacts to streams that are anticipated to be subject to state jurisdiction under Article 15 (Protection of Waters Program) of the ECL.

4.3 Navigable Waters Impacts

There are no TNWs within the IWWTP; therefore, Section 10 of the Rivers and Harbors Act is not applicable. Additionally, there are no state navigable waters within the IWWTP; therefore, Article 15 (Protection of Waters) of the ECL is not be applicable.

5.0 ALTERNATIVES ANALYSIS

Alternatives to the proposed IWWTP have been evaluated by the Applicant to determine ways to avoid and minimize impacts to wetlands and streams, while still achieving the purpose and need of the IWWTP. Appendix G of the Engineering Report (Appendix C) provides a summary comparison matrix of the 11 alternatives considered for the IWWTP during the conceptual engineering effort. Additionally, the appendix provides block flow diagrams for each. These alternatives were developed considering, but not limited to, the following requirements developed by OCDWEP:

1. Water quality and quantity data provided by Micron.
2. Discharge water quality requirements as outlined in the existing Oak Orchard State Permit Discharge Elimination System (SPDES) permit.
3. OCDWEP's objectives:
    a. **Reliability**: The proposed IWWTP shall continuously operate and meet applicable law and contract standards such that the needs of OCDWEP, Micron, Onondaga County, its residents and other stakeholders are met throughout the design, construction, and operation; providing reliable long-term operation.
    b. **Cost**: Design shall focus on capital and life-cycle costs through alternatives evaluation, collaboration, and value engineering with consideration for construction and long-term operation.
    c. **Phasing**: Design and execution shall include forward thinking and phasing to provide a logical cost-effective plan to meet future expansion and/or modifications to operations that may be needed for changing wastewater conditions or applicable law.
    d. **Schedule**: Project will be a progressive design-build. The schedule is tight and will be a driver for success with completion dates identified herein for design, construction, commissioning, and operation. Meeting the milestone dates will be critical.
    e. **Risk**: Risks shall be clearly identified. OCDWEP IWWTP team and the Design-Build team shall work collaboratively to reduce risk during the design and bidding phases of the project.
    f. **Health and Safety**: Implement an effective safety program that incorporates OCDWEP standards and industry best practices.
    g. **Operability**: IWWTP shall be designed for ease of operations and to protect operations staff from injury.

h. **Accessibility**: IWWTP shall be easily accessible for operations, outside deliveries, and hauling of waste.
i. **Aesthetics**: IWWTP shall not impact the surrounding community from a visual or odor standpoint.
j. **Adaptability**: Controls are flexible to adapt and be modified as needed to changing conditions and drive operational improvements and efficiencies.
k. **Standards**: Project shall meet OCDWEP county standards as well as industry standards where applicable within project cost structure and objectives.
l. **Footprint**: The IWWTP layout shall fit within the footprint identified by OCDWEP.

The two technically feasible IWWTP alternatives for treatment of Micron's wastewater discharges are described in Sections 3.1 and 3.2 of the Engineering Report (Attachment B). Alternative 10 discusses the treatment process for FAB1, and Alternative 11 discusses the treatment for the additional flow once FAB2 is operating.

5.1 Alternative IWWTP Sites

This section provides background information on the selection of the site for the IWWTP to facilitate understanding of the criteria that the Applicant employed. The feasibility of developing the IWWTP is directly related to the proximity of the site it is servicing (proposed Micron Site), utilizing a site that has previously been largely disturbed, and is adjacent to an existing wastewater treatment plant. Many factors went in to determining where the proposed Micron Site could be located, one of them being ready access to substantial wastewater treatment infrastructure with adequate capacity to accommodate a large-scale semiconductor facility, or to a technically and economically feasible and practicable plan to expand such capacity and a route to connect to the service. In addition, the site of the IWWTP would require landowners willing to participate in the project, sufficient space, favorable topography, proximity to the proposed Micron Site, proximity to a waterbody for discharge of treated water, and an ability to obtain necessary permits to construct and operate.

- Accessibility: It is vital that a potential site also possesses ease of transportation and proximity and ease of accessing and connecting to the proposed Micron Site. The IWWTP is accessible by public roads and provides the opportunity of a direct route to the proposed Micron Site. Additionally, the proximity of the proposed Micron Site to the Oak Orchard Site is optimal for the construction of the Conveyance Corridor to convey wastewater from and reclaimed water to the proposed Micron Site from the IWWTP.
- Natural Resources: The wastewater components for the IWWTP need to avoid and/or minimize impacts to a variety of natural resources to the greatest extent practicable. Avoidance of impacts to forests, agricultural land, threatened and endangered species habitat, and water resources are critical siting criteria. Utilizing a site that has been largely previously disturbed and currently utilized for other facilities (i.e., Oak Orchard Site) results in higher opportunities for avoidance and/or minimization of impacts to natural resources.
- Cultural Resources: The construction of the IWWTP needs to be conducted in such a way that does not cause any significant impact to prehistoric or historic archeological resources. In response to

cultural resources consultation initiated by the Applicant, the New York State Historic Preservation Office (NYSHPO) has indicated that the Facility can be built and operated without adverse impacts to archaeological and/or historic resources (See Section 8.0).

The Applicant selected the proposed site for the IWWTP based on the presence of a suitable, existing wastewater treatment plant, open land, available land, and willing landowners. In addition, the proposed site provides adequate vehicular access and proximate and relative ease of connecting to the proposed Micron Site. The combination of these factors makes the proposed site desirable from the standpoint of industrial wastewater treatment plant development. Given the unique nature and constraints associated with siting an industrial wastewater treatment plant, as discussed previously, the Applicant did not conduct a detailed evaluation of the comparative advantages and disadvantages of alternative sites for the IWWTP. It is simply not practicable to procure land, perform environmental and engineering studies, enter into and progress through multiple permit processes, and conduct community outreach for the purpose of proposing alternative locations. Additionally, since the proposed IWWTP location meets criteria for developing an industrial wastewater treatment plant as it is adjacent to an existing wastewater treatment plant, with relatively minor environmental impacts, developing alternate sites in the regions was not considered necessary.

5.2 No Action Alternative

No Action was not considered a feasible alternative as the proposed Micron Site will generate a complex industrial wastewater stream that the existing Municipal WWTP is not designed, sized, or equipped to handle at full load. A new construction project to treat the industrial wastewater stream from Micron is the only available option for the total fabrication facilities' wastewater flows.

6.0 IMPACT AVOIDANCE, MINIMIZATION, AND MITIGATION

6.1 Avoidance and Minimization Measures

Several iterative changes were made to the IWWTP component layouts throughout the design optimization and refinement process in order to avoid and minimize impacts to wetlands and streams to the maximum extent practicable. Extensive reviews of the Project components design and subsequent modifications, specifically the reduction of the limit of disturbance, were completed with specific priority given to the avoidance of wetland impacts while maintaining the purpose and construction feasibility of the IWWTP. The feasibility of developing the IWWTP is directly related to the proximity of the site it is servicing (proposed Micron Site), utilizing a site that has previously been largely disturbed, and is adjacent to an existing wastewater treatment plant. Where impacts cannot be avoided, the Applicant will develop a Mitigation Plan to offset the permanent impacts from the construction of the IWWTP (see Section 6.2).

6.1.1 Stormwater Pollution Prevention Plan Implementation

Typical indirect, construction-related impacts to off-site wetlands and stream resulting from IWWTP construction could include siltation and degradation of downstream water quality. However, construction-related impacts to jurisdictional wetlands and streams will be avoided, minimized, and ultimately demonstrate compliance through implementation of a Stormwater Pollution Prevention Plan (SWPP) in

accordance with the IWWTP's State Pollutant Discharge Elimination System (SPDES) Permit, submitted to NYSDEC on June 18, 2025. NYSDEC-approved BMPs for sediment and siltation control will be implemented (e.g., silt fences, compost filter socks, level spreaders, etc.). These controls will be installed and maintained throughout construction of the IWWTP, as necessary. Exposed soil will be seeded and/or mulched to minimize erosion and siltation off-site. Construction-related impacts to off-site wetlands and streams will be avoided with the implementation of the above-mentioned sediment controls and other standard practices (e.g., use of timber matting). Specific control measures will be identified in the IWWTP's SWPPP, and the location of these features will be indicated on construction drawings and reviewed by the contractor and other appropriate parties prior to construction. These features will be regularly inspected to ensure that they function properly throughout the period of construction and until completion of all restoration work.

6.2 Wetland/Stream Mitigation

All permanent impacts to wetlands anticipated to be under state jurisdiction will require mitigation. Onondaga County is currently in talks with a third-party mitigation consultant to plan the required mitigation. A mitigation plan will be developed and provided to both USACE and NYSDEC under separate cover.

7.0 COMPLIANCE WITH THE FEDERAL AND STATE ENDANGERED SPECIES ACTS

The United States Fish and Wildlife Service (USFWS) maintains the online database Information Planning and Conservation (IPaC) where users can request site-specific information for known occurrences of federally listed threatened, endangered, and candidate species listed under the Endangered Species Act. A shapefile of the IWWTP Facility Site was initially uploaded to IPaC in October 2024 and subsequently updated in July 2025. The official species list from USFWS, obtained from the July 2025 inquiry, determined the potential presence of federally listed species in the vicinity of the Facility (see Appendix D). The Official Species List was provided pursuant to Section 7 of the Endangered Species Act (ESA) and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action. The Official Species Lists identified the following as potentially being present at or near the Facility and Conveyance Route:

- Indiana bat (*Myotis sodalist*), federally endangered
- northern long-eared bat (*Myotis septentrionalis*), federally endangered
- the tricolored bat (*Perimyotis subflavus*), federally proposed endangered
- monarch butterfly (*Danaus plexippus*), federally proposed endangered

New York Natural Heritage Project (NYNHP) results, obtained in December 2024, determined the potential presence of state listed species in the vicinity of the Facility site (See Appendix D). The species that were identified include:

- pie-billed grebe *(Podilymbus podiceps*), state threatened
- lake sturgeon *(Acipenser fulvescens)*, state threatened
- bald eagle *(Haliaeetus leucocephalus)*, state threatened

- Indiana bat (*Myotis sodalist*), state endangered
- hairy small-leaved tick trefoil (*Desmodium ciliare*), state threatened

Furthermore, in support of the Draft Environmental Impact Statement (DEIS) for the Micron Semiconductor Manufacturing Project, which was prepared pursuant to the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. § 4321 *et seq.*, and the State Environmental Quality Review Act (SEQRA), as codified at N.Y. Environmental Conservation Law (ECL) § 8-0101 *et seq.* and its implementing regulations at 6 N.Y.C.R.R. Part 617, a Biological Assessment (BA) was prepared to evaluate the reasonably foreseeable environmental effects of the construction of the Micron Sites and Connected Actions (which includes the IWWTP. The BA includes an Effects Analysis which analyzes potential impacts on listed species from habitat loss, noise and human activity, and lighting associated with the IWWTP. However, the Endangered Species Act (ESA) consultation process is still in progress and will conclude when the USFWS issues its Biological Opinion (BO). Final determinations on potential impacts will be memorialized by USFWS in the BO. Lastly, a site visit was conducted by CHA Consulting Inc., on March 25, 2025, to inventory the ecological communities of the project area. Based on the data obtained during the field investigation, an evaluation of the habitats within the Project Area was conducted to identify if they were suitable habitat for listed species.

A summary of the species identified in the IPaC and NYNHP results is provided in the following subsections along with a discussion of impact avoidance and minimization actions based on the results of the site visit conducted by CHA and the analysis in the BA.

7.1 Indiana Bat

A total of approximately 10.3 acres of trees (in both uplands and wetlands), which could potentially represent summer roosting habitat for the Indiana bat, is anticipated to be cleared prior to the construction of the IWWTP. To avoid and minimize potential impacts to Indiana bat from tree clearing, the Applicant has committed to restricting the clearing of trees and shrubs with a trunk diameter greater than 3 inches (in.) diameter at breast height (dbh) during the period between November 1 and March 31, when bats are hibernating off-site. The time of year restriction for tree removal will be adhered to for the purpose of avoiding direct disturbance, injury, or mortality that can result from the felling of an active roost tree.

Since tree removal would occur during the winter hibernation period, tree clearing noise would not have the potential to disturb Indiana bats. Construction activity later in the season, when bats are out of hibernation, would be mostly, if not entirely, limited to the daytime and would not be expected to generate noise and human disturbance to an extent that would disturb roosting or foraging bats. Given that the IWWTP would be located within and adjacent to previously disturbed areas, including along public roads and an existing wastewater treatment plant, operation of the IWWTP would not generate noise above existing conditions and is not anticipated to result in impacts to Indiana bat. Additionally, since the IWWTP occurs in proximity to existing roads and adjacent to an existing wastewater treatment plant, the lighting required for construction and operations of the IWWTP is not anticipated to result in adverse impacts to Indiana bat. Therefore, it is not anticipated that the construction and/or the post-construction operation of the IWWTP will result in potential direct take of bats and/or will result in significant adverse impacts to potential summer roosting habitat.

Furthermore, as stated in the BA, there are no known hibernacula for Indiana bat in or near any portion of the IWWTP (Ormsbee et al. 2007; Adams 2013; USFWS 2023); therefore, it is not anticipated that the Project will result in direct impacts to hibernating bats or wintering habitat. Lastly, construction of the Project is not anticipated to affect fall swarming bats or fall swarming habitat, which is limited to within only a few miles of a hibernaculum entrance.

7.2 Northern Long-Eared Bat

A total of approximately 10.3 acres of trees (in both uplands and wetlands), which could potentially represent summer roosting habitat for the northern long-eared bat, is anticipated to be cleared prior to the construction of the IWWTP. No caves or mines were observed or are known to be present within or near the Facility site. The net loss in tree cover would represent a minor reduction in roosting habitat availability in the area and potentially improve foraging and commuting conditions for northern long-eared bats. To avoid and minimize potential impacts to northern long-eared bats from tree clearing, the Applicant has committed to restricting the clearing of trees and shrubs with a trunk diameter greater than 3 inches (in.) dbh during the period between November 1 and March 31, when bats are hibernating off-site. The time of year restriction for tree removal will be adhered to for the purpose of avoiding direct disturbance, injury, or mortality that can result from the felling of an active roost tree.

Since tree removal would occur during the winter hibernation period, tree clearing noise would not have the potential to disturb northern long-eared bats. Construction activity later in the season, when bats are out of hibernation, would be mostly, if not entirely, limited to the daytime and would not be expected to generate noise and human disturbance to an extent that would disturb roosting or foraging bats. Given that the IWWTP would be located within and adjacent to previously disturbed areas, including along public roads and an existing wastewater treatment plant, operation of the IWWTP would not generate noise above existing conditions and is not anticipated to result in impacts to northern long-eared bat. Additionally, since the IWWTP occurs in proximity to existing roads and adjacent to an existing wastewater treatment plant, the lighting required for construction and operations of the IWWTP is not anticipated to result in adverse impacts to northern long-eared bat. Therefore, it is not anticipated that the construction and/or the post-construction operation of the IWWTP will result in potential direct take of bats and/or will result in significant adverse impacts to potential summer roosting habitat.

Furthermore, as stated in the BA, there are no known hibernacula for Indiana bat in or near any portion of the IWWTP (Ormsbee et al. 2007; Adams 2013; USFWS 2023); therefore, it is not anticipated that the Project will result in direct impacts to hibernating bats or wintering habitat. Lastly, construction of the Project is not anticipated to affect fall swarming bats or fall swarming habitat, which is limited to within only a few miles of a hibernaculum entrance.

7.3 Tricolored Bat

A total of approximately 10.3 acres of trees (in both uplands and wetlands), which could potentially represent summer roosting habitat for tricolored bat is anticipated to be cleared as a result of the construction of the IWWTP. The net loss in tree cover would represent a minor reduction in roosting habitat availability in the area and potentially improve foraging and commuting conditions for tricolored bats. To

avoid and minimize potential impacts to tricolored bat from tree clearing, the Applicant has committed to restricting the clearing of trees and shrubs with a trunk diameter greater than 3 inches (in.) dbh during the period between November 1 and March 31, when bats are hibernating off-site. The time of year restriction for tree removal will be adhered to for the purpose of avoiding direct disturbance, injury, or mortality that can result from the felling of an active roost tree.

Since tree removal would occur during the winter hibernation period, tree clearing noise would not have the potential to disturb tricolored bats. Construction activity later in the season, when bats are out of hibernation, would be mostly, if not entirely, limited to the daytime and would not be expected to generate noise and human disturbance to an extent that would disturb roosting or foraging bats. Given that the IWWTP would be located within and adjacent to previously disturbed areas, including along public roads and an existing wastewater treatment plant, operation of the IWWTP would not generate noise above existing conditions and is not anticipated to result in impacts to tricolored bat. Additionally, since the IWWTP occurs in proximity to existing roads and adjacent to an existing wastewater treatment plant, the lighting required for construction and operations of the IWWTP is not anticipated to result in adverse impacts to tricolored bat. Therefore, it is not anticipated that the construction and/or the post-construction operation of the IWWTP will result in potential direct take of bats and/or will result in significant adverse impacts to potential summer roosting habitat.

Furthermore, as stated in the BA, there are no known hibernacula for Indiana bat in or near any portion of the IWWTP (Ormsbee et al. 2007; Adams 2013; USFWS 2023); therefore, it is not anticipated that the Project will result in direct impacts to hibernating bats or wintering habitat. Lastly, construction of the Project is not anticipated to affect fall swarming bats or fall swarming habitat, which is limited to within only a few miles of a hibernaculum entrance.

7.4 Monarch Butterfly

The monarch butterfly was listed as a candidate species under the federal ESA on June 27, 2023, and proposed for listing as threatened under the federal ESA on December 11, 2024 (USFWS, 2025). The public comment period was reopened on March 19, 2025. As of the date of this application, the monarch butterfly is not listed for protection under the federal ESA.

Significant concentrations of milkweed (*Asclepias* sp.), which are critical species for monarch butterfly, were not observed to be present within the Facility site. Scattered common milkweed (*Asclepias syriaca*) individual plants were observed in low abundance in the successional old field communities. Additionally, other species of flowering native plants could serve as suitable foraging habitat for the monarch butterfly. Given the summer range of the monarch butterfly and the location of the Facility, there is potential for monarch butterflies to be present within the Facility area. However, impacts to monarch butterfly and/or their critical habitat are not anticipated to occur, as disruption of large areas of milkweed and nectaring vegetation, if present, will be avoided.

7.5 Pie-billed Grebe

As stated in Section 4.0, the Project is anticipated to result in approximately 0.13 acres of permanent impacts to emergent wetlands. These emergent wetlands could potentially be suitable habitat for pie-billed grebe. Potential pied-billed grebe breeding/nesting habitat occurs within Mud Creek and the adjacent fringe hemi-marsh emergent wetlands, as well as isolated emergent wetlands within close proximity to Mud Creek. The sewage treatment lagoons to the west of the IWWTP provide foraging or transient habitat for pied-billed grebe, but the lagoons will not be impacted from the construction of the IWWTP. No other habitats within the IWWTP area provide suitable habitat for pied-billed grebe. Direct, adverse impacts to pied-billed grebe or their habitat (i.e., emergent wetland adjacent to Mud Creek) are not anticipated to result from the construction of the IWWTP. Temporary and spatially limited noise generated during construction activities will likely be negligible in terms of disrupting nesting and/or foraging, if individuals are present adjacent to the Project Site.

7.6 Lake Sturgeon

Project activities will not occur within the Oneida River or Mud Creek, which could be suitable spawning habitat for lake sturgeon. Therefore, the construction of the IWWTP is not anticipated to result in adverse impacts to lake sturgeon and/or their habitat.

7.7 Bald Eagle

As previously stated, approximately 10.3 acres of trees (in both uplands and wetlands) will be cleared for the construction of the IWWTP. These forested areas could be suitable habitat for bald eagle nesting and breeding, as they are in close proximity to Mud Creek and Oneida River which could be suitable habitat for foraging. However, bald eagles tend to avoid areas with human activities (NYNHP, 2019a), such as the existing Municipal WWTP adjacent to the proposed IWWTP. Therefore, the construction of the IWWTP is not anticipated to result in adverse impacts to bald eagles and/or their habitat. Temporary noises during construction will likely be negligible in terms of disrupting nesting and/or foraging, if individuals are present adjacent to the IWWTP site.

7.8 Hairy Small-leaved Tick Trefoil

Suitable habitat for hairy small-leaved tick trefoil, which includes dry, open habitats (i.e., oak openings, roadsides within pitch-pine forests, and sandy or rocky summit grasslands [NYNHP, 2010]), is not present within the IWWTP. Additionally, the NYNHP data received in August 2025 indicates this species was observed in 1991 on a small sand hill next to Oak Orchard Road. No IWWTP activities will be occurring on or immediately adjacent to Oak Orchard Road (i.e., within the road ROW), where this species has been documented. Therefore, the construction of the IWWTP is not anticipated to result in adverse impacts to hairy small-leaved tick trefoil and/or suitable habitat.

8.0 COMPLIANCE WITH THE FEDERAL AND STATE HISTORIC PRESERVATION ACTS

The Applicant engaged in consultation with the New York State Office of Parks, Recreation and Historic Preservation (per their role as NYSHPO) (see Appendix D). The NYSHPO has indicated that based on their

review of the proposed Facility, no historic properties, including archaeological and/or historic resources will be affected by this undertaking. A summary of cultural resources-related correspondence for the Facility is provided in Table 2.

The Applicant will continue to engage with the USACE and NYSHPO as the Section 106 process progresses, as necessary.

Table 2. Summary of Cultural Resources Correspondence

Date	Sender	Recipient(s)	Content
July 28, 2025	Nicole Frazer (CHA Consulting), on behalf of the Applicant	Daniel McEneny (NYSHPO)	The Applicant initiated formal consultation with the NYSHPO via the online Cultural Resources Information System (CRIS). This submission included a letter requesting NYSHPO review of the Facility, along with concept plans, descriptions of previous disturbance from construction of the existing facility, and photographs of existing conditions (CHA, 2025).
August 1, 2025	R. Daniel Mackay (NYSHPO)	Nicole Frazer (CHA Consulting)	NYSHPO provided a response via the CRIS website indicating that no historic properties would be affected by construction of the Facility (NYSHPO, 2025).

9.0 REFERENCES

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CHA Consulting (CHA). 2025. *RE: Oak Orchard Wastewater Treatment Plant Expansion, Clay, Onondaga County, NY, CHA Project No.: 090316*. Correspondence from Nicole Frazer (CHA) to Daniel McEneny (NYSHPO). July 28, 2025.

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USFWS. 2025. Monarch Butterfly. (*Danaus plexippus*). Available at: https://www.fws.gov/species/monarch-danaus-plexippus (Accessed April 2025).

Appendix A

Figures

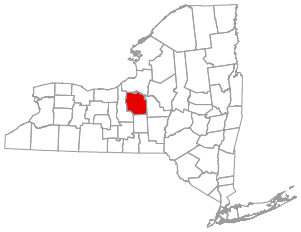
Figure 1. Regional Project Location



Onondaga County Industrial Waste Water Treatment Plant

Town of Clay, Onondaga County, New York

Joint Application for Permit



0 2.5 5 10

Miles

Prepared September 4, 2025

Basemap: Esri "World Street Map" map service

EDR

Figure 2. Project Site



Onondaga County Industrial Waste Water Treatment Plant

Town of Clay, Onondaga County, New York

Joint Application for Permit

Proposed Conveyance Corridor

Proposed Industrial Waste Water Treatment Plant

0 75 150 300

Feet

Prepared September 4, 2025

Basemap: NYSDOP "2022" and "2023" orthoimagery map service

EDR

Figure 3. Tax Map



Onondaga County Industrial Waste Water Treatment Plant

Town of Clay, Onondaga County, New York

Joint Application for Permit

Parcel Boundary

Proposed Conveyance Corridor

Proposed Industrial Waste Water Treatment Plant

0 75150 300

Feet

Prepared September 4, 2025

Basemap: NYSDOP "2022" and "2023" orthoimagery map service

EDR

APPENDIX B

Wetland and Stream Delineation Memorandum and Jurisdictional Determination

Memorandum

To:	Onondaga County Department of Water Environment Protection 650 Hiawatha Blvd. West Syracuse, NY 13204
From:	Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C.
Date:	August 16, 2024
Reference:	Wetland and Stream Delineation Memorandum Oak Orchard Project Town of Clay, Onondaga County, New York
EDR Project No:	24293

At the request of the Onondaga County Department of Water Environment Protection, Environmental Design & Research, Landscape Architecture, Engineering & Environmental Services, D.P.C. (EDR) conducted a wetland and stream delineation on an approximately 76.7-acre Study Area on July 30 and 31, 2024. The Study Area is located in the Town of Clay, Onondaga County, New York, and is loosely bound by the Oneida River to the north, Henry Clay Boulevard to the east, Verplank Road to the south and Mud Creek to the west (Figure 1; all figures are in Appendix A).

Review of Background Data

EDR's review of NWI mapping indicates the presence of five water resources within the Study Area. The mapped water resources include two riverine features (R2UBH), which correspond with the Oneida River and Mud Creek; two freshwater pond features (PUBHx), which correspond with wastewater treatment lagoons; and one freshwater pond feature (PAB/UBHh) that corresponds with a portion of Mud Creek. New York State (NYS) Freshwater Wetlands mapping indicates that there is one state mapped wetland within the Study Area. The mapped NYS Freshwater Wetland, BRE-17, is a Class 1 wetland that corresponds with the riparian area along Mud Creek. Based on available NYSDEC stream classification mapping, the Study Area includes two Class C streams and one Class B stream. The Class C streams include Mud Creek and an unnamed tributary of Mud Creek; the Class B stream is the Oneida River, which is designated as a U.S. Army Corps of Engineers (USACE) traditional navigable water (TNW) and a state protected stream under Article 15 of the Environmental Conservation Law (Figure 2).

A review of the Study Area on U.S. Department of Agriculture (USDA) Web Soil Survey maps identified six distinct mapping units. Table 1 lists the mapping units within the Study Area, along with their slope, drainage class, hydric rating, and hydric classification. Although soil mapping units may have a hydric rating in the online databases indicating hydric, non-hydric or potentially non-hydric conditions, this is for general use and does not supersede specific conditions documented in the field.

Table 1. Study Area Soil Mapping Units

Mapping Unit Symbol	Mapping Unit	Percent of Study Area	Slope	Drainage[1]	Hydric Rating[2]	Hydric Classification[3]
ChB	Collamer silt loam	32.5%	4%	MWD	0%	Non-hydric
DuC	Dunkirk silt loam, rolling	24.7%	9%	WD	0%	Non-hydric
NgA	Niagara silt loam	21.6%	2%	SPD	7%	Predominantly non-hydric
SA	Saprists and Fluvaquents, ponded	10.5%	2%	VPD	100%	Hydric
W	Water	8.4%	--	--	--	--
PpA	Phelps gravelly loam	2.2%	2%	MWD	5%	Predominantly non-hydric

[1] WD = well drained, MWD = moderately well drained, SPD = somewhat poorly drained, and VPD = very poorly drained.

[2] Map units are composed of one or more component soil types, each of which is individually rated as hydric or not hydric. The hydric rating, as provided in the USDA Web Soil Survey, indicates the percentage of the map unit that meets hydric criteria.

[3] Hydric classification categories are based on the total percentage of hydric soils in the map unit. as listed on the USDA Web Soil Survey. Hydric = 100% of map unit components rated as hydric. Predominantly hydric = 66%–99% of map unit components rated as hydric. Partially hydric = 33%–66% of map unit components rated as hydric. Predominantly non-hydric = up to 33% of map unit components rated as hydric. Non-hydric = 0% of map unit components rated as hydric.

Field Visit and Methodology

On July 30 and 31, 2024, an EDR Ecological Resources Specialist and an EDR Field Technician visited the site to delineate any wetlands and/or streams present within the Study Area.

The identification of wetland boundaries was based on the methodology described in the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987). Determination of wetland boundaries was also guided by the methodologies presented in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0* (Regional Supplement) (USACE, 2012) and *New York State Freshwater Wetland Delineation Manual* (NYSDEC, 1995). Attention was given to the size of the wetland (including portions that may extend outside the Study Area), evidence of disturbance, and the identification of potential hydrologic connections between wetlands and other waters, as these factors could influence jurisdictional status. Wetland boundaries were defined in the field with sequentially numbered pink surveyor's flagging and mapped using a GPS unit with reported sub-meter accuracy.

Delineated features were characterized according to the wetlands and deepwater habitats classification system used in NWI mapping (Cowardin et al., 1979). Data were collected from sample plots in representative wetland cover types and recorded on USACE Routine Wetland Determination forms (see Appendix B). The data collected at each delineated wetland included dominant vegetation, hydrology indicators, and soil characteristics. Data to confirm upland areas were also collected adjacent to wetland boundaries and in areas where aerial photograph signatures or existing wetland mapping suggested potential wet conditions. Upland data were also documented and recorded on USACE Routine Wetland Determination forms (Appendix B)

Wetland hydrology was evaluated based on the presence of primary and secondary indicators. The Regional Supplement lists the following primary indicators of wetland hydrology: (A1) surface water, (A2) high water table, (A3) soil saturation, (B1) water marks, (B2) sediment deposits, (B3) drift deposits, (B4) algal mat or crust, (B5) iron deposits, (B7) inundation visible on aerial imagery, (B8) sparsely vegetated concave surface, (B9) water-stained leaves, (B13) aquatic fauna, (B15) marl deposits, (C1) hydrogen sulfide odor, (C3) oxidized rhizospheres on living roots, (C4) presence of reduced iron, (C6) recent iron reduction in tilled soils, and (C7) thick muck surface. Per the Regional Supplement, the presence of any one of these primary indicators is sufficient evidence that wetland hydrology is present. In addition, the Regional Supplement identifies the following secondary indicators, which were also used by EDR to determine wetland hydrology: (B6) surface soil cracks, (B10) drainage patterns, (B16) moss trim lines, (C2) dry-season water table, (C8) crayfish burrows, (C9) saturation visible on aerial imagery, (D1) stunted or stressed plants, (D2) geomorphic position, (D3) shallow aquitard, (D4) microtopographic relief, and (D5) results of the FAC-neutral test. In accordance with the Regional Supplement, in the absence of a primary indicator, the presence of any two secondary indicators is considered a suitable indication of wetland hydrology.

Wetland vegetation is indicated by a dominance of hydrophytic plant species, or species that have adapted to grow in areas of inundation and saturation. Assessment of vegetation focused on the identification of dominant plant species in four categories: trees (greater than or equal to 3 inches diameter at breast height [DBH]), saplings/shrubs (less than 3 inches DBH and greater than 3.2 feet tall), herbs (all vegetation less than 3.2 feet tall), and woody vines. Dominance was determined by visually estimating those species having the greatest absolute percent cover within each stratum. Vascular plant nomenclature and wetland indicator status for dominant plant species were determined by the Wildnote field data collection application, which refers to the USDA PLANTS Database (USDA NRCS, 2021) and the National Wetland Plant List, an interagency effort compiled by the USACE (2020). The indicator status represents a plant's likelihood of occurring in wetlands. The five indicator statuses and their probability of being observed in a wetland are as follows:

- Obligate (OBL): Plants occur within wetlands more than 99% of the time
- Facultative Wetland (FACW): Plants occur within wetlands 67 to 99% of the time
- Facultative (FAC): Plants occur within wetlands 33 to 67% of the time
- Facultative Upland (FACU): Plants occur within wetlands 1 to 33% of the time
- Upland (UPL): Plants occur within wetlands less than 1% of the time

Those plant species that are not assigned an indicator status in the National Wetland Plant List are assumed to always be found in uplands and assigned an indicator status of UPL. Wetlands are indicated by a dominance and/or prevalence of hydrophytic plant species (i.e., those assigned an indicator status of OBL, FACW, or FAC).

Hydric soils are those that are poorly drained and are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part of the soil layer. The presence of hydric soils is indicative of the possible presence of wetlands (Environmental Laboratory, 1987). Hydric soil conditions were determined in the field through observation of soil composition, color, and morphology. Soils data were collected by using a Dutch auger and tiling spade to examine the soil profile. Soil colors were determined using Munsell Soil Charts (Munsell Color, 2009). Information concerning soil series, color, texture, and matrix and concentration color was recorded at each sample location and used to determine whether the soils displayed hydric characteristics.

Streams were identified according to the Cowardin et al. (1979) classification system, and stream boundaries were determined based on the presence of ordinary high water mark (OHWM) characteristics, including a "clear, natural line impressed on the bank; shelving; changes in the character of soil; destruction of terrestrial vegetation; the presence of litter and debris" (33 CFR 329.11). Stream boundaries were defined and mapped in the field using the same method as described above for wetlands. The OHWM, if present, was determined through evaluation of hydrologic, geomorphic, and biological characteristics in accordance with the *USACE National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams: Interim Version* (David et al., 2022). Data regarding stream morphology, stream bank and channel width, water depth, stream bed substrate, in-stream cover, and biological indicators were collected and recorded on OHWM data forms (Appendix B).

Photographs were taken of each wetland and stream delineated within the Study Area (Appendix C).

Findings

Five wetlands (05-W001, 05-W002, 05-W003, 05-W004, and 05-W005) and five streams (05-ST001, 05-ST002, 05-ST003, 05-ST004, and 05-ST005), totaling 6.95 acres and 2,837 linear feet, respectively, were delineated within the Study Area (Figure 3). Two constructed wastewater treatment lagoons were located within the Study Area. The boundaries of these features were digitized based on arial imagery and verified in the field. The wastewater lagoons are presumed to be non-jurisdictional features as wastewater treatment facilities are specifically listed by the USACE as exclusions from Waters of the United States (WOTUS). (Figure 3, Photograph 1 in Appendix C). Detailed descriptions of the wetlands, their associated uplands, and the streams delineated on site are provided below.

<u>Wetland 05-W001 (Photographs 2 through 5 in Appendix C)</u>
Wetland 05-W001 is a palustrine forested and palustrine emergent wetland complex totaling 1.52 acres within the Study Area. It is located south of an existing solar panel array and drains west to its lowest point at a stormwater drop culvert. The drop culvert is situated approximately 1 to 2 feet above the existing grade of the wetland (Photograph 3 in Appendix C). There was no observable connection to any other surface water within the Study Area. The boundary of wetland 05-W001 continues approximately 40 feet east of the Study Area, where it is surrounded by upland forest and does not appear to continue further or connect to another body of water based on aerial imagery and on-site observations (Photograph 4 in Appendix C).

The forested portion of Wetland 05-W001 totaled 1.39 acres within the Study Area. The canopy was dominated by red maple (*Acer rubrum*) and tuliptree (*Liriodendron tulipifera*) and the herbaceous understory was dominated by eastern poison ivy (*Toxicodendron radicans*), spotted jewelweed (*Impatiens capensis*), green ash saplings (*Fraxinus pennsylvanica*), and northern spicebush saplings (*Lindera benzoin*). The wetland exhibited strong pit and mound microtopography with the mounds hosting localized upland vegetation such as tuliptree. The indicators of wetland hydrology included water-stained leaves (B9), drainage patterns (B10), and microtopographic relief (D4). Soils in this portion of the wetland were composed of two layers. In the top layer, which occurred at a depth of 0 to 8 inches, soils were very dark gray (10YR 3/1) with a fine sandy loam texture. In the lower layer, which occurred at a depth of 8 to 18 inches, soils were grayish brown (10YR 5/2) with 20% yellowish brown (10YR 5/8) redox concentrations in the matrix and a fine sandy loam texture. This soil profile satisfies the hydric soil indicator of depleted matrix (F3). The wetland/upland

transition varied, but was typically abrupt and followed site topography along the northern boundary of the wetland compared to a more gradual transition that followed a change in vegetation along the southern boundary of the wetland. The adjacent upland was forested with a canopy dominated by American beech (*Fagus grandifolia*) and an understory dominated by American beech saplings and eastern poison ivy. Photograph 6 in Appendix C illustrates conditions in this upland area.

The palustrine emergent portion of Wetland 05-W001 totaled 0.13 acres within the Study Area. Dominant herbaceous vegetation included smooth goldenrod (*Solidago gigantea*), common reed (*Phragmites australis*), common boneset (*Eupatorium perfoliatum*), green bulrush (*Scirpus atrovirens*), and purple loosestrife (*Lythrum salicaria*). Indicators of wetland hydrology included oxidized rhizospheres on living roots (C3) and results of the FAC-neutral test (D5). Soils in the emergent portion of the wetland were composed of two layers. In the top layer, which occurred at a depth of 0 to 12 inches, soils were very dark grayish brown (10YR 3/2) with 10% yellowish brown (10YR 5/6) redox concentrations in the pore lining and matrix and a clay loam texture. In the lower layer, which occurred at a depth of 12 to 18 inches, soils were brown (10YR 5/3) with 30% yellowish brown (10YR 5/8) redox concentrations in the matrix and a sand texture. This soil profile satisfies the hydric soil indicator of redox dark surface (F6). The wetland/upland transition was abrupt and followed both the local topography and a change in vegetation. The adjacent upland was dominated by herbaceous vegetation including brownray knapweed (*Centaurea jacea*), American bird's foot trefoil (*Lotus unifoliolatus*), and common timothy (*Phleum pratense*). Photograph 7 in Appendix C illustrates conditions in this upland area.

Wetland 05-W002 (Photograph 8 in Appendix C)

Wetland 05-W002 is a 0.02-acre palustrine emergent wetland located in the southeastern corner of the Study Area. It extends beyond the southern boundary of the Study Area into an upland deciduous forest. Herbaceous vegetation within the wetland included common spike rush (*Eleocharis palustris*), slender rush (*Juncus tenuis*), and redtop (*Agrostis stolonifera*). Indicators of wetland hydrology included oxidized rhizospheres on living roots (C3) and results of the FAC-neutral test (D5). Soils in Wetland 05-W002 were composed of two layers. In the top layer, which occurred at a depth of 0 to 5 inches, soils were dark grayish brown (10YR 4/2) with 5% brown (7.5YR 4/4) redox concentrations in the pore linings and matrix and a clay loam texture. In the lower layer, which occurred at a depth of 5 to 18 inches, soils were dark gray (2.5Y 4/1) with 10% yellowish brown (10YR 5/8) redox concentrations in the pore lining and matrix and a clay loam texture. This soil profile satisfies the hydric soil indicator of a depleted matrix (F3). The wetland/upland transition was gradual and generally followed the local topography. The adjacent uplands included a scrub-shrub area dominated by autumn olive (*Elaeagnus umbellata*), Morrow's honeysuckle (*Lonicera morrowii*), and European buckthorn (*Rhamnus cathartica*) and a maintained field dominated by common dandelion (*Taraxacum officinale*), English plantain (*Plantago lanceolata*), common plantain (*Plantago major*), and self heal (*Prunella vulgaris*). Photograph 9 in Appendix C illustrates conditions in this upland area.

Wetland 05-W003 (Photograph 10 in Appendix C)

Wetland 05-W003 is a 0.79-acre palustrine scrub-shrub wetland located in the northeastern corner of the Study Area. The wetland does not extend beyond the Study Area; however, it drains into an intermittent stream (05-ST002) that exits the Study Area to the east. The canopy cover in this wetland was sparse and consists entirely of green ash (both dead and alive). Dominant shrub species included gray dogwood (*Cornus racemosa*) and green ash saplings. Herbaceous vegetation within the wetland included wrinkle-leaf goldenrod (*Solidago rugosa*), slender rush, aster (*Symphyotrichum* sp.), spotted jewelweed, and rough avens (*Geum laciniatum*). Indicators of wetland hydrology included drainage patterns (B10), microtopographic

relief (D4), and results of the FAC-neutral test (D5). Within 18 inches of the surface, soils in Wetland 05-W003 were composed of a single layer. These soils were dark grayish brown (10YR 4/2) with 10% brown (7.5YR 4/4) redox concentrations in the matrix and a clay loam texture. This soil profile satisfies the hydric soil indicator of a depleted matrix (F3). The wetland/upland transition was gradual and generally followed the local topography. The adjacent upland was forested with a canopy dominated by red maple, red pine (*Pinus resinosa*), and dead or dying green ash. Dominant shrub species included European buckthorn and black walnut (*Juglans nigra*) saplings. Herbaceous vegetation was dominated by Virginia creeper (*Parthenocissus quinquefolia*), green ash seedlings, European buckthorn seedlings, jumpseed (*Persicaria virginiana*), and multiflora rose (*Rosa multiflora*). Photograph 11 in Appendix C illustrates conditions in this upland area.

Wetland 05-W004 (Photograph 12 in Appendix C)

Wetland 05-W004 is a 2.45-acre palustrine forested wetland located in the northwestern corner of the Study Area and extending north beyond the Study Area boundary. A portion of this wetland overlaps NYSDEC-mapped Wetland BRE-17. Dominant canopy species included red maple and green ash; dominant shrub species included green ash saplings and European buckthorn; and dominant herbaceous vegetation included lizard's-tail (*Saururus cernuus*) and sensitive fern (*Onoclea sensibilis*). Indicators of wetland hydrology included surface water (A1), high water table (A2), soil saturation (A3), geomorphic position (D2), and results of the FAC-neutral test (D5). Within 18 inches of the surface, soils in Wetland 05-W004 were composed of a single layer. These soils were dark gray (10YR 4/1) with 5% yellowish brown (10YR 5/6) redox concentrations in the matrix and a clay loam texture. This soil profile satisfies the hydric soil indicator of a depleted matrix (F3). The wetland/upland transition was abrupt and generally followed a distinct change in topography. The adjacent upland was forested with a canopy dominated by black walnut and green ash. Understory shrubs species included Morrow's honeysuckle and sparse green ash saplings . Dominant herbaceous understory species included jumpseed and Allegheny blackberry (*Rubus allegheniensis*). Photograph 13 in Appendix C illustrates conditions in this upland area.

Wetland 05-W005 (Photographs 14 and 15 in Appendix C)

Wetland 05-W005 is a mixed palustrine forested and emergent wetland totaling 2.16 acres within the Study Area. It is located along (and extends beyond) the western border of the Study Area in the riparian area associated with Mud Creek (05-ST004) and corresponds with NYSDEC-mapped Wetland BRE-17. Portions of this wetland were inaccessible at the time of delineation due to the water level of Mud Creek. Delineations for these areas are based on satellite imagery and wetland flags are absent as shown in Figure 3.

The forested portion of Wetland 05-W005 totaled 0.92 acres within the Study Area. Dominant species in the canopy included American elm (*Ulmus americana*) and red maple; dominant shrub species included multiflora rose, American hornbeam (*Carpinus caroliniana*), and swamp white oak (*Quercus bicolor*); and dominant herbaceous species included lizard's tail and Virginia creeper. Indicators of wetland hydrology included geomorphic position (D2) and results of the FAC-neutral test (D5). Soils in the forested portion of this wetland were composed of one layer. From 0 to 18 inches, soils were very dark gray (3/N) with 10% dark gray (5Y 4/1) redox depletions in the matrix and 5% dark yellowish brown (10YR 4/6) redox concentrations in the matrix with a clay loam texture. This soil profile satisfies the hydric soil indicator of loamy gleyed matrix (F2). The wetland/upland transition was abrupt and occurred at the base of a slope. The adjacent upland was disturbed, with soils containing crushed rock fill. The sparse canopy was dominated by chokecherry (*Prunus virginiana*) and eastern cottonwood (*Populus deltoides*) and European buckthorn was the only understory shrub species. Herbaceous vegetation included Virginia creeper, river-bank grape

(*Vitis riparia*), and eastern poison ivy. Photographs 16 and 17 in Appendix C illustrate conditions in this upland area.

The emergent portion of Wetland 05-W005 totaled 1.24 acres within the Study Area. Dominant herbaceous vegetation included green arrow arum (*Peltandra virginica*), narrow leaf cattail (*Typha angustifolia*), and sensitive fern. Indicators of wetland hydrology included surface water (A1), high water table (A2), soil saturation (A3), oxidized rhizospheres on living roots (C3), and results of the FAC-neutral test (D5). Soils in the emergent portion of the wetland were composed of two layers. In the top layer, which occurred at a depth of 0 to 8 inches, soils were very dark gray (10YR 3/1) with 10% yellowish red (5YR 4/6) redox concentrations in the pore linings and matrix and a clay loam texture. In the lower layer, which occurred at a depth of 8 to 18 inches, soils were gray (7.5YR 5/1) with a clay loam texture. This soil profile satisfies the hydric soil indicators of redox dark surface (F6) and depleted matrix (F3). Within the Study Area, this emergent community occurred between the forested portion of the wetland and the adjacent stream, and no wetland/upland transition was observed.

Stream 05-ST001 (Photograph 18 in Appendix C)
Stream 05-ST001 is a 167-linear foot ephemeral stream segment located in the southeast corner of the Study Area. The stream begins in an upland forest and continues beyond the southern border of the Study Area. The stream appears to only convey water in direct response to precipitation and no water was present in the stream channel at the time of delineation. Stream width averaged from 4 to 6 feet based on OHWMs on opposing banks and the stream was characterized by a gentle gradient, absence of vegetation in the stream channel, and a substrate consisting of sand, silt, and clay. Indicators used to define the OHWM included a break in slope and a change in vegetation. The stream was classified as ephemeral due to lack of biological indicators, absence of water in the stream channel, and overland sheet flow from precipitation as the sole source of water.

Stream 05-ST002 (Photograph 19 in Appendix C)
Stream 05-ST002 is a 94-linear foot intermittent stream segment located in the northeast corner of the Study Area. It begins where Wetland 05-W003 channelizes and exits the Study Area to the east toward NYSDEC-mapped Wetland BRE-13. Stream width was 4 feet based on OHWMs on opposing banks and the stream was characterized by a well-developed bed and banks, gentle gradient, and a substrate consisting of sand, silt, and clay. Indicators used to define the OHWM included a break in slope, a change in vegetation, and the presence of large wood in the stream channel. The stream was classified as intermittent because it receives water from Wetland 05-W003, but water was absent from the stream channel at the time of survey.

Stream 05-ST003 (Photograph 20 in Appendix C)
Stream 05-ST003 is a 49-linear foot intermittent stream segment located in the southwest corner of the Study Area. The stream begins at the outlet of a culvert and flows southwest to where it connects with NYSDEC-mapped Wetland BRE-17 and Mud Creek outside the Study Area. Stream width was 3 feet based on OHWMs on opposing banks and it had a water depth of 2 inches at the time of the survey. Stream 05-ST003 was characterized by well-developed banks, a gentle gradient, and a substrate consisting of cobble, gravel, sand, silt, and clay. Indicators used to define the OHWM included a break in slope and a change in vegetation. The stream was classified as intermittent due to the presence of water in the channel and its source at a culvert outlet, but a lack of biological indicators that would suggest a perennial flow regime.

Stream 05-ST004 (Photograph 21 in Appendix C)
Stream 05-ST004 is a perennial stream corresponding with Mud Creek, a NYSDEC Class C mapped stream. The delineated reach included 2,330 linear feet along the western boundary of the Study Area and was bordered by a forested and emergent wetland complex on both sides of the stream. Portions of this stream were inaccessible at the time of delineation due to the water level. Delineations for these areas are based on satellite imagery and stream flags are absent as shown in Figure 3. The stream enters the Study Area from the south, passes under Oak Orchard Road, and flows into the Oneida River (Stream 05-ST005) in the northwest corner of the Study Area. Stream 05-ST004 was characterized by a wide, well-developed channel; continuous banks; gentle gradient; and a substrate consisting of gravel, sand, silt, and clay. Indicators used to define the OHWM included a break in slope and a change in vegetation, both of which were consistent throughout the entire delineated reach of stream. The stream was classified as perennial due to its substantial size, the presence of aquatic vegetation in the stream channel, and a water depth greater than 24 inches at the time of survey.

Stream 05-ST005 (Photograph 22 in Appendix C)
Stream segment 05-ST005 is a small portion of the Oneida Rived, a NYSDEC Class B mapped stream and USACE traditional navigable water. The delineated reach of the stream includes approximately 197 linear feet and is located in the northwest corner of the Study Area along Oak Orchard Road. The stream was characterized by its large size, well-developed banks, gentle gradient, and substrate consisting of cobble, gravel, sand, silt, and clay. Indicators used to define the OHWM included a break in slope and a change in vegetation, which both persisted throughout the entire delineated reach of stream. Based on aerial imagery, the stream had an average width of approximately 425 feet. A water depth greater than 24 inches was recorded along the bank of the stream.

Conclusion

Within the Study Area, EDR identified five wetlands (05-W001, 05-W002, 05-W003, 05-W004, and 05-W005) totaling 6.95 acres, and five streams (05-ST001, 05-ST002, 05-ST003, 05-ST004, and 05-ST005) totaling 2,837 linear feet.

Wetland 05-W001 appears to be an isolated feature with no relatively permanent surface connection to WOTUS; therefore, it is not anticipated to fall under federal jurisdiction. Additionally, it is not anticipated to fall under NYSDEC jurisdiction because it does not exceed 12.4 acres and is not connected to a NYSDEC-mapped wetland. Wetlands 05-W002 and 05-W003 are both anticipated to fall under federal jurisdiction due to potential off-site connections to WOTUS, but are not anticipated to fall under NYSDEC jurisdiction because they do not exceed 12.4 acres and are not connected to any NYSDEC-mapped wetlands. Wetlands 05-W004 and 05-W005 are anticipated to fall under both federal and NYSDEC jurisdictions due to connections to WOTUS and correlation with NYSDEC-mapped wetland BRE-17, respectively.

Stream 05-ST001 is not anticipated to fall under federal or NYSDEC jurisdiction. It is not anticipated to fall under federal jurisdiction because it is ephemeral (i.e., a temporary drainage feature flowing only in direct response to precipitation events) and it is not anticipated to fall under NYSDEC jurisdiction because it does not meet the criteria for protection based on classification or navigability. Streams 05-ST002 and 05-ST003 are both anticipated to fall under federal jurisdiction due to potential connections to WOTUS beyond the Study Area. However, neither are anticipated to fall under NYSDEC jurisdiction because they do not meet the criteria for protection based on classification or navigability. Streams 05-ST004 and 05-ST005 are

anticipated to fall under both federal and NYSDEC jurisdictions. Stream 05-ST004 is expected to fall under federal jurisdiction because it connects to the Oneida River, which is a TNW, and is expected to fall under NYSDEC jurisdiction because it is a potential state-navigable water. Stream 05-ST005 corresponds with a small portion of the Oneida River and is anticipated to fall under federal jurisdiction because it is a TNW. It is anticipated to be NYSDEC jurisdictional based on both its probable classification as a state-navigable water and its Class B designation. However, final determination of jurisdictional status of all wetland and streams delineated within the Study Area must be made by the USACE and NYSDEC.

List of Appendices

Appendix A. Figures

Figure 1: Regional Project Location

Figure 2: Mapped Wetlands and Streams

Figure 3. Delineated Wetlands and Streams

Appendix B. Routine Wetland Determination Data Sheets and OHWM Data Forms

Appendix C. Photo Documentation

References

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Appendix A

Figures

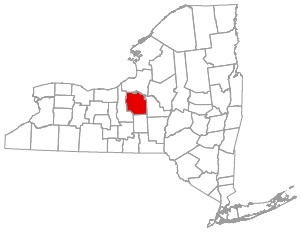
Figure 1. Regional Project Location



Oak Orchard Project

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Memorandum



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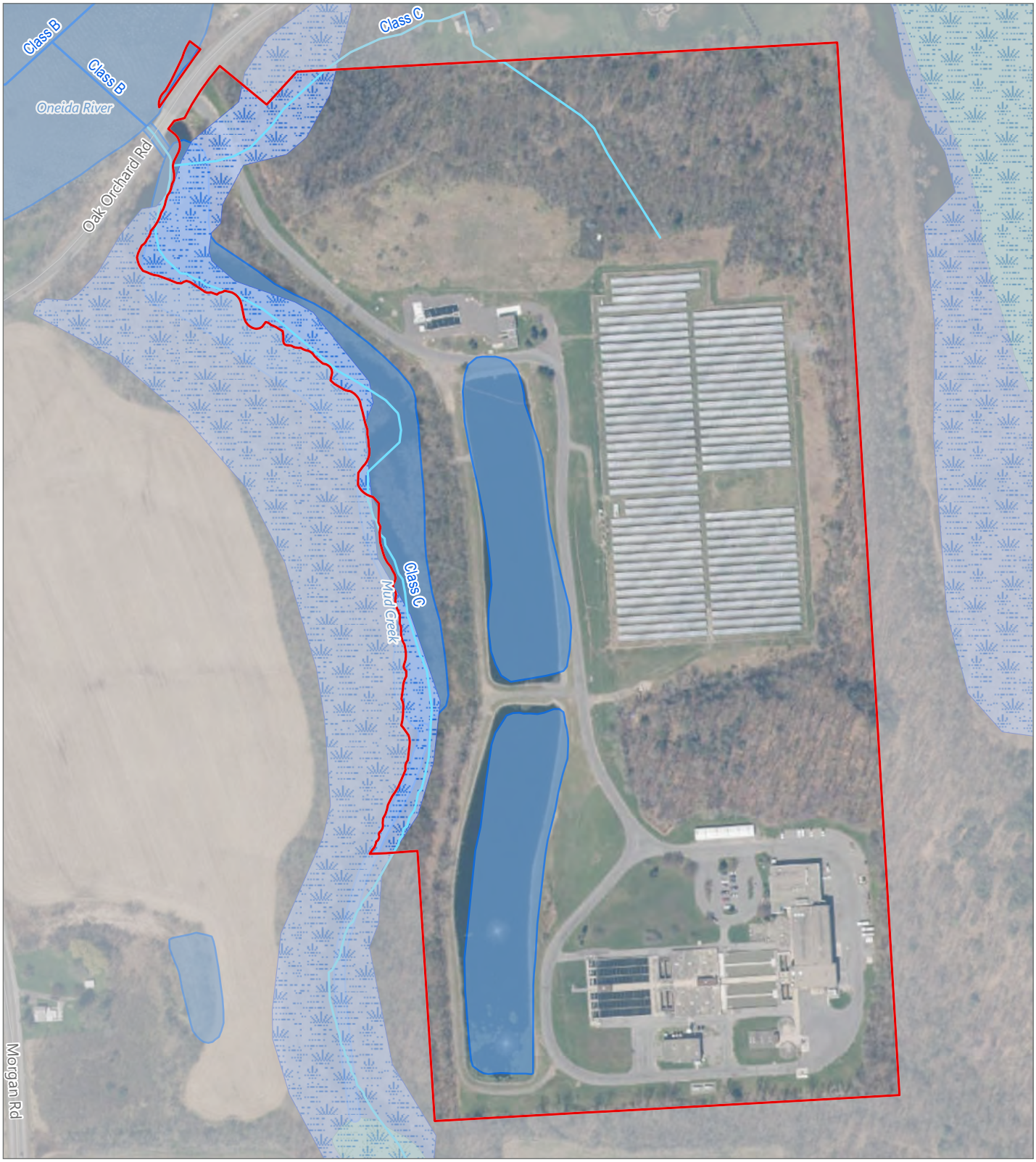
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Prepared August 13, 2024

Basemap: Esri "World Street Map" map service

EDR

Figure 2. Mapped Wetlands and Streams



Oak Orchard Project

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Memorandum

NYSDEC Stream Classification
- Class A, B, C(TS), or C(T) Stream
- Class C or D Stream
- NYSDEC Mapped Wetland
- NWI Mapped Wetland
- NWI Mapped Pond/Lake/Riverine
- Study Area

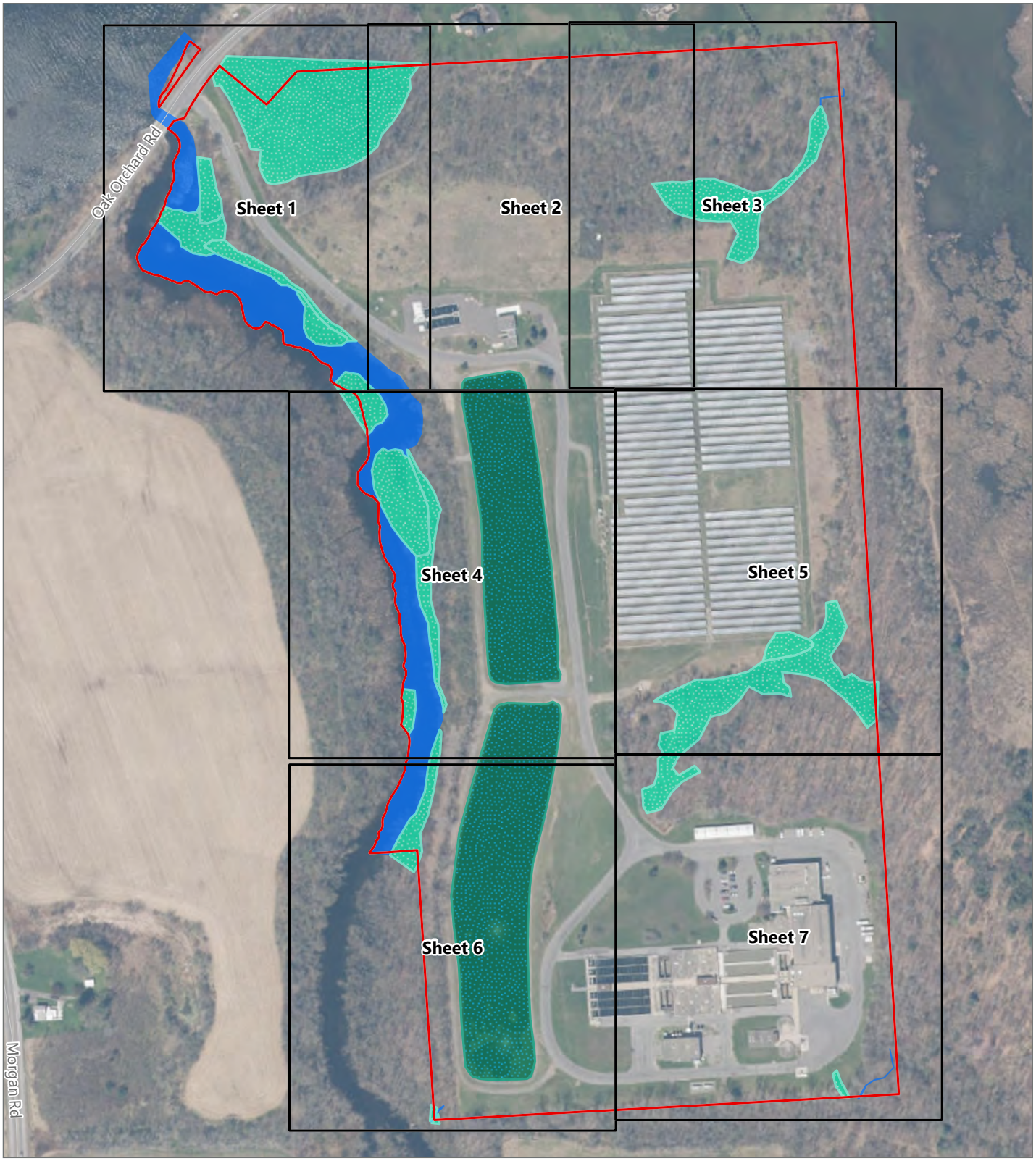
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Prepared August 13, 2024
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EDR

Figure 3. Delineated Wetlands and Streams

Index



Oak Orchard Project

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Memorandum

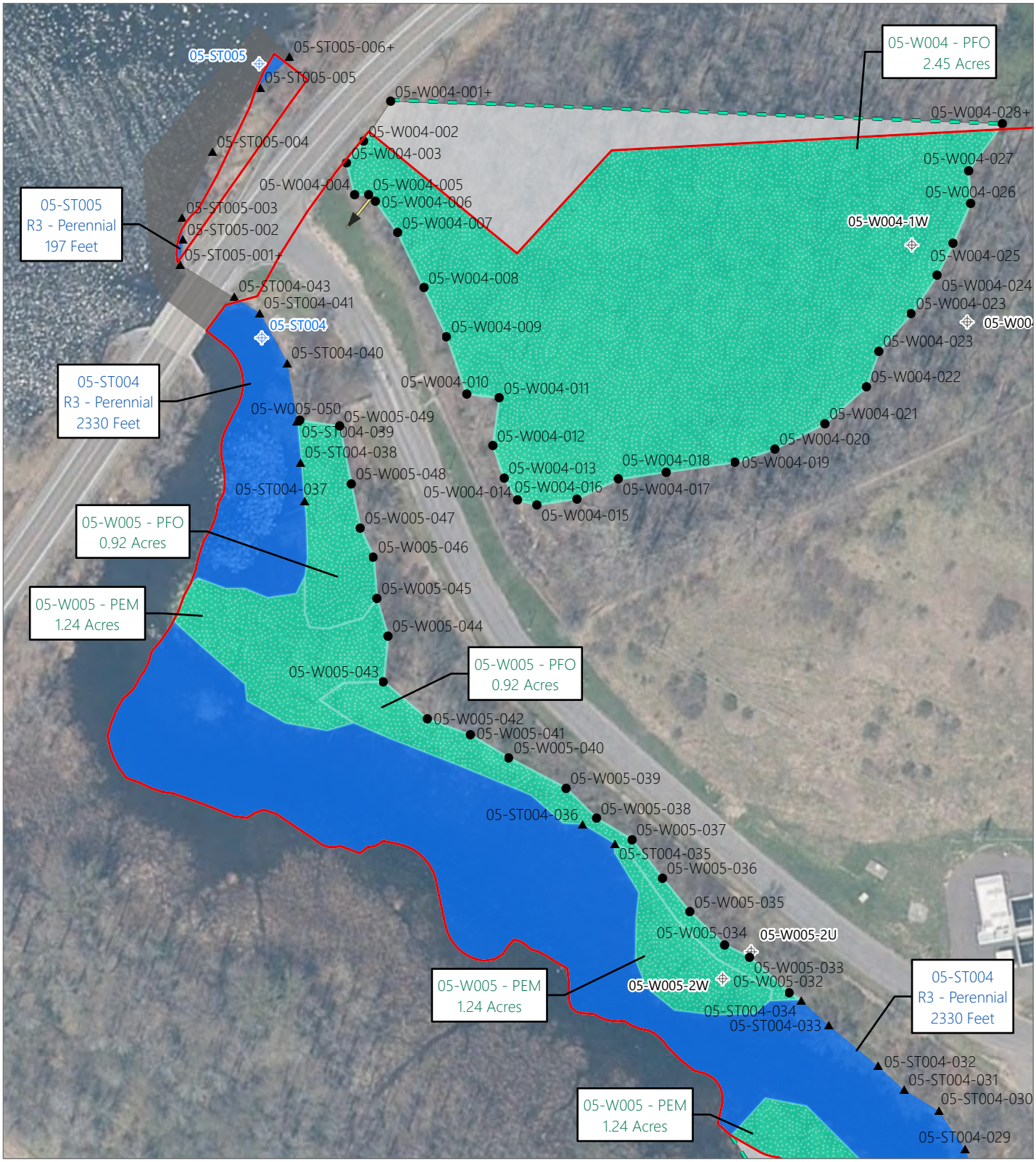
Delineated Stream
Delineated Wetland
Wastewater Treatment Lagoon
Study Area

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Prepared August 14, 2024
Basemap: NYSDOP "2022" orthoimagery map service

EDR

Figure 3. Delineated Wetlands and Streams



Oak Orchard Project

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Memorandum

- Stream Flag
- Wetland Flag
- Datapoint Stream
- Datapoint Wetland
- Culvert
- Wetland Continues
- Delineated Stream inside Study Area
- Delineated Stream outside Study Area
- Delineated Wetland inside Study Area
- Delineated Wetland outside Study Area
- Study Area

0 50 100 200

Feet

Prepared August 14, 2024

Basemap: NYSDOP "2022" orthoimagery map service

EDR

Figure 3. Delineated Wetlands and Streams



Oak Orchard Project

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Memorandum

- Stream Flag
- Wetland Flag
- Datapoint Wetland
- Non-Wetland Verification Point
- Wetland Continues
- Delineated Stream inside Study Area
- Delineated Wetland inside Study Area
- Delineated Wetland outside Study Area
- Wastewater Treatment Lagoon
- Study Area

0 50 100 200

Feet

Prepared August 14, 2024

Basemap: NYSDOP "2022" orthoimagery map service

EDR

Figure 3. Delineated Wetlands and Streams



Oak Orchard Project

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Memorandum

- Stream Flag
- Wetland Flag
- Datapoint Stream
- Datapoint Wetland
- Delineated Stream inside Study Area
- Delineated Stream outside Study Area
- Delineated Wetland inside Study Area
- Study Area

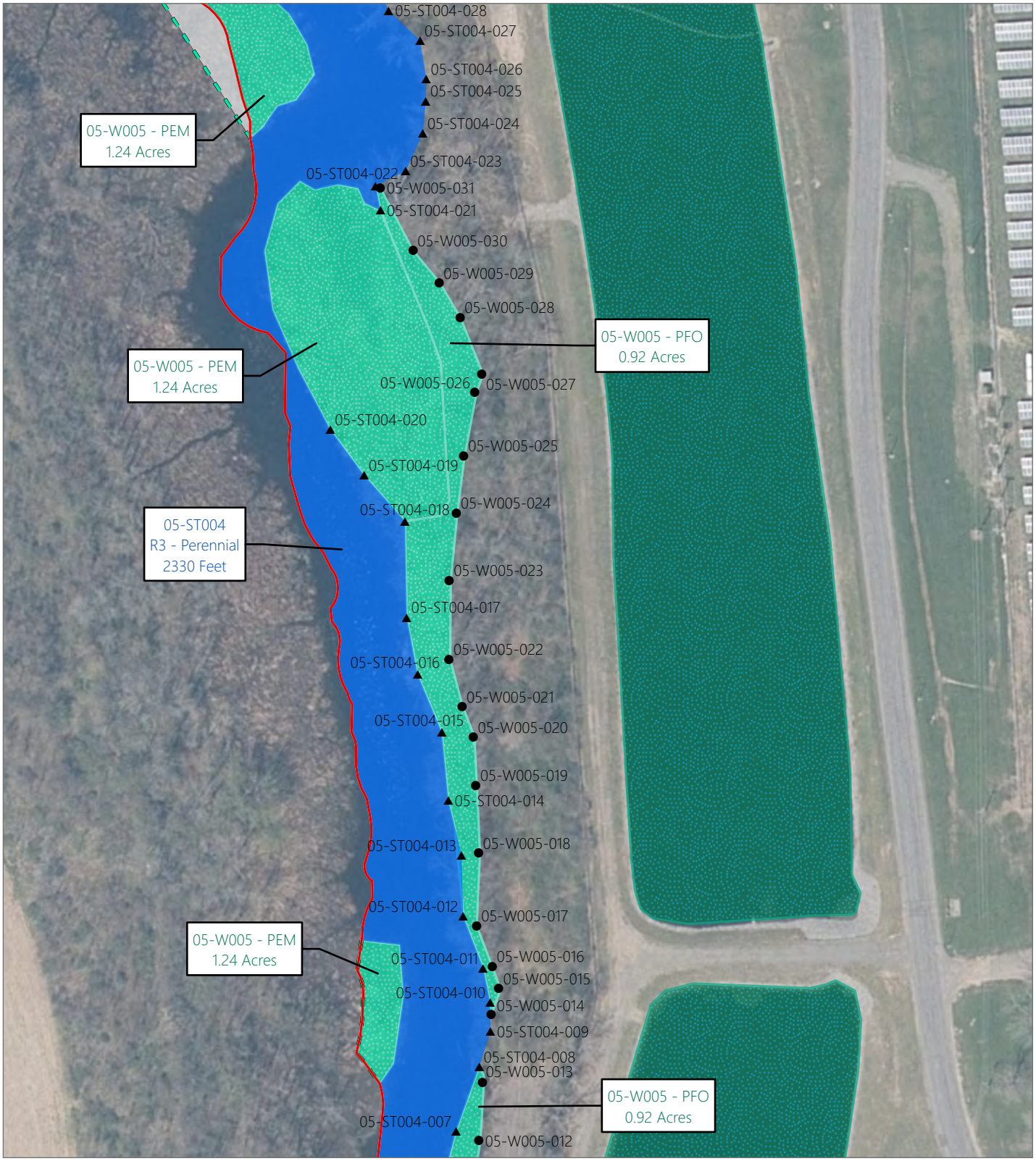
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Feet

Prepared August 14, 2024

Basemap: NYSDOP "2022" orthoimagery map service

Figure 3. Delineated Wetlands and Streams



Oak Orchard Project

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Memorandum

- Stream Flag
- Wetland Flag
- Wetland Continues
- Delineated Stream inside Study Area
- Delineated Wetland inside Study Area
- Delineated Wetland outside Study Area
- Wastewater Treatment Lagoon
- Study Area

0 50 100 200

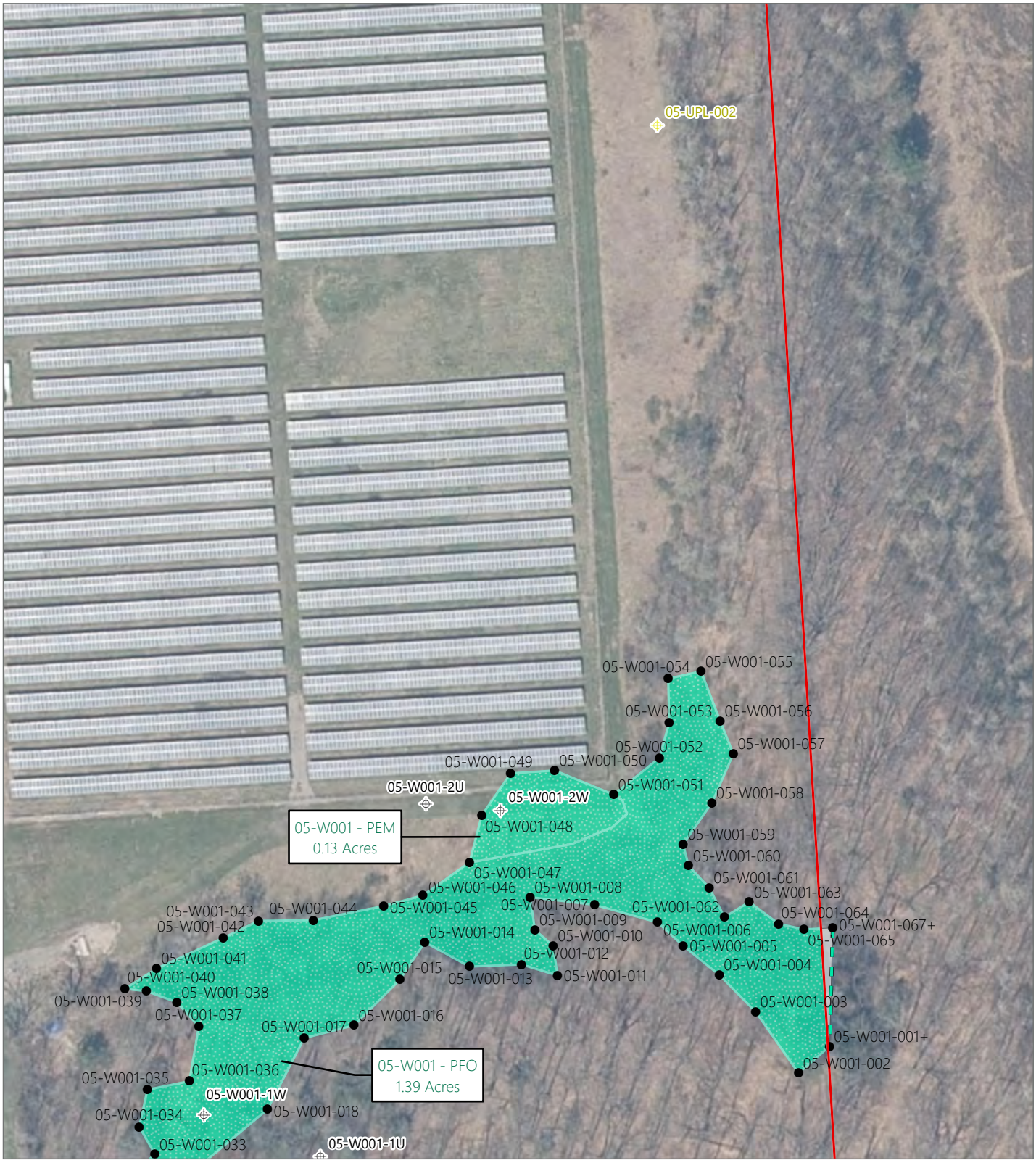
Feet

Prepared August 14, 2024

Basemap: NYSDOP "2022" orthoimagery map service

EDR

Figure 3. Delineated Wetlands and Streams



Oak Orchard Project

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Memorandum

- Wetland Flag
- Datapoint Wetland
- Non-Wetland Verification Point
- Wetland Continues
- Delineated Wetland inside Study Area
- Delineated Wetland outside Study Area
- Study Area

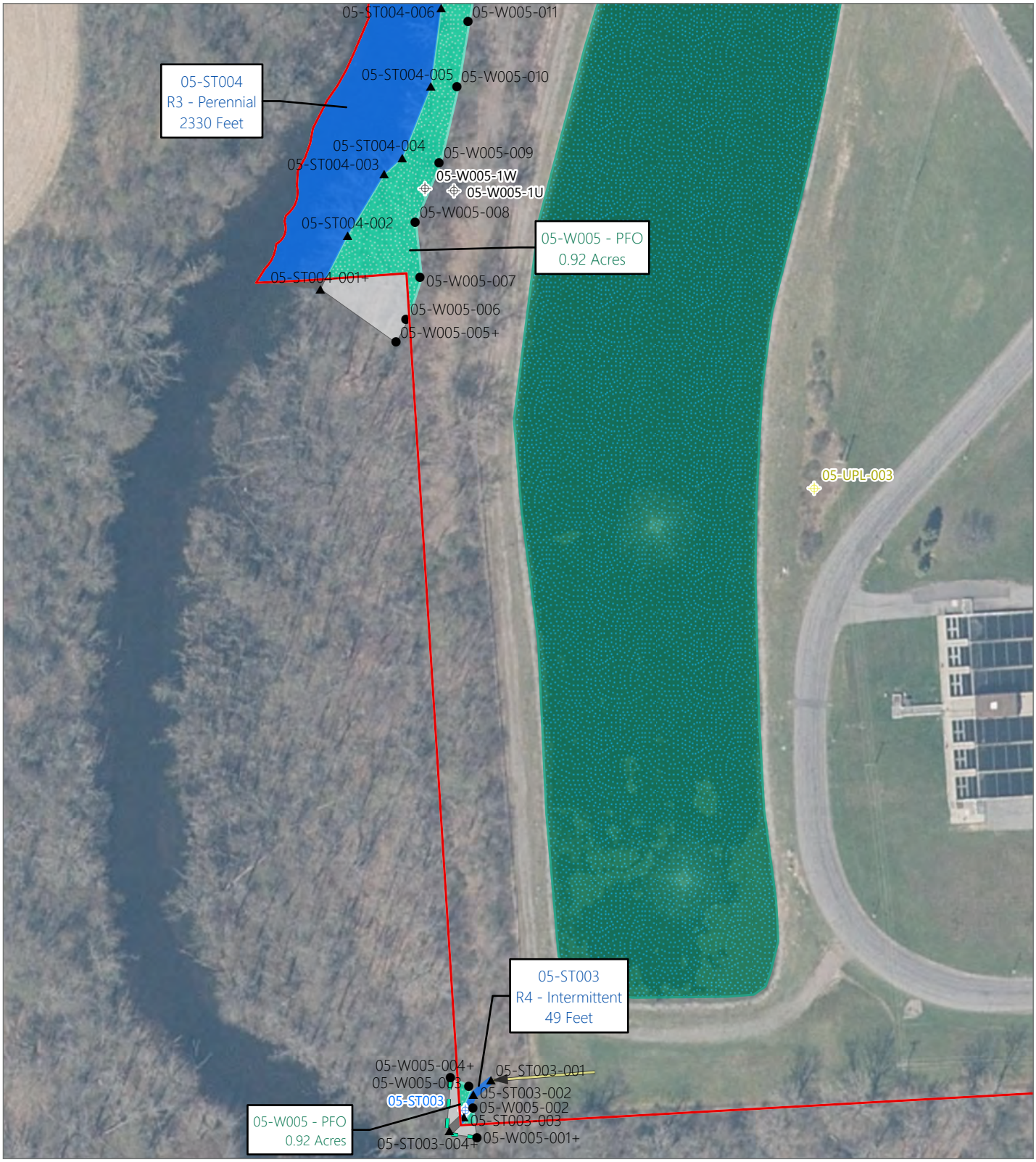
0 50 100 200

Feet

Prepared August 14, 2024

Basemap: NYSDOP "2022" orthoimagery map service

Figure 3. Delineated Wetlands and Streams



Oak Orchard Project

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Memorandum

- Stream Flag
- Wetland Flag
- Datapoint Stream
- Datapoint Wetland
- Non-Wetland Verification Point
- Culvert
- Wetland Continues
- Delineated Stream inside Study Area
- Delineated Stream outside Study Area
- Delineated Wetland inside Study Area
- Delineated Wetland outside Study Area
- Wastewater Treatment Lagoon
- Study Area

0 50 100 200

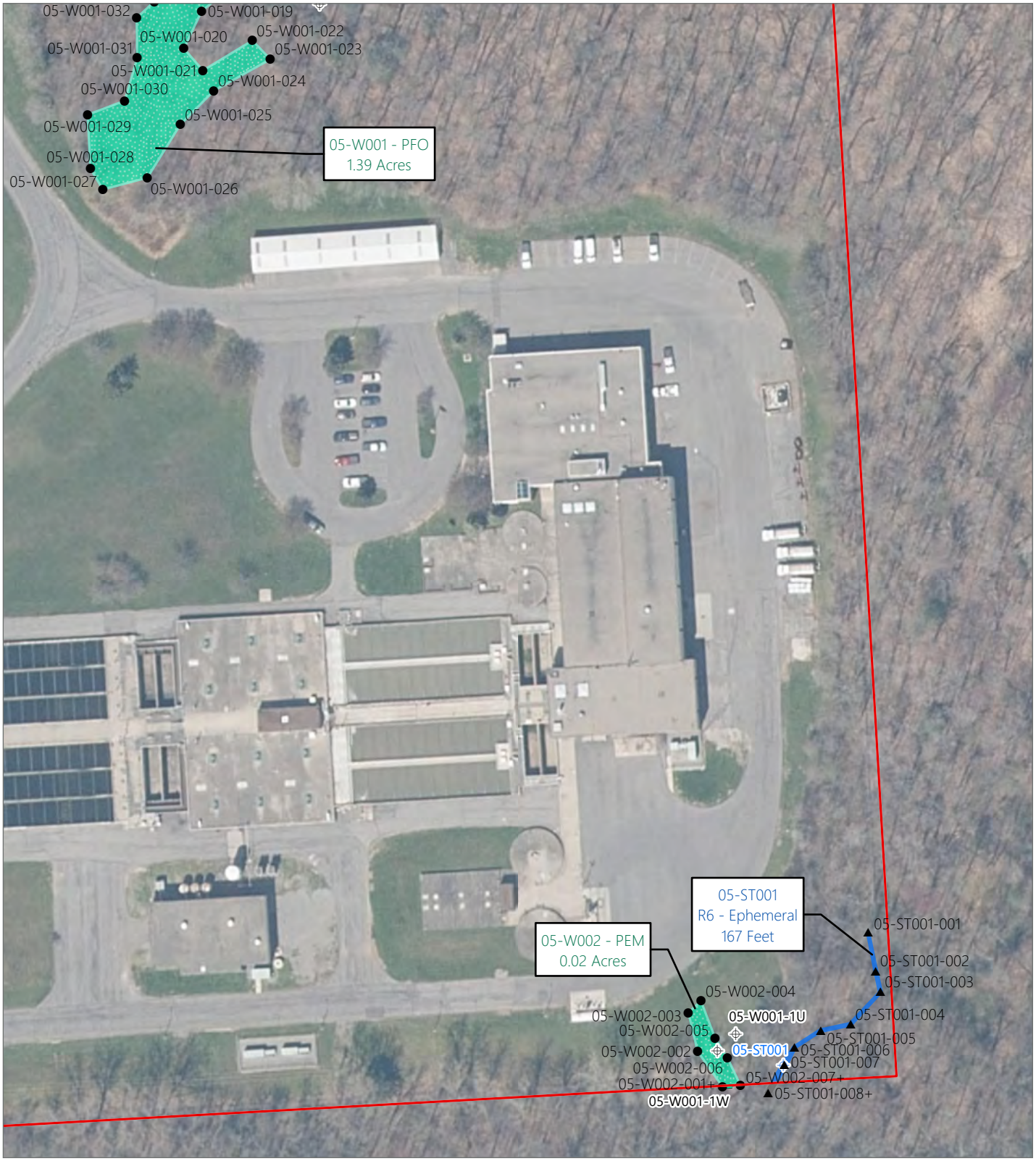
Feet

Prepared August 14, 2024

Basemap: NYSDOP "2022" orthoimagery map service

EDR

Figure 3. Delineated Wetlands and Streams



Oak Orchard Project

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Memorandum

- Stream Flag
- Wetland Flag
- Datapoint Stream
- Datapoint Wetland
- Wetland Continues
- Delineated Stream inside Study Area
- Delineated Stream outside Study Area
- Delineated Wetland inside Study Area
- Delineated Wetland outside Study Area
- Study Area

0 50 100 200

Feet

Prepared August 14, 2024

Basemap: NYSDOP "2022" orthoimagery map service

Appendix B

Routine Wetland Determination Data Sheets and OHWM Data Forms

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Oak Orchard City/County: Onondaga County Sampling Date: 07/31/2024
Applicant/Owner: Onondaga County State: New York Sampling Point: 05-UPL-001
Investigator(s): JK, MC Section, Township, Range: Town of Clay
Landform (hillslope, terrace, etc): Flat Local relief (concave, convex, none): none Slope (%): 0-5
Subregion (LRR or MLRA): LRR L Lat: 43.2039295 Long: -76.21140133333333 Datum: WGS 1984
Soil Map Unit Name: Collamer silt loam, 2 to 6 percent slopes NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? Yes ____ No X
If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____
Water Table Present? Yes ____ No X Depth (inches): ____
Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants. Sampling Point: 05-UPL-001

Tree Stratum (Plot size: 30-ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15-ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Herb Stratum (Plot size: 5-ft)			
1. *Lotus unifoliolatus* / American bird's foot trefoil	50	Yes	NI
2. *Centaurea jacea* / Brownray knapweed	50	Yes	FACU
3. *Solidago altissima* / Canada goldenrod	10	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	110	= Total Cover	
Woody Vine Stratum (Plot size: 30-ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	60	x 4 =	240
UPL species	50	x 5 =	250
Column Totals:	110 (A)		490 (B)

Prevalence Index = B/A = 4.45

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Explain alternative procedures here or in a separate report.)

SOIL

Sampling Point: 05-UPL-001

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/3	100					Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R,MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Very gravelly. Gravel refusal at 5 inches.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Oak Orchard City/County: Onondaga County Sampling Date: 07/31/2024
Applicant/Owner: Onondaga County State: New York Sampling Point: 05-UPL-002
Investigator(s): JK, MC Section, Township, Range: Town of Clay
Landform (hillslope, terrace, etc): Flat Local relief (concave, convex, none): none Slope (%): 0-5
Subregion (LRR or MLRA): LRR L Lat: 43.20270583333333 Long: -76.20796383333334 Datum: WGS 1984
Soil Map Unit Name: Collamer silt loam, 2 to 6 percent slopes NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? Yes ____ No X
If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____
Water Table Present? Yes ____ No X Depth (inches): ____
Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants. Sampling Point: 05-UPL-002

Tree Stratum (Plot size: 30-ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Populus deltoides* / Eastern cottonwood	20	Yes	FAC
2. *Populus tremuloides* / Quaking aspen	10	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	30	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15-ft)			
1. *Lonicera morrowii* / Morrow's honeysuckle	10	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
	10	= Total Cover	
Herb Stratum (Plot size: 5-ft)			
1. *Solidago canadensis* / Canada goldenrod	90	Yes	FACU
2. *Rosa multiflora* / Multiflora rose, Multiflora rosa	10	No	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30-ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	120	x 4 =	480
UPL species	0	x 5 =	0
Column Totals:	140 (A)		540 (B)

Prevalence Index = B/A = 3.86

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Explain alternative procedures here or in a separate report.)

SOIL

Sampling Point: 05-UPL-002

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 4/3	100					Silt Loam	
12-18	2.5Y 5/6	100					Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R,MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Oak Orchard City/County: Onondaga County Sampling Date: 07/31/2024
Applicant/Owner: Onondaga County State: New York Sampling Point: 05-UPL-003
Investigator(s): JK, MC Section, Township, Range: Town of Clay
Landform (hillslope, terrace, etc): Flat Local relief (concave, convex, none): none Slope (%): 0-5
Subregion (LRR or MLRA): LRR L Lat: 43.19940466666667 Long: -76.2105315 Datum: WGS 1984
Soil Map Unit Name: Dunkirk silt loam, rolling NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? Yes ____ No X
If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)
un mowed area adjacent to around utility pole, adjacent to waste water lagoon.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____
Water Table Present? Yes ____ No X Depth (inches): ____
Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants. Sampling Point: 05-UPL-003

Tree Stratum (Plot size: 30-ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15-ft)			
1. *Lonicera morrowii* / Morrow's honeysuckle	20	Yes	FACU
2. *Salix sp.* / Willow	5	Yes	NI
3.			
4.			
5.			
6.			
7.			
	25	= Total Cover	
Herb Stratum (Plot size: 5-ft)			
1. *Solidago canadensis* / Canada goldenrod	40	Yes	FACU
2. *Phragmites australis* / Common reed	30	Yes	FACW
3. *Lythrum salicaria* / Purple loosestrife	2	No	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	72	= Total Cover	
Woody Vine Stratum (Plot size: 30-ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	2	x 1 =	2
FACW species	30	x 2 =	60
FAC species	0	x 3 =	0
FACU species	60	x 4 =	240
UPL species	5	x 5 =	25
Column Totals:	97 (A)		327 (B)

Prevalence Index = B/A = 3.37

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Explain alternative procedures here or in a separate report.)

SOIL

Sampling Point: 05-UPL-003

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/3	90	10YR 4/4	10	C	M	Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R,MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Oak Orchard | City/County: Onondaga County | Sampling Date: 07/31/2024
Applicant/Owner: Onondaga County | State: New York | Sampling Point: 05-W001-1U
Investigator(s): JK, MC | Section, Township, Range: Town of Clay
Landform (hillslope, terrace, etc): Flat | Local relief (concave, convex, none): none | Slope (%): 0-5
Subregion (LRR or MLRA): LRR L | Lat: 43.20050216666667 | Long: -76.20896066666667 | Datum: WGS 1984
Soil Map Unit Name: Niagara silt loam, 0 to 4 percent slopes | NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	If yes, optional Wetland Site ID: ___
Wetland Hydrology Present?	Yes ___	No X	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants. Sampling Point: 05-W001-1U

Tree Stratum (Plot size: 30-ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fagus grandifolia* / American beech	25	Yes	FACU
2. *Carya ovata* / Shag-bark hickory	15	Yes	FACU
3. *Liriodendron tulipifera* / Tuliptree	15	Yes	FACU
4. *Acer rubrum* / Red maple	10	No	FAC
5.			
6.			
7.			
	65	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15-ft)			
1. *Fagus grandifolia* / American beech	10	Yes	FACU
2. *Acer rubrum* / Red maple	5	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	15	= Total Cover	

Herb Stratum (Plot size: 5-ft)			
1. *Toxicodendron radicans* / Eastern poison ivy	10	Yes	FAC
2. *Podophyllum peltatum* / May-apple	5	Yes	FACU
3. *Fraxinus pennsylvanica* / Green ash	5	Yes	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	20	= Total Cover	

Woody Vine Stratum (Plot size: 30-ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 37.5 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:		
OBL species	0	x 1 =	0	
FACW species	5	x 2 =	10	
FAC species	25	x 3 =	75	
FACU species	70	x 4 =	280	
UPL species	0	x 5 =	0	
Column Totals:	100	(A)	365	(B)

Prevalence Index = B/A = 3.65

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Explain alternative procedures here or in a separate report.)

SOIL

Sampling Point: 05-W001-1U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/2	100					Silt Loam	
14-18	10YR 5/3	80	10YR 5/8	20	C	M	Fine Sndy Lm	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R,MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Oak Orchard | City/County: Onondaga County | Sampling Date: 07/31/2024
Applicant/Owner: Onondaga County | State: New York | Sampling Point: 05-W001-1W
Investigator(s): JK, MC | Section, Township, Range: Town of Clay
Landform (hillslope, terrace, etc): Bowl shaped depression | Local relief (concave, convex, none): concave | Slope (%): 0-6
Subregion (LRR or MLRA): LRR L | Lat: 43.20058566666667 | Long: -76.20930383333334 | Datum: WGS 1984
Soil Map Unit Name: Niagara silt loam, 0 to 4 percent slopes | NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	If yes, optional Wetland Site ID: 05-W001-1W PFO
Wetland Hydrology Present?	Yes X	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants. Sampling Point: 05-W001-1W

Tree Stratum (Plot size: 30-ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum* / Red maple	20	Yes	FAC
2. *Liriodendron tulipifera* / Tuliptree	15	Yes	FACU
3. *Carya ovata* / Shag-bark hickory	10	No	FACU
4. *Tsuga canadensis* / Eastern hemlock	10	No	FACU
5.			
6.			
7.			
	55	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15-ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	

Herb Stratum (Plot size: 5-ft)			
1. *Toxicodendron radicans* / Eastern poison ivy	60	Yes	FAC
2. *Impatiens capensis* / Spotted jewelweed	35	Yes	FACW
3. *Fraxinus pennsylvanica* / Green ash	10	No	FACW
4. *Lindera benzoin* / Northern spicebush	5	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	110	= Total Cover	

Woody Vine Stratum (Plot size: 30-ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	80	x 3 =	240
FACU species	35	x 4 =	140
UPL species	0	x 5 =	0
Column Totals:	165 (A)		480 (B)

Prevalence Index = B/A = 2.91

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Explain alternative procedures here or in a separate report.)

SOIL

Sampling Point: 05-W001-1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1	100					Fine Sndy Lm	
8-18	10YR 5/2	80	10YR 5/8	20	C	M	Fine Sndy Lm	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R,MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Oak Orchard City/County: Onondaga County Sampling Date: 07/31/2024
Applicant/Owner: Onondaga County State: New York Sampling Point: 05-W001-2U
Investigator(s): JK, MC Section, Township, Range: Town of Clay
Landform (hillslope, terrace, etc): Mound Local relief (concave, convex, none): convex Slope (%): 2-6
Subregion (LRR or MLRA): LRR L Lat: 43.20125566666667 Long: -76.20863966666667 Datum: WGS 1984
Soil Map Unit Name: Collamer silt loam, 2 to 6 percent slopes NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	If yes, optional Wetland Site ID: ____
Wetland Hydrology Present?	Yes ____	No X	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants. Sampling Point: 05-W001-2U

Tree Stratum (Plot size: 30-ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15-ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Herb Stratum (Plot size: 5-ft)			
1. *Centaurea jacea* / Brownray knapweed	50	Yes	FACU
2. *Lotus unifoliolatus* / American bird's foot trefoil	50	Yes	NI
3. *Phleum pratense* / Common timothy, Cultivated timothy	10	No	FACU
4. *Phragmites australis* / Common reed	5	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	115	= Total Cover	
Woody Vine Stratum (Plot size: 30-ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	5	x 2 =	10
FAC species	0	x 3 =	0
FACU species	60	x 4 =	240
UPL species	50	x 5 =	250
Column Totals:	115 (A)		500 (B)

Prevalence Index = B/A = 4.35

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Explain alternative procedures here or in a separate report.)

SOIL

Sampling Point: 05-W001-2U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/3	100					Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R,MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Very gravelly. Gravel refusal at 5 inches.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Oak Orchard | City/County: Onondaga County | Sampling Date: 07/31/2024
Applicant/Owner: Onondaga County | State: New York | Sampling Point: 05-W001-2W
Investigator(s): JK, MC | Section, Township, Range: Town of Clay
Landform (hillslope, terrace, etc): Flat | Local relief (concave, convex, none): none | Slope (%): 0-5
Subregion (LRR or MLRA): LRR L | Lat: 43.20124383333334 | Long: -76.20844483333333 | Datum: WGS 1984
Soil Map Unit Name: Collamer silt loam, 2 to 6 percent slopes | NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	If yes, optional Wetland Site ID: 05-W001-2W PEM
Wetland Hydrology Present?	Yes X	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants. Sampling Point: 05-W001-2W

Tree Stratum (Plot size: 30-ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15-ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Herb Stratum (Plot size: 5-ft)			
1. *Solidago gigantea* / Smooth goldenrod	30	Yes	FACW
2. *Phragmites australis* / Common reed	20	Yes	FACW
3. *Eupatorium perfoliatum* / Common boneset	10	No	FACW
4. *Scirpus atrovirens* / Green bulrush	10	No	OBL
5. *Lythrum salicaria* / Purple loosestrife	5	No	OBL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	75	= Total Cover	
Woody Vine Stratum (Plot size: 30-ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	60	x 2 =	120
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	75 (A)		135 (B)

Prevalence Index = B/A = 1.8

Hydrophytic Vegetation Indicators:

- X 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Explain alternative procedures here or in a separate report.)

SOIL

Sampling Point: 05-W001-2W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	90	10YR 5/6	10	C	PL,M	Clay Loam	
12-18	10YR 5/3	70	10YR 5/8	30	C	M	Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R,MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Oak Orchard | City/County: Onondaga County | Sampling Date: 07/30/2024
Applicant/Owner: Onondaga County | State: New York | Sampling Point: 05-W002-1U
Investigator(s): JK, MC | Section, Township, Range: Town of Clay
Landform (hillslope, terrace, etc): Hillslope | Local relief (concave, convex, none): convex | Slope (%): 0-4
Subregion (LRR or MLRA): LRR L | Lat: 43.19829833333333 | Long: -76.207756 | Datum: WGS 1984
Soil Map Unit Name: Niagara silt loam, 0 to 4 percent slopes | NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ___	No X	**Is the Sampled Area within a Wetland?** Yes ___ No X
Hydric Soil Present?	Yes ___	No X	If yes, optional Wetland Site ID: ___
Wetland Hydrology Present?	Yes ___	No X	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes ___ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants. Sampling Point: 05-W002-1U

Tree Stratum (Plot size: 30-ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15-ft)			
1. *Lonicera morrowii* / Morrow's honeysuckle	10	Yes	FACU
2. *Elaeagnus umbellata* / Autumn olive	10	Yes	NI
3. *Rhamnus cathartica* / European buckthorn	10	Yes	FAC
4. *Rosa multiflora* / Multiflora rose, Multiflora rosa	5	No	FACU
5.			
6.			
7.			
	35	= Total Cover	
Herb Stratum (Plot size: 5-ft)			
1. *Taraxacum officinale* / Red seeded dandelion, Common dan	25	Yes	FACU
2. *Plantago lanceolata* / Ribwort, English plantain	20	Yes	FACU
3. *Plantago major* / Common plantain	15	Yes	FACU
4. *Prunella vulgaris* / Self heal	15	Yes	FAC
5. *Oxalis stricta* / Upright yellow wood-sorrel	10	No	FACU
6. *Centaurea stoebe* / Spotted knapweed	10	No	NI
7. *Toxicodendron radicans* / Eastern poison ivy	5	No	FAC
8. *Daucus carota* / Carrot, Carrot, Queen anne's lace	5	No	UPL
9. *Hieracium caespitosum* / Meadow hawkweed	5	No	NI
10.			
11.			
12.			
	110	= Total Cover	
Woody Vine Stratum (Plot size: 30-ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 28.6 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	30	x 3 =	90
FACU species	85	x 4 =	340
UPL species	30	x 5 =	150
Column Totals:	145 (A)		580 (B)

Prevalence Index = B/A = 4.0

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Explain alternative procedures here or in a separate report.)

SOIL

Sampling Point: 05-W002-1U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/3	100					Silt Loam	
6-18	10YR 5/3	100					Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R,MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Oak Orchard | City/County: Onondaga County | Sampling Date: 07/30/2024
Applicant/Owner: Onondaga County | State: New York | Sampling Point: 05-W002-1W
Investigator(s): JK, MC | Section, Township, Range: Town of Clay
Landform (hillslope, terrace, etc): Hillslope | Local relief (concave, convex, none): concave | Slope (%): 0-4
Subregion (LRR or MLRA): LRR L | Lat: 43.19826183333333 | Long: -76.207809 | Datum: WGS 1984
Soil Map Unit Name: Niagara silt loam, 0 to 4 percent slopes | NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	If yes, optional Wetland Site ID: 05-W002-1W PEM
Wetland Hydrology Present?	Yes X	No ___	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Small seep from maintained lawn adjacent pavement area.

VEGETATION - Use scientific names of plants. Sampling Point: 05-W002-1W

Tree Stratum (Plot size: 30-ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15-ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Herb Stratum (Plot size: 5-ft)			
1. *Agrostis stolonifera* / Redtop, Creeping bent	40	Yes	FACW
2. *Eleocharis palustris* / Common spikerush	20	Yes	OBL
3. *Juncus tenuis* / Slender rush, Poverty or slender rush	5	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	65	= Total Cover	
Woody Vine Stratum (Plot size: 30-ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	40	x 2 =	80
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	65 (A)		115 (B)

Prevalence Index = B/A = 1.77

Hydrophytic Vegetation Indicators:

- X 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Explain alternative procedures here or in a separate report.)

SOIL

Sampling Point: 05-W002-1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/2	95	7.5YR 4/4	5	C	PL,M	Clay Loam	
5-18	2.5Y 4/1	90	10YR 5/8	10	C	PL,M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R,MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Oak Orchard | City/County: Onondaga County | Sampling Date: 07/30/2024
Applicant/Owner: Onondaga County | State: New York | Sampling Point: 05-W003-1U
Investigator(s): JK, MC | Section, Township, Range: Town of Clay
Landform (hillslope, terrace, etc): Mound | Local relief (concave, convex, none): convex | Slope (%): 0-6
Subregion (LRR or MLRA): LRR L | Lat: 43.20449783333333 | Long: -76.20919766666667 | Datum: WGS 1984
Soil Map Unit Name: Collamer silt loam, 2 to 6 percent slopes | NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	If yes, optional Wetland Site ID: ____
Wetland Hydrology Present?	Yes ____	No X	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants. Sampling Point: 05-W003-1U

Tree Stratum (Plot size: 30-ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum* / Red maple	60	Yes	FAC
2. *Pinus resinosa* / Red pine	15	No	FACU
3. *Fraxinus pennsylvanica* / Green ash	10	No	FACW
4.			
5.			
6.			
7.			
	85	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15-ft)			
1. *Rhamnus cathartica* / European buckthorn	15	Yes	FAC
2. *Juglans nigra* / Black walnut	10	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	25	= Total Cover	

Herb Stratum (Plot size: 5-ft)			
1. *Parthenocissus quinquefolia* / Virginia creeper	40	Yes	FACU
2. *Persicaria virginiana* / Jumpseed	20	Yes	FAC
3. *Fraxinus pennsylvanica* / Green ash	15	No	FACW
4. *Rosa multiflora* / Multiflora rose, Multiflora rosa	10	No	FACU
5. *Rhamnus cathartica* / European buckthorn	10	No	FAC
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	95	= Total Cover	

Woody Vine Stratum (Plot size: 30-ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	25	x 2 =	50
FAC species	105	x 3 =	315
FACU species	75	x 4 =	300
UPL species	0	x 5 =	0
Column Totals:	205 (A)		665 (B)

Prevalence Index = B/A = 3.24

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

___ 3 - Prevalence Index ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Explain alternative procedures here or in a separate report.)

SOIL

Sampling Point: 05-W003-1U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/3	100					Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R,MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Oak Orchard | City/County: Onondaga County | Sampling Date: 07/30/2024
Applicant/Owner: Onondaga County | State: New York | Sampling Point: 05-W003-1W
Investigator(s): JK, MC | Section, Township, Range: Town of Clay
Landform (hillslope, terrace, etc): Toeslope | Local relief (concave, convex, none): concave | Slope (%): 0-6
Subregion (LRR or MLRA): LRR L | Lat: 43.20430766666666 | Long: -76.20910716666667 | Datum: WGS 1984
Soil Map Unit Name: Collamer silt loam, 2 to 6 percent slopes | NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ___ (If no, explain in Remarks.)
Are Vegetation ___, Soil ___, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes X No ___
Are Vegetation ___, Soil ___, or Hydrology ___ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ___	**Is the Sampled Area within a Wetland?** Yes X No ___
Hydric Soil Present?	Yes X	No ___	If yes, optional Wetland Site ID: 05-W003-1W PSS
Wetland Hydrology Present?	Yes X	No ___	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- X Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? Yes X No ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants.

Sampling Point: 05-W003-1W

Tree Stratum (Plot size: 30-ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Fraxinus pennsylvanica* / Green ash	15	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	15	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15-ft)			
1. *Cornus racemosa* / Gray dogwood	30	Yes	FAC
2. *Fraxinus pennsylvanica* / Green ash	20	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	50	= Total Cover	
Herb Stratum (Plot size: 5-ft)			
1. *Solidago rugosa* / Wrinkle-leaf goldenrod	40	Yes	FAC
2. *Juncus tenuis* / Slender rush, Poverty or slender rush	20	Yes	FAC
3. *Symphyotrichum sp.* / Aster	15	No	NI
4. *Impatiens capensis* / Spotted jewelweed	10	No	FACW
5. *Geum laciniatum* / Rough avens	10	No	FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	95	= Total Cover	
Woody Vine Stratum (Plot size: 30-ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	55	x 2 =	110
FAC species	90	x 3 =	270
FACU species	0	x 4 =	0
UPL species	15	x 5 =	75
Column Totals:	160 (A)		455 (B)

Prevalence Index = B/A = 2.84

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Explain alternative procedures here or in a separate report.)

SOIL

Sampling Point: 05-W003-1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/2	90	7.5YR 4/4	10	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R,MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Oak Orchard City/County: Onondaga County Sampling Date: 07/30/2024
Applicant/Owner: Onondaga County State: New York Sampling Point: 05-W004-1U
Investigator(s): JK, MC Section, Township, Range: Town of Clay
Landform (hillslope, terrace, etc): Hillslope Local relief (concave, convex, none): convex Slope (%): 8-15
Subregion (LRR or MLRA): LRR L Lat: 43.204748 Long: -76.211759 Datum: WGS 1984
Soil Map Unit Name: Dunkirk silt loam, rolling NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

Is the Sampled Area within a Wetland? Yes ____ No X
If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ____ No X Depth (inches): ____
Water Table Present? Yes ____ No X Depth (inches): ____
Saturation Present? (includes capillary fringe) Yes ____ No X Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants. Sampling Point: 05-W004-1U

Tree Stratum (Plot size: 30-ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Juglans nigra* / Black walnut	30	Yes	FACU
2. *Fraxinus pennsylvanica* / Green ash	10	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	40	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15-ft)			
1. *Lonicera morrowii* / Morrow's honeysuckle	25	Yes	FACU
2. *Fraxinus pennsylvanica* / Green ash	5	No	FACW
3.			
4.			
5.			
6.			
7.			
	30	= Total Cover	
Herb Stratum (Plot size: 5-ft)			
1. *Persicaria virginiana* / Jumpseed	40	Yes	FAC
2. *Rubus allegheniensis* / Allegheny blackberry	25	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	65	= Total Cover	
Woody Vine Stratum (Plot size: 30-ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	15	x 2 =	30
FAC species	40	x 3 =	120
FACU species	80	x 4 =	320
UPL species	0	x 5 =	0
Column Totals:	135 (A)		470 (B)

Prevalence Index = B/A = 3.48

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Explain alternative procedures here or in a separate report.)

SOIL

Sampling Point: 05-W004-1U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 5/3	100					Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R,MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Oak Orchard City/County: Onondaga County Sampling Date: 07/30/2024
Applicant/Owner: Onondaga County State: New York Sampling Point: 05-W004-1W
Investigator(s): JK, MC Section, Township, Range: Town of Clay
Landform (hillslope, terrace, etc): Bowl shaped depression Local relief (concave, convex, none): concave Slope (%): 2-15
Subregion (LRR or MLRA): LRR L Lat: 43.204913 Long: -76.211904 Datum: WGS 1984
Soil Map Unit Name: Dunkirk silt loam, rolling NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes X No ____
If yes, optional Wetland Site ID: 05-W004-1W PFO

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 2
Water Table Present? Yes X No ____ Depth (inches): 0
Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 0

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants. Sampling Point: 05-W004-1W

Tree Stratum (Plot size: 30-ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum* / Red maple	30	Yes	FAC
2. *Fraxinus pennsylvanica* / Green ash	20	Yes	FACW
3.			
4.			
5.			
6.			
7.			
	50	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15-ft)			
1. *Fraxinus pennsylvanica* / Green ash	30	Yes	FACW
2. *Rhamnus cathartica* / European buckthorn	15	Yes	FAC
3. *Lonicera morrowii* / Morrow's honeysuckle	5	No	FACU
4.			
5.			
6.			
7.			
	50	= Total Cover	

Herb Stratum (Plot size: 5-ft)			
1. *Saururus cernuus* / Lizard's-tail	30	Yes	OBL
2. *Onoclea sensibilis* / Sensitive fern	20	Yes	FACW
3. *Impatiens capensis* / Spotted jewelweed	10	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60	= Total Cover	

Woody Vine Stratum (Plot size: 30-ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	80	x 2 =	160
FAC species	45	x 3 =	135
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	160 (A)		345 (B)

Prevalence Index = B/A = 2.16

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Explain alternative procedures here or in a separate report.)

