Village of Athens Drinking Water Source Protection Program (DWSP2) Plan

Village of Athens

Prepared for

Village of Athens

Athens Municipal Building
2 First St. Athens, NY 12015

Final
January 2024

NEW YORK STATE OF OPPORTUNITY. Department of Health

NE IW PCC

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Athens, Greene County, New York

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Athens Municipal Building
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Prepared by

New York State Department of Health
Bureau of Water Supply Protection
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Tables

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ABBREVIATIONS

AWQR	Annual Water Quality Report
BMP	Best Management Practice
CAC	Conservation Advisory Council
CBS	Chemical Bulk Storage
DOT	Department of Transportation
DPW	Department of Public Works
DWSP2	Drinking Water Source Protection Program
gpd	Gallons per day
GIS	Geographical Information System
MCL	Maximum Contaminant Level
NRCS	Natural Resources Conservation Service
NYS	New York State
NYSAGM	New York State Department of Agriculture and Markets
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
NYSDOS	New York State Department of State
NYSEFC	New York State Environmental Facilities Corporation
PCS	Potential Contaminant Source
PFAS	Per- and Polyfluorinated Substances
PWS	Public Water System
SPDES	State Pollutant Discharge Elimination System
SWAP	Source Water Assessment Program
SWCD	Soil and Water Conservation District
TA	Technical Assistance
TTHM	Total Trihalomethanes
USDA NRCS	United States Department of Agriculture Natural Resources Conservation Service
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
WQIP	Water Quality Improvement Project
WRR	Watershed Rules and Regulations

INTRODUCTION

The purpose of this Drinking Water Source Protection Program (DWSP2) Plan for the Village of Athens is to protect public health and safety by preventing pollutants from entering the drinking water supply. Source water refers to surface water (streams, rivers, lakes, and reservoirs) and groundwater (aquifers) from which water is taken by a public water system for drinking or food processing purposes. DWSP2 is designed to empower municipalities to take action to improve and protect their public water sources and surrounding environment.

The Village applied for free technical assistance to create a tailored, locally developed DWSP2 plan that builds off previous work, helps align priorities, and fills gaps within the Village's current and future source water protection efforts. The Village was paired with a Technical Assistance Provider (TA provider) from the New York State Department of Health (NYSDOH) to develop their DWSP2 Plan.

To help guide municipalities and their TA providers in developing DWSP2 Plans, representatives of key state agencies, including NYSDOH, New York State Department of Environmental Conservation (NYSDEC), New York State Department of State (NYSDOS), and New York State Department of Agriculture and Markets (NYSAGM), among other organizations, created a draft "Framework for Creating a Drinking Water Source Protection Program." The phases and key components of DWSP2 are as follows (Table 0-1).

Table 0-1: Phases and Key Components

Phase 1. Stakeholder Group
1.1 Form a Stakeholder Group **1.2 Establish Goals and Formulate a Vision**
Phase 2. Drinking Water Source Assessment
2.1 Develop an Overview of the Water System **2.2 Prepare a Drinking Water Source Protection Map** **2.3 Create a Potential Contaminant Source Inventory**
Phase 3. Protection and Implementation Strategies
3.1 Identify Protection and Management Methods **3.2 Develop an Implementation Timeline**
Phase 4. Progression and Maintenance
4.1 Designate a Plan Management Team
Phase 5. Implementation
5.1 Implement the Plan **5.2 Progress Reports**

The Village DWSP2 Plan was developed with a local stakeholder group using the series of steps above. The stakeholder group was able to provide knowledge of current conditions of the water supply and emerging concerns. In developing their DWSP2 Plan, the stakeholder group and TA provider interpreted

data, created maps, identified potential sources of contamination, prepared an actionable list of source water protection methods, and researched funding and partnership opportunities.

This plan prepares the Village for the most important component of DWSP2: Implementation. The DWSP2 Plan will guide the Village and their partners to readily apply source water protection methods. This will help the Village promote public health, avoid preventable drinking water treatment costs, increase community confidence in their drinking water, and strengthen community partnerships.

This document outlines the Village DWSP2 Plan that will be updated, maintained, and implemented by the community. It is comprehensive and tailored to the Village's unique needs and goals. Ultimately, this plan offers a detailed road map for long-term protection of the Village's drinking water source.

BACKGROUND

This DWSP2 Plan was prepared for the Village of Athens, New York. The source of the Village of Athens Public Water System is Hollister Lake Reservoir. The PWS serves approximately 1,700 people through 795 service connections. The average daily demand is about 112,730 gallons per day. Hollister Lake Reservoir is located on Schoharie Turnpike in the northwest corner of the Town of Athens. The Public Water System identification number is NY1900024.

In the early 1900s, the watershed was primarily inhabited by farmhouses, cultivated fields, and some timberland. Alternative water sources were explored, including the Hudson River, Green Lake, and Black Lake. However, these sources did not offer sufficient water quality or quantity at the time. The Hudson Valley section of Greene County does not have any bedrock capable of any moderate or large groundwater yields, and no soils that appear capable of supplying groundwater (Village of Athens Local Waterfront Revitalization Program Report). Impoundment of surface waters was determined to be the best means of providing an adequate municipal water supply to the Village. In 1925, the Village constructed a 250-foot long earthen dam with a concrete core wall and 25-foot spillway. The dam was constructed at the natural outlet of Hollister Lake and raised the water level 7 feet.

Watershed rules and regulations (WRR) were first enacted in 1928 and updated in 1982. WRR require certain components, including application of regulations, definitions, and general provisions. Optional sections include: inspections; enforcement and remedies; and waiver or variance procedures and/or a separability statement. In 2023, the Village of Athens WRR are still relevant and apply to Hollister Lake Reservoir and all watercourses that discharge into Hollister Lake Reservoir.

In 2004, a Source Water Assessment Program (SWAP) was prepared for the Village of Athens by NYSDOH. The SWAP included a delineation of contributing land areas (watersheds), inventory of potential contaminant sources, and analysis of the susceptibility of the water supply to contamination. This assessment was referenced and enhanced for DWSP2 Plan. The Village and their TA provider compiled and reviewed additional information, including but not limited to annual water quality reports (AWQR), local laws, and the Village's 2020 Comprehensive Plan.

This DWSP2 Plan focuses on Hollister Lake Reservoir and its contributing watershed (see Figure 1). The watershed is mainly rural and heavily forested, with few potential contaminants of concern. The Village recognizes the importance of maintaining a high-quality and reliable drinking water source for its residents. This plan will build off previous work and assess current and future water quality concerns. By implementing the identified protection and management methods, the Village will maintain the long-term quality of their reservoir.

1.0 STAKEHOLDER GROUP

1.1. Form a Stakeholder Group

Members of the stakeholder group and their affiliations are listed in Table 1-1. The Village utilized an existing team of stakeholders that typically lead environmental efforts in the Village, known as the Village of Athens Conservation Advisory Council (CAC). Members of the CAC were able to offer a range of input and expertise for DWSP2 planning, including topics related to water quality, environmental health, environmental law, geographic information systems, local planning, local zoning laws, and local resident perspectives. The CAC acted as the core stakeholder group and devoted time during regularly scheduled meetings to progress through the Framework and develop the DWSP2 Plan with their TA provider. A list of the scheduled meetings and summaries of the discussions is included in Appendix A.2. The stakeholder group assisted in creating a vision statement and goals. They also provided local knowledge and feedback during the drinking water source assessment phase and protection and implementation strategies phase. During plan development, the CAC consulted with additional stakeholders, including staff from the Village's water treatment operation team (hereafter water operators) and NYSDOH Oneonta District Office. The CAC also reached out with specific questions to Greene County Soil and Water Conservation District (SWCD) and the Towns of Athens and Coxsackie Zoning boards. Finally, they decided that the CAC will lead future DWSP2 efforts by acting as the Plan Management Team.

Table 1-1: Village of Athens Stakeholder Group

Name	Relevant Affiliation(s)
Dr. Josh Lipsman[1]	Village of Athens CAC, Village of Athens Trustee
Kyle Winslow	Village of Athens CAC
Susan Grilli	Village of Athens CAC
Gerald Bunting	Village of Athens CAC
Merrill Roth	Village of Athens CAC
Molly Little	Village of Athens CAC
Nancy Poylo[2]	Village of Athens CAC, Ex-Officio Trustee
Maggie Moree	Village of Athens CAC, Ex-Officio Member, Village Planning Board
Joseph Myers[3]	Lead Water Operator
Matt Currey[3]	NYS Department of Health Oneonta District Office
Shane Finch[3]	NYS Department of Health Oneonta District Office
1 Point of Contact:	

Email: jlipsman@athensvillageny.net, CC Village Clerk at clerk@athensvillageny.gov
Phone: Village Clerk - 518-945-1551
2 Left CAC in summer 2022
3 Provided feedback throughout the process outside of regularly scheduled meetings

1.2. Vision Statement and Goals

The Village stakeholder group created specific goals for their DWSP2 Plan and a vision statement to guide their efforts. The goals are as follows:

1. Inventory, assess, and address existing or potential future source water quality issues to protect public health.
2. Develop and utilize partnerships with the Towns of Athens and Coxsackie to evaluate current land use and plan for future land use within the Hollister Lake Reservoir watershed.
    a) Evaluate possible risk factors that may impact drinking water treatment facility operations.
    b) Explore and implement mechanisms for protecting and regulating activities that impact source water quality.
3. Evaluate future development demands to account for potential population increases.

After consideration of the community's goals, the vision statement was created and followed during the project:

The Village of Athens, New York, recognizes that the quality and reliability of drinking water is of paramount importance to the health and sustainability of a community. Protecting the source of that water is therefore within the interest of all Village residents. We are committed to dedicating sufficient resources and taking comprehensive action to maintain and improve it for our own lifetimes and for those of generations to come.

2.0 DRINKING WATER SOURCE ASSESSMENT

2.1. Water System Overview

Hollister Lake Reservoir is the sole source of water for the Village. It is a 14-million-gallon impoundment on the Hans Vosen Kill and is maintained by an earthen dam on the north side of the reservoir. The reservoir and treatment plant are situated along Schoharie Turnpike in the *Town* of Athens, approximately six miles northwest of the Village of Athens and about 100 feet from the Athens-Coxsackie town line. It is important to note that the reservoir is physically located within the municipal boundaries of the Town of Athens and not within the municipal boundaries of the Village itself. The contributing watershed also extends into the Town of Coxsackie. This has important implications for future protection of the reservoir.

Water flows by gravity through a system of piping to the Village, serving approximately 1,700 people through 795 service connections. Water consumers primarily include residents and businesses in the Village of Athens as well as some nearby properties along the Turnpike. An interconnection exists that will allow the Village of Athens to serve the Sleepy Hollow Lake community in the event of an emergency. At the time of this report, this interconnection would not allow the Village to utilize Sleepy Hollow Lake as a backup water supply without further modifications.

The treated water storage capacity at the Village's treatment plant is 100,000 gallons of treated water. There is a combined total storage capacity of 850,000 gallons of water to meet consumer demand and to provide adequate fire protection. Consumer demand is currently stable. Table 2-1 provides a summary of water quantity data for the Village's water system. A complete overview of the water system is compiled in Appendix A.4.

Table 2-1: Village Water Quantity Summary

Current Water Withdrawal Permit Expiration Date	No Expiration Date
Total Permitted Water Withdrawal Capacity	450,000 GPD
Average Daily Water Demand	112,730 GPD
Maximum Daily Water Demand (Unofficial 3-day average in peak month – e.g., July)	345,000 GPD
Annual Water Losses	Not available*
*At the time of this report, the Village water operators were working with the town clerk to calculate annual water losses. This report will be updated accordingly when this information becomes available.	

The Village's current facilities draw water from Hollister Lake Reservoir and pump it to the water treatment plant. The treatment steps include (1) coagulation, using an alum based product which causes large and small particles to stick together forming what is termed as a "floc", these particles are trapped and removed from the clarifier; (2) filtration, as the water travels through layers of media beds of sand and charcoal; (3) disinfection, using ultraviolet light and chlorination to kill harmful bacteria and other organisms; and (4) storage and distribution, where a corrosion inhibitor is added to protect the distribution system piping and household plumbing fixtures (Annual Water Quality Report 2021).

In 2021, there was a maximum contaminant level (MCL) violation for Total Trihalomethanes (TTHMs). TTHMs are a by-product of drinking water chlorination needed to kill harmful organisms. TTHMs are formed when chlorine reacts with organic matter. The system has a long transmission main resulting in long chlorine contact times which increases the potential for TTHM formation. The Village of Athens has corrected this by increasing backwash frequency of carbon filters, adjusting chemical addition and flushing of the distribution system (Annual Water Quality Report 2021).

2.2. Drinking Water Source Protection Mapping

2.2.1. Drinking Water Source Protection Areas

Drinking water source protection areas were delineated to identify locations in the watershed that could potentially impact the source water. For surface waters serving public water systems, there are various protection areas that can be identified. These include: (1) the Critical Area and (2) the Extended Source Water Area.

The Critical Area is a 500-foot radius around the reservoir in which potential contaminants could quickly reach the reservoir and thus pose a greater risk to the drinking water source. The Extended Source Water Area was calculated using StreamStats. StreamStats is a United States Geological Survey Web-based Geographic Information Systems (GIS) application that provides users with tools for water-resources planning and management purposes, and for engineering and design purposes. The location of the Village's drinking water intake was used in StreamStats to generate the drainage area in which water flows from the surrounding land into Hollister Lake Reservoir. The DWPS2 Framework provides a step-by-step guide on how this was performed.

2.2.2. Drinking Water Source Protection Maps

ESRI ArcGIS ArcMap Desktop v.10.8.2 was used to generate and analyze the drinking water source protection maps. The source water intake was removed from all public facing maps for security purposes. Figure 1 is the Overview Project Location Map, which displays the location of the Village and Hollister Lake Reservoir. Figure 2 shows the topography of the two protection areas described above: Critical Area and the Extended Source Water Area.

Figures 3 through 11 provide an overview of conditions within the Critical and Extended Source Water Areas. They are:

- Figure 3 – Surficial Geology
- Figure 4 – Bedrock Geology
- Figure 5 – Steep Slopes
- Figure 6 – Soil Hydrologic Group
- Figure 7 – Land Cover
- Figure 8 – Land Use
- Figure 9 – Potential Contaminant Sources
- Figure 10 - Private Septic Systems
- Figure 11 – Town of Athens Zoning

2.2.3. Surface Water Hydrology

Hollister Lake Reservoir (HUC 12 – 020200060808) is a ~63 acres water body that drains into the Hans Vosen Kill in the Town of Athens. There are no known named tributaries

contributing to Hollister Lake Reservoir. Surficial geology describes sediment materials at or near the Earth's surface. Figure 3 demonstrates that the watershed primarily consist of glacial till, which tends to be composed of largely unsorted, mixed materials previously transported and deposited directly by a glacier as it advanced or retreated. Bedrock geology describes the type of solid rock that underlies surface material like soil and gravel (Figure 4). The bedrock within the reservoir's watershed primarily consists of carbonates, shales and sandstone.

Steep slopes are areas where hillsides with a 15-foot or greater vertical rise over a 100-foot horizontal run (or 15% slope) are found. These areas are primarily located in the western portion of the Critical Area (Figure 5). While steep slopes can present obstacles to development, they also represent areas where there is less water infiltrating the ground and increased runoff, which would carry sediments and pollutants more quickly towards the reservoir. Soil types also play a role in runoff potential during significant storm events. The United States Department of Agriculture Natural Resources Conservation Service (USDA NRCS) groups soils that share similar runoff potentials. Soil group classifications consider runoff, infiltration rates, and the ways in which land activities can affect dynamics such as erosion and sedimentation of waterways. The Hollister Lake Reservoir Critical Area contains a mixture of Class A, B, C, and D soil groups (Figure 6).

Land cover and land use are important factors in identifying potential contaminant sources. Land cover (Figure 7) is the mixture of natural and human-influenced systems that cover a region. The National Land Cover Data (2019) shows that forests cover 73.9% of the Extended Source Water Area. Hay and pasture account for 7% of the watershed area, with developed and open space accounting for 6.9% of the watershed area. Woody wetlands make up 5.8% while emergent herbaceous wetlands make up 1.8%. Developed and low intensity land use makes up 2.1% of the watershed. The remaining area is open water.

Land use was analyzed by property type classification codes based on Greene County tax parcels. The land use map (Figure 8) provides context as to how each tax parcel in the Extended Source Water Area is or is intended to be used in the future (i.e. agricultural, residential, commercial, industrial). According to the DWSP2 Framework, areas zoned as low-density residential use (with limited or no septic system use) and open space are considered low risk. The tax parcel data were also utilized to create a visualization of private septic systems in the region (Figures 10). Local zoning laws (Figure 11) include an overlay district for the watershed.

2.3. Potential Contaminant Source Inventory

A potential contaminant source inventory was assembled for the Village (Appendix A.6) and includes a list of potential contaminant sources (PCS) that may impact the quality of drinking water sources, if improperly managed.

