Engineering Report

Town of Amenia

Water District #1: Water System Evaluation

DECEMBER 4, 2024

Public Water Supply (PWS) # NY 1302759

Drinking Water SRF # 19187

DELAWARE ENGINEERING, D.P.C.

CIVIL & ENVIRONMENTAL ENGINEERING

ALBANY • ONEONTA • MONTICELLO • GOSHEN • RED HOOK • PORT CHESTER

TABLE OF CONTENTS

List of Appendices

1 EXECUTIVE SUMMARY

The Town of Amenia is located in Dutchess County, New York. Amenia owns and operates Water District #1, which encompasses four groundwater wells, treatment systems, and a 200,000-gallon storage tank, as well as 15 miles of distribution system piping and appurtenances. Encompassed within the Water District is the Town's central business district. The Water District serves approximately 1,000 people through 302 service connections and has a typical water use of 60,000 gallons per day (GPD).

The northeastern portion of Water District #1 is considered a Potential Environmental Justice Area (PEJA) because 28.73% of the population reported themselves as members of minority groups. Additionally, 14.93% of this population have household incomes below the federal poverty level.

All of Water District #1 is considered a Disadvantaged Community (DAC). Upgrades to problematic areas of the water distribution system and planning for future maintenance needs will benefit both the PEJA and DAC populations.

The need to upgrade the existing water infrastructure is evident from a letter received from the Department of Health following a sanitary inspection, indicating the need for multiple improvements. There are potential health concerns due to the Lavell Well Field needing filtration for its two wells, cross-connections to old or abandoned water mains. Furthermore, the 200,000-gallon water tank, built in 1975, needs rehabilitation.

This engineering report has been created to support an application for funding and submission to the NYS Environmental Facilities Corporation and NYS Department of Health.

The total probable cost for the proposed work is $3.9M.

2 PROJECT BACKGROUND AND HISTORY

2.1 SITE INFORMATION

2.1.1 Location

Amenia Water District #1 is located in the Town of Amenia, Dutchess County, New York (see **Figure 1**). The Water District encompasses the Town's central business district and serves approximately 1,000 people through 305 service connections in a region of nearly 0.75 square miles. Since July 2021, the typical water use has been 60,000 GPD, and the water system's daily production has ranged from 14,300 to 160,000 gallons. The water is sourced from four wells in two well fields and is treated with chlorine. The system includes a 200,000-gallon storage tank located on Washington Court.

According to the 2021 American Community Survey, the Town has a total population of 3,848 persons, a median household income (MHI) of $65,000, and a family poverty rate of 11.9%. The Water District boundary is almost entirely within the Amenia Census Designated place (CDP) and includes the more densely developed area (see **Figure 1**). The CDP has a total population of 780 persons, an MHI of $66,026, and a family poverty rate of 2.6%.

2.1.2 Geologic Conditions

There are no unique geologic features in the area according to the NYSDEC Environmental Resource Mapper. According to the NRCS Custom Soil Resource Report, multiple soil types exist within the Water District, also referred to throughout this report as the area of intent (AOI).

Table 1 describes the characteristics of the seven soils that are the dominant soil type in at least 5% of the AOI, which, when combined, accounts for approximately 70% of the total area. Across the AOI, many of the soil characteristics vary considerably concerning the depth to the water table (ranging from zero inches to greater than 80 inches), farmland classification (from prime farmland to non-prime farmland), and drainage class (from poorly drained to excessively drained). The full soil report is available in **Appendix A**.

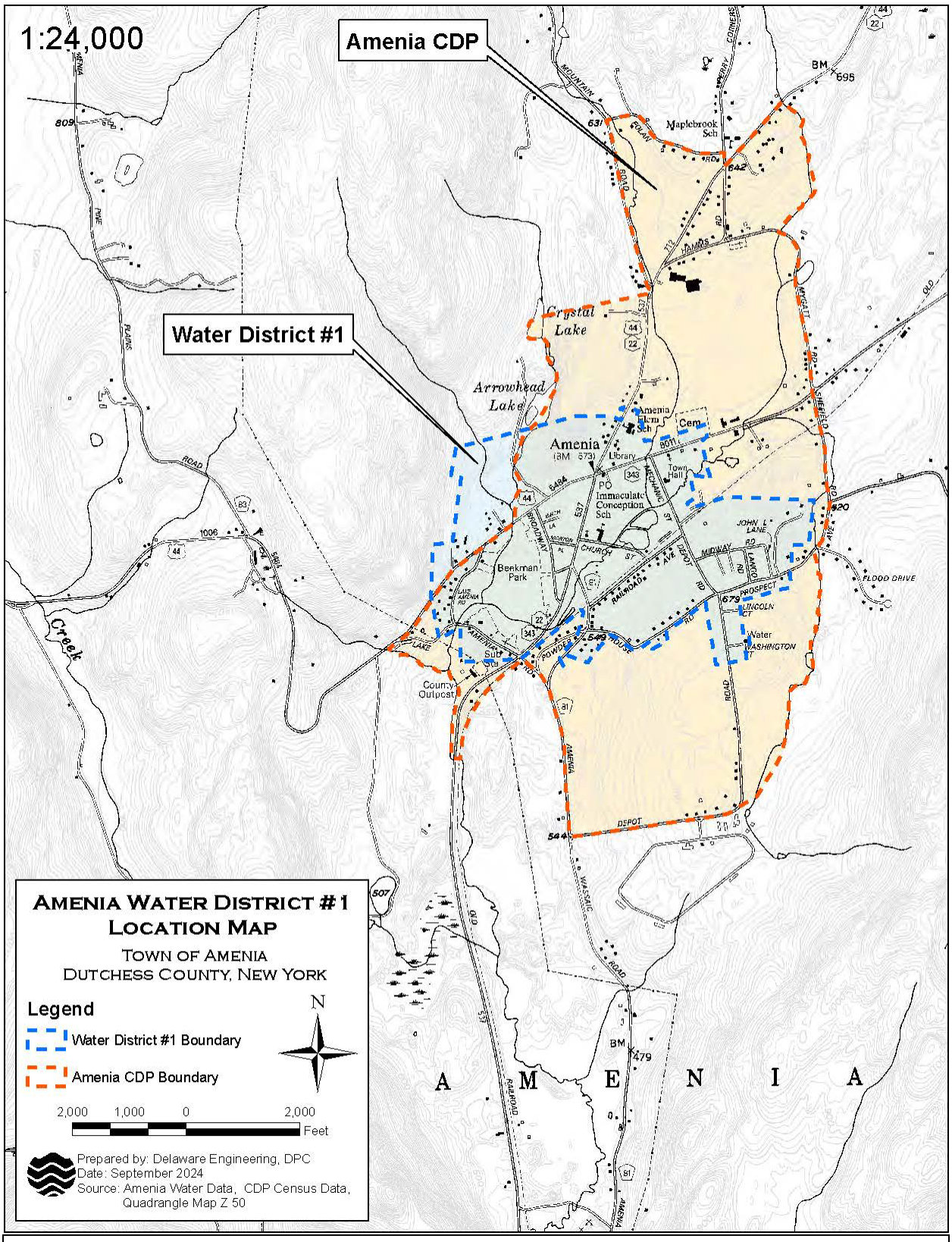


Figure 1. Amenia Water District #1

Table 1. Water District #1 Soil Characteristics								
Soil Name	**Percent of Site**	**Slope**	**Depth to Bedrock**	**Depth to Water Table**	**Farmland Classification**	**Hydric Soil Rating**	**Hydrologic Soil Group**	**Drainage Class**
Wayland Silt Loam (Wy)	19.9%	0-3%	> 80 Inches	About 0 Inches	Not Prime Farmland	Yes	C/D	Poorly Drained
Stockbridge Silt Loam (SkC)	12.6%	8-15%	> 80 Inches	> 80 Inches	Farmland of Statewide Importance	No	C	Well Drained
Copake-Urban Land Complex, Undulating (CxB)	8.2%	1-6%	> 80 Inches	> 80 Inches	Not Prime Farmland	No	A	Well Drained
Fredon Silt Loam (Fr)	8.0%	0-3%	> 80 Inches	About 6 to 18 Inches	Prime Farmland If Drained	No	B/D	Somewhat Poorly Drained
Copake Gravelly Silt Loam, Rolling (CuC)	7.7%	5-16%	> 80 Inches	> 80 Inches	Farmland of Statewide Importance	No	A	Well Drained
Stockbridge Silt Loam (SkB)	7.2%	3-8%	> 80 Inches	> 80 Inches	All areas are prime farmland	No	C	Well Drained
Hoosic Gravelly Loam (HsE)	6.1%	25-45%	> 80 Inches	> 80 Inches	Not Prime Farmland	No	A	Somewhat Excessively Drained

It is not anticipated that upgrades to the water system will negatively impact the soils and surrounding geology. The Town of Amenia will work closely with appropriate agencies to ensure that all natural resources are protected to the fullest extent.

2.1.3 Surface Water Features

Tributaries of the Wassaic Creek are located within the AOI. The Wassaic Creek and its tributaries are located in the Housatonic River Drainage Basin and are classified as a class C(T) stream on the priority waterbodies list. The best use of this waterbody is fishing; however, this use is considered stressed due to the water's pH.

Additionally, the southern half of Arrowhead Lake is located in the northwest region of the AOI and spans approximately 5.5 acres. This waterbody is currently unassessed by NYSDEC. There is also a 6-acre freshwater pond north of Lavelle Rd on the eastern side of the tributary. This waterbody is also currently unassessed by NYSDEC. These surface water features are shown in **Figure 2** below.

There are no mussel screening streams in the project area.

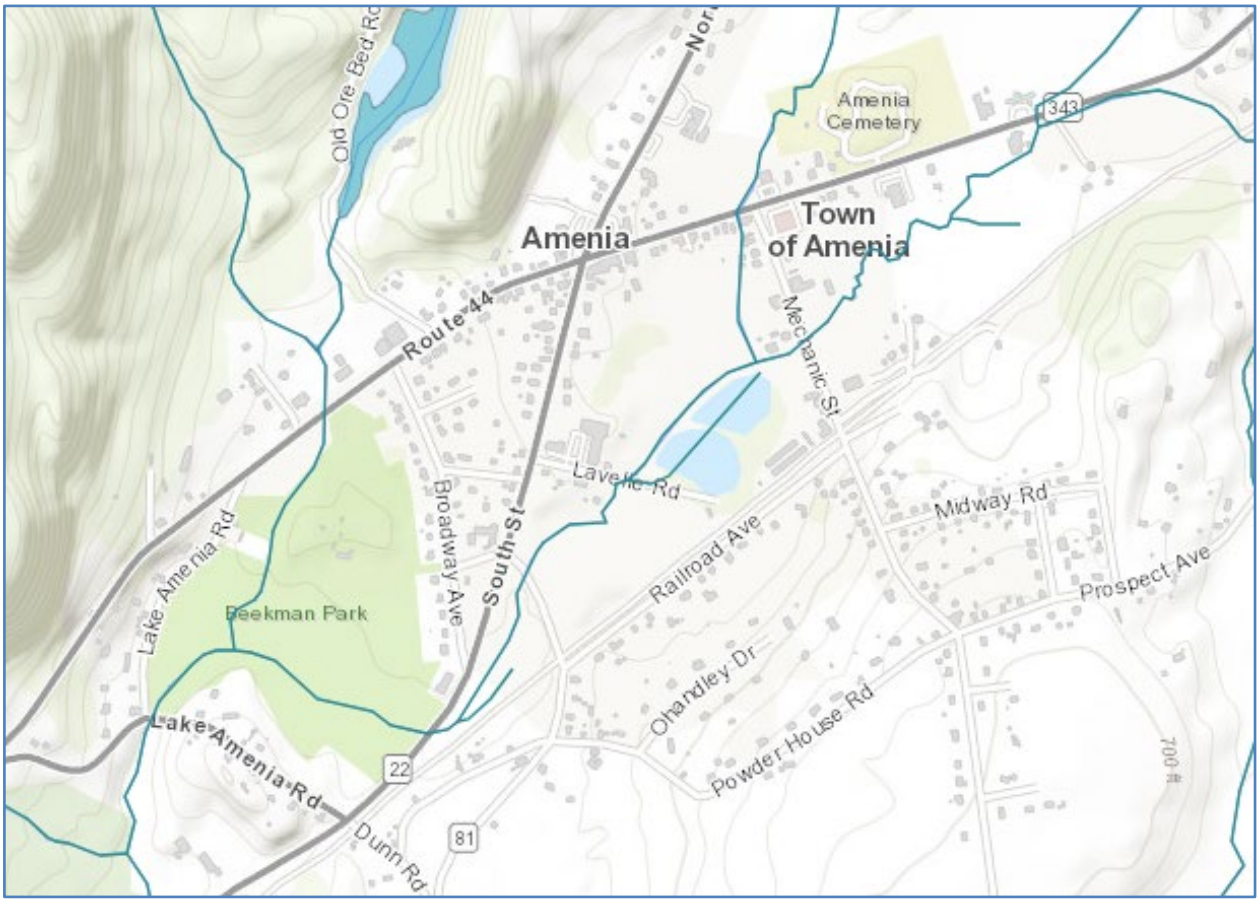


Figure 2. Surface Water Features (NYSDEC Environmental Resource Mapper)

2.1.4 Environmental Resources

Aquifers: The Town of Amenia is located over the Stockbridge Marble Aquifer, a sub-aquifer of the Hudson Valley Aquifer System. This aquifer is classified as a bedrock aquifer found within the Stockbridge Marble formation. Throughout the AOI, the depth to the Stockbridge Marble Aquifer varies widely. At Well 4 and Well 4A on Lavelle Road, the bedrock is buried by 135 feet of unconsolidated sediments. In contrast, the bedrock is located 30 feet below grade at Well 5 and 27 feet below grade at Well 6 on Washington Court.

Endangered Species: According to the U.S. Fish and Wildlife Service (USFWS), there are no critical habitats, fish hatcheries, or national wildlife refuge lands within the AOI. The USFWS IPaC system identified several endangered species that are located within the AOI, which are listed in **Table 2** below.

Table 2. Endangered Species in AOI		
Category	**Common Name**	**Protection Status**
Mammals	Indiana Bat	Endangered
	Northern Long-eared Bat	Endangered
Reptiles	Bog Turtle	Threatened
Insects	Monarch Butterfly	Candidate

Additionally, according to the NYSDEC EAF Mapper, the following species are listed by the federal government or NYS as endangered or threatened: Timber Rattlesnake and Hidden Spike Moss. There are no plant or animal species listed by NYS as rare or as a species of special concern, according to the NYSDEC EAF Mapper and the NYSDEC Nature Explorer. The USFWS IPaC also identified multiple migratory birds of particular concern in the vicinity of Water District #1, including the Bald Eagle and Golden Eagle.

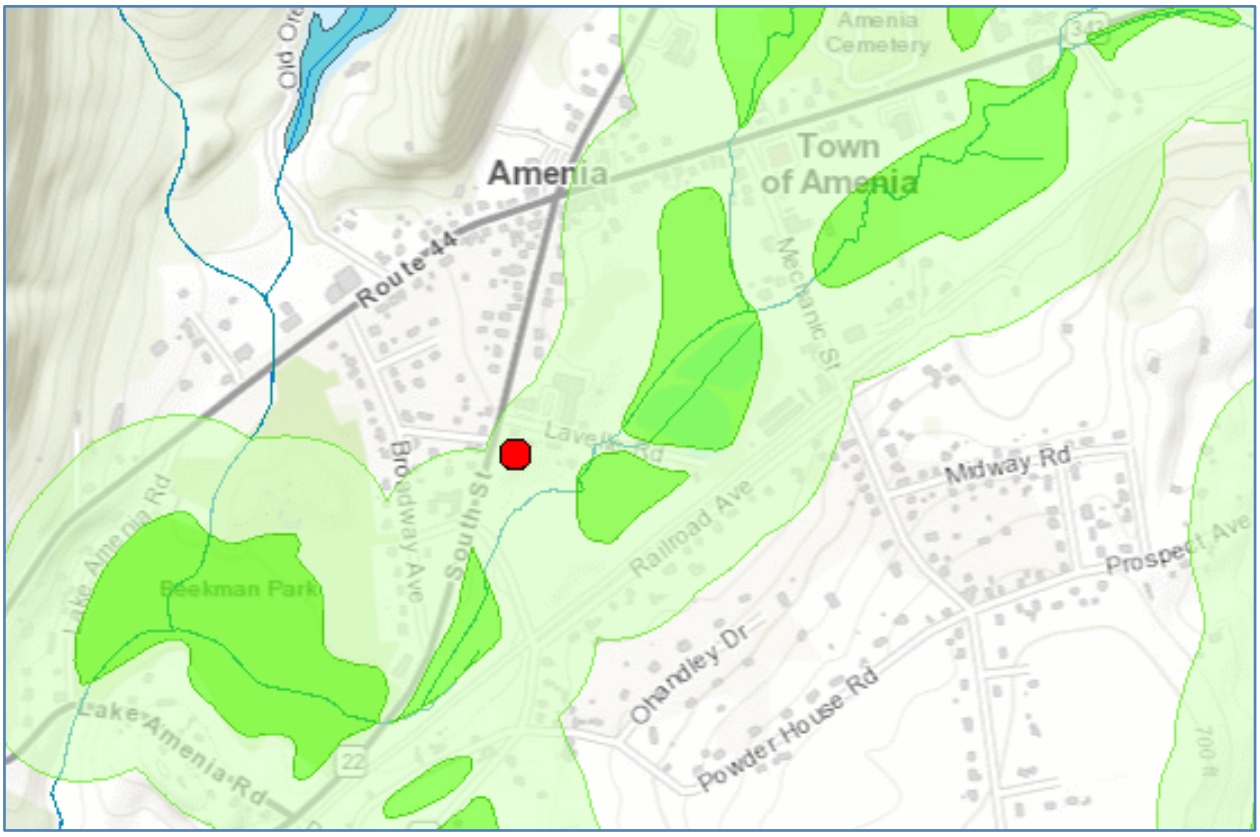


Figure 3. NYSDEC Regulated Wetlands and Waterbodies (NYSDEC Environmental Resource Mapper)

It is not anticipated that these species will be present on the WTP site or near the water infrastructure positioned throughout the AOI. The Town will work closely with NYSDEC, USFWS, and other relevant agencies to ensure that these species are protected throughout the life of the project.

Wetlands: Mapped NYS DEC freshwater wetlands and National Wetlands Inventory (NWI) wetlands are present throughout the project area, primarily along the Wassaic Creek and its tributaries. Within the AOI, there are three NYS DEC-regulated wetlands: AM-7, a 34.4-acre class 2 wetland; AM-8, a 20.2-acre class 3 wetland; and AM-9, a 124.3-acre class 2 wetland. **Figure 3** depicts these wetlands in green and water bodies in blue.

The NWI wetlands within the AOI include two freshwater pond habitats (PUBHh) that are flooded year-round: Arrowhead Lake and the unnamed 6-acre pond north of Lavelle Rd. Other NWI wetlands in the area include Freshwater Emergent Wetland Habitats (PEM1E, PEM1C), and Freshwater Forested/Shrub Wetland Habitats (PFO1A, PFO1C, PFO1E). Refer to **Figure 4** below.

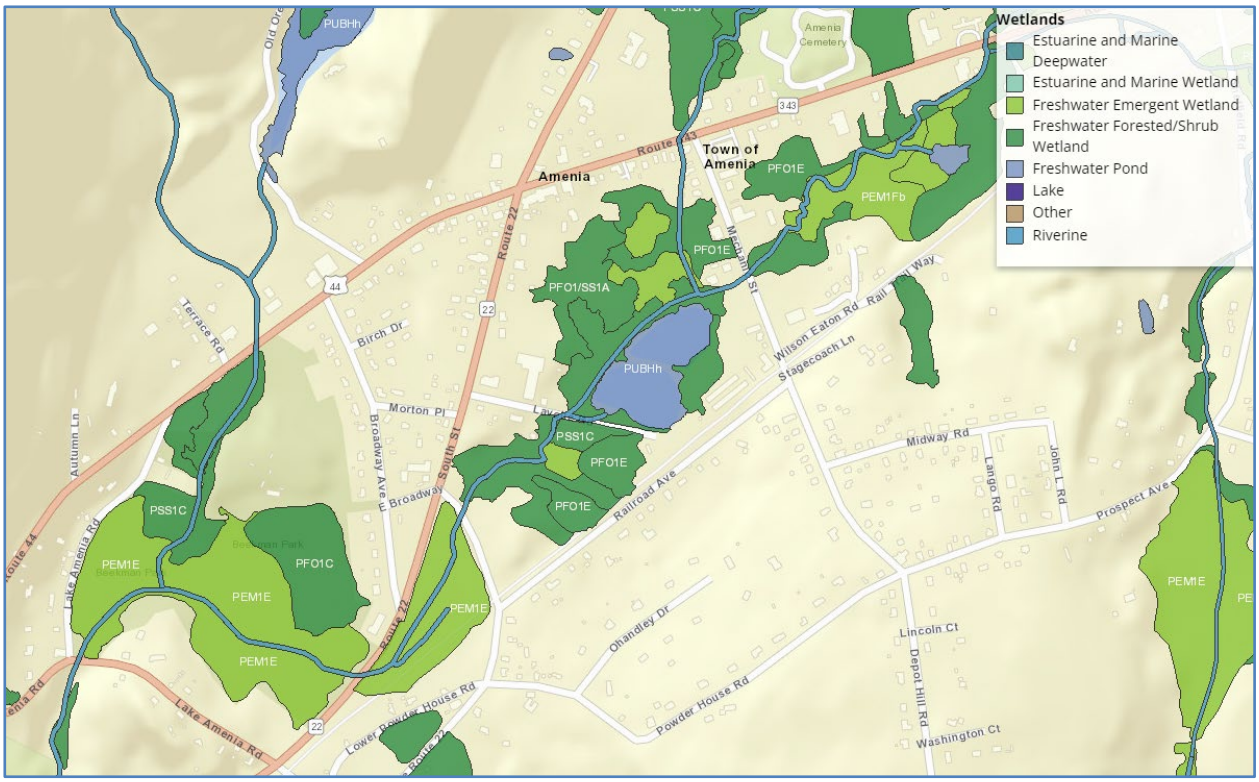


Figure 4. National Wetlands Inventory (NWI) Wetlands Map (NWI Mapper)

The Town will work with appropriate agencies throughout the proposed project's duration to ensure that all wetlands are protected to the fullest extent. All necessary permits will be obtained prior to any work within a wetland or 100-ft adjacent areas.

Archeologically Sensitive Areas: According to the Cultural Resource Information System (CRIS), multiple projects near the Water District have required archeological surveys. Within the area, only one building, the Beth David Synagogue, is listed on the National Register of Historic Sites, while two other buildings are considered eligible for listing.

The Town will coordinate with the State Historic Preservation Office (SHPO) to ensure that all historic and archaeologically significant features are protected to the fullest extent.

Agricultural Districts: Two small portions of the southern and northwestern ends of the Water District are located in Dutchess County Agricultural District 21. No critical water infrastructure is located within the District. It is not anticipated that the proposed water

treatment and distribution upgrades will negatively impact agricultural lands, nor will any agricultural lands will be converted for project purposes.

The Town will coordinate with the County to ensure the Agriculture District is not adversely affected by the proposed project.

2.1.5 Potential Environmental Justice Areas and Disadvantaged Communities

According to the NYSDEC DECinfo Locator, the northeastern portion of Water District #1 is classified as a Potential Environmental Justice Area (PEJA) because 28.73% of the population identifies as members of minority groups. Additionally, 14.93% of this population have household incomes below the federal poverty level.

All of Water District #1 is designated as a Disadvantaged Community (DAC). Upgrades to problematic areas of the water distribution system and planning for future maintenance will benefit both the PEJA and DAC populations. **Figure 5** above shows the location of Water District #1 in relation to PEJA and DAC areas.

The Town will ensure that planning for repairs and/or replacements of problematic areas in the water distribution system addresses the needs of the PEJA and DAC communities,

protecting marginalized groups from potential negative impacts associated with critical infrastructure upgrades.

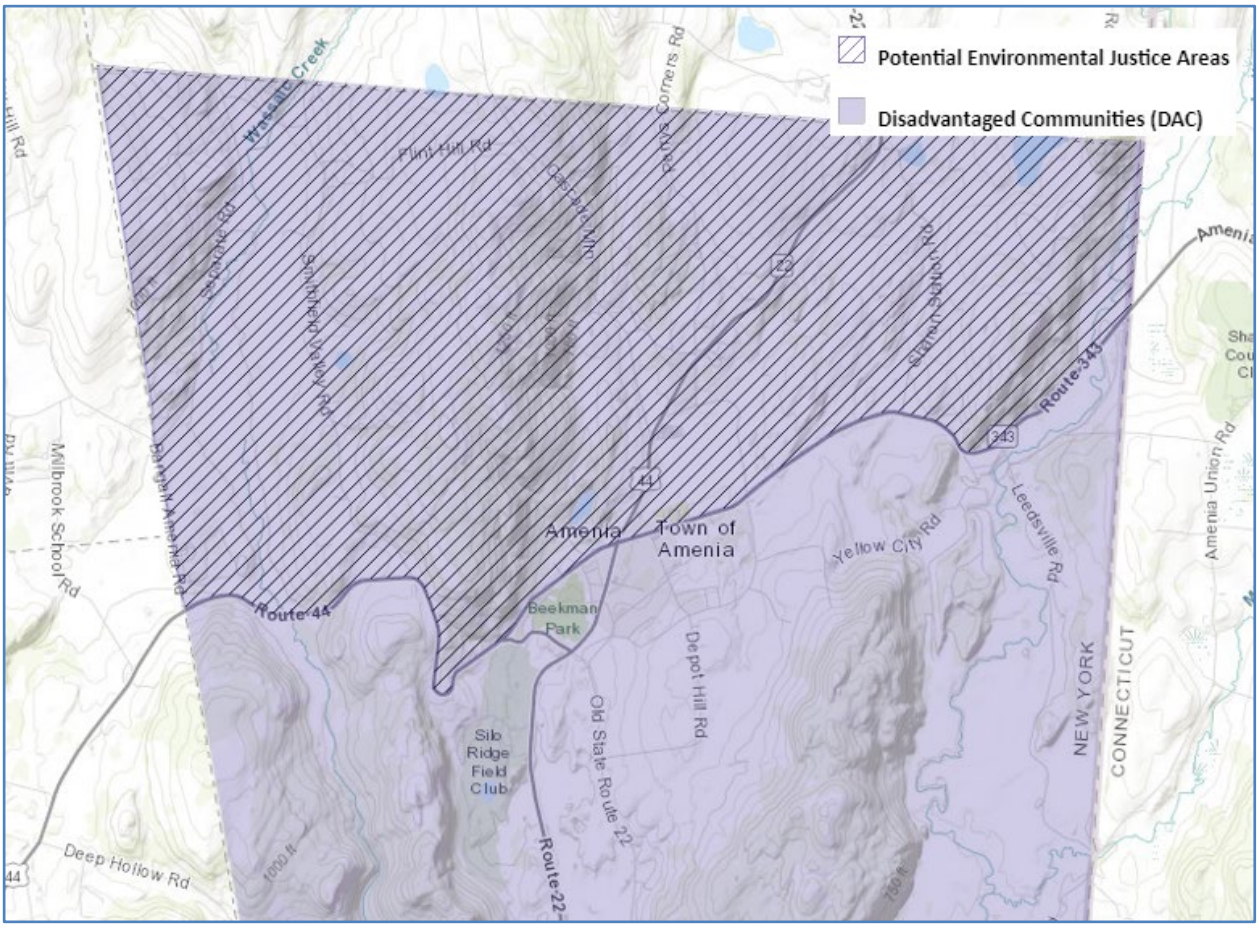


Figure 5. Potential Environmental Justice Areas and Disadvantaged Communities in Water District #1 (NYSDEC DECinfo Locator)

2.1.6 Floodplain Considerations

Water District #1 traverses four FEMA Floor Insurance Rate Map (FIRM) panels: 36027C0327E, 36027C0331E, 36027C0329E, and 36027C0333E. According to FEMA, a significant portion of the AOI is mapped within the Special Flood Hazard Zone (Zone AE). The Zone AE regions are primarily located along the Wassaic Creek and its tributaries. See **Figure 6**.

The Town of Amenia will ensure that all vital equipment is elevated above the Base Flood Elevation (BFE) in these areas as part of the proposed project.

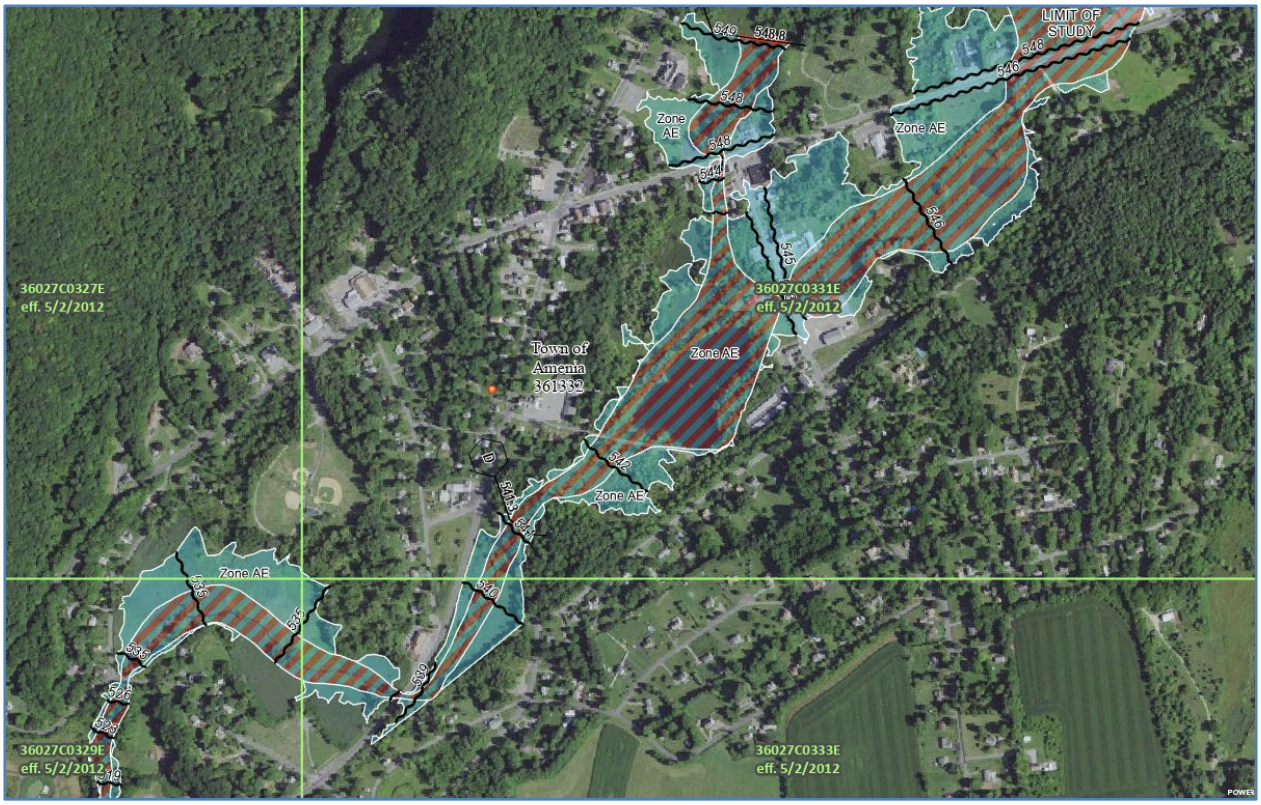


Figure 6. FEMA Flood Map of Amenia Water District #1

2.2 OWNERSHIP AND SERVICE AREA

2.2.1 Publicly or Privately Owned

Water District #1 and all associated infrastructure are owned and operated by the Town of Amenia. The system is governed by Public Water Supply NY1302759.

2.2.2 Water System Management

The Town of Amenia has a contract with VRI Environmental Services, Inc. (VRI) to operate Water District #1. Joe McLaughlin is the chief operator for Water District #1. He is a NYS Certified Grade IA, IIA, IIB, C, and D Water Treatment Plant Operator (NYSDOH Operator Certification Number is NY0033218).

2.2.3 Water District Boundaries

Water District #1 encompasses parcels primarily in the Amenia CDP along the business corridor. No changes will be made to the existing Water District Boundary as part of the proposed work. A map of the water service area is included as **Appendix B**.

2.2.4 Outside Users

There are no existing or required water purchase contracts between water supplies, and/or inter-municipal/private/industrial agreements. There are no outside water users. Water is solely supplied to customers within the bounds of the Water District.

2.2.5 Nearby Agricultural or Industrial Land Use Activities

There are no significant agricultural or industrial land use activities that are connected to the water system or that could potentially pollute the water source.

2.2.6 Population Trends and Growth

According to the 2021 American Community Survey, the Town has a total population of 3,848 persons, median household income (MHI) of $65,000 and a family poverty rate of 11.9%. The Water District boundary is almost entirely within that of the Amenia Census Designated Place (CDP). The CDP has a total population of 780 persons, MHI of $66,026 and a family poverty rate of 2.6%.

2.2.7 Historical and Projected Water Use Data

Figure 7 below illustrates the distribution of daily water usage in the Town of Amenia Water District #1 over a three-year period, from July 2021 to June 2024. The x-axis represents the daily water usage in gallons per day (GPD), with a bin width of 2,500 gallons, while the y-axis indicates the number of days with that fall within a specific usage range. During this

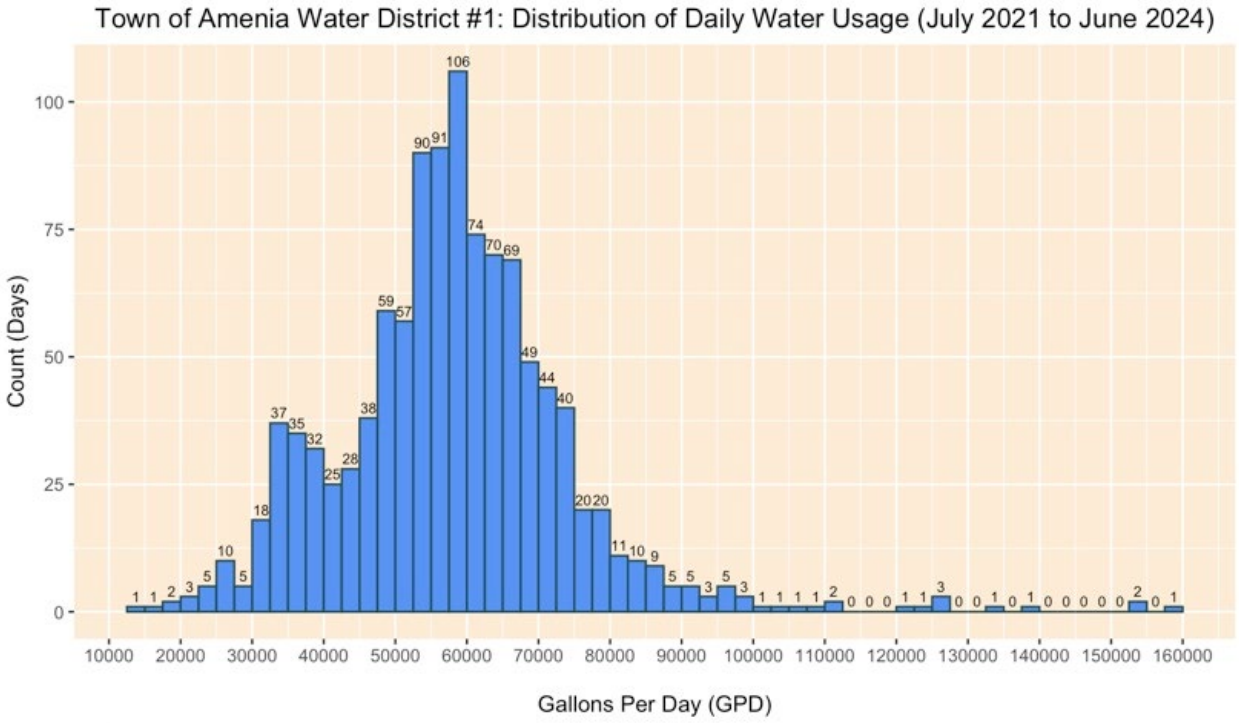


Figure 7. Histogram showing the distribution of daily water usage in the Town of Amenia Water District #1 from July 2021 to June 2024.

period, the water system's daily production has ranged from 14,300 to 160,000 gallons, with the central 98% of this range falling between approximately 25,000 and 111,000 gallons per day. The histogram reveals a distribution that is roughly symmetric around the central range of usage values, with the highest frequency observed in the bins around 60,000 to 62,500 gallons per day. The counts increase towards this central peak and then decrease symmetrically. Notable deviations from symmetry include a few large values that create spikes in the higher bins. Despite these outliers, the overall distribution exhibits a balanced shape, suggesting that water usage values are generally centered around the middle of the observed range, with extreme values being less frequent.