SOIL

Sampling Point: 05-W004-1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/1	95	10YR 5/6	5	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R,MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Oak Orchard | City/County: Onondaga County | Sampling Date: 07/31/2024
Applicant/Owner: Onondaga County | State: New York | Sampling Point: 05-W005-1U
Investigator(s): JK, MC | Section, Township, Range: Town of Clay
Landform (hillslope, terrace, etc): Hillslope | Local relief (concave, convex, none): convex | Slope (%): 8-15
Subregion (LRR or MLRA): LRR L | Lat: 43.200039 | Long: -76.2115765 | Datum: WGS 1984
Soil Map Unit Name: Saprists and Fluvaquents, ponded | NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	If yes, optional Wetland Site ID: ____
Wetland Hydrology Present?	Yes ____	No X	

Remarks: (Explain alternative procedures here or in a separate report.)
Soils problematic due to rocks fill along slope.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants. Sampling Point: 05-W005-1U

Tree Stratum (Plot size: 30-ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Prunus virginiana* / Chokecherry	10	Yes	FACU
2. *Populus deltoides* / Eastern cottonwood	5	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	15	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15-ft)			
1. *Rhamnus cathartica* / European buckthorn	15	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	15	= Total Cover	
Herb Stratum (Plot size: 5-ft)			
1. *Parthenocissus quinquefolia* / Virginia creeper	15	Yes	FACU
2. *Vitis riparia* / River-bank grape	10	Yes	FAC
3. *Toxicodendron radicans* / Eastern poison ivy	10	Yes	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	35	= Total Cover	
Woody Vine Stratum (Plot size: 30-ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	40	x 3 =	120
FACU species	25	x 4 =	100
UPL species	0	x 5 =	0
Column Totals:	65 (A)		220 (B)

Prevalence Index = B/A = 3.38

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Explain alternative procedures here or in a separate report.)

SOIL

Sampling Point: 05-W005-1U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R,MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Rock refusal at 0 inches. Large area adjacent to wetland has been filled along seep grad with 2+ inch rock fill.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Oak Orchard | City/County: Onondaga County | Sampling Date: 07/31/2024
Applicant/Owner: Onondaga County | State: New York | Sampling Point: 05-W005-1W
Investigator(s): JK, MC | Section, Township, Range: Town of Clay
Landform (hillslope, terrace, etc): Toeslope | Local relief (concave, convex, none): concave | Slope (%): 0-15
Subregion (LRR or MLRA): LRR L | Lat: 43.200048 | Long: -76.21166 | Datum: WGS 1984
Soil Map Unit Name: Saprists and Fluvaquents, ponded | NWI classification: PAB/UBHh
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	If yes, optional Wetland Site ID: 05-W005-1W PFO
Wetland Hydrology Present?	Yes X	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants. Sampling Point: 05-W005-1W

Tree Stratum (Plot size: 30-ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus americana* / American elm	15	Yes	FACW
2. *Acer rubrum* / Red maple	10	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	25	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15-ft)			
1. *Rosa multiflora* / Multiflora rose, Multiflora rosa	15	Yes	FACU
2. *Carpinus caroliniana* / American hornbeam	15	Yes	FAC
3. *Quercus bicolor* / Swamp white oak	10	Yes	FACW
4. *Rhamnus cathartica* / European buckthorn	5	No	FAC
5. *Fraxinus pennsylvanica* / Green ash	5	No	FACW
6.			
7.			
	50	= Total Cover	
Herb Stratum (Plot size: 5-ft)			
1. *Saururus cernuus* / Lizard's-tail	30	Yes	OBL
2. *Parthenocissus quinquefolia* / Virginia creeper	10	Yes	FACU
3. *Rosa multiflora* / Multiflora rose, Multiflora rosa	5	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	45	= Total Cover	
Woody Vine Stratum (Plot size: 30-ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 71.4 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	30	x 2 =	60
FAC species	30	x 3 =	90
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	120 (A)		300 (B)

Prevalence Index = B/A = 2.5

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Explain alternative procedures here or in a separate report.)

SOIL

Sampling Point: 05-W005-1W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	N 3/	85	5Y 4/1	10	D	M	Clay Loam	
0-18			10YR 4/6	5	C	M	Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R,MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- X Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Oak Orchard | City/County: Onondaga County | Sampling Date: 07/31/2024
Applicant/Owner: Onondaga County | State: New York | Sampling Point: 05-W005-2U
Investigator(s): JK, MC | Section, Township, Range: Town of Clay
Landform (hillslope, terrace, etc): Hillslope | Local relief (concave, convex, none): convex | Slope (%): 8-20
Subregion (LRR or MLRA): LRR L | Lat: 43.20340566666667 | Long: -76.21240116666667 | Datum: WGS 1984
Soil Map Unit Name: Saprists and Fluvaquents, ponded | NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____	No X	If yes, optional Wetland Site ID: ____
Wetland Hydrology Present?	Yes ____	No X	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants. Sampling Point: 05-W005-2U

Tree Stratum (Plot size: 30-ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Juglans nigra* / Black walnut	30	Yes	FACU
2. *Ulmus rubra* / Slippery elm	10	Yes	FAC
3.			
4.			
5.			
6.			
7.			
	40	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15-ft)			
1. *Elaeagnus umbellata* / Autumn olive	40	Yes	UPL
2. *Lonicera morrowii* / Morrow's honeysuckle	20	Yes	FACU
3. *Rhamnus cathartica* / European buckthorn	10	No	FAC
4.			
5.			
6.			
7.			
	70	= Total Cover	

Herb Stratum (Plot size: 5-ft)			
1. *Toxicodendron radicans* / Eastern poison ivy	25	Yes	FAC
2. *Persicaria virginiana* / Jumpseed	10	Yes	FAC
3. *Amphicarpaea bracteata* / American hog-peanut	8	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	43	= Total Cover	

Woody Vine Stratum (Plot size: 30-ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	63	x 3 =	189
FACU species	50	x 4 =	200
UPL species	40	x 5 =	200
Column Totals:	153 (A)		589 (B)

Prevalence Index = B/A = 3.85

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Explain alternative procedures here or in a separate report.)

SOIL

Sampling Point: 05-W005-2U

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 4/3	100					Silt Loam	
5-14	10YR 5/3	100					Silt Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R,MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Very gravelly. Gravel refusal at 14 inches.

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Oak Orchard | City/County: Onondaga County | Sampling Date: 07/31/2024
Applicant/Owner: Onondaga County | State: New York | Sampling Point: 05-W005-2W
Investigator(s): JK, MC | Section, Township, Range: Town of Clay
Landform (hillslope, terrace, etc): Riverine | Local relief (concave, convex, none): concave | Slope (%): 0-8
Subregion (LRR or MLRA): LRR L | Lat: 43.2033305 | Long: -76.21240616666667 | Datum: WGS 1984
Soil Map Unit Name: Saprists and Fluvaquents, ponded | NWI classification: PAB/UBHh
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** Yes X No ____
Hydric Soil Present?	Yes X	No ____	If yes, optional Wetland Site ID: 05-W005-2W PEM
Wetland Hydrology Present?	Yes X	No ____	

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X No ____	Depth (inches):	4+
Water Table Present?	Yes X No ____	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes X No ____	Depth (inches):	0

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants. Sampling Point: 05-W005-2W

Tree Stratum (Plot size: 30-ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15-ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	0	= Total Cover	
Herb Stratum (Plot size: 5-ft)			
1. *Peltandra virginica* / Green arrow arum, Tuckahoe	20	Yes	OBL
2. *Typha angustifolia* / Narrow leaf cattail, Narrow-leaved cattai	15	Yes	OBL
3. *Onoclea sensibilis* / Sensitive fern	10	Yes	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	45	= Total Cover	
Woody Vine Stratum (Plot size: 30-ft)			
1.			
2.			
3.			
4.			
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	35	x 1 =	35
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	45 (A)		55 (B)

Prevalence Index = B/A = 1.22

Hydrophytic Vegetation Indicators:

- X 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Explain alternative procedures here or in a separate report.)

SOIL

Sampling Point: 05-W005-2W

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1	90	5YR 4/6	10	C	PL,M	Clay Loam	
8-18	7.5YR 5/1	100					Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R,MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

Oak Orchard - OHWM 1.1

Project	24187 - Oak Orchard
ID	470604
Survey Date	07/30/2024
User	Megan Cammett
General Information	
Sampling Point	05-ST001
Project	Oak Orchard
Date	07/30/2024
Time	08:53 AM
Location	
Latitude	43.1982327
Longitude	-76.2076213
Investigator(s)	JK, MC
Step 1: Site overview from remote and online resources	
Check boxes for online resources used to evaluate site	LiDAR, climatic data, geologic maps, land use maps, other, satellite imagery, topographic maps
Other	Natural Resource Mapper
Describe land use and flow conditions from online resources.	Stream flows through forested area directly adjacent to wastewater treatment plant. Forested area is bordered by fields with solar panels on south side.
Step 2: Site conditions during field assessment	
Describe Site Condition	Ephemeral stream flows southwest through forested area. No flow at time of delineation. Developed bank present at the lower stretch with a change in vegetation.
Step 3 Indicators	
Geomorphic Indicators	
Break in slope	Present
Break in Slope Indicator Location	x
On the bank	Present
On the bank Indicator Location	x
Undercut Bank	
Valley Bottom	
Other break in slope description	
Shelving	
Channel bar	

made with Wildnote

lnstream bedforms and other bedload transport evidence	
Secondary channels	

Sediment Indicators	
Soil development	
Changes in character of soil	
Mudcracks	
Changes in particle-sized distribution	

Vegetation Indicators	
Change in vegetation type and/or density	Present
Vegetation Indicator Location	x
Vegetation Change From	vegetation absent
Vegetation Change To	forbs
Vegetation matted down and/or bent:	
Exposed roots below intact soil layer:	

Ancillary Indicators	
Wracking/presence of organic litter	
Presence of large wood	
Leaf litter disturbed or washed away	
Water staining	
Weathered clasts or bedrock	
Other observed indicators?	No

Step 4: Additional Information	
Is additional information needed to support this determination?	No

Step 5: Rationale	
Describe rationale for location of OHWM	The OHWM indicators of break in slope on the bank and change in vegetation were persistent throughout the entire delineated reach of stream.
Additional observations or notes	

Photos	
Photo log attached?	Yes
Photos	



Change in vegetation type and break in slope.

Oak Orchard - OHWM 1.1

Project	24187 - Oak Orchard
ID	470608
Survey Date	07/30/2024
User	Megan Cammett
General Information	
Sampling Point	05-ST002
Project	Oak Orchard
Date	07/30/2024
Time	12:04 PM
Location	
Latitude	43.2049395
Longitude	-76.20786683333333
Datum	NAD83/2011
Investigator(s)	JK, MC
Step 1: Site overview from remote and online resources	
Check boxes for online resources used to evaluate site	LiDAR, climatic data, geologic maps, land use maps, other, satellite imagery, topographic maps
Other	Natural Resource Mapper
Describe land use and flow conditions from online resources.	Stream flows through shrubland bordered by residential housing and wastewater treatment plant.
Step 2: Site conditions during field assessment	
Describe Site Condition	Intermittent drainage stream flows west from offsite through successional shrubland and drains wetland. No flow at time of delineation. Bank and bed well developed.
Step 3 Indicators	
Geomorphic Indicators	
Break in slope	Present
Break in Slope Indicator Location	x
On the bank	Present
On the bank Indicator Location	x
Undercut Bank	
Valley Bottom	
Other break in slope description	
Shelving	
Channel bar	
Instream bedforms and other bedload transport evidence	

Secondary channels	

Sediment Indicators	
Soil development	
Changes in character of soil	
Mudcracks	
Changes in particle-sized distribution	

Vegetation Indicators	
Change in vegetation type and/or density	Present
Vegetation Indicator Location	x
Vegetation Change From	vegetation absent
Vegetation Change To	forbs
Vegetation matted down and/or bent:	
Exposed roots below intact soil layer:	

Ancillary Indicators	
Wracking/presence of organic litter	
Presence of large wood	Present
Presence of Large Wood Indicator Location	x
Leaf litter disturbed or washed away	
Water staining	
Weathered clasts or bedrock	
Other observed indicators?	No

Step 4: Additional Information	
Is additional information needed to support this determination?	No

Step 5: Rationale	
Describe rationale for location of OHWM	The OHWM indicators of brake in slope on the bank and change in vegetation type were persistent throughout the entire delineated reach of stream. The indicator of presence of large wood was observed but not persistent.
Additional observations or notes	

Photos	
Photo log attached?	Yes
Photos	







Break in slope on the bank and change in vegetation type.



Presence of large wood.

Oak Orchard - OHWM 1.1

Project	24187 - Oak Orchard
ID	471569
Survey Date	08/01/2024
User	Megan Cammett
General Information	
Sampling Point	05-ST003
Project	Oak Orchard
Date	07/31/2024
Time	08:27 AM
Location	
Latitude	43.1980791
Longitude	-76.2115564
Investigator(s)	JK, MC
Step 1: Site overview from remote and online resources	
Check boxes for online resources used to evaluate site	LiDAR, climatic data, geologic maps, land use maps, other, satellite imagery, topographic maps
Other	Natural Resource Mapper
Describe land use and flow conditions from online resources.	Surrounded by forested area bordered by developed land of wastewater treatment plant. Northeast of NWI mapped wetland with classification PFO1/SS1E, NYSDEC Class C mapped stream, and NYSDEC mapped wetland BRE-17.
Step 2: Site conditions during field assessment	
Describe Site Condition	Intermittent stream flows southwest through forested wetland. Fed from culvert with outflow from wastewater treatment plant. Light base flow at time of delineation. Well developed bank and substrate bottom present.
Step 3 Indicators	
Geomorphic Indicators	
Break in slope	Present
Break in Slope Indicator Location	x
On the bank	Present
On the bank Indicator Location	x
Undercut Bank	
Valley Bottom	
Other break in slope description	
Shelving	
Channel bar	
Instream bedforms and other bedload transport evidence	

Secondary channels	

Sediment Indicators	
Soil development	
Changes in character of soil	
Mudcracks	
Changes in particle-sized distribution	

Vegetation Indicators	
Change in vegetation type and/or density	Present
Vegetation Indicator Location	x
Vegetation Change From	vegetation absent
Vegetation Change To	forbs
Vegetation matted down and/or bent:	
Exposed roots below intact soil layer:	

Ancillary Indicators	
Wracking/presence of organic litter	
Presence of large wood	Present
Presence of Large Wood Indicator Location	x
Leaf litter disturbed or washed away	
Water staining	
Weathered clasts or bedrock	
Other observed indicators?	No

Step 4: Additional Information	
Is additional information needed to support this determination?	No

Step 5: Rationale	
Describe rationale for location of OHWM	The OHWM indicators of break in slope on the bank and change in vegetation type were persistent throughout the entire delineated reach of stream. The indicator of presence of large wood was noted but not persistent.
Additional observations or notes	In addition to forbs, vegetation also changed to woody shrubs.

Photos	
Photo log attached?	Yes
Photos	



Presence of large wood.



Change in vegetation type and break in slope on the bank.

Oak Orchard - OHWM 1.1

Project	24187 - Oak Orchard
ID	471572
Survey Date	08/01/2024
User	Megan Cammett
General Information	
Sampling Point	05-ST004
Project	Oak Orchard
Date	07/31/2024
Time	04:17 PM
Location	
Latitude	43.20472
Longitude	-76.213823
Investigator(s)	JK, MC
Step 1: Site overview from remote and online resources	
Check boxes for online resources used to evaluate site	LiDAR, climatic data, geologic maps, land use maps, other, satellite imagery, topographic maps
Other	Natural Resource Mapper
Describe land use and flow conditions from online resources.	Stream corresponds with NYSDEC Class C mapped stream. Also flows within NYSDEC mapped wetland BRE-17 and an NWI mapped wetland with classification PAB/UBHh. Stream flows through forested area that is bordered by an agriculture field and wastewater treatment plant.
Step 2: Site conditions during field assessment	
Describe Site Condition	Perennial stream flows north bordered by a forested and emergent wetland complex on both sides. Outflows into 05-ST005 via under a road bridge. Strong base flow rate during time of delineation. Stream has a well developed bank and distinct change in vegetation. Downhill from wastewater treatment plant.
Step 3 Indicators	
Geomorphic Indicators	
Break in slope	Present
Break in Slope Indicator Location	x
On the bank	Present
On the bank Indicator Location	x
Undercut Bank	
Valley Bottom	
Other break in slope description	
Shelving	
Channel bar	
Instream bedforms and	

other bedload transport evidence	
Secondary channels	

Sediment Indicators	
Soil development	
Changes in character of soil	
Mudcracks	
Changes in particle-sized distribution	

Vegetation Indicators	
Change in vegetation type and/or density	Present
Vegetation Indicator Location	x
Vegetation Change From	vegetation absent
Vegetation Change To	forbs
Vegetation matted down and/or bent:	
Exposed roots below intact soil layer:	

Ancillary Indicators	
Wracking/presence of organic litter	
Presence of large wood	
Leaf litter disturbed or washed away	
Water staining	
Weathered clasts or bedrock	
Other observed indicators?	Yes
Describe	Aquatic vegetation was observed during time of delineation.

Step 4: Additional Information	
Is additional information needed to support this determination?	No

Step 5: Rationale	
Describe rationale for location of OHWM	The OHWM indicators of break in slope on the bank and change in vegetation type were persistent throughout the entire delineated reach of stream.
Additional observations or notes	In addition to forbs, vegetation also changes to woody shrubs and deciduous trees.

Photos	
Photo log attached?	Yes
Photos	



Break in slope on the bank.



Change in vegetation type.

Oak Orchard - OHWM 1.1

Project	24187 - Oak Orchard
ID	471575
Survey Date	08/01/2024
User	Megan Cammett
General Information	
Sampling Point	05-ST005
Project	Oak Orchard
Date	07/31/2024
Time	11:19 AM
Location	
Latitude	43.205311
Longitude	-76.213826
Investigator(s)	JK, MC
Step 1: Site overview from remote and online resources	
Check boxes for online resources used to evaluate site	LiDAR, climatic data, geologic maps, land use maps, other, satellite imagery, topographic maps
Other	Natural Resource Mapper
Describe land use and flow conditions from online resources.	Stream corresponds with NYSDEC Class B mapped stream and NWI mapped waterbody with classification R2UBH. Bordered by deciduous forests, residential neighborhoods, and paved roads with multiple bridge overpasses. Outflows into Oneida Lake.
Step 2: Site conditions during field assessment	
Describe Site Condition	Perennial stream flows northwest through developed, successional scrub shrub, and forested areas. Receives outflow from 05-ST004 via under road bridge. Strong base flow present during time of delineation. Well developed bank and distinct change in vegetation present.
Step 3 Indicators	
Geomorphic Indicators	
Break in slope	Present
Break in Slope Indicator Location	x
On the bank	Present
On the bank Indicator Location	x
Undercut Bank	
Valley Bottom	
Other break in slope description	
Shelving	
Channel bar	
Instream bedforms and other bedload transport	

evidence	
Secondary channels	

Sediment Indicators	
Soil development	
Changes in character of soil	
Mudcracks	
Changes in particle-sized distribution	

Vegetation Indicators	
Change in vegetation type and/or density	Present
Vegetation Indicator Location	x
Vegetation Change From	vegetation absent
Vegetation Change To	deciduous trees
Vegetation matted down and/or bent:	
Exposed roots below intact soil layer:	

Ancillary Indicators	
Wracking/presence of organic litter	
Presence of large wood	
Leaf litter disturbed or washed away	
Water staining	
Weathered clasts or bedrock	
Other observed indicators?	No

Step 4: Additional Information	
Is additional information needed to support this determination?	No

Step 5: Rationale	
Describe rationale for location of OHWM	The OHWM indicators of break in slope on the bank and change in vegetation type were persistent throughout the entire delineated reach of stream.
Additional observations or notes	In addition to deciduous trees, vegetation also changes to woody shrubs and forbs.

Photos	
Photo log attached?	Yes
Photos	



Change in vegetation type.



Break in slope on the bank.



Appendix C

Photo Documentation



Photo 1
Representative photograph of a wastewater treatment lagoon.



Photo 2
Representative photograph of the palustrine forested (PFO) portion of wetland 05-W001.



Photo 3
Photograph of drop culvert within wetland 05-W001.



Photo 4
Photograph of wetland 05-W001 beyond the Study Area. Wetland extends approximately 40 feet into upland forest.



Photo 5
Representative photograph of the palustrine emergent (PEM) portion of wetland 05-W001.



Photo 6
Representative photograph of the upland area adjacent to the PFO portion of wetland 05-W001.



Photo 7
Representative photograph of the upland area adjacent to the PEM portion of wetland 05-W001.



Photo 8
Representative photograph of palustrine emergent (PEM) wetland 05-W002.



Photo 9
Representative photograph of the upland area adjacent to wetland 05-W002.



Photo 10
Representative photograph of palustrine scrub-shrub (PSS) wetland 05-W003.



Photo 11
Representative photograph of the upland area adjacent to wetland 05-W003.



Photo 12
Representative photograph of palustrine forested (PFO) wetland 05-W004.



Photo 13
Representative photograph of the upland area adjacent to wetland 05-W004.



Photo 14
Representative photograph of the palustrine forested (PFO) portion of wetland 05-W005.



Photo 15
Representative photograph of the palustrine emergent (PEM) portion of wetland 05-W005.



Photo 16
Representative photograph of the upland area adjacent to the PFO portion of wetland 05-W005.



Photo 17
Representative photograph of the upland area adjacent to the PFO portion of wetland 05-W005.



Photo 18
Representative photograph of ephemeral stream 05-ST001.



Photo 19
Representative photograph of intermittent stream 05-ST002.



Photo 20
Representative photograph of intermittent stream 05-ST003.



Photo 21
Representative photograph of Mud Creek, perennial stream 05-ST004.



Photo 22
Representative photograph of the Oneida River, perennial stream 05-ST005.

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS BUFFALO DISTRICT
478 MAIN STREET
BUFFALO, NY 14202-3278

August 4, 2025

Regulatory Branch

SUBJECT: Approved Jurisdictional Determination, Preliminary Jurisdictional Determination, and Delineation Verification for Department of the Army Processing No. LRB-2024-01037

Odean Dyer
Onondaga County Department of Water
Environment Protection
650 Hiawatha Boulevard West
Syracuse, New York 13204

Dear Mr. Dyer:

I have reviewed your request for an approved jurisdictional determination (JD) and a preliminary JD for the 76.7-acre area located at the Oak Orchard Wastewater Treatment Plant, at 4300 Oak Orchard Road, in the Town of Clay, Onondaga County, New York, and a preliminary JD for the proposed wastewater conveyance right-of-way located from the Plant to the proposed Micron facility off of Caughdenoy Road in the Town of Clay, Onondaga County, New York.

Please note that this letter contains three jurisdictional determinations. The approved JD (AJD) applies to the entire 76.7-acre site with the exception of Wetland 05-W004-PFO. The two preliminary JDs apply only to Wetland 05-W004-PFO as well as the proposed wastewater conveyance right-of-way. Please refer to the documentation below and attached for the terms, conditions, and appeal rights for each type of JD.

Approved JD

I have determined that the location and extent of all aquatic resources shown on the attached map(s) are accurately represented.

Enclosed is an approved JD which verifies the limits of waters of the U.S as depicted on Sheets 2-9 of 9, except for Wetland 05-W004-PFO which is being reviewed under a PJD. This approved JD will remain valid for a period of five (5) years from the date of this correspondence unless new information warrants revision of the approved JD before the expiration date. At the end of this period, a new aquatic resource delineation will be required to support any request for a new JD.

I have determined that the following aquatic resources are waters of the U.S. regulated under Section 404 of the Clean Water Act as noted on the attached Approved Jurisdictional Determination Form(s): Streams 05-ST003, 05-ST004, 05-ST005 and Wetlands 05-W005-PEM

Regulatory Branch

SUBJECT: Approved Jurisdictional Determination, Preliminary Jurisdictional Determination, and Delineation Verification for Department of the Army Processing No. LRB-2024-01037

and 05-W005-PFO. Department of the Army authorization is required if you propose a discharge of dredged or fill material in these waters of the U.S.

In addition, the following aquatic resources are also navigable waters of the U.S., regulated under Section 10 of the Rivers and Harbors Act of 1899 as noted on the attached Approved Jurisdictional Determination Form and as depicted on the attached map(s): Stream 05-ST005. Department of the Army authorization is required if you propose work or installation of structures in, over, under this navigable water of the U.S.

I have determined that the following aquatic resources are not waters of the U.S. as noted on the attached Approved Jurisdictional Determination Form: Northern Lagoon, Southern Lagoon, Streams 05-ST001, 05-ST002, and Wetlands 05-W001-PEM, 05-W001-PFO, 05-W002-PEM, 05-W003-PSS and 05-W006-PFO. Therefore, these aquatic resources are not regulated under Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act of 1899. Department of the Army authorization is not required if you propose work, installation of structures, or a discharge of dredged or fill material in these aquatic resources.

If you object to the determination for the AJD you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find Request for Appeal (RFA) form. If you request to appeal the above AJD, you must submit a completed RFA form within 60 days of the date on this letter to the Great Lakes/Ohio River Division Office at the following address:

Suzanne Chubb
Regulatory Program Manager
US Army Corps of Engineers
Great Lakes and Ohio River Division
550 Main Street, Room 10780
Cincinnati, Ohio 45202-3222
Phone: 513-218-1243
e-mail: Suzanne.l.chubb@usace.army.mil

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 C.F.R. part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by **October 2, 2025**.

It is not necessary to submit an RFA to the Division office if you do not object to the AJD determination in this letter.

Preliminary JD

Regulatory Branch

SUBJECT: Approved Jurisdictional Determination, Preliminary Jurisdictional Determination, and Delineation Verification for Department of the Army Processing No. LRB-2024-01037

I have determined that the location and extent of the aquatic resource boundaries shown on the attached map(s) for wetland 05-W004-PFO and the wastewater conveyance right-of-way are accurately represented. Please note that this is a preliminary JD. Preliminary JDs are non-binding written indications that there may be waters of the United States (WOUS) on your parcel and approximate locations of those waters. Preliminary JDs are advisory in nature and may not be appealed.

Pursuant to Regulatory Guidance Letter 16-01, any permit application made in reliance on this preliminary JD will be evaluated as though all aquatic resources are regulated by the Corps. Further, all aquatic resources will be used for purposes of assessing the extent of project related impacts and compensatory mitigation. If you require a definitive response regarding Department of the Army jurisdiction for any or all of the aquatic resources identified on the submitted drawings, you may request an approved JD from this office. If an approved JD is requested, please be aware that this is often a lengthy process and we may require the submittal of additional information.

I have enclosed the preliminary JD Forms with this letter. The forms and attached table identify the extent and specific terms and conditions of the preliminary JDs. Please sign and return a copy of the forms to my attention. If you do not respond within 15 days, I will presume concurrence and no additional follow-up is necessary.

In accordance with Regulatory Guidance Letter 05-02, “Preliminary jurisdictional determinations are not definitive determinations of areas within regulatory jurisdiction and do not have expirations dates.” However, I strongly recommend that the boundaries of all aquatic resources within the review area be re-evaluated by a qualified wetland biologist after five years of the date of this letter. This will ensure that any changes are appropriately identified, and you do not inadvertently incur a violation of Federal law while constructing your project or working within the review area.

Further, the delineation and all determinations included herein have been conducted to identify the location and extent of the aquatic resource boundaries and/or the jurisdictional status of aquatic resources for purposes of the Clean Water Act for the review areas identified in this request. This delineation and/or jurisdictional determination may not be valid for the Wetland Conservation Provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should discuss the applicability of a certified wetland determination with the local USDA service center, prior to starting work.

Regulatory Branch

SUBJECT: Approved Jurisdictional Determination, Preliminary Jurisdictional Determination, and Delineation Verification for Department of the Army Processing No. LRB-2024-01037

Questions pertaining to this matter should be directed to me at (315) 255-8090 X 8077 by writing to the following address: U.S. Army Corps of Engineers Regulatory Branch 7413 County House Road, Auburn, New York 13021 or by e-mail at: Margaret.A.Crawford@usace.army.mil

Sincerely,

Margaret Crawford

Margaret Crawford
Biologist

Enclosures

U.S. Army Corps of Engineers (USACE)

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

For use of this form, see Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act of 1899, and Section 103 of the Marine Protection, Research, and Sanctuaries Act; the proponent agency is CECW-COR.

Form Approved –
OMB No. 0710-0003
Expires 2027-10-31

DATA REQUIRED BY THE PRIVACY ACT OF 1974

Authority	The authorities for requesting this information are Sections 9, 10, 13, and 14, Rivers and Harbors Act of March 3, 1899; Section 404, Clean Water Act; and Section 103 Marine Protection Research and Sanctuaries Act of 1972.
Principal Purpose	This information serves as notification to affected parties regarding the USACE administrative appeal options and process, as well as to facilitate requests for appeal of USACE decisions with which they disagree.
Routine Uses	Routine uses will include: (a) To serve as notification to affected parties of the Corps administrative appeal options and process and to facilitate requests for appeal of Corps decisions with which they disagree. (b) Records may be referred to the Department of Justice for possible criminal prosecution. (c) Records may be referred to other Federal, State, and local agencies for evaluation and enforcement purposes.
Disclosure	Disclosure of this information is voluntary on your part. However, failure of individual to provide requested information could result in inability to determine all pertinent information regarding a Department of the Army permit matter.

The Agency Disclosure Notice (ADN)

The Public reporting burden for this collection of information, 0710-0003, is estimated to average 1 hour per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PURPOSE: This form is used to facilitate the initiation of the administrative appeals process. The appeals process allows an affected party to pursue an administrative appeal of certain Corps of Engineers decisions with which they disagree.

Upon release, this form will also be available on the Corps website https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/

Applicant: Onondaga County Department of Water Environment Protection	File Number: LRB-2024-01037	Date: 8/4/2025

Documents Attached (*select all that apply*):		Form Reference Section:
☐	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
☐	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
☐	PERMIT DENIAL WITHOUT PREJUDICE	C
☐	PERMIT DENIAL WITH PREJUDICE	D
☒	APPROVED JURISDICTIONAL DETERMINATION	E
☒	PRELIMINARY JURISDICTIONAL DETERMINATION	F

SECTION I

The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/appeals/ or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C. PERMIT DENIAL WITHOUT PREJUDICE: Not appealable

You received a permit denial without prejudice because a required Federal, state, and/or local authorization and/or certification has been denied for activities which also require a Department of the Army permit before final action has been taken on the Army permit application. The permit denial without prejudice is not appealable. There is no prejudice to the right of the applicant to reinstate processing of the Army permit application if subsequent approval is received from the appropriate Federal, state, and/or local agency on a previously denied authorization and/or certification.

D: PERMIT DENIAL WITH PREJUDICE: You may appeal the permit denial

You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information for reconsideration

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety and waive all rights to appeal the approved JD.

- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

- RECONSIDERATION: You may request that the district engineer reconsider the approved JD by submitting new information or data to the district engineer within 60 days of the date of this notice. The district will determine whether the information submitted qualifies as new information or data that justifies reconsideration of the approved JD. A reconsideration request does not initiate the appeal process. You may submit a request for appeal to the division engineer to preserve your appeal rights while the district is determining whether the submitted information qualifies for a reconsideration.

F: PRELIMINARY JURISDICTIONAL DETERMINATION: Not appealable

You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also, you may provide new information for further consideration by the Corps to reevaluate the JD.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:	
If you have questions regarding this decision you may contact:	If you have questions regarding the appeal process, or to submit your request for appeal, you may contact:
Name: Margaret Crawford	Name: Suzanne Chubb, Regulatory Program Manager
Street Address, City, State: U.S. Army Corps of Engineer, Buffalo District 478 Main Street Buffalo, New York 14202	Street Address, City, State: USACE, Great Lakes & Ohio River Division 550 Main Street, Room 10-780, CELRD-PD-O Cincinnati, Ohio 45202-3222
Phone: 315-835-0058	Phone: (513) 218-1243
Email: Margaret.a.crawford@usace.army.mil	Email: suzanne.l.chubb@usace.army.mil

SECTION II – REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. Use additional pages as necessary. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.	
RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15-day notice of any site investigation and will have the opportunity to participate in all site investigations.	
Email address of appellant and/or agent	Telephone number
Signature of appellant or agent	Date

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, BUFFALO DISTRICT
478 MAIN STREET
BUFFALO, NEW YORK 14202-3278

CELRB-ORR-NA 4 August 2025

MEMORANDUM FOR RECORD

SUBJECT: US Army Corps of Engineers (Corps) Approved Jurisdictional Determination in accordance with the "Revised Definition of 'Waters of the United States'"; (88 FR 3004 (January 18, 2023) as amended by the "Revised Definition of 'Waters of the United States'; Conforming" (8 September 2023) ,[1] Corps File No.: LRB-2024-01037 (MFR 1 of 1)[2]

BACKGROUND. An Approved Jurisdictional Determination (AJD) is a Corps document stating the presence or absence of waters of the United States on a parcel or a written statement and map identifying the limits of waters of the United States on a parcel. AJDs are clearly designated appealable actions and will include a basis of JD with the document.[3] AJDs are case-specific and are typically made in response to a request. AJDs are valid for a period of five years unless new information warrants revision of the determination before the expiration date or a District Engineer has identified, after public notice and comment, that specific geographic areas with rapidly changing environmental conditions merit re-verification on a more frequent basis.[4]

On January 18, 2023, the Environmental Protection Agency (EPA) and the Department of the Army ("the agencies") published the "Revised Definition of 'Waters of the United States,'" 88 FR 3004 (January 18, 2023) ("2023 Rule"). On September 8, 2023, the agencies published the "Revised Definition of 'Waters of the United States'; Conforming", which amended the 2023 Rule to conform to the 2023 Supreme Court decision in *Sackett v. EPA*, 598 U.S., 143 S. Ct. 1322 (2023) ("*Sackett*").

This Memorandum for Record (MFR) constitutes the basis of jurisdiction for a Corps AJD as defined in 33 CFR §331.2. For the purposes of this AJD, we have relied on Section 10 of the Rivers and Harbors Act of 1899 (RHA),[5] the 2023 Rule as amended,

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[1] While the Revised Definition of "Waters of the United States"; Conforming had no effect on some categories of waters covered under the CWA, and no effect on any waters covered under RHA, all categories are included in this Memorandum for Record for efficiency.

[2] When documenting aquatic resources within the review area that are jurisdictional under the Clean Water Act (CWA), use an additional MFR and group the aquatic resources on each MFR based on the TNW, the territorial seas, or interstate water that they are connected to. Be sure to provide an identifier to indicate when there are multiple MFRs associated with a single AJD request (i.e., number them 1, 2, 3, etc.).

[3] 33 CFR 331.2.

[4] Regulatory Guidance Letter 05-02.

[5] USACE has authority under both Section 9 and Section 10 of the Rivers and Harbors Act of 1899 but for convenience, in this MFR, jurisdiction under RHA will be referred to as Section 10.

as well as other applicable guidance, relevant case law, and longstanding practice in evaluating jurisdiction.

1. SUMMARY OF CONCLUSIONS.

    a. Provide a list of each individual feature within the review area and the jurisdictional status of each one (i.e., identify whether each feature is/is not a water of the United States and/or a navigable water of the United States).

Waters Name	Latitude	Longitude	Waters Size	Type Of Aquatic Resource	Geographic Authority
Northern lagoon	43.20198	-76.21086	2.9 ACRES	B1-EXCL-WTS	None
Southern lagoon	43.1999	-76.21094	3.8 ACRES	B1-EXCL-WTS	None
Stream 05-ST001	43.1984	-76.20761	167 FEET	NON-WOTUS-TRIB.NEGATIVE.A3	None
Stream 05-ST002	43.20481	-76.2077	94 FEET	NON-WOTUS-TRIB.NEGATIVE.A3	None
Stream 05-ST003	43.19796	-76.21154	49 FEET	A3.TRIB-404	Section 404
Stream 05-ST004	43.19998	-76.21212	2330 FEET	A3.TRIB-404	Section 404
Stream 05-ST005	43.20503	-76.21402	197 FEET	A1-1.TNW-404.10	Section 10/404
Wetland 05-W001-PEM	43.20109	-76.20806	.13 ACRES	NON-WOTUS-WET.NEGATIVE.A4	None
Wetland 05-W001-PFO	43.20037	-76.20928	1.87 ACRES	NON-WOTUS-WET.NEGATIVE.A4	None
Wetland 05-W002-PEM	43.19825	-76.20803	.02 ACRES	NON-WOTUS-WET.NEGATIVE.A4	None
Wetland 05-W003-PSS	43.20416	-76.20836	.79 ACRES	NON-WOTUS-WET.NEGATIVE.A4	None
Wetland 05-W005-PEM	43.20083	-76.21169	1.24 ACRES	A4-2.ADJ.WET.A2&A3-404	Section 404
Wetland 05-W005-PFO	43.19862	-76.21243	.92 ACRES	A4-2.ADJ.WET.A2&A3-404	Section 404
Wetland 05-W006-PFO	43.20021	-76.2088	.05 ACRES	NON-WOTUS-WET.NEGATIVE.A4	None

2. REFERENCES.

    a. "Revised Definition of 'Waters of the United States,'" 88 FR 3004 (January 18, 2023) ("2023 Rule")

    b. "Revised Definition of 'Waters of the United States'; Conforming" 88 FR 61964 (September 8, 2023)

    c. *Sackett v. EPA*, 598 U.S. 651, 143 S. Ct. 1322 (2023)

3. REVIEW AREA. *This MFR is for the 76.7-acre study area including the Oak Orchard Wastewater Treatment Plant, located at latitude 43.198714, longitude -76.165076, at 4300 Oak Orchard Road, in the Town of Clay, Onondaga County, New York. This MFR is specific to the following features: Northern lagoon, Southern lagoon, Streams 05-ST001, 05-ST002, 05-ST003, 05-ST004, 05-ST005, and Wetlands 05-W001-PEM, 05-W001-PFO, 05-W002-PEM, 05-W003-PSS, 05-W005-PEM, 05-*

W005-PFO and 05-W006-PFO. Wetland 05-W004-PFO is being assessed via Preliminary Jurisdictional Determination (PJD).

4. NEAREST TRADITIONAL NAVIGABLE WATER (TNW), THE TERRITORIAL SEAS, OR INTERSTATE WATER TO WHICH THE AQUATIC RESOURCE IS CONNECTED. *Oneida River is within the AJD Study Area.*[6]

5. FLOWPATH FROM THE SUBJECT AQUATIC RESOURCES TO A TNW, THE TERRITORIAL SEAS, OR INTERSTATE WATER. *The Oneida River, a traditionally navigable water and it's tributary, Mud Creek, a relatively permanent water are both located on the subject parcel.*

6. SECTION 10 JURISDICTIONAL WATERS[7]: Describe aquatic resources or other features within the review area determined to be jurisdictional in accordance with Section 10 of the Rivers and Harbors Act of 1899. Include the size of each aquatic resource or other feature within the review area and how it was determined to be jurisdictional in accordance with Section 10.[8] *The Oneida River, identified as Stream 05-ST005, is located within the study area (197 linear feet). The Oneida River is a traditionally navigable water, due to its regular role transporting commerce as part of the NYS Barge Canal system.*

7. SECTION 404 JURISDICTIONAL WATERS: Describe the aquatic resources within the review area that were found to meet the definition of waters of the United States in accordance with the 2023 Rule as amended, consistent with the Supreme Court's decision in *Sackett*. List each aquatic resource separately, by name, consistent with the naming convention used in section 1, above. Include a rationale for each aquatic resource, supporting that the aquatic resource meets the relevant category of "waters of the United States" in the 2023 Rule as amended. The rationale should also include a written description of, or reference to a map in the administrative record that shows, the lateral limits of jurisdiction for each aquatic resource,

[6] This MFR should not be used to complete a new stand-alone TNW determination. A stand-alone TNW determination for a water that is not subject to Section 9 or 10 of the Rivers and Harbors Act of 1899 (RHA) is completed independently of a request for an AJD. A stand-alone TNW determination is conducted for a specific segment of river or stream or other type of waterbody, such as a lake, where upstream or downstream limits or lake borders are established.
[7] 33 CFR 329.9(a) A waterbody which was navigable in its natural or improved state, or which was susceptible of reasonable improvement (as discussed in § 329.8(b) of this part) retains its character as "navigable in law" even though it is not presently used for commerce, or is presently incapable of such use because of changed conditions or the presence of obstructions.
[8] This MFR is not to be used to make a report of findings to support a determination that the water is a navigable water of the United States. The district must follow the procedures outlined in 33 CFR part 329.14 to make a determination that water is a navigable water of the United States subject to Section 10 of the RHA.

including how that limit was determined, and incorporate relevant references used. Include the size of each aquatic resource in acres or linear feet and attach and reference related figures as needed.

a. Traditional Navigable Waters (TNWs) (a)(1)(i):

Stream 05-ST005	197 FEET	A1-1.TNW-404.10	Section 10/404

<u>Stream 05-ST005</u> is a perennial water also known as the Oneida River, part of the NYS Barge Canal system. The Oneida River is a traditionally navigable water, and a Section 10 navigable waterway, due to its regular role transporting commerce as part of the NYS Barge Canal system. The river is noted on the LRB Section 10 list posted on the website.

b. The Territorial Seas (a)(1)(ii): N/A

c. Interstate Waters (a)(1)(iii): N/A

d. Impoundments (a)(2): N/A

e. Tributaries (a)(3):

Stream 05-ST003	49 FEET	A3.TRIB-404	Section 404
Stream 05-ST004	2330 FEET	A3.TRIB-404	Section 404

<u>Stream 05-ST003</u> is 49 linear feet long and 3 feet wide. This stream is a first order stream (Strahler) starting on site and ending at its confluence with 05-ST004. According to the delineation, Stream 05-ST003 was characterized by well-developed banks, a gentle gradient, and a substrate consisting of cobble, gravel, sand, silt, and clay. As noted in the delineation report indicators used to define the OHWM included a break in slope and a change in vegetation. The delineation characterized the stream as intermittent due to the presence of water in the channel and its source at a culvert outlet from stormwater collection within the wastewater treatment plant in addition to precipitation. The delineation was conducted in July 2024, at a time of a wetter than normal condition (incipient wetness) in the dry season according to the Antecedent Precipitation Tool (APT). The stream is not identified on other in-house resources including the NHD, NWI, or streamstats. It can be seen on the hillshade 2 foot contour map dropping at least 10 feet in elevation. Based upon the delineation report, as well as aerial imagery, Stream 05-ST003 flows directly into Stream 05-ST004. Stream 05-ST003 is a relatively permanent water, connecting to and contributing flow to a downstream TNW (Oneida River), and is therefore an (a)(3) tributary and a regulated water of the US.

Stream 05-ST004 is 2,330 linear feet within the study area. Stream 05-ST004 is identified as a perennial stream (Mud Creek) on the USGS topographic map, NHD maps, and water is present within the stream in all aerial photographs examined. It flows into the navigable Stream 05-ST005 (Oneida River) within the study area. The limits of OHW of the stream were identified based upon aerial imagery, as this stream is a wide well-developed channel with abutting wetlands (Wetland 05-W005). The delineated reach included 2,330 linear feet along the western boundary of the Study Area and was bordered by a forested and emergent wetland complex on both sides of the stream. Portions of this stream were inaccessible at the time of delineation due to the deep water level in the adjacent wetlands. Stream 05-ST004 is a third order stream (Strahler). Stream 05-ST004 is an (a)(3) tributary and a regulated water of the US.

f. Adjacent Wetlands (a)(4):

Wetland 05-W005-PEM	1.24 ACRES	A4-2.ADJ.WET.A2&A3-404	Section 404
Wetland 05-W005-PFO	.92 ACRES	A4-2.ADJ.WET.A2&A3-404	Section 404

Wetland 05-W005-PEM (1.24 acres) and PFO (0.92 acres) are one wetland complex (2.16 acres) that physically abuts Stream 05-ST004 (Mud Creek) which is an (a)(3) tributary to a TNW. The stream flows through the wetland system based upon the in-house resources (NYSDEC informational wetland maps, NWI, & aerial photos). Since the wetland abuts a Relatively Permanent Water and has a continuous surface connection to a TNW, it has been determined that it is an adjacent wetland and a regulated (a)(4) wetland.

g. Additional Waters (a)(5): N/A

8. NON-JURISDICTIONAL AQUATIC RESOURCES AND FEATURES

a. Describe aquatic resources and other features within the review area identified in the 2023 Rule as amended as not "waters of the United States" even where they otherwise meet the terms of paragraphs (a)(2) through (5). Include the type of excluded aquatic resource or feature, the size of the aquatic resource or feature within the review area and describe how it was determined to meet one of the exclusions listed in 33 CFR 328.3(b).[9]

Northern lagoon	2.9 ACRES	B1-EXCL-WTS	None
Southern lagoon	3.8 ACRES	B1-EXCL-WTS	None

[9] 88 FR 3004 (January 18, 2023)

Northern and Southern Lagoons, measuring 2.9 acres and 3.8 acres in size respectively were constructed between 1972 and 1985 based upon historic aerial photographs in upland soil types (Dunkirk silt loam and Collamer silt loam with hydric ratings of 0). The ponds were constructed as treatment ponds / lagoons for the wastewater treatment facility. Therefore, it has been determined that these ponds meet the exclusions in (b)(1) and are not regulated waters.

b. Describe aquatic resources and features within the review area that were determined to be non-jurisdictional because they do not meet one or more categories of waters of the United States under the 2023 Rule as amended (e.g., tributaries that are non-relatively permanent waters; non-tidal wetlands that do not have a continuous surface connection to a jurisdictional water).

Stream 05-ST001	167 FEET	NON-WOTUS-TRIB.NEGATIVE.A3
Stream 05-ST002	94 FEET	NON-WOTUS-TRIB.NEGATIVE.A3
Wetland 05-W001-PEM	.13 ACRES	NON-WOTUS-WET.NEGATIVE.A4
Wetland 05-W001-PFO	1.87 ACRES	NON-WOTUS-WET.NEGATIVE.A4
Wetland 05-W002-PEM	.02 ACRES	NON-WOTUS-WET.NEGATIVE.A4
Wetland 05-W003-PSS	.79 ACRES	NON-WOTUS-WET.NEGATIVE.A4
Wetland 05-W006-PFO	.05 ACRES	NON-WOTUS-WET.NEGATIVE.A4

Stream 05-ST001 is an intermittent stream that flows 167 feet within the study area and south off of the property. The stream was flowing at the time of 5/14/2025 USACE site inspection, but was not flowing and did not contain water within the channel at the time it was delineated on 7/30/2024. The delineation occurred during the dry season during a wet condition, based on the APT. The stream is not identified on the NHD, Stream Stats, USGS topography map, soil survey and not evident in aerial imagery as the ground is obscured by woody vegetation. The delineation report described the stream as averaging 4-6 feet wide with gentle gradient, with no vegetation within the stream channel, and a substrate consisting of sand, silt and clay, which was consistent with USACE observations. OHW was identified by a break in slope and a change in vegetation. The stream was flowing at the time of the USACE site inspection with evidence of considerable wracked leaf litter in the channel and erosion around roots, supporting the determination that it is an intermittent relatively permanent feature. According to the APT the USACE site inspection was conducted during wetter than normal conditions during the wet season, so the observation of flow was consistent for this period. The stream is a first order stream (Strahler). The stream flows into a wetland and stream system to the south that was delineated under LRB-2019-00832, where a Preliminary Jurisdictional Determination was issued on 3/30/2020, where a USACE site visit was conducted. While the PJD did not assess jurisdiction, it contained wetland and stream boundary maps that

identify that the areas downstream of Stream 05-ST001 is a closed system with no downstream surface water connection. The off-site receiving stream (S-T01-003) was delineated as an isolated stream. Therefore Stream 05-ST001 does not contribute flow to a TNW and is not a paragraph (a)(3) tributary and therefore does not meet the definition of a water of the United States (US).

Wetland 05-W002-PEM is a 0.02-acre emergent wetland in the southeast corner of the study area. Based upon visual assessment on site, Wetland 05-W002-PEM continues offsite and abuts Stream 05-ST001. Since ST001 has been determined to not be an (a)(3) tributary and is not a water of the US, Wetland 05-W002-PEM does not abut a water that is a water of the US in its own right and therefore does not have a continuous surface connection to a downstream water and therefore is not a water of the US.

Stream 05-ST002 is an ephemeral stream flowing 94 linear feet within the northeast corner of the study area, flowing off-site into an old sand pit to the east that is now open water. Stream 05-ST002 is not visible on aerial photos and is not evident on the in-house resources with the exception of the hillshade and 2 foot contour map. In this resource, the stream starts at the wetland edge and continues offsite where it drops over 8 feet in topography into an open water historic sand mine. Based upon the delineation, the stream width was 4 feet at OHWMs on opposing banks and the stream was characterized by a well-developed bed and banks, gentle gradient, and a substrate consisting of sand, silt, and clay. Indicators used to define the OHWM included a break in slope, a change in vegetation, and the presence of large wood in the stream channel. The delineation suggested the stream is intermittent because it receives water from Wetland 05-W003 in addition to direct precipitation, but water was absent from the stream channel at the time of the delineation survey, which was conducted during a wetter than normal condition (incipient wetness) in the dry season. According to the APT, the USACE site inspection was conducted during the wet season (5/15/2025) in wetter than normal conditions and was dry at the time of site inspection. This stream is a first order stream (Strahler), and the reach of the stream starts where it is delineated on site until it enters the open water. The portion off site was not accessible and only in-house resources could be used to assess conditions. This portion of the stream was delineated in a separate EDR delineation report (October 2024) where conditions of the stream were the same as on-site conditions. The feature was not visible in any in-house resource except for the 2 foot contour hillshade map referenced above. Since the stream was dry during both the delineation and the USACE site inspection, during wetter than normal conditions in the wet season where the site had just received a rain event earlier that morning , it has been determined to be an ephemeral feature,

and is therefore not a relatively permanent water as there was no evidence that it flows continuously during certain times of the year.

Wetland 05-W003-PSS is a 0.79-acre wetland that directly abuts/connects to ephemeral stream 05-ST002 to the east, which is not an RPW as discussed above. Since Wetland 05-W003-PSS is not adjacent to a water of the US and does not have a continuous surface connection to a downstream water of the US, and therefore it also is not a regulated water of the US.

Wetland 05-W001-PEM and 05-W001-PFO is primarily a wooded wetland located in the center of the study area. The wetland extends slightly off-site to the east, but the boundaries off-site were easily seen during site visit based upon inundation and change in topography and vegetation. The drainage within this wetland is generally to the west. A standpipe is located within the southwest corner of the wetland with its grated opening approximately 3 feet higher in elevation from the existing ground elevation of the wetland. No standing water was present at the time of the USACE site inspection at the standpipe location, although other portions of the wetland were inundated. Based upon information sent after the site visit from CHA (see map AD-1 dated March 3, 1978), this standpipe drains into a stormwater system, collecting combined stormwater from other portions of the site, and then discharging directly into Stream 05-ST003. Since this wetland does not abut a water of the US, it does not have a continuous surface connection and therefore it has been determined it does not meet the definition of a water of the US.

Wetland 05-W006-PFO is a 0.05-acre forested wetland depression that is located approximately 75 feet south of Wetland 05-W001 and about 25 feet north of a developed portion of the site. No surface connections were located extending to/from any other wetland or waterway. It is located within Niagara silt loam soils, with a hydric rating of 7. Since this wetland does not abut a water of the US, there is no continuous surface connection to another water of the US, this wetland is not a water of the US.

9. DATA SOURCES. List sources of data/information used in making determination. Include titles and dates of sources used and ensure that information referenced is available in the administrative record.

   a. *Corps of Engineers' site visit: 5/14/2025 (per APT, wet season, wetter than normal conditions).*

   b. *Wetland and Stream Delineation Memorandum, Oak Orchard Project.*

Prepared by EDR, dated August 16, 2024 (based upon data collected on 7/30/2024), subsequent data provided by CHA Solutions and EDR on 5/19/2025 (stormwater map AD-1 dated March 3, 1978) and additional wetland data provided on 5/27/2025.

c. *Wetland and Stream Delineation Report, White Pine Industrial Wastewater Treatment Plant, prepared by EDR, dated October 2024.*

d. *Aerial/Oblique Imagery evaluated: Google Earth Pro 7/3/2022, 4/13/2017, 3/26/1995; Connect Explorer - https://explorer.pictometry.com/ - oblique imagery dates 3/27/2024, 3/23/2021, 4/8/2021; historicaerials.com 1972 and 1985.*

e. *USGS NHD layer: accessed through the National Regulatory Viewer; accessed November 22, 2023.*

f. *USGS Streamstats - https://streamstats.usgs.gov/ss/; accessed November 22, 2023.*

g. *National wetlands inventory map(s): included in 8/16/2024 Wetland and Stream Delineation Memorandum https://www.fws.gov/program/nationalwetlands-inventory/wetlands-mapper*

h. *U.S. Geological Survey map(s). Cite scale & quad name: USGS Quad: Brewerton – NY, scale 1:24000*

i. *New York State Department of Environmental Resource Mapper - https://gisservices.dec.ny.gov/gis/erm/*

j. *U.S. Department of Agriculture, Onondaga County, New York Soil Survey 1977.*

k. *Web soil survey, accessed 10/24/2023 https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx*

l. *Antecedent Precipitation Tool (APT), version 2.0*

m. *On-site photos, provided by EDR in 8/16/2024 Wetland and Stream Delineation Memorandum*

n. *USGS National Map 3D Elevation Program (3DEP) 1/2/2025 from USACE Regulatory Viewer.*

o. *Sheets A-2 and A-3 from Preliminary Jurisdictional Determination for file no. LRB-2019-00832 issued 3/30/2020, and supporting information contained in the Wetlands and Waterbodies Report for Clay DG Solar and Energy Storage Project dated January 2020.*

p. *USACE site notes, 5/14/2025 and photolog*

10. OTHER SUPPORTING INFORMATION. N/A

11. NOTE: The structure and format of this MFR were developed in coordination with the EPA and Department of the Army. The MFR's structure and format may be subject to future modification or may be rescinded as needed to implement additional guidance from the agencies; however, the approved jurisdictional determination described herein is a final agency action.

U.S. Army Corps of Engineers (USACE)

PRELIMINARY JURISDICTIONAL DETERMINATION (PJD)

For use of this form, see Sec 404 CWA, Sec 10 RHA, Sec 103 MPRSA; the proponent agency is CECW-COR.

Form Approved -
OMB No. 0710-0024
Expires 2024-04-30

DATA REQUIRED BY THE PRIVACY ACT OF 1974

Authority Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.

Principal Purpose The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the review area that may be subject to federal jurisdiction under the regulatory authorities referenced above.

Routine Uses This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice or FOIA request as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in any resulting jurisdictional determination (JD), which may be made available to the public on the District's website and/or on the Headquarters USACE website.

Disclosure Submission of requested information is voluntary; however, if information is not provided, the request for a JD cannot be evaluated nor can a PJD be issued.

The Agency Disclosure Notice (ADN)

The public reporting burden for this collection of information, 0710-0024, is estimated to average 25 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

SECTION I - BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD: 4 August 2025

B. NAME AND ADDRESS OF PERSON REQUESTING PJD:
Odean Dyer
Onondaga County Department of Water
Environment Protection
650 Hiawatha Boulevard West
Syracuse, New York 13204

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:
Buffalo District, Onondaga County Department of Water Environment Protection; LRB-2024-01037

D. PROJECT LOCATION AND BACKGROUND INFORMATION:
(*USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES*)

State: New York County/Parish/Borough: Onondaga City: Town of Clay

Center coordinates of site (*lat/long in degree decimal format*): Latitude: 43.198714 ° Longitude: -76.16507 °

Universal Transverse Mercator: Zone 18

Name of nearest waterbody: Mud Creek and Oneida River

E. REVIEW PERFORMED FOR SITE EVALUATION (*CHECK ALL THAT APPLY*):

☒ Office (*Desk*) Determination. Date: 8/4/2025

☒ Field Determination

Date(s): 5/14/2025

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

	Site Number	Latitude (*decimal degrees*)	Longitude (*decimal degrees*)	Estimated amount of aquatic resource in review area (*acreage and linear feet, if applicable*)	Type of aquatic resource (*i.e., wetland vs. non-wetland waters*)	Geographic authority to which the aquatic resource "may be" subject (*i.e., Section 404 or Section 10/404*)

	Site Number	Latitude (*decimal degrees*)	Longitude (*decimal degrees*)	Estimated amount of aquatic resource in review area (*acreage and linear feet, if applicable*)	Type of aquatic resource (*i.e., wetland vs. non-wetland waters*)	Geographic authority to which the aquatic resource "may be" subject (*i.e., Section 404 or Section 10/404*)
	Wetland 05-W004-PFO	43.20492	-76.21305	2.45 acres	wetland	Section 404

1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.

2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "preconstruction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD or no JD whatsoever, which do not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the USACE has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD or reliance on no JD whatsoever; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of USACE permit authorization based on a PJD or no JD whatsoever constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the USACE will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there *"may be"* waters of the U.S. and/or that there *"may be"* navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

F. SUPPORTING DATA. Data reviewed for PJD (*check all that apply)*
Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

☒ Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:

Map: Wetland and Stream Delineation Memorandum, Oak Orchard Project.Prepared by EDR, dated August 16, 2024, subsequent data provided by CHA Solutions and EDR on 5/27/2025

☒ Data sheets prepared/submitted by or on behalf of the PJD requestor.

☒ Office concurs with data sheets/delineation report.

☐ Office does not concur with data sheets/delineation report.

Rationale:

☐ Data sheets prepared by the USACE:

☐ Corps navigable waters' study:

☐ U.S. Geological Survey Hydrologic Atlas:

☒ USGS NHD data.

☐ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name:

Brewerton – NY, scale 1:24000

☒ USDA Natural Resources Conservation Service Soil Survey.

Citation: U.S. Department of Agriculture, Onondaga County, New York Soil Survey 1977. Web soil survey, accessed 10/24/2023 - https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

☒ National Wetlands Inventory map(s).

Cite Name: included in 8/16/2024 Wetland and Stream Delineation Memorandum https://www.fws.gov/program/nationalwetlands-inventory/wetlands-mapper

☒ State/Local Wetland Inventory map(s):

New York State Department of Environmental Resource Mapper - https://gisservices.dec.ny.gov/gis/erm/

☐ FEMA/FIRM maps:

☐ 100-year Floodplain Elevation is: _____. (National Geodectic Vertical Datum of 1929)

☒ Photographs: ☒ Aerial (*Name & Date*): Aerial/Oblique Imagery evaluated: Google Earth Pro 7/3/2022, 4/13/2017, 3/26/1995; Connect Explorer - https://explorer.pictometry.com/ - oblique imagery dates 3/27/2024, 3/23/2021, 4/8/2021; historicaerials.com 1972 and 1985.

or ☒ Other (*Name & Date*): On-site photos, provided by EDR in 8/16/2024 Wetland and Stream Delineation Memorandum

☒ Previous determination(s). File no. and date of response letter:

LRB-2024-01037 Approved Jurisdictional Determination being issued concurrently for the site.

☐ Other information (*please specify*):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the USACE and should not be relied upon for later jurisdictional determinations.

Name of Regulatory Staff Member Completing PJD	Date	Signature of Regulatory Staff Member Completing PJD
Margaret Crawford	8/4/2025	Margaret Crawford
Name of Person Requesting PJD	Date	Signatureof Person Requesting PJD *(REQUIRED, unless obtaining the Signature is Impracticable*

[1] Districts may establish timeframes for requester to return signed PJD forms. If the requester does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

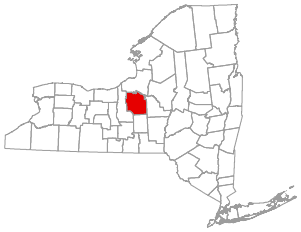
Figure 1. Regional Project Location



Oak Orchard Project

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Memorandum



0 2.5 5 10

Miles

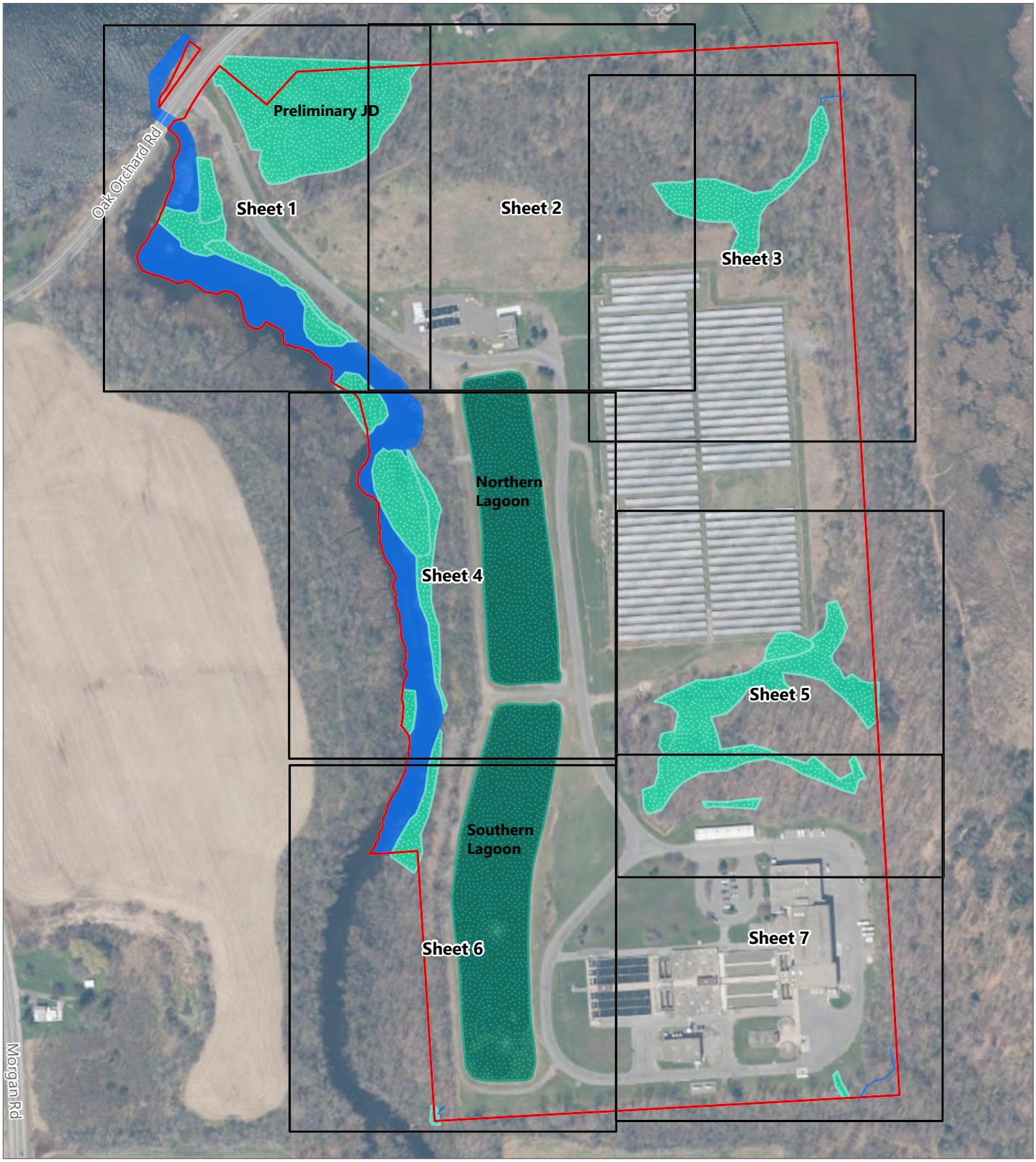
Prepared August 13, 2024

Basemap: Esri "World Street Map" map service

EDR

Figure 1. Delineated Wetland and Stream Extensions

Index



Oak Orchard

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Addendum

Delineated Stream
Delineated Wetland
Wastewater Treatment Lagoon
Study Area

0 100 200 400
Feet

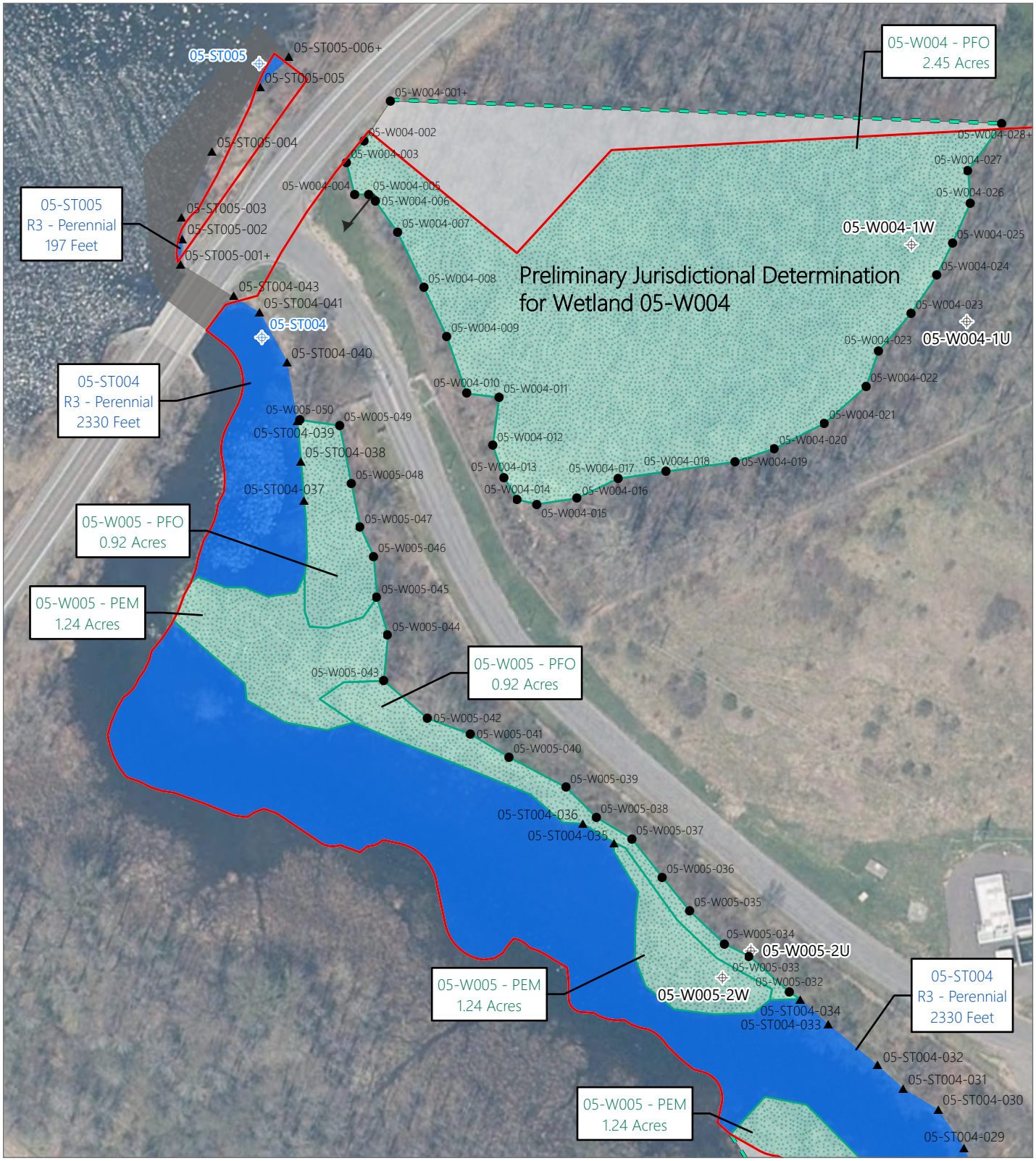
Prepared May 27, 2025
Basemap: NYSDOP "2022" orthoimagery map service

EDR

Note: These maps are subject to Approved Jurisdictional Determination (AJD) except for Wetland 05-W004 which is being reviewed via Preliminary JD (PJD)

Figure 1. Delineated Wetland and Stream Extensions

Sheet 1 of 7



Oak Orchard

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Addendum

- Stream Flag
- Wetland Flag
- Datapoint Stream
- Datapoint Wetland
- Culvert
- Wetland Continues
- Delineated Stream inside Study Area
- Delineated Stream outside Study Area
- Previously Delineated Wetland inside Study Area
- Delineated Wetland outside Study Area
- Study Area

0 25 50 100
Feet

Prepared May 27, 2025
Basemap: NYSDOP "2022" orthoimagery map service

EDR

Note: These maps are subject to Approved Jurisdictional Determination (AJD) except for Wetland 05-W004 which is being reviewed via Preliminary JD (PJD)

Figure 1. Delineated Wetland and Stream Extensions

Sheet 2 of 7



Oak Orchard

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Addendum

- Stream Flag
- Wetland Flag
- Datapoint Wetland
- Non-Wetland Verification Point
- Wetland Continues
- Delineated Stream inside Study Area
- Previously Delineated Wetland inside Study Area
- Delineated Wetland outside Study Area
- Wastewater Treatment Lagoon
- Study Area

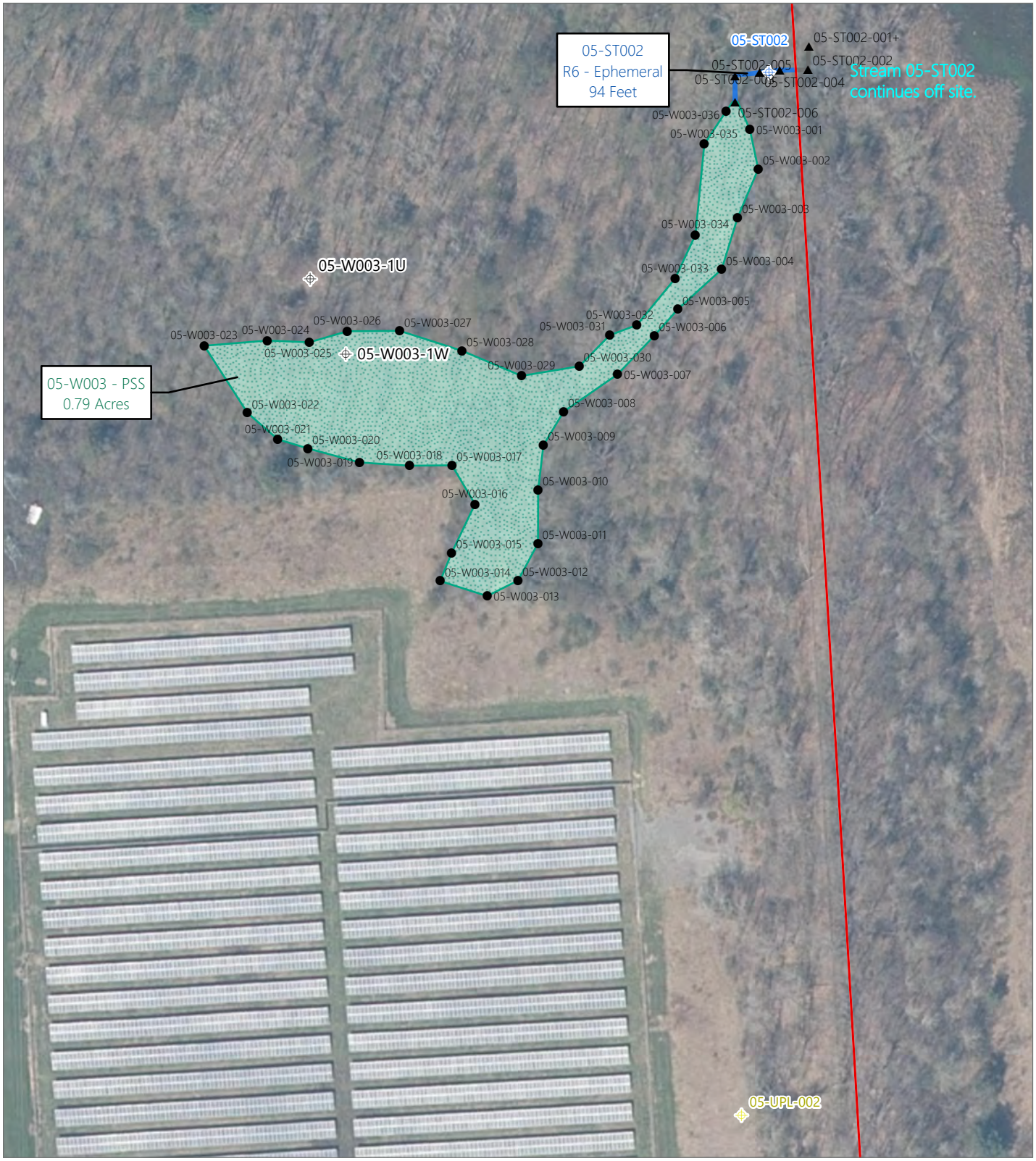
0 25 50 100
Feet

Prepared May 27, 2025
Basemap: NYSDOP "2022" orthoimagery map service

EDR

Figure 1. Delineated Wetland and Stream Extensions

Sheet 3 of 7



Oak Orchard

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Addendum

- Stream Flag
- Wetland Flag
- Datapoint Stream
- Datapoint Wetland
- Non-Wetland Verification Point
- Delineated Stream inside Study Area
- Delineated Stream outside Study Area
- Previously Delineated Wetland inside Study Area
- Study Area

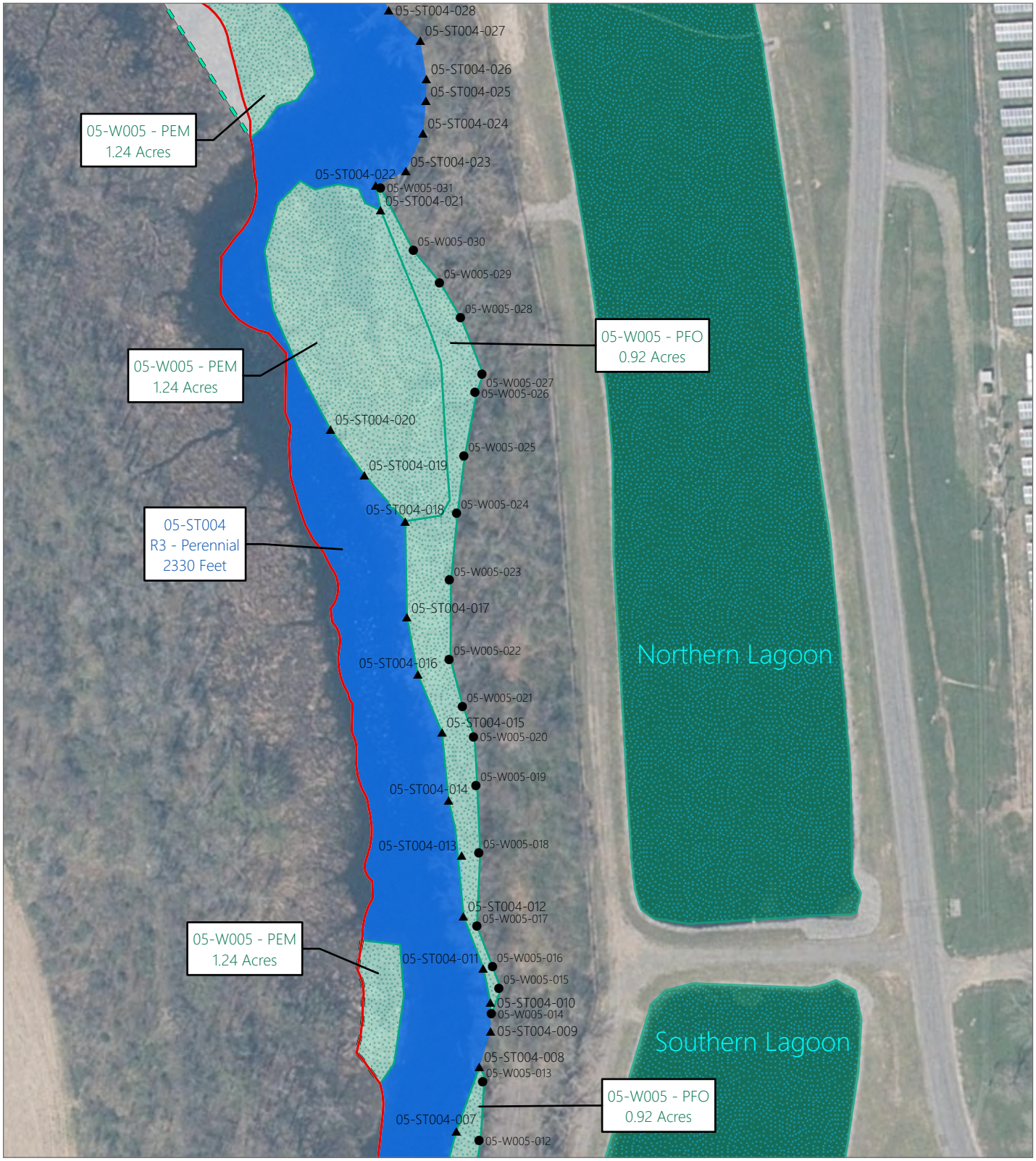
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Feet

Prepared May 27, 2025
Basemap: NYSDOP "2022" orthoimagery map service

EDR

Figure 1. Delineated Wetland and Stream Extensions

Sheet 4 of 7



Oak Orchard

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Addendum

- Stream Flag
- Wetland Flag
- Wetland Continues
- Delineated Stream inside Study Area
- Previously Delineated Wetland inside Study Area
- Delineated Wetland outside Study Area
- Wastewater Treatment Lagoon
- Study Area

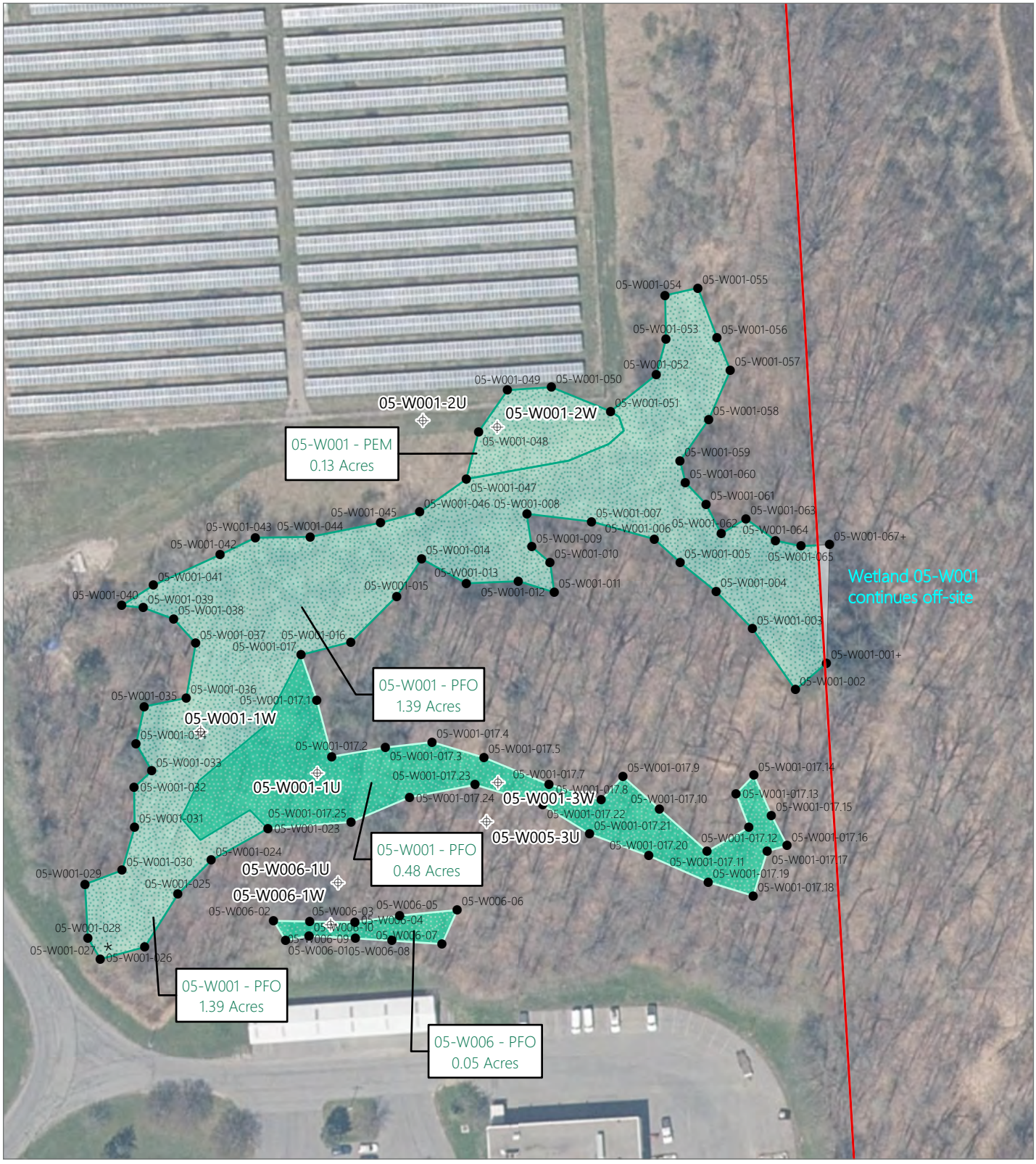
0 25 50 100
Feet

Prepared May 27, 2025
Basemap: NYSDOP "2022" orthoimagery map service

EDR

Figure 1. Delineated Wetland and Stream Extensions

Sheet 5 of 7



Oak Orchard

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Addendum

- Wetland Flag
- Datapoint Wetland
- May 2025 Delineated Wetland inside Study Area
- Previously Delineated Wetland inside Study Area
- Delineated Wetland outside Study Area
- Study Area

0 25 50 100
Feet

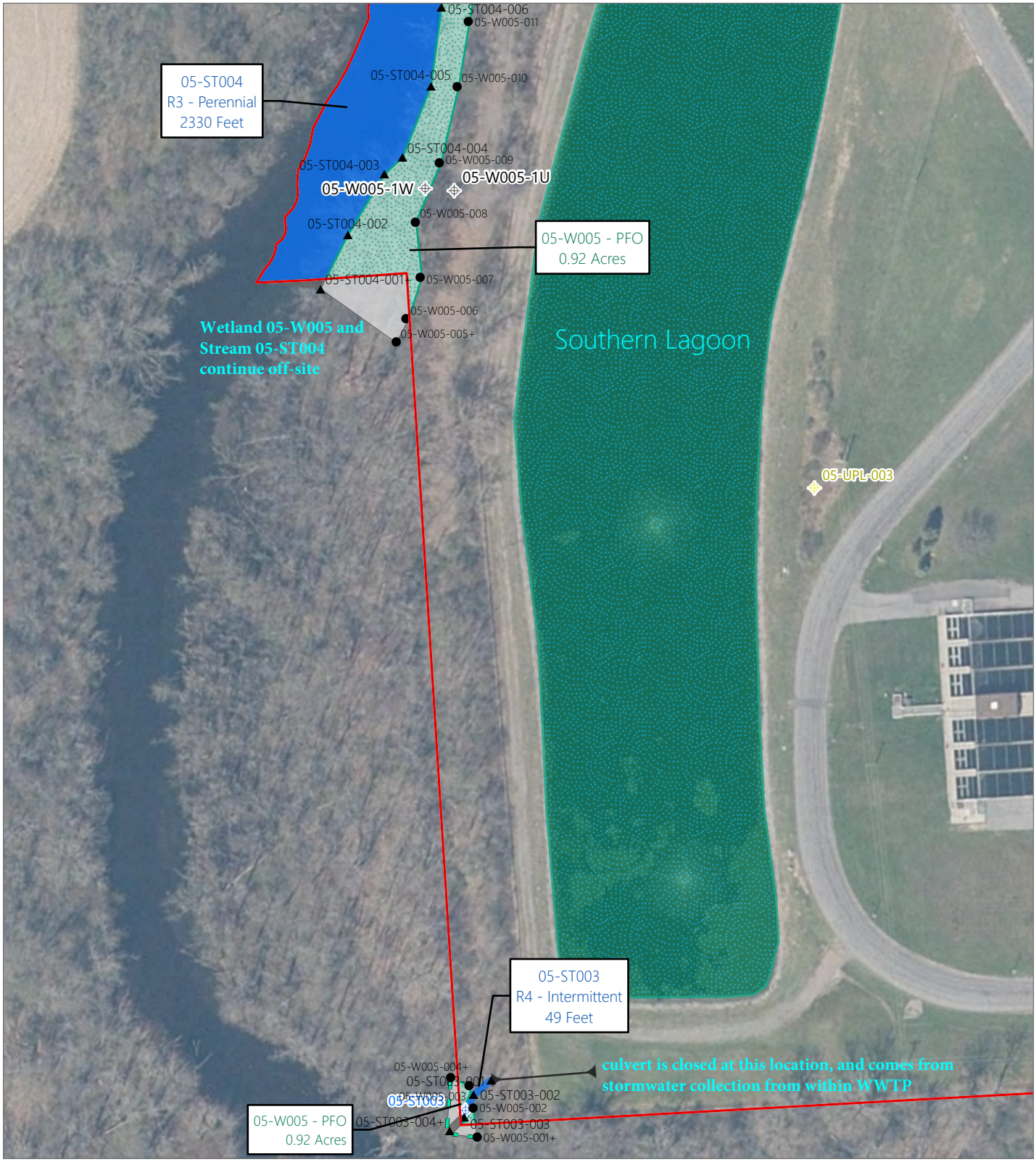
* approximate standpipe location

Prepared May 27, 2025
Basemap: NYSDOP "2022" orthoimagery map service

EDR

Figure 1. Delineated Wetland and Stream Extensions

Sheet 6 of 7



Oak Orchard

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Addendum

- Stream Flag
- Wetland Flag
- Datapoint Stream
- Datapoint Wetland
- Non-Wetland Verification Point
- Culvert
- Wetland Continues
- Delineated Stream inside Study Area
- Delineated Stream outside Study Area
- Previously Delineated Wetland inside Study Area
- Delineated Wetland outside Study Area
- Wastewater Treatment Lagoon
- Study Area

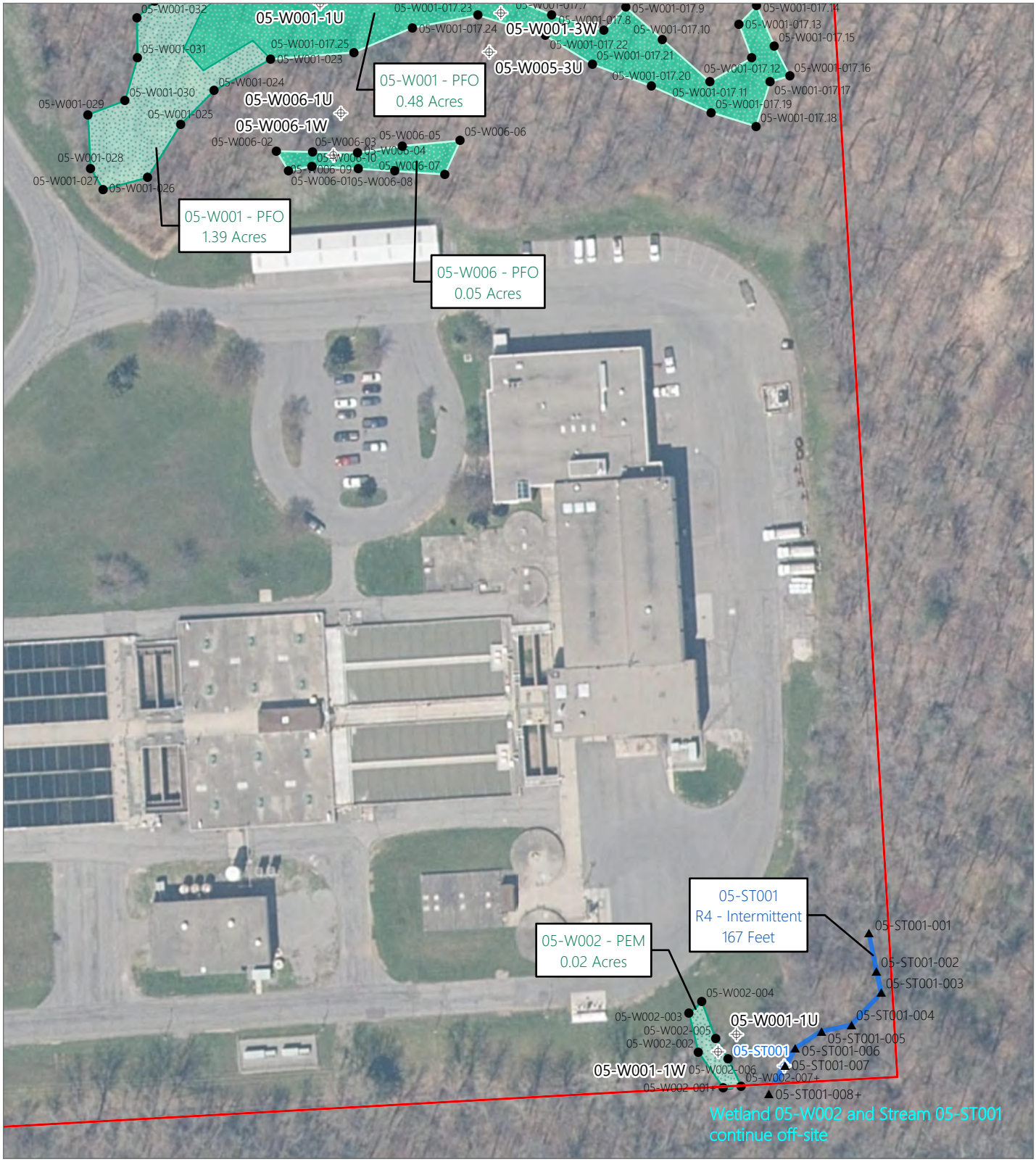
0 25 50 100
Feet

Prepared May 27, 2025
Basemap: NYSDOP "2022" orthoimagery map service

EDR

Figure 1. Delineated Wetland and Stream Extensions

Sheet 7 of 7



Oak Orchard

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Addendum

- Stream Flag
- Wetland Flag
- Datapoint Stream
- Datapoint Wetland
- Wetland Continues
- Delineated Stream inside Study Area
- Delineated Stream outside Study Area
- May 2025 Delineated Wetland inside Study Area
- Previously Delineated Wetland inside Study Area
- Delineated Wetland outside Study Area
- Study Area

0 25 50 100

Feet

Prepared May 27, 2025

Basemap: NYSDOP "2022" orthoimagery map service

EDR

U.S. Army Corps of Engineers (USACE)

PRELIMINARY JURISDICTIONAL DETERMINATION (PJD)

For use of this form, see Sec 404 CWA, Sec 10 RHA, Sec 103 MPRSA; the proponent agency is CECW-COR.

Form Approved - OMB No. 0710-0024 Expires 2024-04-30

DATA REQUIRED BY THE PRIVACY ACT OF 1974

Authority Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.

Principal Purpose The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the review area that may be subject to federal jurisdiction under the regulatory authorities referenced above.

Routine Uses This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice or FOIA request as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in any resulting jurisdictional determination (JD), which may be made available to the public on the District's website and/or on the Headquarters USACE website.

Disclosure Submission of requested information is voluntary; however, if information is not provided, the request for a JD cannot be evaluated nor can a PJD be issued.

The Agency Disclosure Notice (ADN)

The public reporting burden for this collection of information, 0710-0024, is estimated to average 25 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

SECTION I - BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD: 4 August 2025

B. NAME AND ADDRESS OF PERSON REQUESTING PJD:

Odean Dyer
Onondaga County Department of Water
Environment Protection
650 Hiawatha Boulevard West
Syracuse, New York 13204

C. DISTRICT OFFICE, FILE NAME, AND NUMBER:

Buffalo District, Onondaga County Department of Water Environment Protection; LRB-2024-01037; Wastewater Conveyance

D. PROJECT LOCATION AND BACKGROUND INFORMATION:

(*USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES*)

State: New York County/Parish/Borough: Onondaga City: Town of Clay

Center coordinates of site (*lat/long in degree decimal format*): Latitude: 43.201 ° Longitude: -76.189 °

Universal Transverse Mercator: Zone 18

Name of nearest waterbody: Shaver Creek

E. REVIEW PERFORMED FOR SITE EVALUATION (*CHECK ALL THAT APPLY*):

☒ Office (*Desk*) Determination. Date: 8/4/2025

☒ Field Determination

Date(s): 5/14/2025

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION.

	Site Number	Latitude (*decimal degrees*)	Longitude (*decimal degrees*)	Estimated amount of aquatic resource in review area (*acreage and linear feet, if applicable*)	Type of aquatic resource (*i.e., wetland vs. non-wetland waters*)	Geographic authority to which the aquatic resource "may be" subject (*i.e., Section 404 or Section 10/404*)

	Site Number	Latitude (*decimal degrees*)	Longitude (*decimal degrees*)	Estimated amount of aquatic resource in review area (*acreage and linear feet, if applicable*)	Type of aquatic resource (*i.e., wetland vs. non-wetland waters*)	Geographic authority to which the aquatic resource "may be" subject (*i.e., Section 404 or Section 10/404*)
	See attached					Section 404

1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.

2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "preconstruction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD or no JD whatsoever, which do not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the USACE has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD or reliance on no JD whatsoever; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of USACE permit authorization based on a PJD or no JD whatsoever constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the USACE will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there *"may be"* waters of the U.S. and/or that there *"may be"* navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

F. SUPPORTING DATA. Data reviewed for PJD (*check all that apply)*
Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

☒ Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:

Map: Industrial Wastewater (IWW) Line Wetland Delineation, Micron Semiconductor Fabrication Facility, November 26, 2024, by Ramboll, and subsequent data provided by Ramboll on 5/28/2025

☒ Data sheets prepared/submitted by or on behalf of the PJD requestor.

☒ Office concurs with data sheets/delineation report.

☐ Office does not concur with data sheets/delineation report.

Rationale: _____

☐ Data sheets prepared by the USACE:

☐ Corps navigable waters' study:

☐ U.S. Geological Survey Hydrologic Atlas:

☒ USGS NHD data.

☐ USGS 8 and 12 digit HUC maps.

☒ U.S. Geological Survey map(s). Cite scale & quad name:

Brewerton – NY, scale 1:24000

☒ USDA Natural Resources Conservation Service Soil Survey.

Citation: Web soil survey, accessed 10/28/2024 in Wetland Delineation Report

☒ National Wetlands Inventory map(s).

Cite Name: included in Wetland Delineation Report https://www.fws.gov/program/nationalwetlands-inventory/wetlands-mapper

☒ State/Local Wetland Inventory map(s):

New York State Department of Environmental Resource Mapper - https://gisservices.dec.ny.gov/gis/erm/

☐ FEMA/FIRM maps:

☐ 100-year Floodplain Elevation is: _____. (National Geodectic Vertical Datum of 1929)

☒ Photographs: ☒ Aerial (*Name & Date*): Aerial/Oblique Imagery evaluated: Google Earth Pro 7/3/2022, 4/13/2017, 3/26/1995.

or ☒ Other (*Name & Date*): On-site photos, provided by Ramboll in Wetland Delineation Report

☐ Previous determination(s). File no. and date of response letter:

☐ Other information (*please specify*):

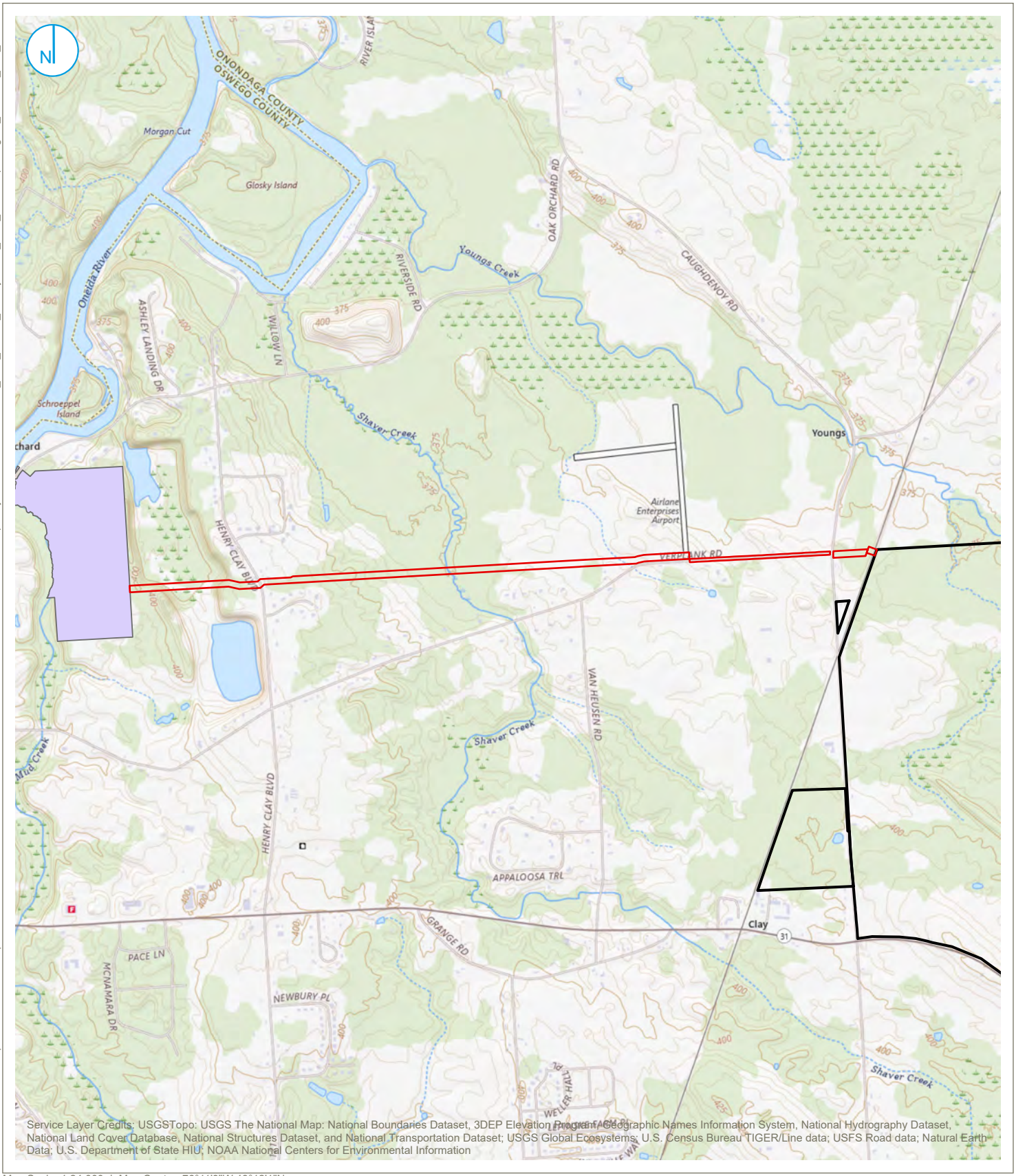
IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the USACE and should not be relied upon for later jurisdictional determinations.

Name of Regulatory Staff Member Completing PJD	Date	Signature of Regulatory Staff Member Completing PJD
Margaret Crawford	8/4/2025	Margaret Crawford
Name of Person Requesting PJD	Date	Signatureof Person Requesting PJD *(REQUIRED, unless obtaining the Signature is Impracticable*

[1] Districts may establish timeframes for requester to return signed PJD forms. If the requester does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

PJD waters for proposed wastewater conveyance, LRB-2024-01037

Waters_Name	Latitude	Longitude	Waters Size	Type Of Aquatic Res	Geographic Authority
Driveway Ditch 1	43.20137	-76.1777	87 FEET	DELIN.PJD-404	Section 404
IWW10_PEM	43.20113	-76.1834	.36 ACRES	DELIN.PJD-404	Section 404
IWW11_PEM	43.2011	-76.1818	.04 ACRES	DELIN.PJD-404	Section 404
IWW12_PEM	43.20126	-76.1791	.84 ACRES	DELIN.PJD-404	Section 404
IWW13_PEM	43.20143	-76.1768	.36 ACRES	DELIN.PJD-404	Section 404
IWW14_PEM	43.20149	-76.1757	.04 ACRES	DELIN.PJD-404	Section 404
IWW1_PEM	43.20164	-76.1654	.2 ACRES	DELIN.PJD-404	Section 404
IWW1_PFO	43.20152	-76.1664	.99 ACRES	DELIN.PJD-404	Section 404
IWW5_PSS	43.20026	-76.2028	.01 ACRES	DELIN.PJD-404	Section 404
IWW6_PEM	43.20033	-76.2045	1.3 ACRES	DELIN.PJD-404	Section 404
IWW6_PSS	43.20039	-76.2036	.2 ACRES	DELIN.PJD-404	Section 404
IWW7_PFO	43.20088	-76.191	1.23 ACRES	DELIN.PJD-404	Section 404
IWW8_PFO	43.20094	-76.188	1.49 ACRES	DELIN.PJD-404	Section 404
IWW9_PEM	43.20102	-76.1861	.2 ACRES	DELIN.PJD-404	Section 404
Shavers Creek	43.2009	-76.1894	106 FEET	DELIN.PJD-404	Section 404
Wetland 05-W004-PFO	43.20492	-76.2131	2.45 ACRES	DELIN.PJD-404	Section 404



PROJECT: 1950100687 | DATED: 11/7/2024 | DESIGNER: SSOULE
C:\Users\SSOULE\OneDrive - Ramboll\Desktop\Projects\Micron\PRO\White_Pine_Micron_Shelby\White_Pine_Micron.aprx\Figure_01-IWW_Site_Location

Map Scale: 1:24,000 | Map Center: 76°11'9"W 43°12'1"N



KEY MAP (not to scale)

Force Main ROW
Oak Orchard WWTP
Micron Main Campus

0 1,000 2,000 Feet

SITE LOCATION
IWW EASEMENT

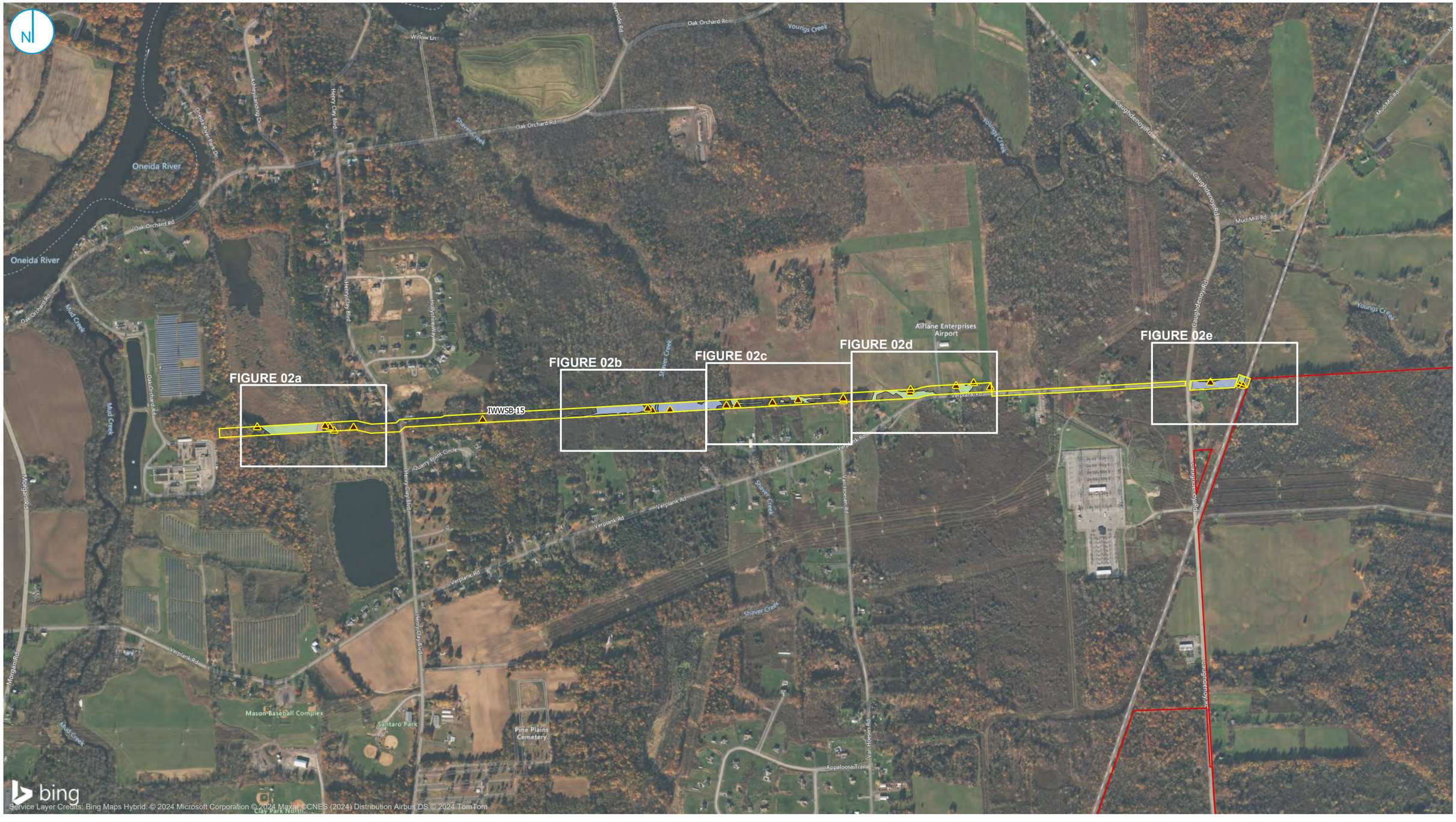
Micron Campus
Town of Clay
Onondaga County, New York

FIGURE 01

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

PROJECT: 1950100687 | DATED: 11/7/2024 | DESIGNER: SSOULE
C:\Users\SSOULE\OneDrive - Ramboll\Desktop\Projects\Micron\PRO\White_Pine_Micron_Shelby\White_Pine_Micron.aprx\Figure_02-IWW_Wetlands_Overview



- Soil Boring
- Shavers Creek
- Force Main ROW
- Micron Main Campus

0 500 1,000 Feet

Notes
- Force main ROW from Thew Associates Land Surveyors 10/18/2024.

