A Framework for Creating a Drinking Water Source Protection Program Plan

Working Draft - Subject to Revision

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Contact Information

New York State Department of Health
Corning Tower. Empire State Plaza, Albany, New York 12237
P: (518) 402-7650 | F: (518) 402-7599 | bpwsp@health.ny.gov
www.health.ny.gov/DrinkingWater

New York State Department of Environmental Conservation
625 Broadway. Albany, New York 12233
P: (518) 402-8086 | F: (518) 402-9029 | source.water@dec.ny.gov
www.dec.ny.gov/chemical/115250.html

Table of Contents

List of Acronyms 4
DRINKING WATER SOURCE PROTECTION PROGRAM PLAN FRAMEWORK 6
Background 6
Purpose 6
Phases and Key Components 6
1. Stakeholder Group 7
1.1 Form a Stakeholder Group 7
1.2 Establish Goals and Formulate a Vision 7
2. Drinking Water Source Assessment 8
2.1 Develop an Overview of the Water System 8
2.2 Prepare a Drinking Water Source Protection Map 9
2.3 Create a Potential Contaminant Source Inventory 10
3. Protection and Implementation Strategies 11
3.1 Identify Protection and Management Methods 11
3.2 Develop an Implementation Timeline 12
4. Progression and Maintenance 13
4.1 Designate a Plan Management Team 13
Appendices 14
RESOURCE KIT 15
1. Stakeholder Group 16
1.1 Form a Stakeholder Group 17
1.2 Establish Goals and Formulate a Vision 20
2. Drinking Water Source Assessment 21
2.1 Develop an Overview of the Water System 22
2.2 Prepare a Drinking Water Source Protection Map 24
2.3 Create a Potential Contaminant Source Inventory 42
3. Protection and Implementation Strategies 77
3.1 Identify Protection and Management Methods 78
3.2 Develop an Implementation Strategy Timeline 119
4. Progression and Maintenance 135
4.1 Designate a Plan Management Team 136
APPENDICES 137

WORKING DRAFT

Appendix A 138
Climate Change Resiliency 138
Appendix B 141
Contacts 141
Appendix C 158
Questions to Ask the Regulated Entity 158
Glossary 160

WORKING DRAFT

List of Acronyms

AEM	Agricultural Environmental Management
BMP	Best Management Practice
CAFO	Concentrated Animal Feeding Operations
CEA	Critical Environmental Area
CSO	Combined Sewer Overflow
CWSRF	Clean Water State Revolving Fund
DAM	Department of Agriculture and Markets
DEC	Department of Environmental Conservation
DEP	Department of Environmental Protection
DOH	Department of Health
DOS	Department of State
DOT	Department of Transportation
DWSP2	Drinking Water Source Protection Program
ECHO	Enforcement and Compliance History Online
EFC	Environmental Facilities Corporation
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FSA	Farm Service Agency
GIS	Geographic Information System
GPD	Gallons Per Day
GWUDI	Groundwater Under Direct Influence of Surface Water
HUC	Hydrologic Unit Codes
IMA	Intermunicipal Agreement
IMO	Intermunicipal Organization
MCL	Maximum Contaminant Level
MCW	Mean Wetted Channel Width
MGPD	Million Gallons Per Day
MSGP	Multi-Sector General Permit

WORKING DRAFT

MS4	Municipal Separate Storm Sewer System
NFHL	National Flood Hazard Layer
NLCD	National Land Cover Database
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NYC	New York City
NYS	New York State
PFOA	Perfluorooctanoic Acid
PFOS	Perfluorooctanesulfonic Acid
SDWA	Safe Drinking Water Act
SEQR	State Environmental Quality Review Act
SPDES	State Pollution Discharge Elimination System
SSO	Sanitary Sewer Overflow
SWAP	Source Water Assessment Program
SWMP	Stormwater Management Plan
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Load
TRI	Toxic Release Inventory
UCMR	Unregulated Contaminant Monitoring Rule
US	United States
USDA	United States Department of Agriculture
USGS	United States Geological Survey
VA	Vulnerability Assessment
WI/PWL	Waterbody Inventory/Priority Waterbodies List
WQIP	Water Quality Improvement Project
WRR	Watershed Rules and Regulations
WWTP	Wastewater Treatment Plant
9E	Nine Element Watershed Plan

WORKING DRAFT

DRINKING WATER SOURCE PROTECTION PROGRAM PLAN FRAMEWORK

Background

Source water denotes surface water (streams, rivers, lakes and reservoirs) or groundwater (aquifers) from which water is taken either periodically or continuously by a public water system for drinking or food processing purposes. In 1996, an amendment to the Safe Drinking Water Act (SDWA) required states to evaluate each source of water used by a public water system. As a result, the New York State (NYS) Department of Health (DOH) created the Source Water Assessment Program (SWAP), which produced reports delineating source water assessment areas, generating potential contaminant inventories and developing susceptibility analyses for public water systems. The State recognized the need to update these assessments and focus on creating and implementing modernized protection plans, which led to the development of the Drinking Water Source Protection Program (DWSP2). DWSP2 is a four Agency initiative co-led by DOH and the Department of Environmental Conservation (DEC), in collaboration with the Department of Agriculture and Markets (DAM) and Department of State (DOS).

Source water protection plans can contribute significantly to the conservation of natural resources and preservation of public health. In addition, communities may experience benefits such as drinking water treatment cost savings, general liability insurance savings, maintenance of real estate values and increased climate change resilience (refer to *Appendix A: Climate Change Resiliency* for climate change resiliency resources and tools). This framework will serve as a tool for communities to sustain these benefits.

Purpose

This framework will help New York State communities build a tailored protection plan, or a DWSP2 Plan, to protect sources of drinking water from potential contamination. Unlike the assessments in the SWAP, the DWSP2 Plans will be developed, implemented and maintained by New York State communities with guidance from DOH, DEC, and technical assistance providers such as, but not limited to, New York Rural Water Association, Regional Planning Boards or hiring a consultant. This framework provides an overview of four phases and eight key components of a DWSP2 Plan and should be read in concert with the attached Resource Kit.

Phases and Key Components

1. **Stakeholder Group**
    - 1.1 Form a Stakeholder Group
    - 1.2 Establish Goals and Formulate a Vision
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
3. **Protection and Implementation Strategies**
    - 3.1 Identify Protection and Management Methods
    - 3.2 Develop an Implementation Timeline
4. **Progression and Maintenance**
    - 4.1 Designate a Plan Management Team

WORKING DRAFT

It may be beneficial to work on multiple key components of a phase simultaneously, as one may lend information to complete another. It is recognized that communities may need to alter the recommended steps to fit local needs. The Resource Kit expands upon the key components and provides additional information, examples and recommended steps. As a community completes the 8 key components, they may utilize the Progress Report Template presented in section 4.1 of the Resource Kit.

> Look for this symbol as you read through the framework to direct you to the appropriate ***Resource Kit*** section.

1. Stakeholder Group

Glossary Terms

- DWSP2 Plan
- Resource Kit
- Drinking Water Source

The first phase and component of a DWSP2 Plan is the formation of a knowledgeable stakeholder group. An invested stakeholder group will guide the development and implementation of the DWSP2 Plan, starting with establishing an overarching vision specific to the community and its needs. Phase 4 recommends the formation of a Plan Management Team whose responsibility is to implement and report on the progress of the DWSP2 Plan. A community may keep the Plan Management Team in mind when forming the stakeholder group.

1.1 Form a Stakeholder Group

Communities may build a stakeholder group from an existing board/commission or create an entirely new group. Including a wide range of stakeholders early in the planning process will prevent future roadblocks.

The Resource Kit provides a description of how each potential stakeholder may benefit plan development and implementation. Each stakeholder may be formally invited to the group with an indication of why they should participate and how their expertise will benefit the development and/or implementation of the DWSP2 Plan. Identifying mutual benefits and overlapping priority areas between group members can be an effective technique to entice participation. As a community completes component 1.1, they may update the Progress Report Template presented in section 4.1 of the Resource Kit.

> Refer to section ***1.1 Form a Stakeholder Group*** of the Resource Kit.

1.2 Establish Goals and Formulate a Vision

After establishing a stakeholder group, the goals and vision of the DWSP2 Plan should be discussed. The resource kit provides examples of goals and visions. The goals may be overarching and should be an indication of what the community hopes to accomplish with the plan. The vision guides the development and implementation of the protection plan and is a “call to action” from the community to commit to protecting its drinking water source(s). As a community completes component 1.2, they may update the Progress Report Template presented in section 4.1 of the Resource Kit.

The vision of the DWSP2 Plan should:

- Recognize that drinking water source protection will likely involve multiple approaches.
- Include input from all stakeholder group members.

WORKING DRAFT

- Declare intent to commit sufficient resources to drinking water source protection.

Refer to section ***1.2 Establish Goals and Formulate a Vision*** section of the Resource Kit.

2. Drinking Water Source Assessment

Glossary Terms

- Ambient Water
- Control and Monitoring Area
- Critical Area
- Delineation
- Drinking Water Source Assessment
- Drinking Water Source Protection Area
- Drinking Water Source Protection Map
- DWSP2 Plan
- Finished Water
- Land Cover
- Management Methods
- Nonpoint Source
- Ownership and Control Area
- Point Source
- Potential Contaminant Source
- Public Water System
- Raw water
- Resource Kit
- Source Water Area
- Source Water Assessment Program (SWAP)
- Source Water/Drinking Water Source
- Time of Travel
- Field Survey

Prior to preparing a drinking water source assessment, the stakeholder group should review the community's original SWAP report. Although it was prepared in the early 2000's, it may contain valuable information. It is important to keep in mind that drinking water sources, withdrawal rates, land uses, water quality, and potential contaminant sources have likely changed. In addition to the SWAP documents, communities are advised to review other plans pertinent to source water protection such as, but not limited to, a Nine Element Watershed Plan (9E), a Harmful Algal Bloom Action Plan, a Total Maximum Daily Load (TMDL) document, an Agricultural Environmental Management Strategic Plan and/or a Farmland Protection Plan. A comprehensive drinking water source assessment should include relevant information from the SWAP documents, other relevant documents or plans, current source water information, and information gathered in the key components of the Drinking Water Source Assessment phase.

2.1 Develop an Overview of the Water System

Information from a general water system overview can be used to select appropriate methods to delineate drinking water source protection areas and to help focus protection measures. The water system overview will include basic information about the system, water quality and quantity. A water system overview worksheet can be found in the Resource Kit. Municipalities may want to review their water system's annual water quality report for water quality information. As a community completes component 2.1, they may update the Progress Report Template presented in section 4.1 of the Resource Kit.

Refer to section ***2.1 Develop an Overview of the Water System*** of the Resource Kit.

Including a complete review of existing water quality monitoring data, including ambient, raw, and finished water, can identify potential contaminants of concern and help prioritize protection efforts. Depending on

WORKING DRAFT

this review, communities may want to conduct more extensive monitoring and should discuss their sampling needs with the local health department.

The water quantity summary will serve to provide a general understanding of the system's water supply and demand. This information may be used to determine if the water system would be able to provide enough water to the community based on future growth and land use projections.

2.2 Prepare a Drinking Water Source Protection Map

A drinking water source protection map will guide the development of the DWSP2 Plan by delineating and/or displaying drinking water source protection areas and land use. This will allow a community to create a potential contaminant source inventory in component 2.3. Preparing a drinking water source protection map may involve revisiting the map developed in the community's original SWAP report and creating a new map with updated information. Geographic Information System (GIS) software can be an invaluable computational or visual tool for assisting a community with delineating protection areas and preparing a drinking water source protection map. It is recognized that technical assistance with GIS and component 2.2 may be needed. If the community is unable to attain GIS assistance, please reach out to the NYS DOH or NYS DEC Drinking Water Source Protection Program team (Contact information can be found in *Appendix B: Contacts*). As a community completes component 2.2, they may update the Progress Report Template presented in section 4.1 of the Resource Kit.

Mapping resources (e.g. aquifer mapping data, conservation easement data, DEC water withdrawal data, etc.) are provided in the Resource Kit. Information and links to data for mapping for potential contaminant sources can be found in the *Potential Contaminant Source Descriptions* section of the Resource Kit.

Refer to section ***2.2 Prepare a Drinking Water Source Protection Map*** of the Resource Kit.

Establish and Delineate Protection Areas

The drinking water source protection areas are established to protect against different classes or types of contaminants: biological, chemical, physical, and radiological. Depending on the nature of the source of contamination, the community can choose to establish the protection areas as a fixed distance from the source, a time of travel distance, or a combination of the two. Here, a time of travel describes the distance a particle will move through an aquifer and/or surface water body in a specified amount of time, or the area that contributes ground water to a well within a specified amount of time. Selecting a method for delineating protection areas will depend upon several different factors and communities may choose to establish additional or customized areas based on local needs. There are required DOH distances for groundwater supplies (by regulation) but not for surface water supplies. Below are the required and recommended protection areas:

Required protection area (applies to groundwater wells serving public water systems only):

- *Ownership and Control Area:* The required ownership and control area under the New York State Sanitary Code helps to reduce any direct contamination to the wellhead (Part 5, Subpart 5-1, Public Water Systems- Appendix 5-D.2 of New York State Sanitary Code). Wells serving public water systems shall be located such that the owner of the water system possesses 100 ft ownership around the well and controls land activities within 200 ft of the well.

Recommended protection areas:

- *Control and Monitoring Area (surface water only):* The control and monitoring area for surface water is analogous to the ownership and control area for groundwater but is not a requirement.

WORKING DRAFT

- *Critical Area:* This is the area of land that is directly surrounding the drinking water source. Contaminants within this area may take less time to reach the drinking water source.

- *Source Water Area:* This is the area of land that extends beyond the critical area, but still has the potential to contribute water to the drinking water source. Contaminants in this area take longer to reach the drinking water source.

The Resource Kit provides more information about required and recommended protection areas, how to establish them and tools to delineate them.

2.3 Create a Potential Contaminant Source Inventory

The next component of the drinking water source assessment is to identify all potential contaminant sources within the established protection areas. Potential contaminant sources are often divided up into two categories: point sources and nonpoint sources. Recognizing whether a source is point or nonpoint can help determine what protection and management methods to utilize in phase 3. The Resource Kit provides steps on how to create a potential contaminant source inventory. As a community completes component 2.3, they may update the Progress Report Template presented in section 4.1 of the Resource Kit.

Refer to section ***2.3 Create a Potential Contaminant Source Inventory*** of the Resource Kit.

Any single identifiable source of pollution from which pollutants are discharged is typically known as a point source (i.e. a gas station). Point sources are often monitored and regulated by federal, state and local laws. These can include wastewater dischargers, bulk storage tanks and combined sewer overflow outfalls.

Typically, when no single location of contaminant release can be identified, it is considered a nonpoint source (i.e. lawn and garden chemicals). Potential contamination can occur by rainfall or snowmelt moving over and through the ground. Moving water can pick up and carry natural and human-made pollutants and deposit them into lakes, rivers and groundwater. One way to identify nonpoint sources is to examine land cover data. Potential threats include certain activities associated with commercial, industrial, agricultural and residential land uses that when not managed properly can lead to source water contamination.