Figure 8 below shows the actual daily water usage in grey and the 15-day, 30-day, and 45-day rolling averages of daily water usage in Water District #1 over a three-year period,

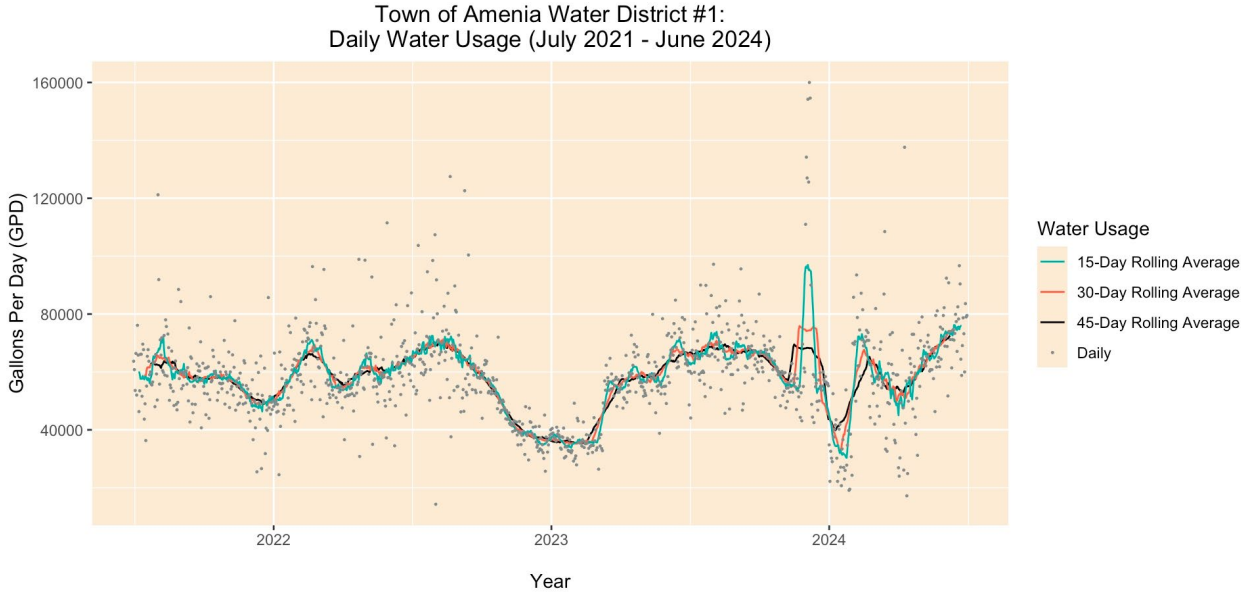


Figure 8. Daily water usage and 15-day, 30-day, and 45-day rolling averages of daily water usage in the Town of Amenia Water District #1 from July 2021 to June 2024.

from July 2021 to June 2024. The 15-day, 30-day, and 45-day rolling averages are fairly close together, indicating a consistent trend without significant short-term fluctuations. However, while the overall trend is stable, there are occasional spikes in daily usage. The plot also reveals some minor seasonal variations, with peak usage occurring during the summer months and lower usage during the winter. But the overall trend remains relatively stable, suggesting that factors like weather or climate are not causing major disruptions.

2.2.8 Nearest Public Water Systems

The Village of Millbrook (WWR0001002) public water supply system is located approximately 8 miles southwest of Water District #1. The system is comprised of three unconsolidated wells with a maximum system capacity of 0.374 MGD.

The Village of Millerton (WWR 0001003) public water supply system is located approximately 9 miles north of Water District #1. The system is comprised of two bedrock wells with a maximum system capacity of 0.322 MGD.

2.2.9 Community Involvement

The Town of Amenia Comprehensive Plan discusses providing water services to places designated for growth, such as the central business district and Hamlet of Amenia. The Town views infrastructure investments as vital to the success of development.

2.3 EXISTING FACILITIES AND PRESENT CONDITION

2.3.1 Location and Layout

The Water District is located within the Amenia CDP and is centered around the central business district. The District contains the junction of New York State Route 343 and U.S. Route 44, and many watermains are located on these Routes. The system dates to the 1960's and as such, some components are over 60-years old.

The overall system includes four wells, a two pump houses, a 200,000-gallon water storage tank and distribution piping. Four working wells are located between two different sites within the Water District. The Lavelle Road site contains a treatment system, pump house and two wells. The Washington Court site contains a treatment system, two wells and water storage tank. Approximately 15 miles of distribution piping are located throughout the Water District. **Appendix B** includes a map of the layout of the existing water distribution system.

The system's four wells are rated for a total of 143 GPM. With the smallest well out of service the system capacity is 124 GPM or 178,560 GPD.

The system typical water use is 60,000 GPD.

2.3.2 General Description and Present Conditions

While operational, the system requires significant upgrades to remain compliant with regulatory standards and to reliably serve the community's needs. The Dutchess County Department of Behavioral and Community Health (DCDOH) identified multiple compliance deficiencies in letters dated December 15, 2023, and April 17, 2024 (see **Appendix C** and **Appendix D**, respectively). The December 15, 2023 correspondence details the findings during a scheduled sanitary survey that was conducted on December 5, 2023, and the April 17, 2024 correspondence was the DCDOH's response to a well deepening project.

2.3.2.1 Active Wells

Well 4:

Well 4 is located inside the Lavelle Road Pump House and within 200 feet of surface water. According to available completion reports, Well 4 was constructed in 1971 as part of a privately owned water supply before being acquired by the Town of Amenia. This well is constructed of 8-inch steel casing to 175 ft into carbonate bedrock and finished 235-foot-deep as an open hole in bedrock. The source capacity (maximum rate) is approximately 36 GPM, according to the water withdrawal reporting form submitted in 2020 (see **Appendix E**), and it is permitted for 30 GPM (see **Appendix F**). Water is treated with chlorine for disinfection and pumped directly into the distribution system. Well 4 has the following deficiencies:

- It is GWUDI due to its proximity to a lake and wetland.
- The small size of the Lavelle Road Pump House makes it difficult to perform maintenance on Well 4 and associated equipment efficiently.

Well 4A:

Well 4A is located immediately southeast of Well 4 at the Lavelle Road site. It was constructed in 2006 to supplement the existing public water supply. This well features 8-inch steel casing to 168 feet and is finished as an open hole at a depth of 200 feet in carbonate bedrock. Its maximum pumping rate is approximately 44 GPM, according to the 2020 water withdrawal form (see **Appendix E**), and it is permitted for 64 GPM (see **Appendix F**). Water from Well 4A is treated with chlorine before entering the distribution system. Well 4A has the following deficiencies:

Figure 9. Photo of Well 4A

- It is GWUDI due to its proximity to a lake and wetland.
- The previous operator reported to the DCDOH that it produces fine silt, which clogs equipment and increases maintenance demands.

Well 5:

Well 5 is located at the Washington Court site and was deepened in June 2023 from 325 feet to 845 feet to improve its yield and reliability. It features an 8-inch casing, with the pump installed at 800 feet. After these upgrades, the well demonstrated a source capacity of 20 GPM, and it is permitted for 19 GPM (see **Appendix F**). However, it is currently out of service due to water quality issues. Well 5 has the following deficiencies:

Figure 10. Photo of Well 5

- The well is out of service due to contamination concerns.
- Iron levels exceed the Maximum Contaminant Level (MCL).
- Total Coliform bacteria were detected in water samples.

The following actions are required for requalification:

- Complete the following tests:
  - Turbidity
  - PFOS, PFOA, and 1,4-Dioxane (with sample blanks)
  - Radiological contaminants (Table 12)
  - Inorganic compounds (Tables 8b, 8c, and 8d)
  - Organic compounds (Tables 9c and 9d, MTBE and vinyl chloride)
  - Bacteriological sampling
- Hire an engineer to:
  - Evaluate the well, appurtenances, and surrounding area for potential contamination sources.
  - Prepare a report and submit treatment plans based on test results.
- Submit the following documents to DCDOH:
  - Well Completion Report from the drilling contractor.
  - DOH-348 Application for Approval of Plans for Public Water Supply Improvement (with applicable fees).

Well 6:

Well 6 is also located at the Washington Court site. It is a bedrock well with an 8-inch casing and a depth of 500 feet. The source capacity is approximately 32 GPM, according to the 2020 water withdrawal form (see Appendix E), and it is permitted for 30 GPM (see **Appendix F**). Water is treated with chlorine at the Washington Court Pump House before being distributed. Currently, Well 6 has no reported deficiencies and remains fully operational.

Figure 11. Photo of Well 6

2.3.2.2 Abandoned and Decommissioned Wells

Wells 1, 2, and 3, located on 3320 Route 343, have been abandoned, though formal documentation confirming each well's decommissioning is not available. In 2019, the Town of Amenia authorized the sale of this parcel, including a decommissioned pump house and any wells located on the property, as surplus real estate.

Well 1:

According to the 2007 DEC permit (see **Appendix F**), Well 1 was required to undergo a yield test. If the yield was found to be below 5 GPM, Well 1 was to be decommissioned. However, there is no available documentation confirming the completion of this test or the formal decommissioning of the well.

Well 2:

Approval for Well 2 as a water source was formally revoked in the DEC's 2007 permit (see **Appendix F**), and it has remained out of service since then. It has not been confirmed whether Well 2 was fully decommissioned following the permit revocation.

Well 3:

Similar to Well 2, Well 3's status as a water supply source was also revoked in 2007 by the DEC (see **Appendix F**). There is likewise no documentation confirming that Well 3 has been fully decommissioned.

2.3.2.3 Pump Houses

Main Pump House:

Located at the Washington Court treatment facility site, the main pump house is a 28-by-48-foot structure responsible for pumping water from Wells 5 and 6. The facility disinfects the water using sodium hypochlorite before it is pumped to the storage tank.

Lavelle Road Pump House:

The Lavelle Road Pump House is located at the end of Lavelle Road in the southern portion of the Water District. It was constructed in the early 2000's. The parcel is owned and operated by the Town of Amenia. This pump house is located just outside of FEMA 1% chance annual flood area and NWI Wetlands but is within a NYSDEC Wetland 500ft

Figure 12. Lavelle Road Pump House and Fence Photos

Checkzone. Well 4 is within the pump house and Well 4A is located just southeast of the pump house. From the pump house, treated water from both wells is sent throughout the distribution system via Lavelle Road to both Railroad Avenue and South Street/NYS Route 22. The site is enclosed with a fence and locking gate.

The pump house contains primary electrical circuits, pump motor starters, system controls and a chlorination system as well as a storage tank with sodium hypochlorite solution. The pump house is generally in working order, although, the conditions of the equipment, electrical components and the structure itself are deteriorating due to age.

The structure itself is an 8-foot by 10-foot wooden building with asphalt shingles on top of a slab on grade (no foundation).

A radio telemetry antenna is located on the side of the pump house. This connects the well controls to the remote system storage tank. The storage tank water level regulates the operation of the wells and controls chlorination.

The underground electrical service is provided to the pump house (3 phase, 240 volts). All electrical components inside the structure are mounted above the interior piping. A ceiling mounted heater is present.

The site contains a 20kW Kohler emergency generator and 500-gallon aboveground propane storage tank to supply the generator with fuel. The fuel line travels below grade from the tank to the generator. The concrete pad holding the generator is cracked.

Chlorination is achieved by the introduction of sodium hypochlorite via a solution feed pump and a mixed storage tank. The feed pump is connected to the common well pump discharge header before leaving the building.

The structure has reached the end of its useful life and is in need of total replacement. The following are noted deficiencies associated with the Lavelle Road Pump House:

- The overall condition of the site is fair and it is clear that regular maintenance is required to keep it from totally deteriorating.

- The structure is located within a wet and damp area. The interior conditions of the pump house indicate water damage moisture saturation and mold growth. This puts the operators at risk of exposure to toxins.
- There is no ventilation or dehumidification installed at the pump house.
- There is evidence of vermin and insect infestation.
- Well 4 is located inside the pump house. Maintenance and repair become difficult without interrupting other vital functions.
- According to Operators, the water from the well occasionally flows to the top of the well without the need for pumping due to existing pressure (artesian). This causes the well to overflow inside the building.
- The pump house is located just outside of FEMA flood prone areas. It is suspected that the finished floor elevation of the pump house is less than 2-feet above the base flood elevation for this site.
- There is evidence of corrosion on the internal and external equipment. The chlorination system is housed with the water and electrical components which creates a highly corrosive environment for all components inside. This puts the operators at risk of electrocution and exposure to toxins.
- It is difficult for the operators to create an unobstructed working area within the structure which can lead to hazardous or unsafe working conditions. Space is limited with the small footprint of the structure.
- There is restricted access to electrical components and they are not properly protected from water and moisture damage.
- The concrete slab holding the pump house is cracked and located at grade, instead of above grade like would typically be found with these structures.
- The ground is covered in pea gravel and not graded to drain away from the infrastructure. Soil conditions seem generally unsuitable for stormwater infiltration.
- The concrete pad holding the generator is cracked.
- There is minimal lighting at the site.
- The security fence and gate are aged and distressed.
- Site access is provided through a gravel/dirt drive which is uneven due to age and use by maintenance vehicle access.

2.3.2.4 Water Storage Tank

Water Tank: water is stored in a 200,000-gallon, 40-foot-high, 29.5-foot-diameter storage tank/standpipe (see **Figure 13**) located at the Washington Court treatment facility site. The tank was built in 1975. A radio telemetry antenna is located on the side of the Lavelle Road Pump House, which connects the well controls to the remote system storage tank. The storage tank water level regulates the operation of the wells and controls chlorination. The tank is located at approximately 760-feet. The tank is equipped with cathodic protection. It was last inspected in September 2023 and was found to have the following deficiencies:

Figure 13. Photo of 200,000-Gallon Water Storage Tank

- The exterior surfaces of the tank exhibit corrosion, thinning/peeling of the protective coating and mildew growth.
    - The deterioration of the manway is shown in **Figure 14**.
    - The overflow screen and bolts exhibit corrosion (see **Figure 15**).
- The interior inspection found the following:
    - Heavy staining and biofilm buildup on the interior surfaces
    - Deterioration of the protective coating
    - Corrosion on some of the interior welds (see **Figure 16**)
    - Exposed steel on the floor
    - Surface corrosion on the interior of the overflow pipe

Figure 14. Corrosion, thinning/peeling protective coating and mildew on manway.

Figure 15. Corrosion on bolt (left) and overfill screen (right).

Figure 16. Corrosion on the internal welds of the water tank.

Additionally, the access ladder on the water tank does not meet current safety standards. According to 29 CFR 1926.1053(a)(20), cages for fixed ladders must extend at least 42 inches above the point of access at the top of the ladder; however, the top of the cage for the fixed ladder on the water tank is substantially below the top of the ladder. See **Figure 17** below. The cage and ladder also exhibit significant corrosion.

Figure 17. Ladder and ladder cage for water tank.

The water tank site is equipped with a 25-kW, Katolight continuous standby emergency generator.

Figure 15. Photo of Water Tank Generator

An altitude valve is located in a pit near the tank which provides protection against overflowing. The pit is equipped with heaters and sump pumps.

2.3.2.5 Distribution System

The Amenia Water District #1 distribution system spans approximately 15 miles and consists of various pipe sizes and materials, resulting from modifications and expansions over the years. Routine flushing is conducted twice per year to maintain water quality.

Most customers are metered, with around 300 meters in the system. The older meters are failing at a rate of approximately 5 to 10 per quarter and are being replaced with new, smart meters. About 40 meters (~13% of total) consistently fail to read usage.

The system includes approximately 43 fire hydrants and 35 water valves. VRI has reported that several hydrants and valves are non-operational, though a written list of these specific units is not available.

There are 16 reduced pressure zone backflow prevention devices in the system, none of which include homes at the higher elevations; these homes have installed individual booster bumps. The system lacks municipally operated booster pumps.

The Insurance Service Office (ISO) last studied the water system for fire protection in 2004. The water district/Amenia FD was rated Class 7/9. **Appendix G** has the results of hydrant flow test performed in 1994 and 2004. A summary of the results is as follows:

- Best hydrant is rated for 380 GPM
- Worst hydrant is rated for 240 GPM
- Residual pressure drops to 4 psi at W Main and Broadway

On September 24, 2024, Delaware Engineering, with assistance from VRI, conducted static pressure tests on 12 fire hydrants across the water district. The water level in the tank during these tests was 34 feet. The specific hydrants and their pressure readings are shown in **Appendix B**. Generally, the lower pressure readings (20 psi to 35 psi) are found at the district's highest elevation, in the southeastern corner. The higher pressure readings (78 psi to 84 psi) are located at the lower elevations in the western and southwestern regions. The remaining areas in the water district exhibit moderate pressures, ranging from 54 psi to 72 psi.

The following are noted deficiencies associated with the distribution system:

- The distribution system piping is aging and some areas are undersized. These areas do not comply with the NYS Uniform Building and Fire Prevention Code and do not have proper fire suppression capabilities. As a result, new commercial businesses are required to invest in private fire suppression systems.

- Some watermains within the system are as small as 1.25 inches in diameter. Undersized watermains do not maintain proper pressure and volume during high water usage days. Modifications, expansions and repairs have caused various pipe sizes and materials to be installed along sections of piping. This leads to rapid changes in cross sectional area of the pipes and causes head loss, stress and strain on the piping and lowered hydraulic efficiency.
    - Current Ten States Standards recommend that water mains should be at least six inches in diameter.
    - Duplicate pipes exist in the system because upgrades pipes have been installed. This may result in contamination from the older pipes enter the water system.
- Dead ends are located throughout the distribution system. These areas of the Water District can experience loss of chlorine residual resulting in the presence of disinfection byproducts, water stagnation and sediment/settling of particles, and bacterial growth.
- Many fire hydrants are old and in need of replacement. Several are out of service and others have caps that cannot be removed or deficient parts.
- Multiple water customers are located at higher elevations within the Water District. These customers have installed privately owned and operated individual booster pumps in order to eradicate low pressure concerns. Currently, booster pumps are privately owned and the Town does not inspect or perform maintenance on them. The pumps have the potential to back feed into the system causing:
    - Pressure imbalances;
    - Degradation of water quality;
    - Water contamination; and/or
    - Infrastructure stress.
- Furthermore, NYS standards do not allow private residential booster pumps.

2.3.3 Permit Conditions

The water system is governed by PWS ID# 1302759. The system is currently permitted for maximum withdrawal of 227,520 gallons per day with 158 gallons per minute. See **Appendix F**.

The Town currently samples for the following constituents (see **Appendix H**):

- Nitrate
- Copper
- Lead
- Barium
- Chloride
- Sodium
- Nickle
- Gross Alpha
- Uranium
- Beta Particles
- Combined Radium
- Total Trihalomethanes
- PFOA
- PFOS
- PFHxA
- PFHxS
- PFBA
- PFPeA

2.3.4 History of Infrastructure Damage

The Water District has not been subject to damage or loss of service as a result of storm surges, flooding impacts or other extreme weather events.

2.3.5 Financial Status

The majority of water users within the system are metered and are charged based on water usage. Water rates for users within the Town are as follows:

- Single Family Home..... $75.00/5,000 gallons water used
    - Additional Water:.....$5.00/1,000 gallon water used
- Multiple Dwelling Home: ..... $110.00/5,000 gallons water used
    - Additional Water:.....$5.00/1,000 gallon water used
- Commercial Business:..... $135.00/5,000 gallons water used
    - Additional Water:.....$5.00/1,000 gallon water used

Approximately **40 meters** (~13% of total) consistently fail to read usage. The Town has budgeted for meter replacement and is in the process of replacing problematic meters.

2.3.6 Lead Service Line Inventory

A Lead Service Line (LSL) Inventory was submitted to the New York State Department of Health (NYSDOH). Of the total service lines inspected, approximately 30 have documented materials, primarily consisting of galvanized, copper, CTS plastic, polyethylene, and well-

grade plastic. The majority of service line materials remain unknown. The complete LSL Inventory is available in **Appendix I**.

2.3.7 Emergency Response Plan

The Department of Health (DOH) strongly recommends the development of an Emergency Response Plan (ERP) for the Amenia Water District #1; however, the system is not required to have one. Under New York State Public Health Law (PHL) §1125, only community water systems serving more than 3,300 people must prepare and submit an ERP. Although not mandatory for smaller systems, the DOH encourages all community water systems to create an ERP to improve their ability to respond effectively to emergencies. An ERP outlines key communication protocols and predefined response actions for anticipated emergencies, such as power outages, equipment failures, and severe weather events.

Developing an ERP would enhance the district's preparedness and ensure rapid, effective responses to potential disruptions, safeguarding public health and continuity of service.

2.4 NEED FOR THE PROJECT

2.4.1 Health, Sanitation, Security and/or Cybersecurity

The sources for Well 4 and Well 4A are potentially groundwater under the direct influence (GWUDI) of surface water due to their proximity to a surface water pond and a forest/shrub wetland. Additionally, operators have reported that Well 4A is producing a fine silt. A monitoring plan for these two wells is attached as **Appendix J.**

Well 5 is not in service due to water quality issues. High levels of iron and Total Coliform have been detected.

There are older ¾" water service lines that were intended to be disconnected but have stayed in service and are now a potential source of cross contamination.

There are several homes with service pressures of less than 20 psi. These low working pressures does not meet Ten State Standards.

The tank is experiencing significant deterioration due to age (built in 1975). On the interior surfaces, heavy staining and biofilm buildup are present, and the protective coating is

deteriorating. Due to the age of the tank, the deteriorating coating could be lead based paint.

2.4.2 Aging Infrastructure

The existing water infrastructure in the Water District has significantly deteriorated due to age. While the pump house for wells 4 and 4A remains operational, its equipment, electrical components, and structural elements are showing severe signs of wear. The interior of the pump house exhibits water damage, moisture saturation, and mold growth, and the concrete slab supporting the pump house is cracked. Additionally, both internal and external equipment are suffering from corrosion, which jeopardizes their functionality and reliability. The security fence and gate are also aged and in poor condition, compromising site security. Access to the site is via a gravel and dirt drive that has become uneven over time due to regular use by maintenance vehicles.

The tank is experiencing significant deterioration due to age (built in 1975). The exterior surfaces show mildew growth and a thinning protective coating. The overflow screen exhibits corrosion, compromising its functionality. On the interior surfaces, heavy staining and biofilm buildup are present, and the protective coating is deteriorating. There is noticeable corrosion on some of the interior welds, and exposed steel is visible on the floor.

2.4.3 Reasonable Growth

While there are ongoing considerations for additional housing developments, these plans include provisions to expand the water district accordingly. As such, the potential population growth associated with these developments is not expected to impact the existing water system, as any new demand would be addressed through planned infrastructure expansions.

2.4.4 Suitability for Continued Use

The water system is suitable for continued use but upgrades are needed. Upgrades to the wells, water tank, water mains, etc.

2.4.5 Storm and Flood Resiliency

Not applicable. The Water District has not been subject to damage or loss of service as a result of sea level rise, storm surges, flooding impacts or other extreme weather events.

2.4.6 Compliance with Local, State and Federal Requirements

There are several items that need to be addressed to comply with local, state and federal requirements. A sanitary survey of the Water District was conducted by the County of Dutchess Department of Behavioral and Community Health (the "Department") on December, 15th 2023 (see **Appendix C**). As a result, the Department has requested the Town of Amenia to:

- Repair and upgrade the Lavelle Road water treatment plant building and fence;
- Evaluate well 4 and well 4A for potential groundwater under the direct influence of surface water;
- Develop a plan to improve the pressure and flow conditions in the distribution system;
- Calculate chlorine contact time; and
- Recoat the water storage tank

2.4.7 Compliance with Current Design Standards

A review of the Recommended standards for Water Works, latest edition provided the following deficiencies.
The following are noted deficiencies associated with the distribution system:

- The distribution system piping is aging and some areas are undersized. These areas do not comply with the NYS Uniform Building and Fire Prevention Code and do not have proper fire suppression capabilities. As a result, new commercial businesses are required to invest in private fire suppression systems.
- Some watermains within the system are as small as 1.25 inches in diameter. Undersized watermains do not maintain proper pressure and volume during high water usage days. Modifications, expansions and repairs have caused various pipe sizes and materials to be installed along sections of piping. This leads to rapid changes in cross sectional area of the pipes and causes head loss, stress and strain on the piping and lowered hydraulic efficiency.
    - Current Ten States Standards recommend that water mains should be at least six inches in diameter.
    - Duplicate pipes exist in the system because upgrades pipes have been installed. This may result in contamination from the older pipes enter the water system.

- Dead ends are located throughout the distribution system. These areas of the Water District can experience loss of chlorine residual resulting in the presence of disinfection byproducts, water stagnation and sediment/settling of particles, and bacterial growth.
- Many fire hydrants are old and in need of replacement. Several are out of service and others have caps that cannot be removed or deficient parts.

Multiple water customers are located at higher elevations within the Water District. These customers have installed privately owned and operated individual booster pumps in order to eradicate low pressure concerns. Currently, booster pumps are privately owned and the Town does not inspect or perform maintenance on them.

2.5 CAPACITY DEVELOPMENT

The Town of Amenia has adequate technical, managerial and financial capabilities to provide safe drinking water to its residents. A certified water operator is employed to run and maintain the system. A Capacity Development Form is included as **Appendix K**.

3 ALTERNATIVES ANALYSIS

Existing conditions, service life and data review were considered when developing the alternatives described below. Priority was given to components which have the highest potential impact on the system's ability to provide adequate treatment and potable water to the existing users. Material longevity, process importance, system capacity and cost analyses were considered when developing the detailed alternatives and options for replacement or repair.

3.1 ALTERNATIVE 1: NO-ACTION

3.1.1 Description

While this action would not result in a capital project or increased water rates, the No-Action Alternative would leave the system with aging components which could eventually lead to system failure and additional violations, therefore, this alternative is not explored further. The No-Action alternative does not carry a capital cost. Due to the age and condition of some of the water system components, this Alternative is not recommended.

3.1.2 Cost Estimate

The No-Action Alternative does not carry a capital cost.

3.1.3 Non-Monetary Factors

The No-Action Alternative would not help the Town to realize their goal of improving water services to existing customers or addressing the existing DOH and code violations. This approach is not viable and is not explored further.

3.2 ALTERNATIVE 2: WATER SYSTEM UPGRADES

3.2.1 Lavelle Road Pump House Upgrade

The Lavelle Road Pump House serves GWUDI-classified Wells 4 and 4A. To enhance water quality and meet regulatory requirements, it will be upgraded to include a filtration system. This design includes two filter housings, each containing a 5-micron and a 1-micron cartridge filter. Additionally, the design incorporates Variable Frequency Drives (VFDs) on the well pumps, which adjust motor speed to match water demand, providing energy savings and extended equipment life.

This section evaluates two main options for replacing the Lavelle Road Pump House: a prepackaged pump house and a custom-built pump house, each offering distinct benefits in terms of cost, installation, and adaptability.

3.2.1.1 Option 1: Prepacked Pump House

3.2.1.1.1 Description

The prepackaged pump house option offers a standardized, fiberglass structure measuring 10 by 20 feet, designed to house all necessary treatment and control components efficiently. This option includes the essential filtration and monitoring equipment specified for the Lavelle Road Pump House, providing quick installation with minimal on-site assembly. The compact, all-in-one design reduces both installation time and overall construction impact, making it a practical choice for immediate operational needs.

3.2.1.1.2 Cost Estimate

Costs for Option 1: Prepackaged Pump House are shown in **Table 3** below.

Table 3. Prepackaged Pump House Cost Estimate

ID	Description	Cost
1	Mobilization and General Construction	$128,000.00
2	Site Preparation	$22,500.00
3	Prepackaged Fiberglass Structure	$260,000.00
4	Auxiliary Systems	$17,000.00
5	Water Treatment Equipment	$106,400.00
6	Demolition of Existing Structures	$7,000.00
7	Miscellaneous	$29,000.00

Subtotal (2024)		**$569,900.00**
Projected Cost (2026) (4% annual increase)		**$616,000.00**

Engineering (15%)		$92,400.00
Contingency (20%)		$123,200.00

Total Estimated Project Cost		**$831,600.00**

3.2.1.1.3 Non-Monetary Factors

The prepackaged pump house offers significant non-monetary advantages due to its streamlined installation and standardized design. With reduced on-site construction and

assembly, this option minimizes disturbance to the surrounding area and expedites deployment, providing a quick path to enhanced water quality. Additionally, the prepackaged setup meets current regulatory requirements but is less adaptable to future modifications or expansions compared to a custom-built structure.

3.2.1.2 Option 2: Custom-Built Pump House

3.2.1.2.1 Description

The custom-built pump house option provides a tailored solution designed to fit the specific layout and operational needs of the Lavelle Road Pump House site. This structure, measuring 30 by 16 feet, allows for flexibility in the arrangement of treatment, filtration, and control equipment, offering ample space for future upgrades or adjustments. Its design is intended for long-term use and adaptability, ensuring it can accommodate evolving regulatory or operational requirements over time.

3.2.1.2.2 Cost Estimate

Costs for Option 2: Custom-Built Pump House are shown in **Table 4** below.

Table 4. Custom-Built Pump House Cost Estimate

ID	Description	Cost
1	Mobilization and General Construction	$162,000.00
2	Site Preparation	$31,000.00
3	Building Structure	$264,000.00
4	Interior Finishes and Safety Features	$51,000.00
5	Electrical and Lighting	$39,000.00
6	Water Treatment Equipment	$115,150.00
7	Demolition of Existing Structures	$7,000.00
8	Miscellaneous	$29,000.00

Subtotal (2024)		**$698,150.00**
Projected Cost (2026) (4% annual increase)		**$755,000.00**

Engineering (15%)		$113,250.00
Contingency (20%)		$151,000.00

Total Estimated Project Cost		**$1,019,250.00**

3.2.1.2.3 Non-Monetary Factors

The custom-built pump house offers significant adaptability and customization, which are key advantages over the prepackaged option. This flexibility allows for optimized equipment layout, future modifications, and potential expansions as operational needs evolve. However, it involves a longer construction timeline than the prepackaged option, with more on-site work that may increase disruption during installation. Despite the extended timeline, this option provides a highly flexible, long-term solution with built-in capacity for upgrades.

3.2.1.3 Recommendation

Both the prepackaged and custom-built options offer significant advantages over the no-action alternative by including a filtration system that the current pump house lacks. This enhancement is crucial given that both wells for the Lavelle Road Pump House (Well 4 and Well 4A) are classified as GWUDI, necessitating effective filtration to meet regulatory standards and ensure water quality.

In comparing the two options, the prepackaged pump house is recommended as the preferred solution for Amenia's immediate needs. This option offers a significant cost advantage over the custom-built alternative while still meeting all regulatory requirements and enhancing water quality. The prepackaged design also allows for quicker installation and reduced site disruption, making it a practical choice for immediate operational needs at a lower overall project cost.

3.2.2 Water Storage Tank Upgrade

The tank has aged to the point where upgrades are necessary to maintain its functionality and resolve incompliancy with regulatory standards. This section provides a comparative analysis of two options for addressing the existing water storage tank: Rehabilitation and Replacement.

3.2.2.1 Option 1: Tank Rehabilitation

3.2.2.1.1 Description

The rehabilitation option for the existing water storage tank includes a series of repairs aimed at restoring its structural integrity and extending its service life. This approach involves pit welding to repair corroded areas, replacing a deteriorated overflow screen,

applying a new protective coating to prevent further deterioration, and adding safety features such an OSHA-compliant access ladders. While this option is more cost-effective than full replacement, it has a shorter projected lifespan and may require ongoing maintenance.

3.2.2.1.2 Cost Estimate

Costs for Option 1: Tank Rehabilitation are shown in **Table 5** below.

Table 5. Tank Rehabilitation Cost Estimate

ID	Description	Cost
1	Mobilization and General Construction	$268,000.00
2	Interior Full Coating System	$475,000.00
3	Exterior Full Coating System	$335,000.00
4	Temporary Tank	$20,000.00
5	Miscellaneous Repairs	$54,000.00
6	Site Restoration	$30,000.00

Subtotal (2024)		**$1,182,000.00**
Projected Cost (2026) (4% annual increase)		**$1,278,000.00**

Engineering (15%)		$191,700.00
Contingency (20%)		$255,600.00

Total Estimated Project Cost		**$1,725,300.00**

3.2.2.1.3 Non-Monetary Factors

The tank rehabilitation option provides a cost-effective solution for extending the life of the existing tank while minimizing environmental impact. By preserving the existing structure, rehabilitation produces less waste than a full replacement, reducing the project's footprint. Additionally, rehabilitation is faster to complete, minimizing community disruption. However, the rehabilitated tank may not have the same durability as a new tank, potentially leading to more frequent maintenance.

3.2.2.2 Option 2: Tank Replacement

3.2.2.2.1 Description

Replacing the existing water storage tank with a new structure provides a long-term solution that offers improved durability and reduces the need for frequent maintenance.

A new tank would be constructed with modern materials and design enhancements, ensuring compliance with the latest safety and regulatory standards. This option allows for an optimized tank configuration that can better meet future demand and requires less intervention over its lifespan

3.2.2.2.2 Cost Estimate

Costs for Option 2: Tank Replacement are shown in **Table 6** below.

Table 6. Tank Replacement Cost Estimate

ID	Description	Cost
1	Mobilization and General Construction	$505,000.00
2	New Tank	$1,150,000.00
3	Demolition of Old Tank	$395,000.00
---	---	---
Subtotal (2024)		**$2,050,000.00**
Projected Cost (2026) (4% annual increase)		**$2,217,000.00**
---	---	---
Engineering (15%)		$332,550.00
Contingency (20%)		$443,400.00
---	---	---
Total Estimated Project Cost		**$2,992,950.00**

3.2.2.2.3 Non-Monetary Factors

While tank replacement requires a longer construction period and generates more waste than rehabilitation, it offers significant long-term advantages. The new tank's enhanced durability reduces the likelihood of frequent repairs, resulting in lower ongoing maintenance needs.

3.2.2.3 Recommendation

After evaluating both options, Option 1: tank rehabilitation is recommended as the preferred solution to meet Amenia's immediate needs. This option addresses critical structural concerns while minimizing capital investment and environmental impact. Tank replacement, while beneficial in the long term, may be revisited as a future investment when additional funding or operational demands justify the higher cost.

3.2.3 Washington Court Well Field

This section evaluates two options for addressing the current needs of the Washington Court Well Field. The first option involves a series of upgrades to the well field, while the second considers the impact of taking no action.

3.2.3.1 Option 1: Well Field Upgrades

3.2.3.1.1 Description

The Washington Court Well Field Upgrades aim to enhance the reliability and compliance of the water supply system. While the current condition and age of the well pumps are uncertain, it is recommended to replace them as part of the broader system upgrade to avoid the risk of them reaching the end of their lifespan soon after completing other improvements. This proactive approach minimizes the likelihood of unplanned failures and ensures consistent performance. The primary components of this upgrade include:

- Replacement of the well pump for both Well 5 and Well 6 to ensure operational reliability.
- Requalification of Well 5, which includes water sampling, contamination evaluation, and an engineering report for a treatment plan based on the findings of the sampling and contamination assessment.

This option prioritizes both the immediate reliability and long-term sustainability of the well field, addressing potential risks associated with aging infrastructure. Requalifying Well 5 would enhance the redundancy and resilience of the water supply system.

3.2.3.1.2 Cost Estimate

Costs for Option 1: Well Field Upgrade are shown in **Table 7** below.