IWW WETLAND DELINEATION

Micron Campus
Town of Clay
Onondaga County, New York

FIGURE 02

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

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PROJECT: 1950100687 | DATED: 11/5/2024 | DESIGNER: SSOULE



Soil Boring
Delineated Wetland
Force Main ROW
Property Line

0 50 100 Feet

Notes
- Property lines and force main ROW from Thew Associates Land Surveyors 10/18/2024.

IWW WETLAND DELINEATION

Micron Campus
Town of Clay
Onondaga County, New York

FIGURE 02a

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

C:\Users\SSOULE\OneDrive - Ramboll\Desktop\Projects\Micron\PRO\White_Pine_Micron_ShelbyWhite_Pine_Micron.aprx\Figure_02-IWW_Wetlands
PROJECT: 1950100687 | DATED: 11/5/2024 | DESIGNER: SSOULE



Soil Boring
Shavers Creek Flow Direction
Delineated Wetland
Shavers Creek
Force Main ROW
Property Line

0 50 100 Feet

Notes
- Property lines and force main ROW from Thew Associates Land Surveyors 10/18/2024.

IWW WETLAND DELINEATION

Micron Campus
Town of Clay
Onondaga County, New York

FIGURE 02b

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

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PROJECT: 1950100687 | DATED: 11/5/2024 | DESIGNER: SSOULE



Soil Boring
Delineated Wetland
Force Main ROW
Property Line

0 50 100 Feet

Notes
- Property lines and force main ROW from Thew Associates Land Surveyors 10/18/2024.

IWW WETLAND DELINEATION

Micron Campus
Town of Clay
Onondaga County, New York

FIGURE 02c

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

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PROJECT: 1950100687 | DATED: 11/5/2024 | DESIGNER: SSOULE



Soil Boring
Culvert
Ditch Flow Direction

Delineated Wetland
Force Main ROW
Property Line

0 50 100 Feet

Notes
- Property lines and force main ROW from Thew Associates Land Surveyors 10/18/2024.

IWW WETLAND DELINEATION

Micron Campus
Town of Clay
Onondaga County, New York

FIGURE 02d

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

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PROJECT: 1950100687 | DATED: 11/5/2024 | DESIGNER: SSOULE



Soil Boring
Delineated Wetland
Force Main ROW
Property Line
Micron Main Campus

0 50 100 Feet

Notes
- Property lines and force main ROW from Thew Associates Land Surveyors 10/18/2024.

IWW WETLAND DELINEATION

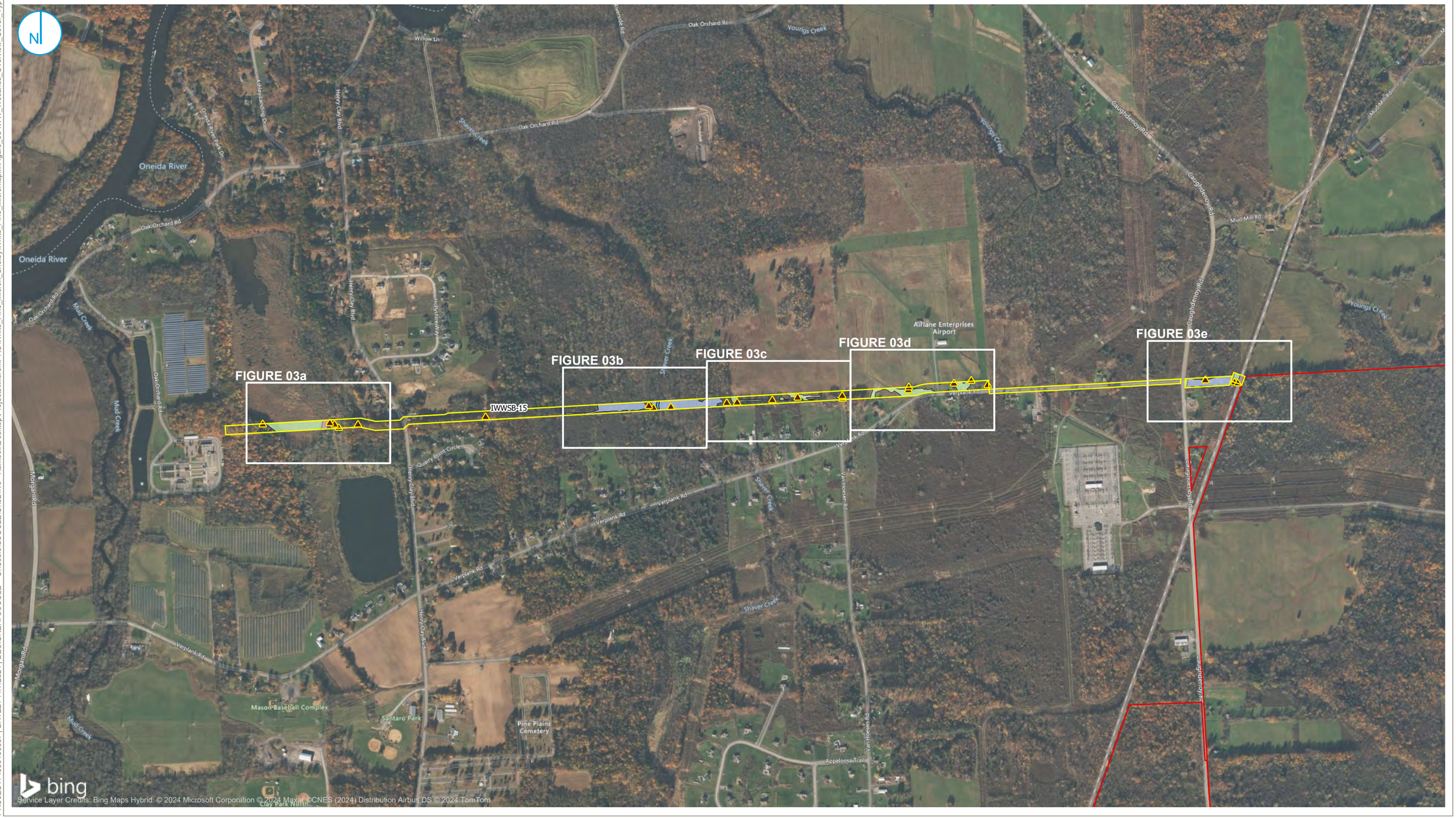
Micron Campus
Town of Clay
Onondaga County, New York

FIGURE 02e

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

PROJECT: 1950100687 | DATED: 11/7/2024 | DESIGNER: SSOULE C:\Users\SSOULE\OneDrive - Ramboll\Desktop\Projects\Micron\PRO\White_Pine_Micron_Shelby\White_Pine_Micron.aprx\Figure_03-IWW_Wetlands_Overview_Cover_Type



- Soil Boring
- Shavers Creek

Delineated Wetland Cover Type
- PEM
- PFO
- PSS

- Force Main ROW
- Micron Main Campus

0 500 1,000 Feet

Notes
- Force main ROW from Thew Associates Land Surveyors 10/18/2024.

IWW WETLAND DELINEATION
COVER TYPES

Micron Campus
Town of Clay
Onondaga County, New York

FIGURE 03

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

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PROJECT: 1950100687 | DATED: 11/5/2024 | DESIGNER: SSOULE



Soil Boring

Delineated Wetland Cover Type

- PEM
- PFO
- PSS

Force Main ROW

Property Line

0 50 100 Feet

Notes

- Property lines and force main ROW from Thew Associates Land Surveyors 10/18/2024.

IWW WETLAND DELINEATION
COVER TYPES

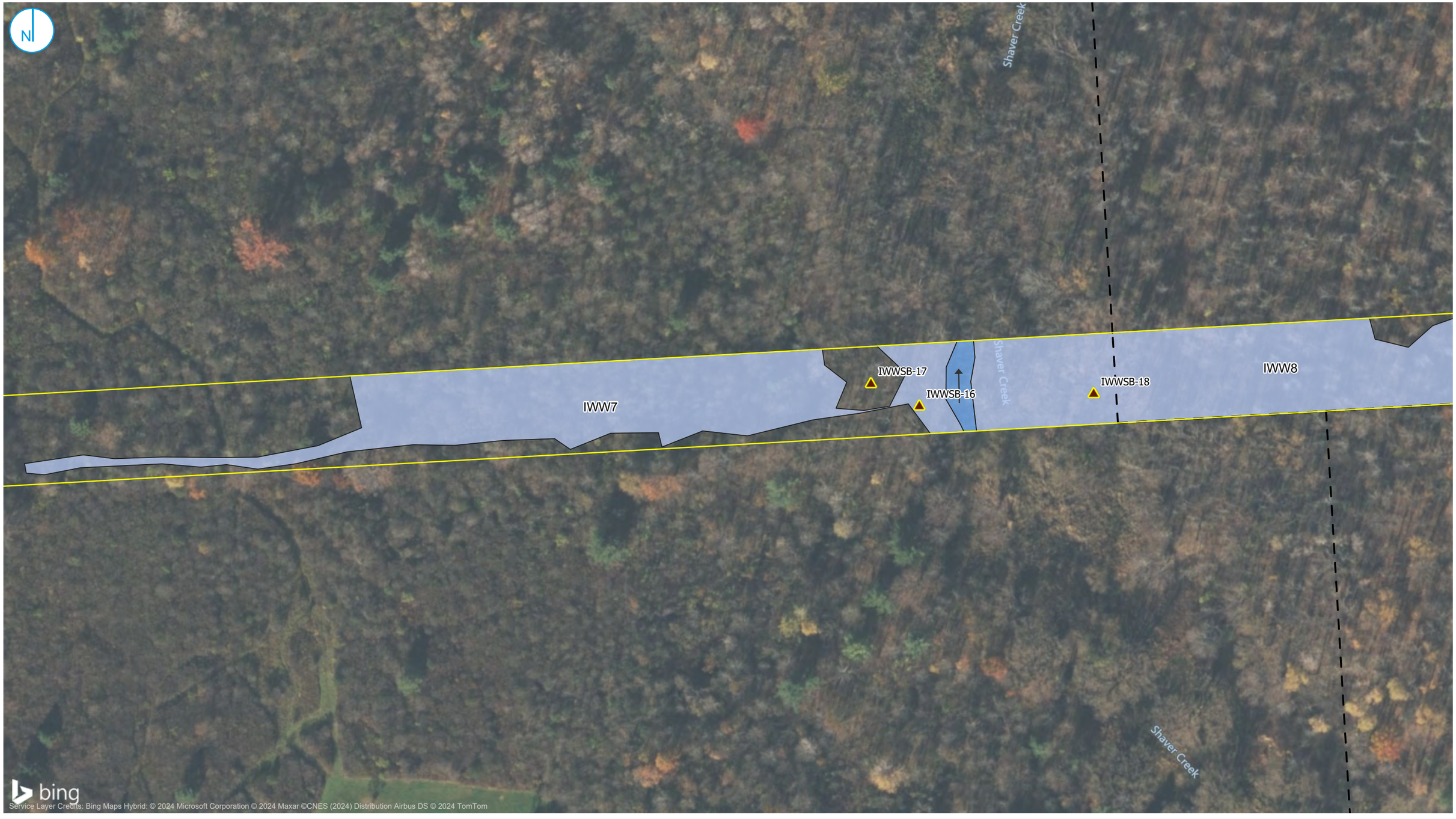
Micron Campus
Town of Clay
Onondaga County, New York

FIGURE 03a

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

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PROJECT: 1950100687 | DATED: 11/5/2024 | DESIGNER: SSOULE



Soil Boring
Shavers Creek Flow Direction

Delineated Wetland Cover Type
PEM
PFO
PSS

0 50 100 Feet

Shavers Creek
Force Main ROW
Property Line

Notes
- Property lines and force main ROW from Thew Associates Land Surveyors 10/18/2024.

IWW WETLAND DELINEATION
COVER TYPES

Micron Campus
Town of Clay
Onondaga County, New York

FIGURE 03b

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

C:\Users\SSOULE\OneDrive - Ramboll\Desktop\Projects\Micron\PRO\White_Pine_Micron_Shelby\White_Pine_Micron.aprx\Figure_03-IWW_Wetlands_Cover_Type
PROJECT: 1950100687 | DATED: 11/5/2024 | DESIGNER: SSOULE



Soil Boring

Delineated Wetland Cover Type
- PEM
- PFO
- PSS

Force Main ROW

Property Line

0 50 100 Feet

Notes
- Property lines and force main ROW from Thew Associates Land Surveyors 10/18/2024.

IWW WETLAND DELINEATION
COVER TYPES

Micron Campus
Town of Clay
Onondaga County, New York

FIGURE 03c

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

C:\Users\SSOULE\OneDrive - Ramboll\Desktop\Projects\Micron\PRO\White_Pine_Micron_Shelby\White_Pine_Micron.aprx\Figure_03-IWW_Wetlands_Cover_Type
PROJECT: 1950100687 | DATED: 11/5/2024 | DESIGNER: SSOULE



- Soil Boring
- Culvert
- Ditch Flow Direction

Delineated Wetland Cover Type
- PEM
- PFO
- PSS
- Force Main ROW
- Property Line

0 50 100 Feet

Notes
- Property lines and force main ROW from Thew Associates Land Surveyors 10/18/2024.

IWW WETLAND DELINEATION
COVER TYPES

Micron Campus
Town of Clay
Onondaga County, New York

FIGURE 03d

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

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PROJECT: 1950100687 | DATED: 11/5/2024 | DESIGNER: SSOULE



Soil Boring

Delineated Wetland Cover Type
- PEM
- PFO
- PSS

Force Main ROW

Property Line

Micron Main Campus

0 50 100 Feet

Notes
- Property lines and force main ROW from Thew Associates Land Surveyors 10/18/2024.

IWW WETLAND DELINEATION
COVER TYPES

Micron Campus
Town of Clay
Onondaga County, New York

FIGURE 03e

RAMBOLL AMERICAS
ENGINEERING SOLUTIONS, INC.
A RAMBOLL COMPANY

RAMBOLL

APPENDIX C

Site Plans and Engineering Report

Date Printed: 6/17/2025 7:23:59 PM

PRIVACY WALL AND ACOUSTIC BARRIER

(3) 30" INFLUENT PIPES FROM MICRON SITE AND (1) 18" FUTURE PIPE

OAK ORCHARD TREATMENT FACILITY EXPANSION

OAK ORCHARD TREATMENT FACILITY EXPANSION

OAK ORCHARD TREATMENT FACILITY EXPANSION	
AREA CODE	AREAS
10	HEADWORKS
21	PRIMARY CLARIFIERS
28	ODOR CONTROL
30	FINE SCREENING
31	BIOREACTORS
33	BLOWER BUILDING
41	REUSE FACILITY (RO BUILDING), TEMPORARY UF
43	MEMBRANE BUILDING
45	RECYCLED WATER PUMP STATION
51	DIGESTER COMPLEX
53	GAS STORAGE AND GAS FLARE
54	THICKENING/DEWATERING
56	PS GRAVITY THICKENING
57	HSW AND MS RECEIVING AND BLENDING
58	SOLIDS HAULING, DRYER BUILDING
70	NATIONAL GRID CONNECTION, NATIONAL GRID SUBSTATION
80	EXISTING ADMIN BUILDING, ADMIN BUILDING
90	BRIDGING PROJECT MBBR TANKS - FUTURE RECYCLED WATER STORAGE, BRIDGING MBBR BLOWER BUILDING

WHITE PINES INDUSTRIAL WASTEWATER TREATMENT FACILITY

LEGEND

- EQUIPMENT FOR TREATING FAB - 1 WASTEWATER
- EQUIPMENT FOR TREATING FAB - 2 EXPANSION WASTEWATER
- OAK ORCHARD TREATMENT FACILITY EXPANSION
- PAVED ROAD
- EXISTING STRUCTURE
- CONTRACTOR STAGING AREA
- PRIVACY WALL ACOUSTIC BARRIER
- LIMIT OF WORK BY OTHERS
- FAB - 1 STRUCTURE OR AREA
- FAB - 2 EXPANSION STRUCTURE OR AREA

A	INFLUENT SCREENING BUILDING
B	EQUALIZATION TANK
C	DIVERSION TANK
D	ANOXIC TANKS
E	AERATION TANKS
F	MEMBRANE FILTRATION BUILDING
G	BLOWER BUILDING
H	CHEMICAL BUILDING
I	EVAPORATION SYSTEM BUILDING
J	CONDENSATE / EFFLUENT STORAGE AREA
K	CRYSTALLIZER SYSTEM BUILDING
L	HIGH PH RO BUILDING
M	HIGH PH RO PERMEATE AND FEED TANKS
N	ION EXCHANGE BUILDING
O	DECARBONATION BUILDING
P	UV DISINFECTION BUILDING
Q	RECYCLED WATER PUMP STATION
R	DEWATERING BUILDING
S	MOTOR CONTROL BUILDING
T	ODOR CONTROL AREA

100 0 50 100 200

GRAPHIC SCALE (IN FEET)

GENERAL ARRANGEMENT SITE PLAN

Scale: 1" = 20'

OTHER INFORMATION

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PROJECT TITLE: **WHITE PINES INDUSTRIAL WWTP**

PROJECT LOCATION: **OAK ORCHARD ROAD**

CLIENT: **ONONDAGA COUNTY**

DRAWING TITLE: **GENERAL ARRANGEMENT SITE PLAN**

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Onondaga County Department of Water Environment Protection

Oak Orchard Industrial Wastewater Treatment Plant and Water Reclamation Facility

Conceptual Design Engineering Report

Prepared for
OCDWEP
SPDES No. NY0030317
Syracuse, NY
June 18, 2025



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List of Abbreviations

µm	micrometer
AACE	Association for the Advancement of Cost Engineering International
BC	Brown and Caldwell
BFE	base flood elevation
BNR	biological nitrogen removal
BOD	biochemical oxygen demand
$CaCO_3$	calcium carbonate
CAPEX	Capital Expenditures
CCI	Construction Cost Index
CIP	clean in place
CO2	carbon dioxide
COD	chemical oxygen demand
CPES	Critical Path Engineering Solutions
DAC	Disadvantaged Communities
DB	design build
DO	dissolved oxygen
EDR	Environmental Design & Research
ENR	Engineers News Record
EPC	engineering, procurement, and construction
EPRI	Electric Power Research Institute
EQ	equalization
ERM	Environmental Resources Mapper
FAB	Fabrication Facility/Building
FEL	front end loading
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
GC	General Contractor
gpd	gallons per day
gpd/ft2	gallons per day per square foot
gph	gallons per hours
H_2O_2	hydrogen peroxide
H_2SO_4	sulfuric acid
H_3PO_4	phosphoric acid
HERO	high-efficiency reverse osmosis
HP	horsepower
HRT	hydraulic retention time
I&C	instrumentation and controls
IPA	isopropyl alcohol
IPaC	Information for Planning and Consultation
IWWTP	industrial wastewater treatment plant
IX	ion exchange
lb/day	pounds per day
lb/yr	pounds per year
MBR	membrane bioreactor
MCRT	mean cell residence time
MF	microfiltration
MF/UF	microfiltration/ultrafiltration
MG	million gallons
mg/L	milligrams per liter
MGD	million gallons per day
mJ/cm^2	millijoules per square centimeter
MLE	Modified Ludzack-Ettinger
MLSS	mixed liquor suspended solids
mm	millimeter
MM	million
mV	millivolt
MVR	mechanical vapor recompression
N2O	nitrous oxide
NaOCl	sodium hypochlorite
NaOH	sodium hydroxide
ND	non-detect
NF	nanofiltration
NH_3-N	ammonia nitrogen
NH_4+	ammonium
NHP	National Heritage Program
NO_3-N	nitrate nitrogen
NWI	National Wetlands Inventory
NYSDEC	New York State Department of Environmental Conservation
O&M	operations and maintenance
OA	owner's advisor
°C	degrees Celsius
OCDWEP	Onondaga County Department of Water Environment Protection

OCIDA	Onondaga County Industrial Development Agency
OCWA	Onondaga County Water Authority
°F	degrees Fahrenheit
OPEX	Operating Expenditures
ORP	oxidation reduction potential
PD	positive displacement
PEJA	Potential Environmental Justice Areas
PFAS	per and polyfluoroalkyl substances
PFD	process flow diagram
PO4-P2	ortho phosphorous
POTW	Publicly Owned Treatment Works
PUB	Public Utilities Board
RAS	return activated sludge
RFE	Ready for Equipment
RFI	request for information
RFM	Ready for Manufacturing
RFP	request for proposal
RO	reverse osmosis
RPR	Resident Project Representative
SAC	strong acid cation
SBA	strong base anion
SCADA	Supervisory Control and Data Acquisition
scf/day	standard cubic feet per day
SIC	Standard Industry Classification
SPDES	State Permit Discharge Elimination System
TBEL	federal technology based effluent limits
TBLL	technically based local limits
TCLP	toxicity characteristic leaching procedure
TDS	total dissolved solids
TKN	Total Kjeldahl nitrogen
TMAH	tetramethylammonium hydroxide
TMP	transmembrane pressure
TOC	total organic carbon
TP	total phosphorous
TSS	total suspended solids
TTO	total toxic organics
UF	ultrafiltration
UPW	ultrapure water
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service
UV	ultraviolet
UVT	ultraviolet transmittance
VSS	volatile suspended solids
WAC	weak acid cation
WAS	waste activated sludge
WHO	World Health Organization
WOTUS	Waters of the United States
WQBEL	Water Quality Based Effluent Limits
WQS	Water Quality Standards
WRF	water reclamation facility
WWTP	wastewater treatment plant

Executive Summary

Micron Technology, Inc. (Micron) is proposing to construct a semiconductor manufacturing campus in the Town of Clay, New York. There will be a total of four Fabrication Facilities (Fabrication 1 [FAB1], Fabrication 2 [FAB2], Fabrication 3 [FAB3], and Fabrication 4 [FAB4]) built in two phases. FAB1 and FAB2 will be constructed in Phase 1, while FAB3 and FAB4 will be constructed in Phase 2.

Onondaga County through the Onondaga County Department of Water Environment Protection (OCDWEP) is working with Micron to provide sanitary and process wastewater treatment and reclaimed water for ultrapure water (UPW) and cooling water. For process wastewater and reclaimed wastewater for cooling water, OCDWEP is in the process of procurement of design build (DB) engineering procurement and construction (EPC) services for a greenfield industrial wastewater treatment plant (IWWTP) and water reclamation facility (WRF) to be collocated at their Oak Orchard Wastewater Treatment Plant (Municipal WWTP) site. As part of development of the request for proposal (RFP) for bidding EPC services, OCDWEP has contracted Critical Path Engineering Solutions (CPES), Environmental Design & Research (EDR), and Brown and Caldwell (BC), a subconsultant to EDR, for support with owner's advisor (OA) services for the procurement and oversite of the EPC through final design.

The Project consists of a new IWWTP WRF and associated force mains to serve the industrial discharge from the new Micron Facility. The new IWWTP WRF will be located on the existing Municipal WWTP site. The Municipal WWTP is in the process of being upgraded in capacity to accommodate additional sanitary wastewater and provide reclaimed water for UPW as required by Micron to meet sustainability goals and mitigate any gaps in supply of Onondaga County Water Authority (OCWA) water to Micron.

A total of 11 alternatives, in addition to the no-action and green infrastructure alternatives, were developed for the IWWTP WRF based on the following criteria:

1. Water quality and quantity data provided by Micron
2. Discharge water quality requirements as outlined in the existing Oak Orchard State Permit Discharge Elimination System (SPDES) permit
3. OCDWEP's objectives: reliability, cost, phasing, schedule, risk, health and safety, operability, accessibility, aesthetics, adaptability, county and industrial standards.

Alternative 10 was selected from the 11 to meet Micron FAB1 discharge requirements. Alternative 11 was selected as an addition to Alternative 10 to meet Micron FAB2 discharge and reclaimed water requirements. Together these comprise the IWWTP WRF in support of Micron's Phase 1 manufacturing campus.

A maximum design condition flow of 8.25 million gallons per day (MGD) for FAB1 and an additional flow of 8.25 MGD for FAB2 was used, along with the criteria above, as the basis of design for the development of the alternatives. The 11 alternatives outline the combination of treatment techniques within biological, physical, and chemical treatment to meet the discharge and water reuse requirements. An alternatives analysis evaluation was performed, and two technically feasible alternatives were further developed to be selected as the recommended alternatives for the IWWTP WRF.

Alternative 10 will provide biological treatment for the wastewater generated during the operation of FAB1, with the ability to upgrade the biological treatment capacity when FAB2 is online. This

alternative consists of an equalization tank to provide constant volume equalization and a diversion tank to provide for the peak influent concentrations and/or off-specification water. The biological treatment includes the Modified Ludzack Ettinger (MLE) process which uses an anoxic tank upstream of the aerobic tank to provide nitrogen removal through nitrification and denitrification. The wastewater flow from the aerobic tanks then passes through a membrane bioreactor (MBR) where internal immersed hollow fiber ultrafiltration (UF) membranes provide solids removal. From the MBR, the flow passes through ultraviolet (UV) disinfection to treat potential pathogenic organisms before being discharged to the internal outfall 01B to the Oak Orchard campus outfall pipe. The waste activated sludge (WAS) from the MBR is thickened via a combination of gravity thickeners and centrifuges, and the solids produced from these processes are intended to be disposed of in a landfill. Specific disposal locations and criteria will be investigated as the design progresses.

Alternative 11 will provide biological and physical/chemical treatment for the wastewater generated to treat the combined 16.5 MGD of flow during the operation of both FAB1 and FAB2. The FAB2 alternative has the same biological treatment setup as Alternative 10 but with additional trains to meet the increased capacity of 16.5 MGD. Following MBR treatment, the wastewater flow goes through an ion exchange (IX) process using a strong acid cation to remove magnesium and calcium alkalinity in addition to magnesium and calcium non-alkalinity to reduce scaling in the reverse osmosis (RO) treatment. Following the IX process, a decarbonization stripper is used to remove carbon dioxide in the wastewater to further reduce corrosion and scaling tendencies in the downstream processes. The carbon dioxide stripped wastewater then passes through RO treatment where the permeate is sent through UV treatment and can be either discharged in the Oneida River or reused by Micron as reclaim water. The RO concentrate is further treated through an evaporator and crystallizer system to reduce the amount of overall brine for hauling and disposal offsite. Specific details of the disposal of brine solids separated through dewatering will be developed as this design is progressed. The condensate from the evaporator and crystallizer systems can be blended with the RO permeate before being sent through UV disinfection and either discharged or used for reclaimed purposes.

A Class 5 cost estimate was developed for both Alternatives 10 and 11 considering construction costs, non-construction costs, and appropriate contingencies. The capital cost was calculated based on present value (May 2025).The operations and maintenance (O&M) costs were calculated based on future value July 2028), when the fabrication facilities are in operation. The total projected capital cost for Alternative 10 was estimated to be $410 million (+100%/-50%). The O&M costs for Alternative 10 were estimated to be $11.6 million in July 2028 dollars. The total projected incremental cost for Alternative 11 was estimated to be $1,054 million (+100%/-50%). The O&M costs for Alternative 11 were estimated to be $73.1 million in July 2028 dollars.

Section 1

Project Background and History

Micron Technology, Inc. (Micron) is proposing to construct a semiconductor manufacturing campus in the Town of Clay, New York, at the White Pine Commerce Park, an approximately 1,400-acre Industrial Park. Wastewater is generated from the manufacturing of semiconductors and other devices on silicon wafers. Micron's facility aligns with Standard Industry Classification (SIC) 3674 for Semiconductors and Related Devices aligning with US EPA 40 CFR Part 469, Subpart A, Electrical and Electronic Components industrial point source categorical limitations. In general, the semiconductor wafers will be manufactured at this campus with soldering and packaging for ultimate applications completed at another facility.

There will be a total of four Fabrication Buildings (e.g., Fabrication 1 [FAB1], Fabrication 2 [FAB2], Fabrication 3 [FAB3], and Fabrication 4 [FAB4]) FAB1 and FAB2 will be constructed first. FAB1 is projected for groundbreaking in November 2025, with construction complete by July 2028 and full steady state production by July 2030. FAB1 Ready for Equipment (RFE) validation testing is anticipated in April 2028 with Ready for Manufacturing (RFM) validation testing in July 2028, and then production in November 2028. FAB2 will be completed over a similar three plus year period with full steady state production by Summer of 2035. Micron's wastewater quantities, quality, and requirements for the installation of FAB1 and FAB2 are discussed in this Engineering Report.

Onondaga County through the Onondaga County Department of Water Environment and Protection (OCDWEP) is working with Micron to provide sanitary and process wastewater treatment and reclaimed water for cooling water and ultrapure water (UPW) makeup water. Additionally, the Onondaga County Water Authority (OCWA) is working with Micron to provide potable water for production (e.g., cooling and ultrapure water production) as well as sanitary uses by site personnel.

For process wastewater and reclaim wastewater for cooling water, OCDWEP is in the process of procurement of design build (DB) engineering procurement and construction (EPC) services for a greenfield industrial wastewater treatment plant (IWWTP) and water reclamation facility (WRF) to be collocated at their Oak Orchard Wastewater Treatment Plant (Municipal WWTP) site. As part of development of the request for proposal (RFP) for bidding EPC services, OCDWEP has contracted Critical Path Engineering Solutions (CPES), Environmental Design & Research (EDR), and Brown and Caldwell (BC), a subconsultant to EDR, for support with owner's advisor (OA) services for the EPC procurement and oversite through detailed design, referred to as the OA Team in this Report.

BC is working with EDR and CPES to complete both a conceptual and preliminary design of the IWWTP WRF to facilitate permitting and DB EPC procurement for the IWWTP WRF infrastructure. The current level of project and design development is between the conceptual or front-end loading (FEL) 0 and FEL 1 stage whereas up to 10 percent of the engineering is complete with approximately 10 percent of the total project defined. As such, high level process flow diagrams, material balances, major equipment sizing, major equipment lists, and general arrangement drawings were completed for a Class 5 cost estimate per AACE (Association for the Advancement of Cost Engineering International) guidelines. BC will advance this concept to a preliminary design between a FEL1 and FEL 2 stage where up to 20% of the engineering will be complete and the project further defined approximately 15% of the project defined for a Class 4 cost estimate per AACE requirements. The New York State Department of Environmental Conservation (NYSDEC) would typically require preliminary design level materials, however to help NYSDEC and the multiple stakeholders involved

begin to become familiar with the project, this report has been prepared to accompany the conceptual level design. The report will be revised and submitted to accompany the preliminary design which is scheduled to be completed in November of 2025.

The IWWTP WRF will be built in two steps associated with Micron's projected discharges from FAB1 and FAB2. An initial IWWTP will be designed to serve FAB1 with additional IWWTP and WRF capabilities added for FAB2. Discharges from the IWWTP WRF will be discharged through the internal outfall 01B to the Oneida River through the combined Oak Orchard Campus Outfall 001. The IWWTP WRF conceptual design is the focus of this Engineering Report. The subsequent preliminary design will be completed by November 2025.

OCDWEP is currently contracted with Carollo Engineers (Carollo) to upgrade Municipal WWTP capacity and treatment for initial or bridge wastewater treatment for sanitary and process wastewater during early 2028/2029 as a "bridge" or stop gap until the IWWTP WRF is complete. Longer term, the upgraded Municipal WWTP will only provide sanitary wastewater treatment for Micron, with initial supplemental UPW make-up water until the IWWTP has WRF capabilities for cooling water when FAB2 upgrade is complete. Municipal WWTP will also supply recycled water to Micron for UPW makeup. The engineering report for the Oak Orchard municipal upgrades and reclaimed water will be submitted under separate cover by Carollo Engineers to the New York State Department of Environmental Conservation (NYSDEC) for permitting and review purposes.

Carollo is leading the New York State Permit Discharge Elimination System (SPDES) effort with support as needed by the OA team for both the OOWTP and the IWWTP WRF. The IWWTP WRF design concept described herein is based primarily on the initial SPDES compliance, permitting, and modeling work lead by BC, where potential SPDES permit requirements were developed based on NYSDEC guidelines on outfall mixing and modeling considerations to the Oneida River, Municipal WWTP discharges, and the IWWTP WRF.

1.1 Site Information

1.1.1 Location

The Project consists of a new IWWTP WRF and associated force mains to serve the industrial discharge from the new Micron Facility. The project will be located at the existing Oak Orchard WWTP at 4300 Oak Orchard Road and the adjacent conveyance corridor. The conveyance corridor connects the Micron Site located on Caughdenoy Road to the IWWTP location. The Conveyance Corridor follows Verplank Road, west of Caughdenoy Road towards the Oak Orchard Site for approximately 0.5 miles, and then through several easements through back lots for another mile and a half to the Oak Orchard Site. A figure showing the project location is located in Appendix A.

1.1.2 Geologic Conditions

The USDA Web Soil Survey was reviewed to obtain a summary of soil conditions within the project area. Based on the soils data provided, the topography is flat to rolling, with slopes between zero and 6 percent. The soils on the site are primarily in Hydraulic Soils Groups C and C/D indicating poorly drained soils.

Soil borings completed in the area indicate areas of existing fill consisting of silts, silty sand or cobbles and boulders, as well as areas of lacustrine deposits consisting of silts, silty clays and sand. The soil boring logs are included in Appendix B.

A subsurface geotechnical program including additional borings along the conveyance corridor from Micron to the IWWTP site will be established.

1.1.2.1 Environmental Resources

A preliminary review of environmental resources was conducted including a desktop review of publicly available information and on-site wetland delineations. Desktop reviews of the NYSDEC Environmental Resources Mapper (ERM) and the U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) were conducted to identify environmentally sensitive areas that may be present within the project area.

Review of the ERM indicates the following:

- One NYSDEC-mapped stream is located within the project area. This is a Class C stream (Mud Creek) which flows to the north along the western edge of the project area. The stream continues beyond the project boundary and discharges into the Oneida River.
- USFWS National Wetlands Inventory (NWI) mapping shows the presence of three freshwater ponds and three riverine wetlands within the project area along Mud Creek to the west. Additionally, the conveyance route may intersect one freshwater forested/shrub wetland adjacent to, but outside of, the eastern boundary of the project area.
- One previously mapped NYSDEC freshwater wetland exists within the project area along the banks of Mud Creek to the west and a freshwater pond to the east, and two exist to the east along the proposed conveyance route.
- The project area is not located above or adjacent to a primary or sole source aquifer.
- The project area is in the vicinity of state-listed (i.e., endangered, threatened, or rare) plants and animals. Further consultation with the NYSDEC Regional Office is ongoing to determine whether the project may be harmful to state-listed species or their habitats. If it is determined that impacts to these species may occur, mitigation and/or minimization coordination may be required.

Review of the IPaC system indicates the following:

- Project activities could potentially affect the following federally protected species: northern long-eared bat (Myotis septentrionalis; endangered), the Indiana bat (Myotis sodalis; endangered), the tricolored bat (Perimyotis subflavus; proposed endangered), and the monarch butterfly (Danaus plexippus; proposed threatened).
- Review of the Natural Heritage Program (NHP) indicates the following in addition to the IPaC system:
  - Project activities could potentially affect the following species: Pied-billed grebe (Podilymbus podiceps; threatened), Bald eagle (Haliaeetus leucocephalus; threatened), Lake sturgeon (Acipenser fluvescens; threatedned), and Hairy small-leaved tick trefoil (Desmodium ciliare; threatened).
- A habitat suitability assessment was completed for the Oak Orchard site and an assessment of the Conveyance Corridor is in progress. The assessment of the Oak Orchard site determined that impacts to the monarch butterfly, Lake sturgeon, Pied-Billed grebe are not likely to be affected by the project. Impacts to bats or bat habitat are not expected to occur if tree cutting and clearing can be avoided. Impacts to monarch butterflies are not expected to occur if disruption of large areas of milkweed and nectaring vegetation can be avoided. This information is being confirmed through ongoing federal agency coordination. If it is determined that impact avoidance is not feasible (e.g., tree clearing required or habitat is impacted), then additional minimization (e.g., adherence to time of year clearing restrictions) and/or mitigation coordination may be required as part of federal agency review.
- Additionally, EDR conducted site-specific wetland delineation within the Oak Orchard Site on July 30 and 31, 2024. A total of five wetlands and five streams were identified in the project

area, totaling 6.95 acres and 2,837 linear feet, respectively. Impacts to these wetland resources will require permits from the U.S Army Corps of Engineers (USACE) and/or NYSDEC.

- Two constructed wastewater treatment lagoons are located within the project area. The boundaries of these features were digitized based on arial imagery and verified in the field. The wastewater lagoons are presumed to be non-jurisdictional features as wastewater treatment facilities are specifically listed by the USACE as exclusions from Waters of the United States (WOTUS).

  Ramboll conducted wetland delineations within the Conveyance Corridor encompassing the 99-foot easement corridor along the proposed conveyance route between August 26 and September 18, 2024. Eleven wetlands were identified, including palustrine forested, palustrine scrub-shrub, and palustrine emergent wetlands, totaling 7.25 acres within the 23.1-acre easement corridor.

The review indicates that early coordination with USACE/NYSDEC will be essential for this project and as such, preliminary jurisdictional determination and mitigation planning is being coordinated and performed.

1.1.2.2 Floodplain Considerations

Portions of the Oak Orchard Site are within flood areas designated by Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs; included in Appendix C of the final submittal of this report). A majority of the site is in Zone X (minimal to moderate flood hazard area) with the westernmost edge of the site, adjacent to Mud Creek, being Zone AE (high flood hazard area) and a regulatory Floodway with a base flood elevation (BFE) of 369. A portion of the northern portion of the site is also located in Zone AE with a BFE of 369. The project area is not located above or adjacent to a primary or sole source aquifer.

As per the New York State Flood Risk Management Guidance, the final design will include elevation adjustments as follows:

- Non-critical equipment should be designed at least 2 feet above the BFE and the corresponding horizontal floodplain.
- Critical equipment should be designed at least 3 feet above BFE, or the 500-yr floodplain, whichever is more restrictive.

1.1.2.3 Project Impacts to Potential Environmental Justice Areas or Disadvantages Communities

Based on the Potential Environmental Justice Areas (PEJA) provided by the NYSDEC, the project area is not located within a PEJA or a Disadvantaged Communities (DAC).

1.2 Ownership and Service Area

The IWWTP and conveyance piping will be owned by the OCDWEP. As the project develops, OCDWEP will determine if OCDWEP will operate the facility or contract the operations to a third party. The IWWTP WRF will treat the industrial wastewater discharged by the new Micron manufacturing facility located approximately 2 miles away. The IWWTP service area will be limited to the Micron Campus initially. However, if additional users would like to discharge industrial wastewater to the IWWTP in the future, an evaluation of the proposed wastewater will be conducted to determine if service can be provided. The evaluation will be conducted through OCDWEP's industrial discharge permit application process.

1.3 Design Flows

FAB1 will be constructed first with full steady state production expected in July 2030. FAB2 construction will follow with steady state production expected in summer 2035. The wastewater flows from FAB1 and FAB2 are shown in Table 1-1.

Table 1-1. Wastewater Flows from FAB1 and FAB2

		FAB1			FAB2		
		Summer Average	Winter Average	Max Design Concentration	Summer Average	Winter Average	Max Design Concentration
Flow	MGD	6.8	8.25	8.25	13.60	16.5	16.5
	gpm	4,724	5,729	5,729	9,447	11,458	11,458

1.3.1 Population Data Obtained from the U.S. Census Bureau.

While the population is projected to grow, the Industrial WWTP will only provide service to industrial users and will be independent of population.

1.3.1.1 Planned and Anticipated Development

At this time, there are no planned or anticipated additional users for the IWWTP.

1.4 Existing Facilities and Present Condition

The new IWWTP WRF will be located on the existing Municipal WWTP site. The Municipal WWTP treats the municipal wastewater from the area. It is currently being upgraded in capacity and with water reclamation capabilities to accommodate additional sanitary wastewater and provide reclaimed water as required by Micron after the completion of FAB1. The Municipal WWTP expansion project is a separate project but has been and will continue to be closely coordinated with the IWWTP WRF project. The effluent from the IWWTP WRF discharges through internal outfall 01B to the combined Oak Orchard Campus Outfall 001.

The IWWTP WRF is located in the northern portion of the Municipal WWTP site near the Oneida River. A portion of the site currently contains a solar panel array and radio tower that will be demolished prior to the construction of this project.

1.4.1 Design Flows and Waste Loads – from Micron

Currently, there are no existing facilities on the project site. Micron proposes construction of a new semiconductor fabrication facility for the Town of Clay, New York, at the White Pine Commerce Park managed by the Onondaga County Industrial Development Agency (OCIDA) in Onondaga County. Up to four FABs are currently proposed over a 20-year period. FAB1 through FAB4 are anticipated to be fully completed by July 2030, July 2035, July 2040, and July 2045, respectively. The project is to be divided into two phases – Phase 1 will involve the construction of FAB1 and FAB2. Phase 2 will involve the construction of FAB3 and FAB4. Micron will provide UPW, decentralized wastewater, wastewater, and water reclamation treatment on their site with 60- and 55-percent water reclamation in the summer and winter periods, respectively.

1.4.1.1 Analysis of Production Rates for Processing and/or Manufacturing Operations -From Micron

Micron plans to use potable water provided by OCWA and will discharge early works (e.g., construction, RFE, and RFM) production and sanitary wastewater to OCDWEP Municipal WWTP as a bridge until the IWWTP WRF is completed. Ultimately, when the completed IWWTP for FAB1 has been expanded to include the WRF for FAB2, the IWWTP facilities will provide production wastewater treatment and reclaimed water for cooling water to Micron. A project schedule is presented in Appendix D.

1.4.1.1.1 Micron Provided Data

Micron's plan for UPW, decentralized wastewater, on-site wastewater, and water reclamation treatment has been evolving since 2023 with a complex semiconductor toolset planned for this facility. Micron's EPC firm that is completing a FEL3 for the fabrication facility has recently retained a vendor that will help Micron better define their wastewater discharge water quality and quantity at completion. Until that time, Micron has shared potential discharge options resulting in varying water quality and quantities.

Water quantities are generally contingent on the seasonal evaporative cooling and target water reclamation requirements. Micron anticipates needing between 1 and 5 million gallons (MG) of cooling water with higher volumes required in the summer months. Micron currently is targeting up to 60 percent water reuse or reclamation to meet Micron's sustainability goals for FAB1. This could increase during the progression of additional fabrication facilities and technologies. It is anticipated that Micron will share information on anticipated diurnal variations in flow that can be used to verify equalization strategies incorporated into the treatment system design.

Water quality is contingent upon the level of treatment that Micron will provide on-site. As a result, Micron will rely on total dissolved solids (TDS) being managed primarily with their wastewater discharges. Micron is considering different options with varying levels of chemical, physical, and biological treatment at their site. More site treatment generally results in less wastewater discharges from the fabrication facility because it facilitates more water reuse onsite. The OCDWEP team has been working with Micron to optimize the on-site treatment, working to minimize the amount of treatment needed at the IWWTP.

Wastewater Discharge

The most recent Micron data provided per the March 2025 OCDWEP Industrial Wastewater Discharge Permit Application and Questionnaire includes select parameters for the projected combined wastewater flow that will require treatment. These are also referred to by Micron as the latest Option 2.1 Rev 1. The projected wastewater discharge is presented in Table 1-2 below along with parameters estimated for use in modeling necessary in the development, sizing, and evaluation of the treatment of the two alternatives for the conceptual design discussed in Section 2.

Table 1-2. FAB1 and FAB2 Evaluation Basis of Design

Parameter[1]	Units	FAB1			FAB2		
		Summer Average	Winter Average	Maximum Design Condition	Summer Average	Winter Average	Maximum Design Condition[2]
Flow	MGD	6.80	8.25	8.25	13.6	16.5	16.5
	gpm	4,724	5,729	5,729	9,448	11,458	11,458
Influent Temperature	°C	30	25	30	30	25	30
	°F	86	77	86	86	77	86
pH		7.0	7.2	7	7.0	7.2	7.0
Total Organic Carbon (TOC)	mg/L	109	90	163	109	90	163
	lb/day	6,164	6,186	11,213	12,363	12,385	22,426
Chemical Oxygen Demand (COD)	mg/L	848	699	1,272	848	699	1,272
	lb/day	48,106	48,106	87,520	96,212	96,212	175,040
Total Suspended Solids (TSS)	mg/L	98	80	300	98	80	300
	lb/day	5,578	5,532	20,642	11,156	11,064	41,284
Total Dissolved Solids (TDS)	mg/L	1,826	1,515	3,400	1,826	1,515	3,400
	lb/day	103,561	104,243	233,937	207,122	298,486	467,874
Volatile Suspended Solids (VSS)	mg/L	20	16	60	20	16	60
	lb/day	1,116	1,106	4,128	2,232	2,212	8,256
Total Kjeldahl Nitrogen (TKN)	mg/L	75	75	75	75	75	75
	lb/day	4,255	5,160	5,160	8,510	10,320	10,320
Ammonia (NH_3) as N	mg/L - N	75	75	75	75	75	75
	lb/day	4,255	5,160	5,160	8,510	10,320	10,320
Nitrate (NO_3) as N	mg/L	59	49	89	59	49	89
	lb/day	3,370	3,371	6,132	6,740	6,742	12,264
Total Phosphorous (TP)[3]	mg/L	1.8	1.5	1.8	1.8	1.5	1.8
	lb/day	102	107	124	204	214	248
Phosphate (PO_4) as P	mg/L	17	14	17	17	14	17
	lb/day	964	995	1,170	1,928	1,990	2,340
Total Alkalinity[3]	mg/L	Not Provided					
	lb/day						
Aluminum (Al)	mg/L	0.80	0.72	0.80	0.80	0.72	0.80
	lb/day	45	50	55	90	100	110

Table 1-2. FAB1 and FAB2 Evaluation Basis of Design

Parameter[1]	Units	FAB1			FAB2		
		Summer Average	Winter Average	Maximum Design Condition	Summer Average	Winter Average	Maximum Design Condition[2]
Barium (Ba)	mg/L	0.40	0.31	0.40	0.40	0.31	0.40
	lb/day	23	21	28	46	42	56
Calcium (Ca)	mg/L	104	87	104	104	87	104
	lb/day	5,902	5,974	7,158	11,804	11,948	14,316
Chloride (Cl)	mg/L	179	150	179	179	150	179
	lb/day	10,154	10,303	12,316	20,308	20,606	24,632
Copper (Cu)	mg/L	0.41	0.33	0.41	0.41	0.33	0.41
	lb/day	23	23	28	46	46	56
Fluoride (F)	mg/L	9.2	7.6	9.2	9.2	7.6	9.2
	lb/day	521	524	632	1,042	1,048	1,264
Magnesium (Mg)	mg/L	19	17	19	19	17	19
	lb/day	1,078	1,137	1,307	2,156	2,274	2,614
Total Silica (TSi)	mg/L as SiO2	57	47	57	57	47	57
	lb/day	3,243	3,233	3,933	6,486	6,466	7,866
Sodium (Na)	mg/L	234	194	234	234	194	234
	lb/day	13,275	13,359	16,100	26,550	26,718	32,200
Sulfate (SO_4)	mg/L	763	635	763	763	635	763
	lb/day	43,284	43,700	52,498	86,568	87,400	104,996
Isopropyl Alcohol (IPA)	mg/L	206	190	206	206	190	206
	lb/day	11,681	13,102	14,167	23,362	26,204	28,334
Hydrogen Peroxide (H_2O_2)	mg/L	50	50	50	50	50	50
	lb/day	2,836	3,440	3,440	5,672	6,880	6,880
Tetramethylammonium Hydroxide (TMAH)	mg/L	49	40	49	49	40	49
	lb/day	2,764	2,764	3,353	5,528	5,528	6,706

1. *During the preparation of this report, Micron revised the projected effluent wastewater characterization. These new values will be considered during the preparation of the preliminary design report.*
2. *FAB1 Maximum Design Condition doubled for FAB2.*
3. *Peaking factor of 1.5 considered for peak day conditions*

Noteworthy Wastewater Parameters

The following are noteworthy assumptions and information provided in the Micron discharge basis of design criteria for Alternatives 10 and 11.

- **Isopropyl Alcohol (IPA)** – IPA makes up the majority of the organic/chemical oxygen demand (COD) or carbon loading of the wastewater discharges and is readily degradable at the concentrations provided. Adding additional IPA past what has been considered would result in further nitrate reduction and increased biomass production. Additional carbon sources should be investigated if the available IPA is unable to provide sufficient carbon for the treatment of the wastewater.
- **TDS** – TDS is the total material residue that includes inorganic and organics in water that can pass through a 0.45 to 1.5 micrometer (µm) filter that the Standard Methods allows. Values provided by Micron as part of the Option 2.1 Rev 1 water quality data Chemistry Data.
- **Total Suspended Solids (TSS)** – TSS is the particulate matter in the wastewater stream that is made up of both inorganic (fixed) solids and organic solids. Most of the solids discharged are anticipated to be inorganic solids. Average TSS values were included as part of the Option 2.1 Rev 1 Chemistry Data.
- **Volatile Suspended Solids (VSS)** – Organic makeup of TSS consisting of both inert and biodegradable solids. VSS was assumed to be 20 percent of the TSS values reported.
- **Total Kjeldahl Nitrogen (TKN)** – Total concentration of organic nitrogen and ammonia. The value of 75 milligrams per liter (mg/L) is based on maximum allowable discharge Micron is able to discharge per Micron's Preliminary Wastewater agreement with Onondaga County dated 02/07/25.
- **Tetramethylammonium Hydroxide (TMAH)** – TMAH is biodegradable and a critical chemical widely used for photolithography and etching. It therefore one of the primary constituents discharged contributing to TKN, and ultimately ammonia nitrogen to be nitrified.
- **Ammonia Nitrogen (NH_3-N)** – Ammonium (NH_4+) value included as part of Option 2.1 Rev 1 Chemistry Data. Value is presented as NH_3-N to represent the nitrogen concentration in the waste stream. Assumed value is equal to TKN with no organic nitrogen in the wastewater.
- **Total Phosphorous (TP)** –Total concentration of both dissolved and particulate phosphorous which is further made up of ortho phosphorous, inorganic, and soluble organic phosphorous. Assumed that all TP would consist of ortho phosphorous.
- **Ortho Phosphorous (PO4-P)** – Ortho phosphorous is the simple form of phosphorous available for use as macronutrient. Assumed that PO4-P values were equal to TP values.
- **Chemical Oxygen Demand (COD)** – Average values provided by Micron based on information captured in models developed by FTD solutions for Micron.
- **Hydrogen Peroxide (H_2O_2)** – H_2O_2 discharged from production would be limited to 50 mg/L in order to reduce the supplemental COD requirements and/or other (e.g., catalase, sulfite, etc.) reducing chemicals.
- **Per and Polyfluoroalkyl Substances (PFAS) and mercury** – Micron stated during the workshops that PFAS and mercury are anticipated in low concentrations in the waste load coming from their facilities. These compounds will be limited in the discharge from Micron to a level that can be removed in the biological treatment to values below the discharge requirements.
- **Azoles** – Based on Micron's organic wastewater constituents document provided on December 16, 2024, the total azoles from Micron coming to the IWWTP WRF amounted to 10,681 pounds per year (lb/yr). The total azoles are composed of 1,2,4-triazole (8,677 lb/yr), 1-hydroxybenzotriazole (1,508 lb/yr), and 6-methylbenzotriazole (496 lb/yr). At the design summer flow of 6.8 million gallons per day (MGD), the total azoles load corresponds to a concentration of 0.52 mg/L. At the design winter flow of 8.5 MGD, the total azoles load corresponds to a concentration of 0.41 milligrams per liter (mg/L). Based on BC's previous work

and literature, further reduction of total azoles must be accomplished before discharge to the biological treatment system.

- **Silica** – Data on silica was provided as Total Silica. No further information was provided on reactive versus non-reactive silica. It was assumed that all silica is reactive to be conservative when designing the reclaim water treatment.
- **Micronutrients –** Metals in the influent were reviewed to understand if micronutrients needed to be added to promote biological growth and removal of constituents in the wastewater. Values published by Dr. James Young were considered. Additional information is needed to understand if micronutrient addition is necessary for cobalt, iron, and nickel. Values for calcium, copper, magnesium, and sodium are understood to be available at concentrations that meet this demand. Due to the sludge age considered for treatment of this wastewater, addition of cobalt, iron, and nickel were assumed to be non-essential in meeting treatment requirements. The addition of these may improve dewaterability and can be tested on a trial basis following startup of the IWWTP.
- **Sanitary** - It was assumed that no sanitary wastewater will be coming to the IWWTP WRF. Addition of sanitary would introduce debris that could impact the downstream process. Carbon provided by the sanitary would be minimal compared to IPA.
- **Temperature**- Documentation provided by Micron indicates that processes temperature will range between 72°F and 89°F. The cold temperature of 77°F was considered for winter and 86°F for summer based on temperature modeling performed by BC.
- **Alkalinity** – Alkalinity is the summation of bases that allow for buffering above a pH of 4.5 with the majority of alkalinity being associated with carbonate compounds. Assumed sufficient alkalinity.
- **pH** - A value of 7.0 was assumed based on information captured in models developed by FTD solutions for Micron.

Reclaim Water Requirements

Micron also provided water quality criteria for cooling water requirements that are shown in Table 1-3 below.

Table 1-3. PUB NEWater Quality (Typical Values)

Parameters	Unit	WHO Guideline Value*	Typical Value
Microbiological Parameters			
Escherichia coli (E. coli)	colony forming units (cfu)/100mL	<1	<1
Heterotrophic Plate Count (HPC)	cfu/mL	-	<1
Physical Parameters			
Color	Hazen	-	<5
Conductivity	Microseimens per centimeter (µS/cm)	-	<250
Chlorine	mg/L	5	<2
pH Value	Units	-	7.0-8.5
Total Dissolved Solids (TDS)	mg/L	-	<150

Table 1-3. PUB NEWater Quality (Typical Values)			
Parameters	Unit	WHO Guideline Value*	Typical Value
Turbidity	Nephelometric Turbidity Units (NTU)	5	<5
Chemical Parameters			
Ammonia (as N)	mg/L	-	<1.0
Aluminum	mg/L	-	<0.1
Barium	mg/L	1.3	<0.1
Boron	mg/L	2.4	<0.5
Calcium	mg/L	-	<20
Chloride	mg/L	-	<20
Copper	mg/L	2	<0.05
Fluoride	mg/L	1.5	<0.5
Iron	mg/L	-	<0.04
Manganese	mg/L	-	<0.05
Nitrate (as N)	mg/L	11	<5
Sodium	mg/L	-	<20
Sulphate	mg/L	-	<5
Silica (as SiO_2)	mg/L	-	<3
Strontium	mg/L	-	<0.1
Total Trihalomethanes Ratio	-	<1	<0.04
Total Organic Carbon (TOC)	mg/L	-	<5
Total Hardness (as $CaCO_3$)	mg/L	-	<50
Zinc	mg/L	-	<0.1

Urea: <0.005 mg/L or non-detect (ND)

The NEWater potable water standards were developed primarily for industrial and cooling purposes at semiconductor manufacturing plants, petrochemical plants, industrial parks, and commercial buildings. PUB NEWater Quality criteria exceed typical US industry water quality criteria for cooling towers as defined by SPX, BAC, Electric Power Research Institute (EPRI), and Puckorius/CTI. US cooling towers can utilize lesser quality water, and the OA Team will work with Micron to establish the Water Quality Criteria for Cooling Towers in the next phase of the design.

The reclaim water will have an internal outfall at the IWWTP WRF for monitoring of discharge quality.

1.4.2 Discharge Requirements

This section provides a description of potential pretreatment limits as well as considerations for discharge of residuals from the IWWTP. At the completion of FAB1, the IWWTP will have an internal outfall (preliminarily named “outfall 01B”) and monitoring station which is then combined with the Municipal WWTP discharge to Outfall 001. This outfall is being designed by Carollo.

At the completion of FAB2, the IWWTP will include the WRF which will have a discharge and monitoring station for the reclaim water pumped back to Micron.

1.4.2.1 Industrial Point Source `Pretreatment Limits

Micron has indicated the facility is subject to 40 CFR Part 469—Electrical and Electronic Components Point Source Category, Subpart A—Semiconductor Subcategory. Micron has applied for a permit from OCDWEP, and this permit will contain the total toxic organics (TTO) effluent limitations included in 40 CFR 469.18 Pretreatment standards for new sources. In addition to the federal technology based effluent limits (TBELs), technically based local limits (TBLLs) will also be developed and incorporated for protection of pass-through and interference. Pretreatment permit limits are anticipated to include, but not limited to, PFAS, mercury, hydrogen peroxide, cyanide, and metals.

1.4.2.2 Preliminary Estimates on the NY SPDES Permit Limits

The Municipal WWTP currently operates under SPDES Permit NY0030317, with treated wastewater discharged to the Oneida River via existing Outfall 001. The current SPDES permit is included in Appendix E of this report. OCDWEP is planning to replace the existing Municipal WWTP outfall; the IWWTP will connect to the new outfall as internal outfall 01B. Both treatment trains will operate under a single SPDES Permit, with internal outfalls at the effluent of each before combining. Water Quality Based Effluent Limits (WQBELs) will be applied at the combined Outfall 001 while TBELs will apply at the internal outfalls, and as allocated by the owner, if need be, for the Municipal WWTP and IWWTP.

Carollo is preparing an SPDES permit modification application to request inclusion of all planned changes to the Municipal WWTP as well as an addition of the IWWTP for Micron's FAB1 and FAB2. FAB3 and FAB4 are not being included in this permit modification request because these are outside the 10-year permitting window.

NYS Surface Water Quality Standards (WQS) for Class B waters apply to the Oneida River. NYSDEC guidance for development of WQBELs using dilution modeling are documented in NYSDEC's Technical and Operational Guidance Series (TOGS) 1.3.1 (July 1996). Carollo is in the process of modeling dilution using the CORMIX model to determine the appropriate WQBELs for the combined Municipal WTP and IWWTP discharge to protect surface water quality in the Oneida River. Without the completed CORMIX model results, conservative assumptions were made on the amount of assimilative capacity and mixing achievable with a new diffuser. In addition to the mixing provided by diffuser design, several other factors impact WQBELs including background instream concentrations (still under investigation), in stream critical low flows (still under investigation), and instream modeling of oxygen demanding substances (still under investigation). Carollo is investigating these variables with support from OA as needed. In the interim, assumptions were made to account for these variables to predict projected WQBELs (included in Appendix F). More definitive WQBELs will replace these values after further coordination with Carollo and NYSDEC. Final WQBELs will be available in the modified SPDES Permit.

1.4.2.3 Landfill Requirements for Biosolids and Brine Solids

Solids produced will be disposed of according to federal, state, and local regulations to ensure environmental and public health protection. The solids will need to be disposed of according to the contents and quality as determined through waste characterizations (toxicity characteristic leaching procedure [TCLP], moisture, etc.) Specific requirements will be detailed as design progresses. Landfilling of biosolids will be done in accordance with 6 CRR-NY 363-7.1 (j) (i.e., biosolids will be stabilized, dewatered to at least 20-percent solids, and exhibit no free liquid as defined by SW-846 Method 9095 - Paint Filter Liquids Test). Options for landfilling in the NY state area are limited and thus solids handling will be a focus of the design as it progresses.

Additionally, when FAB2 becomes operational, brine solids will be generated and require disposal. Pilot testing is recommended during FAB1 operation to generate water that can be used to create

brine solids that can be analyzed to determine if characteristics are nonhazardous in accordance with 6 CRR-NY 371, with additional treatment considerations, if warranted. Brine solids disposal options being further investigated include landfilling in an industrial waste landfill or transporting to either Pennsylvania or Ohio for deep well injection at an existing disposal facility.

1.5 Definition of the Problem

Micron is proposing to construct a semiconductor manufacturing campus in the Town of Clay, New York, at the White Pine Commerce Park (Micron Campus). The Micron Campus will be built-out in phases over an approximate 20-year period. It will consist of the construction of at least two FABs. The FABs are plants where silicon wafers are turned into integrated circuits and computer chips that power personal computers, cell phones, and other electronic devices. To support the Micron Campus, OCDWEP is proposing to construct, operate, and maintain a new IWWTP WRF to treat the industrial wastewater produced by FAB productions and provide reclaim water.

1.6 Financial Status

OCDWEP is responsible for the infrastructure and maintenance of six wastewater treatment plants, approximately 185 pump stations, and nearly 2,000 miles of sewer pipe. The system, in conjunction with locally owned sewer infrastructure, serves approximately 410,000 residents within the County's Consolidated Sanitary District. The County's budget generates revenue through multiple sources, primarily through the Sewer Unit Charge.

The Sewer Unit Charge is a user fee billed to all properties that have a connection to the County's sanitary sewer system. The fee supports the costs associated with the operation and maintenance of the six wastewater treatment plants. It also provides funding for necessary capital improvements.

As this project includes OCDWEP's first and only facility dedicated to treating industrial wastewater, a Single User Industrial Sewer Use Fee is being developed to support the costs associated with the operation and maintenance on the IWWTP facility as well as capital cost. If additional industrial users are approved to discharge, the industrial user fee will be adjusted accordingly to a multi-user industrial fee, including any improvements or capital needed at that time to receive additional wastewater.

Section 2

Summary and Comparison of Alternatives

2.1 Alternative Comparison Criteria

Appendix G provides a summary comparison matrix of the 11 alternatives considered for the Onondaga County IWWTP WRF during the conceptual engineering effort. Additionally, Appendix G provides block flow diagrams for each. These alternatives were developed considering, but not limited to, the following requirements developed by OCDWEP:

1. Reliability: The proposed IWWTP shall continuously operate and meet applicable law and contract standards such that the needs of OCDWEP, Micron, Onondaga County, its residents and other stakeholders are met throughout the design, construction, and operation; providing reliable long-term operation.
2. Cost: Design shall focus on capital and life-cycle costs through alternatives evaluation, collaboration, and value engineering with consideration for construction and long-term operation.
3. Phasing: Design and execution shall include forward thinking and phasing to provide a logical cost-effective plan to meet future expansion and/or modifications to operations that may be needed for changing wastewater conditions or applicable law.
4. Schedule: Project will be a progressive design-build. The schedule is tight and will be a driver for success with completion dates identified herein for design, construction, commissioning, and operation. Meeting the milestone dates will be critical.
5. Risk: Risks shall be clearly identified. OCDWEP IWWT team and the Design-Build team shall work collaboratively to reduce risk during the design and bidding phases of the project.
6. Health and Safety: Implement an effective safety program that incorporates OCDWEP standards and industry best practices.
7. Operability: IWWTP WRF shall be designed for ease of operations and to protect operations staff from injury.
8. Accessibility: IWWTP WRF shall be easily accessible for operations, outside deliveries, and hauling of waste.
9. Aesthetics: IWWTP WRF shall not impact the surrounding community from a visual or odor standpoint.
10. Adaptability: Controls are flexible to adapt and be modified as needed to changing conditions and drive operational improvements and efficiencies.
11. Standards: Project shall meet OCDWEP county standards as well as industry standards where applicable within project cost structure and objectives.
12. Footprint: The IWWTP WRF layout shall fit within the footprint identified by OCDWEP.

2.1.1 Alternatives 1 through 3

Alternatives 1 through 3 were ruled out because of the following:

- Inability to meet anticipated SPDES requirements in particular with TDS.
- Each alternative resulted in large quantities of chemical treatment solids from softening and calcium sulfate precipitation.
- Applying chemical clarification on the entire influent flow required large area requirements for the clarifiers in addition to greater TDS contribution.
- No removal of sodium and chlorides.
- Cycling effects of TDS with reverse osmosis (RO) reject recycle.

2.1.2 Alternatives 4 through 6

Alternatives 4 through 6 were determined not to be feasible because of the following:

- Larger footprint with Bardenpho biological nitrogen removal (BNR), strong base anion (SBA) IX, and RO reject chemical treatment systems.
- Larger quantities of residuals resulting from both chemical and thermal treatment systems.
- Largest number of unit processes applied to treatment resulting in higher costs.
- Largest amount of chemicals required including supplemental COD, acids, bases, sodium aluminate, magnesium hydroxide, and lime.
- Most operational complexity.

2.1.3 Alternatives 7 through 9

Alternatives 7 through 9 were determined not to be feasible because of the following:

- Larger footprint with Bardenpho BNR (alternative 9 only), SBA IX, and RO reject chemical treatment systems
- Larger quantities of residuals resulting from both chemical and thermal treatment systems
- Largest number of unit processes applied to treatment resulting in higher costs
- Largest amount of chemicals required including supplemental COD, acids, bases, sodium aluminate, magnesium hydroxide, and lime
- Most operational complexity

2.1.4 Alternatives 10 and 11

See Section 3 below.

2.2 Cost Analysis/Comparison

Life cycle cost analyses were not completed for all of the alternatives. An initial high level AACE (+100/-50%) total installed capital costs were estimated in early December 2024 for Alternative 4 and 6 (now alternatives 10 and 11) at design flows of 8.5 MGD at $500MM and $1,000MM, respectively. As described in Section 2.2 we have developed present value total installed capital and operations and maintenance costs for Alternatives 10 and 11 herein.

Section 3

Alternative Analysis

Due to the changes in water quality and quantities prescribed by Micron associated with the advancement of their engineering for the Fabrication Facility, the advancement of the SPDES permit modeling and development work to define discharge water quality requirements and OCDWEP's objectives, a total of 11 alternatives for the IWWTP WRF were developed. These alternatives were evaluated and screened to find a feasible alternative for advancement of the engineering work for use in the EPC RFP as part of the conceptual design work. This will be further developed into a preliminary design for the EPC RFP by November 2025. The complete list of alternatives developed, considered, and selected are presented in Section 3 below. The alternatives that were selected and have been developed as design concepts are presented below. These will be further refined with advancement of the engineering as part of the preliminary design.

No Action was not considered a feasible alternative as Micron's facility will generate a complex industrial wastewater stream that the existing Oak Orchard facility is not designed, sized, or equipped to handle at full load. A new construction project to treat the industrial wastewater stream from Micron is the only available option for the total fabrication facilities' wastewater flows. No information for additional industrial facilities was available during this phase of design.

At the current level of design, green infrastructure has not been included in the design. It will be considered when the design begins to include site civil engineering. It is assumed this project will increase the impervious area and therefore stormwater outfalls to the local surface water will be necessary.

The two technically feasible IWWTP WRF alternatives for treatment of Micron's process wastewater discharges are described in the following sections. Alternative 10 discusses the treatment process for FAB1, and Alternative 11 discusses the treatment for the additional flow once FAB2 is operating.

3.1 Alternative 10: Micron Fabrication Facility 1 Treatment IWWTP

Alternative 10 provides biological treatment for the wastewater generated during the operation of FAB1 that can be upgraded for FAB2 (with additional biological treatment in like kind and chemical physical treatment for reclaim water – see Section 3.2 Alternative 11).

3.1.1 Proposed Design Concept

A conceptual design for Alternative 10 is included as Appendix H. This includes the following:

1. A high-level process flow diagram (PFD) depicting the IWWTP.
2. A mass balance which predicts the performance of the system by detailing the flow and water quality of individual streams through the treatment process. The balance was also used to size equipment. This mass balance will be refined while working with Micron to establish pretreatment permit and treatment requirements at the fabrication facilities.
3. A major equipment list which provides details of the equipment included in this alternative.
4. A general arrangement is included to show the preliminary location of the equipment on the site.

Figure H-1 in Appendix H provides a PFD for the FAB1 IWWTP. Industrial wastewater from FAB1 will be pumped from Micron's wastewater pump station to the IWWTP facility located adjacent to the

Municipal WWTP. The first component of the IWWTP is an equalization tank used to dampen the influent loading variations. The system also includes a diversion tank to contain slug loads and high flows from the Micron facility and bleed the slugs/excess flow into the equalization tank for conveyance into the treatment system. Flow from the equalization tank is pumped though self-cleaning horizontal filters to protect the downstream ultrafiltration (UF) membranes treatment trains from stringy materials and solids greater than 2 millimeters. The screened wastewater then flows into two parallel anoxic reactors. During anoxic treatment, nitrates in the wastewater will be denitrified utilizing residual carbon from the influent wastewater. The effluent from the anoxic tank will flow by gravity to the aerobic tank where organics will be degraded and ammonia will be nitrified. The treated wastewater from the aerobic tank flows by gravity to the membrane bioreactor (MBR) where the UF membranes pump filtered wastewater to the effluent tank. Up to 80 percent of the forward flow is pumped back to the anoxic zone to remove nitrates and nitrites generated in the nitrification process while the remaining 20 percent is bypassed. The 80 percent that is returned will be returned from the MBR at 4X the forward flow. Water collected in the effluent tank is now very low in solids, organics, and nitrogen. The effluent is then pumped to ultraviolet (UV) disinfection and discharged to the Municipal WWTP outfall with ultimate discharge to the Oneida River.

Biosolids from the membrane tank are recycled to the bioreactors or wasted to solids handling which is comprised of gravity thickening followed by centrifugation for dewatering.

The majority of the tankage for the process is shared wall concrete construction to minimize the footprint of the treatment system.

3.1.1.1 Equalization Tank

A 3-MG above ground concrete equalization tank will receive influent to be treated by the biological treatment process. The equalization tank will be equipped with an eductor or jet type mixing system to blend the contents. The function of the equalization tank will be to reduce peaks in flow and concentrations as a means to maintain a normalized or equalized flow. Normalized flow aids in providing consistent treatment and reducing peaks experienced. Because the construction is anticipated to be shared wall concrete tanks for the FAB1 system, the equalization tank (and diversion tank described in Section 3.1.1.2 below) are designed for the FAB2 flow to simplify construction. A minimum hydraulic retention time (HRT) of four hours was considered for the equalization tank under a peak flow of 16.5 MGD for the combined FAB1 and FAB2 discharge. The short retention time for four hours along with the H_2O_2 in the influent will minimize the risk of biological growth and related odor concerns. By installing the equalization tank ahead of FAB1, time for the construction and installation for FAB2 would be reduced. This will be operated at a constant volume. By operating at a constant volume, any variations in the influent wastewater would be reduced. Equalization sizing may be revised based upon diurnal flow information provided by Micron as their design progresses (see Section 1.4.1.1).

Continuous complete mixing would be necessary for the equalization tank. Tank mixing would be accomplished through the use of an eductor. The eductor relies on the use of a mix pump to pump the contents of the equalization tank through the eductors in a pipe header system in the tank. The forward or motive flow through an eductor results in a venturi effect or vacuum such that each unit volume of forward flow pumped through the eductor typically results in up to four- to-six-unit volume of flow being combined resulting in a high rate of mixing thereby turning the tank volume over four to six times per day. The liquid leaving the eductor would be discharged at an increased rate (direct and induced flow) resulting in a completely mixed environment.

3.1.1.2 Diversion Tank

A 3-MG above ground concrete offline diversion tank is included for use in conditions where surplus volume is discharged and/or further dampening of wastewater influent loads are required (such as maintenance activities). The contents of the diversion tank would be discharged to the equalization tank. This tank is also equipped with eductor or jet type mixing to blend the contents and will provide additional equalization and allow off-specification discharges to be metered back into the mainstream wastewater to be treated to avoid upset conditions. A minimum HRT of four hours was considered for diversion of 16.5 MGD under the combined Micron FAB1 and FAB2 discharge. This tank would operate as needed and not on a continuous basis. Like the equalization tank, the diversion tank would rely on the use of an eductor for a complete mixed environment.

The contents of the diversion tank would be pumped back to the equalization tank. The discharge from the diversion tank will be discharged at a controlled pace to minimize variability in downstream loading.

3.1.1.3 Influent Screening

Process water collected in the equalization tank will be pumped through horizontal self-cleaning stainless-steel screens with perforations of 2 millimeters (mm) to capture fine particles that have the potential to foul downstream treatment equipment (such as UF and RO processes). The screened water would then discharge to the biological treatment system. The backwash generated from the screens will discharge to the downstream gravity thickeners ahead of dewatering.

3.1.2 Biological Treatment

The screened influent would discharge to completely mixed above ground concrete anoxic tanks. The anoxic process is conducted by a group of heterotrophic organisms that require organic carbon to reduce nitrate. IPA in the influent is able to serve as the carbon source to facilitate this process. External carbon sources can be evaluated to understand if other carbon sources such as MicroC, acetate, methanol, or glycol provide more efficient treatment compared to IPA alone. Each anoxic tank was sized for 1.05 MG. Each anoxic tank would operate at an oxidation reduction potential (ORP) of -100 to 50 millivolt (mV) and dissolved oxygen (DO) concentration less than 0.5 mg/L. Operating at the reduced ORP would facilitate the removal of organics and nitrate. The contents of the tank would be kept completely mixed to allow biomass to remain in suspension and in contact with organics and nitrate. Mixing would be accomplished by low-speed vertical mixers These were considered due to the low energy usage of these mixers and ability to minimize oxygen entrainment. In this process nitrate would be converted to nitrogen gas. During the anoxic process alkalinity would be produced to aid in regulating pH. The pH in that anoxic tank should remain between 6.5 and 7.5.

Effluent from each anoxic tank will flow by gravity to a 5.7-MG above ground concrete aerobic treatment tank. The aerobic treatment tank would serve to reduce NH_3-N and organics discharged from the anoxic tank. The aerobic treatment tank will rely on an online sensor to monitor DO concentration in the aeration tanks continuously. Positive displacement (PD) blowers will be started and adjusted as needed to maintain a DO of 2 mg/L in the mixed liquor. As an alternative to DO, use of ORP probes may be considered to target select ORP ranges. 800 horsepower (HP) of blowers will satisfy oxygen transfer needs of under average conditions while 1300 HP of blowers would be needed to satisfy oxygen transfer needs under peak conditions. Each aeration tank would be equipped with an aeration grid to accommodate operation of 1300 HP of blowers simultaneously. The pH in the aeration tank should remain between a pH of 6.5 to 7.5.

Alkalinity in the form of 50-percent sodium hydroxide (NaOH) will be added as needed to control pH and maintain effluent bicarbonate alkalinity. Additional phosphorous will be added as 75-percent phosphoric acid (H_3PO_4) to meet the phosphorous macronutrient deficiency. Addition of 75-percent

H_3PO_4 is anticipated to range from 28 gallons per day (gpd) to 54 gpd. Micronutrient deficiencies are not expected based on the makeup of the influent wastewater.

3.1.3 Membrane Bioreactor

Liquid solids separation will be provided by a submerged UF membrane coupled with the anoxic and aerobic bioreactors (MBR) to produce high-quality effluent. Water from the aerobic biological treatment tank for the biological treatment process will overflow by gravity to the above ground concrete membrane tanks operating in parallel. Outside-in, dead-end-flow, hollow fiber membranes were considered for these alternatives. Permeate pumps pull clean water through the membranes into a permeate tank at 7 to 10 gpd per square foot of membrane (gpd/ft^2).

During FAB1 conditions, the treated effluent from the permeate tank will be pumped to UV treatment for disinfection. Biomass maintained in the MBR tanks will be returned to the anoxic tanks as return activated sludge [RAS]) or wasted from the treatment process as waste activated sludge (WAS) to maintain an optimal mean cell residence time (MCRT). An MCRT of 25 days was considered for the Modified Ludzack Ettinger (MLE) process. By operating at an MCRT of 25 days, more robust treatment of the influent constituents would be provided compared to an MCRT of 8 days implemented at a typical municipal wastewater treatment facility. Operation at a lower MCRT is possible but may result in increased biological wasting and reduced effluent quality. Both RAS and WAS pumps will be operated to handle these streams. While RAS is recycled, the WAS from the MBRs will be pumped from the membrane tank to a gravity sludge thickener to further concentrate the biological solids ahead of centrifuge dewatering.

The MBR includes scour blowers and chemical dosing equipment. Both of these systems are utilized to aid in increasing the transmembrane pressure (TMP) due to biological and chemical fouling. The scour blowers provide a high burst of air to scour sludge buildup on the MBR membranes. These operate continuously during operation. As part of maintenance of the MBR systems, chemical cleanings are implemented. Chemical cleanings typically rely on the use of sodium hypochlorite (NaOCl) to reduce biological fouling and citric acid to reduce inorganic scale. The equipment used to dose these chemicals is included as part of the MBR system. Periodically, the UF membranes will require a deeper recovery clean. Membranes are sized to be able to take one unit out of service at a time for a deep recovery clean as needed. Due to the constituents in the influent (e.g., silica), coordination with the MBR vendor should be considered for pilot or bench scale testing to validate the performance of the MBR as well as the chemical cleaning regime to consider prior to startup.

3.1.4 Solids Handling

Alternative 10 will produce waste biosolids from the MBR process. Under the average FAB1 basis of design, the MLSS is anticipated to be low (<4,000 mg/L). Biosolids generated in the IWWTP are expected to be considerably more difficult than municipal biosolids to dewater due to the lack of fibers and solids in the influent stream. To increase the concentration of the solids and reduce dewatering time, a 70-ft diameter above ground steel sludge thickener was included to allow solids to thicken to approximately 12,000 mg/L. The settled solids will be pumped to centrifuges while the supernatant from the gravity thickeners will flow by gravity to a sump located in the wastewater operations building. A single thickener was considered as the solids can be pumped directly from the MBR to the centrifuges if needed if maintenance is required for the thickener.

Polymer would be added to the feed line for the centrifuges to improve the dewaterability. Through the use of a centrifuge, chemically conditioned sludge with a solids content exceeding 20 percent will be generated. The process will be adjusted based upon landfill requirements, but it is expected that lime and/or another bulking agent will be added during the sludge handling process. The dewatered sludge generated from the centrifuges will be collected and disposed of offsite in a

landfill. As only biological solids are produced in Alternative 10, disposal options for the solids will be further investigated as the design progresses as discussed in Section 1.4.2.3.

The liquid generated (centrate) from the centrifuge will be captured in the centrate sump located below the centrifuges. Liquid collected in the centrate sump will be pumped back to the front of the biological treatment process. Pumping sump contents to the equalization tank was not considered as this could result in unintended biological seeding that would degrade readily degradable substrate.

There is potential for odors in the solids handling building due to the use of sulfur reducing agents in the upstream Micron operations to ensure longevity of equipment, minimize pipe corrosion, and minimize semiconductor wafer contamination. Vapor phase scrubbers will be used to provide odor control in the solids handling building, allowing for multiple air changes to reduce odor. A determination will be made in the next phase of the design whether a bioscrubber or a carbon scrubber for vapor phase will be used for this application. The scrubbers may be determined to be unnecessary if lime or other stabilization techniques are used in the solids handling process.

3.1.5 UV

At FAB1, the biologically treated effluent will undergo UV disinfection to comply with regulatory discharge requirements. The current specification targets an industry UV dose of 30 millijoules per square centimeter (mJ/cm^2) (up to 8.25 MGD flow). This design assumes a minimum UV transmittance (UVT) of approximately 65 percent for the biological effluent. The system will utilize low pressure UV lamps and is sized to disinfect the full flow from the biological treatment process.

3.1.6 Discharge

After the UV process and prior to discharge through the 001B outfall, the treated and disinfected wastewater flows through a sampling location equipped with a composite sampler and flow meter for compliance monitoring.

3.1.7 Stormwater

Currently, the treatment system is in the conceptual design phase. Stormwater management will be considered during future design phases. It is recognized that the site will be creating significant impervious areas and there will likely be multiple stormwater outfalls to the Oneida River or local tributaries and therefore the State of New York's approaches to green infrastructure should be considered in the development of the site.

3.1.8 Impact on Existing Facility

This is a greenfield project with separate treatment processes from the Municipal WWTP, and no direct impact to the facility is anticipated.

3.1.9 Outfall Configuration

Carollo is designing a new outfall in conjunction with the appropriate agencies. The IWWTP will be assigned a separate, internal outfall (preliminarily called "outfall 01B") for monitoring and compliance purposes prior to combining with Municipal WWTP flow and discharging via outfall 001 to the Oneida River. Compliance monitoring will occur at the internal outfall 01B, as required in the final SPDES permit that will be issued by NYDEC.

3.1.10 Land Requirements

This project will be contained in the Oak Orchard site which is owned by OCDWEP. It is not anticipated that additional land will be required for the IWWTP. A general arrangement drawing is included in Appendix H of this document.

3.1.11 Environmental Impacts and Mitigation Measures

The proposed alternatives would have minimal impact on the environmental resources in the project area. The IWWTP location would be adjacent to the existing Municipal WWTP. Efforts will be made to avoid impacts to environmental resources (e.g., wetlands, streams, habitat) to the maximum extent practicable. Any unavoidable impacts will be minimized and reviewed with the appropriate agencies in support of a USACE Permit and/or NYSDEC Article 24 permit. Any loss of wetland would be mitigated per USACE and/or NYSDEC requirements. Other best management practices to be implemented such that adverse environmental impact can be avoided or minimized include limited tree clearing, clearing during winter months, implementation of erosion and sediment control measures, and site monitoring/inspections during construction.

3.1.12 Potential to Meet Limits by DEC

Alternative 10 was developed to comply with the anticipated discharge requirements for the internal outfall 01B as well as the overall compliance for the combined flow to Outfall 001. Appendix H presents mass balances prepared under several conditions (Winter Average, Summer Average, and Maximum Design Concentration) to predict the water quality of the discharges. The mass balances also present the biological modeling results, other performance assumptions, estimated chemicals usages, and residual solids produced. Preliminary calculations indicate that this alternative will comply with projected limits; however, potential compliance should be reevaluated upon the receipt of the finalized SPDES limits from NYSDEC.

3.1.13 Wastes Discharged

Biological solids generated in Alternative 10 will be thickened and dewatered as required to meet appropriate landfill requirements including but not limited to paint filter, proctor density, and TCLP tests. These requirements will be better defined as part of the preliminary design of these alternatives (see Section 1.4.2.3).

Table 3-1 summarizes the solids or waste quantity estimates for IWWTP for FAB1.

Table 3-1. Waste Discharged from FAB1

Flow (MGD)	8.25
Daily Biological Solid Waste (wet lbs/d)	77,165
Yearly Biological Solid Waste (wet ton/yr)	14,083
Daily Chemical Solid Waste (lbs/d)	N/A
Yearly Chemical Solid Waste (lbs/d)	N/A
Daily Discharge to Outfall (MG)	8.07
Yearly Discharge to Outfall (MG)	2,946

3.1.14 Identify Water and Energy Efficiency Measures Used

This project is part of a wholistic approach regarding Micron's use of water and its impact on Onondaga County. The approach aims to recycle wastewater into cooling and other high-quality streams for use by Micron to reduce Micron's impact on the local water supply. The estimated electrical and natural gas demands for Alternative 10 are shown in Table 3-2 and Table 3-3, respectively.

Table 3-2. Estimated Electrical Demand from Equipment for Alternative 10

	Connected Load	Demand Load
Total (HP)	4,236	3,179
Total (MW)	3.2	2.4

Table 3-3. Estimated Peak Natural Gas Demands Summary for Alternative 10

	Units	FAB1
Natural Gas for Building Heating	cf/hr	15,213

The common wall construction approach was selected to help reduce footprint and site impacts, but it also allows for gravity flows through a majority of the system, reducing pumping and energy requirements. The side water depth of the tanks was selected to increase oxygen transfer and therefore allow for reduced blower power.

As the design progresses to include facilities and infrastructure, energy efficiency considerations will be incorporated. Appendix I presents a list of energy efficiency best practices.

3.1.15 Demonstrate Future Climate Risks

The site is currently owned by OCDWEP. The site is not located in the floodplain and all critical equipment will be located 3 ft above the 100-yr flood elevation. Additional climate risks will be assessed as the design is progressed.

Preliminary emissions have been calculated for FAB1 wastewater treatment. Carbon dioxide (CO_2) and nitrous oxide (N_2O) emissions were estimated based on what could be generated from the biological treatment process for FAB1. The CO_2 produced for treatment of the influent under the summer average condition was calculated to be 385,500 standard cubic feet per day (scf/day) with an N_2O production of 270 scf/day. Under the winter average condition, CO_2 produced during treatment of the influent was calculated to be 362,800 scf/day with an N_2O production of 338 scf/day.

3.1.16 Security and Cyber Security

Micron relies on a great deal of reliability from the IWWTP including cybersecurity. This will be included in further design activities as the project progresses.

Constructability and Schedule

Where applicable, the treatment plant will include skid mounted and modular type equipment systems to improve constructability efficiencies and schedule. The OA Team as part of the conceptual design has developed a preliminary schedule presented in Appendix D. This schedule will be updated during the advancement of engineering on the IWWTP WRF preliminary design. It will

include all schedule aspects and impacts related to the IWWTP WRF that can be identified during the preliminary design as well as incorporating NYS permitting schedules.

3.2 Alternative 11: Fabrication Facilities 1 and 2 Supplemental Treatment IWWTP WRF

Following the completion of FAB2, the IWWTP will be required to treat flows from both FAB1 and FAB2. This requires essentially doubling the biological treatment and biosolids management systems described in Alternative 10. It also requires adding chemical and physical treatment for appropriate TDS and other water quality criteria removal to comply with anticipated NY SPDES permit requirements, and a WRF to meet Micron's reclaim water requirements. Alternative 11 below describes the IWWTP WRF.

3.2.1 Proposed Design Concept

A conceptual design for Alternative 11 is included as Appendix J.

1. A high-level PFD depicting the IWWTP WRF.
2. A mass balance which predicts the performance of the system by detailing the flow and water quality of individual streams through the treatment process. The balance was also used to size equipment.
3. A major equipment list which provides details of the equipment included in this alternative.
4. A general arrangement is included to show the preliminary location of the equipment on the site.

Figure J-1 in Appendix J provides a PFD for the IWWTP WRF for FAB2. Wastewater from FAB2 will be combined with FAB1 and will be delivered via the same distribution system as FAB1. It is assumed that the wastewater produced by FAB2 will be of the same volume and quality as FAB1 and therefore will double the influent flow and loads to the IWWTP.

The equalization and diversion tank described in Section 3.1 was sized to be able to accommodate the peak FAB2 design flow of 16.5 MGD. Therefore, following the completion of FAB2, Micron's industrial wastewater will flow into the same equalization tank to help reduce variations in the loading to the treatment system. Flow can be directed to the diversion tank and bled back into the equalization tank as needed. New pumps and piping will be provided to tie Alternative 11 into the existing FAB1 (Alternative 10) treatment system. Wastewater is then screened and treated in anoxic and aerobic bioreactors to remove nitrogen and organics. A second thickener would be added along with an additional centrifuge to increase dewatering capacity. MBRs would use UF to remove solids from the wastewater which are processed in the same systems as in Alternative 10. However, due to the increased flow and loads, the MBR effluent now requires treatment to remove TDS prior to discharge to meet anticipated SPDES requirements. Removal of TDS requires RO treatment; however, to protect the RO membranes, the wastewater is pretreated using strong acid cation (SAC) IX to remove calcium and magnesium and reduce the scaling potential for the RO membranes. The IX effluent then passes through a decarbonator to reduce the potential for carbonate scaling on the RO membranes. Pretreated water is then pumped though RO membranes to remove TDS from the wastewater. The RO permeate will be disinfected and returned to Micron as reclaim water and to the blend tank to be discharged to the shared outfall.

Brine or TDS concentrate from the RO reject is treated using an evaporator followed by a crystallizer to further concentrate the TDS and generate brine solid slurry. The salt slurry is then further dewatered using centrifuges. The centrifuged solids are then disposed of off-site. Condensate water from the evaporation and crystallization processes are collected and will be reclaimed and/or discharged.

3.2.2 Biological Treatment

Further treatment capacity will be needed to treat the wastewater once production has increased with the startup of FAB2. To provide additional treatment capacity, the same treatment process considered for FAB1 will be duplicated to handle the doubling of wastewater flow and loads.

The treatment process considered for FAB2 will operate in parallel to the treatment process for FAB1. In addition to providing more treatment capacity, adding a duplicate treatment train would provide redundancy and allow for operations to be more flexible during non-peak conditions. Anoxic, aerobic, and MBR tanks will be constructed of reinforced concrete.

3.2.2.1 Performance

The anoxic, aerobic, and MBR treatment process will primarily be used to reduce COD/BOD and nitrogen species (TKN, NH_3-N, NO_3-N). Some metals will be reduced in the biological treatment process, and there will be some reduction of bio-accumulative metals like mercury and arsenic that sorb to solids and are removed from the system as waste (at low levels that do not make the sludge hazardous). The MBR will polish the aerobic treatment effluent prior to further treatment.

3.2.2.2 Redundancy

In FAB1 and FAB2 each treatment train was sized to handle 50 percent of the flow and load of the total influent stream, This process was considered to both limit the sludge concentration in the MBR tanks as well as allow for one train to be taken out of service (if needed) for maintenance or repair; additional wastewater would be diverted to the treatment trains in service. Blowers used for the biological treatment process would be installed such that two to three blowers would operate at any given time for FAB1 under the average summer and winter conditions. While three to four blowers would be required to handle peak summer and winter conditions, a fifth spare blower would be added to maintain an N+1 redundancy. Five additional blowers would be installed for the additional aeration tank capacity required for FAB2.

3.2.2.3 Reliability

Micron operations will require continuous wastewater treatment and therefore, reliability to prevent downtime and to ensure compliance must be included in the design. Pretreatment limits to Micron will be clearly delegated in the pretreatment permit and enforced as needed to maintain continuity of treatment and compliance. Reliability of the biological treatment process will rely on scheduling and implementing routine maintenance of the equipment. The MBR treatment process will require periodic deep cleans as well as replacement of MBR modules.

If the sludge thickener requires removal from service, the UF membrane reject rate will be adjusted to produce 12,000 mg/L mixed liquor suspended solids (MLSS) concentration in the membrane tank during sludge dewatering periods. This value reflects the highest concentration considered for MBR operations based on input provided by MBR vendors. Under this scenario, sludge will be wasted directly from the membrane tank to polymer conditioning just upstream of the centrifuges.

3.2.3 RO Pretreatment

Pretreatment prior to the RO to remove scale-forming ions like calcium and magnesium is critical for reducing membrane fouling and scaling, reducing antiscalant chemistry consumption, and extending the life and efficiency of the RO system. The proposed RO pretreatment is designed to remove hardness (i.e., calcium and magnesium) associated with carbonate alkalinity as well as other hardness associated with sulfate. The presence of calcium would create high scaling potential for minerals such as calcium carbonate, calcium phosphate, calcium sulfate, and calcium silicate. The presence of magnesium would create high scaling potential for magnesium hydroxide.

Given the level of hardness, alkalinity and sulfate, a SAC IX was selected as the first pretreatment step for the high pH RO. Cold lime softening, antiscalant addition, and weak acid cation (WAC) ion exchange (IX) were considered but were ruled out given the water quality and efficiency of those unit process applications and the desired or targeted RO efficiency.

The excess carbonate alkalinity coming out of the SAC units will be converted to carbon dioxide with the addition of sulfuric acid to a pH setpoint of approximately 4.3. After sulfuric acid addition, the free CO2 will be removed from the water through the forced air stripping decarbonation system. This will prevent the carbon dioxide from being converted back to alkalinity before the RO treatment process and will increase the caustic required for high pH RO operation.

Prior to feeding the water to the RO system, the pH must be increased. This will be done with the addition of sodium hydroxide to achieve influent pH of approximately 10. This two-step pretreatment process coupled with increasing the pH of the RO influent reduces nearly all scaling potential for the RO system, greatly reducing cleaning frequency and increasing membrane life, even up to 95-percent recovery.

3.2.3.1 Performance

The strong acid IX system will reduce the hardness of the RO influent to less than 0.5 mg/L as calcium carbonate ($CaCO_3$) and the calcium concentration to less than 0.1 mg/L as ion. The acidification and decarbonators will reduce the carbon dioxide concentration of the RO influent to less than 8 mg/L.

3.2.3.2 Redundancy

The IX vessels and decarbonators will be installed in an N+1 fashion, meaning there will be one redundant standby unit.

3.2.3.3 Reliability

Reliability of the RO pretreatment system will be dependent on the maintenance and scheduled downtime of individual component and trains. For the IX system, the critical control factor will be monitoring resin performance. Though the total hardness going into the IX system is relatively low, the wastewater TDS concentration (principally sodium and sulfate) may increase the frequency of resin regeneration. The systems will need to be regularly monitored to determine when regeneration is needed and take vessels offline as necessary. Monitoring and control strategies will be developed as programming and detailed design continue.

For the decarbonation system, the primary concern will be ensuring routine maintenance is conducted, including any necessary cleaning for biofouling.

For all RO pretreatment systems, critical spare parts should be kept on hand to minimize downtime.

3.2.4 RO System

The RO system treats effluent from the IX system. Depending on the reclaim water demands, permeate from the RO is either conveyed back to the Micron for reuse or discharged to the outfall. Concentrate from the RO is conveyed to the brine chemical treatment for further concentration and treatment.

Removing dissolved salts and minerals from water is most commonly accomplished using high pressure nanofiltration or RO membranes. Separation takes place by diffusion through the membrane in lieu of water movement through pores as is the case with low pressure membranes or with other forms of particulate filtration. Microfiltration (MF) and UF are not applicable to this discussion because they remove only particulate matter and microbes. RO membranes were

selected over nanofiltration (NF) due to the high concentrations of monovalent and multivalent ions and silica present in the wastewater and low dissolved solids water quality requirements for internal water recycling and discharge.

Pressures required to achieve effective process success can be quite high and are primarily related to the level of dissolved solids in the feed supply, with pressure increasing significantly as dissolved solids concentration rises. Pressure is also indirectly related to temperature, with higher pressures required for colder water. Additionally, RO membranes are subject to fouling due to organic and inorganic content in the feed stream. Fouling is acceptable as long as it is reversible and membrane permeability can be reasonably restored through chemical treatment. Antiscalant chemicals can be applied in specific applications to extend membrane life and optimize operation by controlling scale formed. The IX treatment upstream of the RO is designed to reduce the membrane fouling tendencies for calcium, magnesium, and barium of the water and reduce antiscalant usage.

RO treatment will be required to both meet the discharge requirements and provide reclaim water once FAB2 is online due to the higher TDS concentrations in the influent IWWTP stream. RO treatment will also be required to meet the reclaim requirements for multiple parameters including TDS, total organic carbon (TOC), nitrate, silica, and sulfate. During the process technology evaluation, several varieties of RO system membranes and configurations were evaluated. A high pH RO configuration was selected for Alternative 11. It parallels the original High-Efficiency Reverse Osmosis (HERO) process where patents have expired and is currently being trademarked by Aquatech. It is designed to overcome the limitations of conventional RO systems, particularly when dealing with challenging feedwaters such as those high in silica, organics, or scaling compounds. Unlike traditional RO, which operates at neutral pH and is prone to membrane fouling and scaling, a high pH RO operates at a high pH (e.g., typically above 9), which helps reduce scaling, enhance membrane performance, and increase water recovery rates, often exceeding 90 percent. This makes the RO configuration selected for the IWWTP WRF critical for water reuse quality and minimal waste generation. In comparison to the previous conventional RO systems that were evaluated in the earlier alternatives, it typically achieves lower recovery rates and requires more frequent maintenance due to fouling and scaling issues plus eliminates the need for separate silica treatment.

The HERO process offers significant operational advantages over a conventional RO design due tolerance for silica and TOC that typically result in RO membrane fouling and frequent cleaning. HERO operates at a high pH range where silica solubility is enhanced. This high pH operation also reduces TOC fouling since the RO is effectively operating in a cleaning pH regime continuously. With the HERO process, the concentrate directed to the downstream thermal system will be hardness free and at a high pH, enabling the use of an unseeded evaporative process.

One additional important consideration is disposal of the RO concentrate stream which will be too concentrated to discharge back to the Oneida River. Therefore, it must be concentrated further and turned into a solid for offsite disposal. Brine treatment processes have a high capital cost, so every effort must be made to minimize the volume of the RO concentrate stream. The high recovery RO from the HERO process will allow a TDS concentration factor of about 13.

Brackish water membranes are preferred due to their lower energy requirements, effective removal of monovalent ions, fouling resistance, and cost effectiveness (when compared to sea water membranes). However, seawater membranes may be necessary in either the third and fourth, second through fourth, or in all RO stages (depending on the project state) to meet the Publicly Owned Treatment Works (POTW) discharge limits for nitrate or reclaim criteria for sodium or sulfate.

The RO system sizing was determined using AWC Proton membrane projection software. The models were run using brackish water membranes and a five-stage, single-pass configuration. Model runs

were conducted using the projected water quality out of the RO pretreatment system and increasing system size as necessary to accommodate flow and optimize permeate recovery. See Appendix J Mass Balance for model results.

BC has experience with a semi-conductor wastewater treatment facility achieving greater than 95 percent recovery using high pH RO. BC's conversations with two RO vendors experienced with semi-conductor/microelectronics wastewater indicated that recovery rates for an RO system in this application would range from 95 to 98 percent. The RO projections performed by BC were based on a 95-percent recovery rate. However, the mass balance uses a conservative 92.5-percent recovery to consider minor downtimes during clean in place (CIP), unit switches, and to provide a safety margin.

A summary of the RO system equipment and their associated capacities are included in Appendix J – Equipment List.

3.2.4.1 Performance

The RO system will need to be able to meet the PUB NEWater Quality reclaim water quality criteria specified for reclaim. Additionally, since any reclaim water that is not used onsite will be blended with the biological treatment system that was bypassed around the IX and RO systems and discharged to the outfall, RO permeate will also need to meet the water quality criteria specified for POTW discharge. The most critical of these is the discharge limit for TDS.

It is recommended that pilot testing of any RO system be performed during the operation of FAB1 to verify system performance, fouling rates, and recovery from cleaning processes.

3.2.4.2 Redundancy

The RO system will be installed in an N+1 fashion, meaning there will be one redundant standby unit.

3.2.4.3 Reliability

Reliability of the RO system will be dependent on the downtime of individual components and trains. With the relatively high recovery and salt content of the concentrate stream, it will be imperative to maintain all process monitoring equipment and chemical feed systems. While the HERO process is much more resistant to fouling and scaling than a conventional RO process, operating parameters such as TMP, flows, and flux values must be monitored for signs of fouling, and CIP operations must be initiated when target values are reached to prevent irreversible fouling. Critical spare parts should be kept on hand as well to minimize downtime during unplanned maintenance activities.

3.2.5 Thermal Treatment

Considering the scale and design parameters of the wastewater from FAB1 and FAB2, the only feasible brine treatment method for the IWWTP was brine concentration followed by solidification using a crystallizer. The brine concentrator or evaporator further concentrates the brine from the RO process to at least 225,000 mg/L. The majority of the flow processed by this system is returned as near-pure water, which is blended with RO permeate and sent back to Micron for use as reclaimed water, while the blowdown is directed to a crystallizer/centrifuge for solidification. Mechanical vapor recompression (MVR) will be used for brine concentration, utilizing a combination of heat and vapor compression/expansion to evaporate water from the brine.

After brine concentration, the solidification process involves vertical tube falling film evaporation, forced circulation crystallization, and centrifugation. The crystallizer and concentrator work together using heat, vapor compression, and centrifugation to remove nearly all residual water. This results in granular salt containing approximately 10 to 15-percent moisture content that can be hauled offsite for disposal. A list of the thermal treatment equipment used in the brine treatment process is provided in Appendix J – Equipment List.

3.2.5.1 Performance

The primary goal of the brine concentrator and crystallizer is to produce dewatered brine solids to facilitate offsite disposal. To accomplish this, the MVR-driven evaporator concentrates the brine to approximately 225,000 mg/L TDS to feed the crystallizer. Additionally, the crystallizer must further concentrate the brine past saturation limits to precipitate salt crystals. The centrifuge is then capable of dewatering the salt crystals from the brine to produce a salt cake with approximately 10 to 15-percent moisture content for offsite disposal.

3.2.5.2 Redundancy

Both the evaporator and crystallizer have two units sized at 100-percent capacity to provide full redundancy.

3.2.6 Solids Handling

Biological solids for Alternative 11 are handled in the same manner as Alternative 10. As the flow and loads are doubled due to the addition of FAB2, the biological solids handling equipment from Alternative 10 is duplicated to provide the necessary capacity.

Alternative 11 also requires solids handling for the residual brine solids from the crystallization process. The crystallization process will produce a salt slurry that is approximately 50-percent solids. This slurry is then pumped to one of two chemical centrifuges that will generate a waste solid for disposal. Each centrifuge is capable of dewatering approximately 60 gpm of salt slurry and will produce a salt cake with water content of 10 to 15 percent. These solids will require disposal as described above in Section 1.4.2.3. Options such as stabilization with concrete prior to landfilling and deep well injection will be investigated during the development of the design.

3.2.7 UV

For the FAB2 expansion, the IWWTP will also supply reclaimed water for cooling purposes. The UV system will be upsized such that it can accommodate either the RO permeate flow, a portion of the biological flow, or the entire biological effluent from FAB1 and FAB2 for 16.5 MGD of discharge. The system will be designed with reactors and interconnecting piping, valves, and appurtenances to direct flow through the appropriate reactor chambers and deliver the target UV dose of 30 mJ/cm^2. The RO permeate, intended for use as reclaimed cooling water, will also be UV disinfected to minimize downstream biological growth. With an expected UVT of 96 percent or higher, the RO permeate will require a lower UV disinfection dose compared to the biological effluent. For the FAB1 and FAB2 expansion, the UV system will be sized with N+1 (2x 100%) redundancy to handle capacities of 16.5 MGD and 33 MGD, respectively.

While unlikely to significantly affect the current design, updated regulatory disinfection requirements and footprint constraints could influence minor changes in the required UV system design.

3.2.8 Discharge

Reclaim water will be comprised of RO permeate that is UV disinfected and conveyed to Micron. Flow pumped from the RO Permeate Tank will be measured with a flow meter. An online conductivity probe will be used as an indicator of adequate performance of the RO membrane system. If an increase in the permeate conductivity is observed, reclaim flow can be stopped and diverted to either the outfall, where it is expected to still be of adequate quality for discharge, or recirculated back to the head of the IWWTP at the Equalization Tank for further treatment.

Treated effluent from the biological MBR system that bypasses the RO is combined in the Blend Tank with the remainder of the RO permeate that is not used for reclaim purposes and is then pumped to

the UV disinfection system. Following UV disinfection, it is combined with the Municipal WWTP for discharge to the Oneida River through the existing outfall 01B.

3.2.9 Stormwater

As stated above for Alternative 10, stormwater management will be investigated during future design stages. It is recognized that the site will be creating significant impervious area, and there will likely be multiple stormwater outfalls to the Oneida River or local tributaries. Therefore, the State of New York's approaches to green infrastructure should be considered in the development of the site.

3.2.10 Impact On Existing Facility

This will expand the IWWTP to receive the wastewater generated by the completion of FAB2 and provide additional reclaim volume back to Micron.

3.2.11 Outfall Configuration

Carollo is designing a new outfall in conjunction with the appropriate agencies. The IWWTP will be assigned a separate, internal outfall (preliminarily called "outfall 01B") for monitoring and compliance purposes prior to combining with Municipal WWTP flow and discharging via outfall 001 to the Oneida River. Compliance monitoring will occur at the internal outfall 01B, as required in the final SPDES permit that will be issued by NYDEC.

3.2.12 Land Requirements

This project will be contained to the Oak Orchard site which is owned by OCDWEP. The additional equipment required for Alternative 11 will be located in the same area as Alternative 10. It is not anticipated that additional land will be required for the IWWTP WRF. A general arrangement drawing is included in Appendix J of this document.

3.2.13 Environmental Impacts and mitigation measures

This alternative would have minimal impact on the environmental resources in the project area. The additional IWWTP WRF equipment would be adjacent to the system established in Alternative 10, near the existing Municipal WWTP. Efforts will be made to avoid impacts to environmental resources (e.g., wetlands, streams, habitat) to the maximum extent practicable. Any unavoidable impacts will be minimized and reviewed with the appropriate agencies in support of a USACE Permit and/or NYSDEC Article 24 permit. Any loss of wetland would be mitigated per USACE and/or NYSDEC requirements. Other best management practices to be implemented such that adverse environmental impact can be avoided or minimized include limited tree clearing, clearing during winter months, implementation of erosion and sediment control measures, and site monitoring/inspections during construction.

3.2.14 Potential to Meet Limits by DEC

Alternative 11 was developed to comply with the anticipated discharge requirements for the internal outfall 01B as well as the overall compliance for the combined flow to Outfall 001 as well as provide high quality reclaim water to Micron. Mass balances (Appendix J) were prepared under several conditions (Winter Average, Summer Average, and Maximum Design Concentration) to predict the water quality of the discharges. The mass balance also presents the biological modeling results, RO software projections, other performance assumptions, estimated chemicals usages, and residual solids produced. The flow to post-biological treatment systems were adjusted for each condition to meet a reclaim demand from the IWWTP of 6 MGD while also maintaining an effluent TDS concentration from the IWWTP. Preliminary calculations indicate that this alternative will comply with

projected limits; however, potential compliance should be reevaluated upon the receipt of the finalized SPDES limits from NYSDEC.