The estimated PCS locations were identified by using a wide range of publicly available datasets. It is important to recognize that these are not sources of contamination, but rather represent areas with potential risk based on the histories of surface water contaminants associated with certain land uses. Their mapped presence in the reservoir's Critical and Extended Source Water Areas provided the Village CAC with guidance on categories of land uses warranting plan attention. Figure 9 shows the location of all potential contaminant sources mapped within the Critical and Extended Source Water Areas. Overall, there are few potential point sources and non-point sources of contamination to drinking water sources in the Hollister Lake Reservoir watershed.

The data provided lists the facility, address, and information source in addition to key attributes associated with proximity to the Critical and Extended Source Water Areas. The data is classified by general category as defined in the Framework. Some PCS are categorized as "other", which means that they did not fall into the general categories. Potential future sources of contamination are also listed in the PCS inventory. These sources could emerge in the near or far future and keeping track of these sources is critical to be able to protect drinking water.

Table 2-2 shows all potential contaminant source categories and sources and notes which were found within the Critical and Extended Source Water Areas at the time of this report.

There are few immediate concerns regarding the potential contaminant sources located within the Hollister Lake Reservoir Critical and Extended Source Water Areas. However, there are several items that should be monitored in the future. The Village identified strategies to help maintain these low levels of concern.

Table 2-2: Potential Contaminant Source Categories and Sources

Bulk Storage	**Transportation**
Chemical Bulk Storage✓	Airports
Major Oil Storage Facilities	Transportation Corridors✓
Petroleum Bulk Storage Facilities	Road and Maintenance Facilities
Waste Management and Disposal	Salt and Deicers Storage
Active Landfills	**Agriculture**
Inactive Landfills (Title 12)	Agricultural Activities✓
Hazardous Waste Management Facilities	**Residential Sources**
Land Application Sites	On-site Septic Systems✓
Vehicle Dismantling Facilities	Lawn and Garden chemicals✓
Contamination Sites or Incidents	Waterfront Property Management
Remediation Sites✓	**Conveyances and Pipelines**
Spill Incidents	Oil and Gas Pipelines✓
Mineral Extraction Sites	**Other**
Oil and Gas Wells	Golf Courses
Orphan Oil and Gas Wells	Marinas and Boat Launches
Mines	Stormwater
Historical Abandoned Mines	Toxic Release Inventory (TRI) Facilities
Discharge to Water	Fire Training and Dedicated Fire Training Facilities
State Pollutant Discharge Elimination System Permitted (SPDES) Facilities	Nutrient Loading (Lakes Only)
Combined Sewer Overflows (CSOs) and Sanitary Sewer Overflows (SSOs)	Saltwater Intrusion
	Road Salt Application✓
	Other✓

✓Discovered in Potential Contaminant Source Inventory

3.0 PROTECTION AND IMPLEMENTATION STRATEGIES

Since the Village is solely dependent on Hollister Lake Reservoir for their drinking water source, it is crucial to implement effective strategies for current and future protection. Overall, Hollister Lake Reservoir provides a quality and adequate source of water for the Village. Implementation of the

identified protection and management strategies will allow the Village to maintain the current condition of their reservoir and meet the vision and goals outlined by the Village CAC.

3.1. Protection and Management Methods

The protection and management methods recommended to address the Village's priority issues and potential contaminant sources can help protect the source water. There are several regulatory and non-regulatory methods that the municipality can explore.

3.1.1. Land Use Tools and Methods

The broad category of land use tools and methods includes both regulatory and non-regulatory methods for mitigating potential contaminant sources. Regulatory methods include zoning ordinances, updating Watershed Rules and Regulations to address current and emerging concerns, designation of critical environmental areas (CEAs) that require additional reviews and oversight, inter-municipal agreements, etc.
Non-regulatory methods include land purchase or voluntary conservation easements, encouraging or incentivizing the best management practices (BMPs), and intermunicipal organizations. Other examples include improved roadway maintenance, enhanced staffing for inspections and enforcement, and planned maintenance of stormwater and wastewater infrastructure. Certain actions can minimize adverse impacts of climate change, including tree planting, vegetated buffers, wetland restoration, and floodplain management to help reduce flood flows and erosion of the stream bed and banks.

3.1.2. Monitoring and Reporting

Additional water quality monitoring throughout the Critical and Extended Source Water Areas may help locate specific areas where contamination is entering the source water. Identifying and addressing sources of contamination before they reach the water intake could eliminate or reduce the need for additional treatment. A detailed review of current monitoring plans and findings can identify gaps and highlight potential areas of vulnerability. Additionally, expanded monitoring could provide early warning of the presence of emerging contaminants.

3.1.3. Public Education and Outreach

Informing the public and providing educational tools to teach them about source water protection methods can reduce the risk of contamination from residential sources. Public involvement in monitoring programs (community science) can be a highly effective means of building understanding of Critical and Extended Source Water Area issues and a commitment to stewardship.

The following questions should be considered when identifying potential outreach approaches:

1. Who are your target audience(s) and what do you want them to do in response to your project (e.g., what behaviors you seek to change, or actions you want them to take as a result of the information provided)?
2. What are your key messages and where do you want to direct people to get more information on the topic?

3. Are messages short, long, require graphics, etc.?
4. How do you plan to get the information out? (in person, email, digitally, direct mail)?
5. Who are partners who can help you get the information out?
6. What is your budget? Example strategies for education and outreach include digital/social media, paid advertising, press release, newsletters, factsheets and flyers, email blasts, signage, tabling/presenting, community events, and training.

3.1.4. Priority Issues

Discussions were held with the Village CAC to understand the municipality's priority issues. These issues were ranked on a high, medium or low scale in order of importance based on several factors, including the Village's existing concerns, observed issues, gaps in existing protection efforts and the proximity of potential contaminant sources to the water intake. Issues with previous or current impacts were prioritized first. With each priority issue, a targeted potential contaminant source was identified along with goals to reduce or mitigate the issue. Refer to Appendix B for a complete list of project profiles with implementation steps and protection and management methods for each priority issue. Appendix C includes a cost estimate for each project profile.

PRIORITY 1:

The first priority for the Village is to address excess vegetation, algae and possible aquatic invasive species in the Hollister Lake Reservoir. Excess nutrients in the reservoir have likely led to an increase in vegetation and algae growth. In turn, this causes a build-up of organic matter, leading to taste and odor concerns in the summer months. It has also led to increased sedimentation in Hollister Lake Reservoir. At the time of this report, the Village's water operations staff are working towards possible solutions. The species of vegetation impacting the reservoir are unknown and additional sampling is needed. The Village designates this as their highest priority due to its known impact on water quality. The Village also recognizes that treatment of vegetation and algal growth needs to happen in tandem with targeting the cause of excess vegetation growth (i.e. nutrient loading). The Village will work to address nutrient loading in various ways through additional implementation actions to prevent water quality impacts from persisting in the future.

PRIORITY 2:

The second priority for the Village is to consider future development in the Critical and Extended Source Water Areas surrounding Hollister Lake Reservoir. New development associated with potential contaminant sources could occur in sensitive parts of the watershed with little consideration to the source water or best management practices. Potential contaminants may include nutrients, sediment, lawn and garden chemicals, salt/chlorides, or unregulated/newly regulated contaminants. Because the Village's

reservoir and contributing areas are located in different municipalities (i.e. Town of Athens, Town of Coxsackie), communication is key. Both Towns have already incorporated overlay zones for the Hollister Lake Reservoir. The Village's goal is to enhance communication regarding future development with the Towns, increase an understanding of the protections in place, and monitor potential new development and population increases within the reservoir's Critical and Extended Source Water Areas.

PRIORITY 3:

The third priority for the Village is outreach and education for residential and agricultural activities in the Critical and Extended Source Water Areas. One topic that the Village will address will be chemicals from lawn, garden, and agricultural activities. Overland flow from nearby agriculture and residential land can bring excess nutrients into the reservoir. One of the Village's goals is to reduce such impacts by conducting outreach and education on best management practices to landowners in the Critical and Extended Source Water Areas. The second outreach topic the Village will address is private on-site septic system maintenance. Poorly maintained residential septic systems can be a source of pathogens, PFAs, nutrients, pharmaceuticals, etc. At the time of this report, municipalities in Greene County are not eligible for the NYS Environmental Facilities Corporation (EFC) Septic System Replacement Fund. The Village would benefit from such funding if and when it becomes available to them. In the meantime, the Village will encourage homeowners to properly maintain their septic systems through appropriate outreach channels.

PRIORITY 4:

The fourth priority for the Village is future drought due to climate change. Periods of short-term drought may be more frequent or severe due to warmer, less snowy winters, fewer steady rainfalls, and higher evaporation from increased temperatures. These droughts may impact recharge, nutrient loading, and algae growth in Hollister Lake Reservoir. For example, lower reservoir levels can increase the concentration of nutrients and consequently amplify the excess vegetation and algae growth impacts on water quality. At the time of this report, drought impact has not been drastic. However, water use restrictions have been put in place for residents in recent years. The Village will continue to monitor water levels and water quality over time. The Village will also work to increase awareness of drought, climate change, and water conservation practices with water users in the Village to lessen the impact of seasonal droughts on water availability and quality. While there are actions included in this plan to address other topics, they can also help with drought as a priority (e.g. land acquisition for source water protection or reducing runoff and nutrient loading).

PRIORITY 5:

The fifth priority for the Village is the management of regulated potential contaminant sources. The targeted potential contaminant sources include a hazardous waste facility,

a natural gas pipeline, and chemical bulk storage. Leaks and spills may allow contaminants to enter the groundwater or waterbody directly, necessitating increased treatment costs or restrictions on the use of the reservoir. To mitigate these concerns, communication with local facilities and regulatory staff will be important to understand ongoing procedures and correct any potential issues.

PRIORITY 6:

The sixth priority for the Village is transportation related-runoff and spill incidents in the Critical Area. Chemical, physical, or biological spills directly entering the reservoir from vehicles using transportation corridors can pose risk to water quality. De-icing materials can also enter the waterbody during winter. A section of Schoharie Turnpike is located directly next to the reservoir. At the time of this report, there have not been major impacts on the reservoir from Schoharie Turnpike. The Village's goal is to minimize future risk of contamination and increase hydrologic resilience.

The long-term protection of the Village's water supply will require leadership and oversight to manage implementation of the recommended actions. Opportunities to partner with regional or state resources for technical support and funding should be explored.

3.2. Implementation Timeline

For each protection and management method identified, the stakeholder group has established a step-by-step process for implementation. Refer to Appendix C for the project profiles, which identify project leaders and partnerships needed, potential funding sources, costs, project timing, and step-by-step implementation processes. Refer to Appendix A.7 for a table summary of the implementation timeline for each protection and management method. Please note that potential funding sources are not guaranteed. It is the responsibility of the Village to determine eligibility and apply for any potential funding source listed in this report.

4.0 PLAN PROGRESSION AND MAINTENANCE

This DWSP2 Plan was developed to provide the Village of Athens with the tools and information, including the potential contaminant source list and implementation timeline, needed to protect their drinking water. A Plan Management Team is recommended to oversee the implementation of the plan. The Plan Management Team is also responsible for generating and sharing progress reports with the community.

The Village of Athens CAC will act as the Plan Management team. Table 4-1 provides a list of the Village of Athens' Management Team members. Members were selected based on their knowledge of the water system, position, and potential to lead or contribute to implementation of the recommended actions. At the time of this report, expertise of the CAC/Plan Management Team includes environmental health, local resident perspectives, horticulture/agriculture, outreach, local planning, and local zoning

laws. The CAC/Plan Management Team is encouraged to include two members from each organization to enable transfer of institutional knowledge and succession planning.

The CAC/Plan Management Team will review progress toward implementation and review any issues or emerging concerns during their regularly scheduled meetings. Members are expected to coordinate with one another to share the ideas and methods contained within the Plan. Progress will be monitored by the CAC/Plan Management Team and documented in CAC meeting notes. Updates may also be shared at Village board meetings. Annual progress reports will be produced and shared with NYSDEC, NYSDOH and the community. The CAC/Plan Management Team will update their DWSP2 Plan to reflect progress and emerging issues every five years.

Table 4-1: Plan Management Team

Name	**Relevant Affiliation(s)**
Dr. Josh Lipsman*	Village of Athens CAC, Village of Athens Trustee
Robert Brunner	Village of Athens CAC
Molly Little	Village of Athens CAC
Maggie Moree	Village of Athens CAC, Ex-Officio Member
Chris Sprague	Village of Athens DPW
Leslie Reed	Village of Athens CAC
Rob Scott	Village of Athens CAC
Joseph Myers	Lead Water Operator
*Point of Contact: Email: jlipsman@athensvillageny.net, CC Village Clerk at clerk@athensvillageny.gov Phone: Village Clerk - 518-945-1551	

5.0 IMPLEMENTATION

5.1. Implement the Plan

The Plan Management Team is tasked with overseeing the implementation of the DWSP2 Plan. Steps for implementing the plan below will aid in ensuring its usefulness for the Village of Athens.

Steps to implementing the plan.

1. Start with priority action from the implementation timeline table.
2. Review project profile for the action including steps.
3. Assign how work will be divided for the project
    a. For example, if one of the earlier steps is to contact a local partner, who will conduct that outreach? Once that individual/group is on board, designate individuals for the remaining tasks.
4. Identify lead for the project.
5. Implement project. Note that certain projects may be recurring. Therefore, certain steps for the project will become routine overtime and allow for projects to be implemented simultaneously. If this is not the case, review the project with the team before considering it completed/closed out and moving on to the next action.

6. The team may decide to complete a retrospective review of how the implementation action went, to enhance the process moving forward.

Items for the CAC/ Plan Management Team to consider:

- The CAC/Plan Management Team may decide to implement one action at a time or have certain actions concurrently.
- The CAC/Plan Management Team should frequent the state DWSP2 webpage for any new templates or resources that will aid with plan implementation.
- The CAC/Plan Management Team may decide to incorporate their DWSP2 Plan into future Comprehensive Plan updates.

5.2. Progress Reports

An additional responsibility that the CAC/Plan Management Team is tasked with is to generate and share progress reports with the community to build support for implementation strategies. Community awareness strategies can include but not limited to Village website postings, Village meetings, info sheets included in water bills or Annual Water Quality Reports.

6.0 CONCLUSION

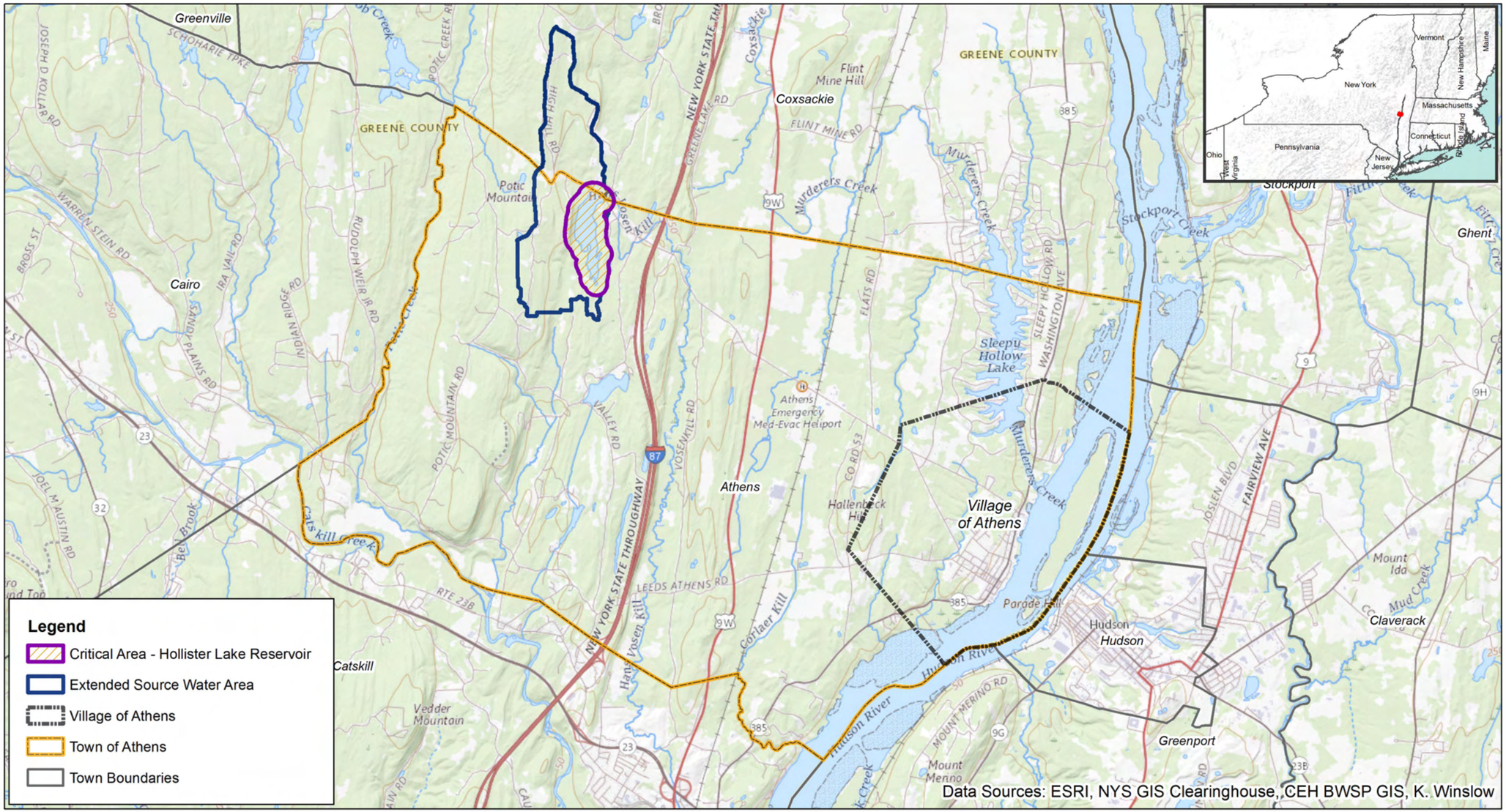
This DWSP2 Plan serves to guide the Village of Athens toward implementation of various methods designed to protect their drinking water source, Hollister Lake Reservoir. The drinking water maps outline the areas that are a priority for protection, and the potential contaminant source inventory within these priority areas identifies potential point and nonpoint sources of contamination within the watershed. The project profiles included in Appendix B of this plan outline specific goals, partnerships, funding opportunities, and implementation steps to complete a variety of projects that align with the Village of Athens's goals and vision. The Village of Athens CAC will use this plan to progress forward with their drinking water source protection.