Available potential contaminant source locations and land use data should be added to the drinking water source protection map prepared in component 2.2. Although the use of GIS can be helpful for determining approximate locations of potential contaminant sources of concern and land uses, there are possible limitations to be aware of. For example, some data for mapping may provide the location of a building where treatment of wastewater occurs, but not the exact location of the outfall pipe discharging to a nearby waterbody. The community should verify the accuracy of the data by conducting field surveys and using local knowledge. Not all potential contaminant sources will have available data for mapping, especially those that are unregulated.

A comprehensive inventory table should be created listing all identified potential contaminant sources, where they lie within the protection areas and the relevant information that was considered when creating the inventory. If a community plans on contacting a regulatory authority, they should refer to the "Questions to Ask the Regulated Entity" template provided in *Appendix C: Questions to Ask the Regulated Entity*. Communities should refer to the Resource Kit for examples and recommended steps.

WORKING DRAFT

3. Protection and Implementation Strategies

Glossary Terms

- Best Management Practices (BMPs)
- Control and Monitoring Area
- Critical Area
- DWSP2 Plan
- Management Methods
- Potential Contaminant Source
- Protection Methods
- Resource Kit
- Source Water Area

The community may have a different focus for each established protection area. Refer to the suggested focus for each protection area below:

Recommended Focus for Control and Monitoring Area:

Surface Water – It is recommended that the community owns or controls the area around the intake and that no development occurs in this area. If development does exist, this would be the highest priority for acquiring land. The community may also consider implementing protection methods that severely restrict activities (e.g. zoning).

Recommended Focus for Critical Area:

Groundwater – Manage existing sources of microbial contamination. Additionally, potential contaminant sources located within the critical area should be intensely managed or eliminated since there would be limited time to respond to a spill and mitigate contamination. If the critical area is undeveloped, it is recommended that communities leave the area that way. If development exists within the critical area, it is recommended that communities increase oversight of permitted facilities and utilize other management methods to mitigate risks (e.g. outreach and education programs).

Surface Water – Land within this area should remain undeveloped. If development already exists, it is recommended that the community increases oversight of any permitted facilities and uses other management methods to mitigate risks (e.g. outreach and education programs).

Recommended Focus for Source Water Area:

Groundwater and Surface Water – The source water area is the area where long-term planning regarding land use and higher risk activities may be considered. Employing outreach and education programs along with encouraging the use of best management practices may be appropriate for this area.

3.1 Identify Protection and Management Methods

The DWSP2 Plan will identify specific protection and management methods that can minimize risks posed by potential contaminant sources. Both protection and management methods, when used on their own or in conjunction, can protect against existing and future potential contaminant sources. As a community completes component 3.1, they may update the Progress Report Template presented in section 4.1 of the Resource Kit.

Protection methods are overarching approaches a municipality can take to protect the source water protection area. These methods are not specific to a potential contaminant source and can be utilized for existing and/or future potential contaminant sources through a number of regulatory and non-regulatory methods.

Management methods are specific to a potential contaminant source and are provided in the Resource Kit. Each management method is a step by step process and/or best management practices that a

WORKING DRAFT

municipality can utilize to protect against an existing potential contaminant source. Many of the methods are easy to conduct and do not cost money.

> Refer to section ***3.1 Identify Protection and Management Methods*** of the Resource Kit.

3.2 Develop an Implementation Timeline

There are several factors that may impact the timing of implementation. These factors may include cost, public support, project innovation, project integration, public visibility, land ownership, partner involvement and feasibility. Although certain protection and/or management methods may require a significant amount of time to implement, this should not change the community's commitment to implementing those methods. Each identified protection and/or management method should have a detailed implementation timeline which will help keep the DWSP2 Plan on track. As a community completes component 3.2, they may update the Progress Report Template presented in section 4.1 of the Resource Kit.

> Refer to section ***3.2 Develop an Implementation Strategy Timeline*** section of the Resource Kit.

The timeline should include the following:

- *Priority Issue* – Review priority issues previously identified.
- *Goal* – Specify the goal the community hopes to achieve as a result of successful implementation.
- *Protection and/or Management Method* – Identify a specific method to address existing or future potential contaminant sources. The *Protection and Implementation Strategies* section of the Resource Kit has detailed information on both protection and management methods.
- *Targeted Potential Contaminant Source(s)* – Review the list of potential contaminant sources and match sources with protection and/or management methods.
- *Project Leader/Partnerships Needed* – Identify if partnerships are needed, which partners may take the lead on implementation and which ones may assist on the project. Partners may include watershed groups, local government officials, farmers, property owners, local business representatives, developers and contractors and other interested parties.
- *Costs* – Provide estimates for both capital improvement projects, regulatory or programmatic changes and costs for project monitoring.
- *Potential Funding Sources* – Determine agencies/organizations that could provide grant funding for specific projects and actions. Specific funding sources are provided in the Resource Kit.
- *Steps* – List out detailed steps of how each project will be achieved.
- *Implementation Timing/Schedule* – Consider the need for phasing of a project and estimate when the implementation of each step should take place.

WORKING DRAFT

4. Progression and Maintenance

Glossary Terms

- Drinking Water Source
- DWSP2 Plan
- Emergency Response Plan
- Framework
- Management Methods
- Protection Methods
- Resource Kit
- Vulnerability Assessment

As the community designs their DWSP2 Plan, it is important to designate a Plan Management Team to implement it. In addition to the implementation, the Plan Management Team can keep the community and all parties involved up to date on the progression of the DWSP2 Plan by sharing the plan and progress reports. A successful DWSP2 Plan is dependent upon a dedicated group who will continue to revise and update the plan.

4.1 Designate a Plan Management Team

The community should designate a Plan Management Team that will be responsible for ensuring the DWSP2 Plan is completed and the identified protection and/or management methods are being implemented. Members of the Plan Management Team may be chosen from the stakeholder group developed in Phase 1. The Plan Management Team should work to accomplish the following:

Review and Share the Plan

After working through the framework for creating a DWSP2 Plan, all the key components should be compiled into a report. Once the DWSP2 Plan is compiled, there should be an opportunity for interested parties to provide input. The draft DWSP2 Plan should be shared with the NYS DOH and DEC, the stakeholder group and a broader audience. Once the DWSP2 Plan is finalized it should be given to the NYS DOH and DEC.

Share Progress Reports

A progress report should be generated and shared with the stakeholder group and other interested agencies or individuals no less than once a year. Sharing progress reports with the community can build support for implementation strategies necessary to protect the public drinking water source. An annual progress report should be shared with the NYS DOH and DEC. The progress report template in the Resource Kit provides potential information that may be included in the progress reports.

Refer to section ***4.1 Designate a Plan Management Team*** of the Resource Kit.

Create a Revision Schedule

Source water protection is a very dynamic process and consistently revising and updating the DWSP2 Plan is critical. A variety of changes are constantly occurring including land uses, discharges, funding sources, new wells, opening and closing of businesses, data accuracy, data availability and water quality. Updating the DWSP2 Plan to reflect changes will allow the plan to remain effective.

It is recommended that the plan be reviewed at the same frequency that the municipality has set for updating its adopted comprehensive plan, which usually occurs every five years. The community should also revisit their water system's Vulnerability Assessment (VA) and Emergency Response Plan (ERP) to see if any updates are necessary based on the findings of the Source Water work. Systems serving 3,300

WORKING DRAFT

people or less that are not required to develop VAs and ERPs may elect to do so and may elect to submit them to NYS DOH for approval. A full VA would assess vulnerabilities to numerous potential hazards, not just vulnerabilities associated with contamination of water sources. For VA and ERP templates, visit www.nyruralwater.org/downloads/downloads-vulnerability-assessment (New York Rural Water Association, Search on: "VA & ERP Plans").

Appendices

The Appendices provide additional resources and tools that may be useful and/or considered by municipalities when developing and implementing their source water protection plans.

Appendices:
- *Appendix A. Climate Change Resiliency*
- *Appendix B. Contacts*
- *Appendix C. Questions to Ask the Regulated Entity*

WORKING DRAFT

RESOURCE KIT

WORKING DRAFT

1. Stakeholder Group

In this section you will find:

1.1 Form a stakeholder Group 17

Potential Stakeholder Group Member Descriptions 17

1.2 Establish Goals and Formulate a Vision 20

Examples of DWSP2 Plan Goals 20

Examples of Visions 20

WORKING DRAFT

1.1 Form a Stakeholder Group

Potential Stakeholder Group Member Descriptions

Provided below are descriptions of potential stakeholder group members. The list should not be interpreted as all-encompassing and municipalities and should augment this list with any additional stakeholders that could provide key knowledge applicable to their source water.

City, Town and Village Government

Local Drinking Water Operator	A drinking water operator will have the most knowledge about the public water system. The water operator will benefit the stakeholder group by contributing information about surface or groundwater supply, well and intake locations, system infrastructure, pumping rates, land uses and changes in raw and finished water quality.
Local Governing Board Representative	A local governing board representative will have the ability to facilitate local policy changes and ordinances. The representative can benefit the stakeholder group by providing information about historical and current laws, statutes and regulations relevant to sources of drinking water.
Municipal or Local Engineer	Municipal or local engineers hired by the municipality are typically familiar with the water supply system and its sources. This is particularly true if the engineer has been involved with the installation of the water supply system. It is recommended to use an engineer with specific public water system work experience.
Local Planning Board Member	Local planning board members review and approve site plan and subdivision applications, and issue special permits. They are frequently involved with changes to existing zoning regulations and can advise the stakeholder group about current and potential zoning laws and protection strategies to protect source waters.
County Water Authority Member or Local Water Board Member	Water boards have the authority to oversee and manage the public water supply. These boards are often responsible for setting water rates and dealing with water supply issues.
Conservation Advisory Council or Conservation Board Representative	Conservation advisory councils are created by the local legislative body to advise on the development, management and protection of natural resources. A conservation board is a conservation advisory council that has been re-designated by the legislative body once completing and accepting a conservation open area inventory and map. Such representative(s) would benefit the stakeholder group by providing a knowledge of local water resources, land uses and critical areas to protect.
Zoning Board of Appeals Member	A Zoning Board of Appeals, or a Board of Zoning Appeals, has the power to grant use and area variances, and to impose related conditions and restrictions. Like the local planning board member, the Zoning Board of Appeals member can advise about land use strategies.
Comprehensive Plan Committee Member	The local legislative body may appoint a special board, designated as a Comprehensive Plan Committee, to prepare a proposed comprehensive plan and/or amendment. Such a plan typically includes an inventory of local water resources and utilities, and a discussion of proposed measures and programs. Maps, GIS data, and appendices may exist that could be beneficial to the stakeholder group.

WORKING DRAFT

Agricultural Advisory Committee Member	Local legislative bodies can appoint an Agricultural Advisory Committee to provide advice and information about agriculture as well as support and promote agriculture in the community. This committee is often involved with the preparation of an agricultural protection plan, such as those funded by the NYS DAM. Including a representative of the agricultural community is important when addressing local issues regarding land use which are common in many rural areas of New York State.

County Government

County Health Department or Regional Environmental Health District Representative	Health department representatives specializing in environmental health will be familiar with regulation related to the operation, design and quality of the public water supply. These representatives will also have knowledge regarding potential health effects associated with drinking water contaminants.
County Planning Department Representative	A member of the County Planning Department can provide important expertise including mapping/GIS resources and knowledge about local environmental and water quality issues.
County Soil & Water Conservation District Representative	A member from your County Soil & Water Conservation District can be a link between landowning farmers and a host of conservation service providers. This member will have knowledge regarding local water quality concerns and potential funding programs to address those concerns. County Soil & Water Conservation Districts may apply for funding programs on behalf of landowners, depending on the funding source.

Community

Environmental and Civic Groups	Environmental and Civic groups include local watershed groups, chambers of commerce, citizen groups, etc. Every community has unique organizations who have expertise and knowledge to share.
Citizens	Local residents should be involved in the development of the protection plan as they are directly affected by the quality of their drinking water and may be involved in the steps necessary to protect it. A subset of dedicated residents can provide local knowledge and opinions that are representative of the community.
Neighboring Communities	When a drinking water source is either shared with a neighboring community or lies completely outside of the municipality's jurisdiction, representatives from the neighboring community should be invited to participate in the stakeholder group as the plan's vision and overarching goals may need support from that community.
Land Trusts	Local Land Trusts may work with communities to identify properties that qualify for funding and provide expertise in negotiating acquisitions from willing sellers.

WORKING DRAFT

Business

Agricultural Representative	Representatives from the agricultural community (e.g. local farmers and farm owners, farm related associations, farm bureau) provide input about different agricultural practices in the area. The agricultural representative(s) can help determine how conservation dollars are spent based on which practices will have the greatest benefit to drinking water source protection.
Business Representative	Representatives of local businesses or the business community (Chamber of Commerce, Downtown Revitalize Group) provide information about how drinking water relates to the economic viability of the community, as well as to the growth and sustainability of local businesses.
Industrial Representative	Representatives of local industry may be impacted by protection methods identified in the DWSP2 Plan. These industrial representatives may have information on best management practices (BMPs) and operating procedures that are currently in place, and the feasibility of implementing additional BMPs in the future to protect sources of drinking water.

Additional stakeholders may be added to the group or consulted with during the development, implementation and/or maintenance of the protection plan. For information about how to build and maintain effective partnerships, visit: sourcewatercollaborative.org/how-to-collaborate-toolkit/ (Source Water Collaborative, Search On: "Collaboration Toolkit: How to Build and Maintain Effective Partnerships to Protect Sources of Drinking Water").

Back to section ***1.1 Form a Stakeholder Group*** of the Framework.

WORKING DRAFT

1.2 Establish Goals and Formulate a Vision

Examples of DWSP2 Plan Goals

Protect public health
Improve public confidence in drinking water supply
Address existing drinking water quality issues
Avoid drinking water treatment costs or the need to find a new water supply[1]
Provide quality tasting drinking water
Become an environmental steward
Create long-lasting partnerships with various stakeholders
Engage and educate the community about their drinking water
Maintain property values, tax revenues, local tourism and jobs
Promote a sense of pride in the community
Increase supply reliability
Increase reliability of treatment technology
Knowing what contaminants are regulated and addressing emerging or unknown contaminants
Evaluate current land use and plan for future land use

[1]*Previous studies have shown that the costs of preventing contamination through drinking water source protection have been, on average, 30 to 40 times less than the costs of treating contaminated drinking water.* (US EPA. 1995. Benefits and Costs of Wellhead Protection. *Case Studies of Community Wellhead Protection)*.

Examples of Visions

"New York City's Department of Environmental Protection has a comprehensive watershed protection program which focuses on both protective and corrective initiatives, to ensure that its Catskill/Delaware reservoir system, the source of 90% of the supply's daily demand, remains unfiltered and sustains its extraordinarily high quality"

-NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION, NEW YORK CITY, NEW YORK

"The Edwards Aquifer Authority is committed to manage and protect the Edwards Aquifer system to ensure the entire region of a sustainable, adequate, high quality and cost-effective supply of water, now and in the future"
-SAN ANTONIO WATER SYSTEM, SAN ANTONIO, TEXAS

Back to section ***1.2 Establish Goals and Formulate a Vision*** of the Framework.