Table 7. Well Field Upgrade Cost Estimate

ID	Description	Cost
1	Mobilization and General Construction	$17,500.00
2	Well 5 Upgrades	$20,000.00
3	Well 6 Upgrades	$20,000.00
4	Well 5 Requalification	$15,000.00
---	---	---
Subtotal (2024)		**$72,500.00**
Projected Cost (2026) (4% annual increase)		**$78,000.00**
---	---	---
Engineering (15%)		$11,700.00
Contingency (20%)		$15,600.00
---	---	---
Total Estimated Project Cost		**$105,300.00**

3.2.3.1.3 Non-Monetary Factors

Implementing the Washington Court Well Field Upgrades would provide enhanced reliability and reduce the likelihood of operational disruptions. Proactively replacing the pumps as part of this upgrade minimizes future maintenance risks, ensuring the well field remains functional and efficient. The Engineering Report, focused on developing a treatment plan based on water sampling and contamination evaluation, ensures that any potential water quality issues are addressed comprehensively, supporting public health and safety for the community. Additionally, requalifying Well 5 would restore redundancy to the well field, improving resilience in case of future issues with the other three wells in the Water District.

3.2.3.2 Option 2: No-Action

3.2.3.2.1 Description

The No Action option involves continuing to operate the Washington Court Well Field without implementing any upgrades. This option avoids any immediate capital expenditures; however, it leaves the well field in its current state, with unknown pump conditions and without updated contamination assessments.

3.2.3.2.2 Cost Estimate

While the No Action option has no immediate costs, it poses potential risks of increased maintenance expenses over time due to the possibility of aging equipment reaching the end of its useful life. The lack of proactive upgrades could lead to unplanned equipment failures, emergency repairs, and possible regulatory compliance issues if water quality is compromised. In the long run, the No Action approach may result in higher operational costs and potential disruptions in water service.

3.2.3.2.3 Non-Monetary Factors

Choosing to take no action increases the risk of well field degradation, leading to possible interruptions in water supply and safety concerns for the community. Without upgrading the well pumps or requalifying Well 5, this option does not address existing vulnerabilities, which could ultimately impact the reliability and safety of the water supply system. Regulatory non-compliance is also a potential issue if Well 5 is not requalified. Without demonstrating compliance through requalification, the well field may face future inspections or assessments that could lead to mandatory decommissioning of Well 5, reducing water supply capacity and resiliency for the district.

3.2.3.3 Recommendation

After evaluating both options, Option 1: Well Field Upgrades is recommended. Although it involves an upfront investment, this option ensures a reliable and efficient water supply system while addressing potential contamination risks. Upgrading the well field infrastructure will provide long-term operational benefits, reduce the likelihood of emergency repairs, and ensure compliance with regulatory standards. The development of a treatment plan through the Engineering Report further supports water quality goals. Additionally, bringing Well 5 back into service provides essential redundancy, enhancing resiliency across the entire water district in case of future issues with any of the wells in either well field. This makes Option 1 the most sustainable and responsible choice for the Washington Court Well Field.

3.2.4 Lavelle Road Well Field

This section evaluates two options for addressing the current needs of the Lavelle Road Well Field. The first option involves implementing a series of upgrades to ensure compliance and improve functionality, while the second considers the impact of taking no action.

3.2.4.1 Option 1: Well Field Upgrades

3.2.4.1.1 Description

The Lavelle Road Well Field Upgrades aim to improve water quality, and resolve regulatory non-compliance. The upgrades include raising the well casings of Wells 4 and 4A to prevent contamination from surface water infiltration and replacing the well pumps due to the uncertainty of their remaining lifespan. The well casings must be raised because the pumps are located within a 100-year flood area. In accordance with the Ten State Standards for Drinking Water, the casings need to be elevated at least three feet above the 100-year flood level to protect against surface water contamination.

3.2.4.1.2 Cost Estimate

Costs for Option 1: Well Field Upgrade are shown in **Table 8** below.

Table 8. Well Field Upgrade Cost Estimate

ID	Description	Cost
1	Mobilization and General Construction	$29,500.00
2	Well 4 Upgrades	$30,000.00
3	Well 4A Upgrades	$30,000.00
4	New Emergency Generator	$28,500.00
---	---	---
Subtotal (2024)		**$118,000.00**
Projected Cost (2026) (4% annual increase)		**$128,000.00**
---	---	---
Engineering (15%)		$19,200.00
Contingency (20%)		$25,600.00
---	---	---
Total Estimated Project Cost		**$172,800.00**

3.2.4.1.3 Non-Monetary Factors

Implementing the Lavelle Road Well Field Upgrades would improve both the safety and reliability of the water supply. Raising the well casings is a preventative measure against contamination risks in flood-prone areas, as required by the Ten State Standards. Additionally, replacing the pumps, given their uncertain age and remaining lifespan, reduces the risk of unexpected mechanical failures, thus ensuring consistent service. These focused upgrades provide a resilient and compliant water supply solution for the district.

3.2.4.2 Option 2: No-Action

3.2.4.2.1 Description

The No Action option involves continuing to operate the Lavelle Road Well Field without implementing any upgrades. This approach avoids immediate costs but leaves the well field with aging infrastructure and does not address the contamination risks associated with the low well casings, which are already classified as GWUDI and thus vulnerable to surface water influence.

3.2.4.2.2 Cost Estimate

While the No Action option has no initial costs, it presents a higher risk of costly emergency repairs in the future if well pumps fail unexpectedly. Additionally, the current low well casings increase the risk of surface water infiltration, which could lead to contamination and require costly remediation. Over time, operating without upgrades may result in higher maintenance expenses, regulatory fines, or potential shutdowns if water quality standards are not met.

3.2.4.2.3 Non-Monetary Factors

Taking no action leaves the Lavelle Road Well Field vulnerable to contamination from surface water infiltration due to its GWUDI classification and low well casings, especially during heavy rains or flooding. This option also risks compromising the district's water supply if the wells require decommissioning, and the aging well pumps could fail, leading to service interruptions and increased operational costs.

3.2.4.3 Recommendation

After evaluating both options, Option 1: Lavelle Road Well Field Upgrades is recommended. While it involves an upfront investment, this option proactively addresses water quality, regulatory compliance, and operational reliability. Raising the well casings reduces contamination risks, and replacing the well pumps minimizes the likelihood of unexpected failures, ensuring a resilient and dependable water supply for the district. Choosing option 1 supports long-term sustainability and operational efficiency for the Lavelle Road Well Field.

3.2.5 Depot Hill Road

This section evaluates two options for addressing low-pressure concerns in the highest-elevation region of the water district. The first option involves constructing a new booster pump station on Depot Hill Road to improve water pressure in this area, while the second considers the impact of taking no action.

3.2.5.1 Option 1: Booster Pump Station

3.2.5.1.1 Description

Constructing a new booster pump station at Depot Hill Road is intended to address the low-pressure issues identified in the DOH sanitary survey (see **Appendix C**) and comply with the Ten State Standards, which prohibit the use of individual residential booster pumps on public water supply mains. This project would create a centralized solution to ensure adequate water pressure for homes at higher elevations, thereby aligning with regulatory requirements.

3.2.5.1.2 Cost Estimate

Costs for Option 1: Booster Pump Station are shown in **Table 9** below.

Table 9. Booster Pump Station Cost Estimate

ID	Description	Cost
1	Mobilization and General Construction	$96,000.00
2	Site Preparation	$38,000.00
3	Building	$119,000.00
4	Emergency Generator	$33,000.00
5	Pump Equipment and Piping	$122,000.00
6	Miscellaneous	$19,000.00

Subtotal (2024)		**$427,000.00**
Projected Cost (2026) (4% annual increase)		**$462,000.00**

Engineering (15%)		$69,300.00
Contingency (20%)		$92,400.00

Total Estimated Project Cost		**$623,700.00**

3.2.5.1.3 Non-Monetary Factors

Implementing this booster pump station addresses regulatory concerns by eliminating the need for individual booster pumps, which are not permitted under the Ten State Standards for public water supply connections. This centralized solution ensures adequate and consistent pressure, aligning with both regulatory standards and the DOH's recommendations to improve distribution performance.

3.2.5.2 Option 2: No-Action

3.2.5.2.1 Description

The No Action option involves continuing to operate the water distribution system without constructing a booster pump station on Depot Hill Road. While this approach avoids immediate capital expenditures, it does not address the identified low-pressure issues in the high-elevation area of the district. Existing individual booster pumps would need to remain in place to maintain adequate pressure for some residences.

3.2.5.2.2 Cost Estimate

The No Action option has no initial infrastructure costs. However, the lack of a centralized solution may lead to higher operational costs in the future if temporary measures or emergency solutions are required to address low-pressure complaints as they arise.

3.2.5.2.3 Non-Monetary Factors

Choosing the No Action option leaves the low-pressure concerns in high-elevation areas unresolved, which may lead to resident dissatisfaction and potential regulatory attention if the pressure issues persist. While the current use of individual booster pumps provides temporary relief, this solution does not fully address the DOH's recommendation to improve pressure conditions in the area. Taking no action could affect the district's ability to ensure consistent, reliable service in the long term.

3.2.5.3 Recommendation

After evaluating both options, it is recommended not to proceed with constructing a booster pump station at Depot Hill Road at this time. Although this project would address low-pressure issues in high-elevation areas, the district has not received resident complaints about pressure, likely due to existing individual booster pumps. Given the high capital investment required and the limited demand for this improvement, the No-Action option is considered more practical. However, this addition could be reconsidered in the future if

additional funding becomes available, as it would further enhance distribution performance and regulatory compliance.

3.2.6 Water Mains

This section evaluates two options for upgrading the water mains to improve flow, pressure, and overall system reliability. The first option focuses on a targeted replacement of undersized water mains on Birch Drive, Morton Place, and South Street, addressing an immediate weak point in the system. The second option considers a comprehensive replacement of all water mains in the district that are less than 6 inches in diameter, offering a long-term solution for improving water distribution across the entire district. Both options also include replacing broken valves and hydrants and cutting and capping approximately 5 connections to abandoned water mains.

3.2.6.1 Option 1: Water Main Replacement (Select Undersized Mains)

3.2.6.1.1 Description

This option focuses on the targeted replacement of the existing 1.25-inch water main on Birch Drive, the 2-inch water main on Morton Place, and the 1.5-inch water main on South Street south of Lavelle Road, upgrading each to an 8-inch diameter. Only 1,260 LF of piping would be replaced, making this a limited-scope project. This option includes replacing all broken hydrants and valves in the water district, although the precise number is currently unknown, and cutting and capping approximately 5 connections to abandoned water mains. This selective approach addresses a specific weak point in the system without requiring a comprehensive overhaul.

3.2.6.1.2 Cost Estimate

Costs for Option 1: Select Undersized Water Main Replacement are shown in **Table 10** below.

Table 10. Select Undersized Water Main Replacement Cost Estimate

ID	Description	Cost
1	Mobilization and General Construction	$170,000.00
2	Site Preparation	$144,900.00
3	Water Main Installation	$141,100.00
4	Backfilling and Restoration	$102,620.00
5	Miscellaneous	$172,500.00
---	---	---
Subtotal (2024)		**$731,120.00**
Projected Cost (2026) (4% annual increase)		**$791,000.00**
---	---	---
Engineering (15%)		$118,650.00
Contingency (20%)		$158,200.00
---	---	---
Total Estimated Project Cost		**$1,067,850.00**

3.2.6.1.3 Non-Monetary Factors

This option represents a low-cost, minimal-intervention approach to improving water service on Birch Drive, Morton Place, and South Street. It would provide immediate improvements to water flow and pressure in these targeted areas. However, this solution does not address the broader infrastructure needs of the water district and leaves other undersized mains in place. While the targeted hydrant and valve replacements and the disconnection from abandoned water mains offer some district-wide benefits, the overall impact on system reliability remains limited. This option is less disruptive but also less effective in providing long-term benefits across the district.

3.2.6.2 Option 2: Water Main Replacement (All Undersized Mains)

3.2.6.2.1 Description

This option involves replacing all existing water mains in the district with a diameter smaller than 6 inches, upgrading them to 8-inch mains. Approximately 9,000 linear feet (LF) of piping would be replaced. Like option 1, this project also includes replacing all broken hydrants and valves and disconnecting from abandoned water mains. The larger diameter

of the new mains would improve water flow, and replacing aged infrastructure would reduce the need for maintenance and lower the risk of future failures.

3.2.6.2.2 Cost Estimate

Costs for Option 2: All Undersized Water Main Replacement are shown in **Table 11** below.

Table 11. All Undersized Water Main Replacement Cost Estimate

ID	Description	Cost
1	Mobilization and General Construction	$975,000.00
2	Site Preparation	$1,035,000.00
3	Water Main Installation	$1,165,000.00
4	Backfilling and Restoration	$818,000.00
5	Miscellaneous	$260,000.00
---	---	---
Subtotal (2024)		**$4,253,000.00**
Projected Cost (2026) (4% annual increase)		**$4,600,000.00**
---	---	---
Engineering (15%)		$690,000.00
Contingency (20%)		$920,000.00
---	---	---
Total Estimated Project Cost		**$6,210,000.00**

3.2.6.2.3 Non-Monetary Factors

This comprehensive replacement would ensure greater system resiliency by upgrading all undersized mains to meet modern standards. Improved water flow and capacity would benefit the entire community by addressing current and anticipated future demands. Although this is a costly and time-intensive option, it maximizes reliability and reduces the likelihood of further disruptions from main breaks or system failures. The system-wide hydrant and valve replacements, along with the disconnection from abandoned water mains, would also enhance emergency preparedness and reduce potential points of failure. However, extensive construction could inconvenience residents over a prolonged period.

3.2.6.3 Recommendation

After evaluating both options, Option 1 – the targeted replacement of the undersized water mains on Birch Drive, Morton Place, and South Street – is recommended as the more

practical solution at this time. While Option 2 provides a comprehensive upgrade with substantial long-term benefits, it involves a high capital cost and significant construction time, which could lead to extensive disruption for residents. The targeted replacement on these streets offers a cost-effective approach that addresses immediate weak points in the system by improving water flow and pressure in critical areas without requiring a district-wide overhaul.

In the future, as additional funding becomes available, a phased approach to replacing other undersized mains throughout the district could be considered to enhance overall system resiliency gradually.

3.3 ALTERNATIVE 3: CONSOLIDATION OPPORTUNITIES

3.3.1 Description

Mechanisms such as shared services, expansions of service, and the formation of new districts and service areas offer communities additional resources and technical and financial capabilities relative to the provision of water and sewer. There are two public water systems located within a 10-mile radius of the Town of Amenia water system.

The Village of Millbrook (WWR0001002) public water supply system is located approximately 8 miles southwest of Water District #1. The system is comprised of three unconsolidated wells with a maximum system capacity of 0.374 MGD. The maximum day and average day withdrawals for 2022 for this system are 0.381 MGD and 0.1798 MGD. This system does not appear to have enough capacity to add another 300 customers from the Town of Amenia without significant upgrades. Additionally, construction of just 8 miles of connection piping would cost over $20M.

The Village of Millerton (WWR 0001003) public water supply system is located approximately 9 miles north of Water District #1. The system is comprised of two bedrock wells with a maximum system capacity of 0.322 MGD. The maximum day and average day withdrawals for 2022 for this system are 0.364 MGD and 0.170 MGD. This system does not appear to have enough capacity to add another 300 customers from the Town of Amenia without significant upgrades. Additionally, construction of just 9 miles of connection piping would cost over $20M.

3.3.2 Cost Estimate

Neither water system has capacity to add additional customers without significant upgrades. It is estimated that connection piping alone would cost over $20M. This Alternative is not feasible and therefore not considered further.

3.3.3 Non-Monetary Factors

This approach is not viable and is not explored further.

4 SUMMARY AND COMPARISON OF ALTERNATIVES

This section provides an overview of the three alternatives considered for improving the water system. The following table summarizes the pros, cons, and estimated costs for each alternative, which informed the final recommendations.

Table 12. Alternative Analysis

Alternative	Pros and Cons	Cost
1. No-Action	**Pros:** No additional capital costs; User costs do not increase as a result of debt service **Cons:** Equipment continues to age; Upgrades are not realized and will result in failures and regulatory compliance issues	Not Evaluated
2. Water System Upgrades	**Pros:** Improves reliability, regulatory compliance, and long-term performance across all components; Users provided higher-quality water **Cons:** Very large capital project and costs; Increases user rates significantly	$3,902,850
3. Consolidation	**Pros:** Less equipment and systems to operate and maintain; Results in continued regulatory compliance if surrounding community systems are in compliance **Cons:** Very large capital project and costs; Loss of jobs and loss of autonomy by the community; Increases user rates significantly; Additional permitting and regulatory compliance prior to start up	Over $20M

After evaluating all three alternatives, Alternative 2: Water System Upgrades is the preferred solution. While it requires a significant capital investment, it ensures long-term system reliability, compliance, and improved water quality. Alternative 1 does not address

the district's needs, and Alternative 3 has very high costs per benefitted user, thus making the Alternative 2 the most practical and beneficial choice.

5 RECOMMENDED AND SELECTED ALTERNATIVES

5.1 BASIS OF SELECTION

Alternative 2, Water System Upgrades, was chosen due to its ability to address current operational and regulatory needs across all six key components of the water system. This alternative was selected after evaluating each component's specific requirements for reliability, regulatory compliance, and long-term sustainability. Implementing these targeted upgrades will improve water quality, system resilience, and operational efficiency while allowing flexibility for phased construction based on funding availability.

The No-Action and Consolidation alternatives were considered less viable. The No-Action alternative fails to address pressing infrastructure needs and regulatory requirements, increasing the likelihood of costly repairs and potential service disruptions. Consolidation, while offering potential operational efficiencies, poses risks related to dependency on external systems and the loss of control over water resources, and may involve high transition costs.

5.2 COST ESTIMATE

While the costs of investing in a project can be daunting, these costs should be kept in perspective and weighed against long-term operating costs and the sustainability of the water system. The estimated costs for the recommended water system upgrades are summarized in the table below. These recommended upgrades satisfy all of the immediate needs while remaining cost effective. Expanded Cost Estimates for all components are included with this report (**Appendix L**).

Table 14. Alternative 2: Water System Upgrades Cost Estimate			
ID	**Component**	**Option**	**Cost**
1	Lavelle Road Pump House	Prepacked Pump House	$569,900.00
2	Water Storage Tank	Rehabilitate Existing Tank	$1,182,000.00
3	Washington Court Well Field	Well Field Upgrades	$72,500.00
4	Lavelle Road Well Field	Well Field Upgrades	$118,000.00
5	Depot Hill Road	No-Action	$0.00
6	Water Main	Select Replacement Only	$731,120.00

Subtotal (2024)			**$2,673,520.00**
Projected Cost (2026) (4% annual increase)			**$2,891,000.00**

Engineering (15%)			$433,650.00
Contingency (20%)			$578,200.00

Total Estimated Project Cost			**$3,902,850.00**

5.3 PROJECT SCHEDULE AND NEXT STEPS

The timeline below summarizes the action dates for the identified recommendations.

- Preparation of Engineering Report ..... November 2024
- Complete SEQRA and SHPO ..... January 2025
- Bond Resolution ..... February 2025
- 202B Process ..... February 2025
- DW IUP Listing Update ..... May 2025
- WIIA Application ..... May 2025
- OSC Approvals, if needed ..... June 2025
- Design ..... March – Dec 2025
- Funding Awards Announced ..... Dec 2025
- Permitting and Regulatory Review ..... Jan – Sept 2026
- Bidding ..... Oct to Dec 2026
- Initiation of Construction ..... March 2027
- Final Completion and Start-Up ..... Dec 2028

The following permits and approvals may be required:

Table 15. Required Permits and Approvals	
Town of Amenia Town Board	SEQR Determination
	202B – Increase & Improvement of Facilities
	Bond Resolution
NYSDOH	Project/Plan Approval – Public Water Supply Improvement
	Funding Approval
NYSEFC	Project/Plan Approval
	Funding Approval
Dutchess County Department of Health	Project/Plan Approval – Public Water Supply Improvement
NYSDEC	Article 24 Freshwater Wetlands Permit
US ACOE	Wetlands Permit

5.4 PROJECT FINANCING

The financial impact of the proposed $3,902,850 project was analyzed under three funding scenarios. These scenarios, which are shown in **Table 16**, reflect different combinations of grants and loans, with annual user costs calculated by applying roughly uniform percentage increases to the current rates for each customer category. Detailed calculations are provided in **Appendix M**.

Table 16. Average Annual Cost

Rate Plan	Count	Current Scenario	Scenario 1: No Outside Funding	Scenario 2: $400,000 WFH + 60% WIIA Grant	Scenario 3: 50% BIL Grant + $400,000 WFH + 60% WIIA Grant
Residential	206	$383.26	$1,004.81	$613.22	$484.08
Commercial Business	50	$868.04	$2,285.70	$1,384.86	$1,110.05
Multiple Dwelling	40	$741.40	$2,013.79	$1,182.25	$936.76
Two Houses	2	$654.18	$1,706.29	$1,046.69	$827.73
Municipal Rate	1	$0.00	$0.00	$0.00	$0.00
Commercial Flat Rate	1	$400.00	$1,080.00	$640.00	$520.00
Estimated Annual Metered Sales		**$153,718.92**	**$406,321.09**	**$245,590.28**	**$194,868.66**
Loan Amount			**$3,902,850.00**	**$1,401,140.00**	**$620,570.00**
Rate			5%	5%	5%
Term			30 Years	30 Years	30 Years
Annual Loan Repayment			**$253,885.99**	**$91,146.17**	**$40,368.97**

In Scenario 1, with no outside funding, the full project cost of $3,902,850 would be financed through a 30-year loan at an interest rate of 5%. This results in an annual loan repayment of $253,885.99. Under this scenario, user rates would increase by approximately 165%.

In Scenario 2, funding includes $400,000 from the Amenia Workforce Housing Trust Fund (WFH) and a 60% Water Infrastructure Improvement Act (WIIA) grant. These contributions reduce the loan amount to $1,401,140, with an annual loan repayment of $91,146.17. Under this scenario, user rates would increase by approximately 60%.

Scenario 3 maximizes available funding by combining a 50% Bipartisan Infrastructure Law (BIL) grant with the $400,000 WFH and 60% WIIA grants. This scenario minimizes the loan amount to $620,570, with an annual loan repayment of $40,368.97. User rates under this scenario would increase by approximately 26%.

6 ENGINEERING REPORT CERTIFICATION

During the preparation of this Engineering Report, Delaware Engineering 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 Drinking 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. An Engineering Report Certification Form is included as **Appendix N**.

7 SMART GROWTH

The proposed project will comply with the New York State Smart Growth Public Infrastructure Policy Act to the extent Practicable. The Town of Amenia water system upgrades will use, maintain and improve existing infrastructure. While the need to upgrade the water system is evident due to the age of the facilities, technologies and approaches to upgrade the system are widely available. The project will upgrade, reuse and replace various components of the water infrastructure and incorporate best available technology and energy conservation where practical. A Smart Growth Assessment Form is included as **Appendix O**.

Appendix A

United States Department of Agriculture

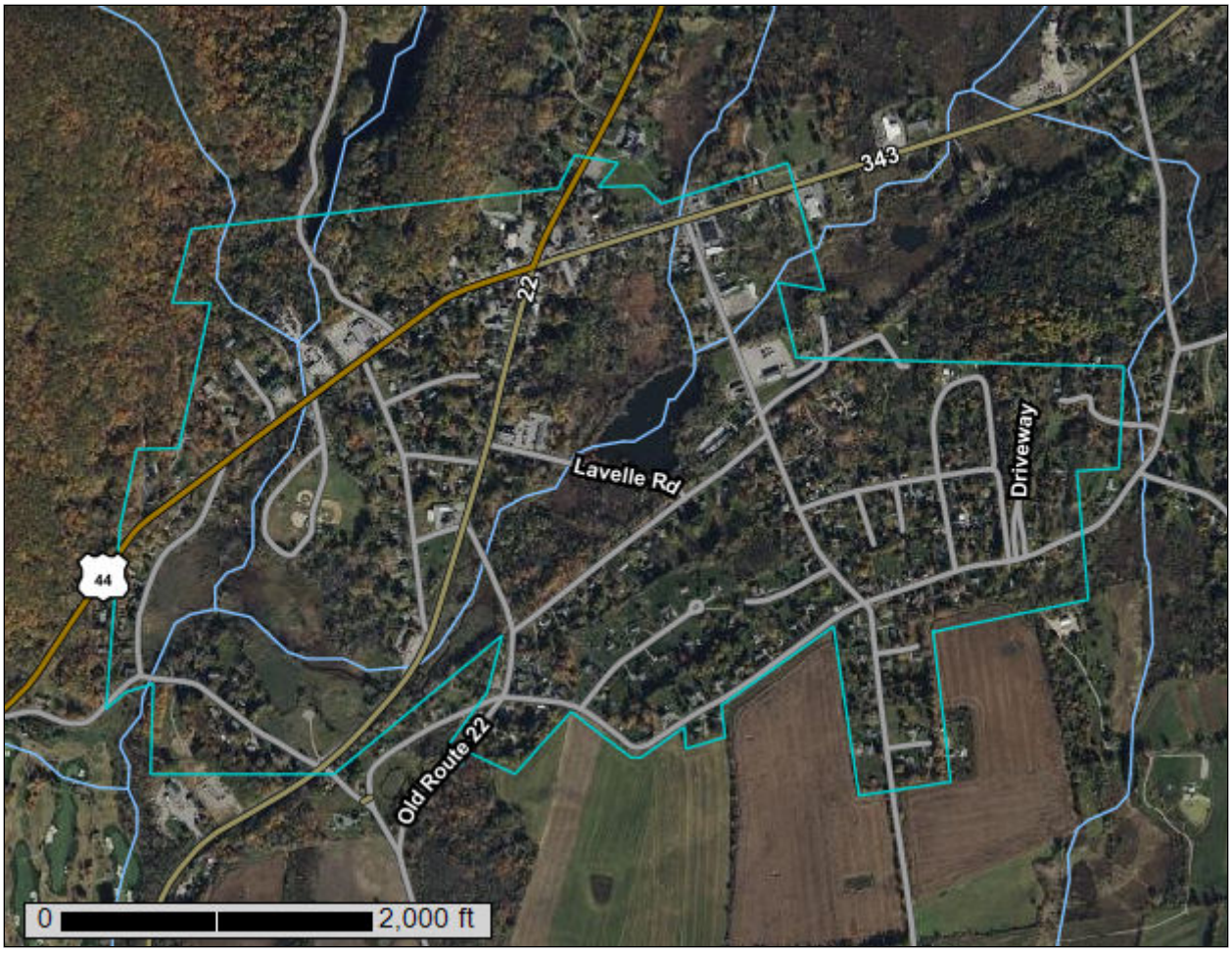
NRCS

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 Dutchess County, New York

Water District #1



August 26, 2024

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.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

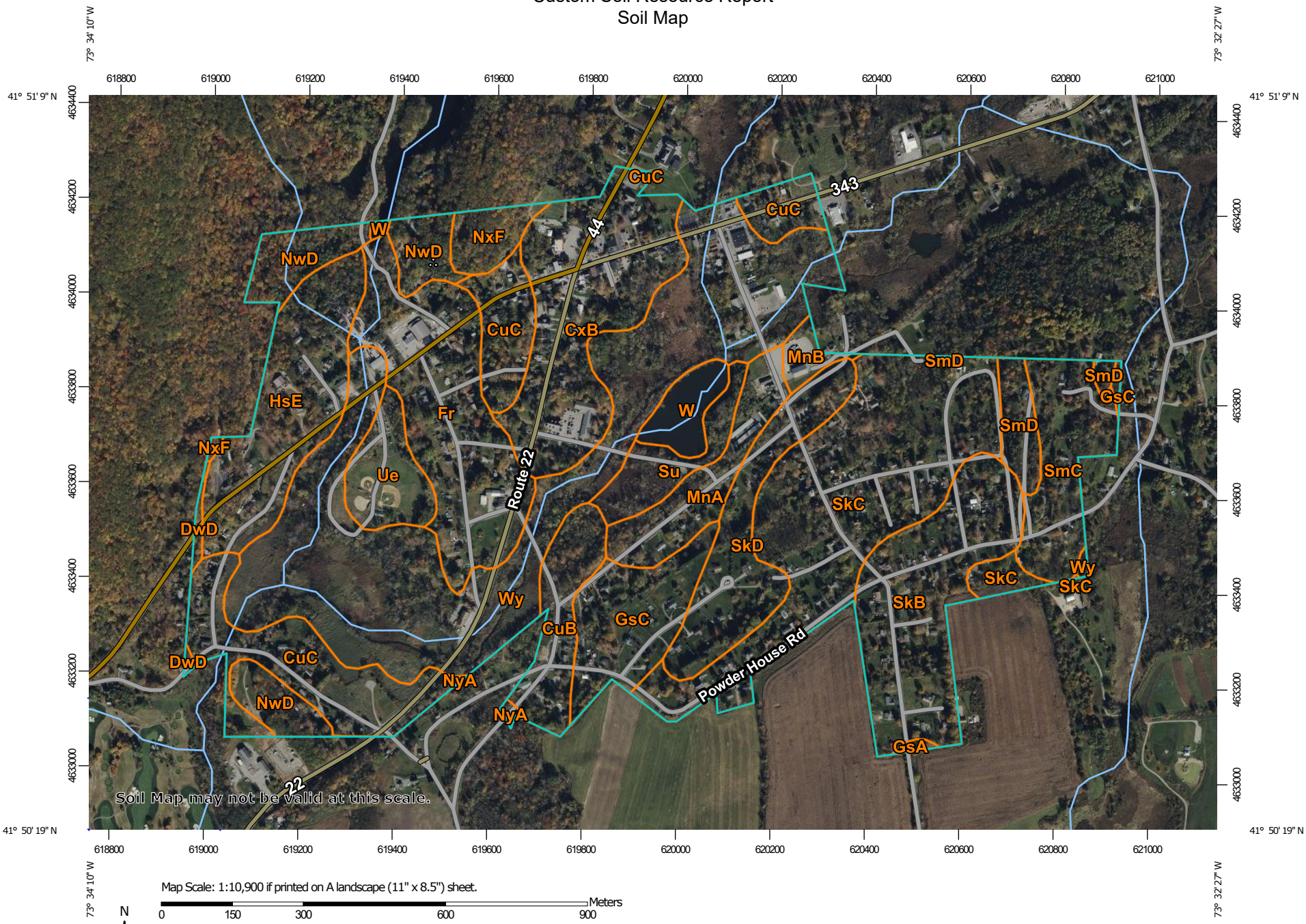
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

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 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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: Dutchess County, New York
Survey Area Data: Version 20, Sep 5, 2023

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

Date(s) aerial images were photographed: Oct 21, 2022—Oct 27, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background 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
CuB	Copake gravelly silt loam, undulating	11.1	2.7%
CuC	Copake gravelly silt loam, rolling	32.3	7.7%
CxB	Copake-Urban land complex, undulating	34.1	8.2%
DwD	Dutchess-Cardigan complex, hilly, rocky	0.9	0.2%
Fr	Fredon silt loam	33.2	8.0%
GsA	Georgia silt loam, 0 to 3 percent slopes	0.4	0.1%
GsC	Georgia silt loam, 8 to 15 percent slopes	15.9	3.8%
HsE	Hoosic gravelly loam, 25 to 45 percent slopes	25.6	6.1%
MnA	Massena silt loam, 0 to 3 percent slopes	12.2	2.9%
MnB	Massena silt loam, 3 to 8 percent slopes	2.5	0.6%
NwD	Nassau-Cardigan complex, hilly, very rocky	15.8	3.8%
NxF	Nassau-Rock outcrop complex, very steep	5.1	1.2%
NyA	Natchaug muck, 0 to 2 percent slopes	0.4	0.1%
SkB	Stockbridge silt loam, 3 to 8 percent slopes	30.1	7.2%
SkC	Stockbridge silt loam, 8 to 15 percent slopes	52.7	12.6%
SkD	Stockbridge silt loam, 15 to 25 percent slopes	18.6	4.5%
SmC	Stockbridge-Farmington complex, rolling, rocky	15.5	3.7%
SmD	Stockbridge-Farmington complex, hilly, rocky	5.5	1.3%
Su	Sun silt loam	7.7	1.9%
Ue	Udorthents, wet substratum	8.8	2.1%
W	Water	5.7	1.4%
Wy	Wayland silt loam	83.0	19.9%
Totals for Area of Interest		**417.3**	**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.