Figures*

*The Village of Athens source water intake was removed from public facing maps for security purposes.

Figure 1
Overview Project Location Map

Village of Athens DWSP2 - Overview



0 0.5 1 2 3 4 Miles

N

Disclosure: Geographic data represented on this map are based on entries to the Safe Drinking Water Information System (SDWIS), Department of Health, and/or other government agency. As such, the map may contain errors or inaccuracies, and represents a generalized description of the area. Basemap provided by the Environmental Systems Research Institute (ESRI).

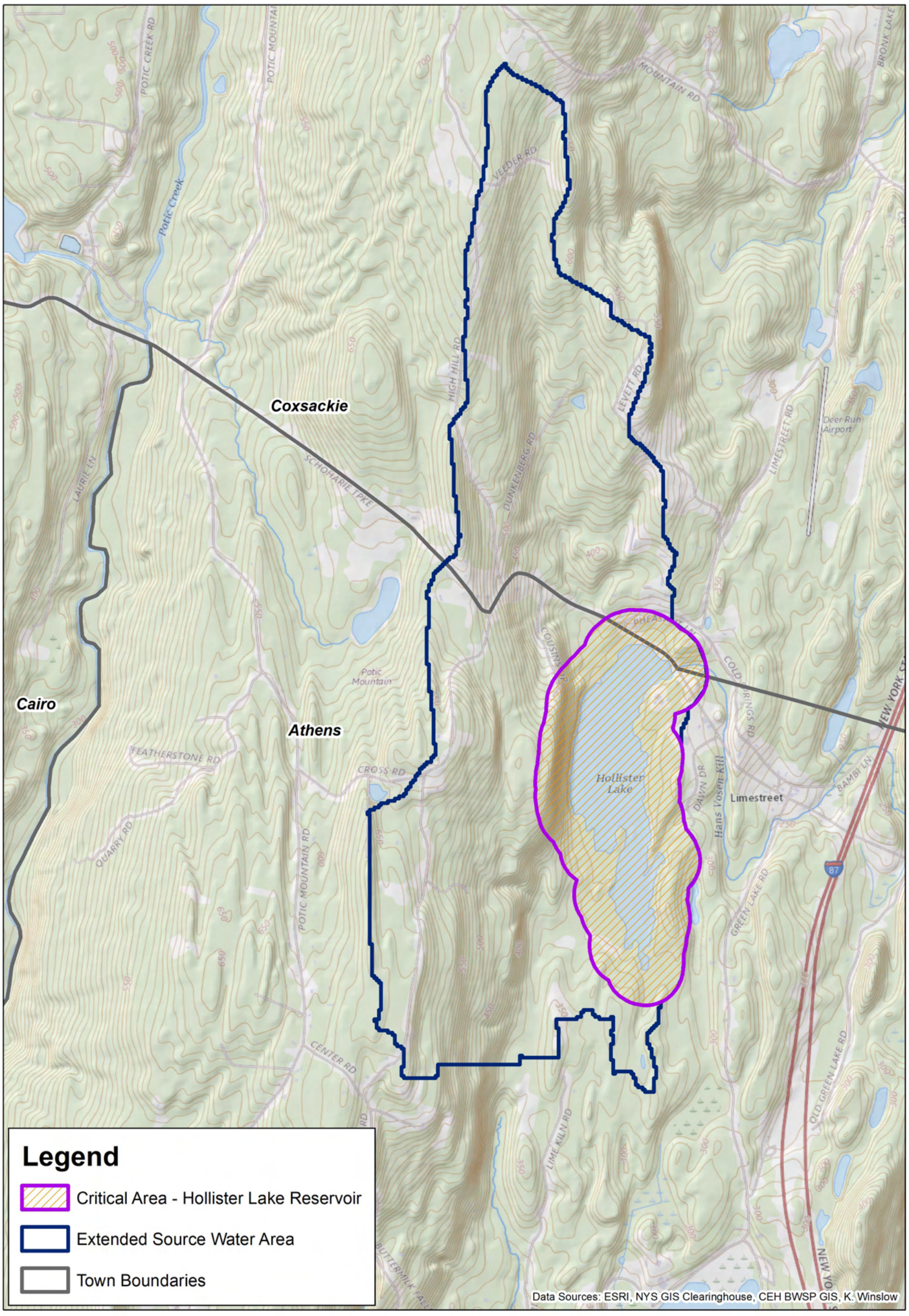
NEW YORK STATE | Department of Health

Center for Environmental Health,
Bureau of Water Supply Protection GIS
Date: 6/30/2023

Figure 2

Critical and Extended Source Water Areas

Village of Athens DWSP2 - Critical & Extended Source Water Areas



Disclosure: Geographic data represented on this map are based on entries to the Safe Drinking Water Information System (SDWIS), Department of Health, and/or other government agency. As such, the map may contain errors or inaccuracies, and represents a generalized description of the area. Basemaps provided by the Environmental Systems Research Institute (ESRI).

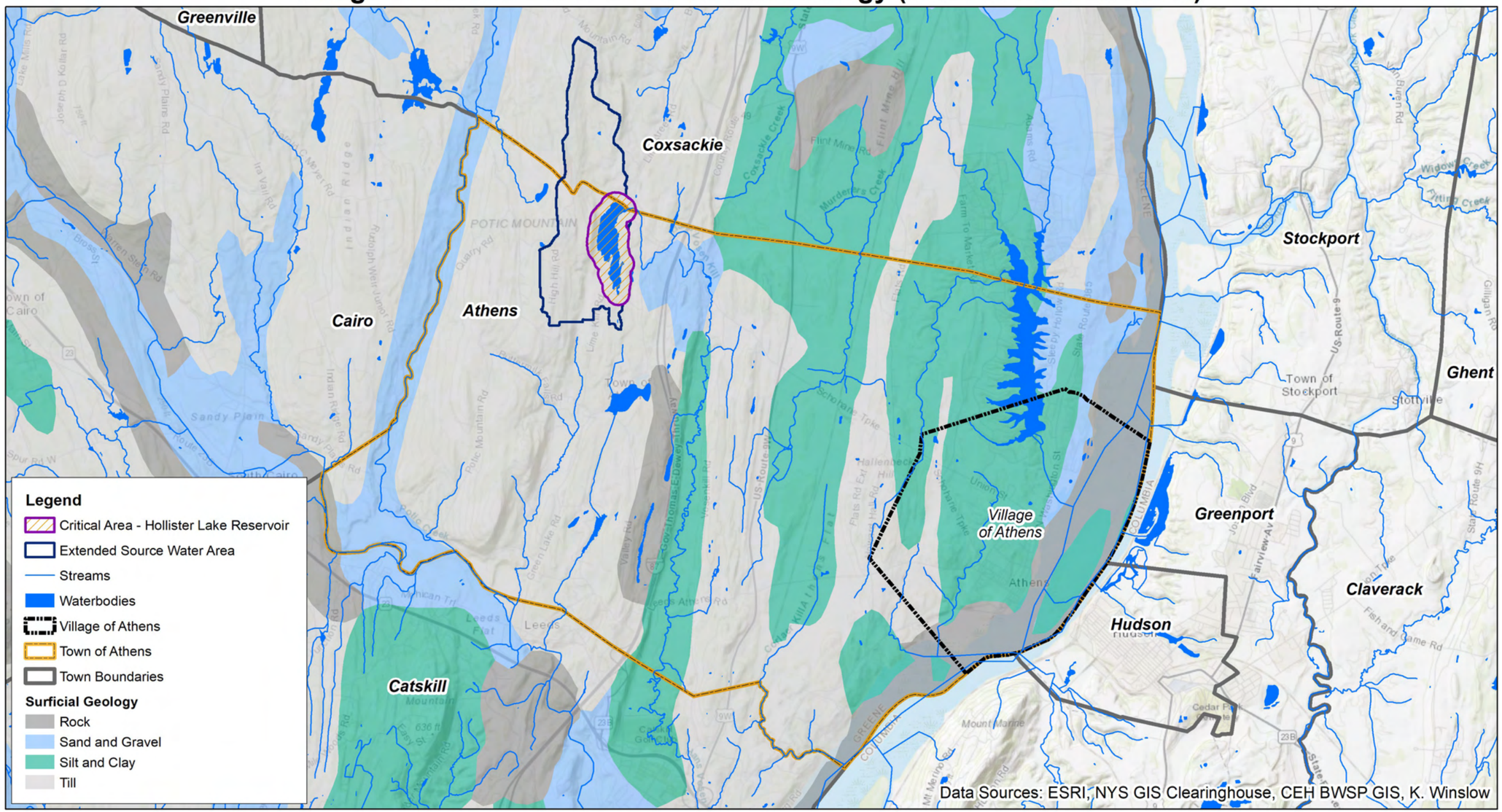
NEW YORK STATE Department of Health

Center for Environmental Health,
Bureau of Water Supply Protection GIS
Date: 6/30/2023

Figure 3

Surficial Geology

Village of Athens DWSP2 - Surficial Geology (West of Hudson River)



0 0.5 1 2 3 4 Miles

N

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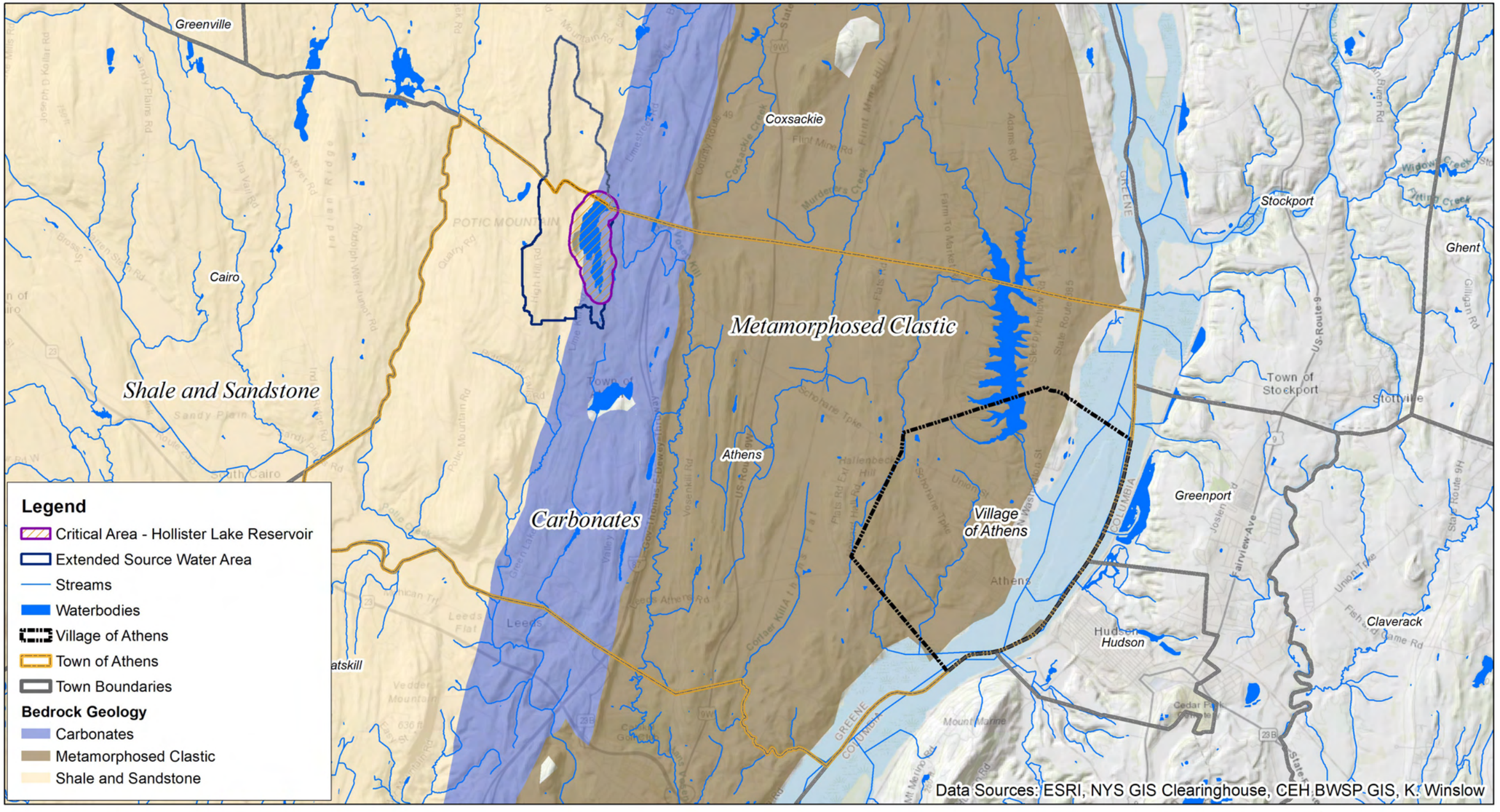
NEW YORK STATE Department of Health

Center for Environmental Health,
Bureau of Water Supply Protection GIS
Date: 6/30/2023

Figure 4

Bedrock Geology

Village of Athens DWSP2 - Bedrock Geology (West of Hudson River)



Miles
0 0.5 1 2 3 4

N

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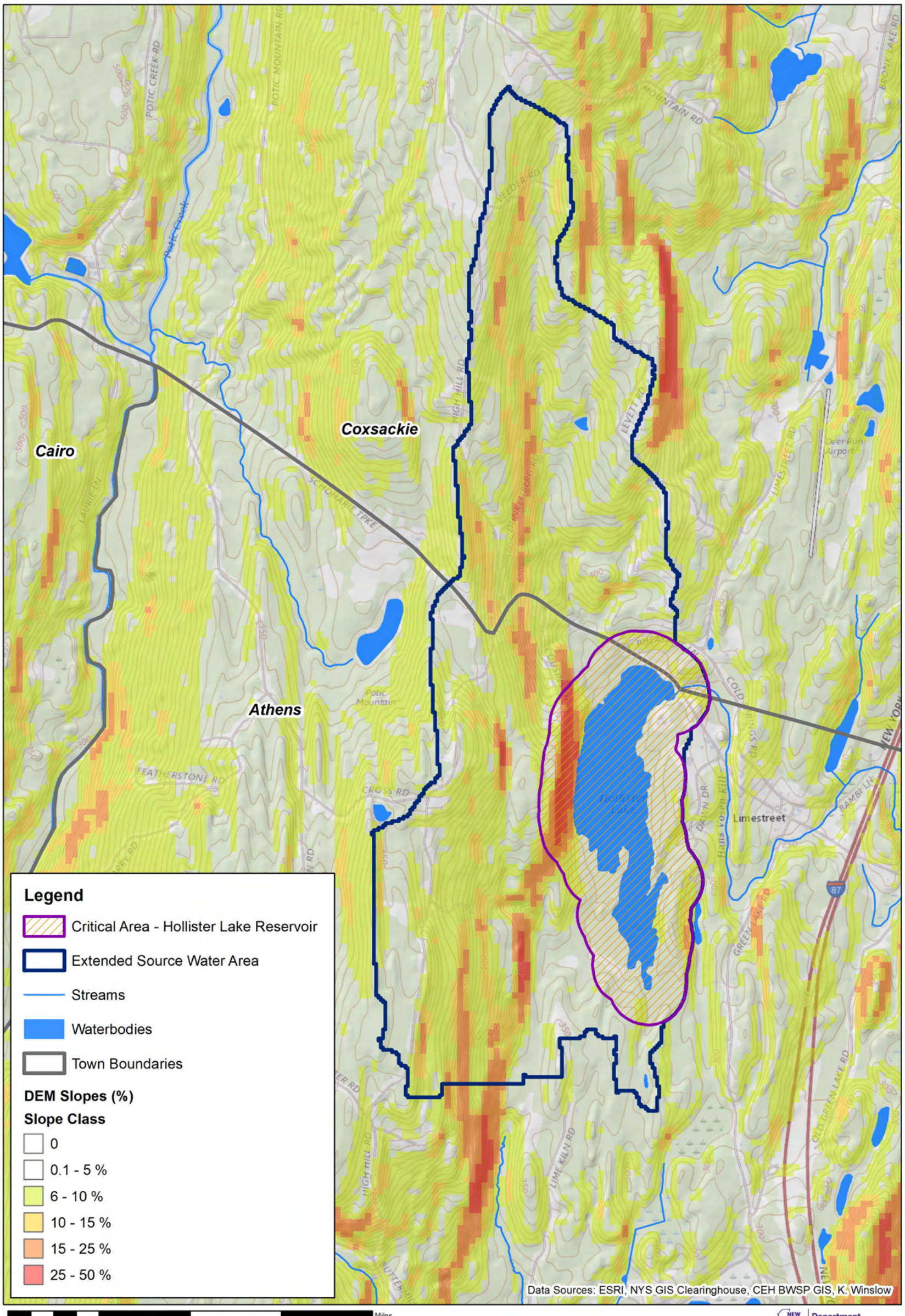
NEW YORK STATE Department of Health