WORKING DRAFT

2. Drinking Water Source Assessment

In this section you will find:

2.1 Develop an Overview of the Water System ……. 22

Sources of Water Quality Information…….. 23

2.2 Prepare a Drinking Water Source Protection Map ……. 24

Mapping Resources …… 25

Establish and Delineate Groundwater Protection Areas …….. 31

Factors to Consider When Selecting an Appropriate Delineation Method …….. 32

Groundwater Delineation Methods …….. 33

Volumetric Flow Equation ……. 35

Uniform Flow Analytical Model ……. 36

Establish and Delineate Surface Water Protection Area ……. 37

Using StreamStats ……. 39

To calculate a Time of Travel distance …….. 41

2.3 Create a Potential Contaminant Source Inventory …….. 42

Potential Contaminant Sources ……... 44

Potential Contaminant Source Descriptions …….. 44

Potential Contaminant Source Inventory Table – Example ……. 76

WORKING DRAFT

2.1 Develop an Overview of the Water System

Water system name:

NYS Public Water System ID:

Type of water system (e.g. community, non-community, transient, non-transient):

Name of the community, or communities, served by the system:

Population served by the system:

Number of service connections:

Summary of wells, intakes, infiltration galleries and/or springs including name, depth, screen length and pumping rates:

General treatment information:

Summary of hydrogeographic setting of drinking water sources including watershed information and/or type of aquifer and aquifer materials (this information may be gathered after delineating protection areas in section *2.2 Prepare a Drinking Water Source Protection Map*)

Water quality summary including any known raw or ambient water quality information, finished water detections and/or history of maximum contaminant level (MCL) violations (Refer to *Sources of Water Quality Information* on the following page):

Water quantity summary:

Current water withdrawal permit expiration date(s)	___ / ___ / _____
Total permitted water withdrawal capacity	_____MGD
Average daily water demand (= yearly usage / 365)	_____MGD
Maximum daily water demand (Unofficial 3-day average in peak month – e.g. July)	_____MGD
Daily water losses (Can be obtained from Water Conservation Program form)	_____MGD

WORKING DRAFT

Sources of Water Quality Information

Finished Water	
Public Water System Compliance Data	Information about MCL violation history under Part 5, Subpart 5--1 of the New York State Sanitary Code.
United States (US) Environmental Protection Agency's (EPA) Unregulated Contaminant Monitoring Rule (UCMR)	Information about UCMR which is a nationwide program that the EPA uses to collect data for contaminants that are suspected to be in drinking water and do not have standards set under the Safe Drinking Water Act (SDWA). UCMR monitoring occurs every five years for no more than thirty contaminants. This data is available for all public water systems serving more than 10,000 people and only a small subset of public water systems serving less than 10,000 people.

Raw / Ambient Water	
Public Water System Compliance Data	Information about raw water quality monitoring required under Part 5, Subpart 5--1 of the New York State Sanitary Code and/or routine samples to optimize treatment (e.g. turbidity, pH, temperature, etc.).
National Ambient Water Quality Portal	The National Ambient Water Quality Portal is a cooperative service sponsored by the United States Geological Survey (USGS), EPA and the National Water Quality Monitoring Council. Data is available from several federal, state, tribal and local agencies. The Water Quality Portal User Guide is also available for instructions on how to use the portal. To learn more, visit: www.waterqualitydata.us (National Water Quality Monitoring Council, Search On: "Water Quality Portal").
New York State Section 303(d) List of Impaired/Total Maximum Daily Load (TMDL) Waters	This is a list of waters that do not support their appropriate uses and that may require development of a TMDL. This list also provides the specific cause/pollutant causing the waterbody impairment. To learn more, visit: www.dec.ny.gov/chemical/31290.html (NYS DEC, Division of Water, Search On: "NYS Section 303(d) List of Impaired/TMDL Waters").

Back to section ***2.1 Develop an Overview of the Water System*** of the Framework.

WORKING DRAFT

2.2 Prepare a Drinking Water Source Protection Map

The information below includes general steps to prepare an updated drinking water source protection map using Geographic Information System (GIS) mapping software. GIS software will allow the user to store and maintain all data and layers in one map document. For documentation purposes, data and layers should be turned on and off to create a series of maps that best display the source water, its protection areas and potential threats. Using GIS in the preliminary stages of creating a protection plan will be beneficial for the community in the long run.

If it is not possible to obtain GIS assistance, contact the NYS DOH and DEC using the contact information provided on the cover page.

Step 1: Choose a GIS software/mapping application

- There are several GIS applications that can be used to map protection areas, potential contaminant sources and land uses. Some applications are publicly available, and others require a license to be purchased. The functionality of different GIS software and tools can vary, and the following steps are generalized so that they may be applied to multiple applications.

Step 2: Start with a base map

- A base map in GIS refers to a collection of GIS data that provides a background setting for the content you want to display. Base maps typically include features such as topography, imagery, municipal boundaries and watershed boundaries. Most GIS applications provide a set of pre-installed base maps that do not need to be downloaded. The *Mapping Resources* below provide additional datasets that can be added to the drinking water source protection map to supply extra information when designing the protection plan.

Step 3: Upload or digitize source water locations

- Source water locations are necessary in order to create drinking water source protection areas around them. Certain communities may have access to data or layers that represent the locations of wells, intakes and/or surface waterbodies. If so, load these into the GIS application. For communities that do not have access to these data or layers, it may be necessary to digitize the drinking water source locations. To digitize in GIS essentially means to draw features on a map. Instructions are available online. *Search on:* 'digitize' and your selected GIS application name.

Step 4: Delineate drinking water source protection areas

- Creating buffers, or designated distances, around source waters allows the user to visualize drinking water source protection areas. An efficient way to delineate drinking water source protection areas is by using a buffer tool in GIS which allows the user to select features (e.g. wells, intakes, surface waterbodies) and create polygons, or boundaries, around them. The user must designate distances to instruct the GIS software application about how large or small to draw the polygons around the feature. Recommended distances to use for establishing drinking water source protection areas are provided in the *Establish and Delineate Groundwater Protection Areas* and *Establish and Delineate Surface Water Protection Areas* sections of the Resource Kit.
- For surface water sources, download the National Hydrography Dataset under *Mapping Resources* and select the appropriate Hydrologic Unit Code (HUC) 12 watershed(s) to establish the source water area. It is encouraged that a community also delineates the drainage area specific to the source water intake. To do so, follow Using StreamStats under the *Establish and Delineate Surface Water Protection Areas* section of the Resource Kit. A community can compare the selected HUC-12 watershed(s) with the StreamStats delineated watershed to determine which boundary best represents the area contributing water to the source waterbody.

WORKING DRAFT

Step 5: **Download and add publicly available potential contaminant source data to the map**

- Downloading publicly available potential contaminant source data is necessary for creating layers to add to your drinking water source protection map. Refer to the *Potential Contaminant Source Descriptions* section of the Resource Kit for information about where to download publicly available data for mapping by source. Datasets already in GIS format (shapefiles, feature layers, etc.) can be added to your GIS application and are ready to be displayed. Datasets in table format (CSV, CSV for excel, etc.) can be imported into your GIS application if coordinates or addresses are provided with the dataset. If the dataset is in table format, the user will have to instruct the GIS application to create a layer from the XY data or geocode the addresses. *Search on:* 'Display XY data' or 'Geocode addresses' and your selected GIS application name. At this point, the community will be able to view and identify any added potential contaminant sources that lie within the drinking water source protection areas. Following mapping, the community should verify the accuracy of the data by conducting field surveys and using local knowledge. *Note: Not all potential contaminant sources have publicly available data for mapping.*

Step 6: **Download and add local land use and land cover data**

- Real property land classification codes, zoning, and coarse land cover data can be useful for visualizing potential concerns within established protection areas. The availability of relevant data for mapping can be found under *Mapping Resources*. Many GIS applications will allow the user to turn layers on and off, therefore, the user may view the potential contaminant sources, land use, and land cover within the same map environment.

Mapping Resources

Below are descriptions of mapping resources that can be added to the drinking water source protection map. Each of these resources can provide a community with information to better understand their source water protection area which will help with informed decision making when selecting protection and management methods. If there is local data for mapping that can be publicly downloaded, it should be added to the drinking water source protection map. For certain resources, it specifies whether the data for mapping should only be considered for groundwater or surface water. As with the potential contaminant sources, communities should supplement the publicly available data for mapping with local knowledge and information.

WORKING DRAFT

Aquifer Mapping	
Aquifers consist of water-bearing material, such as sand and gravel or fractured bedrock, that can store water underground. Aquifers are sources of drinking water for wells and can become contaminated due to human activity. Communities with groundwater for a drinking water supply should consider mapping their local aquifer to aid with selecting the appropriate protection strategies for their source.	
Data for Mapping	Dataset of unconsolidated aquifers that were digitized using a set of five 1:250,000 scale maps of unconsolidated New York State aquifers, excluding Long Island, originally created by the USGS in partnership with the NYS DEC in the mid-1980s. www.opdgig.dos.ny.gov/#/home / Search on: Unconsolidated Aquifers Detailed aquifer mapping in upstate New York presents a set of maps at 1:24,000 scale for 21 extensively used (primary) aquifers. www.sciencebase.gov/catalog/item/55c9ddf7e4b08400b1fdb734 / Search on: Science Base Detailed Aquifer Mapping Program in Upstate New York

Conservation Easement Data	
Conservation easement data can help communities identify lands within their source water protection area that are already being protected, or areas that are not currently being protected but might benefit from an easement. Communities can look to the Natural Resources Conservation Service (NRCS), their Soil and Water Conservation District, Land Trusts and their own databases to identify protected lands.	
Data for Mapping	Dataset of NRCS conservation easement areas received from each state. Vector data downloadable by county. To access the NRCS Conservation Easement Areas by State, visit: www.datagateway.nrcs.usda.gov/GDGOrder.aspx National Conservation Easement Data conservation easement database www.conservationeasement.us / Shapefile available for download with sign in.

WORKING DRAFT

DEC Waterbody Inventory/Priority Waterbodies (WI/PWL) List	
The Waterbody Inventory/Priority Waterbodies List (WI/PWL) is a statewide inventory of individual waterbodies (lakes, rivers, streams, estuaries and coastlines) of New York State. The WI/PWL includes waterbody fact sheets outlining the most recent assessment of a waterbody's best use (e.g. drinking water, recreation, fish propagation), identification of water quality problems and their sources, and a summary of activities to restore and protect each individual waterbody. WI/PWL information can be used by communities to identify water quality issues and specific waterbodies where efforts will have the greatest impact.	
Data for Mapping	WI/PWL Shapefile available for download. Includes layers for Estuary, Lake Reservoir, River Stream and Shoreline segments www.data.ny.gov / Search on: Inventory & Priority Waterbodies

DEC Water Withdrawal	
Effective August 2011, all water withdrawal systems with the capacity to withdraw 100,000 gallons per day or more are required by Environmental Conservation Law 15-1501 to have a water withdrawal permit. This permit includes water withdrawal information for domestic, municipal, agricultural, commercial, industrial, power, environmental and recreational purposes. This information can be used to identify entities that are withdrawing water within a municipality.	
Data for Mapping	Dataset beginning with 2009 data and includes facility name, town, county, easting, northing and withdrawal information. The dataset does not include Nassau and Suffolk counties. www.data.ny.gov / Search on: Water Withdrawals by Facility Susquehanna River Basin Commission: This dataset includes facility name, water source, water withdrawal information and more. The dataset includes only those facilities within the Susquehanna River Basin. www.srbc.net/ / Search on: Water Application and Approval Viewer - WAAV Delaware River Basin Commission: This dataset includes facility name, location, water source, water withdrawal information and more. The dataset includes only those facilities within the Delaware River Basin. www.state.nj.us/drbc/ / Search on: Interactive Maps and click on Map of DRBC Docket and Permit Holders

WORKING DRAFT

National Hydrography Dataset	
The National Hydrography Dataset is the surface water component of the US Topo map from the USGS. Communities should use this information to identify waters constituting or surrounding their drinking water supply that may need to be included when determining their surface water protection areas.	
Data for Mapping	The National Hydrography Dataset represents the water drainage network of the United States with features such as rivers, streams, canals, lakes, ponds, etc. A shapefile is available, and the most current dataset is mapped at a scale of 1:24,000 or better. To access the National Hydrography Dataset, visit: www.datagateway.nrcs.usda.gov/GDGOrder.aspx

12 Digit Watershed Boundary	
The Watershed Boundary Dataset defines the areal extent of surface water drainage to a point, accounting for all land and surface areas. The Watershed Boundary Dataset is composed of Hydrologic Units that are each given a Hydrologic Unit Code (HUC). A Hydrologic Unit's boundaries are defined by hydrographic and topographic criteria that delineate an area of land upstream from a specific point on a river, stream or similar surface waterbody.	
Data for Mapping	The 12 Digit Watershed Boundary provides watershed boundaries as polygons at the HUC-12 level. To access the 12 Digit Watershed Boundary dataset, visit: www.datagateway.nrcs.usda.gov/GDGOrder.aspx

National Land Cover Database (NLCD)	
The USGS, in partnership with several federal agencies developed NLCD over the past two decades in: 1992, 2001, 2006, 2011 and 2016. The database provides spatial information on the Nation's land cover and land cover change. The NLCD could provide supplemental information when creating a potential contaminant source inventory, help formulate the vision statement, or aid in discussion about future land use and planning.	
Data for Mapping	The NLCD shows land cover for development (low, medium, high intensity, as well as, open space), agricultural activities (pasture and cultivated crops), water and wetland areas and forest areas (deciduous, evergreen, mixed). There is also Urban Imperviousness and Land Cover Change Index data available. The resolution of this data is 30-meters. www.mrlc.gov / Search on: NLCD Land Cover

WORKING DRAFT

USGS Digital Raster Graphic Quadrangle (1:24,000 scale)	
USGS Digital Raster Graphics are digital topographic maps that use contour lines to show the shape of the earth's surface. The USGS Digital Raster Graphic Quadrangle can aid municipalities with determining the mean wetted channel width for tributaries entering their drinking water source which is needed to calculate the critical area.	
Data for Mapping	Digital raster maps of New York State by municipality. Displays elevation of land using contour lines. www.gis.ny.gov / Search on: USGS Digital Raster Graphic Quadrangle

Zoning	
Zoning divides a community into districts, or zones. Each zone is subject to a set of zoning regulations that restrict the use and development of property. Communities should view their local zoning to determine whether it minimizes impacts to drinking water or if it indicates places where greater protection might be needed. Areas zoned as low-density residential use (with limited or no septic system use) and open space are considered low risk.	
Data for Mapping	Gather data at the local level to map zoning across the source water area.