Dutchess County, New York

CuB—Copake gravelly silt loam, undulating

Map Unit Setting

National map unit symbol: 9rfb
Elevation: 30 to 950 feet
Mean annual precipitation: 41 to 47 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: All areas are prime farmland

Map Unit Composition

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

Description of Copake

Setting

Landform: Terraces, outwash plains, deltas
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy over calcareous sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 6 inches: gravelly silt loam
H2 - 6 to 36 inches: gravelly loam
H3 - 36 to 80 inches: stratified very gravelly coarse sand to gravelly loamy fine sand

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: 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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F144AY044VT - Semi-Rich Well Drained Outwash
Hydric soil rating: No

Minor Components

Hoosic

Percent of map unit: 10 percent

Hydric soil rating: No

Fredon

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

Halsey

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

CuC—Copake gravelly silt loam, rolling

Map Unit Setting

National map unit symbol: 9rfc
Elevation: 80 to 840 feet
Mean annual precipitation: 41 to 47 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Copake

Setting

Landform: Terraces, outwash plains, deltas
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy over calcareous sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 6 inches: gravelly silt loam
H2 - 6 to 36 inches: gravelly loam
H3 - 36 to 80 inches: stratified very gravelly coarse sand to gravelly loamy fine sand

Properties and qualities

Slope: 5 to 16 percent
Depth to restrictive feature: More than 80 inches
Drainage class: 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: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Ecological site: F144AY044VT - Semi-Rich Well Drained Outwash
Hydric soil rating: No

Minor Components

Hoosic

Percent of map unit: 10 percent
Hydric soil rating: No

Fredon

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

Halsey

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

CxB—Copake-Urban land complex, undulating

Map Unit Setting

National map unit symbol: 9rfj
Elevation: 340 to 740 feet
Mean annual precipitation: 41 to 47 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Copake and similar soils: 40 percent
Urban land: 35 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Copake

Setting

Landform: Terraces, outwash plains, deltas
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex

Parent material: Loamy over calcareous sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 6 inches: gravelly silt loam
H2 - 6 to 36 inches: gravelly loam
H3 - 36 to 80 inches: stratified very gravelly coarse sand to gravelly loamy fine sand

Properties and qualities

Slope: 1 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: 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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 6.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Ecological site: F144AY044VT - Semi-Rich Well Drained Outwash
Hydric soil rating: No

Description of Urban Land

Typical profile

H1 - 0 to 6 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Minor Components

Udorthents

Percent of map unit: 10 percent
Hydric soil rating: No

Hoosic

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

Halsey

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

Fredon

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

DwD—Dutchess-Cardigan complex, hilly, rocky

Map Unit Setting

National map unit symbol: 9rfq
Elevation: 20 to 1,230 feet
Mean annual precipitation: 41 to 47 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Dutchess and similar soils: 40 percent
Cardigan and similar soils: 30 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Dutchess

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till derived mainly from phyllite, slate, schist, and shale

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 28 inches: silt loam
H3 - 28 to 86 inches: channery silt loam

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: 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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Description of Cardigan

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till or colluvium derived from phyllite, slate, shale, and schist

Typical profile

H1 - 0 to 8 inches: channery silt loam
H2 - 8 to 20 inches: channery loam
H3 - 20 to 30 inches: channery silt loam
H4 - 30 to 34 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Sun

Percent of map unit: 10 percent
Landform: Depressions
Hydric soil rating: Yes

Nassau

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

Massena

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

Georgia

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

Rock outcrop

Percent of map unit: 1 percent
Hydric soil rating: Unranked

Fr—Fredon silt loam

Map Unit Setting

National map unit symbol: 9rfz
Elevation: 250 to 1,200 feet
Mean annual precipitation: 41 to 47 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Prime farmland if drained

Map Unit Composition

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

Description of Fredon

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy over sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 31 inches: very fine sandy loam
H3 - 31 to 70 inches: stratified very gravelly sand to loamy 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 to high (0.20 to 1.98 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 6.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B/D
Ecological site: F144AY029NY - Semi-Rich Wet Outwash
Hydric soil rating: No

Minor Components

Fredon, poorly drained
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Unnamed soils, glacial outwash
Percent of map unit: 5 percent
Hydric soil rating: No

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

GsA—Georgia silt loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 9rg5
Elevation: 90 to 1,000 feet
Mean annual precipitation: 41 to 47 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: All areas are prime farmland

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

Description of Georgia

Setting
Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from limestone, shale, or slate

Typical profile
H1 - 0 to 8 inches: silt loam
H2 - 8 to 27 inches: loam
H3 - 27 to 80 inches: gravelly fine sandy 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 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 supply, 0 to 60 inches: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Ecological site: F144AY038NY - Semi-Rich Moist Till Uplands
Hydric soil rating: No

Minor Components

Massena

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

Stockbridge

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

Charlton

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

Dutchess

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

Sun

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

Punsit

Percent of map unit: 2 percent
Hydric soil rating: No

GsC—Georgia silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9rg7
Elevation: 90 to 1,000 feet
Mean annual precipitation: 41 to 47 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Georgia

Setting

Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Loamy till derived mainly from limestone, shale, or slate

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 27 inches: loam
H3 - 27 to 80 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 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 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 supply, 0 to 60 inches: Moderate (about 8.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F144AY038NY - Semi-Rich Moist Till Uplands
Hydric soil rating: No

Minor Components

Massena

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

Stockbridge

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

Charlton

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

Dutchess

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

Pittstown

Percent of map unit: 2 percent

Hydric soil rating: No

Sun

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

HsE—Hoosic gravelly loam, 25 to 45 percent slopes

Map Unit Setting

National map unit symbol: 9rgn
Elevation: 100 to 1,100 feet
Mean annual precipitation: 41 to 47 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Hoosic

Setting

Landform: Terraces, outwash plains, deltas
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Riser
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and gravelly glaciofluvial deposits

Typical profile

H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 24 inches: very gravelly sandy loam
H3 - 24 to 70 inches: extremely gravelly loamy sand

Properties and qualities

Slope: 25 to 45 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (1.98 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: A
Ecological site: F144AY022MA - Dry Outwash
Hydric soil rating: No

Minor Components

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

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

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

MnA—Massena silt loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 9rh9
Elevation: 100 to 1,000 feet
Mean annual precipitation: 41 to 47 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Prime farmland if drained

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

Description of Massena

Setting
Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till dominated by siliceous rocks with varying proportions of limestone

Typical profile
H1 - 0 to 7 inches: silt loam
H2 - 7 to 33 inches: loam
H3 - 33 to 72 inches: fine sandy loam

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 low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Available water supply, 0 to 60 inches: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F144AY039NY - Semi-Rich Wet Till Depressions
Hydric soil rating: No

Minor Components

Sun

Percent of map unit: 10 percent
Landform: Depressions
Hydric soil rating: Yes

Georgia

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

Punsit

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

MnB—Massena silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9rhb
Elevation: 100 to 1,000 feet
Mean annual precipitation: 41 to 47 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Prime farmland if drained

Map Unit Composition

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

Description of Massena

Setting

Landform: Till plains, hills, drumlinoid ridges

Landform position (two-dimensional): Footslope, summit
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till dominated by siliceous rocks with varying proportions of limestone

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 33 inches: loam
H3 - 33 to 72 inches: fine sandy loam

Properties and qualities

Slope: 3 to 8 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 low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 12 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Available water supply, 0 to 60 inches: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: F144AY039NY - Semi-Rich Wet Till Depressions
Hydric soil rating: No

Minor Components

Sun

Percent of map unit: 10 percent
Landform: Depressions
Hydric soil rating: Yes

Punsit

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

Georgia

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

NwD—Nassau-Cardigan complex, hilly, very rocky

Map Unit Setting

National map unit symbol: 9rhf
Elevation: 0 to 1,800 feet
Mean annual precipitation: 41 to 47 inches

Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Nassau and similar soils: 45 percent
Cardigan and similar soils: 30 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nassau

Setting

Landform: Till plains, ridges, benches
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Channery loamy till derived mainly from local slate or shale

Typical profile

H1 - 0 to 5 inches: channery silt loam
H2 - 5 to 16 inches: very channery silt loam
H3 - 16 to 20 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Cardigan

Setting

Landform: Ridges, hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till or colluvium derived from phyllite, slate, shale, and schist

Typical profile

H1 - 0 to 8 inches: channery silt loam
H2 - 8 to 20 inches: channery loam

H3 - 20 to 30 inches: channery silt loam
H4 - 30 to 34 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C
Ecological site: F144AY034CT - Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Dutchess

Percent of map unit: 10 percent
Hydric soil rating: No

Sun

Percent of map unit: 10 percent
Landform: Depressions
Hydric soil rating: Yes

Rock outcrop

Percent of map unit: 5 percent
Hydric soil rating: Unranked

NxF—Nassau-Rock outcrop complex, very steep

Map Unit Setting

National map unit symbol: 9rhh
Elevation: 600 to 1,800 feet
Mean annual precipitation: 41 to 47 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Nassau and similar soils: 50 percent
Rock outcrop: 30 percent
Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Nassau

Setting

Landform: Till plains, ridges, benches
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Channery loamy till derived mainly from local slate or shale

Typical profile

H1 - 0 to 5 inches: channery silt loam
H2 - 5 to 16 inches: very channery silt loam
H3 - 16 to 20 inches: unweathered bedrock

Properties and qualities

Slope: 45 to 65 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: F144AY033MA - Shallow Dry Till Uplands
Hydric soil rating: No

Description of Rock Outcrop

Typical profile

H1 - 0 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 45 to 70 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydric soil rating: Unranked

Minor Components

Cardigan

Percent of map unit: 10 percent
Hydric soil rating: No

Sun

Percent of map unit: 10 percent

Landform: Depressions
Hydric soil rating: Yes

NyA—Natchaug muck, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2w68z
Elevation: 0 to 1,550 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Natchaug

Setting

Landform: Depressions, depressions, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Highly decomposed organic material over loamy glaciofluvial deposits and/or loamy glaciolacustrine deposits and/or loamy till

Typical profile

Oa1 - 0 to 12 inches: muck
Oa2 - 12 to 31 inches: muck
2Cg1 - 31 to 39 inches: silt loam
2Cg2 - 39 to 79 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.01 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 25 percent
Maximum salinity: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water supply, 0 to 60 inches: Very high (about 17.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w

Hydrologic Soil Group: B/D
Ecological site: F144AY042NY - Semi-Rich Organic Wetlands
Hydric soil rating: Yes

Minor Components

Catden
Percent of map unit: 8 percent
Landform: Depressions, depressions, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Limerick
Percent of map unit: 5 percent
Landform: Flood plains
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Sun
Percent of map unit: 4 percent
Landform: Depressions, hills
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Halsey
Percent of map unit: 3 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

SkB—Stockbridge silt loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 9rhv
Elevation: 200 to 1,310 feet
Mean annual precipitation: 41 to 47 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Stockbridge and similar soils: 80 percent
Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Stockbridge

Setting

Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous loamy till

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 23 inches: silt loam
H3 - 23 to 80 inches: silt loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Ecological site: F144AY036NY - Semi-Rich Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Georgia

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

Galway

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

Massena

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

Charlton

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

Bernardston

Percent of map unit: 2 percent
Hydric soil rating: No

Farmington

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

Sun

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

SkC—Stockbridge silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9rhw
Elevation: 180 to 1,340 feet
Mean annual precipitation: 41 to 47 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Stockbridge

Setting

Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous loamy till

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 23 inches: silt loam
H3 - 23 to 80 inches: silt loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: F144AY036NY - Semi-Rich Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Georgia

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

Massena

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

Galway

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

Charlton

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

Bernardston

Percent of map unit: 2 percent
Hydric soil rating: No

Farmington

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

Sun

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

SkD—Stockbridge silt loam, 15 to 25 percent slopes

Map Unit Setting

National map unit symbol: 9rhx
Elevation: 160 to 1,310 feet
Mean annual precipitation: 41 to 47 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Stockbridge

Setting

Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous loamy till

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 23 inches: silt loam
H3 - 23 to 80 inches: silt loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: F144AY036NY - Semi-Rich Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Bernardston

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

Charlton

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

Georgia

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

Galway

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

Sun

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

Farmington

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

SmC—Stockbridge-Farmington complex, rolling, rocky

Map Unit Setting

National map unit symbol: 9rj0
Elevation: 100 to 1,080 feet
Mean annual precipitation: 41 to 47 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Stockbridge and similar soils: 50 percent
Farmington and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Stockbridge

Setting

Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous loamy till

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 23 inches: silt loam
H3 - 23 to 80 inches: silt loam

Properties and qualities

Slope: 5 to 16 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e

Hydrologic Soil Group: C
Ecological site: F144AY036NY - Semi-Rich Well Drained Till Uplands
Hydric soil rating: No

Description of Farmington

Setting

Landform: Till plains, ridges, benches
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till or congeliturbate derived from limestone, dolomite, shale, and sandstone, and in many places mixed with wind and water deposits

Typical profile

H1 - 0 to 7 inches: loam
H2 - 7 to 15 inches: very fine sandy loam
H3 - 15 to 19 inches: unweathered bedrock

Properties and qualities

Slope: 5 to 16 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F144AY035MA - Shallow Semi-Rich Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Galway

Percent of map unit: 10 percent
Hydric soil rating: No

Georgia

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

Massena

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

Rock outcrop

Percent of map unit: 1 percent
Hydric soil rating: Unranked

Sun

Percent of map unit: 1 percent

Landform: Depressions
Hydric soil rating: Yes

SmD—Stockbridge-Farmington complex, hilly, rocky

Map Unit Setting

National map unit symbol: 9rj1
Elevation: 100 to 1,000 feet
Mean annual precipitation: 41 to 47 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Stockbridge and similar soils: 50 percent
Farmington and similar soils: 30 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Stockbridge

Setting

Landform: Till plains, hills, drumlinoid ridges
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous loamy till

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 23 inches: silt loam
H3 - 23 to 80 inches: silt loam

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C

Ecological site: F144AY036NY - Semi-Rich Well Drained Till Uplands
Hydric soil rating: No

Description of Farmington

Setting

Landform: Till plains, ridges, benches
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till or congeliturbate derived from limestone, dolomite, shale, and sandstone, and in many places mixed with wind and water deposits

Typical profile

H1 - 0 to 7 inches: loam
H2 - 7 to 15 inches: very fine sandy loam
H3 - 15 to 19 inches: unweathered bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): Very low (0.00 to 0.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Very low (about 2.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: F144AY035MA - Shallow Semi-Rich Well Drained Till Uplands
Hydric soil rating: No

Minor Components

Galway

Percent of map unit: 10 percent
Hydric soil rating: No

Sun

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

Rock outcrop

Percent of map unit: 1 percent
Hydric soil rating: Unranked

Su—Sun silt loam

Map Unit Setting

National map unit symbol: 9rj3
Elevation: 600 to 1,800 feet
Mean annual precipitation: 41 to 47 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

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

Description of Sun

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loamy till derived primarily from limestone and sandstone, with a component of schist, shale, or granitic rocks in some areas

Typical profile

H1 - 0 to 4 inches: silt loam
H2 - 4 to 22 inches: loam
H3 - 22 to 80 inches: gravelly loam

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): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Occasional
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 6.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Ecological site: F144AY039NY - Semi-Rich Wet Till Depressions
Hydric soil rating: Yes

Minor Components

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

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

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

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

Ue—Udorthents, wet substratum

Map Unit Setting
National map unit symbol: 9rj8
Elevation: 50 to 2,400 feet
Mean annual precipitation: 41 to 47 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition
Udorthents, wet substratum, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Wet Substratum

Typical profile
H1 - 0 to 4 inches: gravelly loam
H2 - 4 to 72 inches: very gravelly loam

Properties and qualities
Slope: 0 to 5 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 low to high (0.06 to 5.95 in/hr)
Depth to water table: About 12 to 36 inches
Frequency of flooding: None
Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 5.5 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Udorthents, smoothed
Percent of map unit: 10 percent
Hydric soil rating: No

Urban land
Percent of map unit: 5 percent
Hydric soil rating: Unranked

Unnamed soils, undisturbed
Percent of map unit: 4 percent
Hydric soil rating: Unranked

Rock outcrop
Percent of map unit: 1 percent
Hydric soil rating: Unranked

W—Water

Map Unit Setting
National map unit symbol: 9rjc
Mean annual precipitation: 41 to 47 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

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

Wy—Wayland silt loam

Map Unit Setting
National map unit symbol: 9rjf
Elevation: 200 to 1,500 feet
Mean annual precipitation: 41 to 47 inches
Mean annual air temperature: 45 to 50 degrees F
Frost-free period: 115 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

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

Description of Wayland

Setting

Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Silty and clayey alluvium washed from uplands that contain some calcareous drift

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 80 inches: silt loam

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): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: Frequent
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: High (about 11.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D
Ecological site: F144AY016MA - Very Wet Low Floodplain
Hydric soil rating: Yes

Minor Components

Linlithgo

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

Pawling

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

Palms

Percent of map unit: 3 percent
Landform: Swamps, marshes
Hydric soil rating: Yes

Fluvaquents

Percent of map unit: 3 percent

Landform: Flood plains
Hydric soil rating: Yes

Carlisle

Percent of map unit: 2 percent
Landform: Marshes, swamps
Hydric soil rating: Yes

Udifluvents

Percent of map unit: 2 percent
Hydric soil rating: No

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Appendix B

Amenia Water System

Town of Amenia, Dutchess County, NY

N

Wells
Hydrants
Water Shutoffs

8" Ductile
6" Plastic
6-8" Cast Iron

=<4"
Water District Boundary #1

0 250 500 750 1,000
Feet

Prepared by: Delaware Engineering, DPC
Date: October 2024
Sources: Dutchess County RPS

Note:
Static pressure of hydrants is indicated in **blue**
Date of measurements: 9/24/24
Water level in tank: 34 feet

71 psi
65 psi
72 psi
54 psi
84 psi
53 psi
60 psi
35 psi
32 psi
81 psi
78 psi
20 psi

Well #2 (Abandoned)
Well #1 (Abandoned)
Well #3 (Abandoned)
Well #4A
Well #4
Lavelle Road Pump Station

200,000 Gallon Water Storage Tank. 40'-0" High X 29'-6" Diameter. Water Elevation 760 USGS

Well #6
Well #5
Main Pump House

Route 22
Route 343
Route 44
Mygatt Road
Mechanic Street
Horseshoe Bend
Rail Trail Way
Wilson Eaton Road
Terrace Road
Broadway
Morton Place
Lavelle Road
East Broadway
Autumn Lane
Lake Amenia Road
Dunn Road
Old Route 22
Ohandley Drive
Powder House Road
Railroad Avenue
Midway Avenue
Lango Road
Prospect Avenue
John L Road
Depot Hill Road

Appendix C

WILLIAM F.X. O'NEIL
COUNTY EXECUTIVE

LIVIA SANTIAGO-ROSADO, MD, FACEP
COMMISSIONER

ANTHONY J. RUGGIERO, MPA
ASSISTANT COMMISSIONER

COUNTY OF DUTCHESS
DEPARTMENT OF BEHAVIORAL & COMMUNITY HEALTH

December 15, 2023

Victoria Perotti
Town of Amenia
4988 Route 22
Amenia, NY 12501

Re: Amenia Water District #1
Community Public Water Supply (PWS) # NY 1302759
Town of Amenia

Dear Ms. Perotti:

Part 5 of the New York State Sanitary Code addresses your responsibilities relative to ownership, operation and monitoring of the above referenced facility. On December 5, 2023, this department conducted a scheduled sanitary survey. Your operator, Marco D'Antonio, assisted. Please provide us with any corrections to the following report.

Also, as a reminder, the lead service line inventory is due to this department by no later October 16, 2024. Failure to submit on time will result in the issuance of a violation and possible administrative action.

System Description

Your water system serves 1001 people through 291 service connections. The system produces between 35,000 gallons per day and 65,000 gallons per day 2023. This is significantly less than water usage prior to late 2019 when your operator repaired several leaky mains in the system. The water comes from 4 wells in two well fields and is treated with sodium hypochlorite. Overall the system is old but has been maintained in to continue to operate as approved.

Operator

Currently, Subpart 5-4 of the New York State Sanitary Code requires that a grade IIB operator operate the water supply and a grade D operator operate the distribution system. Our records indicated that your operator is Marco D'Antonio, who holds a IIB, C and D grade certification. Your assistant operator is Uldis A. Ziemins, who is certified as a grade IA, C & D operator.

Sources

This facility has four active wells; wells 4 and 4A are located on Lavalle Road and wells 5 and 6 are located on Washington Court adjacent to the 200,000-gallon storage tank. Wells 4 and 4A are equipped with solenoid valves in order to discharge turbidity on startup, however these valves are not in use. The yield of each well at the 2023 inspection was as follows: well 4 (40 gpm), well 4A (50

gpm), well 5 (24 gpm), and well 6 (28 gpm). Your operator reports that Well 4A is producing a fine silt when it operates which clogged the original water meter. Your operator has replaced the mechanical meter with an electronic meter. The well 5 and 6 combined meter read 87,791,900 gallons. Well 6 was pumping at approximately 30.5 gpm. System pressure was 18 psi at the tank (20 psi from well 6).

Because there is a single chlorinator at each well field, the applied chlorine residual is slightly different depending upon which well is pumping. The applied chlorine residual will be roughly halved if the lag well must activate.

Well 4 and 4A are located near a lake and are located in a wetland. Considering the change in water quality with fine silt being drawn into the system from well 4A, well 4 and well 4A should be evaluated by a qualified professional hydrogeologist or professional engineer for being wells potentially that are groundwater under the direct influence of surface water (GWUDI) in accordance with Part 5-1.81. Alternatively, the treatment system can be evaluated by a licensed professional engineer to determine it provides adequate treatment per Part 5-1.81

Well #1, located on Mechanic Street, was abandoned in 2016.

Facilities

The Lavalle Road pump house is in poor condition with plants growing under the walls, decay of the wood framing and walls and cracking of the floor slab. The plant building is undersized for the equipment in the building. Additionally, the chlorine should be stored in a separate room to protect the operator as well as to protect the other equipment from corrosion.

Chemtech Xp chemical pumps inject the Slack Superchlor disinfectant, which is NSF60 certified. The injection pumps operate whenever the respective well pump(s) is/are operating.

Chlorine contact time is provided by the pipe between injection at the well houses and the first customer. The distance from the pumps to the first customer is relatively longer at the Lavalle Road site.

Storage

A 200,000-gallon standpipe (40’ high x 29.5’ diameter) water tank built in 1975 is located on Washington Court. The location is elevated relative to most consumers (760’ USGS). The storage tank supplies system pressure. There are no booster pumps in the distribution system, however, some homes located near the storage tank are fitted with booster pumps. We recommend regular inspections of the tank interior and exterior. There are some small rust spots on all areas of the tank. Repainting the tank in the near future is recommended.

An altitude valve in a pit by the tank protects against overflowing the tank. The pit has heaters and sump pumps.

The tank overflow has a rusty coarse screen welded on. Consider adding a 24 mesh non-corrodible screen as recommended by the “Ten States” standards. There is no splash plate under the overflow. Consider installing a splash plate to redirect overflow water.

The storage tank water level was 34.1 feet during the inspection. Your operator reports that 36 feet is the maximum level for this tank.

Distribution System

Flushing of the distribution system is conducted in July and October.

There are 16 reduced pressure zone backflow prevention devices installed in the system. Devices must be tested annually. A program to identify hazardous connections is required by code. It was reported in 2015 that a "Cross Connection Control Plan has been implemented by the Town" and that "The NYS Plumbing Code which references Part 5-131 of the NYS Sanitary Code will be the means of enforcement".

The 16 devices do not include the homes at the higher elevations which have installed booster pumps. Consideration should be given to installing a second (and third) pressure zone to eliminate the maintenance and liability of individual home booster pumps.

With the exception of some homes near the tank and at higher elevations in the west, the distribution pressure meets the minimum emergency standard of 20 psi when the tank is full. Pressure necessarily declines as the tank empties. Pressures farther from the tank can be reduced by friction losses due to inadequately sized pipes.

A map of the distribution system is available. Your operator has identified areas of the distribution system where pipes must be interconnected or upgraded and where duplicate pipes must be removed (after upgraded lines were installed). These actions are necessary to insure adequate pressures, reduced leakage, and simple maintenance.

The old water meters are reported to be failing at a rate of 5 to 10 meters per quarter. They are being replaced with smart meters. This will allow improved leak detection.

Sampling

Our version of your sampling schedule is attached. This schedule is provided to you as a general guide only. It is the responsibility of the supplier and not this department to make sure that all monitoring is performed per the methods, procedures and time periods indicated in Part 5 of the New York State Sanitary Code, as required by the EPA and the New York State Health Department.

A surveillance sample was taken at Cumberland Farms. A copy of the report has been sent to your operator for your records.

Emergency:

The Lavalle Road treatment plant has a 20 kW Kohler emergency generator. The generator has an LPG powered inline 4-cylinder engine supplied by a 500-gallon tank.

The storage tank holds more than one average day's use of water, however, lowering the water level in the tank exacerbates low pressures in the system.

Although your water system is not required to have a formal emergency plan by state law, you should include emergency planning in your operations. Make sure to include procedures for low pressure events. NYSDOH has templates on their website.

All buildings were locked and had alarms. The fence at the Lavalle Road treatment plant is not straight and interferes with opening of the gate to access the plant. This needs to be repaired to allow for proper access for maintenance.

Action

Submit lead service inventory by October 16, 2024.

Repair and upgrade the Lavalle Road Water treatment plant building and fence.

Evaluate well 4 and well 4A for potential groundwater under the direct influence of surface water.

Continue maintaining existing equipment.

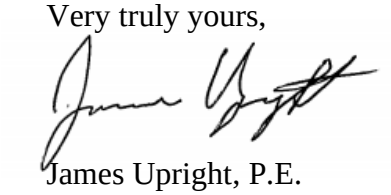
Develop a plan to improve the pressure and flow conditions in the distribution system.

Calculate chlorine contact time.

Recoat the water storage tank.

Should you need to contact me to discuss any of the above listed items or should any data need to be corrected or updated, I can be reached at (845) 486-3459.

Very truly yours,



James Upright, P.E.
Senior Public Health Engineer
Environmental Health Services

cc: Marco D'Antonio, Water System Operator (via email)
File

Appendix D

SUE SERINO
COUNTY EXECUTIVE

LIVIA SANTIAGO-ROSADO, MD, FACEP
COMMISSIONER

ANTHONY J. RUGGIERO, MPA
ASSISTANT COMMISSIONER

DUTCHESS COUNTY GOVERNMENT
DEPARTMENT OF BEHAVIORAL & COMMUNITY HEALTH

April 17, 2024

Tyler Post, Operations Manager
VRI Environmental Services, Inc.
1847 Route 55
Lagrangeville, NY 12540

Re: Amenia Water District #1
Rework of Well #5
PWS #1302759

Tyler,

Our department has the following information regarding deepening Well #5:

1. A 'Drinking Water Engineering Report', prepared by SEBI Environmental Services and dated May 6, 2023, was received in June 2023. This report was prepared for the Town of Amenia as a study of the entire water district and was detailed and extensive. Specifically concerning Well #5, the report recommended that "Well 5 should be drilled to a greater depth, hydrocracked/rehab, and requalified."
2. On September 8, 2023, we received data from a 72 hour well pump test for Well #5. It's presumed that the well had been deepened by this point as the data report states a well depth of 845' with the pump set at 800' for the test. The date of the start of the test was 6/20/2023. A flow rate of 20 gpm was established with an acceptable recovery rate. This was a raw data report – no Well Completion Report was received.
3. Beginning in late July 2023, lab reports for multiple samples were sent to this department. The following samples were collected according to the COC (table numbers refer to subpart 5-1):
    a. Turbidity
    b. PFOS, PFOA, 1,4 Dioxane w/ blanks
    c. Table 12 – Rad
    d. Table 8b, 8c, & 8d
    e. Table 9c, 9d + MTBE & Vinyl Chloride
    f. Bacteriological
4. There were multiple 'detects', plus the following exceedences - Fe was over the MCL and there was a positive TC/C.

SUE SERINO
COUNTY EXECUTIVE

LIVIA SANTIAGO-ROSADO, MD, FACEP
COMMISSIONER

ANTHONY J. RUGGIERO, MPA
ASSISTANT COMMISSIONER

DUTCHESS COUNTY GOVERNMENT
DEPARTMENT OF BEHAVIORAL & COMMUNITY HEALTH

For Well #5 to be requalified with acceptance by this department, you must generally follow the requirements of NYS DOH State Sanitary Code Subpart 5-1. Specifically, sections 5-1.10 through 5-1.15, 5-1.22, 5-1.25 and 5-1.30 are emphasized for this project. Please take the following steps:

1. The town should hire an engineer to evaluate the existing conditions of the well and appurtenances, and the surrounding area for possible contamination sources.
2. Have the well water re-tested as per item 3 above.
3. Have the engineer prepare a report and plan set with proposed treatment as required per the results of the new lab tests. This should include all data regarding the deepened Well #5 and process and instrumentation drawings from the wellhead to the point where it re-joins the existing system.
4. Provide a copy of the Well Completion Report from the drilling contractor.
5. Submit form DOH-348 – "Application for Approval of Plans for Public Water Supply Improvement" with above documents/plans and fee of $330.

When this submission has been received, we can discuss the next steps. This process will generally follow PWS-131 from the NYS DOH Environmental Health Manual.

Please do not hesitate to reach out with any questions that you may have.

Regards,

William 'Jay' Gieseler, PE
Senior Public Health Engineer
Environmental Services Division

CC: File (PWS #1302759)

Appendix E

Dec. '15

New York State Department of Environmental Conservation
Division of Water, Bureau of Water Resources Management
625 Broadway, Albany, NY 12233-3508

Water Withdrawal Reporting Form

Due by March 31st each year

Prior to filling out this form, please read the instructions on the last page

This form not for Agricultural Facilities

Section 1 of 6 - Basic Information

Facility Name: Ameina WD#1 | Facility Street Address: 12 Washington Ct | Reporting Year: 2020

City: Amenia | Zip: 12550 | Town: Amenia | County: Cutchess

Contact Name: Marco D'Antonio | Email: marcod@sebiny.com | Telephone: (845) 789-1307

Source Name	Source Type	Well Depth	Max Rate	Units
Well 4	BW	200	36	GPM
Well 4a	BW	225	44	GPM
Well 5	BW	325	18	GPM
Well 6	BW	500	32	GPM

Average Day Withdrawal	Units	Maximum Day Withdrawal	Units	Maximum System Capacity or NYSDEC Permitted Withdrawal	Units
91,351	GPD	126,000	GPD	130	GPM

Submitted by: Marco D'Antonio | Title: Operator | Date: 2/17/2020

Water Withdrawal Category

(Check One)

- ○ Agricultural - Must use form at http://www.dec.ny.gov/lands/86904.html
- ○ Bottled / Bulk Water
- ○ Commercial
- ○ Environmental
- ○ Industrial
- ○ Institutional
- ○ Mine Dewatering
- ○ Oil / Gas Production
  - Power Production:
    - ○ Fossil Fuel
    - ○ Nuclear
    - ○ Other Pwr
- ◉ Public Water Supply
  - Recreational:
    - ○ Golf Course
    - ○ Snow Making
    - ○ Other Rec
- ○ Other Category

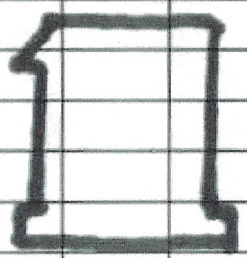
Appendix F

INSURANCE SERVICES OFFICE, INC.

HYDRANT FLOW DATA SUMMARY

City Amenia Water District
County Dutchess State NY Witnessed by Insurance Services Office, Inc. Date September 14, 2004

TEST NO.	TYPE DIST.*	TEST LOCATION	SERVICE	FLOW - GPM $Q=(29.83)(C)(d^2)(p^{0.5})$ INDIVIDUAL HYDRANTS			TOTAL	PRESSURE PSI STATIC	PRESSURE PSI RESID.	FLOW -AT 20 PSI $Q_R=Q_T(h_R^{1.85}/h_T^{1.85})$ NEEDED **	FLOW -AT 20 PSI AVAIL.	REMARKS***
1	Res	Prospect Ave at John L Rd	Main	380			380	32	24	750	450	
2	Comm	Mechanic St s/o E Main St	Main	280			280	87	70	2500	600	(A)-(1000 gpm) (B)-(1586 gpm)
3	Comm	North St n/o E & W Main St	Main	240			240	76	19	2250	250	(B)-(1586 gpm)
4	Comm	W Main St at Broadway	Main	240			240	78	4	2500	200	(B)-(1586 gpm)
5	Comm	South St (Rte 22) n/o Church St	Main	370			370	77	32	2250	400	(B)-(1586 gpm)



NOT FOR PUBLICATION

THE ABOVE LISTED NEEDED FIRE FLOWS ARE FOR PROPERTY INSURANCE PREMIUM CALCULATIONS ONLY AND ARE *NOT* INTENDED TO PREDICT THE MAXIMUM AMOUNT OF WATER REQUIRED FOR A LARGE SCALE FIRE CONDITION. THE AVAILABLE FLOWS ONLY INDICATE THE CONDITIONS THAT EXISTED AT THE TIME AND AT THE LOCATION WHERE TESTS WERE WITNESSED.

***Comm = Commercial; Res = Residential.**

****Needed is the rate of flow for a specific duration for a full credit condition. Needed Fire Flows greater than 3,500 gpm are not considered in determining the classification of the city when using the Fire Suppression Rating Schedule.**

*****(A)-Limited by available hydrants to gpm shown. Available facilities limit flow to gpm shown plus consumption for the needed duration of (B)-2 hours.**

ISO COMMERCIAL RISK SERVICES, INC.

HYDRANT FLOW DATA SUMMARY

City AMENIA FD State NY Zip 12501 Witnessed by ~~G.A.KERN~~ A. BAXTER Date ~~8/27/94~~

TEST NO.	TYPE DIST.*	TEST LOCATION	SERVICE	FLOW-GPM				PRESSURE PSI		FLOW AT 20 PSI		REMARKS
				INDIVIDUAL HYDRANTS			TOTAL	STATIC	RESID.	NEEDED **	AVAIL.	
1	COMM	MAIN ST @ NORTH ST	MAIN	300			300	70	10	1750	300	
2	COMM	SOUTH ST @ CHURCH ST	MAIN	380			380	74	34	2250	450	
3	COMM	MECHANIC ST @ S/O	MAIN	290			290	76	6	1250	250	
		E.MAIN ST										
4	COMM	W. MAIN @ BROADWAY	MAIN	290			290	78	6	2000	250	
5	RES	PROSPECT E/O DEPOT RD.										

THE ABOVE LISTED NEEDED FIRE FLOWS ARE FOR PROPERTY INSURANCE PREMIUM CALCULATIONS ONLY AND ARE NOT INTENDED TO PREDICT THE MAXIMUM AMOUNT OF WATER REQUIRED FOR A LARGE SCALE FIRE CONDITION. THE AVAILABLE FLOWS ONLY INDICATE THE CONDITIONS THAT EXISTED AT THE TIME AND AT THE LOCATION WHERE TESTS WERE WITNESSED.

* Comm = Commercial; Res = Residential

** Needed is the rate of flow for a specific duration for a full credit condition. Needed Fire Flows greater than 3,500 gpm are not considered in determining the classification of the city when using the Fire Suppression Rating Schedule.

Appendix G

95-20-6(10/90)-25c R3

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DEC PERMIT NUMBER
3-1320-00086-00004 & 5

FACILITY/PROGRAM NUMBER(s)
WSA# 10,919
FW# AM-9

PERMIT

Under the Environmental Conservation Law (ECL)

EFFECTIVE DATE
September 25, 2007

EXPIRATION DATE
Wetlands/401: December 31, 2009
WS: None (*Except see General Condition "D" on page 3*)

RECEIVED
SEP 27 2007
BUREAU OF WATER RESOURCE MANAGEMENT

TYPE OF PERMIT (Check All Applicable Boxes)
X New ☐ Renewal ☐ Modification ☐ Permit to Construct ☐ Permit to Operate

☐ Article 15, Title 5: Protection of Water	☐ Article 17, Titles 7, 8: SPDES	☐ Article 27, Title 9; 6NYCRR 373: Hazardous Waste Management
XX Article 15, Title 15: Water Supply	☐ Article 19: Air Pollution Control	☐ Article 34: Coastal Erosion Management
☐ Article 15, Title 15: Water Transport	☐ Article 23, Title 27: Mined Land Reclamation	☐ Article 36: Floodplain Management
☐ Article 15, Title 15: Long Island Wells	XX Article 24: Freshwater Wetlands	☐ Articles 1, 3, 17, 19, 27, 37; 6NYCRR 380: Radiation Control
☐ Article 15, Title 27: Wild, Scenic & Recreational Rivers	☐ Article 25: Tidal Wetlands	☐ Other _____
XX 6NYCRR 608: Water Quality Certification	☐ Article 27, Title 7; 6NYCRR 360: Solid Waste Management	

PERMIT ISSUED TO: Town of Amenia W.D. No.1 -3rd application
TELEPHONE NUMBER: (845) -373-8118

ADDRESS OF PERMITTEE: Town Hall, P.O. Box 81, Mechanic St, Amenia, NY 12501

CONTACT PERSON FOR PERMITTED WORK: Morris Associate, Attn: John Lazarony, P.E.
TELEPHONE NUMBER: (845)-471-7900

NAME AND ADDRESS OF PROJECT/FACILITY: Town of Amenia W.D. No.1

LOCATION OF PROJECT/FACILITY: Lavelle Road (aka Washington Court)

COUNTY	TOWN	WATERCOURSE/WETLAND NO.	NYTM COORDINATES
Dutchess	Amenia	FW# AM-9	E:620.5 . N: 4633

DESCRIPTION OF AUTHORIZED ACTIVITY

Take a new supply of water in amounts up to 92,160 gallons per day (gpd) for use in the Town's existing distribution system from Well No. 4A, having an approved capacity of 64 gallons per minute (gpm). The total approved withdrawal from all of the Town's groundwater sources is limited to 227,520 gallons per day (See Special Condition No. 1).

This permit also authorizes the past construction activity of drilling Well No. 4A in freshwater wetland AM-9, the proposed installation of a water line connecting the well to the existing adjacent treatment facility, the creation of a one-vehicle parking area and footpath, the restoration of all other disturbed areas and implementation of the wetland mitigation plan for removal of trash from a section of AM-9, in accordance with the plans referenced in the Special Conditions herein.

By acceptance of this permit, the permittee agrees that the permit is contingent upon strict compliance with the ECL, all applicable regulations, the General Conditions specified (**See Page 2**) and any Special Conditions included as part of this permit.

DEPUTY PERMIT ADMINISTRATOR: Michael D. Merriman
ADDRESS: 21 South Putt Corners Rd., New Paltz NY 12561 ☞ MDM

AUTHORIZED SIGNATURE: Michael D. Merriman
Date: September 25, 2007

DRA1:PERMITP1 8/94

NOTIFICATION OF OTHER PERMITTEE OBLIGATIONS

Item A: Permittee Accepts Legal Responsibility and Agrees to Indemnification

The permittee has accepted expressly, by the execution of the application, the full legal responsibility for all damages and costs, direct or indirect, of whatever nature and by whomever suffered, for liability it incurs resulting from activity conducted pursuant to this permit or in noncompliance with this permit and has agreed to indemnify and save harmless the State from suits, actions, damages and costs of every name and description resulting from such activity.

Item B: Permittee to Require it's Contractors to Comply with Permit

The permittee shall require its independent contractors, employees, agents and assigns to read, understand and comply with this permit, including all special conditions, and such persons shall be subject to the same sanctions for violations of this permit as those prescribed for the permittee.

Item C: Permittee Responsible for Obtaining Other Required Permits

The permittee is responsible for obtaining any other permits, approvals, lands, easements and rights-of-way that may be required for this project.

Item D: No Right to Trespass or Interfere with Riparian Rights

This permit does not convey to the permittee any right to trespass upon the lands or interfere with the riparian rights of others in order to perform the permitted work nor does it authorize the impairment of any rights, title, or interest in real or personal property held or vested in a person not a party to the permit.

GENERAL CONDITIONS

General Condition 1: Facility Inspection by the Department

--The permitted site or facility, including relevant records, is subject to inspection at reasonable hours and intervals by an authorized representative of the Department of Environmental Conservation (the Department) to determine whether the permittee is complying with this permit and the ECL. Such representative may order the work suspended pursuant to ECL 71-0301 and SAPA 401(3).

--The permittee shall provide a person to accompany the Department's representative during an inspection to the permit area when written or verbal notification is provided by the Department at least 24 hours prior to such inspection.