Center for Environmental Health,
Bureau of Water Supply Protection GIS
Date: 6/30/2023

Figure 5
Steep Slopes

Village of Athens DWSP2 - Steep Slopes



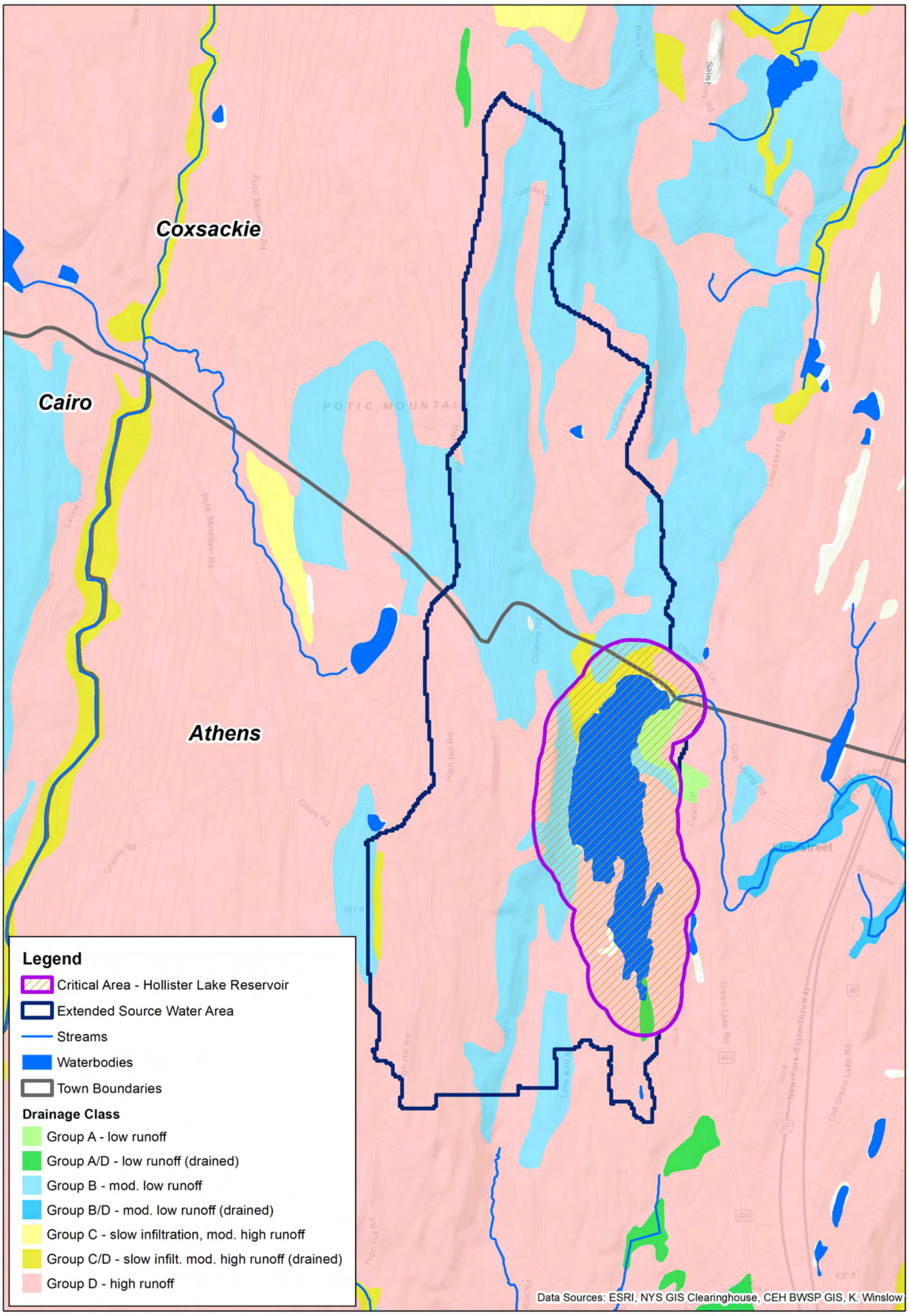
Disclosure: Geographic data represented on this map are based on entries to the Safe Drinking Water Information System (SDWIS), Department of Health, and/or other government agency. As such, the map may contain errors or inaccuracies, and represents a generalized description of the area. Basemaps provided by the Environmental Systems Research Institute (ESRI).

NEW YORK STATE Department of Health

Center for Environmental Health,
Bureau of Water Supply Protection GIS
Date: 6/30/2023

Figure 6
Soil Hydrologic Group

Village of Athens DWSP2 - Soil Hydrologic Groups



0 0.125 0.25 0.5 0.75 1 Miles

N

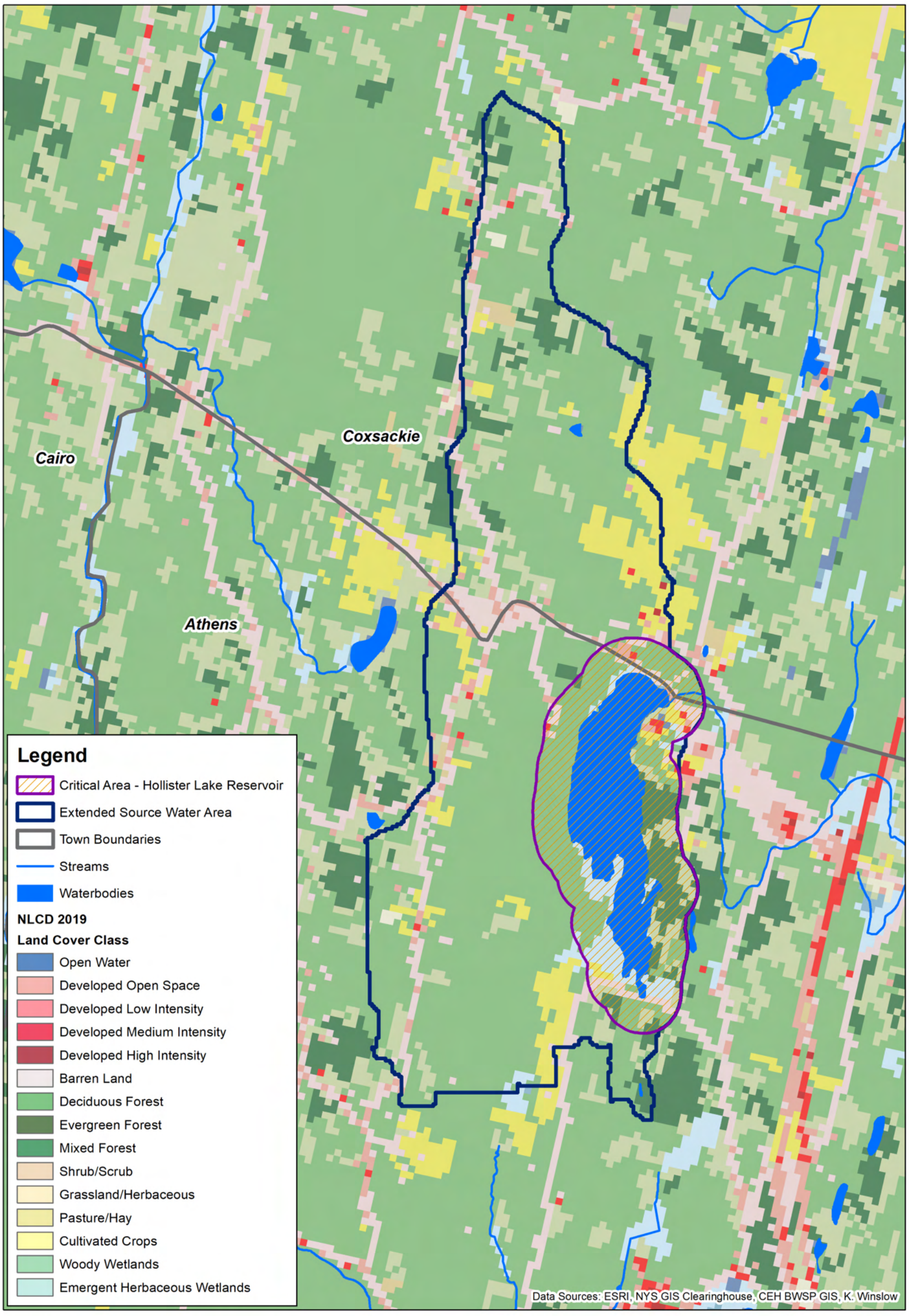
Disclosure: Geographic data represented on this map are based on entries to the Safe Drinking Water Information System (SDWIS), Department of Health, and/or other government agency. As such, the map may contain errors or inaccuracies, and represents a generalized description of the area. Basemap provided by the Environmental Systems Research Institute (ESRI).

NEW YORK STATE Department of Health

Center for Environmental Health,
Bureau of Water Supply Protection GIS
Date: 6/30/2023

Figure 7
Land Cover

Village of Athens DWSP2 - NLCD Land Cover



0 0.125 0.25 0.5 0.75 1 Miles

N

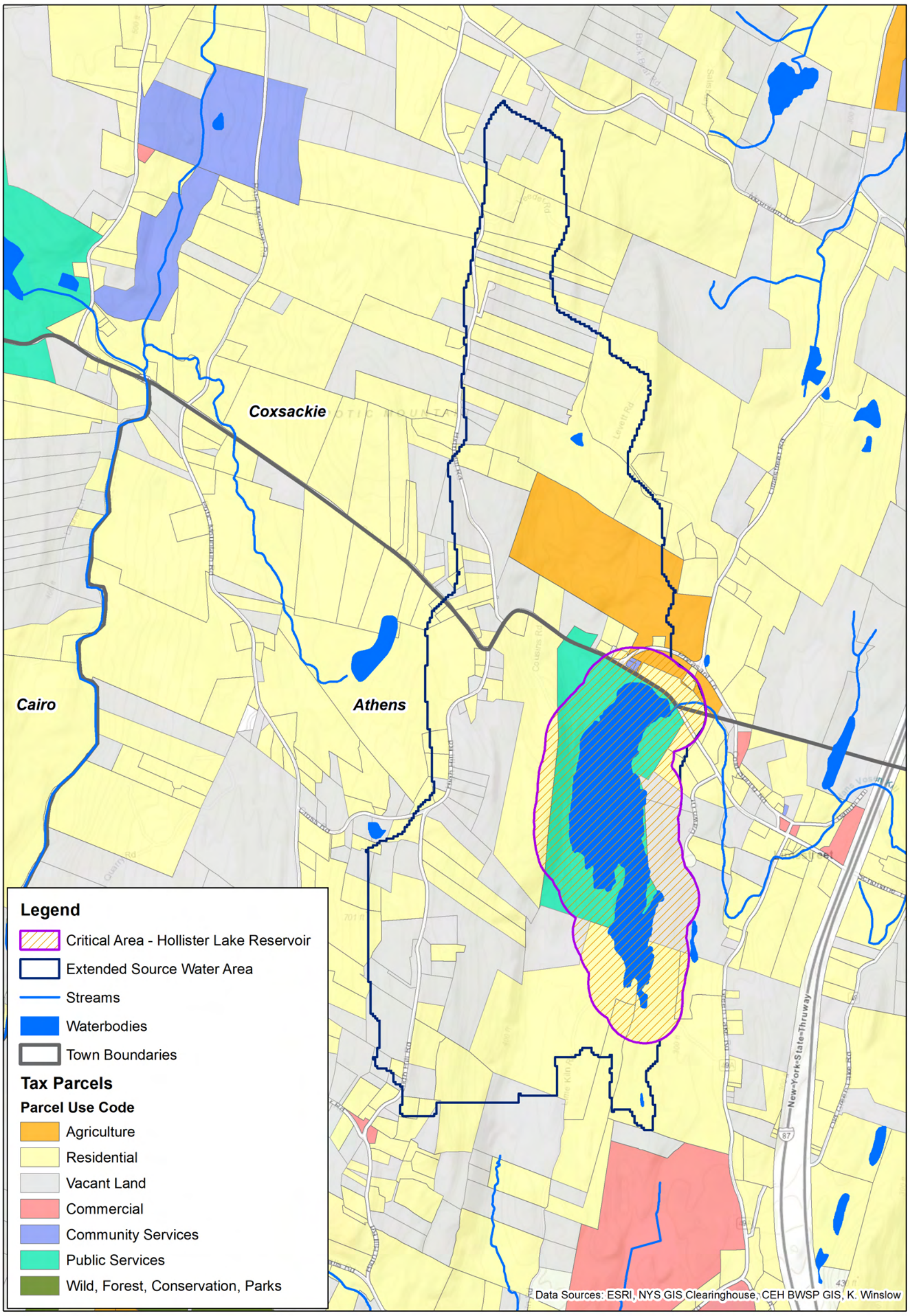
Disclosure: Geographic data represented on this map are based on entries to the Safe Drinking Water Information System (SDWIS), Department of Health, and/or other government agency. As such, the map may contain errors or inaccuracies, and represents a generalized description of the area. Basemaps provided by the Environmental Systems Research Institute (ESRI).

NEW YORK STATE | Department of Health

Center for Environmental Health,
Bureau of Water Supply Protection GIS
Date: 6/30/2023

Figure 8
Land Use

Village of Athens DWSP2 - Land Use



0 0.125 0.25 0.5 0.75 1 Miles

N

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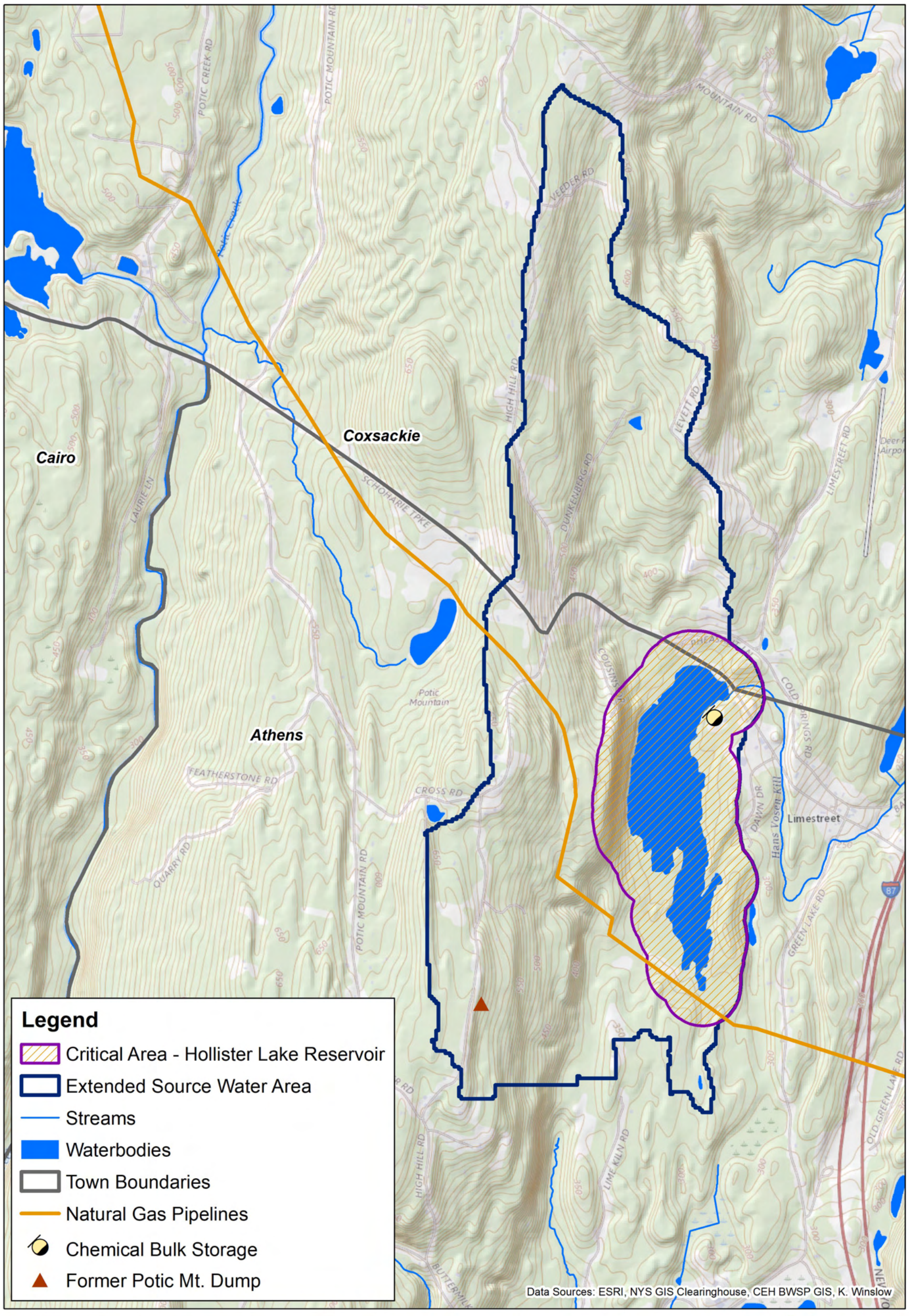
NEW YORK STATE Department of Health