Tax Parcel Data	
Tax parcel data identifies property type using the New York State Office of Real Property classification system. The classification system consists of numeric codes in nine categories such as agricultural, residential, commercial and industrial. This information can be used to identify point and non-point sources of contamination, as well as, aid in selecting management methods that would be the most effective for that property class.	
Data for Mapping	Datasets created as part of the NYS Statewide Parcel Map Program, including 2017 tax parcel polygons for 21 counties in New York State and a select set of counties not included in the NYS Tax Parcels dataset. Parcel data for counties not included in the NYS Tax Parcels layer or the website must be obtained directly from the county or municipality. www.gis.ny.gov / Search on: NYS Tax Parcels *Note: Communities can identify inactive landfills using the tax parcel layer and property type classification codes. A description of property class codes can be found on the NYS Department of Taxation and Finance website (www.tax.ny.gov) by searching on "property class codes."*

WORKING DRAFT

Federal Emergency Management Agency's (FEMA) National Flood Hazard Layer (NFHL) Database	
The NFHL is a geospatial database that contains current flood hazard data. It is a compilation of Flood Insurance Rate Map (FIRM) databases and Letters of Map Revision. Communities can use data from the NFHL to better understand their level of flood risk and type of flooding in their source water protection areas. *Note: If communities want to explore current digital flood hazard data, the best tool to use is the NFHL Viewer. From the NFHL Viewer, communities can zoom into their area of interest to view and download flood maps for their location. However, not all areas are covered by the NFHL data. If this is the case, there may be other FEMA products and services which provide coverage for those areas at: www.msc.fema.gov/portal/resources/productsandtools (FEMA, Search On: "Flood Map Service Center" and click on "MSC Products and Tools").*	
Data for Mapping	Incorporates FIRM databases and Letters of Map Revision that have been issued against those databases. The FIRM database depicts flood risk information and supporting data used to develop the risk data. It is derived from Flood Insurance Studies, previously published FIRMs, flood hazard analyses performed in support of the Flood Insurance Studies and FIRMs, and new mapping data, where available. It is updated on a monthly basis. www.fema.gov/national-flood-hazard-layer-nfhl / Search on: NFHL Viewer

WORKING DRAFT

Establish and Delineate Groundwater Protection Areas

This section outlines how to establish and delineate protection areas for groundwater sources. Below are required and recommended protection areas for a community's wells or wellfield.

Groundwater Protection Areas	
Ownership and Control Area (Required)	The required ownership and control area under New York State Sanitary Code helps to reduce any direct contamination to the wellhead (Part 5, Subpart 5-1, Public Water Systems- Appendix 5D of New York State Sanitary Code). Wells serving public water systems shall be located such that the owner of the water system possesses 100 ft ownership around the well and controls land activities within 200 ft of the well.
Critical Area: Select most appropriate threshold between 1-year and 5-year time of travel (Recommended)	This range is the area that contributes water to the well between a 1-year and 5-year period. The community should evaluate the area using different travel times within this 1 to 5-year range and make an informed decision about the most appropriate time of travel threshold to use for the critical area.
Source Water Area: Remaining area within the contribution area (Recommended)	This area represents the remaining land area, beyond the critical area, but still within a zone that contributes water to the well. Communities may wish to delineate specific areas such as direct recharge to the aquifer (where the aquifer is exposed at ground surface) and indirect recharge (on lands where overland flows ultimately terminate in the aquifer's recharge area).

These groundwater protection areas can be delineated by various methodologies that range in detail from relatively simple with little to no technical expertise necessary to highly complex models that require a high level of hydrogeologic and modelling expertise. Prior to delineating the groundwater protection area, a community should consider a few factors to select the most appropriate delineation method for their source of drinking water.

Below is a list of factors a community should consider before moving onto selecting a delineation method for their groundwater protection area. One factor alone may steer a community towards a specific delineation method. For example, if a community does not have sufficient data, they may choose a simple method rather than a sophisticated method such as a numerical model. This list is not all encompassing, meaning there may be other factors that a community needs to consider.

WORKING DRAFT

Factors to Consider When Selecting an Appropriate Delineation Method

Availability of Data	An in-depth review of all available public water system source data should occur prior to selection of a delineation method. A significant amount of the information needed may already have been collected as part of the development of the water supply. This review can determine whether a more sophisticated level of delineation can occur or if more information is needed to use one of the methods provided. Available data for the public water system could include pumping tests, observation well data, etc.
Protection Methods	Protection methods can range from regulatory methods (e.g. zoning, comprehensive plans, intermunicipal agreements) to non-regulatory methods (e.g. land acquisition, encouraging the use of best management practices, public outreach and education). Specific protection strategies do not need to be identified at this time, but an idea or category of the strategy should be. For example, a community may weigh using zoning against using public education and outreach. Zoning may require a better understanding of the source water protection area if the purpose is to prevent development or other potentially harmful land use changes within the source waters critical area. Public education and outreach do not need to place such an emphasis on a specific area, so a less sophisticated delineation method could be utilized.
Technical Assistance Provider/Funding	It may be necessary to hire a qualified professional to conduct a study to delineate a drinking water source protection area, especially for a groundwater source. For complicated delineation scenarios, a community may need to contact state, regional and county agencies, and/or non-governmental organizations to inquire about additional technical assistance or funding resources.

WORKING DRAFT

Groundwater Delineation Methods

This table contains several methods for a community to use ranging from simple to highly complex. More sophisticated delineation methods are recommended for systems with a large withdrawal rate since a larger portion of the aquifer is typically used. Before selecting a method, communities should be sure to review *Factors to Consider When Selecting an Appropriate Delineation Method* above.

Method	Approach	Description	Equation	Data Required	Advantages	Disadvantages	Water Withdrawal Rate
Arbitrary Fixed Radius	Geometric	Predetermined fixed radius around your intake.	X feet around the intake	None	• Simple • Inexpensive • No data required • Little to no technical expertise	• Delineation may not include areas that impact your source water. • Does not consider any hydrogeologic parameters.	• Recommended for systems with a withdrawal rate less than 100,000 Gallons Per Day (GPD).
Volumetric Flow Equation	Analytical	Delineates a circular area using a calculated fixed radius volumetric flow equation.	$r=\sqrt{(Qt/nh\pi)}$ r = radius of circle (ft) Q = pumping rate t = travel time n = porosity h = length of well screen	• Pumping rate • Aquifer porosity • Well screen length	• Simple • Inexpensive • Not data intensive	• Based on a relatively simple equation. • Delineation may not include areas that impact your source water. • Does not consider groundwater flow.	• Recommended for systems with a withdrawal rate greater than 100,000 GPD but less than 1 Million Gallons Per Day (MGPD).
Calculated Fixed Radius - Half-Circle	Analytical	Allows circular shape to be altered to a half circle shape oriented in the up-gradient direction of groundwater flow.	$r=\sqrt{(2Qt/nh\pi)}$ r = radius of circle (ft) Q = pumping rate t = travel time n = porosity h = length of well screen	• Pumping rate • Aquifer porosity • Inferred flow direction (from topography) • Length of well screen	• Incorporates groundwater flow direction • Simple • In-expensive • Not data intensive	• Based on a relatively simple equation. • Delineation may not include areas that impact your source water.	• Recommended for systems with a withdrawal rate greater than 100,000 GPD but less than 1 MGPD.
Uniform Flow Analytical Model	Analytical	Delineates a protection area in a sloping water table using the uniform flow equation.	$-\frac{Y}{X} = \tan\frac{2\pi Kbi}{Q} Y$ $Y_L = \pm\frac{Q}{2Kbi} = \pm Boundary$ $X_L = \frac{Q}{2\pi Kbi} = Null\ Point$ Q = pumping rate K = Hydraulic Conductivity b = Saturated Thickness i = Hydraulic gradient	• Pumping rate • Hydraulic conductivity • Saturated thickness • Hydraulic gradient	• Incorporates site specific hydrogeologic parameters. • Generally understood and solved by hydrogeologists.	• Does not consider the drainage area, aquifers diverse composition or intermittent rainfall.	• Recommended for systems with a withdrawal rate greater than 100,000 GPD but less than 1 MGPD.

WORKING DRAFT

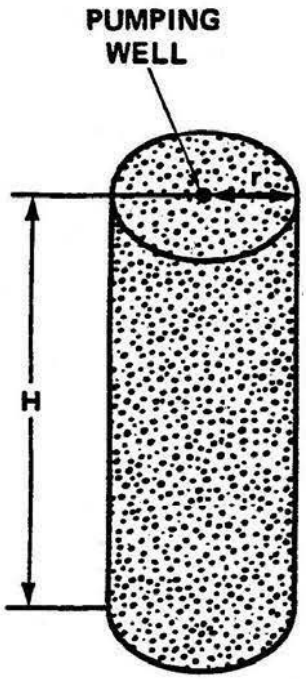
Groundwater Delineation Methods (continued)

Method	Approach	Description	Equation	Data Required	Advantages	Disadvantages	Water Withdrawal Rate
Analytical Element Modeling (WhAEM and GFLOW)	Advanced Analytical	A two-dimensional single layer model that used mathematical functions to determine the size and shape of the protection area.	Computer based model	• Pumping rate • Groundwater flow direction • Aquifer transmissivity • Aquifer thickness • Aquifer recharge rate • Aquifer porosity	• More sophisticated than the shape methods in that hydrogeologic features such as streams, lakes and flow boundaries can be incorporated into the model. • More accurate delineation of source water.	Assumptions: • Constant flow and pumping parameters • Aquifer composition is diverse • Complex to apply • Large data requirement • High level of expertise required	• Recommended for systems who have a withdrawal rate greater than 1 MGPD.
Hydrogeologic Mapping	Mapping	Delineate source water protection area from characteristics of an aquifer.	Mapping	• Aquifer boundary • Aquifer thickness • Aquifer Soil Type • Aquifer porosity or transmissivity • Hydraulic gradient	• High level of confidence • Well suited for fractured bedrock and conduit-flow karst aquifers.	• Expensive to apply • Large data requirement • High level of expertise in geomorphic and geologic mapping.	• Systems with a withdrawal rate greater than 100,000 GPD should consider using this method.
MODFLOW	Numerical Modeling	Grid based numerical model that provides multi-layer 3-D representation of groundwater flow.	Computer based model	• Aquifer boundary • Geology • Water table elevations • Aquifer transmissivity • Hydraulic conductivity	• Useful for complex hydrogeologic conditions • High level of confidence • One of the most accurate models • Easier to defend for regulatory purposes	• Expensive to conduct • Large data requirement • High level of hydrogeologic and modeling expertise required.	• Recommended for systems with a withdrawal rate greater than 1 MGPD.

The following tools are fillable forms that can be used to aid with delineating the critical area of a groundwater supply. It is recommended the tools be used to determine a critical area no larger than 365 days, or 1 year. Inputs necessary to be filled out are highlighted in yellow.

WORKING DRAFT

Delineation of the Critical Area Using the Volumetric Flow Equation



$$Q\,t = n\,\pi\,H\,r^2$$

VOLUME PUMPED — VOLUME OF CYLINDER

$$r = \sqrt{\frac{Q\,t}{\pi\,n\,H}}$$

WHERE

	Q = Pumping Rate of Well (gpm)
	n = Aquifer Porosity
	H = Open Interval or Length of Well Screen (ft)
	t = Time (days)

Using the parameters entered above, the calculated Critical Area Protection Radius is approx.

NaN **feet**

or

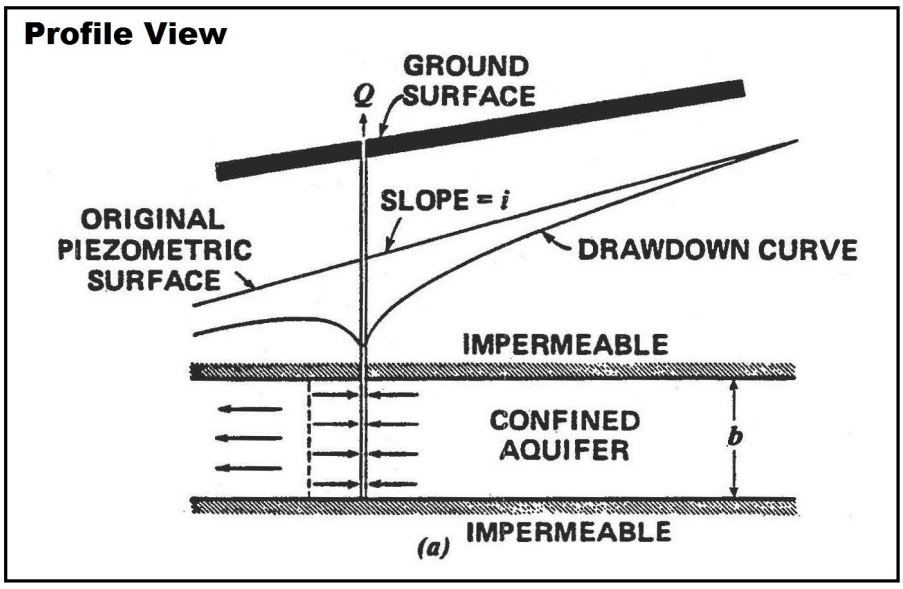
NaN **feet at 60 days**

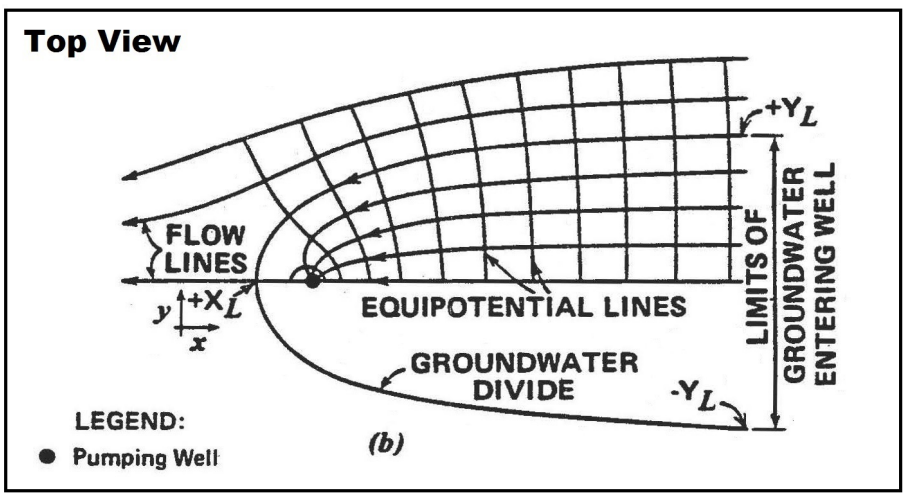
NaN **feet at 90 days**

NaN **feet at 120 days**

Adapted from USEPA, Guidlines for Delineation of Wellhead Protection Areas, 1987

Delineation Using the Uniform Flow Analytical Model





UNIFORM-FLOW EQUATION

$$-\frac{Y}{X} = \tan\left(\frac{2\pi Kbi}{Q}\,Y\right)$$

Where:
Q = Well Pumping Rate (gpm)
K = Hydraulic Conductivity (feet/day)
b = Saturated Thickness (feet)
i = Hydraulic Gradient
π = 3.1416

BOUNDARY LIMIT $Y_L = \pm \frac{Q}{2Kbi} = \pm$ NaN (feet)

DISTANCE TO DOWN-GRADIENT NULL POINT $X_L = -\frac{Q}{2\pi Kbi} =$ NaN (feet)

SOURCE: Todd, 1980

NOT TO SCALE

Multiple Wells and Multiple Wellfields: Another item public water systems may have to consider is how to approach wells that are relatively close to each other. Depending upon the proximity and drawdown of the wells, one delineation model may be used. Pumping and/or drawdown of one well should be looked at to determine if it affects a neighboring well. If so, these wells should have one delineation model done. This information can be gathered by looking at water withdrawal permits or from local knowledge.