--A copy of this permit, including all referenced maps, drawings and special conditions, must be available for inspection by the Department at all times at the project site. Failure to produce a copy of the permit upon request by a Department representative is a violation of this permit.

General Condition 2: Relationship of this Permit to Other Department Orders and Determinations

Unless expressly provided for by the Department, issuance of this permit does not modify, supersede or rescind any order or determination previously issued by the Department or any of the terms, conditions or requirements contained in such order or determination.

General Condition 3: Applications for Permit Renewals or Modifications

The permittee must submit a separate written application to the Department for renewal, modification or transfer of this permit. Such application must include any forms or supplemental information the Department requires. Any renewal, modification or transfer granted by the Department must be in writing.

The permittee must submit a renewal application at least:

a) 180 days before expiration of permits for State Pollutant Discharge Elimination System (SPDES), Hazardous Waste Management Facilities (HWMF), major Air Pollution Control (APC) and Solid Waste Management Facilities (SWMF); and

b) 30 days before expiration of all other permit types.

Submission of applications for permit renewal or modification are to be submitted to:

NYSDEC Regional Permit Administrator, Region 3
21 South Putt corners Road, New Paltz, NY 12651, Telephone: 845-256-3054

General Condition 4: Permit Modifications, Suspensions and Revocations by the Department

The Department reserves the right to modify, suspend or revoke this permit when:

a) the scope of the permitted activity is exceeded or a violation of any condition of the permit or provisions of the ECL and pertinent regulations is found;

b) the permit was obtained by misrepresentation or failure to disclose relevant facts;

c) new material information is discovered; or

d) environmental conditions, relevant technology, or applicable law or regulation have materially changed since the permit was issued.

ADDITIONAL GENERAL CONDITIONS FOR ARTICLES 15 (TITLE 5), 24,25,34,36 AND 6NYCRR PART 608

1. If future operations by the State of New York require an alteration in the position of the structure or work herein authorized, or if, in the opinion of the Department of Environmental Conservation it shall cause unreasonable obstruction to the free navigation of said waters or flood flows or endanger the health, safety or welfare of the people of the State, or cause loss or destruction of the natural resources of the State, the owner may be ordered by the Department to remove or alter the structural work, obstructions, or hazards caused thereby without expense to the State, and if, upon the expiration or revocation of this permit, the structure, fill, excavation, or other modification of the watercourse hereby authorized shall not be completed, the owners, shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore to its former condition the navigable and flood capacity of the watercourse. No claim shall be made against the State of New York on account of any such removal or alteration.

2. The State of New York shall in no case be liable for any damage or injury to the structure or work herein authorized which may be caused by or result from future operations undertaken by the State for the conservation or improvement of navigation, or for other purposes, and no claim or right to compensation shall accrue from any such damage.

3. Granting of this permit does not relieve the applicant of the responsibility of obtaining any other permission, consent or approval from the U.S. Army Corps of Engineers, U.S. Coast Guard, New York State Office of General Services or local government which may be required.

4. All necessary precautions shall be taken to preclude contamination of any wetland or waterway by suspended solids, sediments, fuels, solvents, lubricants, epoxy coatings, paints, concrete, leachate or any other environmentally deleterious materials associated with the project.

5. Any material dredged in the conduct of the work herein permitted shall be removed evenly, without leaving large refuse piles, ridges across the bed of a waterway or floodplain or deep holes that may have a tendency to cause damage to navigable channels or to the banks of a waterway.

6. There shall be no unreasonable interference with navigation by the work herein authorized.

7. If upon the expiration or revocation of this permit, the project hereby authorized has not been completed, the applicant shall, without expense to the State, and to such extent and in such time and manner as the Department of Environmental Conservation may require, remove all or any portion of the uncompleted structure or fill and restore the site to its former condition. No claim shall be made against the State of New York on account of any such removal or alteration.

8. If granted under 6NYCRR Part 608, the NYS Department of Environmental Conservation hereby certifies that the subject project will not contravene effluent limitations or other limitations or standards under Sections 301, 302, 303, 306 and 307 of the Clean Water Act of 1977 (PL 95-217) provided that all of the conditions listed herein are met.

9. All activities authorized by this permit must be in strict conformance with the approved plans submitted by the applicant or his agent as part of the permit application.
Such approved plans were prepared by _____
_____ on _____.

SPECIAL CONDITIONS

- The enclosed permit sign must be conspicuously posted in a publicly accessible location at the project site. It must be visible and protected from the elements at all times.
- The permittee shall require that any contractor, project engineer, or other person responsible for the overall supervision of this project reads, understands and complies with this permit, including all special conditions to prevent environmental degradation.
- For Article 15, Protection of Waters and Article 24, Freshwater Wetlands permits, the permittee or an authorized representative shall notify the Department by mailing the attached form at least 48 hours prior to the commencement of any portion of the project authorized herein.

Continued on next page...

A. The permittee must require that any contractor, project engineer, or other person responsible for the overall supervision of this project has read, understands and agrees to comply with this permit and associated plan(s).

B. Prior to starting work on any construction authorized herein, detailed plans of the structures proposed to be built and specifications for such work shall have been submitted to and approved by the Department. Thereafter, such construction work shall be entirely completed in full accordance with the plans and specifications which have been submitted and approved.
NOTE: Approval by this Department of final plans and specifications, and of completed works, will not be issued until equivalent approvals have been issued by the NYS Department of Health.

C. Section 15-1529 of the Environmental Conservation Law forbids the operation of any of these works until, as constructed, they have been approved by the Department. Such final approval will be given only on written request. In general, such approval will not be given until all provisions affecting quality of the water and safety of the works have been complied with in full.

D. The Department reserves the right to rescind this permit or to take whatever action it may deem suitable and proper if the works authorized to be constructed herein are not initiated by December 31, 2010.

SPECIAL CONDITIONS

For Article 15, Title 15 (Water Supply)
and
Article 24 (Freshwater Wetlands) & 401 Water Quality Certification

1. The following table lists the permittee's approved ground water sources. No other groundwater sources shall be used without the further approval of the Department.

Source Name	WSA Number	Current Approved Individual Source Capacities (gpm)
Well # 1	1296	15
Well # 4	9,264	30
Well # 5	9,264	19
Well # 6	9,264	30
Well # 4A	This Permit	64
	Total	158 (227,520 gpd)

2. Due to the age of the existing system, Well Nos. 1, 4, 5 & 6 must be yield tested. Results of the test must be submitted to the Regional Water Engineer in White Plains, by September 30, 2008. Testing must be consistent with Division of Water (DOW) Recommended Pump Test Procedures (see http://www.dec.ny.gov).

   If Well #1 is demonstrated to be able to adequately provide at least 5 gallons per minute, the permittee may retain it for standby (or auxiliary) purposes, such as in the event of an unexpected sure temporary outage, or during a drought. Otherwise, that wells must be decommissioned in accordance with the procedures listed in Special Condition #3 of this permit.

3. Approval for use of the following sources of supply, as granted previously by the Department or its predecessors, is hereby revoked:

Source Name	WSA Number	Approval Date
Well No. 2	1,296	5/4/1938
Well No. 3	4,390	3/29/1963

SPECIAL CONDITIONS

For Article 15 Title 15 (Water Supply) and Article 24 (Freshwater Wetlands) & 401 Water Quality Certification

These sources shall be permanently disconnected from the permittee's system, the piping plugged and the wells capped and sealed in a manner satisfactory to the New York State Department of Health. The sources so abandoned shall not again be used for public water supply purposes without a further permit from the Department of Environmental Conservation. Decommissioning shall be consistent with the information provided at http://www.dec.ny.gov.

However, if after pumptesting Well #1 it is found to have and unusable, or unreliable, or insufficient amount of water, it must be abandoned in accordance with the same requirements.

4. Prior to using any water from Well #4A for potable uses, the height of the casing and the ground around the well No. 4A shall be raised to terminate at least three (3) feet above the 100 year flood elevation and the well shall be fitted with an appropriate sanitary seal to protect against contamination.

5. The permittee shall test raw water samples from Well No. 4A for Total Coliform and Escherichia Coli (E. Coli) on a monthly basis for one year from the date the well is placed in service. Results of the test be submitted to Dutchess County Health Department. If E. Coli is present in any sample, a detailed evaluation of the well shall be conducted to determine if the well is under the direct influence of surface water.

6. Due to the elevated nitrate levels in Well No. 5, this well shall not be operated by itself. The operation restrictions on this well shall be as follows

   a) Pumping Start Up; Pumping at Well No. 6 must occur prior to pumping at Well No. 5.
   b) Pumping Shut Down; Well No. 5 must be shut down prior to shut down at Well No. 6.

7. The permittee shall conduct and submit quarterly nitrate analyses to the Dutchess County Health Department on both Wells 5 and 6 to establish the trend for nitrate levels until such time that the Dutchess County Health Department is satisfied that nitrates have stabilized at an acceptable level.

8. Nothing contained herein shall be held to authorize the permittee to distribute water to any other district or service area, or to any expansion of an existing district or service area, which has not already been approved by the Department or its predecessors without having received a further permit from the Department.

9. All land within 200 feet of any well approved herein shall be protected and controlled, in order to prevent pollution of the ground or groundwater, by direct ownership of the land, by the acquisition of protective easements, or by other appropriate measures. However, no additional land or easements need to be acquired around Wells 1, 4, 4-A, 5 and 6, at this time.

10. Before any water from the sources approved herein may be used for any purpose, the permittee shall have caused a sample of the water from each to be collected and analyzed and shall have submitted the results of such analyses to the Department and to the New York State Department of Health (DOH). Should DOH find that the water from any source requires treatment to attain satisfactory sanitary quality, it will notify the Department of the specific treatment required for that source. The permittee shall use water from such source only after certifying to the Department that it has achieved full compliance with DOH's treatment requirements .

11. Nothing contained in this permit and approval shall be held to authorize the permittee to supply, sell or distribute, for any purpose, water from any source approved herein unless all such water shall first have been treated in a manner satisfactory to the New York State Department of Health. Nor shall it be held to authorize distribution of water to any other district or service area, or from the expansion of any existing district or service area, without first obtaining a further permit from the Department.

SPECIAL CONDITIONS

For Article 15 Title 15 (Water Supply) and Article 24 (Freshwater Wetlands) & 401 Water Quality Certification

12. During any construction directly or indirectly associated with the activities authorized herein, the permittee shall make provisions to minimize erosion on the construction site and to prevent increased sedimentation in any water body on or adjacent to the site. (Also see Wetland Conditions later in this permit)

13. The permittee shall ensure that water used for disinfecting water mains, if discharged to area streams, has a free chlorine residual not exceeding 0.05 milligrams-per-liter (mg/l) at the point of discharge.

14. In the event that the failure or diminution of yield of any well should cause the actual combined yield of all approved wells to fall below 120 gallons per minute, the permittee shall develop plans to obtain an additional supply of water or to take such other measures as the Department may direct. Such additional supply(ies) shall require a further permit for which a new Water Supply application shall be made to the Department.

15. The permittee shall make provisions to provide an adequate supply of water to those residents whose private well-water systems are diminished or rendered non-productive by the permittee's use of the sources of water supply approved by this permit.

Water Conservation Conditions

16. The permittee must install meters on all service connections within the Water District within three years of the date of this permit. The permittee must maintain meters on all sources of supply used in the system and on all customer service connections supplied by the system.

17. At least once every fifteen years, the permittee must have all of its small service connection meters (less than 1-inch in diameter) calibrated for accuracy according to standards of the American Water Works Association (AWWA). Larger service meters and all source meters must be calibrated more frequently, based upon the AWWA standards for the size of meter used.

18. The permittee must maintain records of annual metered water production and consumption, and, at least once annually, must conduct a system water audit that utilizes metered production and consumption data to determine unaccounted-for water.

19. The permittee must develop and implement a leak detection and repair program that uses sonic detection equipment to inspect its entire distribution system in a systematic fashion. At a minimum, this program must cover the entire system in a three-year cycle by inspecting at least one-third of the system each year. Whenever two consecutive annual water audits shall show that unaccounted-for water is 15% or less of system production, the leak detection and repair program may be modified to cover the entire system in a longer cycle.

20. The permittee must retain records of production and consumption, reports of audit results, and summaries of leaks detected and repaired for at least ten years. The permittee must provide copies of such of these records, reports, and summaries as might be requested in writing by the Department within one month of receiving such a request.

Freshwater Wetland Conditions:

21. All work authorized by this permit must be undertaken in accordance with the plans and reports prepared by Morris Associates, entitled "Amenia Water District #1: Well Connection Plan" drawings 1 & 2 dated May 17, 2007and a Revised Wetland Replanting Plan the last received February 12, 2007.

22. Prior to commencing any construction in this wetland or its 100- foot wide adjacent area, the permittee or their agent must contact DEC Biologist Heather Gierloff at 845-256-3086 to schedule a pre-construction meeting.

23. Upon commencement of any regulated activity, the successful implementation and completion of all freshwater wetland

SPECIAL CONDITIONS

For Article 15 Title 15 (Water Supply)
and
Article 24 (Freshwater Wetlands) & 401 Water Quality Certification

mitigation is mandatory regardless of whether or not construction proceeds to completion. The required mitigation must be completed no later than the expiration date of this permit.

24. Any further clearing of vegetation authorized by this permit within the wetland or its 100 foot wide adjacent area, shall be done by hand without the use of construction equipment.

25. EROSION CONTROL: Prior to commencement of any construction activity within the wetland or its 100-foot wide adjacent area authorized herein, the permittee shall install securely anchored silt fencing and/or continuous staked hay bales as shown on the plans or drawings referenced in this permit. These erosion control devices shall be maintained until all disturbed land is fully vegetated to prevent any silt or sediment from entering the freshwater wetland or its adjacent area. Subsequently, silt fencing, hay bales and any accumulated silt or sediment shall be completely removed for disposal at an appropriate upland site.

26. The permittee shall employ measures sufficient to prevent contamination of the freshwater wetland by turbidity, sediment, fuels, concrete leachate or any other pollutants associated with construction or construction procedures.

27. All material excavated for utility trench work in the wetland and its regulated adjacent areas must be stockpiled on tarps adjacent to the work area. This material may be used for backfill. The completed work area shall be restored to existing grade and no higher. All excess excavated material must be completely removed from the wetland and its adjacent 100 foot area.

Wetland Mitigation Conditions:

28. The permittee must undertake and complete the wetland mitigation work specified in plans and reports cited previously in this permit, no later than December 31, 2010.

29. The permittee is responsible for supervising this project, and shall ensure that all necessary measures are employed to prevent environmental degradation and to ensure successful mitigation.

30. The permittee is responsible for replacement of lost plantings if the survival rate of initial wetland plantings is less than 85% within one year of planting, and each year thereafter, for a minimum three year period.

31. The success of the mitigation area shall be monitored for a minimum of three years from completion. Annual reports discussing the status of vegetation established, any problems that have occurred and containing representative photographs shall be provided to the Department by December 31 of each year for the duration of this permit with the first report due December 31, 2008.

STATE ENVIRONMENTAL QUALITY REVIEW

Under the State Environmental Quality Review Act (SEQR), the project associated with this permit is classified as an Unlisted Action with the Town of Amenia designated as the lead agency. It has been determined that the project will not have a significant effect on the environment.

Distribution:

H. Gierloff, BOH, NPO
VJ Gandhi; M. George, DOW, WPO
M. Holt, DOW, Albany (3504)
B. Rogers, PE, NYSDOH, Troy
Mr. Keeler of Dutchess County Health Department
J. Lazarony, PE, of Morris Associates
P. Nelligan

Appendix H

Annual Drinking Water Quality Report for 2023
Amenia Water District #1
4988 Rt. 22, Amenia, NY 12501
(Public Water Supply ID# 1302759)

INTRODUCTION

To comply with State regulations, Amenia Water District #1 issues this annual report describing the quality of your drinking water. The purpose of this report is to raise your understanding of drinking water and awareness of the need to protect our drinking water sources. Last year, your tap water met all State drinking water health standards. We are proud to report that our system did not violate a maximum contaminant level or any other water quality standard. This report provides an overview of last year's water quality. Included are details about where your water comes from, what it contains, and how it compares to State standards.

If you have any questions about this report or concerning your drinking water, please contact VRI Environmental Services at (845) 677-3839, or the Dutchess County Department of Health at (845) 486-3404. We want you to be informed about your drinking water. If you want to learn more, please attend any of our regularly scheduled town board meetings. The meetings are held every first and third Thursday of each month at 7:00pm at the town hall.

WHERE DOES OUR WATER COME FROM?

In general, the sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activities. Contaminants that may be present in source water include: microbial contaminants; inorganic contaminants; pesticides and herbicides; organic chemical contaminants; and radioactive contaminants. In order to ensure that tap water is safe to drink, the State and the EPA prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. The State Health Department's and the FDA's regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

Our water system serves 1005 customers through 305 service connections. Our water source is made of 4 wells drilled at various depths located throughout the water district. These wells are designated as 4, 4A, 5 and 6. Well #5 is out of service after a well deepening project in June. Sampling at this well was suspended at that time. At each of the well locations, the water is treated with chlorine for disinfection purposes, it is then pumped directly into the distribution system. The unused water is stored in a 200,000-gallon storage tank located at Washington Court treatment facility.

The NYS DOH has completed a source water assessment for this system, based on available information. Possible and actual threats to this drinking water source were evaluated. The state source water assessment includes a susceptibility rating based on the risk posed by each potential source of contamination and how easily contaminants can move through the subsurface to the wells. The susceptibility rating is an estimate of the potential for contamination of the source water, it does not mean that the water delivered to the consumers is or will be contaminated. See section "Are there contaminants in our drinking water?" for a list of contaminants that have been detected, if any. The source water assessments provide resource managers with additional information for protecting source waters into the future.

The source water assessment has rated our water source as having an elevated susceptibility to microbials, nitrates, salts, sulfate, industrial solvents and other industrial contaminates. These ratings are due primarily to the close proximity of the wells to permitted discharge facilities (industrial/commercial facilities that discharge wastewater into the environment and are regulated by the state and/or federal government) and the residential and agricultural land use and related activities in the assessment area. In addition, the wells draw from fractured bedrock and the overlying soils may not provide adequate protection from potential contamination. While the source water assessment has rated our wells as being susceptible to microbials, please note that our water is disinfected to ensure that the finished water delivered into your home meets New York State's drinking water standards for microbial contamination.

The county and state health departments will use this information to direct future source water protection activities. These may include water quality monitoring, resource management, planning, and education programs. A copy of the assessment can be obtained by contacting us as noted above.

ARE THERE CONTAMINANTS IN OUR DRINKING WATER?

As the State regulations require, we routinely test your drinking water for numerous contaminants. These contaminants include: total coliform, turbidity, inorganic compounds, nitrate, nitrite, lead and copper, volatile organic compounds, total trihalomethanes, haloacetic acids, synthetic organic compounds, and radiologicals. The table presented below depicts which compounds were detected in your drinking water. The State allows us to test for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of our data, though representative, are more than one year old.

It should be noted that all drinking water, including bottled drinking water, may be reasonably expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (800-426-4791) or the Dutchess County Health Department at (845) 486-3404.

Table of Detected Contaminants

Contaminant	Violation Yes/No	Date of Sample	Level Detected (Avg/Max) (Range)	Unit Measure-ment	MCLG	Regulatory Limit (MCL, AL or TT)	Likely Source of Contamination
Nitrate Well 4 Well 4A Well 5 Well 6	No	2/7/2023	 2.6 4.0 3.9 5.7	mg/L	10	MCL = 10	Runoff from fertilizer use, leaching from septic tanks, sewage; erosion of natural deposits.
Copper *	No	August 2023	0.163 (Range = 0.0157 – 0.168)	mg/L	1.3	AL = 1.3	Corrosion of household plumbing systems; Erosion of natural deposits; leaching from wood preservatives.
Lead **	No	August 2023	1.19 (Range = ND – 1.71)	ug/L	0	AL = 15	Corrosion of household plumbing systems; Erosion of natural deposits.
Barium Well 4/4A Well 5/6	No	7/12/2021	 0.018 0.0083	mg/L	2	MCL = 2	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chloride Well 4/4A Well 5/6	No	3/8/2023	 43.5 26.8	mg/L	n/a	MCL = 250	Naturally occurring or indicative of road salt contamination.

Table of Detected Contaminants

Contaminant	Violation Yes/No	Date of Sample	Level Detected (Avg/Max) (Range)	Unit Measure-ment	MCLG	Regulatory Limit (MCL, AL or TT)	Likely Source of Contamination
Sodium Well 4/4A Well 5/6	No	3/8/2023	 15.2 11.8	mg/L	n/a	See Health Effects ***	Naturally occurring; Road salt; Water softeners; Animal waste.
Nickel Well 4/4A Well 5/6	No	7/12/2021	 0.0023 0.0034	mg/L	n/a	n/a	
Gross Alpha Well 4/4A Well 5/6	No	6/7/2022	 1.55 2.54	pCi/L	0	MCL = 15	Erosion of natural deposits.
Uranium Well 4/4A Well 5/6	No	6/7/2022	 1.75 5.16	ug/L	0	MCL = 30	Erosion of natural deposits.
Beta particle and photon activity from manmade radionuclides Well 4/4A Well 5/6	No	6/7/2022	 2.48 1.93	pCi/L	0	MCL = 50 ***	Decay of natural deposits and man-made emissions.
Combined Radium 226 & 228 Well 4/4A Well 5/6	No	6/7/2022	 1.086 1.344	pCi/L	0	MCL = 5	Erosion of natural deposits.
Total Trihalomethanes	No	1/21/2021	2.8	ug/L	n/a	MCL = 80	By-product of drinking water chlorination needed to kill harmful organisms. TTHMs are formed when source water contains large amounts of organic matter.
Perfluorooctanoic Acid (PFOA) Well 4/4A Well 5/6	No	11/1/2023	 0.980 0.576	ng/L	n/a	10	Released into the environment from widespread use in commercial and industrial applications.

Table of Detected Contaminants							
Contaminant	**Violation Yes/No**	**Date of Sample**	**Level Detected (Avg/Max) (Range)**	**Unit Measure-ment**	**MCLG**	**Regulatory Limit (MCL, AL or TT)**	**Likely Source of Contamination**
Perfluorooctane Sulfonic Acid (PFOS) Well 4/4A Well 5/6	No	11/1/2023	 1.78 0.664	ng/L	n/a	10	Released into the environment from widespread use in commercial and industrial applications.

Table of Unregulated Detected Contaminants				
Contaminant	**Date of Sample**	**Level Detected (Max) (Range)**	**Unit Measurement**	**Likely Source of Contamination**
Pefluorohexanoic Acid (PFHxA) Well 4/4A Well 5/6	11/1/2023	 0.564 0.634	ng/L	Released into the environment from widespread use in commercial and industrial applications.
Perfluorohexanesulfonic Acid (PFHxS) Well 4/4A	11/1/2023	 0.705	ng/L	Released into the environment from widespread use in commercial and industrial applications.
Perfluorobutanoic Acid (PFBA) Well 4/4A Well 5/6	11/1/2023	 0.560 0.462	ng/L	Released into the environment from widespread use in commercial and industrial applications.
Perfluoropentanoic Acid (PFPeA) Well 4/4A Well 5/6	11/1/2023	 0.744 0.789	ng/L	Released into the environment from widespread use in commercial and industrial applications.

Footnotes:

* The level presented represents the 90th percentile of the 10 sites tested. A percentile is a value on a scale of 100 that indicates the percent of a distribution that is equal to or below it. The 90th percentile is equal to or greater than 90% of the copper values detected at your water system. In this case, 10 samples were collected at your water system and the 90th percentile value is the reported value. The action level for copper was not exceeded at any of the sites tested.

** The level presented represents the 90th percentile of the 10 sites tested. A percentile is a value on a scale of 100 that indicates the percent of a distribution that is equal to or below it. The 90th percentile is equal to or greater than 90% of the lead values detected at your water system. In this case, 10 samples were collected at your water system and the 90th percentile value is the reported value. The action level for lead was not exceeded at any the 10 sites tested.

*** Water containing more than 20 mg/L of sodium should not be used for drinking by people on severely restricted sodium diets. Water containing more than 270 mg/L of sodium should not be used for drinking by people on moderately restricted sodium diets.

**** The State considers 50 pCi/L to be the level of concern for beta particles.

Definitions:
Non - Detects (ND) - Laboratory analysis indicates that the constituent is not present.
Milligrams per liter (mg/l) – Corresponds to one part of liquid in one million parts of liquid (parts per million – ppm).
Micrograms per liter (ug/l) – Corresponds to one part of liquid in one billion parts of liquid (parts per billion – ppb).
Action Level (AL) - The concentrations of a contaminant, which, if exceeded, triggers treatment, or other requirements, which a water system must follow.
Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's as feasible.
Maximum Contaminant Level Goal (MCLG) - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.
Maximum Residual Disinfectant Level (MRDL) – The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.
Maximum Residual Disinfectant Level Goal (MRDLG) – The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contamination.
Treatment Technique (TT) – A required process intended to reduce the level of a contaminant in drinking water.
Picocuries per liter (pCi/L) – A measure of the radioactivity in water.

WHAT DOES THIS INFORMATION MEAN?

As you can see by the table, our system had no violations. We have learned through our testing that some contaminants have been detected; however, these contaminants were detected below the level allowed by the State. We are required to present the following information on lead in drinking water.

Lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. *Amenia Water District #1* is responsible for providing high quality drinking water and removing lead pipes, but cannot control the variety of materials used in plumbing components in your home. You share the responsibility for protecting yourself and your family from the lead in your home plumbing. You can take responsibility by identifying and removing lead materials within your home plumbing and taking steps to reduce your family's risk. Before drinking tap water, flush your pipes for several minutes by running your tap, taking a shower, doing laundry or a load of dishes. You can also use a filter certified by an American National Standards Institute accredited certifier to reduce lead in drinking water. If you are concerned about lead in your water and wish to have your water tested, contact *VRI Environmental Services for Amenia Water District #1 at 845-677-3839*. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available at *http://www.epa.gov/safewater/lead*.

IS OUR WATER SYSTEM MEETING OTHER RULES THAT GOVERN OPERATIONS?

During 2023, our system was in compliance with applicable State drinking water operating, monitoring and reporting requirements.

DO I NEED TO TAKE SPECIAL PRECAUTIONS?

Although our drinking water met or exceeded state and federal regulations, some people may be more vulnerable to disease causing microorganisms or pathogens in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice from their health care provider about their drinking water. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium, Giardia and other microbial pathogens are available from the Safe Drinking Water Hotline (800-426-4791).

Spanish
Este informe contiene información muy importante sobre su agua beber. Tradúzcalo ó hable con alguien que lo entienda bien.

Why Save Water and How to Avoid Wasting It?

Although our system has an adequate amount of water to meet present and future demands, there are a number of reasons why it is important to conserve water:

- Saving water saves energy and some of the costs associated with both of these necessities of life;
- Saving water reduces the cost of energy required to pump water and the need to construct costly new wells, pumping systems and water towers; and
- Saving water lessens the strain on the water system during a dry spell or drought, helping to avoid severe water use restrictions so that essential fire fighting needs are met.

You can play a role in conserving water by becoming conscious of the amount of water your household is using, and by looking for ways to use less whenever you can. It is not hard to conserve water. Conservation tips include:

- Automatic dishwashers use 15 gallons for every cycle, regardless of how many dishes are loaded. So get a run for your money and load it to capacity.
- Turn off the tap when brushing your teeth.
- Check every faucet in your home for leaks. Just a slow drip can waste 15 to 20 gallons a day. Fix it up and you can save almost 6,000 gallons per year.
- Check your toilets for leaks by putting a few drops of food coloring in the tank, watch for a few minutes to see if the color shows up in the bowl. It is not uncommon to lose up to 100 gallons a day from one of these otherwise invisible toilet leaks. Fix it and you save more than 30,000 gallons a year.

Closing

Thank you for allowing us to continue to provide your family with quality drinking water this year. In order to maintain a safe and dependable water supply we sometimes need to make improvements that will benefit all of our customers. The costs of these improvements may be reflected in the rate structure. Rate adjustments may be necessary in order to address these improvements. We ask that all our customers help us protect our water sources, which are the heart of our community. Please call our office if you have any questions.

Appendix I

ID	SC Name	Public Wate	Date of resear	Address of Building	Section Lo	Building Type	Date Building w	Service Line inform
39	SEBI Tech 2	Amenia	6/6/2023	7 Dunn Rd	1	SFR	01/01/1890	No
40	SEBI Tech 2	Amenia	6/6/2023	5 Lango Rd	4	Multi Family	12/11/2018	No
41	SEBI Tech 2	Amenia	6/6/2023	9 Lango Rd	5	Multi Family	1/1/1935	No
42	SEBI Tech 2	Amenia	6/6/2023	10 Lango Rd	5	SFR	1/1/1989	No
43	SEBI Tech 2	Amenia	6/6/2023	5 Broadway	1	Apartment	1/1/1976	No
44	SEBI Tech 2	Amenia	6/6/2023	8 Birch Dr	1	SFR	1/1/1962	No
45	SEBI Tech 2	Amenia	6/6/2023	9 Birch Dr	1	Multi Family	1/1/1976	No
46	SEBI Tech 2	Amenia	6/6/2023	9 Broadway	1	SFR	1/1/1967	No
47	SEBI Tech 2	Amenia	6/6/2023	11 Birch Dr	1	SFR	1/1/1958	No
48	SEBI Tech 2	Amenia	6/6/2023	11 Broadway	1	SFR	1/1/1967	No
49	SEBI Tech 2	Amenia	6/6/2023	12 Birch Dr	1	SFR	1/1/1958	No
50	SEBI Tech 2	Amenia	6/6/2023	13 Lango Rd	4	SFR	1/1/1932	No
51	SEBI Tech 2	Amenia	6/6/2023	15 Broadway	1	SFR	1/1/1966	No
52	SEBI Tech 2	Amenia	6/6/2023	17 Broadway	1	SFR	1/1/1966	No
53	SEBI Tech 2	Amenia	6/6/2023	20 Lango Rd	4	SFR	1/1/1932	No
54	SEBI Tech 2	Amenia	6/6/2023	25 Broadway	1	SFR	1/1/1958	No
55	SEBI Tech 2	Amenia	6/6/2023	29 Broadway	1	SFR	1/1/1958	No
56	SEBI Tech 2	Amenia	6/6/2023	33 Broadway	1	SFR	1/1/1952	No
57	SEBI Tech 2	Amenia	6/6/2023	34 Broadway	1	SFR	1/1/1957	No
58	SEBI Tech 2	Amenia	6/6/2023	37 Broadway	1	SFR	1/1/1949	No
59	SEBI Tech 2	Amenia	6/6/2023	40 Broadway	1	SFR	1/1/1952	No
60	SEBI Tech 2	Amenia	6/6/2023	43 Broadway	1	SFR	1/1/1962	No
61	SEBI Tech 2	Amenia	6/6/2023	5 Morton Place	1	SFR	1/1/1962	No
62	SEBI Tech 2	Amenia	6/6/2023	52 Broadway	1	SFR	1/1/1950	No
63	SEBI Tech 2	Amenia	6/6/2023	53 Broadway	1	SFR	1/1/1948	No
64	SEBI Tech 2	Amenia	6/6/2023	55 Broadway	1	SFR	1/1/1952	No
65	SEBI Tech 2	Amenia	6/6/2023	56 Broadway	1	SFR	1/1/1951	No
66	SEBI Tech 2	Amenia	6/6/2023	59 Broadway	1	SFR	1/1/1951	No
67	SEBI Tech 2	Amenia	6/6/2023	6 Autumn Lane	1	Restaurant	1/1/1930	No
68	SEBI Tech 2	Amenia	6/6/2023	60 Broadway	1	SFR	1/1/1951	No
69	SEBI Tech 2	Amenia	6/6/2023	61 Broadway	1	SFR	1/1/1952	No
70	SEBI Tech 2	Amenia	6/6/2023	66 Broadway	1	SFR	1/1/1972	No
71	SEBI Tech 2	Amenia	6/6/2023	8 Morton Place	1	SFR	1/1/1953	No

72	SEBI Tech 2	Amenia	6/6/2023	9 Morton Place	5	SFR	1/1/1950	No
73	SEBI Tech 2	Amenia	6/6/2023	11 John L Rd	4	SFR	1/1/1975	No
74	SEBI Tech 2	Amenia	6/6/2023	13 John L Rd	4	SFR	1/1/1956	No
75	SEBI Tech 2	Amenia	6/6/2023	14 Morton Pl	3	SFR	1/1/1952	No
76	SEBI Tech 2	Amenia	6/6/2023	17 John L Rd	4	SFR	1/1/1956	No
77	SEBI Tech 2	Amenia	6/6/2023	3 Lavelle Rd	5	Church	1/1/1920	No
78	SEBI Tech 2	Amenia	6/6/2023	30 Midway	4	SFR	1/1/1962	No
79	SEBI Tech 2	Amenia	6/6/2023	10 Terrace Rd	1	SFR	1/1/1989	No
80	SEBI Tech 2	Amenia	6/6/2023	12 Lavelle Rd	3	SFR	1/1/1960	No
81	SEBI Tech 2	Amenia	6/6/2023	12 Lincoln Ct	4	SFR	1/1/1973	No
82	SEBI Tech 2	Amenia	6/6/2023	17 Midway Ave	4	SFR	1/1/1951	No
83	SEBI Tech 2	Amenia	6/6/2023	19 Midway Ave	4	SFR	1/1/1933	No
84	SEBI Tech 2	Amenia	6/6/2023	24 Midway Ave	4	SFR	01/01/1880	No
85	SEBI Tech 2	Amenia	6/6/2023	25 Midway Ave	4	SFR	1/1/1910	No
86	SEBI Tech 2	Amenia	6/7/2023	34 Midway Ave	4	SFR	1/1/1921	No
87	SEBI Tech 2	Amenia	6/7/2023	37 Midway Ave	4	SFR	1/1/1942	No
88	SEBI Tech 2	Amenia	6/7/2023	4 Lavelle Rd	3	SFR	1/1/1935	No
89	SEBI Tech 2	Amenia	6/7/2023	40 Midway Ave	4	SFR	1/1/1930	No
90	SEBI Tech 2	Amenia	6/7/2023	43 Midway Ave	4	SFR	1/1/1928	No
91	SEBI Tech 2	Amenia	6/7/2023	4789 Route 22	1	Commercial	1/1/1975	No
92	SEBI Tech 2	Amenia	6/7/2023	48 Midway Ave	4	SFR	1/1/1930	No
93	SEBI Tech 2	Amenia	6/7/2023	4825 Route 22	3	Commercial	1/1/1950	No
94	SEBI Tech 2	Amenia	6/7/2023	4827 Route 22	3	Commercial	1/1/1920	No
95	SEBI Tech 2	Amenia	6/7/2023	4835 Route 22	3	SFR	1/1/1961	No
96	SEBI Tech 2	Amenia	6/7/2023	4839 Route 22	3	SFR	1/1/1950	No
97	SEBI Tech 2	Amenia	6/7/2023	4857 Route 22	3	SFR	1/1/1948	No
98	SEBI Tech 2	Amenia	6/7/2023	4865 South	5	SFR	1/1/1950	No
99	SEBI Tech 2	Amenia	6/7/2023	4887 Route 22	5	SFR	01/01/1880	No
100	SEBI Tech 2	Amenia	6/7/2023	4892 Route 22	5	SFR	01/01/1871	No
101	SEBI Tech 2	Amenia	6/7/2023	4895 Route 22	5	SFR	1/1/1900	No
102	SEBI Tech 2	Amenia	6/7/2023	4898 Route 22	5	Multi Family	01/01/1861	No
103	SEBI Tech 2	Amenia	6/7/2023	4903 Route 22	5	Multiple Houses	1/1/1941	No
104	SEBI Tech 2	Amenia	6/7/2023	4905 Route 22	5	SFR	01/01/1858	No
105	SEBI Tech 2	Amenia	6/7/2023	4909 Route 22	5	Multi Family	01/01/1873	No

