Preliminary Engineering Report/Map, Plan and Report

Durhamville Sewer District

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Prepared for

Town of Verona

6600 Germany Road
Durhamville, New York

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Barton&Loguidice

Durhamville Sewer District
Town of Verona, Oneida County

Preliminary Engineering Report/Map, Plan and Report

Revision 4
May 2026

Prepared for:

Town of Verona
6600 Germany Road
Durhamville, New York 13054

Prepared by:

Barton & Loguidice, D.P.C.
443 Electronics Parkway
Liverpool, New York 13088

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EXECUTIVE SUMMARY

Barton & Loguidice, D.P.C. (B&L) prepared an Engineering Feasibility Report, dated September 1998, for the Town of Verona to investigate the possibility of providing a municipal wastewater disposal system for the residents within the Hamlet of Durhamville. At that time the Town of Verona chose not to progress the proposed sewer district until project funding could be secured to make the project affordable to the residents of Durhamville.

Over a decade later, the Town retained B&L to prepare a Preliminary Engineering Report (PER), dated October 2010, to expand upon the alternatives presented in the initial feasibility report and to seek consideration from funding agencies for project funding. This PER was submitted to the NYS Environmental Facilities Corporation (NYSEFC) and the project was subsequently listed on the Intended Use Plan (IUP).

Following the project listing, B&L prepared a Map, Plan and Report (MPR), dated November 2011 and revised February 2012, in support of the formation of the proposed Durhamville Sewer District. The district was never formed, but the project remained listed on the IUP. In March 2021, the Town received a letter from EFC indicating that the project was eligible for hardship financing and that an updated PER meeting the new EFC Report Guidelines was required. A revised combination PER and MPR was drafted in 2021, but the hardship funding offer has expired. Based on feedback from property owners on the continued need for public sanitary sewer service, the Town has once again retained the services of B&L to update the PER/MPR to advance the district formation process.

This combined PER and MPR evaluates alternative improvements presented in the previous PER and MPR, and estimates capital costs as well as associated life-cycle costs for each alternative to address the need for public sewer service in the proposed Durhamville Sewer District. Consideration has been given to potential funding sources for each alternative, and user costs were estimated based on the most likely funding scenario. Four (4) potential alternatives were evaluated, generally outlined as follows:

- No Action Alternative
- Alternative No. 1: Gravity Collection System with City Connection on Bennet Road
  - Installation and construction of a new gravity sewer system to convey wastewater flows to the existing City of Oneida collection system on Bennet Road with treatment at the Oneida WWTP.
  - Estimated total project cost – ~~$18,900,000~~ $23,000,000
  - Estimated annual user cost – ~~$1,192~~ $2,048
- Alternative No. 2: Low-Pressure Collection System with City Connection on Bennet Road
  - Installation and construction of a new low-pressure collection system with individual grinder pumps to convey wastewater flows to the existing City sewer on Bennett Road with treatment at the Oneida WWTP.
  - Estimated total project cost – ~~$10,200,000~~ ~~$11,200,000~~ $13,300,000
  - Estimated annual user cost – ~~$783~~ ~~$823~~ $616

- Alternative No. 3: Low-Pressure Collection System with City Connection on N. Lake Street
  - Installation and construction of a new low-pressure collection system with individual grinder pumps to convey wastewater flows to the existing City sewer on Lake Street with treatment at the Oneida WWTP.
  - Estimated total project cost – ~~$10,200,000~~ ~~$11,700,000~~ $13,900,000
  - Estimated annual user cost – ~~$783~~ ~~$843~~ $980

~~Alternative No. 3: Low-Pressure Collection System with City Connection on N. Lake Street~~ Alternative No. 2: Low-Pressure Collection System with City Connection on Bennet Road is the recommended infrastructure alternative for the following reasons:

- Provides a reliable public sewer conveyance system for the residents within the proposed Durhamville Sewer District.
- Consolidates treatment at the City of Oneida WWTP, currently being upgraded with sufficient flow/load capacity to accommodate the proposed Durhamville Sewer District.
- Eliminates environmental and health risks associated with failing and inadequate subsurface disposal systems within the proposed Durhamville Sewer District.
- Improves water quality within Oneida Creek and the Old Erie Canal.
- ~~Provides opportunity for approximately 34 City of Oneida residential equivalent dwelling units (EDUs) currently served by private, onsite treatment systems to connect to the Town's proposed public sewer conveyance system, including a multi-unit mobile home park served by a community system.~~

Should the Verona Town Board accept the recommended project, the Town could proceed with an environmental review and sewer district formation in accordance with New York State (NYS) Law, Article 12A district formation by Town Board resolution subject to permissive referendum to move the project toward "shovel readiness".

Revision 2 of this PER serves to incorporate responses to PER review comments received from the NYSEFC on October 22, 2024, and are consistent with written responses within the November 8, 2024 comment response letter to NYSEFC prepared by Barton & Loguidice.

Revision 3 of this PER serves to update costs of alternatives and the plan of finance, based upon a projected midpoint of construction in 2028.

Revision 4 of this PER serves to update user costs associated with alternatives and the plan of finance, based upon funding awarded as of May 2026 and a projected midpoint of construction in 2028.

ABBREVIATIONS

ADD	Average daily demand
BMP	Best Management Practice
C	Celsius
CCI	Construction Cost Index (ENR)
cfs	Cubic feet per second
CT	concentration x time
CWSRF	Drinking Water State Revolving Fund
DBP	Disinfection byproducts
DEC	New York State Department of Environmental Conservation
DO	Dissolved oxygen
DOC	Dissolved organic carbon
DOH	New York State Department of Health
DOT	New York State Department of Transportation
ECL	Environmental Conservation Law
EDU	Equivalent Dwelling Unit
EFC	New York State Environmental Facilities Corporation
ENR	Engineering News-Record
EPA	United States Environmental Protection Agency
F	Fahrenheit
fps	Feet per second
gpd	Gallons per day
GML	General Municipal Law
gpm	Gallons per minute
HAA	Haloacetic acid
HAB	Harmful algal bloom
HGL	Hydraulic Grade Line
hp	Horsepower
HPGN	High Precision Geodetic Network (1998)
IUP	Intended Use Plan
ISO	Insurance Services Office
LF	linear feet
MCL	Maximum contaminant level
MC-LR	Microcystin-LR
MHI	Median Household Income
MGD	Million gallons per day

ABBREVIATIONS (cont'd)

NAD83	North American Datum (1983)
NAVD88	North American Vertical Datum (1988)
NPSHa	Net positive suction head available
NPSHr	Net positive suction head required
NYSOPRHP	New York State Office of Parks, Recreation, and Historic Preservation
OMB	Office of Management and Budget
PAC	Powdered activated carbon
PACl	Polyaluminum chloride
PHD	Peak hourly demand
PER	Preliminary Engineering Report
ppm	parts per million
psig	Pounds per square inch (gauge)
Q	Volumetric flow rate (gpm, MGD)
SEQR	State Environmental Quality Review
SPDES	State Pollutant Discharge Elimination System
SUVA	Specific ultraviolet absorbance
SWPPP	Storm Water Pollution Prevention Plan
TDH	Total dynamic head
THM	Trihalomethane
TOC	Total organic carbon
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service

1.0 INTRODUCTION

1.1. Authorization

On May 3, 2021 the Town of Verona retained the services of Barton & Loguidice, D.P.C. (B&L) to prepare a Preliminary Engineering Report and Map, Plan and Report (PER/MPR) for the proposed Durhamville Sewer District. This PER/MPR serves to update the alternatives and estimated costs presented in a 2012 PER, and considers additional alternatives to determine the most beneficial and cost effective approach for the Town of Verona to implement the proposed Durhamville Sewer District.

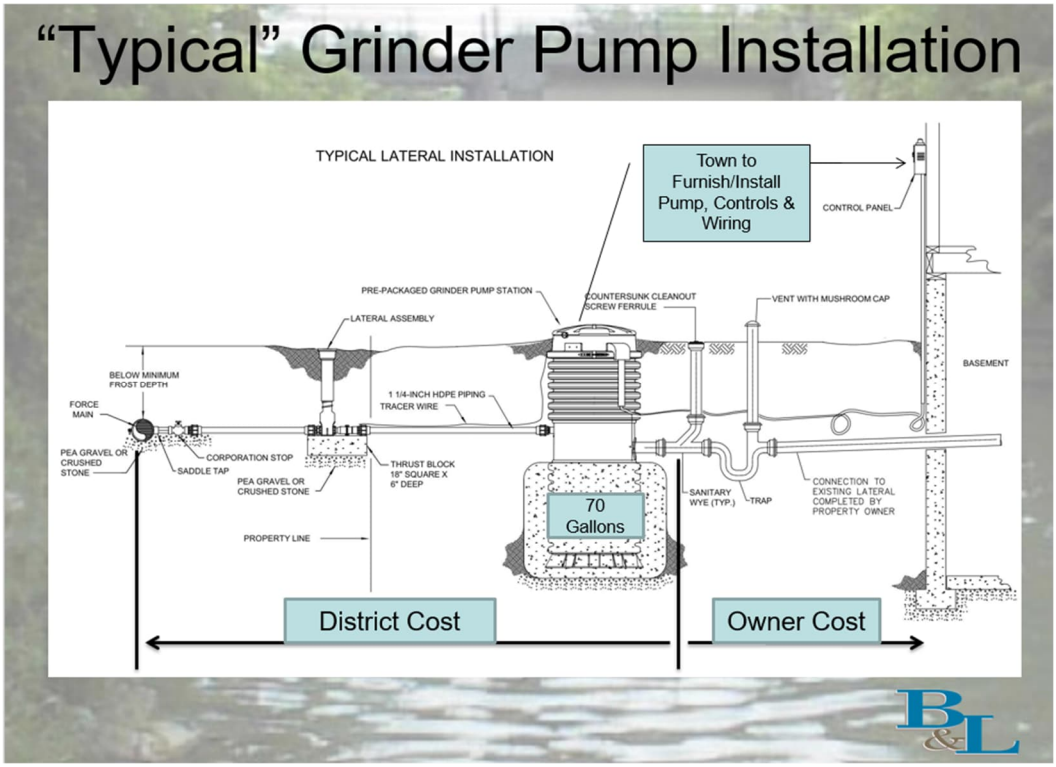
1.2. Project Background

The Town of Verona initially considered extending municipal sewer service to the Hamlet of Durhamville in response to public support from area residents in the 1990s, as documented in the 1998 report entitled *Town of Verona Wastewater Treatment and Hamlets of Verona and Durhamville Sewer Analysis*, prepared by B&L. In the 1998 report, the initial service area was identified and a gravity collection system was evaluated. The report also compared two (2) wastewater treatment alternatives: (1) treatment at the existing City of Oneida Wastewater Treatment Plant (City WWTP), which required expansion at the time; and (2) treatment at a new Town-owned WWTP. The report concluded that conveying wastewater flows to the City WWTP was the more feasible and affordable alternative. Since the 1998 report, the City has completed asset renewal and capacity improvements at its WWTP, and is currently undergoing a major upgrade for further capacity expansion and plant modernization.

The Town retained the services of B&L again in 2010 to prepare an NYSEFC-compliant PER for the proposed Durhamville Sewer District. The PER was released in November 2011 following completion of an interest survey in early 2011 which showed favorable interest within the proposed district area. The PER was revised in February 2012 to reflect interest survey feedback, and evaluated alternatives for a gravity collection system as well as low-pressure sewers for conveying waste to the City of Oneida WWTP. The final PER recommended a low-pressure system equipped with individual residential grinder pumps at each dwelling or business, depicted below.



Preliminary Plan of Recommended Low-Pressure Collection System from 2010 PER.



Schematic Layout of Proposed Residential Grinder Pump and Ownership Jurisdiction

The Town Board held a Public Hearing on September 10, 2012 to present the recommended capital improvement plan, grinder pump installation and operation responsibilities, and estimated annualized capital project, operation and maintenance, and treatment costs. The estimated total probable project cost and maximum amount to be expended by the district was $4.11 million. The project was listed in the NYSEFC Intended Use Plan at that time, and was poised to move forward in accordance with the schedule shown below at an estimated annual cost per typical single-family household of $807 per year, including treatment by the City of Oneida.



Public comments received at the September 10, 2012 Public Hearing were disproportionately opposed to the proposed sewer district, citing concerns over cost, use of grinder pumps, electrical connections, and one-time connection costs for homeowners to connect their building sewer to the new pump installed by the Town on behalf of the district. In the end, the Town Board elected not to move forward with the Durhamville Sewer District formation in accordance with Article 12-A of NYS Town Law; however, the Town has kept the project on the NYSEFC CWSRF IUP Annual List, making it eligible for subsidized interest rate financing.

In a letter dated March 4, 2021 the New York State Environmental Facilities Corporation (NYSEFC) notified the Town of Verona that the proposed project remains eligible to receive zero-percent interest "hardship" financing (refer to Appendix A). Due to this determination, which

was based on the Town's Median Household income and population, the Town will need to submit an updated PER to be eligible to receive hardship financing. This PER and Map, Plan and Report (MPR) will expand on the previous 2012 PER by considering additional alternatives for proposed collection system improvements that generally mimic the structure of the Town's NYSEFC funded Verona Sewer District and Sewer District Extension No. 1, respectively, each served by a low-pressure collection system with treatment provided by the City of Oneida. The PER has also been expanded to meet the requirements of sewer district formation progressed by the Verona Town Board in accordance with New York State Town Law Article 12A, or sewer district formation by Town Board and subject to permissive referendum.

1.3. Scope of Work

This PER and MPR examines alternative wastewater collection systems to serve the residents in the Hamlet of Durhamville, Town of Verona, and quantifies the anticipated debt service, O&M, short-lived asset, life-cycle, and City treatment costs. The four (4) alternatives considered are as follows:

1. No action: The Town continues to allow residents to maintain their existing on-site wastewater treatment systems (OSWT).
2. Alternative No. 1: The Town constructs a gravity collection system to replace individual OSWTs and convey wastewater to the City of Oneida WWTP.
3. Alternative No. 2: The Town constructs a low-pressure collection system to replace individual OSWTs and convey wastewater to the City of Oneida WWTP. Under this alternative, the low-pressure sewer would connect to the City's existing gravity sewer on Bennett Street.
4. Alternative No. 3: The Town constructs a low-pressure sewer system to replace individual OSWT's and convey wastewater to the City of Oneida WWTP. Under this alternative, the low-pressure sewer would connect to the City's existing gravity sewer on Lake Street, with capacity allocation for connection of City residences that front the proposed force main currently served by OSWTs.

Each alternative is evaluated based on the following:

1. Technical aspects of general constructability
2. Environmental Impact
3. Capital, O&M, Short-Lived Asset, and Life Cycle Costs
4. Sustainability

2.0 PROJECT PLANNING AREA

2.1. Site Information

2.1.1. Location

The proposed Town of Verona Durhamville Sewer District is generally located in the Hamlet of Durhamville in the southwestern quadrant of Oneida County, and borders Oneida Creek and the City of Oneida in Madison County. Nearby communities consist of the City of Oneida to the west, the Town of Vernon to the south, the Town of Westmoreland to the southeast, the City of Rome to the northeast, and the Town of Vienna and Oneida Lake to the northwest (refer to Figure 2-1). The elevations within the proposed Durhamville Sewer District range from approximately 415 to 435 feet USGS above sea level (refer to Figure 2-2). The proposed sewer district is located within the Oneida River watershed.

2.1.2. Land Use of Project Area

The properties within the proposed Durhamville Sewer District are zoned as Commercial Neighborhood Service and Residential.

2.1.3. Geologic Conditions

Preliminary screening conducted through the USDA Web Soil Survey identified the type of soils found in the project area along the proposed sewer collection mains. The soils throughout the project area primarily consist of Minoa fine sandy loam, 0-6% slopes (750B, 45.4%), Covert loamy sand, 0-3% slopes (81A, 21.9%), and Udorthents, smoothed (22, 7%) (Web Soil Survey, 2021). A full list of soils located within the project area is provided in Appendix B. The depth to bedrock in the project area ranges from approximately 2.7 feet to over 6.5 feet, and depth to the water table ranges from 0.5 feet to over 6.5 feet. A geotechnical investigation will be completed as part of the project's preliminary design to obtain more accurate information regarding subsurface conditions along planned collection mains. A topographic map of the project area is provided in Figure 2-2.

2.1.4. Environmental Resources

The New York State Department of Environmental Conservation (NYSDEC) Environmental Resource Mapper (ERM) was reviewed for the presence of natural resources within the project area. No NYSDEC-mapped wetlands are mapped within 100 feet of the project area. Three (3) NYSDEC-mapped streams, the Barge Canal Feeder, Oneida Creek, and a tributary of Oneida Creek, intersect a portion of the proposed sewer main along NY-46 and Randel Road. These streams are also mapped by the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI). A copy of the NYSDEC Environmental Resource Mapper Results is included in Appendix C. Figure 2-3 illustrates mapped wetlands and waterbodies.

The USFWS Information for Planning and Consultation (IPaC) website reported no threatened or endangered species for the project area. Additionally, the ERM reported that the project area is not within the vicinity of significant natural communities or rare plants or animals. A copy of the IPaC report and ERM results can be found in Appendix C.

2.1.5. Floodplain Considerations

A portion of the project area along Oneida Street and Randel Road is located within the FEMA-mapped 100 and 500-year floodplain (Zone AE) of Oneida Creek. No other portions of the project area are mapped within a FEMA-mapped floodplain. The FEMA Flood Insurance Rate Maps (FIRMs) for the area are provided in Figure 2-4.

2.1.6. Agricultural Districts

The proposed force main along Kotary Road is adjacent to an agricultural property that is part of Oneida County Agricultural District No. 4. Figure 2-5 shows the location of agricultural districts in relation to the project area. The Town recognizes that this project could potentially have adverse impacts on the agricultural lands within District No. 4, and will endeavor to mitigate potential impacts through coordination with the NYS Department of Agricultural and Markets (NYSDAM) during project development and design to ensure that impacts to agricultural lands are minimized or mitigated to the extent possible in accordance with Article 25AA of the NYS Agricultural Law. The proposed sewer district boundary reflects exclusion of agricultural lands, or portions thereof, for Smart Growth compliance. Further, the proposed facilities would be constructed in accordance with NYSDAM guideline entitled "Guidelines/Special Conditions for Water/Sewer Transmission Mains Located Wholly or partially in an Agricultural District", included in Appendix D.

2.1.7. Historical Sites

According to the New York State Historic Preservation Office (SHPO) website, the majority of the proposed project area is located within an Archeological Sensitive Area. There are no historic sites listed on the National Register located within the project area. The Historic Preservation Field Services Bureau of the New York State Office of Parks, Recreation and Historic Preservation (NYSOPRHP) would be contacted concerning historic and/or prehistoric cultural resources in the project area. If NYSOPRHP recommends that a Phase 1 Cultural Resources Survey be conducted, this work would be done prior to construction. If significant archeological sites or remains are found, potential impacts to such sites would be mitigated as appropriate. Coordination with applicable regulatory agencies will be sought during project design to minimize and mitigate potential impacts to environmental and historic resources.

2.2. Ownership and Service Area

2.2.1. Ownership

The existing public sewer systems in the Town of Verona are owned and operated by the Town of Verona, with flows being conveyed to and treated at the City of Oneida WWTP. There currently is no publicly owned sewer in the Hamlet of Durhamville. Residents own and maintain their own individual OSWTs.

2.2.2. Management

The Town Water and Wastewater Department is led by the Water/Sewer Superintendent. The Town of Verona's Water and Wastewater Department is in charge of the operation and maintenance of three (3) water districts and four (4) sewer districts in the Town.

2.2.3. Service Area

All of the properties included in the proposed Durhamville Sewer District are contained within the municipal boundary of the Town of Verona; there will be no out of district or contract users as part of the proposed sewer district and this project.

2.3. Population Trends and Projected Growth

Census data indicates that the Town of Verona has seen a population decrease of 2.1% between 2000 and 2010, and a decrease of 5.1% between 2010 and 2020, summarized in Table 2-1. The estimated population of the Hamlet of Durhamville (census designated place, or CDP) in 2020 was 527 according to the U.S. Census Bureau, a decrease of 9.8%.

Table 2-1: Village Population Trends

Hamlet/Village/Town	1990 Population	2000 Population	2010 Population	2020 Population
(T) Verona	6,460	6,425	6,293	5,974
(H) Durhamville	N/A	N/A	584	527

2.3.1. Historical and Projected Flows

While the Town of Verona has seen an overall decrease in population over recent years, it should be noted that the proposed Durhamville Sewer District could see residential development of the vacant properties once residents have access to a public sewer system. Anticipated flows and loads for the proposed Durhamville Sewer District are further detailed in Section 4.0 of this report.

2.3.2. Community Engagement

The Verona Town Board commissioned this PER/MPR in response to resident requests as a result of ongoing issues with failing OSWTs in the Hamlet area. Community engagement will be a project priority. The Town of Verona plans to host multiple public information meetings and public hearings as part of the district formation process to share information and solicit public comment from the affected community.

3.0 EXISTING CONDITIONS

3.1. General Description

Residences and businesses within the proposed project area typically utilize on-site, subsurface, private wastewater treatment and disposal systems. These systems typically consist of a septic tank and leach field.

The Town of Verona currently operates four (4) additional wastewater collection systems known as the Route 365 Sewer District, Sconondoa Sewer District, Verona Sewer District, and Verona Sewer District Extension 1. Wastewater from these existing sewer districts, as well as areas of the Oneida Indian Nation located in the Town, are conveyed to the City of Oneida WWTP for treatment.

3.2. Need for Improvement

As shown in Appendix E, according to the NYSDEC's 2009 and 2016 Waterbody Inventory for the Oswego River/Finger Lakes Drainage Basin, Oneida Creek is listed as "stressed" for aquatic life and recreation. Known pollutants include phosphorus and sediment, and suspected pollutants include pathogens and unknown toxicity. Known sources of pollution include on-site septic systems and other sanitary discharges. The Waterbody Inventory listing in Appendix E describes documented cases of raw sewage discharging to the existing storm sewer system, and that existing soil conditions are not ideal for on-site subsurface wastewater treatment within the Hamlet of Durhamville.

Failing and inadequate subsurface disposal systems present public health hazards, as described in the letter of support from the Oneida County Health Department (OCHD) included as Appendix F. This letter describes the presence of poor soil conditions for subsurface wastewater treatment, such as clayey soil and high groundwater, and that some homes in the area may be using private wells as a water source despite the presence of municipal water service. Additionally, the OCHD noted that the private OSWTs within the Hamlet of Durhamville are operating inadequately partially due to the high groundwater in residential areas, and that the primary concern in the Hamlet of Durhamville is the potential for human exposure to untreated or poorly treated wastewater from the current subsurface disposal systems. In this letter it is noted that there have been some informal reports that sewage from the private subsurface disposal systems and stormwater drainage have flowed into a depressed area in the center of the Hamlet of Durhamville. Also included in Appendix F is Oneida County Health Department's report "Complaint 02/44, Sewage Disposal in the Hamlet of Durhamville", which documents the presence of three (3) unpermitted "combined sewers" in the Hamlet which are tributary to Oneida Creek and the Old Erie Canal. Fecal coliform sampling conducted in February 2023 at one of the outfall locations came back TNTC (Too Numerous To Count), indicating the presence of raw and/or partially treated sewage within the discharge to the canal.

The failing and inadequate subsurface disposal systems in the proposed project area are directly resulting in negative impacts to Oneida Creek and the Old Erie Canal, presenting potential public health hazards. Access to municipal sewer service would eliminate environmental and health risks associated with failing and inadequate subsurface disposal systems within the proposed sewer district area.

4.0 PROPOSED SERVICE AREA AND ESTIMATED WASTEWATER FLOWS AND LOADS

The proposed Durhamville Sewer District includes 226 properties within the Town of Verona, Oneida County. The proposed sewer district generally includes areas of the Hamlet with access to municipal water service, including the Durhamville Elementary School and parcels fronting all or parts of Broad Street, Canal Street, Center Street, Charles Street, Church Street, Clinton Street, Foster Street, Fox Street, John Street, Kotary Road, Lafayette Street, Main Street, Maple Lane, NYS Route 46, Oneida Street, Railroad Street, Randell Road, and Sand Hill Road in the Town of Verona. A Map and Plan of the boundary of the proposed Durhamville Sewer District, developed through interest surveys and cost/ benefit evaluations, is shown in Figure 4-1. A written legal description of the proposed Durhamville Sewer District boundary is included in Appendix G.

4.1. Equivalent Dwelling Units (EDUs)

In order to estimate wastewater flows and loads for the proposed Durhamville Sewer District, Oneida County Tax parcel data was used to assess all properties on an equivalent dwelling unit (EDU) basis, where one (1) EDU is representative of a single-family residence. Water usage data obtained from the Town of Verona was used to assess all non-residential properties. Vacant (developable) parcels were assessed 0.5 EDU because of their ability to access the proposed municipal sewer system in the future.

An EDU assessment is included as Appendix H; there are currently an estimated 236.5 EDUs in the proposed district. According to 2015-2019 U.S. Census data, the average household size in the Town of Verona is 2.62 persons; therefore, the 2021 estimated population of the proposed sewer district is 620 persons. EDUs are estimated based on the tax assessment property classification and are generally defined as follows:

Table 4-1: EDU Summary

Classification	Alternate Description (if applicable)	Number of Parcels	Equivalent EDUs
Residential	Single and Two-Family Residences; Residences with Incidental Commercial Use; Multiple Residences; Mobile Home; Residential Multipurpose	187	205.5
Commercial	Apartments; Auto Body Shop; Shopping Center; Small Parking Garage	7	9
Residential Vacant	Residential Vacant Land; Residential Land with Improvement	18	9
Commercial Vacant	Vacant Commercial Land	2	1
Agriculture	Productive Agricultural Vacant Land	0	0
Community Service and Recreation Land	Religious; Cemetery; School; Police and Fire Protection; Recreational Services; Outdoor Sports; Athletic Fields	12	12
Estimated Total No. EDUs – Debt Service:			236.5
Estimated Total No. Connected EDUs – O&M, SLAs, City Treatment:			226.5

4.2. Estimated Wastewater Flows and Loads

Based on the EDU assessment and estimated population of the Durhamville Sewer District, flows and loads were estimated for the initial design year (2024). Table 4-2 below summarizes these estimated flows and loads.

Table 4-2: Estimated Flows and Loads (2021)

Population [(1)]	Projected Wastewater Flows			Projected Waste Loads	
	Avg. Daily[(2)]	Max Daily[(3)]	Peak Hourly[(4)]	BOD_5[(5)]	TSS[(6)]
620	46,500 gpd	93,000 gpd	186,000 gpd	136 lbs/day	155 lbs/day

(1) Includes all developed parcel EDUs x 2.62 persons/EDU (including residential and commercial)
(2) Calculated as population x 75 gpd/person (based upon a 2024 water use study in the Durhamville Hamlet)
(3) Calculated as ADF x 2 peaking factor per Ten States Standards
(4) Calculated as ADF x 4 peaking factor per Ten States Standards
(5) Calculated as Population 0.22 lb BOD_5/capita-day
(6) Calculated as Population 0.25 lb TSS/capita-day

5.0 WASTEWATER COLLECTION AND TREATMENT ALTERNATIVES ANALYSIS

The following collection alternatives were investigated, with treatment provided at the City of Oneida WWTP under each alternative:

- No Action Alternative
- Alternative 1: Gravity Collection System with City Connection on Bennet Road
- Alternative 2: Low-Pressure System with City Connection on Bennett Road
- Alternative 3: Low-Pressure System with City Connection on N. Lake Street

5.1. No Action Alternative

Under the No Action alternative, the proposed Durhamville Sewer District is not formed and no changes would be made to the Town's existing wastewater collection system. The no action alternative would not address the long standing deficiencies with private OSWTs within the Hamlet area, and is therefore not a viable alternative.

5.2. Alternative No. 1: Gravity Collection System

Alternative No. 1 includes the installation of a gravity wastewater collection system to serve the proposed Durhamville Sewer District. The proposed improvements are depicted in Figure 5-1 and generally include the following:

- 17,200 linear feet of 8-inch PVC gravity sewer with approximately 62 manholes;
- 9,200 linear feet of 4-inch HDPE force main;
- 600 linear feet of 2-inch HDPE force main;
- 1,300 linear feet of 1.5-inch HDPE force main;
- Eight (8) Grinder pumps, and one (1) spare pump core;
- Four (4) duplex submersible pump stations; and
- 13,740 linear feet of 6-inch PVC service laterals.

5.2.1. Proposed Collection System Summary

Alternative No. 1 includes the installation of 8-inch PVC gravity sewer within the existing road rights-of-way to the extent possible. Wastewater flows from areas located generally west of the Old Erie Canal would be conveyed by gravity to one of the proposed duplex submersible pump stations, Pump Station No.1, which would convey flows via 4-inch force main beneath the Old Erie Canal and NYS Route 46 to the gravity collection system on John Street.

Flows from the northern end of the service area along Foster Street would be conveyed by gravity to the proposed submersible grinder pump station, Pump Station No. 2, which would convey flows via 2-inch force main to the gravity sewer on Foster Street.

All flows from the eastern side of the Old Erie Canal, as well as areas of Center Street, would be conveyed to the second proposed duplex submersible pump station, Pump Station No. 3. This pump station would convey flows back-lot via 4-inch force main to

the proposed gravity sewer along Center Street. Flows would then flow by gravity to the final proposed duplex submersible pump station, "Main" Pump Station No. 4, which would convey flows via 4-inch force main along Randel Road and Bennett Road under the NYS Thruway (I-90), and CSX Railroad tracks, to the City of Oneida WWTP.

Low-pressure collection main (1.5-inch) would be installed along Kotary Road and Sand Hill Road, and a total of eight (8) individual grinder pumps located along the low-pressure main alignment would be installed to serve properties fronting the low-pressure main. One (1) spare pump core would be purchased to use as a replacement.

Included as part of Alternative No.1, each developed parcel in the proposed sewer district served by gravity sewers would be provided with a 6-inch PVC service lateral installed to the parcel's existing septic tank inlet and connected to the building plumbing. The existing on-site treatment system would also be abandoned as part of this alternative. Any required plumbing changes within the building would be the responsibility of the property owner.

For developed parcels served by a low-pressure collection main under this alternative, the following scenario is proposed for grinder pump purchase, installation, operation and maintenance which mimics that currently used for the Verona Sewer District and its Extension No. 1 district:

- The Durhamville Sewer District would purchase and own the grinder pump stations and associated controls.
- The District would be responsible for installing the grinder pumps and controls as well as the electrical feed from the served building's electrical service.
- The District would be responsible for installation and maintenance of a 1-1/4 inch sewer lateral from the connection to the force main to the new grinder pump.
- Grinder pump stations would be installed on private property, adjacent to the building as required.
- The District would be responsible for installation and maintenance of a 4-inch gravity sewer lateral from the existing septic tank inlet to the grinder pump. The property owner would be responsible for any plumbing changes within the building, if needed.
- The onsite treatment systems on each developed parcel will be abandoned as a part of this project. The septic tank abandonment procedure will proceed as follows:
    - A new grinder pump and lateral will be installed within permanent easement boundary agreed upon by the Town of Verona and the Hamlet resident.
    - The sewer lateral from the structure will be disconnected from the septic tank and reconnected to the newly installed grinder pump.

  - The septic tank will be pumped out and cleaned.
  - The septic tank top will be broken in or left intact based upon structure proximity.
  - The septic tank will be filled with stone and/or flowable fill/concrete based upon structure proximity.
  - The septic tank will be covered with topsoil and seeded.
- A written agreement between the Owner and the District would be executed granting access to District maintenance personnel for service lateral and pump installation and maintenance. The District would own and maintain each service lateral and grinder pump, providing maintenance services as required.
- Air/vacuum release valves would be installed at high points in the low-pressure force mains as required, and cleanout manholes would be installed at approximate 1,000 to 1,500 foot intervals along the force main alignment.

5.2.2. Operations and Maintenance

The Town of Verona would operate and maintain all sewerage facilities located within any permanent easements or rights-of-way (i.e., facilities not located on private property).

5.2.3. Impact on Existing City of Oneida WWTP and Conveyance System

The average daily design flow, maximum daily design flow, and peak hourly design flow for the proposed Durhamville Sewer District are 0.047 MGD, 0.093 MGD, and 0.186 MGD, respectively, as shown in Table 4-2. These flows would be conveyed to the City of Oneida WWTP to be treated with the existing flows being treated at this facility. The City of Oneida WWTP is currently designed for 3.75 MGD, with a peak hourly design flow of 10 MGD. The City of Oneida WWTP is currently being upgraded with an average daily design capacity of 4.5 MGD. The City of Oneida has allocated a total wastewater flow of 0.9 MGD to the Town of Verona for their four existing sewer districts. The current average and max day flow for the Town's existing districts are 0.29 MGD and 0.71 MGD, respectively. The addition of the flows from the proposed Durhamville Sewer District presented in Table 4-2 will increase the average daily and max daily flows from the Town of Verona to 0.34 MGD and 0.8 MGD, which is still within the 0.9 MGD currently allocated to the Town. The City of Oneida WWTP will also have a dedicated dairy industry force main to convey 0.5 MGD of pretreated flows to the treatment plant, and will remove this portion of the existing flows from the current connection point on Lake Street with the transmission main. The following is a summary of the upgrades currently under construction at the City of Oneida WWTP:

- New Grit Classifier and Grit Pump
- New Aeration Tank Distribution Box
- Modifications to the existing Aeration System
- Conversion of Existing Final Clarifiers to Aeration Tanks

- New Aeration Blowers and Diffusers
- New Secondary Clarifiers and Splitter Box
- New Activated Sludge Pumping Station
- New Broadway Street Pumping Station and Force Main
- New Contact Adsorption Settling Thickening (CAST) Contact Tank
- New CAST Thickener
- New Primary Sludge Thickener
- New High Strength Organic Waste (HSOW) Receiving Equipment
- New Digester Feed Blend Tank
- New Primary Anaerobic Digesters, Control Building and Waste Gas Burner
- Conversion of Existing Digester to Digestate and Filtrate Storage Tanks
- New Belt Filter Press and loadout conveyors
- Upgraded electrical systems

A capacity analysis was also completed to confirm that the City of Oneida's existing collection system had sufficient remaining capacity at the proposed connection point on Bennett Road. It was determined that there is sufficient capacity remaining in the existing gravity sewer to convey flows from the Durhamville sewer district to the City WWTP as shown in Appendix I.

5.2.4. Project Capital Cost

The estimated probable project cost for Alternative No. 1 is ~~$19.3~~ $23 million, summarized in Table 5-1 and in Appendix J.

Table 5-1: Estimate of Probable Project Cost, Alternative No. 1

Description	Estimated Cost
Construction Subtotal (~~2023~~ 2025 Dollars)	$10,928,000
Inflation to ~~2025~~ 2028 dollars (6% inflation per yr.)	~~$1,351,000~~ $2,087,000
Mob/Demob/General Conditions/Work Traffic Control (5%)	*~~$614,000~~ $651,000*
Contingency (~~20%~~ 35%)	*~~$2,579,000~~ $4,783,000*
Subtotal (Construction Costs) (~~2025~~ 2028 dollars)	~~$15,400,000~~ $18,400,000
Estimated Engineering, Legal, Administration (25%)	*~~$3,900,000~~ $4,600,000*
Total Estimated Project Capital Cost (~~2025~~ 2028 Dollars)	~~$19,300,000~~ $23,000,000

5.2.5. Short-Lived Assets Cost

Table 5-2 summarizes the anticipated short-lived assets associated with the gravity collection system in the proposed Durhamville Sewer District. All district property owners would be required to contribute towards any "short-lived assets" (SLA's) or components of the project that have an expected service life of 15-years or less.

Table 5-2: Alternative No. 1 Gravity Collection System Short-Lived Assets

Equipment	Quantity	Unit	Unit Cost	Useful Life (yr)	No. of Replacement	Total Replacement Cost
Grinder Pumps	8	EA	$3,000	10-15	4	$12,000
Submersible Pumps	3	EA	$30,000	10-15	3	$90,000
Submersible Grinder Pumps	1	EA	$25,000	10-15	1	$25,000
Pump Station Controls	4	LS	$10,000	10-15	4	$40,000
Estimated Total SLAs (15 years):						$167,000

5.2.6. Operation and Maintenance (O&M) Cost

Table 5-3 summarizes the estimated annual operation and maintenance costs associated with the gravity collection system in the proposed Durhamville Sewer District. A summary of charges is included in Appendix J.

Table 5-3: Alternative No. 1 O&M Cost Summary

Item	Estimated Annual Cost	Cost/EDU
Personnel Services	$55,000	$243
Tools/Equipment	$30,000	$132
Short-Lived Assets	$11,133	$48
City of Oneida	~~$413,000~~ $54,587	~~$158~~ $241
Total Estimate O&M Cost	~~$508,800~~ $150,720	~~$581~~ $664

5.3. Alternative No. 2: Low-Pressure Collection System with City Connection at Bennett Road

Alternative No. 2 would generally include the installation of a low-pressure collection system to serve the proposed Durhamville Sewer District. The proposed improvements are depicted in Figure 5-2 and generally include the following:

- 4,900 linear feet of 6-inch HDPE force main
- 5,220 linear feet of 4-inch force main
- 7,100 linear feet of 3-inch force main
- 9,150 linear feet of 2-inch force main
- Thirty-four (34) Force main Cleanouts
- Seven (7) Air Valve Manholes
- Two hundred twenty-three (223) Grinder pumps and lateral kits
- One (1) duplex grinder pump and lateral kit
- Six (6) spare grinder pump cores
- Two hundred twenty-three (223) 1-1/4-inch service laterals and 4”-inch building sewer connections to the grinder pump

5.3.1. Low Pressure Collection System Conveyance Summary

All flows would be conveyed through the proposed Durhamville Sewer District via force mains to the City of Oneida WWTP for treatment. Flows in the northern portion of the proposed sewer district would be conveyed to the intersection of Church Street and Center Street using 2-inch and 3-inch diameter HDPE force mains. These force mains would each discharge to a single 4-inch HDPE force main which would generally continue south, crossing beneath the NYS Thruway (I-90), and transition to a 6-inch diameter HDPE force main at the intersection of Kotary Road and Randel Road. The 6-inch force main would then convey all flows beneath the CSX railroad and Oneida Creek, along Bennett Road to the City of Oneida WWTP.

The low pressure sewer system that is proposed will be a completely closed system. HDPE force mains ensure that I&I is not an issue because of the seamless fused piping. Additionally, the pressure from the waste inside will not allow any I&I to enter the HDPE piping unless the system is depressurized catastrophically or intentionally. Finally, the preferred grinder pump system, E-One, provides flood protection to their residential and industrial sized grinder pumps and basins upon request via a gasketed floodplain cover. Any grinder pumps within the floodplain would be receiving this cover as well as having their vent pipes be raised above the floodplain elevation.

Low-pressure main sizing calculations are included as Appendix K. Based on these calculations, the 6-Inch force main may require periodic flushing due to the anticipated flow velocities not exceeding 2 ft/s. The 2-inch force mains in the outlying areas of the proposed District may also require periodic flushing and/or odor control due to retention times in excess of 10 hours. Additionally the discharge manhole is set to be coated with an epoxy lining to mitigate hydrogen-sulfide (H2S) corrosion and concrete structure deterioration. Additionally the project can add peroxide to mitigate odors, if deemed necessary.

Each residential dwelling and commercial business would be served by an individual grinder pump, initially requiring a total of approximately 223 grinder pump stations, and one (1) duplex grinder pump to serve the school. Six (6) spare grinder pump cores would be purchased to use as emergency replacements.

For developed parcels served by low-pressure collection under this alternative, the following scenario is proposed for grinder pump purchase, installation, operation and maintenance:

- The Durhamville Sewer District would purchase and own the grinder pump stations and associated controls.
- The District would be responsible for installing the grinder pumps and controls as well as the electrical feed from the served building's electrical service.

- The District would be responsible for installation and maintenance of a 1-1/4 inch sewer lateral from the connection to the force main to the new grinder pump.
- Grinder pump stations will be installed on private property, adjacent to the building as required.
- The District would be responsible for installation and maintenance of a 4-inch gravity sewer lateral from the existing septic tank inlet to the grinder pump. The property owner would be responsible for any plumbing changes within the building if needed/desired.
- The onsite treatment systems on each developed parcel will be abandoned as a part of this project. The septic tank abandonment procedure will proceed as follows:
    - A new grinder pump and lateral will be installed within permanent easement boundary agreed upon by the Town of Verona and the Hamlet resident.
    - The sewer lateral from the structure will be disconnected from the septic tank and reconnected to the newly installed grinder pump.
    - The septic tank will be pumped out and cleaned.
    - The septic tank top will be broken in or left intact based upon structure proximity.
    - The septic tank will be filled with stone and/or flowable fill/concrete based upon structure proximity.
    - The septic tank will be covered with topsoil and seeded.
- A written agreement between the Owner and the District would be executed granting access to District maintenance personnel for service lateral and pump installation and maintenance. The District would own and maintain each service lateral and grinder pump, providing maintenance services as required.
- Air/vacuum release valves would be installed at high points in the low-pressure force mains as required, and cleanout manholes would be installed at approximate 1,000 to 1,500 foot intervals along the force main alignment.