Groundwater Under Direct Influence (GWUDI) of Surface Water Delineation: It is recommended that surface water delineation methods are done on GWUDI wells first. If there are available resources after, a groundwater delineation should also be done to account for groundwater influences. Deciding on which surface water and groundwater method to use can be determined by reviewing this section and the *Establish and Delineate Surface Water Protection Areas* section as well as the associated tables.

Establish and Delineate Surface Water Protection Areas

Surface waters that serve as sources of public drinking water in New York State include waterbodies with a diverse set of characteristics. Surface water sources may come in the form of streams, rivers, lakes and reservoirs. It is recommended that different protection areas be established for lakes/reservoirs and rivers/streams of the state.

Communities with a surface water supply should consider slopes and soil types to aid with delineating the critical area. Certain land use activities (e.g. development) on steep slopes and some soil types may be more likely to degrade water quality due to slope failures, increased stormwater runoff, and erosion. If these areas are in close proximity to the surface water, a community should consider factoring them in when establishing the critical area. The United State Department of Agriculture (USDA) has a Web Soil Survey tool that provides soil data and information produced by the National Cooperative Soil Survey. To learn more, visit: www.websoilsurvey.sc.egov.usda.gov/App/HomePage.htm (USDA, Search On: "Web Soil Survey").

Reservoirs and Lakes	
Control and Monitoring Area (Recommended)	1000-foot radius from intake
Critical Area (Recommended)	300 to 1000 feet from the shore of the lake or reservoir including tributaries flowing into the waterbody within that range. The 300 to 1000-foot range is based on distances used for NYS DEC Watershed plans. It is recommended that the community chooses a distance that is most appropriate and applicable to their drinking water source. The recommended distance to follow upstream tributaries should be based on the mean wetted channel width (MCW) multiplied by 20. Refer to the MCW Equation below to calculate this distance.
Source Water Area (Recommended)	Remaining area within upstream Hydrologic Unit Code (HUC) 12 watershed boundaries that contain any portion of the critical area. If the intake lies near the upstream boundary of the HUC 12, it is recommended that the source water area be extended to encompass the next upstream HUC 12 watershed(s). Refer to *Mapping Resources* for information on where to obtain HUC 12 watershed boundary data for mapping.

WORKING DRAFT

Rivers and Streams	
Control and Monitoring Area (Recommended)	1000-foot radius from intake
Critical Area (Recommended)	300 to 1000 feet from the shore of the river or stream. The 300 to 1000-foot range is based on distances used for NYS DEC Watershed plans. It is recommended that the community chooses a distance that is most appropriate and applicable to their drinking water source. The recommended distance upstream to follow the source river or stream is 10-miles. *For fast flowing waters, a 4 to 6-hour Time of Travel distance is recommended to be used with low and high flow OR 10 miles upstream of intake, whichever is furthest. Refer to Using StreamStats below to calculate a Time of Travel distance.* The recommended distance to follow upstream tributaries flowing into the source river or stream should be based the MCW multiplied by 20. Refer to the Mean Wetted Cannel Width Equation below to calculate this distance.
Source Water Area (Recommended)	Remaining area within upstream Hydrologic Unit Code (HUC) 12 watershed boundaries that contain any portion of the critical area. Refer to *Mapping Resources* for information on where to obtain HUC 12 watershed boundary data for mapping.

Mean Wetted Channel (MCW) Width Equation: To determine the MCW, it is recommended to use the USGS 1:24,000 Topographic map. This map provides the necessary contours to be used on either side of the tributary to determine MCW. When measuring width, communities should measure at the tributary's widest point, which is where the tributary enters the main waterbody. The width is multiplied by 20 to determine how far upstream the protection area should extend. This distance is a recommended minimum. Communities are encouraged to use their professional judgement to determine if they need to go further up the tributary to ensure that the unique characteristics of their source water are taken into consideration when determining distance.

Equation: $Mean\ Wetted\ Channel\ Width\ (MCW)\ x\ 20$

As a reminder, the drinking water source should already have a 300 to 1,000 ft critical area from the surface waters edge. To calculate the distance upstream, start at the edge of the critical area.

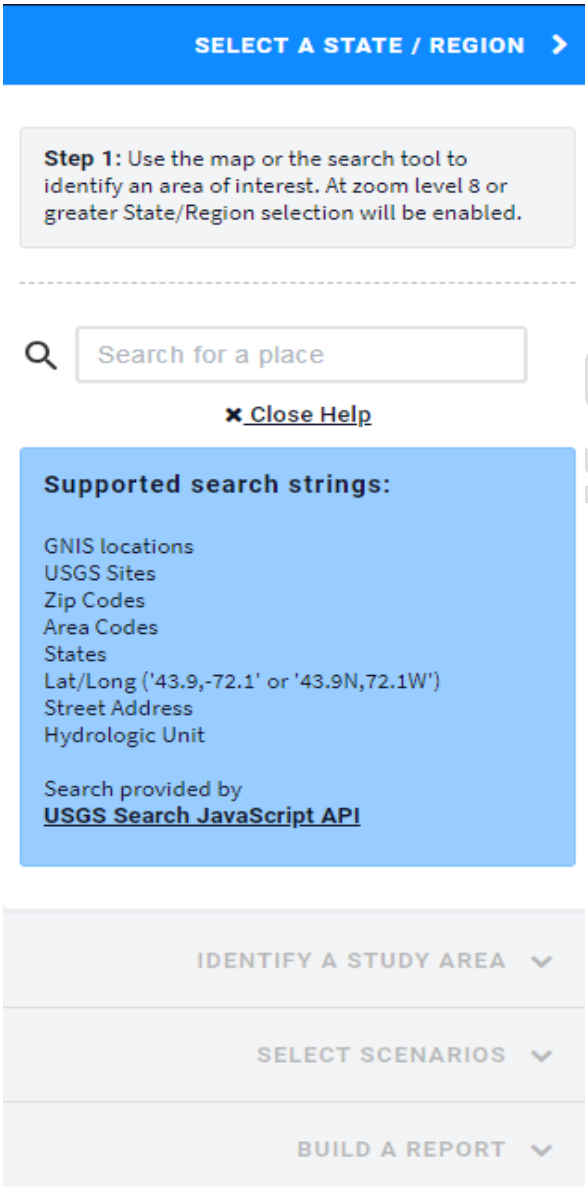
In some cases, the distance calculated for a tributary may reach a branching tributary. It is recommended the community continue up each branching tributary until the calculated distance is reached.

WORKING DRAFT

Using StreamStats

USGS StreamStats is a publicly available spatial analytical tool that can be used to make informed decisions on water-related activities in a specified area. Included below are steps to delineate a watershed and calculate a surface waterbody velocity using StreamStats. The online tool consists of the map frame which will display a digital map layer and allow users to select points of interest. The sidebar to the left of the map frame allows users to zoom into areas of interest and obtain additional characteristics for the delineated area. The map frame and sidebar include help icons that can assist the user with a specific step or the overall program. The map frame includes additional tools for users to use, but this guidance focuses on the sidebar tools for the purpose of delineating a watershed.

To access USGS StreamStats, visit: www.streamstats.usgs.gov/ss/. For additional assistance, the user manual can be accessed by clicking on the "? Help" tab.



For Watershed Delineation:

Step 1: Identify an area of interest

- The sidebar to the left of the map frame allows the user to search for a specific place by inputting an address, a name, a zip code, coordinates, etc. This easily allows the user to zoom into the specified area. Since this program is for the entire United States, be sure to select the right area of interest in case multiple options appear when searching for a specific place.

Step 2: Select a regional study area

- Once the area of interest is selected, the frame will zoom into the specified area. State and regional study areas will appear in the sidebar. Select "New York" to move on.

Step 3: Zoom in to the study area

- Now that a study area has been identified in the frame, a red dot will appear for the specified location and blue lines identifying waterbodies. If blue lines do not appear, zoom in further to the specified location or red dot.

Step 4: Delineate the watershed

- Once the waterbody lines appear, click the "delineate" button on the sidebar to activate the delineation tool. Move the cursor to where the public water supply intake is and drop a point on the closest waterbody line. If the delineation point is valid, a box on the lower right corner of the frame will notify the user while the system begins to delineate the basin. If the point is invalid, move the delineation cursor slightly to another section of the waterbody line to try again.

WORKING DRAFT

<u>Step 5</u>: Delineation complete

- As long as the delineation point is valid, the map frame will zoom out to show the delineated watershed area for the public water supply highlighted in yellow. This area can be downloaded as a shapefile to then import into a GIS application. Click “download basin” and then “shapefile” in the sidebar to download the watershed area.
- *Note: To calculate velocity, click “continue” under download basin in the sidebar and proceed with the steps below.*

To Calculate Velocity:

Once a watershed is delineated (see *Using StreamStats* for watershed delineation above), StreamStats can provide information that can be used to calculate velocity for a given stream using the equation below. This output can be used to calculate a distance associated with Time of Travel for a surface waterbody.

Equation:

$$\frac{Bankfull\ Streamflow\ (\frac{ft^3}{s})}{Bankfull\ Area\ (\frac{ft^2}{s})} = Velocity\ \left(\frac{ft}{sec}\right)$$

<u>Step 1</u>:

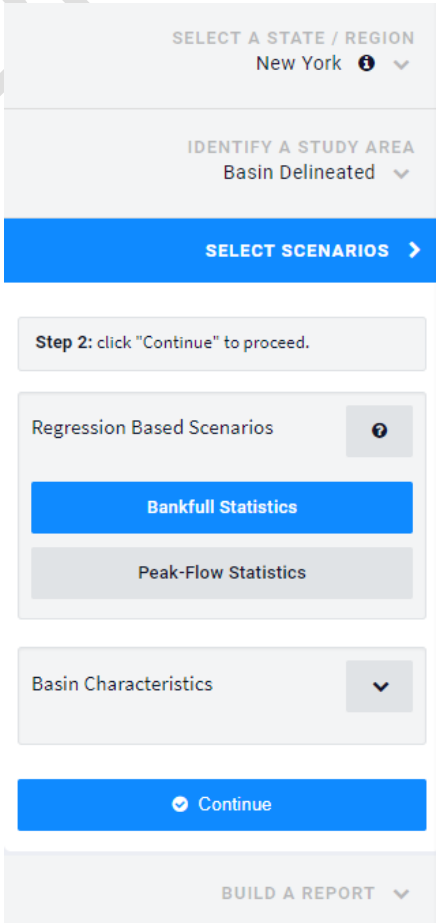
- Two regression scenarios will appear in the sidebar: bankfull statistics and peak flow statistics. In order to obtain the necessary inputs to calculate velocity, bankfull statistics must be selected. If the user would like to learn more about the watershed area, peak flow statistics and specific basin characteristics could also be selected. Click “continue” once the desired statistics are selected.

<u>Step 2</u>:

- StreamStats will then calculate the selected basin characteristics and have default reports selected in the sidebar to display in the next step. Basin Characteristics Report and Scenario Flow Reports should be selected. Click “continue” to proceed to the report.

<u>Step 3</u>:

- The map frame will display a report that includes the previous selected characteristics for the delineated watershed. The two parameters needed to calculate velocity are Bankfull Streamflow and Bankfull Area. These two values can be found under the Bankfull Statistics Flow Report section. This report can also be downloaded as a shapefile and imported into a GIS application.
- Using these two values and the velocity equation provided above, an approximate velocity for the waterbody can be calculated.



WORKING DRAFT

To calculate a Time of Travel distance

To determine the upstream Time of Travel distance to be used for the critical area for fast flowing rivers and streams, a 4 to 6-hour Time of Travel is recommended to be used with low and high flow OR 10 miles upstream of intake, whichever is furthest. Determining 4 or 6-hour Time of Travel distance can be done using an equation or flow modeling. The two methods are described below.

Determining the upstream Time of Travel distance for the Critical Area by equation: Using a designated 4 to 6-hour Time of Travel and a value for average stream velocity, a community can calculate a distance to delineate their critical area. If the average stream velocity is not known, StreamStats is a tool that can be used to determine this. Refer to the *Using StreamStats* section to calculate velocity. This Time of Travel distance equation is not a computer-based model and does not consider all factors.

$$L = 3{,}600 \cdot T_t \cdot V$$

L = distance between two points, ft
T_t = travel time, hours
[4]V = average velocity of flow between two points, ft/s
3,600 = conversion factor, seconds to hours

[4]Refer to *Using StreamStats* section

Determining the upstream Time of Travel distance for the Critical Area by flow modeling: Several computer-based flow models are available that utilize hydrologic, geographic and water quality parameters to determine a more precise Time of Travel distance for a surface waterbody. This method is more accurate than fixed distance since it considers surface water characteristics, as well as, additional information of the surrounding area. While this model may provide the most accurate delineation of the surface water critical area, it requires a significant amount of data and expertise in hydrogeology and modeling.

Back to section ***2.2 Prepare a Drinking Water Source Protection Map*** of the Framework.

WORKING DRAFT

2.3 Create a Potential Contaminant Source Inventory

Gathering information specific to each potential contaminant source within the drinking water source protection areas will allow communities to focus their protection efforts. Using the potential contaminant source list and descriptions in the subsequent sections of the Resource Kit, complete the steps below to create a potential contaminant source Inventory.

Step 1: List potential contaminant sources lying within established protection areas.

The potential contaminant sources should be listed and sorted by protection area. For scenarios where a community identifies facilities or operations that encompass multiple potential contaminant sources or identifies many potential contaminant sources of the same type, the community may want to consider grouping them.

Step 2: Gather and review relevant information of potential contaminant sources.

After identifying the potential contaminant sources that lie within the protection areas, the community should gather information specific to each potential contaminant source. Understanding the specifics of the potential contaminant sources may help the community identify any deficiencies and focus implementation actions to mitigate or eliminate those deficiencies. The subsequent questions should be considered when creating an inventory of the potential contaminant sources. It is important to note that certain questions listed below may not apply to all potential contaminant sources. If a municipality plans on contacting a regulated facility, they should refer to the "Questions to Ask the Regulated Entity" template provided in *Appendix C: Questions to Ask the Regulated Entity*. The community may also choose to consider additional information when creating an inventory such as reviewing EPA's Enforcement and Compliance History Online (ECHO) database or reaching out to the appropriate NYS DEC Regional contact (*Appendix B: Contacts*). The EPA ECHO database can be accessed at www.echo.epa.gov/ (US EPA, Search On: "Enforcement and Compliance History Online").