106	SEBI Tech 2	Amenia	6/7/2023	4913 Route 22	5	SFR	1/1/1900	No
107	SEBI Tech 2	Amenia	6/7/2023	4916 Route 22	5	SFR	1/1/1951	No
108	SEBI Tech 2	Amenia	6/7/2023	4919 Route 22	5	1 use small building	1/1/1920	No
109	SEBI Tech 2	Amenia	6/7/2023	4920 Route 22	5	Multi Family	12/31/1872	No
110	SEBI Tech 2	Amenia	6/7/2023	4925 Route 22	5	Multi Family	1/1/1900	No
111	SEBI Tech 2	Amenia	6/7/2023	4930 Route 22	5	Apartment	1/1/1960	No
112	SEBI Tech 2	Amenia	6/7/2023	4931 Route 22	5	SFR	1/1/1910	No
113	SEBI Tech 2	Amenia	6/7/2023	4936 Route 22	5	Apartments	1/1/1960	No
114	SEBI Tech 2	Amenia	6/7/2023	4942 Route 22	5	SFR	01/01/1880	No
115	SEBI Tech 2	Amenia	6/7/2023	4950 Route 22	5	Single use small buil	1/1/1960	No
116	SEBI Tech 2	Amenia	6/7/2023	4958 Route 22	5	Bank	1/1/1950	No
117	SEBI Tech 2	Amenia	6/7/2023	4966 Route 22	5	Converted Residence	1/1/1986	No
118	SEBI Tech 2	Amenia	6/7/2023	4971 Route 22	5	SFR	1/1/1900	No
119	SEBI Tech 2	Amenia	6/7/2023	4974 Route 22	5	Office	1/1/1920	No
120	SEBI Tech 2	Amenia	6/7/2023	4975 Route 22	5	SFR	1/1/1951	No
121	SEBI Tech 2	Amenia	6/7/2023	4981 Route 22	5	SFR	01/01/1850	No
122	SEBI Tech 2	Amenia	6/7/2023	4989 Route 22	5	SFR	1/1/1925	No
123	SEBI Tech 2	Amenia	6/7/2023	5001 Route 22	5	SFR	1/1/2006	No
124	SEBI Tech 2	Amenia	6/7/2023	51 Midway Ave	4	SFR	1/1/1954	No
125	SEBI Tech 2	Amenia	6/7/2023	52 Midway Ave	4	SFR	1/1/1933	No
126	SEBI Tech 2	Amenia	6/7/2023	5202 Route 44	1	SFR	1/1/1920	No
127	SEBI Tech 2	Amenia	6/7/2023	5224 Route 44	1	SFR	1/1/1920	No
128	SEBI Tech 2	Amenia	6/7/2023	5251 Route 44	1	SFR	1/1/1976	No
129	SEBI Tech 2	Amenia	6/7/2023	5263 Route 44	1	Det row building	1/1/1950	No
130	SEBI Tech 2	Amenia	6/7/2023	5267 Route 44	1	SFR	1/1/1992	No
131	SEBI Tech 2	Amenia	6/7/2023	5275 Route 44	1	Auto Body	1/1/1986	No
132	SEBI Tech 2	Amenia	6/7/2023	5291 Route 44	1	Lumber Yard	1/1/1950	No
133	SEBI Tech 2	Amenia	6/7/2023	5294 Route 44	1	Multi Family	1/1/1920	No
134	SEBI Tech 2	Amenia	6/7/2023	5296 Route 44	1	Tele com	1/1/1986	No
135	SEBI Tech 2	Amenia	6/7/2023	5298 Route 44	1	SFR	1/1/1929	No
136	SEBI Tech 2	Amenia	6/7/2023	5299 Route 44	Other	SFR	1/1/1952	No
137	SEBI Tech 2	Amenia	6/7/2023	5304 Route 44	1	SFR	1/1/1947	No
138	SEBI Tech 2	Amenia	6/7/2023	5305 Route 44	Other	SFR	1/1/1900	No
139	SEBI Tech 2	Amenia	6/7/2023	5308 Route 44	1	SFR	1/1/1930	No

140	SEBI Tech 2	Amenia	6/7/2023	5309 Route 44	5	SFR	1/1/1920	No
141	SEBI Tech 2	Amenia	6/7/2023	5310 Route 44	1	SFR	1/1/1920	No
142	SEBI Tech 2	Amenia	6/7/2023	5314 Route 44	5	SFR	1/1/1920	No
143	SEBI Tech 2	Amenia	6/7/2023	5318 Route 44	5	SFR	1/1/1920	No
144	SEBI Tech 2	Amenia	6/7/2023	5319 Route 44	5	Multi Family	01/01/1870	No
145	SEBI Tech 2	Amenia	6/7/2023	5321 Route 44	5	1 use small building	1/1/1930	No
146	SEBI Tech 2	Amenia	6/7/2023	5322 Route 44	5	SFR	01/01/1890	No
147	SEBI Tech 2	Amenia	6/7/2023	5323 Route 44	5	Converted residence	1/1/1920	No
148	SEBI Tech 2	Amenia	6/7/2023	5324 Route 44	5	SFR	01/01/1871	No
149	SEBI Tech 2	Amenia	6/7/2023	5325 Route 44	5	Multi Family	01/01/1800	No
150	SEBI Tech 2	Amenia	6/7/2023	5326 Route 44	5	SFR	01/01/1871	No
151	SEBI Tech 2	Amenia	6/7/2023	5327 Route 44	5	1 use small building	1/1/1920	No
152	SEBI Tech 2	Amenia	6/7/2023	5329 Route 44	5	Det row building	1/1/1920	No
153	SEBI Tech 2	Amenia	6/7/2023	54 Midway Ave	4	SFR	1/1/1930	No
154	SEBI Tech 2	Amenia	6/7/2023	71 Midway Ave	4	SFR	1/1/1974	No
155	SEBI Tech 2	Amenia	6/7/2023	75 Midway Ave	4	SFR	1/1/1958	No
156	SEBI Tech 2	Amenia	6/7/2023	85 Midway Ave	4	SFR	1/1/1958	No
157	SEBI Tech 2	Amenia	6/7/2023	89 Midway Ave	4	SFR	1/1/1994	No
158	SEBI Tech 2	Amenia	6/7/2023	9 Mechanic	5	Apartment	12/31/1869	No
159	SEBI Tech 2	Amenia	6/14/2023	1 Prospect Ave	4	SFR	1/1/1900	No
160	SEBI Tech 2	Amenia	6/14/2023	11 Lavelle Rd.	5	Religious	1/1/1963	No
161	SEBI Tech 2	Amenia	6/14/2023	13 Mechanic St	5	Storage	1/1/1959	No
162	SEBI Tech 2	Amenia	6/14/2023	16 Lavelle Rd	3	SFR	1/1/1935	No
163	SEBI Tech 2	Amenia	6/14/2023	18 Ohandley Drive	3	SFR	1/1/1996	No
164	SEBI Tech 2	Amenia	6/14/2023	19 Ohandley Dr	3	SFR	1/1/1995	No
165	SEBI Tech 2	Amenia	6/14/2023	20 Ohandley Dr	3	SFR	1/1/1994	No
166	SEBI Tech 2	Amenia	6/14/2023	21 Ohandley Drive	3	SFR	1/1/1996	No
167	SEBI Tech 2	Amenia	6/14/2023	22 Ohandley Dr	3	SFR	1/1/2003	No
168	SEBI Tech 2	Amenia	6/14/2023	24 Ohandley Dr	3	SFR	1/1/1993	No
169	SEBI Tech 2	Amenia	6/14/2023	25 Ohandley Dr	3	SFR	1/1/1997	No
170	SEBI Tech 2	Amenia	6/14/2023	26 Ohandley Dr	3	SFR	1/1/1994	No
171	SEBI Tech 2	Amenia	6/14/2023	27 Ohandley Dr	3	SFR	1/1/2000	No
172	SEBI Tech 2	Amenia	6/14/2023	3 Morton Place	1	SFR	1/1/1962	No
173	SEBI Tech 2	Amenia	6/14/2023	3 Prospect Ave	4	SFR	01/01/1890	No

174	SEBI Tech 2	Amenia	6/14/2023	3294 Route 343	5	Det row	1/1/1920	No
175	SEBI Tech 2	Amenia	6/14/2023	3296 Route 343	5	Det Row	1/1/1920	No
176	SEBI Tech 2	Amenia	6/14/2023	3300 Route 343	5	Det Row	1/1/1920	No
177	SEBI Tech 2	Amenia	6/14/2023	3302 Route 343	5	Apartment	1/1/1930	No
178	SEBI Tech 2	Amenia	6/14/2023	3304 Route 343	5	Det Row	1/1/1920	No
179	SEBI Tech 2	Amenia	6/14/2023	3305 Route 343	5	Auto Dealer	1/1/1930	No
180	SEBI Tech 2	Amenia	6/14/2023	3309 Route 343	5	Library	1/1/1930	No
181	SEBI Tech 2	Amenia	6/14/2023	3310 Route 343	5	SFR	1/1/1900	No
182	SEBI Tech 2	Amenia	6/14/2023	3312 Rout 343	5	School	1/1/1930	Yes
183	SEBI Tech 2	Amenia	6/14/2023	3314 Route 343	5	Converted Res	1/1/1920	No
184	SEBI Tech 2	Amenia	6/14/2023	3316 Route 343	5	Det Row	1/1/1950	No
185	SEBI Tech 2	Amenia	6/14/2023	3318 Route 343	5	Multi Family	1/1/1920	No
186	SEBI Tech 2	Amenia	6/14/2023	3319 Route 343	5	SFR	1/1/1900	No
187	SEBI Tech 2	Amenia	6/14/2023	3322 Route 343	5	Det Row	1/1/1930	No
188	SEBI Tech 2	Amenia	6/14/2023	3324 Route 343	5	Converted Residence	1/1/1940	No
189	SEBI Tech 2	Amenia	6/14/2023	3326 Route 343	5	Multi Family	1/1/1920	No
190	SEBI Tech 2	Amenia	6/20/2023	3330 Route 343	5	Det Row Bldg	1/1/1920	No
191	SEBI Tech 2	Amenia	6/20/2023	3338 Route 343	5	>1 use small building	1/1/1960	No
192	SEBI Tech 2	Amenia	6/20/2023	3339 Route 343	5	>1 use small building	1/1/1984	No
193	SEBI Tech 2	Amenia	6/20/2023	3343 Route 343	5	SFR	1/1/1980	No
194	SEBI Tech 2	Amenia	6/20/2023	3344 Route 343	5	Religious	1/1/1929	No
195	SEBI Tech 2	Amenia	6/20/2023	3346 Route 343	5	Multi Family	01/01/1871	No
196	SEBI Tech 2	Amenia	6/20/2023	3347 Route 343	5	Multi Family	1/1/1900	No
197	SEBI Tech 2	Amenia	6/20/2023	3350 Route 343	5	Apartment	01/01/1871	No
198	SEBI Tech 2	Amenia	6/20/2023	3352 Route 343	5	SFR	1/1/1900	No
199	SEBI Tech 2	Amenia	6/20/2023	3353 Route 343	5	Multi Family	01/01/1887	No
200	SEBI Tech 2	Amenia	6/20/2023	3360 Route 343	5	Health bldg	1/1/1988	No
201	SEBI Tech 2	Amenia	6/20/2023	35 Mechanic St	5	1 use small bldg	1/1/1960	No
202	SEBI Tech 2	Amenia	6/20/2023	36 Mechanic St	5	Police/Fire	1/1/1976	No
203	SEBI Tech 2	Amenia	6/20/2023	4 Railroad Ave	3	SFR	1/1/1951	No
204	SEBI Tech 2	Amenia	6/20/2023	40 Mechanic St	5	Mfg housing	1/1/1962	No
205	SEBI Tech 2	Amenia	6/20/2023	43 Mechanic St	5	SFR	01/01/1871	No
206	SEBI Tech 2	Amenia	6/20/2023	44 Mechanic St	5	SFR	01/01/1871	No
207	SEBI Tech 2	Amenia	6/20/2023	46 Mechanic St	5	Auto body	1/1/1950	No

208	SEBI Tech 2	Amenia	6/20/2023	47 Mechanic St	5	SFR	01/01/1883	No
209	SEBI Tech 2	Amenia	6/20/2023	4950B Route 22	5	1 use small bldg	1/1/1960	No
210	SEBI Tech 2	Amenia	6/20/2023	4963B Route 22	5	Multi-use building	1/1/1900	No
211	SEBI Tech 2	Amenia	6/20/2023	5 Prospect Ave	4	SFR	01/01/1890	No
212	SEBI Tech 2	Amenia	6/20/2023	8 Prospect Ave	3	SFR	1/1/1935	No
213	SEBI Tech 2	Amenia	6/20/2023	9 Prospect Ave	3	SFR	1/1/1900	No
214	SEBI Tech 2	Amenia	6/20/2023	10 Prospect Ave	3	SFR	1/1/1991	Yes
215	SEBI Tech 2	Amenia	6/20/2023	10 Railroad Ave	3	SFR	1/1/1960	No
216	SEBI Tech 2	Amenia	6/20/2023	11 Prospect Ave	4	SFR	01/01/1890	No
217	SEBI Tech 2	Amenia	6/20/2023	12 Prospect Ave	4	SFR	1/1/1950	No
218	SEBI Tech 2	Amenia	6/20/2023	13 Prospect Ave	4	SFR	1/1/1928	No
219	SEBI Tech 2	Amenia	6/20/2023	14 Prospect Ave	4	Multi Family	1/1/1900	No
220	SEBI Tech 2	Amenia	6/20/2023	15 Prospect Ave	4	SFR	1/1/1940	No
221	SEBI Tech 2	Amenia	6/20/2023	16 Prospect Ave	4	MFG housing	1/1/1975	No
222	SEBI Tech 2	Amenia	6/20/2023	17 Lavelle Rd	5	Multi Dwelling	12/31/1869	No
223	SEBI Tech 2	Amenia	6/20/2023	17 Ohandley Dr	3	SFR	1/1/1992	No
224	SEBI Tech 2	Amenia	6/20/2023	17 Prospect Ave	4	SFR	1/1/1966	No
225	SEBI Tech 2	Amenia	6/20/2023	18 Railroad Ave	3	Multi Dwelling	1/1/1920	No
226	SEBI Tech 2	Amenia	6/20/2023	19 Prospect Ave	4	SFR	1/1/2001	Yes
227	SEBI Tech 2	Amenia	6/20/2023	20 Prospect Ave	4	SFR	1/1/1946	No
228	SEBI Tech 2	Amenia	6/20/2023	20 Railroad Ave	3	SFR	1/1/1920	No
229	SEBI Tech 2	Amenia	6/20/2023	23 Ohandley Dr	3	Multi Family	1/1/1997	No
230	SEBI Tech 2	Amenia	6/20/2023	25 Mechanic St	5	Multi Dwelling	01/01/1870	No
231	SEBI Tech 2	Amenia	6/20/2023	26 Railroad Ave	3	SFR	01/01/1871	No
232	SEBI Tech 2	Amenia	6/20/2023	30 Railroad Ave	3	SFR	01/01/1870	No
233	SEBI Tech 2	Amenia	6/20/2023	33 Prospect Ave	4	Rural res	1/1/1976	No
234	SEBI Tech 2	Amenia	6/20/2023	34 Railroad Ave	3	SFR	1/1/1975	No
235	SEBI Tech 2	Amenia	6/20/2023	38 Railroad Ave	3	SFR	01/01/1870	No
236	SEBI Tech 2	Amenia	6/20/2023	40 Railroad Ave	3	SFR	01/01/1870	No
237	SEBI Tech 2	Amenia	6/20/2023	44 Railroad Ave	3	SFR	12/31/1874	No
238	SEBI Tech 2	Amenia	6/21/2023	50 Railroad Ave	3	SFR	1/1/1963	No
239	SEBI Tech 2	Amenia	6/21/2023	54 Railroad Ave	3	SFR	01/01/1870	No
240	SEBI Tech 2	Amenia	6/21/2023	56 Railroad Ave	3	SFR	1/1/1914	No
241	SEBI Tech 2	Amenia	6/21/2023	6 Depot Hill Rd	3	Multi Family	01/01/1770	No

242	SEBI Tech 2	Amenia	6/21/2023	62 Railroad Ave	3	SFR	1/1/1900	No
243	SEBI Tech 2	Amenia	6/21/2023	68 Railroad Ave	3	SFR	01/01/1890	No
244	SEBI Tech 2	Amenia	6/21/2023	7 Washington Ct	4	Multi Family	1/1/1972	No
245	SEBI Tech 2	Amenia	6/21/2023	9 Depot Hill Rd	4	SFR	1/1/1900	No
246	SEBI Tech 2	Amenia	6/21/2023	1 Lake Amenia Rd	1	Multi Family	12/31/1849	No
247	SEBI Tech 2	Amenia	6/21/2023	10 Depot Hill Rd	3	SFR	1/1/1932	No
248	SEBI Tech 2	Amenia	6/21/2023	10 Washington Ct	4	SFR	1/1/1974	No
249	SEBI Tech 2	Amenia	6/21/2023	11 Depot Hill Rd	4	SFR	1/1/1968	No
250	SEBI Tech 2	Amenia	6/21/2023	14 Depot Hill Rd	3	SFR	01/01/1880	No
251	SEBI Tech 2	Amenia	6/21/2023	17 Depot Hill Rd	4	SFR	1/1/1908	No
252	SEBI Tech 2	Amenia	6/21/2023	18 Depot Hill Rd	3	SFR	1/1/1900	No
253	SEBI Tech 2	Amenia	6/21/2023	18 Stagecoach Ln	4	Multiple res	1/1/1920	No
254	SEBI Tech 2	Amenia	6/21/2023	20 Depot Hill Rd	3	SFR	1/1/1900	No
255	SEBI Tech 2	Amenia	6/21/2023	22 Depot Hill Rd	3	SFR	1/1/1900	No
256	SEBI Tech 2	Amenia	6/21/2023	23 Depot Hill Rd	4	SFR	1/1/1910	No
257	SEBI Tech 2	Amenia	6/21/2023	25 Depot Hill Rd	4	Multi Family	1/1/1900	No
258	SEBI Tech 2	Amenia	6/21/2023	28 Depot Hill	3	SFR	1/1/1900	No
259	SEBI Tech 2	Amenia	6/21/2023	30 Depot Hill Rd	3	Inn/Lodge	1/1/1986	No
260	SEBI Tech 2	Amenia	6/21/2023	31 Depot Hill Rd	4	SFR	01/01/1880	No
261	SEBI Tech 2	Amenia	6/21/2023	35 Depot Hill Rd	4	SFR	1/1/1920	No
262	SEBI Tech 2	Amenia	6/21/2023	36 Depot Hill Rd	3	School	1/1/1988	No
263	SEBI Tech 2	Amenia	6/21/2023	39 Depot Hill Rd	4	SFR	1/1/1908	No
264	SEBI Tech 2	Amenia	6/21/2023	43 Depot Hill Rd	4	Converted res	1/1/1909	No
265	SEBI Tech 2	Amenia	6/21/2023	5 Lake Amenia	1	SFR	1/1/2007	Yes
266	SEBI Tech 2	Amenia	6/21/2023	51 Depot Hill Rd	4	SFR	1/1/1978	No
267	SEBI Tech 2	Amenia	6/21/2023	54 Depot Hill Rd	4	SFR	1/1/1971	No
268	SEBI Tech 2	Amenia	6/21/2023	57 Depot Hill Rd	4	SFR	1/1/1972	No
269	SEBI Tech 2	Amenia	6/21/2023	58 Depot Hill Rd	4	SFR	1/1/1974	No
270	SEBI Tech 2	Amenia	6/21/2023	64 Depot Hill Rd	4	SFR	1/1/1972	No
271	SEBI Tech 2	Amenia	6/21/2023	67 Depot Hill Rd	4	SFR	1/1/1974	No
272	SEBI Tech 2	Amenia	6/21/2023	7 Lake Amenia Rd	1	SFR	1/1/1930	No
273	SEBI Tech 2	Amenia	6/21/2023	70 Depot Hill Rd	4	SFR	1/1/1972	No
274	SEBI Tech 2	Amenia	6/21/2023	76 Depot Hill Rd	4	SFR	1/1/1969	No
275	SEBI Tech 2	Amenia	6/21/2023	764 Old Route 22	2	Multi Family	1/1/1920	No

276	SEBI Tech 2	Amenia	6/21/2023	766 Old Route 22	2	Multi Family	1/1/1920	No
277	SEBI Tech 2	Amenia	6/21/2023	770 Old Route 22	2	Apartment	1/1/1980	No
278	SEBI Tech 2	Amenia	6/21/2023	782 Old Route 22	3	Multi Family	1/1/1920	No
279	SEBI Tech 2	Amenia	6/21/2023	784 Old Route 22	3	SFR	1/1/1942	No
280	SEBI Tech 2	Amenia	6/21/2023	8 Old Ore Bed Rd	Other	SFR	1/1/1967	No
281	SEBI Tech 2	Amenia	6/21/2023	80 Depot Hill Rd	4	SFR	1/1/2005	No
282	SEBI Tech 2	Amenia	6/21/2023	82 Depot Hill Rd	4	SFR	1/1/1969	No
283	SEBI Tech 2	Amenia	6/21/2023	89 Depot Hill Rd	4	SFR	1/1/1971	No
284	SEBI Tech 2	Amenia	6/26/2023	90 Depot Hill Rd	4	SFR	1/1/1967	No
285	SEBI Tech 2	Amenia	6/26/2023	13 Lake Amenia Rd	1	SFR	1/1/1930	No
286	SEBI Tech 2	Amenia	6/26/2023	18-20 Mechanic St	5	Truck terminal	1/1/1998	No
287	SEBI Tech 2	Amenia	6/26/2023	19 Lake Amenia	1	SFR	1/1/1920	No
288	SEBI Tech 2	Amenia	6/26/2023	21 Lake Amenia Rd	1	SFR	1/1/1920	No
289	SEBI Tech 2	Amenia	6/26/2023	23 Lake Amenia Rd	1	SFR	1/1/1920	No
290	SEBI Tech 2	Amenia	6/26/2023	29 Lake Amenia Rd	1	SFR	1/1/1930	No
291	SEBI Tech 2	Amenia	6/26/2023	3 Powder House Rd	3	SFR	01/01/1870	No
292	SEBI Tech 2	Amenia	6/26/2023	50 Lake Amenia Rd	1	SFR	1/1/1976	No
293	SEBI Tech 2	Amenia	6/26/2023	62 Lake Amenia Rd	1	SFR	1/1/2018	No
294	SEBI Tech 2	Amenia	6/26/2023	67 Lake Amenia Rd	1	Multi Dwelling	1/1/1991	No
295	SEBI Tech 2	Amenia	6/26/2023	74 Lake Amenia Rd	1	SFR	1/1/1900	No
296	SEBI Tech 2	Amenia	6/26/2023	81 Lake Amenia Rd	1	Multi Family	1/1/1966	No
297	SEBI Tech 2	Amenia	6/26/2023	84 Lake Amenia Rd	1	SFR	1/1/1963	No
298	SEBI Tech 2	Amenia	6/26/2023	90 Lake Amenia Rd	1	SFR	1/1/1979	No
299	SEBI Tech 2	Amenia	6/26/2023	96 Lake Amenia Rd	1	SFR	1/1/1960	No
300	SEBI Tech 2	Amenia	6/26/2023	10 Stagecoach Ln	4	SFR	01/01/1850	No
301	SEBI Tech 2	Amenia	6/26/2023	13 Powder House Rd	3	SFR	1/1/1920	No
302	SEBI Tech 2	Amenia	6/26/2023	17 Powder House Rd	3	SFR	1/1/2022	No
303	SEBI Tech 2	Amenia	6/26/2023	41 Powder House Rd	3	SFR	1/1/1920	No
304	SEBI Tech 2	Amenia	6/26/2023	49 Powder House Rd	3	Multi Family	1/1/2003	No
305	SEBI Tech 2	Amenia	6/26/2023	54 Powder House Rd	3	SFR	1/1/1965	No
306	SEBI Tech 2	Amenia	6/26/2023	55 Powder House Rd	3	SFR	1/1/1988	No
307	SEBI Tech 2	Amenia	6/26/2023	56 Powder House Rd	3	SFR	1/1/1964	No
308	SEBI Tech 2	Amenia	6/26/2023	61 Powder House Rd	3	SFR	1/1/1987	No
309	SEBI Tech 2	Amenia	6/26/2023	67 Powder House Rd	3	SFR	1/1/1988	No

310	SEBI Tech 2	Amenia	6/26/2023	73 Powder House Rd	3	SFR	1/1/1987	No
311	SEBI Tech 2	Amenia	6/26/2023	79 Powder House Rd	3	SFR	1/1/1920	No
312	SEBI Tech 2	Amenia	6/26/2023	83 Powder House Rd	3	SFR	1/1/1987	No
313	SEBI Tech 2	Amenia	6/26/2023	89 Powder House Rd	3	SFR	1/1/1990	No
314	SEBI Tech 2	Amenia	6/26/2023	97 Powder House Rd	3	SFR	1/1/1940	No
315	SEBI Tech 2	Amenia	6/26/2023	29 W Lake Amenia Rd	1	SFR	1/1/2002	No
316	SEBI Tech 2	Amenia	6/26/2023	35 W lake Amenia Rd	1	Multi Family	1/1/1930	No
317	SEBI Tech 2	Amenia	6/26/2023	13 Lower Powder House	2	SFR	01/01/1890	No
318	SEBI Tech 2	Amenia	6/26/2023	19 Lower Powder House	2	Multi Family	1/1/1987	No
319	SEBI Tech 2	Amenia	6/26/2023	25 Lower Powder House	2	SFR	1/1/1969	No
320	SEBI Tech 2	Amenia	6/26/2023	36 Lower Powder House	2	1 use small building	1/1/1960	No
321	SEBI Tech 2	Amenia	6/26/2023	4957 Route 22	5	Restaurant	1/1/1920	No
322	Avery Anderson	Amenia	7/11/2023	4873 Route 22	5	SFR	1/1/1910	No
323	Avery Anderson	Amenia	7/11/2023	4879 Route 22	5	SFR	01/01/1860	No
324	Avery Anderson	Amenia	7/11/2023	4912 Route 22	5	SFR	01/01/1850	No
325	Avery Anderson	Amenia	7/11/2023	4914 Route 22	5	SFR	1/1/1975	No
326	Avery Anderson	Amenia	7/11/2023	5233 Route 44	1	SFR	1/1/1920	No
327	Avery Anderson	Amenia	7/11/2023	5235 Route 44	1	SFR	1/1/1975	No
328	Avery Anderson	Amenia	7/11/2023	5313 Route 44	1	SFR	01/01/1870	No
329	Avery Anderson	Amenia	7/11/2023	61 Midway Ave	5	Multi Family	1/1/1958	No
330	Avery Anderson	Amenia	7/11/2023	59 Midway Ave	5	Multi Family	1/1/1958	No
331	Avery Anderson	Amenia	7/11/2023	5330 Route 44	5	Commercial	1/1/1977	No
332	Avery Anderson	Amenia	7/11/2023	14 Powder House Rd	3	SFR	1/1/1955	No
333	Avery Anderson	Amenia	7/11/2023	16 Morton Place	3	SFR	1/1/1952	No
334	Avery Anderson	Amenia	7/11/2023	4963 Route 22	5	SFR	1/1/1900	No
335	Avery Anderson	Amenia	7/11/2023	4988 Route 22	5	Town Hall	1/1/1920	No
336	Avery Anderson	Amenia	7/12/2023	5270 Route 44	1	Ball Field	1/1/2007	No
337	Avery Anderson	Amenia	7/12/2023	4757 Route 22	1	Cemetery	7/12/2023	No
338	Avery Anderson	Amenia	7/12/2023	97 lake amenia road	1	Cemetery	7/12/2023	No

Service line type	Building change of Use from origin	Date of use changed if applicable	Notes
No Information	No		
No Information	Yes	12/11/2018	
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		

No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	Yes	1/1/1986 Originally listed as apartments and c
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	One house built in 1941 and one bu
No Information	No	
No Information	No	

No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	4930 and 4936 on same parcel
No Information	No	
No Information	No	4930 and 4936 on same parcel
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	

No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No

No Information	No		
No Information	No		
No Information	Yes		Change of use from Apt to Retail
No Information	No		
No Information	No		
No Information	No		
No Information	Yes		Change of use storage to library
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	Yes		Row retail use to row storage use
No Information	No		
No Information	No		
No Information	No		Originally built 1720
No Information	Yes		Church to storage
No Information	No		
No Information	No		
No Information	No	3/1/2020	3 family residence to apartment
No Information	No		
No Information	No		
No Information	Yes		Health facility to non contrib
No Information	No		
No Information	Yes		Row retail to fire station
No Information	No		
No Information	No		
No Information	No		
No Information	No		
No Information	No		

No Information	No	
No Information	No	Walk up apartment
No Information	No	
No Information	No	
No Information	No	
No Information	No	
Copper	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
Copper	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	

No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
Polyethylene	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No
No Information	No

No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	Site 2 Built in 1985
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	

No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	Building demoed. Now a vacant lot.
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	
No Information	No	

office space. Later became a car dealership with showroom

ilt in 1985

ID	Start time	Completion time	Public Water Supply	Date of inspec	Address of Inspection	Section
5	2/2/23 14:26:02	2/2/23 14:39:07	Amenia WD#1	2/1/2023	5318 Rt 44	5
6	2/2/23 14:39:21	2/2/23 14:43:10	Amenia WD#1	2/1/2023	9 Depot Hill	4
10	3/13/23 12:17:56	3/13/23 12:22:37	Amenia WD#1	2/27/2023	25 Mechanic Street	5
11	3/13/23 12:24:41	3/13/23 12:30:32	Amenia WD#1	3/1/2023	68 Railroad Ave	3
12	3/13/23 12:31:50	3/13/23 12:36:24	Amenia WD#1	2/18/2023	44 Railroad Ave	3
13	3/13/23 12:36:38	3/13/23 12:40:24	Amenia WD#1	2/13/2023	17 Broadway	1
14	3/13/23 12:49:44	3/13/23 12:50:20	Amenia WD#1	2/9/2023	3343 Route 343	5
15	3/13/23 12:51:32	3/13/23 12:56:53	Amenia WD#1	2/6/2023	85 Midway Ave	4
16	3/13/23 12:59:16	3/13/23 13:08:48	Amenia WD#1	1/28/2023	5202 Route 44	1
17	7/5/23 14:09:30	7/5/23 14:29:27	Amenia WD#1	7/5/2023	5298 Rt 44	1
18	7/5/23 14:29:31	7/5/23 14:32:23	Amenia WD#1	7/5/2023	3353 Rt 343	1
19	7/5/23 14:32:26	7/5/23 14:44:22	Amenia WD#1	7/5/2023	4966 Rt 22	1
20	7/5/23 14:44:26	7/5/23 14:50:59	Amenia WD#1	7/5/2023	3294 Rt 343	1
21	7/5/23 14:51:02	7/5/23 14:55:36	Amenia WD#1	7/5/2023	4925 Rt 22	1
22	7/10/23 10:58:19	7/10/23 11:00:44	Amenia WD#1	7/10/2023	20 Depot Hill	4
23	7/10/23 13:36:56	7/10/23 13:41:07	Amenia WD#1	7/10/2023	16 Morton Place	3
24	7/11/23 11:47:42	7/11/23 11:49:05	Amenia WD#1	7/11/2023	36 Depot Hill	3
25	7/11/23 11:49:10	7/11/23 11:56:57	Amenia WD#1	7/11/2023	3316 Rt 343	5
26	7/11/23 11:57:02	7/11/23 12:02:12	Amenia WD#1	7/11/2023	4963 Rt 22	5
27	7/14/23 9:21:32	7/14/23 9:24:27	Amenia WD#1	7/14/2023	20 Depot Hill Rd	4
28	7/14/23 9:24:31	7/14/23 10:12:19	Amenia WD#1	7/14/2023	23 Depot Hill Rd	4
29	7/14/23 11:24:19	7/14/23 11:27:30	Amenia WD#1	7/13/2023	4895 Route 22	1
30	7/14/23 13:05:34	7/14/23 13:28:44	Amenia WD#1	7/14/2023	4919 Route 22	5
31	7/17/23 13:00:31	7/17/23 13:03:23	Amenia WD#1	7/17/2023	25 Lower Powder House Rd	4
103	8/15/23 16:32:07	8/15/23 16:37:26	Amenia WD#1	8/2/2023	17 Broadway	1
104	8/15/23 16:37:29	8/15/23 16:48:40	Amenia WD#1	8/15/2023	54 Railroad Ave	3
105	8/28/23 10:29:38	8/28/23 11:05:23	Amenia WD#1	8/28/2023	43 Depot Hill	4
106	8/28/23 11:05:28	8/28/23 11:23:47	Amenia WD#1	8/28/2023	17 John L	4
107	8/28/23 11:32:11	8/28/23 11:39:17	Amenia WD#1	8/28/2023	4966 Rt 22	3
108	8/28/23 11:47:36	8/28/23 12:05:05	Amenia WD#1	8/28/2023	3338 Rt 343	3
110	8/28/23 13:11:46	8/28/23 13:20:13	Amenia WD#1	8/28/2023	30 Midway	4

Building Type	Service Line location (use facing/lo	Meter location	Meter Distance from service line e
Multi Dwelling	Front;	Basement	1-3 ft
SFR	Front;	Basement	1-3 ft
Multi Family	Right;Back;	Basement	4-7 ft
SFR	Front;Right;	Basement	1-3 ft
SFR	Right;Front;	Basement	1-3 ft
SFR	Front;Right;	Basement	1-3 ft
SFR	Front;	Basement	1-3 ft
SFR	Front;Left;	Basement	1-3 ft
SFR	Front;Left;	Basement	1-3 ft
SFR	Front;	Basement	1-3 ft
Multi Dwelling	Right;	Basement	1-3 ft
SFR	Left;Front;	Basement	4-7 ft
Commercial	Front;	Basement	1-3 ft
SFR	Left;	Basement	1-3 ft
SFR	Right;Front;	Basement	7-10 ft
SFR	Front;Right;	Basement	1-3 ft
Multi Dwelling	Front;	Basement	1-3 ft
SFR	Front;	Basement	4-7 ft
SFR	Front;	Basement	4-7 ft
SFR	Back;Left;	None	1-3 ft
SFR	Back;Left;	Basement	1-3 ft
SFR	Front;	Basement	1-3 ft
Commercial	Front;Right;	Basement	4-7 ft
SFR	Back;	1st Floor	1-3 ft
SFR	Front;	Basement	1-3 ft
SFR	Right;	Basement	1-3 ft
SFR	Back;Left;	Basement	4-7 ft
SFR	Back;Right;	Basement	1-3 ft
SFR	Back;Left;	Basement	4-7 ft
Commercial	Back;	1st Floor	1-3 ft
SFR	Front;Right;	Basement	1-3 ft

Meter ID	Meter Size	Service	Service Line Material	Service Line Co	Water Sl	Operational Water Sh	RPZ
1461380750	5/8"	3/4"	Galvanized	Good	Yes	Yes	No
1461345022	5/8"	3/4"	Copper	Good	No	No	Yes
1565198360	1"	3/4"	Well grade plastic	Good	Yes	Yes	No
1574969084	5/8"	3/4"	Galvanized	Good	Yes	Yes	No
1574952436	5/8"	3/4"	Galvanized	Good	Yes	Yes	No
1574955102	5/8"	3/4"	Galvanized	Good	Yes	Yes	No
1574954592	5/8"	3/4"	Galvanized	Good	Yes	Yes	No
1569548638	5/8"	3/4"	Galvanized	Good	Yes	Yes	No
1461343928	5/8"	3/4"	Galvanized	Good	Yes	Yes	No
1567940568	5/8"	3/4"	Copper	Good	Yes	Yes	Yes
1548529880	5/8"	3/4"	CTS Plastic	Good	Yes	Yes	Yes
1562666226	3/4"	3/4"	Copper	Good	Yes	Yes	Yes
10064433	3/4"	3/4"	Galvanized	Good	Yes	Yes	Yes
12083028	3/4"	1"	Galvanized	Good	Yes	Yes	Yes
Unsure	3/4"	1/2"	Copper	Good	Yes	Yes	No
1580192364	5/8"	1"	Galvanized	Good	Yes	Yes	Yes
1567570174	3/4"	3/4"	CTS Plastic	Good	Yes	Yes	No
Needs Confirmation	3/4"	3/4"	Copper	Good	Yes	Yes	Yes
1566347622	3/4"	3/4"	Galvanized	Good	Yes	Yes	Yes
No meter	3/4"	3/4"	Copper	Good	Yes	Yes	No
1574961792	3/4"	3/4"	Copper	Good	Yes	Yes	No
1548594836	3/4"	3/4"	Copper	Good	Yes	Yes	Yes
1852517623	3/4"	3/4"	Copper	Good	Yes	Yes	Yes
1546050906	3/4"	1"	Galvanized	Good	Yes	Yes	Yes
1574960062	3/4"	3/4"	Copper	Good	Yes	Yes	Yes
1852793665	3/4"	3/4"	Galvanized	Good	Yes	Yes	Yes
1574959836	5/8"	3/4"	Galvanized	Good	Yes	Yes	Yes
1574933938	5/8"	1"	Galvanized	Good	Yes	Yes	No
1562666226	3/4"	3/4"	Copper	Good	Yes	Yes	Yes
11113026	5/8"	3/4"	CTS Plastic	Good	Yes	Yes	Yes
1574955102	5/8"	1"	CTS Plastic	Good	Yes	Yes	No

Water Treatment in Building	Notes
None;	Stone foundation Feeds two (2) house 5318 and 5316 rt44, Should run a new line for 5316, Meter is currently in 531
None;	House is currently empty 1/1/23. Curb Valve is off
None;	
Water Softener;	
Filter;	
None;	
None;	
None;	
Water Softener;	
None;	
Water Softener;	
None;Water Softener;	
None;	
Water Softener;	
Water Softener;	Not sure if I found the meter or not. Did not see a meter outside and inside there was no meter before the water treat
Water Softener;	
Water Softener;	RPZ?
Water Softener;	
None;	
Water Softener;	
Water Softener;	
Water Softener;	
Water Softener;	
None;	
Water Softener;	
Water Softener;	
Water Softener;	Copper or Galvanized?
None;	
None;	
None;	
Water Softener;	

8

tment.