5.3.2. Operations and Maintenance

The Town of Verona would operate and maintain all sewerage facilities located within any permanent easements or rights-of-way (i.e., facilities not located on private property).

Similar to the Town's existing Verona Sewer District, comprised of 275 residential grinder pump units, the Town of Verona Water & Sewer Department plan to assist residents with grinder pumps in a power outage. All individual grinder pump control panels will be provided with a generator receptacle. The Town will follow the procedure below, consistent with current procedures:

1. If the power goes out for an extended period of time (over 8 hours) in the Hamlet of Durhamville, a conserve water order will be issued for the Hamlet and the Water & Sewer Dept. will mobilize.

2. Starting with homes that do not have emergency generators, the Town of Verona staff will travel to each home with a portable generator and plug into the E-One emergency external power cord.
3. The Town staff will use the portable generator to energize the E-One grinder pump to pump out the waste from the collection basin.
4. The Town staff will disconnect the emergency external power cord once the collection basin is pumped down.
5. The Town staff will check in on homes with emergency generators to ensure their grinder pumps are operating properly.
6. Go back to step 2 and repeat steps 2 through 5 until power is restored to the Durhamville residents.

5.3.3. Impact on Existing City of Oneida WWTP and Conveyance System

The proposed force main discharge to the City of Oneida conveyance system on Bennett Road is identical to that proposed for Alternative No. 1. Refer to Section 5.2.3 for assessment of impacts and capacity on the City of Oneida WWTP and the City's conveyance system on Bennett Road. A capacity analysis was also completed to confirm that the City of Oneida's existing collection system had sufficient remaining capacity at the proposed connection point on Bennett Road. It was determined that there is sufficient capacity remaining in the existing gravity sewer to convey flows from the Durhamville sewer district to the City WWTP as shown in Appendix I.

5.3.4. Project Capital Cost

The estimated probable project cost for Alternative No. 2 is ~~$10.2~~ ~~$11.2~~ $13.3 million, summarized in Table 5-4 and in Appendix J.

Table 5-4: Estimate of Probable Project Cost, Alternative No. 2

Description	Estimated Cost
Construction Subtotal (~~2023~~ 2025 Dollars)	~~$5,769,000~~~~$6,291,000~~ $6,296,000
Inflation to ~~2025~~ 2028 dollars (6% inflation per yr.)	~~$713,000~~~~$778,000~~ $1,203,000
Mob/Demob/General Conditions/Work Traffic Control (5%)	~~*$324,000*~~~~*$353,000*~~ *$375,000*
Contingency (~~20%~~35%)	~~*$1,361,000*~~~~*$1,484,000*~~ *$2,756,000*
Subtotal (Construction Costs) (~~2025~~ 2028 dollars)	~~$8,100,000~~~~$8,900,000~~ $10,600,000
Estimated Engineering, Legal, Administration (25%)	~~*$2,100,000*~~~~*$2,300,000*~~ *$2,700,000*
Total Estimated Project Capital Cost (~~2025~~ 2028 Dollars)	~~$10,200,000~~~~$11,200,000~~ $13,300,000

5.3.5. Short-Lived Assets Cost

Table 5-5 summarizes the anticipated SLAs associated with the low-pressure collection system in the proposed Durhamville Sewer. All district property owners would be required to contribute towards any SLAs or components of the public system that may

require replacement in the 10 to 15 year range. It is assumed that half of the 223 grinder pump cores would be replaced at a cost of $3,000/Each.

Table 5-5: Alternative No. 2 Low-Pressure System Short-Lived Assets

Equipment	Quantity	Unit	Unit Cost	Useful Life (yr)	No. of Replacements	Total Replacement Cost
Grinder Pumps	223	EA	$3,000	10-15	112	$336,000

5.3.6. Operation and Maintenance (O&M) Cost

Table 5-6 summarizes the estimated operation and maintenance costs associated with the low-pressure collection system for the proposed Durhamville Sewer District.

Table 5-6: Alternative No. 2 Low-Pressure Collection System O&M Cost Summary

Item	Estimated Annual Cost	Cost/EDU
Personnel Services	$16,500	$73
Tools/Equipment	$6,000	$26
Short-Lived Assets	~~$22,400~~ $11,325	~~$99~~ $50
City of Oneida	~~$413,000~~ $54,587	~~$158~~ $241
Total Estimated O&M Costs	~~$457,900~~ $88,412	~~$356~~ $390

5.4. Alternative No. 3: Low-Pressure Collection System with City Connection on N. Lake Street

Alternative No. 3 would generally include the installation of a low-pressure collection system to serve the proposed Durhamville Sewer District. The proposed improvements are depicted in Figure 5-3 and generally include the following:

- 5,300 linear feet of 6-inch HDPE force main
- 1,500 linear feet of 4-inch force main
- 10,600 linear feet of 3-inch force main
- 9,720 linear feet of 2-inch force main
- 2,500 linear feet of 1.5-inch force main
- Thirty-eight (38) Force main Cleanouts
- Nine (9) Air Valve Manholes
- Two hundred twenty-three (223) Grinder pumps and lateral kits
- One (1) duplex grinder pump and lateral kit
- Six (6) spare grinder pumps
- Two hundred twenty-three (223) 1-1/4-inch service laterals and 4-inch building sewer connections to the grinder pumps

5.4.1. Low Pressure Collection System Conveyance Summary

All flows would be conveyed through the proposed Durhamville Sewer District via force mains to the City of Oneida WWTP for treatment. The flows in the southern portion of the proposed sewer district will be conveyed through 1.5-inch diameter HDPE force mains on Kotary Road and Sandhill Road to a 2-inch diameter HDPE force main on Randel Road to the intersection at Center Street and Randel Road where the force main increases to 3-inch diameter HPDE. Flows in the northern portion of the proposed sewer district would be conveyed to the intersection of Church Street and Center Street using 1.5-inch, 2-inch, and 3-inch diameter HDPE force mains, and discharge to a 4-inch HDPE force main on Oneida Street and Williams Street. This force main would then continue south beneath the NYS Thruway (I-90), and transition to a 6-inch diameter HDPE force main at the Oneida Creek crossing. The 6-inch HDPE force main would continue south on N. Lake Street and discharge to an existing City of Oneida gravity sewer system on N. Lake Street just south of the CSX railroad crossing. The flows will then be conveyed via gravity to the City of Oneida WWTP.

Grinder pump locations, spares, force main alignments, abandonment procedures and connections to dwellings would all be similar to that outlined for Alternative No. 2 above.

5.4.2. Operations and Maintenance

The Town of Verona would operate and maintain all sewerage facilities located within any permanent easements or rights-of-way (i.e., facilities not located on private property).

The Town of Verona Water & Sewer Dept. plan to assist residents with grinder pumps in a power outage. All individual grinder pump control panels will be provided with a generator receptacle. The Town will follow the procedure below:

1. If the power goes out for an extended period of time (over eight (8) hours) in the Hamlet of Durhamville, a conserve water order will be issued for the Hamlet and the Water & Sewer Dept. will mobilize.
2. Starting with homes that do not have emergency generators, the Town of Verona staff will travel to each home with a portable generator and plug into the E-One emergency external power cord.
3. Town staff will use the portable generator to energize the E-One grinder pump to pump out the waste from the collection basin.
4. Town staff will disconnect the emergency external power cord once the collection basin is pumped down.
5. Town staff will check in on homes with emergency generators to ensure their grinder pumps are operating properly.
6. Go back to step 2 and repeat steps 2 through 5 until power is restored to the Durhamville residents.

5.4.3. Impact on Existing City of Oneida WWTP and Conveyance System

The proposed force main discharge to the City of Oneida conveyance system on N. Lake Street will have the same impact on the City of Oneida's WWTP as Alternative Nos. 1 and 2. Refer to Section 5.2.3 for assessment of impacts and capacity on the City of Oneida WWTP.

A capacity analysis was also completed to confirm that the City of Oneida's gravity collection system serving N. Lake Street north of the WWTP has sufficient remaining capacity to convey peak hourly flow rates from the proposed Durhamville Sewer District. It was determined that there is sufficient capacity remaining in the City's N. Lake Street gravity sewer; refer to calculations in Appendix I.

5.4.4. Project Capital Cost

The estimated probable project cost for Alternative No. 3 is ~~$10.2~~ ~~$11.7~~ $13.9 million, summarized in Table 5-7 and in Appendix J.

Table 5-7: Estimate of Probable Project Cost, Alternative No. 3

Description	Estimated Cost
Construction Subtotal (~~2023~~ 2025 Dollars)	~~$5,781,000~~ $6,578,000
Inflation to ~~2025~~ 2028 dollars (6% inflation per yr.)	~~$715,000~~~~$813,000~~ $1,257,000
Mob/Demob/General Conditions/Work Traffic Control (5%)	~~*$325,000*~~~~*$370,000*~~ *$392,000*
Contingency (~~20%~~35%)	~~*$1,364,000*~~~~*$1,552,000*~~ *$2,879,000*
Subtotal (Construction Costs) (~~2025~~ 2028 dollars)	~~$8,100,000~~~~$9,300,000~~ $11,100,000
Estimated Engineering, Legal, Administration (25%)	~~*$2,100,000*~~~~*$2,400,000*~~ *$2,800,000*
Total Estimated Project Capital Cost (~~2025~~ 2028 Dollars)	~~$10,200,000~~~~$11,700,000~~ $13,900,000

5.4.5. Short-Lived Assets Cost

Table 5-8 summarizes the anticipated SLAs associated with the low-pressure collection system in the proposed Durhamville Sewer. All district property owners would be required to contribute towards any SLAs or components of the public system that may require replacement in the 10 to 15 year range. It is assumed that half of the 223 grinder pump cores would be replaced at a cost of $3,000/Each.

Table 5-8: Alternative No. 3 Low Pressure System Short-Lived Assets

Equipment	Quantity	Unit	Unit Cost	Useful Life (yr)	No. of Replacement	Total Replacement Cost
Grinder Pumps	223	EA	$3,000	10-15	112	$336,000

5.4.6. Operation and Maintenance (O&M) Cost

Table 5-9 summarizes the estimated operation and maintenance costs associated with the low-pressure collection system for the proposed Durhamville Sewer District.

Table 5-9: Alternative No. 3 O&M Cost Summary

Item	Estimated Annual Cost	Cost/EDU
Personnel Services	$16,500	$73
Tools/Equipment	$6,000	$26
Short-Lived Assets	~~$22,400~~ $11,325	~~$99~~ $50
City of Oneida	~~$413,000~~ $54,587	~~$158~~ $241
Total Estimated O&M Costs	~~$457,900~~ $88,412	~~$356~~ $390

6.0 SUMMARY AND COMPARISON OF ALTERNATIVES

6.1. Feasible Alternatives Summary

Each of the three (3) alternatives described above are feasible for extending public sewer service to the proposed Durhamville Sewer District. However, the OCHD Letter of Support, refer to Appendix F, describes the presence of poor soil conditions for subsurface wastewater treatment, such as clayey soil and high groundwater. The EPA Alternative Wastewater Collection Systems Manual issued in 1991, states that low pressure systems should be considered in high groundwater conditions and in municipalities with populations under 10,000 people. The estimated capital project cost for the two (2) low-pressure system configurations ($11.2 M & 11.7 M) is, on average, roughly 59-percent of that estimated for a conventional gravity system ($19.3 M).

6.2. Non-Monetary Factors

6.2.1. Compliance with Standards

All alternatives described above will address and eliminate the public health hazards and negative impacts to the nearby Oneida Creek and Old Erie Canal. Access to municipal sewer service would eliminate environmental and health risks associated with failing and inadequate subsurface disposal systems within the proposed project area.

Alternative No. 1: Gravity Collection System conforms to 10 States Standards for Wastewater Collection and Treatment Facilities.

Alternative No. 2 and Alternative No. 3: Low Pressure System conforms to the TR-16 Guide for the Design of Wastewater Treatment Works.

6.2.2. WWTP Capacity

The City of Oneida WWTP is currently designed for 3.75 MGD, with a daily peak design flow of 10 MGD. The City ~~is currently~~ has completed upgrading its WWTP with an average daily design flow capacity of 4.5 MGD, with substantial increase in organic loading (i.e., BOD, TSS, ammonia nitrogen) for accepting high strength waste as a revenue stream. The City of Oneida has allocated a total wastewater flow of 0.9 MGD to the Town of Verona for their four (4) existing sewer districts. The current average and maximum daily flow for the Town's existing districts are 0.29 MGD and 0.71 MGD, respectively. The addition of the flows from the proposed Durhamville Sewer District presented in Table 4-2 will increase the average and maximum daily flows from the Town of Verona to 0.34 MGD and 0.8 MGD, respectively, which are well within the 0.9 MGD currently allocated to the Town. The City of Oneida WWTP will also have a dedicated dairy industry force main to convey 0.5 MGD of pretreated flows to the treatment plant, and will remove this

portion of the existing flows from the current connection point on Lake Street, effectively "creating" conveyance capacity below the planned point of connection from Durhamville.

7.0 RECOMMENDED AND SELECTED ALTERNATIVES

7.1. Basis of Selection

Alternative No. 2: Low-Pressure Collection System with City Connection on Bennett Road is the recommended and selected alternative as it will provide a reliable, cost-effective public conveyance system for the residents within the proposed Durhamville Sewer District that is similar in size and type to that currently operating in the Verona Sewer District and Extension No. 1 thereto. ~~This alternative also has the capacity and ability to serve residential dwellings within the City of Oneida that currently do not have access to public sewers, depicted on Figure 5-3, inclusive of a 20-unit mobile home park on a community treatment system on Old North Lake Street which sits immediately adjacent to Oneida Creek.~~ Also, access to municipal sewer service would eliminate environmental and health risks associated with failing and inadequate subsurface disposal systems within the proposed Durhamville Sewer District. Additionally, the Durhamville area ~~also~~ has high groundwater levels and clayey soil making a low-pressure system more favorable to implement in this situation. The Hamlet's relatively flat topography and presence of NYSDOT roadways, the Old Erie Canal, Oneida Creek, the NYS Thruway and railroad tracks would lead to excessively deep gravity sewers and four (4) lift stations to cross roadways and waterways that bisect the Hamlet area.

Alternative No. 2 is the recommended configuration of the two (2) low-pressure system configurations evaluated, each of which have substantially lower capital costs than the Alternative No. 1 gravity system. Its estimated capital project cost of ~~$11.2~~ $13.3 million in ~~2025~~ 2028 dollars represents the lowest capital cost of the alternatives evaluated. While Alternative No. 3 system has a higher construction cost than Alternative No. 2, the estimated annual O&M cost for each alternative is $457,900.

It should be noted that Alternative No. 3 could provide public sewer access to a number of City of Oneida residents that currently do not have public sewers along Lake Street, as well as a 20-unit mobile home park on a community treatment system on Old North Lake Street which sits immediately adjacent to Oneida Creek. Should City residents connect under a "joint" project scenario, an estimated 34 City EDUs could potentially share in paying the annual debt service cost for the new system due to benefit derived, offsetting at least a portion of the increased capital cost of Alternative No. 3 versus the currently recommended Alternative No. 2.

7.2. Proposed Durhamville Sewer District Boundary

The proposed Durhamville Sewer District Boundary includes 226 properties within the Town of Verona, Oneida County, generally in the Hamlet of Durhamville. A Map and Plan of the boundary of the proposed Durhamville Sewer District, is shown in Figure 4-1. A written legal description of the proposed Durhamville Sewer District boundary is included in Appendix G.

7.3. District Unit Assessment

The proposed Durhamville Sewer District consists of 236.5 equivalent dwelling units (EDUs). An EDU is defined as a typical single-family home having an average of 2.62 persons per household according to 2015-2019 U.S. Census data for the Town of Verona; therefore, the 2021 estimated population of the proposed sewer district is 620. EDUs are estimated based on the tax assessment property classification and are generally defined as follows:

- One (1) EDU shall represent a typical single-family household;
- Two (2) EDUs shall represent a two-family household;
- 0.5 EDU shall represent a residential or agricultural vacant lot;
- 0 EDU shall represent agricultural parcels that do not receive sewer service;
- One (1) EDU is equivalent to 200 gpd with a minimum of one (1) EDU for a property receiving sewer service.

Refer to Appendix H for the EDU assessment of the proposed Durhamville Sewer District.

7.4. Impact on Durhamville Drinking Water System

The proposed low pressure sewer system will be installed in proximity to a potable drinking water district within the Hamlet of Durhamville. This water district supplies 246.5 EDUs with drinking water with 8-inch water main. This water is currently supplied form the City of Oneida. This proposed sewer district will not impede on the minimum spacing requirements for sewer and water systems set forth by Ten States Standards.

7.5. Opinion of Probable Cost

~~Alternative No. 3~~ Alternative No. 2 is the recommended configuration of the two (2) low-pressure system configurations evaluated, each of which have substantially lower capital costs than the Alternative No. 1 gravity system. Its estimated capital project cost is ~~$10.2~~ ~~$11.2~~ $13.3 million in ~~2025~~ 2028 dollars. ~~While the recommended Alternative No. 3 system has a higher construction cost than Alternative No. 2, the estimated annual O&M cost for each alternative is $457,900. Further, Alternative No. 3 will provide public sewer access to a number of City of Oneida residents that currently do not have public sewers along Lake Street. Should City residents connect under a "joint" project scenario, an estimated 34 City EDUs could potentially share in paying the annual debt service cost for the new system due to benefit derived. This would need to be negotiated with the City during Project Development and Preliminary Design.~~

8.0 PRELIMINARY ENVIRONMENTAL REVIEW FOR RECOMMENDED ALTERNATIVE

8.1. Environmental Impacts and Mitigation Measures

8.1.1. SEQR/SERP Compliance and Overview

The project is expected to require review as a Type 1 action under the State Environmental Quality Review Act (SEQRA). The SEQRA review would involve completion of the Full Environmental Assessment Form and a coordinated review with all potentially involved or interested agencies for the project, wherein the Town Board would assume Lead Agency status.

8.1.2. Wetlands and Surface Waters

No NYSDEC Wetlands are mapped within 100 feet of the project area. The Barge Canal Feeder (Old Erie Canal), Oneida Creek, and a tributary of Oneida Creek, which are all mapped by the NYSDEC and NWI, intersect the proposed force main along Main Street and Randel Road. All three (3) streams are Class C streams with C standards. Mapped waterbodies with C standards are not protected by the NYSDEC under Article 15 of the Environmental Conservation Law. However, if any of these streams are state-navigable (can accommodate a canoe or kayak), they may be regulated by the NYSDEC under Article 15 regardless of their classification and standard. Additionally, all three (3) streams drain into the Oneida River, a navigable waterbody regulated by the U.S. Army Corps of Engineers (USACE) under Section 10 of the Rivers and Harbors Act. Due to this direct connection, the Barge Canal Feeder, Oneida Creek, and the tributary of Oneida Creek are likely regulated by the USACE under Section 404 of the Clean Water Act as Waters of the U.S. A wetland delineation would be completed during the project's design phase to accurately identify the boundaries of wetlands and surface waters within the project area.

8.1.3. Threatened and Endangered Species

According to the USFWS IPaC database, the project area is not within the range of any federally threatened or endangered species. Additionally, the NYSDEC ERM reported that the project area is not within the vicinity of any significant natural communities or rare plants or animals. Additional coordination with the NYSDEC and USFWS would be completed during the project's design phase, as needed.

8.1.4. Cultural and Historic Resources

Portions of the project area are within an archaeologically sensitive area mapped by SHPO. The proposed force mains along NY-46 and Center Street intersect the Old Erie Canal State Historic Park. Additionally, a building eligible for the State and National Registers of Historic Places is adjacent to the proposed force mains along Church Street. Project information would be formally submitted to SHPO during the design phase.

Appropriate actions will be taken to fulfill the requests from SHPO to ensure that the proposed project will not result in an adverse impact on historic properties, including archaeological and/or historic resources.

8.1.5. Environmental Permit Summary

If the proposed force main crossing the Barge Canal Feeder, Oneida Creek, or the tributary of Oneida Creek needs to be installed using open cut excavation, an Article 15 permit and Section 401 Water Quality Certification may be required from the NYSDEC, as well as a Section 404 permit from the USACE.

8.1.6. Smart Growth

A Smart Growth Assessment form was completed for the proposed project and is included as Appendix L.

9.0 PLAN OF FINANCE

9.1. Funding Opportunities and Rate Impacts

Several funding opportunities are available to ensure that the chosen alternative is affordable for system users. This project is eligible for funding through programs including the NYS Environmental Facilities Corporation (EFC) Clean Water State Revolving Fund (CWSRF), the USDA Rural Development (RD) Water and Waste Disposal Loan and Grant Program, and various other programs, including those under the NYS Consolidated Funding Application (CFA). User costs will vary depending on the amount of funding ultimately awarded to the Town for the project.

9.1.1. NYSEFC

The NYSEFC provides financing for projects involving needed clean water infrastructure improvements. The CWSRF program through NYSEFC offers interest-free financing for 100% of eligible project costs, up to $20 million, for municipalities that qualify for hardship. Market-rate or subsidized financing (up to 50% reduced) are also available through the CWSRF if the municipality does not qualify for zero interest financing. The Town's project is currently listed in the CWSRF IUP with a score that would place it above the Hardship Subsidy line. An income survey will need to be completed for the proposed sewer service area, as the Town-wide and Durhamville CDP MHIs are above the hardship eligibility threshold. As of the writing of this report, an income survey has been completed, and a revised MHI of $50,000 was submitted to and accepted by EFC. Refer to Appendix A for the Town's previous NYSEFC Hardship letter.

9.1.2. USDA RD

The USDA Rural Development (RD) Water and Environmental Program (WEP) offers long-term, low-interest loans and grants for projects that involve the development or rehabilitation of vital infrastructure. Loans are offered with poverty, intermediate or market-rate interest, based on the municipality's Mean Household Income and poverty rates. The USDA RD WEP Loan and Grant Program targets drinking water and sanitary sewer projects in rural areas with populations of 10,000 or less. The Town of Verona has an estimated population of 5,974 in 2020, according to the U.S. Census Bureau, and would qualify for financing under this program. USDA RD offers "poverty" financing, which typically includes a loan over 38 years at an interest rate of approximately 2.250% and possible grant financing. The exact financing terms would be based on RD's underwriting process which closely examines the Town's finances including current tax levels, existing debt and capital reserves available. The typical service charge for comparable sewer districts is used to determine the proposed project's target service charge (TSC). It is noted that the NYS Comptroller's statewide published average sewer district charge for 2026 is $1,010 per unit, although this is not necessarily the service charge that RD will use to determine the TSC.

9.1.3. Grants

Grants that the Village may be eligible for include:

EFC Hardship: The NYSEFC Hardship Grant Program is available to municipalities that receive hardship financing. The Town of Verona was notified that they qualify for Hardship financing in a letter dated March 4, 2021 (refer to Appendix A.

EFC WIIA Grant: The NYSEFC Water Infrastructure Improvement Act (WIIA) program provides grants to assist municipalities with water quality improvement projects which provide environmental or public health benefits. Projects eligible for CWSRF funding are considered eligible for WIIA grants. Funding is allocated up to a maximum of 25% of net project costs or $5,000,000, whichever is less, of combined CWSRF and WIIA grants over five (5) years.

CWSRF BIL General Supplemental Funding: All CWSRF eligible projects and activities may be funded under the CWSRF BIL General Supplemental Capitalization Grant. Up to fifty percent (50%) additional subsidy up to a maximum amount of $25 million will be offered to eligible projects that serve "disadvantaged" communities (those meeting financial hardship criteria). The remaining 50% of the project cost can be funded with Hardship Loan, BIL General Supplemental financing or other sources of funds.

NYSDEC WQIP: The NYSDEC offers the Water Quality Improvement Program (WQIP) grant administered under NY State's annual Consolidated Funding Application (CFA) program. The WQIP has categories for wastewater treatment plants as well as collection systems for addressing failing on-site waste treatment systems. Grants for the latter may be awarded up to $10 million, or 60% of construction costs for removing private systems from service with new public sewers.

USDA Water and Waste Disposal Loan and Grant Program: The USDA RD offers grants that can be combined with an RD loan if necessary to keep user costs reasonable; USDA will not offer grants without a loan.

EPA Community Grants: Congress appropriates resources for specifically named community water infrastructure projects identified as Congressionally Directed Spending (CDS) and Community Project Funding (CPF) items (Community Grants) in Appropriations Acts. Funding is provided in the State and Tribal Assistance Grants (STAG) account for these drinking water, wastewater, stormwater infrastructure, and water quality protection Community Grants projects.

9.2. Preliminary Funding Analysis

Estimates presented herein are based on the equivalent dwelling units (EDU), as required by the NYS Environmental Facilities Corporation (EFC), which may differ from the Town's typical

assessment basis for debt service. The costs below represent estimates of cost to service the debt associated with the recommended alternative and potential funding opportunities through EFC and USDA RD for an estimated probable project cost and maximum amount to be expended of $13,300,000 by the proposed Durhamville Sewer District. A preliminary funding analysis of each core funding program and grant opportunity for the Town of Verona is included below.

9.2.1. NYSEFC Clean Water State Revolving Fund (CWSRF) Program

The recommended alternative meets the eligibility criteria for the CWSRF program. The project is currently listed on the IUP with a score of 46 points, which is above the 2023 hardship eligibility line. The project is eligible for 0% hardship financing as stated previously, as the income survey yielded a service area MHI of $50,000, below the hardship threshold, which for 2026 is $67,662.

9.2.2. USDA Rural Development (RD) Water and Environmental Program (WEP)

The proposed project meets the eligibility criteria for the USDA RD WEP program and, based on the income survey MHI of $50,000, should qualify for a 38 year loan with an intermediate category interest rate (currently 3.750%). Depending on MHI thresholds at the time of application, the project could qualify for a poverty category interest rate (currently 2.875%) if health and sanitary issues are cited by the State and/or Oneida County DOH.

9.2.3. NYSEFC CWSRF Hardship Grant

Since the Town should qualify for hardship financing, the project should also be eligible to receive a hardship grant through the CWSRF program.

9.2.4. WIIA Grant

The project is eligible to apply for a WIIA grant through EFC. Based on the scope of the project, it may be eligible to receive up to 25% or $2,550,000 grant through WIIA. The maximum combined amount that can be awarded between the CWSRF and WIIA programs is $5,000,000. An exception to these caps was created for rural hardship communities through an enhanced WIIA program which can cover up to 50% of project costs and is not subject to the $5,000,000 cap. It is noted that WIIA grant awards are 25% or 50% of net project costs after other grants are subtracted. The Town was notified on December 19, 2025 of an enhanced WIIA award of up to 50% of net project costs.

9.2.5. USDA RD WEP Grant

The Town may be eligible for a grant through the USDA RP WEP program.

9.2.6. WQIP Grant

The project should be eligible for a WQIP under the "Other Wastewater Treatment Improvements" subcategory, up to 60% of eligible construction costs and maximum grant of $10.0M. A process will need to be undertaken with NYSDEC to document the

water quality impairment from the combined sewer discharge discussed earlier in the report in order to confirm WQIP eligibility.

9.2.7. NYSEFC SWIFT Grant

The project is eligible for financial assistance through the New York State Environmental Facilities Corporation (NYSEFC) under the State's hardship-based funding framework, including the State Water Infrastructure Funding Terms (SWIFT) provisions described in the 2026 Hardship Policy (Section 4). Under this framework, projects serving communities that meet affordability criteria may qualify for enhanced subsidies through the Clean Water State Revolving Fund (CWSRF) in the form of principal forgiveness and/or interest-free financing. In conjunction with base grant programs such as the Water Infrastructure Improvement Act (WIIA), which typically provides grants of up to 25 percent of eligible project costs, the SWIFT hardship provisions can increase the overall effective grant-equivalent assistance to approximately 50 percent or more of total eligible costs, depending on the municipality's median household income, population, and user cost burden.

9.3. Estimated Annual User Costs

9.3.1. Durhamville Sewer District Debt Service

The estimated debt service and annual cost to a typical property, based on the financing assumptions determined above, are summarized in Tables 9-1 below and in Appendix J. The estimated debt service for the recommended alternative, based on hardship financing and maximum grant award is ~~$404~~ ~~$444~~ ~~$616~~ $875 per EDU.

9.3.2. Town O&M Cost

The estimated total first-year town district operation and maintenance (O&M) cost of the proposed project is $22,500 for personnel and equipment costs to operate and maintain the low-pressure system, inclusive of individual pumps. This charge would be assessed to all connected district property owners. Each unit (226.5 connected EDUs) in the proposed Durhamville Sewer District would be charged approximately $99 per year for District O&M costs.

9.3.3. Short-Lived Assets

All district property owners would be required to contribute towards any "short-lived assets" or components of the project that would need to be replaced. The only short-lived asset associated with the project would be grinder pump core replacement in the 10- to 15-year range; based on the assumption that half of the 223 grinder pump cores would be replaced at a cost of $3,000 each, it is estimated that all EDUs (226.5 connected EDUs) would contribute approximately ~~$99~~ $50 per year towards short-lived assets.

9.3.4. City WWTP O&M Cost

The proposed Durhamville Sewer District would receive a bill for costs associated with wastewater treatment and operation and maintenance at the City of Oneida WWTP. The terms of the City's O&M charge would be defined in an Intermunicipal Agreement to be executed between the Town and City following sewer district formation and during the Project Development Phase. Based on preliminary discussions with the City, it is anticipated that a typical single-family household using 200 gallons of water per day would receive a sewer use charge of approximately ~~$158~~ $241 per year.

9.3.5. Annual Pump Power Cost

Each resident and business owner to be connected to the Durhamville collection system would have a packaged grinder pump station installed on their property, and would have electrical service extended from their house or other building to the pump. Power consumption of the grinder pump would be metered along with the rest of the electrical power consumed by the house/building. Therefore, the resident/owner would be responsible for paying for the power consumption of their grinder pump. Average annual power costs for a grinder pump serving a single-family household, based on similar installations, is approximately $22 per year. This cost increase would be reflected in each property owner's personal monthly electricity bill.

9.3.6. Summary of Estimated Typical First Year User Costs

The total first year cost to the typical property owner in the Durhamville Sewer District will include all the costs presented herein. Table 9-1 summarizes the estimated annual cost per EDU. This cost could be further reduced through additional grants.

Table 9-1: First Year Estimated Annual User Cost Summary

Item	Value
Total Project Cost & Maximum Amount to be Expended	~~$10,200,000~~~~$11,200,000~~ $13,300,000
Total EDUs (Debt Service only)	236.5
Assumed WIIA, ~~WQIP~~ STAG and ~~CDBG~~ SWIFT Grants	~~$7,331,250~~~~$8,050,000~~~~$11,185,000~~ $9,196,000
Net Cost to be Financed	~~$2,868,750~~~~$3,150,000~~~~$2,115,000~~ $4,104,000
Total Net Annualized Project Cost	~~$95,625~~~~$105,000~~~~$56,400~~ $109,400
Total Net Annual Project Cost per District EDU	~~$404~~~~$444~~~~$238~~ $463
Annual O&M Cost (connected EDU)	$99
Annual Short Lived Assets (connected EDU)	~~$99~~ $50
Annual City WWTP O&M Cost (connected EDU)	~~$158~~ $241
Annual Pump Power Cost (connected EDU)	$22
Estimated Total Annual User Cost	~~$783~~~~$823~~~~$616~~ $875

10.0 MAXIMUM AMOUNT TO BE EXPENDED

The estimated total Durhamville Sewer Project cost, inflated to 2025 dollars, and maximum amount to be expended by the district is ~~$10,200,000~~ ~~$11,200,000~~ $13,300,000. See Appendix J for the detailed estimated of probable project cost estimate.

10.1. Existing Debt

The proposed Durhamville Sewer District does not currently have any existing debt.

11.0 CONCLUSION

11.1. Anticipated Schedule

On the basis of this revised Map, Plan and Report, the Town intends to proceed with forming the Durhamville Sewer District in accordance with Article 12-a of NYS Town Law, pass a bond resolution, secure short-term funding and proceed with design, regulatory and permitting reviews and approvals, bidding and construction on the following anticipated project schedule:

11.2. Suggested Next Steps

Project Schedule Milestone Item	Schedule Date
(T) Board Resolution Scheduling Public Hearing on Formation of Durhamville S.D.	May 4, 2026
Publication of Notice of Public Hearing on Formation of Durhamville S.D.	May 12 – May 22 2026
Public Hearing and Resolution Forming Durhamville S.D. (subject to 30-day permissive referendum)	June 1, 2026
Bond Resolution passed by (T) Board	June 1, 2026 or July 6, 2026
Assemble/submit EFC Required Documents for CWSRF Hardship Loan, WIIA and STAG grants	May – August 2026
Secure a BAN for Engineering Services ($500K)	July - August 2026
Start Survey, Soil Borings, House Inspections and Preliminary Design	July - August 2026
Submit CDBG Application (optional under 2026 CFA)	July 2026
Close on CWSRF Short Term Financing	November 2026
CDBG Award announcement (if submitted)	December 2026
Submit Project Plans and Specifications for Review and Approval	March 2027
Project Letting/Bidding Phase	July 2027
Award Bids	September 2027
Confirm SWIFT Grant	October 2027
Execute Construction Contract	October 2027
Issue Notice to Proceed	November 2027
Construction Start	Spring 2028
Substantial Completion and Final Restoration	Spring 2029

Should the Verona Town Board accept this proposed recommended project, the Town should proceed in accordance with New York State (NYS) Town Law Article 12A, generally include the following:

- Town Board accepts this PER and MPR at a regular Town Board Meeting
- District Formation of the proposed Durhamville Sewer District in accordance with NYS Town Law Article 12A and holds a public hearing
  - Town Board holds public hearing
  - Town applies for New York State Office of the State Comptroller (NYS OSC) approval of the district
  - Upon receipt of NYS OSC approval of the district, Town Board can proceed with review of district formation
- Durhamville Sewer District Bond Resolution
- Secure short-term financing – Bond Anticipation Note, which would then be rolled into EFC short-term financing
- Engineering Design and Regulatory Approvals
- Bidding and Construction

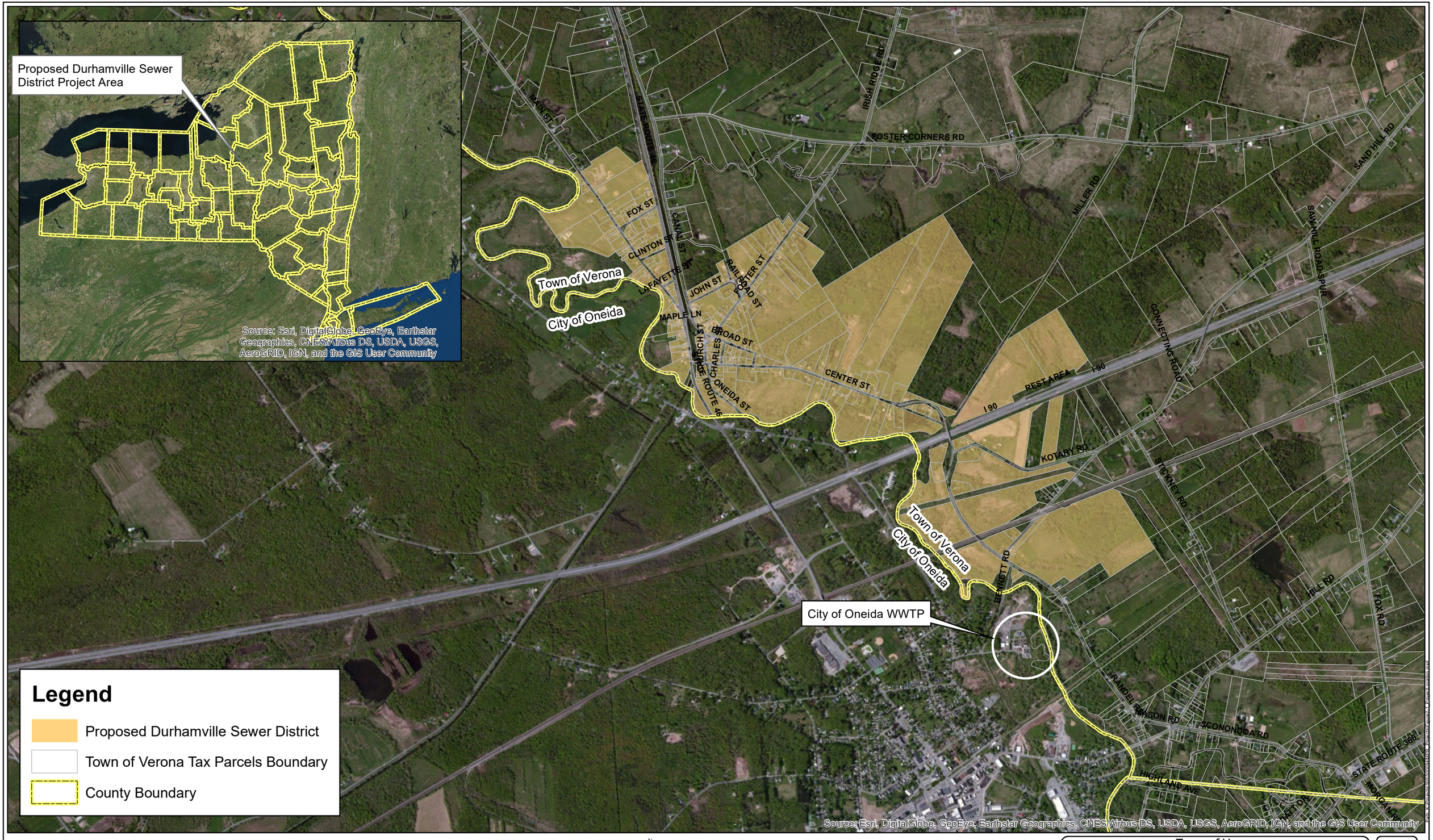
11.3. Anticipated Permits and Approvals

The following regulatory reviews and/or approvals of the proposed Durhamville Sewer District project are anticipated and will be obtained during the project design phase:

- New York State Department of Environmental Conservation (NYSDEC) and NYS Environmental Facilities Corporation (EFC) – Engineering Report and Plan Approval
- State Environmental Quality Review Act (SEQRA) – The proposed rehabilitation project is potentially a Type I project, which may require additional SEQR review
- City of Oneida approval to accept sanitary wastewater from the district through an Intermunicipal Agreement
- Anticipated Permits:
  - NYSDOT Utility Work Permit
  - Oneida County DOT Utility Work Permit
  - NYSTA Roadway Crossing Permit
  - Railroad Crossing Permit
  - NYSDEC/USACE Joint Application for Permit (wetlands and/or stream crossings)

Figures

Figure 2-1
Location Map



Legend

- Proposed Durhamville Sewer District
- Town of Verona Tax Parcels Boundary
- County Boundary

Barton & Loguidice

1 inch = 1,600 feet

Town of Verona
Durhamville Sewer District

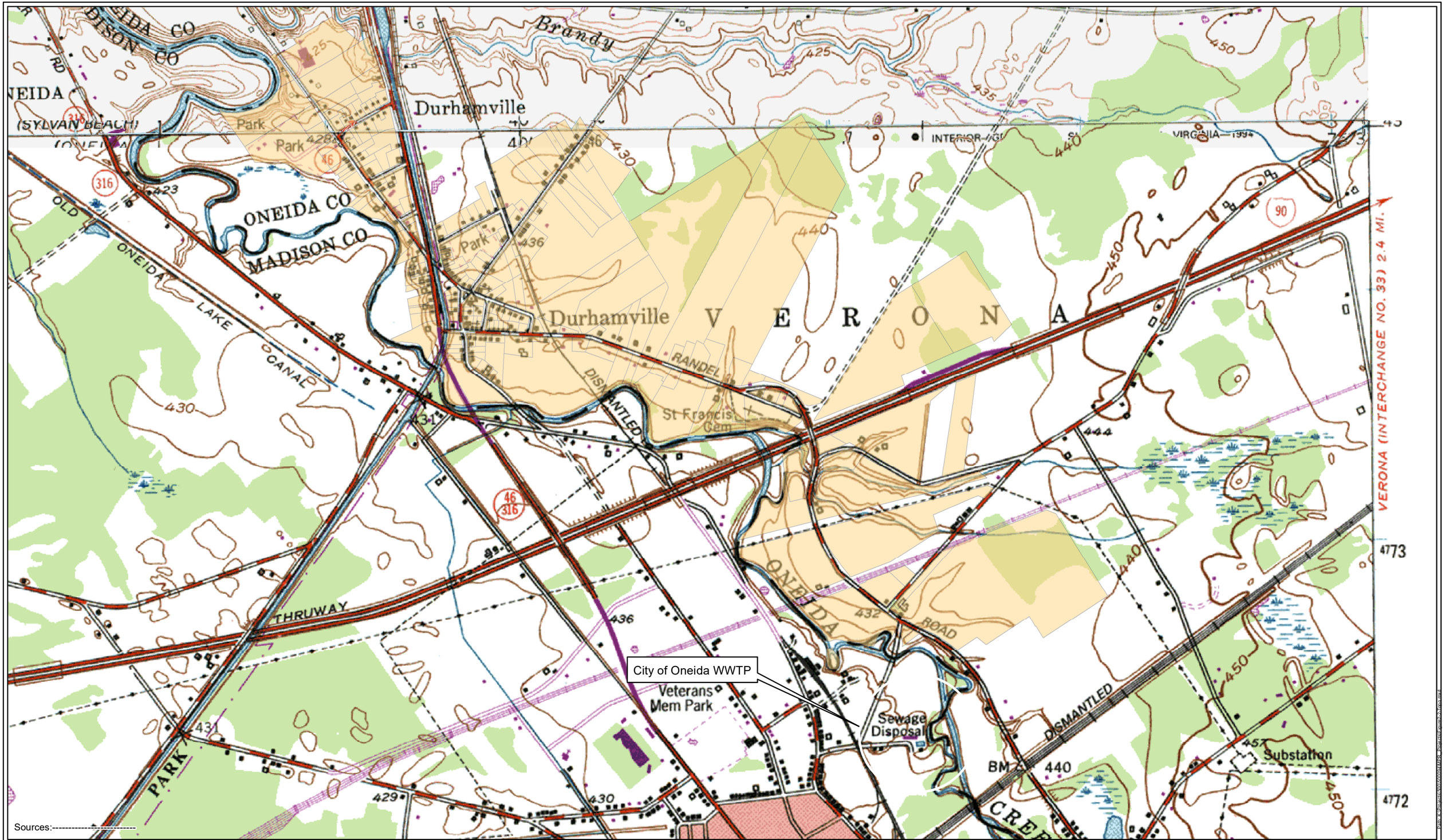
Project Location

Oneida County 5/13/2021 New York

Figure 2-1

Project No. 500.094

Figure 2-2
Topographic Map



Sources:----------

Barton & Loguidice

1 inch = 1,137 feet

Town of Verona
Durhamville Sewer District
USGS Topographic Map
Oneida County 6/22/2021 New York