- Is the facility or activity regulated? If yes, who is the regulatory authority?
- Is there a history of violations? If yes, how have they been addressed?
- What is the age of the facility and has equipment been properly maintained and/or upgraded?
- Are contaminants stored and/or disposed correctly?
- What is the quantity of contaminant(s) being handled, stored and/or discharged?
- What is the toxicity of the contaminant(s)?
  - For chemical-specific information regarding toxicity to humans, visit: www.atsdr.cdc.gov/substances/index.asp (Center for Disease Control and Prevention, Agency for Toxic Substances & Disease Registry, Search On: "Toxic Substances Portal").
- What management practices are required by the facility?
- Is there an Agricultural Environmental Management (AEM) Strategic Plan covering the protection area?
  - For information on AEM Strategic Plans contact the local Soil and Water Conservation District *(Appendix B: Contacts).*
- 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? If yes, how is it being addressed?
  - For information on Clean Water Plans and Watershed Management Plans, visit:
    - www.dec.ny.gov/chemical/23835.html (NYS DEC, Division of Water, Search On: "Clean Water Plans");
    - www.dec.ny.gov/chemical/103264.html (NYS DEC, Division of Water, Search On: "Nine Element Watershed Plans");

WORKING DRAFT

- www.dec.ny.gov/lands/95817.html (NYS DEC, Division of Water, Search On: “Lakes and Rivers”); and
- www.dos.ny.gov/opd/programs/waterResourcesMgmt/watershedplansNY.html# (NYS DOS, Office of Planning & Development, Search On: “Water Resources Management” and click on “Watershed Plans in New York”).

Step 3: Create a potential contaminant source inventory table.

After gathering relevant information for potential contaminant sources lying within the community’s established protection areas, the information may be organized into a table that is clear and comprehensible. The potential contaminant source inventory may include information specific to each potential contaminant source such as contaminant(s) of concern, protection area, and other relevant information considered. For an example, refer to *Potential Contaminant Source Inventory Table - Example* at the end of this section.

Step 4: Share the potential contaminant source inventory table with the stakeholder group.

Sharing the potential contaminant source inventory table with the stakeholder group will allow members to start thinking about potential implementation actions and ways they could help facilitate those actions.

WORKING DRAFT

Potential Contaminant Sources

The following list includes potential sources of contamination that may impact the quality of drinking water sources, if improperly managed. The nature of potential contamination events from the sources provided below are variable. For example, contamination can occur via direct discharge to source waters, indirect discharges through stormwater runoff, or by providing a path to source waters through conduits. The list should not be interpreted as all-encompassing and municipalities should use local and historical knowledge to augment the list. For example, some public water systems may have easements with electrical and wastewater utilities, logging companies, and other operations within established protection areas. The community should work with municipal leaders to determine easements within these areas and to ensure proper management.

Bulk Storage

- Chemical Bulk Storage Facilities (e.g. chemical manufacturing)
- Major Oil Storage Facilities (e.g. petroleum storage and distribution centers)
- Petroleum Bulk Storage Facilities (e.g. gas stations)

Waste Management and Disposal

- Active Landfills
- Inactive Landfills (Title 12)
- Hazardous Waste Management Facilities
- Land Application Sites
- Vehicle Dismantling Facilities (e.g. junkyards)

Contamination Sites or Incidents

- Remediation Sites (e.g. State Superfund Sites, Brownfield Cleanup Sites, Environmental Restoration Program Sites, Federal Superfund Sites)
- Spill Incidents

Mineral Extraction Sites

- Oil and Gas Wells
- Orphan Oil and Gas Wells
- Mines
- Historical Abandoned Mines

Discharges to Water

- State Pollutant Discharge Elimination System Permitted (SPDES) Facilities (e.g. municipal wastewater treatment works, municipal separate storm sewer systems (MS4s), combined sewer overflows (CSO), concentrated animal feeding operations (CAFO), solid waste management facilities, manufacturing operations)
- Combined Sewer Overflows (CSOs) and Sanitary Sewer Overflows (SSOs)

Transportation

- Airports (e.g. de-icing operations)
- Transportation Corridors (e.g. highways, railroads, hazardous material routes)
- Road Maintenance Facilities
- Salt and Deicers Storage

Agriculture

- Agricultural Activities

Residential Sources

- On-site Septic Systems (e.g. septic tanks, cesspools)
- Lawn and Garden chemicals
- Waterfront Property Management

Conveyances and Pipelines

- Oil and Gas Pipelines

Other

- Golf Courses
- Marinas and Boat Launches
- Stormwater
- Toxic Release Inventory (TRI) Facilities
- Fire Training and Dedicated Fire Training Facilities
- Nutrient Loading (Lakes Only)
- Saltwater Intrusion
- Road Salt Application

WORKING DRAFT

Potential Contaminant Source Descriptions

Provided below are descriptions of potential contaminant sources. If the potential contaminant source is regulated or has applicable regulatory requirements pertaining to source water protection, these are included in the core regulatory requirements box. Information is also included on the availability of data for mapping that can be downloaded for the creation of an updated drinking water source protection map. Communities should add their own facilities and information if it is not included in the publicly available data for mapping.

Bulk Storage

Chemical Bulk Storage Facilities	
Chemical Bulk Storage facilities are facilities that contain one or more hazardous substances in an aboveground storage tank larger than 185 gallons, any size underground storage tank, with some exceptions, or in a non-stationary tank used to store 1,000 kg or more for a period of 90 consecutive days or more.	
Contaminant Category of Concern	Chemical – hazardous substances are chemicals, or mixture of chemicals listed in 6 New York Codes, Rules and Regulations Part 597. Hazardous substances are those that, if improperly stored, can pose a serious threat to human health and the environment.
Core Regulatory Requirements	Chemical Bulk Storage facilities are regulated by and must be registered with the DEC's Division of Environmental Remediation and managed in compliance with applicable regulations for the storage and handling of hazardous substances. For more information, visit: www.dec.ny.gov/chemical/2648.html (NYS DEC, Division of Environmental Remediation, Search On: "Regulation Summary of Chemical Tanks").
Where to Obtain Potential Contaminant Source-Specific Information	Obtain facility-specific information via NYS DEC's Bulk Storage Database Search. Information available may include site number, status, expiration date, site type, site name, address, county, location, status, installation or closure date, capacity, product stored and tank/piping equipment specifications. • To access NYS DEC's Bulk Storage Database Search, visit: www.dec.ny.gov/cfmx/extapps/derexternal/index.cfm?pageid=4 (NYS, Search On: "Environmental Site Database Search" and click on "Bulk Storage Database Search").
Data for Mapping	Dataset showing status information for Chemical Bulk Storage Facilities www.data.ny.gov/ Search on: Bulk Storage Facilities in New York State

WORKING DRAFT

Major Oil Storage Facilities	
Major Oil Storage Facilities are facilities that store a total of 400,000 gallons or more of petroleum in aboveground and underground storage tanks, or vessels that transfer petroleum to another vessel while operating in the waters of New York State.	
Contaminant Category of Concern	Chemical – petroleum is a mixture of hydrocarbons that originally come from crude oil. Exposure to these hydrocarbons can cause negative health effects in humans.
Core Regulatory Requirements	Major Oil Storage Facilities are regulated by and must be licensed by the DEC's Division of Environmental Remediation and managed in compliance with applicable regulations for the storage and handling of petroleum.
Where to Obtain Potential Contaminant Source-Specific Information	Obtain facility specific information via NYS DEC's Bulk Storage Database Search. Information available may include site number, status, expiration date, site type, site name, address, county, location, status, installation or closure date, capacity, product stored and tank/piping equipment specifications. • To access NYS DEC's Bulk Storage Database Search, visit: www.dec.ny.gov/cfmx/extapps/derexternal/index.cfm?pageid=4
Data for Mapping	Dataset showing status information for Major Oil Storage Facilities www.data.ny.gov / Search on: Bulk Storage Facilities in New York State

Petroleum Bulk Storage Facilities	
Petroleum Bulk Storage facilities are those that store more than 1,100 gallons of petroleum in aboveground and underground storage tanks, or facilities with one or more underground storage tanks larger than 110 gallons.	
Contaminant Category of Concern	Chemical – petroleum is a mixture of hydrocarbons that originally come from crude oil. Exposure to these hydrocarbons can cause negative health effects in humans.
Core Regulatory Requirements	All tanks (with some exceptions) for the storage of petroleum at facilities must be registered with NYS DEC's Division of Environmental Remediation and managed in compliance with applicable regulations for the storage and handling of petroleum. For more information, visit: www.dec.ny.gov/chemical/2642.html (NYS DEC, Division of Environmental Remediation, Search On: "Regulation of Petroleum Tanks").
Where to Obtain Potential Contaminant Source-Specific Information	Obtain facility-specific information via NYS DEC's Bulk Storage Database Search. Information available may include site number, status, expiration date, site type, site name, address, county, location, status, installation or closure date, capacity, product stored and tank/piping equipment specifications. • To access NYS DEC's Bulk Storage Database Search, visit: www.dec.ny.gov/cfmx/extapps/derexternal/index.cfm?pageid=4
Data for Mapping	Dataset showing status information for Petroleum Bulk Storage www.data.ny.gov / Search on: Bulk Storage Facilities in New York State

WORKING DRAFT

Waste Management and Disposal

Active Landfills	
Landfills are well-engineered facilities used for the disposal of solid waste. Landfills are designed, constructed, operated and closed to minimize adverse environmental impacts. The five types of solid waste landfills in New York State are Municipal Solid Waste Landfills, Construction and Demolition Debris Landfills, Long Island Landfills, Industrial Waste Monofills and Municipal Waste Combustor Ash Monofills.	
Contaminant Categories of Concern	➢ Chemical – several materials that end up in landfills often contain toxins such as arsenic, acids, mercury and lead. Leachate may contain chemicals such as methane, carbon dioxide, organic acids, alcohols and aldehydes, and can react with one another to produce a toxic leachate. ➢ Biological – leachate may contain bacteria, parasites and viruses. ➢ If the landfill is improperly maintained, these contaminants have the potential to seep into the environment and pose a threat to public health.
Core Regulatory Requirements	NYS DEC's Division of Materials Management is responsible for regulating solid waste management facilities in areas such as permitting, financial assurance, inspections, compliance, closure/post-closure care, operational data reported by facilities and technical assistance.
Data for Mapping	Dataset of active solid waste management facilities, including active landfills www.data.ny.gov / Search on: Solid Waste Management Facilities

WORKING DRAFT

Inactive Landfills (Title 12)	
Through the Inactive Landfill Initiative, DEC is evaluating inactive landfills (approximately 2,000) statewide, where it is suspected that illegal disposal of solid waste may have occurred, or the facility is suspected of contaminating a drinking water supply and there is no monitoring or an inadequate monitoring program in place. Investigations are completed at higher risk inactive landfills to evaluate impacts on the groundwater at the landfill, possible impacts to downgradient receptors and to determine a need for mitigation/remediation.	
Contaminant Category of Concern	Chemical – critical drinking water contamination concerns associated with emerging contaminants (Per- and Polyfluoroalkyl Substances and 1,4-dioxane) along with other chemicals of concern (i.e. volatile organic compounds and metals) from inactive landfills.
Core Regulatory Requirements	Title 12 of Article 27 of Environmental Conservation Law required the DEC to prioritize inactive solid waste sites based on their known or potential impact on drinking water sources for mitigation and/or remediation. The Division of Materials Management has been tasked with completion of this initiative.
Data for Mapping	Datasets created as part of the NYS Statewide Parcel Map Program, including 2017 tax parcel polygons for 21 counties in New York State and a subset of counties not included in the NYS Tax Parcels dataset. Parcel data for counties not included in the NYS Tax Parcels layer or the website must be obtained directly from the county or municipality. www.gis.ny.gov / Search on: NYS Tax Parcels *Note: Communities can identify inactive landfills using the tax parcel layer and property type classification codes. A description of property class codes can be found on the NYS Department of Taxation and Finance website (www.tax.ny.gov) by searching on "property class codes."*

WORKING DRAFT

Hazardous Waste Management Facilities	
Hazardous waste management facilities may generate and/or receive off-site hazardous wastes for treatment, storage and/or disposal. Treatment facilities alter the character or composition of hazardous waste. Treatment methods include incineration, oxidation, and other treatment methods that allow waste to be recovered and reused.	
Contaminant Category of Concern	Chemical – hazardous substances are chemicals, or mixture of chemicals listed in 6 New York Codes, Rules and Regulations Part 597. Hazardous wastes contain chemicals that, if improperly managed, can pose a serious threat to human health and the environment. Hazardous wastes may be designated due to a characteristic of the waste (e.g. toxic, reactive, ignitable), the chemical itself or the process by which the waste is generated. The designation of and listings for hazardous wastes may be found in 6 New York Codes, Rules and Regulations Part 371.
Core Regulatory Requirements	NYS DEC's Division of Materials Management regulates hazardous waste management facilities. DEC issues the enforceable document (e.g. permits, Orders on Consent), conducts inspections, issues Notices of Violations, as well as, gathering and processing hazardous waste data.
Data for Mapping	Not Available – Employ local knowledge

Land Application Sites	
Land application of organic wastes such as sewage sludge, septage, food processing and brewery/vineyard wastes, and other organic materials provides valuable nutrients to the soil while diverting material from landfilling.	
Contaminant Categories of Concern	➢ Chemical – over application may lead to excess nutrients, such as nitrogen and phosphorus, entering the water supply from runoff. ➢ Biological – the material applied may contain bacteria, parasites and viruses. ➢ If improperly applied, these contaminants have the potential to contaminate the water supply causing potential health impacts.
Core Regulatory Requirements	DEC's Division of Materials Management is responsible for regulating land application and associated storage facilities in accordance with 6 New York Codes, Rules and Regulations Part 361-2. These regulations cover quality and quantity of the waste being applied, nutrient loading calculations and site-specific soil, land, and water requirements. DEC issues permits and registrations, conducts inspections, reviews annual reports for compliance, responds to complaints and provides technical assistance to the facility.
Data for Mapping	Dataset of active solid waste management facilities, including land application sites. www.data.ny.gov / Search on: Solid Waste Management Facilities

WORKING DRAFT

Vehicle Dismantling Facilities	
Businesses or sites which decommission, dismantle and recycle end-of-life vehicles to recover parts and metal.	
Contaminant Category of Concern	Chemical – fluids from dismantled vehicles include oils, anti-freeze, hydraulic fluid, and gasoline. Other problematic vehicle components include mercury-containing switches and sensors, lead acid batteries, refrigerants and airbags.
Core Regulatory Requirements	DEC's Division of Materials Management regulates Vehicle Dismantling Facilities through 6 New York Codes, Rules and Regulations Part 361-7. All Vehicle Dismantling Facilities and some motor vehicle repair shops require registration and must comply with operating requirements such as collection and proper disposal of fluids. Vehicle hulks may not be shredded or crushed before problem components have been removed or airbags have been deployed.
Data for Mapping	Dataset of active solid waste management facilities, including vehicle dismantling sites www.data.ny.gov / Search on: Solid Waste Management Facilities Datasets created as part of the NYS Statewide Parcel Map Program, including 2017 tax parcel polygons for 21 counties in New York State and a select set of counties not included in the NYS Tax Parcels dataset. Parcel data for counties not included in the NYS Tax Parcels layer or the website must be obtained directly from the county or municipality. www.gis.ny.gov / Search on: NYS Tax Parcels *Note: Communities can identify vehicle dismantling facilities using the tax parcel layer and property type classification codes. A description of property class codes can be found on the NYS Department of Taxation and Finance website (www.tax.ny.gov) by searching on "property class codes."*