Center for Environmental Health,
Bureau of Water Supply Protection GIS
Date: 6/30/2023

Figure 9
Potential Contaminant Sources

Village of Athens DWSP2 - Potential Contaminant Sources



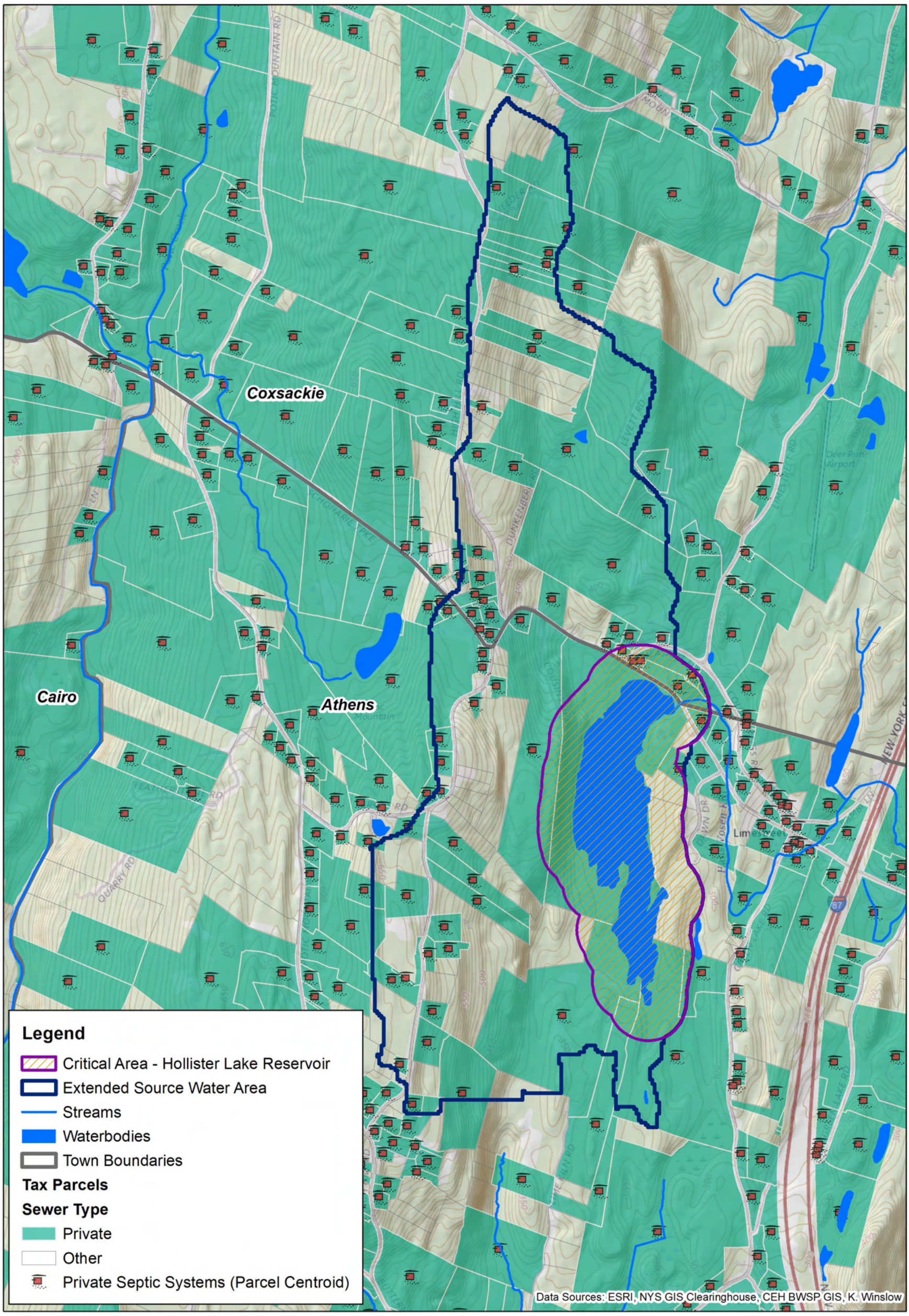
Disclosure: Geographic data represented on this map are based on entries to the Safe Drinking Water Information System (SDWIS), Department of Health, and/or other government agency. As such, the map may contain errors or inaccuracies, and represents a generalized description of the area. Basemaps provided by the Environmental Systems Research Institute (ESRI).

NEW YORK STATE Department of Health

Center for Environmental Health, Bureau of Water Supply Protection GIS
Date: 6/30/2023

Figure 10
Private Septic Systems

Village of Athens DWSP2 - Private Septic Systems



0 0.125 0.25 0.5 0.75 1 Miles

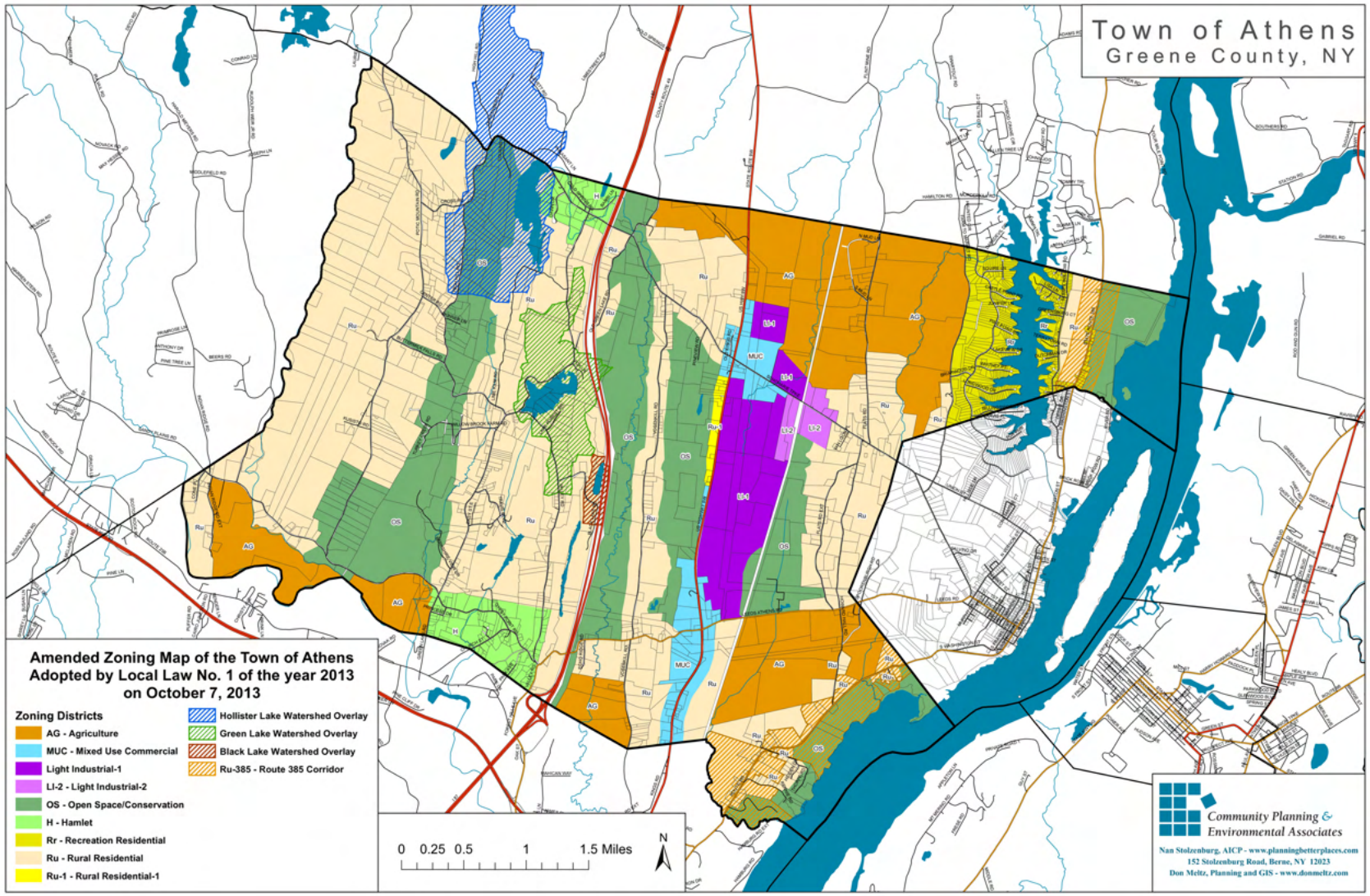
N

Disclosure: Geographic data represented on this map are based on entries to the Safe Drinking Water Information System (SDWIS), Department of Health, and/or other government agency. As such, the map may contain errors or inaccuracies, and represents a generalized description of the area. Basemaps provided by the Environmental Systems Research Institute (ESRI).

NEW YORK STATE | Department of Health

Center for Environmental Health,
Bureau of Water Supply Protection GIS
Date: 6/30/2023

Figure 11
Town of Athens Zoning


Town of Athens
Greene County, NY
Amended Zoning Map of the Town of Athens
Adopted by Local Law No. 1 of the year 2013
on October 7, 2013
Zoning Districts
AG - Agriculture
MUC - Mixed Use Commercial
Light Industrial-1
LI-2 - Light Industrial-2
OS - Open Space/Conservation
H - Hamlet
Rr - Recreation Residential
Ru - Rural Residential
Ru-1 - Rural Residential-1
Hollister Lake Watershed Overlay
Green Lake Watershed Overlay
Black Lake Watershed Overlay
Ru-385 - Route 385 Corridor
0 0.25 0.5 1 1.5 Miles
N
Community Planning & Environmental Associates
Nan Stolzenburg, AICP - www.planningbetterplaces.com
152 Stolzenburg Road, Berne, NY 12023
Don Meltz, Planning and GIS - www.donmeltz.com

Appendices

Appendix A
DWSP2 Data Summary

Appendix A.1

DWSP2 Plan Check List

Drinking Water Source Protection Program (DWSP2) Plan Data Summary

Description: This DWSP2 Plan Data Summary is a tool to summarize data gathered throughout the protection planning process using the DWSP2 Framework. The sections in this Data Summary align with the components of the DWSP2 Framework.

Communities may seek to include information beyond what is outlined in this document and should make additions based on local needs. The tables and information in this document will be valuable to include within a community's DWSP2 Plan.

For guidance on writing a DWSP2 Plan, refer to the DWSP2 Plan Template. The DWSP2 Plan Template specifies where the tables from the data summary can be included in a DWSP2 Plan.

DWSP2 Plan Checklist

This checklist can be used throughout the protection planning process to keep track of components that are in-process or complete. Select "in-process" or "complete" under the status dropdown menu for each component.

Component	Status
Phase 1. Stakeholder Group	**Complete**
1.1 Form a Stakeholder Group	Complete
1.2 Establish Goals and Formulate a Vision	Complete
Phase 2. Drinking Water Source Assessment	**Complete**
2.1 Develop an Overview of the Water System	Complete
2.2 Prepare a Drinking Water Source Protection Map	Complete
2.3 Create a Potential Contaminant Source Inventory	Complete
Phase 3. Protection and Implementation Strategies	**Complete**
3.1 Identify Protection and Management Methods	Complete
3.2 Develop an Implementation Timeline	Complete
Phase 4. Progression and Maintenance	**Complete**
4.1 Designate a Plan Management Team	Complete

Appendix A.2
Stakeholder Group

1.1 Form a Stakeholder Group	
Member Name	**Relevant Affiliation(s)**
Dr. Josh Lipsman	Athens CAC Chairperson, Athens Village Trustee
Gerald Bunting	Athens CAC Member
Susan Grilli	Athens CAC Member
Merrill Roth	Athens CAC Member
Molly Little	Athens CAC Member
Kyle Winslow	Athens CAC Member
Nancy Poylo[2]	Athens CAC, Athens Village Trustee
Maggie Moree	Athens CAC, Ex-Officio Member
Joe Myers[3]	Lead Water Operator
Matt Currey[3]	Oneonta District Health Office
Shane Finch[3]	Oneonta District Health Office

1 Point of Contact:
Email: jlipsman@athensvillageny.net, CC Village Clerk at clerk@athensvillageny.gov
Phone: Village Clerk - 518-945-1551

2 Left CAC in summer 2022

3 Provided feedback throughout the process outside of regularly scheduled meetings

Note: Members of the CAC were able to offer a range of input and expertise for DWSP2 planning, including topics related to water quality, environmental health, environmental law, geographic information systems, local planning, local zoning laws and local resident perspectives.

Stakeholder Group Meetings	
Date	**Topics Covered**
1/20/2022	DWSP2 introduction presented by NYSDOH.
2/17/2022	Reviewed DWSP2 application submitted for Village of Athens. Began discussion of goals and vision statement. Reviewed DWSP2 Stakeholder Roles and Responsibilities.
3/31/2022	Reviewed, edited and finalized goals list. Discussed plans for drafting a vision statement.
4/21/2022	DWSP2 mapping process presented by NYSDOH.
5/19/2022	Reviewed Hollister Lake Reservoir maps. Formally voted and approved 500ft control area around the reservoir. Finalized vision statement. Discussed next steps and items to investigate before discussing protection strategies.

6/16/2022	NYSDOH provided copies of the maps and potential contaminant sources. NYSDOH began discussions on selecting protection and implementation actions based on these items.
7/25/2022	CAC stakeholders discussed future demand concerns about water usage/loss data that the village has on file. Reviewed potential DWSP2 protection strategies.
8/18/2022	Reviewed the DWSP2 management strategies.
9/15/2022	Discussed the Village's climate change assessment and any potential crossover with DWSP2.
10/20/2022	NYSDOH and CAC stakeholders debriefed their treatment plant tour from 10/13/2022. The group discussed priority rankings for DWSP2 and brainstormed additional stakeholders that could provide input for DWSP2.
11/17/2022	Reviewed the implementation table and discussed final details of the planning process.
4/20/2023	Began review discussions regarding the DWSP2 Plan draft and cost estimates.
5/18/2023	Continued discussing comments and updates for the DWSP2 Plan draft.
7/20/2023	Discussed final changes to the DWSP2 Plan draft and discussed next steps, including state review, creating an executive summary of the report and Plan implementation.

Appendix A.3
Goals and Vision Statement

1.2 Establish Goals and Formulate a Vision
Vision Statement
The Village of Athens, New York, recognizes that the quality and reliability of drinking water is of paramount importance to the health and sustainability of a community. Protecting the source of that water is therefore within the interest of all Village residents. We are committed to dedicating sufficient resources and taking comprehensive action to maintain and improve it for our own lifetimes and for those of generations to come.

Goals	
Goal #1	Inventory, assess and address existing or potential future source water quality issues to protect public health.
Goal #2	Develop and utilize partnerships with Town of Coxsackie and Town of Athens to evaluate current land use and plan for future land use within the Hollister Lake Reservoir watershed. 1) Evaluate possible risk factors that may impact drinking water treatment facility operations. 2) Explore and implement mechanisms for protecting or regulating activities that impact source water quality.
Goal #3	Evaluate future development demands to account for potential population increases.

Appendix A.4
Overview of Water System

Public Water Supply (PWS) Information	
PWS Name:	Village of Athens
PWS ID:	NY1900024
Type of sources identified in the plan:	Surface Water
Name(s) of sources being protected:	Hollister Lake Reservoir
2.1 Develop an Overview of the Water System	
Water system name:	Village of Athens
NYS PWS ID:	NY1900024
Type of water system (e.g. community, non-community, transient, non-transient):	Community
Name of community, or communities, served by system:	Village of Athens and Town of Athens
Population served by the system:	1700
# of service connections:	795
Summary of wells, intakes, infiltration galleries, and/or springs	Hollister Lake Reservoir located on Schoharie Turnpike in the Town of Athens
General treatment information:	Water is pumped to the treatment plant and the water treatment consists of the following processes which begin in the clarifier: 1) coagulation using an alum based product which causes large and small particles to stick together forming what is termed a "floc", these particles are then trapped and removed from the clarifier; 2) filtration then occurs as the water travels through layers of media beds of sand and charcoal; 3) new ultraviolet light technology along with chlorination is used to kill harmful bacteria and other organisms 4) water is then polished in carbon filter tanks and sent to a storage tank where a corrosion inhibitor is added to protect the distribution system piping and household plumbing fixtures from corrosion. The storage capacity at the treatment plant is 100,000 gallons of treated water and a 750,000 gallon storage tank in the Village gives us a combined total storage capacity of 850,000 gallons of water to meet consumer demand and to provide adequate fire protection.
Summary of hydrogeographic setting of drinking water sources including watershed	Hollister Lake is a 14 million gallon surface water supply for the Village of Athens. The impoundment is maintained by an earthen dam on the North Side of the lake.