3.2.15 Wastes Discharged

The biological solids and chemical solids produced following biological, physical, and chemical treatment for FAB2 will be dewatered and disposed offsite. Table 3-4 summarizes the solids or waste quantity estimates for IWWTP for FAB2.

Table 3-4. Waste Discharged from FAB2

Influent Flow (MGD)	16.5
Daily Biological Solid Waste (wet lbs/d)	154,323
Annual Biological Solid Waste (wet ton/yr)	28,164
Daily Crystallizer Brine Solid Waste (wet lbs/d)	146,961
Annual Crystallizer Brine Solid Waste (wet ton/yr)	26,820
Daily Discharge to Outfall (MG)	12.1
Annual Discharge to Outfall (MG)	4,417
Annual Reclaim Flow to Micron (MG)	1,460

3.2.16 Identify Water and Energy Efficiency Measures Used

This project is part of a wholistic approach regarding Micron's use of water and its impact on Onondaga County. The approach aims to recycle wastewater into cooling and other high-quality streams for use by Micron to reduce Micron's impact on the local water supply. The Alternative 11 IWWTP will be designed to produce up to 6 MGD of reclaim water. The estimated electrical and natural gas demands for Alternative 11 are shown in Table 3-5 and Table 3-6, respectively.

Table 3-5. Estimated Electrical Demand from Equipment for Alternative 11

	Connected Load	Demand Load
Total (HP)	39,788	28,063
Total (MW)	29.7	20.9

Table 3-6. Estimated Peak Natural Gas Demands Summary for Alternative 11

Natural Gas for Boiler (cf/hr)	10,607
Natural Gas for Building Heating (cf/hr)	19,784
Combined Gas Demand (cf/hr)	30,391

As the design progresses to include facilities and infrastructure, energy efficiency considerations will be incorporated. A list of energy efficiency best practices is listed in Appendix I.

3.2.17 Demonstrate Future Climate Risks

The site is currently owned by OCDWEP. The site is not located in the floodplain and all critical equipment will be located 3 ft above the 100-yr flood elevation. Additional climate risks will be assessed as the design is progressed.

Emissions have been calculated for FAB2 wastewater treatment. Carbon dioxide (CO2) and nitrous oxide (N2O) emissions were estimated based on what could be generated from the biological treatment process for FAB2. The CO2 produced for biological treatment of the influent under the summer average condition was calculated to be 771,000 scf/day with an N2O production of 540 scf/day. Under the winter average condition, CO2 produced during treatment of the influent under calculated to be 725,600 scf/day with an N2O production of 676 scf/day. These future climate risks will be better defined as preliminary engineering progresses.

3.2.18 Security and Cyber Security

Micron depends on a great deal of reliability from the IWWTP including cybersecurity. This will be included in further design activities as the project progresses.

3.2.19 Constructability and Schedule

Where applicable, the treatment plant will include skid mounted and modular type equipment systems to improve constructability efficiencies and schedule. The OA Team as part of the conceptual design has developed a preliminary Gantt Chart style schedule presented in Appendix D. This schedule will be updated during the advancement of engineering on the IWWTP WRF preliminary design. It will include all schedule aspects and impacts related to the IWWTP WRF that can be identified during the preliminary design as well as incorporate NYS permitting schedules.

3.3 Conveyance

To convey industrial wastewater to the new IWWTP as well as reclaimed water back to the Micron facility, several forcemains will be constructed. The forcemains will be located within a designated utility corridor known as the Conveyance Corridor. The corridor is a maximum of 99-feet wide and a minimum of 49.5-feet wide and follows Verplank Road, west of Caughdenoy Road towards the Oak Orchard Site for approximately 0.5 miles and then through several easements through back lots for another mile and a half to the Oak Orchard Site. The corridor crosses the CSX railroad, goes through Onondaga County Department of Transportation Right-of-Ways, and through several easements along the way.

Conveyance Corridor Layout

The utility corridor will house several conveyance pipes (forcemains) bringing wastewater and reclaim water to and from the IWWTP and WRF site. The following pipes are included in the proposed layout:

- Three 30-inch pipes for conveyance from Micron to IWWTP WRF (two active, one redundant)
- Four 20-inch pipes for reclaim for cooling water to Micron (one active, one redundant)
- Two 20-inch pipes for reclaim for UPW makeup to Micron (one active, one redundant)

A section and view of the Conveyance corridor layout in the 99-foot wide and 49.5-foot wide section in included in Appendix K.

Utility Corridor Basis of Design

The utility corridor piping layout is based on the following flows:

Table 3-7. Utility Corridor Piping

Use (per FAB)	Flow (MGD)
Industrial WW to IWWTP WRF Campus	8.25 per FAB (16.5 FABs 1&2)
Reclaim Water for cooling water	2 per FAB (up to 4)
Reclaim Water for UPW makeup	2 per FAB (up to 4)

The forcemains will be HDPE pipe installed primarily by horizontal directional drilling (HDD) to avoid wetland and other environmental disturbances.

3.4 Cost Estimates

3.4.1 Scope of Work

Two Class 5 total installed capital and operations and maintenance present value (e.g., May 2025) cost estimates are provided for Phase 1 of the design – Alternative 10 for FAB1 and Alternative 11 for FAB2. The FAB1 cost estimate includes equipment costs pertaining to biological treatment for the 8.25-MGD maximum flow. The cost estimate for FAB2 includes the incremental cost with the addition of the physical/chemical treatment to treat the total 16.5-MGD maximum flow.

3.4.2 Class of Estimate: Class 5

In accordance with the Association for the Advancement of Cost Engineering International (AACE), a Class 5 estimate is defined as a Conceptual Level or Project Viability Estimate with 0 to 2 percent conceptual design completion. Class 5 estimates are used to prepare planning level cost scopes or evaluation of alternative schemes, long range capital outlay planning, and can also form the base work for the Class 4 Planning Level or Design Technical Feasibility Estimate.

Expected accuracy for Class 5 estimates typically range from -20 to -50 percent on the low end, and +30 to +100 percent on the high end. These ranges depend on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. At this stage of the project, an accuracy range of -50 to +100 percent was selected.

3.4.3 Estimating Methodology

This estimate was prepared using quantity take-offs, vendor quotes, and equipment pricing furnished either by the project team or by the estimator. The cost estimator may furnish some or all of the equipment quotes from BC's historical quote database. If so, these historical quotes are adjusted to present-day cost using Engineers News Record (ENR) Construction Cost Index (CCI) 20-cities average and scaled (if applicable) using the six-tenths rule. The six-tenths rule scaling factors may be adjusted based on equipment type or as deemed necessary by the cost estimator. Where possible, estimates for work anticipated to be performed by specialty subcontractors have been identified.

Installation of purchased equipment and supply and installation of instrumentation and controls (I&C), electrical components, buildings, piping, yard improvements, and service utility connections are included in the conceptual cost estimate as a percent markup applied to the purchased equipment delivered subtotal cost. The percent markup ranges are based on Peters et al. (2002)[1] and are summed to the estimates total direct cost. Total indirect costs are based on percentage markups on the total direct cost for items such as Contractor's Fee, Contractor's General Conditions, and Legal Fees. The project contingency and escalation are applied to the summation of total direct and indirect costs. Cost for Engineering and Services During Construction is developed by the project team and provided as a discrete input value to the estimate.

This estimate was prepared using Industrial Water's internal Conceptual Cost Estimating Tool and supplemented by BC's estimating system, which consists of Sage Construction and Real Estate 300 estimating software engine (formerly Timberline) using RS Means database, historical project data, the latest vendor and material cost information, and other costs specific to the project location.

3.4.4 Estimated Project Costs

The Class 5 cost estimates for the two fabrication facilities are based on present (May 2025) values. The total projected cost for FAB1- Alternative 10 is $410 million and the incremental projected cost for FAB2 – Alternative 11 is $1,054 million (Table 3-8).

Table 3-8. Class 5 Cost Estimate for FAB1 and FAB2 in $MM			
	FAB1 – Alternative 10	FAB2 – Alternative 11	Total
Total Capital (i.e., Total Direct) Cost	$201	$529	$895
Total Non-Construction (i.e., Total Indirect) Cost	$306	$780	$1,309
Total Contingency	$97	$255	$431
Total Projected Cost	$410	$1054	$1,740

3.4.5 Estimating Assumptions

As the design progresses through different completion stages, it is customary for the estimator to make assumptions to account for details that may not be evident from the documents. The following assumptions were used in the development of this estimate.

1. Contractor performs the work during normal daylight hours, nominally 7 a.m. to 5 p.m., Monday through Friday, in an 8-hour shift. No allowance has been made for additional shift work or weekend work.
2. Contractor has complete access for lay-down areas and mobile equipment.
3. Major equipment costs are based on vendor supplied price quotes obtained by the project design team and/or estimators and on historical pricing of like equipment.
4. Bulk material quantities are based on manual quantity take-offs.
5. There is enough electrical power to feed the specified equipment. The local power company will supply power and transformers suitable for this facility.
6. The engineering has not been advanced to adequately estimate the cost for piling, but likely will be required, therefore, it is assumed to be covered in the contingency.
7. Demolition costs are an estimated lump sum amount based on available information regarding current layout.
8. Concrete pad thickness is 8 inches.
9. N+1 equipment redundancy added when applicable (e.g., pumps, blowers).
10. Ancillary equipment costs for major systems (i.e., IX/RO/Evaporator/Crystallizer) included in vendor package costs
11. Costs are based on May 2025 dollars ($). No escalation is included.
12. 35-percent contingency is included in costs.
13. Engineering and supervision during construction is included in costs.
14. Percent markups used in capital expenditures (CAPEX) development are within wastewater treatment typical ranges associated with freight, installation, piping, electrical and I&C, yard improvements, service utilities, contractor's fee, legal, general conditions, etc.

3.4.6 Estimating Exclusions

The following estimating exclusions were assumed in the development of this estimate.

1. Hazardous materials remediation and/or disposal
2. Utility agency costs for incoming power modifications
3. Permits beyond those normally needed for the type of project and project conditions

4. All ancillary equipment (i.e., electrical, instrumentation and controls, etc.) associated with wastewater systems located outside of the boundary of the WWTP
5. Extensive site grading
6. Heat tracing, insulation, or other winterization for piping
7. Parking lots, roadways, and fencing
8. Software and licenses for instrumentation and controls
9. Site-specific geotechnical investigations
10. Moving utilities or piping below grade
11. Mobilization/demolition of solar farm and radio tower onsite

3.4.7 Allowances for Known but Undefined Work

The following allowances were made in the development of this estimate.

1. Demolition
2. Unloading
3. Civil Earthworks

3.4.8 Contractor and Other Estimate Markups

Contractor markup is based on conventionally accepted values which have been adjusted for project-area economic factors. Included markup definitions are shown in Table 3-99.

Table 3-9. Estimate Markups

Item	Definition
Direct Cost Markups	
Freight	Material shipping and handling
Sales Tax	State and local for materials, process equipment and construction equipment rentals, etc.
Purchased Equipment Installation	Installation of all equipment listed on complete flow sheet, structural supports, insulation, paint
Instrumentation and Controls (Installed)	Purchase, installation, calibration, computer tie-ins
Piping (Installed)	Process piping, pipe hangers, fittings, valves, insulation, equipment.
Electrical systems (installed)	Electrical equipment, switches, conduit, wire, fittings, feeders, grounding, lighting, panels, etc.
Building Systems	Structural components including curbing, pipe supports, etc.
Yard Improvements	Site development, clearing, grading, roads, walkways, etc.
Service Utilities (installed)	Steam, potable water, power, refrigeration, compressed air, fuel, waste disposal.
Indirect Cost Markups	
Construction Expenses – General Conditions	Construction, operation and maintenance of temporary facilities, office, road, parking lots, railroads, electrical, piping, communication, fencing. Construction tools and equipment. Construction supervision, accounting, timekeeping, purchasing, expediting. Warehouse personnel and expense, guards, permits, field tests, special licenses, taxes, insurance, interest.
Legal Expenses	Identification of applicable federal, state, and local regulations. Preparation and submission of forms required by regulatory agencies Acquisition of regulatory approval Contract negotiations

Table 3-9. Estimate Markups	
Item	Definition
Contractors Fee	Contractor profits and mark-ups
Contingency	Contingency for project/construction
Design Builder General Conditions	General condition fees (see description above) for the design builder
Design Builder Fee	Design Builder's profits and mark-ups on top of contractor's fee
Engineering and Services During Construction [a]	Engineering cost-administrative, process, design and general engineer, drafting, cost engineering, procuring, expediting, reproduction, communications, scale models, consultant fees, travel.

[a] *Estimate provided by project team. Value may not represent proposal amount for the actual scope of work.*

3.4.8.1 Sales Tax (Materials, Process Equipment and Construction Equipment)

This is the tax that the contractor must pay according to state and local tax laws. This project is exempt from sales tax.

3.4.8.2 Material Shipping and Handling

This can range from 2 to 10 percent, and is based on the type of project, material makeup of the project, and the region and location of the project. Material shipping and handling covers delivery costs from vendors, unloading costs (and in some instances loading and shipment back to vendors for rebuilt equipment), site paperwork, and inspection of materials prior to unloading at the project site. BC typically adjusts this percentage by the amount of materials and whether vendors have included shipping costs in the quotes that were used to prepare the estimate. This cost also includes the GC's cost to obtain local supplies, e.g., oil, gaskets, and bolts that may be missing from the equipment or materials shipped.

3.4.8.3 Escalation to Midpoint for Labor, Materials and Subcontractors

In addition to contingency, it is customary for projects that will be built over several years to include an escalation to midpoint of anticipated construction to account for the future escalation of labor, material and equipment costs beyond values at the time the estimate is prepared. For this project, the anticipated rate of escalation is 4 percent per annum.

The estimated construction time for this project is 24 months for FAB 1 and 36 months for FAB 2, exclusive of unusual weather or site conditions delays. The escalation factors used in this estimate are calculated from the date of anticipated start date to the anticipated start of construction which is approximately 12 months from the date of this estimate.

3.4.8.4 Undesigned/Undeveloped Contingency

The contingency factor covers unforeseen conditions, area economic factors, and general project complexity. This contingency is used to account for those factors that cannot be addressed in each of the labor and/or material installation costs. Based on industry standards, completeness of the project documents, project complexity, the current design stage, and area factors, construction contingency can range from 25 to 35 percent.

3.4.8.5 Engineering and Services During Construction

The Engineering and Services During Construction covers labor and expenses for full detailed design of project scope as defined in previous sections, the management/responses of request for information (RFIs), submittal reviews/approval, on-site inspection, resident project representative

services (RPR), quality checks, scheduling, and procurement. The cost also includes any on-site engineering services that may be required for startup and commissioning of the newly constructed system.

3.4.9 Operating and Maintenance Costs

Annual operating and maintenance (O&M) costs consider personnel, water purchase or waste treatment costs, insurance, energy costs, process chemical, monitoring and testing, short-lived asset maintenance and replacement, professional services, and residuals disposal. Any income from energy generation or outside revenue is not considered.

The opinion of probable annual O&M cost for FAB1 - Alternative 10 is $11.6 million in July 2028 dollars, assuming 3 percent annual inflation. The opinion of probable annual O&M cost for FAB2 - Alternative 11 is $73.1 million in July 2028 dollars, assuming 3 percent annual inflation. A breakdown of the O&M costs is shown in Table 3-10Table 3-10. Note, the costs for FAB1 and FAB2 are not additive and the costs for FAB2 include the costs for operating the existing IWWTP from FAB1. The cost estimates are based on BC's experience, information from major equipment suppliers, published unit costs for labor and commodities, and historical O&M cost information from previous projects.

Table 3-10. Average Annual O&M Cost Summary in July 2028 Million Dollars

	FAB1 – Alternative 10	FAB2 - Alternative 11
Labor	$2.1	$3.2
Equipment Maintenance & Replacement	$1.4	$6.6
Chemicals	$0.5	$18.0
Power	$1.8	$16.2
Natural Gas	$0.06	$0.1
Sludge Hauling - Biosolids	$2.7	$5.4
Sludge Hauling - Brine Solids	$0.0	$6.3
Contingency	$3.0	$17.3
Total O&M	$11.6	$73.1

Key assumptions in the O&M cost estimate are:

- All O&M costs are shown in July 2028 dollars; 3.0% annual inflation was assumed.
- Labor count and cost is based on assuming the IWWTP needs to be staffed 24 hours per day, 7 days a week, 365 days a year.
- Labor count and costs were developed using The Northeast Guide for Estimating Staffing at Publicly and Privately Owned Wastewater Treatment Plants prepared by the New England Interstate Water Pollution Control Commission, November 2008.
- 20 full-time equivalents are assumed to be required for Alternative 10 operation.
- 30 full-time equivalents are assumed to be required for Alternative 11 operation.
- Depending on final equipment selection, sizing, and level of automation, it is anticipated that operations staff may be adjusted from original estimates.
- 35-percent contingency is included in the O&M costs.

- Biosolids disposal will be hauled via truck at a rate of $174 per ton assuming a solids content of 20 percent.
- Crystallizer brine solids will be hauled via truck at a rate of $174 per ton assuming a solids content of 85 percent.
- RO membranes will need to be replaced frequently to avoid pollutant-removal performance degradation. RO membrane replacement will occur every 3 years on average. UF membrane replacement will occur every 6 years.
- Equipment maintenance cost is assumed to be 2.5 percent of the purchased equipment cost per year. This cost addresses both annual maintenance (such as changing lubricating oil, replacing worn parts, and periodic hydroblasting of the evaporator and crystallizer) and periodic complete replacement of equipment at the end of its life.
    - Additional costs were included in the "equipment maintenance and replacement" line item for membrane replacement and IX resin replacement.
- Electricity costs are $0.081 per kilowatt-hour.
- Natural gas is used for building heating and boiler operation.

3.5 Non-Monetary Factors

Consideration for non-monetary factors will be included in the final submittal of this document.

Section 4

Recommended Alternative

Based on the assessment performed by BC, Alternative 10 was selected to meet the requirements of FAB1. Alternative 11 was selected to meet the demands of FAB2, including the continuing operation of FAB1.

4.1 Basis of Selection

The basis of selection of Alternatives 10 and 11 from the other alternatives includes but is not limited to the following requirements established by OCDWEP and detailed above in Section 2.1: reliability, cost, phasing, schedule, risk, health and safety, operability, accessibility, aesthetics, adaptability, standards, and footprint.: Alternatives 10 and 11 were selected for further development in the preliminary design because they align best with meeting these criteria.

4.2 Cost Estimate

See Section 3 above.

4.3 Project Schedule

The OA Team as part of the conceptual design has begun to develop a detailed project controls Primavera P6 schedule for the IWWTP WRF. This will be available during the advancement of engineering on the IWWTP WRF preliminary design. It will include all schedule aspects and impacts related to the IWWTP WRF that can be identified during the preliminary design. As such it will include latest estimates of the NYS EIS, SPDES, and air permit schedule and milestones. The current schedule is presented in Appendix D.

4.4 Next Steps

As discussed throughout the document, the OA Team will advance the engineering on Alternatives 10 and 11 to complete a preliminary design and EPC RFP by November 2025. A subsequent NYS Engineering Report could be completed at that time, recognizing that additional changes to the preliminary design are anticipated with the selected EPC Firm that will actually complete the final design, procurement, and installation of the IWWTP WRF.

The IWWTP will be fully compliant with all applicable federal, state, and local permitting requirements. The design will ensure compliance with NYSPDES permit effluent limitations and requirements. The design will also take into account compliance with all applicable air quality regulations. This includes adherence to the Clean Air Act and NYSDEC air permitting requirements for emissions from treatment processes, odor control systems, and/or standby generators. Compliance will be verified for solid waste management requirements under 6 NYCRR Part 360 for handling biosolids and residuals. Management of all residuals, including any sludges, biosolids, etc. will be designed to ensure compliance with 6 NYCRR Part 360 solid waste regulations to ensure safe handling, storage, and disposal or reuse. Environmental assessments, public health safeguards, and resilience measures will continue to be evaluated and progressed with the design to ensure sustainable and regulatory-compliant operations from construction through long-term use.

Section 5

Maps and Figures

5.1 Project Location Map

Project location figure is presented in Appendix A.

5.2 Proposed Site Layout

The general arrangement layout in this scope of work was developed for two scenarios. Layout 1 is presented as part of Appendix H and corresponds to treatment Alternative 10, which addresses wastewater from FAB1 only. Layout 2 was developed for treatment Alternative 11 that includes wastewater from FAB2 and also accounts for future capacity needs related to FAB2 and is presented as part of the design package in Appendix J.

This current scope does not account for potential expansions to treat wastewater from FAB3 and FAB4. A rough estimate for the additional space required to accommodate FAB3 and FAB4 would be approximately double the footprint of Layout 2 and would require additional land purchase in this area.

Both layouts incorporate equipment for the proposed treatment processes as well as associated supporting structures (e.g., buildings). Due to the limited available footprint, several key assumptions were made including:

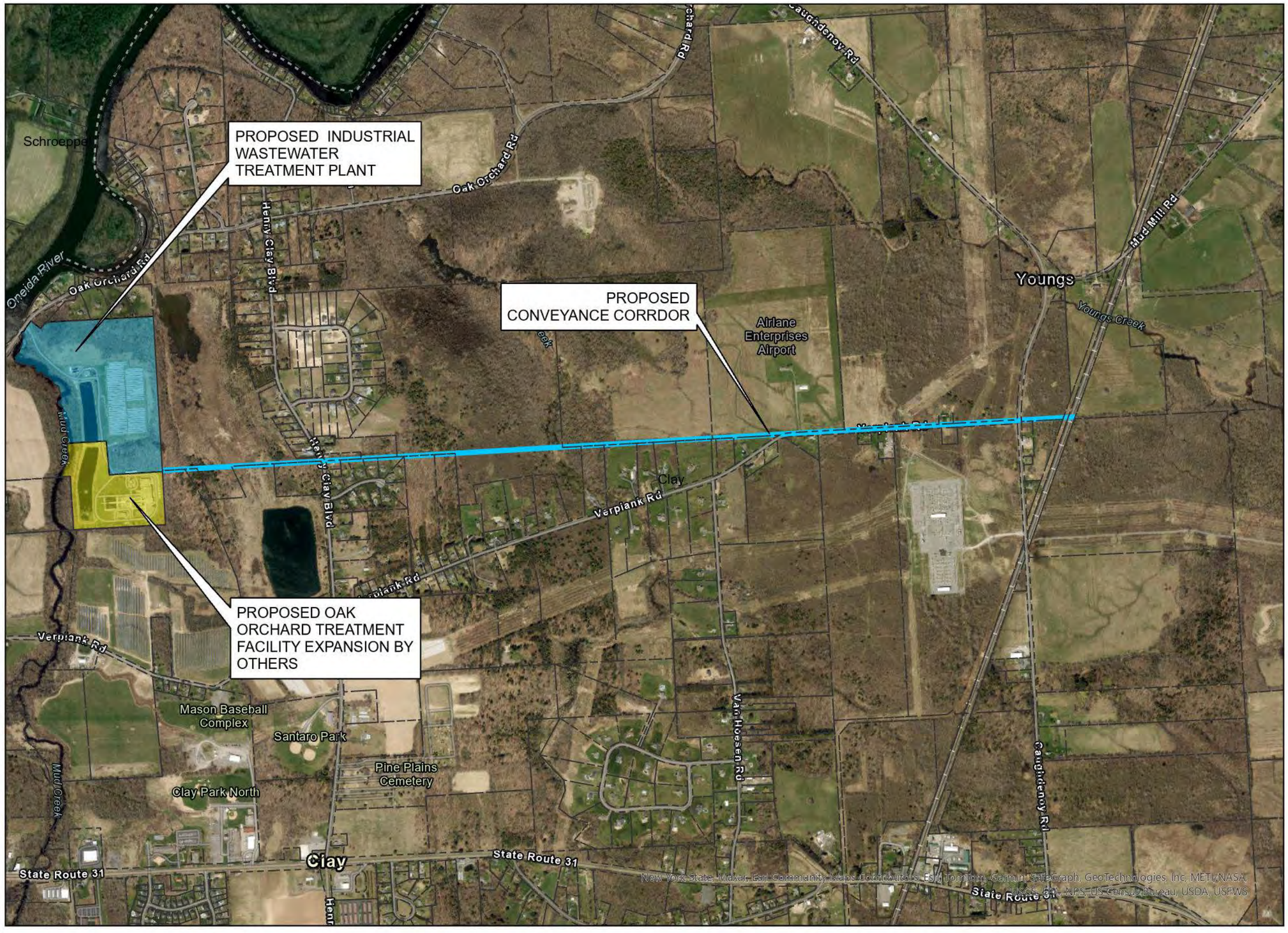
- Shared wall construction for biological treatment systems,
- Side water depth of 30 feet for the relevant tanks, and
- A height limitation of 100 feet.

5.3 Proposed Process Flow Diagrams

A PFD for each of the viable treatment options, Alternatives 10 and 11, are included in the respective design packages located in Appendix H and J.

Appendix A: Project Location Map

PROPOSED INDUSTRIAL WASTEWATER TREATMENT PLANT AND CONVEYANCE CORRIDOR



OCDWEP Industrial Wastewater Treatment Plant and Conveyance Corridor Location Map

Town of Clay, Onondaga County, New York

Property Boundaries

Conveyance Corridor

0 300 600 1,200 Feet

Prepared June 13, 2025
Basemap: World Imagery

EDR

Appendix B: Soil Borings

WHITESTONE

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January 21, 2025

via email

ENVIRONMENTAL DESIGN AND RESEARCH
217 Montgomery Street
Suite 1100
Syracuse, New York 13202

Attention: Ms. Abaigeal Doyle
Project Engineer

Regarding: PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED MICRON MEGAFAB WASTEWATER TREATMENT PLANT
OAK ORCHARD ROAD AND HENRY CLAY BOULEVARD
TAX ID NO.: 312489031000001016001000O
CLAY, ONONDAGA COUNTY, NEW YORK
WHITESTONE PROJECT NO.: PRY34323G.R24

Dear Ms. Doyle:

Whitestone Associates Engineering & Geology NY, PLLC (Whitestone) has completed a limited geotechnical investigation at the above-referenced site. The purpose of the limited investigation was to evaluate the existing subsurface conditions prior to final site design and further investigations. Whitestone's scope of services consisted of conducting widely spaced test borings within the anticipated areas under consideration for construction of a new wastewater treatment plant associated with the Micron Megafab facility.

1.0 PROJECT DESCRIPTION

1.1 Site Location and Existing Conditions

The project site is located at 4300 Oak Orchard Road in the Town of Clay, Onondaga County, New York. The western portion of the site under consideration is partially developed with the Oak Orchard Wastewater Treatment plant servicing the Town of Clay and a solar power generation array. The central portion of the site consisting of wetlands and brush covered property was observed to be significantly lower in elevation and reportedly previously utilized as a sand and gravel borrow pit. Areas of the subject site along the eastern boundary (along Henry Clay Boulevard) were observed to be at a relatively higher elevation than the center portion, moderately wooded, and interspersed with residential homes.

1.2 Site Geology

Based on a review of the *Surficial Geologic Map of New York – Finger Lakes Sheet (1989)*, the site is underlain by lacustrine sand soils – a well sorted, stratified deposit associated with large bodies of water. The *Geologic Map of New York – Finger Lakes Sheet (1995)* indicates that the site is underlain by Upper Silurian-age Lockport Group bedrock, consisting of the Oak Orchard and Penfield formation dolostone.

1.3 Proposed Construction

Based on correspondence with Environmental Design and Research (EDR) the site is under consideration for development with the Micron Megafab Wastewater Treatment Plant. Detailed construction and grading information was not available at the time of this investigation.

2.0 FIELD AND LABORATORY WORK

2.1 Field Work

Field exploration at the project site was conducted by means of twelve widely spaced borings (identified as B-1 through B-12) advanced with a Central Mine Equipment 550X all-terrain vehicle (ATV) mounted drill rig equipped with hollow stem augers and split-spoon sampling techniques. The borings were terminated at depths ranging from approximately 24 feet below ground surface (fbgs) to 30 fbgs. The locations of the subsurface tests are shown on the accompanying *Boring Location Plan* included as Figure 1. *Records of Subsurface Exploration* are provided in Appendix A.

The tests were conducted in the presence of a Whitestone engineer who conducted field tests, recorded visual classifications, and collected samples of the various strata encountered. The tests were located in the field using a handheld Garmin GPSMAP 66SR GPS unit. These locations are presumed to be accurate within a few feet.

The borings and Standard Penetration Tests (SPTs) were conducted in general accordance with ASTM International (ASTM) designation D 1586. The SPT resistance value (N) can be used as an indicator of the consistency of fine-grained soils and the relative density of coarse-grained soils. The N-value for various soil types can be correlated with the engineering behavior of earthworks and foundations.

Groundwater level observations, where encountered, were recorded during and immediately after the completion of field operations prior to backfilling the tests. Seasonal variations, temperature effects, man-made effects, and recent rainfall conditions may influence the levels of the groundwater, and the observed levels will depend on the permeability of the soils. Groundwater elevations derived from sources other than seasonally observed groundwater monitor wells may not be representative of true groundwater levels.

2.2 Laboratory Program

Representative samples of strata encountered in selected borings were subjected to a laboratory program that consisted of moisture content determinations (ASTM D-2216). The results of the moisture content tests are included on the *Records of Subsurface Exploration* provided in Appendix A of this report.

3.0 SUBSURFACE CONDITIONS

The subsurface soil conditions encountered within the subsurface tests consisted of the following generalized strata in order of increasing depth. *Records of Subsurface Exploration* are provided in Appendix A.

Existing Fill: Several borings (Borings B-4, B-6, B-8, B-9 and B-12) encountered existing fill consisting of reworked native silts, silty sand or cobbles and boulders with variable amounts of silt. The existing fill extended to depths ranging between approximately 2 fbgs and 8 fbgs where encountered.

Lacustrine Deposits: Underlying the existing fill material, the borings encountered natural lacustrine deposits that generally consisted of silts (USCS: ML), silty clays (USCS: CL) and sands with variable amounts of silt (USCS: SP-SM). Naturally cemented soils were observed in the upper portion of borings B-10 and B-12. Strata of peat soils (USCS: PT) were observed in borings B-6 and B-8.

Groundwater: No groundwater was encountered at the completion of drilling in the following borings: B-2, B-3, B-8, B-9, B-10 and B-11. Groundwater was encountered at depths ranging from 4.7 fbgs to 29.2 fbgs in the remaining borings at the completion of sampling. Groundwater levels should be expected to fluctuate seasonally and following periods of precipitation.

4.0 CLOSING

Whitestone appreciates the opportunity to be of service to Environmental Design and Research for this project. Please note that Whitestone has the capability to conduct additional geotechnical investigation and engineering services upon final design and site work approval. Please contact us with any questions or comments regarding this report.

Sincerely,

WHITESTONE ASSOCIATES, INC.

Frank R. Minnolera Jr., PG
Field Services Manager

Ryan R. Roy, PE
Vice President

WHITESTONE

FIGURE 1
Boring Location Plan



LEGEND

B-1 BORING LOCATION

NOTE: ALL LOCATIONS ARE APPROXIMATE.

REFERENCE

THIS PLAN IS BASED ON THE 5/29/23 GOOGLE EARTH IMAGE.

0 300

1 inch = 300 ft.

WHITESTONE

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585.252.6879 WHITESTONEASSOC.COM

DRAWING TITLE: **BORING LOCATION PLAN**

CLIENT: ENVIRONMENTAL DESIGN & RESEARCH

PROJECT: PROPOSED MICRON MEGAFAB WASTEWATER TREATMENT PLANT
HENRY CLAY BOULEVARD
CLAY, ONONDAGA COUNTY, NEW YORK

PROJECT #: PRY34323.R24	
DESIGNED BY: MR	PROJ. MGR.: CG
DATE: 1/20/25	FIGURE: 1
SCALE: 1" = 300'	

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APPENDIX A
Records of Subsurface Exploration

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-1

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research
Surface Elevation:	± NS feet	**Date Started:**	12/17/2024
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/17/2024
Proposed Location:		**Logged By:**	F. Minnolera
Drill / Test Method:	3 1/4" ID HSA and 2" OD Split Barrel Sampler	**Contractor:**	NSD
		Equipment:	CME-550X

Water Depth | Elevation (feet bgs) | (feet)			Cave-In Depth | Elevation (feet bgs) | (feet)	
During:	8.0			
At Completion:	7.1		**At Completion:**	
24 Hours:			**24 Hours:**	

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
							TOPSOIL		TOPSOIL - 0.4'	
0.0 - 2.0	1		1 - 3 - 5 - 5	19	8				Brown SILT, trace sand (moist, loose, ML)	MC = 41.0%
2.0 - 4.0	2		4 - 5 - 3 - 4	16	8		SILT			MC = 22.0%
4.0 - 6.0	3		3 - 4 - 4 - 5	18	8	5.0				MC = 21.6%
6.0' - 8.0	4		3 - 5 - 5 - 5	17	10				Brown Silty CLAY, trace sand (moist, stiff, CL)	MC = 32.9%
8.0 -10.0	5		2 - 3 - 3 - 4	21	6				Becomes medium, moist -wet	MC = 26.6%
10.0 - 12.0	6		2 - 2 - 2 - 2	19	4	10.0				MC = 27.6%
15.0 - 17.0	7		3 - 3 - 3 - 3	23	6	15.0	SILTY CLAY			MC = 28.3%
20.0 - 22.0	8		3 - 3 - 3 - 3	19	6	20.0			Becomes wet	MC = 27.8%
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-1

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research

Surface Elevation:	± NS feet	**Date Started:**	12/17/2024	**Water Depth (feet bgs) | Elevation (feet)**		**Cave-In Depth (feet bgs) | Elevation (feet)**	
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/17/2024				
Proposed Location:		**Logged By:**	F. Minnolera	**During:**	8.0 |		
Drill / Test Method:	3 1/4" ID HSA and 2" O.D.	**Contractor:**	NSD	**At Completion:**	7.1 |	**At Completion:**	|
	Split Barrel Sampler	**Equipment:**	CME-550X	**24 Hours:**	|	**24 Hours:**	|

SAMPLE INFORMATION						DEPTH	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)			
						25.0			
25.0 - 27.0	9	X	2 - 2 - 3 - 3	22	5		SILT	Gray SILT, trace sand, occasional clay partings (wet, loose, ML)	MC = 24.3%
28.0 - 30.0	10	X	3 - 2 - 3 - 3	22	5	30.0			MC = 18.3%
								Boring Log B-1 Terminated at a Depth of 30.0 Feet Below Ground Surface	
						35.0			
						40.0			
						45.0			
						50.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-2

Page 1 of 2

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research
Surface Elevation:	± NS feet	**Date Started:**	12/17/2024
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/17/2024
Proposed Location:		**Logged By:**	F. Minnolera
Drill / Test Method:	3 1/4" ID HSA and 2" OD Split Barrel Sampler	**Contractor:**	NSD
		Equipment:	CME-550X

Water Depth (feet bgs) | Elevation (feet)		Cave-In Depth (feet bgs) | Elevation (feet)	
During:			
At Completion:	none |	**At Completion:**	
24 Hours:		**24 Hours:**	

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
0.0 - 2.0	1	X	1 - 3 - 3 - 4	18	6		TOPSOIL		TOPSOIL - 0.6'	
2.0 - 4.0	2	X	4 - 4 - 6 - 7	19	10		SILT		Orange-Brown SILT, trace sand (moist, loose, ML)	
4.0 - 6.0	3	X	3 - 3 - 5 - 5	20	8	5.0			Becomes brown	
6.0' - 8.0	4	X	3 - 2 - 4 - 5	24	6					
8.0 -10.0	5	X	3 - 4 - 3 - 4	23	7				Contains occasional clay partings, becomes moist-wet	
10.0 - 12.0	6	X	1 - 2 - 3 - 5	23	5	10.0	SILTY CLAY		Brown Silty CLAY, trace sand, occasional Silt seams (moist, medium, CL)	
						15.0				
15.0 - 17.0	7	X	2 - 3 - 2 - 2	22	5		SILT		Brown-Gray SILT, trace sand, occasional Clay partings (wet, loose, ML)	
						20.0				
20.0 - 22.0	8	X	3 - 5 - 2 - 1	24	7					
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-2

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research

Surface Elevation:	± NS feet	**Date Started:**	12/18/2024	**Water Depth (feet bgs) | Elevation (feet)**		**Cave-In Depth (feet bgs) | Elevation (feet)**	
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/18/2024				
Proposed Location:		**Logged By:**	F. Minnolera	**During:**			
Drill / Test Method:	3 1/4" ID HSA and 2" OD	**Contractor:**	NSD	**At Completion:**	none	**At Completion:**	
	Split Barrel Sampler	**Equipment:**	CME-550X	**24 Hours:**		**24 Hours:**	

SAMPLE INFORMATION						DEPTH	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)			
						25.0		Brown-Gray SILT, trace sand, occasional Clay partings (wet, loose, ML) (Cont.)	
25.0 - 27.0	9	X	2 - 1 - 2 - 1	9	3			Becomes very loose	
28.0 - 30.0	10	X	3 - 3 - 3 - 4	24	6			Becomes loose	
						30.0		Boring Log B-2 Terminated at a Depth of 30.0 Feet Below Ground Surface	
						35.0			
						40.0			
						45.0			
						50.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-3

Page 1 of 2

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research
Surface Elevation:	± NS feet	**Date Started:**	12/18/2024
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/18/2024
Proposed Location:		**Logged By:**	F. Minnolera
Drill / Test Method:	3 1/4" ID HSA and 2" OD Split Barrel Sampler	**Contractor:**	NSD
		Equipment:	CME-550X

Water Depth (feet bgs) | Elevation (feet)		Cave-In Depth (feet bgs) | Elevation (feet)	
During:			
At Completion:	none |	**At Completion:**	
24 Hours:		**24 Hours:**	

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
							TOPSOIL		TOPSOIL - 0.5'	
0.0 - 2.0	1	X	2 - 3 - 4 - 3	18	7		SILT		Brown SILT, trace sand, trace organic matter (moist, loose, ML)	MC = 18.1%
2.0 - 4.0	2	X	5 - 6 - 7 - 7	17	13		SILTY CLAY		Brown Silty CLAY, trace sand (moist, stiff, CL)	MC = 30.7%
4.0 - 6.0	3	X	4 - 6 - 6 - 6	17	12	5.0			Borwn SILT, trace sand, occasional clay partings (moist, medium dense, ML)	MC = 22.6%
6.0 - 8.0	4	X	4 - 6 - 5 - 4	19	11					MC = 24.7%
8.0 -10.0	5	X	2 - 2 - 3 - 2	18	5				Becomes loose	MC = 22.6%
						10.0	SILT			
10.0 - 12.0	6	X	1 - 2 - 3 - 2	15	5					MC = 23.5%
						15.0				
15.0 - 17.0	7	X	1 - 2 - 1 - 6	24	3				Gray Silty CLAY, trace sand (wet, soft, CL)	MC = 26.3%
							SILTY CLAY			
						20.0				
20.0 - 22.0	8	X	2 - 4 - 2 - 3	21	6				Gray SILT, trace sand, occasional clay partings (moist-wet, loose, ML)	MC = 25.6%
							SILT			
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-3

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research

Surface Elevation:	± NS feet	**Date Started:**	12/18/2024	**Water Depth (feet bgs) | Elevation (feet)**		**Cave-In Depth (feet bgs) | Elevation (feet)**	
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/18/2024				
Proposed Location:		**Logged By:**	F. Minnolera	**During:**			
Drill / Test Method:	3 1/4" ID HSA and 2" OD	**Contractor:**	NSD	**At Completion:**	none	**At Completion:**	
	Split Barrel Sampler	**Equipment:**	CME-550X	**24 Hours:**		**24 Hours:**	

SAMPLE INFORMATION						DEPTH	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)			
						25.0		Gray SILT, trace sand, occasional clay partings (moist-wet, loose, ML) (cont.)	
25.0 - 27.0	9	X	2 - 1 - 2 - 1	24	3			Becomes wet, very loose	MC = 31.8%
							SILT		
28.0 - 30.0	10	X	1 - 2 - 1 - 1	24	3				MC = 22.7%
						30.0		Boring Log B-3 Terminated at a Depth of 30.0 Feet Below Ground Surface	
						35.0			
						40.0			
						45.0			
						50.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-4

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research
Surface Elevation:	± NS feet	**Date Started:**	12/18/2024
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/18/2024
Proposed Location:		**Logged By:**	F. Minnolera
Drill / Test Method:	3 1/4" ID HSA and 2" OD Split Barrel Sampler	**Contractor:**	NSD
		Equipment:	CME-550X

Water Depth (feet bgs) | Elevation (feet)		Cave-In Depth (feet bgs) | Elevation (feet)	
During:	11.3 |		
At Completion:	26.9 |	**At Completion:**	|
24 Hours:	|	**24 Hours:**	|

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
							TOPSOIL		TOPSOIL - 0.6'	
0.0 - 2.0	1	X	1 - 1 - 4 - 6	16	5		FILL		Orange-Brown and Black Silty SAND (moist, FILL)	
2.0 - 4.0	2	X	4 - 4 - 5 - 4	16	9		SILTY CLAY		Brown Silty CLAY, trace sand (moist, stiff, CL)	
4.0 - 6.0	3	X	3 - 3 - 3 - 3	19	6	5.0	SILT		Brown SILT, trace sand, occasional clay partings (moist, loose, ML)	
6.0' - 8.0	4	X	2 - 2 - 1 - 2	20	3		SILTY CLAY		Brown Silty CLAY, trace sand (wet, soft, CL)	
8.0 -10.0	5	X	2 - 3 - 2 - 3	18	5	10.0			Contains occasional silt partings	
10.0 - 12.0	6	X	4 - 4 - 4 - 4	19	8		SILT		Brown SILT, trace sand, occasional clay partings (moist, loose, ML)	
						15.0				
15.0 - 17.0	7	X	6 - 6 - 7 - 8	15	13		SAND		Brown poorly graded SAND (fine grained), trace silt (moist, medium dense, SP)	
						20.0				
20.0 - 22.0	8	X	3 - 3 - 4 - 9	17	7				Becomes wet, loose	
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-4

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research

Surface Elevation:	± NS feet	**Date Started:**	12/18/2024	**Water Depth (feet bgs) | Elevation (feet)**		**Cave-In Depth (feet bgs) | Elevation (feet)**	
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/18/2024				
Proposed Location:		**Logged By:**	F. Minnolera	**During:**	11.3 |		
Drill / Test Method:	3 1/4" ID HSA and 2" OD	**Contractor:**	NSD	**At Completion:**	26.9 |	**At Completion:**	|
	Split Barrel Sampler	**Equipment:**	CME-550X	**24 Hours:**	|	**24 Hours:**	|

SAMPLE INFORMATION						DEPTH	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)			
						25.0			
25.0 - 27.0	9	X	8 - 15 - 12 - 12	16	27			Brown SILT, trace sand, occasional fine sand lenses (wet, medium dense, ML)	
							SILT		
28.0 - 30.0	10	X	8 - 10 - 11 - 9	17	21			Becomes gray	
						30.0		Boring Log B-4 Terminated at a Depth of 30.0 Feet Below Ground Surface	
						35.0			
						40.0			
						45.0			
						50.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-5

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research
Surface Elevation:	± NS feet	**Date Started:**	12/19/2024
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/19/2024
Proposed Location:		**Logged By:**	F. Minnolera
Drill / Test Method:	3 1/4" ID HSA and 2" OD Split Barrel Sampler	**Contractor:**	NSD
		Equipment:	CME-550X

Water Depth | Elevation (feet bgs) | (feet)		Cave-In Depth | Elevation (feet bgs) | (feet)	
During:			
At Completion:	24.2 |	**At Completion:**	
24 Hours:		**24 Hours:**	

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
0.0 - 2.0	1		2 - 3 - 3 - 3	17	6		TOPSOIL		TOPSOIL - 0.5'	
									Brown SILT, trace sand, occasional clay partings (moist, loose, ML)	
2.0 - 4.0	2		2 - 3 - 3 - 2	15	8		SILT			
4.0 - 6.0	3		3 - 4 - 5 - 5	16	9	5.0				
6.0' - 8.0	4		5 - 5 - 5 - 4	16	10				Brown Silty CLAY, trace sand, occasional silt partings (moist-wet, stiff, CL)	
8.0 -10.0	5		3 - 3 - 3 - 4	24	6				Becomes soft	
10.0 - 12.0	6		1 - 1 - 1 - 1	20	2	10.0				
						15.0				
15.0 - 17.0	7		1 - 2 - 2 - 1	20	4		SILTY CLAY			
						20.0				
20.0 - 22.0	8		2 - 2 - 1 - 2	24	3					
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-5

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research

Surface Elevation:	± NS feet	**Date Started:**	12/19/2024	**Water Depth (feet bgs) | Elevation (feet)**		**Cave-In Depth (feet bgs) | Elevation (feet)**	
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/19/2024				
Proposed Location:		**Logged By:**	F. Minnolera	**During:**			
Drill / Test Method:	3 1/4" ID HSA and 2" OD	**Contractor:**	NSD	**At Completion:**	24.2	**At Completion:**	
	Split Barrel Sampler	**Equipment:**	CME-550X	**24 Hours:**		**24 Hours:**	

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						25.0				
25.0 - 27.0	9	X	2 - 2 - 2 - 2	24	4				Gray SILT, trace sand, occasional clay partings (wet, loose, ML)	
							SILT			
28.0 - 30.0	10	X	2 - 3 - 3 - 2	16	6					
						30.0			Boring Log B-5 Terminated at a Depth of 30.0 Feet Below Ground Surface	
						35.0				
						40.0				
						45.0				
						50.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-6

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research
Surface Elevation:	± NS feet	**Date Started:**	12/19/2024
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/19/2024
Proposed Location:		**Logged By:**	F. Minnolera
Drill / Test Method:	3 1/4" ID HSA and 2" OD Split Barrel Sampler	**Contractor:**	NSD
		Equipment:	CME-550X

Water Depth (feet bgs)	Elevation (feet)	Cave-In Depth (feet bgs)	Elevation (feet)
During: 12.6			
At Completion: 17.5		**At Completion:**	
24 Hours:		**24 Hours:**	

Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	DEPTH (feet)	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
						0.0			
0.0 - 2.0	1	X	1 - 1 - 4 - 4	14	5		TOPSOIL	TOPSOIL - 0.5'	
2.0 - 4.0	2	X	5 - 5 - 6 - 5	12	11		FILL	Brown SILT, trace gravel, trace clay (moist, FILL)	
4.0 - 6.0	3	X	4 - 5 - 5 - 4	20	10	5.0			
6.0' - 8.0	4	X	4 - 5 - 4 - 4	14	9			Becomes brown-gray, contains trace organic matter	
8.0 -10.0	5	X	2 - 2 - 4 - 6	10	6		SILT	Black SILT, trace peat (moist, loose, OL)	
10.0 - 12.0	6	X	2 - 3 - 4 - 5	18	7	10.0		Brown Silty SAND (fine grained),occasional clay partings (wet, loose, SM)	
15.0 - 17.0	7	X	WOH - 3 - 2 - 2	17	5	15.0	SAND		
						20.0			
20.0 - 22.0	8	X	3 - 4 - 1 - 2	18	5			Gray SILT, trace sand, trace clay (wet, loose, ML)	
							SILT		
						25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-6

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research

Surface Elevation:	± NS feet	**Date Started:**	12/19/2024	**Water Depth (feet bgs) | Elevation (feet)**		**Cave-In Depth (feet bgs) | Elevation (feet)**	
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/19/2024				
Proposed Location:		**Logged By:**	F. Minnolera	**During:**	12.6 |		
Drill / Test Method:	3 1/4" ID HSA and 2" OD	**Contractor:**	NSD	**At Completion:**	17.5 |	**At Completion:**	|
	Split Barrel Sampler	**Equipment:**	CME-550X	**24 Hours:**	|	**24 Hours:**	|

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						25.0			Gray SILT, trace sand, trace clay (wet, loose, ML) (cont.)	
25.0 - 27.0	9	X	3 - 2 - 2 - 3	13	4					
							SILT			
28.0 - 30.0	10	X	2 - 2 - 2 - 1	17	4					
						30.0			Boring Log B-6 Terminated at a Depth of 30.0 Feet Below Ground Surface	
						35.0				
						40.0				
						45.0				
						50.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-7

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research

Surface Elevation:	± NS feet	**Date Started:**	12/20/2024	**Water Depth | Elevation (feet bgs) | (feet)**		**Cave-In Depth | Elevation (feet bgs) | (feet)**	
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/20/2024				
Proposed Location:		**Logged By:**	F. Minnolera	**During:**	4.7 |		
Drill / Test Method:	3 1/4" ID HSA and 2" OD	**Contractor:**	NSD	**At Completion:**	|	**At Completion:**	|
	Split Barrel Sampler	**Equipment:**	CME-550X	**24 Hours:**	|	**24 Hours:**	|

SAMPLE INFORMATION						DEPTH	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)			
						0.0			
							TOPSOIL	TOPSOIL - 0.6'	
0.0 - 2.0	1	X	1 - 2 - 3 - 3	17	5		SILT	Brown SILT, trace sand (moist, loose, ML)	
2.0 - 4.0	2	X	2 - 3 - 2 - 4	16	5			Brown Silty CLAY, trace sand, occasional silt partings (moist, medium, CL)	
4.0 - 6.0	3	X	2 - 2 - 1 - 2	22	3	5.0		Becomes soft	
6.0' - 8.0	4	X	2 - 1 - 2 - 1	23	3		SILTY CLAY	Becomes wet, contains occasional silt seams	
8.0 -10.0	5	X	1 - 1 - 1 - 2	21	2	10.0			
10.0 - 12.0	6	X	2 - 2 - 3 - 4	22	5			Brown Silty SAND (fine grained), occasional silty clay seams (wet, loose, SM)	
							SAND		
						15.0			
15.0 - 17.0	7	X	5 - 5 - 7 - 9	21	12			Brown SILT, trace sand, occasional fine sand lenses (moist-wet, medium dense, ML)	
						20.0	SILT		
20.0 - 22.0	8	X	3 - 4 - 5 - 4	17	9			Becomes gray, loose	
						25.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-7

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research

Surface Elevation:	± NS feet	**Date Started:**	12/20/2024	**Water Depth | Elevation (feet bgs) | (feet)**		**Cave-In Depth | Elevation (feet bgs) | (feet)**	
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/20/2024				
Proposed Location:		**Logged By:**	F. Minnolera	**During:**	4.7 |		
Drill / Test Method:	3 1/4" ID HSA and 2" OD	**Contractor:**	NSD	**At Completion:**	|	**At Completion:**	|
	Split Barrel Sampler	**Equipment:**	CME-550X	**24 Hours:**	|	**24 Hours:**	|

SAMPLE INFORMATION						DEPTH	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)			
						25.0			
25.0 - 27.0	9	X	2 - 3 - 4 - 3	23	7			Brown SILT, trace sand, occasional fine sand lenses (moist-wet, loose, ML) (cont.)	
							SILT		
28.0 - 30.0	10	X	3 - 4 - 5 - 7	24	9	30.0			
								Boring Log B-7 Terminated at a Depth of 30.0 Feet Below Ground Surface	
						35.0			
						40.0			
						45.0			
						50.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-8

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research
Surface Elevation:	± NS feet	**Date Started:**	12/19/2024
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/19/2024
Proposed Location:		**Logged By:**	F. Minnolera
Drill / Test Method:	3 1/4" ID HSA and 2" OD Split Barrel Sampler	**Contractor:**	NSD
		Equipment:	CME-550X

Water Depth (feet bgs) | Elevation (feet)		Cave-In Depth (feet bgs) | Elevation (feet)	
During:			
At Completion:	none |	**At Completion:**	
24 Hours:		**24 Hours:**	

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
							TOPSOIL		TOPSOIL - 0.4'	
0.0 - 2.0	1	X	1 - 4 - 8 - 9	18	12		FILL		Brown-gray and black Sandy SILT, trace clay, trace cobble fragments (moist, FILL)	
2.0 - 4.0	2	X	9 - 18 - 17 - 10	15	35					
4.0 - 6.0	3	X	5 - 23 - 16 - 9	16	39	5.0				
6.0' - 8.0	4	X	6 - 8 - 8 - 9	15	16		SILT		Gray-black organic SILT, trace sand, trace peat (moist, medium dense, ML-OL)	
8.0 -10.0	5	X	11 - 5 - 4 - 4	15	9	10.0				
10.0 - 12.0	6	X	1 - 2 - 3 - 4	14	5		SILTY CLAY		Gray-black organic Silty CLAY, trace sand (moist, medium, CL-OL)	
						15.0				
15.0 - 17.0	7	X	2 - 3 - 2 - 2	24	5		PEAT		Black PEAT (moist, loose, PT)	
						20.0				
20.0 - 22.0	8	X	2 - 2 - 2 - 2	22	4		SILT		Gray SILT, trace sand (moist, loose, ML)	
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-8

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research

Surface Elevation:	± NS feet	**Date Started:**	12/19/2024	**Water Depth (feet bgs) | Elevation (feet)**		**Cave-In Depth (feet bgs) | Elevation (feet)**	
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/19/2024				
Proposed Location:		**Logged By:**	F. Minnolera	**During:**			
Drill / Test Method:	3 1/4" ID HSA and 2" OD	**Contractor:**	NSD	**At Completion:**	none	**At Completion:**	
	Split Barrel Sampler	**Equipment:**	CME-550X	**24 Hours:**		**24 Hours:**	

SAMPLE INFORMATION						DEPTH	STRATA	DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)			
						25.0		Gray SILT, trace sand (moist, loose, ML) (cont.)	
25.0 - 27.0	9	X	2 - 4 - 5 - 6	20	9				
							SILT		
28.0 - 30.0	10	X	3 - 4 - 5 - 5	22	9				
						30.0		Boring Log B-8 Terminated at a Depth of 30.0 Feet Below Ground Surface	
						35.0			
						40.0			
						45.0			
						50.0			

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-9

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research
Surface Elevation:	± NS feet	**Date Started:**	12/20/2024
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/20/2024
Proposed Location:		**Logged By:**	F. Minnolera
Drill / Test Method:	3 1/4" ID HSA and 2" OD Split Barrel Sampler	**Contractor:**	NSD
		Equipment:	CME-550X

Water Depth | Elevation (feet bgs) | (feet)		Cave-In Depth | Elevation (feet bgs) | (feet)	
During:	18.7 |		
At Completion:	None |	**At Completion:**	|
24 Hours:	|	**24 Hours:**	|

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
							GRAVEL		CRUSHED STONE (0.2')	
0.0 - 2.0	1	X	5 - 5 - 5 - 4	13	10		FILL		Dark-brown and black Sandy SILT, trace gravel (moist, FILL)	
2.0 - 4.0	2	X	2 - 7 - 6 - 8	14	13		SILT		Brown SILT, trace sand, trace clay (moist, medium dense, ML)	MC = 14.5%
4.0 - 6.0	3	X	4 - 5 - 5 - 4	18	10	5.0			Becomes brown gray	MC = 17.5%
6.0 - 8.0	4	X	6 - 5 - 6 - 6	10	11				Becomes dark gray	MC = 18.6%
8.0 -10.0	5	X	2 - 3 - 4 - 6	21	7		SILTY CLAY		Brown Silty CLAY, trace sand, occasional silt seams (moist, medium, CL)	MC = 16.2%
10.0 - 12.0	6	X	4 - 5 - 5 - 7	22	10	10.0			Becomes moist-wet, stiff	MC = 36.7%
						15.0				
15.0 - 17.0	7	X	3 - 4 - 2 - 2	22	6		SILT		Brown SILT, trace sand (moist, loose, ML)	MC = 24.7%
						20.0				
20.0 - 22.0	8	X	1 - 2 - 3 - 2	16	5		SILTY CLAY		Brown-gray Silty CLAY, trace sand, occasional fine sand lenses (wet, medium, CL)	MC = 27.9%
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-9

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research
Surface Elevation:	± NS feet	**Date Started:**	12/20/2024
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/20/2024
Proposed Location:		**Logged By:**	F. Minnolera
Drill / Test Method:	3 1/4" ID HSA and 2" OD Split Barrel Sampler	**Contractor:**	NSD
		Equipment:	CME-550X

Water Depth (feet bgs)	Elevation (feet)	Cave-In Depth (feet bgs)	Elevation (feet)
During: 18.7			
At Completion: none		**At Completion:**	
24 Hours:		**24 Hours:**	

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						25.0			Brown-gray Silty CLAY, trace sand, occasional fine sand lenses (wet, medium, CL) (cont.)	
25.0 - 27.0	9	X	3 - 4 - 3 - 4	24	7					MC = 30.7%
							SILTY CLAY			
28.0 - 30.0	10	X	3 - 4 - 4 - 5	19	8					MC = 20.8%
						30.0			Boring Log B-9 Terminated at a Depth of 30.0 Feet Below Ground Surface	
						35.0				
						40.0				
						45.0				
						50.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-10

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research
Surface Elevation:	± NS feet	**Date Started:**	12/17/2024
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/17/2024
Proposed Location:		**Logged By:**	F. Minnolera
Drill / Test Method:	3 1/4" ID HSA and 2" OD	**Contractor:**	NSD
	Split Barrel Sampler	**Equipment:**	CME-550X

Water Depth | Elevation (feet bgs) | (feet)		Cave-In Depth | Elevation (feet bgs) | (feet)	
During:			
At Completion:	none	**At Completion:**	
24 Hours:		**24 Hours:**	

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
							TOPSOIL		TOPSOIL - 0.6'	
0.0 - 2.0	1		2 - 3 - 7 - 9	12	10		SANDY LOAM		Red-brown Silty SAND with Gravel (moist,loose, SM)	
2.0 - 2.9	2		35 - 50/0.4	8	REF		SAND		Brown-gray Gravelly SAND with Silt (moist, very dense, SW-SM - cemented soils)	MC = 3.5%
									Brown Silty SAND (fine grained)(moist, medium dense, SP-SM)	
4.0 - 6.0	3		4 - 5 - 6 - 7	18	11	5.0				MC = 6.0%
6.0 - 8.0	4		6 - 5 - 5 - 6	13	10				Contains occasional silt partings	MC = 6.9%
8.0 -10.0	5		4 - 6 - 5 - 6	14	11		SAND			MC = 6.9%
10.0 - 12.0	6		4 - 5 - 5 - 6	14	10	10.0				MC = 7.1%
						15.0				
15.0 - 17.0	7		7 - 5 - 7 - 9	16	12				Brown poorly graded (fine grained) SAND, trace silt (moist, medium dense, SP)	MC = 7.1%
							SAND			
						20.0				
20.0 - 22.0	8		9 - 12 - 15 - 17	14	27				Brown Silty SAND (fine grained)(moist, medium dense, SM)	MC = 6.9%
							SAND			
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-10

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research

Surface Elevation:	± NS feet	**Date Started:**	12/16/2024	**Water Depth (feet bgs) | Elevation (feet)**		**Cave-In Depth (feet bgs) | Elevation (feet)**	
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/16/2024				
Proposed Location:		**Logged By:**	F. Minnolera	**During:**			
Drill / Test Method:	3 1/4" ID HSA and 2" OD	**Contractor:**	NSD	**At Completion:**	none	**At Completion:**	
	Split Barrel Sampler	**Equipment:**	CME-550X	**24 Hours:**		**24 Hours:**	

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						25.0			Brown Silty SAND (fine grained)(moist, medium dense, SM)(Cont.)	
25.0 - 27.0	9	X	3 - 4 - 5 - 7	14	9				Becomes loose	MC = 2.6%
							SAND			
28.0-30.0	10	X	5 - 9 - 12 - 16	15	21				Becomes medium dense	MC = 3.2%
						30.0			Boring Log B-10 Terminated at a Depth of 30.0 Feet Below Ground Surface	
						35.0				
						40.0				
						45.0				
						50.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-11

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research
Surface Elevation:	± NS feet	**Date Started:**	12/17/2024
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/17/2024
Proposed Location:		**Logged By:**	F. Minnolera
Drill / Test Method:	3 1/4" ID HSA and 2" OD Split Barrel Sampler	**Contractor:**	NSD
		Equipment:	CME-550X

Water Depth (feet bgs) | Elevation (feet)		Cave-In Depth (feet bgs) | Elevation (feet)	
During:			
At Completion:	none |	**At Completion:**	
24 Hours:		**24 Hours:**	

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
0.0 - 2.0	1		W 1 - O - 1 - 1 H	11	1		TOPSOIL		TOPSOIL - 0.7'	
							SAND		Brown poorly graded (fine grained) SAND, trace silt (moist, very loose, SP)	
2.0 - 4.0	2		1 - 2 - 2 - 2	13	4				Becomes loose	
							SAND		Brown Silty SAND (fine to medium grained)(moist, loose, SP-SM)	
4.0 - 6.0	3		2 - 3 - 3 - 3	16	6	5.0				
6.0' - 8.0	4		4 - 3 - 4 - 5	15	7					
8.0 -10.0	5		3 - 5 - 6 - 6	14	11				Brown poorly graded (fine grained) SAND, trace silt (moist, medium dense, SP)	
10.0 - 12.0	6		4 - 5 - 6 - 8	14	11	10.0				
							SAND			
15.0 - 17.0	7		4 - 5 - 7 - 7	18	12	15.0				
20.0 - 22.0	8		4 - 6 - 8 - 8	15	14	20.0				
							SAND		Brown Silty SAND (fine to medium grained) moist, medium dense, SP-SM)	
						25.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-11

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research
Surface Elevation:	± NS feet	**Date Started:**	12/17/2024
Termination Depth:	30.0 feet bgs	**Date Completed:**	12/17/2024
Proposed Location:		**Logged By:**	F. Minnolera
Drill / Test Method:	3 1/4" ID HSA and 2" OD	**Contractor:**	NSD
	Split Barrel Sampler	**Equipment:**	CME-550X

Water Depth (feet bgs)	Elevation (feet)	Cave-In Depth (feet bgs)	Elevation (feet)
During:			
At Completion:	none	**At Completion:**	
24 Hours:		**24 Hours:**	

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						25.0			Brown Silty SAND (fine to medium grained) moist, medium dense, SP-SM)(Cont.)	
25.0 - 27.0	9	X	20 - 18 - 22 - 21	16	39				Becomes dense	
							SAND			
28.0 - 30.0	10	X	10 - 12 - 13 - 18	15	25				Becomes medium dense	
						30.0			Boring Log B-11 Terminated at a Depth of 30.0 Feet Below Ground Surface	
						35.0				
						40.0				
						45.0				
						50.0				

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

RECORD OF SUBSURFACE EXPLORATION

Boring No.: B-12

Page 1 of 1

Project:	Micron WWTP - Preliminary Investigation	**WAI Project No.:**	PRY34323
Location:	4300 Oak Orchard Road, Clay, Onondaga County, NY	**Client:**	Environmental Design and Research
Surface Elevation:	± NS feet	**Date Started:**	12/17/2024
Termination Depth:	24.3 feet bgs	**Date Completed:**	12/17/2024
Proposed Location:		**Logged By:**	F. Minnolera
Drill / Test Method:	3 1/4" ID HSA and 2" OD Split Barrel Sampler	**Contractor:**	NSD
		Equipment:	CME-550X

Water Depth (feet bgs)	Elevation (feet)	Cave-In Depth (feet bgs)	Elevation (feet)
During: 6.0			
At Completion: 8.6		**At Completion:**	
24 Hours:		**24 Hours:**	

SAMPLE INFORMATION						DEPTH	STRATA		DESCRIPTION OF MATERIALS (Classification)	REMARKS
Depth (feet)	No	Type	Blows Per 6"	Rec. (in.)	N	(feet)				
						0.0				
0.0 - 2.0	1		6 - 20 - 30 - 37	6	50		TOPSOIL		TOPSOIL - 0.6'	
							FILL		AUGER THROUGH SANDSTONE AND GRANITE COBBLES AND BOULDERS TO 4' DEPTH (POSSIBLE FILL)	
4.0 - 6.0	2		16 - 15 - 21 - 24	24	36	5.0	SAND		Brown Gravelly SAND with Silt, slightly cemented soils (fine to coarse grained)(moist, dense, SM)	Very rugged augering encountered from grade to completion of boring
6.0' - 8.0	3		11 - 17 - 12 - 12	13	29				Becomes medium dense	
8.0 -10.0	4		11 - 10 - 10 - 10	12	20		GRAVEL		Brown-Gray Sandy GRAVEL with Silt (fine to coarse grained) (wet, medium dense, GW-GM)	
10.0 - 12.0	5		14 - 9 - 10 - 7	9	19	10.0	SAND		Brown-gray well graded SAND, trace silt (moist, medium dense, SW)	
13.0 - 15.0	6		11 - 7 - 21 - 9	12	28	15.0				
									Becomes dense, contains occasional cobble fragments	
18.0 - 20.0	7		14 - 21 - 28 - 29	20	49	20.0				
23.0 - 24.3	8		54 - 37 - 50/0.3	7	REF				Becomes very dense	
						25.0			Boring Log B-12 Terminated with sampler refusal at a Depth of 24.3 Feet Below Ground Surface	

NOTES: bgs = below ground surface, NA = Not Applicable, NE = Not Encountered, NS = Not Surveyed, P = Perched

WHITESTONE

APPENDIX B
Supplemental Information (USCS, Terms & Symbols)

WHITESTONE

500 CANAL VIEW BOULEVARD
ROCHESTER, NY 14623
585.252.6879
whitestoneassoc.com

UNIFIED SOIL CLASSIFICATION SYSTEM

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS	CLEAN SAND (LITTLE OR NO FINES)	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMITS LESS THAN 50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMITS GREATER THAN 50	MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS FOR SAMPLES WITH 5% TO 12% FINES

GRADATION*

% FINER BY WEIGHT

TRACE..... 1% TO 10%
LITTLE..... 10% TO 20%
SOME..... 20% TO 35%
AND..... 35% TO 50%

COMPACTNESS*
Sand and/or Gravel

RELATIVE DENSITY

LOOSE. ..... 0% TO 40%
MEDIUM DENSE.... 40% TO 70%
DENSE..... 70% TO 90%
VERY DENSE..... 90% TO 100%

CONSISTENCY*
Clay and/or Silt

RANGE OF SHEARING STRENGTH IN POUNDS PER SQUARE FOOT

VERY SOFT..... LESS THAN 250
SOFT..... ..... 250 TO 500
MEDIUM..... 500 TO 1000
STIFF..... 1000 TO 2000
VERY STIFF..... 2000 TO 4000
HARD..... GREATER THAN 4000

** VALUES ARE FROM LABORATORY OR FIELD TEST DATA, WHERE APPLICABLE. WHEN NO TESTING WAS PERFORMED, VALUES ARE ESTIMATED.*

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ROCHESTER, NY 14623
585.252.6879
whitestoneassoc.com

GEOTECHNICAL TERMS AND SYMBOLS

SAMPLE IDENTIFICATION

The Unified Soil Classification System is used to identify the soil unless otherwise noted.

SOIL PROPERTY SYMBOLS

N: Standard Penetration Value: Blows per ft. of a 140 lb. hammer falling 30" on a 2" O.D. split-spoon.
Qu: Unconfined compressive strength, TSF.
Qp: Penetrometer value, unconfined compressive strength, TSF.
Mc: Moisture content, %.
LL: Liquid limit, %.
PI: Plasticity index, %.
δd: Natural dry density, PCF.
▼: Apparent groundwater level at time noted after completion of boring.

DRILLING AND SAMPLING SYMBOLS

NE: Not Encountered (Groundwater was not encountered).
SS: Split-Spoon - 1 ⅜" I.D., 2" O.D., except where noted.
ST: Shelby Tube - 3" O.D., except where noted.
AU: Auger Sample.
OB: Diamond Bit.
CB: Carbide Bit
WS: Washed Sample.

RELATIVE DENSITY AND CONSISTENCY CLASSIFICATION

Term (Non-Cohesive Soils)	Standard Penetration Resistance
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	Over 50

Term (Cohesive Soils)	Qu (TSF)
Very Soft	0 - 0.25
Soft	0.25 - 0.50
Firm (Medium)	0.50 - 1.00
Stiff	1.00 - 2.00
Very Stiff	2.00 - 4.00
Hard	4.00+

PARTICLE SIZE

Boulders	8 in.+	Coarse Sand	5mm-0.6mm	Silt	0.074mm-0.005mm
Cobbles	8 in.-3 in.	Medium Sand	0.6mm-0.2mm	Clay	-0.005mm
Gravel	3 in.-5mm	Fine Sand	0.2mm-0.074mm		

Subsurface Investigation

NOT A PART OF THE CONTRACT

C-36-731 Oak Orchard Water Pollution Control Plant

Contract IX A-General
Contract IX B-Electrical
Contract IX C-Heating & Ventilating
Contract IX D-Plumbing
Contract IX E-Oxygen Generation & Dissolution System
Contract IX F-Sludge Treatment Process

County of Onondaga, New York
Department of Drainage & Sanitation
Clay Sanitary District
January, 1978

AS ADV



O'BRIEN & GERE ENGINEERS, INC.

GA-1 OPEN 4/6/78
GEN OPEN 3/30/78

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

January 7, 1975

O'Brien & Gere Engineers, Inc.
1304 Buckley Road
Syracuse, New York 13202

Attention: Mr. Raj Maniktala

Re: 74130
Oak Orchard Treatment Plant
Clay, New York

Gentlemen:

Enclosed are the logs of nine test borings made for you for the above project.

Samples from these borings have been delivered to your office this date under separate cover.

The borings were made at points located in the field by you and were drilled in accordance with standard ASTM methods for split-barrel sampling in soils and coring in rock.

A soil profile at the site consists generally of twenty-five to forty-five feet of loose sand and silt overylaying a dense sand and gravel. Below this granular material is the bedrock, an interbedded shale and limestone. The rock was found at depths below existing ground surface ranging from thirty feet to fifty-seven feet. The rock was cored in each test boring.

Ground water depths are noted on the boring logs.

Very truly yours,

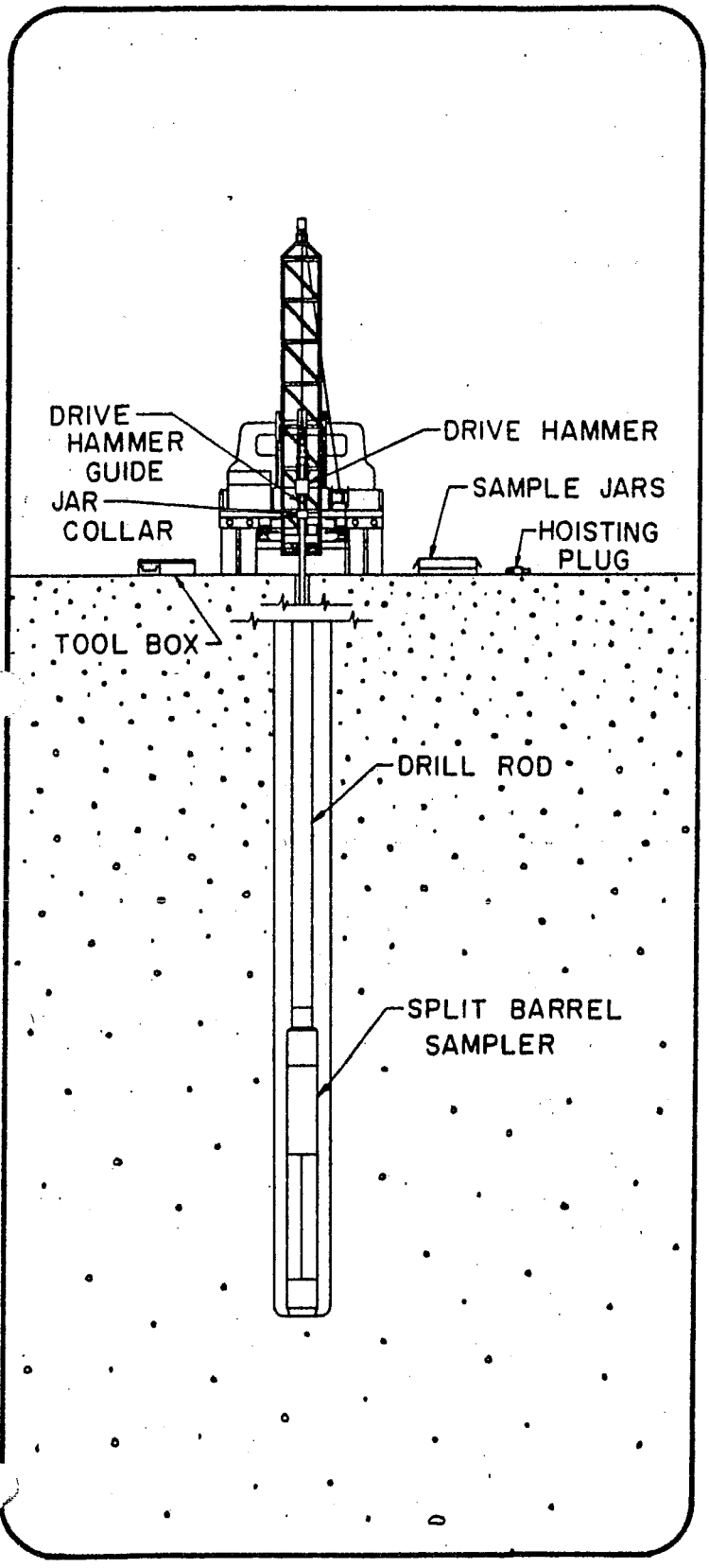
PARRATT-WOLFF, INC.

Steffen Wolff

Steffen Wolff
SW/jw
Enclosures

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TELEPHONE AREA CODE 315/437-1429

SOIL SAMPLING-METHODS



Split barrel sampling

The following excerpts are from "Standard Method for penetration test and split-barrel sampling of soils."[1] (ASTM designation: D-1586-67 AASHO Designation: T-206-70.)

1. Scope

1.1 This method describes a procedure for using a split-barrel sampler to obtain respresentative samples of soil for identification purposes and other laboratory tests, and to obtain a measure of the resistance of the soil to penetration of the sampler.

2. Apparatus

2.1 Drilling Equipment – Any drilling equipment shall be acceptable that provides a reasonably clean hole before insertion of the sampler to ensure that the penetration test is performed on undisturbed soil, and that will permit the driving of the sampler to obtain the sample and penetration record in accordance with the procedure described in 3. Procedure. To avoid "whips" under the blows of the hammer, it is recommended that the drill rod have stiffness equal to or greater than the A-rod. An "A" rod is a hollow drill rod or "steel" having an outside diameter of 1-5/8 in. or 41.2 mm and an inside diameter of 1-1/8 in. or 28.5 mm, through which the rotary motion of drilling is transferred from the drilling motor to the cutting bit. A stiffer drill rod is suggested for holes deeper than 50 ft (15m). The hole shall be limited in diameter to between 2-1/4 and 6 in. (57.2 and 152mm).

2.2 Split-Barrel Sampler – The sampler shall be constructed with the dimensions indicated (in Fig. 1.) The drive shoe shall be of hardened steel and shall be replaced or repaired when it becomes dented or distorted. The coupling head shall have four 1/2-in. (12.7-mm) (minimum diameter) vent ports and shall contain a ball check valve. If sizes other than the 2-in. (50.8-mm) sampler are permitted, the size shall be conspicuously noted on all penetration records.

2.3 Drive Weight Assembly – The assembly shall consist of a 140-lb (63.5-kg) weight, a driving head, and a guide permitting a free fall of 30 in. (0.76 m). Special precautions shall be taken to ensure that the energy of the falling weight is not reduced by friction between the drive weight and the guides.

2.4 Accessory Equipment – Labels, data sheets, sample jars, paraffin, and other necessary supplies should accompany the sampling equipment.

SOIL SAMPLING - METHODS

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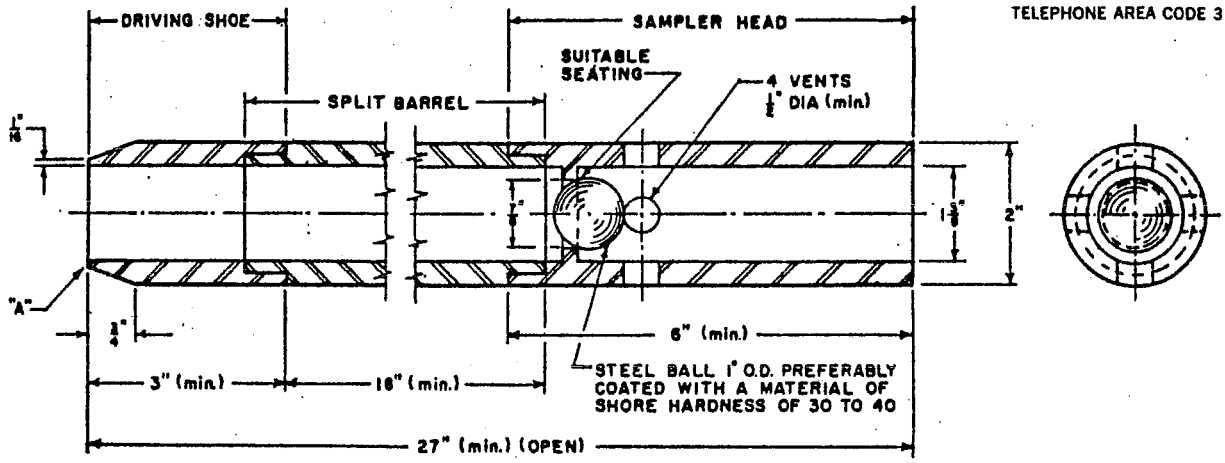


Fig. 1 — Standard Split Barrel Sampler Assembly

Note 1 — Split barrel may be 1-1/2 in. inside diameter provided it contains a liner of 16-gage wall thickness.

Note 2 — Core retainers in the driving shoe to prevent loss of sample are permitted.

Note 3 — The corners at A may be slightly rounded.

Table of Metric Equivalents.

In.	Mm	Cm	In.	Mm	Cm
1/16 (16 gage)	1.5	...	2	...	5.08
1/2	12.7	...	3	...	7.62
3/4	19.0	1.90	6	...	15.24
7/8	22.2	2.22	18	...	45.72
1-3/8	34.9	3.49	27	68.58	
1-1/2	38.1	3.81			

3. Procedure

3.1 Clear out the hole to sampling elevation using equipment that will ensure that the material to be sampled is not disturbed by the operation. In saturated sands and silts withdraw the drill bit slowly to prevent loosening of the soil around the hole. Maintain the water level in the hole at or above ground water level.

3.2 In no case shall a bottom-discharge bit be permitted. (Side-discharge bits are permissible.) The process of jetting through an open-tube sampler and then sampling when the desired depth is reached shall not be permitted. Where casing is used, it may not be driven below sampling elevation. Record any loss of circulation or excess pressure in drilling fluid during advancing of holes.

3.3 With the sampler resting on the bottom of the hole, drive the sampler with blows from the 140-lb (63.5 kg) hammer falling 30 in. (0.76 m) until either 18 in. (0.45 m) have been penetrated or 100 blows have been applied.

3.4 Repeat this operation at intervals not longer than 5 ft (1.5 m) in homogeneous strata and at every change of strata.

3.5 Record the number of blows required to effect each 6 in. (0.15 m) of penetration or fractions thereof. The first 6 in. (0.15 m) is considered to be a seating drive. The number of blows required for the second and third 6 in. (0.15 m) of penetration added is termed the penetration resistance, N. If the sampler is driven less than 18 in. (0.45 m), the penetration resistance is that for the last 1 ft (0.30 m) of penetration (if less than 1 ft (0.30 m) is penetrated, the logs shall state the number of blows and the fraction of 1 ft (0.30 m) penetrated).

3.6 Bring the sampler to the surface and open. Describe carefully typical samples of soils recovered as to composition, structure, consistency, color, and condition; then put into jars without ramming. Seal them with wax or hermetically seal to prevent evaporation of the soil moisture. Affix labels to the jar or make notations on the covers (or both) bearing job designation, boring number, sample number, depth penetration record, and length of recovery. Protect samples against extreme temperature changes.

4. Report

4.1 Data obtained in borings shall be recorded in the field and shall include the following:

4.1.1 Name and location of job,
4.1.2 Date of boring — start, finish,
4.1.3 Boring number and coordinate, if available,
4.1.4 Surface elevation, if available,
4.1.5 Sample number and depth,
4.1.6 Method of advancing sampler, penetration and recovery lengths,
4.1.7 Type and size of sampler,
4.1.8 Description of soil,
4.1.9 Thickness of layer,
4.1.10 Depth to water surface; to loss of water; to artesian head; time at which reading was made,
4.1.11 Type and make of machine,
4.1.12 Size of casing, depth of cased hole,
4.1.13 Number of blows per 6 in. (0.15 m),
4.1.14 Names of crewmen, and
4.1.15 Weather, remarks.

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[1]Under the standardization procedure of the Society, this method is under the jurisdiction of the ASTM Committee D-18 on Soil and Rock for Engineering Purposes. A list of members may be found in the ASTM Year Book.

Current edition accepted October 20, 1967. Originally issued, 1958. Replaces D-1586-64T.

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TELEPHONE AREA CODE 315/437-1429

GENERAL NOTES

1. The soil logs, notes and other test data shown are the result of interpretations made by representatives of Parratt-Wolff Inc. from personal observations made during the exploration period of samples of subsurface materials recovered during exploration and records of exploration as prepared by the drill operator.

2. Explanation of the classifications and terms:

a. Bedrock - Natural solid mineral matter occurring in great thickness and extent in its natural location. It is classified according to geological type and structure (joints, bedding, etc.) and described as solid, weathered, broken, fragmented or decomposed depending on its condition.

b. Soils - Sediments or other unconsolidated accumulations of particles produced by the physical and chemical disintegration of rocks and which may or may not contain organic matter.

PENETRATION RESISTANCE

COHESIONLESS SOILS

Blows per Ft.	Relative Density
0 to 4	Very Loose
4 to 10	Loose
10 to 30	Medium
30 to 50	Dense
Over 50	Very Dense

COHESIVE SOILS

Blows per Ft.	Consistency
0 to 2	Very Soft
2 to 4	Soft
4 to 8	Medium
8 to 15	Stiff
15 to 30	Very Stiff
Over 30	Hard

Size Component Terms

Boulder	larger than 8 inches
Cobble or Small Stone	8 inches to 3 inches
Gravel - course	3 inches to 3/4 inch
medium	3/4 inch to 4.76 mm
Sand - coarse	4.76 mm to 2.00 mm (#10 sieve)
medium	2.00 mm to 0.42 mm (#40 sieve)
fine	0.42 mm to 0.074 mm (#200 sieve)
Silt and Clay	finer than 0.074 mm

Proportion Terms by Weight

Major component is shown with all letters capitalized.

Minor component percentage terms of total sample are:

and	40 to 50 percent
some	20 to 40 percent
little	10 to 20 percent
trace	1 to 10 percent

c. Gradation Terms - The terms coarse, medium and fine are used to describe gradation of Sands and Gravel.

d. The terms used to describe the various soil components and proportions are arrived at by visual estimates of the recovered soil samples. Other terms are used when the recovered samples are not truly representative of the natural materials, such as, soil containing numerous cobbles and boulders which cannot be sampled, thinly stratified soils, organic soils, and fills.

e. Ground Water - The measurement was made during exploration work or immediately after completion, unless otherwise noted. The depth recorded is influenced by exploration methods, the soil type and weather conditions during exploration. Where no water was found it is so indicated. It is anticipated that the ground water will rise during periods of wet weather. In addition, perched ground water above the water levels indicated (or above the bottom of the hole where no ground water is indicated) may be encountered at changes in soil strata or top of rock.

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15 DEANE LANE CAZENOVIA, N.Y. 13035

TEST BORING LOG

PROJECT Jankowski Site
Clay, New York

HOLE NO. 11-36-73-605

LOCATION N 1,167,550 - E 598, 800

SURF. ELEV. 385

DATE STARTED 7/27/73 COMPLETED 7/27/73

JOB NO. 7384

GROUND WATER Depth on completion 5'6"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 1

AUGER BORING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Brown moist fine sandy SILT to sandy CLAY
5'0"					
			1	8'-10'	
10'0"					10'0"
			2	10'-12'	Brown moist clayey SILT to silty CLAY, trace fine sand
15'0"					
					18'0"
			3	18'-20'	Gray moist SILT, trace fine sand
20'0"					
					Bottom of boring 20'0"

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EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Jankowski Site
Clay, New York

HOLE NO. 12-37-73-606

LOCATION N 1,167,300 - E 599,100

SURF. ELEV. 380

DATE STARTED 7/27/73 COMPLETED 7/27/73

JOB NO. 7384

GROUND WATER Depth on completion 10'0"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 1

AUGER BORING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
5'0"				8'-10'	Brown moist fine sandy SILT
					8'0"
10'0"			1		Brown moist clayey SILT to silty CLAY, trace fine sand 11'0"
15'0"					Gray wet SILT, trace fine sand
					Bottom of boring 15'0"

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EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Jankowski Site
Clay, New York

HOLE NO. 13-38-73-607

LOCATION N 1,166,800 - E 599,200

SURF. ELEV. 375

DATE STARTED 7/27/73 COMPLETED 7/27/73

JOB NO. 7384

GROUND WATER Depth on completion 10'0"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 1

AUGER BORING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Brown moist to wet clayey SILT to silty CLAY, trace fine sand
5'0"					
					8'2"
10'0"					Gray wet SILT, trace fine sand
					Bottom of boring 10'0"

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EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Jankowski Site
Clay, New York

HOLE NO. 14-39-73-608

LOCATION N 1,166,000 - E 599,050

SURF. ELEV. 370

DATE STARTED 7/27/73 COMPLETED 7/27/73

JOB NO. 7384

GROUND WATER Dry on completion

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 1

AUGER BORING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
5'0"					Brown moist clayey SILT to silty CLAY, trace fine sand
					Bottom of boring 5'0"

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EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Jankowski Site
Clay, New York

LOCATION N 1,167,500 - E 599,250

HOLE NO. 15-40-73-609

SURF. ELEV. 390

DATE STARTED 7/27/73 COMPLETED 7/27/73

JOB NO. 7384

GROUND WATER Depth on completion 11'6"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 1

AUGER BORING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
			1	1'0"-2'6"	Brown dry to wet clayey SILT to silty CLAY, trace fine sand
5'0"					
10'0"					
15'0"			2	13'0"-15'0	
					18'0"
20'0"					Gray wet SILT, trace fine sand
25'0"					
					Bottom of boring 25'0"

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FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Jankowski Site
Clay, New York

HOLE NO. 16-41-73-610

LOCATION N 1,167,000 - E 599,500

SURF. ELEV. 395

DATE STARTED 7/27/73 COMPLETED 7/27/73

JOB NO. 7384

GROUND WATER Depth after 3 hours 30'0"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 1

AUGER BORING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Brown moist fine sandy SILT
					4'0"
5'0"					
					Brown moist clayey SILT to silty CLAY, trace fine sand
10'0"					
					12'6"
15'0"					Gray wet SILT, trace fine sand
20'0"					
25'0"					
30'0"					
					30'0"
					Bottom of boring 30'0"

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FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Jankowski Site
Clay, New York

LOCATION N 1,166,500 - E 599,500

HOLE NO. 17-42-73-611

SURF. ELEV. 385

DATE STARTED 7/27/73 COMPLETED 7/27/73

JOB NO. 7384

GROUND WATER Depth on completion 13'0"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 1

AUGER BORING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Brown moist fine sandy SILT
5'0"					4'6"
					Brown moist clayey SILT to silty CLAY, trace fine sand
10'0"					
					13'0"
15'0"					Gray moist SILT, trace fine sand
20'0"					
					Bottom of boring 20'0"

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FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Jankowski Site
Clay, New York

LOCATION N 1,166,125 - E 599,375

HOLE NO. 18-43-73-612

SURF. ELEV. 390

DATE STARTED 7/27/73 COMPLETED 7/27/73

JOB NO. 7384

GROUND WATER Depth on completion 22'0"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 1

AUGER BORING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
5'0"					Brown dry to moist clayey SILT to silty CLAY, trace fine sand
10'0"					
15'0"					14'0"
20'0"					Gray moist SILT, trace fine sand
25'0"					
					Bottom of boring 25'0"

parratt wolff inc

FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Jankowski Site
Clay, New York

HOLE NO. 19-44-73-613

LOCATION N 1,165,750 - E 599,250

SURF. ELEV. 390

DATE STARTED 7/27/73 COMPLETED 7/27/73

JOB NO. 7384

GROUND WATER Depth on completion 22'0"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 1

AUGER BORING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
5'0"					Brown dry to moist clayey SILT to silty CLAY, trace fine sand
10'0"					
15'0"					13'6"
20'0"					Gray wet SILT, trace fine sand 18'2"
25'0"					Gray coarse to fine SAND and coarse to fine gravel, some silt 20'0"
					Gray wet SILT, trace fine sand 22'6"
		12/16	1	25'-27'	Gray coarse to fine SAND and coarse to fine GRAVEL, some silt
		16/30			
					Bottom of boring 27'0"

perratt wolff inc
FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 30-74-524

LOCATION Clay, New York — SURF. ELEV. 383.2

DATE STARTED 12/18/74 COMPLETED 12/19/74 — JOB NO. 74130

GROUND WATER Depth after 14 hours 7'6"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		1/15	1	0'0"	Brown moist soft SILT and CLAY, trace tree roots and fine sand
		2/1		2'0"	
		3/3	2	2'-3'	
		6/9	3	3'-4'	
5'0"		6/6	4	4'0"-6'0"	
		6/6			Brown moist stiff SILT, trace clay, fine sand and organic matter 6'0"
▽ W.L.		4/4	5	6'-7'	
		4/3	6	7'-8'	Brown wet medium stiff SILT, little clay and fine sand 9'0"
		2/2	7	8'-9'	
10'0"		4/3	8	9'-10'	
		1/1	9	10'-11'	Brown gray wet medium stiff SILT and CLAY 10'0"
		1/2	10	11'-12'	
		1/2	11	12'-13'	Gray wet very soft SILT, little clay, trace fine sand
		3/7	12	13'-14'	
15'0"		2/1	13	14'0"-16'0"	
		2/1			
		3/2	14	16'0"-18'0"	
		1/1			
		1/2	15	18'-19'	
20'0"		3/3	16	19'-20'	20'0"
		4/4	17	20'0"-21'6"	Gray wet loose SILT and fine SAND
		5			
					24'0"
25'0"					
		4/9	18A	25'-26'	Gray wet stiff SILT, little clay 26'0"
		22	18B	26'0"-26'6"	Gray moist dense fine to coarse SAND and fine to medium GRAVEL, some silt, trace clay 28'0"
30'0"					
		20/22	19	30'0"-31'2"	Black moist very dense silty sandy weathered SHALE
		50			
		2"			
35'0"					Top of rock 35'0"
					Run #1, 35'0" - 40'0" Rec. 20" - 33% Gray thin bedded weathered SHALE

parratt wolff inc
FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant

LOCATION Clay, New York

DATE STARTED 12/18/74 COMPLETED 12/19/74

GROUND WATER Depth after 14 hours 7'6"

HOLE NO. 30

SURF. ELEV. 383.2

JOB NO. 74130

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					NOTE: Coring time in rock 4 minutes per foot; no water loss.

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FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant

HOLE NO. 31-74-525

LOCATION Clay, New York

SURF. ELEV. 385.5

DATE STARTED 12/17/74 COMPLETED 12/17/74

JOB NO. 74130

GROUND WATER Depth on completion 9'3"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		1/5	1	0'0"-	Brown moist stiff to very
		4/5		2'0"	stiff SILT, trace fine sand,
		4/6	2	2'0"-	clay and topsoil
		8/12		4'0"	
5'0"		4/4	3	4'0"-	4'6"
		6/4		6'0"	Brown moist stiff SILT,
W.L. ▽		4/4	4	6'0"-	trace fine sand
		3/4		8'0"	
		4/4	5	8'0"-	
10'0"		3/4		10'0"	
		4/4	6	10'0"-	10'6"
		5/4		12'0"	Gray wet stiff to soft SILT,
		3/2	7	12'0"-	trace fine sand
		3/3		14'0"	
15'0"		2/3	8	14'0"-	
		3/2		16'0"-	
		3/3	9	16'0"-	
		2/3		18'0"	
		2/2	10	18'0"-	
20'0"		2/2		20'0"	20'6"
		2/7	11	20'0"-	Brown wet medium dense fine
		9		21'6"	SAND and fine to medium
					GRAVEL, little silt
25'0"					
		6/12	12	25'0"-	
		20		26'6"	
30'0"					29'0"
		19/24	13	30'0"-	Black moist very dense silty
		34		31'6"	weathered SHALE
					Top of rock 34'0"
35'0"					Run #1, 34'0" - 39'0"
					Rec. 14" - 23%
					Gray thin bedded weathered
					SHALE
40'0"					39'0"

parratt wolff inc
FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 31

LOCATION Clay, New York — SURF. ELEV. 386.5

DATE STARTED 12/17/74 COMPLETED 12/17/74 — JOB NO. 74130

GROUND WATER Depth on completion 9'3"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
45'0"					Run #2, 39'0" - 44'0" Rec. 50" - 83% Gray weathered SHALE and LIMESTONE
50'0"					Bottom of boring 44'0" NOTE: Coring time in Run #1-3-4 minutes per foot; Run #2-6-7 minutes per foot; no water loss.

parratt wolff inc
FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 32-74-526

LOCATION Clay, New York — SURF. ELEV. 403.1

DATE STARTED 12/18/74 COMPLETED 12/19/74 — JOB NO. 74130

GROUND WATER Depth on completion 25'6"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		5/7	1	0'0"-	Brown-black moist stiff to
		8		1'6"	very stiff SILT, trace fine
					sand, clay and topsoil
5'0"					
		6/7	2	5'0"-	
		10		6'6"	
10'0"					
		4/6	3	10'0"-	
		6/8		12'0"	
		3/6	4	12'0"-	
		9/11		14'0"	
15'0"		5/7	5	14'0"-	
		10/14		16'0"	
		10/8	6	16'0"-	
		11/14		18'0"	
		12/10	7	18'0"-	
20'0"		8/7		20'0"	19'6"
		6/7	8	20'0"-	Brown moist very stiff to
		9/8		22'0"	medium stiff SILT, little
		7/7	9	22'0"-	fine sand
		8/7		24'0"	
25'0" ▽		2/3	10	24'0"-	
		2/2		26'0"	
W.L.		2/2	11	26'0"-	
		3/2		28'0"	
		3/3	12	28'0"-	
30'0"		3/2		30'0"	
		3/3	13	30'0"-	
		2/3		32'0"	
35'0"					
		1/2	14	35'0"-	
		4		36'6"	
40'0"					

parratt wolff inc
FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 32-74-526

LOCATION Clay, New York — SURF. ELEV. 403.1

DATE STARTED 12/18/74 COMPLETED 12/19/74 — JOB NO. 74130

GROUND WATER Depth on completion 25'6"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		9/8	15	40'0"-	Brown wet medium dense medium
		11		41'6"	to fine SAND, trace fine
					gravel
45'0"					45'6"
		4/16	16	45'0"-	Black moist dense SILT and
		18		46'6"	weathered SHALE
50'0"					50'0"
		17/22	17	50'0"-	Black dry very dense silty
		60		51'6"	weathered SHALE
55'0"					
		75	18	55'0"-	
		2"		55'2"	Top of rock 57'4"
				No Rec.	Run #1, 57'4" - 62'4"
60'0"					Rec. 37" - 62%
					Gray weathered SHALE and
					LIMESTONE
65'0"					Bottom of boring 62'4"

NOTE: Coring time in rock 5-6 minutes per foot; no water loss.

parratt wolff inc

FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 33-74-527

LOCATION Clay, New York — SURF. ELEV. 392.8

DATE STARTED 12/17/74 COMPLETED 12/18/74 — JOB NO. 74130

GROUND WATER Depth on completion 13'7"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		1/1	1	0'0"-	Brown moist stiff to hard
		5/8		2'0"	SILT, trace fine sand, clay
		8/10	2	2'0"-	and topsoil
		15/18		4'0"	
5'0"		9/9	3	4'0"-	
		9/9		6'0"	6'0"
		8/8	4	6'0"-	Brown moist very stiff to
		10/9		8'0"	stiff SILT, little fine sand
		8/6	5	8'0"-	9'6"
10'0"		5/5		10'0"	
		4/5	6	10'0"-	Gray moist stiff to medium
W.L. ▽		4/4		12'0"	stiff SILT, little fine sand
		4/4	7	12'0"-	
		5/4		14'0"	
15'0"		5/4	8	14'0"-	
		4/2		16'0"	
		2/2	9	16'0"-	
		2/2		18'0"	
		3/2	10	18'0"-	
20'0"		3/3		20'0"	
		3/7	11	20'0"-	20'6"
		8		21'6"	Gray-brown wet medium dense
					fine SAND, some silt
					24'0"
25'0"					
		5/1	12	25'0"-	Brown wet very loose to
		1		26'6"	medium dense fine SAND, trace
					silt
30'0"					
		7/6	13	30'0"-	
		13		31'6"	
35'0"					
		3/6	14	35'0"-	
		7		36'6"	
				No Rec.	
40'0"					

parratt wolff inc

FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 33-74-527

LOCATION Clay, New York — SURF. ELEV. 392.8

DATE STARTED 12/17/74 COMPLETED 12/18/74 — JOB NO. 74130

GROUND WATER Depth on completion 13'7"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		4/4	15	40'0"- 41'6"	Brown wet very loose to medium dense fine SAND, trace silt
		5			
45'0"					46'0"
		9/17	6	45'0"- 46'3"	Black moist very dense silty weathered SHALE
		50			
		3"			Top of rock 49'6"
50'0"					Run #1, 49'6" - 54'6" Rec. 35" - 58% Gray weathered SHALE and LIMESTONE
55'0"					Bottom of boring 54'6"
					NOTE: Coring time in rock 5 minutes per foot; no water loss.

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FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant

LOCATION Clay, New York

DATE STARTED 1/2/75 COMPLETED 1/3/75

GROUND WATER Depth on completion 8'6"

HOLE NO. 34-74-528

SURF. ELEV. 392.4

JOB NO. 74130

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

SHEET 1 OF 1

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		2/2	1	0'0"-	Brown wet medium stiff to
		4/4		2'0"	stiff SILT, some fine sand
		3/3	2	2'0"-	and clay
		5/5		4'0"	
5'0"		3/4	3	4'0"-	
		5/6		6'0"	
WL		6/7	4	6'0"-	
▽		5/5		8'0"	
		2/2	5	8'0"-	Gray wet soft SILT and CLAY
10'0"		2/2		10'0"	
		1/2	6	10'0"-	
		2/1		12'0"	
		2/1	7	12'0"-	
		1/3		14'0"	14'0"
15'0"		1/3	8	14'0"-	Gray wet loose SILT, trace
		3/3		16'0"	clay
		3/3	9	16'0"-	
		2/5		18'0"	18'0"
		6/11	10	18'0"-	Gray wet dense fine SAND,
20'0"		19/17		20'0"	some silt
		12/13	11	20'0"-	
		16		21'6"	
25'0"					25'0"
		8/10	12	25'0"-	Black moist medium dense
		13		26'6"	fine SAND and fine to coarse
					GRAVEL, little silt 28'0"
30'0"					Black moist dense SILT with
		13/20	13	30'0"-	embedded shale gravel and
		25		31'6"	fine sand
					Top of rock 30'4"
					Run #1, 30'4" - 35'4"
35'0"					Rec. 38" - 63%
		50	14	30'0"	Gray weathered SHALE, some
		0"			limestone
					Bottom of boring 35'4"
40'0"					NOTE: Coring time in rock 4 minutes per foot; no water loss

parratt wolff inc

FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 35-74-529

LOCATION Clay, New York — SURF. ELEV. 394.0

DATE STARTED 12/24/74 COMPLETED 12/31/74 — JOB NO. 74130

GROUND WATER Depth after 72 hours 16'0"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 2

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		1/1	1	0'0"-	Brown moist loose SILT,
		2/4		2'0"	trace fine sand 2'0"
		4/4	2	2'0"-	Brown wet stiff SILT,
		5/5		4'0"	little clay, trace fine
5'0"		4/9	3	4'0"-	sand
		8/8		6'0"	
		5/4	4	6'0"-	
		5/5		8'0"	8'0"
		2/2	5	8'0"-	Brown wet medium stiff
10'0"		3/2		10'0"	SILT, some fine sand 10'0"
		1/3	6	10'0"-	Gray wet medium stiff SILT,
		2/3		12'0"	little clay and fine sand
		2/2	7	12'0"-	
		2/2		14'0"	
15'0"		3/3	8	14'0"-	15'0"
▽		5/6	9	15'0"	Gray wet medium dense fine
WL		6/5	10	15'0"-	SAND and SILT
		6/7		16'0"	18'0"
		5/4	11	16'0"-	Gray wet loose fine SAND,
20'0"		3/3		18'0"	some silt
		4/1	12	18'0"-	
		2		20'0"	
				20'0"-	
				21'6"	
25'0"					
		6/5	13	25'0"-	
		5		26'6"	
30'0"					
		3/3	14	30'0"-	
		3		31'6"	
35'0"					
		6/5	15	35'0"-	36'0"
		5		36'6"	Black wet loose coarse to
					fine GRAVEL and coarse to
					fine SAND, little silt
40'0"					

parratt wolff inc
FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 35-74-529

LOCATION Clay, New York — SURF. ELEV. 394.0

DATE STARTED 12/24/74 COMPLETED 12/31/74 — JOB NO. 74130

GROUND WATER Depth after 72 hours 16'0"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		10/13	16	40'0"-	Black wet medium dense coarse
		14		41'6"	to fine GRAVEL and coarse to
					fine SAND, little silt 43'0"
45'0"					Black moist very dense fine
		50/50	17	45'0"-	SAND, some fine to coarse
		3"		45'9"	gravel, trace silt
					Top of rock 49'0"
50'0"					Run #1, 49'0" - 54'0"
					Rec. 36" - 60%
					Gray-black weathered SHALE
55'0"					and LIMESTONE
					Bottom of boring 54'0"
					NOTE: Coring time in rock 4 minutes per foot; no water loss.

parratt wolff inc
FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 36-74-530

LOCATION Clay, New York — SURF. ELEV. 393.2

DATE STARTED 12/23/74 — COMPLETED 12/23/74 — JOB NO. 74130

GROUND WATER Struck water @ 4'0" while drilling-depth after 16 hours 16'0"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 2

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		1/1	1	0'-1'	Brown wet very soft TOPSOIL 1'0"
		2/3	2	1'-2'	Brown moist medium stiff to stiff SILT and CLAY
		3/5	3	2'-3'	
		8/8	4	3'-4'	4'0"
5'0"		2/3	5	4'0"-6'0"	Brown wet loose SILT, little fine sand
		1/1			7'0"
		4/3	6	6'-7'	Brown moist medium stiff SILT and CLAY
		2/3	7	7'-8'	
		2/3	8	8'-9'	
10'0"		4/4	9	9'-10'	11'0"
		1/2	10	10'-11'	Gray wet very loose SILT, trace fine sand
		1/2	11	11'-12'	
		2/2	12	12'-13'	
		2/1	13	13'-14'	
15'0"		1/3	14	14'-15'	15'0"
▽		6/8	15	15'-16'	Gray moist to wet medium dense fine SAND
W.L.		6/10	16	16'0"-18'0"	18'0"
		9/10			Gray wet loose to medium dense fine SAND and SILT
		3/3	17	18'0"-20'0"	
20'0"		4/4			
		3/3	18	20'0"-21'6"	
		3			
25'0"					
		5/6	19	25'0"-26'6"	
		7			
30'0"					
		4/5	20	30'0"-31'6"	
		6			
35'0"					
		3/5	21	35'0"-36'6"	
		6			
					38'0"
40'0"					

parratt wolff inc
FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 36-74-530

LOCATION Clay, New York — SURF. ELEV. 393.2

DATE STARTED 12/23/74 COMPLETED 12/23/74 — JOB NO. 74130

GROUND WATER Struck water @ 4'0" while drilling-depth after 16 hours 16'0"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 2 OF 2

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		10/18	22	40'0"-	Black wet dense to very dense
		16		41'6"	coarse to fine GRAVEL and
					coarse to fine SAND, some silt
45'0"					
		28/50	23	45'0"-	
				46'0"	
50'0"					Top of rock 49'3"
					Run #1, 49'3" - 54'3"
					Rec. 17" - 28%
55'0"					Gray weathered SHALE and LIMESTONE
					Bottom of boring 54'3"
60'0"					NOTE: Coring time in rock 4 minutes per foot; no water loss.

parratt wolff inc

FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant

LOCATION Clay, New York

DATE STARTED 12/17/74 COMPLETED 12/18/74

GROUND WATER Depth after 12 hours 6'3"

HOLE NO. 37-74-531

SURF. ELEV. 396.7

JOB NO. 74130

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		1/2	1	0'-1'	Brown moist soft SILT and TOPSOIL 1'0"
		2/5	2	1'-2'	
		5/4	3	2'0"-	Brown moist to wet stiff to soft SILT, trace fine sand
		5/5		4'0"	
5'0"		2/2	4	4'-5'	
▽ W.L.		4/6	5	5'-6'	
		4/4	6	6'-7'	
		3/4	7	7'-8'	
		3/3	8	8'-9'	
10'0"		4/5	9	9'-10'	
		2/3	10	10'-11'	
		4/5	11	11'-12'	
		2/2	12	12'0"	12'0"
		1/2		14'0"-	Gray wet soft SILT, little clay, trace fine sand
15'0"		2/2	13	14'-15'	
		2/6	14	15'-16'	16'0"
		6/8	15	16'0"-	Brown moist medium dense fine SAND, some silt 18'0"
		10/13		18'0"	
		12/14	16	18'0"-	Gray wet medium dense to loose fine SAND, trace silt
20'0"		13/13		20'0"	
		9/8	17	20'0"-	
		6		21'6"	
25'0"					
		6/5	18	25'0"-	
		3		26'6"	
30'0"					
		5/6	19	30'0"-	
		6		31'6"	
35'0"					
		3/3	20	35'0"-	
		3		36'6"	
40'0"					

perratt wolff inc
FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant

HOLE NO. 37-74-531

LOCATION Clay, New York

SURF. ELEV. 396.7

DATE STARTED 12/17/74 COMPLETED 12/18/74

JOB NO. 74130

GROUND WATER . Depth after 12 hours 6'3"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		3/2	21	40'0"-	Gray wet loose to medium
		3		41'6"	dense fine SAND, trace silt
45'0"					
		6/5	22	45'0"-	
		6		46'6"	
50'0"					
		4/5	23	50'0"-	
		6		51'6"	
55'0"					52'0"
					Black moist hard silty weathered SHALE
					Top of rock 53'6"
					Run #1, 53'6" - 58'6"
					Rec. 31" - 52%
					Gray weathered SHALE and LIMESTONE
					Bottom of boring 58'6"
					NOTE: Coring time in rock 4 minutes per foot; no water loss.