Appendix J

Monitoring Plan

Lavelle Road Wells

PWS# NY1302759

TOWN OF AMENIA

4988 ROUTE 22, AMENIA, NY 12501

June 6, 2024

Revised August 30, 2024

Delaware Engineering, D.P.C.
Civil and Environmental Engineering
Albany • Oneonta • Red Hook • Monticello • Goshen

Table of Contents

INTRODUCTION AND OBJECTIVE

The Town of Amenia, NY, owns and operates Amenia Water District #1under Community Public Water Supply (PWS) # NY 1302759. The water district serves 1001 people through 291 service connections, and produced between 35,000 gallons per day and 65,000 gallons per day in 2023.

The Town of Amenia is located in Dutchess County, New York. The Village lies within the Housatonic River basin. The Ten Mile Creek runs through the Village of Amenia from northeast to southwest to eventually join the Housatonic River north of Gaylordsville CT.

The Water District #1 water supply currently consists of four wells in two separate locations; the Lavelle Road Well 4 and Well 4A, and Washington Court Well 5 and Well 6.

The proximity of surface water pond, approximately 100 feet north of the Lavelle Road wells, and forest/shrub wetland adjacent to the west led the Dutchess County Department of Behavioral and Community Health to require evaluation of Well 4 and Well 4A for potential groundwater under the direct influence of surface water (GWUDI). See Figure 1 for the location of Amenia, NY. See Appendix A for a summary of GWUDI determination.

PROJECT BACKGROUND AND HISTORY

The Village lies within the Harlem Valley. The aquifer is bedrock, described as shale and as limestone in completion reports for wells in the surrounding area. Dutchess County Natural Resources Inventory maps bedrock at Lavelle Road wells as Limestone (a carbonate rock). Carbonate rocks are susceptible to internal erosion by the movement of groundwater along fractures and faults. Groundwater dissolves carbonate deposits, producing solution channels and voids; these openings provide storage cavities for groundwater supplies. This stored water can easily be polluted by contamination sources, such as septic tanks, where there are not enough sediment deposits on top of the carbonate bedrock to filter the waste materials. Although cave-ins may occur elsewhere in carbonate rocks, they are rare in Dutchess County (Dutchess County, NRI, Chapter 3).
https://www.dutchessny.gov/Departments/Planning/Natural-Resource-Inventory.htm

According to available completion reports, Lavelle Road Well 4 was constructed in 1971 at which time it was a privately owned water supply, prior to being acquired by the Town. Well 4A, immediately to the southeast, was constructed in 2006 to supplement the existing public water supply. See Appendix B for available completion reports.

The area surrounding the wells is mapped as outside the 1% chance annual flood hazard area on FEMA Flood Insurance Rate Map (FIRM) 36027C0331E, 5/2/2012. There is mapped floodway along the Ten Mile Creek to the north of Lavelle Road that flows northeast to southwest past the well field.

The area surrounding the wellfield includes a pond to the north, a storage facility to the northeast, residences to the southeast, the Harlem Valley Rail Trail to the east, wetland and the stream to the southwest, and a church and residences to the west. The pond to the north is on a privately owned 10-acre parcel.

Physical Features

	Well 4	Well 4A
Year Constructed	1971	2006
Surface Elevation	550 ft	550 ft
Total Depth	235	200
Overburden	clay	Clay and boulders
Bedrock Depth	Uncertain (Assume 135 fbg)	135 fbg
Casing Set	175 ft	168 ft
Static Water Level	5 ft	overflow
Construction	Steel casing, open hole in bedrock (limestone)	Steel casing, open hole in bedrock (limestone)
Yield	40 gpm	50 gpm

GWUDI Indicators

Has there been documented bacteriological MCL violations in the past three years? NO
Has there been documented nitrate MCL violations in the past three years? NO
Has there been any regional documented sources of contamination with this source within the past three years? NO
There are no violations that would be considered GWUDI indicators to date, as per the USEPA Water System Violation Report, accessed 5/29/2024, and recent Annual Water Quality Reports.
https://ordspub.epa.gov/ords/sfdw_rest/r/sfdw/sdwis_fed_reports_public/11?ireq_pwsid=NY1302759&clear=11,RIR

SAMPLING AND ANALYTICAL WORK PLAN

According to GWUDI determination guidance (NYSDOH Environmental Health Manual, WSP 42 TR, 08/06/2007) a two-phased methodology shall be used to determine whether or not a ground water source is under the direct influence of surface water.

1. Source Screening Phase – used to separate those sources that are clearly not subject to surface water influences from those sources in need of further evaluation.
2. Detailed Evaluation Phase – applied to sources identified to be tested to evaluate their degree of hydraulic connection with surface water. Options include;
   a) Hydrogeologic Assessment
   b) Water Quality Assessment
   c) Microscopic Particulate Analysis (MPA)

Source Screening Phase

The Lavelle wells are located within a carbonate aquifer which is one of the primary screening criteria. The wells are also located within 200 feet of a surface water body which is a secondary screening criterion. The wells are disinfected. Therefore, according to the guidance, the wells require further review.

Detailed Evaluation Phase

The detailed evaluation options include a water quality assessment, the collection of daily conductivity and temperature data to evaluate the extent of hydraulic connection and communication between the surface water body and the subsurface collection device (well). These data will also help determine if the time of travel from the surface water body to the ground water source is short enough to allow transport of Giardia lamblia cysts or Cryptosporidium oocysts from surface water to the groundwater source of drinking water.

For this project, Water Quality Assessment will consist of one year of daily temperature and conductivity readings at the wells and the surface water to the north. Temperature data should be from below the neutral zone. A Rain gage will be maintained and monitored daily at the groundwater source. Lake water levels relative to a fixed local datum will be recorded daily.

Data interpretation will be completed once a month to graphically compare temperature and conductivity variations between surface and ground water and an estimation of time

of movement of surface water to ground water. If time of travel can be assumed to be less than 100 days, a significant hydraulic connection should be assumed and a microscopic particulate analysis (MPA) completed.

The MPA sampling will be done twice to represent worst case conditions, when maximum potential recharge from surface water is taking place; during extremely wet or dry periods. There are two methods for MPA sample analysis. Each method has a risk-rating system. The DOH will be consulted in determination of the required method.

- EPA Consensus method = filtering 500 to 1000 gallons of water
- Wadsworth lab – concentration of 10 liters of water for benchtop filtration and sedimentation

SAMPLING FREQUENCY AND PARAMETERS

Sampling locations are shown in Figure 2 and listed in Table 1.
Temperature and Specific Conductivity data will be collected daily at each monitoring location for one year, if necessary, to show no surface water influence.
Should data demonstrate a surface water to ground water connection prior to one year, the project will proceed to MPA analyses.

SAMPLE COLLECTION AND HANDLING

A temperature/specific conductance field meter will be acquired for this project. The meter will be calibrated weekly, as per manufacturers methods, and documented on the attached calibration form. See Appendix C for calibration documentation sheet. Standard solutions for calibration will be acquired at concentration ranges appropriate for the groundwater and surface water being sampled.

Samples from each well will be taken at a sampling tap prior to chlorination. A dedicated sample container will be rinsed three times with the well water to be sampled before being used to collect well water. The meter will be used to make temperature and specific conductance readings in the sample container.

The surface water, pond to the north, is not thought to be deep. A grab sample will be taken with a reach pole from water at half depth, away from the bank, without stirring sediment that might otherwise be stirred up and interfere with sample results.

See Appendix C for a blank Field Data Sheet. The date and time, temperature and specific conductivity reading, and daily weather observations/rain records will be filled in each sampling event.

MONITORING LOCATIONS

Daily sampling will be carried out at the Lavelle Road wells and surface water pond to the north as listed in Table 1.

Table 1: Monitoring Locations

Location	Description
Well 4	Raw water sample tap
Well 4A	Raw water sample tap
Pond	Southern end closest to wells

ANALYSIS AND REPORTING

All samples will be field measurements as documented on the attached data sheet. The results of well raw water measurements will be compared to surface water as per guidance to determine if characteristics of change of surface water parameters exist in well water. Data will be maintained on field records and entered into an excel spreadsheet allowing graphic comparison of water quality fluctuations.

SAMPLING REPORT

A written report will be submitted to the Town and to NYS DOH, within 30 days of sample collection completion. The report will include basic weather observations made at the time, and during the day of sampling, including comparison of temperature and specific conductivity between groundwater and surface water.

- A map of the monitoring locations
- Information on pond bathymetric topography
- Copies of field data sheets

- A table summarizing current year's analytical results
- A table of rain and snow day information
- Observed land use changes, if any, within 200 feet of public well

RESPONSE TO SAMPLING RESULTS

The Department of Health will make a determination as to the wells being GWUDI or not GWUDI based upon geologic conditions, hydraulic communication data, and MPA results.

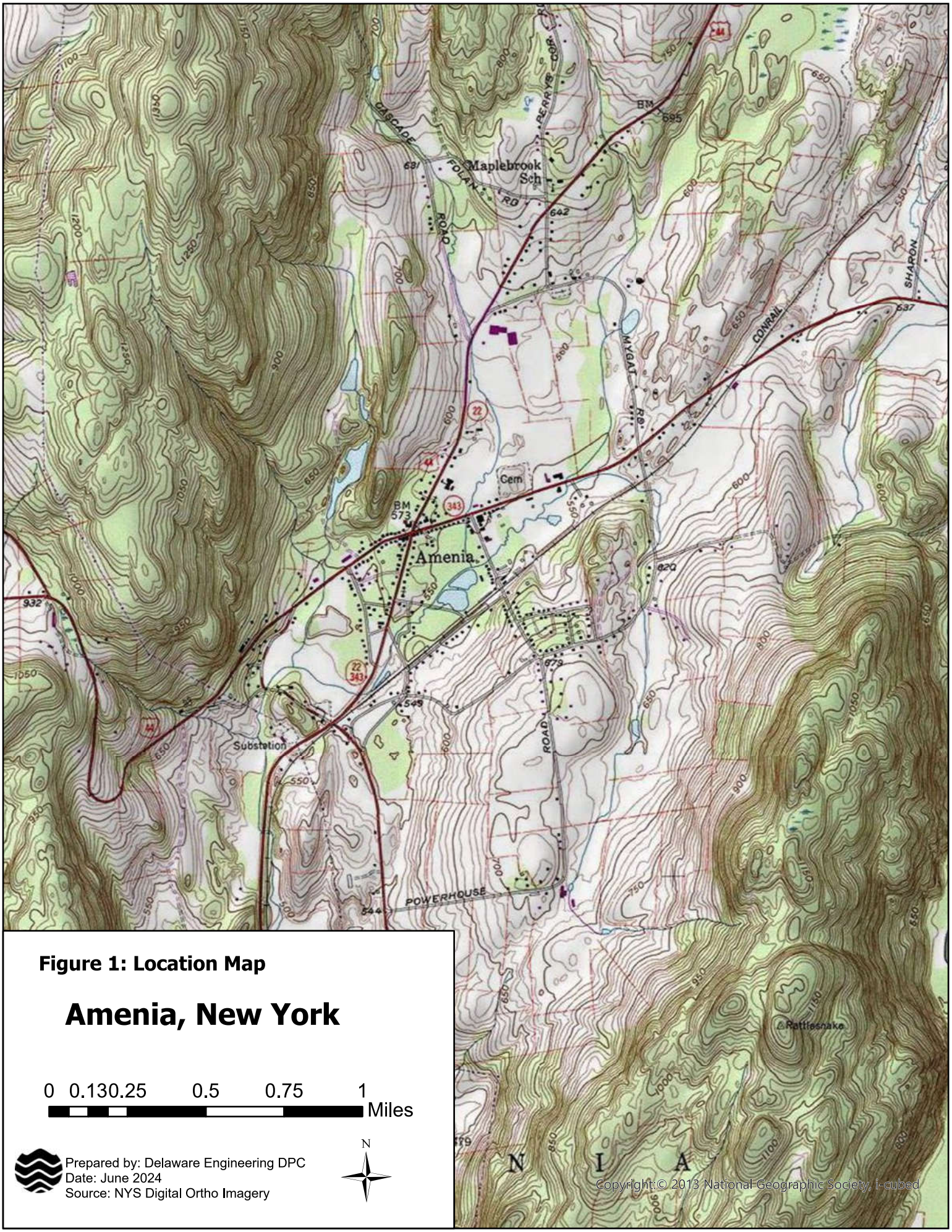


Figure 1: Location Map

Amenia, New York

Figure 2: Monitoring Locations

Amenia, New York

0 0.03 0.05 0.1 Miles

Prepared by: Delaware Engineering DPC
Date: June 2024
Source: NYS Digital Ortho Imagery

N

APPENDIX A

GWUDI Determination Summary Tables

NEW YORK STATE DEPARTMENT OF HEALTH OFFICE OF PUBLIC HEALTH CENTER FOR ENVIRONMENTAL HEALTH TECHNICAL REFERENCE	**ITEM NO:** WSP 42 TR **DATE:** 08/06/07 **SUBJECT:** Identification of Ground Water Sources Under the Direct Influence of Surface Water Page 4 of 18

Figure 1: Source Screening Phase Methodology

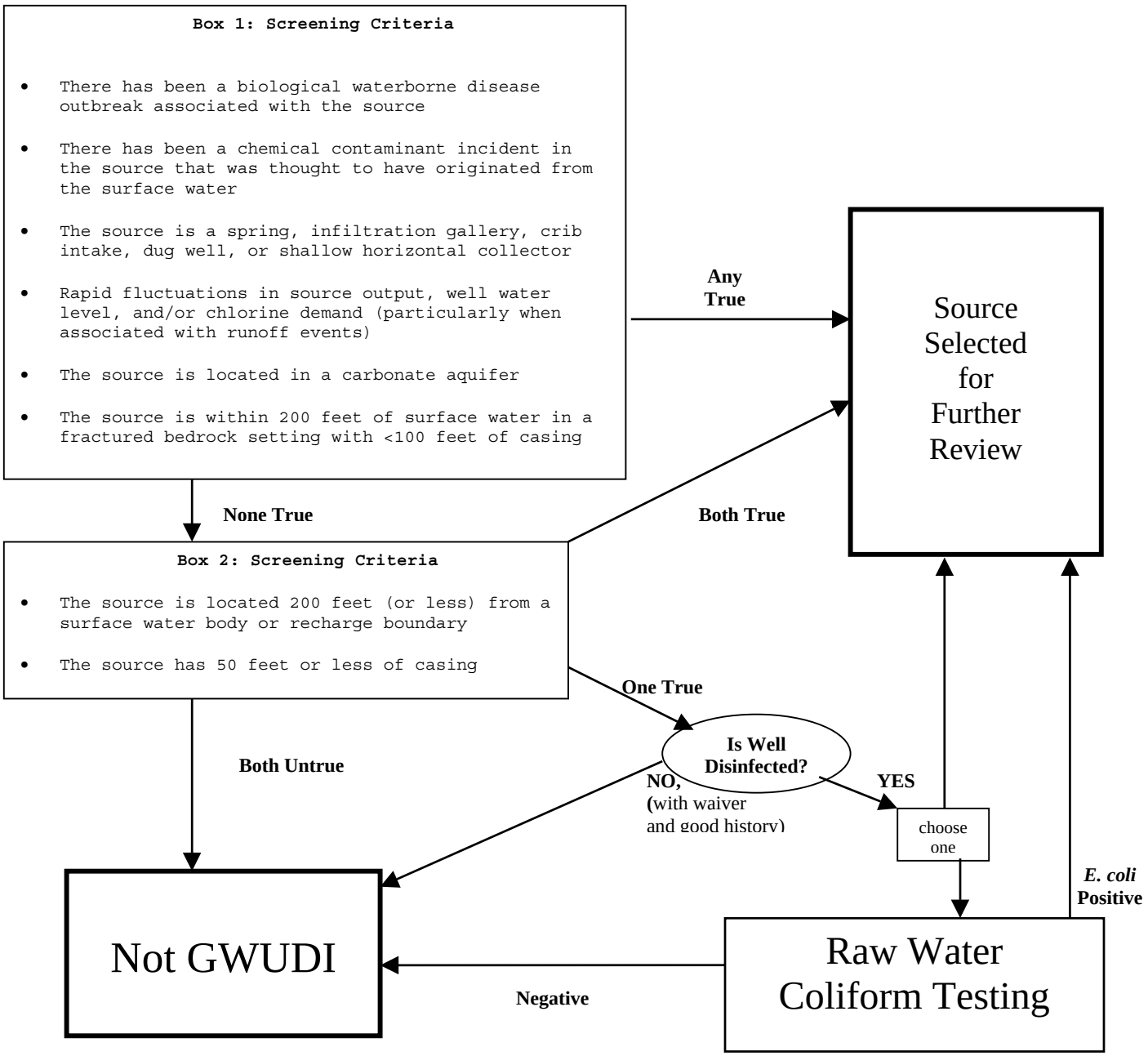
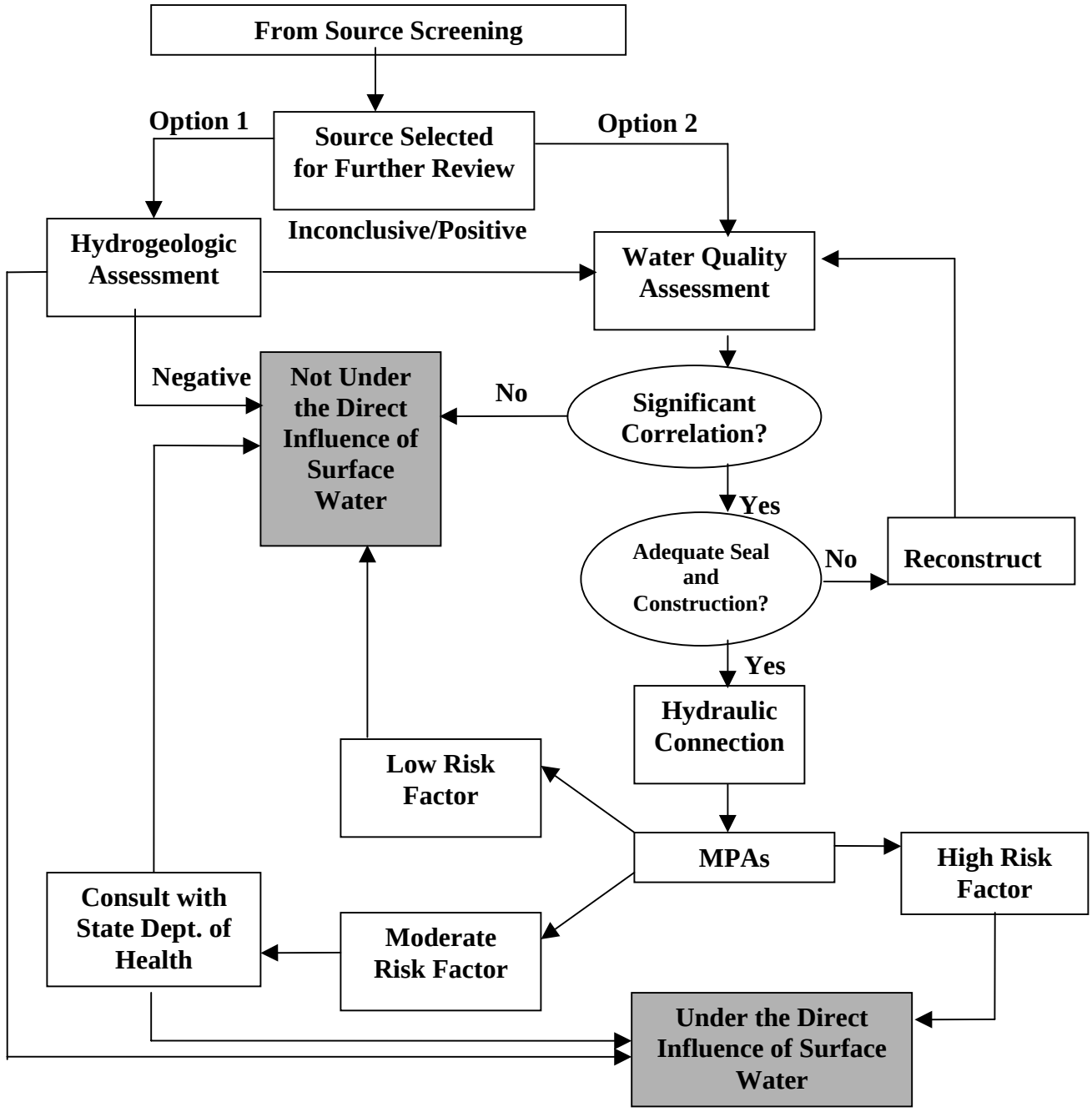


Figure 2: Detailed Evaluation Phase Methodology



APPENDIX B

Well Completion Reports

Amenia, Town of

DCHD-WWC

GROUND ELEVATION _____ ft.

WELL COMPLETION DATE _ _ _

WELL COMPLETION REPORT

DUTCHESS COUNTY • HEALTH DEPARTMENT
387 MAIN MALL POUGHKEEPSIE, NEW YORK 12601-3316
(914) 486-3404 Fax (914) 473-6001
PLEASE PRINT OR TYPE Town of Amenia Water Dist.

OFFICE USE ONLY
NYS GRID NO. E 71 2150 N (07) 3330
RECEIVED MAY - 3 2006
SOURCE LOG. NO ENVIRONMENTAL HEALTH

WELL LOCATION STREET ADDRESS: Town of Amenia Water District, Amenia, NY TOWN/VILLAGE/CITY TAX GRID NUMBER: 017107 13 215330

WELL OWNER NAME: Town of Amenia, P. O. Box 126, Amenia, NY 12501 ADDRESS: ☐ PRIVATE ☐ PUBLIC

USE OF WELL (1 - primary, 2 - secondary)
☐ RESIDENTIAL ☒ PUBLIC SUPPLY ☐ AIR/COND./HEAT PUMP ☐ ABANDONED
☐ BUSINESS ☐ FARM ☐ TEST/OBSERVATION ☐ OTHER (specify)
☐ INDUSTRIAL ☐ INSTITUTIONAL ☐ STAND-BY ☐ _____

AMOUNT OF USE YIELD SOUGHT 50 gpm./NO. PEOPLE SERVED _____ / EST. OF DAILY USAGE _____ gal.

REASON FOR DRILLING
☐ NEW SUPPLY ☒ PROVIDE ADDITIONAL SUPPLY ☐ TEST/OBSERVATION
☐ REPLACE EXISTING SUPPLY ☐ DEEPEN EXISTING WELL

DEPTH DATA WELL DEPTH 200 ft. STATIC WATER LEVEL overflow. ft. DATE MEASURED 12/2/05

DRILLING EQUIPMENT
☒ ROTARY ☒ COMPRESSED AIR PERCUSSION ☐ DUG
☐ WELL POINT ☐ CABLE PERCUSSION ☐ OTHER (specify):

WELL TYPE ☐ SCREENED ☐ OPEN END CASING ☒ OPEN HOLE IN BEDROCK ☐ OTHER

CASING DETAILS
TOTAL LENGTH 168 ft. MATERIALS: ☒ STEEL ☐ PLASTIC ☐ OTHER
LENGTH BELOW GRADE 167 ft. JOINTS: ☐ WELDED ☒ THREADED ☐ OTHER
DIAMETER 8 in. SEAL: ☒ CEMENT GROUT ☐ BENTONITE ☐ OTHER
WEIGHT PER FOOT 29 lb./ft. DRIVE SHOE: ☒ YES ☐ NO LINER: ☐ YES ☒ NO

SCREEN DETAILS

	DIAMETER (in)	SLOT SIZE	LENGTH (ft)	DEPTH TO SCREEN (ft)	DEVELOPED?
FIRST					☐ YES ☐ NO
SECOND					HOURS _____

GRAVEL PACK ☐ YES ☐ NO GRAVEL SIZE: DIAMETER OF PACK _____ in. TOP DEPTH _____ ft. BOTTOM DEPTH _____ ft.

WELL YIELD TEST

METHOD: ☒ PUMPED ☒ COMPRESSED AIR ☐ BAILED ☐ OTHER

If detailed pumping tests were done is information attached? ☐ YES ☐ NO

WELL DEPTH ft.	DURATION hr. min.	DRAWDOWN ft.	YIELD gpm.
200'	48 hrs.	51.5'	64

IF AVAILABLE, PLEASE COMPLETE:
WATER QUALITY ☐ CLEAR ☐ CLOUDY ☐ COLORED TEMP. _____ HARDNESS _____ ANALYZED? ☐ YES ☐ NO
ANALYSIS ATTACHED? ☐ YES ☐ NO

PUMP INFORMATION
TYPE submersible CAPACITY 75gpm
MAKER Goulds DEPTH 168'
MODEL 75GS50432 VOLTAGE 230 HP 5

WELL LOG

If more detailed formation descriptions or sieve analyses are available, please attach.

DEPTH FROM SURFACE ft.	ft.	Water Bearing	Well Diameter In	FORMATION DESCRIPTION	CODE
Land Surface	135			Drilling in overburden clay and boulders	
				Hit rock at 135'	
135	168			Drilling in rock, set casing, grouted	
168	200			Drilling in rock shale	

SITE MAP: A SITE MAP MUST BE ATTACHED SHOWING LOCATION OF WELL AND DISTANCES TO AT LEAST TWO LANDMARKS AND ANY POTENTIAL POLLUTION SOURCES.

WELL DRILLER NAME P. F. Beal & Sons, Inc. DATE 5/2/06
ADDRESS 4 Putnam Avenue Brewster, NY 10509 SIGNATURE Matthew L. Beal
Matthew L. Beal

White - Health Dept. Pink - Dept. of Planning Yellow - Applicant

Compiled from DCHD file

DATE OF WELL COMPLETION __-__-71

WELL COMPLETION REPORT

DUTCHESS COUNTY

(DIRECTIONS ON REVERSE SIDE)

located by centroid

OFFICE USE ONLY
NYS GRID NO. E712150
USGS NO. N673300
SOURCE NO. 1019
GROUND ELEV. 550 (M.S.L.)

WELL LOCATION — STREET ADDRESS: Church St. Amenia — TOWN: Amenia — TAX GRID NUMBER: 01-7161-13-215330-00

WELL OWNER — NAME: Amenia Water District #1 — ADDRESS: ✓ WELL #4 — ☐ PRIVATE ☐ PUBLIC

USE OF WELL (1 - Primary, 2 - Secondary)
☐ RESIDENTIAL ☒ PUBLIC SUPPLY ☐ AIR COND. / HEAT PUMP
☐ BUSINESS ☐ FARM ☐ TEST / OBSERVATION
☐ INDUSTRIAL ☐ INSTITUTIONAL ☐ OTHER (specify): _____

AMOUNT OF USE — ESTIMATE OF DAILY USAGE _____ gals. / NUMBER OF PEOPLE SERVED _____

REASON FOR DRILLING
☐ NEW SUPPLY ☒ PROVIDE ADDITIONAL SUPPLY ☐ TEST / OBSERVATION
☐ REPLACE EXISTING SUPPLY ☐ DEEPEN EXISTING WELL

DEPTH DATA — WELL DEPTH 125' 235 FT. ? — STATIC WATER LEVEL 5 FT. — DATE MEASURED _____

DRILLING EQUIPMENT
☐ ROTARY ☐ COMPRESSED AIR PERCUSSION ☐ DUG
☐ WELL POINT ☐ CABLE PERCUSSION ☐ OTHER (specify):

WELL TYPE
☐ SCREENED ☐ OPEN END CASING ☒ OPEN HOLE IN BEDROCK ☐ OTHER

CASING DETAILS
TOTAL LENGTH see depth 175 FT. — MATERIALS: ☒ STEEL ☐ PLASTIC ☐ OTHER
LENGTH BELOW GRADE _____ FT. — JOINTS: ☐ WELDED ☐ THREADED ☐ OTHER
DIAMETER ✓ 8+ IN — SEAL: ☐ CEMENT GROUT ☐ BENTONITE ☐ OTHER
WEIGHT PER FOOT _____ LB/FT. — DRIVE SHOE: ☐ YES ☐ NO — LINER: ☐ YES ☐ NO

SCREEN DETAILS

	DIAMETER (in.)	SLOT SIZE	LENGTH (ft.)	DEPTH TO SCREEN (ft.)	DEVELOPED
FIRST					☐ YES ☐ NO
SECOND					# HOURS

GRAVEL PACK — ☐ YES ☐ NO — GRAVEL SIZE: — DIAMETER OF PACK _____ IN. — TOP DEPTH _____ FT. — BOTTOM DEPTH _____ FT.

WELL YIELD TEST (as applicable)

METHOD: ☐ PUMPED ☐ COMPRESSED AIR ☐ BAILED ☐ OTHER

WELL DEPTH (FT)	DURATION hr (MIN)	DRAWDOWN (FT)	YIELD (GPM)
	18 hr	75	125
	8 hr.	25.2	30.8

PUMP INFORMATION

TYPE: _____ CAPACITY _____ gpm
MFCTR: _____ DEPTH _____ ft.
MODEL #: _____ VOLTAGE _____ HP _____

WATER QUALITY ☐ CLEAR ☐ CLOUDY ☐ COLORED — TEMP _____ — HARDNESS _____ — ANALYZED ☐ YES ☐ NO

WELL LOG

DEPTH FROM SURFACE (FT.)	WATER BEARING (Y/N)	WELL DIAMETER (IN)	FORMATION DESCRIPTION	CODE
0			Overburden	
175 235			see depth Unknown	
			9/87 - RVA revised data according to ENGRs. Report: Haywort & Pakan Assoc. dated: Jan 14, 1985	
			LBCP Entered 11/16/83 (MH)	

* PLEASE ATTACH SITE MAP & ANY ENGINEER'S REPORTS, INCLUDING MORE DETAILED FORMATION DESCRIPTIONS AND PUMPING TEST RESULTS. *

WELL DRILLERS NAME: (please print) Harris — ADDRESS: STATIC WL 5.0' 12-17-84 Pumping test — PHONE #: — DATE:

APPENDIX C

Field Data Sheet

Calibration Documentation Sheet

Lavalle Road Well Data Log

Meter ID

Date & Time	**Well 4**			**Well 4A**			**Surface water**				**Weather**
	Temp	Sp.Cond	pH	Temp	Sp.Cond	pH	Temp	Sp.Cond	pH	Level	Rain " and observations

Field Meter Calibration Log **Meter ID -**

Date	Standard Solution	SpCond us/cm PRE-CAL	SpCond us/cm POST-CAL	Standard Solution	pH PRE-CAL	pH POST-CAL	Notes

Appendix K

CAPACITY DEVELOPMENT PROGRAM

TECHNICAL, MANAGERIAL, AND FINANCIAL EVALUATION CRITERIA FOR: COMMUNITY PUBLIC WATER SYSTEMS

SYSTEM NAME: Town of Amenia Water District #1

COUNTY: Dutchess County **PWSID #:** NY 1302759

COMPLETED BY: Delaware Engineering **DATE:** 11/14/2024

Technical Capacity

A. System Infrastructure

1. Does the system have as-built plans, drawings, or maps of its facilities including source, treatment, storage, and distribution?

   ☐ Yes ☒ No ☐ Not Applicable

   If the system lacks certain plans, please specify:
   As-builts

2. Does the system have exact location measurements of all main valves and service shut-offs?

   ☐ Yes ☒ No ☐ Not Applicable

3. Can the system's pumping, storage and distribution facilities meet current normal and peak demands and required distribution pressures?

   ☐ Yes ☒ No ☐ Not Applicable

4. Does the system have a water conservation plan?

   ☐ Yes ☒ No ☐ Not Applicable

5. Are all customers on the water system metered?

   ☒ Yes ☐ No ☐ Not Applicable

6. Is the system equipped with "master" meters that measure the amount of water the system produces or purchases for each source of water?

   ☒ Yes ☐ No ☐ Not Applicable

B. Source Water Evaluation

1. Does the system have a copy of its Source Water Assessment?

☐ Yes ☒ No ☐ Not Applicable

2. Has a yield analysis been done for the system's source?

☐ Yes ☒ No ☐ Not Applicable

3. Does the system have a description of the existing source-pumping capacity and the system's raw and finished water storage capacity?

☒ Yes ☐ No ☐ Not Applicable

4. For groundwater systems, does your system have a wellhead protection program in place?

☒ Yes ☐ No ☐ Not Applicable

C. Technical Knowledge

1. Has an evaluation of the water system facilities been conducted with respect to its ability to reliably meet current and proposed State and Federal drinking water regulations?

☒ Yes ☐ No ☐ Not Applicable

If system can't meet regulations, please specify:

_____

_____

2. Does the system have monthly water production records or treatment records that show daily and monthly water production for each source used by the system?

☒ Yes ☐ No ☐ Not Applicable

3. Has an evaluation been conducted to document the condition and remaining service life of existing facilities?

☒ Yes ☐ No ☐ Not Applicable

4. Has the system been cited within the past two years for failing to sample and report test results?

☐ Yes ☒ No ☐ Not Applicable

5. Has the system been cited within the past two years for operating deficiencies as a result of a sanitary survey or other inspection conducted by the DOH?

☐ Yes ☒ No ☐ Not Applicable

6. If you answered *"Yes"* to Questions 4 or 5, has corrective action been taken to correct all deficiencies?

☐ Yes ☐ No ☒ Not Applicable

D. Certified Operators

1. Does the water system have a certified water operator(s) and designated an operator in responsible charge?

☒ Yes ☐ No

2. If the water system does not have a state-certified water treatment operator, or lacks the necessary number of operators to safely and reliably operate the system, does the system have a plan to acquire the services of a (additional) state-certified operator?

☐ Yes ☐ No ☒ Not Applicable

Managerial Capacity

A. Staffing and Organization

1. What type of training/continuing education did system personnel attend within the last two years (please specify)?

System personnel complete 30 hours of contact time every three years to maintain their water licenses.

2. Who is responsible for policy and operational decisions for the water system *(name and title)*?

Amenia Town Board

3. Who is responsible for ensuring compliance with state regulatory requirements *(name and title)*?

Joe McLaughlin | President, Operations of VRI Environmental Services, Inc.

4. Who is responsible for approving expenditures *(name and title)*?

Amenia Town Board

5. *For systems that contract for system operation or management*: Does the system have a valid (signed) contract that summarizes the duties and responsibilities the contractor must provide to the system?

☒ Yes ☐ No ☐ Not Applicable

B. Ownership

1. *If the system is under temporary ownership*, has a future owner been found for the water system?

   ☐ Yes ☐ No ☒ Not Applicable

   If "*Yes*", who will the future owner be?

   _____

2. *For systems that use, but do not own, land or facilities that are essential to water system operation:* Is there a valid long-term contract (i.e., lease) between the water system and the owner of the land or facilities essential to the operation of the system?

   ☐ Yes ☐ No ☒ Not Applicable

3. *For systems with a single proprietor:* Does the system have a contingency plan for continuing system operation in the event the owner becomes incapable of carrying out his/her responsibilities?