WORKING DRAFT

Contamination Sites or Incidents

Remediation Sites	
Contaminated properties can be cleaned up under one of three DEC programs: The Brownfield Cleanup Program, State Superfund Program and Environmental Restoration Program. Contaminated properties can also be cleaned up under EPA's Superfund Program.	
Contaminant Category of Concern	Chemical – hazardous substances are chemicals, or mixture of chemicals listed in 6 New York Codes, Rules and Regulations Part 597. Hazardous substances are those that, if improperly managed, can pose a serious threat to human health and the environment.
Core Regulatory Requirements	NYS DEC Programs: DEC's Division of Environmental Remediation oversees and tracks each cleanup project's progress from investigation, design and completion of each remedial measure to certifying cleanup completion and planning for any future site management needs. EPA's Superfund Program: The Comprehensive Environmental Response, Compensation and Liability Act (informally called Superfund) allows EPA to clean up contaminated sites and forces responsible parties to either perform cleanups or reimburse the government for their cleanup efforts.
Where to Obtain Potential Contaminant Source-Specific Information	The risk associated with each site is provided in a narrative "Site Environmental Assessment" and "Site Health Assessment" which are provided in the Environmental Database Search. • To access NYS DEC's Environmental Site Database Search, visit: www.dec.ny.gov/chemical/8437.html
Data for Mapping	DEC programs: Dataset representing environmental remediation sites which have cleanup currently underway or have undergone cleanup under the oversight of DEC. www.data.ny.gov / Search on: Environmental Remediation Sites EPA Superfund program: Dataset representing active Federal Superfund Sites. www.data.gov / Search on: Superfund Sites

WORKING DRAFT

Spill Incidents	
Accidental releases of petroleum or hazardous chemicals are reported to NYS DEC. The Spill Response Program oversees the investigation and cleanup of these spills.	
Contaminant Category of Concern	Chemical – most spills are from releases of petroleum, including leaking underground storage tanks. “Open” spills (where cleanup has not been completed) may represent an ongoing source of contamination to groundwater.
Core Regulatory Requirements	NYS DEC’s Division of Environmental Remediation oversees and tracks each spill response and cleanup.
Where to Obtain Potential Contaminant Source-Specific Information	Review the online Spill Incident Database Search to identify previous spill incidents. This database can be queried to provide a list of spills along with information about the material spilled and the status of the cleanup. Tank test failures and spills are reported on the spills database. • To access NYS DEC’s Spill Incidents Database Search, visit: www.dec.ny.gov/cfmx/extapps/derexternal/index.cfm?pageid=2
Data for Mapping	Dataset of petroleum and other hazardous material spills across New York www.data.ny.gov / Search on: Spill Incidents

WORKING DRAFT

Mineral Extraction Sites

Oil and Gas Wells	
Oil and gas wells are drilled to produce hydrocarbons, primarily crude oil and natural gas (methane). Highly saline water (brine) that preexists naturally in hydrocarbon-bearing rock formations may be extracted from both oil and gas wells as a by-product of the production process.	
Contaminant Category of Concern	Chemical – petroleum is a mixture of hydrocarbons that originally comes from crude oil. Brine is a solution containing high levels of sodium chloride and/or other salts and dissolved solids. Exposure to these contaminants can cause negative health effects in humans.
Core Regulatory Requirements	DEC's Division of Mineral Resources regulates the drilling, construction, operation and plugging of all oil and gas wells in New York under Environmental Conservation Law Article 23 and its supporting regulations, 6 New York Codes, Rules and Regulations Parts 550-559. Operators or persons proposing to drill, deepen, plug back, convert or plug an oil or natural gas well are required to apply and obtain a permit from the DEC Permits protect groundwater by mandating construction requirements (i.e. a casing and cementing program) for each well. Casing and cementing prevent the flow of oil, gas or brine between underground formations. Permits also ensure that well locations meet the required setbacks from municipal water wells and surface water bodies including streams, and that all drilling fluids and waste fluids are properly contained and disposed of. The Division of Mineral Resources reviews all oil and gas well permit applications in accordance with the State Environmental Quality Review Act (SEQR) to ensure that the environmental impact of resource extraction will be mitigated to the greatest extent possible. Once permitted, the Division of Mineral Resources staff inspect well site activities to monitor for compliance with the Environmental Conservation Law, regulations and permit conditions and brings enforcement actions against violators. For additional information regarding the regulation of oil and gas wells, visit: www.dec.ny.gov/energy/205.html (NYS DEC, Division of Mineral Resources, Search On: "Oil, Gas and Solution Salt Mining in New York State").
Where to Obtain Potential Contaminant Source-Specific Information	Information regarding nearly 40,000 wells including locations, types, permitting and drilling history, annual production, operators, drillers and pluggers, is available to the public via NYS DEC's Oil & Gas Database at: www.dec.ny.gov/cfmx/extapps/GasOil (NYS DEC, Division of Mineral Resources, Search On: "Data on Oil, Gas and Other Wells in New York State").
Data for Mapping	Dataset for information on oil, gas, storage, solution salt, stratigraphic and geothermal well www.data.ny.gov / Search on: Oil, Gas and Other Regulated Wells: Beginning 1860

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Orphan Oil and Gas Wells	
As noted above, oil and gas wells are drilled to produce hydrocarbons, but in some instances, wells are abandoned by the entity that operated them and no longer maintained in accordance with current statute and regulation. These wells subsequently deteriorate into advanced states of disrepair. An abandoned well for which a legally responsible owner or operator cannot be identified is categorized as an orphan. Many orphan wells were drilled prior to environmental regulation and constructed using methodologies now considered substandard.	
Contaminant Category of Concern	Chemical – orphan wells may discharge crude oil and/or other associated fluids (brine). Brine is a solution containing high levels of sodium chloride and/or other salts and dissolved solids. Exposure to these contaminants may cause negative health effects in humans.
Core Regulatory Requirements	Orphan wells fall under the regulatory authority of Division of Mineral Resources; however, there is no legally responsible operator to regulate. The Division of Mineral Resources invests significant resources to methodically locate and inspect orphan wells. Wells are evaluated and assigned a score based on environmental threat, with the highest scoring wells prioritized for inclusion into well plugging projects funded through the New York Works Well Plugging Initiative. For additional information, visit: www.dec.ny.gov/energy/111211.html (NYS DEC, Division of Mineral Resources, Search On: "Orphan & Abandoned Well Plugging") or www.data.ny.gov/Energy-Environment/Abandoned-Wells/vgue-bamz (data.ny.gov, Search On: "Abandoned Wells").
Data for Mapping	Dataset of wells that are regulated under the Oil, Gas and Solution Mining Law (Environmental Conservation Law Article 23) in New York State that are abandoned and not plugged www.data.ny.gov / Search On: Abandoned Wells Map

WORKING DRAFT

Mines	
New York State is rich in minerals which are mined for industrial and construction uses. The state's major mined commodities include sand and gravel, clay, topsoil, bluestone, limestone, sandstone, shale, garnet, salt and wollastonite. Sand and gravel mines are found throughout New York State and represent about 80 percent of the State's 1,850 active mines.	
Contaminant Categories of Concern	➢ Physical – dewatering of a mine has the potential to drawdown water resources immediately surrounding the site. ➢ Chemical – equipment used for mining and mineral preparation can contribute dissolved constituents, including petroleum hydrocarbons.
Core Regulatory Requirements	DEC's Division of Mineral Resources oversees operations and activities related to non-fuel mining and mined land reclamation The Mined Land Reclamation Law Article 23, Title 27, and its supporting regulations 6 New York Codes, Rules and Regulations Parts 420-425 require permittees to assess potential impacts through hydrogeologic assessments incorporated into the mined land use plan and allows NYS DEC to mitigate potential impacts through permit conditions and detailed monitoring plans.
Where to Obtain Potential Contaminant Source-Specific Information	Information regarding location, commodity, permit status, acreage, reclamation objective, permit dates and inspection results for all active and reclaimed mines may be obtained from NYS DEC's New York State Mined Land Reclamation Database at: www.dec.ny.gov/cfmx/extapps/MinedLand (NYS DEC, Division of Mineral Resources, Search On: "Mining in New York State").
Data for Mapping	Dataset from DEC Division of Mineral Resources Mined Lands Reclamation Program that depicts point locations of New York State regulated mines permitted since 1975 www.dec.ny.gov/lands/5374.html / Search on: mIDOS.zip

WORKING DRAFT

Historical Abandoned Mines	
The Mined Land Reclamation Law was enacted in 1975. Underground and surface mines that started operations after 1975 are not subject to the jurisdiction of the Mined Land Reclamation Law.	
Contaminant Category of Concern	Chemical – intense precipitation at historic metal mines can cause leaching of mine wastes containing metals, acids and sulfides into drinking water supplies.
Core Regulatory Requirements	New York does not currently have an abandoned mine reclamation program. Mines closed prior to 1975 have no obligation to monitor for subsidence or any other environmental indicators. The Division of Mineral Resources in conjunction with the New York State Museum have initiated a program to identify the location of these abandon mines.
Where to Obtain Potential Contaminant Source-Specific Information	Questions or concerns regarding potential historical abandon mines or related activities can be directed to the Chief, Mined Land Section (518) 402-8056 or the appropriate DEC Regional Mined Land Supervisor based on the region where the mine is located. To find contact information by region, refer to *Appendix B: Contacts*.
Data for Mapping	Not Available – Employ local knowledge

WORKING DRAFT

Discharges to Water

State Pollutant Discharge Elimination System (SPDES) Facilities	
In 1975, the EPA authorized New York State to implement the National Pollutant Discharge Elimination System (NPDES) program to regulate all wastewater discharges to surface waters. The State's Environmental Conservation Law established the SPDES program and provides NYS DEC with additional legal authority to regulate wastewater discharges to groundwater in addition to surface water. DEC issues both individual permits and general permits. An individual SPDES permit applies to a single facility, in one location, possessing unique discharge characteristics and other factors. A general SPDES permit applies to a class of dischargers, which involve similar operations or pollutants. A general permit also requires similar effluent limits, operating conditions, or the same or similar monitoring. SPDES permitted dischargers include both municipal and industrial operations. Examples of industrial dischargers are laundromat, car washes, food processing, photographic manufacturing operations and sand pharmaceutical research facilities. Municipal dischargers include wastewater treatment facilities which treat either residential wastewater or a mixture of residential and industrial wastewater.	
Contaminant Categories of Concern	➢ Biological – discharge may be a source of bacteria, parasites and viruses. ➢ Chemical – industrial facilities may be a source of chemical contamination. ➢ If improperly maintained, these contaminants have the potential to contaminate the water supply causing potential health impacts.
Core Regulatory Requirements	New York State law requires a permit for: ➢ Constructing or using an outlet or discharge pipe (referred to as a "point source") that discharges wastewater into the surface waters or groundwaters of the State. ➢ Constructing or operating a disposal system such as a sewage treatment plant. ➢ Permits are also required for modifying, transferring and renewing your permit. SPDES facilities are permitted, regulated and inspected by DEC's Division of Water. Discharge limits are determined by DEC's Division of Water. SPDES effluent limits are based on either established ambient water quality standards and guidance values or technology-based limits. Note: Regulatory requirements, and the particular agency responsible for administering the regulations may be dependent on the volume and mode (surface vs. subsurface) of wastewater discharge. For example, NYS DOH is responsible for plan approval and regulatory actions for non-residential on-site wastewater treatment systems discharging between 1,000 and 10,000 gallons per day to soil and groundwater. Examples of these DOH-permitted facilities include temporary residences, food service establishments, and mobile home parks. These DOH-permitted facilities can be a significant potential contaminant source.

WORKING DRAFT

State Pollutant Discharge Elimination System (SPDES) Facilities (continued)	

Where to Obtain Potential Contaminant Source-Specific Information	• Use DECinfo Locator Environmental Quality Map Viewer to obtain a copy of the SPDES permit. The permit may include information including effluent limitations, monitoring requirements and compliance schedules.
	• To access, visit: www.dec.ny.gov/pubs/109457.html (NYS DEC, Search On: "DECinfo Locator").
	• Review EPA's Enforcement and Compliance History Online (ECHO) database for facility-specific information including monitoring data, permit data, inspection dates and findings, violations, enforcement actions and penalties assessed.
	  ○ To access, visit: www.echo.epa.gov/ (US EPA, Search On: "Enforcement and Compliance History Online").
	• Review DEC's Permit Applications Database for information about the permit application history of each facility.
	  ○ To access, visit: www.dec.ny.gov/cfmx/extapps/envapps/index.cfm (NYS DEC, Search On: "DEC Data" and click on "Permit Applications Search (DART)").