Water quality summary including any known raw or ambient water quality information, finished water detections, and/or history of maximum contaminant level (MCL) violations:	Raw Water: Turbidity=<5, PH=6.5-7.5, T(deg c)=4-22, Alkalinity=45-85. Finished Water Detected Contaminants: Elevated Total Trihalomethanes (TTHMs-chloroform, bromodichloromethane, dibromochloromethane, and bromoform). TTHMs are a by-product of drinking water chlorination needed to kill harmful organisms. TTHMs are formed when source water contains organic matter. Other Data can be found in Athens Annual Water Quality Report.
Water quantity summary:	The current Water Withdrawal Permit has no expiration date. The Total Permitted Water Withdrawal Capacity is 450,000 GPD, the Average Daily Water Demand is 112,730 GPD, Maximum Daily Water Demand is 345,000 GPD. At the time of this report, the Village water operators are working on calculating Annual Average Water Loss with the town clerk. This report will be updated when that value becomes available.

Appendix A.5
DWSP2 Map Creation

2.2 Prepare a Drinking Water Source Protection Map

Provide a description of established drinking water source protection areas below, including distances and/or time of travel information. In addition, make note of any applicable studies (e.g. Wellhead Protection Plan) or technical assistance that were used to determine each protection area and/or delineation method:

Protection Areas	Description	Delineation Method
Critical Area	500' spatial buffer around GIS layer for Hollister Lake Reservoir Shoreline	Surface water delineation method
Extended Source Water Area	Watershed of Hollister Lake Reservoir delineated at Intake point using USGS StreamStats. https://streamstats.usgs.gov/ss	Surface water delineation method

Below is a list of sources of publicly available data:

URL	Publicly Available Data
https://data.ny.gov/	• Bulk Storage Facilities • Solid Waste Management Facilities • Environmental Remediation Sites • Superfund Sites • Spill Incidents • Oil, Gas and Other Regulated Wells • SPDES Multi-Sector General Permit • Combined Sewer Overflows (CSOs) • Water Withdrawals by Facility • Boat Launch Sites • Inventory & Priority Waterbodies
https://gis.ny.gov/	• State Pollutant Discharge Elimination System • NYS DOT Facilities • NYS Tax Parcels • USGS Digital Raster Graphic Quadrangle • NYS Tax Parcels
https://mrlc.gov/	• NLCD Land Cover
http://opdgig.dos.ny.gov/index.html#/home	• Unconsolidated Aquifers
https://datagateway.nrcs.usda.gov/GDGOrder.aspx	• NRCS Conservation Easement Areas by State
https://www.conservationeasement.us/	• Conservation Easement Areas US
https://datagateway.nrcs.usda.gov/GDGOrder.aspx#	• National Hydrography Dataset 1:24,000
http://www.dec.ny.gov/lands/5374.html	• Mines
https://www.eia.gov/	• Pipelines
https://www.epa.gov/	• TRI Basic Data Files

Provide a description of the map layers created or acquired to create the source water protection map below:

Layer	Date created or acquired	Description
Bedrock Geology	4/3/2023	Rock units constituting the bedrock lithology of New York State.
Critical Area	4/28/2022	Created shapefile with Critical Area around source water (Hollister Lake Reservoir).
Extended Source Water Area	4/28/2022	Created shapefile of the source water watershed (Hollister Lake Reservoir, delineated at the intake point using USGS StreamStats.
Intake	2/28/2022	Village of Athens source water intake point provided by NYSDOH. Location was removed from public facing maps for security purposes.

Municipal Boundaries	4/28/2022	Boundary polygons for Cities, Towns, Villages, Indian Territories and Incorporated Areas in New York State.
Natural Gas Pipelines	4/28/2022	Major natural gas transmission lines in the U.S., including interstate, intrastate and gathering lines.
Potential Contaminant Sources	4/28/2022	Developed for this project through assistance from Village of Athens CAC member: Kyle Winslow. Data accessed through GIS Clearinghouse.
Private Sewer Use (parcel)	3/10/2023	Created in GIS by coding and symbolizing NYS Tax Parcel data on the "SEWER_DESC" variable (description of sewer type employed within the property, from possible values of: PRIVATE, COMM\PUBLIC (common or public), NONE or UNKNOWN.
Private Sewer Use (parcel centroid)	3/10/2023	Created by coding and symbolizing NYS Tax Parcel data (Point Centroids) on the "SEWER_DESC" variable (description of sewer type employed within the property, from possible values of: PRIVATE, COMM\PUBLIC (common or public), NONE or UNKNOWN. Point features added to highlight the "singularity" or dot density, of one point per parcel (due to variable parcel sizes).
Regional Land Use	3/10/2023	Created by coding and symbolizing NYS Tax Parcel data, on "Property Type Classification Codes", to illustrate the assigned uses of individual property parcel, and their potential impact on water quality, across the landscape.
Soil Hydrologic Groups	2/15/2023	Drawn from ESRI ONLINE data library, features illustrate the USDA 7 class SSURGO soils for the region, reflecting the respective soil units rate of runoff or conversely the ability to absorb water during a rainfall event.
Steep Slopes	2/15/2023	Created for the project through a surficial slope model, calculating percent % slope categories, upon a 30m resolution Digital Elevation Model (DEM).
Surface Geology	4/3/2023	Rock units constituting the surficial geology (overlaying bedrock) of New York State.
Surface Hydrology (lakes, streams)	4/28/2022	Surface water features (rivers, streams, lakes, ponds) of New York State, from the USGS National Hydrological Data Plus (NHD+) program.
Tax Parcels	2/15/2023	Tax parcel property data drawn from NYS GIS Clearinghouse of publicly available geospatial features.
USGS Topographic Map	4/28/2022	Drawn from ESRI ONLINE data library, this base map composition from the USGS contains a wide range of useful spatial and contextual features relevant to identifying locations and landscape patterns.

Appendix A.6

Potential Contaminant Source Inventory

2.3 Create a Potential Contaminant Source Inventory								
Potential Source Category	**Potential Source**	**Facility**	**Contaminant(s) of Concern**	**Protection Area(s) Impacted**	**Status**	**Relevant Information**	**Address**	**Identification**
Waste Management and Disposal	Hazardous Waste Management Facility	Former Potic Mountain Dump Site	Chemical, Biological	Extended Source Water Area	Closed	State Superfund Program. Marked "potential future investigation site" by DEC, but "no further action" by NYS. https://www.dec.ny.gov/cfmx/extapps/derexternal/haz/details.cfm	High Hill Rd, Coxsackie, NY 12051	Site 420025
Bulk Storage	Chemical Bulk Storage	Village of Athens Water Treatment Plant	Chemical	Critical Area	Current/ Active	At Village of Athens water treatment plant, directly adjacent to Hollister Lake. Chemicals used for water treatment.	1399 Schoharie Turnpike, Catskill, NY 12414	Unique ID: 4-000007
Conveyances and Pipelines	Pipeline	Iroquois Gas Corp	Chemical (Natural Gas)	Critical Area, Extended Source Water Area	Current/ Active	Traverses both Critical Area and Extended Source Water Area. https://www.eia.gov/naturalgas/archive/analysis_publications/ngpipeline/northeast.html#companies	NA	NA
Transportation Corridor	Transportation Corridor	Schoharie Turnpike	Chemical, Physical (Deicing Materials / Spills)	Critical Area	Future	Six local roads within the Critical Area, probably negligible source of salt runoff. No known impact. Should be monitored in the future.	NA	NA
Residential Sources	Onsite Septic Systems	NA	Chemical, Biological, Physical	Critical Area, Extended Source Water Area	Future	Estimating through geospatial assessment of contributing areas. No known impact. Should be monitored in the future.	NA	NA
Agricultural and Residential Sources	Agricultural Activity; Lawn and Garden Chemicals	NA	Chemical, Physical	Critical Area, Extended Source Water Area	Future	Estimating through geospatial assessment of contributing areas. No known impact. Should be monitored in the future.	NA	NA
Other	Algae/Invasive Species	NA	Biological, Physical	Critical Area	Current	Unknown vegetation impacting taste and odor.	NA	NA

Appendix A.7
Implementation Timeline

Priority Issue	Priority Level	Targeted Potential Contaminant Source(s)	Goal	Protection and/or Management Methods	Potential Cost	Potential Funding Sources	Project Partnerships Needed	Implementation Timing
Excess Vegetation	High	Possible aquatic invasive species, excess vegetation, algae	Reduce impact of excess vegetation/algae growth on water quality.	Identify vegetation and algae species present. Consider NYSDEC Invasive Species Grant Program. Assist operators as necessary in considering dredging, harvesting and herbicide treatment. Address source of vegetation and algae concerns through remaining project profiles (i.e., nutrient loading).	See Appendix C Footnote 1	NYSDEC Invasive Species Grant Program, EPA Clean Water State Revolving Fund, NYSDEC Hudson River Estuary Grants for Local Stewardship Planning	Village of Athens CAC, Water Operators	Year 2 or longer (Ongoing). Start date: October 2023
Future Development in Critical and Extended Source Water Areas	Medium	Future potential contaminant sources and nutrient loading.	Develop and utilize partnerships to evaluate current land use and plan for future land use. Protect the Critical Area from future potential contaminants and nutrient loading.	Coordinate with the Towns of Athens and Coxsackie to ensure protections of Hollister Lake through current zoning. Anticipate future land use plans. Consider land acquisition or conservation easements for high priority parcels.	$0.00	NYSDEC Water Quality Improvement Project, NYSDOS Smart Growth Comprehensive Grant Program	Village of Athens CAC, Town of Athens Zoning Board, Town of Coxsackie Zoning Board, Athens Code Enforcement Officers	Year 1-2 (Ongoing). Start date: January 2024
Outreach and Education: Agricultural Activities	Medium	Nutrient loading (Fertilizer, herbicides, pesticides)	Mitigate overland flow of excess nutrients.	Outreach and Education to encourage best management practices and increase awareness of agricultural activities within the watershed.	$350.00	EPA Environmental Education Grants, Greene County SWCD, Cornell Corporative Extension Columbia Greene Counties	Village of Athens CAC, Town of Athens, Town of Coxsackie, Greene County SWCD, Cornel corporative Extension Columbia Greene Counties	Year 1-3. (Once initiated, ongoing). Start date: April 2024
Outreach and Education: Lawn and Garden Chemicals	Medium	Nutrient loading (Fertilizer, herbicides, pesticides)	Mitigate overland flow of excess nutrients.	Outreach and Education to encourage best management practices and increase awareness of lawn and garden activities within the watershed.	$350.00	EPA Environmental Education Grants, Greene County SWCD, Cornell Corporative Extension Columbia Greene Counties	Village of Athens CAC, Town of Athens, Town of Coxsackie, Greene County SWCD, Cornel corporative Extension Columbia Greene Counties	Year 1-3. (Once initiated, ongoing). Start date: April 2024

Priority Issue	Priority Level	Targeted Potential Contaminant Source(s)	Goal	Protection and/or Management Methods	Potential Cost	Potential Funding Sources	Project Partnerships Needed	Implementation Timing
Outreach and Education: Private Septic Systems	Medium	Nutrient Loading (Private Septic Systems)	Reduce amount of nutrients from failing septic systems from entering the waterbody. Increase awareness of watershed area through outreach and education.	Outreach and education to encourage residential septic maintenance and best management practices.	$350.00	NYSDEC Water Quality Improvement Program, NYSDEC Non-Agriculture Nonpoint Source Planning Grant, EPA Environmental Education Grant	Village of Athens CAC, Town of Athens, Town of Coxsackie, Greene County SWCD	Year 1-3 (Once initiated, ongoing). Start date: April 2024
Future drought due to climate change	Medium-Low	Future drought	Maintain resilience to climate change. Increase awareness of drought, climate change, and water conservation practices through outreach and education.	Continue to monitor over time. Communicate about potential changes in Emergency Response Plan/Vulnerability Assessments. Outreach and education on water conservation practices.	$350.00	EPA Environmental Education Grants, NYSDEC Climate Smart Community Grant, United States Bureau of reclamation WaterSMART Drought Response Program	Village of Athens CAC, Water Operators, Greene County SWCD, CCE Columbia and Green Counties, NYSDOH	Year 1-3 (Ongoing). Start date: October 2024
Management of Regulated Potential Contaminant Sources	Low	Hazardous Waste Site	To enhance communication with specific facilities or DEC staff that work with these regulated facilities to understand the nature of the threat as associated risk and response efforts.	Review permit information and contaminant concerns.	$0.00	Not applicable	Village of Athens CAC, NYSDEC Division of Material Management, Oneonta District Health Office	Year 1. Start date: September 2023
	Low	Oil and Gas Pipeline		Review pipeline information. Increase communication as necessary.	$0.00	Not applicable	Village of Athens CAC, US DOT Community Liaison	Year 1. Start date: November 2023
	Low	Chemical Bulk Storage Facility		Maintain communication among Village of Athens Water Operations staff, NYS DEC Bulk Storage Program, and NYSDOH regarding chemical bulk	Not Applicable	Not applicable	Village of Athens CAC, NYSDEC Bulk Storage Program, NYSDOH Oneonta District Health	Year 1 (Ongoing). Start date: November 2023

				storage at the treatment plant. Monitor for potential leaks.			Department, Water Operators	
Transportation-Related Runoff and Spill Incidents in Critical Area	Low	Transportation Corridors	Monitor spills and road salt application on Schoharie Turnpike.	Develop communication plan with water/fire/emergency services/highway departments to increase awareness of spills and potential contamination concerns.	$0.00	Not applicable	Village of Athens CAC, Water Dept/Fire Department/Emergency Services, Highway DPW	Year 2 (Ongoing). Start date: November 2024

Appendix A.8
Plan Management Team

4.1 Designate a Plan Management Team	
Name	**Relevant Affiliation(s)**
Dr. Josh Lipsman*	Village of Athens CAC, Village of Athens Trustee
Robert Brunner	Village of Athens CAC
Molly Little	Village of Athens CAC
Maggie Moree	Village of Athens CAC, Ex-Officio Member
Chris Sprague	Village of Athens DPW
Rob Scott	Village of Athens CAC
Leslie Reed	Village of Athens CAC
Joe Myers	Lead Water Operator

*Point of Contact:
Email: jlipsman@athensvillageny.net, CC Village Clerk at clerk@athensvillageny.gov
Phone: Village Clerk - 518-945-1551

Note: At the time of this report, expertise of the CAC/Plan Management Team includes environmental health, local resident perspectives, horticulture/agriculture, outreach, local planning, and local zoning laws.

Use the table below to document the Plan Management strategy for keeping your DWSP2 Plan up to date:

Plan Management Summary	
Item	**Status**
Designate a Plan Management Team	Complete
Determine progress report frequency: 1 year	Complete
Share progress reports	In Progress
Review and share the plan	Complete
Verification from NYSDOH and NYSDEC for completeness	Complete
Create a revision schedule	In Progress

Use the table below to track updates and revisions to the DWSP2 Plan. Use the notes section to detail changes made in each update and/or revision:

Update/Revision Tracker		
Report	**Date**	**Notes**
First Report		
Update/Revision 1		
Update/Revision 2		
Update/Revision 3		
Update/Revision 4		
Update/Revision 5		
Update/Revision 6		
Update/Revision 7		
Update/Revision 8		

Appendix B

Project Profiles

The suggested project profiles outlined in this document are meant to be a guide to implement protection and management methods. Each project profile outlines the priority issue, targeted potential contaminant sources (PCSs) and threats, goals and priorities for the project, potential costs and funding sources, potential partnerships for project success, and specific implementation steps.

Detailed cost estimates are included in Appendix C. Please note that potential funding sources are not guaranteed. It is the responsibility of the Village to determine eligibility and apply for any potential funding source listed in this report.

Project schedules and timelines are incorporated into each implementation project. This includes an approximate schedule for when to begin work for each action, assigning to Year 1 those actions that may be most urgent or may require less up-front investment of time or funding. Actions assigned to Years 2 and beyond are either less urgently needed or may require more budget or thought to implement. Many of the actions on the implementation timeline should be refreshed annually, particularly those including coordination between local officials and project partners to ensure persisting potential contaminant source awareness or ongoing education practices.

Although all issues listed in the plan are critical to the plan's success, the project profiles are listed in order of highest to lowest priority for the Village of Athens.