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FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant

HOLE NO. 38-74-532

LOCATION Clay, New York

SURF. ELEV. 391.4

DATE STARTED 12/20/74 COMPLETED 12/20/74

JOB NO. 74130

GROUND WATER Depth after 16 hours 4'3"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

SHEET 1 OF 2

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		2/2	1	0'0"-	Brown moist stiff SILT and
		4/5		2'0"	CLAY
W.L		4/5	2	2'0"-	
▽		6/8		4'0"	4'0"
5'0"		5/8	3	4'-5'	Brown wet stiff to very
		8/10	4	5'-6'	stiff SILT, little clay
		5/8	5	6'0"-	
		8/7		8'0"	8'0"
		2/3	6	8'-9'	Brown wet soft CLAY and
10'0"		3/3	7	9'-10'	SILT 9'0"
		1/1	8	10'-11'	Gray wet medium stiff soft
		1/2	9	11'-12'	to medium stiff SILT, some
		2/2	10	12'-13'	clay, trace fine sand
		3/2	11	13'-14'	
15'0"		1/2	12	14'-15'	
		2/1	13	15'-16'	
		2/1	14	16'-17'	
		1/2	15	17'-18'	
		1/2	16	18'-19'	
20'0"		3/5	17	19'-20'	20'0"
		3/2	18	20'0"-	Gray wet loose SILT, trace
		2		21'6"	fine sand
25'0"					
		3/4	19	25'0"-	
		6		26'6"	
30'0"					
		2/3	20	30'0"-	
		2		31'6"	
35'0"					35'0"
		5/6	21	35'0"-	Black wet medium dense fine
		7		36'6"	to coarse GRAVEL and fine to
40'0"					coarse SAND, some silt

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FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 38

LOCATION Clay, New York — SURF. ELEV. 74-532

DATE STARTED 12/20/74 COMPLETED 12/20/74 — JOB NO. 74130

GROUND WATER Depth after 16 hours 4'3"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 2 OF 2

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		10/24	22	40'0"-	Black moist very dense fine
		45		41'6"	to coarse SHALE GRAVEL, fine
					SAND and SILT
45'0"					
		75		45'0"	
		0"			
					Top of rock 48'3"
50'0"					Run #1, 48'3" - 53'3"
					Rec. 30" - 50%
					Gray weathered SHALE, some
					limestone
55'0"					Bottom of boring 53'3"
					NOTE: Coring time in rock 3-4
					minutes per foot; no
					water loss.

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FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 39-74-533

LOCATION Clay, New York — SURF. ELEV. 390.9

DATE STARTED 2/10/75 — COMPLETED 2/10/75 — JOB NO. 74130

GROUND WATER Depth on completion 25'6"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 2

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Dark brown saturated medium dense SILT, little fine sand and roots 3'0"
		6/7	1	1'0"- 2'6"	
		7			
5'0"					Brown wet medium dense SILT, little fine sand
		5/8	2	5'0"- 6'6"	
		9			
					9'0"
10'0"					Gray wet loose SILT, little fine sand, trace clay
		3/2	3	10'0"- 11'6"	
		2			
15'0"					
		2/2	4	15'0"- 16'6"	
		2			
20'0"					
		2/4	5	20'0"- 21'6"	21'0"
		4			Gray saturated loose fine SAND, some silt
25'0" ▽					
WL		4/4	6	25'0"- 26'6"	
		3			
30'0"					
		3/2	7	30'0"- 31'6"	
		3			
35'0"					
		2/2	8	35'0"- 36'6"	
		2			
40'0"					37'6"

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FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 39-74-533

LOCATION Clay, New York — SURF. ELEV. 390.9

DATE STARTED 2/10/75 COMPLETED 2/10/75 — JOB NO. 74130

GROUND WATER Depth on completion 25'6"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 2 OF 2

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		9/11	9	40'0"-	Gray wet dense coarse to fine
		35		41'6"	GRAVEL, some coarse to fine
					sand, trace silt 43'0"
45'0"					Dark brown wet very dense
		44/32	10	45'0"-	coarse to fine GRAVEL, some
		73		46'6"	coarse to fine sand, some silt
		75	11	48'0"-	Top of rock 48'1"
		1"		48'1"	Run #1, 48'1" - 53'1"
50'0"				No Rec.	Rec. 36" - 60%
					Gray weathered SHALE and
					LIMESTONE
55'0"					Bottom of boring 53'1"
					NOTE: Coring time in rock 4 minutes per foot; no water loss.

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FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant

HOLE NO. 40-74-534

LOCATION Clay, New York

SURF. ELEV. 395.4

DATE STARTED 2/11/75 COMPLETED 2/11/75

JOB NO. 74130

GROUND WATER Depth after 12 hours 9'6"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 2

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		6/5	1	1'0"-2'6"	Brown moist loose SILT, trace fine sand and roots
		5			2'6"
5'0"					Brown wet medium dense SILT, some fine sand
		7/8	2	5'0"-6'6"	
		9			
10'0" WL					
		4/2	3	10'0"-11'6"	10'6"
		2			Brown wet soft SILT, trace fine sand and clay
15'0"					15'6"
		1/6	4	15'0"-16'6"	Brown saturated medium dense fine SAND, trace silt
		8			
20'0"					
		5/7	5	20'0"-21'6"	
		7			
25'0"					
		5/5	6	25'0"-26'6"	
		5			
30'0"					
		6/8	7	30'0"-31'6"	
		9			
35'0"					
		6/9	8	35'0"-36'6"	
		14			
40'0"					

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FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant

HOLE NO. 40-74-534

LOCATION Clay, New York

SURF. ELEV. 395.4

DATE STARTED 2/11/75 COMPLETED 2/11/75

JOB NO. 74130

GROUND WATER Depth after 12 hours 9'6"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

SHEET 2 OF 2

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		5/4	9	40'0"-	Brown saturated medium dense
		4		41'6"	fine SAND, trace silt
					42'6"
45'0"					Brown gray wet medium dense to very dense coarse to fine
		7/8	10	45'0"-	GRAVEL, some medium to fine
		10		46'6"	sand, little silt
50'0"					
		33/46	11	50'0"-	
		75/4"		51'4"	
		75/0"			51'0"
55'0"					Gray-black wet very dense SILT, some coarse to medium gravel, trace sand
					Top of rock 53'0"
					Run #1, 53'0" - 58'0"
					Rec. 44" - 73%
60'0"					Gray weathered SHALE and LIMESTONE
					Bottom of boring 58'0"
					NOTE: Coring time in rock 3-4 minutes per foot; no water loss.

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FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 41-74-535

LOCATION Clay, New York — SURF. ELEV. 390.3

DATE STARTED 2/12/75 — COMPLETED 2/12/75 — JOB NO. 74130

GROUND WATER See note

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		5/7	1	1'0"- 2'6"	Brown wet medium dense to very loose SILT, some fine sand, trace clay
		6			
5'0" WL		5/8	2	5'0"- 6'6"	
		9			
10'0"		2/1	3	10'0"- 11'6"	
		2			
15'0"		1/1	4	15'0"- 16'6"	
		3			17'0"
20'0"		5/5	5	20'0"- 21'6"	Brown saturated loose fine SAND, little silt
		4			
25'0"		3/4	6	25'0"- 26'6"	
		4			
30'0"		3/2	7	30'0"- 31'6"	
		3			34'0"
35'0"		9/13	8	35'0"- 36'6"	Gray-black wet medium dense SILT and coarse to medium GRAVEL, little fine sand
		12			
40'0"					

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FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 41-74-535

LOCATION Clay, New York — SURF. ELEV. 390.3

DATE STARTED 2/12/75 — COMPLETED 2/12/75 — JOB NO. 74130

GROUND WATER See note

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		23/29	9	40'0"-	
		37		41'6"	41'4"
					Dark gray wet very dense silty weathered SHALE
45'0"					
		34/45	10	45'0"-	
		76		46'6"	Top of rock 46'6"
					Run #1, 46'6" - 51'6"
					Rec. 46" - 77%
50'0"					Gray weathered SHALE and LIMESTONE
					Bottom of boring 51'6"
55'0"					NOTE: Coring time in rock 4 minutes per foot; no water loss.
					Water depth with boring complete and cased to 46'6" @ 13'4" water depth after pulling casing 5'6".

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FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant

HOLE NO. 42-74-536

LOCATION Clay, New York

SURF. ELEV. 389.8

DATE STARTED 2/12/75 COMPLETED 2/12/75

JOB NO. 74130

GROUND WATER Depth on completion 12'4"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 2

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		9/7	1	1'0"-2'6"	Brown wet medium dense SILT, little fine sand and roots 2'0"
		8			Brown wet medium dense SILT, trace fine sand
5'0"					
		6/7	2	5'0"-6'6"	
		7			8'0"
10'0"					Gray-brown wet soft clayey SILT, trace fine sand
		1/2	3	10'0"-11'6"	
▽ WL		2			
15'0"					15'8"
		1/1	4	15'0"-16'6"	Brown saturated loose to medium dense fine SAND, little silt
		1			
20'0"					
		4/3	5	20'0"-21'6"	
		3			
25'0"					
		6/9	6	25'0"-26'6"	
		7			
30'0"					
		2/2	7	30'0"-31'6"	
		2			
35'0"					
		6/7	8	35'0"-36'6"	36'9"
		9			Gray wet medium dense medium to fine SAND and coarse to medium GRAVEL, trace silt
40'0"					

parratt wolff inc

FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant

HOLE NO. 42-74-536

LOCATION Clay, New York

SURF. ELEV. 389.8

DATE STARTED 2/12/75 COMPLETED 2/12/75

JOB NO. 74130

GROUND WATER Depth on completion 12'4"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		12/13	9	40'0"-	
		10		41'6"	42'0"
					Dark gray wet very dense silty weathered SHALE
45'0"					
		26/45	10	45'0"-	
		80		46'3"	Top of rock 47'0"
		3"			Run #1, 47'0" - 52'0"
					Rec. 34" - 57%
50'0"					Gray weathered SHALE and LIMESTONE
					Bottom of boring 52'0"
55'0"					NOTE: Coring time in rock 3-4 minutes per foot; no water loss.

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FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 43-74-537

LOCATION Clay, New York — SURF. ELEV. 389.0

DATE STARTED 2/19/75 COMPLETED 2/19/75 — JOB NO. 74130

GROUND WATER Depth on completion 8'5"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		5/6	1	1'0"-	Brown moist medium dense to very loose SILT
		8		2'6"	
5'0"					
		4/5	2	5'0"-	
WL ▽		5		6'6"	
10'0"					
		1/1	3	10'0"-	
		2		11'6"	
15'0"					14'0"
		4/4	4	15'0"-	Gray wet loose fine SAND, little silt
		5		16'6"	17'6"
20'0"					Gray wet loose SILT and fine SAND
		3/4	5	20'0"-	
		5		21'6"	
25'0"					
		4/4	6	25'0"-	
		5		26'6"	
30'0"					
		2/3	7	30'0"-	
		2		31'6"	
35'0"					
		4/5	8	35'0"-	
		5		36'6"	
40'0"					37'6"

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FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant

HOLE NO. 43-74-537

LOCATION Clay, New York

SURF. ELEV. 389.0

DATE STARTED 2/19/75 COMPLETED 2/19/75

JOB NO. 74130

GROUND WATER Depth on completion 8'5"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		7/9	9	40'0"-	Gray wet medium dense coarse
		13		41'6"	to medium GRAVEL, some medium
					to fine sand and silt 43'0"
45'0"					Gray-black moist very dense
		26/55	10	45'0"-	SILT and medium to fine
				46'0"	embedded GRAVEL
					Top of rock 46'0"
50'0"					Run #1, 46'0" - 51'0"
					Rec. 30" - 50%
					Gray weathered SHALE and
					LIMESTONE
55'0"					Bottom of boring 51'0"
					NOTE: Coring time in rock 4-5 minutes per foot; no water loss.

parratt wolff inc
FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant
HOLE NO. 44-74-538

LOCATION Clay, New York
SURF. ELEV. 389.4

DATE STARTED 2/20/75 COMPLETED 2/21/75
JOB NO. 74130

GROUND WATER Struck water @ 6'0" while drilling

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		4/7	1	1'0"- 2'6"	Brown moist medium dense SILT, little fine sand
		7			
5'0" WL		5/6	2	5'0"- 6'6"	
		7			
10'0"					9'0"
		2/2	3	10'0"- 11'6"	Gray wet soft SILT, trace fine sand
		2			
15'0"					
		1/2	4	15'0"- 16'6"	
		1			
20'0"					
		1/1	5	20'0"- 21'6"	
		1			
25'0"					24'0"
		5/10	6	25'0"- 26'6"	Gray wet medium dense to loose fine SAND, some silt
		8			
30'0"					
		4/4	7	30'0"- 31'6"	
		4			
35'0"					35'0"
		5/5	8	35'0"- 36'6"	Black wet medium dense medium to fine SAND and fine to coarse GRAVEL, little silt
		5			
40'0"					

parratt wolff inc

FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 44-74-538

LOCATION Clay, New York — SURF. ELEV. 389.4

DATE STARTED 2/20/75 — COMPLETED 2/21/75 — JOB NO. 74130

GROUND WATER Struck water @ 6'0" while drilling

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 2 OF 2

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		15/25	9	40'0"-	Black moist very dense SILT
		36		41'6"	and fine to coarse GRAVEL,
					trace fine sand 43'4"
45'0"					BOULDER
					Top of rock 44'4"
					Run #1, 44'4" - 49'4"
					Rec. 25" - 60%
					Gray weathered SHALE and
50'0"					LIMESTONE
					Bottom of boring 49'4"
55'0"					NOTE: Coring time in rock 5 minutes per foot; no water loss.

perratt wolff inc
FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 45-74-539

LOCATION Clay, New York — SURF. ELEV. 388.3

DATE STARTED 2/20/75 COMPLETED 2/20/75 — JOB NO. 74130

GROUND WATER Struck water @ 8'0" while drilling

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 2

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		5/8	1	1'0"-	Brown moist medium dense SILT, trace fine sand
		10		2'6"	
5'0"					
		5/6	2	5'0"-	
		5		6'6"	
▼ WL					
10'0"					8'0"
		1/1	3	10'0"-	Gray wet very loose SILT, trace fine sand
		1		11'6"	
15'0"					
		1/1	4	15'0"-	
		1		16'6"	
20'0"					
		1/1	5	20'0"-	
		1		21'6"	
25'0"					
		5/3	6	25'0"-	
		3		26'6"	
30'0"					27'0"
					Gray wet loose fine to medium SAND, trace fine gravel and silt
		2/4	7	30'0"-	
		5		31'6"	
					32'9"
		50/1"	8	33'7"-	Black moist very dense SILT, little medium to fine GRAVEL
35'0"				33'8"	Top of rock 33'8"
					Run #1, 33'8" - 38'8"
					Rec. 42" - 70%
40'0"					Gray weathered SHALE and LIMESTONE

perratt wolff inc

FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant

HOLE NO. 45-74-539

LOCATION Clay, New York

SURF. ELEV. 388.3

DATE STARTED 2/20/75 COMPLETED 2/20/75

JOB NO. 74130

GROUND WATER Struck water @ 8'0" while drilling

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					NOTE: Coring time in rock 4 minutes per foot; lost drill water in open seam from 36'8" - 37'2".

perratt wolff inc

FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant

HOLE NO. 46-74-540

LOCATION Clay, New York

SURF. ELEV. 391.4

DATE STARTED 2/18/75 COMPLETED 2/19/75

JOB NO. 74130

GROUND WATER Depth on completion 16'2"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		4/9	1	1'0"-	Brown-black moist medium dense SILT, trace roots and fine
		11		2'6"	sand
5'0"					
		4/8	2	5'0"-	
		11		6'6"	
					8'0"
10'0"					Brown moist loose fine SAND and SILT
		5/5	3	10'0"-	
		5		11'6"	
					13'6"
15'0"					Brown wet loose SILT, trace fine sand
▼ WL		2/2	4	15'0"-	
		3		16'6"	
20'0"					
		2/2	5	20'0"-	
		2		21'6"	
25'0"					
		3/4	6	25'0"-	
		4		26'6"	
					29'0"
30'0"					Brown saturated loose SILT and fine SAND
		4/4	7	30'0"-	
		4		31'6"	
35'0"					
		4/4	8	35'0"-	Brown wet loose SILT, trace fine sand
		5		36'6"	37'4"
40'0"					Gray wet very dense SILT and medium to fine embedded GRAVEL,

perratt wolff inc

FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant

HOLE NO. 46-74-540

LOCATION Clay, New York

SURF. ELEV. 391.4

DATE STARTED 2/18/75 COMPLETED 2/19/75

JOB NO. 74130

GROUND WATER Depth on completion 16'2"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		10/17	9	40'0"-41'4"	trace fine sand
		75			Top of rock 41'8"
		4"			Run #1, 41'8" - 46'8"
45'0"					Rec. 17" - 28%
					Gray fractured weathered SHALE 46'8"
					Ran quarry bit from 46'8" - 47'0" 47'0"
50'0"					Run #2, 47'0" - 52'0"
					Rec. 36" - 60%
					Gray weathered SHALE and LIMESTONE
55'0"					Bottom of boring 52'0"

NOTE: Coring time in rock on Run #1/ 5-6 minutes per foot, Run #2/ 4 minutes per foot; no water loss.

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FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 47-74-541

LOCATION Clay, New York — SURF. ELEV. 396.8

DATE STARTED 2/17/75 COMPLETED 2/18/75 — JOB NO. 74130

GROUND WATER Depth on completion 16'10"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 1 OF 2

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		6/7	1	1'0"- 2'6"	Brown wet medium dense SILT, little roots
		9			3'0"
5'0"					Brown moist medium dense SILT, trace wood
		6/11	2	5'0"- 6'6"	6'0"
		15			Brown moist loose to medium dense SILT, little fine sand
10'0"					
		3/4	3	10'0"- 11'6"	
		5			
15'0"					
▽ WL		7/7	4	15'0"- 16'6"	
		6			
20'0"					19'0"
		1/2	5	20'0"- 21'6"	Gray wet loose to medium dense SILT, little fine sand
		2			
25'0"					
		1/6	6	25'0"- 26'6"	
		7			
30'0"					
		2/3	7	30'0"- 31'6"	
		3			
35'0"					34'6"
		2/4	8	35'0"- 36'6"	Gray wet loose fine SAND, little silt
		4			
40'0"					40'0"

parratt wolff inc

FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant

HOLE NO. 47-74-541

LOCATION Clay, New York

SURF. ELEV. 396.8

DATE STARTED 2/18/75 COMPLETED 2/19/75

JOB NO. 74130

GROUND WATER Depth on completion 16'10"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		4/6	9	40'0"-	Gray wet medium dense SILT
		7		41'6"	and fine SAND
45'0"					
		7/6	10	45'0"-	
		7		46'6"	
					47'6"
50'0"					Gray wet medium dense SILT and medium to fine GRAVEL, little medium to fine sand
		7/6	11	50'0"-	
		10		51'6"	
					52'6"
55'0"					Gray wet very dense silty weathered medium to fine GRAVEL
		75	12	55'0"-	Top of rock 55'4"
		4"		55'4"	
60'0"					Run #1, 55'4" - 60'4" Rec. 35" - 58% Gray weathered SHALE and LIMESTONE
					Bottom of boring 60'4"
65'0"					NOTE: Coring time in rock 4 minutes per foot; no water loss.

perratt wolff inc
FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 48-74-542

LOCATION Clay, New York — SURF. ELEV. 387.8

DATE STARTED 2/21/75 — COMPLETED 2/21/75 — JOB NO. 74130

GROUND WATER Struck water @ 6'0" while drilling

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		3/4	1	1'0"-	Brown moist loose SILT
		5		2'6"	
5'0"					4'6"
WL		4/5	2	5'0"-	Brown wet medium dense SILT, some fine sand
		6		6'6"	8'0"
10'0"					Brown wet very loose SILT, trace fine sand
		3/2	3	10'0"-	12'0"
		2		11'6"	Gray wet very loose SILT, trace fine sand
15'0"					
		1/1	4	15'0"-	
		1		16'6"	
20'0"					
		1/2	5	20'0"-	
		2		21'6"	
25'0"					24'0"
		5/5	6	25'0"-	Gray wet medium dense SILT and fine SAND, little fine to coarse embedded gravel
		8		26'6"	
30'0"					
		5/13	7	30'0"-	
		6		31'6"	
35'0"					34'0"
		11/19	8	35'0"-	Black moist dense SILT and fine to coarse GRAVEL, some medium to fine sand
		26		36'6"	
40'0"					

perratt wolff inc

FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 48-74-542

LOCATION Clay, New York — SURF. ELEV. 387.8

DATE STARTED 2/21/75 COMPLETED 2/21/75 — JOB NO. 74130

GROUND WATER Struck water @ 6'0" while drilling

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 2 OF 2

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		31/50 3"	9	40'0"- 40'9"	Black moist very dense SILT, some fine to coarse gravel, trace weathered shale and fine sand
45'0"					Top of rock 43'6"
					Run #1, 43'6" - 48'6" Rec. 39" - 65% Gray weathered SHALE and LIMESTONE
50'0"					Bottom of boring 48'6"
55'0"					NOTE: Coring time in rock 4 minutes per foot; no water loss.

perratt wolff inc
FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 49-74-543

LOCATION Clay, New York — SURF. ELEV. 387.0

DATE STARTED 2/13/75 COMPLETED 2/14/75 — JOB NO. 74130

GROUND WATER Depth on completion 12'6"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		4/4	1	1'0"-	Brown moist loose SILT,
		5		2'6"	trace fine sand
5'0"					
		6/7	2	5'0"-	
		9		6'6"	
					8'0"
10'0"					Gray wet loose SILT, trace
		3/3	3	10'0"-	fine sand
▼ WL		3		11'6"	
15'0"					
		1/2	4	15'0"-	
		1		16'6"	
20'0"					
		1/2	5	20'0"-	
		3		21'6"	
					24'0"
25'0"					Gray wet loose to medium
		2/4	6	25'0"-	dense fine SAND, some silt,
		4		26'6"	trace fine embedded gravel
30'0"					
		7/8	7	30'0"-	
		9		31'6"	
35'0"					
		4/5	8	35'0"-	
		5		36'6"	
					37'0"
40'0"					Gray wet very dense coarse to medium GRAVEL, some silt, little medium to fine sand

perratt wolff inc
FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant

HOLE NO. 49-74-543

LOCATION Clay, New York

SURF. ELEV. 387.0

DATE STARTED 2/13/75 COMPLETED 2/14/75

JOB NO. 74130

GROUND WATER Depth on completion 12'6"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		14/75 2"	9	40'0"- 40'8"	Gray wet very dense coarse to medium GRAVEL, some silt, little medium to fine sand
45'0"		75 2"	10	43'0"- 43'2"	Top of rock 45'0"
50'0"					Run #1, 45'0" - 50'0" Rec. 36" - 60% Gray weathered SHALE and LIMESTONE
					Bottom of boring 50'0" NOTE: Coring time in rock 3-4 minutes per foot; no water loss.

parratt wolff inc
FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 50-74-544

LOCATION Clay, New York — SURF. ELEV. 390.5

DATE STARTED 2/25/75 COMPLETED 2/25/75 — JOB NO. 74130

GROUND WATER Depth on completion 11'3"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		14/16	1	1'0"-	Brown wet dense coarse to
		18		2'6"	fine GRAVEL, little coarse
					to fine sand, little silt 3'0"
5'0"					Brown wet loose SILT, trace
		6/4	2	5'0"-	fine sand
		3		6'6"	
10'0"					
▼		3/2	3	10'0"-	
WL		3		11'6"	
					14'0"
15'0"					Brown wet loose SILT with
		2/3	4	15'0"-	thin layers fine sand
		2		16'6"	
20'0"					20'0"
		1/1	5	20'0"-	Gray-brown wet loose fine
		3		21'6"	SAND and SILT
25'0"					24'0"
		6/9	6	25'0"-	Gray-brown saturated medium
		9		26'6"	dense SILT, little fine sand
30'0"					
		5/7	7	30'0"-	
		12		31'6"	
35'0"					
		6/15	8	35'0"-	
		12		36'6"	
40'0"					

parratt wolff inc
FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant

HOLE NO. 50-74-544

LOCATION Clay, New York

SURF. ELEV. 390.5

DATE STARTED 2/25/75 COMPLETED 2/25/75

JOB NO. 74130

GROUND WATER Depth on completion 11'3"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

SHEET 2 OF 2

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		15/18	9	40'0"-	Gray-brown saturated medium
		21		41'6"	dense SILT, little fine sand
45'0"					47'0"
		8/11	10	45'0"-	Gray wet medium dense coarse
		15		46'6"	to fine GRAVEL, some coarse
50'0"		150	11	49'6"-	to fine sand, little silt
				50'0"	Top of rock 50'0"
55'0"					Run #1, 50'0" - 55'0" Rec. 46" - 77% Gray weathered SHALE and LIMESTONE
					Bottom of boring 55'0"
					NOTE: Coring time in rock 3-4 minutes per foot; partial water loss.

parratt wolff inc

FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 51-74-545

LOCATION Clay, New York — SURF. ELEV. 390.3

DATE STARTED 2/25/75 COMPLETED 2/25/75 — JOB NO. 74130

GROUND WATER Depth on completion 16'8"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C.	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
					Brown wet dense coarse to fine GRAVEL and SILT, little medium to fine sand — 2'6"
		12/15	1	1'0"- 2'6"	
		18			
5'0"					Brown moist medium dense SILT, trace fine sand
		3/4	2	5'0"- 6'6"	
		5			
10'0"					
		5/7	3	10'0"- 11'6"	
		4			
					14'0"
15'0"					Brown wet loose fine SAND, trace silt
▼ WL		5/3	4	15'0"- 16'6"	
		5			
					19'0"
20'0"					Gray-brown wet very loose SILT, little fine sand
		1/1	5	20'0"- 21'6"	
		3			
25'0"					
		3/1	6	25'0"- 26'6"	
		2			
30'0"					
		4/7	7	30'0"- 31'6"	
		8			
35'0"					
		4/7	8	35'0"- 36'6"	
		8			
40'0"					

parratt wolff inc
FISHER ROAD
EAST SYRACUSE, N.Y. 13057

TEST BORING LOG

PROJECT Oak Orchard Treatment Plant — HOLE NO. 51-[illegible]-545

LOCATION Clay, New York — SURF. ELEV. 390.3

DATE STARTED 2/25/75 COMPLETED 2/25/75 — JOB NO. 74130

GROUND WATER Depth on completion 16'8"

N= NO. OF BLOWS TO DRIVE 2" SAMPLER 6" W/140 LB. WEIGHT FALLING 30"

C= NO. OF BLOWS TO DRIVE CASING 12" W/300 LB. WEIGHT FALLING 24"

BORING MADE WITH HOLLOW STEM AUGER CASING

DEPTH	C	N.	SAMPLE NO.	SAMPLE DEPTH	DESCRIPTION OF MATERIAL
		8/13	9	40'0"-	Gray-brown wet very loose SILT, little fine sand
		12		41'4"	43'0"
45'0"					Gray moist medium dense fine SAND and SILT, trace fine gravel 46'0"
		8/13	10A	45'0"-	
		12	10B	46'0"	
				46'0"-	Dark gray moist very dense coarse to fine GRAVEL and SILT
				46'6"	Top of rock 50'8"
50'0"					
		75	11	50'0"-	Run #1, 50'8" - 55'8"
		3"		50'3"	Rec. 32" - 53%
					Gray weathered SHALE and LIMESTONE
55'0"					
					Bottom of boring 55'8"
60'0"					NOTE: Coring time in rock 4 minutes per foot; lost all water @ 51'0".

Appendix C: Floodplain Considerations

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) Report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS Report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study Report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study Report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was New York State Plane Central Zone (FIPS zone 3102). The **horizontal datum** was NAD 83, GRS 1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey **at (301) 713- 3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on the Flood Insurance Rate Map (FIRM) was derived from digital orthophotography provided by the New York Office of Cyber Security and Critical Infrastructure Coordination from photography dated April 2006.

The **profile baselines** depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the **profile baseline**, in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.

Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables for multiple streams in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

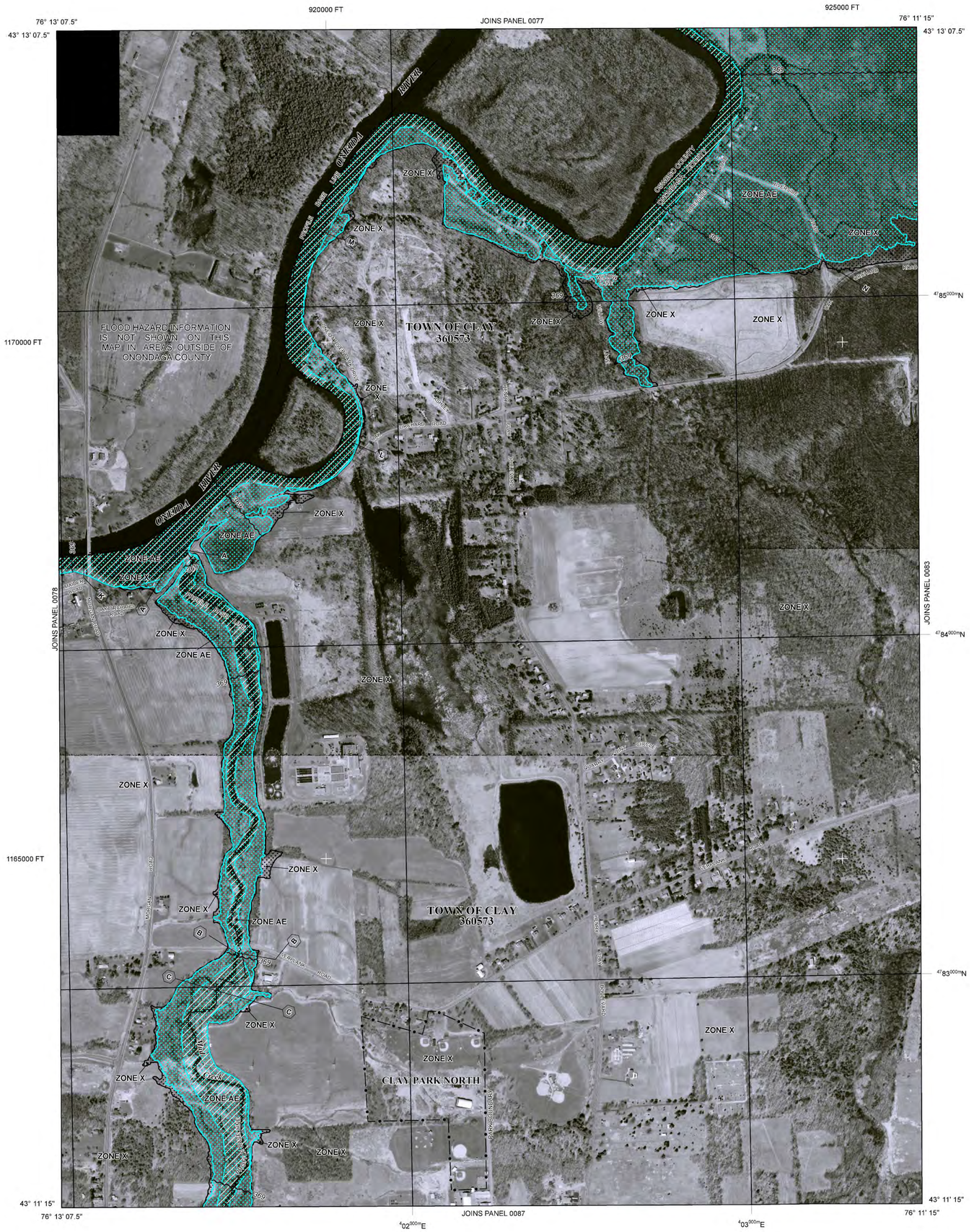
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

For information on available products associated with this FIRM visit the **Map Service Center (MSC)** website at http://msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the MSC website.

If you have **questions about this map,** how to order products, or the National Flood Insurance Program in general, please call the **FEMA Map Information eXchange (FMIX)** at **1-877-FEMA-MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

This digital FIRM was produced through a unique cooperative partnership between the New York State Department of Environmental Conservation (NYSDEC) and FEMA. As part of the effort, NYSDEC has joined in a Cooperative Technical Partnership agreement to produce and maintain FEMA's digital FIRMS.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Areas formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% Annual Chance Floodplain Boundary
- 0.2% Annual Chance Floodplain Boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 45° 02' 08", 93° 02' 12" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83) Western Hemisphere
- 3100000 FT — 5000-foot ticks: New York State Plane Central Zone (FIPS Zone 3102), Transverse Mercator projection
- 4789000mN — 1000-meter Universal Transverse Mercator grid values, zone 18
- DX5510 × — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
November 4, 2016

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0079F

FIRM

FLOOD INSURANCE RATE MAP

ONONDAGA COUNTY, NEW YORK (ALL JURISDICTIONS)

PANEL 79 OF 520
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
CLAY, TOWN OF	360573	0079	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

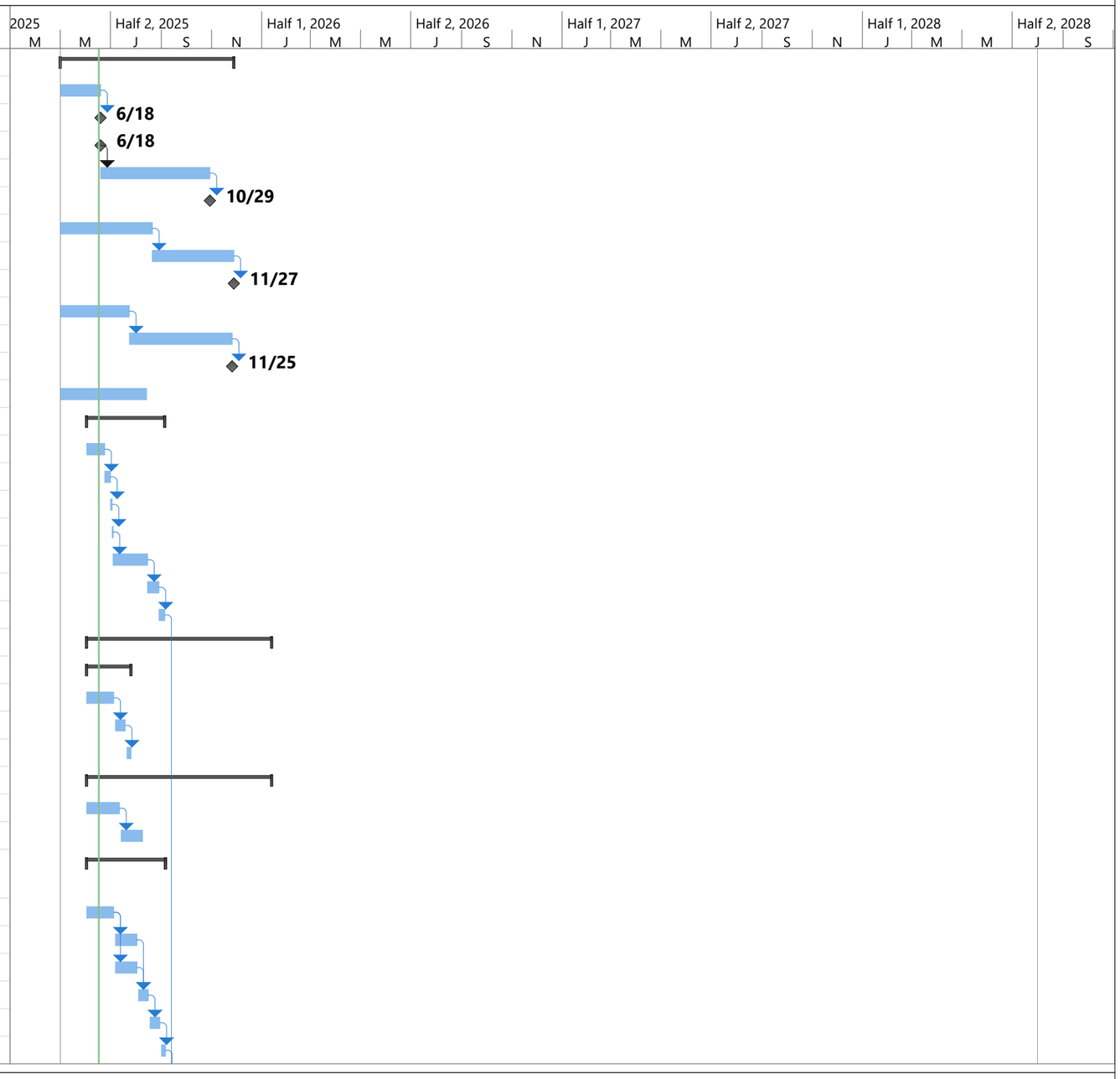
MAP NUMBER
36067C0079F
EFFECTIVE DATE
NOVEMBER 4, 2016

Federal Emergency Management Agency

Appendix D: Project Schedule

OCDWEP Industrial WWTP Schedule

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
1		**Permitting**	**151 days**	**Thu 5/1/25**	**Thu 11/27/25**	
2		SPDES Preparation	35 days	Thu 5/1/25	Wed 6/18/25	
3		SPDES Permit Application	0 days	Wed 6/18/25	Wed 6/18/25	2
4		SPDES Initial BODr Report	0 days	Wed 6/18/25	Wed 6/18/25	
5		SPDES Final	95 days	Thu 6/19/25	Wed 10/29/25	4
6		SPDES Final Submit	0 days	Wed 10/29/25	Wed 10/29/25	5
7		Air Permit Initial Submission	80 days	Thu 5/1/25	Wed 8/20/25	
8		Air Permit	71 days	Thu 8/21/25	Thu 11/27/25	7
9		Air Permit Final	0 days	Thu 11/27/25	Thu 11/27/25	8
10		Wetlands JD	60 days	Thu 5/1/25	Wed 7/23/25	
11		Wetlands Joint App	89 days	Thu 7/24/25	Tue 11/25/25	10
12		Wetland Final Application	0 days	Tue 11/25/25	Tue 11/25/25	11
13		Procurement	75 days	Thu 5/1/25	Wed 8/13/25	
14		**RFQ**	**69 days**	**Mon 6/2/25**	**Thu 9/4/25**	
15		Draft RFQ docs and forms	16 days	Mon 6/2/25	Mon 6/23/25	
16		OCDWEP review	5 days	Tue 6/24/25	Mon 6/30/25	15
17		Finalize RFQ	2 days	Tue 7/1/25	Wed 7/2/25	16
18		Issue RFQ	1 day	Thu 7/3/25	Thu 7/3/25	17
19		RFQ Response period	6 wks	Fri 7/4/25	Thu 8/14/25	18
20		RFQ response review	2 wks	Fri 8/15/25	Thu 8/28/25	19
21		Selection of PDB proposers	1 wk	Fri 8/29/25	Thu 9/4/25	20
22		**RFP**	**161 days**	**Mon 6/2/25**	**Mon 1/12/26**	
23		**Front End RFP Package**	**40 days**	**Mon 6/2/25**	**Fri 7/25/25**	
24		Front end package development	25 days	Mon 6/2/25	Fri 7/4/25	
25		Front end review	10 days	Mon 7/7/25	Fri 7/18/25	24
26		Finalize front end	5 days	Mon 7/21/25	Fri 7/25/25	25
27		**PDB Contract**	**161 days**	**Mon 6/2/25**	**Mon 1/12/26**	
28		PDB agreement development	30 days	Mon 6/2/25	Fri 7/11/25	
29		WLG/County review and edits	20 days	Mon 7/14/25	Fri 8/8/25	28
30		**Technical Design and Bridging Document**	**70 days**	**Mon 6/2/25**	**Fri 9/5/25**	
31		Finalize facility sizing and assumpt	25 days	Mon 6/2/25	Fri 7/4/25	
32		Draft of balance of plant design	20 days	Mon 7/7/25	Fri 8/1/25	31
33		Draft of process design	20 days	Mon 7/7/25	Fri 8/1/25	31
34		Full draft of technical documents	10 days	Mon 8/4/25	Fri 8/15/25	32,33
35		Full review	10 days	Mon 8/18/25	Fri 8/29/25	34
36		Finalize technical docs	5 days	Mon 9/1/25	Fri 9/5/25	35

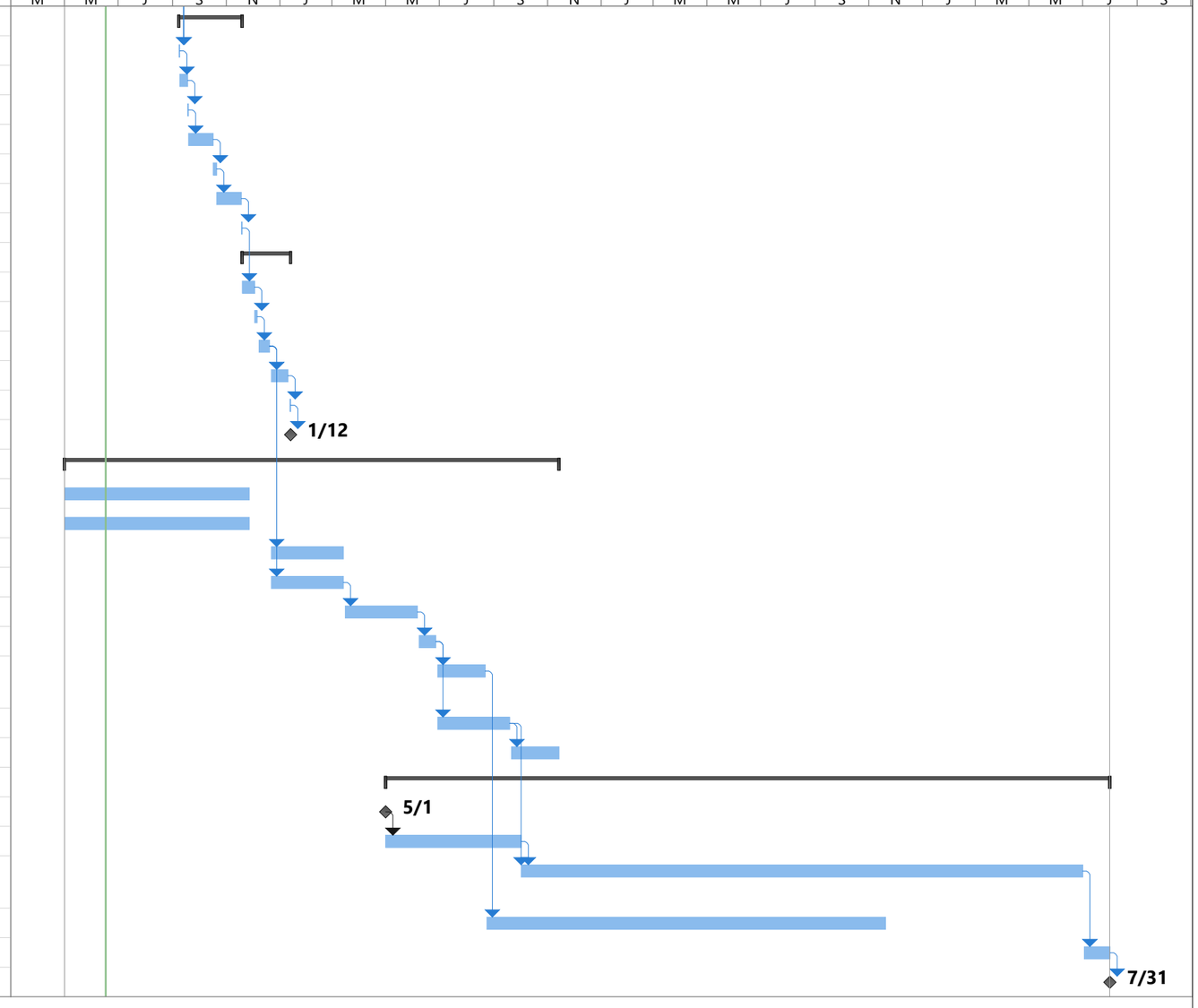


Project: 0616-2025 Schedule_S
Date: Tue 6/17/25

Task	Project Summary	Manual Task	Start-only	Deadline
Split	Inactive Task	Duration-only	Finish-only	Progress
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
Summary	Inactive Summary	Manual Summary	External Milestone	

OCDWEP Industrial WWTP Schedule

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors
37		**RFP Process and Bids Due**	**52 days**	**Mon 9/8/25**	**Tue 11/18/25**	
38		Issue RFP to proposers	1 day	Mon 9/8/25	Mon 9/8/25	36,21
39		Proposer initial assessments of RF	7 days	Tue 9/9/25	Wed 9/17/25	38
40		Site walk	1 day	Thu 9/18/25	Thu 9/18/25	39
41		Content development	4 wks	Fri 9/19/25	Thu 10/16/25	40
42		Confidential meetings	2 days	Fri 10/17/25	Mon 10/20/25	41
43		Final bid period	4 wks	Tue 10/21/25	Mon 11/17/25	42
44		Proposals due	1 day	Tue 11/18/25	Tue 11/18/25	43
45		**Contract Award Process**	**39 days**	**Wed 11/19/25**	**Mon 1/12/26**	
46		Proposal review period	2 wks	Wed 11/19/25	Tue 12/2/25	44
47		Interviews	3 days	Wed 12/3/25	Fri 12/5/25	46
48		Issuance of notice of award	2 wks	Mon 12/8/25	Fri 12/19/25	47
49		Contract negotiations	3 wks	Mon 12/22/25	Fri 1/9/26	48
50		Contract Award - Design only	1 day	Mon 1/12/26	Mon 1/12/26	49
51		DB Start	0 days	Mon 1/12/26	Mon 1/12/26	50
52		**Design**	**402 days**	**Thu 5/1/25**	**Fri 11/13/26**	
53		B&C Final BODr Report- handoff to DB	150 days	Thu 5/1/25	Wed 11/26/25	
54		EDR Site Enabling Package	150 days	Thu 5/1/25	Wed 11/26/25	
55		DB Precon - Early Works Design/IFC	60 days	Mon 12/22/25	Fri 3/13/26	48
56		DB BODr-30% Design Check In Point	60 days	Mon 12/22/25	Fri 3/13/26	48
57		DB 60% Design	60 days	Mon 3/16/26	Fri 6/5/26	56
58		60% Design Approval	15 days	Mon 6/8/26	Fri 6/26/26	57
59		Funding and PDB Final Contract Amendment	40 days	Mon 6/29/26	Fri 8/21/26	58
60		90% Design	60 days	Mon 6/29/26	Fri 9/18/26	58
61		DB IFC	40 days	Mon 9/21/26	Fri 11/13/26	60
62		**Construction**	**587 days**	**Fri 5/1/26**	**Mon 7/31/28**	
63		Mobilization	0 days	Fri 5/1/26	Fri 5/1/26	
64		Early Works Construction	110 days	Fri 5/1/26	Thu 10/1/26	63
65		DB Construction - Installation Commissioning	456 days	Fri 10/2/26	Fri 6/30/28	60,64
66		Equipment Procurement	325 days	Mon 8/24/26	Fri 11/19/27	59
67		Start-Up - Operational Comissioning	21 days	Mon 7/3/28	Mon 7/31/28	65
68		Micron Wastewater Fab 1 Begin	0 days	Mon 7/31/28	Mon 7/31/28	67



Project: 0616-2025 Schedule_S
Date: Tue 6/17/25

Task	Project Summary	Manual Task	Start-only	Deadline
Split	Inactive Task	Duration-only	Finish-only	Progress
Milestone	Inactive Milestone	Manual Summary Rollup	External Tasks	Manual Progress
Summary	Inactive Summary	Manual Summary	External Milestone	

Appendix E: SPDES Permit

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

State Pollutant Discharge Elimination System (SPDES)
DISCHARGE PERMIT

Industrial Code: **4952**
Discharge Class (CL): **05**
Toxic Class (TX): **N**
Major Drainage Basin: **07**
Sub Drainage Basin: **03**
Water Index Number: **ONT-66-11**
Compact Area: **IJC**

SPDES Number: **NY-0030317**
DEC Number: **7-3124-00018/00001**
Effective Date (EDP): **07/01/2014**
Expiration Date (ExDP): **06/30/2019**
Modification Dates:(EDPM)

This SPDES permit is issued in compliance with Title 8 of Article 17 of the Environmental Conservation Law of New York State and in compliance with the Clean Water Act, as amended, (33 U.S.C. §1251 et.seq.)(hereinafter referred to as "the Act").

PERMITTEE NAME AND ADDRESS

Name: **Onondaga County** Attention: **Commissioner, WEP**
Street: **650 Hiawatha Blvd. West**
City: **Syracuse** State: **NY** Zip Code: **13204-1194**
is authorized to discharge from the facility described below:

FACILITY NAME AND ADDRESS

Name: **Oak Orchard Wastewater Treatment Plant**
Location (C,T,V): **Clay (T)** County: **Onondaga**
Facility Address: **4300 Oak Orchard Road**
City: **Clay** State: **NY** Zip Code: **13212**
NYTM -E: NYTM - N:
From Outfall No.: **001** at Latitude: **43 ° 12 ' 18.6 ''** & Longitude: **76 ° 12 ' 49.7 ''**
into receiving waters known as: **Oneida River** Class: **B**
and; (list other Outfalls, Receiving Waters & Water Classifications)

See stormwater outfalls list, page 2 of permit.

in accordance with: effluent limitations; monitoring and reporting requirements; other provisions and conditions set forth in this permit; and 6 NYCRR Part 750-1 and 750-2.

DISCHARGE MONITORING REPORT (DMR) MAILING ADDRESS

Mailing Name: **Onondaga County Department of Water Environment Protection**
Street: **650 Hiawatha Blvd**
City: **Syracuse** State: **NY** Zip Code: **13204-1194**
Responsible Official or Agent: **Head Operator** Phone: **(315) 652-5097**

This permit and the authorization to discharge shall expire on midnight of the expiration date shown above and the permittee shall not discharge after the expiration date unless this permit has been renewed, or extended pursuant to law. To be authorized to discharge beyond the expiration date, the permittee shall apply for permit renewal not less than 180 days prior to the expiration date shown above.

DISTRIBUTION:

CO BWP - Permit Coordinator
RWE
RPA
EPA Region II – Michelle Josilo
NYSEFC
NYSDOH District Office
IJC

Chief Permit Permit Administrator: John J. Ferguson

Address: Division of Environmental Permits
625 Broadway
Albany, NY 12233-1750

Signature: Date: 6/9/14

STORMWATER OUTFALLS

The following outfalls discharge on-site stormwater only, from roofs and catch basins:

Outfall	Description	Latitude/Longitude	Receiving Water
002	Stormwater runoff only from catch basin, roof drains, grass covered swales.	43° 12' 12.9" N 76° 12' 42" W	Mud Creek to Oneida River
003	Stormwater runoff only from catch basin and paved roadway areas.	43° 12' 00" N 76° 12' 30.9" W	Drainage area of Oneida River
004	Stormwater runoff only from catch basins, roof drains, grassed areas and paved areas.	43° 11' 53.3" N 76° 12' 40.8" W	Mud Creek to Oneida River

PERMIT LIMITS, LEVELS AND MONITORING DEFINITIONS

OUTFALL	WASTEWATER TYPE	RECEIVING WATER	EFFECTIVE	EXPIRING
	This cell describes the type of wastewater authorized for discharge. Examples include process or sanitary wastewater, storm water, non-contact cooling water.	This cell lists classified waters of the state to which the listed outfall discharges.	The date this page starts in effect. (e.g. EDP or EDPM)	The date this page is no longer in effect. (e.g. ExDP)

PARAMETER	MINIMUM	MAXIMUM	UNITS	SAMPLE FREQ.	SAMPLE TYPE
e.g. pH, TRC, Temperature, D.O.	The minimum level that must be maintained at all instants in time.	The maximum level that may not be exceeded at any instant in time.	SU, °F, mg/l, etc.		

PARA-METER	EFFLUENT LIMIT	PRACTICAL QUANTITATION LIMIT (ML)	ACTION LEVEL	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE
	Limit types are defined below in Note 1. The effluent limit is developed based on the more stringent of technology-based standards, required under the Clean Water Act, or New York State water quality standards. The limit has been derived based on existing assumptions and rules. These assumptions include receiving water hardness, pH and temperature; rates of this and other discharges to the receiving stream; etc. If assumptions or rules change the limit may, after due process and modification of this permit, change.	For the purposes of compliance assessment, the analytical method specified in the permit shall be used to monitor the amount of the pollutant in the outfall to this level, provided that the laboratory analyst has complied with the specified quality assurance/quality control procedures in the relevant method. Monitoring results that are lower than this level must be reported, but shall not be used to determine compliance with the calculated limit. This ML can be neither lowered nor raised without a modification of this permit.	Action Levels are monitoring requirements, as defined below in Note 2, that trigger additional monitoring and permit review when exceeded.	This can include units of flow, pH, mass, Temperature, concentration. Examples include µg/l, lbs/d, etc.	Examples include Daily, 3/week, weekly, 2/month, monthly, quarterly, 2/yr and yearly.	Examples include grab, 24 hour composite and 3 grab samples collected over a 6 hour period.

Note 1: DAILY DISCHARGE: The discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for the purposes of sampling. For pollutants expressed in units of mass, the 'daily discharge' is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the 'daily discharge' is calculated as the average measurement of the pollutant over the day. DAILY MAX: The highest allowable daily discharge. DAILY MIN: The lowest allowable daily discharge. MONTHLY AVG (daily avg): The highest allowable average of daily discharges over a calendar month, calculated as the sum of each of the daily discharges measured during a calendar month divided by the number of daily discharges measured during that month. RANGE: The minimum and maximum instantaneous measurements for the reporting period must remain between the two values shown. 7 DAY ARITHMETIC MEAN (7 day average): The highest allowable average of daily discharges over a calendar week. 12 MRA (twelve month rolling avg): The average of the most recent twelve month's monthly averages. 30 DAY GEOMETRIC MEAN (30 d geo mean): The highest allowable geometric mean of daily discharges over a calendar month, calculated as the antilog of : the sum of the log of each of the daily discharges measured during a calendar month divided by the number of daily discharges measured during that month. 7 DAY GEOMETRIC MEAN (7 d geo mean): The highest allowable geometric mean of daily discharges over a calendar week.

Note 2: ACTION LEVELS: Routine Action Level monitoring results, if not provided for on the Discharge Monitoring Report (DMR) form, shall be appended to the DMR for the period during which the sampling was conducted. If the additional monitoring requirement is triggered as noted below, the permittee shall undertake a short-term, high-intensity monitoring program for the parameter(s). Samples identical to those required for routine monitoring purposes shall be taken on each of at least three consecutive operating and discharging days and analyzed. Results shall be expressed in terms of both concentration and mass, and shall be submitted no later than the end of the third month following the month when the additional monitoring requirement was triggered. Results may be appended to the DMR or transmitted under separate cover to the same address. If levels higher than the Action Levels are confirmed, the permit may be reopened by the Department for consideration of revised Action Levels or effluent limits. The permittee is not authorized to discharge any of the listed parameters at levels which may cause or contribute to a violation of water quality standards. The additional monitoring requirement is triggered upon receipt by the permittee of any monitoring results in excess of the stated Action Level.

PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL No.	LIMITATIONS APPLY:	RECEIVING WATER	EFFECTIVE	EXPIRING
001	June 16 to October 31	Oneida River	07/01/2014	06/30/2019

PARAMETER	EFFLUENT LIMIT					MONITORING REQUIREMENTS				FN
								Location		
	Type	Limit	Units	Limit	Units	Sample Frequency	Sample Type	Inf.	Eff.	
Flow	Monthly average	10.0	mgd	-	-	Continuous	Recorder		X	
$CBOD_5$	Monthly average	25	mg/l	2085	lbs/d	2/week	24-hr. Comp.	X	X	(1)
$CBOD_5$	7 day average	40	mg/l	3336	lbs/d	2/week	24-hr. Comp.	X	X	
BOD_5	Monthly average	Monitor	mg/l	Monitor	lbs/d	1/month	24-hr. Comp.	X		
UOD	Daily maximum	Monitor	mg/l	4289	lbs/d	2/week	24-hr. Comp.	X	X	(2)
Solids, Suspended	Monthly average	30	mg/l	2500	lbs/d	2/week	24-hr. Comp.	X	X	(1)
Solids, Suspended	7 day average	45	mg/l	3750	lbs/d	2/week	24-hr. Comp.	X	X	
Solids, Settleable	Daily maximum	0.3	ml/l	-	-	3/day	Grab	X	X	
pH	Range	6.0 to 9.0	SU	-	-	3/day	Grab	X	X	
Temperature	Daily maximum	Monitor	Deg C	-	-	3/day	Grab	X	X	
Dissolved Oxygen	Daily Minimum	2.0	mg/l	-	-	2/week	Grab		X	
Nitrogen, Ammonia Total (as NH_3)	Monthly average	Monitor	mg/l	307	lbs/d	2/week	24-hr. Comp.		X	
Nitrogen, TKN (as N)	Daily maximum	Monitor	mg/l	-	-	2/week	24-hr. Comp.		X	
Phosphorus, Total (as P)	Monthly average	1.0	mg/l	-	-	2/week	24-hr. Comp.		X	
Mercury, Total	Daily maximum	50	ng/l	-	-	Quarterly	Grab		X	(4)
Effluent Disinfection required: [ ] All Year [X] Seasonal from May 15 to October 15										
Coliform, Fecal	30 day geometric mean	200	No./ 100 ml	-	-	2/week	Grab.		X	
Coliform, Fecal	7 day geometric mean	400	No./ 100 ml	-	-	2/week	Grab.		X	
Chlorine, Total Residual *(Interim – effective EDP to 11/1/2018)*	Daily maximum	0.35	mg/l	-	-	3/day	Grab		X	(5)
Chlorine, Total Residual *(Final – becomes effective 11/1/2018)*	Daily maximum	0.045	mg/l	-	-	3/day	Grab		X	(5)

FOOTNOTES: See page 6

PERMIT LIMITS, LEVELS AND MONITORING

OUTFALL No.	LIMITATIONS APPLY:	RECEIVING WATER	EFFECTIVE	EXPIRING
001	November 1 to June 15	Oneida River	07/01/2014	06/30/2019

PARAMETER	EFFLUENT LIMIT					MONITORING REQUIREMENTS				FN
								Location		
	Type	Limit	Units	Limit	Units	Sample Frequency	Sample Type	Inf.	Eff.	
Flow	Monthly average	10.0	mgd	-	-	Continuous	Recorder		X	
$CBOD_5$	Monthly average	25	mg/l	2085	lbs/d	2/week	24-hr. Comp.	X	X	(1)
$CBOD_5$	7 day average	40	mg/l	3336	lbs/d	2/week	24-hr. Comp.	X	X	
BOD_5	Monthly average	Monitor	mg/l	Monitor	lbs/d	1/month	24-hr. Comp.	X		
UOD	Daily maximum	-	mg/l	-	lbs/d	2/week	24-hr. Comp.	X	X	(2)
Solids, Suspended	Monthly average	30	mg/l	2500	lbs/d	2/week	24-hr. Comp.	X	X	(1)
Solids, Suspended	7 day average	45	mg/l	3750	lbs/d	2/week	24-hr. Comp.	X	X	
Solids, Settleable	Daily maximum	0.3	ml/l	-	-	3/day	Grab	X	X	
pH	Range	6.0 to 9.0	SU	-	-	3/day	Grab	X	X	
Temperature	Daily maximum	Monitor	Deg C	-	-	3/day	Grab	X	X	
Dissolved Oxygen	Daily Minimum	2.0	mg/l	-	-	2/week	Grab		X	
Nitrogen, Ammonia Total (as NH_3)	Monthly average	Monitor	mg/l	2,026	lbs/d	2/week	24-hr. Comp.		X	
Nitrogen, TKN (as N)	Daily maximum	Monitor	mg/l	-	-	2/week	24-hr. Comp.		X	
Phosphorus, Total (as P)	Monthly average	1.0	mg/l	-	-	2/week	24-hr. Comp.		X	
Mercury, Total	Daily maximum	50	ng/l	-	-	Quarterly	Grab		X	(4)
Effluent Disinfection required: [ ] All Year [X] Seasonal from May 15 to October 15										
Coliform, Fecal	30 day geometric mean	200	No./ 100 ml	-	-	2/week	Grab.		X	
Coliform, Fecal	7 day geometric mean	400	No./ 100 ml	-	-	2/week	Grab.		X	
Chlorine, Total Residual *(Interim – effective EDP to 11/1/2018)*	Daily maximum	0.35	mg/l	-	-	3/day	Grab		X	5
Chlorine, Total Residual *(Final – becomes effective 11/1/2018)*	Daily maximum	0.045	mg/l	-	-	3/day	Grab		X	5

FOOTNOTES: See page 6

PERMIT LIMITS, ACTION LEVELS AND MONITORING

OUTFALL No.	LEVELS APPLY:	RECEIVING WATER	EFFECTIVE	EXPIRING
001	All year unless otherwise noted	Oneida River	07/01/2014	06/30/2019

PARAMETER	EFFLUENT LIMIT		MONITORING ACTION LEVEL	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Monthly Avg.	Daily Max					
Iron, Total Recoverable			Monitor	lbs/day	1/quarter	24 hr. Comp.	
Chloroform			1.3	lbs/day	1/quarter	24 hr. Comp.	(3)
Cadmium, Total Recoverable			0.4	lbs/day	1/quarter	24 hr. Comp.	
Chromium, Total Recoverable			1.9	lbs/day	1/quarter	24 hr. Comp.	
Copper, Total Recoverable			1.8	lbs/day	1/quarter	24 hr. Comp.	
Nickel, Total Recoverable			2.9	lbs/day	1/quarter	24 hr. Comp.	
Zinc, Total Recoverable			5.4	lbs/day	1/quarter	24 hr. Comp.	
Arsenic, Total Recoverable			Monitor	lbs/day	1/quarter	24 hr. Comp.	
Phenols, Total			Monitor	lbs/day	1/quarter	24 hr. Comp.	(3)

FOOTNOTES:

(1) Effluent shall not exceed 15 % and 15 % of influent concentration values for $CBOD_5$ & TSS respectively.
(2) Ultimate Oxygen Demand shall be computed as follows: UOD = 1.5 X $CBOD_5$ + 4.5 X TKN (Total Kjeldahl Nitrogen).
(3) The 24-hr. composites shall be collected as 3 grab samples at 8 hr. intervals. Three grab samples shall be collected and combined in laboratory prior to analysis.
(4) EPA Method 1631 is required for Mercury sampling.
(5) Monitoring of these parameters is only required during the period when disinfection is required.

WHOLE EFFLUENT TOXICITY (WET) TESTING REQUIREMENTS

OUTFALL No.	LEVELS APPLY:	RECEIVING WATER	EFFECTIVE	EXPIRING
001	All year unless otherwise noted	Oneida River	07/01/2014	06/30/2019

PARAMETER	EFFLUENT LIMIT		PQL	MONITORING ACTION LEVEL	UNITS	SAMPLE FREQUENCY	SAMPLE TYPE	FN
	Monthly Avg.	Daily Max.	Daily Max.					
WET - Acute Invertebrate				1.5	TUa	Quarterly	seefootnote	1
WET - Acute Vertebrate				1.5	TUa	Quarterly	seefootnote	1
WET - Chronic Invertebrate				9.0	TUc	Quarterly	seefootnote	1
WET - Chronic Vertebrate				9.0	TUc	Quarterly	seefootnote	1

Footnotes:

1. Whole Effluent Toxicity (WET) Testing:

Testing Requirements - WET testing shall consist of Chronic only testing. WET testing shall be performed in accordance with 40 CFR Part 136 and TOGS 1.3.2 unless prior written approval has been obtained from the Department. The test species shall be *Ceriodaphnia dubia* (water flea - invertebrate) and *Pimephales promelas* (fathead minnow - vertebrate). Receiving water collected upstream from the discharge should be used for dilution. The appropriate dilution series bracketing the IWC and including one exposure group of 100% effluent should be used to generate a definitive test endpoint, otherwise an immediate rerun of the test is required. WET testing shall be coordinated with the monitoring of chemical and physical parameters limited by this permit so that the resulting analyses are also representative of the sample used for WET testing. The ratio of critical receiving water flow to discharge flow (i.e. dilution ratio) is 5:1 for acute, and 9:1 for chronic. Discharges which are disinfected using chlorine should be dechlorinated prior to WET testing or samples shall be taken immediately prior to the chlorination system.

Monitoring Period - WET testing shall be performed at the specified sample frequency for the duration of the permit during calendar years ending in 1 and 6 beginning in January and lasting for a period of one full year.

Reporting - Toxicity Units shall be calculated and reported on the DMR as follows: TUa = (100)/(48 hr LC50) or (100)/(48 hr EC50) (note that Acute data is generated by both Acute and Chronic testing) and TUc = (100)/(NOEC) when Chronic testing has been performed or TUc = (TUa) x (10) when only Acute testing has been performed and is used to predict Chronic test results, where the 48 hr LC50 or 48 hr EC50 and NOEC are expressed in % effluent. This must be done for both species and using the Most Sensitive Endpoint (MSE) or the lowest NOEC and corresponding highest TUc. Report a TUa of 0.3 if there is no statistically significant toxicity in 100% effluent as compared to control.

The complete test report including all corresponding results, statistical analyses, reference toxicity data, daily average flow at the time of sampling and other appropriate supporting documentation, shall be submitted within 60 days following the end of each test period to the Toxicity Testing Unit. A summary page of the test results for the invertebrate and vertebrate species indicating TUa, 48 hr LC50 or 48 hr EC50 for Acute tests and/or TUc, NOEC, IC25, and most sensitive endpoints for Chronic tests, should also be included at the beginning of the test report.

WET Testing Action Level Exceedances - If an action level is exceeded then the Department may require the permittee to conduct additional WET testing including Acute and/or Chronic tests. Additionally, the permittee may be required to perform a Toxicity Reduction Evaluation (TRE) in accordance with Department guidance. If such additional testing or performance of a TRE is necessary, the permittee shall be notified in writing by the Regional Water Engineer. The written notification shall include the reason(s) why such testing or a TRE is required.

PRETREATMENT PROGRAM IMPLEMENTATION REQUIREMENTS

A. DEFINITIONS. Generally, terms used in this Section shall be defined as in the General Pretreatment Regulations (40 CFR Part 403). Specifically, the following definitions apply to terms used in this Section (PRETREATMENT PROGRAM IMPLEMENTATION REQUIREMENTS):

1. Categorical Industrial User (CIU) - an industrial user of the POTW that is subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N;

2. Local Limits - General Prohibitions, specific prohibitions and specific limits as set forth in 40 CFR 403.5.

3. The Publicly Owned Treatment Works (the POTW) - as defined by 40 CFR 403.3(q) and that discharges in accordance with this permit.

4. Program Submission(s) - requests for approval or modification of the POTW Pretreatment Program submitted in accordance with 40 CFR 403.11 or 403.18 and approved by letter dated June 11, 1984.

5. Significant Industrial User (SIU) -

   a. CIUs;

   b. Except as provided in 40 CFR 403.3(v)(3), any other industrial user that discharges an average of 25,000 gallons per day or more of process wastewater (excluding sanitary, non-contact cooling and boiler blowdown wastewater) to the POTW;

   c. Except as provided in 40 CFR 403.3(v)(3), any other industrial user that contributes a process wastestream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant;

   d. Any other industrial user that the permittee designates as having a reasonable potential for adversely affecting the POTW's operation or for violating a pretreatment standard or requirement.

6. Substances of Concern - Substances identified by the New York State Department of Environmental Conservation Industrial Chemical Survey as substances of concern.

B. IMPLEMENTATION. The permittee shall implement a POTW Pretreatment Program in accordance 40 CFR Part 403 and as set forth in the permittee's approved Program Submission(s). Modifications to this program shall be made in accordance with 40 CFR 403.18. Specific program requirements are as follows:

1. Industrial Survey. To maintain an updated inventory of industrial dischargers to the POTW the permittee shall:

   a. Identify, locate and list all industrial users who might be subject to the industrial pretreatment program from the pretreatment program submission and any other necessary, appropriate and available sources. This identification and location list will be updated, at a minimum, every five years. As part of this update the permittee shall collect a current and complete New York State Industrial Chemical Survey form (or equivalent) from each SIU.

   b. Identify the character and volume of pollutants contributed to the POTW by each industrial user identified in B.1.a above that is classified as a SIU.

   c. Identify, locate and list, from the pretreatment program submission and any other necessary, appropriate and available sources, all significant industrial users of the POTW.

2. Control Mechanisms. To provide adequate notice to and control of industrial users of the POTW the permittee shall:

   a. Inform by certified letter, hand delivery courier, overnight mail, or other means which will provide written acknowledgment of delivery, all industrial users identified in B.1.a. above of applicable pretreatment standards and requirements including the requirement to comply with the local sewer use law, regulation or

PRETREATMENT PROGRAM IMPLEMENTATION REQUIREMENTS (continued)

ordinance and any applicable requirements under section 204(b) and 405 of the Federal Clean Water Act and Subtitles C and D of the Resource Conservation and Recovery Act.

b. Control through permit or similar means the contribution to the POTW by each SIU to ensure compliance with applicable pretreatment standards and requirements. Permits shall contain limitations, sampling frequency and type, reporting and self-monitoring requirements as described below, requirements that limitations and conditions be complied with by established deadlines, an expiration date not later than five years from the date of permit issuance, a statement of applicable civil and criminal penalties and the requirement to comply with Local Limits and any other requirements in accordance with 40 CFR 403.8(f)(1).

3. Monitoring and Inspection. To provide adequate, ongoing characterization of non-domestic users of the POTW, the permittee shall:

a. Receive and analyze self-monitoring reports and other notices. The permittee shall require all SIUs to submit self-monitoring reports at least every six months unless the permittee collects all such information required for the report, including flow data.

b. The permittee shall adequately inspect each SIU at a minimum frequency of once per year.

c. The permittee shall collect and analyze samples from each SIU for all priority pollutants that can reasonably be expected to be detectable at levels greater than the levels found in domestic sewage at a minimum frequency of once per year.

d. Require, through permits, each SIU to collect at least one 24 hour, flow proportioned composite (where feasible) effluent sample every six months and analyze each of those samples for all priority pollutants that can reasonably be expected to be detectable in that discharge at levels greater than the levels found in domestic sewage. The permittee may perform the aforementioned monitoring in lieu of the SIU except that the permittee must also perform the compliance monitoring described in 3.c.

4. Enforcement. To assure adequate, equitable enforcement of the industrial pretreatment program the permittee shall:

a. Investigate instances of noncompliance with pretreatment standards and requirements, as indicated in self-monitoring reports and notices or indicated by analysis, inspection and surveillance activities. Sample taking and analysis and the collection of other information shall be performed with sufficient care to produce evidence admissible in enforcement proceedings or in judicial actions. Enforcement activities shall be conducted in accordance with the permittee's Enforcement Response Plan developed and approved in accordance with 40 CFR Part 403.

b. Enforce compliance with all national pretreatment standards and requirements in 40 CFR Parts 406 - 471.

c. Provide public notification of significant non-compliance as required by 40 CFR 403.8(f)(2)(viii).

d. Pursuant to 40 CFR 403.5(e), when either the Department or the USEPA determines any source contributes pollutants to the POTW in violation of Pretreatment Standards or Requirements the Department or the USEPA shall notify the permittee. Failure by the permittee to commence an appropriate investigation and subsequent enforcement action within 30 days of this notification may result in appropriate enforcement action against the source and permittee.

5. Record keeping. The permittee shall maintain and update, as necessary, records identifying the nature, character, and volume of pollutants contributed by SIUs. Records shall be maintained in accordance with 6 NYCRR Part 750-2.5(c).

6. Staffing. The permittee shall maintain minimum staffing positions committed to implementation of the Industrial Pretreatment Program in accordance with the approved pretreatment program.

PRETREATMENT PROGRAM IMPLEMENTATION REQUIREMENTS (continued)

C. SLUDGE DISPOSAL PLAN. The permittee shall notify NYSDEC, and USEPA as long as USEPA remains the approval authority, 60 days prior to any major proposed change in the sludge disposal plan. NYSDEC may require additional pretreatment measures or controls to prevent or abate an interference incident relating to sludge use or disposal.

D. REPORTING. The permittee shall provide to the offices listed on the Monitoring, Reporting and Recording page of this permit and to the Chief-Water Compliance Branch; USEPA Region II; 290 Broadway; New York, NY 10007; a periodic report that briefly describes the permittee's program activities over the previous year. This report shall be submitted to the above noted offices within 60 days of the end of the reporting period. The reporting period shall be ANNUAL with reporting period(s) ending on December 31.

The periodic report shall include:

1. Industrial Survey. Updated industrial survey information in accordance with 40 CFR 403.12(i)(1) (including any NYS Industrial Chemical Survey forms updated during the reporting period).

2. Implementation Status. Status of Program Implementation, to include:

   a. Any interference, upset or permit violations experienced at the POTW directly attributable to industrial users.

   b. Listing of significant industrial users issued permits.

   c. Listing of significant industrial users inspected and/or monitored during the previous reporting period and summary of results.

   d. Listing of significant industrial users notified of promulgated pretreatment standards or applicable local standards who are on compliance schedules. The listing should include for each facility the final date of compliance.

   e. Summary of POTW monitoring results not already submitted on Discharge Monitoring Reports and toxic loadings from SIU's organized by parameter.

   f. A summary of additions or deletions to the list of SIUs, with a brief explanation for each deletion.

3. Enforcement Status. Status of enforcement activities to include:

   a. Listing of significant industrial users in Significant Non-Compliance (as defined by 40 CFR 403.8(f)(2)(viii)) with federal or local pretreatment standards at end of the reporting period.

   b. Summary of enforcement activities taken against non-complying significant industrial users. The permittee shall provide a copy of the public notice of significant violators as specified in 40 CFR Part 403.8(f)(2)(viii).

MERCURY MINIMIZATION PROGRAM – High Priority POTWs

1. **General** - The permittee shall develop, implement, and maintain a Mercury Minimization Program (MMP). The MMP is required because the 50 ng/L permit limit exceeds the statewide water quality based effluent limit (WQBEL) of 0.70 nanograms/liter (ng/L) for Total Mercury. The goal of the MMP will be to reduce mercury effluent levels in pursuit of the WQBEL. Note – The mercury-related requirements in this permit conform to the mercury Multiple Discharge Variance specified in NYSDEC policy *DOW 1.3.10*.

2. **MMP Elements** - The MMP shall be documented in narrative form and shall include any necessary drawings or maps. Other related documents already prepared for the facility may be used as part of the MMP and may be incorporated by reference. As a minimum, the MMP shall include an on-going program consisting of: periodic monitoring designed to quantify and, over time, track the reduction of mercury; an acceptable control strategy for reducing mercury discharges via cost-effective measures, which may include more stringent control of tributary waste streams; and submission of periodic status reports.

A. Monitoring - The permittee shall conduct periodic monitoring designed to quantify and, over time, track the reduction of mercury. All permit-related wastewater and stormwater mercury compliance point (outfall) monitoring shall be performed using EPA Method 1631. Use of EPA Method 1669 during sample collection is recommended. Unless otherwise specified, all samples shall be grabs. Monitoring at influent and other locations tributary to compliance points may be performed using either EPA Methods 1631 or 245.7. Monitoring of raw materials, equipment, treatment residuals, and other non-wastewater/non-stormwater substances may be performed using other methods as appropriate. Monitoring shall be coordinated so that the results can be effectively compared between internal locations and final outfalls. Minimum required monitoring is as follows:

i. Sewage Treatment Plant Influent & Effluent, and Type II SSO Outfalls - Samples at each of these locations must be collected in accordance with the minimum frequency specified on the mercury permit limits page.

ii. Key Locations in the Collection System and Potential Significant Mercury Sources - The minimum monitoring frequency at these locations shall be semi-annual. Monitoring of properly treated dental facility discharges is not required.

iii. Hauled Wastes - Hauled wastes which may contain significant mercury levels must be periodically tested prior to acceptance to ensure compliance with pretreatment/local limits requirements and/or determine mercury load.

iv. Additional monitoring must be completed as may be required elsewhere in this permit or upon Department request.

B. Control Strategy - An acceptable control strategy is required for reducing mercury discharges via cost-effective measures, including but not limited to more stringent control of industrial users and hauled wastes. The control strategy will become enforceable under this permit and shall contain the following minimum elements:

i. Pretreatment/Local Limits - The permittee shall evaluate and revise current requirements in pursuit of the goal.

ii. Periodic Inspection - The permittee shall inspect users as necessary to support the MMP. Each dental facility shall be inspected at least once every five years to verify compliance with the wastewater treatment operation, maintenance, and notification elements of 6NYCRR Part 374.4. Other mercury sources shall also be inspected once every five years. Alternatively, the permittee may develop an outreach program which informs these users of their responsibilities once every five years and is supported by a subset of site inspections. Monitoring shall be performed as above.

iii. Systems with CSO & Type II SSO Outfalls - Priority shall be given to controlling mercury sources upstream of CSOs and Type II SSOs through mercury reduction activities and/or controlled-release discharge. Effective control is necessary to avoid the need for the Department to establish mercury permit limits at these outfalls.

iv. Equipment and Materials – Equipment and materials which may contain mercury shall be evaluated by the permittee and replaced with mercury-free alternatives where environmentally preferable.

C. Annual Status Report - An annual status report shall be submitted to the Regional Water Engineer and to the Bureau of Water Permits summarizing: (a) all MMP monitoring results for the previous year; (b) a list of known and potential mercury sources; (c) all action undertaken pursuant to the strategy during the previous year; (d) actions planned for the upcoming year; and, (e) progress toward the goal. The first annual status report is due one year after the permit is modified to include the MMP requirement and follow-up status reports are due annually thereafter. A file shall be maintained containing all MMP documentation, including the dental forms required by 6NYCRR Part 374.4, which shall be available for review by NYSDEC representatives. Copies shall be provided upon request.

3. **MMP Modification** - The MMP shall be modified whenever: (a) changes at the facility or within the collection system increase the potential for mercury discharges; (b) actual discharges exceed 50 ng/L; (c) a letter from the Department identifies inadequacies in the MMP; or, (d) pursuant to a permit modification.

STORM WATER POLLUTION PREVENTION PLAN FOR POTWs WITH STORMWATER OUTFALLS

1. General - The Department has determined that stormwater discharges from POTWs with design flows at or above 1 mgd shall be covered under the SPDES permit. If the permittee has already submitted a Notice of Intent to the Department for coverage under the General Storm Water permit, the permittee shall submit a Notice of Termination to the Department upon receipt of this final SPDES permit containing the requirement to develop a SWPPP.

The permittee is required to develop, maintain, and implement a Storm Water Pollutant Prevention Plan (SWPPP) to prevent releases of significant amounts of pollutants to the waters of the State through plant site runoff; spillage and leaks; sludge or waste disposal; and other stormwater discharges including, but not limited to, drainage from raw material storage.

The SWPPP shall be documented in narrative form and shall include the 13 minimum elements below and plot plans, drawings, or maps necessary to clearly delineate the direction of stormwater flow and identify the conveyance, such as ditch, swale, storm sewer or sheet flow, and receiving water body. Other documents already prepared for the facility such as a Safety Manual or a Spill Prevention, Control and Countermeasure (SPCC) plan may be used as part of the SWPPP and may be incorporated by reference. A copy of the current SWPPP shall be submitted to the Department as required in item (2.) below and a copy must be maintained at the facility and shall be available to authorized Department representatives upon request.

2. Compliance Deadlines - The initial completed SWPPP shall be submitted by EDP + 6 months to the Regional Water Engineer. The SWPPP shall be implemented within 6 months of submission, unless a different time frame is approved by the Department. The SWPPP shall be reviewed annually and shall be modified whenever: (a) changes at the facility materially increase the potential for releases of pollutants; (b) actual releases indicate the SWPPP is inadequate, or (c) a letter from the Department identifies inadequacies in the SWPPP. The permittee shall certify in writing, as an attachment to the December Discharge Monitoring Report (DMR), that the annual review has been completed. All SWPPP revisions (with the exception of minimum elements - see item (4.B.) below) must be submitted to the Regional Water Engineer within 30 days. Note that the permittee is not required to obtain Department approval of the SWPPP (or of any minimum elements) unless notified otherwise. Subsequent modifications to or renewal of this permit does not reset or revise these deadlines unless a new deadline is set explicitly by such permit modification or renewal.

3. Facility Review - The permittee shall review all facility components or systems (including but not limited to material storage areas; in-plant transfer, process, and material handling areas; loading and unloading operations; storm water, erosion, and sediment control measures; process emergency control systems; and sludge and waste disposal areas) where materials or pollutants are used, manufactured, stored or handled to evaluate the potential for the release of pollutants to the waters of the State. In performing such an evaluation, the permittee shall consider such factors as the probability of equipment failure or improper operation, cross-contamination of storm water by process materials, settlement of facility air emissions, the effects of natural phenomena such as freezing temperatures and precipitation, fires, and the facility's history of spills and leaks. The relative toxicity of the pollutant shall be considered in determining the significance of potential releases.

The review shall address all substances present at the facility that are identified in Tables 6-10 of SPDES application Form NY-2C (available at *http://www.dec.state.ny.us/website/dcs/permits/olpermits/form2c.pdf*) as well as those that are required to be monitored by the SPDES permit.

4. A. 13 Minimum elements - Whenever the potential for a release of pollutants to State waters is determined to be present, the permittee shall identify Best Management Practices (BMPs) that have been established to prevent or minimize such potential releases. Where BMPs are inadequate or absent, appropriate BMPs shall be established. In selecting appropriate BMPs, the permittee shall consider good industry practices and, where appropriate, structural measures such as secondary containment and erosion/sediment control devices and practices. USEPA guidance for development of minimum elements of the SWPPP and BMPs is available in the September 1992 manual *Storm Water Management for Industrial Activities,* EPA 832-R-92-006 (available on-line at http://nepis.epa.gov/pubtitleOW.htm). At a minimum, the plan shall include the following elements:

1. Pollution Prevention Team
2. Reporting of BMP Incidents
3. Risk Identification & Assessment
4. Employee Training
5. Inspections and Records
6. Security
7. Preventive Maintenance
8. Good Housekeeping
9. Materials/Waste Handling, Storage, & Compatibility
10. Spill Prevention & Response
11. Erosion & Sediment Control
12. Management of Runoff
13. Street Sweeping

STORM WATER POLLUTION PREVENTION PLAN FOR POTWs WITH STORMWATER OUTFALLS (continued)

Note that for some facilities, especially those with few employees, some of the above may not be applicable. It is acceptable in these cases to indicate "Not Applicable" for the portion(s) of the SWPPP that do not apply to your facility, along with an explanation, for instance if street sweeping did not apply because no streets exist at the facility.

B. Stormwater Pollution Prevention Plans (SWPPPs) Required for Discharges of Stormwater From Construction Activity to Surface Waters - As part of the erosion of and sediment control element, a SWPPP shall be developed prior to the initiation of any site disturbance of one acre or more of uncontaminated area. Uncontaminated area means soils or groundwater which are free of contamination by any toxic or non-conventional pollutants identified in Tables 6-10 of SPDES application Form NY-2C. Disturbance of any size contaminated area(s) and the resulting discharge of contaminated stormwater is not authorized by this permit unless the discharge is under State or Federal oversight as part of a remedial program or after review by the Regional Water Engineer; nor is such discharge authorized by any SPDES general permit for stormwater discharges. SWPPPs are not required for discharges of stormwater from construction activity to groundwaters.

The SWPPP shall conform to the *New York Standards and Specifications for Erosion and Sediment Control* and *New York State Stormwater Management Design Manual,* unless a variance has been obtained from the Regional Water Engineer, and to any local requirements. The permittee shall submit a copy of the SWPPP and any amendments thereto to the local governing body and any other authorized agency having jurisdiction or regulatory control over the construction activity at least 30 days prior to soil disturbance. The SWPPP shall also be submitted to the Regional Water Engineer if contamination, as defined above, is involved and the permittee must obtain a determination of any SPDES permit modifications and/or additional treatment which may be required prior to soil disturbance. Otherwise, the SWPPP shall be submitted to the Department only upon request. When a SWPPP is required, a properly completed *Notice of Intent* (NOI) form shall be submitted (available at *www.dec.state.ny.us/website/dow/toolbox/swforms.html*) prior to soil disturbance. Note that submission of a NOI is required for informational purposes; the permittee is not eligible for and will not obtain coverage under any SPDES general permit for stormwater discharges, nor are any additional permit fees incurred. SWPPPs must be developed and submitted for subsequent site disturbances in accordance with the above requirements. The permittee is responsible for ensuring that the provisions of each SWPPP is properly implemented.

DISCHARGE NOTIFICATION REQUIREMENTS

(a) Except as provided in (c) and (g) of these Discharge Notification Act requirements, the permittee shall install and maintain identification signs at all outfalls to surface waters listed in this permit. Such signs shall be installed before initiation of any discharge.

(b) Subsequent modifications to or renewal of this permit does not reset or revise the deadline set forth in (a) above, unless a new deadline is set explicitly by such permit modification or renewal.

(c) The Discharge Notification Requirements described herein do not apply to outfalls from which the discharge is composed exclusively of storm water, or discharges to ground water.

(d) The sign(s) shall be conspicuous, legible and in as close proximity to the point of discharge as is reasonably possible while ensuring the maximum visibility from the surface water and shore. The signs shall be installed in such a manner to pose minimal hazard to navigation, bathing or other water related activities. If the public has access to the water from the land in the vicinity of the outfall, an identical sign shall be posted to be visible from the direction approaching the surface water.

The signs shall have **minimum** dimensions of eighteen inches by twenty four inches (18" x 24") and shall have white letters on a green background and contain the following information:

N.Y.S. PERMITTED DISCHARGE POINT

SPDES PERMIT No.: NY_____

OUTFALL No. :____

For information about this permitted discharge contact:

Permittee Name: _____

Permittee Contact: _____

Permittee Phone: ( ) - ### - ####

OR:

NYSDEC Division of Water Regional Office Address :

NYSDEC Division of Water Regional Phone: ( ) - ### -####

(e) For each discharge required to have a sign in accordance with a), the permittee shall, concurrent with the installation of the sign, provide a repository of copies of the Discharge Monitoring Reports (DMRs), as required by the **RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS** page of this permit. This repository shall be open to the public, at a minimum, during normal daytime business hours. The repository may be at the business office repository of the permittee or at an off-premises location of its choice (such location shall be the village, town, city or county clerk's office, the local library or other location as approved by the Department). In accordance with the **RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS** page of your permit, each DMR shall be maintained on record for a period of five years.

(f) The permittee shall periodically inspect the outfall identification sign(s) in order to ensure they are maintained, are still visible, and contain information that is current and factually correct. Signs that are damaged or incorrect shall be replaced within 3 months of inspection.

DISCHARGE NOTIFICATION REQUIREMENTS (continued)

(g) All requirements of the Discharge Notification Act, including public repository requirements, are waived for any outfall meeting any of the following circumstances, provided Department notification is made in accordance with (h) below:

(i) such sign would be inconsistent with any other state or federal statute;

(ii) the Discharge Notification Requirements contained herein would require that such sign could only be located in an area that is damaged by ice or flooding due to a one-year storm or storms of less severity;

(iii) instances in which the outfall to the receiving water is located on private or government property which is restricted to the public through fencing, patrolling, or other control mechanisms. Property which is posted only, without additional control mechanisms, does not qualify for this provision;

(iv) instances where the outfall pipe or channel discharges to another outfall pipe or channel, before discharge to a receiving water; or

(v) instances in which the discharge from the outfall is located in the receiving water, two-hundred or more feet from the shoreline of the receiving water.

(h) If the permittee believes that any outfall which discharges wastewater from the permitted facility meets any of the waiver criteria listed in (g) above, notification (form enclosed) must be made to the Department's Bureau of Water Permits, Central Office, of such fact, and, provided there is no objection by the Department, a sign and DMR repository for the involved outfall(s) are not required. This notification must include the facility's name, address, telephone number, contact, permit number, outfall number(s), and reason why such outfall(s) is waived from the requirements of discharge notification. The Department may evaluate the applicability of a waiver at any time, and take appropriate measures to assure that the ECL and associated regulations are complied with.

SCHEDULE OF COMPLIANCE

a) The permittee shall comply with the following schedule:

Outfall(s)	Parameter(s) Affected	Interim Effluent Limit(s)	Compliance Action	Due Date
001	Chlorine, Total Residual	0.35 mg/l	Interim Permit Limit	Effective 07/01/2014 to 11/1/2018
001	Chlorine, Total Residual	-	Permittee must provide plans to the Department for achieving final permit limit	04/01/2015
001	Chlorine, Total Residual	-	Permittee must provide status report to the Department documenting progress toward achieving final permit limit.	01/01/2016 (see note (b) below)
001	Chlorine, Total Residual	0.045 mg/l (final)	Final Permit Limit	Effective 11/1/2018

The above compliance actions are one time requirements. The permittee shall comply with the above compliance actions to the Department's satisfaction once. When this permit is administratively renewed by NYSDEC letter entitled "SPDES NOTICE/RENEWAL APPLICATION/PERMIT," the permittee is not required to repeat the submission(s) noted above. The above due dates are independent from the effective date of the permit stated in the "SPDES NOTICE/RENEWAL APPLICATION/PERMIT" letter.

b) For any action where the compliance date is greater than 9 months past the previous compliance due date, the permittee shall submit interim progress reports to the Department every nine (9) months until the due date for these compliance items are met.

c) The permittee shall submit a written notice of compliance or non-compliance with each of the above schedule dates no later than 14 days following each elapsed date, unless conditions require more immediate notice as prescribed in 6 NYCRR Part 750-1.2(a) and 750-2. All such compliance or non-compliance notification shall be sent to the locations listed under the section of this permit entitled RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS. Each notice of non-compliance shall include the following information:

1. A short description of the non-compliance;
2. A description of any actions taken or proposed by the permittee to comply with the elapsed schedule requirements without further delay and to limit environmental impact associated with the non-compliance;
3. A description or any factors which tend to explain or mitigate the non-compliance; and
4. An estimate of the date the permittee will comply with the elapsed schedule requirement and an assessment of the probability that the permittee will meet the next scheduled requirement on time.

d) The permittee shall submit copies of any document required by the above schedule of compliance to the NYSDEC Regional Water Engineer at the location listed under the section of this permit entitled RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS and to the Bureau of Water Permits, 625 Broadway, Albany, N.Y. 12233-3505, unless otherwise specified in this permit or in writing by the Department.

SPECIAL CONDITIONS: Schedule of Submittals

The permittee shall submit the following information to the Regional Water Engineer at the address listed on the Recording, Reporting and Monitoring page of this Permit, and to the Bureau of Water Permits, 625 Broadway, Albany NY 12233-3505:

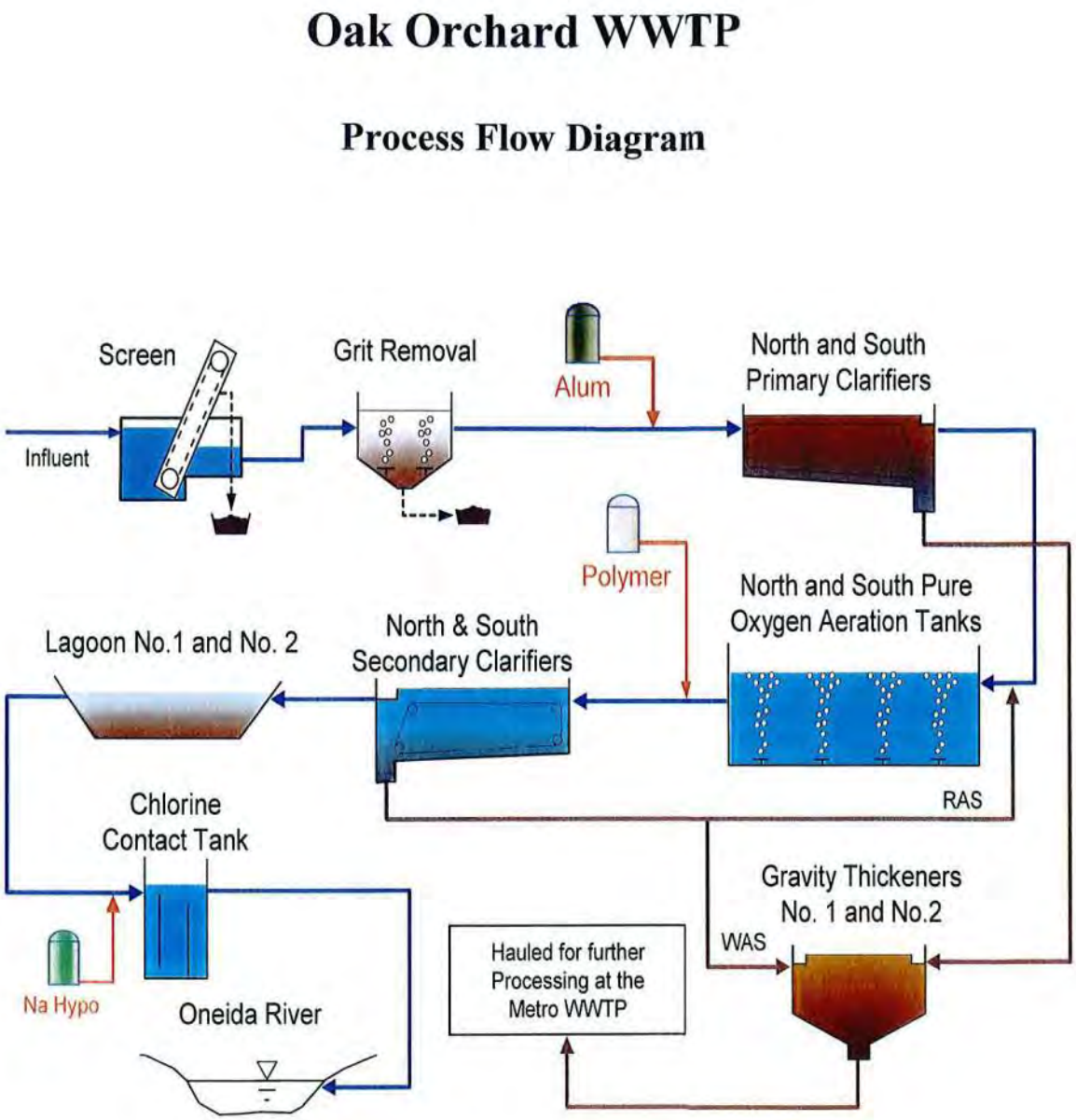
Outfall	Required Action	Due Date
001	Mercury Minimization Program: Submit annual status report by April 1st of each calendar year (for the previous year) with follow-up reports due annually thereafter.	Annually, by April 1st
	Whole Effluent Toxicity Testing: WET testing shall be performed at the specified sample frequency during calendar years ending in 1 and 6 beginning in January and lasting for a period of one full year.	Years ending in 1 and 6

Notes:

1. The permittee shall make every effort to comply with the above dates. Requests for extension, with justification, may be made to the Regional Water Engineer at the address listed above. Failure to submit either the information requested or a request for an extension by the dates listed above shall constitute noncompliance with this Permit.

MONITORING LOCATIONS

The permittee shall take samples and measurements, to comply with the monitoring requirements specified in this permit, at the location(s) specified below:



GENERAL REQUIREMENTS

A. The regulations in 6 NYCRR Part 750 are hereby incorporated by reference and the conditions are enforceable requirements under this permit. The permittee shall comply with all requirements set forth in this permit and with all the applicable requirements of 6 NYCRR Part 750 incorporated into this permit by reference, including but not limited to the regulations in paragraphs B through H as follows:.

B. General Conditions

1.	Duty to comply	6 NYCRR Part 750-2.1(e) & 2.4
2.	Duty to reapply	6 NYCRR Part 750-1.16(a)
3.	Need to halt or reduce activity not a defense	6 NYCRR Part 750-2.1(g)
4.	Duty to mitigate	6 NYCRR Part 750-2.7(f)
5.	Permit actions	6 NYCRR Part 750-1.1(c), 1.18, 1.20 & 2.1(h)
6.	Property rights	6 NYCRR Part 750-2.2(b)
7.	Duty to provide information	6 NYCRR Part 750-2.1(i)
8.	Inspection and entry	6 NYCRR Part 750-2.1(a) & 2.3

C. Operation and Maintenance

1.	Proper Operation & Maintenance	6 NYCRR Part 750-2.8
2.	Bypass	6 NYCRR Part 750-1.2(a)(17), 2.8(b) & 2.7
3.	Upset	6 NYCRR Part 750-1.2(a)(94) & 2.8(c)

D. Monitoring and Records

1.	Monitoring and records	6 NYCRR Part 750-2.5(a)(2), 2.5(c)(1), 2.5(c)(2), 2.5(d) & 2.5(a)(6)
2.	Signatory requirements	6 NYCRR Part 750-1.8 & 2.5(b)

E. Reporting Requirements

1.	Reporting requirements	6 NYCRR Part 750-2.5, 2.6, 2.7 & 1.17
2.	Anticipated noncompliance	6 NYCRR Part 750-2.7(a)
3.	Transfers	6 NYCRR Part 750-1.17
4.	Monitoring reports	6 NYCRR Part 750-2.5(e)
5.	Compliance schedules	6 NYCRR Part 750-1.14(d)
6.	24-hour reporting	6 NYCRR Part 750-2.7(c) & (d)
7.	Other noncompliance	6 NYCRR Part 750-2.7(e)
8.	Other information	6 NYCRR Part 750-2.1(f)
9.	Additional conditions applicable to a POTW	6 NYCRR Part 750-2.9
10.	Special reporting requirements for discharges that are not POTWs	6 NYCRR Part 750-2.6

F. Planned Changes

1. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

   a. The alteration or addition to the permitted facility may meet of the criteria for determining whether facility is a new source in 40 CFR §122.29(b); or
   b. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, or to notification requirements under 40 CFR §122.42(a)(1); or
   c. The alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

   In addition to the Department, the permittee shall submit a copy of this notice to the United States Environmental Protection Agency at the following address: U.S. EPA Region 2, Clean Water Regulatory Branch, 290 Broadway, 24th Floor, New York, NY 10007-1866.

GENERAL REQUIREMENTS continued

G. Notification Requirement for POTWs

1. All POTWs shall provide adequate notice to the Department and the USEPA of the following:
   a. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of CWA if it were directly discharging those pollutants; or
   b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
   c. For the purposes of this paragraph, adequate notice shall include information on:
      i. the quality and quantity of effluent introduced into the POTW, and
      ii. any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

POTWs shall submit a copy of this notice to the United States Environmental Protection Agency, at the following address:
U.S. EPA Region 2, Clean Water Regulatory Branch, 290 Broadway, 24th Floor, New York, NY 10007-1866.

H. Sludge Management

The permittee shall comply with all applicable requirements of 6 NYCRR Part 360.

I. SPDES Permit Program Fee

The permittee shall pay to the Department an annual SPDES permit program fee within 30 days of the date of the first invoice, unless otherwise directed by the Department, and shall comply with all applicable requirements of ECL 72-0602 and 6 NYCRR Parts 480, 481 and 485. Note that if there is inconsistency between the fees specified in ECL 72-0602 and 6 NYCRR Part 485, the ECL 72-0602 fees govern.

J. Water Treatment Chemicals (WTCs)

New or increased use and discharge of a WTC requires prior Department review and authorization. At a minimum, the permittee must notify the Department in writing of its intent to change WTC use by submitting a completed *WTC Notification Form* for each proposed WTC. The Department will review that submittal and determine if a SPDES permit modification is necessary or whether WTC review and authorization may proceed outside of the formal permit administrative process. The majority of WTC authorizations do not require SPDES permit modification. In any event, use and discharge of a WTC shall not proceed without prior authorization from the Department. Examples of WTCs include biocides, coagulants, conditioners, corrosion inhibitors, defoamers, deposit control agents, flocculants, scale inhibitors, sequestrants, and settling aids.

1. WTC use shall not exceed the rate explicitly authorized by this permit or otherwise authorized in writing by the Department.
2. The permittee shall **maintain a logbook** of all WTC use, noting for each WTC the date, time, exact location, and amount of each dosage, and, the name of the individual applying or measuring the chemical. The logbook must also document that adequate process controls are in place to ensure that excessive levels of WTCs are not used.
3. The permittee shall **submit a completed *WTC Annual Report Form*** each year that they use and discharge WTCs. This form shall be attached to either the December DMR or the annual monitoring report required below.

The *WTC Notification Form* and *WTC Annual Report Form* are available from the Department's website at http://www.dec.ny.gov/permits/93245.html .

RECORDING, REPORTING AND ADDITIONAL MONITORING REQUIREMENTS

A. The monitoring information required by this permit shall be summarized, signed and retained for a period of at least five years from the date of the sampling for subsequent inspection by the Department or its designated agent. **Also, monitoring information required by this permit shall be summarized and reported by submitting;**

[X] (if box is checked) completed and signed Discharge Monitoring Report (DMR) forms for each __1__ month reporting period to the locations specified below. Blank forms are available at the Department's Albany office listed below. The first reporting period begins on the effective date of this permit and the reports will be due no later than the 28th day of the month following the end of each reporting period.

[ ] (if box is checked) an annual report to the Regional Water Engineer at the address specified below. The annual report is due by February 1 each year and must summarize information for January to December of the previous year in a format acceptable to the Department.

[ ] (if box is checked) a monthly "Wastewater Facility Operation Report..." (form 92-15-7) to the:
[ ] Regional Water Engineer and/or [ ] County Health Department or Environmental Control Agency specified below

Send the **original** (top sheet) of each DMR page to:
Department of Environmental Conservation
Division of Water, Bureau of Water Compliance
625 Broadway, Albany, New York 12233-3506
Phone: (518) 402-8177

Send an **additional copy** of each DMR page to:
Onondaga Co. Dept. of Health
PO Box 1325
421 Montgomery Street
Syracuse, NY 13202

Send the **first copy** (second sheet) of each DMR page to:
Department of Environmental Conservation
Regional Water Engineer, Region 7
615 Erie Blvd West
Syracuse, New York 13204-2400
(315) 426-7500

B. Monitoring and analysis shall be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

C. More frequent monitoring of the discharge(s), monitoring point(s), or waters of the State than required by the permit, where analysis is performed by a certified laboratory or where such analysis is not required to be performed by a certified laboratory, shall be included in the calculations and recording of the data on the corresponding DMRs.

D. Calculations which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in this permit.

E. Unless otherwise specified, all information recorded on the DMRs shall be based upon measurements and sampling carried out during the most recently completed reporting period.

F. Any laboratory test or sample analysis required by this permit for which the State Commissioner of Health issues certificates of approval pursuant to section 502 of the Public Health Law shall be conducted by a laboratory which has been issued a certificate of approval. Inquiries regarding laboratory certification should be directed to the New York State Department of Health, Environmental Laboratory Accreditation Program.

Appendix F: Projected WQBELs

Projected Water Quality Based Effluent Limits for Discharge to the Oneida River

Assumptions that may change results: cormix instream mixing; effluent flow rates; instream background concentrations; instream hardness, pH, temp; distribution between OOWWTP & IWWTP (current values show equal distribution)

For carbonaceous and nitrogenous oxygen demanding pollutants, the Department uses a model which incorporates the Streeter-Phelps equation. The equation relates the decomposition of inorganic and organic materials along with oxygen reaeration rates to compute the downstream dissolved oxygen concentration for comparison to water quality standards. Boomi is calculating predicted WQBELs for these

Values below are based on the following dilution ratios, and assuming equal distribution between both treatment facilities
Fab 1 Chronic = 6.6x; Acute = 2.5x
Fab 2 Chronic = 4.8x; Acute = 2.0x

Not all parameters listed below will be limited in the SPDES Permit; only parameters that exhibit a reasonable potential to exceed instream standards (based on a projected discharge concentration) will be given a WQBEL.