Figure 2-2

Project No. 500.094

Figure 2-3
NYSDEC and NWI Map

Legend

- Existing Streams
- NYSDEC Wetlands
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Riverine
- Town of Verona Tax Parcels Boundary
- Proposed Durhamville Sewer District
- County Boundary

City of Oneida WWTP

Source: Esri, Maxar, Earthstar Geographics, IGN, and the GIS User Community

Barton & Loguidice

N W E S

1 inch = 1,100 feet

Town of Verona
Durhamville Sewer District

NYSDEC/NWI Wetland Map

Oneida County 2/12/2025 New York

Figure 2-3

Project No. 500.094

Figure 2-4
FEMA Flood Zone Map

Legend

- 100-Year Flood Zone
- 500-Year Flood Zone
- Proposed Durhamville Sewer District
- Town of Verona Tax Parcels Boundary
- County Boundary

City of Oneida WWTP

Source: Esri, Maxar, Earthstar Geographics, IGN, and the GIS User Community

Barton & Loguidice

N W E S

1 inch = 1,100 feet

Town of Verona
Durhamville Sewer District

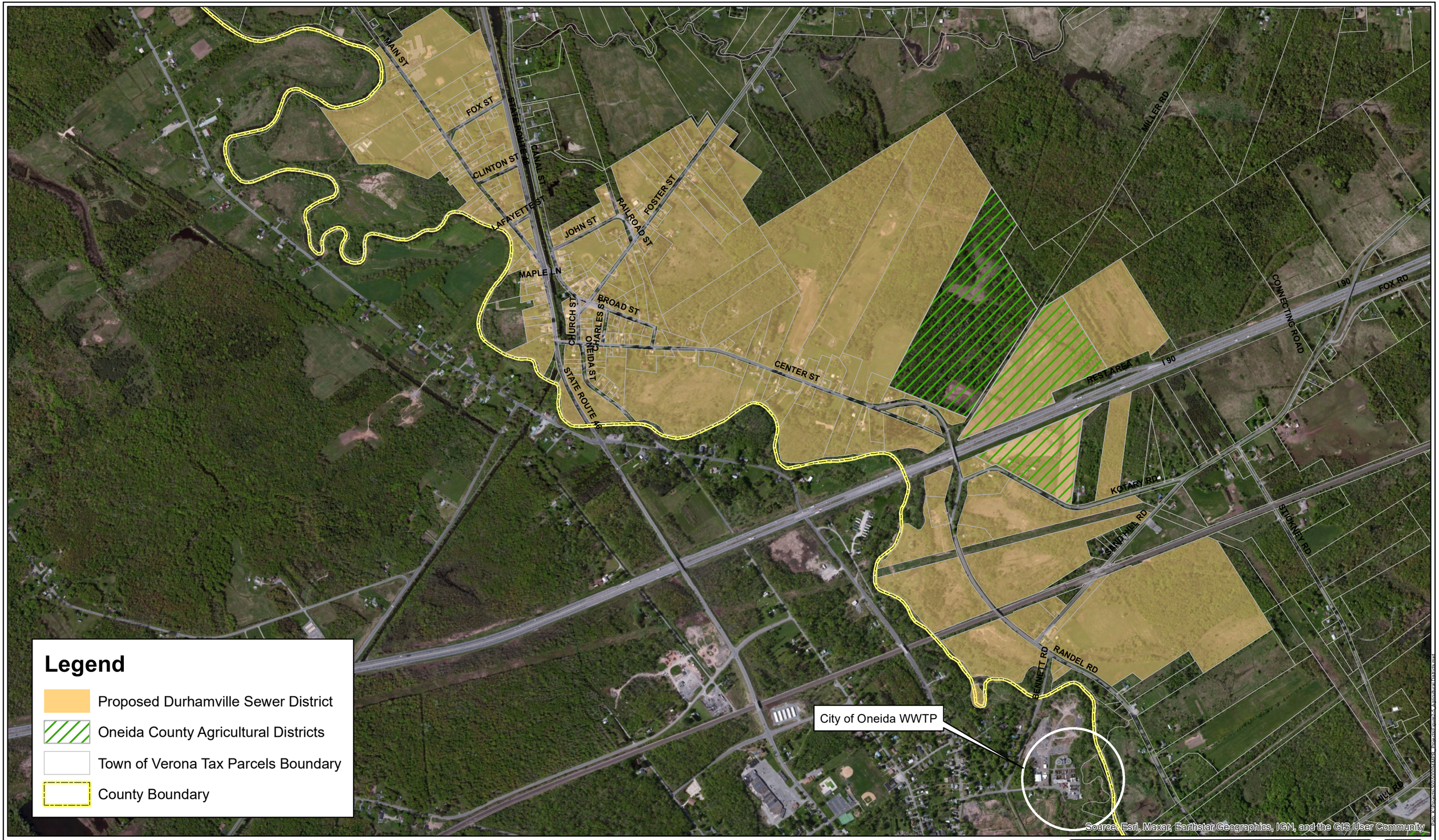
FEMA Flood Zone Maps

Oneida County 2/12/2025 New York

Figure 2-4

Project No. 500.094

Figure 2-5
Agricultural District Map



Legend

- Proposed Durhamville Sewer District
- Oneida County Agricultural Districts
- Town of Verona Tax Parcels Boundary
- County Boundary

Barton & Loguidice

N W E S

1 inch = 1,100 feet

Town of Verona
Durhamville Sewer District

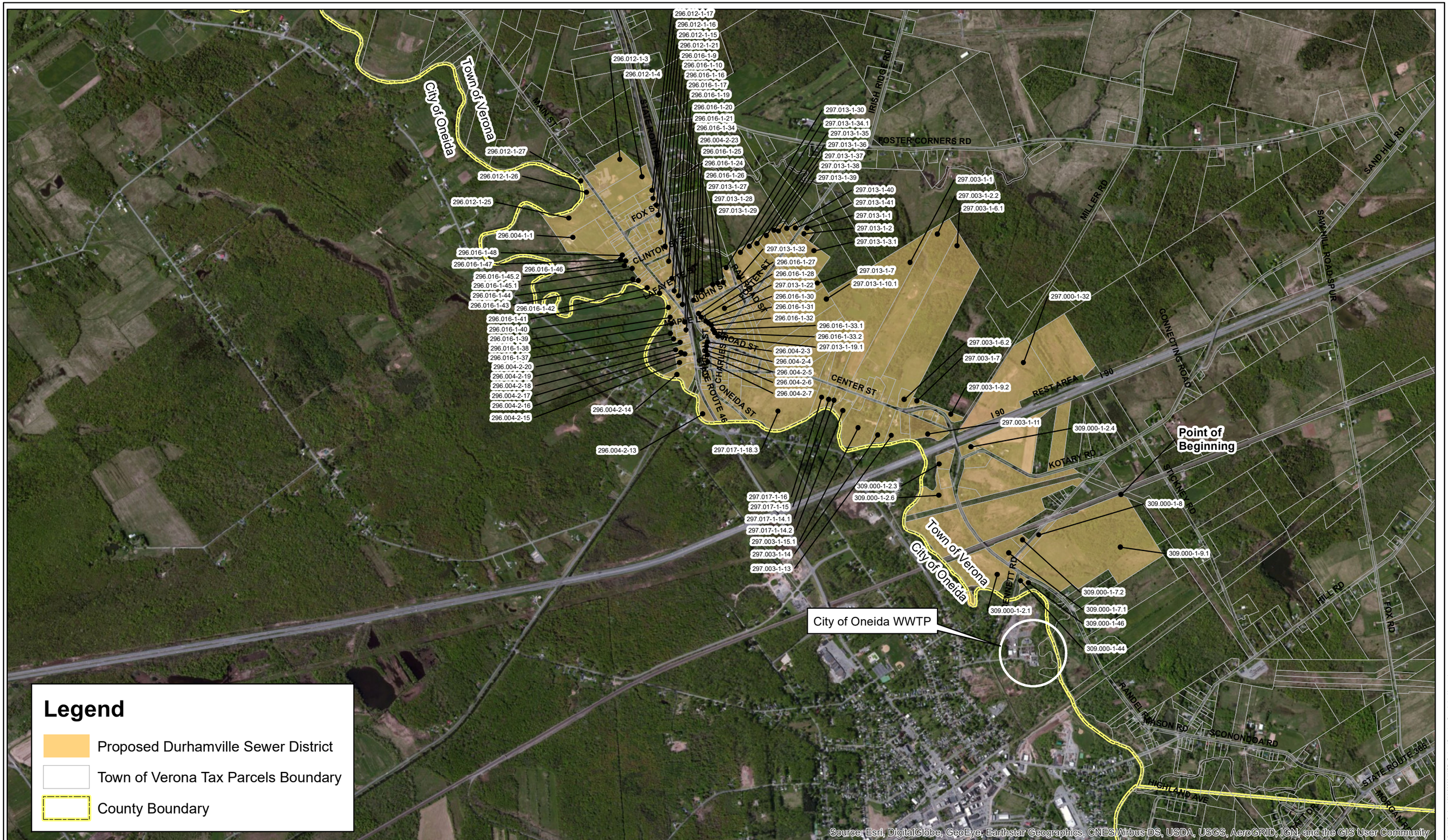
Oneida County Agricultural District

Oneida County 2/12/2025 New York

Figure 2-5

Project No. 500.094

Figure 4-1
Proposed Durhamville Sewer District Boundary Map



Legend

- Proposed Durhamville Sewer District
- Town of Verona Tax Parcels Boundary
- County Boundary

Barton & Loguidice

N W E S

1 inch = 1,600 feet

Town of Verona
Durhamville Sewer District

District Boundary

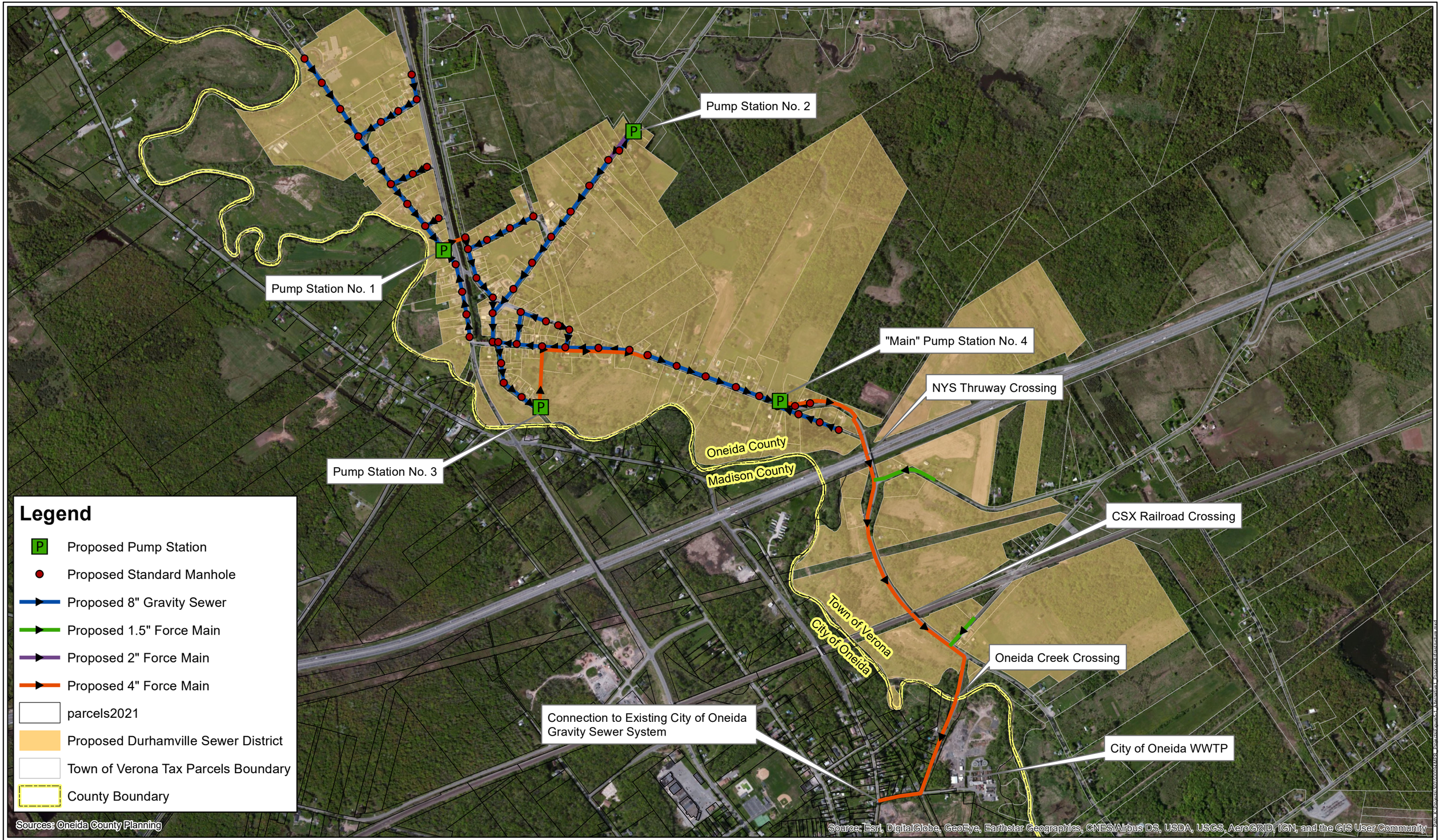
Oneida County 6/22/2021 New York

Figure 4-1

Project No. 500.094

Path: K:\Projects\500\500094\MPR_Projects\Boundary Description Map.mxd

Figure 5-1
Alternative No. 1: Gravity Collection System Proposed Infrastructure



Barton & Loguidice

N W E S

1 inch = 1,000 feet

Town of Verona
Durhamville Sewer District

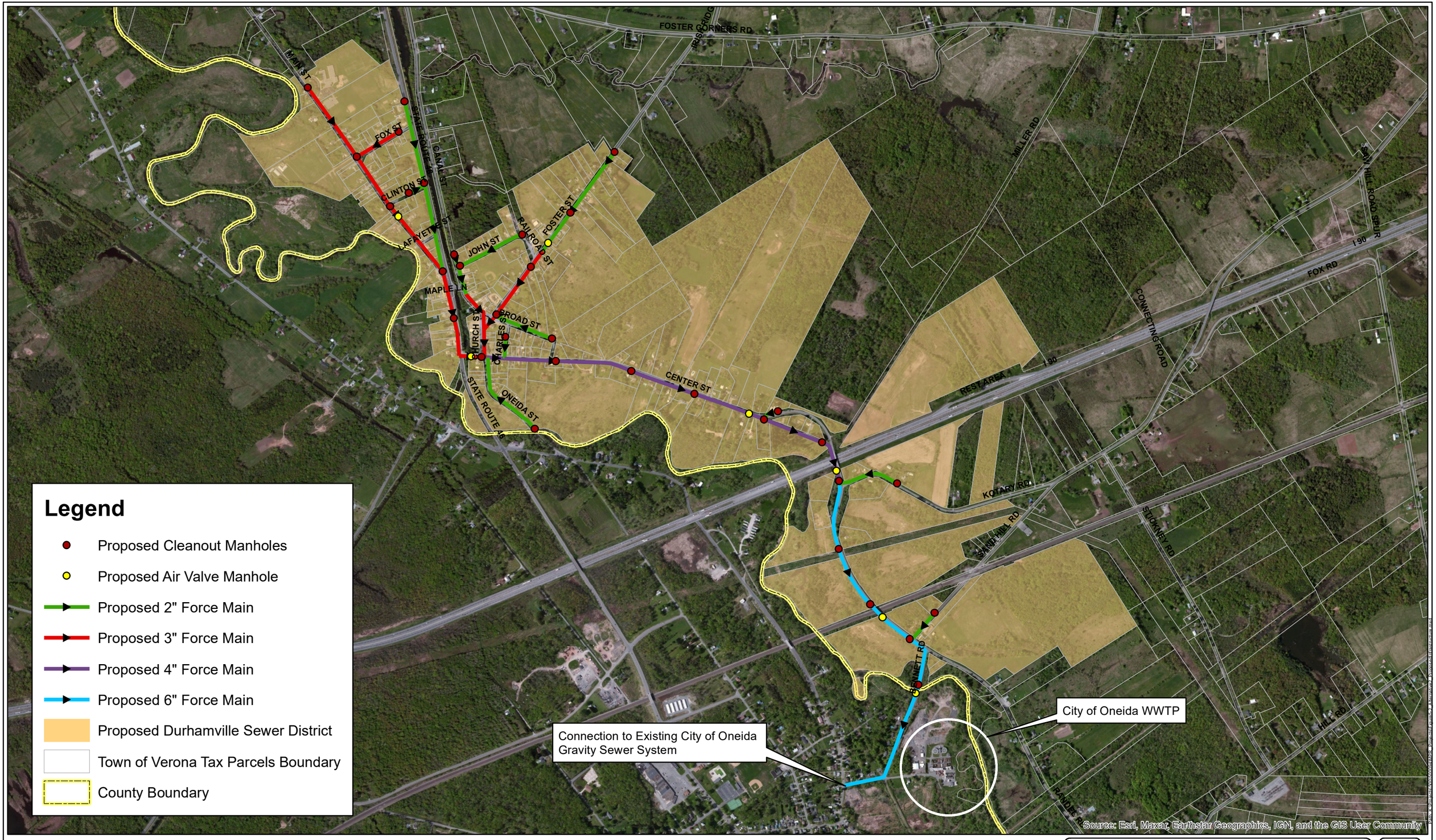
Alternative 1: Proposed Infrastructure

Oneida County 7/6/2021 New York

Figure 5-1

Project No. 500.094.001

Figure 5-2
Alternative No. 2: Low Pressure System Proposed Infrastructure



Barton & Loguidice

N W E S

1 inch = 1,100 feet

Town of Verona
Durhamville Sewer District

Alternative 2: Proposed Infrastructure

Oneida County 2/3/2025 New York

Figure 5-2

Project No. 500.094

Figure 5-3
Alternative No. 3: Low Pressure System extending along N. Lake Street
Proposed Infrastructure

Legend

- Proposed Air Valve Manhole
- Proposed Cleanout Manholes
- Proposed 1.5" Force Main
- Proposed 2" Force Main
- Proposed 3" Force Main
- Proposed 4" Force Main
- Proposed 6" Force Main
- Proposed Durhamville Sewer District
- County Boundary
- Town of Verona Tax Parcels Boundary

Connection to Existing City of Oneida Sewer System

City of Oneida WWTP

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Barton & Loguidice

N W E S

1 inch = 1,100 feet

Town of Verona
Durhamville Sewer District

Alternative 3: Proposed Infrastructure

Oneida County 6/17/2021 New York

Figure 5-3

Project No. 500.094

Appendices

Appendix A
EFC CWSRF Hardship Letter

NEW YORK STATE OF OPPORTUNITY. Environmental Facilities Corporation

ANDREW M. CUOMO
Governor
JOSEPH J. RABITO
President and CEO

March 4, 2021

The Honorable Scott M. Musacchio
Supervisor
Town of Verona
6600 Germany Road
Durhamville, NY 13054

Re: Clean Water State Revolving Fund Project No. C6-6048-01-00
Town of Verona
Oneida County
Hardship Eligibility

Dear Supervisor Musacchio:

I am pleased to inform you that the Town of Verona is eligible for Clean Water State Revolving Fund (CWSRF) interest-free financing for all or a portion of the proposed Clean Water project referenced above. This hardship determination is based on your Median Household Income (MHI) and population, as detailed in the CWSRF Hardship Financing and Grant Eligibility Policy (Hardship Policy) effective October 1, 2020.

If you have not already done so, you must submit an acceptable CWSRF financing application by no later than March 1, 2022. The CWSRF finance application forms and guidance can be found at www.efc.ny.gov/CWApplication.

Hardship eligibility for the referenced project remains in effect through *September 30, 2022*, by which time a Project Finance Agreement for CWSRF financing must be executed with the New York State Environmental Facilities Corporation.

Pursuant to the Hardship Policy, municipalities are limited to $20 million in interest-free financing over a rolling five-year period for all CWSRF projects.

All projects funded through the CWSRF must meet certain programmatic requirements. These requirements include but are not limited to:

- Davis Bacon Federal Prevailing Wage schedules and language in the construction contract bid documents;
- American Iron and Steel provisions; and,
- Minority Women Business Enterprises/Equal Employment Opportunities/ Disadvantaged Business Enterprises for both construction contracts and professional service agreements as applicable.

More information on hardship eligibility and restrictions can be found in the Hardship Policy on EFC's website at www.efc.ny.gov/CWSRF.

This hardship eligibility letter is not a commitment by EFC to provide financial assistance. Such a commitment will be reflected in the Project Financing Agreement executed by both parties. EFC may deny or otherwise adjust the financial assistance for your project based upon our review of the complete CWSRF financing application. In addition, EFC may only provide financial assistance for your project after receiving formal approvals from its Board of Directors and the New York State Public Authorities Control Board.

Thank you for your interest in the CWSRF program. We look forward to working with you to ensure that your community has a safe, affordable, and sustainable wastewater system for generations to come. Should you have any questions, please contact Mr. Timothy P. Burns, P.E., at 518-402-7396 or timothy.burns@efc.ny.gov.

Sincerely,



Joseph J. Rabito
President and CEO

cc: NYSDEC Region 6 - Mr. Gregg Townsend, P.E. (email)
Barton & Loguidice – Mr. Jeff Rowe, P.E. (email)
Mr. Michael O'Neil, P.E. (email)
Mr. Mark Howard (email)

Appendix B
Soil Report

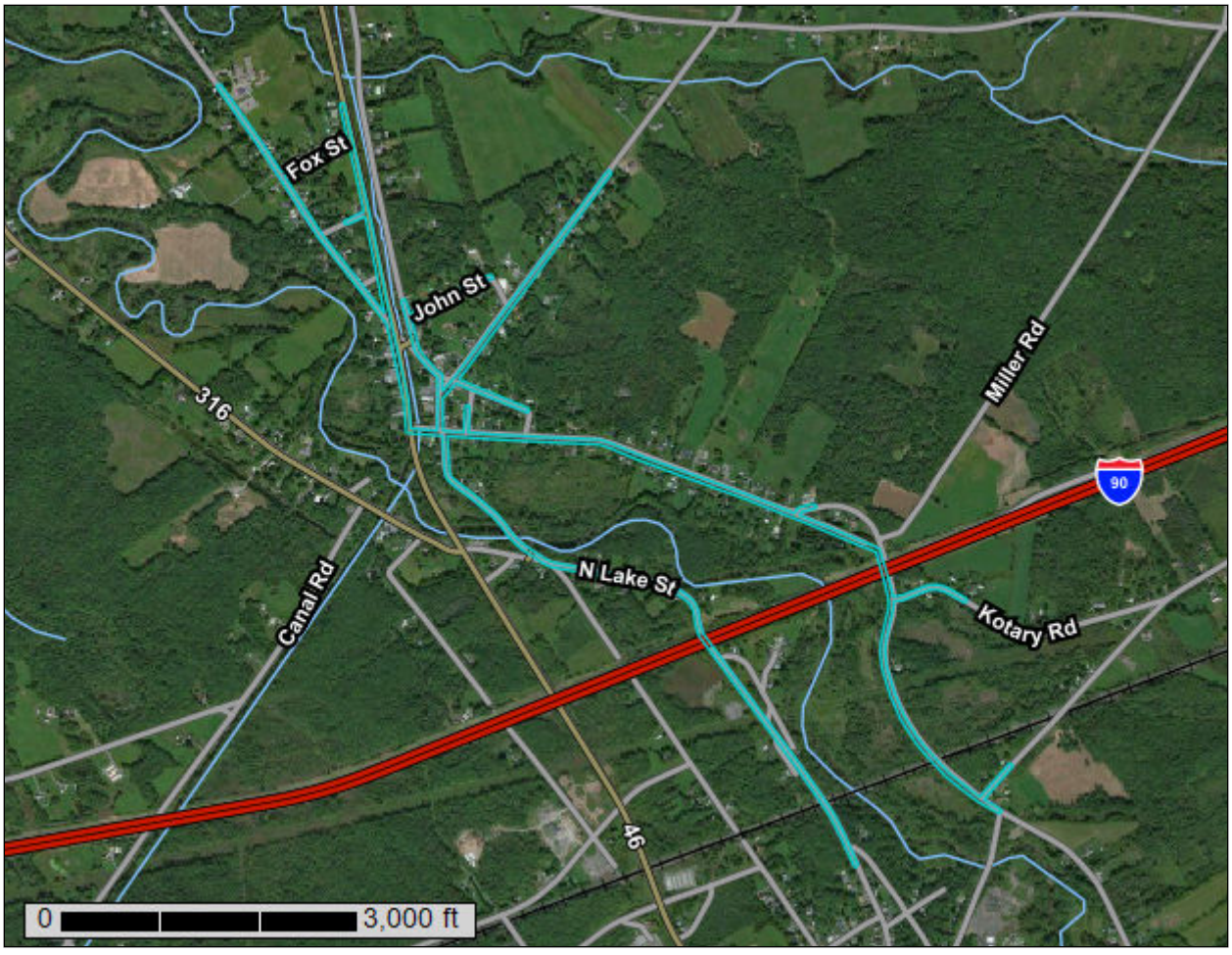
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Madison County, New York, and Oneida County, New York



June 24, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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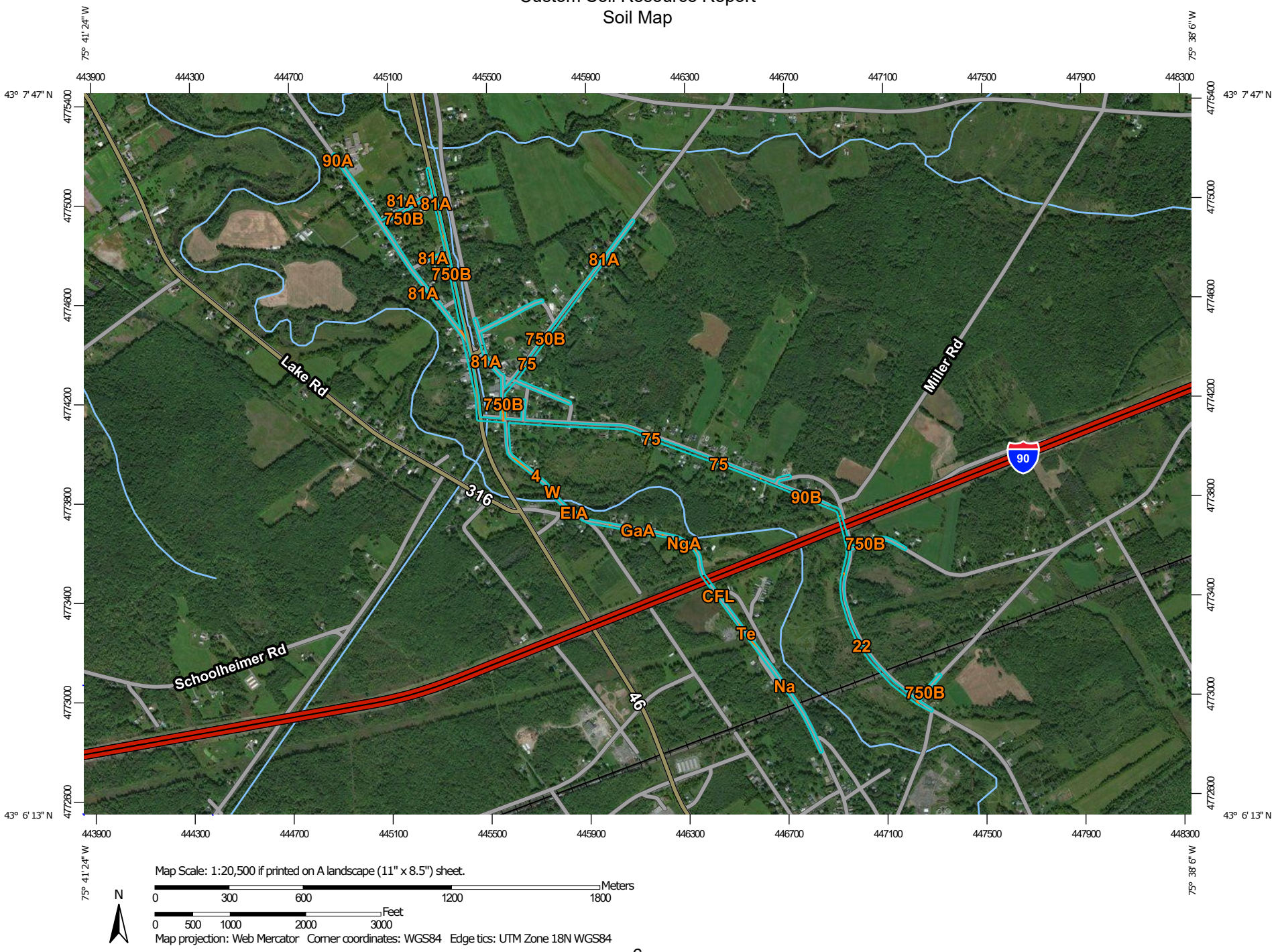
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:15,800 to 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Madison County, New York
Survey Area Data: Version 19, Jun 11, 2020

Soil Survey Area: Oneida County, New York
Survey Area Data: Version 23, Jun 11, 2020

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 3, 2013—Sep 27, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CFL	Cut and fill land	1.3	4.0%
ElA	Elmwood fine sandy loam, 0 to 3 percent slopes	1.0	2.8%
GaA	Galen very fine sandy loam, 0 to 3 percent slopes	0.8	2.4%
Na	Naumburg loamy fine sand	2.0	5.8%
NgA	Niagara silt loam, 0 to 3 percent slopes	0.6	1.7%
Te	Teel silt loam	0.4	1.1%
W	Water	0.1	0.2%
Subtotals for Soil Survey Area		**6.1**	**17.9%**
Totals for Area of Interest		**33.9**	**100.0%**

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
4	Wakeville silt loam, occasionally flooded	0.5	1.5%
22	Udorthents, smoothed	2.4	7.0%
75	Lamson fine sandy loam	0.2	0.6%
81A	Covert loamy sand, 0 to 3 percent slopes	7.4	21.9%
90A	Windsor loamy fine sand, 0 to 3 percent slopes	0.2	0.7%
90B	Windsor loamy fine sand, 3 to 8 percent slopes	1.6	4.8%
750B	Minoa fine sandy loam, 0 to 6 percent slopes	15.4	45.4%
W	Water	0.1	0.2%
Subtotals for Soil Survey Area		**27.8**	**82.1%**
Totals for Area of Interest		**33.9**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the

landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present

or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Madison County, New York

CFL—Cut and fill land

Map Unit Setting

National map unit symbol: 9tdp
Elevation: 380 to 1,660 feet
Mean annual precipitation: 38 to 44 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Typical profile

H1 - 0 to 4 inches: channery loam
H2 - 4 to 70 inches: very channery loam

Properties and qualities

Slope: 0 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.06 to 5.95 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: Low (about 5.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Honeoye

Percent of map unit: 5 percent
Hydric soil rating: No

Tuller

Percent of map unit: 5 percent
Hydric soil rating: No

Mardin

Percent of map unit: 5 percent
Hydric soil rating: No

Palmyra

Percent of map unit: 5 percent

Hydric soil rating: No

Lyons

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Niagara

Percent of map unit: 5 percent
Hydric soil rating: No

ElA—Elmwood fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9tf2
Elevation: 10 to 900 feet
Mean annual precipitation: 38 to 44 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Elmwood and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Elmwood

Setting

Landform: Lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy glaciofluvial or glaciolacustrine deposits over clayey glaciolacustrine or glaciomarine deposits

Typical profile

H1 - 0 to 9 inches: fine sandy loam
H2 - 9 to 32 inches: fine sandy loam
H3 - 32 to 60 inches: stratified silty clay to silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None

Frequency of ponding: None
Available water capacity: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Elnora

Percent of map unit: 5 percent
Hydric soil rating: No

Swanton

Percent of map unit: 5 percent
Hydric soil rating: No

Galen

Percent of map unit: 5 percent
Hydric soil rating: No

Collamer

Percent of map unit: 5 percent
Hydric soil rating: No

GaA—Galen very fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9tfb
Elevation: 380 to 750 feet
Mean annual precipitation: 38 to 44 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Galen and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Galen

Setting

Landform: Deltas on lake plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Deltaic deposits with a high content of fine and very fine sand

Typical profile

H1 - 0 to 11 inches: very fine sandy loam
H2 - 11 to 16 inches: fine sandy loam
H3 - 16 to 45 inches: loamy fine sand
H4 - 45 to 64 inches: stratified fine sand to very fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water capacity: Moderate (about 6.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A/D
Hydric soil rating: No

Minor Components

Colonie

Percent of map unit: 5 percent
Hydric soil rating: No

Arkport

Percent of map unit: 5 percent
Hydric soil rating: No

Elnora

Percent of map unit: 5 percent
Hydric soil rating: No

Minoa

Percent of map unit: 5 percent
Hydric soil rating: No

Na—Naumburg loamy fine sand

Map Unit Setting

National map unit symbol: 9tgv
Elevation: 200 to 1,800 feet
Mean annual precipitation: 38 to 44 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Naumburg, somewhat poorly drained, and similar soils: 50 percent
Naumburg, poorly drained, and similar soils: 25 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Naumburg, Somewhat Poorly Drained

Setting

Landform: Outwash plains, terraces, deltas
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Sandy glaciofluvial or deltaic deposits derived mainly from crystalline rock or sandstone

Typical profile

H1 - 0 to 9 inches: loamy fine sand
H2 - 9 to 34 inches: loamy fine sand
H3 - 34 to 60 inches: fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Hydric soil rating: No

Description of Naumburg, Poorly Drained

Setting

Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Sandy glaciofluvial or deltaic deposits derived mainly from crystalline rock or sandstone

Typical profile

H1 - 0 to 9 inches: loamy fine sand
H2 - 9 to 34 inches: loamy fine sand
H3 - 34 to 60 inches: fine sand

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 3.7 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Minor Components

Lamson
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Wareham
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Elnora
Percent of map unit: 5 percent
Hydric soil rating: No

Minoa
Percent of map unit: 5 percent
Hydric soil rating: No

Swanton
Percent of map unit: 5 percent
Hydric soil rating: No

NgA—Niagara silt loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 9tgw
Elevation: 380 to 1,440 feet
Mean annual precipitation: 38 to 44 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Prime farmland if drained

Map Unit Composition
Niagara and similar soils: 80 percent

Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Niagara

Setting

Landform: Lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Silty and clayey glaciolacustrine deposits

Typical profile

H1 - 0 to 13 inches: silt loam
H2 - 13 to 36 inches: silty clay loam
H3 - 36 to 58 inches: stratified silt loam to very fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water capacity: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F101XY009NY - Moist Lake Plain
Hydric soil rating: No

Minor Components

Odessa

Percent of map unit: 5 percent
Hydric soil rating: No

Collamer

Percent of map unit: 5 percent
Hydric soil rating: No

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Minoa

Percent of map unit: 5 percent
Hydric soil rating: No

Te—Teel silt loam

Map Unit Setting

National map unit symbol: 9thy
Elevation: 600 to 1,800 feet
Mean annual precipitation: 38 to 44 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Teel and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Teel

Setting

Landform: Flood plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Silty alluvium

Typical profile

H1 - 0 to 5 inches: silt loam
H2 - 5 to 38 inches: silt loam
H3 - 38 to 72 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 18 to 24 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Calcium carbonate, maximum content: 1 percent
Available water capacity: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B/D
Hydric soil rating: No

Minor Components

Wayland
Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Middlebury
Percent of map unit: 5 percent
Hydric soil rating: No

Hamlin
Percent of map unit: 5 percent
Hydric soil rating: No

W—Water

Map Unit Setting
National map unit symbol: 9tjg
Mean annual precipitation: 38 to 44 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 110 to 190 days
Farmland classification: Not prime farmland

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Oneida County, New York

4—Wakeville silt loam, occasionally flooded

Map Unit Setting

National map unit symbol: 1t6fq
Elevation: 300 to 1,000 feet
Mean annual precipitation: 30 to 45 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 120 to 150 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Wakeville, occasionally flooded, and similar soils: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wakeville, Occasionally Flooded

Setting

Landform: Flood plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Talf
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Silty alluvium washed from areas of glacial drift derived mainly from shale, siltstone, and sandstone, with some limestone

Typical profile

Ap - 0 to 10 inches: silt loam
Bw - 10 to 15 inches: silt loam
Bg - 15 to 35 inches: silt loam
C - 35 to 72 inches: silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: OccasionalNone
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water capacity: High (about 10.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Hydric soil rating: No

Minor Components

Wayland
Percent of map unit: 8 percent
Landform: Flood plains
Hydric soil rating: Yes

Otego
Percent of map unit: 8 percent
Hydric soil rating: No

Unnamed soils
Percent of map unit: 7 percent
Hydric soil rating: No

Hamlin
Percent of map unit: 7 percent
Hydric soil rating: No

22—Udorthents, smoothed

Map Unit Setting
National map unit symbol: 9v8n
Elevation: 300 to 1,200 feet
Mean annual precipitation: 30 to 45 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition
Udorthents, smoothed, and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Smoothed

Typical profile
H1 - 0 to 6 inches: gravelly loam
H2 - 6 to 72 inches: gravelly sandy loam

Properties and qualities
Slope: 0 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to very high (0.57 to 19.98 in/hr)
Depth to water table: About 36 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent

Available water capacity: Low (about 5.4 inches)

Minor Components

Udorthents, wet substratum
Percent of map unit: 6 percent
Hydric soil rating: No

Urban land
Percent of map unit: 4 percent
Hydric soil rating: No

Wakeville
Percent of map unit: 3 percent
Landform: Depressions
Hydric soil rating: No

Chenango
Percent of map unit: 3 percent
Hydric soil rating: No

Alton
Percent of map unit: 3 percent
Hydric soil rating: No

Lamson
Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

Hamlin
Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: No

Otego
Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: No

Canandaigua
Percent of map unit: 1 percent
Landform: Depressions
Hydric soil rating: Yes

Wayland
Percent of map unit: 1 percent
Landform: Flood plains
Hydric soil rating: Yes

75—Lamson fine sandy loam

Map Unit Setting
National map unit symbol: 9vd5

Elevation: 300 to 700 feet
Mean annual precipitation: 30 to 45 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Lamson and similar soils: 70 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lamson

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Deltaic or glaciolacustrine deposits with a high content of fine and very fine sand

Typical profile

Ap - 0 to 9 inches: fine sandy loam
E - 9 to 13 inches: loamy fine sand
Bw - 13 to 18 inches: fine sandy loam
Bg1 - 18 to 22 inches: fine sandy loam
Bg2 - 22 to 36 inches: loamy fine sand
C - 36 to 72 inches: loamy fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Available water capacity: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Ecological site: F101XY007NY - Wet Outwash
Hydric soil rating: Yes

Minor Components

Minoa

Percent of map unit: 7 percent
Hydric soil rating: No

Canandaigua
Percent of map unit: 6 percent
Landform: Depressions
Hydric soil rating: Yes

Niagara
Percent of map unit: 5 percent
Hydric soil rating: No

Palms
Percent of map unit: 5 percent
Landform: Swamps, marshes
Hydric soil rating: Yes

Lamson
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Wareham
Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

81A—Covert loamy sand, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 9vdn
Elevation: 600 to 1,000 feet
Mean annual precipitation: 30 to 40 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 130 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Covert and similar soils: 65 percent
Minor components: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Covert