Project Profile 1: Vegetation and Algae DWSP2 Plan Implementation Village of Athens, NY	
Dense vegetation, algae, and possible aquatic invasive species growth impacts water quality in Hollister Lake Reservoir during the summer months. The Village of Athens operations staff report that excess vegetation growth impacts waters taste and odor. The buildup of organic plant material also leads to increased sedimentation. Vegetation and algae growth is likely due to nutrient loading. Treatment of vegetation and algal growth should be completed concurrently with other implementation strategies that target nutrient loading (i.e. best management practices, outreach). This will reduce the likelihood of vegetation impacts from persisting in the future.	
Priority Issue:	**Excess vegetation and algae**
Priority Level:	High
Targeted Potential Contaminant Source(s):	Algae, excess vegetation, and possible aquatic invasive species
Goal:	Reduce impact of excess vegetation/algae growth on water quality
Protection Method and/or Management Method:	Identify vegetation species. Consider treatment methods. Consider concurrent methods to address the root cause of excess vegetation and algae.
Potential Costs:	Estimated cost: See Appendix C, Footnote 1 for various options. Cost estimate reflects possible need for treatment or dredging. Effort hours for increasing communication and developing a monitoring and reporting system.
Potential Funding Sources:	• NYSDEC Invasive Species Grant Program (Click Link) • NYSDEC Hudson River Estuary Grants for Local Stewardship Planning (Click Link) • EPA Clean Water State Revolving Fund (Click Link)
Project Partnerships Needed:	• Village of Athens CAC • Water Operators
Implementation Timing:	Begin Year 2 or longer. Once initiated, ongoing.
Implementation Start Date:	October 2023
Step-by-step Process:	
Step 1:	Communicate with Village of Athens's Operations staff about current progress and needs.
	Develop a plan to work concurrently on projects that target the root cause of excess vegetation and algae (nutrient loading). Refer to remaining project profiles.

	Continue consideration of possible dredging, harvesting and herbicide treatment. Consult with professionals and conduct research to decide on best treatment method.
Step 2:	Partner with appropriate agencies (i.e. NYSDEC) to identify areas of concern where vegetation is impacting water quality and additional sampling needs.
Step 3:	Explore funding options for treatment. Consider possibility of regular budget item for treatment costs. Pursue NYSDEC Invasive Species Grant Program if applicable.
Step 4:	Implement mitigation options (e.g. dredging, harvesting and herbicide treatment).
Step 5:	Create a monitoring and reporting system for ongoing efforts to mitigate excess vegetation.

Project Profile 2: Future Development DWSP2 Plan Implementation Village of Athens, NY	
New development associated with potential contaminant sources could occur in sensitive areas of the Critical and Extended Source Water Areas with little consideration to the source water or best management practices. Potential contaminants may include nutrients, sediment, lawn and garden chemicals, salt/chlorides, unregulated/newly regulated contaminants, among others.	
Priority Issue:	**Future development within the Critical and Extended Source Water Areas**
Priority Level:	Medium
Targeted Potential Contaminant Source(s):	Future potential contaminant sources
Goal:	Develop and utilize partnerships with Town of Coxsackie and Town of Athens to evaluate current land use and plan for future land use surrounding Hollister Lake Reservoir. Protect the Critical and Extended Source Water Areas from future potential contaminants and nutrient loading.
Protection Method and/or Management Method:	Coordinate with the Town of Athens and Town of Coxsackie to ensure protections of Hollister Lake Reservoir through current zoning overlay district. Anticipate future land use plans.
Potential Costs:	Estimated Cost: $0.00 Effort hours to meet with potential partnerships and subsequent progress meetings. Effort hours to research potential future issues.
Potential Funding Sources:	• NYSDEC Water Quality Improvement Project (WQIP) (Click Link) • NYSDOS Smart Growth Comprehensive Grant Program (Click Link)
Project Partnerships Needed:	• Village of Athens CAC • Athens Code Enforcement Officers • Town of Athens Zoning Board • Town of Coxsackie Zoning Board
Implementation Timing:	Begin Year 1-2, ongoing once initiated
Implementation Start Date:	January 2024
Step-by-step Process:	
Step 1:	Increase communication with Towns of Athens and Coxsackie Zoning Boards to better understand Hollister Lake Reservoir watershed overlay zone and site plan reviews. Develop a communication plan. • Identify key contacts in each municipality • Review protocols for site permit reviews within the Hollister Lake Reservoir overlay zone. • Ensure review staff are trained to implement protocols that are in place to protect Hollister Lake Reservoir watershed.

	• Encourage the Towns of Athens and Coxsackie to consult with the Village of Athens with any development proposals within the watershed overlay zone.
Step 2:	Monitor future development. Potential for new development on buildable properties within the Extended Source Water Area. • Utilize build-out analysis from 2020 Comprehensive Plan to anticipate future development. • Monitor potential population increases.
Step 3:	Educate new and existing landowners on best practices to maintain properties to reduce potential runoff. Refer to Project Profiles related to outreach and education of agriculture, lawn and garden chemicals, and septic system maintenance.
Step 4:	Identify high priority parcels for conservation within the Critical Area. Consider land purchases for conservation easements. Apply for grant funding through WQIP.
Step 5:	Incorporate the DWSP2 Plan into future Comprehensive Plan updates to ensure that zoning and land use policies consider source water protection. • Identify key initiatives within the DWSP2 Plan where policies can be referenced in the Comprehensive Plan. • Incorporate policies of the DWSP2 Plan into the Comprehensive Plan where applicable • Present the plan to appropriate boards. • Schedule and hold a public informational meeting with interested agencies and the public. • Ensure new DWSP2 protection methods and other policies proposed in the adopted comprehensive plan are implemented.
Step 6:	New York State Watershed Rules and Regulations (WRR) • Ensure Towns of Athens and Coxsackie have copies of WRR (LINK) • Consider ways to enforce WRR.

Project Profile 3: Outreach and Education – Agricultural Activities DWSP2 Plan Implementation Village of Athens, NY	
Overland flow from activities on nearby agricultural land can bring excess nutrients into the Hollister Lake Reservoir.	
Priority Issue:	**Outreach and education: Agricultural activities**
Priority Level:	Medium
Targeted Potential Contaminant Source(s) :	Fertilizer, herbicides, nutrients, pesticides
Goals:	Reduce the amount of fertilizer applied and mitigate overland flow into the waterbody by increasing awareness of best practices for landowners. Maintain low levels of fertilizer, herbicides, nutrients, and pesticides reaching Hollister Lake Reservoir.
Protection Method and/or Management Method:	Outreach and education to educate farm owners on proper fertilizer, herbicide, and pesticide application.
Potential Costs:	Estimated Cost: $350.00 Effort hours to research best management practices. Effort hours to conduct the outreach. Potential material costs for outreach and education materials.
Potential Funding Sources:	• EPA Environmental Education Grant (Click Link) • Greene County SWCD (Click Link) • Cornell Cooperative Extension Columbia and Greene Counties (Click Link)
Project Partnerships Needed:	• Village of Athens CAC • Town of Athens • Town of Coxsackie • Greene County SWCD • Cornell Cooperative Extension Columbia and Greene Counties
Implementation Timing:	Year 1-3, ongoing once initiated
Implementation Start Date:	April 2024
Step-by-step Process:	
Step 1:	Gather information on previous or current concerns, current efforts to reach out, and current community knowledge. Consider combining outreach and education efforts from each project profile to consolidate and streamline efforts (e.g. consider combining efforts for septic maintenance and lawn/garden chemicals outreach if targeting the same audience).

Step 2:	Research best management practices for applying fertilizers, herbicides, and pesticides. Look into pre-existing materials that can be distributed or used as a reference (EPA, State, DEC Publications etc.). Highlight the connection between water quality and agricultural activities. Refer to the Outreach and Education highlight in the 'Protection and Management Methods' section of this report.
Step 3:	Identify gaps in knowledge or action based on best management practices for agricultural activities.
Step 4:	Partner with the Town of Athens and Town of Coxsackie to discuss methods to reach farm owners in Hollister Lake Reservoir Critical and Extended Source Water Areas.
Step 5:	Determine which communication channel(s) would be most effective to reach farmers in the Towns of Athens and Coxsackie located within the Hollister Lake Reservoir watershed. These may include social media, mailings, newspaper postings, websites, email lists, public forum or workshops, event outreach, etc. Consider sharing information through Greene County SWCD and Cornell Cooperative Extension channels.
Step 6:	Present communications in a simple, informative manner to farm owners in the Towns of Athens and Coxsackie.
Step 7:	Provide extended efforts to reach out and educate the public. Keep up with all forms of communication and monitor feedback received. Monitor for new agricultural activity in the area and reach out accordingly.

Project Profile 4: Outreach and Education - Residential DWSP2 Plan Implementation Village of Athens, NY	
Overland flow from activities on nearby residential land can bring excess nutrients into the Hollister Lake Reservoir.	
Priority Issue:	**Outreach and education: Lawn and garden chemicals**
Priority Level:	Medium
Targeted Potential Contaminant Source(s) :	Fertilizer, herbicides, nutrients, pesticides
Goals:	Reduce the amount of fertilizer applied and mitigate overland flow into the waterbody by increasing awareness of best practices for landowners. Maintain low levels of fertilizer, herbicides, nutrients, and pesticides reaching Hollister Lake Reservoir.
Protection Method and/or Management Method:	Outreach and education to educate landowners on proper fertilizer, herbicide, and pesticide application.
Potential Costs:	Estimated Cost: $350.00 Effort hours to research best management practices. Effort hours to conduct the outreach. Potential material costs for outreach and education materials.
Potential Funding Sources:	• EPA Environmental Education Grant (Click Link) • Greene County SWCD (Click Link) • Cornell Cooperative Extension Columbia and Greene Counties (Click Link)
Project Partnerships Needed:	• Village of Athens CAC • Town of Athens • Town of Coxsackie • Greene County SWCD • Cornell Cooperative Extension Columbia and Greene Counties
Implementation Timing:	Year 1-3, ongoing once initiated
Implementation Start Date:	April 2024
Step-by-step Process:	
Step 1:	Gather information on previous or current concerns, current efforts to reach out, and current community knowledge. Consider combining outreach and education efforts from each project profile to consolidate and streamline efforts (e.g. consider combining efforts for septic maintenance and lawn/garden chemicals outreach if targeting the same audience).

Step 2:	Research best management practices for applying fertilizers, herbicides, and pesticides. Look into pre-existing materials that can be distributed or used as a reference (EPA, State, DEC Publications etc.). Highlight the connection between water quality and lawn and garden activities. Refer to the Outreach and Education highlight in the 'Protection and Management Methods' section of this report.
Step 3:	Identify gaps in knowledge or action based on best management practices for lawn and garden chemical application.
Step 4:	Partner with the Town of Athens and Town of Coxsackie to discuss methods to reach landowners in Hollister Lake Reservoir Critical and Extended Source Water Areas.
Step 5:	Determine which communication channel(s) would be most effective to reach residents in the Towns of Athens and Coxsackie located within the Hollister Lake Reservoir watershed. These may include social media, mailings, newspaper postings, websites, email lists, public forum or workshops, event outreach, etc. Consider sharing information through Greene County SWCD and Cornell Cooperative Extension channels.
Step 6:	Present communications in a simple, informative manner to landowners in the Towns of Athens and Coxsackie.
Step 7:	Provide extended efforts to reach out and educate the public. Keep up with all forms of communication and monitor feedback received. Monitor for new landowners in the area and reach out accordingly.
Step 8:	Consider additional enforcement measures as needed (i.e. require pump-out or inspections at certain times).

Project Profile 5: Outreach and Education – Private Septic DWSP2 Plan Implementation Village of Athens, NY	
Biological leaks and spills from private on-site septic systems can enter Hollister Lake Reservoir. Septic system leaks can be a source of E. coli, PFAs, nutrients, pharmaceuticals, etc. At the time of this report, municipalities in Greene County are not eligible for NYS Environmental Facilities Corporation (EFC) Septic System Replacement Fund. Most, if not all, private properties within the Hollister Lake Reservoir watershed are not serviced by public sewer.	
Priority Issue:	**Outreach and education: Private on-site septic systems**
Priority Level:	Medium
Targeted Potential Contaminant Source(s):	Residential sources: Private On-Site Septic Systems.
Goals:	Reduce amount of nutrients from failing septic systems that enter the waterbody.
Protection Method and/or Management Method:	Outreach and education to encourage homeowners on how to properly maintain their septic systems.
Potential Costs:	Estimated Cost: $350.00 Effort hours to research best management practices. Effort hours to conduct the outreach. Potential material costs for outreach and education materials.
Potential Funding Sources:	• EPA Environmental Education Grant (Click Link) • EPA Free Septic Education Materials (Click Link) • NYSDEC Water Quality Improvement Project (Click Link) • NYSDEC Non-Agriculture Nonpoint Source Planning Grant (Click Link)
Project Partnerships Needed:	• Village of Athens CAC • Town of Athens • Town of Coxsackie • Greene County SWCD
Implementation Timing:	Year 1-3, ongoing once initiated
Implementation Start Date:	April 2024
Step-by-step Process:	
Step 1:	Gather information on private septic systems within the Critical Area, including locations, age, current status of owner, and maintenance practices. Gather information on any public sewer systems that residents are serviced by. Consider combining outreach and education efforts from each project profile to consolidate and streamline efforts (e.g. consider combining efforts for septic maintenance and lawn/garden chemicals outreach if targeting the same audience).
Step 2:	Research best management practices to manage septic systems. Look into pre-existing materials that can be distributed or used as a reference (EPA, State, DEC

	Publications, etc.). Highlight the connection between septic system maintenance and water quality in Hollister Lake Reservoir. Refer to the Outreach and Education highlight in the 'Protection and Management Methods' section of this report.
Step 3:	Identify gaps in knowledge or action based on best management practices for septic system maintenance.
Step 4:	Partner with Town of Athens and Town of Coxsackie to discuss methods to reach landowners in the Hollister Lake Reservoir Critical and Extended Source Water Areas.
Step 5:	Determine which communication channel(s) would be most effective to reach residents in the Towns of Athens and Coxsackie located within the Hollister Lake Reservoir watershed. These may include social media, mailings, newspaper postings, websites, email lists, public forum or workshops, event outreach, etc. Consider sharing information through Greene County SWCD channels.
Step 6:	Present communications in a simple, informative manner to landowners in the Towns of Athens and Coxsackie.
Step 7:	Provide extended efforts to reach out and educate the public. Keep up with all forms of communication and monitor feedback received. Monitor for new residential development with septic systems and reach out accordingly.
Step 8:	Stay up to date on potential future eligibility for EFC's Septic Replacement Fund. Greene County is not currently eligible. However, Hollister Lake Reservoir watershed area would greatly benefit from this assistance program.

Project Profile 6: Drought and Climate Change

DWSP2 Plan Implementation Village of Athens, NY

Periods of short-term drought will be more frequent and severe given warmer, less snowy winters, fewer steady rainfalls, and higher evaporation from increased temperatures. These droughts can impact Hollister Lake Reservoir by reducing reservoir recharge and increasing the concentration of nutrients in the reservoir, consequently amplifying the excess vegetation and algae growth impacts on water quality. At the time of this report, the operators check the spillway every day to assess water level. If the water level is 6-8 inches below the spillway, a voluntary water conservation advisory is put into effect. It should also be noted that additional methods in this plan can help reduce the impacts of seasonal drought on water availability and quality (i.e. reducing nutrient loading and runoff)

Priority Issue:	**Future Drought Due to Climate Change**
Priority Level:	Medium-Low
Targeted Potential Contaminant Source(s):	Future drought
Goals:	Maintain resilience to climate change
Protection Method and/or Management Method:	• Monitoring: Continue to monitor water levels and water quality over time • Vulnerability Assessment Updates: Communicate about potential changes in their Emergency Response Plan/Vulnerability Assessments • Outreach and Education: Increase awareness of drought, climate change, and water conservation practices
Potential Costs:	Estimated Cost: $350.00 Effort hours to monitor. Effort hours to communicate and update emergency response plans/vulnerability assessments as necessary. Effort hours to research best management practices. Effort hours to conduct the outreach. Potential material costs for outreach and education materials.
Potential Funding Sources:	Outreach • EPA Environmental Education Grant (Click Link) • NYSDEC Climate Smart Communities Grant Program (Click Link) • Bureau of Reclamation WaterSMART Drought Response Program (Click Link) • Greene County SWCD (Click Link) • Cornell Cooperative Extension Columbia and Greene Counties (Click Link)
Project Partnerships Needed:	• Village of Athens CAC • Village of Athens Water Operations Staff • Greene County SWCD • Cornell Cooperative Extension Columbia and Greene Counties • NYSDOH
Implementation Timing:	Monitoring • Year 2-3, ongoing once initiated Vulnerability Assessment Updates • Year 2-3, 1 year duration to develop, ongoing annual updates

	Education and Outreach • Year 2-3, ongoing once initiated
Implementation Start Date:	October 2024
Step-by-step Process:	
Monitoring and Vulnerability Assessment Updates	
Step 1:	Monitor water levels and water quality over time.
Step 2:	Communicate with Village of Athens Water Operations staff regarding drought conditions over the summer months.
Step 3:	Consider establishing a long-term method to track drought occurrences and impacts over time. Consider need for additional measurement methods (e.g., gauging device) in the long-term.
Step 4:	Assess need to update Emergency Response Plan/Vulnerability Assessments to account for future drought impacts and water use restrictions. Contact NYS NYSDOH to be paired with a technical assistance provider for Emergency Response Plan/Vulnerability Assessments for the water system.
Step 5:	Consider need for incentivizing water conservation to residents during drought conditions (e.g. encouraging use of water-conserving plumbing fixtures and practices in village-owned properties).
Outreach and Education	
Step 1:	Gather information prior or current concerns, current efforts to reach out and current community knowledge. Refer to the Outreach and Education highlight in the 'Protection and Management Methods' section of this report.
Step 2:	Research best management practices (BMPs) for water users to conserve water during drought, including best times to engage in water-intensive activities (e.g. running washing machines, watering lawns, washing cars).
Step 3:	Identify gaps in knowledge or action based on BMPs for water conservation.
Step 4:	Look into pre-existing materials that can be distributed or used as a reference (EPA, State, DEC Publications, etc.). Refer to the Outreach and Education highlight in the 'Protection and Management Methods' section of this report.
Step 5:	Determine what communication channel would be most effective for the Village. This may include social media outreach, website postings, informational mailings, newspaper postings, public meetings and/or workshops, event outreach.
Step 6:	Present communications in a simple, informative manner to water users in the Village.
Step 7:	Provide extended efforts to reach out and educate the public. Keep up with all forms of communication and monitor feedback received. Monitor for new residents in the area and reach out accordingly.