	Fab1 + WEP 13	Fab2 + WEP 15	
Parameter	WQBEL ug/L unless noted	WQBEL ug/L unless noted	WQBEL Notes
pH	6.5 - 8.5	6.5 - 8.5	
Dissolved Oxygen	Boomi modeling - TBD		DO is typically limited through 'UOD' &/or 'CBOD & ammonia'. UOD would be modeled @ 7Q10 using streeter phelps.
Phosphorous	*1000*	*1000*	*OOWWTP informed limit will be 1 mg/L monthly average. However, NY DEC Draft WQS being pursued is 75ug/L resulting in WQBEL of 0.495 mg/L, unsure if this will be finalized by permit issuance.*
Total Ammonia (ug/L NH3)	Boomi modeling - TBD		DO is typically limited through 'UOD' &/or 'CBOD & ammonia'. UOD would be modeled @ 7Q10 using streeter phelps.
Sulfite	1,320	960	
Nitrite (Expressed as N)	660	480	
Solids, Total Dissolved (TDS) mg/L	1,716	1,248	mg/L
1,4-Dioxane	118,800	86,400	
Perfluorooctane Sulfonic Acid (PFOS)	1,056	768	
Fluoride	20,205	14,695	
Hydrogen sulfide	13.2	9.6	
Arsenic, total	850	680	
Beryllium, acid-soluble form	7,260	5,280	
Cadmium, total	14.3	11.5	
Chromium, total (not including hex)	682	496	
Chromium (hexavalent), total	39.3	31.4	
Copper, total	47.3	37.8	
Lead, dissolved	33.11	24.08	
Mercury, total	1.40	1.40	ng/L as 12 month rolling average - based on variance calculation from DEC
Nickel, total	482	351	
Silver, ionic	0.561	0.408	
Thallium, acid soluble form	52.80	38.40	
Zinc,total	404	323	
Cobalt, acid soluble form	33.0	24.0	
Boron, acid soluble form	66,000	48,000	
Iron, Total	1,980	1,440	
Vanadium, acid soluble	92.4	67.2	
Selenium, dissolved	30.4	22.1	
Cyanide, Total	34.32	24.96	
Benzene	105	74	
Clorobenzene	33.00	24.00	
Dichlorobenzene	33.00	24.00	
Methylene Chloride	2,100	1,480	
Toluene	660	480	
Benzidine	0.66	0.48	
Bis (2-ethylhexyl) Phthalate	3.96	2.88	
2,4-Dimethylphenol	10,500	7,400	
2,4-Dinitrophenol	4,200	2,960	
Hexachlorobenzene	3.15E-04	2.22E-04	
Hexachlorobutadiene	0.105	0.074	
Hexachlororcyclopentadiene	2.970	2.160	
Hexachloroethane	6.300	4.440	
Pentachlorophenol	109	87.1	
applies to the sum of "Phenols, total unchlorinated"	52.5	37.0	
applies to the sum of "Phenols, total chlorinated".	10.5	7.4	
Aldrin & Dieldrin	0.0105	0.0074	
Dieldrin	6.30E-06	4.44E-06	
Chlordane	0.0002	0.0001	
4,4'-DDD	0.0008	0.0006	
4,4'-DDE	7.35E-06	5.18E-06	
4,4'-DDT	0.000105	0.000074	
Endosulfan	0.0594	0.0432	
Endrin	0.0210	0.0148	
Heptachlor	0.0021	0.0015	
Heptachlor Epoxide	0.0032	0.0022	
Polychlorinated biphenyls	1.05E-05	7.40E-06	
Azinphosmethyl	0.0330	0.0240	
Carbofuran	6.6	4.8	
dibenzofurans	3.26E-08	2.29E-08	
Chlorine (total residual)	33.0	24.0	
Chlorobenzene	33.0	24.0	
Demeton (sum of)	0.6600	0.4800	
Diazinon	0.5280	0.3840	
alpha-hexachlorocyclohexane	0.0210	0.0148	
beta-hexachlorocyclohexane	0.0735	0.0518	
delta-hexachlorocyclohexane	0.0840	0.0592	
epsilon-hexachlorocyclohexane	0.0840	0.0592	
gamma-hexachlorocyclohexane	0.0840	0.0592	
hydrazine	66.0000	48.0000	
hydroquinone	14.5200	10.5600	
Isodecyl diphenyl phosphate	11.2	8.2	
Isothiazolones, total	6.6	4.8	
Linear alkyl benzene sulfonates	264	192	
Malathion	0.6600	0.4800	
Methoxychlor	0.1980	0.1440	
Methylene bisthiocyanate	6.6	4.8	
Mirex	1.05E-05	7.40E-06	
Nitrolotri acetic acid	33,000	24,000	
Octachlorostyrene	0.000063	0.000044	
Parathion	0.1625	0.1300	
Parathion and Methyl Parathion	0.0528	0.0384	
Quaternary Ammonium Compounds	66.0	48.0	
Toxaphene	6.30E-05	4.44E-05	
Trichlorobenzenes	33.0	24.0	
Trichloroethene	420	296	

Triphenyl Phosphate	26.4	19.2	
Anthracene	25.1	18.2	
Benz(a)anthracene	0.1980	0.1440	
Benzo(a)pyrene	0.0126	0.0089	
Chlorinated dibenzo-p-dioxins and Chlorinated dibenzofurans	6.30E-09	4.44E-09	
2,2-Dibromo-3-nitrilopropionamide and Dibromoacetonitrile	132.0000	96.0000	
Dichlorobenzenes	33.0000	24.0000	
Ethylbenzene	112.2000	81.6000	
Ethylene glycol	3,300,000	2,400,000	
Fluorene	3.6	2.6	
Isopropylbenzene	17.2	12.5	
Isothiazolones, total (isothiazolinones) (includes 5-chloro-2-methyl-4-isothiazolin 3-one & 2-ethyl-4-isothiazolin-3-one)	6.6	4.8	
2-Methylnaphthalene	10.5	8.4	
Naphthalene	85.8	62.4	
Phenanthrene	33	24	
Polychlorinated biphenyls	0.000011	0.000007	
Pyrene	30.36	22.08	
Tetrachloroethene	10.50	7.40	
1,2,4-Trimethylbenzene	218	158	
1,2-Xylene1,3-Xylene 1,4-Xylene	429	312	
Temperature	+/- five Fahrenheit degrees or 86F		

Appendix G: Alternative Comparison Matrix

Onondaga County Micron IWTP Alternatives 1, 2, and 3 Screening

Case	Process	Flow Regime	Equalization and Diversion (EQ/DIV)	Chemical Treatment (Chem)	Clarification (Clar)	Biological Nutrient Removal (BNR)	Membrane Bioreactor (MBR)	Reverse Osmosis (RO)	Advantages	Disadvantages	Screening Comments
1	**EQ/Div/Chem/Clar/BNR/MBR**	Main train forward flow (Q_f)at winter and summer peak flow of 8.5MGD and 6.8 MGD, respectively, plus up to 30 percent of Q_f for recycle treatment as needed or permitted by sodium and chloride TDS cycling.	Equalization and diversion provides up to 8 hours total storage. 4 hours for constant volume equalization and 4 hours for diversion at 1.5 MG each for 8.5 MGD	Lime for pH adjustment to 9 plus for metals precipitation. Ferric Sulfate for limited coprecipitation/precipitation of ions as needed. PH adjustment for BNR.	Gravity chemical high solids clarification for physical removal of TSS.	Peroxide removal with Methanol. Bardenpho (Anoxic/Aerobic/Anoxic/Aerobic) biological activated sludge organics and full nutrient removal. Supplemental MgOH alkalinity and methanol (MeOH) addition for nitrogen removal. Micronutrient and phosphorus addition.	Internal immersed dead end hollow fiber membrane ultrafiltration for solids removal and residence time control coupled with the BNR reactor tanks.	NA	1) Provides low level chemical, biological nutrient and organics treatment that could accommodate brine recycle treatment. 2) Would accommodate other industrial organic and chemical dischargers. 3) Meets current estimated non-TDS discharge requirements.	1) Primary Chemical treatment results in additional Sodium and Chloride TDS. 2) Largest footprint given recycle flows. 3)Discharge would require additional treatment for Micron's Cooling Tower reclaim makup water. 4) Won't meet TDS discharge requirements long term. 5) Requires supplemental COD or electron donor.	Ruled out because of space constraints, sodium and chloride levels, long term TDS compliance and limited potential for reuse by Micron.
2	**EQ/Div/Chem/Clar/BNR/MBR/RO/recycle**	Main train forward flow (Q_f)at winter and summer peak flow of 8.5MGD and 6.8 MGD, respectively, plus up to 30 percent of Q_f for recycle treatment as needed or permitted by sodium and chloride TDS cycling for discharge blending. 70 percent or more of Qf available for reuse by Micron.	Equalization and diversion provides up to 8 hours total storage. 4 hours for constant volume equalization and 4 hours for diversion at 1.5 MG each for 8.5 MGD	Lime treatment pH adjustment to 9 plus for precipitation of metals. Ferric Sulfate addition for limited coprecipitation/precipitaton of ions as needed. Calcium chloride for sulfate removal. PH adustment for BNR	Gravity chemical high solids clarification for physical removal of TSS.	Peroxide removal with Methanol. Bardenpho (Anoxic/Aerobic/Anoxic/Aerobic)biological activated sludge organics and full nutrient removal. Supplemental MgOH alkalinity and methanol (MeOH) addition for nitrogen removal. Micronutrient and phosphorus addition.	Internal immersed dead end hollow fiber membrane ultrafiltration for solids removal and residence time control coupled with the BNR reactor tanks.	Low (70 percent) recovery reverse osmosis with concentrate recycle for sulfate and metals removal with recycle controlled by sodium and chloride cycling. Permeate reuse.	1) Provides low level chemical, biological nutrient, and organics treatment followed by RO treatment. 2) RO brine treatment removes sulfate and other constituents. 3) Provides reclaim water for Micron. 4) Would accommodate other industrial organic and chemical dischargers. 5) Meets current estimated non-TDS discharge requirements.	1) Primary Chemical treatment of both reject and influent results in higher Sodium and Chloride and TDS levels. 2) provides limited softening and silica removal. 3) Largest footprint given recycle flows. 4) Discharge would require additional treatment for Micron's Cooling Tower reclaim makup water. 5) Won't meet TDS discharge requirements long term. 6) Requires supplemental COD or electron donor.	Ruled out because of space constraints, sodium and chloride levels, long- term TDS compliance,limited softening and silica removal capabilities, and complications of brine blowdown.
3	**EQ/Div/Chem/Clar/BNR/RO/norecycle**	Main train forward flow (Q_f)at winter and summer peak flow of 8.5MGD and 6.8 MGD, respectively with no recycle or RO concentrate treatment. 70 percent or more of Qf available for reuse by Micron.	Equalization and diversion provides up to 8 hours total storage. 4 hours for constant volume equalization and 4 hours for diversion at 1.5 MG each for 8.5 MGD	Lime for pH adjustment to 9 plus for metals precipitation. Ferric Sulfate for limited coprecipitation/precipitation of ions as needed. pH adjustment for BNR.	Gravity chemical high solids clarification for physical removal of TSS.	Peroxide removal with Methanol. Bardenpho (Anoxic/Aerobic/Anoxic/Aerobic)biological activated sludge organics and full nutrient removal. Supplemental MgOH alkalinity and methanol (MeOH) addition for nitrogen removal. Micronutrient and phosphorus addition.	Internal immersed dead end hollow fiber membrane ultrafiltration for solids removal and residence time control coupled with the BNR reactor tanks.	Low (70 percent) recovery reverse osmosis with concentrate discharge and permeate reuse.	1) Provides low level chemical, biological nutrient, and organics treatment for Q_f. 2) Provides RO reclaim water for Micron. 3) Would accommodate other industrial organic and chemical dischargers. 4) Meets current estimated non-TDS discharge requirements.	1) Primary Chemical treatment results in additional Sodium and Chloride TDS. 2) One third smaller because of no recycle but still a large footprint. 3)Discharge would require additional treatment for Micron's Cooling Tower reclaim makup water. 4) Won't meet TDS discharge requirements long term. 5) Requires supplemental COD or electron donor.	Ruled out because of space constraints, sodium and chloride levels, longe term TDS compliance, limited softening and silica removal capabilities.

Onondaga County Micron IWTP Alternatives 4, 5, and 6 Screening

Case	Process	Flow Regime	Equalization and Diversion (EQ/DIV)	Chemical Treatment (Chem)	Biological Nutrient Removal (BNR)	Membrane Bioreactor (MBR)	Weak Acid Cation (WAC) Exchange	Decarbonization (DeCarb) Stripping Tower	Reactive Silica Ion Exchange (SIIX)	Reverse Osmosis (RO)	Brine Solids Clarifier (BrClar)	Pressure Multi-Media Filter (MedFilt)	Mechanical Vapor Recompression Evaporator (Evap)	Forced Circulation Crystallizer (Cryst)	Advantages	Disadvantages	Screening Comments
4	**EQ/Div/Chem/BNR/MBR**	Main train forward flow (Q_f)at winter and summer peak flow of 8.5MGD and 6.8 MGD, respectively.	Equalization and diversion provides up to 8 hours total storage. 4 hours for constant volume equalization and 4 hours for diversion at 1.5 MG each for 8.5 MGD	PH adjustment for BNR. Ferric sulfate for limited coprecipitation/precipitation of ions as needed.	Peroxide removal with Methanol. Bardenpho (Anoxic/Aerobic/Anoxic/Aerobic)biological activated sludge organics and full nutrient removal. Supplemental MgOH alkalinity and methanol (MeOH) addition for nitrogen removal. Micronutrient and phosphorus addition.	Internal immersed dead end hollow fiber membrane ultrafiltration for solids removal and residence time control coupled with the BNR reactor tanks.	NA	NA	NA	NA	NA	NA	NA	NA	1)Provides limited chemical, low level biological nutrient and organics treatment that could accommodate brine recycle treatment. 2) Likely meets TDS discharge requirements until shift in TDS related to FAB 2. 3) Would accommodate other industrial organic and limited chemical dischargers. 4) Meets current estimated non-TDS discharge requirements.	1) Limited chemical treatment results in some sodium and chloride TDS. 2)Limited chemical treatment may not meet metals requirements. 3)Discharge would require additional treatment for Micron's Cooling Tower reclaim makup water. 4) Noncompliant with TDS discharge requirements long-term. 5) Requires supplemental COD or electron donor.	Ruled out because of space constraints, supplemental COD requirements, not needed to meet estimated SPDES nitrogen limits, and without addons will not meet long term SPDES TDS and Micron reclaim water requirements.
5	**EQ/Div/Chem/BNR/MBR/WAC/DeCarb/RO/BrChem/BrClar/MedFilt**	Main train forward flow (Q_f)at winter and summer peak flow of 8.5MGD and 6.8 MGD, respectively. Up to 30 percent of Q_f from RO reject treated separately for discharge blending. 70 percent or more of Qf available for reuse by Micron.	Equalization and diversion provides up to 8 hours total storage. 4 hours for constant volume equalization and 4 hours for diversion at 1.5 MG each for 8.5 MGD	PH adjustment for BNR. Ferric sulfate for limited coprecipitation/precipitation of ions as needed.	Peroxide removal with Methanol. Bardenpho (Anoxic/Aerobic/Anoxic/Aerobic)biological activated sludge organics and full nutrient removal. Supplemental MgOH alkalinity and methanol (MeOH) addition for nitrogen removal. Micronutrient and phosphorus addition.	Internal immersed dead end hollow fiber membrane ultrafiltration for solids removal and residence time control coupled with the BNR reactor tanks.	A weak acid cation exchange will be used to remove magnesium and calcium alkalinity to reduce the scaling tendencies in the RO. This will enable the RO to be operated at higher than the base 70 percent recovery. Weak hydrochloric (HCl) or perhaps sulfuric (H_2SO_4) will be used for regeneration of the WAC.	A decarbonization stripping tower will be provided to remove or strip carbon dioxide to further reduce scaling tendencies and corrosion. The pH will be adjusted with sulfuric acid to approximately 4-5 to enhance the stripper performance.	NA	Low (70 percent) recovery reverse osmosis with concentrate discharge to concentrate or brine chemical treatment and permeate reuse.	Gravity brine chemical solids clarifier for low solids density clarification for physical removal of TSS	A disc media filter will remove total suspended solids from clarifier effluent.	NA	NA	1) Provides limited chemical, low level biological nutrient and organics treatment that could accommodate brine recycle treatment. 2) Would accommodate other industrial organic and chemical dischargers. 3) Provides smaller foot print for chemical treatment with chemical and limtied TDS removal. 4) Provides reclaim water for Micron. 5) Hardness pretreatment for low recovery RO. 6) Meets current estimated non-TDS discharge requirements.	1) Limited chemical treatment results in some sodium and chloride TDS. 2)Limited chemical treatment may not meet metals requirements. 3) Discharge would require additional treatment for Micron's Cooling Tower reclaim makup water. 4) Won't meet TDS discharge requirements long-term. 5) No silica RO pretreatment. 6) Requires supplemental COD or electron donor.	Ruled out because of space constraints, supplemental COD requirements, not needed to meet estimated SPDES nitrogen limits, requires more chemicals resulting in more chemical residuals, will not meet FAB 2 and beyond TDS limits and has a higher level of operational complexity.
6	**EQ/Div/Chem/BNR/MBR/WAC/DeCarb/SilX/RO/BrChem/BrClar/MedFilt/Evap/Cryst**	Main train forward flow (Q_f)at winter and summer peak flow of 8.5MGD and 6.8 MGD, respectively. Up to 30 percent of Q_f from RO reject treated separately with all liquid discharge available for reuse. 90 percent or more of Qf available for reuse by Micron.	Equalization and diversion provides up to 8 hours total storage. 4 hours for constant volume equalization and 4 hours for diversion at 1.5 MG each for 8.5 MGD	PH adjustment for BNR. Ferric sulfate for limited coprecipitation/precipitation of ions as needed.	Peroxide removal with Methanol. Bardenpho (Anoxic/Aerobic/Anoxic/Aerobic)biological activated sludge organics and full nutrient removal. Supplemental MgOH alkalinity and methanol (MeOH) addition for nitrogen removal. Micronutrient and phosphorus addition.	Internal immersed dead end hollow fiber membrane ultrafiltration for solids removal and residence time control coupled with the BNR reactor tanks.	A weak acid cation exchange will be used to remove magnesium and calcium alkalinity to reduce the scaling tendencies in the RO. This will enable the RO to be operated at higher than the base 70 percent recovery. Weak hydrochloric (HCl) or perhaps sulfuric (H_2SO_4) will be used for regeneration of the WAC.	A decarbonization stripping tower will be provided to remove or strip carbon dioxide to further reduce scaling tendencies and corrosion. The pH will be adjusted with sulfuric acid to approximately 4-5 to enhance the stripper performance.	A silica strong base ion exchange system will be provided to remove reactive silica to enable the RO to be operated at higher than 70% recovery. Caustic Soda (NaOH) will be used for Si IX regeneration.	High (up to 90 percent)4 stage recovery reverse osmosis with concentrate discharge to concentrate or brine chemical treatment and permeate reuse. RO capacity targeted for maximum reuse and/or zero liquid discharge.	Gravity brine chemical solids clarifier for low solids density clarification for physical removal of TSS	A disc media filter will remove total suspended solids from clarifier effluent.	A mechnical vapor recompression thermal evaporator will further concentrate the brine from the media filter up to 23 percent total dissolved solids.	A forced circulation crystallizer will concentrate the evaporator total dissolved solids to 50 to 65 percent. Brine or TDS will be dewatered to 80 to 90 percent with a centrifuge.	1) Provides limited chemical, low level biological nutrient and organics treatment that could accommodate brine recycle treatment. 2) Meets all current estimated discharge requirements for FAB 1 through FAB 2. 3) Would accommodate other industrial organic and chemical dischargers. 4) Provides the smaller footprint for chemical treatment with chemical TDS removal for both brine treatment and other industry wastewater. 5) Provides the greatest amount of reclaim water for Micron operating as ZLD to near ZLD. 6) Provides hardness and silica pretreatment for high recovery RO.	1) Limited chemical treatment results in some sodium and chloride TDS. 2)Limited chemical treatment may not meet metals requirements. 3)Discharge would require additional treatment for Micron's Cooling Tower reclaim makup water. 4) Not optimized for reclaim water needs and indescriminantly provides ZLD to near ZLD capabilities when those may not be needed. 5) Requires supplemental COD or electron donor.	Ruled out because of space constraints, supplemental COD requirements, not needed to meet estimated SPDES nitrogen limits, requires more chemicals resulting in more chemical residuals and has the highest level of operational complexity.

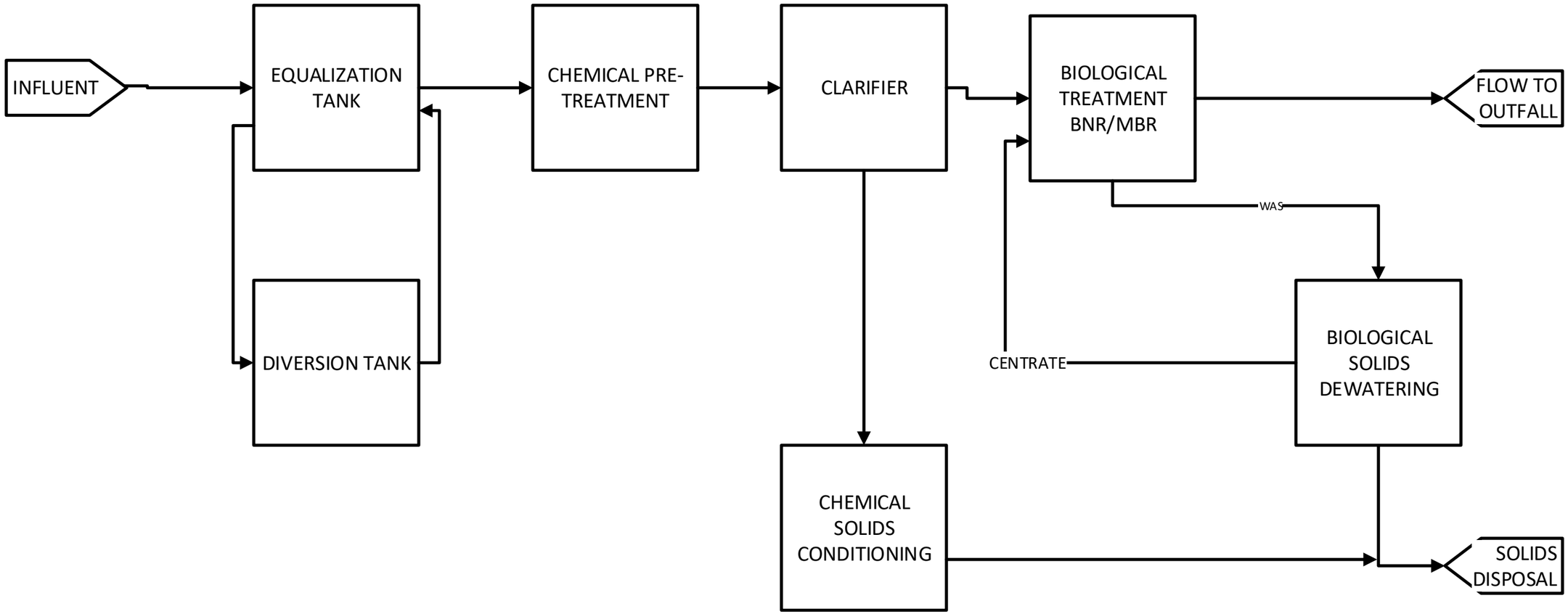
Onondaga County Micron IWTP Alternatives 7, 8, and 9 Screening

Case	Process	Flow Regime	Equalization and Diversion (EQ/DIV)	Chemical Treatment (Chem)	Biological Nutrient Removal (BNR) or Modified Ludzack Ettinger (MLE)	Membrane Bioreactor (MBR)	Ultraviolet Disinfection (UV)	Weak Acid Cation (WAC) Exchange	Strong Acid Cation (SAC) Exchange	Decarbonization (DeCarb) Stripping Tower	Reactive Silica Ion Exchange (SIIX)	Reverse Osmosis (RO)	Brine Solids Clarifier (BrClar)	Pressure Multi-Media Filter (MedFilt)	Mechanical Vapor Recompression Evaporator (Evap)	Forced Circulation Crystallizer (Cryst)	Advantages	Disadvantages	Screening Comments
7	**EQ/Div/Chem/MLE/MBR**	Main train forward flow (Q_3)at winter and summer peak flow of 8.5MGD and 6.8 MGD, respectively.	Equalization and diversion provides up to 8 hours total storage. 4 hours for constant volume equalization and 4 hours for diversion at 1.5 MG each for 8.5 MGD	PH adjustment for BNR. Ferric sulfate for limited coprecipitation/precipitation of ions as needed.	Peroxide removal with Methanol. Modified Ludzack Ettinger (Anoxic/Aerobic)biological activated sludge organics and nutrient removal. Supplemental MgOH alkalinity and methanol (MeOH) addition for up to 85% nitrogen removal. Micronutrient and phosphorus addition.	Internal immersed dead end hollow fiber membrane ultrafiltration for solids removal and residence time control coupled with the BNR reactor tanks.	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1)Provides limited chemical, and simpler biological nutrient and low level organics treatment that could accommodate brine recycle treatment. 2) Likely meets discharge requirements until shift in TDS related to FAB2. 3) Would accommodate other industrial organic and limited chemical dischargers. 4) Meets current estimated non-TDS discharge requirements.	1) Limited chemical treatment results in some sodium and chloride TDS. 2)Limited chemical treatment may not meet metals requirements. 3)Discharge would require additional treatment for Micron's Cooling Tower reclaim makup water. 4) Noncompliant with TDS discharge requirements long-term. 5) Requires supplemental COD or electron donor.	Ruled out because of supplemental COD requirements, not needed to meet estimated SPDES nitrogen limits, and without addons will not meet long term SPDES TDS and Micron reclaim water requirements.
8	**EQ/Div/Chem/MLE/MBR/WAC/DeCarb/SIIX/RO/BrChem/BrClar/MedFilt/Evap/Cryst**	Main train forward flow (Q_3)at winter and summer peak flow of 8.5MGD and 6.8 MGD, respectively. Up to 30 percent of Q_i from RO reject treated separately with all liquid discharge available for reuse. Targeted 70 percent or or less of Qf available for cooling water (4.8 MGD summer and 1.8 MGD winter) reuse by Micron.	Equalization and diversion provides up to 8 hours total storage. 4 hours for constant volume equalization and 4 hours for diversion at 1.5 MG each for 8.5 MGD	PH adjustment for BNR. Ferric sulfate for limited coprecipitation/precipitation of ions as needed.	Peroxide removal with Methanol. Modified Ludzack Ettinger (Anoxic/Aerobic)biological activated sludge organics and nutrient removal. Supplemental MgOH alkalinity and methanol (MeOH) addition for up to 85% nitrogen removal. Micronutrient and phosphorus addition.	Internal immersed dead end hollow fiber membrane ultrafiltration for solids removal and residence time control coupled with the BNR reactor tanks.	NA	A weak acid cation exchange will be used to remove magnesium and calcium alkalinity to reduce the scaling tendencies in the RO. This will enable the RO to be operated at higher than the base 70 percent recovery. Weak hydrochloric (HCl) or perhaps sulfuric (H_2SO_4) will be used for regeneration of the WAC.	NA	A decarbonization stripping tower will be provided to remove or strip carbon dioxide to further reduce scaling tendencies and corrosion. The pH will be adjusted with sulfuric acid to approximately 4-5 to enhance the stripper performance.	A silica strong base ion exchange system will be provided to remove reactive silica to enable the RO to be operated at higher than 70% recovery. Caustic Soda (NaOH) will be used for Si IX regeneration.	High (up to 90 percent) 4 stage recovery reverse osmosis with concentrate discharge to concentrate or brine chemical treatment and permeate reuse. RO capacity targeted for cooling water reclamation of 4.8 MGD and 1.8 MGD respectively, for summer and winter.	Gravity brine chemical solids clarifier for low solids density clarification for physical removal of TSS	A disc media filter will remove total suspended solids from clarifier effluent.	A mechnical vapor recompression thermal evaporator will further concentrate the brine from the media filter up to 23 percent total dissolved solids.	A forced circulation crystallizer will concentrate the evaporator total dissolved solids to 50 to 65 percent. Brine or TDS will be dewatered to 80 to 90 percent with a centrifuge.	1)Provides limited chemical and biological nutrient (up to 85% TIN) and organics treatment that could accommodate brine recycle treatment. 2) Meets all current estimated discharge requirements through FAB 2. 3) Would accommodate other industrial organic and chemical dischargers. 4) Provides the smaller footprint for chemical treatment with chemical TDS removal for both brine treatment and other industry wastewater. 5) Provides the required reclaim water to meet Micron stated cooling water quantity and quality. 6) Provides hardness and silica pretreatment for high recovery RO.	1) Limited chemical treatment results in some sodium and chloride TDS. 2)Limited chemical treatment may not meet metals requirements. 3)Discharge would require additional treatment for Micron's Cooling Tower reclaim makup water. 4) Requires supplemental COD or electron donor.	Ruled out because of space constraints, supplemental COD requirements, not needed to meet estimated SPDES nitrogen limits, requires more chemicals resulting in more chemical residuals and has the highest level of operational complexity.
9	**EQ/Div/Chem/BNR/MBR/WAC/DeCarb/SIIX/RO/BrChem/BrClar/MedFilt/Evap/Cryst**	Main train forward flow (Q_3)at winter and summer peak flow of 8.5MGD and 6.8 MGD, respectively. Up to 30 percent of Q_i from RO reject treated separately with all liquid discharge available for reuse. Targeted 70 percent or or less of Qf available for cooling water (4.8 MGD summer and 1.8 MGD winter) reuse by Micron.	Equalization and diversion provides up to 8 hours total storage. 4 hours for constant volume equalization and 4 hours for diversion at 1.5 MG each for 8.5 MGD	PH adjustment for BNR. Ferric sulfate for limited coprecipitation/precipitation of ions as needed.	Peroxide removal with Methanol. Bardenpho (Anoxic/Aerobic/Anoxic/Aerobic)biological activated sludge organics and full nutrient removal. Supplemental MgOH alkalinity and methanol (MeOH) addition for nitrogen removal. Micronutrient and phosphorus addition.	Internal immersed dead end hollow fiber membrane ultrafiltration for solids removal and residence time control coupled with the BNR reactor tanks.	NA	A weak acid cation exchange will be used to remove magnesium and calcium hardness to reduce the scaling tendencies in the RO. This will enable the RO to be operated at higher than the base 70 percent recovery. Weak hydrochloric (HCl) or perhaps sulfuric (H_2SO_4) will be used for regeneration of the WAC.	NA	A decarbonization stripping tower will be provided to remove or strip carbon dioxide to further reduce scaling tendencies and corrosion. The pH will be adjusted with sulfuric acid to approximately 4-5 to enhance the stripper performance.	A silica strong base ion exchange system will be provided to remove reactive silica to enable the RO to be operated at higher than 70% recovery. Caustic Soda (NaOH) will be used for Si IX regeneration.	High (up to 90 percent) 4 stage recovery reverse osmosis with concentrate discharge to concentrate or brine chemical treatment and permeate reuse. RO capacity targeted for cooling water reclamation of 4.8 MGD and 1.8 MGD respectively, for summer and winter.	Gravity brine chemical solids clarifier for low solids density clarification for physical removal of TSS	A disc media filter will remove total suspended solids from clarifier effluent.	A mechnical vapor recompression thermal evaporator will further concentrate the brine from the media filter up to 23 percent total dissolved solids.	A forced circulation crystallizer will concentrate the evaporator total dissolved solids to 50 to 65 percent. Brine or TDS will be dewatered to 80 to 90 percent with a centrifuge.	1)Provides limited chemical, and biological nutrient and organics treatment that could accommodate brine recycle treatment. 2) Meets all current estimated discharge requirements through NY4. 3) Would accommodate other industrial organic and chemical dischargers. 4) Provides the smaller foot print for chemical treatment with chemical TDS removal for both brine treatment and other industry wastewater. 5) Provides the required reclaim water to meet Micron stated cooling water quantity and quality. 6) Provides hardness and silica pretreatment for high recovery RO.	1) Limited chemical treatment results in some sodium and chloride TDS. 2)Limited chemical treatment may not meet metals requirements. 3)Discharge would require additional treatment for Micron's Cooling Tower reclaim makup water.	Ruled out because of space constraints, supplemental COD requirements, not needed to meet estimated SPDES nitrogen limits, requires more chemicals resulting in more chemical residuals and has the highest level of operational complexity.

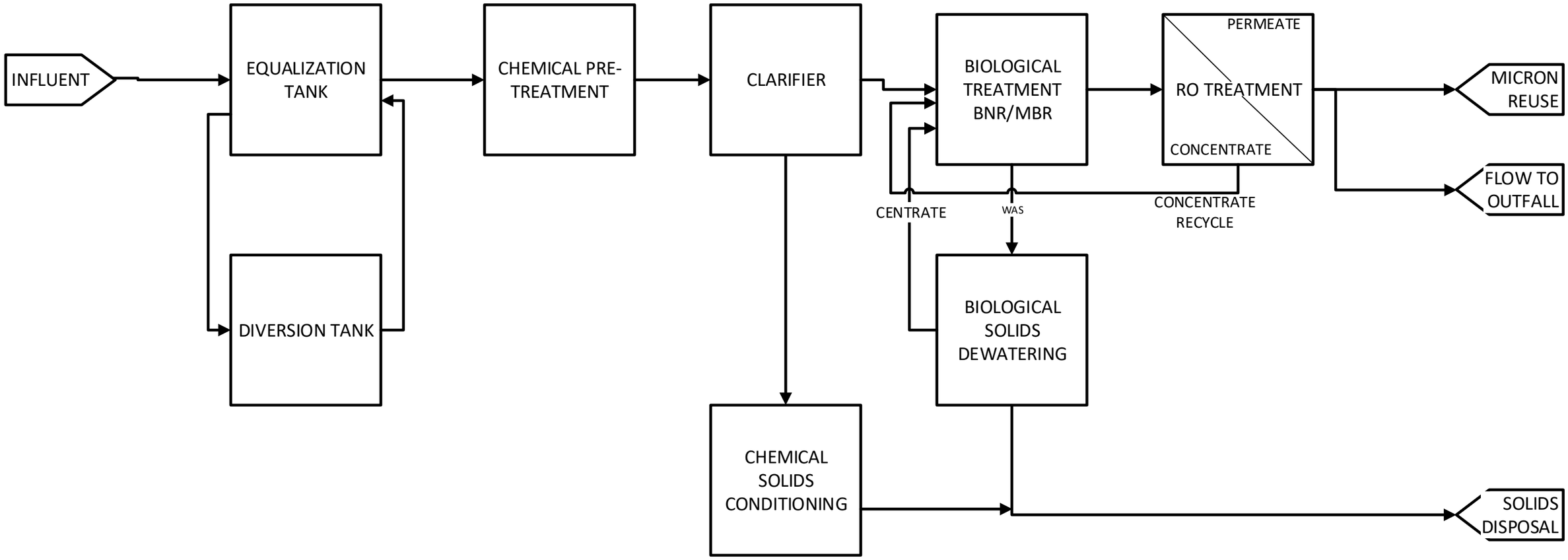
Onondaga County Micron IWTP Alternatives 10 and 11 Screening

Case	Process	Flow Regime	Equalization and Diversion (EQ/DIV)	Chemical Treatment (Chem)	Biological Nutrient Removal or Modified Ludzack Ettinger (MLE)	Membrane Bioreactor (MBR)	Ultraviolet Disinfection (UV)	Weak Acid Cation (WAC) Exchange	Strong Acid Cation (SAC) Exchange	Decarbonization (DeCarb) Stripping Tower	Reactive Silica Ion Exchange (SiIX)	Reverse Osmosis (RO)	Brine Solids Clarifier (BrClar)	Pressure Multi-Media Filter (MedFilt)	Mechanical Vapor Recompression Evaporator (Evap)	Forced Circulation Crystallizer (Cryst)	Advantages	Disadvantages	Screening Comments
10	**EQ/Div/MLE/MBR/UV**	Main train forward flow (Q_A) at winter and summer peak flow of 8.25MGD and 6.8 MGD, respectively, for Fabrication 1.	Equalization and diversion provides up to 16 hours total storage. 8 hours for constant volume equalization and 8 hours for diversion at 3 MG each for up to 8.25 MGD	NA	Modified Ludzack Ettinger (Anoxic/Aerobic)biological activated sludge organics and nutrient removal (~80 percent Nitrogen removal). Supplemental MgOH alkalinity and methanol (MeOH) addition for up to 85% nitrogen removal. Micronutrient and phosphorus addition.	Internal immersed dead end hollow fiber membrane ultrafiltration for solids removal and residence time control coupled with the BNR reactor tanks.	Ultraviolet Disinfection for treatment of potential pathogenic organisms (e.g., coliforms and enterococci) on effluent discharge	NA	NA	NA	NA	NA	NA	NA	NA	1)Provides biological nutrient and low level organics treatment that could accommodate brine recycle treatment. 2) Does not require supplemental COD or electron donor. 3) Requires pretreatment provisions for certain parameters. 4) Meets current estimated discharge requirements.	1) Provides complete ammmonia and partial nitrate nitrogen removal. 2)No chemcial treatment for potential discrete metals/water quality based effluent limits. 3)Discharge would require additional treatment for Micron's Cooling Tower reclaim makup water. 4) Noncompliant with estimated TDS discharge requirements long-term.	Selected as base case starter treatment system that can be expanded and accomodates add on chemical and physical treatment for reclaim water for reuse and improved discharge water quality including TDS discharge compliance.
11	**EQ/Div/MLE/MBR/UV/SAC/DeCarb/RO/Evap/Cryst**	Additional main train forward flow (Q_A) for Fabrication 2 at winter and summer peak flow of 8.25MGD and 6.8 MGD, respectively, for a total of 16.5 and 13.6 MGD for winter and summer, respectively. Up to 11.5 MGD of MBR effluent treated through a 90 plus percent recovery RO with up to 10 percent of RO Reject sent for TDS removal. Resulting in 5 MGD of MBR effluent, 6 MGD of reclaim for Micron and 5.5 MGD of blending reclaim effluent.	Equalization and diversion provides up to 8 hours total storage. 4 hours for constant volume equalization and 4 hours for diversion at 3 MG each for up to 16.5 MGD	NA	Modified Ludzack Ettinger (Anoxic/Aerobic)biological activated sludge organics and nutrient removal (~80 percent Nitrogen removal). Supplemental MgOH alkalinity and methanol (MeOH) addition for up to 85% nitrogen removal. Micronutrient and phosphorus addition.	Internal immersed dead end hollow fiber membrane ultrafiltration for solids removal and residence time control coupled with the BNR reactor tanks.	Ultraviolet Disinfection for treatment of potential pathogenic organisms (e.g., coliforms and enterococci) and to reduce biofouling in reclaime water for cooling on effluent and reclaim water discharges.	NA	A strong acid cation exchange will be used to remove magnesium and calcium alkalnity and non alkalinity magnesium and calcium to reduce the scaling tendencies in the RO. This will enable the RO to be operated at higher than the base 70 percent recovery. Hydrochloric acid (HCl) will be used for regeneration of the SAC.	A decarbonization stripping tower will be provided to remove or strip carbon dioxide to further reduce scaling tendencies and corrosion. The pH will be adjusted with sulfuric acid to approximately 4-5 to enhance the stripper performance.	NA	High (90 plus percent) 5 stage recovery reverse osmosis with concentrate discharge to concentrate or brine thermal treatment and permeate reuse. RO capacity targeted for cooling water reclamation of up 6 MGD for summer and winter.	NA	NA	A mechnical vapor recompression thermal evaporator will further concentrate the brine from the media filter up to 23 percent total dissolved solids.	A forced circulation crystallizer will concentrate the evaporator total dissolved solids to 50 to 65 percent. Brine or TDS will be dewatered to 80 to 90 percent with a centrifuge.	1)Provides biological nutrient and low level organics treatment that could accommodate brine recycle treatment. 2) Does not require supplemental COD or electron donor. 3) Requires pretreatment provisions for certain parameters. 4) Meets current estimated discharge requirements at higher flows and mass of parameters. 5) Provides improved water quality for all water quality parameters and reclaim water from RO Treament.	1) Provides complete ammmonia and partial nitrate nitrogen removal. 2)No chemcial treatment for potential discrete metals/water quality based effluent limits. 3)Discharge would require additional treatment for Micron's Cooling Tower reclaim makup water. 4) Noncompliant with estimated TDS discharge requirements long-term.	Selected as upgrade treatment to base case starter treatment system for improved water quality discharge compliance and reclaim water for reuse by Micron or others.

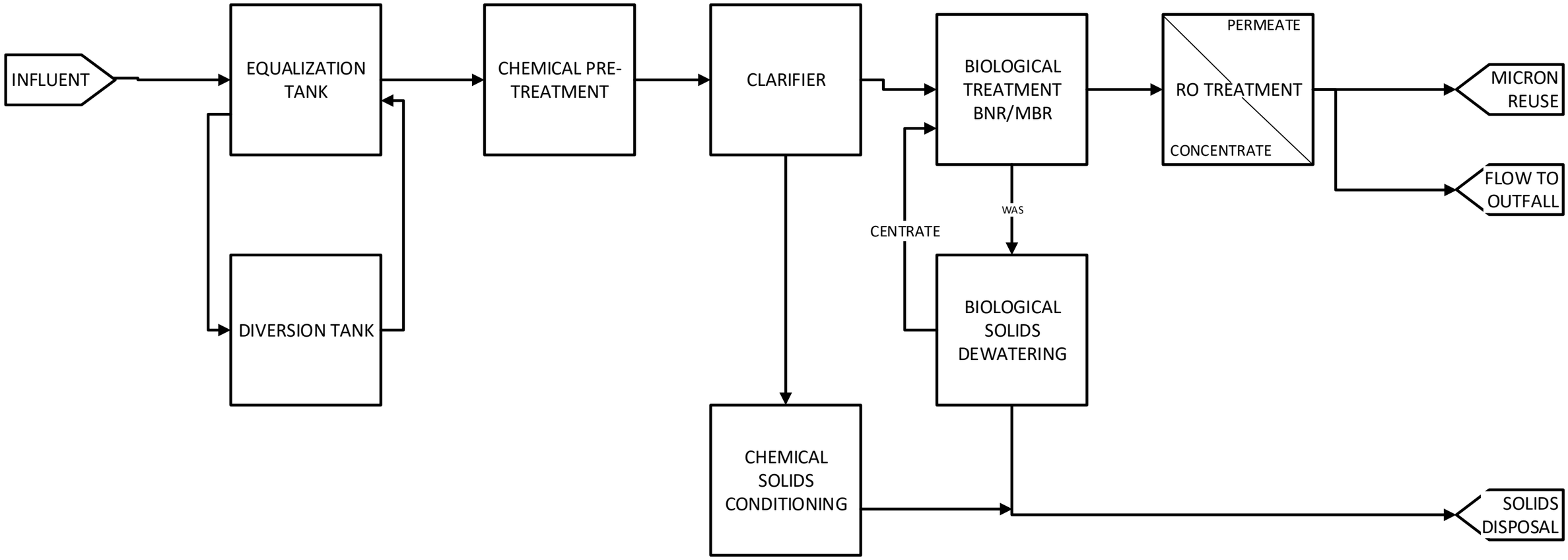
ALTERNATIVE 1



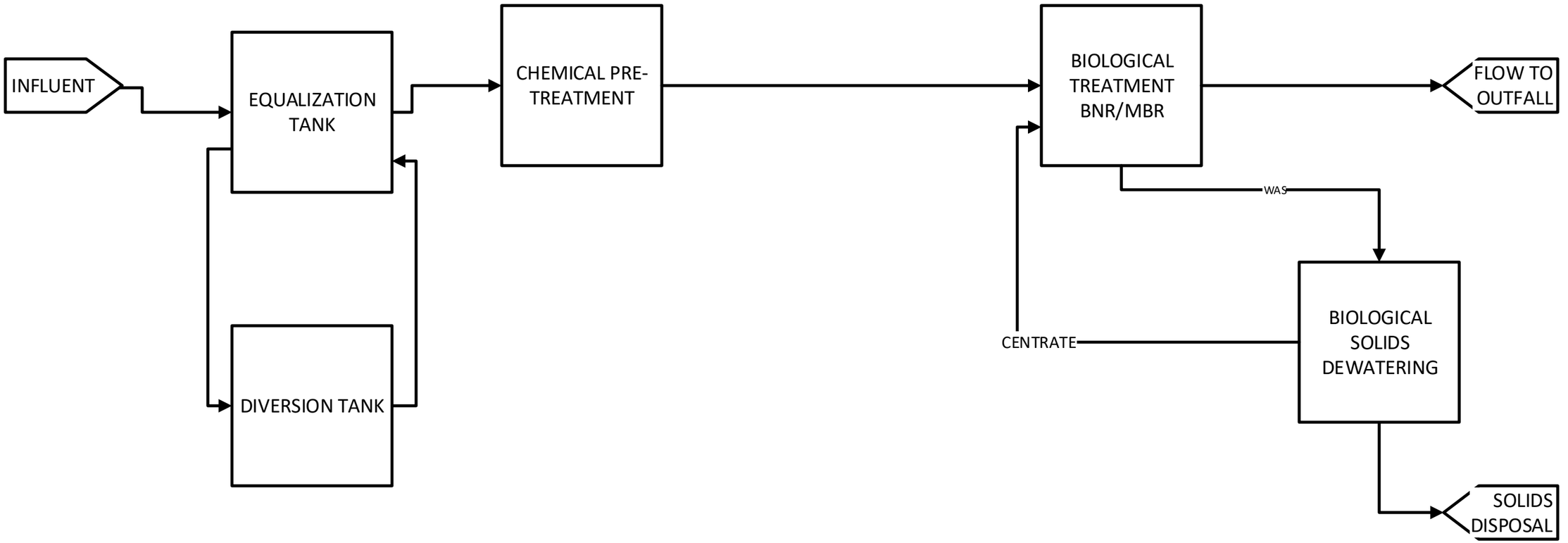
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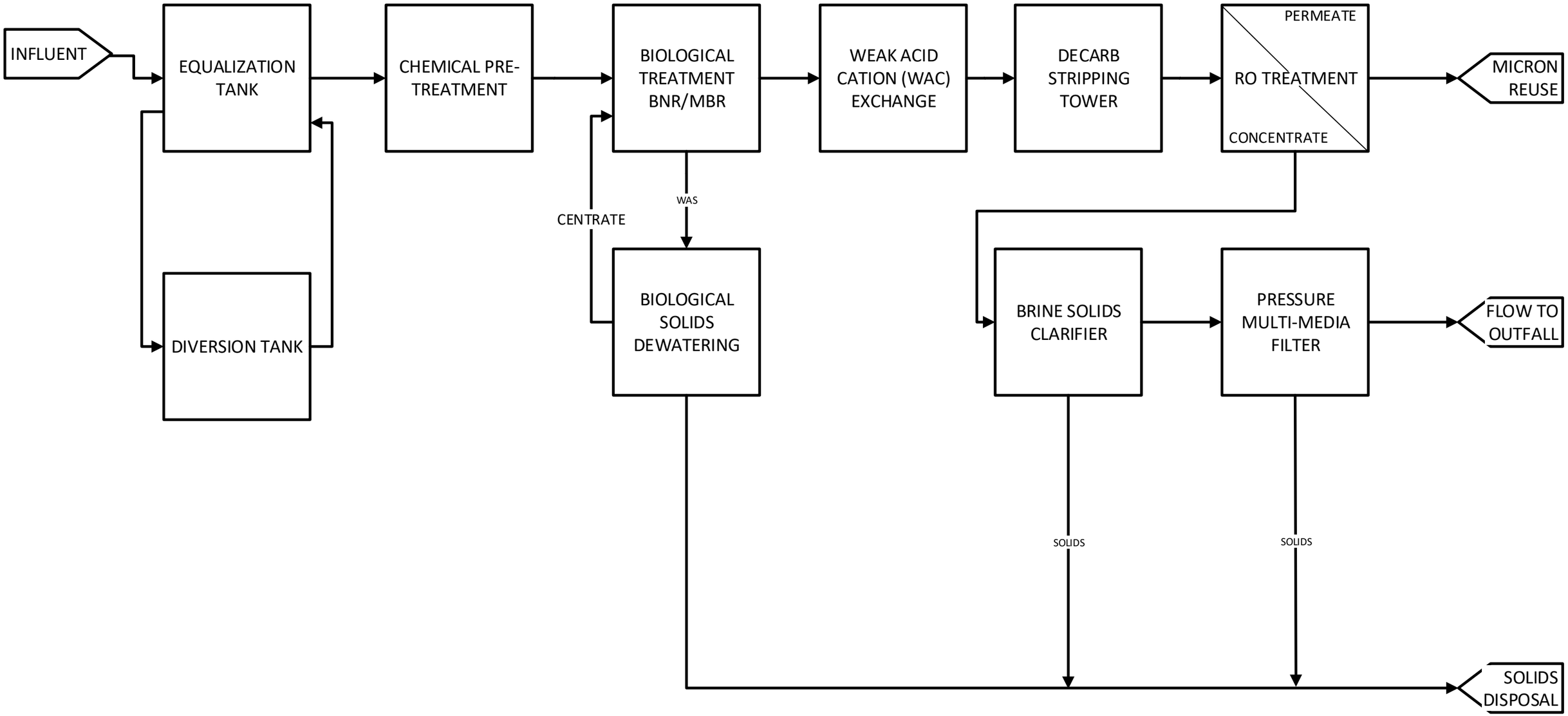
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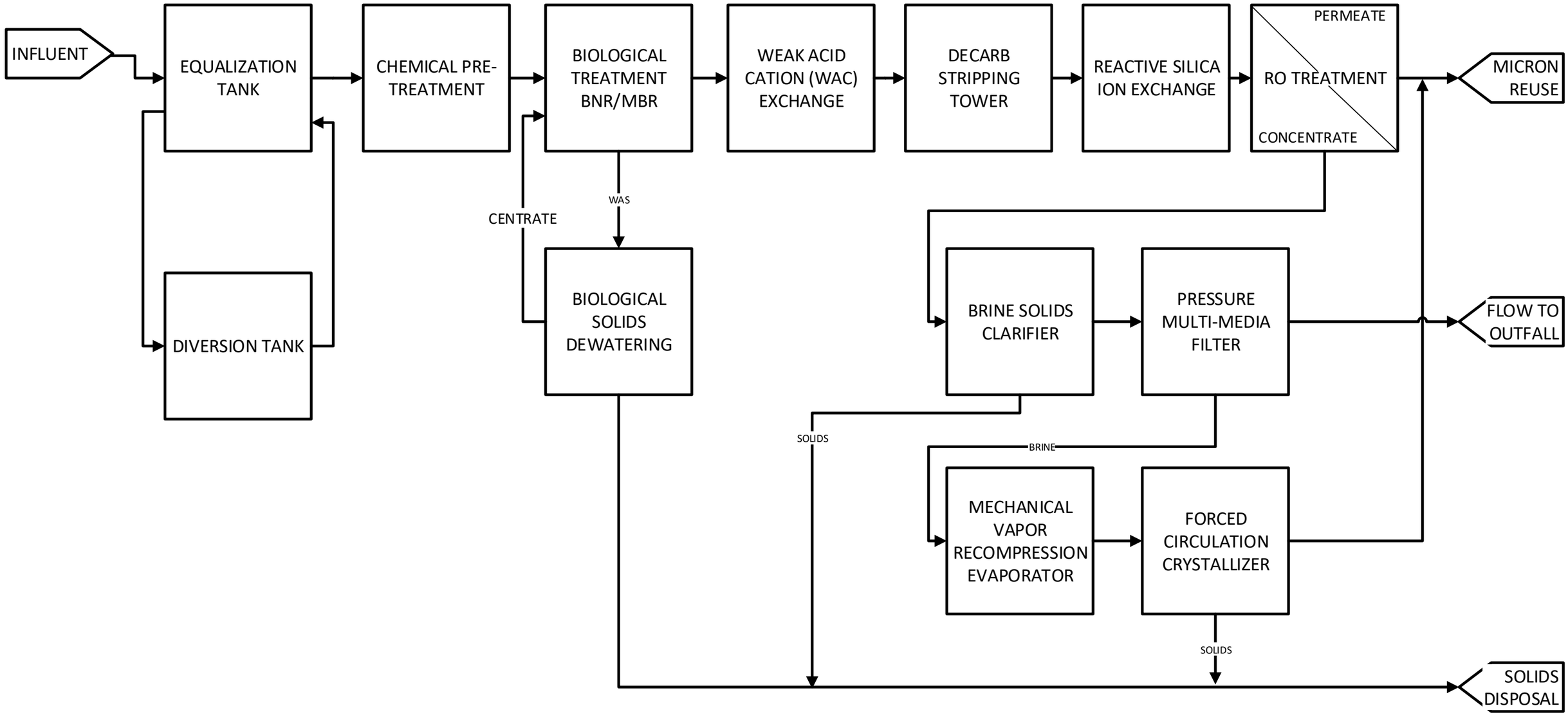
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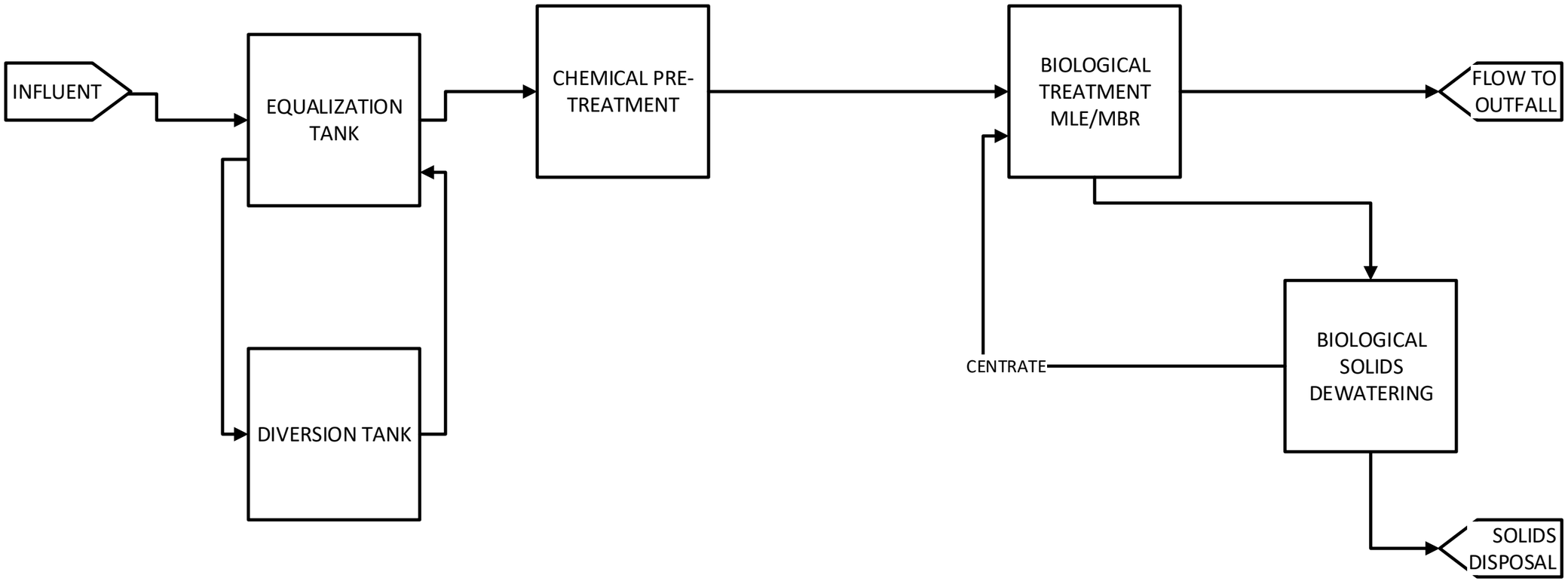
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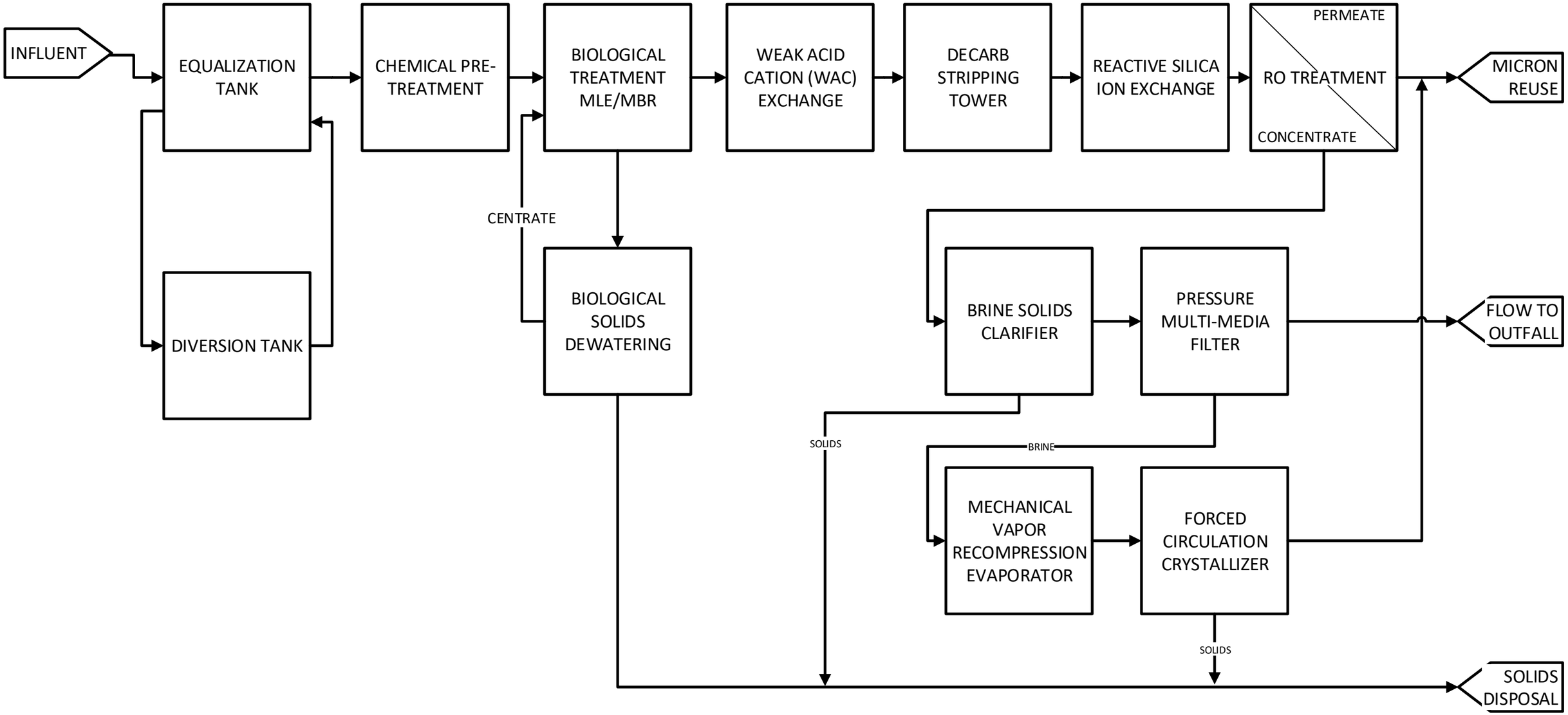
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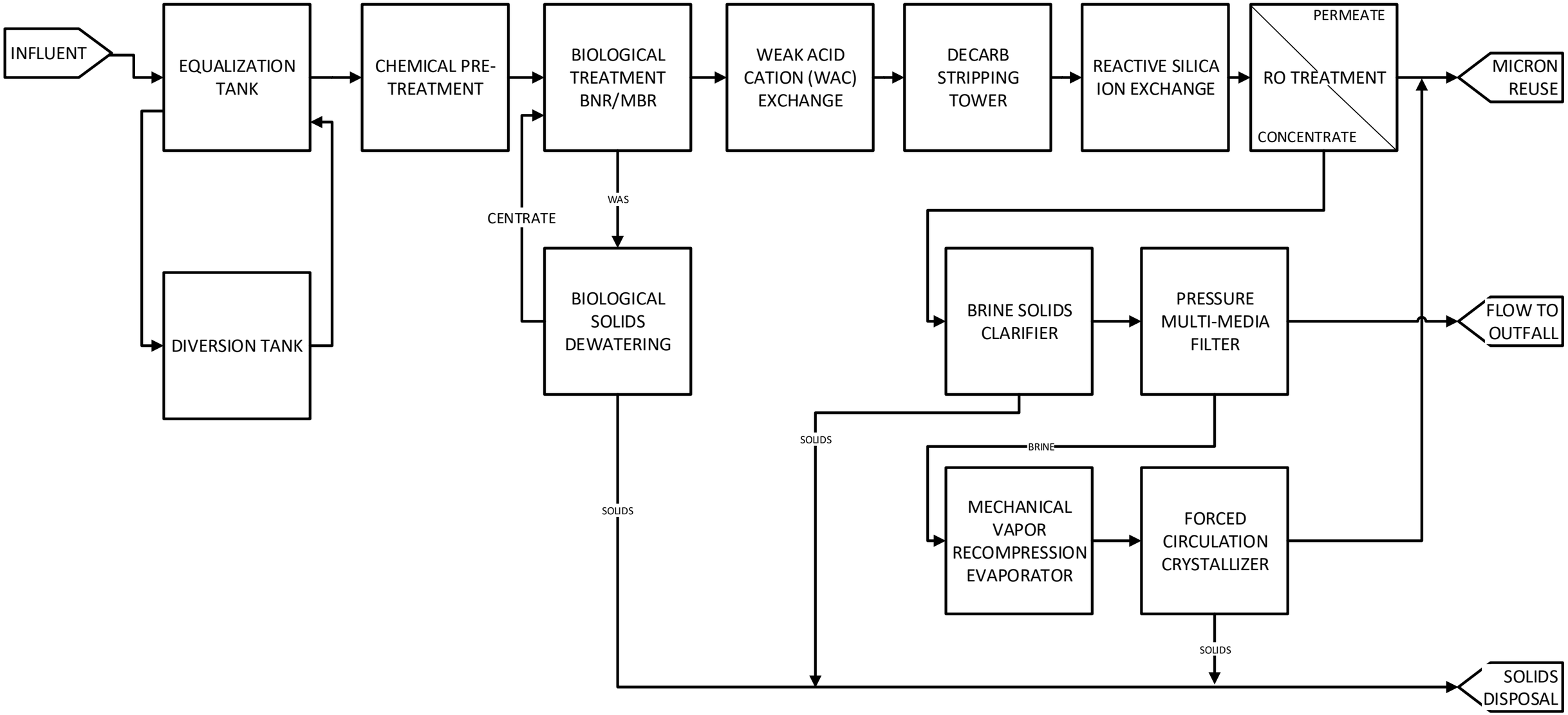
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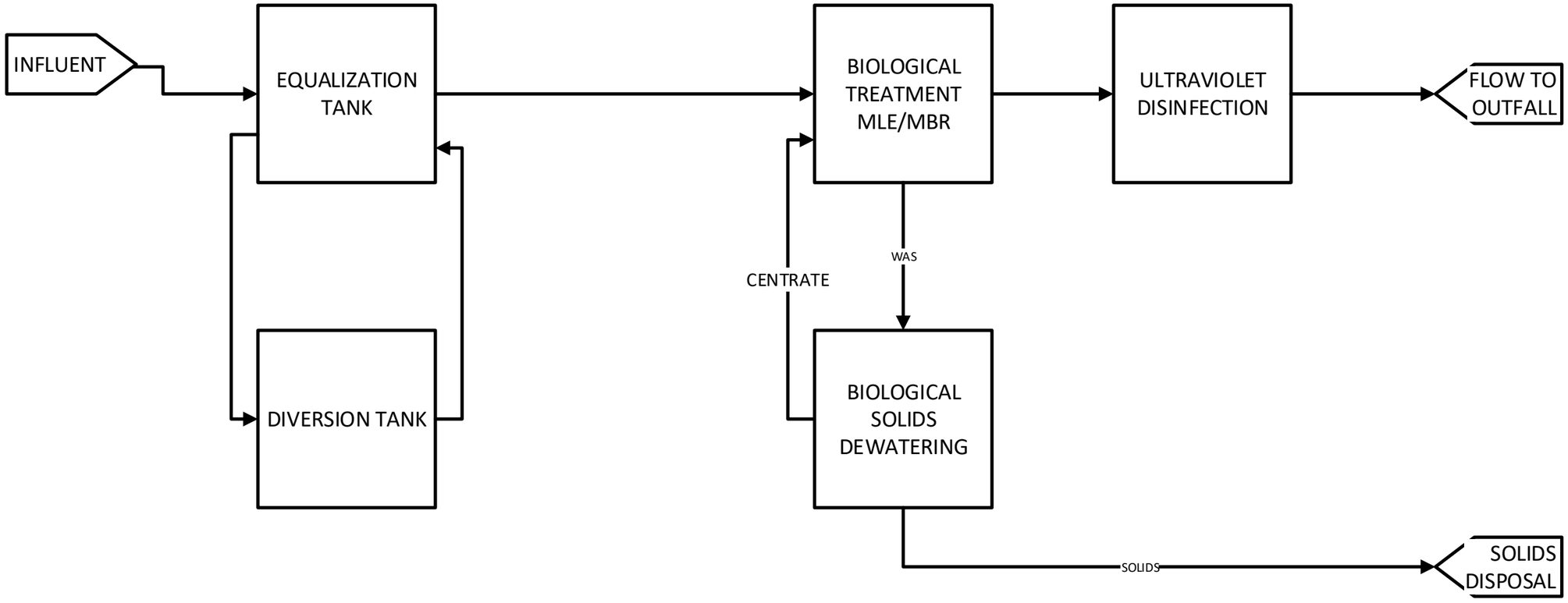
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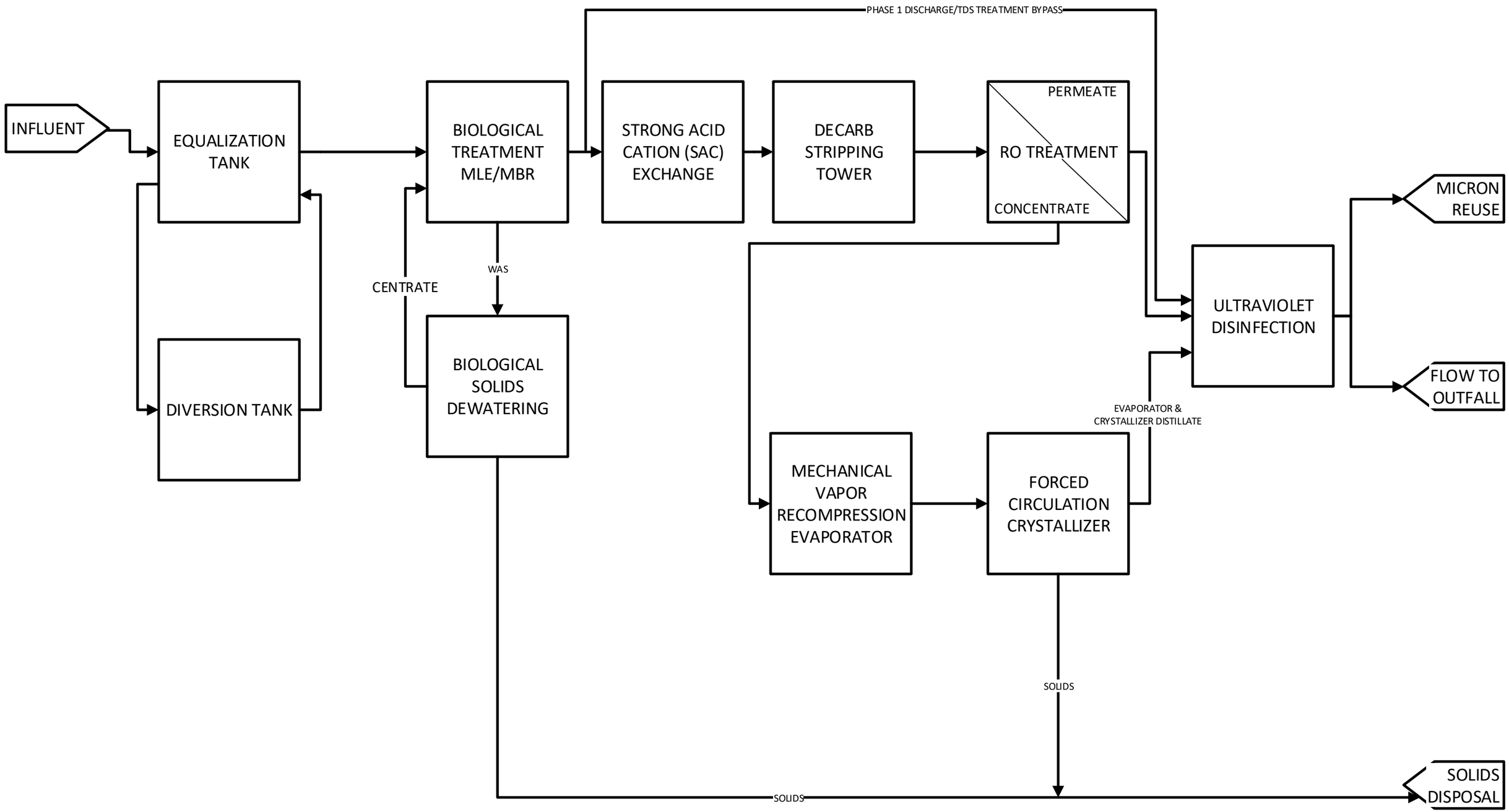
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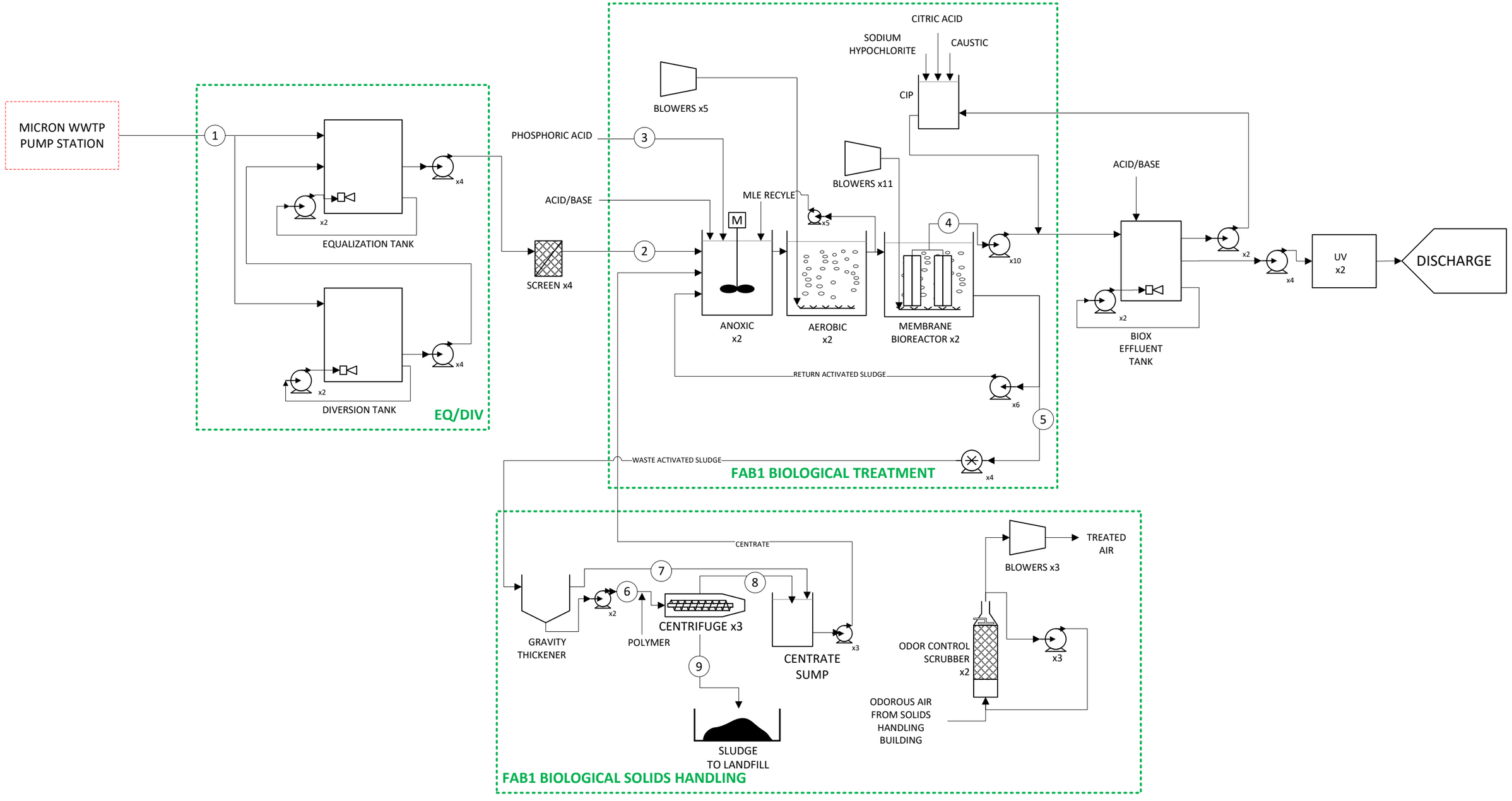
ALTERNATIVE 10



ALTERNATIVE 11



Appendix H: Alternative 10 Conceptual Design Package



PRELIMINARY NOT FOR CONSTRUCTION RECORDATION, CONVEYANCE, SALES, OR PERMIT ISSUANCE

NOTES:
1. NOT TO SCALE

REV	DATE	DESCRIPTION	DRAWN/ENG	CHECKED	APPROVED
0	01/16/2025	CONCEPT FOR DISCUSSION			
1	05/19/2025	REVISED FOR CONCEPT DEVELOPMENT			

Brown AND Caldwell

Industrial Wastewater Treatment and Water Reclamation Facility (IWWTPWRF)
FIGURE H-1: CONCEPTUAL ALTERNATIVE 10 SIMPLIFIED PROCESS FLOW DIAGRAM

Onondaga County Water Redevelopment Corporation

SHEET	REV
	1

Alternative 10: OCWEP IWWTP Fab1 Mass Balance, Winter Average Conditions										
Parameter	**Unit**	**EQ Influent**	**Biological Influent**	**75% Phosphoric acid**	**Biological Effluent**	**WAS**	**Thickened Sludge/ Centrifuge Feed**	**Sludge Thickener Decant**	**Bio Centrifuge Centrate**	**Bio Solids to Landfill**
Stream ID		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Flowrate (MGD)	MGD	8.25	8.34	4.00E-05	7.89	0.45	0.097	0.35	0.088	0.0093
Flowrate (gpm)		5,729	5,790	0.028	5,478	312	68	245	61	6.43
pH	s.u.	7.23	7.23		7.00	7.00	7.00	7.00	7.00	
Temperature	F	75	75		72					
Total Dissolved Solids (TDS)	mg/L	1,515	1,515		1,516	1,516	1,516	1,516	1,516	1,516
	lb/d	104,243	105,357		99,706	5,685	1,231	4,454	1,114	117
Total Suspended Solids (TSS)	mg/L	80	91		5.00	4,559	20,000	291	1,105	200,000
	lb/d	5,532	6,344		329	17,100	16,245	855	812	15,433
Soluble Chemical Oxygen Demand (COD)	mg/L	699	692		26	26	26	26	26	26
	lb/d	48,106	48,125		1,680	96	21	75	19	1.97
Alkalinity	mg/L as CaCO3	145	145		100	100	100	100	100	100
	lb/d	9,977	10,050		6,579	375	81	294	74	7.72
Nitrate	mg/L as N	49	49		45	45	45	45	45	45
	lb/d	3,371	3,403		2,939	168	36	131	33	3.45
Ammonia	mg/L as N	75	74		0.50	0.50	0.50	0.50	0.50	0.50
	lb/d	5,160	5,161		33	1.88	0.41	1.47	0.37	0.039
Total Nitrogen (TN)	mg/L as N	124	123		45	45	45	45	45	45
	lb/d	8,531	8,564		2,972	169	37	133	33	3.49
Sulfate (SO4 2-)	mg/L	635	635		635	635	635	635	635	635
	lb/d	43,700	44,167		41,785	2,382	516	1,867	467	49
Total Silica (TSi)	mg/L as SiO2	47	47		47	47	47	47	47	47
	lb/d	3,233	3,268		3,091	176	38	138	35	3.63
Calcium (Ca)	mg/L	87	87		87	87	87	87	87	87
	lb/d	5,974	6,038		5,713	326	71	255	64	6.70
Magnesium (Mg)	mg/L	17	17		17	17	17	17	17	17
	lb/d	1,137	1,149		1,087	62	13	49	12	1.28
Chloride (Cl-)	mg/L	150	150		150	150	150	150	150	150
	lb/d	10,303	10,413		9,852	562	122	440	110	12
Sodium (Na)	mg/L	194	194		194	194	194	194	194	194
	lb/d	13,359	13,501		12,773	728	158	571	143	15
Potassium (K)	mg/L	7.00	7.00		7.00	7.00	7.00	7.00	7.00	7.00
	lb/d	482	487		461	26	5.69	21	5.15	0.54
Fluoride (F)	mg/L	7.62	7.62		7.62	7.62	7.62	7.62	7.62	7.62
	lb/d	524	530		501	29	6.19	22	5.60	0.59
Total Organic Carbon (TOC)	mg/L	90	89		8.51	8.51	8.51	8.51	8.51	8.51
	lb/d	6,186	6,193		560	32	6.91	25	6.26	0.66
Aluminum	mg/L	0.72	0.72		0.72	0.72	0.72	0.72	0.72	0.72
	lb/d	50	50		48	2.71	0.59	2.12	0.53	0.056
Barium	mg/L	0.31	0.31		0.31	0.31	0.31	0.31	0.31	0.31
	lb/d	21	22		20	1.16	0.25	0.91	0.23	0.024
Copper	mg/L	0.33	0.33		0.33	0.33	0.33	0.33	0.33	0.33
	lb/d	23	23		22	1.24	0.27	0.97	0.24	0.026
Iron	mg/L	0.0080	0.0080		0.0080	0.0080	0.0080	0.0080	0.0080	0.0080
	lb/d	0.55	0.56		0.53	0.030	0.0065	0.024	0.0059	6.17E-04
Zinc	mg/L	0.50	0.50		0.50	0.50	0.50	0.50	0.50	0.50
	lb/d	34	35		33	1.88	0.41	1.47	0.37	0.039
Phosphorus	mg/L	1.55	1.67	361,828	0.50	54	239	3.47	239	2,388
	lb/d	107	116	121	33	204	194	10	9.70	184

Alternative 10: OCWEP IWWTP Fab1 Mass Balance, Summer Average Conditions										
Parameter	**Unit**	**EQ Influent**	**Biological Influent**	**75% Phosphoric acid**	**Biological Effluent**	**WAS**	**Thickened Sludge/ Centrifuge Feed**	**Sludge Thickener Decant**	**Bio Centrifuge Centrate**	**Bio Solids to Landfill**
Stream ID		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Flowrate (MGD)	MGD	6.80	6.88	2.78E-05	6.43	0.45	0.089	0.36	0.081	0.0085
Flowrate (gpm)		4,724	4,780	0.019	4,467	312	62	250	56	5.89
pH	s.u.	7.00	7.00		7.00	7.00	7.00	7.00	7.00	
Temperature	F	86	86		89					
Total Dissolved Solids (TDS)	mg/L	1,826	1,826		1,826	1,826	1,826	1,826	1,826	1,826
	lb/d	103,561	104,792		97,967	6,852	1,360	5,492	1,231	129
Total Suspended Solids (TSS)	mg/L	98	110		5.00	4,178	20,000	261	1,105	200,000
	lb/d	5,578	6,323		268	15,679	14,895	784	745	14,150
Soluble Chemical Oxygen Demand (COD)	mg/L	848	838		2.88	2.88	2.88	2.88	2.88	2.88
	lb/d	48,106	48,108		154	11	2.14	8.65	1.94	0.20
Alkalinity	mg/L as CaCO3	145	144		100	100	100	100	100	100
	lb/d	8,226	8,293		5,365	375	74	301	67	7.08
Nitrate	mg/L as N	59	59		34	34	34	34	34	34
	lb/d	3,370	3,394		1,847	129	26	104	23	2.44
Ammonia	mg/L as N	75	74		0.50	0.50	0.50	0.50	0.50	0.50
	lb/d	4,255	4,255		27	1.88	0.37	1.50	0.34	0.035
Total Nitrogen (TN)	mg/L as N	134	133		35	35	35	35	35	35
	lb/d	7,625	7,649		1,874	131	26	105	24	2.47
Sulfate (SO4 2-)	mg/L	763	763		763	763	763	763	763	763
	lb/d	43,284	43,799		40,936	2,863	568	2,295	514	54
Total Silica (TSi)	mg/L as SiO2	57	57		57	57	57	57	57	57
	lb/d	3,243	3,281		3,067	214	43	172	39	4.04
Calcium (Ca)	mg/L	104	104		104	104	104	104	104	104
	lb/d	5,902	5,972		5,581	390	77	313	70	7.36
Magnesium (Mg)	mg/L	19	19		19	19	19	19	19	19
	lb/d	1,078	1,091		1,019	71	14	57	13	1.34
Chloride (Cl-)	mg/L	179	179		179	179	179	179	179	179
	lb/d	10,154	10,275		9,604	672	133	538	121	13
Sodium (Na)	mg/L	234	234		234	234	234	234	234	234
	lb/d	13,275	13,432		12,554	878	174	704	158	17
Potassium (K)	mg/L	7.00	7.00		7.00	7.00	7.00	7.00	7.00	7.00
	lb/d	397	402		376	26	5.21	21	4.72	0.50
Fluoride (F)	mg/L	9.19	9.19		9.19	9.19	9.19	9.19	9.19	9.19
	lb/d	521	528		493	34	6.84	28	6.19	0.65
Total Organic Carbon (TOC)	mg/L	109	107		0.96	0.96	0.96	0.96	0.96	0.96
	lb/d	6,164	6,164		51	3.60	0.71	2.88	0.65	0.068
Aluminum	mg/L	0.80	0.80		0.80	0.80	0.80	0.80	0.80	0.80
	lb/d	45	46		43	3.00	0.60	2.41	0.54	0.057
Barium	mg/L	0.40	0.40		0.40	0.40	0.40	0.40	0.40	0.40
	lb/d	23	23		21	1.50	0.30	1.20	0.27	0.028
Copper	mg/L	0.41	0.41		0.41	0.41	0.41	0.41	0.41	0.41
	lb/d	23	24		22	1.54	0.31	1.23	0.28	0.029
Iron	mg/L	0.0100	0.0100		0.0100	0.0100	0.0100	0.0100	0.0100	0.0100
	lb/d	0.57	0.57		0.54	0.038	0.0074	0.030	0.0067	7.08E-04
Zinc	mg/L	0.60	0.60		0.60	0.60	0.60	0.60	0.60	0.60
	lb/d	34	34		32	2.25	0.45	1.80	0.40	0.042
Phosphorus	mg/L	1.80	1.92	361,828	0.50	45	213	2.78	213	2,131
	lb/d	102	110	84	27	167	159	8.35	7.93	151

Alternative 10: OCWEP IWWTP Fab1 Mass Balance, Maximum Concentrations										
Parameter	**Unit**	**EQ Influent**	**Biological Influent**	**75% Phosphoric acid**	**Biological Effluent**	**WAS**	**Thickened Sludge/ Centrifuge Feed**	**Sludge Thickener Decant**	**Bio Centrifuge Centrate**	**Bio Solids to Landfill**
Stream ID		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Flowrate (MGD)	MGD	8.25	8.41	3.72E-05	8.07	0.34	0.18	0.16	0.16	0.017
Flowrate (gpm)		5,729	5,840	0.026	5,607	234	123	111	111	12
pH	s.u.	7.23	7.23		7.00	7.00	7.00	7.00	7.00	
Temperature	F	86	86		89					
Total Dissolved Solids (TDS)	mg/L	3,400	3,400		3,400	3,400	3,400	3,400	3,400	3,400
	lb/d	233,937	238,467		228,965	9,536	5,005	4,531	4,530	475
Total Suspended Solids (TSS)	mg/L	300	315		5.00	11,049	20,000	1,163	1,105	200,000
	lb/d	20,642	22,113		337	30,986	29,437	1,549	1,472	27,965
Soluble Chemical Oxygen Demand (COD)	mg/L	1,272	1,248		2.88	2.88	2.88	2.88	2.88	2.88
	lb/d	87,520	87,524		194	8.06	4.23	3.83	3.83	0.40
Alkalinity	mg/L as CaCO3	201	199		100	100	100	100	100	100
	lb/d	13,847	13,980		6,733	280	147	133	133	14
Nitrate	mg/L as N	89	88		21	21	21	21	21	21
	lb/d	6,132	6,160		1,424	59	31	28	28	2.96
Ammonia	mg/L as N	75	74		0.50	0.50	0.50	0.50	0.50	0.50
	lb/d	5,160	5,161		34	1.40	0.74	0.67	0.67	0.070
Total Nitrogen (TN)	mg/L as N	164	161		22	22	22	22	22	22
	lb/d	11,292	11,321		1,458	61	32	29	29	3.03
Sulfate (SO4 2-)	mg/L	763	763		763	763	763	763	763	763
	lb/d	52,498	53,515		51,375	2,140	1,123	1,017	1,016	107
Total Silica (TSi)	mg/L as SiO2	57	57		57	57	57	57	57	57
	lb/d	3,933	4,009		3,849	160	84	76	76	7.99
Calcium (Ca)	mg/L	104	104		104	104	104	104	104	104
	lb/d	7,158	7,296		7,005	292	153	139	139	15
Magnesium (Mg)	mg/L	19	19		19	19	19	19	19	19
	lb/d	1,307	1,333		1,279	53	28	25	25	2.66
Chloride (Cl-)	mg/L	179	179		179	179	179	179	179	179
	lb/d	12,316	12,555		12,053	502	263	239	238	25
Sodium (Na)	mg/L	234	234		234	234	234	234	234	234
	lb/d	16,100	16,412		15,756	656	344	312	312	33
Potassium (K)	mg/L	7.00	7.00		7.00	7.00	7.00	7.00	7.00	7.00
	lb/d	482	491		471	20	10	9.33	9.32	0.98
Fluoride (F)	mg/L	9.19	9.19		9.19	9.19	9.19	9.19	9.19	9.19
	lb/d	632	645		619	26	14	12	12	1.29
Total Organic Carbon (TOC)	mg/L	424	416		0.96	0.96	0.96	0.96	0.96	0.96
	lb/d	29,173	29,175		65	2.69	1.41	1.28	1.28	0.13
Aluminum	mg/L	0.80	0.80		0.80	0.80	0.80	0.80	0.80	0.80
	lb/d	55	56		54	2.24	1.18	1.07	1.07	0.11
Barium	mg/L	0.40	0.40		0.40	0.40	0.40	0.40	0.40	0.40
	lb/d	28	28		27	1.12	0.59	0.53	0.53	0.056
Copper	mg/L	0.41	0.41		0.41	0.41	0.41	0.41	0.41	0.41
	lb/d	28	29		28	1.15	0.60	0.55	0.55	0.057
Iron	mg/L	0.0100	0.0100		0.0100	0.0100	0.0100	0.0100	0.0100	0.0100
	lb/d	0.69	0.70		0.67	0.028	0.015	0.013	0.013	0.0014
Zinc	mg/L	0.60	0.60		0.60	0.60	0.60	0.60	0.60	0.60
	lb/d	41	42		40	1.68	0.88	0.80	0.80	0.084
Phosphorus	mg/L	2.70	2.84	361,828	0.50	99	179	10	179	1,790
	lb/d	186	199	112	34	277	264	14	13	250

Brown AND Caldwell	Client	**Micron Onondaga**		Location	Syracuse, NY		Originator	Anukriti Shah			Revision	**A**	**MAJOR EQUIPMENT LIST ALT 10**
	Project	**IWWTP & WRF**		BC #	191915		Approved By	Tom Sandy			Issued Date	**6/18/2025**	**DRAFT**

		EQUIPMENT INFORMATION				PROCESS				MECHANICAL				ELECTRICAL & INSTRUMENTATION	
Item No.	REV	Equipment Category	Equipment Status	Equipment Name	Quantity	Capacity per Unit	Total Capacity	Units	Temperature	Type	Material of Construction	Physical Dimension	Equipment Installation	HP (Nameplate)	Notes
1	A	Tank	New	Equalization Tank	1	3,000,000	3,000,000	gal	AMB	--	Cast-In-Place Concrete	180 ft (L) x 75 ft (W) x 30 ft (H)	Outdoor	--	
2	A	Tank	New	Diversion Tank	1	3,000,000	3,000,000	gal	AMB	--	Cast-In-Place Concrete	180 ft (L) x 75 ft (W) x 30 ft (H)	Outdoor	--	
3	A	Mixer	New	EQ/Diversion Eductor System	2	1,300	2,600	gpm	AMB	--	--	--	Outdoor	--	
4	A	Pump	New	EQ/Diversion Eductor Pumps	4	1,300	5,200	gpm	AMB	Centrifugal	Cast Iron	--	Outdoor	30.0	
5	A	Pump	New	EQ/Diversion Feed Pumps	4	2,000	8,000	gpm	AMB	Centrifugal	Cast Iron	--	Outdoor	50.0	
6	A	Pump	New	Screen Feed Pumps	4	2,000	8,000	gpm	AMB	Centrifugal	Cast Iron		Outdoor	50.0	
7	A	Separation	New	Screens	4	2,000	8,000	gpm	AMB	--	Stainless steel	--	Outdoor	1.0	
8	A	Tank	New	Anoxic Tanks	2	1,050,000	2,100,000	gal	AMB	--	Cast-In-Place Concrete	63 ft (L) x 75 ft (W) x 30 ft (H)	Outdoor	--	
9	A	Mixer	New	Anoxic Tank Mixers	2	--	--	--	AMB	Vertical Hyperboloid	Stainless Steel	--	Outdoor	40.0	
10	A	Tank	New	Aerobic Tanks	2	5,700,000	11,400,000	gal	AMB	--	Cast-In-Place Concrete	340 ft (L) x 75 ft (W) x 30 ft (H)	Outdoor	--	
11	A	Aeration	New	Aeration Coarse Bubble Grid	2	13,500	27,000	scfm	AMB	Coarse Bubble	Stainless Steel	--	Outdoor	--	
12	A	Blower	New	Aerobic Blowers	5	13,500	67,500	scfm	AMB	Positive Displacement Blower	Cast Iron	--	Outdoor	350.0	
13	A	Pump	New	MLE Recycle Pumps	5	5,730	28,650	gpm	AMB	Centrifugal	Stainless Steel	--	Indoor	50.0	
14	A	Separation	New	MBR Cassette Tanks & Membranes	10	6080	60,800	gpm	AMB	--	Coated Carbon Steel	42 ft (L) x 10 ft (W) x 14 ft (H)	Indoor	--	
15	A	Blower	New	MBR Blowers	11	300	3,300	scfm	AMB	Positive Displacement Blower	Cast Iron	--	Indoor	40.0	
16	A	Pump	New	Recirculation (RAS&WAS) pumps	10	TBD	TBD	gpm	AMB	Low Shear Rotary Lobe Positive Displacement	Cast Iron		Outdoor	25.0	
17	A	Pump	New	Permeate/Feed Pulse Pumps	10	TBD	TBD	gpm	AMB	Centrifugal	Cast Iron		Outdoor	30.0	
18	A	Compressor	New	MBR Air Compressor	2	TBD	TBD	scfm	AMB				Outdoor	5.0	
19	A	Pump	New	CIP Tank Feed Pumps	2	25	50	hp	AMB	Centrifugal	Cast Iron			25.0	
20	A	Tank	New	Gravity Thickener	1	1,000,000	1,000,000	gal	AMB	--	Cast-In-Place Concrete	50 ft (D) x 17 ft (H)	Indoor	--	
21	A	Pump	New	Centrifuge Feed Pumps	2	607	1,214	gpm	AMB	Centrifugal	Cast Iron	--	Indoor	50.0	
22	A	Dewatering	New	Biological Centrifuges	3	607	1,821	gpm	AMB	Decanter Centrifuge	Coated Carbon Steel		Indoor	--	
23	A	Tank	New	Centrate Sump	1	7,500	7,500	gal	AMB	Sump	Concrete-in Place	10 ft (L) x 10ft (W) x 10ft (H)	Outdoor	--	

Brown AND Caldwell	Client	**Micron Onondaga**		Location	Syracuse, NY		Originator	Anukriti Shah			Revision	**A**	**MAJOR EQUIPMENT LIST ALT 10**
	Project	**IWWTP & WRF**		BC #	191915		Approved By	Tom Sandy			Issued Date	**6/18/2025**	**DRAFT**

		EQUIPMENT INFORMATION				PROCESS				MECHANICAL				ELECTRICAL & INSTRUMENTATION	
Item No.	REV	Equipment Category	Equipment Status	Equipment Name	Quantity	Capacity per Unit	Total Capacity	Units	Temperature	Type	Material of Construction	Physical Dimension	Equipment Installation	HP (Nameplate)	Notes
24	A	Pump	New	Centrate Sump Pumps	3	375	1,125	gpm	AMB	Centrifugal	Cast Iron		Outdoor	20.0	
25	A	Pump	New	Building Sump Pumps	2	375	750	gpm	AMB	Centrifugal	Cast Iron			20.0	
26	A	Conveyor	New	Hopper & Conveyor	3	375	1,125	gpm	AMB					15.0	
27	A	Tank	New	Biox Effluent Tank	1	343,800	343,800	gal	AMB	--	Cast-In-Place Concrete	34 ft (L) x 34 ft (W) x 30 ft (H)	Outdoor	--	
28	A	Mixer	New	Biox Effluent Tank Eductor System	1	240	240	gpm	AMB	--	--	--	Outdoor	--	
29	A	Pump	New	Biox Effluent Tank Eductor Pumps	2	240	480	gpm	AMB	Centrifugal	Cast Iron	--	Outdoor	7.5	
30	A	Disinfection	New	UV Disinfection Unit	2	5730	11,460	gpm	AMB	Centrifugal	Stainless steel	6 ft (L) x 5 ft (W) x 6 ft (H)	Outdoor	265.5	
31	A	Pump	New	Discharge Pumps	4	2000	8,000	gpm	AMB	Centrifugal	Cast Iron	--	Indoor	50.0	
32	A	Tank	New	Odor Control Scrubbers	2	31,360	94,080	scfm	AMB			17ft (D)	Outdoor	--	
33	A	Blower	New	Scrubber Blowers	3	31,360	94,080	scfm	AMB	Positive Displacement Blower	Cast Iron		Outdoor		
34	A	Pump	New	Recirculation Scrubber Pumps	3	TBD	TBD	gpm					Outdoor		
35	A	Tank	New	Phosphoric Acid Tank	1	7,400	7,400	gal	AMB	--	FRP Double Wall	11 ft (D) x 10 ft (H)	Indoor	--	
36	A	Tank	New	Sulfuric Acid Tank	1	7,400	7,400	gal	AMB	--	LDPE	11 ft (D) x 10 ft (H)	Indoor	--	
37	A	Tank	New	Sodium Hydroxide Tank	1	7,400	7,400	gal	AMB	--	HDPE	11 ft (D) x 10 ft (H)	Indoor	--	
38	A	Tank	New	Neat Polymer Tank	1	7,400	7,400	gal	AMB	--	FRP Double Wall	11 ft (D) x 10 ft (H)	Indoor	--	
39	A	Tank	New	Sodium Hypochlorite Tote	2	275	550	gal	AMB					--	
40	A	Tank	New	Citric Acid Tote	2	275	550	gal	AMB					--	
41	A	Pump	New	Phosphoric Acid Metering Pumps	4	0.02	0	gpm	AMB	Chemical Metering Pump	PVC/PVDF dosing head, EPDM/Viton FKM O-rings, ceramic check balls	--	Indoor	1.0	
42	A	Pump	New	Sulfuric Acid Metering Pumps	5	1.63	8	gpm	AMB	Chemical Metering Pump	Stainless Steel	--	Outdoor	1.0	
43	A	Pump	New	Sodium Hydroxide Metering Pumps	5	0.10	1	gpm	AMB	Chemical Metering Pump	PVC/PVDF dosing head, EPDM/Viton FKM O-rings, ceramic check balls	--	Indoor	5.0	
44	A	Pump	New	CIP Sodium Hypochlorite Pumps	2	0.10	0.2	gpm	AMB	Chemical Metering Pump	PVC/PVDF dosing head, EPDM/Viton FKM O-rings, ceramic check balls	--	Indoor	1.0	
45	A	Pump	New	CIP Citric Acid Pumps	2	0.10	0.2	gpm	AMB	Chemical Metering Pump	PVC/PVDF dosing head, EPDM/Viton FKM O-rings, ceramic check balls	--	Indoor	1.0	
46	A	Pump	New	CIP Caustic Pumps	2	0.10	0.2	gpm	AMB	Chemical Metering Pump	PVC/PVDF dosing head, EPDM/Viton FKM O-rings, ceramic check balls		Indoor	1.0	
47	A	Pump	New	Biological Polymer Make Down System	3	0.08	0.2	gpm	AMB			--	Indoor	5.0	

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PRIVACY WALL AND ACOUSTIC BARRIER

(3) 30" INFLUENT PIPES FROM MICRON SITE AND (1) 18" FUTURE PIPE

OAK ORCHARD TREATMENT FACILITY EXPANSION

OAK ORCHARD TREATMENT FACILITY EXPANSION

OAK ORCHARD TREATMENT FACILITY EXPANSION	
AREA CODE	AREAS
10	HEADWORKS
21	PRIMARY CLARIFIERS
28	ODOR CONTROL
30	FINE SCREENING
31	BIOREACTORS
33	BLOWER BUILDING
41	REUSE FACILITY (RO BUILDING), TEMPORARY UF
43	MEMBRANE BUILDING
45	RECYCLED WATER PUMP STATION
51	DIGESTER COMPLEX
53	GAS STORAGE AND GAS FLARE
54	THICKENING/DEWATERING
56	PS GRAVITY THICKENING
57	HSW AND MS RECEIVING AND BLENDING
58	SOLIDS HAULING, DRYER BUILDING
70	NATIONAL GRID CONNECTION, NATIONAL GRID SUBSTATION
80	EXISTING ADMIN BUILDING, ADMIN BUILDING
90	BRIDGING PROJECT MBBR TANKS - FUTURE RECYCLED WATER STORAGE, BRIDGING MBBR BLOWER BUILDING

WHITE PINES INDUSTRIAL WASTEWATER TREATMENT FACILITY

LEGEND

- EQUIPMENT FOR TREATING FAB - 1 WASTEWATER
- EQUIPMENT FOR TREATING FAB - 2 EXPANSION WASTEWATER
- OAK ORCHARD TREATMENT FACILITY EXPANSION
- PAVED ROAD
- EXISTING STRUCTURE
- CONTRACTOR STAGING AREA
- PRIVACY WALL ACOUSTIC BARRIER
- LIMIT OF WORK BY OTHERS
- FAB - 1 STRUCTURE OR AREA
- FAB - 2 EXPANSION STRUCTURE OR AREA

A	INFLUENT SCREENING BUILDING
B	EQUALIZATION TANK
C	DIVERSION TANK
D	ANOXIC TANKS
E	AERATION TANKS
F	MEMBRANE FILTRATION BUILDING
G	BLOWER BUILDING
H	CHEMICAL BUILDING
I	EVAPORATION SYSTEM BUILDING
J	CONDENSATE / EFFLUENT STORAGE AREA
K	CRYSTALLIZER SYSTEM BUILDING
L	HIGH PH RO BUILDING
M	HIGH PH RO PERMEATE AND FEED TANKS
N	ION EXCHANGE BUILDING
O	DECARBONATION BUILDING
P	UV DISINFECTION BUILDING
Q	RECYCLED WATER PUMP STATION
R	DEWATERING BUILDING
S	MOTOR CONTROL BUILDING
T	ODOR CONTROL AREA

100 0 50 100 200

GRAPHIC SCALE (IN FEET)

GENERAL ARRANGEMENT SITE PLAN

Scale: 1" = 20'

OTHER INFORMATION

N

P:\jobs\jobs\24370 White Pine Industrial WWTP\CadWorking Drawings\Figures\25249_SITE PLAN.dwg

ORIGINAL DRAWING SIZE: ARCH D (24" X 36")

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CLIENT / SUBCONSULTANT:

EDR a better environment

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PROJECT TITLE: **WHITE PINES INDUSTRIAL WWTP**

PROJECT LOCATION: **OAK ORCHARD ROAD**

CLIENT: **ONONDAGA COUNTY**

DRAWING TITLE: **GENERAL ARRANGEMENT SITE PLAN**

CONTRACT NO.