Setting
Landform: Terraces, deltas, outwash plains
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Sandy glaciofluvial deposits

Typical profile
Ap - 0 to 7 inches: loamy sand

Bs1 - 7 to 13 inches: sand
Bs2 - 13 to 21 inches: sand
BC - 21 to 36 inches: sand
C - 36 to 72 inches: fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: About 24 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water capacity: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Windsor

Percent of map unit: 9 percent
Hydric soil rating: No

Wareham

Percent of map unit: 8 percent
Hydric soil rating: No

Jebavy

Percent of map unit: 6 percent
Landform: Depressions
Hydric soil rating: Yes

Castile

Percent of map unit: 6 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 6 percent
Hydric soil rating: No

90A—Windsor loamy fine sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9vdr
Elevation: 300 to 1,000 feet

Mean annual precipitation: 38 to 50 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Windsor and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor

Setting

Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy glaciofluvial or deltaic deposits

Typical profile

Ap1 - 0 to 2 inches: loamy fine sand
Ap2 - 2 to 7 inches: loamy fine sand
Bw1 - 7 to 15 inches: loamy fine sand
Bw2 - 15 to 21 inches: fine sand
Bw3 - 21 to 29 inches: fine sand
C1 - 29 to 54 inches: fine sand
C2 - 54 to 72 inches: fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Covert

Percent of map unit: 5 percent
Hydric soil rating: No

Chenango

Percent of map unit: 4 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 4 percent
Hydric soil rating: No

Wareham

Percent of map unit: 3 percent
Hydric soil rating: No

Jebavy

Percent of map unit: 3 percent
Landform: Depressions
Hydric soil rating: Yes

Alton

Percent of map unit: 1 percent
Hydric soil rating: No

90B—Windsor loamy fine sand, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9vds
Elevation: 300 to 1,000 feet
Mean annual precipitation: 38 to 50 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 120 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Windsor and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Windsor

Setting

Landform: Deltas, outwash plains, terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy glaciofluvial or deltaic deposits

Typical profile

Ap1 - 0 to 2 inches: loamy fine sand
Ap2 - 2 to 7 inches: loamy fine sand
Bw1 - 7 to 15 inches: loamy fine sand
Bw2 - 15 to 21 inches: fine sand
Bw3 - 21 to 29 inches: fine sand
C1 - 29 to 54 inches: fine sand
C2 - 54 to 72 inches: fine sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 99.90 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water capacity: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Covert

Percent of map unit: 5 percent
Hydric soil rating: No

Chenango

Percent of map unit: 4 percent
Hydric soil rating: No

Unnamed soils

Percent of map unit: 4 percent
Hydric soil rating: No

Wareham

Percent of map unit: 3 percent
Hydric soil rating: No

Jebavy

Percent of map unit: 3 percent
Landform: Depressions
Hydric soil rating: Yes

Alton

Percent of map unit: 1 percent
Hydric soil rating: No

750B—Minoa fine sandy loam, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: 9vd6
Elevation: 300 to 1,000 feet
Mean annual precipitation: 30 to 45 inches
Mean annual air temperature: 45 to 50 degrees F

Frost-free period: 140 to 160 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Minoa and similar soils: 65 percent
Minor components: 35 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Minoa

Setting

Landform: Deltas on lake plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Deltaic or glaciolacustrine deposits with a high content of fine and very fine sand

Typical profile

Ap - 0 to 9 inches: fine sandy loam
Bw1 - 9 to 13 inches: fine sandy loam
Bw2 - 13 to 26 inches: fine sandy loam
BC - 26 to 36 inches: fine sandy loam
C1 - 36 to 51 inches: loamy fine sand
C2 - 51 to 72 inches: fine sand

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water capacity: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F101XY006NY - Moist Outwash
Hydric soil rating: No

Minor Components

Lamson

Percent of map unit: 9 percent
Landform: Depressions
Hydric soil rating: Yes

Unnamed soils

Percent of map unit: 8 percent
Hydric soil rating: Yes

Wareham
Percent of map unit: 5 percent
Hydric soil rating: No

Niagara
Percent of map unit: 5 percent
Hydric soil rating: No

Palms
Percent of map unit: 4 percent
Landform: Swamps, marshes
Hydric soil rating: Yes

Covert
Percent of map unit: 4 percent
Hydric soil rating: No

W—Water

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

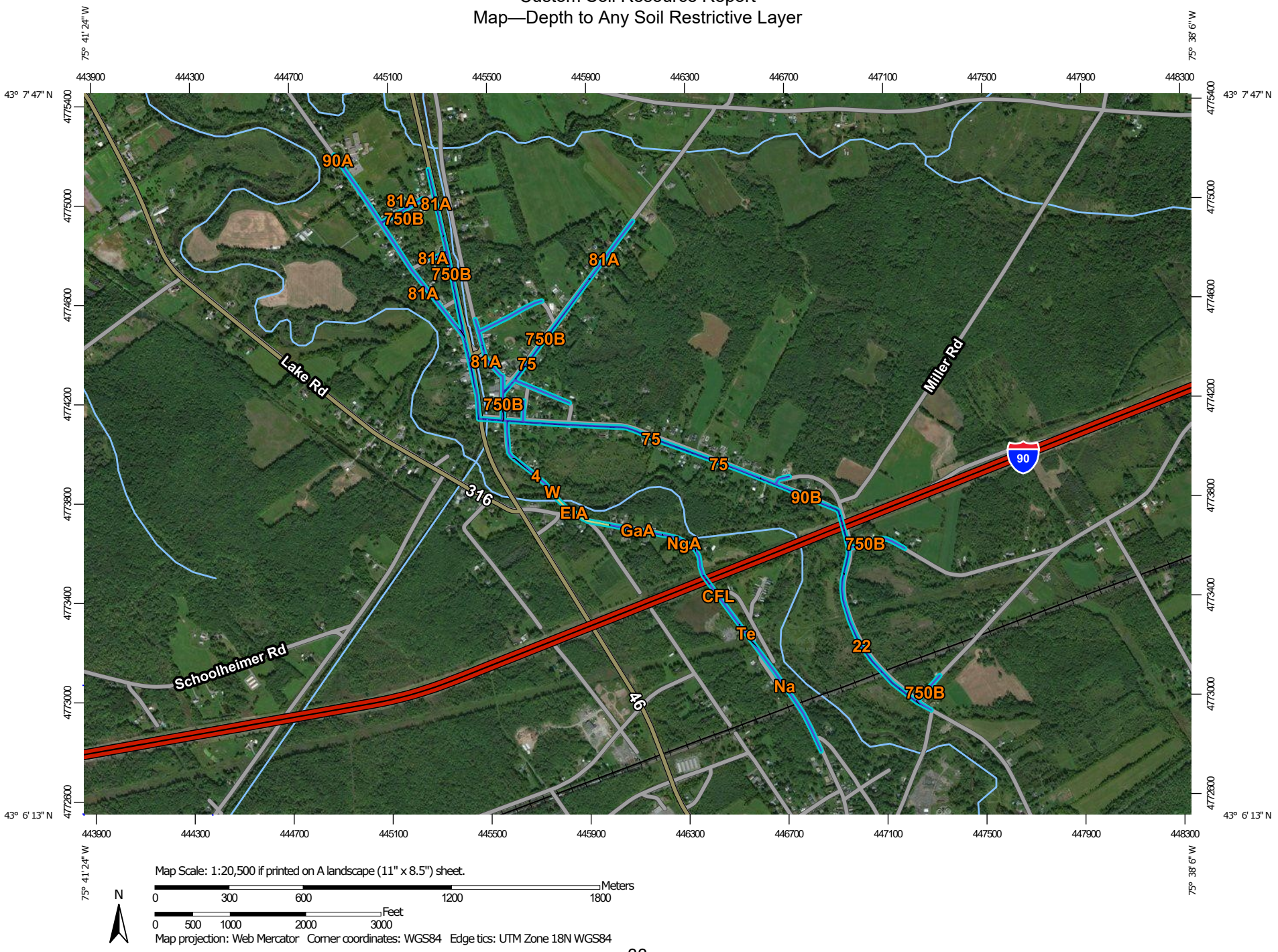
Depth to Any Soil Restrictive Layer

A "restrictive layer" is a nearly continuous layer that has one or more physical, chemical, or thermal properties that significantly impede the movement of water and air through the soil or that restrict roots or otherwise provide an unfavorable root environment. Examples are bedrock, cemented layers, dense layers, and frozen layers.

This theme presents the depth to any type of restrictive layer that is described for each map unit. If more than one type of restrictive layer is described for an individual soil type, the depth to the shallowest one is presented. If no restrictive layer is described in a map unit, it is represented by the "greater than 200" depth class.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

Map—Depth to Any Soil Restrictive Layer



Map Scale: 1:20,500 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 300 600 1200 1800

Feet: 0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Soil Rating Lines

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Soil Rating Points

0 - 25

25 - 50

50 - 100

100 - 150

150 - 200

> 200

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at scales ranging from 1:15,800 to 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Madison County, New York
Survey Area Data: Version 19, Jun 11, 2020

Soil Survey Area: Oneida County, New York
Survey Area Data: Version 23, Jun 11, 2020

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 3, 2013—Sep 27, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Depth to Any Soil Restrictive Layer

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
CFL	Cut and fill land	>200	1.3	4.0%
ElA	Elmwood fine sandy loam, 0 to 3 percent slopes	81	1.0	2.8%
GaA	Galen very fine sandy loam, 0 to 3 percent slopes	>200	0.8	2.4%
Na	Naumburg loamy fine sand	>200	2.0	5.8%
NgA	Niagara silt loam, 0 to 3 percent slopes	>200	0.6	1.7%
Te	Teel silt loam	>200	0.4	1.1%
W	Water	>200	0.1	0.2%
Subtotals for Soil Survey Area			**6.1**	**17.9%**
Totals for Area of Interest			**33.9**	**100.0%**

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
4	Wakeville silt loam, occasionally flooded	>200	0.5	1.5%
22	Udorthents, smoothed	>200	2.4	7.0%
75	Lamson fine sandy loam	>200	0.2	0.6%
81A	Covert loamy sand, 0 to 3 percent slopes	>200	7.4	21.9%
90A	Windsor loamy fine sand, 0 to 3 percent slopes	>200	0.2	0.7%
90B	Windsor loamy fine sand, 3 to 8 percent slopes	>200	1.6	4.8%
750B	Minoa fine sandy loam, 0 to 6 percent slopes	>200	15.4	45.4%
W	Water	>200	0.1	0.2%
Subtotals for Soil Survey Area			**27.8**	**82.1%**
Totals for Area of Interest			**33.9**	**100.0%**

Rating Options—Depth to Any Soil Restrictive Layer

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

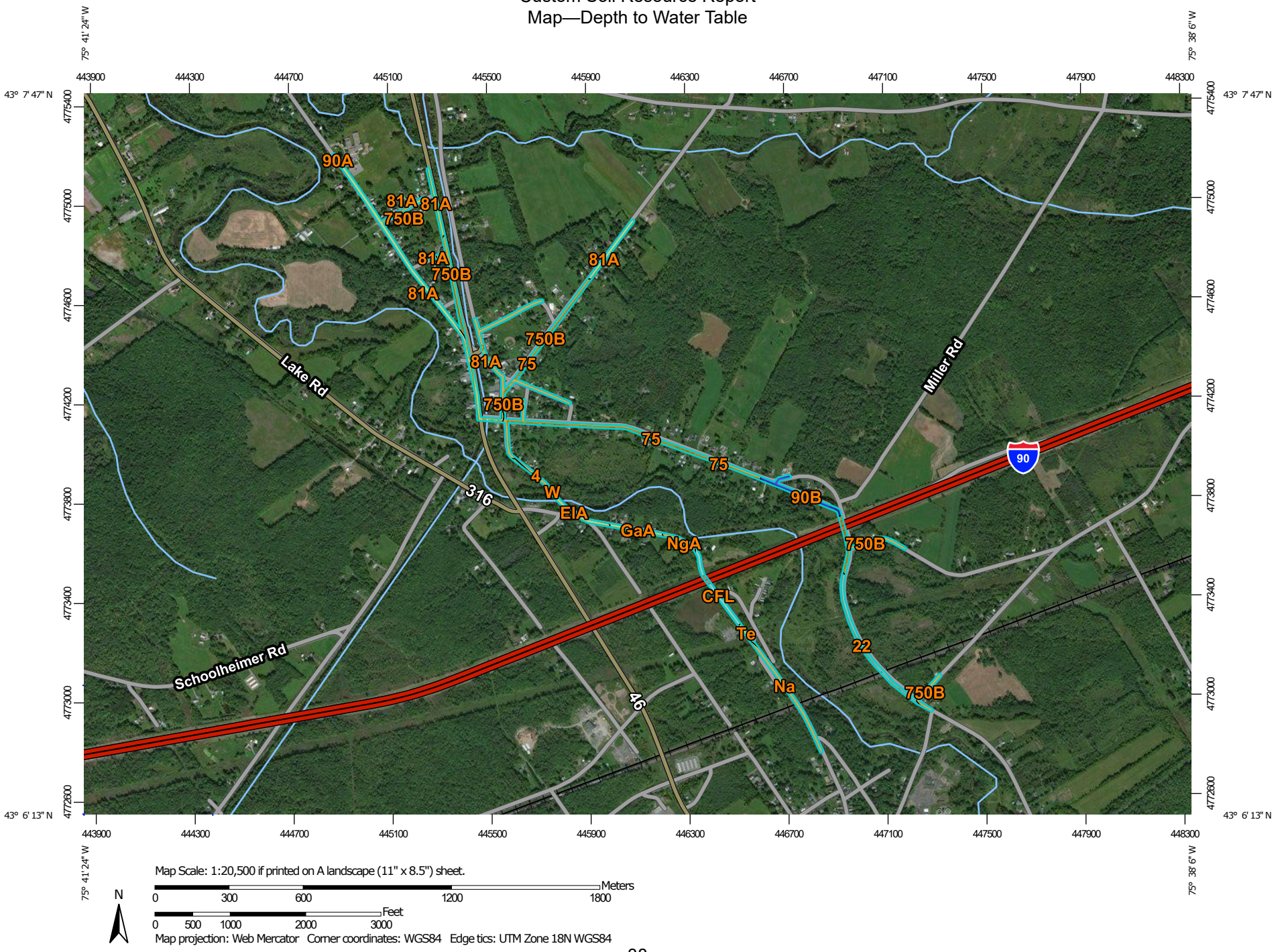
Water Features

Water Features include ponding frequency, flooding frequency, and depth to water table.

Depth to Water Table

"Water table" refers to a saturated zone in the soil. It occurs during specified months. Estimates of the upper limit are based mainly on observations of the water table at selected sites and on evidence of a saturated zone, namely grayish colors (redoximorphic features) in the soil. A saturated zone that lasts for less than a month is not considered a water table.

This attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.



Map Scale: 1:20,500 if printed on A landscape (11" x 8.5") sheet.

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Feet: 0 500 1000 2000 3000

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Major Roads

Local Roads

Background

Aerial Photography

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The soil surveys that comprise your AOI were mapped at scales ranging from 1:15,800 to 1:24,000.

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Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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Survey Area Data: Version 19, Jun 11, 2020

Soil Survey Area: Oneida County, New York
Survey Area Data: Version 23, Jun 11, 2020

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 3, 2013—Sep 27, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND	MAP INFORMATION
	imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—Depth to Water Table

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
CFL	Cut and fill land	137	1.3	4.0%
ElA	Elmwood fine sandy loam, 0 to 3 percent slopes	68	1.0	2.8%
GaA	Galen very fine sandy loam, 0 to 3 percent slopes	54	0.8	2.4%
Na	Naumburg loamy fine sand	31	2.0	5.8%
NgA	Niagara silt loam, 0 to 3 percent slopes	31	0.6	1.7%
Te	Teel silt loam	54	0.4	1.1%
W	Water	>200	0.1	0.2%
Subtotals for Soil Survey Area			**6.1**	**17.9%**
Totals for Area of Interest			**33.9**	**100.0%**

Map unit symbol	Map unit name	Rating (centimeters)	Acres in AOI	Percent of AOI
4	Wakeville silt loam, occasionally flooded	38	0.5	1.5%
22	Udorthents, smoothed	137	2.4	7.0%
75	Lamson fine sandy loam	15	0.2	0.6%
81A	Covert loamy sand, 0 to 3 percent slopes	61	7.4	21.9%
90A	Windsor loamy fine sand, 0 to 3 percent slopes	>200	0.2	0.7%
90B	Windsor loamy fine sand, 3 to 8 percent slopes	>200	1.6	4.8%
750B	Minoa fine sandy loam, 0 to 6 percent slopes	31	15.4	45.4%
W	Water	>200	0.1	0.2%
Subtotals for Soil Survey Area			**27.8**	**82.1%**
Totals for Area of Interest			**33.9**	**100.0%**

Rating Options—Depth to Water Table

Units of Measure: centimeters

Aggregation Method: Dominant Component

Component Percent Cutoff: None Specified

Tie-break Rule: Lower

Interpret Nulls as Zero: No

Beginning Month: January

Ending Month: December

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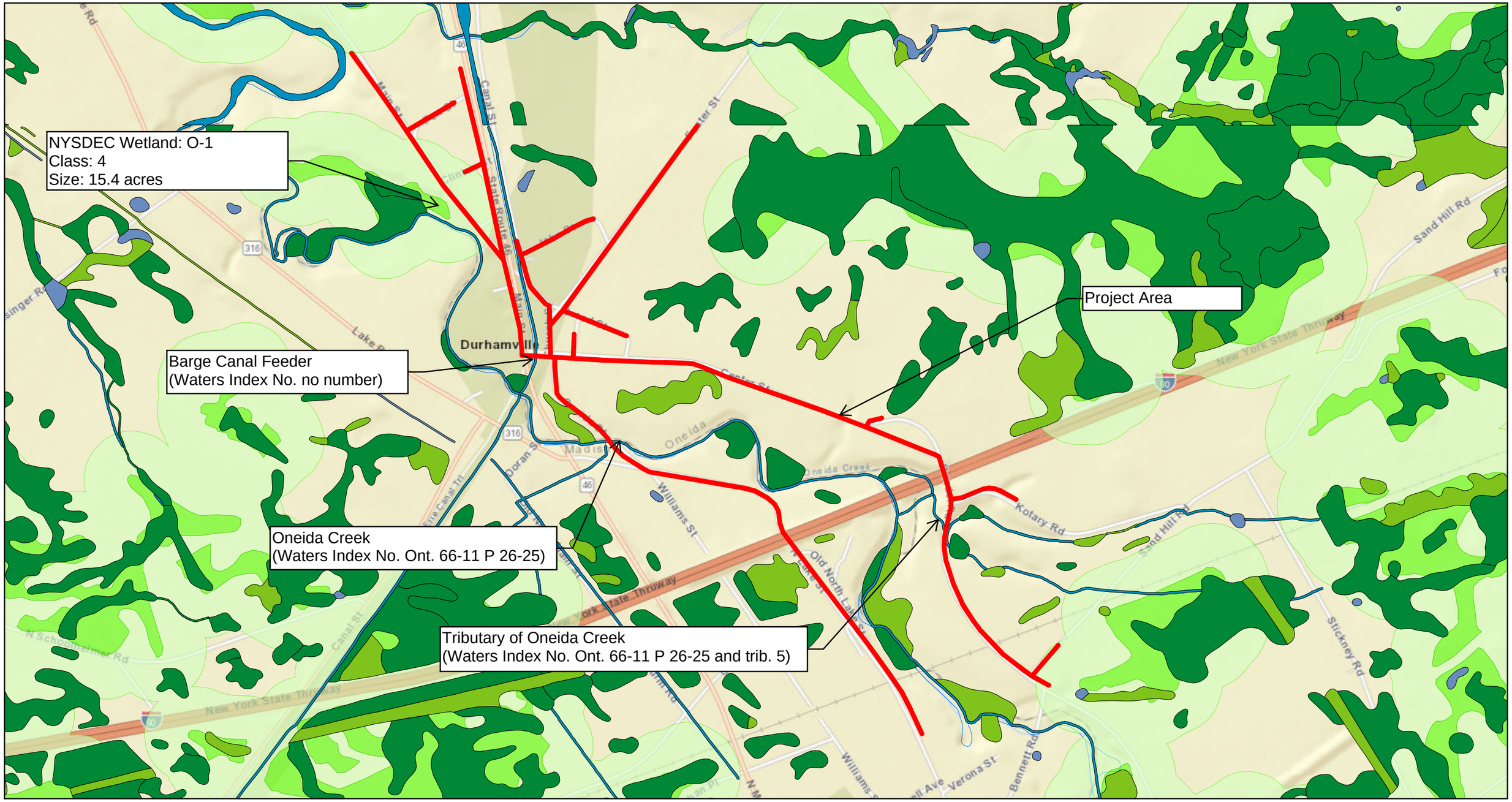
Appendix C

NYSDEC Environmental Resource Mapper Results and IPaC Report

Environmental Resource Mapper



NYSDEC Resource Key

- NYSDEC Wetland
- NYSDEC Stream

NWI Wetland Key

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

1:18,056

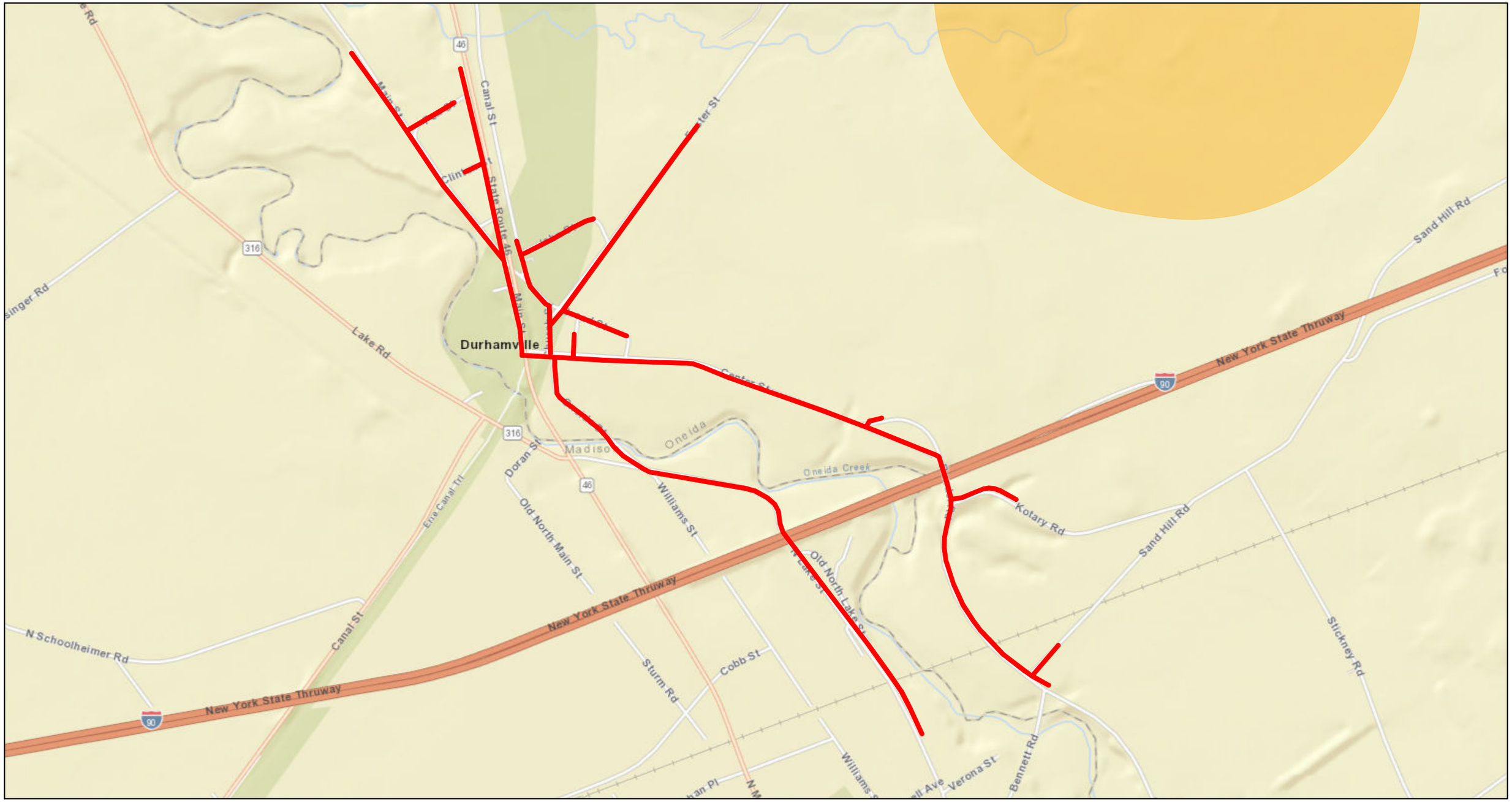
0 0.15 0.3 0.6 mi

0 0.25 0.5 1 km

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

NYS Department of Environmental Conservation
Not a legal document

Environmental Resource Mapper



Legend

- Rare Plants or Animals
- Significant Natural Communities (none in extent)
- Mussel Screening Streams (none in extent)

1:18,056

0 0.15 0.3 0.6 mi

0 0.25 0.5 1 km

Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community

NYS Department of Environmental Conservation
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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
http://www.fws.gov/northeast/nyfo/es/section7.htm

In Reply Refer To: June 24, 2021
Consultation Code: 05E1NY00-2021-SLI-3196
Event Code: 05E1NY00-2021-E-09852
Project Name: Durhamville Sewer 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:

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 (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). This list can also be used to determine whether listed species may be present for projects without federal agency involvement. 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 ESA, 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 ECOS-IPaC site at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list. If listed, proposed, or candidate species were identified as potentially occurring in the project area, coordination with our office is encouraged. Information on the steps involved with assessing potential impacts from projects can be found at: http://www.fws.gov/northeast/nyfo/es/section7.htm

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the Services wind

energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

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 ESA. Please include the Consultation Tracking Number 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

Consultation Code: 05E1NY00-2021-SLI-3196
Event Code: 05E1NY00-2021-E-09852
Project Name: Durhamville Sewer Project
Project Type: WASTEWATER PIPELINE
Project Description: The project proposes to address the need for a municipal sewer service i the proposed Durhamville Sewer District. The project proposes to develop a low pressure system within the Sewer District.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.116693,-75.65979679589448,14z



Counties: Madison and Oneida counties, New York

Endangered Species Act Species

There is a total of 0 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.

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Appendix D
NYSDAM Transmission Main Guidelines

Minimum Construction Standards for Water/Sewer Transmission Mains Located Wholly or Partially in an Agricultural District

FOR PIPELINES OF EIGHT INCHES OR GREATER OUTER - DIAMETER

The following standards apply to those portions of water/sewer transmission mains measuring eight (8) inches or more in outer-diameter, which are proposed for construction on agricultural land. The standards focus on measures that minimize or mitigate the impacts on farmland from such pipeline trenching/construction. The standards cover practical agricultural issues including: pipeline depth-of-cover, topsoil protection, waste stone/rock materials, soil rutting and compaction, existing and future farm drainage and other farm related facilities.

Pipeline Depth-of-Cover

Pipeline depth within the soil profile is important from the farming standpoint due to the permanence of a pipe's position in the soil profile. Inappropriate depth of a water/sewer line will diminish current and future farm operators' capacities to administer the scope of land-fitting practices required to meet specialized cropping needs. Such practices can range from deep tillage to the installation of subsurface tile drain lines.

From the pipeline operator's standpoint, appropriate depth-of-cover is essential for protection against puncture from surface disturbance and against bursting due to frost penetration and freeze up. A common minimum depth-of-cover employed in water/sewer pipelines is 4.5 feet.

Standard: In agricultural land, the minimum depth-of-cover from restored ground surface to top of the buried pipe will be 4.0 feet. (See "Existing and Future Farm Drainage" regarding depth adjustment.)

Topsoil Resource Protection

The topsoil layer of the soil profile is the fertile material needed for sustained crop productivity. Pipeline construction of this size range is generally ongoing through completion, regardless of soil moisture conditions, and can permanently alter the soil profile throughout the construction right-of-way.

The farm soils throughout New York State have only limited ability to recover from the concentrated disturbances of pipeline right-of-way construction activity, due to

a thin topsoil layer, humid climate and correspondingly excessive soil moisture for most of the year. Farm soils must be protected against degradation through the exercise of soil protection standards.

Standard: The full-width topsoil stripping practice should be employed over the construction right-of-way:

The topsoil ("A" horizon) should be stripped down to the top of the subsoil zone for the contiguous width of the construction work/traffic area, trench zone and trench spoil storage area.

The stripped topsoil should be segregated from all other materials in a segregated stockpile on top of unstripped topsoil at the far edge of the construction right-of-way on the side opposite from the trench and spoil side.

Trench Backfill and Waste Rock

Trench excavation for pipelines can unearth substantial quantities of stone and rock spoil from the various subsoil layers. It is important to restore the original soil profile and prevent either large rocks or concentrations of stone material used as backfill from obstructing normal farm tillage operations and disabling farm machinery. Also, if the backfilling phase is completed while there is water in the pipeline trench, long stretches of right-of-way with prolonged soil saturation conditions can occur. Such saturated soil conditions can result in significant restoration difficulties and delays.

Standard: The pipeline trench should be thoroughly dewatered prior to backfilling. The trench should be backfilled with the excavated spoil material and compacted during backfilling to minimize trench settling.

Topsoil should not be used as trench-backfill and should remain in its segregated stockpile until all deep ripping and stone removal work is completed.

On agricultural land, blasted or excavated bedrock, boulders and concentrations of excavated stone or rock materials should not be returned to the trench any closer than 24 inches from the exposed work surface of the stripped portion of right-of-way. The remainder of the backfill should be limited to suitable subsoil material, backfilled up to the top of the exposed work surface. Excess waste rock/stone materials should be removed and disposed of safely.

Deep Ripping and Stone Removal

The dense compaction of the exposed subsoil (i.e., the spoil storage area, backfilled trench and construction work and traffic area) must be alleviated together with stone removal prior to the subsequent stages of topsoil replacement and final subsoil shattering.

Standard: During periods of relatively low to moderate subsoil moisture, the exposed right-of-way shall be returned to rough grade; deep ripped with heavy duty ripper; and, alternately deep chiseled and rock-picked until uplifted stone/rock materials of four inches and larger size are cleaned off the site and disposed of properly. In subsoils with excessive stony-rocky material in the upper layer, an alternate ripping/stone removal plan should be developed and submitted to the Department of Agriculture and Markets for review in advance of project construction.

Topsoil Replacement and Subsoil Shattering

Standard: After the initial subsoil ripping, chiseling and stone removal has been completed, the segregated topsoil materials should be uniformly spread across the stripped portion of right-of-way.

Topsoil spreading should be conducted only during periods of low to moderate soil moisture to avoid rutting, mixing and recompaction of the soil profile. Topsoil spreading should not be conducted during periods of saturation or frozen ground. Alternative plans should be prepared for suspension of topsoil spreading under such conditions, and soil restoration work should not resume until appropriate moisture conditions occur during the following season.

After topsoil replacement, final subsoil shattering using a deep 4-shank paratill with narrow leg spacing should be conducted throughout the disturbed right-of-way to a depth of 18 inches. Large, uplifted rock materials should be picked from the surface and disposed of properly.

Final subsoil shattering and rock removal should be conducted only during periods of low to moderate soil moisture and not during periods of saturation or frozen ground. Final subsoil shattering and rock picking should be suspended when saturated or frozen soil conditions occur. This final phase of restoration

can be completed when appropriate moisture conditions return the following season.

Existing and Future Farm Drainage

Surface drainage ways for storm runoff and for the outletting of subsurface drain lines are afforded agricultural lands by natural creeks, swales, ditches, diversion terraces, etc. Subsurface drainage is managed through installed practices of random and pattern tile drain lines. Protection of existing surface and subsurface drainage is important for crop productivity as is the capacity to install future tile drain lines and maintain ditches.

Standard:

Existing Drainage

Surface drainage systems affected by the pipeline project should be protected and their function maintained by temporary fluming. Earthen berms of surface drainage systems (e.g. diversion terraces) should not be breached. Where breaching is unavoidable, the earthen berm should be fully restored by engineering methods and materials consistent with the specifications of the USDA Soil Conservation Service.

All severed tile drain lines should be repaired, maintaining original gradient, using methods and materials consistent with the standards of the NYS Department of Agriculture and Markets. All repairs and protective pipe sleeving or supportive channel iron should be shouldered firmly at least three feet beyond the limit of the water/sewer line excavation.

Future Drainage

During project planning and design, all operators of affected farmland should be inventoried for future locations of surface or subsurface drainage. All such locations should be noted in the design.

Depth and gradient for such future surface or subsurface drainage installation, consistent with USDA Soil Conservation Service engineering specifications, should be accommodated by appropriate engineering of the depth-of-pipeline.

Control of Water Piping, Soil Saturation and Seeps

Pipeline trench excavation in and immediately upgrade from agricultural areas can alter the natural stratification of soil horizons and natural soil drainage patterns.

Standard: The pipeline right-of-way should be monitored for at least one year following restoration for surface seeps and areas of prolonged soil saturation. Such measures as subsurface intercept drain lines should be used to prevent surface seeps and the seasonally prolonged saturation of the backfilled trench zone and adjacent areas. Intercept drain lines should be installed according to the specifications of the USDA Soil Conservation Service.

Revised: 10/16/02

Appendix E

NYSDEC's 2009 and 2016 Waterbody Inventory for the Oswego River/ Finger Lakes Drainage Basin

Oneida Creek, Lower, and tribs (0703-0032) MinorImpacts

Waterbody Location Information

Revised: 09/28/2009

Water Index No:	Ont 66-11-P26-25			**Drain Basin:**	Oswego-Seneca-Oneida
Hydro Unit Code:	04140202/080	**Str Class:**	C		Oneida River
Waterbody Type:	River			**Reg/County:**	6/Oneida Co. (33)
Waterbody Size:	58.6 Miles			**Quad Map:**	SYLVAN BEACH (I-18-1)
Seg Description:	stream and tribs, from mouth to Oneida				

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Aquatic Life	Stressed	Known
Recreation	Stressed	Suspected

Type of Pollutant(s)

Known: NUTRIENTS (phosphorus), SILT/SEDIMENT
Suspected: Pathogens, Unknown Toxicity
Possible: - - -

Source(s) of Pollutant(s)

Known: AGRICULTURE, MUNICIPAL (Sherrill WWTP), STREAMBANK EROSION, URBAN/STORM RUNOFF, OTHER SANITARY DISCH, On-Site/Septic Syst
Suspected: - - -
Possible: - - -

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 4 (Source Identified, Strategy Needed)
Lead Agency/Office: DOW/Reg6 **Resolution Potential:** Medium
TMDL/303d Status: n/a

Further Details

Aquatic life support and recreational uses in Oneida Creek are known to experience minor impacts due to nutrient and silt/sediment loadings and other pollutants from municipal inputs and agricultural and other nonpoint sources. Failing and/or inadequate on-site wastewater systems also contribute to impacts in some of these waters.

A biological (macroinvertebrate) assessment of Oneida Creek in Durhamville (at Foster Street) was conducted in 2001. Sampling results indicated slightly impacted water quality conditions. Nonpoint source nutrient enrichment and possible toxicity were indicated by the sample. Although aquatic life is supported in the stream, nutrient biotic evaluation indicates the level of eutrophication is sufficient to stress aquatic life support. (DEC/DOW, BWAM/SBU, June 2005)

The sanitary sewer collection system in the City of Sherrill just above this reach experiences sanitary sewer overflows (SSOs) during high flow events such as rain storms and snow melt. Violations of the city wastewater treatment plant (WWTP) discharge permit also occur during wet weather events. During severe weather excessive infiltration and inflow into the collection systems results in flows to the WWTP that are 3.5 times greater than the design flow of the plant. In

the spring of 2009, DEC Regional staff reported that about 1.1 million gallons of untreated SSO discharge entered the creek. (DEC/DOW, Region 6, September 2009)

Both urban runoff (from City of Oneida) and agricultural nonpoint sources from the surrounding lands contribute nutrients and silt/sediments to the stream. The Central New York RPDB has conducted monitoring and issued reports characterizing the sediment loads from the creek to Oneida Lake as excessive. The creek is a spawning trib for warmwater fishery of Oneida Lake.

Raw sewage discharges from homes in the Durhamsville area to the storm sewer system and the river have been observed and documented. Soil conditions for on-site septic systems are generally less than ideal and past surveys have found that only about one-third of systems operate properly. (DEC/DOW, Region 6, May 2007)

This segment includes the portion of the stream and tribs from the mouth to Sconondoa Creek (-6) in Oneida. The waters of this portion of the stream are Class C. Tribs to this reach/segment, including Brandy Brook (-4), are also Class C. Sconondoa Creek (-6) and Upper Oneida Creek are listed separately.

Appendix F

Oneida County Health Department (OCHD) Letter of Support

ONEIDA COUNTY HEALTH DEPARTMENT

Adirondack Bank Building, 5th Floor, 185 Genesee St., Utica, NY 13501

ANTHONY J. PICENTE, JR.
ONEIDA COUNTY EXECUTIVE

ENVIRONMENTAL HEALTH DIVISION

DANIEL W. GILMORE, PH.D.
ACTING DIRECTOR OF HEALTH

Phone: (315) 798-5064 Fax: (315) 798-6486

January 7, 2010

OWEN WALLER
SUPERVISOR OF THE TOWN OF VERONA
6600 GERMANY ROAD
DURHAMVILLE NY 13054

Re: **Sewage Treatment Systems – Verona and Durhamville hamlets**

Dear Supervisor Waller:

The Oneida County Health Department (OCHD) provides limited oversight regarding sewage treatment systems in Oneida County. Facilities regulated by the OCHD (e.g. restaurants, campgrounds, mobile home parks) are required to meet the applicable provisions of Public Health Law and State Sanitary Code. The OCHD does not have an individual Septic System program. Therefore, regulatory authority over individual unregulated private property is limited to review and approval of new construction "alternative design" septic systems, and investigation of Public Health Nuisance or hazard conditions.

The OCHD regularly responds to complaints related to inadequately treated sewage throughout the county. Many of these complaints are a result of inadequately treated sewage appearing on the surface of the ground. This condition in a residential neighborhood is cause for concern and could be deemed a Public Health Hazard that requires OCHD ordered remediation.

Over the last few years, several complaints have been investigated at homes in both the Hamlet of Verona and the Hamlet of Durhamville. Many of these resulted in orders to correct, remediate, repair or replace septic systems. In addition, recent reviews of engineered plans have been conducted in response to problems with individual septic systems in these areas. One of the biggest concerns noted in most situations is the fact that existing septic systems are inadequate for typical household use. Alternative Design septic systems are often required in these areas to replace the existing seepage pit or Conventional septic systems due to poor soil characteristics (e.g. clayey soils, high groundwater). In addition, most of these systems cannot meet the Appendix 75-A requirements for separation distances or system size due to lot size constraints. Although the OCHD and local codes department personnel try to ensure full compliance with the requirements, replacement systems may not be able to meet the regulations. Therefore, the installed systems are "as close as possible" to applicable requirements.

In each of the complaints and investigations, the primary concern is the potential for human exposure to untreated or poorly treated waste. Although most people are conscientious about limiting exposure to untreated sewage by dealing with the problems and limiting access to the failing system components, there are concerns that exposure may be a larger problem.

During water system inspections, water operators for the Town of Verona have related anecdotal reports of complaints received related to problems with an individual home's septic system that is "connected to the municipal septic system" in Durhamville. There is no municipal septic system in the hamlet, but it

has been reported that sewage overflows and storm water drainage have flowed into a depressed area in the center of the hamlet off of NYS Route 46.

Fortunately, most of these areas are served by publicly available municipal water, namely the Verona Hamlet Water District (PWS ID#NY3203517) and the Durhamville Water District (PWS ID#NY3230025) that provide water purchased from the City of Oneida Water System. It is expected that all or most individual water sources have been disconnected and do not serve as domestic water sources. However, there could be individual properties that are not connected to the public water service due to property owner desire, property locations or other limitations. These properties would be of great concern regarding the potential for inadequately treated sewage on the same property or neighboring properties.

The noted operation of inadequately functioning septic systems in high density residential areas is of great public health concern. **Based upon the experience of this department, information provided above and records on file, the OCHD strongly supports the development of a public, municipally-owned and operated wastewater collection and treatment system to serve the hamlets of Verona and Durhamville in the Town of Verona, Oneida County, NY.** The result of the creation of municipal sewage systems will be the reliable removal of wastes from the areas thereby eliminating the existing or potential public health hazard conditions due to failing individual onsite septic systems. The people of the area will have a safe and dependable means for eliminating wastes long into the future with none of the same concerns noted with the current individual on-site septic systems.

Please contact me at 315-798-5064 if you have any questions regarding our support of the referenced projects.