Project Profile 7: Hazardous Waste Management Facility DWSP2 Plan Implementation Village of Athens, NY	
Contaminants from leachate or other sources from a waste management and disposal site (such as a Hazardous Waste Management Facility) could impact water quality and increase the need for treatment. There is one hazardous waste management facility in the Hollister Lake Reservoir watershed.	
Priority Issue:	**Management of Regulated Potential Contaminant Sources: Hazardous Waste Management Facility**
Priority Level:	Low
Targeted Potential Contaminant or Stressor Source(s):	Hazardous Waste Management Facility
Goals:	To enhance communication with the regulated facility or NYSDEC staff that work with the regulated facility to understand the nature of the threat as associated risk and response efforts.
Protection Method and/or Management Method:	Review permit information and potential contaminant concerns. Communicate with appropriate entities.
Potential Costs:	Estimated cost: $0.00 Effort hours for communicating with responsible parties. Effort hours for monitoring.
Potential Funding Sources:	Not applicable
Project Partnerships Needed:	• Village of Athens CAC • NYSDEC Division of Material Management • Oneonta District Health Office
Implementation Timing:	Year 1, ongoing annual review of permit
Implementation Start Date:	September 2023
Step-by-step Process:	
Step 1:	Request a copy of the facility permit from NYS DEC's Division of Material Management Regional Office. The contact number for Region 4 (Greene County) is (518) 357-2243.
Step 2:	Check if the permit is current and inform NYS DEC's Division of Material Management if you know any discrepancy with the owner and/or emergency contact information.

Step 3:	Request a meeting with the Regional Material Management Engineer that has jurisdiction over the facility. The purpose of the meeting is to discuss any violations at the facility that could impact the Hollister Lake Reservoir drinking water supply and to understand the contaminants of concerns related to the facility. Consider asking the following questions: • Is there a history of violations? If yes, list violation and how it has been addressed. • What is the age of the facility? • What equipment is required by the facility? • Has equipment been properly maintained and/or upgraded? • Are contaminant(s) stored and/or disposed correctly? • What is the quantity of contaminant(s) being handled, stored and/or discharged? • What is the toxicity of contaminant(s)? • What management practices are required by the facility? • Are best management practices being implemented? If yes, to what extent? Are they being monitored and maintained? • Is the potential contaminant source identified in other watershed-based management plans (e.g. TMDL, 9E)? If yes, how is it being addressed?
Step 4:	Consider working with the local health department (Oneonta District Health Office) if interested in developing a raw water and/or ambient water sampling plan for contaminants of concern.
Step 5:	Report any detection of the contaminants of concern to the local health department (Oneonta District Health Office) and work with them for appropriate response.

Project Profile 8: Gas Pipeline DWSP2 Plan Implementation Village of Athens, NY	
Gas pipeline crossings pose a risk of spills and leaks. There is one pipeline located within the Critical Area just south of Hollister Lake Reservoir.	
Priority Issue:	**Management of Regulated Potential Contaminant Sources: Gas Pipeline**
Priority Level:	Low
Targeted Potential Contaminant Source(s):	Gas Pipeline
Goals:	Enhance communication with specific facilities or US DOT staff that work with these regulated facilities to understand associated risks and response efforts. Prevent spills and leaks from the gas pipeline.
Protection Method and/or Management Method:	Review pipeline information. Communicate with US DOT Community Liaisons as necessary. Increase awareness of potential spill concerns and preventative measures in place to prevent impact on Hollister Lake Reservoir.
Potential Costs:	Estimated Cost: $0.00 Effort hours to meet with pipeline owners and/or regulatory agencies and conduct site visits.
Potential Funding Sources:	Not applicable
Project Partnerships Needed:	• Village of Athens CAC • USDOT Community Liaison • Village of Athens • Town of Athens • Property owners (where pipeline crossing overlaps with private properties)
Implementation Timing:	Year 1, ongoing annual review of permit
Implementation Start Date:	November 2023
Step-by-step Process:	
Step 1:	Identify areas of concern for pipeline leaks or breaks within the Critical Area of Hollister Lake Reservoir. Discuss with US DOT Community Liaisons to better understand current conditions and permits. Contact Information: US DOT Community Liaison PHMSA: Stakeholder Communications: Community Liaison Services (dot.gov) (LINK) (US DOT, Pipeline and Hazardous Materials Safety Administration, Search on: “Community Liaison Services”).

Step 2:	Partner with NYS DEC and companies that own the pipeline and the land surrounding areas of concern. Conduct a site visit to areas of concern and assess current conditions as necessary.
Step 3:	Review annual reports for inspection planning. Identify preventative measures that can be taken to prevent a leak or spill. Anticipate impacts and potential risks. Take note of exposed pipes.
Step 4:	Work with appropriate parties to implement spill prevention measures as needed.
Step 5:	Monitor conditions and act appropriately if issues arise.

Project Profile 9: Chemical Bulk Storage

DWSP2 Plan Implementation Village of Athens, NY

Chemical leaks and spills stored in aboveground or underground bulk storage tanks directly enter Hollister Lake Reservoir. Contamination of the water source could necessitate increased treatment/costs and environmental damage. The only chemical bulk storage facility near Hollister Lake Reservoir is located at the treatment plant and chemicals are used for standard treatment of the Village's drinking water. Village of Athens water operations staff are required to maintain storage and safety standards with treatment chemicals according to state and federal regulations.

Priority Issue:	**Management of Regulated Potential Contaminant Sources: Chemical Bulk Storage**
Priority Level:	Low
Targeted Potential Contaminant Source(s):	Chemical Bulk Storage Facility
Goals:	Ensure chemical bulk storage is properly maintained at the Village of Athens water treatment plant to reduce the risk of spill incidents.
Protection Method and/or Management Method:	Maintain communication among Village of Athens Water Operations staff, NYSDEC Bulk Storage Program, and NYSDOH regarding chemical bulk storage at the treatment plant. Monitor for potential leaks.
Potential Costs:	Estimated cost: $0.00 Effort hours for monitoring and communicating with responsible parties.
Potential Funding Sources:	Not applicable
Project Partnerships Needed:	• Village of Athens CAC • NYSDEC Bulk Storage Program • NYSDOH Oneonta District Office • Village of Athens Water Operations staff
Implementation Timing:	Year 1, ongoing
Implementation Start Date:	November 2023
Step-by-step Process:	
Step 1:	The Village and their Water Operators should maintain an active role in: • Monitoring chemical storage tanks for potential problems before a major issue occurs (i.e. small drips) • Ensuring bulk storage regulation/permit condition requirements are being met • Maintaining communication with NYSDOH Oneonta District staff and NYS DEC Bulk Storage Program staff Note that NYSDOH reviews chemical storage and spill containment (if any) during regular sanitary survey inspections. They will provide general guidance regarding routine chemical bulk storage tank monitoring and periodic replacement of components. NYS DEC should be contacted to discuss permitting and specific bulk storage regulatory requirements.

Project Profile 10: Transportation-Related Runoff and Spill Incidents

DWSP2 Plan Implementation Village of Athens, NY

Chemical, physical, or biological spills directly entering the waterbody from vehicles using transportation corridors can pose risk to water quality. Deicing materials (including salt) can also directly enter the waterbody from vehicles spreading the materials and vehicles that transport (tires, frame, etc.) as they traverse the corridor. Schoharie Turnpike is located directly north of Hollister Lake Reservoir.

Priority Issue:	**Transportation Related-Runoff and Spill Incidents in Critical Area**
Priority Level:	Low
Targeted Potential Contaminant Source(s):	Transportation Corridors
Goals:	Reduce the likelihood of spills on Schoharie Turnpike. Ensure the amount of deicing materials entering the reservoir remains low.
Protection Method and/or Management Method:	Communicate with Department of Public Works (DPW) regarding deicing material usage near the reservoir. Create and/or update emergency response plans for transportation-related spills.
Potential Costs:	Estimated Cost: $0.00 Effort hours for communicating with responsible parties. Effort hours for monitoring.
Potential Funding Sources:	Not applicable
Project Partnerships Needed:	• Village of Athens CAC • Department of Public Works
Implementation Timing:	Begin Year 2, ongoing
Implementation Start Date:	November 2024
Step-by-step Process:	
Step 1:	Reach out to the Village/Town of Athens DPW or responsible party for Schoharie Turnpike to establish a relationship and gain information on current practices (i.e. application of de-icing materials, monitoring spills).
Step 2:	Ensure awareness of roadway best management practices and understanding emergency response plans in case of spills. Contact NYSDOH about technical assistance for updating water system emergency response plans and vulnerability assessments.
Step 3:	Develop a communication plan to increase correspondence among Village, Water Operators, Fire Department/Emergency Services regarding spills in the Hollister Lake Watershed. Monitor and track spills on sections of Schoharie Turnpike that overlap with the Hollister Lake Reservoir Critical Area and Extended Source Water Area. Consider speed limit reduction near reservoir.
Step 4:	Consider reporting other types of spills or emergency events (i.e. large house fires) that occur within the watershed to the water operators via phone calls (e.g., County emergency services leave a voicemail for water operators for awareness.

Appendix C
Cost Estimates

Preliminary Cost Estimates

Note: These estimates are based on an opinion of time requirement and transactional costs. Dependent on emerging needs or altered priorities, these could change. It is recommended that dedicated staff are designated to assist with these efforts, and it is not assumed that consultants will be hired to lead these efforts. The wage rate is based on one staff person with a salary of $77,000, including a 75% increase for staff benefits, overhead costs, etc. This cost estimate is based off of occupational wage rates estimated by NYS Department of Labor in Q1 2021 dollars for an average environmental scientist. All transactional costs are preliminary and subject to change greatly; THIS IS NOT INTENDED TO BE A FINAL EXACT ESTIMATE. For projects beyond the scope of internal resources that require contractual support, costs will be higher; excepted range is 30-70% increase from base estimates. Please note that many efforts across various projects can be combined to save costs. For the purposes of this estimate, each project is estimated individually. It is likely that actual costs will be lower given that efforts for steps like education and outreach are combined.

Project Profile	Priority Issue	Goal	Protection/Management Method	Task Requirements, for either entire assignment or per year (indicate which)		Monthly Hour Requirements	Monthly Hours Required (Total per year)	Labor Cost per Hour (NYSDOL Wages)	Approximate Transactional Costs (Materials, Construction)	Total Cost	Notes
1	Excess Vegetation/Algae Growth	Reduce impact of excess vegetation/algae growth on water quality	Communicate about sampling, treatment methods	Meetings	One time effort, possible follow up needed.	1	1	$0.00	$0.00	$0.00	No labor cost due to the volunteer nature of the CAC/Plan Management Team.
			Treatment of reservoir (dredging, harvesting and herbicide treatment)	Meetings, site visits, application of treatment, monitoring.	Annual, ongoing. Efforts concentrated in 6 months during spring/summer.	See Footnote 1 for list of cost options					Treatment should be repeated each year to be effective. Please refer to Footnote 1 for a list of options the Village is considering for treatment. At the time of this report, the Village is actively discussing costs and weighing their options for treatment.
2	Future Development in Reservoir Critical and Extended Source Water Areas	Develop and utilize partnerships with Town of Coxsackie and Town of Athens to evaluate current land use and plan for future land use surrounding Hollister Lake Reservoir. Protect the Critical and Extended Source Water Areas from future potential contaminants.	Coordinate with the Towns of Athens and Coxsackie to ensure protections of Hollister Lake through current zoning.	Meetings, monitoring, site visits if necessary.	Annual, ongoing.	1	12	$0.00	$0.00	$0.00	No labor cost due to the volunteer nature of the CAC/ Plan Management Team.
3	Outreach and Education	Mitigate overland flow of excess nutrients. Increase awareness of watershed area through outreach and education.	Outreach and Education to encourage best management practices and increase awareness of agricultural activities within the watershed.	Meetings, material development, community event engagement, surveying, grant applications	Annual, ongoing.	1	12	$0.00	$350.00	$350.00	No labor cost due to the volunteer nature of the CAC/ Plan Management Team. Possibility of templates and assistance from TA provider.
4			Outreach and Education to encourage best management practices and increase awareness of lawn and garden activities within the watershed.		Annual, ongoing.	1	12	$0.00	$350.00	$350.00	
5		Reduce amount of nutrients from failing septic systems from entering the waterbody. Increase awareness of watershed area through outreach and education.	Outreach and education to encourage residential septic maintenance and best management practices.		Annual, ongoing.	1	12	$0.00	$350.00	$350.00	
6	Future Drought Due to Climate Change	Maintain resilience to climate change. Increase awareness of drought, climate change, and water conservation practices through outreach and education.	Continue to monitor over time.	Tracking and monitoring reservoir levels.	Annual, ongoing. Efforts concentrated in summer months.	1	12	$0.00	$0.00	$0.00	No labor cost. This is an existing responsibility of the water operations staff. Results should be reported to CAC.
			Potential changes in Emergency Response Plan/Vulnerability Assessments.	Plan development, meetings, updates	1 year to develop, annual updates.	1	12	$0.00	$0.00	$0.00	No labor cost. This is an existing responsibility of the water operations staff.

6 (Cont.)	Future Drought Due to Climate Change (Cont.)	Maintain resilience to climate change. Increase awareness of drought, climate change, and water conservation practices through outreach and education.	Outreach and education about water conservation practices	Meetings, material development, community event engagement, surveying, grant applications	Annual, ongoing.	1	12	$0.00	$350.00	$350.00	No labor cost due to the volunteer nature of the CAC/ Plan Management Team. Possibility of templates and assistance from TA provider.
7	Management of Regulated Potential Contaminant Sources	To enhance communication with specific facilities or DEC staff that work with these regulated facilities to understand the nature of the threat as associated risk and response efforts.	Review permit information and contaminant concerns for hazardous waste.	Meetings, monitoring. Coordinating partnerships if necessary.	Annual	1	1	$0.00	$0.00	$0.00	No labor cost due to the volunteer nature of the CAC/ Plan Management Team.
8			Review pipeline information. Increase communication as necessary.	Meetings, monitoring. Coordinating partnerships if necessary.	Annual	1	1	$0.00	$0.00	$0.00	No labor cost due to the volunteer nature of the CAC/ Plan Management Team.
9			Maintain communication among Village of Athens Water Operations staff, NYS DEC Bulk Storage Program, and NYSDOH regarding chemical bulk storage at the treatment plant. Monitor for potential leaks.	Inspections, monitoring	Annual	0.5	1	$0.00	$0.00	$0.00	No labor cost. This is an existing responsibility of the water operations staff.
10	Transportation-Related Runoff in the Critical Area	Reduce the likelihood of spills on Schoharie Turnpike. Ensure the amount of deicing materials entering the reservoir remains low.	Communicate with fire department/emergency services/highway department to increase awareness of potential transportation related contamination	Meetings, email and phone correspondence, effort hours of monitoring spills	One time communication plan, followed by annual updates.	1	12	$0.00	$0.00	$0.00	No labor cost due to nature of the task (communication).
									Total		**$1,400[1]**

Footnote 1

Cost estimates for Project Profile 1 are variable and not included in the total amount. See below for cost options provided by the water operator that the Village is considering. The Village may choose to use a combination of these three options.

Option 1: Physical removal of vegetation

- Monthly Hour Requirements: To be determined
- Labor Cost: $1,200-$2,800 per day for contractor services
- Material Cost: $20,000-$115,000 one-time purchase of weed harvester

Option 2: Physical removal of vegetation

- Monthly Hour Requirements: To be determined
- Labor Cost: $1,200-$2,800 per day for contractor services
- Material Costs: To be determined (shared services with another municipality)

Option 3: Chemical removal of vegetation

- Monthly Hour Requirements: To be determined
- Labor Cost: $30-$50 per hour for contractor services
- Material Cost: Estimated $1,000 per year for chemicals

Appendix D
References

References

"Annual Water Quality Report 2021: Athens Village Water System." 2021. https://athensvillageny.com/wp-content/uploads/2022/07/awqr2021.pdf

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"Town and Village of Athens Comprehensive Plan." May. 2021, https://athensvillageny.com/planning-documents/

"Village of Athens Local Waterfront Revitalization Program." 23 Sept. 1999, https://athensvillageny.com/wp-content/uploads/2020/03/Village-of-Athens-2002-LWRP.pdf

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