DRAWINGS ISSUED FOR / REVISIONS

NO.	DATE	ISSUED FOR / REVISION	BY	CHK	APP
1					
2					
3					
4					
5					
6					

EDR JOB#: **24370**

DATE: **05/25**

SCALE: **AS NOTED**

DRAWN BY: **JDF**

CHECKED BY: **JDF**

DRAWING NUMBER:

C-101

Appendix I: Energy Efficiency Best Practices

APPENDIX I
ENERGY EFFICIENCY BEST PRACTICES

Operation Process	Standard Practice	Typical Energy Efficiency Measures
Influent Pumping (Pump Station 1, 2 and 3)	On/Off Level Controls and EPAct Motors	VFD with control loop; premium efficiency motors
Primary Treatment	EPAct Motors, Timers on Sludge Draw-off	Premium efficiency motors; VFDs on sludge drawoff
Secondary Treatment	EPAct Motors	Premium efficiency motors
Fixed Film	EPAct Motors	Premium efficiency motors; flow control/VFDs on recycle
Mechanical Aeration	EPAct Motors	Premium efficiency motors; level control on effluent weir
Diffuser System	Coarse or Medium Bubble Aeration	Fine bubble diffusers; fine bubble diffusers with mixers
Aeration Blowers	Multi-Stage Centrifugal Blowers with EPAct Motors	Premium efficiency motors; inlet flow control
Aeration Blowers	Positive Displacement Blowers with EPAct Motors	Premium efficiency motors; VFDs
Dissolved Oxygen Control	Manual Handheld DO Monitoring with Manual Adjustment	VFD with dissolved oxygen control loop; start/stop blowers; control air output
WAS/RAS Pumps	Timed Operation and EPAct Motors	VFDs with control loop; premium efficiency motors
Tertiary Treatment	Flow Control Valves and EPAct Motors	VFDs with control loop; premium efficiency motors
Sludge Processing	EPAct Motors and case-by-case VFD designs	Premium efficiency motors
UV Disinfection	Medium Pressure UV Lamps	Low pressure high output lamp technology

Operation Process	Standard Practice	Typical Energy Efficiency Measures
Effluent Pumping	Flow Control Valves and EPAct Motors	VFDs with control loop; premium efficiency motors
Plant Water System	Constant Speed Pumps; System Wide Pressure	VFDs with pressure control; booster pumps at specific processes
Building Systems	Building Energy Code Compliant	Lighting, HVAC, etc. More efficient than Building Energy Code

Appendix J: Alternative 11 Conceptual Design Package

MICRON WWTP PUMP STATION

1

EQUALIZATION TANK

DIVERSION TANK

FAB1 EQ/DIV

FAB1 SCREENS

SCREEN x4

SCREEN x4

2

FAB2 BIOLOGICAL TREATMENT

CITRIC ACID

SODIUM HYPOCHLORITE

CAUSTIC

CIP

BLOWERS x5

BLOWERS x11

ACID/BASE

MLE RECYCLE

ANOXIC x2

AEROBIC x2

MEMBRANE BIOREACTOR x2

RETURN ACTIVATED SLUDGE

3 PHOSPHORIC ACID

FAB1

ACID/BASE

4

BIOX EFFLUENT TANK

11

IX, SHEET 2

10

BLEND TANK, SHEET 2

FAB2 BIOLOGICAL SOLIDS HANDLING

TREATED AIR

BLOWER

ODOR CONTROL SCRUBBER x1

ODOROUS AIR FROM SOLIDS HANDLING BUILDING

5 GRAVITY THICKENER

POLYMER

CENTRIFUGE x3

6

WASTE ACTIVATED SLUDGE

CENTRATE

TREATED AIR

BLOWERS x3

ODOR CONTROL SCRUBBER x2

ODOROUS AIR FROM SOLIDS HANDLING BUILDING

GRAVITY THICKENER

CENTRIFUGE x3

POLYMER

8

7

CENTRATE SUMP

9

SLUDGE TO LANDFILL

FAB1 BIOLOGICAL SOLIDS HANDLING

CITRIC ACID

SODIUM HYPOCHLORITE

CAUSTIC

CIP

BLOWERS x5

BLOWERS x11

ACID/BASE

INTERNAL MIXED LIQUOR RECYCLE

ANOXIC x2

AEROBIC x2

MEMBRANE BIOREACTOR x2

RETURN ACTIVATED SLUDGE

FAB1 BIOLOGICAL TREATMENT

PRELIMINARY NOT FOR CONSTRUCTION RECORDATION, CONVEYANCE, SALES, OR PERMIT ISSUANCE

NOTES:
1. NOT TO SCALE

REV	DATE	DESCRIPTION	DRAWN/ENG	CHECKED	APPROVED
0	01/16/2025	CONCEPT FOR DISCUSSION			
1	05/19/2025	REVISED FOR CONCEPT DEVELOPMENT			

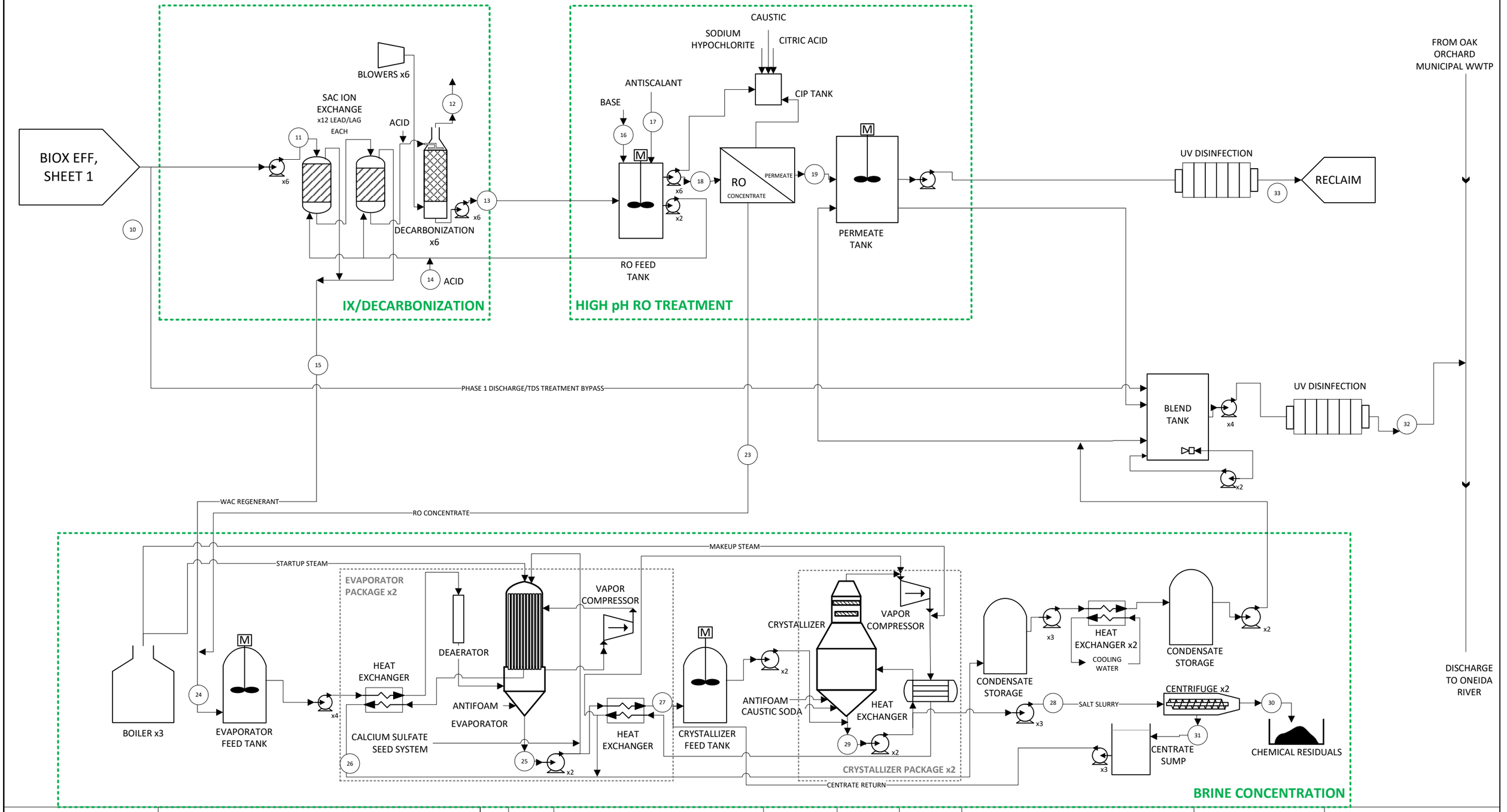
Brown AND Caldwell

Industrial Wastewater Treatment and Water Reclamation Facility (IWWTPWRF)

FIGURE J-1: CONCEPTUAL ALTERNATIVE 11 SIMPLIFIED PROCESS FLOW DIAGRAM

Onondaga County Water Redevelopment Corporation

SHEET 1	REV
	1



PRELIMINARY NOT FOR CONSTRUCTION RECORDATION, CONVEYANCE, SALES, OR PERMIT ISSUANCE

NOTES:
1. NOT TO SCALE

REV	DATE	DESCRIPTION	DRAWN/ENG	CHECKED	APPROVED
0	01/16/2025	CONCEPT FOR DISCUSSION			
1	05/19/2025	REVISED FOR CONCEPT DEVELOPMENT			

Brown AND Caldwell

Industrial Wastewater Treatment and Water Reclamation Facility (IWWTPWRF)
FIGURE J-1: CONCEPTUAL ALTERNATIVE 11 SIMPLIFIED PROCESS FLOW DIAGRAM

Onondaga County Water Redevelopment Corporation

SHEET 2	REV
	1

Alternative 11: OCWEP IWWTP FAB2 Mass Balance, Winter Average Conditions																
Parameter	**Unit**	**EQ Influent**	**Biological Influent**	**75% Phosphoric acid**	**Biological Effluent**	**WAS**	**Thickened Sludge/ Centrifuge Feed**	**Sludge Thickener Decant**	**Bio Centrifuge Centrate**	**Bio Solids to Landfill**	**Biological Eff. Bypassed to Outfall**	**SAC IX Influent**	**Air Stripped from Decarbon**	**IX and Decarbonator Effluent**	**30% HCl for Regeneration**	**IX Regenerate Waste**
Stream ID		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Flowrate (MGD)	MGD	17	17	8.0033E-05	16	0.90	0.19	0.70	0.18	0.019	8.00	7.78		7.39	0.0086	0.40
Flowrate (gpm)		11,458	11,581	0.056	10,956	625	135	489	122	13	5,556	5,401		5,131	5.95	276
pH	s.u.	7.23	7.23		7.00	7.00	7.00	7.00	7.00		7.00	7.00		4.30		5.00
Temperature	F	75	75		72						72	72		72		72
Total Dissolved Solids (TDS)	mg/L	1,515	1,515		1,517	1,515	1,515	1,515	1,515	1,515	1,517	1,517		1,384	38,903	4,793
	lb/d	208,486	210,714	202	199,549	11,366	2,461	8,905	2,227	234	101,186	98,363		85,257	2,781	15,887
Total Suspended Solids (TSS)	mg/L	80	91		5.00	4,559	20,000	291	1,105	200,000	5.00	5.00		5.00		4.89
	lb/d	11,064	12,688		658	34,200	32,490	1,710	1,624	30,865	334	324		308		16
Soluble Chemical Oxygen Demand (COD)	mg/L	699	692		26	26	26	26	26	26	26	26		26		25
	lb/d	96,212	96,249		3,360	192	41	150	38	3.94	1,704	1,656		1,573		83
Alkalinity	mg/L as CaCO3	145	145		100	100	100	100	100	100	100	100		0.100		20
	lb/d	19,953	20,100		13,158	750	162	588	147	15	6,672	6,486	6,415	6.16		65
Nitrate	mg/L as N	49	49		45	45	45	45	45	45	45	45		45		44
	lb/d	6,741	6,807		5,878	335	73	263	66	6.89	2,981	2,898		2,753		145
Ammonia	mg/L as N	75	74		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50		0.50		0.49
	lb/d	10,321	10,321		66	3.75	0.81	2.94	0.74	0.077	33	32		31		1.62
Total Nitrogen (TN)	mg/L as N	124	123		45	45	45	45	45	45	45	45		45		44
	lb/d	17,062	17,128		5,944	339	73	266	66	6.97	3,014	2,930		2,783		146
Sulfate (SO4 2-)	mg/L	635	635		635	635	635	635	635	635	635	635		635		621
	lb/d	87,401	88,334		83,570	4,765	1,032	3,733	934	98	42,376	41,194		39,134		2,060
Total Silica (TSi)	mg/L as SiO2	47	47		47	47	47	47	47	47	47	47		47		46
	lb/d	6,466	6,535		6,183	353	76	276	69	7.25	3,135	3,048		2,895		152
Calcium (Ca)	mg/L	87	87		87	87	87	87	87	87	87	87		0.100		1,697
	lb/d	11,949	12,077		11,425	651	141	510	128	13	5,793	5,632		6.16		5,626
Magnesium (Mg)	mg/L	17	17		17	17	17	17	17	17	17	17		0.100		321
	lb/d	2,274	2,298		2,174	124	27	97	24	2.55	1,102	1,072		6.16		1,066
Chloride (Cl-)	mg/L	150	150		150	150	150	150	150	150	150	150		150	38,903	986
	lb/d	20,607	20,827		19,703	1,123	243	880	220	23	9,991	9,712		9,227	2,781	3,266
Sodium (Na)	mg/L	194	194		194	194	194	194	194	194	194	194		194		190
	lb/d	26,718	27,003		25,547	1,457	315	1,141	285	30	12,954	12,593		11,963		630
Potassium (K)	mg/L	7.00	7.00		7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00		7.00		6.85
	lb/d	963	974		921	53	11	41	10	1.08	467	454		431		23
Fluoride (F)	mg/L	7.62	7.62		7.62	7.62	7.62	7.62	7.62	7.62	7.62	7.62		7.62		7.46
	lb/d	1,049	1,060		1,003	57	12	45	11	1.18	509	494		470		25
Total Organic Carbon (TOC)	mg/L	90	89		8.51	8.51	8.51	8.51	8.51	8.51	8.51	8.51		8.51		8.33
	lb/d	12,373	12,385		1,120	64	14	50	13	1.31	568	552		524		28
Aluminum	mg/L	0.72	0.72		0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72		0.72		0.71
	lb/d	99	101		95	5.42	1.17	4.25	1.06	0.11	48	47		45		2.34
Barium	mg/L	0.31	0.31		0.31	0.31	0.31	0.31	0.31	0.31	0.31	0.31		0.100		4.20
	lb/d	43	43		41	2.32	0.50	1.82	0.46	0.048	21	20		6.16		14
Copper	mg/L	0.33	0.33		0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33		0.33		0.32
	lb/d	45	46		43	2.48	0.54	1.94	0.49	0.051	22	21		20		1.07
Iron	mg/L	0.0080	0.0080		0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080	0.0080		0.0080		0.0078
	lb/d	1.10	1.11		1.05	0.060	0.013	0.047	0.012	0.0012	0.53	0.52		0.49		0.026
Zinc	mg/L	0.50	0.50		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50		0.50		0.49
	lb/d	69	70		66	3.75	0.81	2.94	0.74	0.077	33	32		31		1.62
Phosphorus	mg/L	1.55	1.67	361,828	0.50	54	239	3.47	239	2,388	0.50	0.50		0.50		0.49
	lb/d	213	233	242	66	408	388	20	19	368	33	32		31		1.62

	Alternative 11: OCWEP IWWTP FAB2 Mass Balance, Winter Average Conditions																	
Parameter	**50% Caustic Soda**	**Antiscalant**	**RO Influent**	**RO Permeate**	**93% Sulfuric Acid for pH**	**RO Permeate to Reclaim**	**RO Permeate to Outfall**	**RO Concentrate**	**Thermal Treatment Influent**	**Evaporator Brine**	**Evaporator Distillate**	**Crystallizer Feed**	**Crystallizer Salt Slurry to Centrifuge**	**Cooled Crystallizer Distillate**	**Dewatered Crystallized Salt Solids**	**Crystallizer Dewatering Centrate**	**To Outfall (Bio Eff & RO Perm >**	**To Reclaim (Distillate & RO Perm)**
Stream ID	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**
Flowrate (MGD)	0.0012	1.01E-05	7.39	6.83	4.8E-06	5.06	1.77	0.55	0.95	0.055	0.90	0.068	0.028	0.041	0.015	0.013	9.77	6.00
Flowrate (gpm)	0.81	0.0070	5,131	4,746	0.0033	3,516	1,231	385	661	38	623	47	19	28	10	9.02	671	47
pH			11	8.96		7.00	7.00	11	8.65									
Temperature			72	72		72		72	72					75				
Total Dissolved Solids (TDS)	478,804		1,459	40		41	41	18,958	13,042	225,000	14	202,324	500,000	34	850,000	106,088	1,249	37
	4,630		89,887	2,265	67	1,728	605	87,622	103,509	103,405	104	114,894	114,882	11	103,394	11,488	101,791	1,843
Total Suspended Solids (TSS)			5.00	0		0	0	67	41	0	0	0	0	0	0	0	4.09	0.0
			308	0		0	0	308	324	0	0	0	0	0	0	0	334	0.0
Soluble Chemical Oxygen Demand (COD)			26	0		0	0	340	209	3,601	0.22	5,508	13,602	0.93	13,602	13,602	21	0.039
			1,574	0		0	0	1,574	1,656	1,655	1.66	3,128	3,127	0.31	1,654	1,473	1,704	1.97
Alkalinity			30	3.52		3.52	3.52	358	217	217	217	332	819	0.056	819	819	83	35
	1,850		1,856	200		148	52	1,656	1,721	100	1,621	188	188	0.019	100	89	6,724	1,769
Nitrate			45	7.42		7.42	7.42	504	312	5,379	0.33	8,228	20,320	1.38	20,320	20,320	38	6.32
			2,753	423		314	110	2,330	2,475	2,472	2.47	4,673	4,672	0.47	2,472	2,200	3,090	316
Ammonia			0.50	0.058		0.058	0.058	5.96	3.67	63	0.0039	97	239	0.016	239	239	0.42	0.049
			31	3.29		2.44	0.85	28	29	29	0.029	55	55	0.0055	29	26	34	2.47
Total Nitrogen (TN)			45	7.48		7.48	7.48	510	315	5,443	0.33	8,325	20,560	1.40	20,560	20,560	38	6.37
			2,784	427		316	111	2,357	2,504	2,501	2.50	4,728	4,727	0.47	2,501	2,226	3,125	319
Sulfate (SO4 2-)			635	2.54		2.54	2.54	8,437	5,173	89,242	5.49	136,510	337,112	23	337,112	337,112	520	3.12
			39,140	145	67	107	38	38,995	41,055	41,014	41	77,520	77,512	7.75	41,006	36,506	42,414	156
Total Silica (TSi)			47	0.66		0.66	0.66	618	379	6,544	0.40	10,009	24,718	1.68	24,718	24,718	39	0.63
			2,896	38		28	9.81	2,858	3,010	3,007	3.01	5,684	5,683	0.57	3,007	2,677	3,145	32
Calcium (Ca)			0.100	0.000189		0.000189	0.000189	1.33	710	12,242	0.75	18,726	46,244	3.15	46,244	46,244	71	0.13
			6.16	0.011		0.0080	0.0028	6.15	5,632	5,626	5.63	10,634	10,633	1.06	5,625	5,008	5,793	6.70
Magnesium (Mg)			0.100	0.0003		0.0003	0.0003	1.33	135	2,330	0.14	3,563	8,800	0.60	8,800	8,800	14	0.026
			6.16	0.017		0.013	0.0044	6.15	1,072	1,071	1.07	2,024	2,023	0.20	1,070	953	1,102	1.29
Chloride (Cl-)			150	7.82		7.82	7.82	1,900	1,518	26,190	1.61	40,062	98,934	6.73	98,934	98,934	124	6.89
			9,228	446		330	116	8,782	12,049	12,037	12	22,750	22,748	2.28	12,034	10,714	10,107	345
Sodium (Na)	287,500		239	6.12		6.12	6.12	3,114	1,893	32,657	2.01	49,954	123,363	8.39	123,363	123,363	160	5.52
	2,780		14,743	349		259	91	14,394	15,024	15,009	15	28,368	28,365	2.84	15,006	13,359	13,044	276
Potassium (K)			7.00	0.18		0.18	0.18	91	56	965	0.059	1,476	3,644	0.25	3,644	3,644	5.76	0.16
			431	10		7.60	2.66	421	444	443	0.44	838	838	0.084	443	395	470	8.12
Fluoride (F)			7.62	0.15		0.15	0.15	100	61	1,056	0.065	1,615	3,988	0.27	3,988	3,988	6.27	0.14
			470	8.69		6.44	2.25	461	486	485	0.49	917	917	0.092	485	432	511	7.01
Total Organic Carbon (TOC)			8.51	0.73		0.73	0.73	105	64	1,110	0.068	1,698	4,194	0.29	4,194	4,194	7.10	0.62
			525	41		31	11	483	511	510	0.51	964	964	0.096	510	454	579	31
Aluminum			0.72	0.040		0.040	0.040	9.14	5.62	97	0.0060	148	366	0.025	366	366	0.60	0.035
			45	2.29		1.70	0.59	42	45	45	0.045	84	84	0.0084	45	40	49	1.75
Barium			0.100	0.0050		0.0050	0.0050	1.27	2.50	43	0.0026	66	163	0.011	163	163	0.25	0.0047
			6.16	0.29		0.21	0.074	5.88	20	20	0.020	37	37	0.0037	20	18	21	0.23
Copper			0.33	0.017		0.017	0.017	4.20	2.58	45	0.0027	68	168	0.011	168	168	0.27	0.014
			20	0.94		0.70	0.24	19	20	20	0.020	39	39	0.0039	20	18	22	0.72
Iron			0.0080	0.0004		0.0004	0.0004	0.10	0.063	1.08	6.64E-05	1.65	4.07	0.0002772	4.07	4.07	0.0066	0.0003493
			0.49	0.023		0.017	0.0059	0.47	0.50	0.50	0.000496	0.94	0.94	9.368E-05	0.50	0.44	0.54	0.017
Zinc			0.50	0.025		0.025	0.025	6.36	3.91	67	0.0041	103	255	0.017	255	255	0.41	0.022
			31	1.43		1.06	0.37	29	31	31	0.031	59	59	0.0059	31	28	34	1.09
Phosphorus			0.50	0.0070		0.0070	0.0070	6.58	4.04	70	0.0043	107	263	0.018	263	263	0.41	0.0067
			31	0.40		0.30	0.10	30	32	32	0.032	60	60	0.0060	32	28	33	0.33

Alternative 11: OCWEP IWWTP FAB2 Mass Balance, Summer Average Conditions																
Parameter	**Unit**	**EQ Influent**	**Biological Influent**	**75% Phosphoric acid**	**Biological Effluent**	**WAS**	**Thickened Sludge/ Centrifuge Feed**	**Sludge Thickener Decant**	**Bio Centrifuge Centrate**	**Bio Solids to Landfill**	**Biological Eff. Bypassed to Outfall**	**SAC IX Influent**	**Air Stripped from Decarbon**	**IX and Decarbonator Effluent**	**30% HCl for Regeneration**	**IX Regenerate Waste**
Stream ID		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Flowrate (MGD)	MGD	14	14	5.5547E-05	13	0.90	0.18	0.72	0.16	0.017	5.00	7.87		7.47	0.010	0.40
Flowrate (gpm)		9,447	9,560	0.039	8,935	625	124	501	112	12	3,472	5,462		5,189	7.14	280
pH	s.u.	7.00	7.00		7.00	7.00	7.00	7.00	7.00		7.00	7.00		4.30		5.00
Temperature	F	86	86		89						89	89		89		89
Total Dissolved Solids (TDS)	mg/L	1,826	1,826		1,827	1,826	1,826	1,826	1,826	1,826	1,827	1,827		1,690	38,903	5,313
	lb/d	207,122	209,583	165	196,047	13,700	2,719	10,981	2,461	258	76,189	119,859		105,312	3,337	17,884
Total Suspended Solids (TSS)	mg/L	98	110		5.00	4,178	20,000	261	1,105	200,000	5.00	5.00		5.00		4.87
	lb/d	11,156	12,646		537	31,358	29,790	1,568	1,489	28,300	209	328		312		16
Soluble Chemical Oxygen Demand (COD)	mg/L	848	838		2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88		2.88		2.80
	lb/d	96,212	96,216		308	22	4.28	17	3.88	0.41	120	189		179		9.43
Alkalinity	mg/L as CaCO3	145	144		100	100	100	100	100	100	100	100		0.100		19
	lb/d	16,451	16,586		10,730	750	149	602	135	14	4,170	6,560	6,488	6.23		66
Nitrate	mg/L as N	59	59		34	34	34	34	34	34	34	34		34		34
	lb/d	6,741	6,787		3,695	258	51	207	46	4.87	1,436	2,259		2,146		113
Ammonia	mg/L as N	75	74		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50		0.50		0.49
	lb/d	8,509	8,510		54	3.75	0.74	3.01	0.67	0.071	21	33		31		1.64
Total Nitrogen (TN)	mg/L as N	134	133		35	35	35	35	35	35	35	35		35		34
	lb/d	15,250	15,297		3,748	262	52	210	47	4.94	1,457	2,292		2,177		115
Sulfate (SO4 2-)	mg/L	763	763		763	763	763	763	763	763	763	763		763		744
	lb/d	86,568	87,597		81,871	5,726	1,136	4,590	1,029	108	31,817	50,054		47,551		2,503
Total Silica (TSi)	mg/L as SiO2	57	57		57	57	57	57	57	57	57	57		57		56
	lb/d	6,485	6,562		6,133	429	85	344	77	8.09	2,384	3,750		3,562		187
Calcium (Ca)	mg/L	104	104		104	104	104	104	104	104	104	104		0.100		2,026
	lb/d	11,803	11,943		11,163	781	155	626	140	15	4,338	6,825		6.23		6,818
Magnesium (Mg)	mg/L	19	19		19	19	19	19	19	19	19	19		0.100		368
	lb/d	2,156	2,181		2,039	143	28	114	26	2.69	792	1,246		6.23		1,240
Chloride (Cl-)	mg/L	179	179		179	179	179	179	179	179	179	179		179	38,903	1,166
	lb/d	20,309	20,550		19,207	1,343	267	1,077	241	25	7,464	11,743		11,156	3,337	3,925
Sodium (Na)	mg/L	234	234		234	234	234	234	234	234	234	234		234		228
	lb/d	26,549	26,865		25,109	1,756	349	1,408	315	33	9,758	15,351		14,583		768
Potassium (K)	mg/L	7.00	7.00		7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00		7.00		6.82
	lb/d	794	804		751	53	10	42	9.44	0.99	292	459		436		23
Fluoride (F)	mg/L	9.19	9.19		9.19	9.19	9.19	9.19	9.19	9.19	9.19	9.19		9.19		8.96
	lb/d	1,043	1,055		986	69	14	55	12	1.30	383	603		573		30
Total Organic Carbon (TOC)	mg/L	109	107		0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96		0.96		0.93
	lb/d	12,327	12,329		103	7.19	1.43	5.76	1.29	0.14	40	63		60		3.14
Aluminum	mg/L	0.80	0.80		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80		0.80		0.78
	lb/d	91	92		86	6.00	1.19	4.81	1.08	0.11	33	52		50		2.62
Barium	mg/L	0.40	0.40		0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40		0.100		5.94
	lb/d	45	46		43	3.00	0.60	2.41	0.54	0.057	17	26		6.23		20
Copper	mg/L	0.41	0.41		0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41		0.41		0.40
	lb/d	47	47		44	3.08	0.61	2.47	0.55	0.058	17	27		26		1.34
Iron	mg/L	0.0100	0.0100		0.0100	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100		0.0100		0.0097
	lb/d	1.13	1.15		1.07	0.075	0.015	0.060	0.013	0.0014	0.42	0.66		0.62		0.033
Zinc	mg/L	0.60	0.60		0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60		0.60		0.58
	lb/d	68	69		64	4.50	0.89	3.61	0.81	0.085	25	39		37		1.97
Phosphorus	mg/L	1.80	1.92	361,828	0.50	45	213	2.78	213	2,131	0.50	0.50		0.50		0.49
	lb/d	204	220	168	54	334	317	17	16	301	21	33		31		1.64

	Alternative 11: OCWEP IWWTP FAB2 Mass Balance, Summer Average Conditions																	
Parameter	**50% Caustic Soda**	**Antiscalant**	**RO Influent**	**RO Permeate**	**93% Sulfuric Acid for pH**	**RO Permeate to Reclaim**	**RO Permeate to Outfall**	**RO Concentrate**	**Thermal Treatment Influent**	**Evaporator Brine**	**Evaporator Distillate**	**Crystallizer Feed**	**Crystallizer Salt Slurry to Centrifuge**	**Cooled Crystallizer Distillate**	**Dewatered Crystallized Salt Solids**	**Crystallizer Dewatering Centrate**	**To Outfall (Bio Eff & RO Perm >**	**To Reclaim (Distillate & RO Perm)**
Stream ID	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**
Flowrate (MGD)	0.0012	1.02E-05	7.47	6.91	4.85E-06	5.05	1.86	0.56	0.96	0.067	0.90	0.082	0.033	0.049	0.018	0.016	6.86	6.00
Flowrate (gpm)	0.81	0.0071	5,190	4,801	0.0034	3,509	1,291	389	670	46	623	57	23	34	12	11	682	57
pH			11	8.96		7.00	7.00	11	8.64									
Temperature			89	89		89		89	89					75				
Total Dissolved Solids (TDS)	478,804		1,764	48		49	49	22,925	15,553	225,000	17	202,324	500,000	34	850,000	106,088	1,345	44
	4,630		109,942	2,771	68	2,075	764	107,172	125,056	124,931	125	138,810	138,797	14	124,917	13,880	76,952	2,214
Total Suspended Solids (TSS)			5.00	0		0	0	67	41	0	0	0	0	0	0	0	3.64	0.0
			312	0		0	0	312	328	0	0	0	0	0	0	0	209	0.0
Soluble Chemical Oxygen Demand (COD)			2.88	0		0	0	38	23	339	0.025	519	1,282	0.087	1,282	1,282	2.10	0.0045
			179	0		0	0	179	189	188	0.19	356	356	0.036	188	168	120	0.22
Alkalinity			30	3.48		3.48	3.48	354	214	214	214	327	809	0.055	809	809	74	35
	1,850		1,856	200		146	54	1,656	1,721	119	1,603	225	225	0.022	119	106	4,224	1,749
Nitrate			34	5.72		5.72	5.72	389	240	3,471	0.26	5,310	13,112	0.89	13,112	13,112	27	4.87
			2,146	330		241	89	1,816	1,929	1,927	1.93	3,643	3,642	0.36	1,927	1,715	1,525	243
Ammonia			0.50	0.058		0.058	0.058	5.96	3.67	53	0.0039	81	200	0.014	200	200	0.38	0.049
			31	3.33		2.43	0.89	28	29	29	0.029	56	56	0.0056	29	26	22	2.47
Total Nitrogen (TN)			35	5.78		5.78	5.78	394	244	3,524	0.26	5,391	13,312	0.91	13,312	13,312	27	4.92
			2,177	333		244	90	1,844	1,959	1,957	1.96	3,698	3,698	0.37	1,956	1,742	1,546	246
Sulfate (SO4 2-)			763	3.05		3.05	3.05	10,136	6,204	89,754	6.66	137,292	339,044	23	339,044	339,044	557	3.76
			47,559	176	68	129	47	47,383	49,886	49,836	50	94,194	94,184	9.42	49,826	44,358	31,864	188
Total Silica (TSi)			57	0.81		0.81	0.81	752	461	6,664	0.49	10,193	25,173	1.71	25,173	25,173	42	0.77
			3,563	47		34	13	3,516	3,704	3,700	3.70	6,993	6,993	0.70	3,699	3,293	2,396	38
Calcium (Ca)			0.100	0.000189		0.000189	0.000189	1.33	849	12,279	0.91	18,782	46,383	3.16	46,383	46,383	76	0.16
			6.23	0.011		0.0080	0.0029	6.22	6,825	6,818	6.82	12,886	12,885	1.29	6,816	6,068	4,338	8.12
Magnesium (Mg)			0.100	0.0003		0.0003	0.0003	1.33	155	2,243	0.17	3,430	8,471	0.58	8,471	8,471	14	0.030
			6.23	0.017		0.013	0.0047	6.22	1,246	1,245	1.25	2,353	2,353	0.24	1,245	1,108	792	1.49
Chloride (Cl-)			179	9.35		9.35	9.35	2,271	1,809	26,165	1.94	40,023	98,838	6.73	98,838	98,838	133	8.22
			11,157	539		394	145	10,618	14,543	14,528	15	27,459	27,456	2.75	14,525	12,931	7,609	411
Sodium (Na)	287,500		279	7.13		7.13	7.13	3,626	2,204	31,882	2.37	48,768	120,432	8.19	120,432	120,432	172	6.43
	2,780		17,364	411		301	111	16,952	17,720	17,702	18	33,459	33,455	3.35	17,699	15,756	9,868	322
Potassium (K)			7.00	0.18		0.18	0.18	91	56	808	0.060	1,235	3,051	0.21	3,051	3,051	5.15	0.16
			436	10		7.58	2.79	426	449	448	0.45	848	848	0.085	448	399	295	8.12
Fluoride (F)			9.19	0.18		0.18	0.18	120	74	1,066	0.079	1,630	4,026	0.27	4,026	4,026	6.75	0.17
			573	11		7.75	2.85	562	592	592	0.59	1,119	1,118	0.11	592	527	386	8.45
Total Organic Carbon (TOC)			0.96	0.082		0.082	0.082	12	7.23	105	0.0078	160	395	0.027	395	395	0.72	0.070
			60	4.71		3.45	1.27	55	58	58	0.058	110	110	0.011	58	52	41	3.51
Aluminum			0.80	0.044		0.044	0.044	10	6.21	90	0.0067	137	339	0.023	339	339	0.60	0.039
			50	2.56		1.87	0.69	47	50	50	0.050	94	94	0.0094	50	44	34	1.93
Barium			0.100	0.0050		0.0050	0.0050	1.27	3.23	47	0.0035	71	176	0.012	176	176	0.29	0.0048
			6.23	0.29		0.21	0.078	5.94	26	26	0.026	49	49	0.0049	26	23	17	0.24
Copper			0.41	0.021		0.021	0.021	5.21	3.20	46	0.0034	71	175	0.012	175	175	0.30	0.018
			26	1.18		0.86	0.32	24	26	26	0.026	49	49	0.0049	26	23	17	0.89
Iron			0.0100	0.0005		0.0005	0.0005	0.13	0.078	1.13	8.38E-05	1.73	4.26	0.0002901	4.26	4.26	0.0074	0.000436
			0.62	0.029		0.021	0.0078	0.59	0.63	0.63	0.000627	1.18	1.18	0.0001184	0.63	0.56	0.42	0.022
Zinc			0.60	0.030		0.030	0.030	7.63	4.68	68	0.0050	104	256	0.017	256	256	0.45	0.026
			37	1.73		1.26	0.47	36	38	38	0.038	71	71	0.0071	38	33	25	1.31
Phosphorus			0.50	0.0070		0.0070	0.0070	6.58	4.03	58	0.0043	89	220	0.015	220	220	0.37	0.0067
			31	0.40		0.30	0.11	31	32	32	0.032	61	61	0.0061	32	29	21	0.33

Alternative 11: OCWEP IWWTP FAB2 Mass Balance, Maximum Concentration Conditions																
Parameter	**Unit**	**EQ Influent**	**Biological Influent**	**75% Phosphoric acid**	**Biological Effluent**	**WAS**	**Thickened Sludge/ Centrifuge Feed**	**Sludge Thickener Decant**	**Bio Centrifuge Centrate**	**Bio Solids to Landfill**	**Biological Eff. Bypassed to Outfall**	**SAC IX Influent**	**Air Stripped from Decarbon**	**IX and Decarbonator Effluent**	**30% HCl for Regeneration**	**IX Regenerate Waste**
Stream ID		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Flowrate (MGD)	MGD	17	17	7.4303E-05	16	0.67	0.35	0.32	0.32	0.034	3.95	12		12	0.016	0.63
Flowrate (gpm)		11,458	11,680	0.052	11,213	467	245	222	222	23	2,743	8,470		8,047	11	435
pH	s.u.	7.23	7.23		7.00	7.00	7.00	7.00	7.00		7.00	7.00		4.30		5.00
Temperature	F	86	86		89						89	89		89		89
Total Dissolved Solids (TDS)	mg/L	3,400	3,400		3,402	3,400	3,400	3,400	3,400	3,400	3,402	3,402		3,347	38,903	5,313
	lb/d	467,874	476,932	206	458,068	19,070	10,009	9,061	9,058	951	112,056	346,012		323,455	5,175	27,732
Total Suspended Solids (TSS)	mg/L	300	315		5.00	11,049	20,000	1,163	1,105	200,000	5.00	5.00		5.00		4.87
	lb/d	41,283	44,227		673	61,973	58,874	3,099	2,944	55,931	165	509		483		25
Soluble Chemical Oxygen Demand (COD)	mg/L	1,272	1,248		2.88	2.88	2.88	2.88	2.88	2.88	2.88	2.88		2.88		2.80
	lb/d	175,040	175,048		387	16	8.46	7.66	7.66	0.80	95	292		278		15
Alkalinity	mg/L as CaCO3	201	199		100	100	100	100	100	100	100	100		0.100		19
	lb/d	27,694	27,960		13,467	561	294	267	266	28	3,294	10,172	10,061	9.66		102
Nitrate	mg/L as N	89	88		21	21	21	21	21	21	21	21		21		21
	lb/d	12,264	12,320		2,849	119	62	56	56	5.92	697	2,152		2,044		108
Ammonia	mg/L as N	75	74		0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50		0.50		0.49
	lb/d	10,321	10,322		67	2.80	1.47	1.33	1.33	0.14	16	51		48		2.54
Total Nitrogen (TN)	mg/L as N	164	161		22	22	22	22	22	22	22	22		22		21
	lb/d	22,584	22,642		2,916	121	64	58	58	6.06	713	2,203		2,093		110
Sulfate (SO4 2-)	mg/L	763	763		763	763	763	763	763	763	763	763		763		744
	lb/d	104,996	107,029		102,750	4,280	2,246	2,034	2,033	213	25,136	77,615		73,734		3,881
Total Silica (TSi)	mg/L as SiO2	57	57		57	57	57	57	57	57	57	57		57		56
	lb/d	7,866	8,018		7,697	321	168	152	152	16	1,883	5,814		5,524		291
Calcium (Ca)	mg/L	104	104		104	104	104	104	104	104	104	104		0.100		2,026
	lb/d	14,316	14,593		14,009	583	306	277	277	29	3,427	10,582		9.66		10,573
Magnesium (Mg)	mg/L	19	19		19	19	19	19	19	19	19	19		0.100		368
	lb/d	2,615	2,665		2,559	107	56	51	51	5.31	626	1,933		9.66		1,923
Chloride (Cl-)	mg/L	179	179		179	179	179	179	179	179	179	179		179	38,903	1,166
	lb/d	24,632	25,109		24,105	1,004	527	477	477	50	5,897	18,208		17,298	5,175	6,085
Sodium (Na)	mg/L	234	234		234	234	234	234	234	234	234	234		234		228
	lb/d	32,201	32,824		31,512	1,312	689	624	623	65	7,709	23,803		22,613		1,190
Potassium (K)	mg/L	7.00	7.00		7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00		7.00		6.82
	lb/d	963	982		943	39	21	19	19	1.96	231	712		676		36
Fluoride (F)	mg/L	9.19	9.19		9.19	9.19	9.19	9.19	9.19	9.19	9.19	9.19		9.19		8.96
	lb/d	1,265	1,289		1,238	52	27	24	24	2.57	303	935		888		47
Total Organic Carbon (TOC)	mg/L	424	416		0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96		0.96		0.93
	lb/d	58,347	58,349		129	5.38	2.82	2.55	2.55	0.27	32	97		93		4.87
Aluminum	mg/L	0.80	0.80		0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80		0.80		0.78
	lb/d	110	112		108	4.49	2.35	2.13	2.13	0.22	26	81		77		4.07
Barium	mg/L	0.40	0.40		0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40		0.100		5.94
	lb/d	55	56		54	2.24	1.18	1.07	1.07	0.11	13	41		9.66		31
Copper	mg/L	0.41	0.41		0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41		0.41		0.40
	lb/d	56	58		55	2.30	1.21	1.09	1.09	0.11	14	42		40		2.09
Iron	mg/L	0.0100	0.0100		0.0100	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100	0.0100		0.0100		0.0097
	lb/d	1.38	1.40		1.35	0.056	0.029	0.027	0.027	0.0028	0.33	1.02		0.97		0.051
Zinc	mg/L	0.60	0.60		0.60	0.60	0.60	0.60	0.60	0.60	0.60	0.60		0.60		0.58
	lb/d	83	84		81	3.37	1.77	1.60	1.60	0.17	20	61		58		3.05
Phosphorus	mg/L	2.70	2.84	361,828	0.50	99	179	10	179	1,790	0.50	0.50		0.50		0.49
	lb/d	372	398	224	67	555	527	28	26	501	16	51		48		2.54

	Alternative 11: OCWEP IWWTP FAB2 Mass Balance, Maximum Concentration Conditions																	
Parameter	**50% Caustic Soda**	**Antiscalant**	**RO Influent**	**RO Permeate**	**93% Sulfuric Acid for pH**	**RO Permeate to Reclaim**	**RO Permeate to Outfall**	**RO Concentrate**	**Thermal Treatment Influent**	**Evaporator Brine**	**Evaporator Distillate**	**Crystallizer Feed**	**Crystallizer Salt Slurry to Centrifuge**	**Cooled Crystallizer Distillate**	**Dewatered Crystallized Salt Solids**	**Crystallizer Dewatering Centrate**	**To Outfall (Bio Eff & RO Perm >**	**To Reclaim (Distillate & RO Perm)**
Stream ID	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**31**	**32**	**33**
Flowrate (MGD)	0.0012	1.58E-05	12	11	7.52E-06	4.55	6.17	0.87	1.49	0.19	1.31	0.23	0.093	0.14	0.049	0.044	10	6.00
Flowrate (gpm)	0.81	0.011	8,047	7,444	0.0052	3,163	4,281	604	1,038	128	910	159	64	94	34	30	1,072	159
pH			11	8.96		7.00	7.00	11	8.64									
Temperature			89	89		89		89	89					75				
Total Dissolved Solids (TDS)	478,804		3,395	92		94	94	44,122	27,876	225,000	32	202,324	500,000	34	850,000	106,088	1,385	79
	4,630		328,086	8,268	105	3,557	4,816	319,818	347,549	347,202	348	385,776	385,737	39	347,163	38,574	116,872	3,943
Total Suspended Solids (TSS)			5.00	0		0	0	67	41	0	0	0	0	0	0	0	1.95	0.0
			483	0		0	0	483	509	0	0	0	0	0	0	0	165	0.0
Soluble Chemical Oxygen Demand (COD)			2.88	0		0	0	38	23	189	0.027	290	715	0.049	715	715	1.12	0.0069
			278	0		0	0	278	292	292	0.29	552	552	0.055	292	260	95	0.35
Alkalinity			19	2.25		2.25	2.25	229	141	141	141	216	533	0.036	533	533	40	33
	1,850		1,860	201		85	115	1,659	1,761	218	1,543	412	412	0.041	218	194	3,410	1,628
Nitrate			21	3.52		3.52	3.52	239	147	1,190	0.17	1,820	4,495	0.31	4,495	4,495	10	2.71
			2,045	314		134	181	1,730	1,838	1,836	1.84	3,470	3,470	0.35	1,836	1,634	878	136
Ammonia			0.50	0.058		0.058	0.058	5.96	3.67	30	0.0042	45	112	0.0076	112	112	0.23	0.045
			48	5.16		2.19	2.97	43	46	46	0.046	86	86	0.0086	46	41	19	2.25
Total Nitrogen (TN)			22	3.57		3.57	3.57	245	151	1,219	0.17	1,865	4,606	0.31	4,606	4,606	11	2.76
			2,093	319		136	184	1,773	1,884	1,882	1.88	3,557	3,556	0.36	1,881	1,675	897	138
Sulfate (SO4 2-)			763	3.05		3.05	3.05	10,136	6,204	50,075	7.08	76,597	189,158	13	189,158	189,158	300	4.15
			73,741	273	105	116	157	73,468	77,349	77,272	77	146,050	146,035	15	77,257	68,778	25,292	208
Total Silica (TSi)			57	0.81		0.81	0.81	752	461	3,718	0.53	5,687	14,044	0.96	14,044	14,044	23	0.75
			5,524	72		31	42	5,452	5,743	5,737	5.74	10,844	10,842	1.08	5,736	5,106	1,925	38
Calcium (Ca)			0.100	0.000189		0.000189	0.000189	1.33	849	6,851	0.97	10,479	25,879	1.76	25,879	25,879	41	0.25
			9.66	0.017		0.0072	0.0097	9.65	10,582	10,572	11	19,981	19,979	2.00	10,570	9,410	3,427	13
Magnesium (Mg)			0.100	0.0003		0.0003	0.0003	1.33	155	1,251	0.18	1,914	4,726	0.32	4,726	4,726	7.42	0.046
			9.66	0.027		0.011	0.015	9.64	1,933	1,931	1.93	3,649	3,649	0.36	1,930	1,719	626	2.31
Chloride (Cl-)			179	9.35		9.35	9.35	2,271	1,809	14,598	2.06	22,330	55,144	3.75	55,144	55,144	76	7.63
			17,300	836		355	481	16,464	22,549	22,526	23	42,577	42,573	4.26	22,522	20,050	6,378	382
Sodium (Na)	287,500		263	6.73		6.73	6.73	3,420	2,084	16,821	2.38	25,730	63,539	4.32	63,539	63,539	95	5.72
	2,780		25,393	601		255	346	24,792	25,982	25,956	26	49,059	49,054	4.91	25,951	23,103	8,055	286
Potassium (K)			7.00	0.18		0.18	0.18	91	56	451	0.064	689	1,702	0.12	1,702	1,702	2.84	0.15
			677	16		6.83	9.25	660	696	695	0.70	1,314	1,314	0.13	695	619	240	7.66
Fluoride (F)			9.19	0.18		0.18	0.18	120	74	595	0.084	910	2,246	0.15	2,246	2,246	3.70	0.16
			888	16		6.98	9.45	872	918	918	0.92	1,734	1,734	0.17	917	817	312	8.07
Total Organic Carbon (TOC)			0.96	0.082		0.082	0.082	12	7.23	58	0.0083	89	221	0.015	221	221	0.42	0.064
			93	7.31		3.10	4.20	85	90	90	0.090	170	170	0.017	90	80	36	3.21
Aluminum			0.80	0.044		0.044	0.044	10	6.21	50	0.0071	77	189	0.013	189	189	0.34	0.036
			77	3.98		1.69	2.29	73	77	77	0.077	146	146	0.015	77	69	29	1.78
Barium			0.100	0.0050		0.0050	0.0050	1.27	3.23	26	0.0037	40	98	0.0067	98	98	0.16	0.0048
			9.66	0.45		0.19	0.26	9.22	40	40	0.040	76	76	0.0076	40	36	13	0.24
Copper			0.41	0.021		0.021	0.021	5.21	3.20	26	0.0037	39	98	0.0066	98	98	0.17	0.017
			40	1.83		0.78	1.05	38	40	40	0.040	75	75	0.0075	40	35	15	0.83
Iron			0.0100	0.0005		0.0005	0.0005	0.13	0.078	0.63	8.9E-05	0.96	2.38	0.0001619	2.38	2.38	0.0042	0.0004026
			0.97	0.045		0.019	0.026	0.92	0.97	0.97	0.000973	1.84	1.84	0.0001837	0.97	0.86	0.36	0.020
Zinc			0.60	0.030		0.030	0.030	7.63	4.68	38	0.0053	58	143	0.0097	143	143	0.25	0.024
			58	2.68		1.14	1.54	55	58	58	0.058	110	110	0.011	58	52	21	1.21
Phosphorus			0.50	0.0070		0.0070	0.0070	6.58	4.03	33	0.0046	50	123	0.0084	123	123	0.20	0.0065
			48	0.63		0.27	0.36	48	50	50	0.050	95	95	0.0095	50	45	17	0.33

Brown AND Caldwell	Client	**Micron Onondaga**		Location	Syracuse, NY		Originator	Anukriti Shah			Revision	**A**	**MAJOR EQUIPMENT LIST ALT 11**
	Project	**IWWTP & WRF**		BC #	191915		Approved By	Tom Sandy			Issued Date	**6/18/2025**	**DRAFT**

		EQUIPMENT INFORMATION				PROCESS				MECHANICAL				ELECTRICAL & INSTRUMENTATION	
Item No.	REV	Equipment Category	Equipment Status	Equipment Name	Quantity	Capacity	Total Capacity	Units	Temperature	Type	Material of Construction	Physical Dimension	Equipment Installation	HP (Nameplate)	Notes
1	A	Pump	New	EQ/Diversion Feed Pumps	4	2,000	8,000	gpm	AMB	Centrifugal	Cast Iron	--	Outdoor	50	
2	A	Pump	New	Screen Feed Pumps	4	2,000	8,000	gpm	AMB	Centrifugal	Cast Iron	--	Outdoor	50	
3	A	Separation	New	Screens	4	2,000	8,000	gpm	AMB	--	Stainless steel	--	Outdoor	1	
4	A	Tank	New	Anoxic Tanks	2	1,050,000	2,100,000	gal	AMB	--	Cast-In-Place Concrete	63 ft (L) x 75 ft (W) x 30 ft (H)	Outdoor	--	
5	A	Mixer	New	Anoxic Tank Mixers	2	--	--	--	AMB	Vertical Hyperboloid	Stainless Steel	--	Outdoor	40	
6	A	Tank	New	Aerobic Tanks	2	5,700,000	11,400,000	gal	AMB	--	Cast-In-Place Concrete	340 ft (L) x 75 ft (W) x 30 ft (H)	Outdoor	--	
7	A	Aeration	New	Aeration Coarse Bubble Grid	1	13,500	13,500	scfm	AMB	Coarse Bubble	Stainless Steel	--	Outdoor	--	
8	A	Blower	New	Aerobic Blowers	5	13,500	67,500	scfm	AMB	Positive Displacement Blower	Cast Iron	--	Outdoor	350	
9	A	Pump	New	MLE Recycle Pumps	5	5,730	28,650	gpm	AMB	Centrifugal	Stainless Steel	--	Indoor	50	
10	A	Separation	New	MBR Cassette Tanks & Membranes	10	6080	60,800	gpm	AMB	--	Coated Carbon Steel	42 ft (L) x 10 ft (W) x 14 ft (H)	Indoor	--	
11	A	Blower	New	MBR Blowers	11	300	3,300	gpm	AMB	Positive Displacement Blower	Cast Iron	--	Indoor	40	
12	A	Pump	New	Recirculation (RAS&WAS) pumps	10	TBD	TBD	gpm	AMB	Low Shear Rotary Lobe Positive Displacement	Cast Iron	Design capacities are to be confirmed once vendor information has been provided	Indoor	25	
13	A	Pump	New	Permeate/Feed Pulse Pumps	10	TBD	TBD	gpm	AMB	Centrifugal	Cast Iron	Design capacities are to be confirmed once vendor information has been provided	Outdoor	30	
14	A	Compressor	New	MBR Air Compressor	2	TBD	TBD	scfm	AMB	--	--	Design capacities are to be confirmed once vendor information has been provided	Outdoor	5	
15	A	Pump	New	CIP Tank Feed Pumps	1	375	375	gpm	AMB	Centrifugal	Cast Iron			25	
16	A	Tank	New	Gravity Thickener	1	1,000,000	1,000,000	gal	AMB	--	Cast-In-Place Concrete	50 ft (D) x 17 ft (H)	Indoor	--	
17	A	Pump	New	Centrifuge Feed Pumps	2	607	1,214	gpm	AMB	Progressive Cavity	Cast Iron		Indoor	50	
18	A	Dewatering	New	Biological Centrifuges	3	607	1,821	gpm	AMB	Decanter Centrifuge	Coated Carbon Steel		Indoor	--	
19	A	Tank	New	Centrate Sump	1	7500	7,500	gal	AMB	Sump	Concrete-in Place		Outdoor	--	
20	A	Pump	New	Centrate Sump Pumps	3	375	1,125	gpm	AMB	Centrifugal	Cast Iron		Outdoor	20	
21	A	Pump	New	Building Sump Pumps	2	375	750	gpm	AMB	Centrifugal	Cast Iron			20	
22	A	Conveyor	New	Hopper & Conveyor	3	375	1,125	gpm	AMB					15	
26	A	Disinfection	New	UV Disinfection Unit	2	5730	11,460	gpm	AMB	Various	Stainless steel	6 ft (L) x 5 ft (W) x 6 ft (H)	Outdoor	266	
27	A	Pump	New	Discharge Pumps	4	2000	8,000	gpm	AMB	Centrifugal	Cast Iron	--	Indoor	50	
28	A	Tank	New	Phosphoric Acid Tank	1	7400	7,400	gal	AMB	--	FRP Double Wall	11 ft (D) x 10 ft (H)	Indoor	--	
29	A	Tank	New	Sulfuric Acid Tank	1	7400	7,400	gal	AMB	--	LDPE	11 ft (D) x 10 ft (H)	Indoor	--	
30	A	Tank	New	Sodium Hydroxide Tank	1	7400	7,400	gal	AMB	--	HDPE	11 ft (D) x 10 ft (H)	Indoor	--	
31	A	Tank	New	Neat Polymer Tank	1	7400	7,400	gal	AMB	--	FRP Double Wall	11 ft (D) x 10 ft (H)	Indoor	--	
32	A	Tank	New	Citric Acid Tote	2	275	550	gal	AMB					--	
33		Tank	New	Sodium Hypochlorite Tote	2	275	550	gal	AMB					--	
34	A	Pump	New	Phosphoric Acid Metering Pumps	4	0.02	0.1	gpm	AMB	Chemical Metering Pump	PVC/PVDF dosing head, EPDM/Viton FKM O-rings, ceramic check balls	--	Indoor	1	
35	A	Pump	New	Sulfuric Acid Metering Pumps	5	1.625	8	gpm	AMB	Chemical Metering Pump	Stainless Steel	--	Outdoor	1	
36	A	Pump	New	Sodium Hydroxide Metering Pumps	5	0.1	1	gpm	AMB	Chemical Metering Pump	PVC/PVDF dosing head, EPDM/Viton FKM O-rings, ceramic check balls	--	Indoor	5	
37	A	Pump	New	CIP Hypo Pumps	2	0.1	0.2	gpm	AMB	Chemical Metering Pump	PVC/PVDF dosing head, EPDM/Viton FKM O-rings, ceramic check balls	--	Indoor	1	

Brown AND Caldwell	Client	Micron Onondaga		Location	Syracuse, NY		Originator	Anukriti Shah			Revision	A	MAJOR EQUIPMENT LIST ALT 11
	Project	IWWTP & WRF		BC #	191915		Approved By	Tom Sandy			Issued Date	6/18/2025	DRAFT

		EQUIPMENT INFORMATION				PROCESS				MECHANICAL				ELECTRICAL & INSTRUMENTATION	
Item No.	REV	Equipment Category	Equipment Status	Equipment Name	Quantity	Capacity	Total Capacity	Units	Temperature	Type	Material of Construction	Physical Dimension	Equipment Installation	HP (Nameplate)	Notes
38	A	Pump	New	CIP Citric Acid Pumps	2	0.1	0.2	gpm	AMB	Chemical Metering Pump	PVC/PVDF dosing head, EPDM/Viton FKM O-rings, ceramic check balls	--	Indoor	1	
39	A	Pump	New	CIP Caustic Pumps	2	0.10	0.2	gpm	AMB	Chemical Metering Pump	PVC/PVDF dosing head, EPDM/Viton FKM O-rings, ceramic check balls		Indoor	1.0	
40	A	Tank	New	Biological Polymer Make Down System	3	0.08	0.2	gpm	AMB	--	--	--	Indoor	5	
43	A	Pump	New	IX Feed Pumps	6	1731	10,386	gpm	AMB	Centrifugal	Cast Iron	--	Indoor	100	
44	A	Separation	New	SAC Ion Exchange Vessels	12	8,657	103,884	gpm	AMB	Ion Exchange	Coated Carbon Steel	10 ft (D) x 12 ft (H)	Indoor	--	
45	A	Tank	New	HCl (35%) Storage Tank	1	92,160	92,160	gal	AMB	--	HDPE	25 ft (D) x 25ft (H)	Indoor	--	
46	A	Pump	New	HCl Feed Pumps (IX regeneration)	2	40	80	gpm	AMB	Chemical Metering Pump	Chemical Metering Pump	--	Indoor	3	
47	A	Tank	New	HCl Wet Scrubber	1	TBD	TBD	gal	AMB	--	TBD	--	Outdoor	--	
48	A	Pump	New	SAC Backwash Pumps	2	618	1,237	gpm	AMB	Centrifugal	Cast Iron	--	Indoor	50	
49	A	Separation	New	Decarbonator	6	1,600	9,600	gpm	AMB	--	FRP	17 ft (D) x 24 ft (H)	Outdoor	--	
50	A	Blower	New	Decarbonator blowers	6	86,000	516,000	scfm	AMB	Positive Displacement Blower	Cast Iron	--	Outdoor	600	
51	A	Pump	New	RO Feed Tank Feed Pumps	6	1,800	10,800	gpm	AMB	Centrifugal	Cast Iron	--	Outdoor	40	
52	A	Tank	New	RO Feed Tank	1	173,140	173,140	gal	AMB	--	Cast-In-Place Concrete	30 ft (D) x 33 ft (H)	Outdoor	--	
53	A	Mixer	New	RO Feed Tank Mixer	1	618	618	gpm	AMB	Mechanical Mixer	Stainless Steel	--	Outdoor	15	
54	A	Pump	New	RO Feed Pumps	7	1,500	10,500	gpm	AMB	Centrifugal	Cast Iron	--	Indoor	50	
55	A	Separation	New	RO Package	1	8,225	8,225	gpm	AMB	Various	Various	--	Indoor	--	
56	A	Separation	New	RO Cartridge Filters	5	8,225	41,125	gpm	TBD	TBD	TBD	TBD	Indoor	--	Design capacities and details are to be confirmed once vendor information has been provided
57	A	Pump	New	RO High Pressure Feed Pumps	5	TBD	TBD	gpm	TBD	TBD	TBD	TBD	Indoor	100	Design capacities and details are to be confirmed once vendor information has been provided
58	A	Pump	New	RO Booster Pumps	5	1,800	9,000	gpm	TBD	TBD	TBD	TBD	Indoor	575	Design capacities and details are to be confirmed once vendor information has been provided
59	A	Tank	New	RO Flush Water Tank	1	TBD	TBD	gal	TBD	TBD	TBD	TBD	Indoor	--	Design capacities and details are to be confirmed once vendor information has been provided
60	A	Pump	New	RO Flush Pumps	2	TBD	TBD	gpm	TBD	TBD	TBD	TBD	Indoor	150	Design capacities and details are to be confirmed once vendor information has been provided
61	A	Tank	New	RO CIP Tank	1	2,000	2,000	gal	TBD	TBD	TBD	TBD	Indoor	--	Design capacities and details are to be confirmed once vendor information has been provided
62	A	Pump	New	RO CIP Pumps	2	TBD	TBD	gpm	TBD	TBD	TBD	TBD	Indoor	120	Design capacities and details are to be confirmed once vendor information has been provided
63	A	Tank	New	RO Neutralization Tank	1	2,000	2,000	gal	TBD	TBD	TBD	TBD	Indoor	--	Design capacities and details are to be confirmed once vendor information has been provided
64	A	Pump	New	RO CIP Waste Pumps	3	TBD	TBD	gpm	TBD	TBD	TBD	TBD	Indoor	100	Design capacities and details are to be confirmed once vendor information has been provided
65	A	Tank	New	Sodium Bisulfite Tote	1	275	275	gal	AMB	--	--	--	Indoor	--	
66	A	Tank	New	RO Permeate Tank	1	259,710	259,710	gal	AMB	--	Coated carbon steel	30 ft (D) x 49 ft (H)	Outdoor	--	
67	A	Mixer	New	RO Permeate Tank Mixers	1	12,986	12,986	gpm	AMB	--	--	--	Outdoor	30	
68	A	Tank	New	Blend Tank	1	389,565	389,565	gal	AMB	--	Cast-In-Place Concrete	45 ft (D) x 33 ft (H)	Outdoor	--	
69	A	Mixer	New	Blend Tank Eductor System	1	240	240	gpm	AMB	--	--	--	Outdoor	--	
70	A	Pump	New	Blend Tank Eductor Pumps	2	240	480	gpm	AMB	Centrifugal	Cast Iron	--	Outdoor	5	
71	A	Heat Element	New	Boiler, Natural Gas	3	7267	21,801	lb/hr	Elevated	--	Various	17.2' x 4.5' x 7.9' (H)	Indoor	210	

Brown AND Caldwell	Client	Micron Onondaga		Location	Syracuse, NY		Originator	Anukriti Shah			Revision	A	MAJOR EQUIPMENT LIST ALT 11
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		EQUIPMENT INFORMATION				PROCESS				MECHANICAL				ELECTRICAL & INSTRUMENTATION	
Item No.	REV	Equipment Category	Equipment Status	Equipment Name	Quantity	Capacity	Total Capacity	Units	Temperature	Type	Material of Construction	Physical Dimension	Equipment Installation	HP (Nameplate)	Notes
72	A	Tank	New	Evaporator Feed Tank	1	523,200	523,200	gal	AMB	--	Stainless Steel	30 ft (D) x 99 ft (H)	Indoor	--	
73	A	Mixer	New	Evaporator Feed Tank Mixer	1	60	60	hp	AMB	Mechanical Mixer	Stainless Steel	--	Indoor	60	
74	A	Pump	New	Evaporator Feed Pumps	4	363	1,453	gpm	AMB	Centrifugal	Stainless Steel	--	Indoor	20	
75	A	Separation	New	Evaporator	2	1,090	2,180	gpm	Elevated	Various	Various	--	Indoor	7248	
76	A	Heater	New	Feed Preheater	2	1,090	2,180	gpm	Elevated	Heat Exchanger	Titanium Grade 1	4500 ft^2	Indoor	TBD	Plate and frame Heat Exchanger
77	A	Dearator	New	Deaerator	2	1,090	2,180	gpm	Elevated		Stainless steel	43 ft (D)	Indoor	TBD	
78	A	Compressor	New	Evaporator Vapor Compressor & Motor	2	44,000	88,000	cfm	AMB	Centrifugal Fan	Stainless steel			1450	
79	A	Pump	New	Evaporator Recirculation Pump & Motor	2	4,900	9,800	gpm	AMB	Centrifugal	Stainless steel			125	
80	A	Pump	New	Evaporator Distillate Pump & Motor	3	600	1,800	gpm	AMB	Centrifugal	Stainless steel			25	
81	A	Tank	New	Evaporator Distillate Tank	1	3,000	3,000	gal	AMB		Stainless steel			--	
82	A	Pump	New	Antifoam Pumps & Motors	3	0.1	0.3	gpm	AMB	Chemical Metering Pump	Stainless steel			0.25	
83	A	Pump	New	Slug Antifoam Pump & Motor	1	0.1	0.1	gpm	AMB	Chemical Metering Pump	Stainless steel			0.25	
84	A	Pump	New	Caustic Pumps & Motors	3	0.1	0.3	gpm	AMB	Chemical Metering Pump	Stainless steel			0.25	
85	A	Tank	New	Crystallizer Feed Tank	1	75,840	75,840	gal	AMB	--	Stainless Steel	15 ft (D) x 54 ft (H)	Indoor	--	
86	A	Mixer	New	Crystallizer Feed Tank Mixer	1	60	60	hp	AMB	Mechanical Mixer	Stainless Steel	--	Indoor	TBD	
87	A	Pump	New	Crystallizer Feed Pump & Motor	3	50	150	gpm	AMB	Centrifugal	Stainless steel			10	
88	A	Tank	New	Crystallizer	2	158	316	gpm	AMB	--	Stainless Steel	14.25 ft (D) x 50ft (H)	Indoor	--	
89	A	Heater	New	Crystallizer Heater	1	TBD	TBD	TBD	Elevated					TBD	
90	A	Compressor	New	Crystallizer Vapor Compressor	2	1,000	2,000	HP	AMB	Centrifugal fans	Stainless Steel			2000	
91	A	Pump	New	Crystallizer Recirculation Pump & Motor	1	41,000	41,000	gpm	AMB		Stainless Steel			600	
92	A	Tank	New	Antifoam Tote	1	275	275	gal	AMB	--	--	--	Indoor	--	
93	A	Tank	New	Condensate Storage Tank	2	15,000	30,000	gal	AMB	--	Stainless Steel	12 ft (L) x 12 ft (W) x 12 ft (H)	Indoor	--	
94	A	Pump	New	Condensate Storage Tank Pumps	3	500	1,500	gpm	AMB	Centrifugal	Stainless Steel	--	Indoor	25	
95	A	Pump	New	Condensate Storage Tank Effluent Pumps	2	1,000	2,000	gpm	AMB	Centrifugal	Stainless Steel	--	Indoor	25	
96	A	Pump	New	Centrifuge Feed Pumps	3	64	192	gpm	AMB	Centrifugal	Stainless Steel			20	
97	A	Separation	New	Salt Centrifuges (Solid Bowl)	2	68	136	gpm	AMB	TBD	TBD	TBD		200	125HP Bowl Motor, 75 HP Scroll Motor
98	A	Tank	New	Centrate Sump	1	30	30	gpm	AMB	Sump	Cast-In-Place Concrete		Outdoor	--	
99	A	Pump	New	Centrate Sump Pumps	3	30	90	gpm	AMB	Centrifugal	Cast Iron		Outdoor	15	
100	A	Tank	New	Antiscalant Tote	1	275	275	gal	AMB	--	--	--	Indoor	--	
101	A	Pump	New	Antiscalant Metering Pump	2	0.1	0.2	gpm	AMB	Chemical Metering Pump	PVC/PVDF dosing head, EPDM/Viton FKM O-rings, ceramic check balls		Indoor	0.5	
102	A	Pump	New	Sulfuric Acid Metering Pumps	2	0.1	0.2	gpm	AMB	Chemical Metering Pump	PVC/PVDF dosing head, EPDM/Viton FKM O-rings, ceramic check balls		Indoor	0.5	
103	A	Tank	New	Odor Control Scrubbers	1	31,360	94,080	scfm	AMB			17ft (D)	Outdoor	--	
104	A	Blower	New	Scrubber Blowers	1	31,360	31,360	scfm	AMB					TBD	
105	A	Pump	New	Recirculation Scrubber Pumps	3	TBD	TBD	gpm	AMB					TBD	

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PRIVACY WALL AND ACOUSTIC BARRIER

(3) 30" INFLUENT PIPES FROM MICRON SITE AND (1) 18" FUTURE PIPE

OAK ORCHARD TREATMENT FACILITY EXPANSION

OAK ORCHARD TREATMENT FACILITY EXPANSION

OAK ORCHARD TREATMENT FACILITY EXPANSION	
AREA CODE	AREAS
10	HEADWORKS
21	PRIMARY CLARIFIERS
28	ODOR CONTROL
30	FINE SCREENING
31	BIOREACTORS
33	BLOWER BUILDING
41	REUSE FACILITY (RO BUILDING), TEMPORARY UF
43	MEMBRANE BUILDING
45	RECYCLED WATER PUMP STATION
51	DIGESTER COMPLEX
53	GAS STORAGE AND GAS FLARE
54	THICKENING/DEWATERING
56	PS GRAVITY THICKENING
57	HSW AND MS RECEIVING AND BLENDING
58	SOLIDS HAULING, DRYER BUILDING
70	NATIONAL GRID CONNECTION, NATIONAL GRID SUBSTATION
80	EXISTING ADMIN BUILDING, ADMIN BUILDING
90	BRIDGING PROJECT MBBR TANKS - FUTURE RECYCLED WATER STORAGE, BRIDGING MBBR BLOWER BUILDING

WHITE PINES INDUSTRIAL WASTEWATER TREATMENT FACILITY

LEGEND

- EQUIPMENT FOR TREATING FAB - 1 WASTEWATER
- EQUIPMENT FOR TREATING FAB - 2 EXPANSION WASTEWATER
- OAK ORCHARD TREATMENT FACILITY EXPANSION
- PAVED ROAD
- EXISTING STRUCTURE
- CONTRACTOR STAGING AREA
- PRIVACY WALL ACOUSTIC BARRIER
- LIMIT OF WORK BY OTHERS
- FAB - 1 STRUCTURE OR AREA
- FAB - 2 EXPANSION STRUCTURE OR AREA

A	INFLUENT SCREENING BUILDING
B	EQUALIZATION TANK
C	DIVERSION TANK
D	ANOXIC TANKS
E	AERATION TANKS
F	MEMBRANE FILTRATION BUILDING
G	BLOWER BUILDING
H	CHEMICAL BUILDING
I	EVAPORATION SYSTEM BUILDING
J	CONDENSATE / EFFLUENT STORAGE AREA
K	CRYSTALLIZER SYSTEM BUILDING
L	HIGH PH RO BUILDING
M	HIGH PH RO PERMEATE AND FEED TANKS
N	ION EXCHANGE BUILDING
O	DECARBONATION BUILDING
P	UV DISINFECTION BUILDING
Q	RECYCLED WATER PUMP STATION
R	DEWATERING BUILDING
S	MOTOR CONTROL BUILDING
T	ODOR CONTROL AREA

100 0 50 100 200

GRAPHIC SCALE (IN FEET)

GENERAL ARRANGEMENT SITE PLAN

Scale: 1" = 20'

OTHER INFORMATION

N

P:\jobs\jobs\24370 White Pine Industrial WWTP\CadWorking Drawings\Figures\25249_SITE PLAN.dwg

ORIGINAL DRAWING SIZE: ARCH D (24" X 36")

©2025 **Environmental Design & Research,** Landscape Architecture, Engineering, & Environmental Services, D.P.C.

The following is paraphrased from the New York Education Law, Article 145, Section 7209, and Chapter II, Section 79-1.4, and applies to this drawing: "It is a violation of this law for any person unless he is acting under the direction of a licensed professional engineer, licensed landscape architect or licensed land surveyor to alter an item in any way. If an item bearing the seal of an engineer, landscape architect or land surveyor is altered, the altering engineer, landscape architect or land surveyor shall affix to the item his seal and the notation "altered by" followed by his signature and the date of such alteration and a specific description of the alteration".

CLIENT / SUBCONSULTANT:

EDR a better environment

Environmental Design & Research,

Landscape Architecture, Engineering & Environmental Services, P.C.
396 Main Street, Suite 15
Hyannis, MA 02601
P. 508.972.3960

PROJECT TITLE: **WHITE PINES INDUSTRIAL WWTP**

PROJECT LOCATION: **OAK ORCHARD ROAD**

CLIENT: **ONONDAGA COUNTY**

DRAWING TITLE: **GENERAL ARRANGEMENT SITE PLAN**

CONTRACT NO.

DRAWINGS ISSUED FOR / REVISIONS

NO.	DATE	ISSUED FOR / REVISION	BY	CHK	APP
1					
2					
3					
4					
5					
6					

EDR JOB#: **24370**

DATE: **05/25**

SCALE: **AS NOTED**

DRAWN BY: **JDF**

CHECKED BY: **JDF**

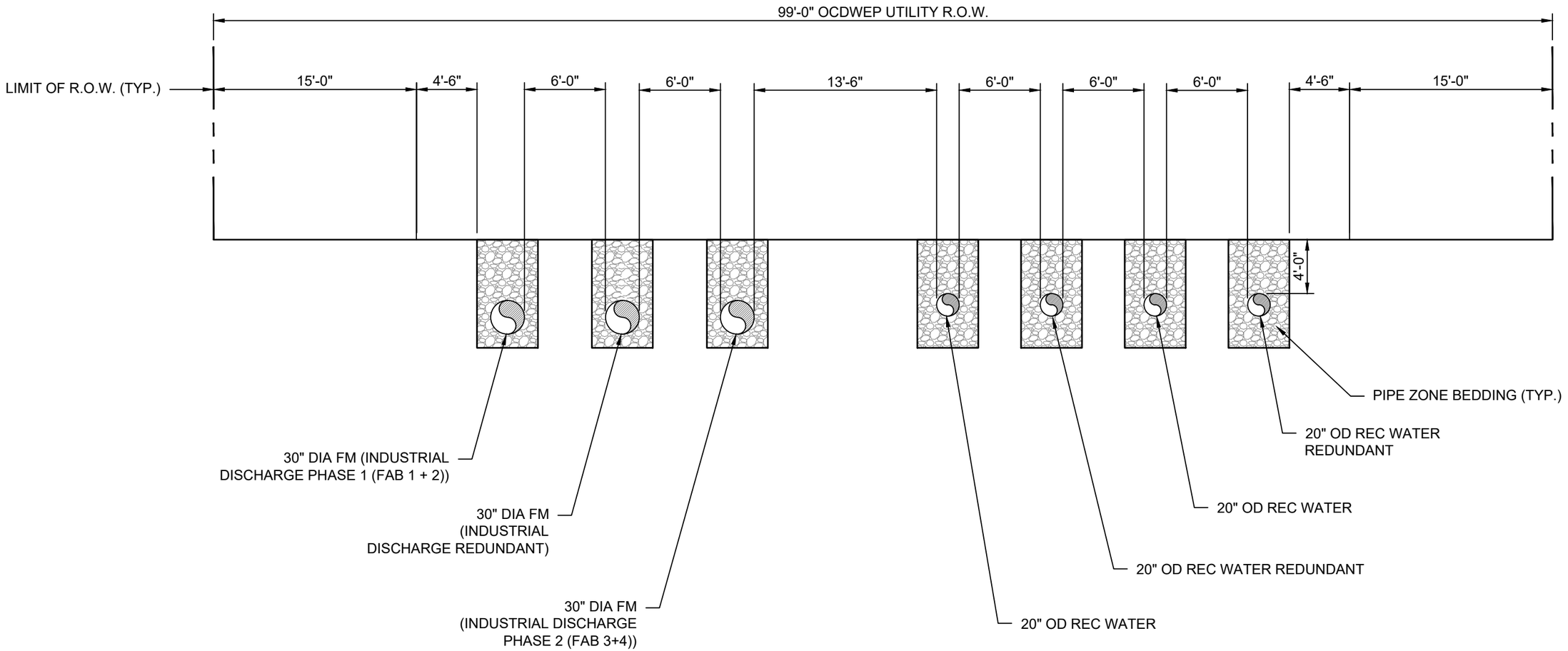
DRAWING NUMBER:

C-101

Appendix K: Conveyance

Date Printed: 6/17/2025 7:26:54 AM

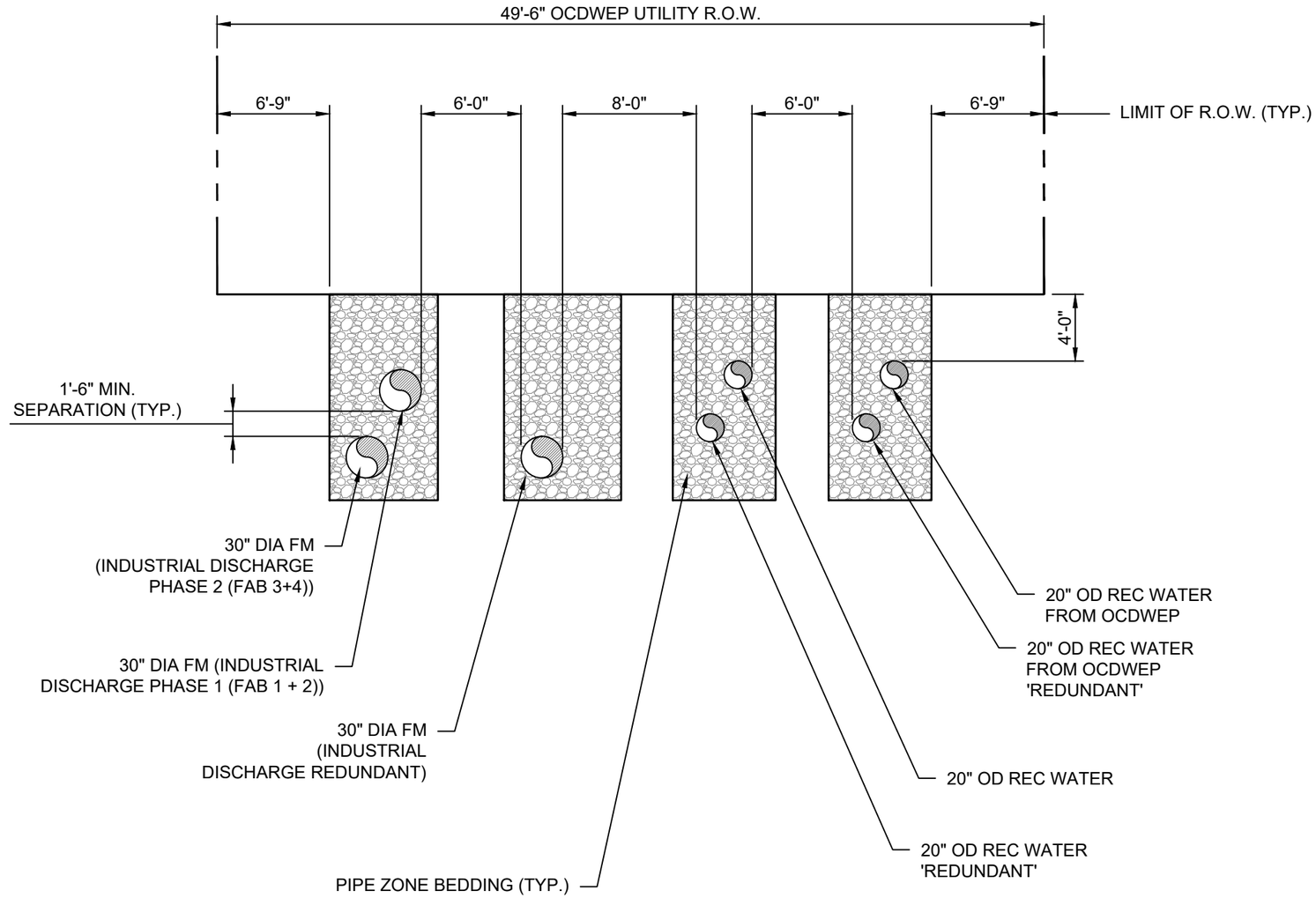
P:\jobs\syr\24370 White Pine Industrial WWTP\Cad\Working Drawings\Figures\24730-G-ROW-PIPE CONFIGURATIONS 05_09_25.dwg



EDR
a better environment
Environmental Design & Research,
Landscape Architecture, Engineering & Environmental Services, D.P.C.
217 Montgomery Street, Suite 1100
Syracuse, New York 13202
P. 315.471.0688

PROJECT TITLE: **WHITE PINE INDUSTRIAL WWTP**				EDR JOB#: **24370**
DRAWING TITLE: **99' OCDWEP UTILITY R.O.W.**				DRAWING NUMBER: **SECTION A**
SCALE: **1/8" = 1'-0"**	DRAWN BY: **JJO**	CHECKED BY: **JDF**	DATE: **06/25**	

Date Printed: 6/17/2025 7:26:29 AM
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Landscape Architecture, Engineering
& Environmental Services, D.P.C.
217 Montgomery Street, Suite 1100
Syracuse, New York 13202
P. 315.471.0688

PROJECT TITLE: **WHITE PINE INDUSTRIAL WWTP**				EDR JOB#: **24370**
DRAWING TITLE: **49.5' OCDWEP UTILITY R.O.W.**				DRAWING NUMBER: **SECTION B**
SCALE: **1/8" = 1'-0"**	DRAWN BY: **JJO**	CHECKED BY: **JDF**	DATE: **06/25**	

APPENDIX D

Agency Consultation

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
625 Broadway, Fifth Floor, Albany, NY 12233-4757
P: (518) 402-8935 | F: (518) 402-8925
www.dec.ny.gov

December 13, 2024

Sara Stebbins
Environmental Design & Research, Landscape Architecture, Engineering & Environmental Ser
217 Montgomery Street, Suite 1100
Syracuse, NY 13202

Re: White Pine Industrial Wastewater Treatment Plant
County: Onondaga Town/City: Clay

Dear Sara Stebbins:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

Enclosed is a report of rare or state-listed animals and plants, and significant natural communities that our database indicates occur in the vicinity of the project site.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our database. We cannot provide a definitive statement as to the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

The presence of the plants and animals identified in the enclosed report may result in this project requiring additional review or permit conditions. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the NYS DEC Region 7 Office, Division of Environmental Permits, at dep.r7@dec.ny.gov.

Sincerely,

Heidi Krahling
Environmental Review Specialist
New York Natural Heritage Program

631

The following state-listed animals have been documented in the vicinity of the project site.

The following list includes animals that are listed by NYS as Endangered, Threatened, or Special Concern; and/or that are federally listed.

For information about any permit considerations for the project, contact the NYSDEC Region 7 Office, Division of Environmental Permits, at dep.r7@dec.ny.gov, 315-426-7438.

The following species have been documented in the vicinity of the project site.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*FEDERAL LISTING*	
Birds				
Pied-billed Grebe *Breeding*	*Podilymbus podiceps*	Threatened		12551
Fish				
Lake Sturgeon	*Acipenser fulvescens*	Threatened		11143

The following species has been documented nesting in the vicinity of the project site.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*FEDERAL LISTING*	
Birds				
Bald Eagle *Breeding*	*Haliaeetus leucocephalus*	Threatened		14908

The following species has been documented within 2.5 miles of the project site. Individual animals may travel 2.5 miles from documented locations. The main impact of concern is the cutting or removal of potential roost trees.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*FEDERAL LISTING*	
Mammals				
Indiana Bat *Maternity colony*	*Myotis sodalis*	Endangered	Endangered	13852

This report only includes records from the NY Natural Heritage database.

Information about many of the listed animals in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, and from NYSDEC at www.dec.ny.gov/animals/7494.html.

The following rare plants, rare animals, and significant natural communities have been documented at the project site, or in its vicinity.

We recommend that potential impacts of the proposed project on these species or communities be addressed as part of any environmental assessment or review conducted as part of the planning, permitting and approval process, such as reviews conducted under SEQR. Field surveys of the project site may be necessary to determine the status of a species at the site, particularly for sites that are currently undeveloped and may contain suitable habitat. Final requirements of the project to avoid, minimize, or mitigate potential impacts are determined by the lead permitting agency or the government body approving the project.

The following plants are listed as Endangered or Threatened by New York State, and/or are considered rare by the New York Natural Heritage Program, and are a vulnerable natural resource of conservation concern.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*HERITAGE CONSERVATION STATUS*
Vascular Plants			
Hairy Small-leaved Tick Trefoil	*Desmodium ciliare*	Threatened	Imperiled in NYS

Documented at the project site. 1991-06-27: A small sand hill next to Oak Orchard Road. Isolated with trails throughout with some trash piles. 6828

This report only includes records from the NY Natural Heritage database. For most sites, comprehensive field surveys have not been conducted, and we cannot provide a definitive statement as to the presence or absence of all rare or state-listed species. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the rare animals and plants in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
Phone: (607) 753-9334 Fax: (607) 753-9699

In Reply Refer To: 08/12/2025 13:38:19 UTC
Project Code: 2025-0134457
Project Name: Onondaga County Industrial Wastewater Treatment Plan (IWWTP) Project

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
(607) 753-9334

PROJECT SUMMARY

Project Code: 2025-0134457

Project Name: Onondaga County Industrial Wastewater Treatment Plan (IWWTP) Project

Project Type: Wastewater Facility - New Construction

Project Description: The Onondaga County Department of Water Environment and Protection (OCDWEP) is proposing to construct the Onondaga County IWWTP to support a proposed semiconductor manufacturing campus at the White Pine Commerce Park in the Town of Clay, Onondaga County, New York. The Onondaga County IWWTP will be constructed on the Oak Orchard Site, which includes the existing Oak Orchard Municipal Wastewater Treatment Plant (municipal WWTP), existing solar panel array, and a radio tower.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.202609550000005,-76.20988288396627,14z



Counties: Onondaga County, New York

ENDANGERED SPECIES ACT SPECIES

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Tom Connolly
Address: 103 Taft Ave
City: Long Beach
State: NY
Zip: 11561
Email tconnolly@edrdpc.com
Phone: 5164265579

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
Phone: (607) 753-9334 Fax: (607) 753-9699

In Reply Refer To: 08/12/2025 14:00:21 UTC
Project code: 2025-0134457
Project Name: Onondaga County Industrial Wastewater Treatment Plan (IWWTP) Project

Federal Nexus: yes
Federal Action Agency (if applicable): County of Onondaga

Subject: Technical assistance for 'Onondaga County Industrial Wastewater Treatment Plan (IWWTP) Project'

Dear Tom Connolly:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on August 12, 2025, for 'Onondaga County Industrial Wastewater Treatment Plan (IWWTP) Project' (here forward, Project). This project has been assigned Project Code 2025-0134457 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements may not be complete.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into IPaC must accurately represent the full scope and details of the Project.

Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key (Dkey), invalidates this letter. ***Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid. Note that conservation measures for northern long-eared bat and tricolored bat may differ. If both bat species are present in the action area and the key suggests more conservative measures for one of the species for your project, the Project may need to apply the most conservative measures in order to avoid adverse effects. If unsure which conservation measures should be applied, please contact the appropriate Ecological Services Field Office***

Determination for the Northern Long-Eared Bat and Tricolored Bat

Based upon your IPaC submission and a standing analysis completed by the Service, your project has reached the following effect determination(s):

Species	Listing Status	Determination
Northern Long-eared Bat (*Myotis septentrionalis*)	Endangered	NLAA
Tricolored Bat (*Perimyotis subflavus*)	Proposed Endangered	May affect

Federal agencies must consult with U.S. Fish and Wildlife Service under section 7(a)(2) of the Endangered Species Act (ESA) when an action *may affect* a listed species. Tricolored bat is proposed for listing as endangered under the ESA, but not yet listed. For actions that may affect a proposed species, agencies cannot consult, but they can *confer* under the authority of section 7(a)(4) of the ESA. Such conferences can follow the procedures for a consultation and be adopted as such if and when the proposed species is listed. Should the tricolored bat be listed, agencies must review projects that are not yet complete, or projects with ongoing effects within the tricolored bat range that previously received a NE or NLAA determination from the key to confirm that the determination is still accurate.

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination key for the northern long-eared bat and tricolored bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Indiana Bat *Myotis sodalis* Endangered
- Monarch Butterfly *Danaus plexippus* Proposed Threatened

You may coordinate with our Office to determine whether the Action may cause prohibited take of the animal species listed above. Note that if a new species is listed that may be affected by the identified action before it is complete, additional review is recommended to ensure compliance with the Endangered Species Act.

Next Steps

Consultation with the Service is necessary. The project has a federal nexus (e.g., Federal funds, permit, etc.), but you are not the federal action agency or its designated (in writing) non-federal representative. Therefore, the ESA consultation status is incomplete and no project activities should occur until consultation between the Service and the Federal action agency (or designated non-federal representative), is completed.

As the federal agency or designated non-federal representative deems appropriate, they should submit their determination of effects to the Service by doing the following.

1. Log into IPaC using an agency email account and click on My Projects, click "Search by record locator" to find this Project using **611-167860018**. (Alternatively, the originator of the project in IPaC can add the agency representative to the project by using the Add Member button on the project home page.)

2. Review the answers to the Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key to ensure that they are accurate.
3. Click on Review/ Finalize to convert the ‘not likely to adversely affect’ technical assistance letter to a concurrence letter. Download the concurrence letter for your files if needed.

If no changes occur with the Project or there are no updates on listed species, no further consultation/coordination for this project is required for the northern long-eared bat. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope, timing, duration, or location of the Project changes (includes any project changes or amendments); 2) new information reveals the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions occurs, additional coordination with the Service should take place before project implements any changes which are final or commits additional resources.

If you have any questions regarding this letter or need further assistance, please contact the New York Ecological Services Field Office and reference Project Code 2025-0134457 associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Onondaga County Industrial Wastewater Treatment Plan (IWWTP) Project

2. Description

The following description was provided for the project 'Onondaga County Industrial Wastewater Treatment Plan (IWWTP) Project':

> The Onondaga County Department of Water Environment and Protection (OCDWEP) is proposing to construct the Onondaga County IWWTP to support a proposed semiconductor manufacturing campus at the White Pine Commerce Park in the Town of Clay, Onondaga County, New York. The Onondaga County IWWTP will be constructed on the Oak Orchard Site, which includes the existing Oak Orchard Municipal Wastewater Treatment Plant (municipal WWTP), existing solar panel array, and a radio tower.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.202609550000005,-76.20988288396627,14z



DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of "may affect, but not likely to adversely affect" for a least one species covered by this determination key.

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of listed bats or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. Is the action area wholly within Zone 2 of the year-round active area for northern long-eared bat and/or tricolored bat?

   Automatically answered
   No

3. Does the action area intersect Zone 1 of the year-round active area for northern long-eared bat and/or tricolored bat?

   Automatically answered
   No

4. Does the proposed action involve **wind or solar energy**?

   No

5. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   Note for projects in Pennsylvania: Projects requiring authorization under Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act would be considered as having a federal nexus. Since the U.S. Army Corps of Engineers (Corps) has issued the Pennsylvania State Programmatic General Permit (PASPGP), which may be verified by the PA Department of Environmental Protection or certain Conservation Districts, the need to receive a Corps authorization to perform the work under the PASPGP serves as a federal nexus. As such, if proposing to use the PASPGP, you would answer 'yes' to this question.

   Yes

6. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

   No

7. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

   Note: This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

   No

8. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

   No

9. Is the lead federal action agency the Federal Energy Regulatory Commission (FERC)?

   No

10. [Semantic] Is the action area located within 0.5 miles of a known bat hibernaculum? Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered

    No

11. Does the action area contain any winter roosts or caves (or associated sinkholes, fissures, or other karst features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating bats?

    No

12. Will the action cause effects to a bridge?

    Note: Covered bridges should be considered as bridges in this question.

    No

13. Will the action result in effects to a culvert or tunnel at any time of year?

    No

14. Are trees present within 1000 feet of the action area?

    Note: If there are trees within the action area that are of a sufficient size to be potential roosts for bats answer "Yes". If unsure, additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

15. Does the action include the intentional exclusion of bats from a building or building-like structure? **Note:** Exclusion is conducted to deny bats' entry or reentry into a building. To be effective and to avoid harming bats, it should be done according to established standards. If your action includes bat exclusion and you are unsure whether northern long-eared bats or tricolored bats are present, answer "Yes." Answer "No" if there are no signs of bat use in the building/structure. If unsure, contact your local Ecological Services Field Office to help assess whether northern long-eared bats or tricolored bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term "National Wildlife Control Operators Association bats"). Also see the White-Nose Syndrome Response Team's guide for bat control in structures.

    No

16. Does the action involve removal, modification, or maintenance of a human-made building-like structure (barn, house, or other building) **known or suspected to contain roosting bats?**

    No

17. Will the action cause construction of one or more new roads open to the public?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    No

18. Will the action include or cause any construction or other activity that is reasonably certain to increase average night-time traffic permanently or temporarily on one or more existing roads? **Note:** For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.). .

    Yes

19. Will the increased vehicle traffic occur on any road that lies between any two areas of contiguous forest that are each greater than or equal to 10 acres in extent and are separated by less than 1,000 feet? Bats may cross a road by flying between forest patches that are up to 1,000 feet apart.

    Note: "Contiguous forest" of 10 acres or more may includes areas where multiple forest patches are separated by less than 1,000 feet of non-forested area if the forested patches, added together, comprise at least 10 acres.

    No

20. Will the proposed Action involve the creation of a new water-borne contaminant source (e.g., leachate pond, pits containing chemicals that are not NSF/ANSI 60 compliant)?

    Note: For information regarding NSF/ANSI 60 please visit https://www.nsf.org/knowledge-library/nsf-ansi-standard-60-drinking-water-treatment-chemicals-health-effects

    No

21. Will the proposed action involve the creation of a new point source discharge from a facility other than a water treatment plant or storm water system?

    No

22. Will the proposed action involve blasting or drilling?

    No

23. Will the action involve military training (e.g., smoke operations, obscurant operations, exploding munitions, artillery fire, range use, helicopter or fixed wing aircraft use)?

    No

24. Will the proposed action involve the use of herbicides or other pesticides other than herbicides (e.g., fungicides, insecticides, or rodenticides)?

    No

25. Will the action include or cause activities that are reasonably certain to cause chronic or intense nighttime noise (above current levels of ambient noise in the area) in suitable summer habitat for the northern long-eared bat or tricolored bat during the active season?

    Chronic noise is noise that is continuous or occurs repeatedly again and again for a long time. Sources of chronic or intense noise that could cause adverse effects to bats may include, but are not limited to: road traffic; trains; aircraft; industrial activities; gas compressor stations; loud music; crowds; oil and gas extraction; construction; and mining.

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    No

26. Does the action include, or is it reasonably certain to cause, the use of permanent or temporary artificial lighting within 1000 feet of suitable northern long-eared bat or tricolored bat roosting habitat?

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

27. Will the action cause an increase in the extent of suitable forested habitat exposed to artificial lighting?

    No

28. Will the action include tree cutting or other means of knocking down or bringing down trees, tree topping, or tree trimming?

    Yes

29. Will the proposed action occur exclusively in an already established and currently maintained utility right-of-way?

    No

30. Does the action include emergency cutting or trimming of hazard trees in order to remove an imminent threat to human safety or property? See hazard tree note at the bottom of the key for text that will be added to response letters

    Note: A "hazard tree" is a tree that is an immediate threat to lives, public health and safety, or improved property.

    No

31. Does the project intersect with the 0- 9.9% forest density category?

    Automatically answered
    No

32. Does the project intersect with the 10.0- 19.9% forest density category map?

    Automatically answered
    No

33. Does the project intersect with the 20.0- 29.9% forest density category map?

    Automatically answered
    No

34. Does the project intersect with the 30.0- 100% forest density category map?

    Automatically answered
    Yes

35. Will the action cause trees to be cut, knocked down, or otherwise brought down across an area greater than 100 acres in total extent?

    No

36. Will the proposed action result in the use of prescribed fire?

    Note: If the prescribed fire action includes other activities than application of fire (e.g., tree cutting, fire line preparation) please consider impacts from those activities within the previous representative questions in the key. This set of questions only considers impacts from flame and smoke.

    No

37. Does the action area intersect the northern long-eared bat species list area?

    Automatically answered
    Yes

38. [Semantic] Is the action area located within 0.5 miles of radius of an entrance/opening to any known NLEB hibernacula? Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

39. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats? **Note:** The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

40. [Semantic] Is the action area located within 150 feet of a documented northern long-eared bat roost site?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.Have you contacted the appropriate agency to determine if your action is within 150 feet of any documented northern long-eared bat roosts?

    Note: A document with links to Natural Heritage Inventory databases and other state-specific sources of information on the locations of northern long-eared bat roosts is available here. Location information for northern long-eared bat roosts is generally kept in state natural heritage inventory databases – the availability of this data varies by state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited.

    Automatically answered
    No

41. Is suitable summer habitat for the northern long-eared bat present within 1000 feet of project activities?
    If unsure, answer "Yes."

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

42. Are any of the trees proposed for cutting or other means of knocking down, bringing down, topping, or trimming suitable for northern long-eared bat roosting (i.e., live trees and/or snags ≥3 inches dbh that have exfoliating bark, cracks, crevices, and/or cavities)?

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    No

43. Does the action area intersect the tricolored bat species list area?

    Automatically answered
    Yes

44. [Semantic] Is the action area located within 0.5 miles of radius of an entrance/opening to any known tricolored bat hibernacula?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

45. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats? **Note:** The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

46. Is suitable summer habitat for the tricolored bat present within 1000 feet of project activities?
    (If unsure, answer ""Yes."")

    Note: If there are trees within the action area that may provide potential roosts for tricolored bats (e.g., clusters of leaves in live and dead deciduous trees, Spanish moss (Tillandsia usneoides), clusters of dead pine needles of large live pines) answer ""Yes."" For a complete definition of suitable summer habitat for the tricolored bat, please see Appendix A in the Service's Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines.

    Yes

47. Do you have any documents that you want to include with this submission?

    No

PROJECT QUESTIONNAIRE

Enter the extent of the action area (in acres) from which trees will be removed - round up to the nearest tenth of an acre. For this question, include the entire area where tree removal will take place, even if some live or dead trees will be left standing.

15

IPAC USER CONTACT INFORMATION

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LEAD AGENCY CONTACT INFORMATION

Lead Agency: County of Onondaga

HABITAT ASSESSMENT RARE, THREATENED, AND ENDANGERED SPECIES REPORT

Oak Orchard Wastewater Treatment Plant Expansion
4300 Oak Orchard Road
Clay, New York 13041

CHA Project Number: 090316.000

July 2025

Prepared for:
Onondaga County Department of Water Environmental Protection
650 Hiawatha Blvd. West
Syracuse, NY 13204

Prepared by:
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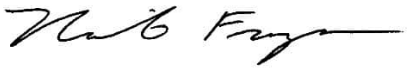
This report has been prepared and reviewed by the following qualified personnel employed by CHA.

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LIST OF ACRONYMS & ABBREVIATIONS

CHA	CHA Consulting, Inc.
D-key	Determinations Key
DBH	Diameter at Breast Height
IPaC	Information for Planning and Consultation
NHP	Natural Heritage Program
NYDEC	New York State Department of Environmental Conservation
OCDWEP	Onondaga County Department of Water Environment Protection
OOWWTP	Oak Orchard Wastewater Treatment Plant
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1.0 INTRODUCTION

1.1 Project Location

The study area is located at the Oak Orchard Wastewater Treatment Plant (OOWWTP) at 4300 Oak Orchard Road in Clay, New York, and consists of developed land and natural and modified ecological communities.

The approximate center-point coordinates of the study area are latitude: 43.202629˚ N.; longitude: -76.210096˚ W. A United States Geological Survey (USGS) and aerial project location map are provided in Appendix A, Figures 1 & 2.

The purpose of this habitat assessment is to document onsite habitat suitability and potential impacts to the rare, threatened and/or endangered species that have been identified by resource agencies as potentially ocurring in the project vicinity.

2.0 PROJECT NEED & DESCRIPTION

The OOWWTP was constructed in 1981. Per the Onondaga County Department of Water Environment Protection (OCDWEP), the proposed project entails upgrading and expanding the OOWWTP to accommodate flow from planned growth in the service area while replacing aging equipment and providing an operator friendly, energy efficient facility.

The project proposes the following:

- OOWWTP liquid upgrades
  - Overhaul of the headworks facility
  - Addition of 2 primary clarifiers
  - Replacement of the high purity oxygen activated sludge secondary process with membrane bioreactor secondary process
  - Replacement of existing chlorination and dichlorination disinfection system
  - Odor control
  - New chemical storage, blower and electrical buildings, ancillary equipment and flow distribution
  - New administration building
- OOWWTP regional biosolids facility
  - Demolition of gravity thickeners
  - High strength waste (HSW) and municipal solids (MS) receiving stations
  - Blend tanks for HSW and trucked in MS.
  - Gravity thickeners for primary sludge (PSL).
  - In-line sludge screening units for PSL.
  - Gravity belt thickeners for waste activated sludge
  - Anaerobic digesters, digested sludge storage tank, and digester heating system.
  - Dewatering centrifuges
  - Sludge dryer
  - Biogas storage, waste gas flares and biogas conditioning
  - Odor control for new thickening/dewatering and dryer buildings.
  - Return pump station
  - New ancillary equipment, electrical rooms/buildings, chemical feed systems, and chemical storage
- New reuse facility

- Recycled water pump station
- Force mains
- Moving bed biofilm reactor bridging project including four storage tanks
- Substation
- Outfall work in the Oneida River

Refer to the Concept Plan in Appendix B for further details.

3.0 METHODOLOGY

3.1 Agency Consultation

The United States Fish and Wildlife Services (USFWS) Information for Planning and Consultation (IPaC) webpage, and the New York Department of Environmental Conservation (NYSDEC) Natural Heritage Program (NHP) were consulted to determine what, if any, critical habitats and/or state or federally protected species exist within the study area. The desktop analysis was used to develop a habitat assessment plan.

The USFWS IPaC Official Species List and NHP response letter are provided in Appendix C.

3.2 Habitat Inventory & Habitat Suitability Assessment

Vegetative communities were described according to Ecological Communities of New York State, Second Edition (Edinger 2014) and the New York Natural Heritage Program Online Conservation Guides.

The habitat suitability assessment was performed in accordance with applicable USFWS and NYSDEC protocols.

4.0 RESULTS

4.1 Agency Comsultation

4.1.1 United States Fish and Wildlife Service

The June 26, 2025 USFWS IPaC Official Species List (Project Code: 2025-0038158) (Appendix C) identified the following results.

4.1.1.1 Mammals

- Indiana bat (*Myotis sodalis*) – endangered
- Northern long-eared bat (*Myotis septentrionalis*) – endangered
- Tricolored bat (*Perimyotis subflavus*) – proposed endangered

4.1.1.2 Insects

- Monarch butterfly (*Danaus plexippus*) – proposed threatened

4.1.1.3 Critical Habitats

- There are no critical habitats within the study area under USFWS jurisdiction.

On July 10, 2025 the project was run through the IPaC Northeast Endangered Species Determination Key (D-key) and the Northern Long-eared Bat and Tricolored Bat Range-wide D-

key to develop Technical Assistance Letters (provided under Appendix C). The conclusions of those letters are provided below.

4.1.1.4 Mammals

- Indiana bat (*Myotis sodalis*) – May Affect
  - **Consultation with the Service is not complete**. Further consultation or coordination with the Service is necessary for those species or designated critical habitats with a determination of "May Affect". Please contact our New York Ecological Services Field Office to discuss methods to avoid or minimize potential adverse effects to those species or designated critical habitats.
- Northern long-eared bat – Not Likely to Adversely Affect
  - **Consultation with the Service is necessary**. The project has a federal nexus (Federal permit), but you are not the federal action agency or its designated (in writing) non-federal representative. Therefore, the ESA consultation status is incomplete, and no project activities should occur until consultation between the Service and the Federal action agency (or designated non-federal representative), is completed. As the federal agency or designated non-federal representative deems appropriate, they should submit their determination of effects to the Service.
- Tricolored bat – Not Likely to Adversely Affect
  - **Consultation with the Service is necessary**. The project has a federal nexus (Federal permit), but you are not the federal action agency or its designated (in writing) non-federal representative. Therefore, the ESA consultation status is incomplete, and no project activities should occur until consultation between the Service and the Federal action agency (or designated non-federal representative), is completed. As the federal agency or designated non-federal representative deems appropriate, they should submit their determination of effects to the Service.

4.1.1.5 Insects

- Monarch butterfly – not evaluated/D-key not available.
  - Did not run through Step 3 (Analyze Project) because a No Jeopardy/No Effect affect is anticipated.

4.1.2 NYSDEC Natural Heritage Program

The February 21, 2025 NHP response (Appendix C) identified the following species in the project vicinity.

4.1.2.1 Mammals

- Indiana bat (*Myotis sodalis*) – endangered – maternity colony within 2.5 miles and the main impact of concern is the cutting or removal of potential roost trees.

4.1.2.2 Birds

- Pied-billed grebe (*Podilymbus podiceps*) – threatened – breeding.
- Bald eagle (*Haliaeetus leucocephalus*) – threatened – breeding.

4.1.2.3 Fish

- Lake sturgeon (*Acipenser fluvescens*) - threatened

4.1.2.4 Plants

- Hairy small-leaved tick trefoil (*Desmodium ciliare*) – threatened – documented within 200 yards northeast of the project site.

4.2 Habitat Inventory

A site visit was conducted on March 25, 2025 to inventory the ecological communities of the study area. Based on those data, we evaluated the habitats of the study area to support the listed species.

A total of eleven (11) land cover types exist within the study area. Representative photographs of the study area are presented in Appendix D.

4.2.1 Shallow Emergent Marsh (Appendix D, Photographs 1 & 10)

This community occurs along the outer edges of Mud Creek. Cattail (*Typha spp.*) and other hydrophytic grasses, rushes and sedges form relatively contiguous cover, and water depths are three feet or less.

4.2.2 Red Maple Hardwood Swamp (Appendix D, Photographs 1, 3, 5, 6, 7, 8 & 9)

Wetlands 1, 3, 4, 5 (Appendix E) are dominated by red maple hardwood swamp. These forested mineral soil wetlands vary in their successional state. Canopy dominants and co-dominants include red maple (*Acer rubrum*), cottonwood (*Populus deltoides*), oaks (*Quercus spp.*), and European buckthorn (*Rhamnus cathartica*). Tree species occurring at lower abundance include shagbark hickory (*Carya ovata*), American elm (*Ulmus americana*), gray birch (*Betula populifolia*) and eastern hemlock (*Tsuga canadensis*).

4.2.3 Vernal Pool (Appendix D, Photographs 3, 4 & 5)

Vernal pool habitat occurs within Wetland 1. This area of forested wetland was observed to have approximately eight inches of standing water at the time of the site visit. Trees and occasional shrubs are present on hummocks. No amphibian egg masses were observed during the site visit.

4.2.4 Intermittent Stream (Appendix D, Photographs 11, 12, 13 & 14)

Streams 001 (intermittent), 002 (ephemeral) and 003 (intermittent) are small intermittent to ephemeral streams that have formed because of drainage flows within or from wetlands. Flow is seasonal or in response to rainfall and runoff. These small streams have moderately defined bed and banks and bankfull depth (bfd) is less than a foot. Water depths are only a few inches. Substrates are mineral soils. These small streams are unlikely to support fish.

4.2.5 Unconfined River (Appendix D, Photographs 1, 15, 16, 17 & 18)

Stream 004 (Mud Creek) is an unconfined river on a gentle gradient with a wide, well-developed channel. Its substrate is composed of gravel, sand, silt and clay. Submerged and emergent aquatic vegetation is present within the stream and along its banks.

Stream 005 (Oneida River) is a large unconfined river with well-developed banks and a gentle gradient. Its substrate consists of cobble, gravel, silt, sand and clay. Aquatic vegetation was not observed during the site visit. Water depths at this location are unknown but were observed to be shallow at the outfall.

4.2.6 Sewage Treatment Pond (Appendix D, Photograph 26)

The onsite sewage treatment ponds are man-made features. Emergent wetland plants occur along the shallower edges of the ponds, and submerged aquatic vegetation is scattered throughout each pond.

4.2.7 Mowed Lawn with Trees (Appendix D, Photographs 10 & 31)

This community is associated with the regularly mowed areas within the wastewater treatment plant property. It is dominated by turf grasses and common forbs such as common dandelion (*Taraxacum officinale*) and English plantain (*Plantago lanceolata*).

4.2.8 Successional Old Field (Appendix D, Photograph 19 & 20)

The successional old field habitats occur between developed areas and undeveloped areas and were likely cleared in the recent past or are periodically maintained/mowed to preclude shrubs and trees from forming significant cover. Grasses and forbs are dominant, and scattered shrubs such as silky dogwood (*Cornus amomum*) and European buckthorn are present. Several areas were observed to support small patches or individual milkweed (*Asclepias spp*.) plants.

4.2.9 Successional shrubland (Appendix D, Photograph 32)

This community type generally occurs between the mowed lawn or successional old field communities and adjacent forested habitats. Shrubs are dominant and constitute at least 50 percent cover. Species typically observed include silky dogwood, gray dogwood (*Cornus racemosa*), European buckthorn, ash (*Fraxinus sp.*) and red maple (*Acer rubrum*). Herbaceous cover is limited due to the dense shrub canopy.

4.2.10 Successional Southern Hardwoods (Appendix D, Photographs 12 & 13)

The majority of the upland forests of the study area are composed of densely-vegetated successional southern hardwoods. Dominant trees include European buckthorn, red maple, black cherry (*Prunus serotina*), cottonwood (*Populus deltoides*) and oaks (*Quercus spp.*). Shrub cover is relatively dense and composed of European buckthorn, gray dogwood, silky dogwood, and young growth of the trees present. Scattered forbs are present.

4.2.11 Paved road/path (Appendix D, Photograph 31)

Paved road/path community type is associated with the paved roads and paths throughout the study area. This classification refers to habitats that are heavily modified or created by human activity, where natural ecological processes are significantly altered.

5.0 HABITAT SUITABILITY ASSESSMENT

The sections below discuss the habitat requirements and onsite habitat suitability for each species.

5.1 Indiana Bat

According to the USFWS:

> *Indiana bats require forests for foraging and roosting and are found in forested areas in the eastern half of the United States. In winter, Indiana bats hibernate in caves and mines. In spring, reproductive females migrate from hibernacula and form maternity colonies in wooded areas where each female bears a single pup that is raised within the colony. Females return to the same colony every summer. Maternity habitat ranges from areas that are completely forested to highly fragmented forest. Summer roosts are typically behind exfoliating bark of large, often dead, trees. Both males and females return to hibernacula in late summer or early fall to mate and enter hibernation.*
>
> *In summer, most reproductive females occupy roost sites in forested areas under the exfoliating bark of dead or dying trees that retain large, thick slabs of peeling bark. Primary roosts usually receive direct sunlight for more than half the day. Roost trees are often within canopy gaps in a forest, in a fenceline, or along a wooded edge. Habitats in which maternity roosts occur include riparian zones, bottomland and floodplain habitats, wooded wetlands and upland communities. Indiana bats typically forage in semi-open to closed forested habitats with open understory, forest edges, and riparian areas. Adult males occupy similar habitats but can use a wider range of roosts compared to females.*

No caves, mines or other potential hibernating structures were observed within the study area. Therefore, the project is expected to have no effect on potential hibernacula.

Potential Indiana bat roosting habitat is present throughout the study area where deciduous trees occur. Specifically, shagbark hickories with loose exfoliating bark, snags with peeling bark and cavities, and some live trees with cracks and crevices are present scattered throughout the study area. These provide potential roosting structure for Indiana bats, and observed canopies would not greatly preclude flight to/from these areas. Tree removals will be completed in the winter between November 1 and March 31 when the bats are hibernating. A May Affect determination has been developed through the use of the USFWS D-key.. Therefore, further coordination with the USFWS will be necessary to discuss methods to avoid or minimize potential adverse effects.