Sincerely yours,

Sean Clive
Principal Public Health Sanitarian

cc: Mr. Daniel Gilmore, PhD, OCHD
Ms. Susan Batson, OCHD
Mr. Jeffrey Rowe, PE, Barton & Loguidice, P.C.
Mr. John Strepelis, ME, PE, NYSDOH – Syracuse
File – Town of Verona Sewage

Oneida County Health
Department
Environmental Health Division

Complaint 02/44

Sewage Disposal in the Hamlet of Durhamville

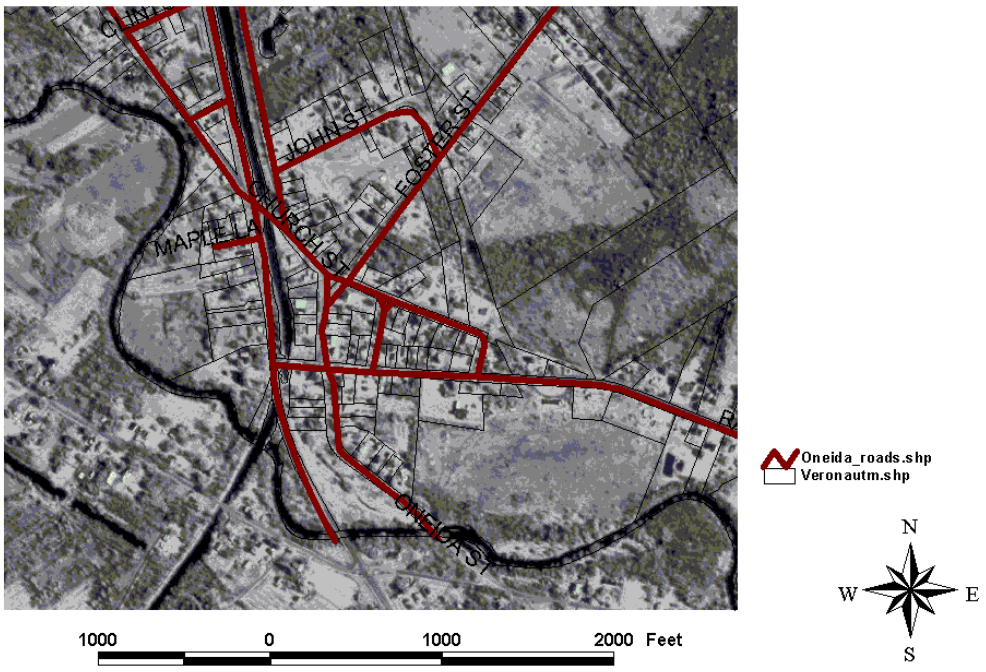
Town of Verona

Investigation of April 10, 2002 by:

Joseph S Robertaccio P.E.

Public Health Engineer

The Hamlet of Durhamville



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The Complaint:

On April 5, 2002 Mr. Jim Mariani of the City of Oneida Water Department lodged a complaint of raw sewage draining into a catch basin at the intersection of Oneida Street and Randal Street in the Hamlet of Durhamville. The catch basin was reportedly on the property of the church located at that intersection.

The Investigation

On Wedensday April 10, 2002 Mr Joseph Robertaccio P.E. made a site inspection to the area in question and located the catch basin.



The catch basin in question is located in the fore ground of this photograph.



A photograph looking into the catch basin at the intersection of Randal Street and Oneida Street.

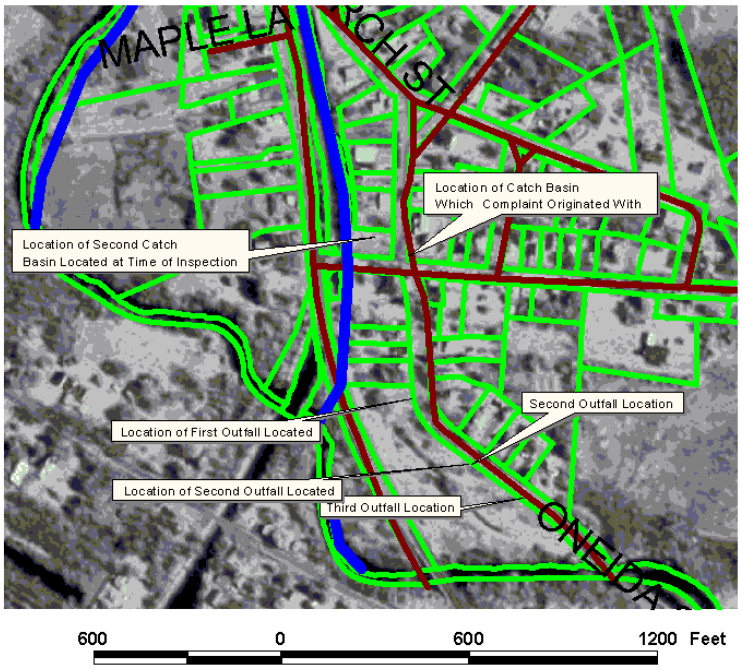
Careful inspection of the area indicated that one of the drain pipes draining tin the basin came from the north side of Randal Street while the other pipe ran up Oneida Street.



Observation of pavement cracks and observation of topography revealed the direction of flow of the drainage pipes from this drainage basin flowed.

At the time of inspection Town of Verona Highway Department personnel were servicing a ditch approximately 150 feet to the east of the site and I was able to determine through observation that no septic could be introduced into this drain pipe from anywhere prior to it becoming encased since none was observed at the time of inspection.

The Location of Outfalls and Catch Basins Located During Complaint Inspection in Hamlet of Durhamville



Prepared by:
Joseph Robertaccio P.E.
Public Health Engineer
Oneida County Health Department
520 Seneca Street
Utica, NY 13501
April 16, 2002

Water.shp
Canal and Streams.shp
Oneida County Roads.shp
Verona Property Parcels.shp

N
W E
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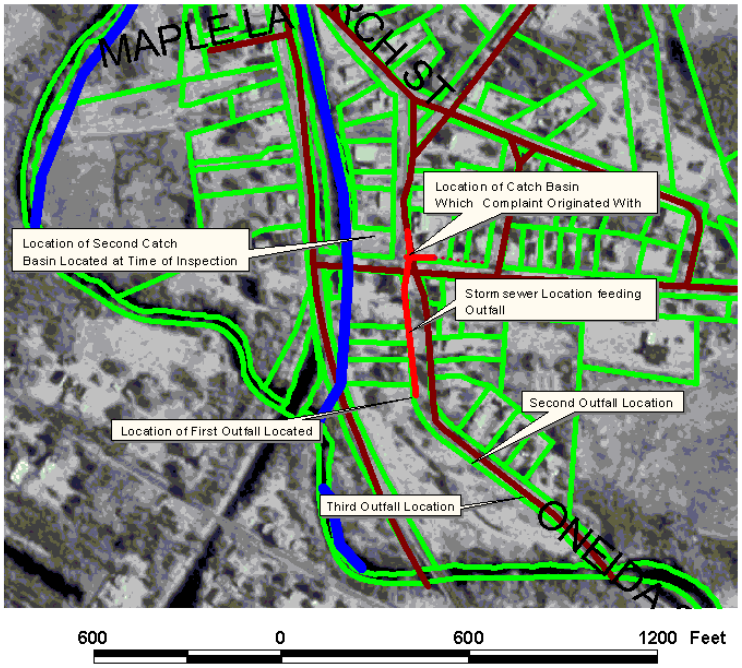
At this point Mr. Robertaccio began to trace the lines and located a second catch basin to the west-north west of the first catch basin. This basin was full of water and the water was not moving. Mr. Robertaccio theorized this water may discharge into the Old Erie canal which was less than 100 feet to the west of the catch basin.

Mr. Robertaccio traced the drain line following the natural topography and found a discharge point. From the smell and the color of the water Mr. Robertaccio determined that the storm drainage system is acting as a combined sewer, and that this outflow point would constitute a combined sewer outflow (CSO).

The Location of Combined Sewers Known to be Feeding Outfalls Located During Complaint Inspection in Hamlet of Durhamville



Prepared by:
Joseph Robertaccio P.E.
Public Health Engineer
Oneida County Health Department
520 Seneca Street
Utica, NY 13501
April 16, 2002



The first of three combined sewer outfalls located in Durhamville. The debris covering the outfall was used either to hide its existence, or more likely to limit access to the area.

While gathering the location of this outfall Mr. Robertaccio was approached by a man who was walking his dog. The gentlemen identified himself as Mr. William McNeil of 5258 Oneida Street in the hamlet of Durhamville.

Mr. McNichol identified himself as a life long resident of Durhamville and appeared to have an intimate knowledge of the area, and the drainage system. Mr McNichol stated, to the best of this knowledge, all of the houses (save 1 or 2) in the hamlet discharge their septic tank effluent into the drainage system. Mr. McNichol's then pointed out two additional out falls located further down Oneida Street. Mr. Robertaccio then proceeded to investigate these additional outfalls, and from the smell and water color, it appeared that Mr. McNichol's comments appeared to be accurate.



Another of the Durhamville stormwater outfalls which apparently are acting as a combined sewage outfalls (CSOs). Note the masonry work on outfall structure.

Mr. Robertaccio returned to the office and discussed the matter with Mr. Nicholas DeRosa, Supervising Sanitarian. Mr. DeRosa noted a taskforce had been formed by the communities boarding the creek in an effort to look at the sewage issue as a whole. Mr. DeRosa requested Mr. Robertaccio write up his findings and that the taskforce would discuss the issue.

General Observations:

Background

The hamlet of Durhamville was reportedly found circa 1811[i]. The hamlet proper was generally laid out in the era 1811-1850.[ii] During the mid 19th century this region was a major boat building center, and its name was associated with freight boats which plied the Erie Canal until the end of the 19th century.[iii]

However, this type of "village" layout predated the sanitary revolution (circa 1890-1915). The village was laid out with the expectation that water would be supplied by a community well and that sewage disposal would be via pit privies. This lead to a community layout with relatively small lots, since the sewage disposal would only require an "foot print" of less than 10 square feet for an outhouse.

However, the coming of the sanitary revolution of the 1890's-1915 era ushered in indoor plumbing. This in turn required a larger "foot print" to facilitate sanitary disposal due to the use of water to convey the wastes out of the house, and the subsequent need for the contaminated water to be disposed of.

During Mr. Robertaccio's investigation of this complaint he was able to observe, from one of the grates the method of construction of at least one of the storm sewers/combined sewer outflows. This structure was constructed out of brick, and the outfall of another of the structures was constructed out of cement. The style of the brick work, and the concrete work which was observed was consistent with dating from the 1890-1915 era, possibly dating as late as the late 1930's.[iv]

This is not to say that the entirety of these structures date from this earlier era, but that the main portion of these structures were built in this area. It was apparent that maintenance has been done of the stormdrain potions of the septic systems as evidenced by the modern gratings covering the catch basins.

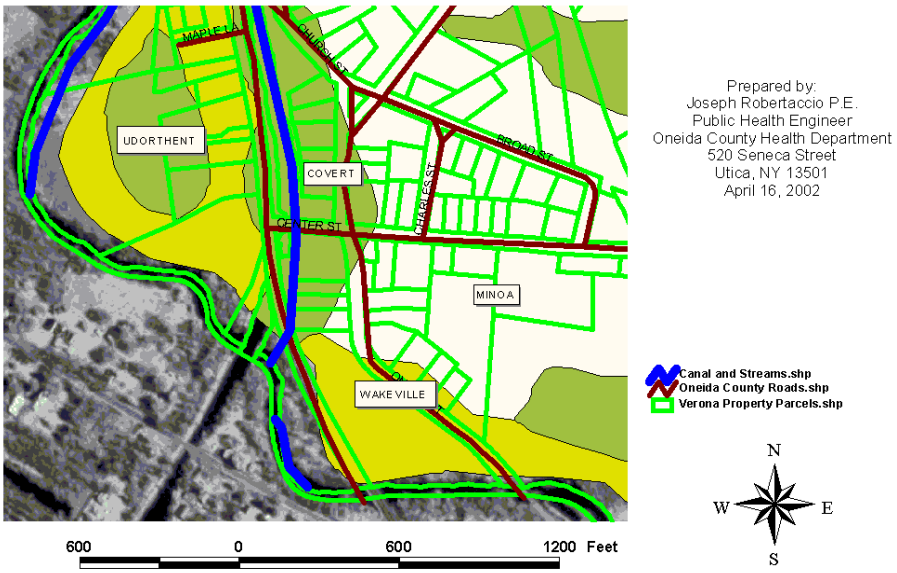
Mr. McNichol's indicated during our discussion that he had lived in the hamlet at least since the 1950's, and the situation with septic tank discharging into the storm sewers had always been that way during his life time.

Soils Classifications and Information

The flowing soils classification and mapping were made by the Oneida County Soil and Water Conservation District. This information was made available to the Oneida County Health Department through the Oneida County GIS Working Group.

The detailed descriptions of the soils located in Appendix a are available online from the Natural Resources Conservation Agency (Formerly USDA Soil and Water Conservation Service).

Soils Classifications Underlying the Hamlet of Durhamville



A review of the soils data for these soils classifications most simply describes them as follows:

Covert soils- limitation: High groundwater levels from 2 to 3.5 feet below ground surface

Wakeville soils- limitation : Associated with flood plains and flooding

Minoa soils-limitation: poor permiabilility (i.e poor percolation rates)

With these soils it would apparently require an alternative design septic disposal system such as a raised system or a sand filter and mound system to properly disposal of septic wastes onsite[v]. This is due to the high groundwater levels and or slow percolation of the soils.

It can be expected that these septic systems would require a foot print as follows:

Baseline septic foot print for raised system:

Basal area:
450 gpd/0.2 gpd/sf = 2250 sq. feet required for a standard 3 bedroom house without septic tank.

If we add to this the minimum separation distances for a septic system from a house, septic tank etc we would need at least an additional 200 square feet[vi]. This would require at least 2450 square feet. With some of the lots having only 6000 square feet, this indicates a properly designed septic system of this type could not be developed for these sites

Baseline for Mounds

Basal area of mound

If septic percolation rate is greater than 60 minutes per inch but less than 120 minutes per inch:

Basal area:
450 gpd/0.2 gpd/sf = 2250 sq. feet required for a standard 3 bedroom house without septic tank.

If we add to this the minimum separation distances for a septic system from a house, septic tank etc we would need at least an additional 200 square feet[vii]. This would require at least 2450 square feet. With some of the lots having only 6000 square feet, this indicates a properly designed septic system of this type could not be developed for these sites

If septic percolation rate is less than 120 minutes per inch:

Divide the daily loading (450 gpd) by the application rate given in Appendix 75A, 10NYCRR Table 4B, and ad an additional 200 square feet for the septic tank and separation distance from a structure.

Baseline for Intermittent Sand Filter

Intermittent Filter Area:

450 gpd/1.15gpd.sf = 517.5 sq feet for filter

add downstream mound area

450gpd/1.2 gpd for filter effluent receiving mound =375 sq feet

add 200 square feet for septic tank and 200 square feet for filter effluent mound pumpstation and you get a final minimum area of 1293 sq feet. However, separation distances can not be maintained on most of the homes

Evapo-Transpiration Absorption Systems:

Not applicable due to average levels of precipitation in the region approaching the evapo-transpiration rate.

Summary of Onsite Systems:

Although some sites in Durhamville could be served by alternative design septic system, they would only solve the problem for a small number of the households in this area[viii].The only practical solution to this problem is the installation of community sewerage collection and disposal systems.

Review of Departmental Records on situation:

Referrals On File

The following complaint referrals in this area were found on record with the Oneida County Health Department:

Complaint Number: (Year/Complaint Number)	Complaint Location:
HO1-67	3418 Center Street
96/98	3289 Center Street
1992 (no complaint Number)	3297 Center Street
88/202	Randel Road
86/44	5300 Church Street, Durhamville
84/264	Main Street, Durhamville
87/187	Center Street Durhamville

One of the difficulties with actually knowing if these locations are at the same location is due to the differences between local names and postal names on some roads. Another factor making it difficult to determine if we have the same complaint coming in over a period of years was the conversation of Oneida County addresses to 911 addresses in the late 1990's.

However, it appears there is an extensive history of complaints of the sewage type in this region.

Alternative Design Septic Plans on File:

Since 1978 the Oneida County Health Department has required the review and approval of all new alternative design septic system plans pursuant to Appendix 75-A of 10 New York Codes Rules and Regulations Section 75-A.9. From 1978 -September of 1991, all alternative design septic system needed to be approved by the Oneida County Department of Health.

Since 1991, only plans for new construction have required the approval of the Oneida County Department of Health (existing home septic replacements was transferred to the local codes enforcement officer under Technical Reference CSFP 526).[ix]

Plan on File	Location
A-38	Foster Corners Rd
A-76	Foster Corners Road

A-95	Center Street
A-113	Higginsville Road
A-141	Main Street
A-199	Foster Street
B-34	Foster Road

From the above data it appears, at least, that a septic problem exists in region of the Town of Verona, and it also appears to be limiting the potential for growth in this region.

Reports on File with the Oneida County Health Department

A review of Departmental files indicates that a waste water study was done by Barton and Loguidice Engineers in 1998.[x] The Barton and Loguidice reports gravity sewers with a forced main pumping either to a Town of Verona Waste Water Treatment Plant (WWTP) or to the City of Oneida WWTP. Barton and Loguidice note that they believe that their daily flows would be in the area of 25,000 gallons per day.[xi]

The New York State Department of Environmental Conservation NYSDEC did an analysis on the Oneida Creek basin and reported their findings in a memo dated April 13, 1994.[xii] Of greatest import in this memorandum was item 1).[xiii]

In the subsequent memo of October 24, 1994, Mr. Samide notes his greatest concerns are :

1. The water quality, primarily DO (Dissolved Oxygen), is not that great in such areas to begin with

2. That discharge to such a location, where the downstream progress of the streams flow is impeded by the lake's water, might result in unacceptable adverse impacts right in the vicinity of the discharge

At least one of these factors, the low levels of dissolved oxygen exhibited in the waters of Oneida Creek, it maybe reasonable explained by the combined sewer outflows observed.

Mr John Pronko P.E. of the New York State Department of Environmental Conservation (NYSDEC) also brought to Mr Robertaccio's attention a 1980 sewer study entitled: "Comprehensive Wastewater Management Study Plans of Study for Primary Study Communities". This study was prepared by Wright-Pierce Architects and Engineers for the Herkimer Oneida Counties Comprehensive Planning Program and the New York State Department of Environmental Conservation. Page 5 of this study gives the planning area investigated in the Durhamville area while pages 9 through15 detail site conditions. Of specific interest is figure 5 on page 13 of this report which locates a series of known and suspected septic discharges. It appears the situation remains unresolved inthat these points, to a large degree, agree with Mr. Robertacco's field observation conducted 22 years after the publication of this report.

Analysis of Data

From the report prepared by Barton and Loguidice PC we get a water flow of 25,000 gpd for the hamlet of Durhamville[xiv].

From Salvato[xv] we find that septic tank effluent usually has the following characteristics for septic tank effluent:

Bacterial Count:	76,000,000
Coliform MPN	110,000,000
Color	3.5
Turbidity (mg/L0	50
Odor	4.5
Suspended matter	3
PH	7.4
Temperature	17 degrees C
Biological Oxygen Demand (BOD), 5- day (mg/l)	140
Dissolved Oxygen (DO) (%)	0
DO saturation (%)	0
Nitrogen (total) (mg/L)	36
Free Ammonia (mg/L)	12
Organic nitrogen (mg/L)	12
Nitrites (mg/L)	0.001
Nitrates (mg/L)	0.12
Oxygen Consumed (mg/L)	80
Chlorides (mg/L)	80
Alkalinity (mg/L)	400
Total Solids (mg/L)	820
Suspended solids (mg/L)	101

From the above table it would be easiest to convert those items we need into to the traditional English units. Thus to convert BOD from mg/L to lbs/gallon we would:

pounds (lbs)/Kilogram(Kg) * 1/1000000 Kilogram/ Milligrams(mg) * 3.71 liter (L)/gallon(gal)

We get a conversation factor of .000008162 lbs/gallon to convert from mg/L

Thus the BOD of 140 mg/L would be multiplied by the conversion factor (0.000008162) to get a final BOD in pounds per gallon of septic tank effluent of:

BOD: 140 * 0.000008162 = 0.00114268 lbs./gallon

If we now multiply this number times the 25,000 gallons per day sewage flow as noted in Barton and Loguidice's Report we get:

BOD of 0.00114268 pounds/gallon * 25,000 gallons/day = 28.5 pounds/day

BOD requires approximately 28.5 pounds of oxygen are needed to digest this sewage every day which would need to be contributed by the stream.

Discussions with New York State Department of Environmental Conservation (NYSDEC)

On Friday afternoon, April 12, 2002 Mr. Joseph Robertaccio of the Oneida County Health Department contacted Mr. Skip Shoemaker PE of the New York State Department of Environmental Conservation on this matter. Mr. Shoemaker related that NYSDEC was working with a regional taskforce dealing with this item. This year NYSDEC will be conducting environmental water quality testing in this entire region. Based upon the results of this testing, these water bodies will be put on the New York State Priority water body listing.

It is the intent of the New York State Department of Environmental Conservation, once these water are listed priority water bodies New York State Department of Environmental Conservation will take actions against individual polluter's be they municipalities or individuals.

For this reason, New York State Department of Environmental Conservation is planning the following timetable:

2002	Water Quality Testing by NYSDEC
2003	Re-listing the water bodies effected as "Priority" Water Bodies
2004	Enforcement of Article 17 of NYS DEC Law against any and all violators unless corrections are under way or imminent.

Mr. Shoemaker noted that his experience shows that a sewer cost of approximately $400-$500 per household per year can be expected with projects of this size.

Mr. Shoemaker agreed with Mr. Robertaccio's assessment that development in this area of Oneida County is being stifled due to the lack of adequate, sanitary sewers in this region.

The Economics of Sewers

Mr. Shoemaker intimated in our conversations that the proposed cost of the necessary upgrades to the City of Oneida Sewage Treatment facility, and the sewage collection facilities, will cost in the area of 8 to 10 million dollars. Mr. Shoemaker also indicated that the cost of these improvements will be bore by those for whom the expansion was constructed for.

Mr Robertaccio calculated that a 9 million dollar bond, with $500 per year payments with a 4% interest rate would be calculated as follows:

Present Value = $9,000,000

Annuity = ($500.00/ 4)(number of households) = $125/ calendar quarter(#Houses)

Interest rate: assume 4%

Number of payments: 4 payments per year (quarterly), multiplied by 20 years = 80 payments

From Mechanical Engineer's Reference Manual, 9th edition[xvi] we choose the column (A/P) 4% interest rate, 80 payments to determine the payments the municipalities will need to make to pay off the $9,000,000 debt:

$9,000,000*(0.0418) = $376,200 dollars needed to be collected per calendar quarter by the municipalities involved to pay off their capitol debt.

To find the number of houses needed to "break even" (the number of houses needed to pay $125.00 per quarter) we would:

$376,200 per quarter/$125 per household per quarter = number of households needed to be served = **3010 households need to be served to break even at $500 per year capitol debt at 4% interest over 20 years.**

Needless to say, there exists a great need for grants to make this project truly feasible.

Bibliography

Books and Manuals

Technology Transfer Manual, Alternative Wastewater Collection Systems, United States Environmental Protection Agency, Office of Research and Development, Office of Water, Washington DC 20460, EPA/1-91/024 Published October of 1991

Design Manual, Onsite Wastewater Treatment and Disposal Systems Systems, United States Environmental Protection Agency, Office of Water Program Operations, Office of Research and Development, Municipal Environmental Research Laboratory, Cincinnati Ohio and Washington DC 20460, EPA/625/1-80-012 Published October of 1980

Environmental Engineering And Sanitation, Joseph Salvato P.E., Third Edition published by Wiley-Interscience, John Wiley & Sons, New York 1982

Appendix 75-A, 10 New York Codes Rules and Regulations (10NYCRR) Wastewater Treatment Standards-Individual-Household Systems, effective date December 1, 1990 Published by the New York State Department of Health, Albany (now in Troy), New York

Design Standards for Wastewater Treatment Works 1988, Intermediate Sized Sewerage Facilities, published by the New York State Department of Environmental Conservation, Division of Water, Albany, New York

Individual Residential Wastewater Treatment Systems Design Handbook, 1996 published by the New York State Department of Health, Division of Environmental Protection, Albany (now in Troy), New York

Recommended Standards for Individual Sewage Systems, 1980 published by the Great Lakes-Upper Mississippi River Board of Sanitary Engineers, available through Health Research Inc. Albany, NY.

Mechanical Engineering Reference Manual, 9th edition by Michael R Lindeburg PE published by Professional Publications Inc, Belmont, CA 94002

Engineering Studies:

"Town of Verona WaterWater Treatment And Hamlets of Verona And Durhamville Sewer Analysis" by Barton and Loguidice P.C. 290 Elwood Davis Road, Box 3107 Syracuse, NY 13220 Draft report of September, 1998

"Comprehensive Wastewater Management Study" prepared by Wright-Pierce Architects and Engineers of Syracuse under sponsor ship of the Herkimer Oneida Counties Comprehensive Planning Program and the New York State Department of Environmental Conservation,1980

Web/ Internet Resources:

New York State Rural Water Association

home page: www.nyruralwater.org telephone
P.O. Box 487 Claverack, NY 12513
Phone: (518) 828-3155
Fax: (518) 828-0582
E-mail: nyrwa@nyruralwater.org

National Small Flows Clearinghouse
Home page: www.estd.wvu.edu/nsfc/

National Small Flows Clearinghouse
West Virginia University/NRCCE Building
P.O. Box 6064
Morgantown, WV 26506-6064

Phone: (800) 624-8301 or (304) 293-4191
Fax: (304) 293-3161

Software Resources

Mapping was produced using Arcview 3.2 , with the Spatial Analysis extension. This software was received as a Community Assistance grant by ESRI in 2000 for which the Oneida County Health Department is truly grateful.

Data was downloaded from the New York State GIS Warehouse

(www.nysgis.state.ny.us/), and the GIS Data Depot (http://data.geocomm.com/) along from information supplied by the Oneida County GIS workgroup.

Appendix A- Soils Classifications by USDA

The following information on the soils characteristics as identified by the Oneida County Soil and Water Conservation District was gathered from the United State Department of Agriculture USDA website located at www.statlab.iastate.edu/cgi-bin/osd .

COVERT SERIES

The Covert series consists of very deep, moderately well drained soils formed in sandy glacial drift on ground moraines, outwash plains, lake plains, and dunes. Permeability is rapid. Slope gradients range from 0 to 8 percent. Mean annual precipitation is about 35 inches, and mean annual temperature is about 47 degrees F.

TAXONOMIC CLASS: Sandy, mixed, mesic Oxyaquic Haplorthods

TYPICAL PEDON: Covert sand - on a nearly level area with a slope of 2 percent in an idle field. (Colors are for moist soil unless otherwise stated.)

Ap--0 to 8 inches; very dark grayish brown (10YR 3/2) sand, gray (10YR 5/1) dry; weak fine granular structure; very friable; many roots; moderately acid; abrupt smooth boundary. (6 to 10 inches thick)

E--8 to 15 inches; light brownish gray (10YR 6/2) sand; single grain; loose; common roots; moderately acid; clear wavy boundary. (1 to 10 inches thick)

Bs1--15 to 20 inches; dark reddish brown (5YR 3/4) sand; single grain; loose; few roots; moderately acid; gradual wavy boundary.

Bs2--20 to 35 inches; strong brown (7.5YR 5/6) sand; single grain; loose; few cemented chunks of ortstein; moderately acid; gradual wavy boundary. (The combined thickness of the Bs horizons is 10 to 40 inches.)

C--35 to 60 inches; pale brown (10YR 6/3) sand; single grain; loose; few fine prominent yellowish brown (10YR 5/8) masses of iron accumulation throughout; moderately acid.

TYPE LOCATION: Van Buren County, Michigan; 1,120 feet east and 2,370 feet south of the northwest corner, sec. 9, T. 2 S., R. 17 W.

RANGE IN CHARACTERISTICS: The base of the spodic horizon ranges from 24 to 45 inches in thickness. Depth to redoximorphic features ranges from 20 to 40 inches. Gravel content ranges from 0 to 5 percent throughout the pedon.

Forested areas have O horizons of partially or well decomposed forest litter up to 4 inches thick.

The Ap horizon has hue of 10YR or 7.5YR, value of 2 to 4, and chroma of 1 to 3. It is sand or loamy sand. An A horizon is present in some pedons with hue of 10YR or 7.5YR; value of 2 or 3, and chroma of 1. Reaction of the A or Ap horizon ranges from very strongly acid to neutral.

The E horizon has hue of 10YR or 7.5YR, value of 4 to 7, and chroma of 1 to 3. It is sand or loamy sand. Reaction of the E horizon ranges from very strongly acid to neutral.

The Bs1 horizon has hue of 7.5YR or 5YR, value of 3 to 5, and chroma of 4. Reaction ranges from very strongly acid to moderately acid.

The Bs2 horizon has hue of 10YR to 5YR, value 4 or 5 and chroma of 4 to 8. Reaction ranges from very strongly acid to neutral. Some pedons have ortstein ranging from 0 to 30 percent within the Bs horizon. Some pedons have BC horizons, that can have redoximorphic features.

The C horizon has hue of 10YR to 5YR, value of 4 to 7, and chroma of 1 to 8. It commonly has distinct or prominent redoximorphic features. It is strongly acid to moderately alkaline. It is sand or fine sand.

COMPETING SERIES: This is the Brethren series. Closely related is the Croswell and Healylake series. The Brethern series has a stronger developed spodic horizon. Croswell soils are frigid. The Healylake (T) series has more than 50 percent ortstein within the control section.

GEOGRAPHIC SETTING: Covert soils are on ground moraines, outwash plains, lake plains, and dunes. Slope gradient ranges from 0 to 8 percent. Mean annual precipitation ranges from 28 to 40 inches, and mean annual temperature ranges from 47 to 50 degrees F. Frost free days ranges from 130 to 170. Elevation above sea level ranges from 600 to 1,000 feet.
GEOGRAPHICALLY ASSOCIATED SOILS: The excessively drained Grattan soils, the somewhat poorly drained Pipestone soils, and the poorly and very poorly drained Granby, Kingsville, and Newton soils are in a drainage sequence with Covert soils.
DRAINAGE AND PERMEABILITY: Moderately well drained. Depth to the apparent seasonal high water table ranges from 2.0 to 3.5 feet below the surface at some time during the period from November to April. Surface runoff is negligible or very low. Permeability is rapid.
USE AND VEGETATION: About 40 percent of this soil is under cultivation to small grain and hay. The remainder is idle cropland, permanent pasture, or forest. The forest vegetation consists of quaking aspen, white oak, northern red oak, wild cherry, eastern white pine, and jack pine.
DISTRIBUTION AND EXTENT: Southern Michigan and central New York. The series is of moderate extent.
MLRA OFFICE RESPONSIBLE: Indianapolis, Indiana
SERIES ESTABLISHED: Midland County, Michigan, 1976.
REMARKS: Diagnostic horizons and features recognized in this pedon are: ochric epipedon - the zone from the surface to 8 inches (Ap horizon); albic horizon - the zone from 8 to 15 inches (E horizon); spodic horizon - the zone from 15 to 20 inches (Bs1 horizon). Oxyaquic subgroup - the soil is saturated with water in one or more layers within 40 inches of the surface for 1 month or more per year in 6 or more out of 10 years. The loamy and gravelly substratum phases of this series with loamy or gravelly material ranging from 40 to 60 inches are no longer within the concept of this series.
ADDITIONAL DATA: A similar Covert pedon was sampled as S73MI-80-2. Laboratory numbers 73B419-73B420. Found in Soil Survey Investigation Report No. 36.
Soil Interpretation Record No.: MI0272

WAKEVILLE SERIES

The Wakeville series consists of very deep, somewhat poorly drained soils on flood plains. They formed in silty alluvium. They are nearly level soils that are subject to common flooding. Permeability is moderate throughout the soil. Slope ranges from 0 to 3 percent. Mean annual temperature is 48 degrees F. and mean annual precipitation is 37 inches.
TAXONOMIC CLASS: Coarse-silty, mixed, active, nonacid, mesic Fluvaquentic Endoaquepts
TYPICAL PEDON: Wakeville silt loam, on a 1 percent slope in a cultivated field. (colors are for moist soil unless otherwise noted.)
Ap -- 0 to 7 inches, dark grayish brown (10YR 4/2) silt loam; light brownish gray (10YR 6/2) dry; moderate fine and medium granular structure; friable; many fine roots; neutral; abrupt smooth boundary. (6 to 10 inches thick.)
Bw -- 7 to 12 inches, dark brown (10YR 4/3) silt loam; weak fine subangular blocky structure; friable; common fine roots; neutral; common fine pores; clear wavy boundary. (0 to 8 inches thick.)
Bg1 -- 12 to 26 inches, dark grayish brown (10YR 4/2) silt loam; weak fine and medium subangular blocky structure; friable; common fine roots; common fine pores; grayish brown (10YR 5/2) on all faces of peds; common medium distinct yellowish brown (10YR 5/6) masses of iron accumulation and grayish brown (10YR 5/2)) iron depletions in the matrix; neutral; clear wavy boundary.
Bg2 -- 26 to 42 inches, grayish brown (10YR 5/2) silt loam; weak fine subangular blocky structure; friable; few fine pores; light brownish gray (10YR 6/2) on all faces of peds;

common medium distinct dark yellowish brown (10YR 4/4) masses of iron accumulation and light brownish gray (10YR 6/2) iron depletions within the matrix; neutral; clear wavy boundary. (Combined thickness of the Bg horizon is 16 to 37 inches.)
Cg -- 42 to 72 inches, grayish brown (10YR 5/2) and dark yellowish brown (10YR 4/4) silt loam; massive; friable; mildly alkaline.

TYPE LOCATION: Chautauqua County, New York, Town of Kiantone, 500 feet west of US Rt. 62 and NY Rt. 60; 50 feet south of NY Rt. 60. USGS Jamestown, NY topographic quadrangle; Latitude 42 degrees, 03 minutes, 16 seconds N. and Longitude 79 degrees, 11 minutes, 45 seconds W. NAD 1927.

RANGE IN CHARACTERISTICS: Solum thickness ranges from 24 to 45 inches. Rock fragments generally are less than 5 percent in the surface layer and subsoil but range to 20 percent in the substratum and up to 45 percent below 40 inches. Depth to bedrock is more than 60 inches. Reaction ranges from moderately acid to neutral to a depth of 40 inches and from slightly acid to moderately alkaline below 40 inches.

The Ap or A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 or 3. Texture is silt loam or very fine sandy loam. Thickness of the A horizon ranges from 2 to 5 inches thick.

The Bw horizon has hue of 10YR or 2.5Y, value of 4 through 6, and chroma of 3 through 6. The texture is very fine sandy loam or silt loam. Structure is fine or medium subangular blocky or granular.

The Bg horizon has hue of 10YR or 2.5Y, value of 3 through 6, and chroma of 1 or 2. The texture is silt loam or very fine sandy loam. Structure is subangular blocky or granular.

The Cg or C horizon has hue of 10YR or 2.5Y, value of 5 or 6, and chroma of 1 through 4. The texture is silt loam or very fine sandy loam above 40 inches, and ranges to fine sandy loam, or loamy sand below 40 inches in the fine earth fraction. The horizon is massive, or has plate like divisions. Consistence is very friable to firm.

Some pedons have a 2C horizon below 40 inches with hue of 10YR through 5Y, value of 3 through 6, and chroma of 1 through 4. Texture ranges from loam to loamy sand in the fine earth fraction. Some pedons have strata of fine sand or sand below 40 inches. The horizon is massive. Consistence is very friable or friable.

COMPETING SERIES: Currently, there are no other series in the same family. The Oridia series is the only other series that may be in the same family after reclassification to the 8th edition. The Orida soils are poorly drained and occur in a marine climate with cool dry summers and cool wet winters.

The Holderton, Maplehill, Raypol, Raynham, Wakeland, Wayland, and Wyalusing series are similar soils in related families. Holderton soils have a coarse-loamy particle-size control section. Maplehill soils have a buried dark colored A horizon within a depth of 36 inches. Raynham soils occur outside the flood plain in older lacustrine deposits. Raypol and Wyalusing soils are coarse-silty over sandy or sandy-skeletal. The Wakeland soils have an AC profile lacking a developed subsoil, are more acid in the substratum, and occur in areas of higher air temperatures. Wayland soils are fine-silty in the particle-size control section.

GEOGRAPHIC SETTING: Wakeville soils are level and nearly level soils on flood plains along low gradient streams. Slope ranges from 0 to 3 percent. The soils formed in recent alluvium derived from upland glacial drift predominantly of shale, siltstone and sandstone origin with some limestone. Mean annual precipitation ranges from 30 to 45 inches; mean annual air temperature ranges from 46 to 50 degrees F.; and the growing season ranges from 110 to 150 days.

GEOGRAPHICALLY ASSOCIATED SOILS: Wakeville soils are the somewhat poorly drained member of a drainage sequence which includes the well drained Hamlin, moderately well drained Teel and poorly and very poorly drained Wayland soils. Allard, Howard and Valois soils are on gravelly, higher adjacent terraces. Langford, Erie, Chautauqua and Busti soils are till soils on higher surrounding landscapes. Swormsville soils occupy similar lowland positions but have a higher clay content in the subsoil.

DRAINAGE AND PERMEABILITY: Somewhat poorly drained. Permeability is moderate throughout the soil. The potential for surface runoff is very low to low. The seasonal high water table is at a depth of 0.5 to 1.5 feet below the surface from January to May.

USE AND VEGETATION: Most areas of this soil are in, corn, small grains, hay and pasture. Native vegetation is mixed hardwoods including red maple, sugar maple, white ash, walnut and Eastern hemlock.

DISTRIBUTION AND EXTENT: Southwestern and South Central New York. MLRA's 101, 139, and 140. The series is moderately extensive.
MLRA OFFICE RESPONSIBLE: Amherst, Massachusetts
SERIES ESTABLISHED: Chautauqua County, New York 1988.
REMARKS: Wakeville series is proposed for the somewhat poorly drained soils previously included with Teel series. The Teel series is now restricted to moderately well drained.
Diagnostic horizons and features recognized in the typical pedon are:
1. Ochric epipedon - the zone from the surface to a depth of 7 inches (Ap horizon).
2. Irregular decrease in organic carbon with depth and is greater than 0.2 percent within 1.25 meters.
3. An aquic moisture regime - evidenced by low chroma matrix colors and redoximorphic features in the Bg horizons
4. Particle-size control section from 10 to 40 inches that is coarse-silty weighted average.