   ☐ Yes ☐ No ☒ Not Applicable

C. Consolidation/Restructuring

1. Has the system examined the feasibility of:
   a) Incorporating with an existing water system in the immediate proximity?

   ☐ Yes ☐ No ☒ Not Applicable

   b) Selling ownership to an existing water system?

   ☐ Yes ☐ No ☒ Not Applicable

   c) Contracting for the management or operation of the system with an existing system or satellite management/operations agency?

   ☒ Yes ☐ No ☐ Not Applicable

D. Emergency/Disaster Response Plans

1. Has the system developed an Emergency Response Plan?

   ☐ Yes ☐ No ☒ Not Applicable

2. Does the Emergency Response Plan:

   a) Designate responsible personnel in the event of an emergency?

   ☐ Yes ☐ No ☒ Not Applicable

b) Provide for emergency phone and radio capabilities?

☐ Yes ☐ No ☒ Not Applicable

c) Describe public and health department notification procedures?

☐ Yes ☐ No ☒ Not Applicable

3. Does the system have any emergency contract agreements under which it operates (e.g., emergency water interconnections and alternative sources)?

☐ Yes ☒ No ☐ Not Applicable

E. Water System Policies

1. Does the system have a *written* System Operations Manual or Policy?

☐ Yes ☒ No ☐ Not Applicable

F. Record Keeping

1. Does the system keep water utility records including: financial, regulatory, facility, operations and maintenance, data quality, Annual Water Quality Reports, and correspondence with the NYS Department of Health and/or local Health Departments (and where appropriate, the NYSPSC)?

☒ Yes ☐ No ☐ Not Applicable

Financial Capacity

A. Budget Projection – Revenues and Expenses

1. Does the system have a water budget?

☒ Yes ☐ No ☐ Not Applicable

2. Are the system's annual water revenues sufficient to cover the annual water expenses as well as anticipated capital improvements?

☐ Yes ☒ No ☐ Not Applicable

3. Are the system's water rates, when combined with other revenue sources, sufficient to cover all listed expenditures for the water system?

☒ Yes ☐ No ☐ Not Applicable

4. Does the system retain budget information for at least two years?

☒ Yes ☐ No ☐ Not Applicable

B. Reserves

1. Does the system have a reserve account (or funds within a reserve account) dedicated to:

   a) Financing the emergency replacement of critical facilities in the event of their failure?

   ☐ Yes ☒ No ☐ Not Applicable

   b) The maintenance of cash flow in the event of an unexpected funding shortfall?

   ☐ Yes ☒ No ☐ Not Applicable

2. If the system has a reserve account, how does it determine the amount to put into the account?

   ____ Fixed Amount_____Percentage of Revenues_____Percentage of Expenses

   ____Other (please specify) _____

3. If the system has a reserve account, what type(s) of reserve account(s) does it have?

   _____Operation and Maintenance_____Capital Projects_____Debt Service

   _____Other (please specify)_____

C. Capital Improvement Plan

1. How do you finance operation and maintenance costs (Check all that apply)?

   X Rates collected from ratepayers _____Rental fees
   _____Other business revenue _____Personal capital
   _____Surcharges _____Reserve account
   X Other (Please specify) ad valorem tax

2. How did you finance your LAST major repair or improvement?

   _____Commercial bank loan ____Bonds
   _____ DWSRF ____Other State or federal loan/grant program
   _____Surcharge ____Personal Capital
   _____Reserve Account ____Revenue from other business
   X Other (Please specify) N/A - no capital projects in the past 10 years

3. What options do you have for financing your NEXT major repair or improvement?

_____Commercial bank loan	____Bonds
_____DWSRF	____Other State or federal loan/grant program
_____Surcharge	____Personal Capital
_____Reserve Account	____Revenue from other business
_X_Other (Please specify) None of the above	

D. Water System Rates

1. Does the water system management review user fee, user charge, or rate system at least once every two years?

☒ Yes ☐ No ☐ Not Applicable

2. What is the frequency of billing (e.g., 12, 6, or 4 times per/year)? 4 times/year

3. Where applicable, what are the system's water rates?
Single Family Home: $75.00/5,000 gal
Multiple Dwelling Home: $110.00/5,000 gal
Commercial Business: $135.00/5,000 gal
Additional water: $5.00/1,000 gal

4. What are rates based on?

_____Capital Improvement Plan and Annual Budget
_X_Annual Budget Only
_____Cash on Hand
_____Last year's expenses
_____Not sure
_____Other (Please specify_____)

5. What was the date of the last rate increase? - 1/5/2023

END OF DOCUMENT

Appendix L

Project Name: Town of Amenia Water District #1 Evaluation
Project# : 24-3060
Date: 11/14/2024
Prepared By: R. Flores

Delaware Engineering, D.P.C.

Water Main Replacement (All Pipes Less Than 6-Inches)

ID	Description	Quantity	Units	Materials	Labor	Unit Cost	Total Unit Cost	Subtotals
1	Mobilization and General Construction							
1.1	Mobilization and Demobilization	1	LS	$0.00	$160,000.00	$160,000.00	$160,000.00	
1.2	Bonds and Insurance	1	LS	$0.00	$130,000.00	$130,000.00	$130,000.00	
1.3	Project Management and General Conditions	1	LS	$0.00	$685,000.00	$685,000.00	$685,000.00	
								$975,000.00
2	Site Preparation							
2.1	Excavation and Trenching	9000	LF	$25.00	$45.00	$70.00	$630,000.00	
2.2	Removal and Disposal of Old Water Main	9000	LF	$15.00	$30.00	$45.00	$405,000.00	
								$1,035,000.00
3	Water Main Installation							
3.1	Piping (8-in PVC/Ductile Iron)	9000	LF	$70.00	$40.00	$110.00	$990,000.00	
3.2	Service Connections	1	LS	$75,000.00	$100,000.00	$175,000.00	$175,000.00	
								$1,165,000.00
4	Backfilling and Restoration							
4.1	Backfilling	9000	LF	$12.00	$25.00	$37.00	$333,000.00	
4.2	Street Paving	1	LS	$15,000.00	$10,000.00	$25,000.00	$25,000.00	
4.3	Sidewalk and Curb Replacement	2000	LF	$50.00	$30.00	$80.00	$160,000.00	
4.4	Site Restoration	1	LS	$120,000.00	$180,000.00	$300,000.00	$300,000.00	
								$818,000.00
5	Miscellaneous							
5.1	Traffic Control	1	LS	$20,000.00	$30,000.00	$50,000.00	$50,000.00	
5.2	Protection of Existing Utilities	1	LS	$20,000.00	$30,000.00	$50,000.00	$50,000.00	
5.3	Valve Replacement	1	LS	$5,000.00	$10,000.00	$15,000.00	$15,000.00	
5.4	Fire Hydrant Replacement	1	LS	$30,000.00	$15,000.00	$45,000.00	$45,000.00	
5.5	Cut and Cap Abandoned Connections	5	EA	$8,000.00	$12,000.00	$20,000.00	$100,000.00	
								$260,000.00
	Cost Summary							

2024 Construction Cost Subtotal	$4,253,000.00
2026 Construction Cost Subtotal (4% increase/year)	$4,600,000.00
15% Engineering	$690,000.00

Project Name: Town of Amenia Water District #1 Evaluation
Project# : 24-3060
Date: 11/14/2024
Prepared By: R. Flores

Delaware Engineering, D.P.C.

Water Main Replacement (All Pipes Less Than 6-Inches)

ID	Description	Quantity	Units	Materials	Labor	Unit Cost	Total Unit Cost	Subtotals
							20% Contingency	$920,000.00
							Project Costs	$6,210,000.00

Project Name: Town of Amenia Water District #1 Evaluation
Project# : 24-3060
Date: 11/14/2024
Prepared By: R. Flores

Delaware Engineering, D.P.C.

Water Main Replacement (Only Select Undersized Water Mains)

ID	Description	Quantity	Units	Materials	Labor	Unit Cost	Total Unit Cost	Subtotals
1	Mobilization and General Construction							
1.1	Mobilization and Demobilization	1	LS	$0.00	$30,000.00	$30,000.00	$30,000.00	
1.2	Bonds and Insurance	1	LS	$0.00	$25,000.00	$25,000.00	$25,000.00	
1.3	Project Management and General Conditions	1	LS	$0.00	$115,000.00	$115,000.00	$115,000.00	
								$170,000.00
2	Site Preparation							
2.1	Excavation and Trenching	1260	LF	$25.00	$45.00	$70.00	$88,200.00	
2.2	Removal and Disposal of Old Water Main	1260	LF	$15.00	$30.00	$45.00	$56,700.00	
								$144,900.00
3	Water Main Installation							
3.1	Piping (8-in PVC/Ductile Iron)	1260	LF	$70.00	$40.00	$110.00	$138,600.00	
3.2	Service Connections	1	LS	$1,000.00	$1,500.00	$2,500.00	$2,500.00	
								$141,100.00
4	Backfilling and Restoration							
4.1	Backfilling	1260	LF	$12.00	$25.00	$37.00	$46,620.00	
4.2	Street Paving	1	LS	$15,000.00	$10,000.00	$25,000.00	$25,000.00	
4.3	Sidewalk and Curb Replacement	300	LF	$50.00	$30.00	$80.00	$24,000.00	
4.4	Site Restoration	1	LS	$3,000.00	$4,000.00	$7,000.00	$7,000.00	
								$102,620.00
5	Miscellaneous							
5.1	Traffic Control	1	LS	$3,000.00	$4,000.00	$7,000.00	$7,000.00	
5.2	Protection of Existing Utilities	1	LS	$2,500.00	$3,000.00	$5,500.00	$5,500.00	
5.3	Valve Replacement	1	LS	$5,000.00	$10,000.00	$15,000.00	$15,000.00	
5.4	Fire Hydrant Replacement	1	LS	$30,000.00	$15,000.00	$45,000.00	$45,000.00	
5.5	Cut and Cap Abandoned Connections	5	EA	$8,000.00	$12,000.00	$20,000.00	$100,000.00	
								$172,500.00
	Cost Summary							

2024 Construction Cost Subtotal	$731,120.00
2026 Construction Cost Subtotal (4% increase/year)	$791,000.00
15% Engineering	$118,650.00

Project Name: Town of Amenia Water District #1 Evaluation
Project# : 24-3060
Date: 11/14/2024
Prepared By: R. Flores

Delaware Engineering, D.P.C.

Water Main Replacement (Only Select Undersized Water Mains)

ID	Description	Quantity	Units	Materials	Labor	Unit Cost	Total Unit Cost	Subtotals
							20% Contingency	$158,200.00
							Project Costs	$1,067,850.00

Project Name: Town of Amenia Water District #1 Evaluation
Project# : 24-3060
Date: 11/14/2024
Prepared By: R. Flores

Delaware Engineering, D.P.C.

Lavelle Road Pump House (Custom-Built)

ID	Description	Quantity	Units	Materials	Labor	Unit Cost	Total Unit Cost	Subtotals
1	Mobilization and General Construction							
1.1	Mobilization and Demobilization	1	LS	$0.00	$28,000.00	$28,000.00	$28,000.00	
1.2	Bonds and Insurance	1	LS	$0.00	$24,000.00	$24,000.00	$24,000.00	
1.3	Project Management and General Conditions	1	LS	$0.00	$110,000.00	$110,000.00	$110,000.00	
								$162,000.00
2	Site Preparation							
2.1	Excavation and Grading	1	LS	$8,000.00	$20,000.00	$28,000.00	$28,000.00	
2.2	Temporary Fence	1	LS	$2,500.00	$500.00	$3,000.00	$3,000.00	
								$31,000.00
3	Building Structure (30-ft x 16-ft)							
3.1	Foundation	1	LS	$75,000.00	$25,000.00	$100,000.00	$100,000.00	
3.2	Exterior Walls	1	LS	$45,000.00	$25,000.00	$70,000.00	$70,000.00	
3.3	Roof Structure	1	LS	$30,000.00	$20,000.00	$50,000.00	$50,000.00	
3.4	Doors	1	LS	$8,000.00	$6,000.00	$14,000.00	$14,000.00	
3.5	Windows	1	LS	$8,000.00	$6,000.00	$14,000.00	$14,000.00	
3.6	Insulation and Weatherproofing	1	LS	$9,000.00	$7,000.00	$16,000.00	$16,000.00	
								$264,000.00
4	Interior Finishes and Safety Features							
4.1	Interior Painting	1	LS	$8,000.00	$10,000.00	$18,000.00	$18,000.00	
4.2	Flooring	1	LS	$9,000.00	$9,000.00	$18,000.00	$18,000.00	
4.3	HVAC System and Ventilation	1	LS	$9,000.00	$6,000.00	$15,000.00	$15,000.00	
								$51,000.00
5	Electrical and Lighting							
5.1	Electrical Wiring	1	LS	$8,000.00	$8,000.00	$16,000.00	$16,000.00	
5.2	Breaker Panel and Controls	1	LS	$8,000.00	$5,000.00	$13,000.00	$13,000.00	
5.3	Light Fixtures	1	LS	$5,000.00	$5,000.00	$10,000.00	$10,000.00	
								$39,000.00
6	Water Treatment Equipment							
6.1	Cartridge Filter System	1	LS	$10,350.00	$3,000.00	$13,350.00	$13,350.00	
6.2	VFDs for Well Pumps	1	LS	$10,500.00	$2,500.00	$13,000.00	$13,000.00	
6.3	Chlorine Dosing Pumps & Calibration Columns	1	LS	$41,250.00	$1,500.00	$42,750.00	$42,750.00	
6.4	Monitoring Equipment/Analyzers	1	LS	$23,650.00	$3,000.00	$26,650.00	$26,650.00	
6.5	Chlorine Storage Tank (50-gal and 10-gal)	1	LS	$3,750.00	$1,000.00	$4,750.00	$4,750.00	
6.6	Flow Meter	1	LS	$4,150.00	$1,500.00	$5,650.00	$5,650.00	

Project Name: Town of Amenia Water District #1 Evaluation
Project# : 24-3060
Date: 11/14/2024
Prepared By: R. Flores

Delaware Engineering, D.P.C.

Lavelle Road Pump House (Custom-Built)								
ID	Description	Quantity	Units	Materials	Labor	Unit Cost	Total Unit Cost	Subtotals
6.7	Chemical Handling and Safety Equipment	1	LS	$5,000.00	$4,000.00	$9,000.00	$9,000.00	
								$115,150.00
7	Demotion of Existing Structures							
7.1	Building Demolition	1	LS	$1,500.00	$4,500.00	$6,000.00	$6,000.00	
7.2	Fence Removal	1	LS	$300.00	$700.00	$1,000.00	$1,000.00	
								$7,000.00
8	Miscellaneous							
8.1	Security Camera	1	LS	$3,000.00	$1,000.00	$4,000.00	$4,000.00	
8.2	Site Restoration	1	LS	$10,000.00	$5,000.00	$15,000.00	$15,000.00	
8.3	Fencing	1	LS	$5,000.00	$5,000.00	$10,000.00	$10,000.00	
								$29,000.00
	Cost Summary							

2024 Construction Cost Subtotal	$698,150.00
2026 Construction Cost Subtotal (4% increase/year)	$755,000.00
15% Engineering	$113,250.00
20% Contingency	$151,000.00
Project Costs	$1,019,250.00

Project Name: Town of Amenia Water District #1 Evaluation
Project# : 24-3060
Date: 11/14/2024
Prepared By: R. Flores

Delaware Engineering, D.P.C.

Lavelle Road Pump House (Prepackaged)

ID	Description	Quantity	Units	Materials	Labor	Unit Cost	Total Unit Cost	Subtotals
1	Mobilization and General Construction							
1.1	Mobilization and Demobilization	1	LS	$0.00	$21,000.00	$21,000.00	$21,000.00	
1.2	Bonds and Insurance	1	LS	$0.00	$19,000.00	$19,000.00	$19,000.00	
1.3	Project Management and General Conditions	1	LS	$0.00	$88,000.00	$88,000.00	$88,000.00	
								$128,000.00
2	Site Preparation							
2.1	Excavation and Grading	1	LS	$5,000.00	$15,000.00	$20,000.00	$20,000.00	
2.2	Temporary Fence	1	LS	$2,000.00	$500.00	$2,500.00	$2,500.00	
								$22,500.00
3	Prepackaged Fiberglass Structure (10-ft x 20-ft)							
3.1	Foundation	1	LS	$30,000.00	$20,000.00	$50,000.00	$50,000.00	
3.2	Shelter Fabrication and Delivery	1	LS	$200,000.00	$10,000.00	$210,000.00	$210,000.00	
								$260,000.00
4	Auxiliary Systems							
4.1	Supplemental Electrical Wiring	1	LS	$3,000.00	$3,000.00	$6,000.00	$6,000.00	
4.2	Supplemental Lighting	1	LS	$2,000.00	$2,000.00	$4,000.00	$4,000.00	
4.3	Supplemental HVAC and Ventilation	1	LS	$4,000.00	$3,000.00	$7,000.00	$7,000.00	
								$17,000.00
5	Water Treatment Equipment							
5.1	Cartridge Filter System	1	LS	$9,850.00	$2,000.00	$11,850.00	$11,850.00	
5.2	VFDs for Well Pumps	1	LS	$10,250.00	$2,000.00	$12,250.00	$12,250.00	
5.3	Chlorine Dosing Pumps & Calibration Columns	1	LS	$40,250.00	$2,500.00	$42,750.00	$42,750.00	
5.4	Monitoring Equipment/Analyzers	1	LS	$22,650.00	$2,000.00	$24,650.00	$24,650.00	
5.5	Chlorine Storage Tank (50-gal and 10-gal)	1	LS	$3,250.00	$500.00	$3,750.00	$3,750.00	
5.6	Flow Meter	1	LS	$3,650.00	$1,000.00	$4,650.00	$4,650.00	
5.7	Chemical Handling and Safety Equipment	1	LS	$4,000.00	$2,500.00	$6,500.00	$6,500.00	
								$106,400.00
6	Demolition of Existing Structures							
6.1	Building Demolition	1	LS	$1,500.00	$4,500.00	$6,000.00	$6,000.00	
6.2	Fence Removal	1	LS	$300.00	$700.00	$1,000.00	$1,000.00	
								$7,000.00
7	Miscellaneous							
7.1	Security Camera	1	LS	$3,000.00	$1,000.00	$4,000.00	$4,000.00	
7.2	Site Restoration	1	LS	$10,000.00	$5,000.00	$15,000.00	$15,000.00	

Project Name: Town of Amenia Water District #1 Evaluation
Project# : 24-3060
Date: 11/14/2024
Prepared By: R. Flores

Delaware Engineering, D.P.C.

Lavelle Road Pump House (Prepackaged)

ID	Description	Quantity	Units	Materials	Labor	Unit Cost	Total Unit Cost	Subtotals
7.3	Permanent Fencing	1	LS	$5,000.00	$5,000.00	$10,000.00	$10,000.00	
								$29,000.00
	Cost Summary							

2024 Construction Cost Subtotal	$569,900.00
2026 Construction Cost Subtotal (4% increase/year)	$616,000.00
15% Engineering	$92,400.00
20% Contingency	$123,200.00
Project Costs	$831,600.00

Project Name: Town of Amenia Water District #1 Evaluation
Project# : 24-3060
Date: 11/14/2024
Prepared By: R. Flores

Delaware Engineering, D.P.C.

Depot Hill Road Booster Pump Station

ID	Description	Quantity	Units	Materials	Labor	Unit Cost	Total Unit Cost	Subtotals
1	Mobilization and General Construction							
1.1	Mobilization and Demobilization	1	LS	$0.00	$16,000.00	$16,000.00	$16,000.00	
1.2	Bonds and Insurance	1	LS	$0.00	$15,000.00	$15,000.00	$15,000.00	
1.3	Project Management and General Conditions	1	LS	$0.00	$65,000.00	$65,000.00	$65,000.00	
								$96,000.00
2	Site Preparation							
2.1	Excavation and Grading	1	LS	$1,000.00	$5,000.00	$6,000.00	$6,000.00	
2.2	Concrete Foundation Pad	1	LS	$15,000.00	$10,000.00	$25,000.00	$25,000.00	
2.3	Site Fencing	1	LS	$4,000.00	$3,000.00	$7,000.00	$7,000.00	
								$38,000.00
3	Building							
3.1	Prepacked Building	1	LS	$100,000.00	$5,000.00	$105,000.00	$105,000.00	
3.2	Weatherproofing and Insulation	1	LS	$5,000.00	$3,000.00	$8,000.00	$8,000.00	
3.3	Lighting	1	LS	$3,000.00	$3,000.00	$6,000.00	$6,000.00	
								$119,000.00
4	Emergency Generator							
4.1	30 kW Generator	1	LS	$20,000.00	$2,000.00	$22,000.00	$22,000.00	
4.2	250-Gallon Storage Tank	1	LS	$3,000.00	$1,000.00	$4,000.00	$4,000.00	
4.3	Concrete Pad	1	LS	$5,000.00	$2,000.00	$7,000.00	$7,000.00	
								$33,000.00
5	Pump Equipment and Piping							
5.1	Two (2) Variable Speed Booster Pumps	1	LS	$60,000.00	$8,000.00	$68,000.00	$68,000.00	
5.2	Pressure Regulating Valves	1	LS	$5,000.00	$500.00	$5,500.00	$5,500.00	
5.3	Pressue Relief Valve	1	LS	$2,000.00	$500.00	$2,500.00	$2,500.00	
5.4	Isolation and Check Valves	1	LS	$4,000.00	$500.00	$4,500.00	$4,500.00	
5.5	Piping, Fittings, and Supports	1	LS	$12,000.00	$2,000.00	$14,000.00	$14,000.00	
5.6	Pressure Gauge and Flow Meter	1	LS	$3,000.00	$500.00	$3,500.00	$3,500.00	
5.7	Pump Control Panel	1	LS	$20,000.00	$4,000.00	$24,000.00	$24,000.00	
								$122,000.00
6	Miscellaneous							
6.1	Security Camera	1	LS	$3,000.00	$1,000.00	$4,000.00	$4,000.00	
6.2	Site Restoration	1	LS	$10,000.00	$5,000.00	$15,000.00	$15,000.00	
								$19,000.00
	Cost Summary							

Project Name: Town of Amenia Water District #1 Evaluation
Project# : 24-3060
Date: 11/14/2024
Prepared By: R. Flores

Delaware Engineering, D.P.C.

Depot Hill Road Booster Pump Station

ID	Description	Quantity	Units	Materials	Labor	Unit Cost	Total Unit Cost	Subtotals

2024 Construction Cost Subtotal	$427,000.00
2026 Construction Cost Subtotal (4% increase/year)	$462,000.00
15% Engineering	$69,300.00
20% Contingency	$92,400.00
Project Costs	$623,700.00

Project Name: Town of Amenia Water District #1 Evaluation
Project# : 24-3060
Date: 11/14/2024
Prepared By: R. Flores

Delaware Engineering, D.P.C.

Washington Court Well Field Upgrades

ID	Description	Quantity	Units	Materials	Labor	Unit Cost	Total Unit Cost	Subtotals
1	Mobilization and General Construction							
1.1	Mobilization and Demobilization	1	LS	$0.00	$3,000.00	$3,000.00	$3,000.00	
1.2	Bonds and Insurance	1	LS	$0.00	$2,500.00	$2,500.00	$2,500.00	
1.3	Project Management and General Conditions	1	LS	$0.00	$12,000.00	$12,000.00	$12,000.00	
								$17,500.00
2	Well 5 Upgrades							
2.1	Replace Well Pump	1	LS	$15,000.00	$5,000.00	$20,000.00	$20,000.00	
								$20,000.00
3	Well 6 Upgrades							
3.1	Replace Well Pump	1	LS	$15,000.00	$5,000.00	$20,000.00	$20,000.00	
								$20,000.00
4	Well 5 Requalification							
4.1	Water Sampling	1	LS	$5,000.00		$5,000.00	$5,000.00	
4.2	Contamination Evaluation	1	LS	$2,000.00	$2,000.00	$4,000.00	$4,000.00	
4.3	Engineering Report	1	LS		$6,000.00	$6,000.00	$6,000.00	
								$15,000.00
	Cost Summary							

2024 Construction Cost Subtotal	$72,500.00
2026 Construction Cost Subtotal (4% increase/year)	$78,000.00
15% Engineering	$11,700.00
20% Contingency	$15,600.00
Project Costs	$105,300.00

Project Name: Town of Amenia Water District #1 Evaluation
Project# : 24-3060
Date: 11/14/2024
Prepared By: R. Flores

Delaware Engineering, D.P.C.

Lavelle Road Well Field Upgrades

ID	Description	Quantity	Units	Materials	Labor	Unit Cost	Total Unit Cost	Subtotals
1	Mobilization and General Construction							
1.1	Mobilization and Demobilization	1	LS	$0.00	$5,000.00	$5,000.00	$5,000.00	
1.2	Bonds and Insurance	1	LS	$0.00	$4,500.00	$4,500.00	$4,500.00	
1.3	Project Management and General Conditions	1	LS	$0.00	$20,000.00	$20,000.00	$20,000.00	
								$29,500.00
2	Well 4 Upgrades							
2.1	Raise Well Casing	1	LS	$5,000.00	$5,000.00	$10,000.00	$10,000.00	
2.2	Replace Well Pump	1	LS	$15,000.00	$5,000.00	$20,000.00	$20,000.00	
								$30,000.00
3	Well 4A Upgrades							
3.1	Raise Well Casing	1	LS	$5,000.00	$5,000.00	$10,000.00	$10,000.00	
3.2	Replace Well Pump	1	LS	$15,000.00	$5,000.00	$20,000.00	$20,000.00	
								$30,000.00
4	New Emergency Generator							
4.1	30 kW Generator	1	LS	$20,000.00	$2,000.00	$22,000.00	$22,000.00	
4.2	250-Gallon Storage Tank	1	LS	$3,000.00	$1,000.00	$4,000.00	$4,000.00	
4.3	Concrete Pad	1	LS	$2,000.00	$500.00	$2,500.00	$2,500.00	
								$28,500.00
	Cost Summary							

2024 Construction Cost Subtotal	$118,000.00
2026 Construction Cost Subtotal (4% increase/year)	$128,000.00
15% Engineering	$19,200.00
20% Contingency	$25,600.00
Project Costs	$172,800.00

Project Name: Town of Amenia Water District #1 Evaluation
Project# : 24-3060
Date: 11/14/2024
Prepared By: R. Flores

Delaware Engineering, D.P.C.

Rehabilitate Existing Tank								
ID	Description	Quantity	Units	Materials	Labor	Unit Cost	Total Unit Cost	Subtotals
1	Mobilization and General Construction							
1.1	Mobilization and Demobilization	1	LS	$0.00	$45,000.00	$45,000.00	$45,000.00	
1.2	Bonds and Insurance	1	LS	$0.00	$38,000.00	$38,000.00	$38,000.00	
1.3	Project Management and General Conditions	1	LS	$0.00	$185,000.00	$185,000.00	$185,000.00	
								$268,000.00
2	Interior Full Coating System							
2.1	Full SPC10 Surface Prep of Lead Paint	1	LS	$75,000.00	$140,000.00	$215,000.00	$215,000.00	
2.2	Zinc Primer	1	LS	$35,000.00	$45,000.00	$80,000.00	$80,000.00	
2.3	Stripe Coat	1	LS	$20,000.00	$20,000.00	$40,000.00	$40,000.00	
2.4	Two Coats of Top Coat	1	LS	$55,000.00	$85,000.00	$140,000.00	$140,000.00	
								$475,000.00
3	Exterior Full Coating System							
3.1	Full SPC10 Surface Prep of Non-Lead Paint	1	LS	$45,000.00	$90,000.00	$135,000.00	$135,000.00	
3.2	Primer	1	LS	$25,000.00	$35,000.00	$60,000.00	$60,000.00	
3.3	Two Coats of Top Coat	1	LS	$55,000.00	$85,000.00	$140,000.00	$140,000.00	
								$335,000.00
4	Temporary Tank							
4.1	10,000-Gallon Tank Rental	1	EA	$12,000.00	$4,000.00	$16,000.00	$16,000.00	
4.2	Piping and Instrumentation	1	LS	$2,000.00	$2,000.00	$4,000.00	$4,000.00	
								$20,000.00
5	Miscellaneous Repairs							
5.1	Pit Welding	1	LS	$2,000.00	$10,000.00	$12,000.00	$12,000.00	
5.2	Pit Filler	1	LS	$3,000.00	$4,000.00	$7,000.00	$7,000.00	
5.3	Overflow Screen	1	EA	$500.00	$500.00	$1,000.00	$1,000.00	
5.4	Miscellaneous Welding	10	FT	$60.00	$140.00	$200.00	$2,000.00	
5.5	Anniversary Inspection	1	LS	$1,000.00	$4,000.00	$5,000.00	$5,000.00	
5.6	Frost Screen	1	LS	$6,000.00	$6,000.00	$12,000.00	$12,000.00	
5.6	Access Ladder	1	EA	$10,000.00	$5,000.00	$15,000.00	$15,000.00	
								$54,000.00
6	Site Restoration							
6.1	Site Restoration	1	LS	$20,000.00	$10,000.00	$30,000.00	$30,000.00	
								$30,000.00
	Cost Summary							

Project Name: Town of Amenia Water District #1 Evaluation
Project# : 24-3060
Date: 11/14/2024
Prepared By: R. Flores

Delaware Engineering, D.P.C.

Rehabilitate Existing Tank

ID	Description	Quantity	Units	Materials	Labor	Unit Cost	Total Unit Cost	Subtotals
							2024 Construction Cost Subtotal	$1,182,000.00
							2026 Construction Cost Subtotal (4% increase/year)	$1,278,000.00
							15% Engineering	$191,700.00
							20% Contingency	$255,600.00
							Project Costs	$1,725,300.00

Project Name: Town of Amenia Water District #1 Evaluation
Project# : 24-3060
Date: 11/14/2024
Prepared By: R. Flores

Delaware Engineering, D.P.C.

Replace Tank								
ID	Description	Quantity	Units	Materials	Labor	Unit Cost	Total Unit Cost	Subtotals
1	Mobilization and General Construction							
1.1	Mobilization and Demobilization	1	LS	$0.00	$80,000.00	$80,000.00	$80,000.00	
1.2	Bonds and Insurance	1	LS	$0.00	$75,000.00	$75,000.00	$75,000.00	
1.3	Project Management and General Conditions	1	LS	$0.00	$350,000.00	$350,000.00	$350,000.00	
								$505,000.00
2	New Tank							
2.1	Excavation, Fill and Backfill	1	LS	$50,000.00	$150,000.00	$200,000.00	$200,000.00	
2.2	Tank Purchase and Installation	1	LS	$300,000.00	$150,000.00	$450,000.00	$450,000.00	
2.3	Foundation	1	LS	$100,000.00	$100,000.00	$200,000.00	$200,000.00	
2.4	Yard Piping	1	LS	$100,000.00	$200,000.00	$300,000.00	$300,000.00	
								$1,150,000.00
3	Demolition of Old Tank							
3.1	Dismantling Old Tank	1	LS	$10,000.00	$200,000.00	$210,000.00	$210,000.00	
3.2	Hazardous Material Handling (Lead Paint)	1	LS	$20,000.00	$60,000.00	$80,000.00	$80,000.00	
3.3	Disposal of Old Tank Materials	1	LS	$20,000.00	$10,000.00	$30,000.00	$30,000.00	
3.4	Site Restoration	1	LS	$50,000.00	$25,000.00	$75,000.00	$75,000.00	
								$395,000.00
	Cost Summary							

2024 Construction Cost Subtotal	$2,050,000.00
2026 Construction Cost Subtotal (4% increase/year)	$2,217,000.00
15% Engineering	$332,550.00
20% Contingency	$443,400.00
Project Costs	$2,992,950.00

Appendix M

User Impact Analysis

Rate Plan	Count	Current Scenario			Scenario 1: No Outside Funding			Scenario 2: $400,000 WFH and 60% WIIA Grant			Scenario 3: 50% BIL Grant, $400,000 WFH, and 60% WIIA Grant		
		Base Rate	Extra Rate	Average Annual Cost	Base Rate	Extra Rate	Average Annual Cost	Base Rate	Extra Rate	Average Annual Cost	Base Rate	Extra Rate	Average Annual Cost
Residential	206	$ 75.00	$ 5.00	$ 383.26	$ 195.00	$ 13.50	$ 1,004.81	$ 120.00	$ 8.00	$ 613.22	$ 95.00	$ 6.25	$ 484.08
Commercial Business	50	$ 135.00	$ 5.00	$ 868.04	$ 350.00	$ 13.50	$ 2,285.70	$ 215.00	$ 8.00	$ 1,384.86	$ 175.00	$ 6.25	$ 1,110.05
Multiple Dwelling	40	$ 110.00	$ 5.00	$ 741.40	$ 300.00	$ 13.50	$ 2,013.79	$ 175.00	$ 8.00	$ 1,182.25	$ 140.00	$ 6.25	$ 936.76
Two Houses	2	$ 150.00	$ 5.00	$ 654.18	$ 390.00	$ 13.50	$ 1,706.29	$ 240.00	$ 8.00	$ 1,046.69	$ 190.00	$ 6.25	$ 827.73
Municipal Rate	1	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Commercial Flat Rate / Verizon	1	$ 100.00	$ -	$ 400.00	$ 270.00	$ -	$ 1,080.00	$ 160.00	$ -	$ 640.00	$ 130.00	$ -	$ 520.00
Estimated Annual Metered Sales				$ 153,718.92			$ 406,321.09			$ 245,590.28			$ 194,868.66

Loan Amount =	$ 3,902,850.00	$ 1,401,140.00	$ 620,570.00
Rate =	5%	5%	5%
Term =	30	30	30
Annual Repayment =	$ 253,885.99	$ 91,146.17	$ 40,368.97

Note:

This appendix provides a detailed breakdown of the projected financial impacts of the proposed $3,902,850 project on the water district users. Three funding scenarios were analyzed in the report. It includes the following information:

- Rate Plans: A comparison of current and projected annual costs for different user categories.
- Rate Structure: Changes to base rates and extra rates that contribute to the overall annual costs for each type of user.
- Loan Information: Details of the loan amount, interest rate, term, and annual repayment under each scenario.
- Estimated Annual Metered Sales: The total expected revenue from user charges under each funding scenario.

Appendix N

NEW YORK STATE | Environmental Facilities Corporation

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: Town of Amenia Water District #1: Water System Evaluation

Date of Report: 11/14/24

Professional Engineer's Name: Robert Flores

Signature: Robert Flores

Date: 11/14/24

Appendix O

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 Amenia Project No.: 24-3060

Project Name: Water District #1: Water System Evaluation

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:

The Town of Amenia owns and operates Water District #1, which encompasses four groundwater wells, a storage tank and 15 miles of distribution system piping. This water infrastructure needs to be upgraded based on a Dutchess County DOH inspection.

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.:
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: The project focuses on upgrading existing water infrastructure in Amenia Water District #1 to meet health and safety standards.

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:

   The Water District #1 encompasses both the Town of Amenia's central business district and a Potential Environmental Justice Area.

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:

The project area is a developed municipal water district, providing essential services to residents and businesses.

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:

While the project does not directly improve groundwater or other state resources, it maintains critical water infrastructure within an already developed area, preventing the need for new infrastructure development that could impact natural or agricultural areas.

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:

This project promotes compact development by upgrading the existing water system, preventing the need for expansion into undeveloped areas.

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

☐Yes ☐No ☑N/A

Explain your response:

The project doesn't involve transportation infrastructure or mobility improvements.

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:

The project involves coordination with the Dutchess County Department of Health to address compliance issues identified in the recent sanitary survey. Additionally, it includes efforts to requalify Well 5 as a safe and reliable water source for the district.

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

☑Yes ☐No

Explain your response and reference any applicable plans:

The project has involved collaboration with local officials, and their input has guided the project to align with local priorities.

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

☑Yes ☐No ☐N/A

Explain your response:

The project will not result in any changes to building or land use codes.

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:

The project promotes sustainability by installing VFDs on well pump motors, which enhance energy efficiency, and by situating the pump house and generator above the flood elevation, ensuring resilient and sustainable infrastructure.

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:

The project mitigates future climate risks by positioning critical infrastructure, including the pump house and generator, above the flood elevation.

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 Amenia	Phone Number: 518-452-1290
Name and Title of Signatory: Kelsey Butera, Engineer I	
Signature: Kelsey Butera	Date: 12/4/24