5.2 Northern Long-Eared Bat

According to the USFWS:

> *The Northern long-eared bat spends the winter hibernating in caves and mines. During summer, the northern long-eared bat roosts singly or in colonies underneath exfoliating or loose bark, in cavities, and in crevices of both live and dead trees. Males and non-reproductive females may also roost in cooler places, like caves and mines. This species seems opportunistic in selecting roosts, using tree species based on suitability to retain bark or provide cavities or crevices. They have also been found, rarely, roosting in structures like barns and sheds.*
>
> *Suitable summer habitat consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old*

fields, and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥ 3 inches diameter at breast height (dbh) that have exfoliating bark, cracks, crevices, and/or cavities), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit characteristics of suitable roost trees and are within 1000 feet of another forested/wooded habitat. The northern long-eared bat has also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat boxes; therefore, these structures should also be considered potential summer habitat (trees found in highly developed urban areas (e.g., street trees, downtown areas) are extremely unlikely to be suitable habitat). Northern long-eared bats typically occupy their summer habitat from mid-May through mid-August each year (dates vary by location) and the species may arrive or leave some time before or after this period.

No caves, mines or other potential hibernating structures were observed within the study area. Therefore, the project is expected to have no effect on potential hibernacula.

Potential northern long-eared bat roosting habitat is present throughout the study area where deciduous trees occur. Specifically, shagbark hickories with loose exfoliating bark, snags with peeling bark and cavities, and some live trees with cracks and crevices are present scattered throughout the study area. These provide potential roosting structure for northern long-eared bats, and observed canopies would not greatly preclude flight to/from these areas. Tree removals will be completed in the winter between November 1 and March 31 when the bats are hibernating. A Not Likely to Adversely Affect determination has been developed through the use of the USFWS D-key. Upon permit application submittal, the USACE will need to coordinate with the USFWS to finalize consultation.

5.3 Tricolored Bat

According to the USFWS:

During the spring, summer and fall - collectively referred to as the non-hibernating seasons - tricolored bats primarily roost among live and dead leaf clusters of live or recently dead deciduous hardwood trees. In the southern and northern portions of the range, tricolored bats will also roost in Spanish moss (Tillandsia usneoides) and Usnea trichodea lichen, respectively. In addition, tricolored bats have been observed roosting during summer among pine needles, within artificial roosts like barns, beneath porch roofs, bridges, concrete bunkers, and rarely within caves. Female tricolored bats exhibit high site fidelity, returning year after year to the same summer roosting locations. Female tricolored bats form maternity colonies and switch roost trees regularly. Males roost singly.

During the winter, tricolored bats hibernate - which means that they reduce their metabolic rates, body temperatures and heart rate - in caves and mines; although, in the southern United States, where caves are sparse, tricolored bats often roost in road-associated culverts and trees and remain active and feed throughout winter. Tricolored bats exhibit high site fidelity with many individuals returning year after year to the same hibernaculum.

No caves, mines or other potential hibernating structures were observed within the study area. Therefore, the project is expected to have no effect on potential hibernacula.

Potential tricolored bat roosting habitat is present throughout the study area where deciduous trees occur. Tree and woody vegetation removals will be completed in the winter between

November 1 and March 31 when the bats are hibernating. A Not Likely to Adversely Affect determination has been developed through the use of the USFWS D-key. Upon permit application submittal, the USACE will need to coordinate with the USFWS to finalize consultation.

5.4 Monarch Butterfly

According to the USFWS:

> *Within the breeding season, monarchs lay their eggs on their obligate milkweed host plant (primarily Asclepias spp.), and larvae emerge after two to five days. Larvae develop through five larval instars (intervals between molts) over a period of 9 to 18 days, feeding on milkweed and sequestering toxic cardenolides as a defense against predators. The larva then pupates into chrysalis before enclosing 6 to 14 days later as an adult butterfly. There are multiple generations of monarchs produced during the breeding season, with most adult butterflies living approximately two to five weeks; overwintering adults enter reproductive diapause (suspended reproduction) and live six to nine months.*

Significant concentrations of milkweed do not occur within the study area. Randomly scattered common milkweed (*Asclepias syriaca*) plants were observed in low abundance in the successional old field communities. Therefore, it is anticipated that the proposed work would have No Jeopardy/No Effect on this species. Upon permit application submittal, the USACE will need to coordinate with the USFWS to finalize consultation.

5.5 Pied-Billed grebe

According to the NHP:

> *Pied-billed Grebes inhabit quiet marshes, marshy shorelines of ponds, shallow lakes, or marshy bays and slow moving streams with sedgy banks or adjacent marshes; rarely in brackish marshes with limited tidal fluctuation. Although plant species in breeding marshes may vary, a 50/50 combination ("hemi- marsh") of emergent vegetation interspersed with open water is desirable (Andrle and Carroll 1988). Grebes avoid dense emergent vegetation, and muskrats appear to play an important role in opening up dense cattail stands and providing cut stalks for nest construction. Ideal water depths for nesting range from 25 to 50 cm (Seyler 2003). Grebes set up breeding territories more commonly in wetlands impounded by beavers or humans than in those of glacial origin, and individual pairs appear to favor wetlands of intermediate size (0.6 - 7.0 ha) over very large or small wetlands (Gibbs and Melvin 1992).*

Potential pied-billed grebe breeding/nesting habitat occurs in Mud Creek and its fringe hemi-marsh emergent wetland. The onsite sewage treatment lagoons provide foraging or transient habitat for pied-billed grebe, but the lagoons won't be used for nesting. No other habitats onsite provide pied-billed grebe habitat. An impact to pied-billed grebe is not anticipated to result from the project because the ideal nesting habitat will not be disturbed for the project. Temporary noises during construction will likely be negligible in terms of disrupting nesting if they are nesting nearby.

5.6 Lake Sturgeon

According to the NHP:

> *Lake Sturgeon live in lakes and large rivers, primarily at depths of 5-10 meters and they prefer a mud, sand, or gravel substrate. Spawning in rivers occurs at shallower depths in areas with swift current, waterfalls, or rapids where the fish cannot migrate upstream, with a range of substrate such as gravel, boulders, or hard-pan clay. Spawning in lakes occurs*

on rocky edges or shoals with wave action. For their first year, young fish form large schools over gravel and sand bar areas (Holst 2023).

The outlet structure is on the bank of the Oneida River. Water depths at this location are unknown but were observed to be shallow at the outfall. A cobble gravel substrate is present in the immediate vicinity of the outfall. The preferred habitat for spawning (rocky edges or shoals with wave action) is not present at the outfall. An impact to lake sturgeon from the project is not anticipated due to a lack of spawning habitat.

5.7 Hairy Small-Leaved Tick Trefoil

According to the NHP:

In New York, Desmodium ciliare has been found in a variety of dry, open habitats, including oak openings, openings and roadsides within pitch-pine forests, and sandy or rocky summit grasslands (New York Natural Heritage Program 2010). Dry sandy woods and clearings (Fernald 1950). Dry, often sandy soil (Gleason 1952).

Dry open habitats and sandy soils are not present. The ecological communities present are not reflective of the habitats where this species is found. Therefore it is unlikely that hairy small-leaved tick trefoil is present or would be impacted by the proposed project.

6.0 CONCLUSIONS

The proposed habitat modifications will result in a loss of potential wildlife habitat.

Regarding bats, removal of trees will not occur within 150 feet of a known occupied maternity roost tree or from within 0.25 mile of a hibernaculum, and the project schedule should allow for the time of year tree cutting restrictions. Further coordination with the USFWS will be required for the Indiana bat, northern long-eared bat and tricolored bat due to the effects determinations. Coordination can be conducted during the permitting process; however, pre-permitting coordination relating to Indiana bat is recommended to identify project limitations and additional studies that may be required.

Significant impacts to monarch butterfly, lake sturgeon and pied-billed grebe are not anticipated due to a general lack of suitable habitat within the study area. Hairy small-leaved tick trefoil habitat is not present, so impacts and species-specific surveys do not appear warranted. Further, adherance to erosion and sediment control practices will prevent indirect impacts to water quality and associated fish and wildlife within aquatic systems.

7.0 REFERENCES

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APPENDIX A

Ecological Resource Mapping Figures



Date Saved: 6/26/2025 6:23 PM Author: Cole Scrivner

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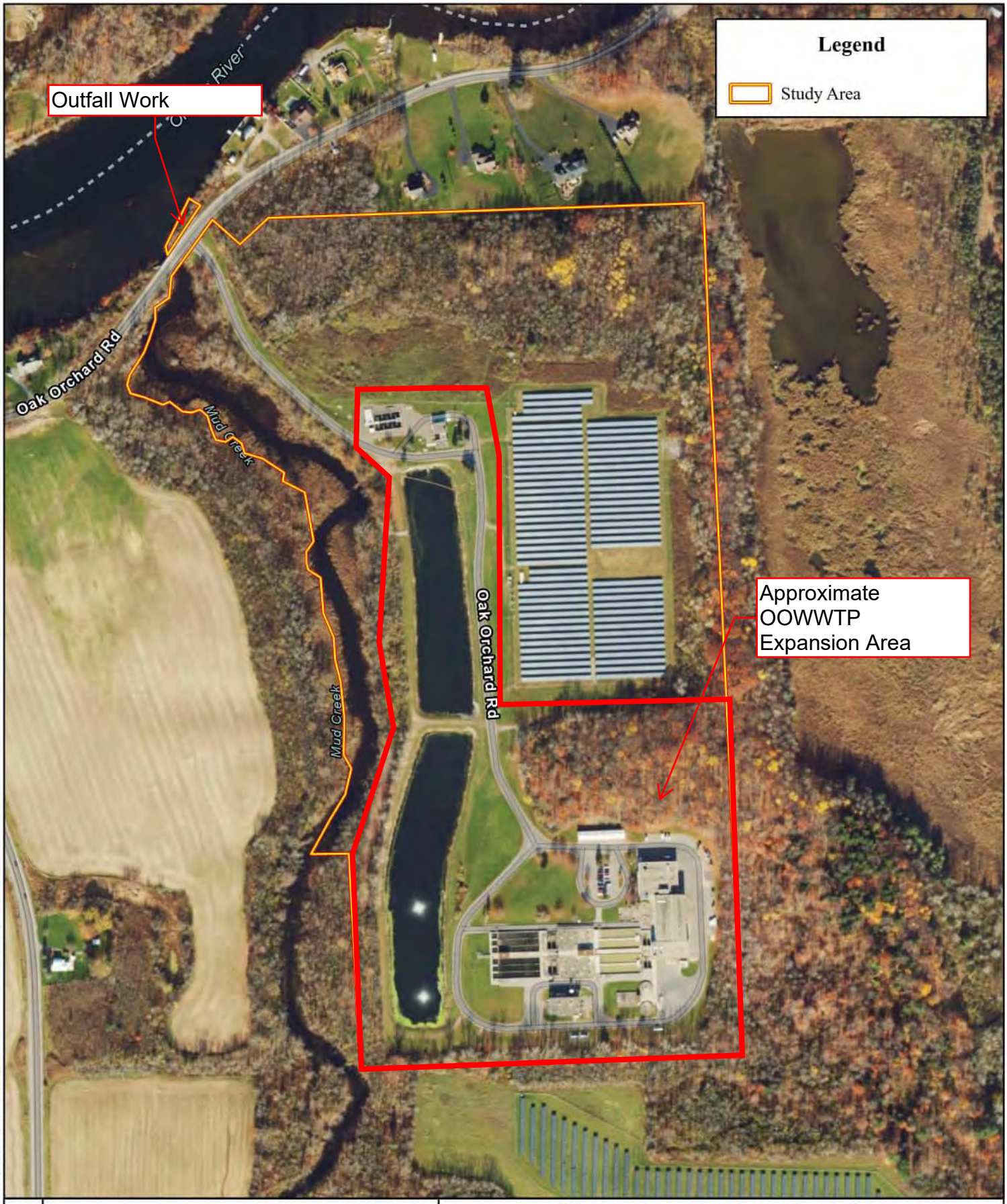
Scale 1" = 2000'

CHA Project No. 090316.000

Figure 1. USGS Project Location Map

Oak Orchard Wastewater Treatment Plant Expansion
Clay, Onondaga County, NY

Copyright:© 2013 National Geographic Society, i-cubed, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS.
USGS Brewerton NY (2019) Quadrangle.



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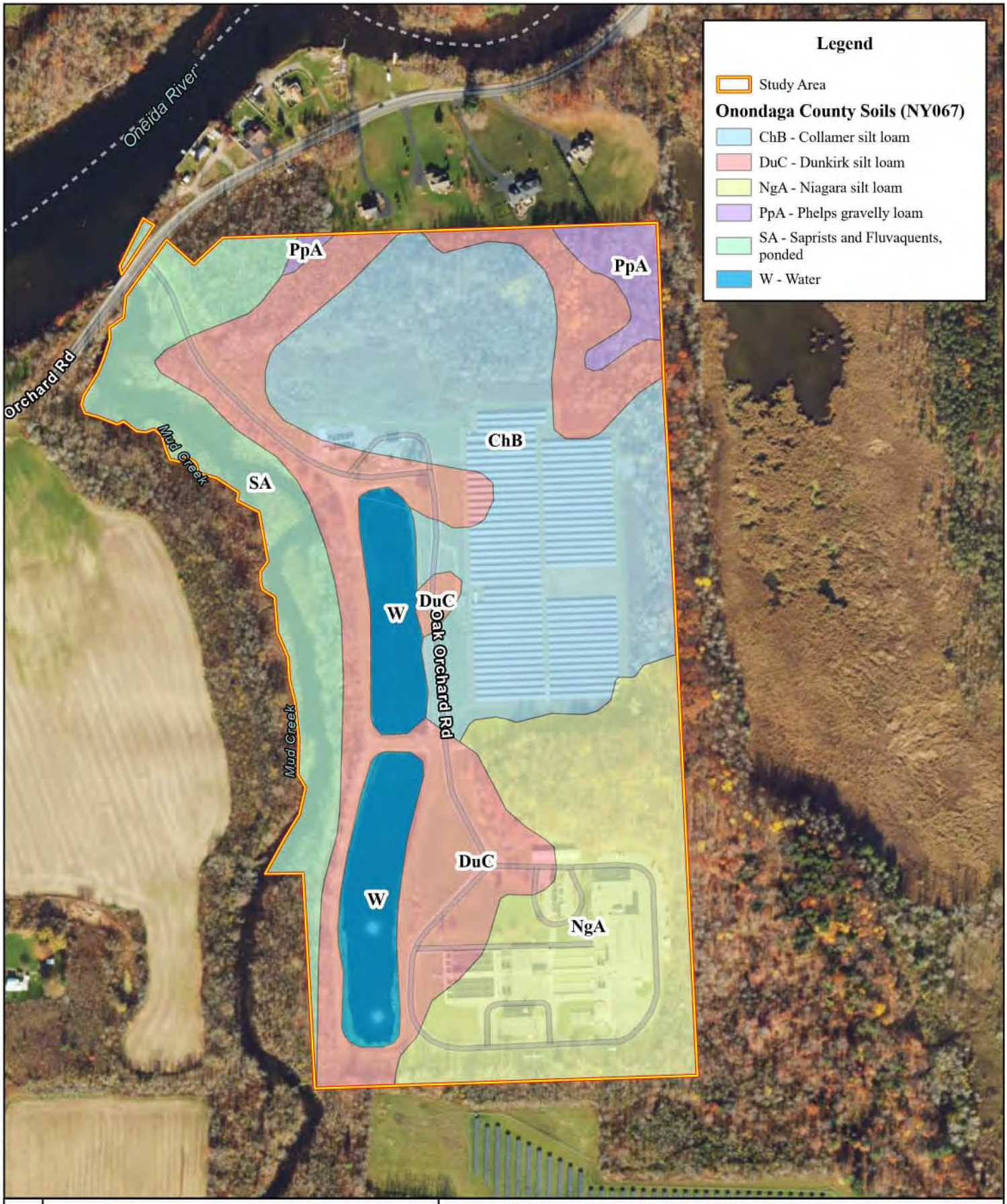
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CHA Project No. 090316.000

Figure 2. Aerial Location Map

Oak Orchard Wastewater Treatment Plant Expansion
Clay, Onondaga County, NY

Source: Esri, USDA FSA, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS



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Scale 1" = 400'

CHA Project No. 090316.000

Figure 3. NRCS Soils Map

Oak Orchard Wastewater Treatment Plant Expansion
Clay, Onondaga County, NY

Source: Esri, USDA FSA, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS. Soils courtesy of the Natural Resource Conservation Service.



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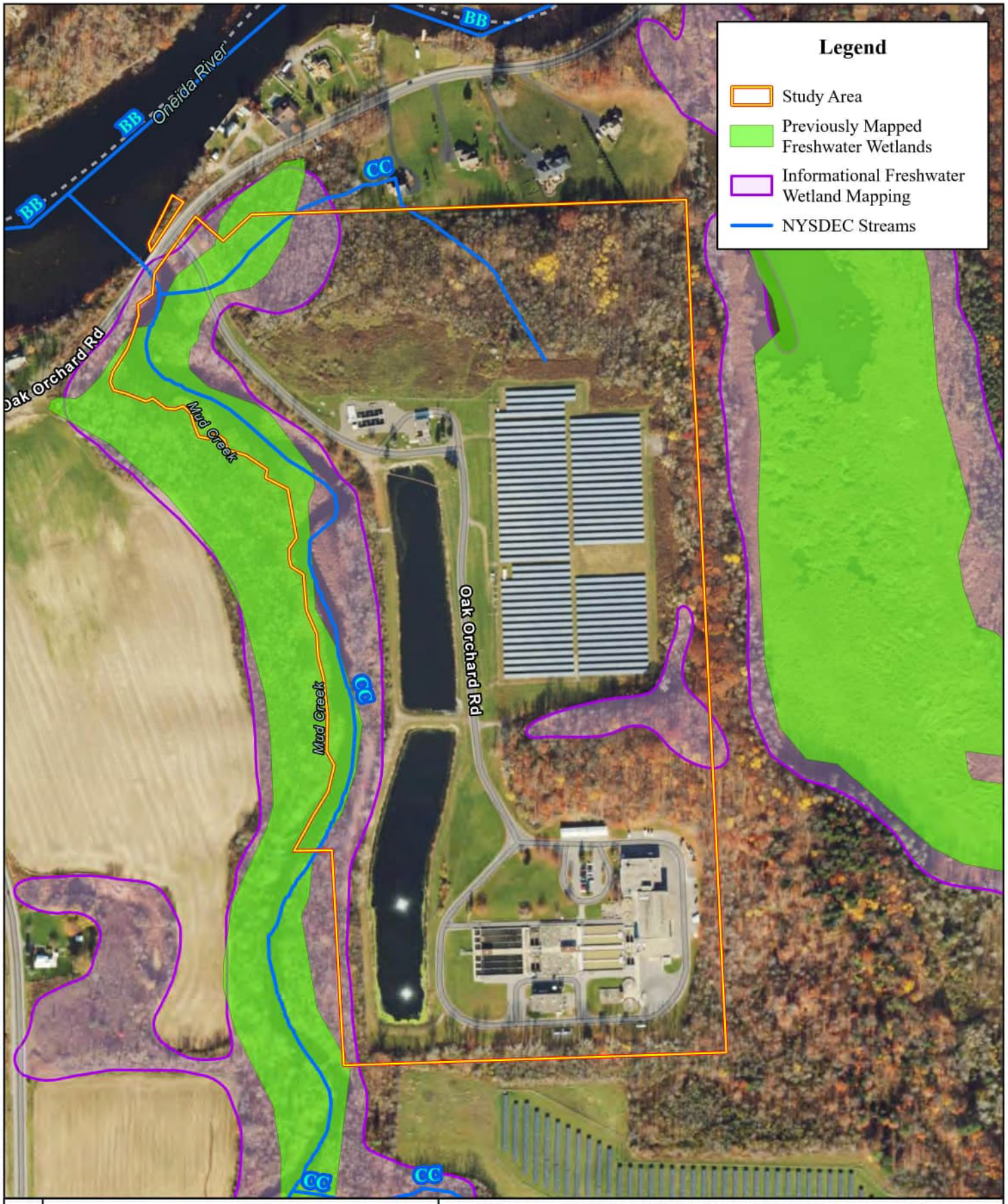
Scale 1" = 400'

CHA Project No. 090316.000

Figure 4. National Wetlands Inventory (NWI) Map

Oak Orchard Wastewater Treatment Plant Expansion
Clay, Onondaga County, NY

Source: Esri, USDA FSA, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS. Wetlands courtesy of the USFWS NWI.



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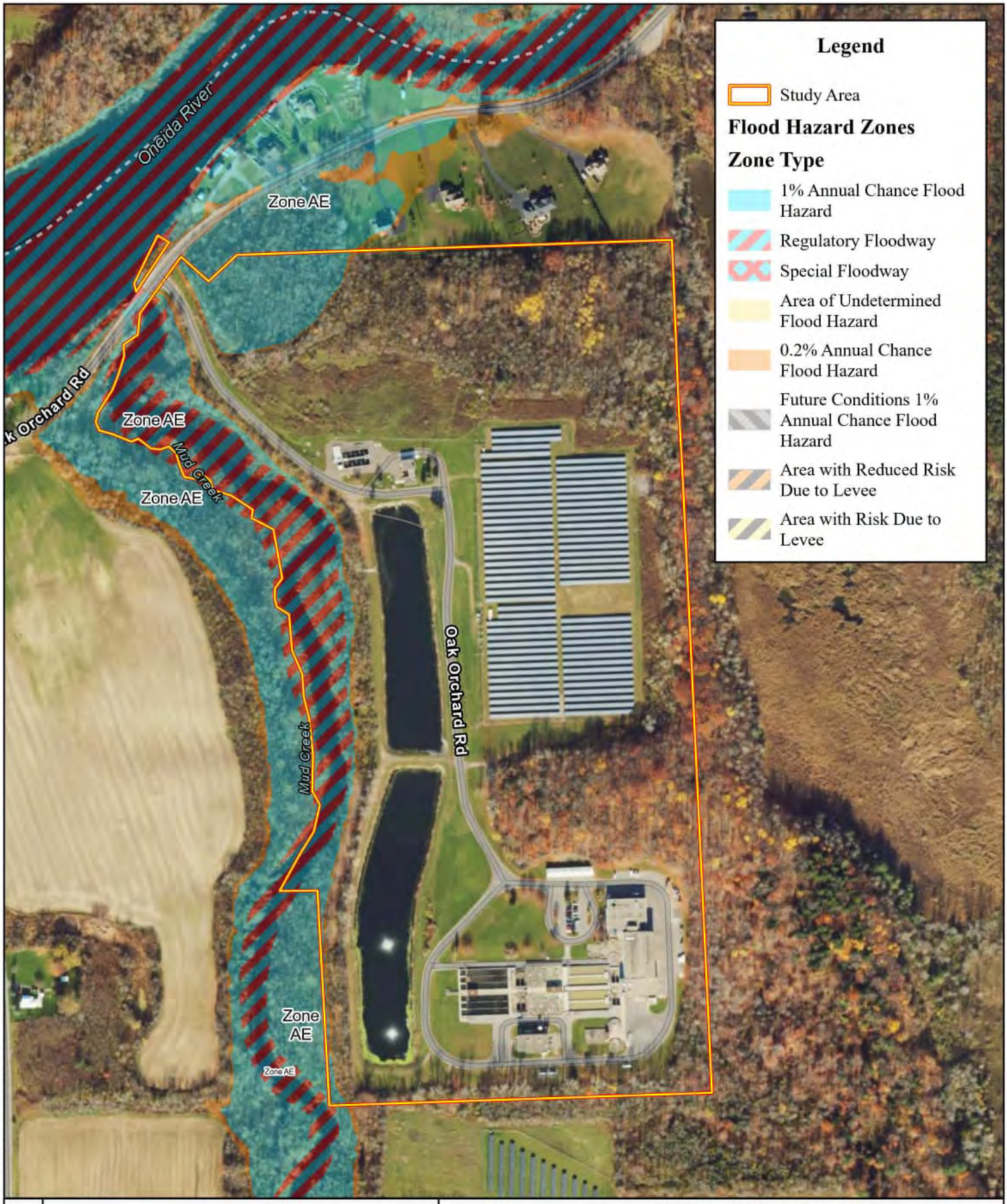
Figure 5. NYSDEC Aquatic Resources Map

Oak Orchard Wastewater Treatment Plant Expansion
Clay, Onondaga County, NY

Scale 1" = 400'

CHA Project No. 090316.000

Source: Esri, USDA FSA, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS. Wetlands courtesy of the New York State Department of Environmental Conservation.



Date Saved: 6/26/2025 5:18 PM Author: Cole Scrivner

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Scale 1" = 400'

CHA Project No. 090316.000

Figure 6. FEMA Flood Zone Map

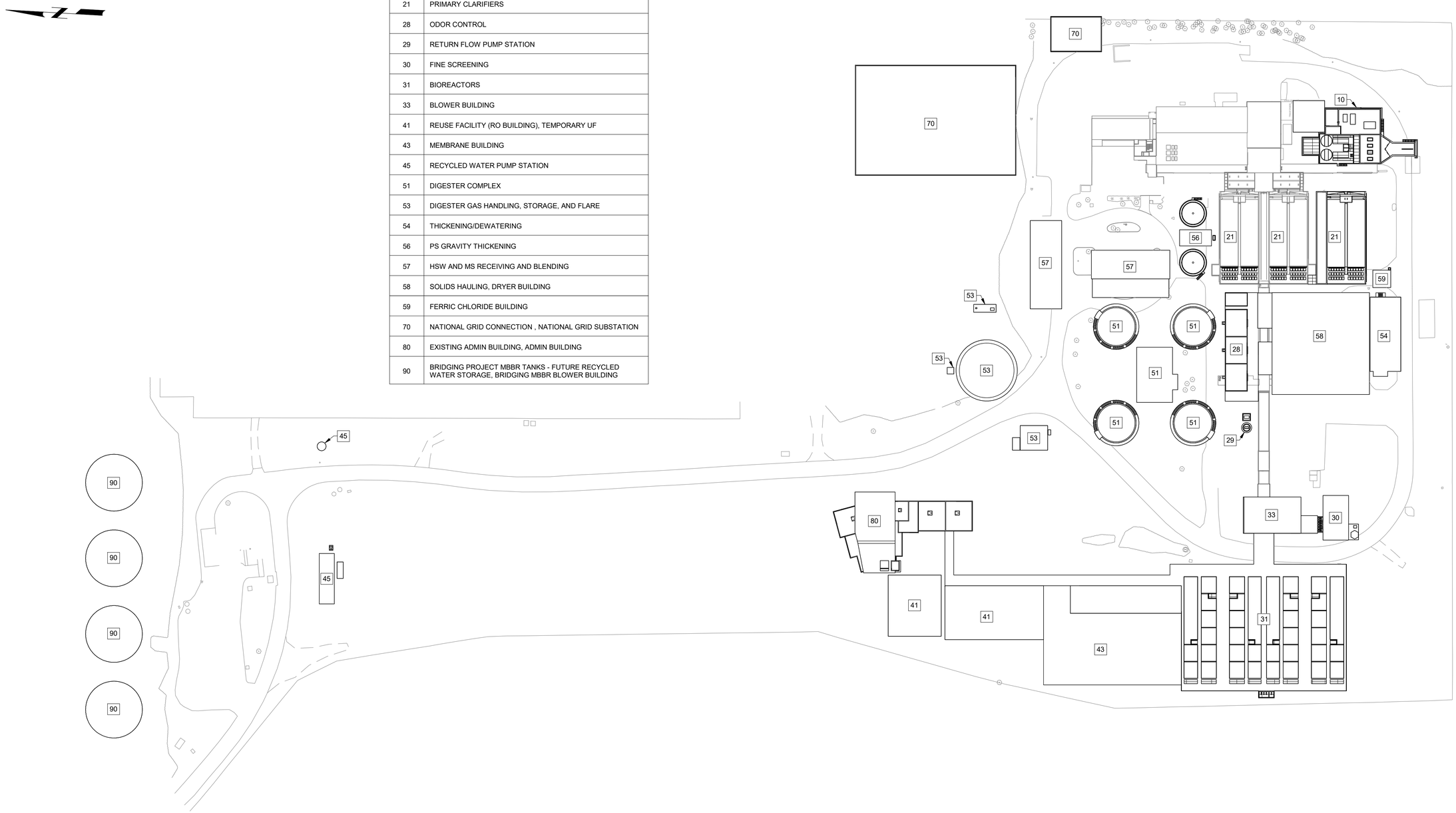
Oak Orchard Wastewater Treatment Plant Expansion
Clay, Onondaga County, NY

Source: Esri, USDA FSA, Federal Emergency Management Agency (FEMA), Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, Esri Community Maps Contributors, © OpenStreetMap, Microsoft, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, USFWS. Flood zones courtesy of the Federal Emergency Management Agency.

APPENDIX B

Concept Plan

AREA CODE	AREAS
10	HEADWORKS
21	PRIMARY CLARIFIERS
28	ODOR CONTROL
29	RETURN FLOW PUMP STATION
30	FINE SCREENING
31	BIOREACTORS
33	BLOWER BUILDING
41	REUSE FACILITY (RO BUILDING), TEMPORARY UF
43	MEMBRANE BUILDING
45	RECYCLED WATER PUMP STATION
51	DIGESTER COMPLEX
53	DIGESTER GAS HANDLING, STORAGE, AND FLARE
54	THICKENING/DEWATERING
56	PS GRAVITY THICKENING
57	HSW AND MS RECEIVING AND BLENDING
58	SOLIDS HAULING, DRYER BUILDING
59	FERRIC CHLORIDE BUILDING
70	NATIONAL GRID CONNECTION , NATIONAL GRID SUBSTATION
80	EXISTING ADMIN BUILDING, ADMIN BUILDING
90	BRIDGING PROJECT MBBR TANKS - FUTURE RECYCLED WATER STORAGE, BRIDGING MBBR BLOWER BUILDING



1 PLAN
SCALE: 1" = 80'-0"

REV	DATE	BY	DESCRIPTION
			25% DESIGN SUBMITTAL NOT FOR CONSTRUCTION

DESIGNED: Designer
DRAWN: Author
CHECKED: Checker
DATE: SUBMITTAL DATE

carollo®

Onondaga County Department of WATER ENVIRONMENT PROTECTION

ONONDAGA COUNTY DEPARTMENT OF WATER ENVIRONMENT PROTECTION
OOWWTP EXPANSION PROGRAM - UPGRADES AND BIOSOLIDS FACILITY
GENERAL
SITE PLAN

VERIFY SCALES
BAR IS ONE INCH ON ORIGINAL DRAWING
0 1"
IF NOT ONE INCH ON THIS SHEET, ADJUST SCALES ACCORDINGLY

JOB NO. 203580
DRAWING NO. 00G07
SHEET NO. OF XX

PLOT DATE: 6/10/2025 9:51:21 PM

FILE NAME: Autodesk Docs://OCDWEP 203580/00-G-3D-101.rvt

APPENDIX C

Rare, Threatened, and Endangered Species Consultation

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
Phone: (607) 753-9334 Fax: (607) 753-9699
Email Address: fw5es_nyfo@fws.gov

In Reply Refer To: 07/10/2025 12:07:57 UTC
Project code: 2025-0038158
Project Name: Oak Orchard WWTP

Federal Nexus: yes
Federal Action Agency (if applicable): Army Corps of Engineers

Subject: Technical assistance for 'Oak Orchard WWTP'

Dear John Greaves:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on July 10, 2025, for “Oak Orchard WWTP” (here forward, Project). This project has been assigned Project Code 2025-0038158 and all future correspondence should clearly reference this number.

The Service developed the IPaC system and associated species’ determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into the IPaC must accurately represent the full scope and details of the Project. Failure to accurately represent or implement the Project as detailed in IPaC or the Northeast Determination Key (Dkey), invalidates this letter. ***Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid.***

To make a no effect determination, the full scope of the proposed project implementation (action) should not have any effects (either positive or negative effect(s)), to a federally listed species or designated critical habitat. Effects of the action are all consequences to listed species or critical habitat that are caused by the proposed action, including the consequences of other activities that are caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action. (See § 402.17). Under Section 7 of the ESA, if a federal action agency makes a no effect determination, no further consultation with, or concurrence from, the Service is required (ESA §7). If a proposed Federal action may affect a listed species or designated critical

habitat, formal consultation is required (except when the Service concurs, in writing, that a proposed action "is not likely to adversely affect (NLAA)" listed species or designated critical habitat [50 CFR §402.02, 50 CFR§402.13]).

The IPaC results indicated the following species is (are) potentially present in your project area and, based on your responses to the Service's Northeast DKey, you determined the proposed Project will have the following effect determinations:

Species	Listing Status	Determination
Indiana Bat (*Myotis sodalis*)	Endangered	May affect

Consultation with the Service is not complete. Further consultation or coordination with the Service is necessary for those species or designated critical habitats with a determination of "May Affect". Please contact our New York Ecological Services Field Office to discuss methods to avoid or minimize potential adverse effects to those species or designated critical habitats.

In addition to the species listed above, the following species and/or critical habitats may also occur in your project area and are not covered by this conclusion:

- Monarch Butterfly *Danaus plexippus* Proposed Threatened
- Northern Long-eared Bat *Myotis septentrionalis* Endangered
- Tricolored Bat *Perimyotis subflavus* Proposed Endangered

Please Note: If the Action may impact bald or golden eagles, additional coordination with the Service under the Bald and Golden Eagle Protection Act (BGEPA) (54 Stat. 250, as amended, 16 U.S.C. 668a-d) by the prospective permittee may be required. Please contact the Migratory Birds Permit Office, (413) 253-8643, or PermitsR5MB@fws.gov, with any questions regarding potential impacts to Eagles.

If you have any questions regarding this letter or need further assistance, please contact the New York Ecological Services Field Office and reference the Project Code associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Oak Orchard WWTP

2. Description

The following description was provided for the project 'Oak Orchard WWTP':

> Upgrades to an existing wastewater treatment facility.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.2015549,-76.20989018622964,14z



QUALIFICATION INTERVIEW

1. As a representative of this project, do you agree that all items submitted represent the complete scope of the project details and you will answer questions truthfully?

   Yes

2. Does the proposed project include, or is it reasonably certain to cause, intentional take of listed species?

   Note: This question could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered, or proposed species.

   No

3. Is the action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   Yes

4. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) the lead agency for this project?

   No

5. Are you including in this analysis all impacts to federally listed species that may result from the entirety of the project (not just the activities under federal jurisdiction)?

   Note: If there are project activities that will impact listed species that are considered to be outside of the jurisdiction of the federal action agency submitting this key, contact your local Ecological Services Field Office to determine whether it is appropriate to use this key. If your Ecological Services Field Office agrees that impacts to listed species that are outside the federal action agency's jurisdiction will be addressed through a separate process, you can answer yes to this question and continue through the key.

   Yes

6. Are you the lead federal action agency or designated non-federal representative requesting concurrence on behalf of the lead Federal Action Agency?

   No

7. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)?

   No

8. Is the lead federal action agency the Federal Energy Regulatory Commission (FERC)?

   No

9. Is the lead federal action agency the Natural Resources Conservation Service?

   No

10. Will the proposed project involve the use of herbicide where listed species are present?

    No

11. Are there any caves or anthropogenic features suitable for hibernating or roosting bats within the area expected to be impacted by the project?

    No

12. Does any component of the project associated with this action include activities or structures that may pose a collision risk to **birds** (e.g., plane-based surveys, land-based or offshore wind turbines, communication towers, high voltage transmission lines, any type of towers with or without guy wires)?

    Note: For federal actions, answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

    No

13. Does any component of the project associated with this action include activities or structures that may pose a collision risk to **bats** (e.g., plane-based surveys, land-based or offshore wind turbines)?

    Note: For federal actions, answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

    No

14. Will the proposed project result in permanent changes to water quantity in a stream or temporary changes that would be sufficient to result in impacts to listed species?

    For example, will the proposed project include any activities that would alter stream flow, such as water withdrawal, hydropower energy production, impoundments, intake structures, diversion structures, and/or turbines? Projects that include temporary and limited water reductions that will not displace listed species or appreciably change water availability for listed species (e.g. listed species will experience no changes to feeding, breeding or sheltering) can answer "No". Note: This question refers only to the amount of water present in a stream, other water quality factors, including sedimentation and turbidity, will be addressed in following questions.

    No

15. Will the proposed project affect wetlands where listed species are present?

    This includes, for example, project activities within wetlands, project activities within 300 feet of wetlands that may have impacts on wetlands, water withdrawals and/or discharge of contaminants (even with a NPDES).

    No

16. Will the proposed project activities (including upland project activities) occur within 0.125 miles of the water's edge of a stream or tributary of a stream where listed species may be present?

    Yes

17. Will the proposed project directly affect a streambed (below ordinary high water mark (OHWM)) of the stream or tributary where listed species may be present?

    Yes

18. Will the proposed project bore underneath (directional bore or horizontal directional drill) a stream where listed species may be present?

    No

19. Will the proposed project involve a new point source discharge into a stream or change an existing point source discharge (e.g., outfalls; leachate ponds) where listed species may be present?

    No

20. Will the proposed project involve the removal of excess sediment or debris, dredging or in-stream gravel mining where listed species may be present?

    Yes

21. Will the proposed project involve the creation of a new water-borne contaminant source where listed species may be present?

    Note New water-borne contaminant sources occur through improper storage, usage, or creation of chemicals. For example: leachate ponds and pits containing chemicals that are not NSF/ANSI 60 compliant have contaminated waterways. Sedimentation will be addressed in a separate question.

    No

22. Will the proposed project involve perennial stream loss, in a stream of tributary of a stream where listed species may be present, that would require an individual permit under 404 of the Clean Water Act?

    No

23. Will the proposed project involve blasting where listed species may be present?

    No

24. Will the proposed project include activities that could negatively affect fish movement temporarily or permanently (including fish stocking, harvesting, or creation of barriers to fish passage).

    No

25. Will the proposed project involve earth moving that could cause erosion and sedimentation, and/or contamination along a stream or tributary of a stream where listed species may be present?

    Note: Answer "Yes" to this question if erosion and sediment control measures will be used to protect the stream.

    No

26. Will the proposed project impact streams or tributaries of streams where listed species may be present through activities such as, but not limited to, valley fills, large-scale vegetation removal, and/or change in site topography?

    No

27. Will the proposed project involve vegetation removal within 200 feet of a perennial stream bank where aquatic listed species may be present?

    No

28. Will erosion and sedimentation control Best Management Practices (BMPs) associated with applicable state and/or Federal permits, be applied to the project? If BMPs have been provided by and/or coordinated with and approved by the appropriate Ecological Services Field Office, answer "Yes" to this question.

    Yes

29. Is the project being funded, lead, or managed in whole or in part by U.S Fish and Wildlife Restoration and Recovery Program (e.g., Partners, Coastal, Fisheries, Wildlife and Sport Fish Restoration, Refuges)?

    No

30. [Semantic] Does the project intersect the Virginia big-eared bat critical habitat?

    Automatically answered
    No

31. [Semantic] Does the project intersect the Indiana bat AOI?

    Automatically answered
    Yes

32. Is the action area within 0.5 mile radius of any known hibernacula (caves or mines) openings or underground features?

    Note: If you are unsure, contact the appropriate Ecological Services Field Office before continuing through the key.

    No

33. Are trees present within the action area?

    Note: If there are trees within the action area that are of a sufficient size to be potential roosts for bats (i.e., live trees and/or snags ≥5 inches dbh (12.7 centimeter), answer "Yes". If you are unsure, answer “Yes.” Or refer to Appendix A of the Range-wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines for definitions and an assessment form that will assist you in determining if suitable habitat is present within your project's action area. Suitable summer habitat for Indiana bat consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥5 inches dbh (12.7 centimeter) that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of other forested/wooded habitat

    Yes

34. Is the action area within known occupied Indiana bat habitat? Known occupied Indiana bat habitat includes established conservation buffers (10-mile buffer around Phase 1 or Phase 2 hibernacula, 5-mile buffer around Phase 3 or Phase 4 hibernacula; 5-mile buffer around Indiana bat captures or detections; 2.5-mile buffer around known roosts).

    Yes

35. [Semantic] Does the project intersect the Indiana bat critical habitat?

    Automatically answered
    No

36. [Semantic] Does the project intersect the candy darter critical habitat?

    Automatically answered
    No

37. [Semantic] Does the project intersect the diamond darter critical habitat?

    Automatically answered
    No

38. [Semantic] Does the project intersect the Big Sandy crayfish critical habitat?

    Automatically answered
    No

39. [Hidden Semantic] Does the project intersect the Guyandotte River crayfish critical habitat?

    Automatically answered
    No

40. Do you have any other documents that you want to include with this submission?

    No

PROJECT QUESTIONNAIRE

1. Approximately how many acres of trees would the proposed project remove?

   2.7

2. Approximately how many total acres of disturbance are within the disturbance/ construction limits of the proposed project?

   20

3. Briefly describe the habitat within the construction/disturbance limits of the project site.

   A mixture of mowed lawn/developed areas, wastewater treatment lagoons, red maple hardwood swamp with vernal pool habitats, and edge habitats composed of successional shrubland, successional northern hardwoods, and thin bands of successional old field.

IPAC USER CONTACT INFORMATION

Agency: County of Onondaga
Name: John Greaves
Address: III Winners Circle
City: Albany
State: NY
Zip: 12205
Email jgreaves@chacompanies.com
Phone: 5184538251

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Army Corps of Engineers

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
Phone: (607) 753-9334 Fax: (607) 753-9699
Email Address: fw5es_nyfo@fws.gov

In Reply Refer To: 07/10/2025 12:22:38 UTC
Project code: 2025-0038158
Project Name: Oak Orchard WWTP

Federal Nexus: yes
Federal Action Agency (if applicable): Army Corps of Engineers

Subject: Technical assistance for 'Oak Orchard WWTP'

Dear John Greaves:

This letter records your determination using the Information for Planning and Consultation (IPaC) system provided to the U.S. Fish and Wildlife Service (Service) on July 10, 2025, for 'Oak Orchard WWTP' (here forward, Project). This project has been assigned Project Code 2025-0038158 and all future correspondence should clearly reference this number. **Please carefully review this letter. Your Endangered Species Act (Act) requirements may not be complete.**

Ensuring Accurate Determinations When Using IPaC

The Service developed the IPaC system and associated species' determination keys in accordance with the Endangered Species Act of 1973 (ESA; 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and based on a standing analysis. All information submitted by the Project proponent into IPaC must accurately represent the full scope and details of the Project.

Failure to accurately represent or implement the Project as detailed in IPaC or the Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key (Dkey), invalidates this letter. ***Answers to certain questions in the DKey commit the project proponent to implementation of conservation measures that must be followed for the ESA determination to remain valid. Note that conservation measures for northern long-eared bat and tricolored bat may differ. If both bat species are present in the action area and the key suggests more conservative measures for one of the species for your project, the Project may need to apply the most conservative measures in order to avoid adverse effects. If unsure which conservation measures should be applied, please contact the appropriate Ecological Services Field Office***

Determination for the Northern Long-Eared Bat and Tricolored Bat

Based upon your IPaC submission and a standing analysis completed by the Service, your project has reached the following effect determination(s):

Species	Listing Status	Determination
Northern Long-eared Bat (*Myotis septentrionalis*)	Endangered	NLAA
Tricolored Bat (*Perimyotis subflavus*)	Proposed Endangered	NLAA

Federal agencies must consult with U.S. Fish and Wildlife Service under section 7(a)(2) of the Endangered Species Act (ESA) when an action *may affect* a listed species. Tricolored bat is proposed for listing as endangered under the ESA, but not yet listed. For actions that may affect a proposed species, agencies cannot consult, but they can *confer* under the authority of section 7(a)(4) of the ESA. Such conferences can follow the procedures for a consultation and be adopted as such if and when the proposed species is listed. Should the tricolored bat be listed, agencies must review projects that are not yet complete, or projects with ongoing effects within the tricolored bat range that previously received a NE or NLAA determination from the key to confirm that the determination is still accurate.

Other Species and Critical Habitat that May be Present in the Action Area

The IPaC-assisted determination key for the northern long-eared bat and tricolored bat does not apply to the following ESA-protected species and/or critical habitat that also may occur in your Action area:

- Indiana Bat *Myotis sodalis* Endangered
- Monarch Butterfly *Danaus plexippus* Proposed Threatened

You may coordinate with our Office to determine whether the Action may cause prohibited take of the animal species listed above. Note that if a new species is listed that may be affected by the identified action before it is complete, additional review is recommended to ensure compliance with the Endangered Species Act.

Next Steps

Consultation with the Service is necessary. The project has a federal nexus (e.g., Federal funds, permit, etc.), but you are not the federal action agency or its designated (in writing) non-federal representative. Therefore, the ESA consultation status is incomplete and no project activities should occur until consultation between the Service and the Federal action agency (or designated non-federal representative), is completed.

As the federal agency or designated non-federal representative deems appropriate, they should submit their determination of effects to the Service by doing the following.

1. Log into IPaC using an agency email account and click on My Projects, click "Search by record locator" to find this Project using **142-164691299**. (Alternatively, the originator of the project in IPaC can add the agency representative to the project by using the Add Member button on the project home page.)

2. Review the answers to the Northern Long-eared Bat and Tricolored Bat Range-wide Determination Key to ensure that they are accurate.
3. Click on Review/ Finalize to convert the ‘not likely to adversely affect’ technical assistance letter to a concurrence letter. Download the concurrence letter for your files if needed.

If no changes occur with the Project or there are no updates on listed species, no further consultation/coordination for this project is required for the northern long-eared bat. However, the Service recommends that project proponents re-evaluate the Project in IPaC if: 1) the scope, timing, duration, or location of the Project changes (includes any project changes or amendments); 2) new information reveals the Project may impact (positively or negatively) federally listed species or designated critical habitat; or 3) a new species is listed, or critical habitat designated. If any of the above conditions occurs, additional coordination with the Service should take place before project implements any changes which are final or commits additional resources.

If you have any questions regarding this letter or need further assistance, please contact the New York Ecological Services Field Office and reference Project Code 2025-0038158 associated with this Project.

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Oak Orchard WWTP

2. Description

The following description was provided for the project 'Oak Orchard WWTP':

> Upgrades to an existing wastewater treatment facility.

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.2015549,-76.20989018622964,14z



DETERMINATION KEY RESULT

Based on the answers provided, the proposed Action is consistent with a determination of “may affect, but not likely to adversely affect” for a least one species covered by this determination key.

QUALIFICATION INTERVIEW

1. Does the proposed project include, or is it reasonably certain to cause, intentional take of listed bats or any other listed species?

   Note: Intentional take is defined as take that is the intended result of a project. Intentional take could refer to research, direct species management, surveys, and/or studies that include intentional handling/encountering, harassment, collection, or capturing of any individual of a federally listed threatened, endangered or proposed species?

   No

2. Is the action area wholly within Zone 2 of the year-round active area for northern long-eared bat and/or tricolored bat?

   Automatically answered
   No

3. Does the action area intersect Zone 1 of the year-round active area for northern long-eared bat and/or tricolored bat?

   Automatically answered
   No

4. Does any component of the action involve leasing, construction or operation of wind turbines? Answer 'yes' if the activities considered are conducted with the intention of gathering survey information to inform the leasing, construction, or operation of wind turbines.

   Note: For federal actions, answer ‘yes’ if the construction or operation of wind power facilities is either (1) part of the federal action or (2) would not occur but for a federal agency action (federal permit, funding, etc.).

   No

5. Is the proposed action authorized, permitted, licensed, funded, or being carried out by a Federal agency in whole or in part?

   Yes

6. Is the Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), or Federal Transit Administration (FTA) funding or authorizing the proposed action, in whole or in part?

   No

7. Are you an employee of the federal action agency or have you been officially designated in writing by the agency as its designated non-federal representative for the purposes of Endangered Species Act Section 7 informal consultation per 50 CFR § 402.08?

   Note: This key may be used for federal actions and for non-federal actions to facilitate section 7 consultation and to help determine whether an incidental take permit may be needed, respectively. This question is for information purposes only.

   No

8. Is the lead federal action agency the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC)? Is the Environmental Protection Agency (EPA) or Federal Communications Commission (FCC) funding or authorizing the proposed action, in whole or in part?

   No

9. Is the lead federal action agency the Federal Energy Regulatory Commission (FERC)?

   No

10. [Semantic] Is the action area located within 0.5 miles of a known bat hibernaculum? Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered

    No

11. Does the action area contain any winter roosts or caves (or associated sinkholes, fissures, or other karst features), mines, rocky outcroppings, or tunnels that could provide habitat for hibernating bats?

    No

12. Will the action cause effects to a bridge?

    Note: Covered bridges should be considered as bridges in this question.

    No

13. Will the action result in effects to a culvert or tunnel at any time of year?

    No

14. Are trees present within 1000 feet of the action area?

    Note: If there are trees within the action area that are of a sufficient size to be potential roosts for bats answer "Yes". If unsure, additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

15. Does the action include the intentional exclusion of bats from a building or structure?

    Note: Exclusion is conducted to deny bats' entry or reentry into a building. To be effective and to avoid harming bats, it should be done according to established standards. If your action includes bat exclusion and you are unsure whether northern long-eared bats or tricolored bats are present, answer "Yes." Answer "No" if there are no signs of bat use in the building/structure. If unsure, contact your local Ecological Services Field Office to help assess whether northern long-eared bats or tricolored bats may be present. Contact a Nuisance Wildlife Control Operator (NWCO) for help in how to exclude bats from a structure safely without causing harm to the bats (to find a NWCO certified in bat standards, search the Internet using the search term "National Wildlife Control Operators Association bats"). Also see the White-Nose Syndrome Response Team's guide for bat control in structures.

    No

16. Does the action involve removal, modification, or maintenance of a human-made structure (barn, house, or other building) **known or suspected to contain roosting bats?**

    No

17. Will the action cause construction of one or more new roads open to the public?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    No

18. Will the action include or cause any construction or other activity that is reasonably certain to increase average night-time traffic permanently or temporarily on one or more existing roads? **Note:** For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.). .

    No

19. Will the action include or cause any construction or other activity that is reasonably certain to increase the number of travel lanes on an existing thoroughfare?

    For federal actions, answer 'yes' when the construction or operation of these facilities is either (1) part of the federal action or (2) would not occur but for an action taken by a federal agency (federal permit, funding, etc.).

    No

20. Will the proposed Action involve the creation of a new water-borne contaminant source (e.g., leachate pond, pits containing chemicals that are not NSF/ANSI 60 compliant)?

    Note: For information regarding NSF/ANSI 60 please visit https://www.nsf.org/knowledge-library/nsf-ansi-standard-60-drinking-water-treatment-chemicals-health-effects

    No

21. Will the proposed action involve the creation of a new point source discharge from a facility other than a water treatment plant or storm water system?

    No

22. Will the proposed action involve blasting or drilling?

    No

23. Will the action involve military training (e.g., smoke operations, obscurant operations, exploding munitions, artillery fire, range use, helicopter or fixed wing aircraft use)?

    No

24. Will the proposed action involve the use of herbicides or other pesticides other than herbicides (e.g., fungicides, insecticides, or rodenticides)?

    No

25. Will the action include or cause activities that are reasonably certain to cause chronic or intense nighttime noise (above current levels of ambient noise in the area) in suitable summer habitat for the northern long-eared bat or tricolored bat during the active season?

    Chronic noise is noise that is continuous or occurs repeatedly again and again for a long time. Sources of chronic or intense noise that could cause adverse effects to bats may include, but are not limited to: road traffic; trains; aircraft; industrial activities; gas compressor stations; loud music; crowds; oil and gas extraction; construction; and mining.

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    No

26. Does the action include, or is it reasonably certain to cause, the use of permanent or temporary artificial lighting within 1000 feet of suitable northern long-eared bat or tricolored bat roosting habitat?

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    No

27. Will the action include tree cutting or other means of knocking down or bringing down trees, tree topping, or tree trimming?

    Yes

28. Will the proposed action occur exclusively in an already established and currently maintained utility right-of-way?

    No

29. Does the action include emergency cutting or trimming of hazard trees in order to remove an imminent threat to human safety or property? See hazard tree note at the bottom of the key for text that will be added to response letters

    Note: A "hazard tree" is a tree that is an immediate threat to lives, public health and safety, or improved property.

    No

30. Does the project intersect with the 0- 9.9% forest density category?

    Automatically answered
    No

31. Does the project intersect with the 10.0- 19.9% forest density category map?

    Automatically answered
    No

32. Does the project intersect with the 20.0- 29.9% forest density category map?

    Automatically answered
    No

33. Does the project intersect with the 30.0- 100% forest density category map?

    Automatically answered
    Yes

34. Will the action cause trees to be cut, knocked down, or otherwise brought down across an area greater than 100 acres in total extent?

    No

35. Will the proposed action result in the use of prescribed fire?

    Note: If the prescribed fire action includes other activities than application of fire (e.g., tree cutting, fire line preparation) please consider impacts from those activities within the previous representative questions in the key. This set of questions only considers impacts from flame and smoke.

    No

36. Does the action area intersect the northern long-eared bat species list area?

    Automatically answered
    Yes

37. [Semantic] Is the action area located within 0.5 miles of radius of an entrance/opening to any known NLEB hibernacula? Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

38. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats? **Note:** The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

39. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats?

    Automatically answered
    No

40. [Semantic] Is the action area located within 150 feet of a documented northern long-eared bat roost site?

    Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.Have you contacted the appropriate agency to determine if your action is within 150 feet of any documented northern long-eared bat roosts?

    Note: A document with links to Natural Heritage Inventory databases and other state-specific sources of information on the locations of northern long-eared bat roosts is available here. Location information for northern long-eared bat roosts is generally kept in state natural heritage inventory databases – the availability of this data varies by state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited.

    Automatically answered
    No

41. Is suitable summer habitat for the northern long-eared bat present within 1000 feet of project activities?
    If unsure, answer "Yes."

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

42. Are any of the trees proposed for cutting or other means of knocking down, bringing down, topping, or trimming suitable for northern long-eared bat roosting (i.e., live trees and/or snags ≥3 inches dbh that have exfoliating bark, cracks, crevices, and/or cavities)?

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

43. Will any tree cutting/trimming or other knocking or bringing down of trees occur during the **Fall Swarming season** for northern long-eared bats in the action area?

    Note: Bat activity periods for your state can be found in Appendix L of the Service's Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines

    No

44. Will any tree cutting/trimming or other knocking or bringing down of trees occur during the **Spring Staging** season for northern long-eared bats in the action area?

    Note: Bat activity periods for your state can be found in Appendix L of the Service's Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines.

    No

45. Will any tree cutting/trimming or other knocking or bringing down of trees occur during the **Summer Occupancy season** for northern long-eared bats in the action area? **Note:** Bat activity periods for your state can be found in Appendix L of the Service's Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines.

    No

46. Does the action area intersect the tricolored bat species list area?

    Automatically answered
    Yes

47. [Semantic] Is the action area located within 0.5 miles of radius of an entrance/opening to any known tricolored bat hibernacula? Note: The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

48. [Semantic] Is the action area located within 0.25 miles of a culvert that is known to be occupied by northern long-eared or tricolored bats? **Note:** The map queried for this question contains proprietary information and cannot be displayed. If you need additional information, please contact your State wildlife agency.

    Automatically answered
    No

49. Is suitable summer habitat for the tricolored bat present within 1000 feet of project activities?
(If unsure, answer ""Yes."")

    Note: If there are trees within the action area that may provide potential roosts for tricolored bats (e.g., clusters of leaves in live and dead deciduous trees, Spanish moss (Tillandsia usneoides), clusters of dead pine needles of large live pines) answer ""Yes."" For a complete definition of suitable summer habitat for the tricolored bat, please see Appendix A in the Service's Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines.

    Yes

50. Do any of the trees proposed for cutting or other means of knocking down, bringing down, topping, or trimming provide potential roosts for tricolored bats (e.g., clusters of leaves in live and dead deciduous trees, Spanish moss (*Tillandsia usneoides*), clusters of dead pine needles of large live pine trees)?

    Note: Additional information defining suitable summer habitat for the northern long-eared bat and tricolored bat can be found in Appendix A of the USFWS' Range-wide Indiana Bat and Northern long-eared bat Survey Guidelines at: https://www.fws.gov/media/range-wide-indiana-bat-and-northern-long-eared-bat-survey-guidelines.

    Yes

51. Will any tree cutting/trimming or other knocking or bringing down of trees be conducted during the Pup Season for tricolored bat?
    Note: Bat activity periods for your state can be found in Appendix L of the Service's Range-wide Indiana Bat and Northern long-eared Bat Survey Guidelines.

    No

52. Do you have any documents that you want to include with this submission?

    No

PROJECT QUESTIONNAIRE

Enter the extent of the action area (in acres) from which trees will be removed - round up to the nearest tenth of an acre. For this question, include the entire area where tree removal will take place, even if some live or dead trees will be left standing.

2.7

IPAC USER CONTACT INFORMATION

Agency: County of Onondaga
Name: John Greaves
Address: III Winners Circle
City: Albany
State: NY
Zip: 12205
Email jgreaves@chacompanies.com
Phone: 5184538251

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Army Corps of Engineers

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
Phone: (607) 753-9334 Fax: (607) 753-9699
Email Address: fw5es_nyfo@fws.gov

In Reply Refer To: 06/26/2025 17:10:22 UTC
Project Code: 2025-0038158
Project Name: Oak Orchard WWTP

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. **Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.**

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New York Ecological Services Field Office
3817 Luker Road
Cortland, NY 13045-9385
(607) 753-9334

PROJECT SUMMARY

Project Code: 2025-0038158
Project Name: Oak Orchard WWTP
Project Type: Wastewater Facility - Maintenance / Modification
Project Description: Upgrades to an existing wastewater treatment facility.
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.2015549,-76.20989018622964,14z



Counties: Onondaga County, New York

ENDANGERED SPECIES ACT SPECIES

There is a total of 4 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

MAMMALS

NAME	STATUS
Indiana Bat *Myotis sodalis* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5949	Endangered
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Endangered
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: County of Onondaga
Name: John Greaves
Address: III Winners Circle
City: Albany
State: NY
Zip: 12205
Email jgreaves@chacompanies.com
Phone: 5184538251

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Army Corps of Engineers

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Fish and Wildlife, New York Natural Heritage Program
625 Broadway, Fifth Floor, Albany, NY 12233-4757
P: (518) 402-8935 | F: (518) 402-8925
www.dec.ny.gov

February 21, 2025

John Greaves
CHA Consulting
3 Winners Circle
Albany, NY 12205

Re: Oak Orchard wastewater treatment plant
County: Onondaga Town/City: Clay

Dear John Greaves:

In response to your recent request, we have reviewed the New York Natural Heritage Program database with respect to the above project.

Enclosed is a report of rare or state-listed animals and plants, and significant natural communities that our database indicates occur in the vicinity of the project site.

For most sites, comprehensive field surveys have not been conducted; the enclosed report only includes records from our database. We cannot provide a definitive statement as to the presence or absence of all rare or state-listed species or significant natural communities. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

The presence of the plants and animals identified in the enclosed report may result in this project requiring additional review or permit conditions. For further guidance, and for information regarding other permits that may be required under state law for regulated areas or activities (e.g., regulated wetlands), please contact the NYS DEC Region 7 Office, Division of Environmental Permits, at dep.r7@dec.ny.gov.

Sincerely,

Heidi Krahling
Environmental Review Specialist
New York Natural Heritage Program

The following state-listed animals have been documented in the vicinity of the project site.

The following list includes animals that are listed by NYS as Endangered, Threatened, or Special Concern; and/or that are federally listed.

For information about any permit considerations for the project, contact the NYSDEC Region 7 Office, Division of Environmental Permits, at dep.r7@dec.ny.gov, 315-426-7438.

The following species have been documented in the vicinity of the project site.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*FEDERAL LISTING*	
Birds				
Pied-billed Grebe *Breeding*	*Podilymbus podiceps*	Threatened		12551
Bald Eagle *Breeding*	*Haliaeetus leucocephalus*	Threatened		14908
Fish				
Lake Sturgeon	*Acipenser fulvescens*	Threatened		11143

The following species have been documented within 2.5 miles of the project site. Individual animals may travel 2.5 miles from documented locations. The main impact of concern is the cutting or removal of potential roost trees.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*FEDERAL LISTING*	
Mammals				
Indiana Bat *Maternity colony*	*Myotis sodalis*	Endangered	Endangered	13852

This report only includes records from the NY Natural Heritage database.

Information about many of the listed animals in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org, and from NYSDEC at www.dec.ny.gov/animals/7494.html.

The following rare plants, rare animals, and significant natural communities have been documented at the project site, or in its vicinity.

We recommend that potential impacts of the proposed project on these species or communities be addressed as part of any environmental assessment or review conducted as part of the planning, permitting and approval process, such as reviews conducted under SEQR. Field surveys of the project site may be necessary to determine the status of a species at the site, particularly for sites that are currently undeveloped and may contain suitable habitat. Final requirements of the project to avoid, minimize, or mitigate potential impacts are determined by the lead permitting agency or the government body approving the project.

The following plants are listed as Endangered or Threatened by New York State, and/or are considered rare by the New York Natural Heritage Program, and are a vulnerable natural resource of conservation concern.

COMMON NAME	*SCIENTIFIC NAME*	*NY STATE LISTING*	*HERITAGE CONSERVATION STATUS*
Vascular Plants			
Hairy Small-leaved Tick Trefoil	*Desmodium ciliare*	Threatened	Imperiled in NYS

Documented within 200 yards northeast of the project site. 1991-06-27: A small sand hill next to Oak Orchard Road. Isolated with trails throughout with some trash piles. 6828

This report only includes records from the NY Natural Heritage database. For most sites, comprehensive field surveys have not been conducted, and we cannot provide a definitive statement as to the presence or absence of all rare or state-listed species. Depending on the nature of the project and the conditions at the project site, further information from on-site surveys or other sources may be required to fully assess impacts on biological resources.

If any rare plants or animals are documented during site visits, we request that information on the observations be provided to the New York Natural Heritage Program so that we may update our database.

Information about many of the rare animals and plants in New York, including habitat, biology, identification, conservation, and management, are available online in Natural Heritage's Conservation Guides at www.guides.nynhp.org.

APPENDIX D

Photographic Documentation



Photo 1 – View of Mud Creek (delineated Stream 4) (unconfined river) and its fringe shallow emergent marsh (part of delineated Wetland 5).



Photo 2 – Wetland 1 red maple hardwood swamp community.

CHA	**SITE PHOTOGRAPHS**
	Oak Orchard Wastewater Treatment Plant **Clay, Onondaga Co., NY**
Sheet 1	**CHA File No. 090316**



Photo 3 – Wetland 1 red maple hardwood swamp community. Large shagbark hickories scattered throughout this wetland and is adjacent upland.



Photo 4 – Wetland 1 vernal pool community.

CHA	**SITE PHOTOGRAPHS**
	Oak Orchard Wastewater Treatment Plant **Clay, Onondaga Co., NY**
Sheet 2	**CHA File No. 090316**



Photo 5 - Wetland 1 vernal pool and red maple hardwood swamp communities.



Photo 6 – Wetland 3 red maple hardwood swamp community.

	SITE PHOTOGRAPHS
	Oak Orchard Wastewater Treatment Plant **Clay, Onondaga Co., NY**
Sheet 3	**CHA File No. 090316**



Photo 7 - Wetland 4 red maple hardwood swamp community.



Photo 8 - Wetland 4 red maple hardwood swamp community.

	SITE PHOTOGRAPHS
	Oak Orchard Wastewater Treatment Plant **Clay, Onondaga Co., NY**
Sheet 4	**CHA File No. 090316**



Photo 9 – Red maple hardwood swamp portion of Wetland 5.



Photo 10 – Wetland 2 – shallow emergent marsh on a mowed lawn.



Photo 11 – Intermittent stream (Stream 1), looking upstream.



Photo 12 - Intermittent stream (Stream 1), looking upstream. Fringe successional southern hardwoods.



**Photo 13 - Ephemeral stream (Stream 2), looking downstream.
Stream 003 is very similar.**



Photo 14 - Ephemeral stream (Stream 2), looking downstream.



Photo 15 – Mud Creek (delineated Stream 004). Unconfined river.



Photo 16 – Oneida River (Stream 005). Unconfined river community.

	SITE PHOTOGRAPHS
	Oak Orchard Wastewater Treatment Plant **Clay, Onondaga Co., NY**
Sheet 8	**CHA File No. 090316**



Photo 17 – Existing outfall within the Oneida River.



Photo 18 – Oneida River substrate at the outfall location.



Photo 19 - Typical view of successional old field community with monarch habitat.



Photo 20 – Typical view of successional old field community with monarch habitat.



Photo 21 – Representative photo of onsite potential NLEB/IBAT roosting structure.



Photo 22 - Representative photo of onsite potential NLEB/IBAT roosting structure.



Photo 23 - Representative photo of onsite potential NLEB/IBAT roosting structure.



Photo 24 – Bat roosting habitat (large shagbark hickories) in and adjacent to Wetland 001 with somewhat open canopy for flight.



Photo 25 – Potential pied-billed grebe nesting habitat in the hemi-marsh along Mud creek.



Photo 26 – Onsite sewage treatment lagoon that may support pied-billed grebe, but not critical or ideal habitat.



Photo 27 – Representative photo of the larger trees onsite that could potentially support bald eagle nesting.



Photo 28 – Oneida River at the outfall location.



Photo 29 – Oneida River substrate at the outfall structure.



Photo 30 – Mud Creek where it flows under the bridge into Oneida River.



Photo 31 – Typical view of mowed lawn with trees habitat.



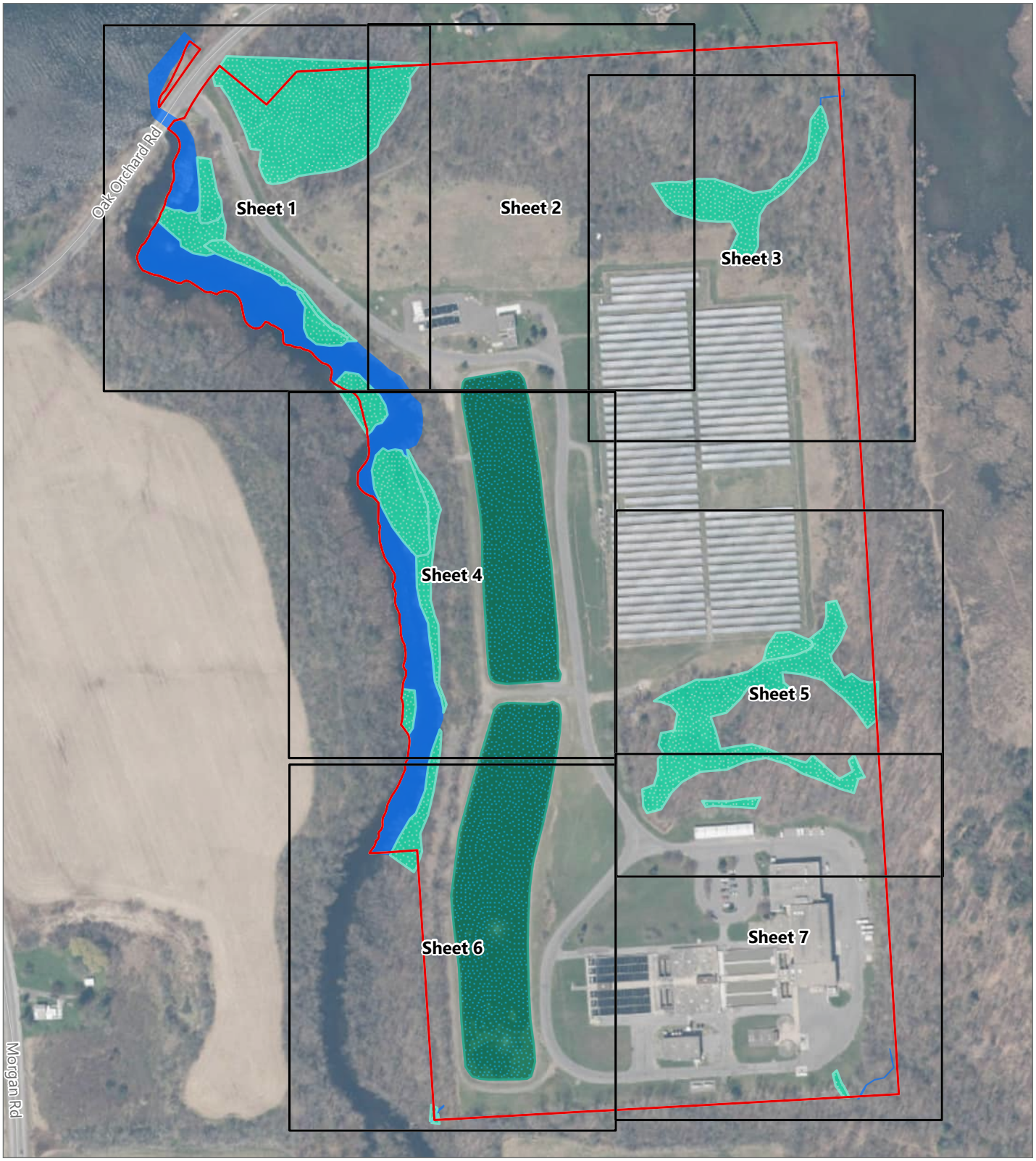
Photo 32 – Successional shrubland habitat.

APPENDIX E

Wetland Delineation Map

Figure 1. Delineated Wetland and Stream Extensions

Index



Oak Orchard

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Addendum

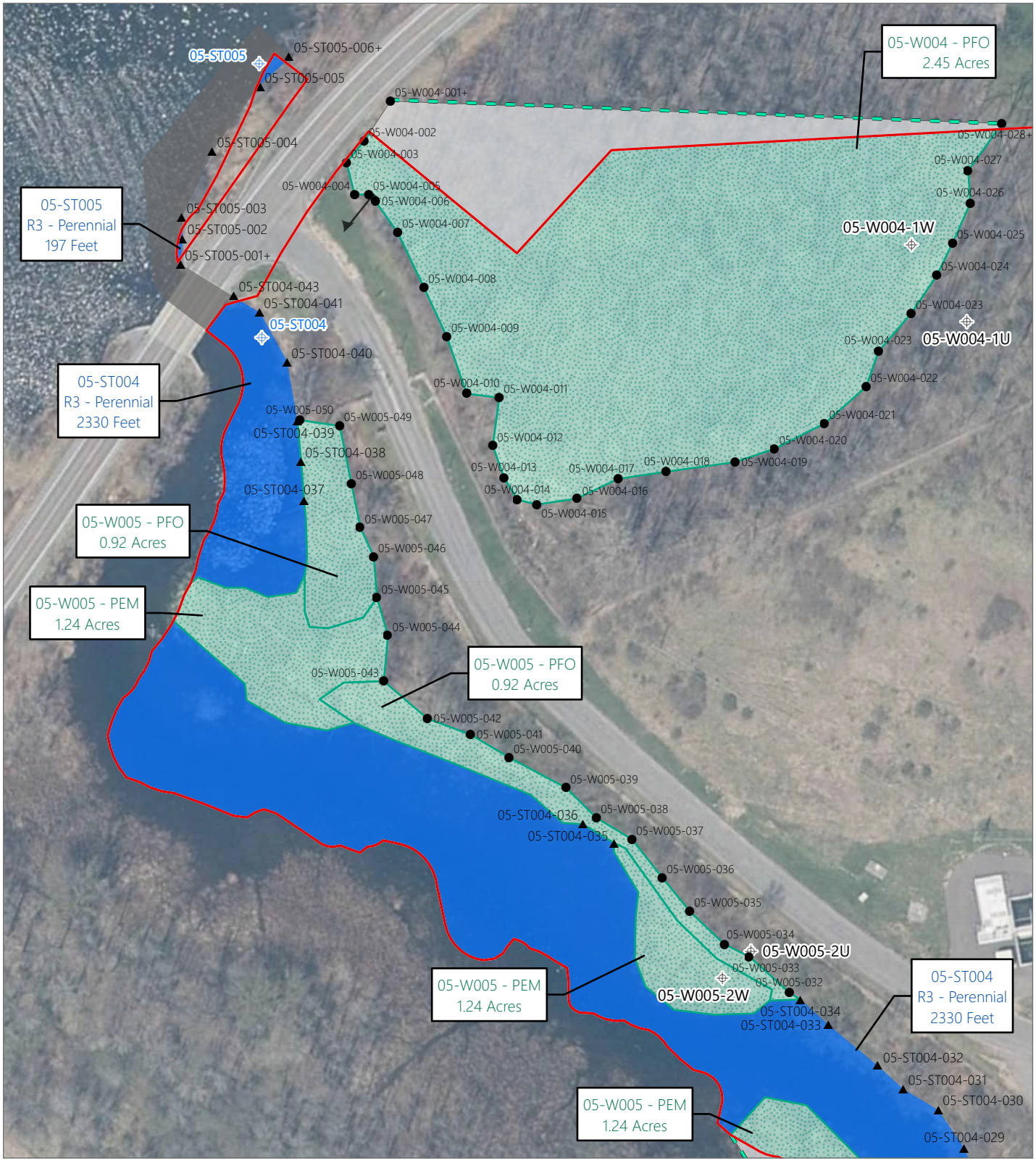
Delineated Stream
Delineated Wetland
Wastewater Treatment Lagoon
Study Area

0 100 200 400
Feet

Prepared May 27, 2025
Basemap: NYSDOP "2022" orthoimagery map service

EDR

Figure 1. Delineated Wetland and Stream Extensions



Oak Orchard

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Addendum

- Stream Flag
- Wetland Flag
- Datapoint Stream
- Datapoint Wetland
- Culvert
- Wetland Continues
- Delineated Stream inside Study Area
- Delineated Stream outside Study Area
- Previously Delineated Wetland inside Study Area
- Delineated Wetland outside Study Area
- Study Area

0 25 50 100
Feet

Prepared May 27, 2025
Basemap: NYSDOP "2022" orthoimagery map service

EDR

Figure 1. Delineated Wetland and Stream Extensions



Oak Orchard

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Addendum

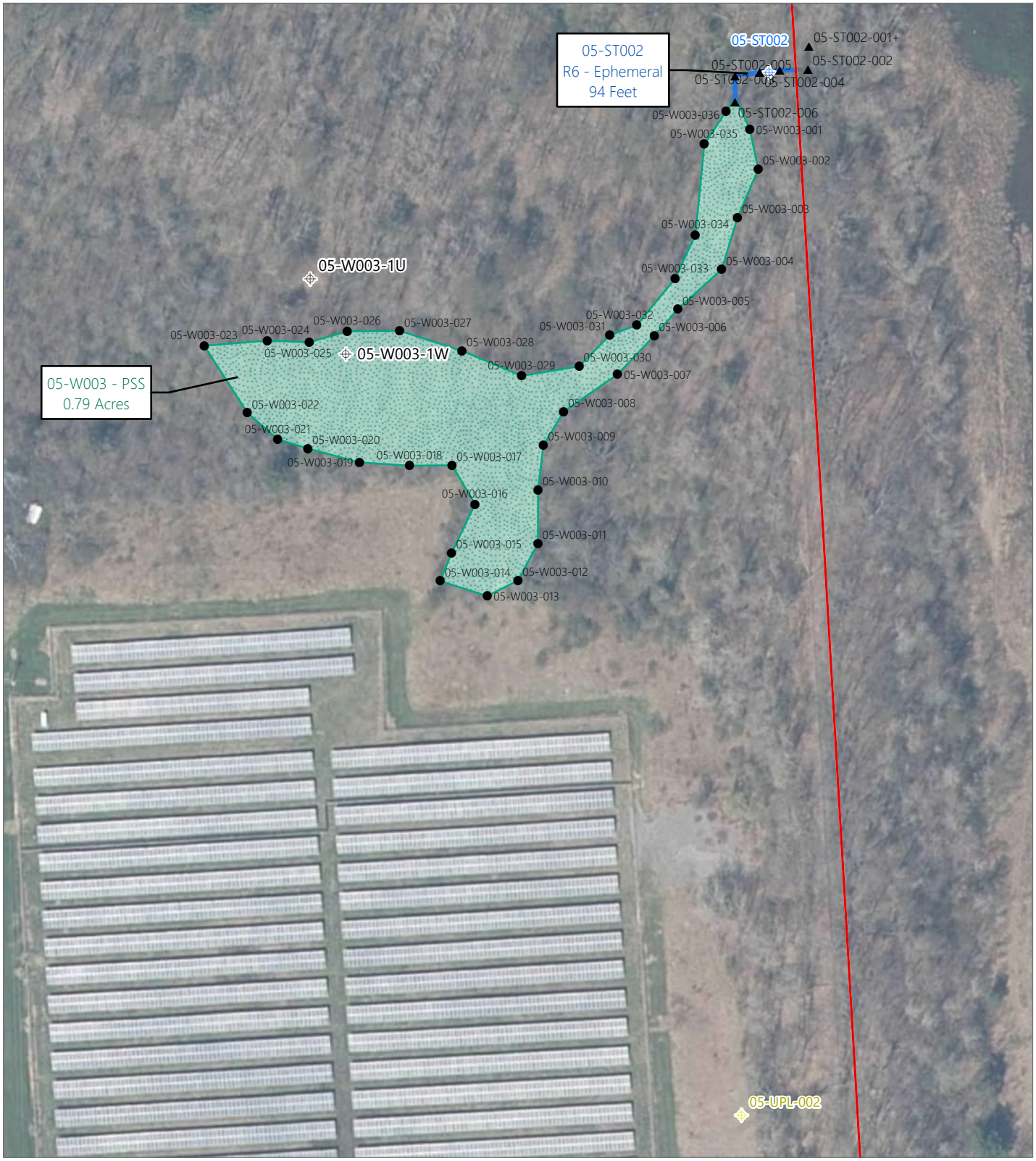
- Stream Flag
- Wetland Flag
- Datapoint Wetland
- Non-Wetland Verification Point
- Wetland Continues
- Delineated Stream inside Study Area
- Previously Delineated Wetland inside Study Area
- Delineated Wetland outside Study Area
- Wastewater Treatment Lagoon
- Study Area

0 25 50 100
Feet

Prepared May 27, 2025
Basemap: NYSDOP "2022" orthoimagery map service

EDR

Figure 1. Delineated Wetland and Stream Extensions



Oak Orchard

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Addendum

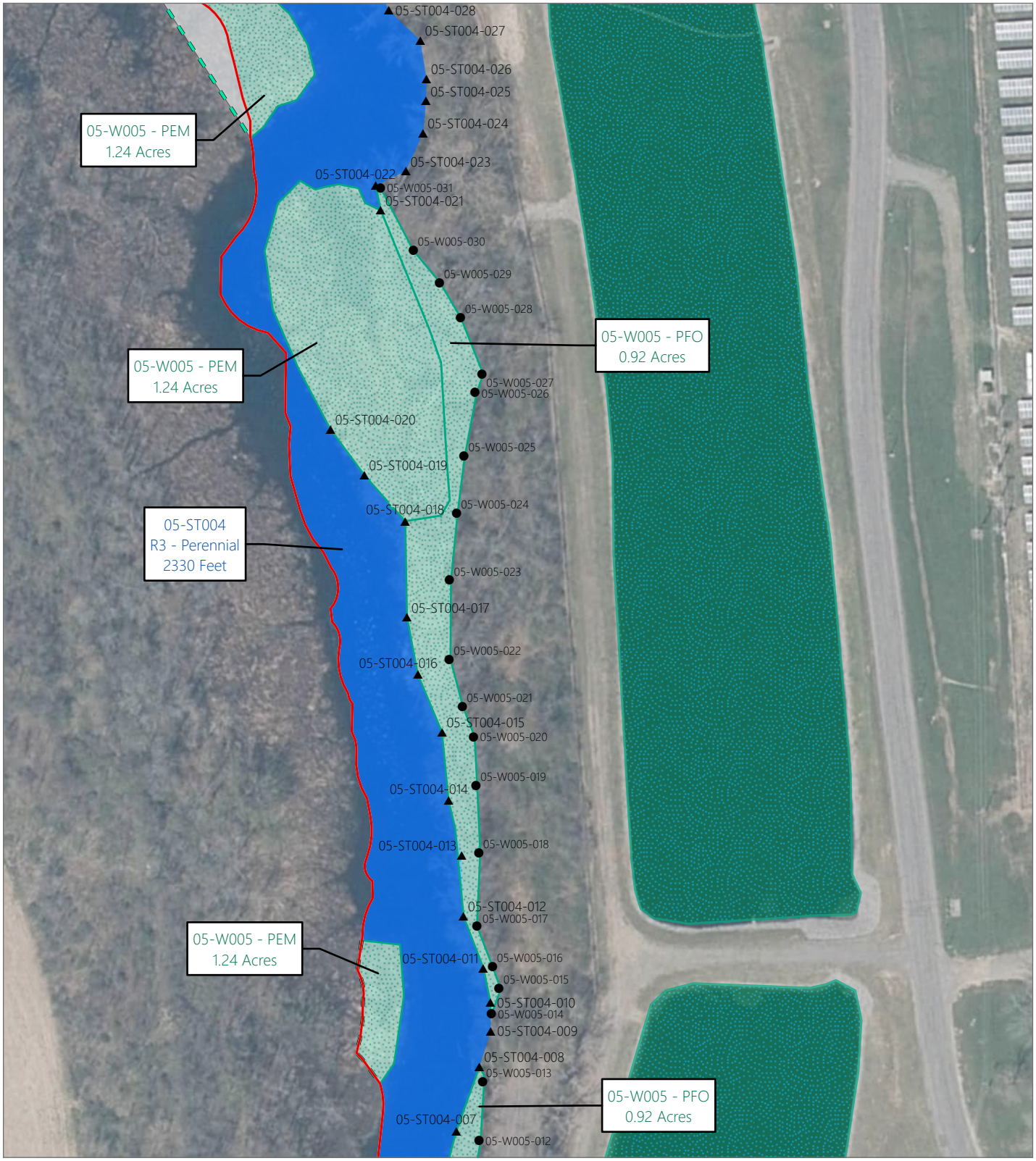
- Stream Flag
- Wetland Flag
- Datapoint Stream
- Datapoint Wetland
- Non-Wetland Verification Point
- Delineated Stream inside Study Area
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- Previously Delineated Wetland inside Study Area
- Study Area

0 25 50 100
Feet

Prepared May 27, 2025
Basemap: NYSDOP "2022" orthoimagery map service

EDR

Figure 1. Delineated Wetland and Stream Extensions



Oak Orchard

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Addendum

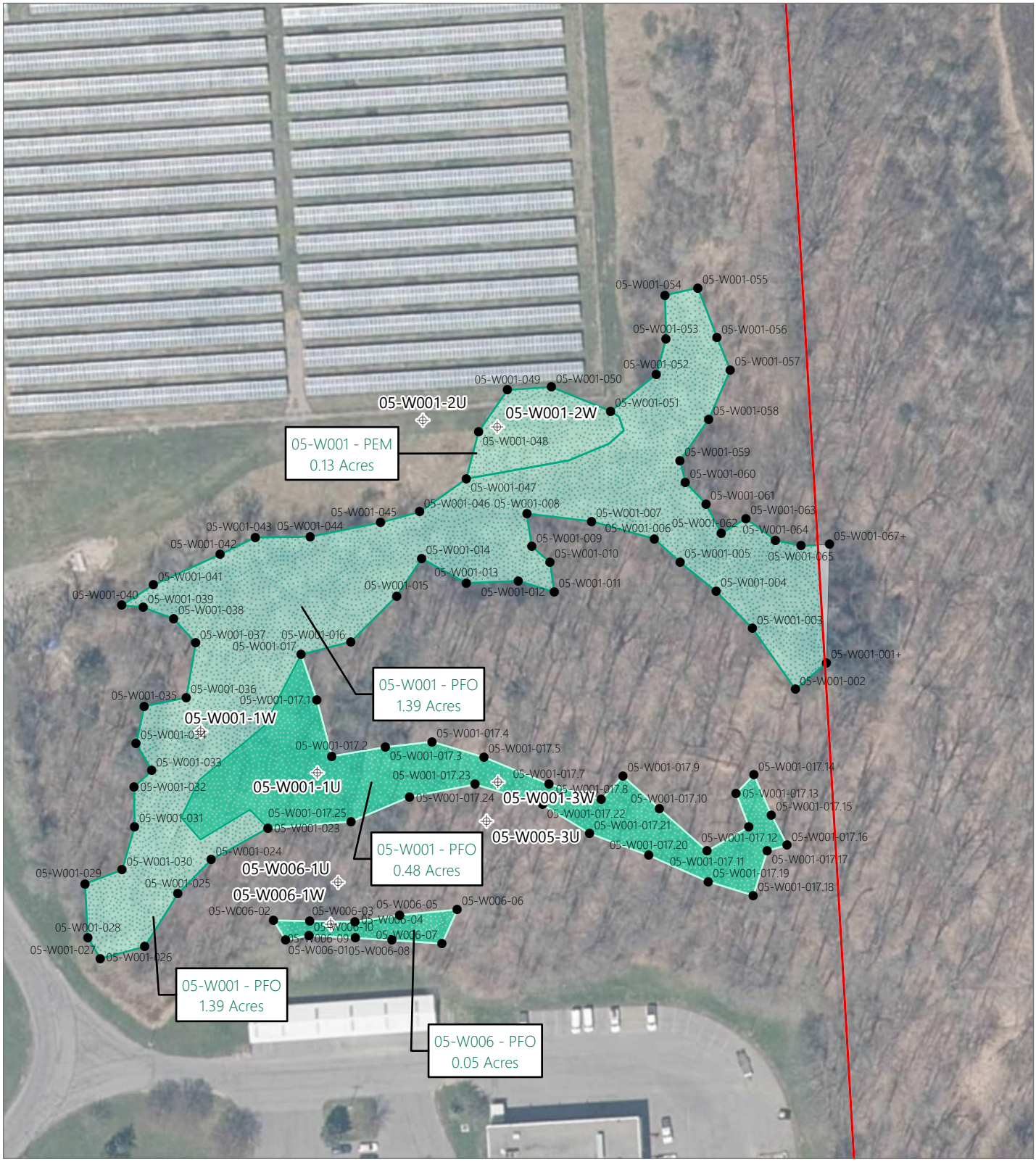
- Stream Flag
- Wetland Flag
- Wetland Continues
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- Delineated Wetland outside Study Area
- Wastewater Treatment Lagoon
- Study Area

0 25 50 100
Feet

Prepared May 27, 2025
Basemap: NYSDOP "2022" orthoimagery map service

EDR

Figure 1. Delineated Wetland and Stream Extensions



Oak Orchard

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Addendum

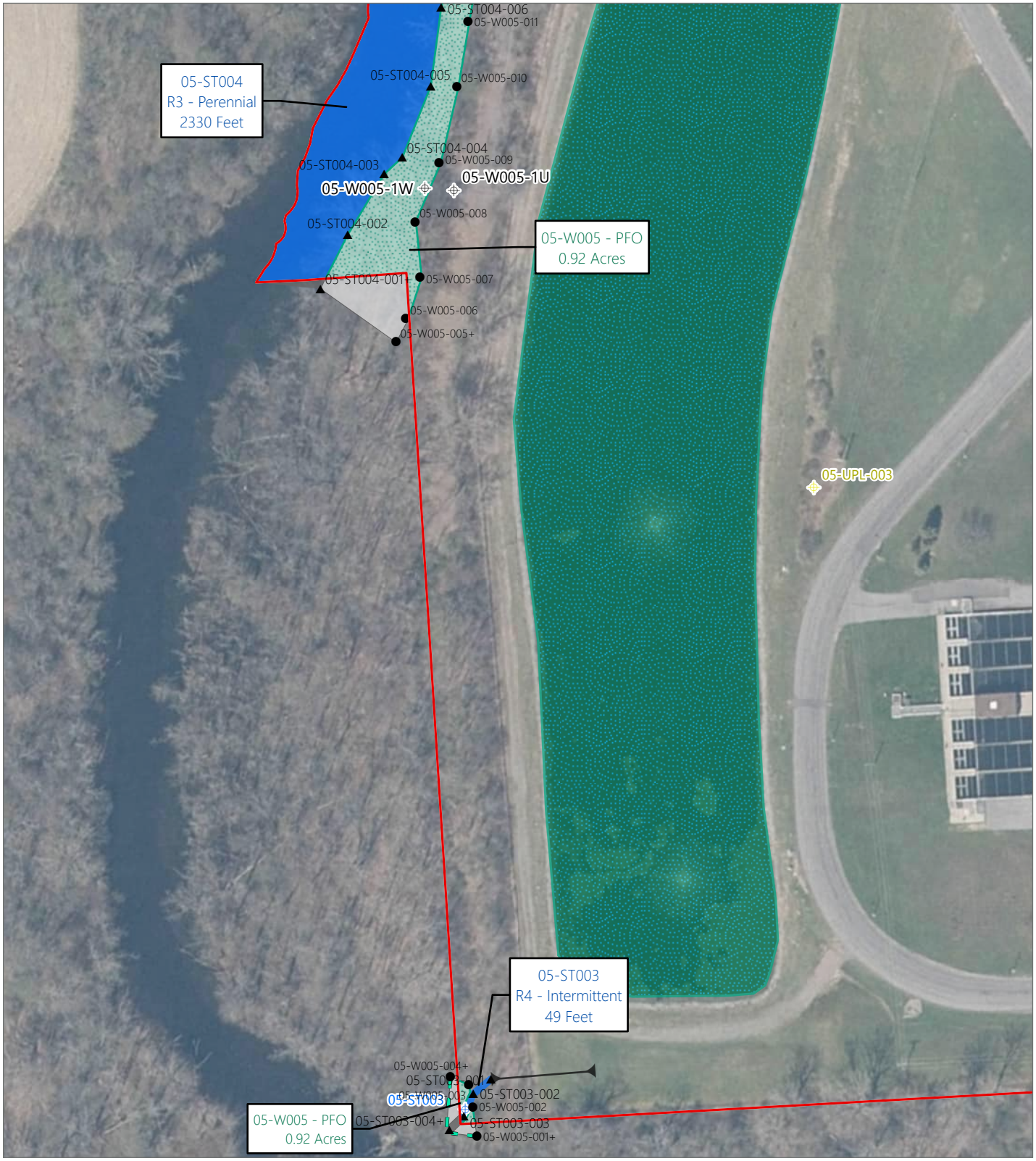
- Wetland Flag
- Datapoint Wetland
- May 2025 Delineated Wetland inside Study Area
- Previously Delineated Wetland inside Study Area
- Delineated Wetland outside Study Area
- Study Area

0 25 50 100
Feet

Prepared May 27, 2025
Basemap: NYSDOP "2022" orthoimagery map service

EDR

Figure 1. Delineated Wetland and Stream Extensions



Oak Orchard

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Addendum

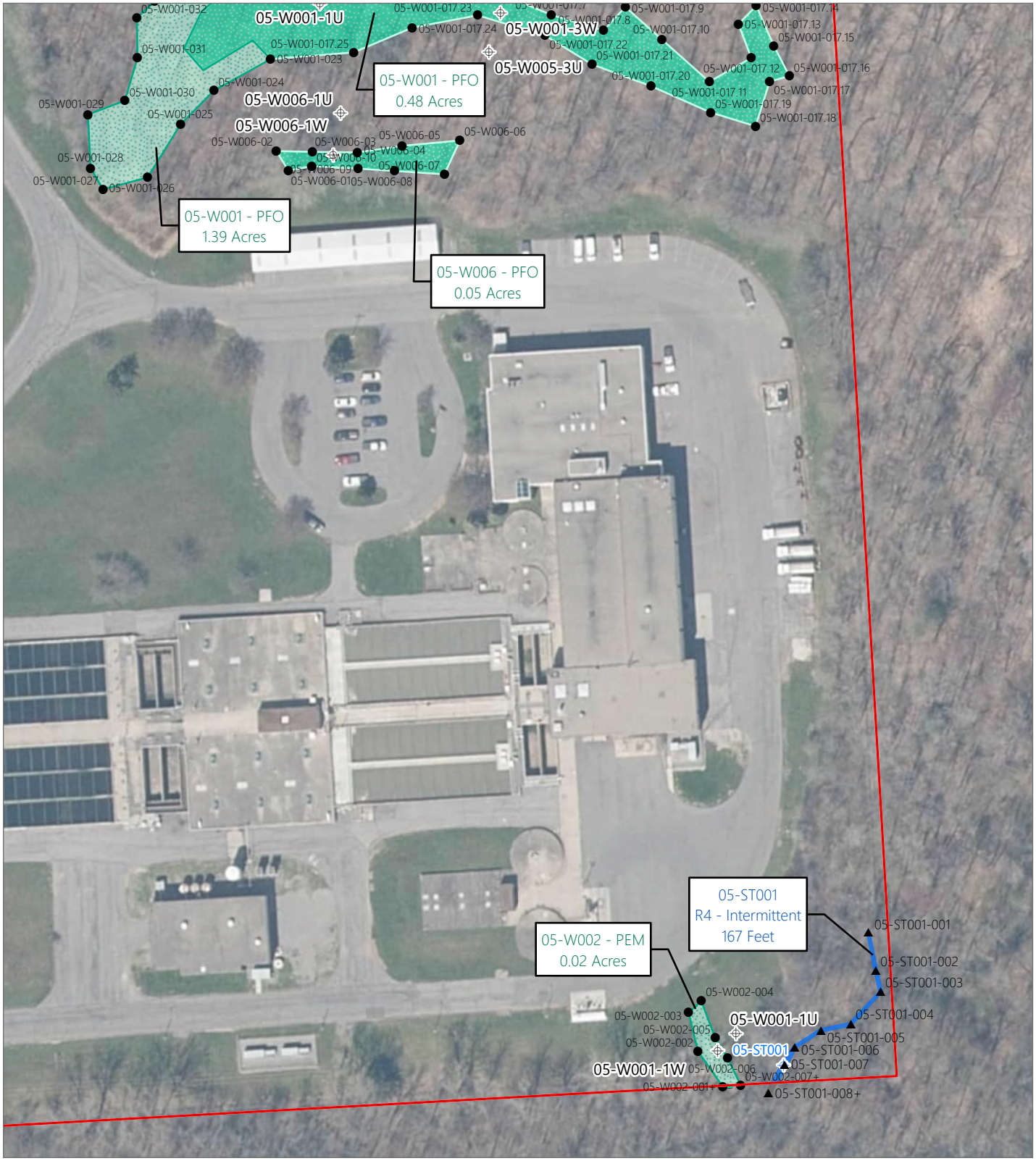
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- Wastewater Treatment Lagoon
- Study Area

0 25 50 100
Feet

Prepared May 27, 2025
Basemap: NYSDOP "2022" orthoimagery map service

EDR

Figure 1. Delineated Wetland and Stream Extensions



Oak Orchard

Town of Clay, Onondaga County, New York

Wetland and Stream Delineation Addendum

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- Study Area

0 25 50 100
Feet

Prepared May 27, 2025
Basemap: NYSDOP "2022" orthoimagery map service

EDR

www.chasolutions.com



APPENDIX E

Photolog and Photo Location Map



Photo 1
Representative photograph of palustrine forested (PFO) Wetland 05-W001



Photo 2
Representative photograph of the palustrine open water (POW) portion of Wetland 12-W001



Photo 3
Representative photograph of intermittent stream 05-ST002



Photo 4
Representative photograph of the Oneida River, perennial stream 12-ST001

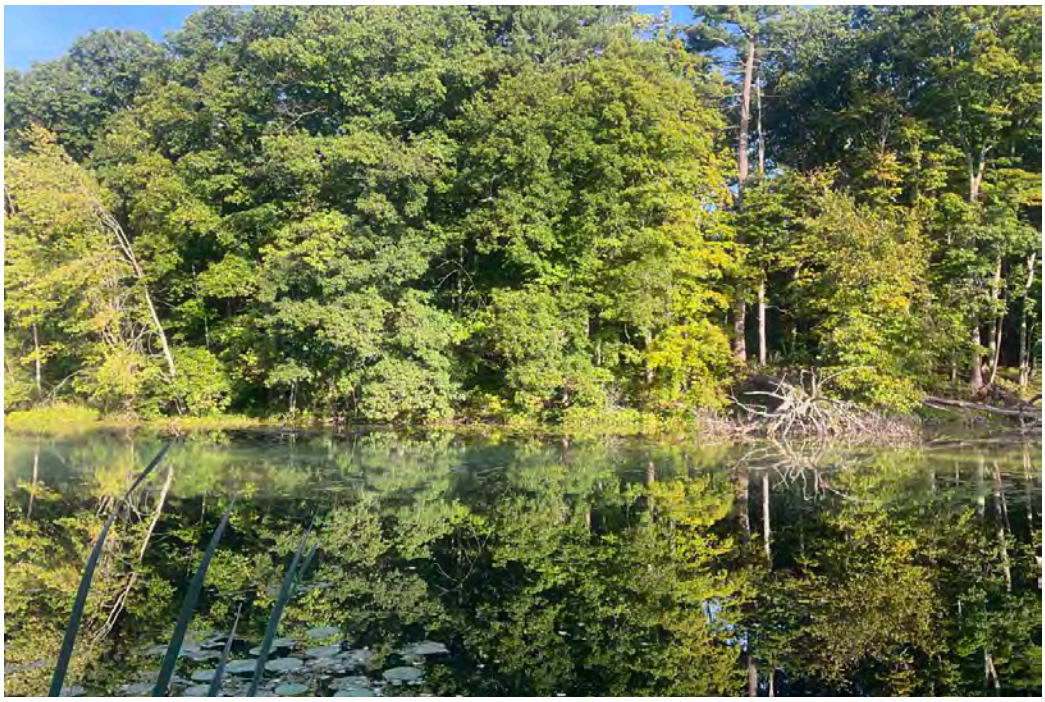


Photo 5
Representative photograph of the Oneida River, perennial stream 12-ST001



Photo 6
Representative photograph of intermittent stream 12-ST002



Photo 7
Representative photograph of an upland deciduous forest community



Photo 8
Representative photograph of a wastewater treatment lagoon.



Photo 9
Representative photograph of the palustrine forested (PFO) portion of wetland 05-W001.



Photo 10
Photograph of drop culvert within wetland 05-W001.



Photo 11
Photograph of wetland 05-W001 beyond the Study Area. Wetland extends approximately 40 feet into upland forest.



Photo 12
Representative photograph of the palustrine emergent (PEM) portion of wetland 05-W001.



Photo 13
Representative photograph of the upland area adjacent to the PFO portion of wetland 05-W001.



Photo 14
Representative photograph of the upland area adjacent to the PEM portion of wetland 05-W001.



Photo 15
Representative photograph of palustrine emergent (PEM) wetland 05-W002.



Photo 16
Representative photograph of the upland area adjacent to wetland 05-W002.



Photo 17
Representative photograph of palustrine scrub-shrub (PSS) wetland 05-W003.



Photo 18
Representative photograph of the upland area adjacent to wetland 05-W003.



Photo 19
Representative photograph of palustrine forested (PFO) wetland 05-W004.



Photo 20
Representative photograph of the upland area adjacent to wetland 05-W004.



Photo 21
Representative photograph of the palustrine forested (PFO) portion of wetland 05-W005.



Photo 22
Representative photograph of the palustrine emergent (PEM) portion of wetland 05-W005.



Photo 23
Representative photograph of the upland area adjacent to the PFO portion of wetland 05-W005.



Photo 24
Representative photograph of the upland area adjacent to the PFO portion of wetland 05-W005.



Photo 25
Representative photograph of ephemeral stream 05-ST001.



Photo 26
Representative photograph of intermittent stream 05-ST002.



Photo 27
Representative photograph of intermittent stream 05-ST003.



Photo 28
Representative photograph of Mud Creek, perennial stream 05-ST004.



Photo 29
Representative photograph of the Oneida River, perennial stream 05-ST005.

Appendix E. Photo Location Map



Onondaga County Industrial Waste Water Treatment Plant

Town of Clay, Onondaga County, New York

Joint Application for Permit

Photograph Location

Proposed Conveyance Corridor

Proposed Industrial Waste Water Treatment Plant

0 75 150 300

Feet

Prepared September 4, 2025

Basemap: NYSDOP "2022" and "2023" orthoimagery map service

EDR

APPENDIX F

Environmental Questionnaire

Environmental Questionnaire

General – Applicable to All Projects

1. Explain the need for, and purpose of, the proposed work

   The proposed Project, which includes the construction of a new industrial wastewater treatment plant (IWWTP), will be developed to support the proposed Micron Technology, Inc. (Micron) semiconductor manufacturing campus in the Town of Clay, Onondaga County, NY. See Section 1.0 of the Project Narrative for further details.

2. Provide the names and addresses of property owners adjacent to your work site (if not shown on the application form or project drawings).

   See Figure 3 in Appendix A and Drawing C101 in Appendix C.

3. Photographs of the project site should be submitted. For projects in tidal areas, photographs of the waterway vicinity should be taken at low tide. Using a separate copy of your plan view, indicate the location and direction of each photograph as well as the date and time at which the photograph was taken. Provide a sufficient number of photographs so as to provide a clear understanding of conditions on and proximate to your project site.

   See Appendix E (Photograph Log and Photograph Location Map).

4. Provide a copy of any environmental impact statement, or any other environmental report which was prepared for your project.

   See Sections 4.0 through 8.0 of the Project Narrative for details.

5. Provide a thorough discussion of alternatives to your proposal. This discussion should include, but not necessarily be limited to, the "no action" alternative and alternative(s) resulting in less disturbance to waters of the United States. For filling projects in waters of the United States, including wetlands, your alternatives discussion should demonstrate that there are no practicable alternatives to your proposed filling and that your project meets with current mitigation policy (i.e. avoidance, minimization and compensation).

   See Section 5.0 of the Project Narrative and Appendix C, Section 3.0 (Engineering Report)

Dredging Projects

Answer the following if your project involves dredging.

1. Indicate the estimated volume of material to be dredged and the depth (below mean low water) to which dredging would occur. Would there be overdepth dredging?
2. You can apply for a ten-year permit for maintenance dredging. If you wish to apply for a ten-year permit, please provide the number of additional dredging events during the ten-year life of the permit and the amount of material to be removed during future events.
3. Indicate of your drawings the dewatering area (if applicable) and disposal site for the dredged material (except landfill sites). Submit a sufficient number of photographs of the dewatering and disposal sites as applicable so as to provide a clear indication of existing conditions. For ten-year maintenance dredging permits, indicate the dewatering/disposal sites for future dredging events, if known.
4. Describe the method of dredging (i.e. clamshell, dragline, etc.) and the expected duration of dredging.
5. Indicate the physical nature of the material to be dredged (i.e. sand, silt, clay, etc.) and provide estimated percentages of the various constituents if available. For beach nourishment projects, grain size analysis data is required.
6. Describe the method of dredged material containment (i.e. hay bales, embankment, bulkhead, etc.) and whether return flow from the dewatering/disposal site would reenter any waterway. Also indicate if there would be any barge overflow.

The Project does not include dredging. Therefore, these questions are not applicable.

Mooring Projects

Answer the following if your project includes the construction or rehabilitation of recreational mooring facilities.

1. It is generally recommended that any fixed piers and walk ramps be limited to four feet in width, and that floats be limited to eight feet in width and rest at least two feet above the waterway bottom at mean low water. Terminal floats at private, non- commercial facilities should be limited to 20 feet in length. If you do not believe your proposal can meet with these recommendations, please provide the reason(s).

2. Using your plan view, show to scale the location(s), position(s) and size(s) (including length, beam and draft) of vessel(s) to be moored at the proposed facility, including those of transient vessel(s) if known.

3. For commercial mooring sites such as marinas, indicate the capacity of the facility and indicate on the plan view the location(s) of any proposed fueling and/or sewage pumpout facilities. If pumpout facilities are not planned, please discuss the rationale below and indicate the distance to the nearest available pumpout station.

4. Indicate on your plan view the distance to adjacent marine structures, if any are proximate and show the locations and dimensions of such structures.

5. Discuss the need for wave protection at the proposed facility. Please be advised that if a permit is issued, you would be required to recognize that the mooring facility may be subject to wave action from wakes of passing vessels, whose operations would not be required to be modified. Issuance of a permit would not relieve you of ensuring the integrity of the authorized structure(s) and the United States would not be held responsible for damages to the structure(s) and vessel(s) moored thereto from wakes from passing vessels.

The Project does not include the construction or rehabilitation of recreational mooring facilities. Therefore, these questions are not applicable.

Bulkheading/Bank Stabilization/Filling Activities

Answer the following if your project includes construction of bulkheading (also retaining walls and seawalls) with backfill, filling of waters/wetlands, or any other bank stabilization fills such as riprap, revetments, gabions, etc.

1. Indicate the total volume of fill (including backfill behind a structure such as a bulkhead) as well as the volume of fill to be placed into waters of the United States. The amount of fill in waters of the United States can be determined by calculating the amount of fill to be placed below the plane of spring high tide in tidal areas and below ordinary high water in non-tidal areas.

2. Indicate the source(s) and type(s) of fill material.

3. Indicate the method of fill placement (i.e. by hand, bulldozer, crane, etc.). Would any temporary fills be required in waterways or wetlands to provide access for construction equipment? If so, please indicate the area of such waters and/or wetlands to be filled, and show on the plan and sectional views.

The Project does not include the construction of bulkheading (also retaining walls and seawalls) with backfill, filling of waters/wetlands, or any other bank stabilization fills such as riprap, revetments, gabions, etc. Therefore, these questions are not applicable

The foregoing requests basic information on the most common types of projects requiring Department of the Army permits. It is intended to obviate or reduce the need for requesting additional information; however, additional information may be requested above and beyond what is requested in this form.

Please feel free to add any additional information regarding your project which you believe may facilitate our review.