MINOA SERIES

The Minoa series consists of very deep, somewhat poorly drained soils formed in deltaic sediments. They are nearly level or gently sloping soils on lowland lake plains. Permeability is moderate in the solum, and moderate or moderately rapid in the substratum. Slope ranges from 0 to 8 percent, mean annual temperature is about 49 degrees F., and mean annual precipitation is about 39 inches.
TAXONOMIC CLASS: Coarse-loamy, mixed, active, mesic Aquic Dystric Eutrudepts
TYPICAL PEDON: Minoa fine sandy loam in a idle field on a 2 percent slope. (Colors are for moist soil unless otherwise noted.)
Ap-- 0 to 10 inches; very dark grayish brown (10YR 3/2) fine sandy loam; light brownish gray (10YR 6/2) dry; weak medium, granular structure; very friable; many roots; strongly acid; abrupt smooth boundary. (7 to 10 inches thick.)
Bw1-- 10 to 14 inches; brown (10YR 5/3) loamy very fine sand; very weak very fine granular structure; very friable; common roots; many pores; few fine distinct dark yellowish brown (10YR 4/4) masses of iron accumulations and few fine faint grayish brown (10YR 5/2) iron depletions within the matrix; strongly acid; clear smooth boundary.
Bw2-- 14 to 22 inches; reddish brown (5YR 4/3) loamy very fine sand; weak medium platy structure parting to weak very fine subangular blocky; firm in place, very friable when removed; few fine roots; common fine and medium pores; many medium distinct yellowish red (5YR 4/6) masses of iron accumulations, reddish gray (5YR 5/2) iron depletions, and dark yellowish brown (10YR 4/4) masses of iron accumulations within the matrix; moderately acid; clear smooth boundary. (Combined thickness of the Bw horizon is 8 to 23 inches.)
BC-- 22 to 38 inches; grayish brown (10YR 5/2) loamy very fine sand; very weak medium platy structure; friable; few fine roots; few fine pores; 2 bands of lamellae, 1 inch and 2 inches thick respectively, of dark brown (10YR 4/3) fine sandy loam with few medium pores that have patchy clay linings on surfaces along pores; many medium distinct dark yellowish brown (10YR 4/4) and yellowish brown (10YR 5/6) masses of iron accumulations within the matrix; moderately acid; clear wavy boundary. (0 to 16 inches thick.)
C-- 38 to 72 inches; light brownish gray (10YR 6/2) weakly stratified very fine and fine sand that has thin bands, 1/4 to 1/2 inch thick, of brown (10YR 5/3) silt; massive; slightly firm in places, very friable when removed; common medium distinct yellowish brown (10YR 5/6) and dark yellowish brown, (10YR 4/4) masses of iron accumulations within the

matrix that decrease in size and number with increasing depth; slightly acid at a depth of 40 inches, neutral at a depth of 50 inches, and mildly alkaline at 65 inches.
TYPE LOCATION: Onondaga County, New York; town of Manlius, 800 feet east of Fremont Road, 2,050 feet south of the New York Thruway, 500 feet north of private road, and 900 feet north of Butternut Creek. USGS Syracuse East, NY topographic quadrangle;. Latitude 43 degrees, 05 minutes, 16 seconds N. and Longitude 76 degrees, 01 minutes, 40 seconds W. NAD 1927.
RANGE IN CHARACTERISTICS: Thickness of the solum ranges from 20 to 40 inches. Carbonates are at depths of 40 to 72 inches. Depth to bedrock is greater than 60 inches. Rock fragments, mostly fine gravel, range from 0 to 5 percent through the soil.
The Ap horizon has hue of 5YR through 2.5Y, value of 3 or 4, and chroma of 2 or 3. It is silt loam, loamy very fine sand, very fine sandy loam, loam, or fine sandy loam. It has fine or medium granular structure, and very friable or friable consistence. Reaction ranges from strongly acid to neutral, unless heavily limed. Unplowed areas have A and E horizons, that are 2 to 5 inches thick.
The Bw horizon has hue of 5YR through 2.5Y, value of 4 through 6, and chroma of 2 through 4. It has faint or distinct redoximorphic features with chroma of 2 where matrix color has chroma greater than 2. It is silt loam through loamy very fine sand and fine sandy loam. The BW horizon is massive, or has granular or subangular blocky structure. It has very friable through firm consistence. Reaction ranges from moderately acid through neutral.
The BC horizon has hue of 5YR through 2.5Y, value of 4 through 6, chroma of 2 through 4, and is mottled. It is silt loam through loamy very fine sand and commonly contains a few fine sandy loam and very fine sandy loam lamellae. It is massive or has very weak or weak granular, subangular blocky or platy structure. It ranges from loose to firm consistence. Reaction ranges from moderately acid through neutral.
The C horizon has hue of 5YR through 2.5Y, value of 4 through 6, and chroma of 1 through 4. It is silt loam through loamy fine sand, above 40 inches with thin lamellae ranging from silty clay to fine sand. Some pedons are fine sand through silty clay below depths of 40 inches. Reaction ranges from moderately acid through moderately alkaline.
COMPETING SERIES: The Bomoseen series is the only competing series in the same family. Bomoseen soils formed in till and have more than 5 percent rock fragments. Canandaigua, Galen, Junius, Kibbie, Lamson, Metamora, Mino, Morocco, Munson, Niagara, Raynham, Stafford, Tedrow, Wallington, Walpole, Wareham, and Williamson are similar soils in related families. Canandaigua and Niagara soils have fine silty particle-size control sections. In addition, Niagara soils have an argillic horizon. Galen soils have sufficient lamellae to have an argillic horizon. Junius, Morocco, Stafford, Tedrow, Walpole, and Wareham soils have sandy particle-size control sections. Kibbie and Metamora soils have argillic horizons. Lamson soils have chroma of 0 or 1 on the faces of peds or in the soil matrix immediately below the Ap or A horizon. Mino soils are frigid. Munson, Raynham, Wallington, and Williamson soils have coarse silty particle-size control sections. In addition, Wallington and Williamson soils have a fragipan.
GEOGRAPHIC SETTING: The Minoa soils occupy nearly level or gently sloping deltas of former glacial lakes. Slopes range from 0 to 8 percent. The regolith is dominated by very fine sandy containing small quantities of clay and moderate amounts of weatherable primary minerals. The mean annual temperature ranges from 46 to 53 degrees F., mean annual precipitation ranges from 28 to 50 inches, and the mean growing season ranges from 140 to 200 days.
GEOGRAPHICALLY ASSOCIATED SOILS: These are the well drained Arkport, the moderately well drained Galen, and the poorly drained and very poorly drained Lamson soils that are in a drainage sequence with Minoa. The Claverack, Cosad, Granby, Junius, Niagara, Odessa, Raynham, Rhinebeck, Stafford, Wallington, Walpole, and Wareham soils also formed in glacial-lacustrine deposits. Claverack and Cosad soils formed in sandy deposits overlying clayey lake sediments Granby, Junius, Stafford, Walpole, and Wareham soils contain more sand in the substratum with textures of loamy fine sand or coarser. Niagara, Raynham, and Wallington soils formed in silty deposits. In addition,

Wallington soils contain a fragipan. Odessa and Rhinebeck soils formed in clayey lacustrine sediments.

DRAINAGE AND PERMEABILITY: Somewhat poorly drained. The potential for surface runoff is very low to low. Permeability is moderate in the solum, and moderate or moderately rapid in the substratum.

USE AND VEGETATION: Most areas have been cleared. Areas remaining in cultivation are pastured or are used to grow hay, small grains, corn, beans, and truck crops. A considerable acreage is reverting to brush and woodland, supporting dogwoods and other shrubs. Aspen, white ash, cherry, white pine, Northern whitecedar, Eastern redcedar, red and sugar maple, and hemlock dominate in existing woodlands.

DISTRIBUTION AND EXTENT: Erie-Ontario plain and Mohawk, Hudson, and St. Lawrence valleys of New York, Champlain valley of New York and the lake plains of Ohio, Michigan, and New Jersey. MLRA 98, 99, 100, 101, 139, 140, 142, 144A, and 148. The series is moderately extensive.

MLRA OFFICE RESPONSIBLE: Amherst, Massachusetts

SERIES ESTABLISHED: St. Clair County, Michigan, 1969.

REMARKS: Excluded from the series are soils previously called Minoa, which are calcareous at depths of less than 40 inches and which are currently unclassified. Such areas have been correlated as taxadjuncts. Chroma of 2 in the matrix of the Bw horizon are believe to be inherited colors.

Diagnostic horizons and features recognized in the typical pedon are:

a. Ochric epipedon - the zone from 0 to 10 inches (Ap horizon).

b. Cambic horizon - the zone from 10 to 22 inches (Bw horizon).

c. Eutrudepts great group - base saturation greater than 60 percent (by NH40Ac) in some subhorizon between depths of 10 and 30 inches (Bw2 and BC horizons).

d. Aquic Dystric subgroup - redoximorphic features with chroma of 2 or less within the upper 24 inches of the soil and lack of free carbonates within 40 inches of the soil surface.

End Notes:

[i] See Marker located along Oneida Street affixed to a boulder

[ii] See French's 1853 and 1858 Map of Oneida County, on file with the Oneida County Clerk

[iii] See American Heritage book, Erie Canal

[iv] Personally observation of the author who has experience as an archeologist. Although this exact era is not his area of direct expertise, he has found similar works while working on sites of earlier ears

[v] See Appendix 75-A 10 New York Codes Rules and Regulations (10NYCRR) section 75-A.9 items75-A9b)(2), 75-A.9(©2), 75-A.9(d)(2), 75-A.9(e)(2)

[vi] For a septic tank it is to be at least 10 feet from a structure, an absorption field at least 20 feet from a structure, thus you would need at least an additional 20by10 ft area for the septic tank to the edge of the leachfield.

[vii] For a septic tank it is to be at least 10 feet from a structure, an absorption field at least 20 feet from a structure, thus you would need at least an additional 20by10 ft area for the septic tank to the edge of the leachfield.

[viii] This conclusion agrees with the assessment made in the "Comprehensive Wastewater Management Study" prepared by Wright-Pierce Architects and Engineers of Syracuse under sponsor ship of the Herkimer Oneida Counties Comprehensive Planning Program and the New York State Department of Environmental Conservation, pages 9-13

[ix] See Technical Reference Manual CSFP 526 published by the New York State Department of Health

[x] "Town of Verona WaterWater Treatment And Hamlets of Verona And Durhamville Sewer Analysis" by Barton and Loguidice P.C. 290 Elwood Davis Road, Box 3107 Syracuse, NY 13220 Draft report of September, 1998

[xi] "Town of Verona WaterWater Treatment And Hamlets of Verona And Durhamville Sewer Analysis" by Barton and Loguidice P.C. 290 Elwood Davis Road, Box 3107 Syracuse, NY 13220 Draft report of September, 1998 page 4.

[xii] Memorandum, April 13, 1994 , to :John Pronko, Region 6 NYSDEC Utica from: Hank Samide, Bureau of Monitoring and Assessment, RE: Verona (T) Master Plan, Oneida County

[xiii] See Memorandum of October 24, 1994 from Hank Samide to John Pronko reaffirming the importance of item 1 of the memorandum of April 13, 1994. This memorandum gives the distinct impression that the problems brought up in item 1 of the April 13, 1994 letter this is the limiting factor on this section of the creek

[xiv] "Town of Verona WaterWater Treatment And Hamlets of Verona And Durhamville Sewer Analysis" by Barton and Loguidice P.C. 290 Elwood Davis Road, Box 3107 Syracuse, NY 13220 Draft report of September, 1998 page 4.

[xv] Environmental Engineering And Sanitation, Joseph Salvato P.E., Third Edition published by Wiley-Interscience, John Wiley & Sons, New York 1982, page434, Table 4-10

[xvi] Mechanical Engineering Reference Manual, 9th edition by Michael R Lindeburg PE published by Professional Publications Inc, Belmont, CA 94002 see pages2-21 and 2-28

Appendix G
Sewer District Written Boundary Description

Boundary Description
Town of Verona, Durhamville Sewer District
Town of Verona, Oneida County, New York

The Town of Verona Durhamville Sewer District, situated in the Town of Verona, Oneida County and State of New York, being more particularly described as follows:

Commencing at a point of beginning, said Point being the northeastern most property corner of Parcel 309.000-1-9.1; thence proceeding southeasterly along the northeastern boundary of Parcel 309.000-1-9.1 to the northeastern property corner of said Parcel; thence proceeding southeasterly along the eastern boundary of Parcel 309.000-1-9.1 to the southeastern property corner of said Parcel; thence proceeding southwesterly along the southern boundary of Parcel 309.000-1-9.1 as it bends and turns to the southwestern property corner of said Parcel; thence proceeding northwesterly along the western boundary of Parcel 309.000-1-9.1 to the point of projection of the southeastern boundary of Parcel 309.000-1-46; thence proceeding southwesterly along the projection of Parcel 309.000-1-46 across Randel Road to the northeastern property corner of said Parcel; thence proceeding southeasterly along the eastern boundary of Parcel 309.000-1-46 to the southeastern property corner of said Parcel; thence proceeding southwesterly along the southern boundary of Parcel 309.00-1-46 to the southwestern corner of said Parcel; thence proceeding northeasterly along the western boundary of Parcel 309.000-1-46 as it bends and turns to the southwestern property corner of Parcel 309.000-1-44; thence proceeding northeasterly along the western boundary of Parcel 309.000-1-44 as it bends and turns to the northern property corner of said Parcel; thence proceeding northwesterly along the projection of the northeastern boundary of Parcel 309.000-1-44 across Bennett Road to the eastern most property corner of Parcel 309.000-1-2.1; thence proceeding southwesterly along the southeastern boundary of the southwestern portion of Parcel 309.00-1-2.1 to the southeastern most property corner of said Parcel; thence proceeding southwesterly along the southern boundary of the southwestern portion of Parcel 309.000-1-2.1 as it bends and turns across Oneida Creek to the southwestern property corner of the said Parcel; thence proceeding northwesterly along the western boundary of Parcel 309.000-1-2.1 to the northwestern property corner of the southwestern portion of said Parcel; thence proceeding northeasterly along the northeastern boundary of the southwester

portion of Parcel 309.000-1-2.1 to the northeastern property corner of said Parcel; thence proceeding northwesterly along the projection of the eastern boundary of the southwestern portion Parcel 309.000-1-2.1 across the CSX ROW that divides the northern and southern portions and along the Randel Road ROW to the southeastern property corner of the western portion of said Parcel; thence proceeding southwesterly along the southern boundary of the western portion of Parcel 309.000-1-2.1 to the southwestern property corner of the western portion of said Parcel; thence proceeding northwesterly along the western boundary of the western portion of Parcel 309.000-1-2.1 as it bends and turns to the northwestern property corner of said Parcel; thence proceeding easterly along the northern boundary of the western portion of Parcel 309.000-1-2.1 to the northeastern property corner of said Parcel; thence proceeding northerly along the Randel Road ROW to the southeastern property corner of Parcel 309.000-1-2.3; thence proceeding southwesterly along the boundary of Parcel 309.000-1-2.3 to the southwestern property corner of said Parcel; thence proceeding northeasterly along the western boundary of Parcel 309.000-1-2.3 as it bends and turns to the northwestern most property corner of said Parcel; thence proceeding northeasterly along the northern boundary of Parcel 309.000-1-2.3 to the northwestern property corner of Parcel 297.003-1-11; thence proceeding easterly along the northern boundary of the southern portion of Parcel 297.003-1-11 to the northeastern property corner of said Parcel; thence proceeding northerly along the Randel Road ROW across I-90 to the southeastern property corner of the northern portion of Parcel 297.003-1-11; thence proceeding southwesterly along the eastern boundary of the northern portion of Parcel 297.003-1-11 to the southeastern most property corner of the northern portion of said Parcel; thence proceeding southwesterly along the southern boundary of Parcel 297.003-1-11 as it bends and turns to the southeastern property corner of Parcel 297.003-1-13; thence continuing southwesterly along the southern boundary of Parcel 297.003-1-13 as it bends and turns to the southeastern property corner of Parcel 297.003-1-14; thence continuing southwesterly along the southern boundary of Parcel 297.003-1-14 to the southeastern property corner of Parcel 297.003-1-15.1; thence continuing southwesterly along the southern boundary of Parcel 297.003-1-15.1 as it bends and turns to the southeastern property corner of Parcel 297.017-1-14.2; thence proceeding northwesterly along the southern boundary of Parcel 297.017-1-14.2 to the southeastern property corner of Parcel 297.017-1-14.1; thence proceeding westerly along the southern boundary of Parcel 297.017-1-14.1 to the southeastern property corner of Parcel

297.017-1-15; thence continuing westerly along the southern boundary of Parcel 297.017-1-15 to the southeastern property corner of Parcel 297.017-1-16; thence proceeding southwesterly along the southern boundary of Parcel 297.017-1-16 to the southeastern property corner of Parcel 297.017-1-18.3; thence continuing southwesterly along the southern boundary of Parcel 297.017-1-18.3 as it bends and turns to the western property corner of said Parcel; thence proceeding westerly along the projection of the southern boundary of Parcel 297.017-1-18.3 across Oneida Street to the southeastern property corner of the eastern portion of Parcel 296.004-2-13; thence proceeding westerly along the southern boundary of Parcel 296.004-2-13 to the southwestern property corner of the eastern portion of Parcel 296.004-2-13; thence proceeding along the projection of the southern boundary of Parcel 296.004-2-13 across NYS Route 46 (Main Street) to the southeastern property corner of the western portion of said Parcel; thence proceeding westerly along the southwestern boundary of Parcel 296.004-2-13 as it bends and turns to the northwestern property corner of said Parcel; thence proceeding northeasterly along the north boundary of Parcel 296.004-2-13 to the northern most property corner of said Parcel; thence proceeding northerly along the NYS Route 46 (Main Street) ROW to the southeastern property corner of Parcel 296.004-2-14; thence proceeding southwesterly along the southeastern boundary of Parcel 296.004-2-14 to the southernmost property corner of said Parcel; thence proceeding northwesterly along the southwestern boundary of Parcel 296.004-2-14 as it bends and turns to the western most property corner of said Parcel; thence proceeding northeasterly along the northern boundary of Parcel 296.004-2-14 to the southwestern property corner of Parcel 296.004-2-15; thence proceeding northerly along the western boundary of Parcel 296.004-2-15 to the southwestern property corner of Parcel 296.004-2-16; thence continuing northerly along the western boundary of Parcel 296.004-2-16 to the southwestern property corner of Parcel 296.004-2-17; thence continuing northerly along the western boundary of Parcel 296.004-2-17 to the southwestern property corner of Parcel 296.004-2-18; thence continuing northerly along the western boundary of Parcel 296.004-2-18 to the northwestern property corner of said Parcel; thence proceeding easterly along the northern boundary of Parcel 296.004-2-18 to the southwestern property corner of Parcel 296.004-2-19; thence proceeding northerly along the western property boundary of Parcel 296.004-2-19 to the intersection of the southern boundary of Parcel 296.004-2-20; thence proceeding westerly along the southern boundary of Parcel 296.004-2-20 to the southwestern property corner of said Parcel; thence proceeding northerly

along the western boundary of Parcel 296.004-2-20 to the intersection with the southern boundary of Parcel 296.016-1-37; thence proceeding westerly along the southern boundary of Parcel 296.016-1-37 to the southwestern property corner of said Parcel; thence proceeding northeasterly along the western boundary of Parcel 296.016-1-37 to the southwestern property corner of Parcel 296.016-1-38; thence proceeding northerly along the western boundary of Parcel 296.016-1-38 to the intersection with the southern boundary of Parcel 296.016-1-39; thence proceeding westerly along the southern boundary of Parcel 296.016-1-39 to the southwestern property corner of said Parcel; thence proceeding northeasterly along the western boundary of Parcel 296.016-1-39 to the southwestern property corner of Parcel 296.016-1-40; thence continuing northeasterly along the western boundary of Parcel 296.016-1-40 as it bends and turns to the southwestern property corner of Parcel 296.016-1-41; thence proceeding northwesterly along the western boundary of Parcel 296.016-1-41 as it bends and turns to the southern property corner of Parcel 296.016-1-42; thence continuing northwesterly along the western boundary of Parcel 296.016-1-42 to the southeastern property corner of Parcel 296.016-1-43; thence continuing northwesterly along the western boundary of Parcel 296.016-1-43 to the southeastern property corner of Parcel 296.016-1-44; thence continuing northwesterly along the western boundary of Parcel 296.016-1-44 to the northwestern property corner of said Parcel; thence proceeding easterly along the northern boundary of Parcel 296.016-1-44 to the southern property corner of Parcel 296.016-1-45.1; thence proceeding northwesterly along the western boundary of Parcel 296.016-1-45.1 to the intersection of the southern boundary of Parcel 296.016-1-45.2; thence proceeding southwesterly along the southern boundary of Parcel 296.016-1-45.2 to the southwestern property corner of said Parcel; thence proceeding northwesterly along the western property boundary of Parcel 296.016-1-45.2 to the northwestern property corner of said Parcel; thence proceeding northeasterly along the northern boundary of Parcel 296.016-1-45.2 to the southwestern property corner of Parcel 296.016-1-46; thence proceeding northwesterly along the western boundary of Parcel 296.016-1-46 to the intersection with the southern boundary of Parcel 296.016.1-47; thence proceeding southwesterly along the southern boundary of Parcel 296.016-1-47 to the southwestern property corner of said Parcel; thence proceeding northwesterly along the western boundary of Parcel 296.016-1-47 to the southwestern property corner of Parcel 296.016-1-48; thence continuing northerly along the western boundary of Parcel 296.016-1-48 to the southeastern property corner of Parcel 296.004-1-1; thence proceeding

southwesterly along the southeastern boundary of Parcel 296.004-1-1 to the southern property corner of said Parcel; thence proceeding northwesterly along the southern boundary of Parcel 296.004-1-1 as it bends and turns to the southwestern property corner of said Parcel; thence proceeding northwesterly along the western boundary of Parcel 296.004-1-1 to the southwestern property corner of Parcel 296.012-1-25; thence continuing northwesterly along the western boundary of Parcel 296.012-1-25 to the northwestern property corner of said Parcel; thence proceeding easterly along the northern boundary of Parcel 296.012-1-25 as it bends and turns to the southwestern property corner of Parcel 296.012-1-26; thence proceeding northeasterly along the western boundary of Parcel 296.012-1-26 to the southwestern property corner of Parcel 296.012-1-27; thence proceeding northwesterly along the western boundary of Parcel 29.012-1-27 to the northwestern property corner of said Parcel; thence proceeding easterly along the northern boundary of Parcel 296.012-1-27 to the northeastern property corner of said Parcel; thence proceeding southerly along the eastern boundary of Parcel 296.012-1-27 to the point of intersection with the projection of the northern boundary of Parcel 293.012-1-3; thence proceeding northeasterly along the projection of the northern boundary of Parcel 296.012-1-27 across NYS Route 46 (Main Street) to the northwestern property corner of Parcel 296.012-1-3; thence continuing northeasterly along the northern property boundary of Parcel 296.012-1-3 as it bends and turns to the northeastern property corner of said Parcel; thence proceeding southeasterly along the eastern boundary of Parcel 296.012-1-3 to the intersection with the northern boundary of Parcel 296.012-1-4; thence proceeding northeasterly along the northern boundary of Parcel 296.012-1-4 to the northeastern property corner of said Parcel; thence proceeding southerly along the eastern property boundary of Parcel 296.012-1-4 to the northeastern property corner of Parcel 296.012-1-17; thence continuing southerly along the eastern boundary of Parcel 296.012-1-17 to the northeastern property corner of Parcel 296.012-1-16; thence continuing southerly along the eastern boundary of Parcel 296.012-1-16 to the northeastern property corner of Parcel 296.012-1-15; thence continuing southerly along the eastern boundary of Parcel 296.012-1-15 to the southeastern property corner of said Parcel; thence continuing southerly along the projection of the eastern boundary of Parcel 296.012-1-15 across Fox Street to the northeastern property corner of Parcel 296.012-1-21; thence continuing southerly along the eastern boundary of Parcel 296.012-1-21 to the northeastern property corner of Parcel 296.016-1-9; thence continuing southerly along the eastern boundary of Parcel

296.016-1-9 to the northeastern property corner of Parcel 296.016-1-10; thence continuing southerly along the eastern boundary of Parcel 296.016-1-10 to the southeastern property corner of said Parcel; thence continuing southerly along the projection of the eastern boundary of Parcel 296.016-1-10 across Clinton Street to the northeastern property corner of Parcel 296.016-1-16; thence continuing southerly along the eastern boundary of Parcel 296.016-1-16 to the northeastern property corner of Parcel 296.016-1-17; thence continuing southerly along the eastern boundary of Parcel 296.016-1-17 to the southeastern property corner of said Parcel; thence continuing southerly along the projection of the eastern boundary of Parcel 296.016-1-17 across Lafayette Street to the northeastern property corner of Parcel 296.016-1-19; thence continuing southerly along the eastern property boundary of Parcel 296.016-1-19 to the northeastern property corner of Parcel 296.016-1-20; thence continuing southerly along the eastern property boundary of Parcel 296.016-1-20 to the northeastern property corner of Parcel 296.016-1-21; thence continuing southerly along the NYS Route 46 (Main Street) ROW to the northeastern property corner of Parcel 296.016-1-38; thence continuing southerly along the eastern boundary of Parcel 296.016-1-38 to the northeastern property corner of Parcel 296.016-1-34; thence continuing southerly along the eastern boundary of Parcel 296.016-1-34 to the northeastern property corner of Parcel 296.016-1-23; thence continuing southerly along the eastern boundary of Parcel 296.004-2-23 to the northeastern property corner of Parcel 296.004-2-20; thence continuing southerly along the eastern boundary of Parcel 296.004-2-20 to the northeastern property corner of Parcel 296.004-2-19; thence continuing southerly along the eastern boundary of Parcel 296.004-2-19 to the northeastern property corner of Parcel 296.004-2-18; thence continuing southerly along the eastern boundary of Parcel 296.004-2-18 to the northeastern property corner of Parcel 296.004-2-17; thence continuing southerly along the eastern boundary of Parcel 296.004-2-17 to the northeastern property corner of Parcel 296.004-2-16; thence continuing southerly along the eastern boundary of Parcel 296.004-2-16 to the northeastern property corner of Parcel 296.004-2-15; thence continuing southerly along the eastern boundary of Parcel 296.004-2-14 to the intersection with the projection of Center Street ROW; thence proceeding easterly along the projection of Center Street ROW across NYS Route 46 to the intersection with the Church Street ROW; thence proceeding northerly along the Church Street ROW to the southeastern property corner of Parcel 296.004-2-7; thence proceeding westerly along the southern boundary of Parcel 296.004-2-7 to the southwestern

property corner of said Parcel; thence proceeding northerly along the western boundary of Parcel 296.004-2-7 to the southwestern property corner of Parcel 296.004-2-6; thence continuing northerly along the western boundary of Parcel 296.004-2-6 to the southwestern property corner of Parcel 296.004-2-5; thence continuing northerly along the western boundary of Parcel 296.004-2-5 as it bends and turns to the southwestern property corner of Parcel 296.004-2-4; thence continuing northerly along the western boundary of Parcel 296.004-2-4 to the southwestern property corner of Parcel 296.004-2-3; thence continuing northerly along the western boundary of Parcel 296.004-2-3 to the northwestern property corner of said Parcel; thence proceeding northeasterly along the northern boundary of Parcel 296.004-2-3 to the northernmost property corner of said Parcel; thence proceeding easterly along the projection of the northern boundary of Parcel 296.004-2-3 across Broad Street to the intersection with the southwestern boundary of Parcel 296.016-1-33.2; thence proceeding northwesterly along the southwestern boundary of Parcel 296.016-1-33.2 to the southernmost property corner of Parcel 296.016-1-33.1; thence continuing northwesterly along the southwestern boundary of Parcel 296.016-1-33.1 to the southernmost property corner of Parcel 296.016-1-32; thence continuing northwesterly along the western boundary of Parcel 296.016-1-32 to the southwestern property corner of Parcel 296.016-1-31; thence continuing northwesterly along the western boundary of Parcel 296.016-1-31 to the southwestern property corner of Parcel 296.016-1-30; thence proceeding northerly along the western boundary of Parcel 296.016-1-30 to the southwestern property corner of Parcel 296.016-1-29; thence continuing northerly along the western boundary of Parcel 296.016-1-29 to the southwestern property corner of Parcel 296.016-1-28; thence continuing northerly along the western boundary of Parcel 296.016-1-28 to the southwestern property corner of Parcel 296.016-1-27; thence continuing northerly along the western boundary of Parcel 296.016-1-27 to the southwestern property corner of Parcel 296.016-1-22; thence continuing northerly along the western boundary of Parcel 296.016-1-22 to the northwestern property corner of said Parcel; thence continuing northerly along the projection of the western boundary of Parcel 296.016-1-22 across John Street to the southwestern property corner of Parcel 296.016-1-25; thence continuing northerly along the western boundary of Parcel 296.016-1-25 to the southwestern property corner of Parcel 296.016-1-24; thence continuing northerly along the western boundary of Parcel 296.016-1-24 to the northwestern property corner of said Parcel; thence proceeding easterly along the northern boundary of Parcel 296.016-1-24 to the

northwestern property corner of Parcel 296.016-1-26; thence continuing easterly along the northern boundary of Parcel 296.016-1-26 to the northwestern property corner of Parcel 297.013-1-27; thence continuing easterly along the northern boundary of Parcel 297.013-1-27 to the northwestern property corner of Parcel 297.013-1-28; thence continuing easterly along the northern boundary of Parcel 297.013-1-28 to the northwestern property corner of Parcel 297.013-1-29; thence continuing easterly along the northern boundary of Parcel 297.013-1-29 to the intersection of the western boundary of Parcel 297.013-1-30; thence proceeding northerly along the western boundary of Parcel 297.013-1-30 to the northwestern property corner of said Parcel; thence proceeding northeasterly along the northern boundary of Parcel 297.013-1-30 to the northeastern property corner of said Parcel; thence proceeding southerly along the eastern boundary of Parcel 297.013-1-30 to the southeastern property corner of said Parcel; thence proceeding easterly along the projection of the southern boundary of Parcel 297.013-1-30 across Railroad Street to the southwestern property corner of Parcel 297.013-1-32; thence proceeding northerly along the western boundary of Parcel 297.013-1-32 to the northwestern property corner of said Parcel; thence proceeding easterly along the northern boundary of Parcel 297.013-1-32 to the intersection of the western boundary of Parcel 297.013-34.1; thence proceeding northerly along the western boundary of Parcel 297.013-34.1 to the northwestern property corner of said Parcel; thence proceeding northeasterly along the northern boundary of Parcel 297.013-1-34.1 to the northwestern property corner of Parcel 297.013-1-35; thence continuing northeasterly along the northern boundary of Parcel 297.013-1-35 to the northwestern property corner of Parcel 297.013-1-36; thence continuing northeasterly along the northern boundary of Parcel 297.013-1-36 to the northwestern property corner of Parcel 297.013-1-37; thence continuing northeasterly along the northern boundary of Parcel 297.013-1-37 to the northwestern property corner of Parcel 297.013-1-38; thence continuing northeasterly along the northern boundary of Parcel 297.013-1-38 to the northwestern property corner of Parcel 297.013-1-39; thence continuing northeasterly along the northwestern boundary of Parcel 297.013-1-39 to the northwestern property corner of Parcel 297.013-1-40; thence continuing northeasterly along the northwestern boundary of Parcel 297.013-1-40 to the northeastern property corner of said Parcel; thence proceeding southerly along the eastern boundary of Parcel 297.013-1-40 to the northwestern property corner of Parcel 297.013-1-41; thence proceeding northeasterly along the northwestern boundary of Parcel 297.013-1-41 to the northern most property corner of said Parcel; thence

proceeding southeasterly along the eastern boundary of Parcel 297.013-1-41 to the southeastern property corner of said Parcel; thence proceeding southeasterly along the projection of the eastern boundary of Parcel 297.013-1-41 across Foster Street to the intersection of the western boundary of Parcel 297.013-1-2; thence proceeding northeasterly along the western boundary of Parcel 297.013-1-2 to the southwestern property corner of Parcel 297.013-1-1; thence proceeding southeasterly along the northern boundary of Parcel 297.013-1-1 to the northeastern property corner of said Parcel; thence proceeding southwesterly along the southeastern boundary of Parcel 297.013-1-1 to the southeastern property corner of Parcel 297.013-1-2; thence continuing southwesterly along the southeastern boundary of Parcel 297.013-1-2 to the intersection of the northeastern boundary of Parcel 297.013-1-3.1; thence proceeding southeasterly along the northeastern boundary of Parcel 297.013-1-3.1 to the eastern property corner of said Parcel; thence proceeding southwesterly along the southeastern boundary of Parcel 297.013-1-3.1 to the intersection of the eastern boundary of Parcel 297.013-1-7; thence proceeding southeasterly along the eastern boundary of Parcel 297.013-1-7 to the northeastern property corner of Parcel 297.013-1-10.1; thence continuing southeasterly along the eastern boundary of Parcel 297.013-1-10.1 to the western property corner of Parcel 297.003-1-1; thence proceeding northeasterly along the northeastern boundary of Parcel 297.003-1-1 to the northwestern property corner of Parcel 297.003-1-2.2; thence continuing northeasterly along the northern boundary of Parcel 297.003-1-2.2 to the northernmost property corner of said parcel; thence proceeding southeasterly along the northeastern property boundary of Parcel 297.003-1-2.2 to the northwestern property corner of Parcel 297.003-1-6.1; thence continuing southeasterly along the northeastern boundary of Parcel 297.003-1-6.1 to the eastern property corner of said Parcel; thence proceeding southwesterly along the southeastern boundary of Parcel 297.003-1-6.1 to the northeastern property corner of Parcel 297.003-1-6.2; thence proceeding southerly along the eastern boundary of Parcel 297.003-1-6.2 to the northwestern property corner of Parcel 297.003-1-7; thence proceeding southeasterly along the northern boundary of Parcel 297.003-1-7 to the northwestern property corner of Parcel 297.003-1-9.2; thence continuing southeasterly along the northern boundary of Parcel 297.003-1-9.2 to the northeastern property corner of said Parcel; thence continuing southeasterly along the projection of the northern boundary of Parcel 297.003-1-9.2 across Miller Road to the intersection with the northwestern boundary of Parcel 297.000-1-32; thence proceeding northeasterly along the northwestern boundary of Parcel 297.000-1-32 to the northwestern

property corner of said Parcel; thence continuing northeasterly along the northern boundary of Parcel 297.000-1-32 to the northwestern property corner of the northern portion of Parcel 309.000-1-9.1; thence continuing northeasterly along the northern boundary of the northern portion of Parcel 309.000-1-9.1 to the northernmost property corner of said Parcel; thence proceeding southeasterly along the eastern boundary of the northern portion of Parcel 309.000-1-9.1 to the southeastern property corner of said Parcel; thence proceeding southwesterly along the southeastern boundary of the northern portion of Parcel 309.000-1-9.1 to the southernmost property corner of the northern portion of said Parcel; thence proceeding westerly along the southern boundary of the northern portion of Parcel 309.000-1-9.1 to a point of intersection with the projection of the eastern boundary of the central portion of said Parcel; thence proceeding southwesterly along the projection of the eastern boundary of the central portion of Parcel 309.000-1-9.1 across the NYS Thruway (I-90) to the northeastern property corner of the central portion of said Parcel; thence proceeding southerly along the eastern boundary of the central portion of Parcel 309.000-1-9.1 to the southeastern property corner of central portion of said Parcel; thence continuing southerly along the projection of the eastern boundary of the central portion of Parcel 309.000-1-9.1 across Kotary Road to the intersection of the northern boundary of the northeastern portion of Parcel 309.000-1-2.1; thence proceeding easterly along the northern boundary of the northeastern portion of Parcel 309.000-1-2.1 to the northeastern property corner of the northeastern portion of said Parcel; thence proceeding southerly along the eastern boundary of the northeastern portion of Parcel 309.000-1-2.1 to the southeastern property corner of the northeastern portion of said Parcel; thence proceeding westerly along the southern boundary of the northeastern portion of Parcel 309.000-1-2.1 to the southwestern property corner of said Parcel; thence proceeding southerly along the Randel Road ROW to the northwestern property corner of the southeastern portion of Parcel 309.000-1-2.1; thence proceeding easterly along the northern boundary of the southeastern portion of Parcel 309.000-1-2.1 to the northernmost property corner of the southeastern portion of said Parcel; thence proceeding southeasterly along the northeastern boundary of the southeastern portion of Parcel 300.000-1-2.1 to the northeastern property corner of the southeastern portion of said Parcel; thence proceeding southwesterly along the southeastern boundary of Parcel 309.000-1-2.1 to the southeastern most property corner of the southeastern portion of said Parcel; thence proceeding southwesterly along the southern boundary of the southeastern portion of Parcel 300.000-1-2.1 as

it bends and turns to the southwestern most property corner of the southeastern portion of said Parcel; thence proceeding southeasterly along the projection of the western boundary of the southeastern portion of Parcel 309.000-1-2.1 across the CSX ROW to the northwestern property corner of Parcel 309.000-1-7.1; thence proceeding easterly along the northern boundary of Parcel 309.000-1-7.1 as it bends and turns to the northwestern property corner of Parcel 309.000-1-7.2; thence continuing easterly along the northern boundary of Parcel 309.000-1-7.2 to the northeastern property corner of said Parcel, thence proceeding southeasterly along the eastern boundary of Parcel 309.000-1-7.2 to the southeastern property corner of said Parcel; thence continuing southeasterly along the projection of the eastern boundary of Parcel 309.000-1-7.2 across Sand Hill Road to the intersection of the northwestern boundary of Parcel 309.000-1-8; thence proceeding northeasterly along the northwestern boundary of Parcel 309.000-1-8 to the northwestern property corner of said Parcel; thence proceeding northeasterly along the northern boundary of Parcel 309.000-1-8 to the northeastern property corner of said Parcel; thence continuing easterly along the northern boundary of Parcel 309.000-1-9.1 to the northeastern property corner of said Parcel, said point also being the Point of Beginning, encompassing all parcels between said boundary.

Appendix H
EDU Assessment

(T) VERONA - PROPOSED DURHAMVILLE SEWER DISTRICT									
TAX ID	PARCEL ADDRESS	OWNERS NAME	OWNER'S MAILING ADDRESS	TOWN, STATE	ZIP CODE	PROPERTY CLASS	PROPERTY CLASS DESCRIPTION	PROPOSED EDUs	COMMENTS
296.004-1-1	Outxr sport	Durhamville Fire District		Durhamville, NY	13054	557	Outdoor Sports	0.5	
296.004-2-10	5279 Oneida St	Lynda A Cole	5279 Oneida St	Oneida, NY	13421	210	Single-Family Residence	1	
296.004-2-11	5275 Oneida St	Randy Zimmerman	5275 Oneida St	Oneida, NY	13421	210	Single-Family Residence	1	
296.004-2-12	5273 Oneida St	John W Griffith	5273 Oneida St, P.O. BOX 51	Durhamville, NY	13054	210	Single-Family Residence	1	
296.004-2-13	0 Oneida St	Michael G Buck	6008 Westcliffe Rd	Jamesville, NY	13078	311	Residential Vacant Land	0.5	
296.004-2-14	5291 NY Rt 46	Marty Allen Blair	P.O. BOX 175	Verona Beach, NY	13162	210	Single-Family Residence	1	
296.004-2-15	5311 NY Rt 46	Liebl Enterprises, INC	P.O. BOX 8	Canastota, NY	13032	452	Shopping Center	2	
296.004-2-16	5321D Main St	Leibl Enterprises	P.O. BOX 8	Canastota, NY	13032	210	Single-Family Residence	1	
296.004-2-17	5323D Main St	Anthony L Mancini	P.O. BOX 181	Durhamville, NY	13054	210	Single-Family Residence	1	
296.004-2-18	5325D Main St	Jean V Brzuszkiewicz	1298 Kelly Rd	Oneida, NY	13421	210	Single-Family Residence	1	
296.004-2-19	5331D Main St	James E Stanton	2032 St Rt 31	Canastota, NY	13032	433	Auto Body, Tire Shops	1	
296.004-2-20	5331D Main St	James E Stanton	5331 Main St	Durhamville, NY	13054	230	Three-Family Residence	3	
296.004-2-23	5333D Main St	Arlene M Specht	5333 Main St, P.O. BOX 63	Durhamville, NY	13054	210	Single-Family Residence	1	
296.004-2-3	5333 Broad St	Michael McNichol	P.O. BOX 10	Durhamville, NY	13054	220	Two-Family Residence	2	
296.004-2-4	5315 Church St	Matthew Twogood	5315 Church St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.004-2-5	5305 Church St	Durhamville Vol Fire Dept		Durhamville, NY	13054	662	Police and Fire Protection	1	
296.004-2-6	5301 Church St	Thomas Relyea	5301 Church St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.004-2-7	5295 Church St	Durhamville Fire District	P.O. BOX 139	Durhamville, NY	13054	331	Vacant Commercial Land	0.5	
296.004-2-9	3284 Center St	Dennis Kowalski Jr	3284 Center St	Oneida, NY	13421	210	Single-Family Residence	1	
296.012-1-10	3217 Fox St	Randy A Campany	3217 Fox St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.012-1-11	3221 Fox St	Jeffrey S Piersall	3221 Fox St	Verona, NY	13478	210	Single-Family Residence	1	
296.012-1-12	3223 Fox St	Stacey Piersall	3221 Fox St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.012-1-13	3227 Fox St	Herbert H Cronizer III	3227 Fox St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.012-1-14	3235 Fox St	Edwin R Oakes	3235 Fox St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.012-1-15	3237 Fox St	Robert S Laurin	P.O. BOX 205	Durhamville, NY	13054	220	Two-Family Residence	2	
296.012-1-16	5471 NY Rt 46	Robert S Laurin	P.O. BOX 205	Durhamville, NY	13054	210	Single-Family Residence	1	
296.012-1-17	5475 NY Rt 46	Paul Brown	5475 NY Rt 46	Durhamville, NY	13054	210	Single-Family Residence	1	
296.012-1-21	3228 Fox St	Bradford A Dunn	P.O. BOX 15	Durhamville, NY	13054	210	Single-Family Residence	1	
296.012-1-22	3232 Fox St	William F Vogt	3232 Fox St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.012-1-23	3224 Fox St	Kevin M McCormick	3224 Fox St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.012-1-24	5435D Main St	Thomas P Terrell	5435 Main St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.012-1-25	5451D Main St	H Russell Eastman	5451 Main St	Oneida, NY	13421	210	Single-Family Residence	1	
296.012-1-26	5461D Main St	Brian R Milbach	5461 Main St	Oneida, NY	13421	210	Single-Family Residence	1	
296.012-1-27	5465D Main St	William F Dougherty jr	5465 Main St	Oneida, NY	13421	210	Single-Family Residence	1	
296.012-1-3	5462D Main St	Durhamville Elementary School	5462 Main St	Durhamville, NY	13054	612	School	4.5	
296.012-1-4	0 Rec facility	Oneida City School Dist.	565 Sayles St, P.O. BOX 327	Oneida, NY	13421	682	Recreational facilities	0	
296.012-1-5	5436D Main St	Lee Heiden	5436 Main St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.012-1-6	5432D Main St	Amelia H Rose	5432 Main St	Oneida, NY	13421	210	Single-Family Residence	1	
296.012-1-7	5424D Main St	Eugene W Emmons	5424 Main St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.012-1-8	3207 Fox St	Timothy Fidler	3207 Fox St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.012-1-9	3211 Fox St	Gary Alley	5123 Ostrander Rd	Verona, NY	13478	220	Two-Family Residence	2	
296.016-1-1	0000D Main St	Hashim Abdulkader	27748 Biscayne Ave	Hayward, CA	94544	311	Residential Vacant Land	0.5	
296.016-1-10	3247 Clinton St	Thomas Dixon	3247 Clinton St	Verona, NY	13478	449	Storage, Warehouse	1	
296.016-1-11	3235 Clinton St	Beverley Ayers	3235 Clinton St, P.O. BOX 48	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-12.1	5394D Main St	Nanette E Roberts	5394 D Main St	Verona, NY	13054	210	Single-Family Residence	1	
296.016-1-12.2	5400D Main St	Eric Reames	5400D Main St	Durhamville, NY	13054	220	Two-Family Residence	2	
296.016-1-13	3222 Clinton St	Robert Z Kellum	3222 Clinton St	Oneida, NY	13421	210	Single-Family Residence	1	
296.016-1-14	5382D Main St	Craig D Palmer	6474 Hilts Rd	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-15	3236 Clinton St	Michelle M King	P.O. BOX 84	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-16	5376D Main St	Anthony Stagnitta	5376 D Main St	Durhamville, NY	13054	281	Multiple Residences	2	
296.016-1-17	3275 Lafayette St	Donald Woodward	3275 Lafayette St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-18	5368D Main St	Abounding Love Fellowship	5368 Main St	Durhamville, NY	13054	620	Religious	1	
296.016-1-19	5360D Main St	Five Chimney Group, LLC	138 Main St	Oneida, NY	13421	220	Two-Family Residence	2	
296.016-1-2	5412D Main St	Vanessa Paver	5412 Main St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-20	5356D Main St	Donald J Premo	5356 Main St	Durhamville, NY	13054	220	Two-Family Residence	2	
296.016-1-21	Vacant comm	Abounding Love Fellowship	5368 Main St	Durhamville, NY	13054	330	Vacant Commercial Land	0.5	
296.016-1-24	5364 Canal St	Damion Marino	5364 Canal St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-25	5356 Canal St	Jessica Johnson	5356 Canal St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-26	3293 John St	Robert L Grems	3293 John St, P.O. BOX 43	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-27	5346 Canal St	Joshua Harmon	5346 Canal St	Durhamville, NY	13054	283	Residence w/ Incidental Commercial Use	2	
296.016-1-28	5342 Canal St	Danny Klahs	5342 Canal St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-29	5338 Canal St	Michael C Currier	5338 Canal St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-3	3208 Fox St	Dustin M Anderson	3208 Fox St	Durhamville, NY	13054	220	Two-Family Residence	2	
296.016-1-30	0 Canal St	Sondra M Usiatynski	5336 Broad St	Durhamville, NY	13054	312	Residential Land w/Improvement	0.5	
296.016-1-31	5336 Broad St	Sondra M Usiatynski	5336 Broad St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-32	5334 Broad St	Richard J Champion	5334 Broad St	Durhamville, NY	13054	220	Two-Family Residence	2	
296.016-1-33.1	5326 Broad St	Mabel Pavelka	5326 Broad St	Durhamville, NY	13054	439	Small Parking Garage	0.5	
296.016-1-33.2	5326 Broad St	Mabel Pavelka	5326 Broad St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-34	5339D Main St	Song Line Consulting, LLC	100 Route 6A	Orleans, MA	2653	281	Multiple Residences	2	
296.016-1-35	3207 Maple Ln	Richard W Wall	3207 Maple Ln	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-36	3205 Maple Ln	McLain Living Trust	4980 Randel Rd	Oneida, NY	13421	210	Single-Family Residence	1	
296.016-1-37	3203 D Maple Ln	Walter G Hiscox	3203 D Maple Ln	Verona, NY	13054	210	Single-Family Residence	1	
296.016-1-38	5341D Main St	McLain Living Trust	4980 Randel Rd	Oneida, NY	13421	215	Single Family w/ Apt	1.5	
296.016-1-39	5343 Main St	Paul V Noyes	131 Sherrill Rd	Sherrill, NY	13461	411	Apartments	2.5	
296.016-1-40	5351D Main St	Taylor A Philo	5351D Main St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-41	5361D Main St	Joseph A Wagner	5361 Main St	Durhamville, NY	13054	311	Residential Vacant Land	0.5	
296.016-1-42	5375D Main St	James F York	5405 Main St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-43	5381D Main St	Tina M Briggs	5381 Main St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-44	0000D Main St	Tina M Briggs	5381 Main St	Durhamville, NY	13054	311	Residential Vacant Land	0.5	
296.016-1-45.1	5389D Main St	Larry David White	5389 Main St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-45.2	5401D Main St	Michelle L Caswell	5401 Main St	Durhamville, NY	13054	311	Residential Vacant Land	0.5	
296.016-1-46	5401D Main St	Michelle L Caswell	5401 Main St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-47	5403D Main St	Thomas McNichol	3430 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-48	5405D Main St	James F York	5405 Main St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-49	5409D Main St	Edmund L Kimball	5409 Main St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-50	5415D Main St	Melissa Raymond	5415 Main St	Durhamville, NY	13054	311	Residential Vacant Land	0.5	
296.016-1-51	5415D Main St	Melissa M Raymond	5415 Main St	Durhamville, NY	13054	270	Mobile Home	1	
296.016-1-52	5425D Main St	Michael Willis	P.O. BOX 6	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-6	3218 Fox St	Barry A Van Buren	3218 Fox St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-7	5408D Main St	Stephen J Sellin	5408 Main St	Durhamville, NY	13054	210	Single-Family Residence	1	
296.016-1-8	5404D Main St	Albert Wagner	5834 Old Oneida Rd	Rome, NY	13440	210	Single-Family Residence	1	
296.016-1-9	0 NY Rt 46	Bradford A Dunn	P.O. BOX 15	Durhamville, NY	13054	311	Residential Vacant Land	0.5	
297.000-1-32	0 Kotary Rd	Peter & Josephine Juravich Trust	401 Lewis St	Canastota, NY	13032	240	Rural Residence with acreage	1	In Agricultural District
297.003-1-1	3421 Center St	Rose LaForce	3421 Center St	Durhamville, NY	13054	240	Rural Residence with acreage	1	
297.003-1-10	5191 Center St	Arthur Hill	P.O. BOX 385	Oneida, NY	13421	210	Single-Family Residence	1	
297.003-1-11	3520 Center St	Cemetery				695	Cemetery	0	
297.003-1-12	3520 Center St	Cemetery		Durhamville, NY		695	Cemetery	0	
297.003-1-13	3498 Center St	Karen Nichols	3498 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.003-1-14	3486 Center St	Howard J Netzband	3486 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.003-1-15.1	3450 Center St	Jack D Warren	3450 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.003-1-15.2	3440 Center St	Nathan Philo	3440 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.003-1-2.1	3441 Center St	Samuel DiPrima	3441 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.003-1-2.2	3431 Center St	Tamelasandra Goodspeed	3431 Center St	Durhamville, NY	13054	240	Rural Residence with acreage	1	
297.003-1-3	3435 Center St	Donald Campbell	3435 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.003-1-4	3449 Center St	George L Lohr	1023 North Lake St	Oneida, NY	13421	210	Single-Family Residence	1	
297.003-1-5	3463 Center St	Thomas & Diana Clarke Living Trust	3463 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.003-1-6.1	3485 Center St	William P McNichol	3485 Center St	Durhamville, NY	13054	240	Rural Residence with acreage	1	
297.003-1-6.2	3497 Center St	David K Stamp	3497 Center St, P.O. BOX 165	Durhamville, NY	13054	210	Single-Family Residence	1	
297.003-1-6.3	3471 Center St	Michael McNichol	P.O. BOX 10	Durhamville, NY	13054	210	Single-Family Residence	1	
297.003-1-7	5210 Randel Rd	Steven M Ferrucci	5210 Randel Rd	Durhamville, NY	13054	210	Single-Family Residence	1	
297.003-1-8	3505 Center St	Stephanie Ray	3505 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.003-1-9.1	3519 Center St	Jessica L Meyer	3519 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.003-1-9.2	5191 Randel Rd	Arthur Hill	P.O. BOX 385	Oneida, NY	13421	311	Residential Vacant Land	0.5	
297.013-1-1									
297.013-1-10.1	5380 Foster St	Steven M Hull	5380 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	

(T) VERONA - PROPOSED DURHAMVILLE SEWER DISTRICT									
TAX ID	PARCEL ADDRESS	OWNERS NAME	OWNER'S MAILING ADDRESS	TOWN, STATE	ZIP CODE	PROPERTY CLASS	PROPERTY CLASS DESCRIPTION	PROPOSED EDUs	COMMENTS
297.013-1-10.2	0 Foster St	Percy White	5368 Foster St	Durhamville, NY	13054	314	Residential Vacant Land	0.5	
297.013-1-10.3	5400 Foster St	Penny L Amo	5400 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-11	5384 Foster St	Laurel M Tessier	5384 Foster St	Durhamville, NY	13054	311	Residential Vacant Land	0.5	
297.013-1-12	5384 Foster St	Laurel Tessier	5384 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-13	5372 Foster St	Paul Bowman	5372 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-15	5372 Foster St	Paul Bowman	5372 Foster St	Durhamville, NY	13054	311	Residential Vacant Land	0.5	
297.013-1-16	5368 Foster St	Percy R White	5368 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-17	5362 Foster St	Amondie Shampine	5362 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-18.1	5342 Foster St	Dawn L Borst	5342 Foster St	Durhamille, NY	13054	210	Single-Family Residence	1	
297.013-1-18.2	5356 Foster St	David O Barker	5356 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-19.1	5322 Broad St	Thomas McNichol	3430 Center St	Durhamville, NY	13054	220	Two-Family Residence	2	
297.013-1-19.2	0 Foster St	Vladimir Odarchuk	8 Cheyenne Crst	Whitesboro, NY	13492	484	Small Mulit-Use Building	1	
297.013-1-2	5434 Foster St	Olive Byrne	5434 Foster St Ss	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-20	5341 Foster St	James L Seifert	5341 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-21	5343 Foster St	James M Smoyer	5343 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-22	0 Athletic fld	Durhamville Veterans Club	5350 Canal St, P.O. BOX 217	Durhamville, NY	13054	592	Athletic Fields	1	
297.013-1-23	5357 Foster St	Monica F Patterelli	5357 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-24	5359 Railroad St	Glenn Marsala	P.O. BOX 277	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-25	3304 John St	Mary Willower	3304 John St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-26	3300 John St	Herman Havener	P.O. BOX 215	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-27	3299 John St	Robin S deMaintenon Irrev Tst	241 James St	Canastota, NY	13032	210	Single-Family Residence	1	
297.013-1-28	3305 John St	Michael Rowe	3305 John St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-29	3309 John St	Jeff W Massey	3309 John St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-3.1	5428 Foster St	Paul Balke Irr. Trust	5428 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-30	3315 John St	Michael T Helmer Sr	3315 John St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-32	5378 Railroad St	Ashley J Sanford	5378 Railroad St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-33.2	5371 Foster St	Paul M Kinney	5371 Foster St	Durhamville, NY	13478	210	Single-Family Residence	1	
297.013-1-33.3	0 Railroad St	Paul M Kinney	5371 Foster St	Durhamville, NY	13478	311	Residential Vacant Land	0.5	
297.013-1-34.1	5379 Foster St	Dennis Renninger	5379 Foster St	Durhamville, NY	13054	311	Residential Vacant Land	0.5	
297.013-1-34.2	5379 Foster St	Dennis J Renninger	5379 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-35	5397 Foster St	Ronald Renninger	5397 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-36	5401 Foster St	Michael Scranton	5401 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-37	5407 Foster St	Hugh W Wheeler	5407 Foster St	Durhamville, NY	13054	280	Residential multi-purpose	2	
297.013-1-38	5413 Foster St	Steven Catello	5428 Canal St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-39	5417 Foster St	Tammy L Wimett	5417 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-40	5423 Foster St	Andrew Kirk	5423 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-41	5427 Foster St	Joseph W Cimpi	5427 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-6	5420 Foster St	Sara Grace Barden	5420 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-7	5414 Foster St	Edward F Trombley Jr	5414 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-8	5408 Foster St	Betty Helmer	5408 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.013-1-9	5404 Foster St	Marvin G Clinch II	5404 Foster St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-1	5334 Foster St	St Francis Church-Durhamville	121 St Joseph Pl	Oneida, NY	13421	620	Religious	1	
297.017-1-10	3381 Center St	Katherine A Cullop	3381 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-11	3387 Center St	Norma F Galloway	3387 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-12	3405 Center St	Robert & Betty Paradowski	3405 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-13	3413 Center St	Tanya M Schroder	3413 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-14.1	3422 Center St	Stanley Sobieraj	3422 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-14.3	3430 Center St	Thomas McNichol	3430 Center St, P.O. BOX 162	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-15	3418 Center St	John K Harrison	3418 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-16	3412 Center St	Vernon A Waters	3412 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-18.1	3368 Center St	Shaun P Edick Sr	3368 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-18.2	3390 Center St	James H Cullen	3390 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-18.3	3358 Center St	Douglas Newman	3358 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-19	3350 Center St	Pamela D Carter	3350 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-2	5318 Broad St	St Francis Church-Durhamville	121 St Joseph Pl	Oneida, NY	13421	620	Religious	1	
297.017-1-20	3332 Center St	Michael D Bartlett	3332 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-21	3326 Center St	Paul Cox	302 Gordon Ave	Sherrill, NY	13461	210	Single-Family Residence	1	
297.017-1-22	5244 Oneida St	Andrew C Staats	5244 Oneida St	Oneida, NY	13421	210	Single-Family Residence	1	
297.017-1-23	5250 Oneida St	Keri L Whitmeyer	5250 Oneida St	Oneida, NY	13421	210	Single-Family Residence	1	
297.017-1-24	5254 Oneida St	Timothy A Edkin	5254 Oneida St	Oneida, NY	13421	210	Single-Family Residence	1	
297.017-1-25	5258 Oneida St	Timothy McNichol	5258 Oneida St	Oneida, NY	13421	220	Two-Family Residence	2	
297.017-1-26	5272 Oneida St	Robert Gorman	5272 Oneida St, P.O. BOX 62	Oneida, NY	13421	210	Single-Family Residence	1	
297.017-1-27	5274 Oneida St	Jeannine K Thurston	5274 Oneida St	Oneida, NY	13421	210	Single-Family Residence	1	
297.017-1-28	5276 Oneida St	Melissa A Witek	5276 Oneida St	Verona, NY	13478	210	Single-Family Residence	1	
297.017-1-29	5282 Oneida St	Carol Miller	5282 Oneida St	Oneida, NY	13421	210	Single-Family Residence	1	
297.017-1-3	5312 Broad St	Lawrence P Chandler	5312 Broad St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-30	3292 Center St	Joanna S Snyder	3292 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-31	3294 Center St	GNK Enterprises LLC	9003 Petire Rd	Bridgeport, NY	13030	210	Single-Family Residence	1	
297.017-1-32	3304 Center St	Shearen Ghaffar	3304 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-33	3314 Center St	Zachary A Buck	2 Northwood Cir	New Hartford, NY	13413	210	Single-Family Residence	1	
297.017-1-34	3305 Center St	Donald F Barker Sr	3305 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-35	3308 Center St	Kathryn H Hutchings	3308 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-36	3309 Center St	Edward L Niles	3309 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-37	3311 Center St	Matthew B Eaton	123 Chippewa Run	Auburn, GA	30011	210	Single-Family Residence	1	
297.017-1-38	3315 Center St	Ralph E Holmes	1562 Crescent Ave	Oneida, NY	13421	210	Single-Family Residence	1	
297.017-1-39	3319 Center St	James L Cortes	3319 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-4.1	5296 Broad St	Thomas Fox	5296 Broad St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-4.2	5308 Broad St	Eric B Crandall	5308 Broad St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-40	3321 Center St	Kinnard D Turner	3321 Center St, P.O. BOX 191	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-41	3321 Center St	Kinnard D Turner	3321 Center St, P.O. BOX 191	Durhamville, NY	13054	312	Residential Land w/Improvement	0.5	
297.017-1-42	5285 Broad St	Gilbert E Stout Jr	5285 Broad St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-43	5299 Broad St	Michael J Stinebrickner	6970 Glass Factory Rd	Holland Patent, NY	13354	210	Single-Family Residence	1	
297.017-1-44	5303 Broad St	Kathleen E Wilson	5303 Broad St	Durhamville, NY	13054	220	Two-Family Residence	2	
297.017-1-45	5305 Broad St	Patricia Stanton	P.O. BOX 414	Canastota, NY	13032	210	Single-Family Residence	1	
297.017-1-46	5307 Broad St	James R Stanton	2032 Route 31	Canastota, NY	13032	210	Single-Family Residence	1	
297.017-1-47	5311 Broad St	Joseph W Ennis Jr	5311 Broad St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-48	5296 Charles St	Stanley T Janczuk	5296 Charles St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-49	5299 Charles St	Frank J Sharon	5299 Charles St, P.O. BOX 28	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-5	5290 Broad St	Carol Smith	5290 Broad St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-51.1	3299 Center St	Lynn Vanderhoof	6088 Blackmans Corner Rd	Verona, NY	13478	280	Residential multi-purpose	2	
297.017-1-51.2	5293 Charles St	Johnny Owens	598 Broad St	Oneida, NY	13421	210	Single-Family Residence	1	
297.017-1-52	3297 Center St	Kenneth J Brown	3297 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-53	5294 Center St	Durhamville Baptist Church	5294 Center St, P.O. BOX 96	Durhamville, NY	13054	620	Religious	1	
297.017-1-54	5300 Church St	Eric A Messier	5300 Church St, P.O. BOX 7	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-55	5302 Church St	Thomas Simchik	5302 Church St, P.O. BOX 253	Durhamville, NY	13054	210	Single-Family Residence	1	

(T) VERONA - PROPOSED DURHAMVILLE SEWER DISTRICT									
TAX ID	**PARCEL ADDRESS**	**OWNERS NAME**	**OWNER'S MAILING ADDRESS**	**TOWN, STATE**	**ZIP CODE**	**PROPERTY CLASS**	**PROPERTY CLASS DESCRIPTION**	**PROPOSED EDUs**	**COMMENTS**
297.017-1-56	5318 Broad St	St Francis Church	121 St Joseph Pl	Oneida, NY	13421	620	Religious	1	
297.017-1-6	3339 Center St	Robert A Gloska	3339 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-7	3355 Center St	Cecelia Swan	3355 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-8	3357 Center St	Raymond J Hatch	3357 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-9.1	3373 Center St	John P Mondrick	3373 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
297.017-1-9.2	3359 Center St	Michael S Ano	3359 Center St	Durhamville, NY	13054	210	Single-Family Residence	1	
309.000-1-1	5132 Randel Rd	Charles W Loveless	5132 Randel Rd	Oneida, NY	13421	210	Single-Family Residence	1	
309.000-1-2.1	3600 Kotary Rd	Lynn Vanderhoof	6088 Lowell Rd	Verona, NY	13478	312	Residential Land w/Improvement	0.5	
309.000-1-2.3									
309.000-1-2.4	3565 Kotary Rd	Joseph M Wimett	3565 Kotary Rd	Oneida, NY	13421	210	Single-Family Residence	1	
309.000-1-2.5	3570 Kotary Rd	Stephanie L Plantz	3570 Kotary Rd	Oneida, NY	13421	210	Single-Family Residence	1	
309.000-1-2.6	5141 Randel Rd	David Youngs	5141 Randel Rd	Oneida, NY	13421	210	Single-Family Residence	1	
309.000-1-44	0 Randel Rd	Lois Davis	1903 Bedford St	Rome, NY	13440	311	Residential Vacant Land	0.5	
309.000-1-46	0 Randel Rd	Michael Murray	P.O. BOX 605	Utica, NY	13503	314	Residential Vacant Land	0.5	
309.000-1-7.1	5075 Sand Hill Rd	Sandra L Lawrence	5075 Sand Hill Rd	Oneida, NY	13421	210	Single-Family Residence	1	
309.000-1-7.2	5085 Sand Hill Rd	Frank Parente	2480 State Route 49	Blossvale, NY	13058	210	Single-Family Residence	1	
309.000-1-8	5080 Sand Hill Rd	Charles H Walsh	5080 Sand Hill Rd	Verona, NY	13478	449	Storage, Warehouse	1	
309.000-1-9.1	5068 Randel Rd	Lois Davis	1903 Bedford St	Rome, NY	13440	240	Rural Residence with acreage	1	
							TOTAL EDUs - DEBT SERVICE:	236.5	
							CONNECTED EDUs - O&M, SLA'S, CITY TREATMENT:	226.5	
							SERVICES AND GRINDER PUMPS:	223	

Appendix I
Existing City of Oneida Sewer Connection Capacity Calculations

Hydraulic Evaluation of Gravity Sewer Lines - Alt. 1 & Alt. 2 - Gravity Sewer & Low Pressure System Extending Bennett Road and Harden Road Connecting to Existing System on Lake Road

		Units	Variable														
Pipe Segmanet Data	Segment Name			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Street			Bennett Street	Harden Street	Lake Street	Lake Street	Lake Street	Lake Street	Lake Street	Lake Street	Transmission Main	Transmission Main	Transmission Main	Transmission Main	Transmission Main	Transmission Main	Transmission Main
	Start Location			Proposed BS 1	Proposed HS 1	LS 3	LS 4	LS 5	LS 6	LS7	LS 8	T1	T2	T3	T4	T5	T6	T7
	End Location			Proposed HS 1	LS 3	LS 4	LS 5	LS 6	LS 7	LS 8	T1	T2	T3	T4	T5	T6	T7	Oneida WWTP Inlet
	Start Invert Elevation	ft																
	End Invert Elevation	ft																
	Length	ft		1,231.8	539.0	326	308	129	377	47	51	84	236	146	12	346	369	101
	Slope [2]	%		0.5	0.5	0.20%	0.44%	0.44%	0.44%	0.49%	1.30%	0.09%	0.21%	0.27%	0.07%	0.07%	0.07%	0.07%
	Nominal Pipe Size	in.		4.0	4.0	8	10	10	10	10	21	21	21	21	21	30	30	30
	Material			HDPE	HDPE						AC	AC	AC	AC	AC	AC	AC	AC
Full Pipe Flow Calcs [3]	Slope	ft/ft	S	0.500	0.500	0.002	0.004	0.004	0.004	0.005	0.013	0.001	0.002	0.003	0.001	0.001	0.001	0.001
	Manning Coeff.	none	n	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
	Diameter of Pipe	ft	D	0.333	0.333	0.667	0.833	0.833	0.833	0.833	1.750	1.750	1.750	1.750	1.750	2.500	2.500	2.500
	Depth of Flow ***(full pipe)*** [4]	ft	d	0.313	0.313	0.627	0.783	0.783	0.783	0.783	1.645	1.645	1.645	1.645	1.645	2.350	2.350	2.350
	d/D ratio for Ref Table lookup [5]	none	d / D	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940
	A/D^2 ratio from Ref Table [5]	none	A/D^2	0.7662	0.7662	0.7662	0.7662	0.7662	0.7662	0.7662	0.7662	0.7662	0.7662	0.7662	0.7662	0.7662	0.7662	0.7662
	R/D ratio from Ref Table [5]	none	R/D	0.2896	0.2896	0.2896	0.2896	0.2896	0.2896	0.2896	0.2896	0.2896	0.2896	0.2896	0.2896	0.2896	0.2896	0.2896
	Area of Flow	ft^2	A	0.085	0.085	0.341	0.532	0.532	0.532	0.532	2.346	2.346	2.346	2.346	2.346	4.789	4.789	4.789
	Hydraulic Radius	ft	R	0.097	0.097	0.193	0.241	0.241	0.241	0.241	0.507	0.507	0.507	0.507	0.507	0.724	0.724	0.724
	Full Pipe Flow [3]	**gpm**	**Q_f**	**651**	**651**	**262**	**704**	**704**	**700**	**746**	**8,750**	**2,302**	**3,517**	**3,988**	**2,030**	**5,257**	**5,257**	**5,257**
	Full Flow Velocity	fps	V_f	**17.0**	**17.0**	**1.7**	**2.9**	**2.9**	**2.9**	**3.1**	**8.3**	**2.2**	**3.3**	**3.8**	**1.9**	**2.4**	**2.4**	**2.4**
	Full Pipe Flow [3]	**gpd**	**Q_f**	**938015**	**938015**	**376779**	**1013344**	**1013344**	**1007570**	**1073728**	**12599729**	**3315208**	**5064064**	**5742109**	**2923739**	**7569411**	**7569411**	**7569411**
	Full Pipe Flow [3]	**gpm**	**Q_f**	**651**	**651**	**262**	**704**	**704**	**700**	**746**	**8750**	**2302**	**3517**	**3988**	**2030**	**5257**	**5257**	**5257**
	Total Demand After Tie-Ins	**gpm**	**Q_f**	**38.51**	**38.43**	**39.23**	**41**	**41**	**43**	**43**	**43**	**43**	**43**	**1759**	**1759**	**1759**	**1759**	**1759**
			Excess Capacity:	94%	94%	85%	94%	94%	94%	94%	100%	98%	99%	56%	13%	67%	67%	67%

Notes:

1. The purpose of this table is to calculate the maximum (or "full") flow that each pipe segment can accommodate, followed by the flow depth and velocity in that segment at the design flow.
2. Minimum acceptable slope for gravity pipe is 0.5%
3. Manning Equation is used to calculate maximum full pipe flow with no head at beginning of pipe

$$Q_f = \frac{669 \times A \times R^{2/3} \times S^{1/2}}{n}$$

4. Max flow occurs at 94% depth due to pipe friction (ISCO Open Channel Flow Measurement Handbook, 3rd ed., p. 108)
5. Ratio d/D is used to determine R/D and A/D^2 from Table 6-2 of ISCO Open Channel Flow Measurement Handbook, 3rd ed.
6. Ratio Q/Q_f is used to determine d/D from Graph in Figure 6.2 in ISCO Open Channel Flow Measurement Handbook, 3rd ed.
7. Ratio d/D is used to determine A/D^2 from Table 6-2 of ISCO Open Channel Flow Measurement Handbook, 3rd ed.

Hydraulic Evaluation of Gravity Sewer Lines - Alt. 3 - Low Pressure System Extending on Lake Street

		Units	Variable	Existing Gravity Sewer Mains														
Pipe Segmanet Data	Segment Name			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Street			Lake Street	Lake Street	Lake Street	Lake Street	Lake Street	Lake Street	Lake Street	Lake Street	Transmission Main	Transmission Main	Transmission Main	Transmission Main	Transmission Main	Transmission Main	Transmission Main
	Start Location			LS 1	LS 2	LS 3	LS 4	LS 5	LS 6	LS7	LS 8	T1	T2	T3	T4	T5	T6	T7
	End Location			LS 2	LS 3	LS 4	LS 5	LS 6	LS 7	LS8	T1	T2	T3	T4	T5	T6	T7	Oneida WWTP Inlet
	Start Invert Elevation	ft																
	End Invert Elevation	ft																
	Length	ft		426	296	326	308	129	377	47	51	84	236	146	12	346	369	101
	Slope [2]	%		0.20%	0.20%	0.20%	0.44%	0.44%	0.44%	0.49%	1.30%	0.09%	0.21%	0.27%	0.07%	0.07%	0.07%	0.07%
	Nominal Pipe Size	in.		8	8	8	10	10	10	10	21	21	21	21	21	30	30	30
	Material										AC	AC	AC	AC	AC	AC	AC	AC
Full Pipe Flow Calcs [3]	Slope	ft/ft	S	0.002	0.002	0.002	0.004	0.004	0.004	0.005	0.013	0.001	0.002	0.003	0.001	0.001	0.001	0.001
	Manning Coeff.	none	n	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
	Diameter of Pipe	ft	D	0.667	0.667	0.667	0.833	0.833	0.833	0.833	1.750	1.750	1.750	1.750	1.750	2.500	2.500	2.500
	Depth of Flow ***(full pipe)*** [4]	ft	d	0.627	0.627	0.627	0.783	0.783	0.783	0.783	1.645	1.645	1.645	1.645	1.645	2.350	2.350	2.350
	d/D ratio for Ref Table lookup [5]	none	d / D	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940	0.940
	A/D^2 ratio from Ref Table [5]	none	A/D^2	0.7662	0.7662	0.7662	0.7662	0.7662	0.7662	0.7662	0.7662	0.7662	0.7662	0.7662	0.7662	0.7662	0.7662	0.7662
	R/D ratio from Ref Table [5]	none	R/D	0.2896	0.2896	0.2896	0.2896	0.2896	0.2896	0.2896	0.2896	0.2896	0.2896	0.2896	0.2896	0.2896	0.2896	0.2896
	Area of Flow	ft^2	A	0.341	0.341	0.341	0.532	0.532	0.532	0.532	2.346	2.346	2.346	2.346	2.346	4.789	4.789	4.789
	Hydraulic Radius	ft	R	0.193	0.193	0.193	0.241	0.241	0.241	0.241	0.507	0.507	0.507	0.507	0.507	0.724	0.724	0.724
	Full Pipe Flow [3]	**gpm**	**Q_f**	**262**	**262**	**262**	**704**	**704**	**700**	**746**	**8,750**	**2,302**	**3,517**	**3,988**	**2,030**	**5,257**	**5,257**	**5,257**
	Full Flow Velocity	fps	V_f	**1.7**	**1.7**	**1.7**	**2.9**	**2.9**	**2.9**	**3.1**	**8.3**	**2.2**	**3.3**	**3.8**	**1.9**	**2.4**	**2.4**	**2.4**
	Full Pipe Flow [3]	**gpd**	**Q_f**	**376779**	**376779**	**376779**	**1013344**	**1013344**	**1007570**	**1073728**	**12599729**	**3315208**	**5064064**	**5742109**	**2923739**	**7569411**	**7569411**	**7569411**
	Full Pipe Flow [3]	**gpm**	**Q_f**	**262**	**262**	**262**	**704**	**704**	**700**	**746**	**8750**	**2302**	**3517**	**3988**	**2030**	**5257**	**5257**	**5257**
	Total Demand After Tie-Ins	**gpm**	**Q_f**	**39.63**	**42**	**43**	**45**	**45**	**47**	**47**	**47**	**1762**	**1762**	**1762**	**1762**	**1762**	**1762**	**1762**
	Excess Capacity:			85%	84%	84%	94%	94%	93%	94%	99%	23%	50%	56%	13%	66%	66%	66%

Notes:

1. The purpose of this table is to calculate the maximum (or "full") flow that each pipe segment can accommodate, followed by the flow depth and velocity in that segment at the design flow.
2. Minimum acceptable slope for gravity pipe is 0.5%
3. Manning Equation is used to calculate maximum full pipe flow with no head at beginning of pipe

$$Q_f = \frac{669 \times A \times R^{2/3} \times S^{1/2}}{n}$$

4. Max flow occurs at 94% depth due to pipe friction (ISCO Open Channel Flow Measurement Handbook, 3rd ed., p. 108)
5. Ratio d/D is used to determine R/D and A/D^2 from Table 6-2 of ISCO Open Channel Flow Measurement Handbook, 3rd ed.
6. Ratio Q/Q_f is used to determine d/D from Graph in Figure 6.2 in ISCO Open Channel Flow Measurement Handbook, 3rd ed.
7. Ratio d/D is used to determine A/D^2 from Table 6-2 of ISCO Open Channel Flow Measurement Handbook, 3rd ed.

Appendix J
Estimated Probable Project Cost

Barton & Loguidice

443 Electronics Parkway Liverpool, New York 13088
Phone 315-457-5200 · Fax 315-451-0052

JOB	(T) Verona - Durhamville Sewer District (500.094.001)		
SHEET NO.	1	OF	1
CALCULATED BY	BAH	DATE	7/29/2025
CHECKED BY	BJS	DATE	7/29/2025
DESC.	Durhamville Sewer District - Estimated Project Cost - Alternative No. 1		

Item	Description	Quantity	Units	Unit Cost	Total
1	Furnish and Install 8" PVC Gravity Sewer (8'-12' depth)	17,200	LF	$300	$5,160,000
2	Furnish and Install 1.5" HDPE Force Main	1,300	LF	$36	$46,800
3	Furnish and Install 2" HDPE Force Main	600	LF	$38	$22,800
4	Furnish and Install 4" HDPE Force Main	9,200	LF	$42	$386,400
5	Furnish and Install 4-foot Diameter Manhole	62	EA	$5,300	$328,600
6	Gravity Sewer Lateral	13,740	LF	$200	$2,748,000
7	Furnish and Install 1.25" Low Pressure Lateral	8	EA	$1,750	$14,000
8	Furnish and Install Individual Grinder Pump and Lateral Kit	8	EA	$8,000	$64,000
9	Furnish and Install Road Crossing (2" Directional Drill)	50	LF	$200	$10,000
10	Furnish and Install Road Crossing (4" Directional Drill)	140	LF	$285	$39,900
11	Grinder Pump Building Sewer Connections	8	EA	$4,000	$32,000
12	Oneida Creek Stream Crossing (Directional Drill)	1	LS	$40,000	$40,000
13	Erie Canal Crossing (Directional Drill)	1	EA	$80,000	$80,000
14	NYS Thurway Crossing (Directional Drill)	1	LS	$100,000	$100,000
15	NYS Route 46 Crossing (Directional Drill)	1	EA	$60,000	$60,000
16	CSX Railroad Crossing (Steel Casing Jack and Bore)	1	LS	$175,000	$175,000
17	Cleanout	9	EA	$1,600	$14,400
18	Air Valve Release Manhole	4	EA	$12,500	$50,000
19	Pump Station No. 1	NEC	LS	$300,000	$300,000
20	Pump Station No. 2	NEC	LS	$100,000	$100,000
21	Pump Station No. 3	NEC	LS	$300,000	$300,000
22	Pump Station No. 4	NEC	LS	$500,000	$500,000
23	Furnish Portable Generator	1	EA	$25,000	$25,000
24	Furnish Spare Pump Cores	1	EA	$3,000	$3,000
25	Connection to Existing City of Oneida WWTP	1	LS	$20,000	$20,000
26	Clearing	NEC	LS	$25,000	$25,000
27	Restoration	28,300	LF	$10	$283,000
				Subtotal (2025 Dollars)	$10,928,000
				Inflation to 2028 (6%/yr)	$2,087,000
	Mob/Demob/General Conditions/Work Traffic Control			5%	$651,000
			Contingency	35%	$4,783,000
			Subtotal (Construction Costs) (2028 Dollars)		$18,400,000
	Planning/District Formation/Funding/Engineering/Legal/Administrative			25%	$4,600,000
				Total (2028 Dollars)	$23,000,000

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JOB	(T) Verona - Durhamville Sewer District (500.094.001)		
SHEET NO.	1	OF	1
CALCULATED BY	BAH	DATE	5/1/2026
CHECKED BY	BJS	DATE	5/1/2026
DESC.	Durhamville Sewer District - Estimated Project Cost - Alternative No. 1		

DURHAMVILLE SEWER PROJECT	
Project Financing and User Cost Estimates	
Description	EFC (0%, 30 year)
Total Estimated Capital Project Cost (2028 Dollars)	$23,000,000
Awarded SWIFT Grant	$2,000,000
Awarded Enhanced WIIA Grant (50% of net cost)	$2,779,000
Awarded EPA STAG Grant	$1,092,000
Total Estimated Capital Project Cost	$18,221,000
Annualized Project Cost	$607,367
Number of EDUs	236.5
Capital Debt per EDU	$2,568
Estimated Annual O&M	$375
Estimated Annual Short Lived Assets	$48
Estimated City WWTP O&M Costs	$241
Estimated Annual Pump Power Cost	$22
Total Annual Cost per EDU	$3,254
*Assumes 0% Hardship DWSRF financing for 30 years.	

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JOB	(T) Verona - Durhamville Sewer District (500.094.001)		
SHEET NO.	1	OF	1
CALCULATED BY	BAH	DATE	7/29/2025
CHECKED BY	BJS	DATE	7/29/2025
DESC.	Durhamville Sewer District - Estimated Project Cost - Alternative No. 2		

Item	Description	Quantity	Units	Unit Cost	Total
1	Furnish and Install 2" HDPE Force Main	9,120	LF	$38	$346,560
2	Furnish and Install 3" HDPE Force Main	7,100	LF	$40	$284,000
3	Furnish and Install 4" HDPE Force Main	5,220	LF	$42	$219,240
4	Furnish and Install 6" HDPE Force Main	4,900	LF	$46	$225,400
5	Furnish and Install 1.25" Low Pressure Lateral	223	EA	$1,750	$390,250
6	Furnish and Install Individual Grinder Pump and Lateral Kit	223	EA	$7,000	$1,561,000
7	Furnish and Install Individual Duplex Grinder Pump and Lateral Kit	1	EA	$12,000	$12,000
8	Furnish and Install Grinder Pump Electrical Service Connection Type A	112	EA	$2,900	$324,800
9	Furnish and Install Grinder Pump Electrical Service Connection Type B	56	EA	$4,400	$246,400
10	Furnish and Install Grinder Pump Electrical Service Connection Type C	56	EA	$5,000	$280,000
11	Furnish and Install Road Crossing (1.25" Directional Drill)	1,600	LF	$170	$272,000
12	Furnish and Install Road Crossing (2" Directional Drill)	300	LF	$200	$60,000
13	Furnish and Install Road Crossing (3" Directional Drill)	180	LF	$250	$45,000
14	Furnish and Install Road Crossing (4" Directional Drill)	100	LF	$285	$28,500
15	Furnish and Install Road Crossing (6" Directional Drill)	40	LF	$300	$12,000
16	Grinder Pump Building Sewer Connections	224	EA	$4,000	$896,000
17	NYS Route 46 Crossing (Directional Drill)	1	EA	$60,000	$60,000
18	NYS Thurway Crossing (Directional Drill)	1	EA	$100,000	$100,000
19	CSX Railroad Crossing (Steel Casing Jack and Bore)	1	EA	$175,000	$175,000
20	Erie Canal Crossing (Directional Drill)	1	EA	$80,000	$80,000
21	Oneida Creek Stream Crossing (Directional Drill)	1	EA	$40,000	$40,000
22	Cleanout	34	EA	$1,600	$54,400
23	Air Valve Release Manhole	7	EA	$12,500	$87,500
24	Utility Allowance	NEC	LS	$170,000	$170,000
25	Furnish Spare Pump Cores	6	EA	$3,000	$18,000
26	Connection to Existing City of Oneida WWTP	1	LS	$20,000	$20,000
27	Clearing	NEC	LS	$25,000	$25,000
28	Restoration	26,340	LF	$10	$263,400
				Subtotal (2025 Dollars)	$6,296,000
				Inflation to 2028 (6%/yr)	$1,203,000
	Mob/Demob/General Conditions/Work Traffic Control			5%	$375,000
			Contingency	35%	$2,756,000
			Subtotal (Construction Costs) (2028 Dollars)		$10,600,000
	Planning/District Formation/Funding/Engineering/Legal/Administrative			25%	$2,700,000
				Total (2028 Dollars)	$13,300,000

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JOB	(T) Verona - Durhamville Sewer District (500.094.001)		
SHEET NO.	1	OF	1
CALCULATED BY	BAH	DATE	5/1/2026
CHECKED BY	BJS	DATE	5/1/2026
DESC.	Durhamville Sewer District - Estimated Project Cost -		

DURHAMVILLE SEWER PROJECT	
Project Financing and User Cost Estimates	
Description	EFC (0%, 30 year)
Total Estimated Capital Project Cost (2028 Dollars)	$13,300,000
Awarded SWIFT Grant	$2,000,000
Awarded Enhanced WIIA Grant (50% of net cost)	$6,104,000
Awarded EPA STAG Grant	$1,092,000
Total Estimated Capital Project Cost to Finance	$4,104,000
Annualized Project Cost (50% Rule)	$109,440
Number of EDUs	236.5
Capital Debt per EDU	$463
Estimated Annual O&M	$99
Estimated Annual Short Lived Assets	$50
Estimated City WWTP O&M Costs	$241
Estimated Annual Pump Power Cost	$22
Total Annual Cost per EDU	$875
*Assumes 0% Hardship DWSRF financing for 30 years.	

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JOB	(T) Verona - Durhamville Sewer District (500.094.001)		
SHEET NO.	1	OF	1
CALCULATED BY	BAH	DATE	7/29/2025
CHECKED BY	BJS	DATE	7/29/2025
DESC.	Durhamville Sewer District - Estimated Project Cost - Alternative No. 3		

Item	Description	Quantity	Units	Unit Cost	Total
1	Furnish and Install 1.5" HDPE Force Main	2,500	LF	$36	$90,000
2	Furnish and Install 2" HDPE Force Main	9,720	LF	$38	$369,360
3	Furnish and Install 3" HDPE Force Main	10,600	LF	$40	$424,000
4	Furnish and Install 4" HDPE Force Main	1,500	LF	$42	$63,000
5	Furnish and Install 6" HDPE Force Main	5,300	LF	$46	$243,800
6	Furnish and Install 1.25" Low Pressure Lateral	223	EA	$1,750	$390,250
7	Furnish and Install Individual Grinder Pump and Lateral Kit	223	EA	$7,000	$1,561,000
8	Furnish and Install Individual Duplex Grinder Pump and Lateral Kit	1	EA	$12,000	$12,000
9	Furnish and Install Grinder Pump Electrical Service Connection Type A	112	EA	$2,900	$324,800
10	Furnish and Install Grinder Pump Electrical Service Connection Type B	56	EA	$4,400	$246,400
11	Furnish and Install Grinder Pump Electrical Service Connection Type C	56	EA	$5,000	$280,000
12	Furnish and Install Road Crossing (1.25" Directional Drill)	1,600	LF	$170	$272,000
13	Furnish and Install Road Crossing (1.5" Directional Drill)	130	LF	$180	$23,400
14	Furnish and Install Road Crossing (2" Directional Drill)	170	LF	$200	$34,000
15	Furnish and Install Road Crossing (3" Directional Drill)	180	LF	$250	$45,000
16	Furnish and Install Road Crossing (4" Directional Drill)	100	LF	$285	$28,500
17	Furnish and Install Road Crossing (6" Directional Drill)	40	LF	$300	$12,000
18	Grinder Pump Building Sewer Connections	224	EA	$4,000	$896,000
19	NYS Route 46 Crossing (Directional Drill)	1	EA	$60,000	$60,000
20	NYS Thurway Crossing (Directional Drill)	2	EA	$100,000	$200,000
21	CSX Railroad Crossing (Steel Casing Jack and Bore)	2	EA	$175,000	$350,000
22	Erie Canal Crossing (Directional Drill)	1	EA	$80,000	$80,000
23	Oneida Creek Stream Crossing (Directional Drill)	1	EA	$40,000	$40,000
24	Cleanout	38	EA	$1,600	$60,800
25	Air Valve Release Manhole	9	EA	$12,500	$112,500
26	Furnish Spare Pump Cores	6	EA	$3,000	$18,000
27	Connection to Existing City of Oneida WWTP	1	LS	$20,000	$20,000
28	Clearing	NEC	LS	$25,000	$25,000
29	Restoration	29,620	LF	$10	$296,200
				Subtotal (2025 Dollars)	$6,578,000
				Inflation to 2028 (6%/yr)	$1,257,000
	Mob/Demob/General Conditions/Work Traffic Control			5%	$392,000
			Contingency	35%	$2,879,000
			Subtotal (Construction Costs) (2028 Dollars)		$11,100,000
	Planning/District Formation/Funding/Engineering/Legal/Administrative			25%	$2,800,000
				Total (2028 Dollars)	$13,900,000

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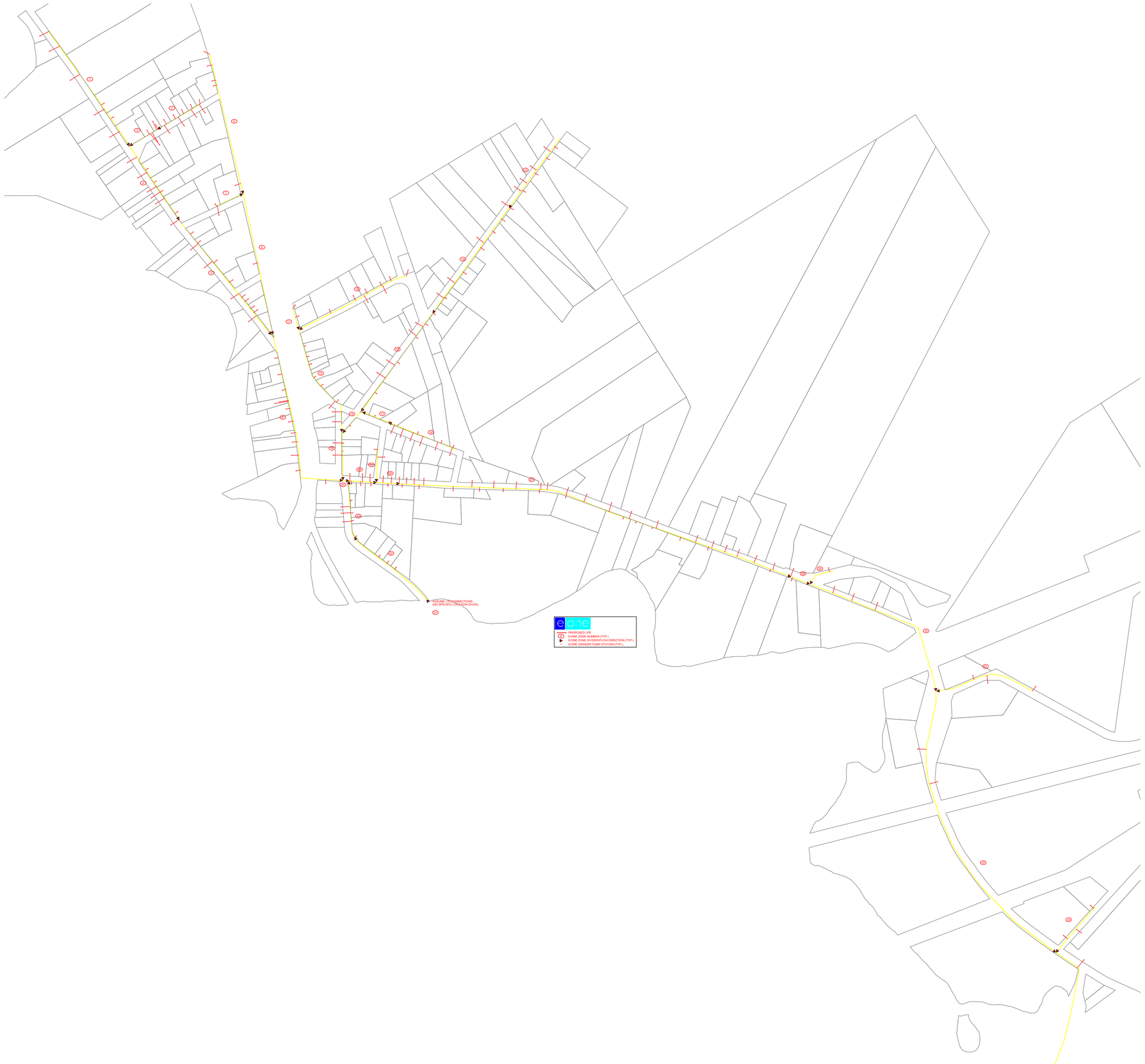
JOB	(T) Verona - Durhamville Sewer District (500.094.001)		
SHEET NO.	1	OF	1
CALCULATED BY	BAH	DATE	5/1/2026
CHECKED BY	BJS	DATE	5/1/2026
DESC.	Durhamville Sewer District - Estimated Project Cost - Alternative No. 3		

DURHAMVILLE SEWER PROJECT	
Project Financing and User Cost Estimates	
Description	EFC (0%, 30 year)
Total Estimated Capital Project Cost (2028 Dollars)	$13,900,000
Awarded SWIFT Grant	$2,000,000
Awarded Enhanced WIIA Grant (50% of net cost)	$6,404,000
Awarded EPA STAG Grant	$1,092,000
Total Estimated Capital Project Cost	$5,496,000
Annualized Project Cost	$183,200
Number of EDUs	236.5
Capital Debt per EDU	$775
Estimated Annual O&M	$99
Estimated Annual Short Lived Assets	$50
Estimated City WWTP O&M Costs	$241
Estimated Annual Pump Power Cost	$22
Total Annual Cost per EDU	$1,187
*Assumes 0% Hardship DWSRF financing for 30 years.	

Appendix K
Low-Pressure Sewer Sizing Calculations


ASSUME 10 CONNECTIONS
(NO SPECIFIC LOCATION GIVEN)
10
e one
PROPOSED LPS
E/ONE ZONE NUMBER (TYP.)
E/ONE ZONE DIVIDER/FLOW DIRECTION (TYP.)
E/ONE GRINDER PUMP STATION (TYP.)

Environment One Corporation

Pressure Sewer Preliminary Cost and Design Analysis For Verona, NY Durhamville SD Alt. 2

Prepared For:
Barton & Loguidice
443 Electronics Parkway
Liverpool NY 13088 USA
Tel: 315-457-5200
Fax:
Prepared By: M. Crowley
June 18, 2021

Verona, NY
Durhamville SD Alt. 2

Prepared by : M. Crowley **On:** June 18, 2021

Notes :
Analysis based upon drawings and data provided. Station recommendations are preliminary.

GPD values impact retention times only, not line sizing or hydraulics. GP laterals to be 1.25".

Analysis valid only with pipe type listed.

General recommendations for valve placement are: clean out valves at intervals of approximately 1,000 ft and at branch ends and junctions; isolation valves at branch junctions; and air release valves at peaks of 25 ft or more and/or at intervals of 2,000 to 2,500 ft. Lateral kits comprised of a ball and check valve are required to be installed between the pump discharge and street main on all installations. Laterals should be located as close to the public right of way as possible.

Quantities of grinder pumps, pipe, and valves are indicated on the cost page. The model of grinder pump(s) indicated is based upon the initial information provided to us but may not be the most appropriate for the specific location or requirements of the project. Costs of these items and their installation are best obtained from sources in your region. We recommend you contact your local distributor of Environment One products for additional recommendations.

<<<<< E N D O F N O T E S >>>>>

June 18, 2021

Budgetary Low Pressure Sewer System Costs

Verona, NY
Durhamville SD Alt. 2

	Quantity	Description	Unit Cost	Installation	Sub Total
Valves	8	Air/Vacuum Release Valve	$0.00	0.00	$0.00
	35	Clean Out	$0.00	0.00	$0.00
					$0.00
Pumps	218	DH071-93	$0.00	0.00	$0.00
	1	DH152-93	$0.00	0.00	$0.00
	219	Lateral Kits (Includes Ball\Check Valve Assembly)	$0.00	0.00	$0.00
	219	Lateral (Boundary) Installation	$0.00	0.00	$0.00
	219	Pump/Panel Installation	$0.00	0.00	$0.00
	10,950	LF of 1.25" Lateral Pipe	$0.00	0.00	$0.00
					$0.00
Piping	225	1.25" Pipe	$0.00	0.00	$0.00
	7,769	2.00" Pipe	$0.00	0.00	$0.00
	7,147	3.00" Pipe	$0.00	0.00	$0.00
	6,978	4.00" Pipe	$0.00	0.00	$0.00
	4,926	6.00" Pipe	$0.00	0.00	$0.00
					$0.00

Number of Connections	**219**		
Total Per Connection	**$0.00**	**Total (w/o other)** >>>>>>>>>>>>	**$0.00**
Grand Total Per Connection	**$0.00**	**Grand Total (including other)** >>>>>>>>>>>>	**$0.00**

Note: The System Costs above are based on piping sized for, and Grinder Pumps manufactured by Environment One Corporation.

PRELIMINARY PRESSURE SEWER - PIPE SIZING AND BRANCH ANALYSIS

Prepared By: Verona, NY

M. Crowley Durhamville SD Alt. 2 June 18, 2021

Zone Number	Connects to Zone	Number of Pumps in Zone	Accum Pumps in Zone	Gals/day per Pump	Max Flow Per Pump (gpm)	Max Sim Ops	Max Flow (GPM)	Pipe Size (inches)	Max Velocity (FPS)	Length of Main this Zone	Friction Loss Factor (ft/100 ft)	Friction Loss This Zone	Accum Fric Loss (feet)	Max Main Elevation	Minimum Pump Elevation	Static Head (feet)	Total Dynamic Head (ft)
This spreadsheet was calculated using pipe diameters for: SDR11HDPE											Friction loss calculations were based on a Constant for inside roughness "C" of: 150						
1.00	4.00	7	7	295	11.00	3	33.00	2.00	3.57	1,093.00	2.52	27.54	132.73	438.00	420.00	18.00	150.73
2.00	3.00	9	9	200	11.00	3	33.00	2.00	3.57	322.00	2.52	8.11	114.96	438.00	420.00	18.00	132.96
3.00	4.00	5	14	200	11.00	4	44.00	3.00	2.19	256.00	0.65	1.66	106.85	438.00	420.00	18.00	124.85
4.00	5.00	9	30	200	11.00	5	55.00	3.00	2.74	689.00	0.98	6.77	105.19	438.00	420.00	18.00	123.19
5.00	9.00	13	43	200	11.00	6	66.00	3.00	3.29	1,171.00	1.38	16.13	98.42	438.00	422.00	16.00	114.42
6.00	8.00	5	5	200	11.00	3	33.00	2.00	3.57	1,118.00	2.52	28.17	139.18	438.00	424.00	14.00	153.18
7.00	8.00	2	2	200	11.00	2	22.00	2.00	2.38	229.00	1.19	2.72	113.73	438.00	424.00	14.00	127.73
8.00	9.00	1	8	200	11.00	3	33.00	2.00	3.57	1,140.00	2.52	28.72	111.01	438.00	426.00	12.00	123.01
9.00	20.00	12	63	200	11.00	7	77.00	4.00	2.32	1,444.00	0.54	7.79	82.29	438.00	428.00	10.00	92.29
10.00	12.00	8	8	200	11.00	3	33.00	2.00	3.57	933.00	2.52	23.51	108.98	438.00	428.00	10.00	118.98
11.00	12.00	2	2	200	11.00	2	22.00	2.00	2.38	169.00	1.19	2.01	87.48	438.00	432.00	6.00	93.48
12.00	19.00	9	19	200	11.00	5	55.00	3.00	2.74	919.00	0.98	9.03	85.47	438.00	430.00	8.00	93.47
13.00	14.00	9	9	200	11.00	3	33.00	2.00	3.57	667.00	2.52	16.80	112.28	438.00	428.00	10.00	122.28
14.00	15.00	9	18	200	11.00	4	44.00	3.00	2.19	1,011.00	0.65	6.57	95.48	438.00	432.00	6.00	101.48
15.00	18.00	9	27	200	11.00	5	55.00	3.00	2.74	945.00	0.98	9.28	88.91	438.00	432.00	6.00	94.91
16.00	17.00	9	9	200	11.00	3	33.00	2.00	3.57	555.00	2.52	13.98	95.13	438.00	432.00	6.00	101.13
17.00	18.00	2	11	200	11.00	4	44.00	3.00	2.19	234.00	0.65	1.52	81.15	438.00	432.00	6.00	87.15
18.00	19.00	1	39	200	11.00	6	66.00	3.00	3.29	232.00	1.38	3.19	79.63	438.00	434.00	4.00	83.63
19.00	20.00	4	62	200	11.00	7	77.00	4.00	2.32	360.00	0.54	1.94	76.44	438.00	434.00	4.00	80.44
20.00	24.00	0	125	200	11.00	9	99.00	4.00	2.98	46.00	0.86	0.40	74.50	438.00	430.00	8.00	82.50
21.00	22.00	25	25	200	11.00	5	55.00	3.00	2.74	500.00	0.98	4.91	92.46	438.00	408.00	30.00	122.46
22.00	23.00	3	28	200	11.00	5	55.00	3.00	2.74	745.00	0.98	7.32	87.55	438.00	410.00	28.00	115.55
23.00	24.00	7	35	200	11.00	6	66.00	3.00	3.29	445.00	1.38	6.13	80.23	438.00	422.00	16.00	96.23
24.00	26.00	6	166	200	11.00	10	110.00	4.00	3.31	215.00	1.04	2.25	74.10	438.00	424.00	14.00	88.10
25.00	26.00	2	2	200	11.00	2	22.00	2.00	2.38	278.00	1.19	3.31	75.16	438.00	422.00	16.00	91.16
26.00	27.00	3	171	200	11.00	10	110.00	4.00	3.31	177.00	1.04	1.85	71.85	438.00	422.00	16.00	87.85
27.00	28.00	33	204	200	11.00	11	121.00	4.00	3.65	3,156.00	1.25	39.33	70.00	438.00	422.00	16.00	86.00
28.00	30.00	2	206	200	11.00	11	121.00	4.00	3.65	163.00	1.25	2.03	30.67	438.00	408.00	30.00	60.67
29.00	30.00	1	1	200	11.00	1	11.00	1.25	2.44	225.00	1.88	4.24	32.88	438.00	424.00	14.00	46.88
30.00	32.00	3	210	200	11.00	11	121.00	4.00	3.65	1,417.00	1.25	17.66	28.64	438.00	414.00	24.00	52.64
31.00	32.00	3	3	200	11.00	2	22.00	2.00	2.38	801.00	1.19	9.52	20.50	442.00	430.00	12.00	32.50
32.00	34.00	2	215	200	11.00	12	132.00	6.00	1.83	2,405.00	0.22	5.36	10.98	436.00	408.00	28.00	38.98
33.00	34.00	3	3	200	11.00	2	22.00	2.00	2.38	464.00	1.19	5.52	11.14	430.00	430.00	0.00	11.14
34.00	34.00	1	219	200	11.00	12	132.00	6.00	1.83	2,521.00	0.22	5.62	5.62	430.00	430.00	0.00	5.62

Note: This analysis is valid only with the use of progressive cavity type grinder pumps as manufactured by Environment One.

Prepared By:
M. Crowley

PRELIMINARY PRESSURE SEWER - ACCUMULATED RETENTION TIME(HR)
Verona, NY
Durhamville SD Alt. 2

June 18, 2021

Zone Number	Connects to Zone	Accumulated Total of Pumps this Zone	Pipe Size (inches)	Gallons per 100 lineal feet	Length of Zone	Capacity of Zone	Average Daily Flow	Average Fluid Changes per Day	Average Retention Time (Hr)	Accumulated Retention Time (Hr)
This spreadsheet was calculated using pipe diameters for: SDR11HDPE								Gals per Day per Dwelling		200
1.00	4.00	7	2.00	15.40	1,093.00	168.35	2,065	12.27	1.96	10.14
2.00	3.00	9	2.00	15.40	322.00	49.60	1,800	36.29	0.66	9.58
3.00	4.00	14	3.00	33.47	256.00	85.67	2,800	32.68	0.73	8.92
4.00	5.00	30	3.00	33.47	689.00	230.58	6,665	28.90	0.83	8.19
5.00	9.00	43	3.00	33.47	1,171.00	391.89	9,265	23.64	1.02	7.36
6.00	8.00	5	2.00	15.40	1,118.00	172.20	1,000	5.81	4.13	13.11
7.00	8.00	2	2.00	15.40	229.00	35.27	400	11.34	2.12	11.09
8.00	9.00	8	2.00	15.40	1,140.00	175.59	1,600	9.11	2.63	8.97
9.00	20.00	63	4.00	55.31	1,444.00	798.72	13,265	16.61	1.45	6.34
10.00	12.00	8	2.00	15.40	933.00	143.71	1,600	11.13	2.16	9.38
11.00	12.00	2	2.00	15.40	169.00	26.03	400	15.37	1.56	8.78
12.00	19.00	19	3.00	33.47	919.00	307.56	3,800	12.36	1.94	7.22
13.00	14.00	9	2.00	15.40	667.00	102.74	1,800	17.52	1.37	10.55
14.00	15.00	18	3.00	33.47	1,011.00	338.35	3,600	10.64	2.26	9.18
15.00	18.00	27	3.00	33.47	945.00	316.26	5,400	17.07	1.41	6.92
16.00	17.00	9	2.00	15.40	555.00	85.49	1,800	21.06	1.14	7.51
17.00	18.00	11	3.00	33.47	234.00	78.31	2,200	28.09	0.85	6.37
18.00	19.00	39	3.00	33.47	232.00	77.64	7,800	100.46	0.24	5.52
19.00	20.00	62	4.00	55.31	360.00	199.13	12,400	62.27	0.39	5.28
20.00	24.00	125	4.00	55.31	46.00	25.44	25,665	1,008.68	0.02	4.89
21.00	22.00	25	3.00	33.47	500.00	167.33	5,000	29.88	0.80	7.25
22.00	23.00	28	3.00	33.47	745.00	249.33	5,600	22.46	1.07	6.45
23.00	24.00	35	3.00	33.47	445.00	148.93	7,000	47.00	0.51	5.38
24.00	26.00	166	4.00	55.31	215.00	118.92	33,865	284.76	0.08	4.87
25.00	26.00	2	2.00	15.40	278.00	42.82	400	9.34	2.57	7.36
26.00	27.00	171	4.00	55.31	177.00	97.90	34,865	356.11	0.07	4.79
27.00	28.00	204	4.00	55.31	3,156.00	1,745.68	41,465	23.75	1.01	4.72
28.00	30.00	206	4.00	55.31	163.00	90.16	41,865	464.34	0.05	3.71
29.00	30.00	1	1.25	7.52	225.00	16.93	200	11.82	2.03	5.69
30.00	32.00	210	4.00	55.31	1,417.00	783.79	42,665	54.43	0.44	3.66
31.00	32.00	3	2.00	15.40	801.00	123.38	600	4.86	4.94	8.15
32.00	34.00	215	6.00	119.90	2,405.00	2,883.57	43,665	15.14	1.58	3.22
33.00	34.00	3	2.00	15.40	464.00	71.47	600	8.40	2.86	4.49
34.00	34.00	219	6.00	119.90	2,521.00	3,022.65	44,465	14.71	1.63	1.63

Note: This analysis is valid only with the use of progressive cavity type grinder pumps as manufactured by Environment One

NOT TO SCALE

ASSUME +20 CONNECTIONS

e one

PROPOSED LPS

E/ONE ZONE NUMBER (TYP.)

E/ONE ZONE DIVIDER/FLOW DIRECTION (TYP.)

E/ONE GRINDER PUMP STATION (TYP.)

Environment One Corporation

Pressure Sewer Preliminary Cost and Design Analysis For Verona, NY Durhamville SD Alt. 3

Prepared For:
Barton & Loguidice
443 Electronics Parkway
Liverpool NY 13088 USA
Tel: 315-457-5200
Fax:
Prepared By: M. Crowley
June 18, 2021

Verona, NY
Durhamville SD Alt. 3

Prepared by : M. Crowley **On:** June 18, 2021

Notes :
Analysis based upon drawings and data provided. Station recommendations are preliminary.

GPD values impact retention times only, not line sizing or hydraulics. GP laterals to be 1.25".

Analysis valid only with pipe type listed.

General recommendations for valve placement are: clean out valves at intervals of approximately 1,000 ft and at branch ends and junctions; isolation valves at branch junctions; and air release valves at peaks of 25 ft or more and/or at intervals of 2,000 to 2,500 ft. Lateral kits comprised of a ball and check valve are required to be installed between the pump discharge and street main on all installations. Laterals should be located as close to the public right of way as possible.

Quantities of grinder pumps, pipe, and valves are indicated on the cost page. The model of grinder pump(s) indicated is based upon the initial information provided to us but may not be the most appropriate for the specific location or requirements of the project. Costs of these items and their installation are best obtained from sources in your region. We recommend you contact your local distributor of Environment One products for additional recommendations.

<<<<< E N D O F N O T E S >>>>>

June 18, 2021

Budgetary Low Pressure Sewer System Costs

Verona, NY
Durhamville SD Alt. 3

	Quantity	Description	Unit Cost	Installation	Sub Total
Valves	8	Air/Vacuum Release Valve	$0.00	0.00	$0.00
	35	Clean Out	$0.00	0.00	$0.00
					$0.00
Pumps	218	DH071-93	$0.00	0.00	$0.00
	1	DH152-93	$0.00	0.00	$0.00
	219	Lateral Kits (Includes Ball\Check Valve Assembly)	$0.00	0.00	$0.00
	219	Lateral (Boundary) Installation	$0.00	0.00	$0.00
	219	Pump/Panel Installation	$0.00	0.00	$0.00
	10,950	LF of 1.25" Lateral Pipe	$0.00	0.00	$0.00
					$0.00
Piping	444	1.25" Pipe	$0.00	0.00	$0.00
	10,174	2.00" Pipe	$0.00	0.00	$0.00
	8,742	3.00" Pipe	$0.00	0.00	$0.00
	4,883	4.00" Pipe	$0.00	0.00	$0.00
	5,299	6.00" Pipe	$0.00	0.00	$0.00
					$0.00

Number of Connections	**219**		
Total Per Connection	**$0.00**	**Total (w/o other)** >>>>>>>>>>>>>	**$0.00**
Grand Total Per Connection	**$0.00**	**Grand Total (including other)** >>>>>>>>>>>>>	**$0.00**

Note: The System Costs above are based on piping sized for, and Grinder Pumps manufactured by Environment One Corporation.

PRELIMINARY PRESSURE SEWER - PIPE SIZING AND BRANCH ANALYSIS

Prepared By: Verona, NY

M. Crowley Durhamville SD Alt. 3 June 18, 2021

Zone Number	Connects to Zone	Number of Pumps in Zone	Accum Pumps in Zone	Gals/day per Pump	Max Flow Per Pump (gpm)	Max Sim Ops	Max Flow (GPM)	Pipe Size (inches)	Max Velocity (FPS)	Length of Main this Zone	Friction Loss Factor (ft/100 ft)	Friction Loss This Zone	Accum Fric Loss (feet)	Max Main Elevation	Minimum Pump Elevation	Static Head (feet)	Total Dynamic Head (ft)
This spreadsheet was calculated using pipe diameters for: SDR11HDPE											Friction loss calculations were based on a Constant for inside roughness "C" of: 150						
1.00	4.00	7	7	295	11.00	3	33.00	2.00	3.57	1,093.00	2.52	27.54	85.27	452.00	420.00	32.00	117.27
2.00	3.00	9	9	200	11.00	3	33.00	2.00	3.57	322.00	2.52	8.11	67.50	452.00	420.00	32.00	99.50
3.00	4.00	5	14	200	11.00	4	44.00	3.00	2.19	256.00	0.65	1.66	59.39	452.00	420.00	32.00	91.39
4.00	5.00	9	30	200	11.00	5	55.00	3.00	2.74	689.00	0.98	6.77	57.73	452.00	420.00	32.00	89.73
5.00	9.00	13	43	200	11.00	6	66.00	3.00	3.29	1,171.00	1.38	16.13	50.96	452.00	422.00	30.00	80.96
6.00	8.00	5	5	200	11.00	3	33.00	2.00	3.57	1,118.00	2.52	28.17	91.72	452.00	424.00	28.00	119.72
7.00	8.00	2	2	200	11.00	2	22.00	2.00	2.38	229.00	1.19	2.72	66.27	452.00	424.00	28.00	94.27
8.00	9.00	1	8	200	11.00	3	33.00	2.00	3.57	1,140.00	2.52	28.72	63.55	452.00	426.00	26.00	89.55
9.00	20.00	12	63	200	11.00	7	77.00	4.00	2.32	1,444.00	0.54	7.79	34.83	452.00	428.00	24.00	58.83
10.00	12.00	8	8	200	11.00	3	33.00	2.00	3.57	933.00	2.52	23.51	61.52	452.00	428.00	24.00	85.52
11.00	12.00	2	2	200	11.00	2	22.00	2.00	2.38	169.00	1.19	2.01	40.02	452.00	432.00	20.00	60.02
12.00	19.00	9	19	200	11.00	5	55.00	3.00	2.74	919.00	0.98	9.03	38.01	452.00	430.00	22.00	60.01
13.00	14.00	9	9	200	11.00	3	33.00	2.00	3.57	667.00	2.52	16.80	64.82	452.00	428.00	24.00	88.82
14.00	15.00	9	18	200	11.00	4	44.00	3.00	2.19	1,011.00	0.65	6.57	48.02	452.00	432.00	20.00	68.02
15.00	18.00	9	27	200	11.00	5	55.00	3.00	2.74	945.00	0.98	9.28	41.45	452.00	432.00	20.00	61.45
16.00	17.00	9	9	200	11.00	3	33.00	2.00	3.57	555.00	2.52	13.98	47.67	452.00	432.00	20.00	67.67
17.00	18.00	2	11	200	11.00	4	44.00	3.00	2.19	234.00	0.65	1.52	33.69	452.00	432.00	20.00	53.69
18.00	19.00	1	39	200	11.00	6	66.00	3.00	3.29	232.00	1.38	3.19	32.17	452.00	434.00	18.00	50.17
19.00	20.00	4	62	200	11.00	7	77.00	4.00	2.32	360.00	0.54	1.94	28.98	452.00	434.00	18.00	46.98
20.00	23.00	0	125	200	11.00	9	99.00	4.00	2.98	46.00	0.86	0.40	27.04	452.00	430.00	22.00	49.04
21.00	21.00	25	219	200	11.00	12	132.00	6.00	1.83	5,299.00	0.22	11.81	11.81	452.00	414.00	38.00	49.81
22.00	21.00	3	194	200	11.00	11	121.00	4.00	3.65	502.00	1.25	6.26	18.07	452.00	414.00	38.00	56.07
23.00	22.00	7	191	200	11.00	11	121.00	4.00	3.65	688.00	1.25	8.57	26.64	452.00	414.00	38.00	64.64
24.00	23.00	6	59	200	11.00	7	77.00	4.00	2.32	215.00	0.54	1.16	27.80	452.00	424.00	28.00	55.80
25.00	24.00	2	2	200	11.00	2	22.00	2.00	2.38	278.00	1.19	3.31	31.11	452.00	422.00	30.00	61.11
26.00	24.00	21	51	200	11.00	7	77.00	4.00	2.32	1,628.00	0.54	8.78	36.58	452.00	422.00	30.00	66.58
27.00	26.00	12	30	200	11.00	5	55.00	3.00	2.74	1,261.00	0.98	12.39	48.97	452.00	424.00	28.00	76.97
28.00	27.00	5	18	200	11.00	4	44.00	3.00	2.19	607.00	0.65	3.94	52.91	452.00	424.00	28.00	80.91
29.00	28.00	1	1	200	11.00	1	11.00	1.25	2.44	225.00	1.88	4.24	57.15	452.00	424.00	28.00	85.15
30.00	28.00	3	12	200	11.00	4	44.00	3.00	2.19	1,417.00	0.65	9.21	62.12	452.00	414.00	38.00	100.12
31.00	30.00	3	3	200	11.00	2	22.00	2.00	2.38	801.00	1.19	9.52	71.64	452.00	430.00	22.00	93.64
32.00	30.00	2	6	200	11.00	3	33.00	2.00	3.57	2,405.00	2.52	60.59	122.71	452.00	434.00	18.00	140.71
33.00	32.00	3	3	200	11.00	2	22.00	2.00	2.38	464.00	1.19	5.52	128.23	452.00	430.00	22.00	150.23
34.00	32.00	1	1	200	11.00	1	11.00	1.25	2.44	219.00	1.88	4.12	126.83	452.00	430.00	22.00	148.83

Note: This analysis is valid only with the use of progressive cavity type grinder pumps as manufactured by Environment One.

Prepared By:
M. Crowley

PRELIMINARY PRESSURE SEWER - ACCUMULATED RETENTION TIME(HR)
Verona, NY
Durhamville SD Alt. 3

June 18, 2021

Zone Number	Connects to Zone	Accumulated Total of Pumps this Zone	Pipe Size (inches)	Gallons per 100 lineal feet	Length of Zone	Capacity of Zone	Average Daily Flow	Average Fluid Changes per Day	Average Retention Time (Hr)	Accumulated Retention Time (Hr)
This spreadsheet was calculated using pipe diameters for: SDR11HDPE								Gals per Day per Dwelling		200
1.00	4.00	7	2.00	15.40	1,093.00	168.35	2,065	12.27	1.96	9.10
2.00	3.00	9	2.00	15.40	322.00	49.60	1,800	36.29	0.66	8.54
3.00	4.00	14	3.00	33.47	256.00	85.67	2,800	32.68	0.73	7.88
4.00	5.00	30	3.00	33.47	689.00	230.58	6,665	28.90	0.83	7.15
5.00	9.00	43	3.00	33.47	1,171.00	391.89	9,265	23.64	1.02	6.32
6.00	8.00	5	2.00	15.40	1,118.00	172.20	1,000	5.81	4.13	12.07
7.00	8.00	2	2.00	15.40	229.00	35.27	400	11.34	2.12	10.05
8.00	9.00	8	2.00	15.40	1,140.00	175.59	1,600	9.11	2.63	7.94
9.00	20.00	63	4.00	55.31	1,444.00	798.72	13,265	16.61	1.45	5.30
10.00	12.00	8	2.00	15.40	933.00	143.71	1,600	11.13	2.16	8.34
11.00	12.00	2	2.00	15.40	169.00	26.03	400	15.37	1.56	7.75
12.00	19.00	19	3.00	33.47	919.00	307.56	3,800	12.36	1.94	6.18
13.00	14.00	9	2.00	15.40	667.00	102.74	1,800	17.52	1.37	9.51
14.00	15.00	18	3.00	33.47	1,011.00	338.35	3,600	10.64	2.26	8.14
15.00	18.00	27	3.00	33.47	945.00	316.26	5,400	17.07	1.41	5.89
16.00	17.00	9	2.00	15.40	555.00	85.49	1,800	21.06	1.14	6.48
17.00	18.00	11	3.00	33.47	234.00	78.31	2,200	28.09	0.85	5.34
18.00	19.00	39	3.00	33.47	232.00	77.64	7,800	100.46	0.24	4.48
19.00	20.00	62	4.00	55.31	360.00	199.13	12,400	62.27	0.39	4.24
20.00	23.00	125	4.00	55.31	46.00	25.44	25,665	1,008.68	0.02	3.86
21.00	21.00	219	6.00	119.90	5,299.00	6,353.45	44,465	7.00	3.43	3.43
22.00	21.00	194	4.00	55.31	502.00	277.67	39,465	142.13	0.17	3.60
23.00	22.00	191	4.00	55.31	688.00	380.55	38,865	102.13	0.24	3.83
24.00	23.00	59	4.00	55.31	215.00	118.92	11,800	99.22	0.24	4.08
25.00	24.00	2	2.00	15.40	278.00	42.82	400	9.34	2.57	6.64
26.00	24.00	51	4.00	55.31	1,628.00	900.50	10,200	11.33	2.12	6.19
27.00	26.00	30	3.00	33.47	1,261.00	422.01	6,000	14.22	1.69	7.88
28.00	27.00	18	3.00	33.47	607.00	203.14	3,600	17.72	1.35	9.24
29.00	28.00	1	1.25	7.52	225.00	16.93	200	11.82	2.03	11.27
30.00	28.00	12	3.00	33.47	1,417.00	474.22	2,400	5.06	4.74	13.98
31.00	30.00	3	2.00	15.40	801.00	123.38	600	4.86	4.94	18.91
32.00	30.00	6	2.00	15.40	2,405.00	370.44	1,200	3.24	7.41	21.39
33.00	32.00	3	2.00	15.40	464.00	71.47	600	8.40	2.86	24.25
34.00	32.00	1	1.25	7.52	219.00	16.47	200	12.14	1.98	23.36

Note: This analysis is valid only with the use of progressive cavity type grinder pumps as manufactured by Environment One

Appendix L
Smart Growth Assessment

NEW YORK STATE OF OPPORTUNITY. | Department of Health | Environmental Facilities Corporation

Smart Growth Assessment Form

This form should be completed by an authorized representative of the applicant, preferably the project engineer or other design professional.[1]

Section 1 – General Applicant and Project Information

Applicant: Town of Verona Project No.: C6-6048-01-00

Project Name: Durhamville Sewer District

Is project construction complete? ☐ Yes, date: ☑ No

Please provide a brief project summary in plain language including the location of the area the project serves:

This project will extend municipal sewer service to the Hamlet of Durhamville within the Town of Verona. There has been public interest for this project since the 1990's, and since then there has been a need due to the failing and inadequate private subsurface disposal systems that are currently being utilized in the Durhamville area. The proposed collection system is a low pressure system with individual grinder pumps at residences that will convey flows to the City of Oneida WWTP to be treated.

Section 2 – Screening Questions

A. Prior Approvals

1. Has the project been previously approved for Environmental Facilities Corporation (EFC) financial assistance? ☑ Yes ☐ No
2. If yes to A(1), what is the project number(s) for the prior approval(s)? Project No.: C6-6048-01-00
3. If yes to A(1), is the scope of the previously-approved project substantially the same as the current project? ☑ Yes ☐ No

If your responses to A(1) and A(3) are both yes, please proceed to Section 5, Signature.

B. New or Expanded Infrastructure

1. Does the project involve the construction or reconstruction of new or expanded infrastructure? ☐ Yes ☐ No

Examples of new or expanded infrastructure include, but are not limited to:

(i) The addition of new wastewater collection/new water mains or a new wastewater treatment system/water treatment plant where none existed previously;

(ii) An increase of the State Pollutant Discharge Elimination System (SPDES) permitted flow capacity for an existing wastewater treatment system; and OR

[1] If project construction is complete and the project was not previously financed through EFC, an authorized municipal representative may complete and sign this assessment.

(iii) An increase of the permitted water withdrawal or the permitted flow capacity for the water treatment system such that a Department of Environmental Conservation (DEC) water withdrawal permit will need to be obtained or modified, or result in the Department of Health (DOH) approving an increase in the capacity of the water treatment plant.

If your response to B(1) is no, please proceed to Section 5, Signature.

Section 3 –Smart Growth Criteria

Your project must be consistent will all relevant Smart Growth criteria. For each question below please provide a response and explanation.

1. Does the project use, maintain, or improve existing infrastructure?
   ☐ Yes ☐ No

   Explain your response:

2. Is the project located in a (1) municipal center, (2) area adjacent to a municipal center, or (3) area designated as a future municipal center, as such terms are defined herein (please select one response)?

   ☐ Yes, my project is located in a municipal center, which is an area of concentrated and mixed land uses that serves as a center for various activities, including but not limited to: central business districts, main streets, downtown areas, brownfield opportunity areas (see *www.dos.ny.gov* for more information), downtown areas of local waterfront revitalization program areas (see *www.dos.ny.gov* for more information), areas of transit-oriented development, environmental justice areas (see *www.dec.ny.gov/public/899.html* for more information), and hardship areas (projects that primarily serve census tracts or block numbering areas with a poverty rate of at least twenty percent according to the latest census data).

   ☐ Yes, my project is located in an area adjacent to a municipal center which has clearly defined borders, is designated for concentrated development in the future in a municipal or regional comprehensive plan, and exhibits strong land use, transportation, infrastructure, and economic connections to an existing municipal center.

   ☐ Yes, my project is located in an area designated as a future municipal center in a municipal or comprehensive plan and is appropriately zoned in a municipal zoning ordinance

   ☐ No, my project is not located in a (1) municipal center, (2) area adjacent to a municipal center, or (3) area designated as a future municipal center.

   Explain your response and reference any applicable plans:

3. Is the project located in a developed area or an area designated for concentrated infill development in a municipally-approved comprehensive land use plan, local waterfront revitalization plan, and/or brownfield opportunity area plan?

   ☐Yes ☐No

   Explain your response and reference any applicable plans:

4. Does the project protect, preserve, and enhance the State's resources, including surface and groundwater, agricultural land, forests, air quality, recreation and open space, scenic areas, and significant historic and archaeological resources?

   ☐Yes ☐No

   Explain your response:

5. Does the project foster mixed land uses and compact development, downtown revitalization, brownfield redevelopment, the enhancement of beauty in public spaces, the diversity and affordability of housing in proximity to places of employment, recreation and commercial development, and the integration of all income and age groups?

   ☐Yes ☐No

   Explain your response:

6. Does the project provide mobility through transportation choices including improved public transportation and reduced automobile dependency?

   ☐Yes ☐No ☐N/A

   Explain your response:

7. Does the project involve coordination between State and local government, intermunicipal planning, or regional planning?

   ☐Yes ☐No

   Explain your response and reference any applicable plans:

8. Does the project involve community-based planning and collaboration?

   ☐Yes ☐No

   Explain your response and reference any applicable plans:

9. Does the project support predictability in building and land use codes?

   ☐Yes ☐No ☐N/A

   Explain your response:

10. Does the project promote sustainability by adopting measures such as green infrastructure techniques, decentralized infrastructure techniques, or energy efficiency measures?

    ☐Yes ☐No

    Explain your response and reference any applicable plans:

11. Does the project mitigate future physical climate risk due to sea-level rise, storm surges, and/or flooding, based on available data predicting the likelihood of future extreme weather events, including hazard risk analysis data, if applicable?

    ☐Yes ☐No

    Explain your response and reference any applicable plans:

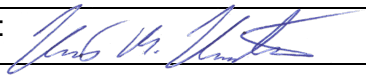
Section 4 – Miscellaneous

1. Is the project expressly required by a court or administrative consent order? ☐ Yes ☐ No

   If yes, and you have not previously provided the applicable order to EFC/DOH, please submit it with this form.

Section 5 – Signature

By signing below, you agree that you are authorized to act on behalf of the applicant and that the information contained in this Smart Growth Assessment is true, correct and complete to the best of your knowledge and belief.

Applicant: Town of Verona	Phone Number: (315) 457-5200
Name and Title of Signatory: Kenneth M. Knutsen, Senior Vice President, Barton & Loguidice, D.P.C.	
Signature: 	Date: 4/3/23

Appendix M
Engineering Report Certification

Engineering Report Certification

To Be Provided by the Professional Engineer Preparing the Report

During the preparation of this Engineering Report, I have studied and evaluated the cost and effectiveness of the processes, materials, techniques, and technologies for carrying out the proposed project or activity for which assistance is being sought from the New York State Clean Water State Revolving Fund. In my professional opinion, I have recommended for selection, to the maximum extent practicable, a project or activity that maximizes the potential for efficient water use, reuse, recapture, and conservation, and energy conservation, taking into account the cost of constructing the project or activity, the cost of operating and maintaining the project or activity over the life of the project or activity, and the cost of replacing the project and activity.

Title of Engineering Report: Durhamville Sewer District

Date of Report: March 2023, Revision 2 February 2025

Professional Engineer's Name: Kenneth M. Knutsen, P.E.

Signature: 

Date: February 14, 2025

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