Data for Mapping	Dataset for the location of SPDES permitted facilities. The SPDES permit program regulates municipal and industrial wastewater treatment facilities that discharge directly into navigable waters. www.gis.ny.gov / Search on: State Pollutant Discharge Elimination System Dataset displaying information on facilities that have active Multi-Sector General Permit (MSGP) coverage. The MSGP covers thirty-one different industrial sectors which include activities such as mining, land transportation, and scrap recycling. www.data.ny.gov / Search on: SPDES Multi-Sector General Permit

WORKING DRAFT

Combined Sewer Overflows (CSOs) and Sanitary Sewer Overflows (SSOs)	
A CSO is the discharge of untreated or partially treated sewage from a combined sewer system that is typically caused by snowmelt or stormwater runoff into the combined sewer system overwhelming the capacity of the system. Combined sewers are older sewer systems that collect stormwater runoff, domestic sewage, and industrial wastewater in the same pipe and bring it to the wastewater treatment facility for treatment. They are designed to overflow during wet weather when the combined stormwater and wastewater exceed the capacity of the system. CSO discharges must be reported to the public using NY-Alert, the state's emergency notification system. An SSO is the discharge of untreated sewage from a separate sanitary sewer system that is typically caused by excessive infiltration and inflow of stormwater into the sewer system. When the flow in the sewer pipes exceeded the system's capacity, overflows could occur anywhere along the sewer system to relieve hydraulic pressure.	
Contaminant Categories of Concern	➢ Biological – discharge may be a source of bacteria, parasites and viruses. ➢ Chemical – discharge may contain nutrients such as nitrogen and phosphorus, oil and grease, pesticides, litter and other wastes. ➢ If improperly maintained, these contaminants have the potential to contaminate the water supply causing treatment complications and potential health impacts.
Core Regulatory Requirements	Every CSO outfall is required to have coverage under a municipal wastewater treatment plant's SPDES permit, which is issued by DEC. SPDES permit holders with CSOs must comply with fifteen CSO Best Management Practices. They are also required to develop a Long-Term Control Plan to reduce CSO impacts. SSOs are illegal and not permitted. A municipality that owns a separate sanitary sewer system must strive to eliminate SSOs.
Data for Mapping	Dataset represents locations of CSO outfall locations. Also includes overflow detection capabilities of CSO communities and overflow frequency data within a specified timeframe. www.data.ny.gov / Search on: Combined Sewer Overflows: Beginning 2013

WORKING DRAFT

Transportation

Airports	
Airports use jet and diesel fuel, deicers, solvents, firefighting foams and heating oil. In addition, stormwater can carry contamination into waterways.	
Contaminant Category of Concern	Chemical – if wastes are improperly discharged or maintained, fuel, deicer chemicals, oil and other hazardous chemicals can runoff into waterways. These contaminants have the potential to contaminate the water supply causing potential health impacts.
Core Regulatory Requirements	Airports that discharge stormwater to surface waters of the State fare subject to the Multi-Sector General Permit (MSGP). The MSGP is a five-year permit that requires monitoring for total nitrogen, ammonia, pH and other parameters. Process wastewater (such as de-icing fluid) is subject to an individual SPDES permit. The MSGP and individual SPDES permit are administered by the DEC.
Data for Mapping	Not Available – Employ local knowledge

WORKING DRAFT

Transportation Corridors	
Transportation corridors, including both roadways and railroads, may pass through areas near the drinking water source. Runoff from roadways could also pose a risk to the drinking water source.	
Contaminant Categories of Concern	➢ Chemical – runoff may contain petroleum products, nutrients, metals, organic contaminants and pesticides (especially herbicides). ➢ Physical – runoff may contribute sediment and organic material to the water supply, impacting the physical properties of the water. ➢ These contaminants have the potential to contaminate the water supply causing potential health impacts.
Core Regulatory Requirements	Highways located within municipal separate stormwater sewer systems (MS4s) must meet the MS4 permit requirements including the development of a Stormwater Management Program (SWMP) to reduce pollution from stormwater on a local level. The MS4 permit is issued by the DEC. Also, the NYS Thruway is an MS4 and the NYS DOT is responsible for the Thruway's SWMP.
Data for Mapping	Dataset of public streets in New York State including street names, addresses, and route numbers. www.gis.ny.gov / Search on: NYS Streets Dataset including roads, railroads, and over features associated with the transport of people or commerce. www.data.gov / Search on: USGS National Transportation Dataset (NTD) Downloadable Data Collection *Note: Most base maps in GIS applications include roadways and railways. Therefore, many transportation corridors may be visualized without the need to download data.*

WORKING DRAFT

Road Maintenance Facilities	
Road maintenance facilities can include transportation maintenance, highway maintenance, equipment management shops, bridge maintenance and garages. Certain maintenance facilities can store petroleum products and discharge wastewater into water bodies. Communities are encouraged to apply local knowledge when gathering information about this facility.	
Contaminant Category of Concern	Chemical – petroleum products and other hazardous liquids can enter the environment and become a public health concern if facilities are improperly managed.
Core Regulatory Requirement	Road maintenance facilities with stormwater discharges to the waters of New York State are subject to the Multi-Sector General Permit (MSGP) requirements. This permit requires facilities to develop Stormwater Pollution Prevention Plans (SWPPP). For more information, visit: www.dec.ny.gov/chemical/9009.html (NYS DEC, Division of Water, Search On: "Multi-Sector General Permit"). Also, a road maintenance facility owned by a municipality that is an MS4 is subject to the MS4 permit. One of the permit requirements is that the municipality conduct pollution prevention/good housekeeping practices at these facilities.
Data for Mapping	Dataset including all permanent NYS Department of Transportation (DOT) facilities such as highway maintenance, salt storage and transportation maintenance. The features are attributed with type of facility and the quantity of diesel and unleaded fuels. www.gis.ny.gov / Search on: NYS DOT Facilities *Note: This file is locked. Communities who would like to download this shapefile must login if they are a member of the New York State GIS Data Sharing Cooperative or reach out to the listed DOT contact for access to the data.*

WORKING DRAFT

Salt and Deicers Storage	
Salt storage facilities store road salt in a quantity larger than 100 tons for the purpose of manufacturing, distributing or using road salt. Storage facilities are widespread and necessary in New York State for deicing roads and highways. If salt is improperly stored, these chemicals can leach into underlying groundwater and nearby surface water. Communities are encouraged to apply local knowledge when gathering information about this facility.	
Contaminant Category of Concern	Chemical – when salt dissolves in water, it forms sodium and chloride. High levels of sodium in drinking water can be a health concern for people with health conditions requiring low sodium diets.
Core Regulatory Requirement	No
Data for Mapping	Dataset including all permanent NYS DOT facilities such as highway maintenance, salt domes and transportation maintenance. The features are attributed with type of facility and the quantity of diesel and unleaded fuels. www.gis.ny.gov / Search on: NYS DOT Facilities *Note: This file is locked. Communities who would like to download this shapefile must login if they are a member of the New York State GIS Data Sharing Cooperative or reach out to the listed DOT contact for access to the data.*

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Agriculture

Agricultural Activities	
Agricultural practices, if improperly managed, may impact drinking water sources. For example, soil erosion from crop fields can contribute sediment, improperly spread manure can also runoff into nearby waterbodies or leach into the groundwater.	
Contaminant Categories of Concern	➢ Chemical – runoff may contain nitrogen, phosphorus, metals, pesticides, salt and trace elements (e.g. selenium). ➢ Biological – runoff may be a source of bacteria, parasites and viruses. ➢ Physical – runoff may contribute sediment and organic material to the water supply, impacting the physical properties of the water. ➢ If practices are improperly maintained, these contaminants have the potential to contaminate the water supply causing potential health impacts.
Core Regulatory Requirements	A Concentrated Animal Feeding Operation (CAFO) General Permit must be obtained by an animal feeding operation that meets certain animal size thresholds and that also confines those animals for 45 days or more in any 12-month period in an area that does not produce vegetation. It is important to note that this requirement is not applicable to all agricultural operations. For more information, visit: www.dec.ny.gov/permits/6285.html (NYS DEC, Division of Water, Search On: "Concentrated Animal Feeding Operations").
Where to Obtain Potential Contaminant Source-Specific Information	County Soil and Water Conservation Districts (SWCD) may be a resource for information regarding agricultural activities. To find SWCD contact information, refer to *Appendix B: Contacts.* Questions or concerns regarding CAFOs or related activities can be directed to DEC Bureau of Water Permits at (518) 402-8111.
Data for Mapping	Datasets created as part of the NYS Statewide Parcel Map Program, including 2017 tax parcel polygons for 21 counties in New York State and a select set of counties not included in the NYS Tax Parcels dataset. Parcel data for counties not included in the NYS Tax Parcels layer or the website must be obtained directly from the county or municipality. www.gis.ny.gov / Search on: NYS Tax Parcels *Note: Communities can identify agricultural activities using the tax parcel layer and property type classification codes. A description of property class codes can be found on the NYS Department of Taxation and Finance website (www.tax.ny.gov) by searching on "property class codes."*

WORKING DRAFT

Residential Sources

On-Site Septic Systems	
On-site septic systems, or on-site wastewater treatment systems, serve residential properties and receive less than 1,000 gallons per day of sewage (without the addition of industrial waste). Treatment systems with a design flow of 1,000 GPD or greater require a DEC SPDES permit.	
Contaminant Categories of Concern	➢ Chemical and Biological – effluent may contain bacteria, parasites, viruses, and nutrients. ➢ If improperly maintained, these contaminants have the potential to contaminate the water supply causing treatment complications and potential health impacts.
Core Regulatory Requirements	NYS DOH has established minimum standards for on-site septic systems including minimum separation distances between septic system components and drinking water supply sources and infrastructure. For more information visit: www.health.ny.gov/regulations (NYS DOH, Search On: "Appendix 75-A Wastewater Treatment Standards").
Data for Mapping	Datasets created as part of the NYS Statewide Parcel Map Program, including 2017 tax parcel polygons for 21 counties in New York State and a select set of counties not included in the NYS Tax Parcels dataset. Parcel data for counties not included in the NYS Tax Parcels layer or the website must be obtained directly from the county or municipality. www.gis.ny.gov / Search on: NYS Tax Parcels *Note: Communities can identify on-site septic systems using the tax parcel layer and property type classification codes. A description of property class codes can be found on the NYS Department of Taxation and Finance website (www.tax.ny.gov) by searching on "property class codes."*

WORKING DRAFT

Lawn and Garden Chemicals	
Lawn and garden care products contain chemicals, and sometimes also include pesticides. When fertilizer or pesticides are not used or applied properly, it can runoff or move through the ground to contaminate public drinking water sources.	
Contaminant Category of Concern	Chemical – runoff may contain chemicals such as fertilizer and pesticides. If improperly applied, these contaminants have the potential to contaminate the water supply causing treatment complications and potential health impacts. For example, excess nitrogen and phosphorus can be released into local waterbodies increasing the likelihood of nutrient impairments.
Core Regulatory Requirements	The New York State Nutrient Runoff Law places restrictions on fertilizer that contains phosphorous in an effort to reduce the quantity entering the State's water bodies. It also regulates the dates all fertilizer can be applied, distances from waterbodies fertilizer can be applied and other restriction to protect waterbodies. To learn more, visit: www.dec.ny.gov/chemical/67239.html (NYS DEC, Division of Water, Search On: "Lawn Fertilizer (NYS Nutrient Runoff Law)"). It is a violation of Federal law to use pesticide products in a manner inconsistent with its labeling. Pesticide products include weed control products that may also contain fertilizer, commonly known as weed and feed. Pesticide labels define who may use the pesticide as well as where, how, how much, and how often it may be used.
Data for Mapping	Not Available – Employ local knowledge

WORKING DRAFT

Waterfront Property Management	
Waterfront property can contribute various pollutants waterbodies depending on how the property is managed. Runoff from waterfront property can contribute pollutants such as fertilizer, oil, pesticide, sediments and more. Impervious surfaces prevent water from soaking into the ground causing an increase in runoff to the adjacent waterbody.	
Contaminant Categories of Concern	➢ Chemical – runoff may contain nitrogen, pet and yard waste, oil and grease, pesticides, litter and other wastes. ➢ Biological – runoff may be a source of bacteria, parasites and viruses. ➢ Physical – runoff may contribute sediment and organic material to the water supply, impacting the physical properties of the water. ➢ If property is improperly maintained, these contaminants have the potential to contaminate the water supply causing treatment complications and potential health impacts.
Core Regulatory Requirements	The New York State Nutrient Runoff Law places restrictions on fertilizer that contains phosphorous in an effort to reduce the quantity entering the State's water bodies. It also regulates the dates all fertilizer can be applied, distances from waterbodies fertilizer can be applied and other restriction to protect waterbodies. To learn more, visit: www.dec.ny.gov/chemical/67239.html (NYS DEC, Division of Water, Search On: "Lawn Fertilizer (NYS Nutrient Runoff Law)"). It is a violation of Federal law to use pesticide products in a manner inconsistent with its labeling. Pesticide products include weed control products that may also contain fertilizer, commonly known as weed and feed. Pesticide labels define who may use the pesticide as well as where, how, how much, and how often it may be used.
Data for Mapping	Datasets created as part of the NYS Statewide Parcel Map Program, including 2017 tax parcel polygons for 21 counties in New York State and a select set of counties not included in the NYS Tax Parcels dataset. Parcel data for counties not included in the NYS Tax Parcels layer or the website must be obtained directly from the county or municipality. www.gis.ny.gov / Search on: NYS Tax Parcels *Note: Communities can identify waterfront property using the tax parcel layer and property type classification codes. A description of property class codes can be found on the NYS Department of Taxation and Finance website (www.tax.ny.gov) by searching on "property class codes."*

WORKING DRAFT

Conveyances and Pipelines

Oil and Gas Pipelines	
The term pipeline includes all parts of the physical facilities through which gas, hazardous liquid or carbon dioxide moves in transportation.	
Contaminant Category of Concern	Chemical – gas, hazardous liquids and carbon dioxide are dangerous to human health and the safety of the environment if improperly used or if not properly stored or contained. Hazardous liquids include petroleum, petroleum product or anhydrous ammonia.
Core Regulatory Requirements	The federal government establishes minimum pipeline safety standards under the United States Code of Federal Regulations, Title 49 "Transportation", Parts 190 - 199. Within the United States DOT, Office of Pipeline Safety Pipeline and Hazardous Materials Safety Administration has overall regulatory responsibility for hazardous liquid and gas pipelines under its jurisdiction in the United States. Part 190 of Code of Federal Regulations Title 49 outlines pipeline safety enforcement and regulatory procedures. Part 191 provides guidance for reporting, including a required Annual Report. Annual reports must be submitted no later than March 15th for the preceding calendar year. Additionally, Part 191 provides guidance in case of an incident including instructions upon discovery and preparation of an Incident report. By signed agreement with the federal Office of Pipeline Safety, the New York State Public Service Commission inspects interstate gas and hazardous liquid pipeline operators in New York. Also, through certification by the Office of Pipeline Safety, the Public Service Commission inspects and enforces the pipeline safety regulations for intrastate gas and hazardous liquid pipeline operators in New York.
Data for Mapping	The National Pipeline Mapping System is a web-based mapping application designed to assist the general public with displaying and querying data related to gas transmission and hazardous liquid pipelines, liquefied natural gas plants and breakout tanks. Information for specific pipelines such as operator name, system name, pipeline miles, commodity category, etc. can be found using the identify tool. Users have access to the National Pipeline Mapping System data for one county at a time using the public map viewer. Government employees who wish to use GIS software to view information can request a data package at no extra charge. To learn more, visit: www.npms.phmsa.dot.gov/AboutPublicViewer.aspx (US DOT, Search On: “National Pipeline Mapping System” and click on “About Public Map Viewer”). www.pvnpms.phmsa.dot.gov/PublicViewer/ A collection of Interactive State Map including datasets for oil and gas pipelines www.eia.gov/maps/layer_info-m.php / Search on: Pipeline Shapefiles

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Other

Golf Courses	
Golf course maintenance requires extensive use of fertilizers and pesticides to maintain the turf. When fertilizer or pesticides are improperly applied, it can runoff or move through the ground to contaminate public drinking water sources.	
Contaminant Category of Concern	Chemical – runoff may contain chemicals such as fertilizer and pesticides. If courses are improperly maintained, these contaminants have the potential to contaminate the water supply causing treatment complications and potential health impacts.
Core Regulatory Requirements	The New York State Nutrient Runoff Law places restrictions on fertilizer that contains phosphorous in an effort to reduce the quantity entering the State's water bodies. It also regulates the dates all fertilizer can be applied, distances from waterbodies fertilizer can be applied and other restriction to protect waterbodies. To learn more, visit: www.dec.ny.gov/chemical/67239.html (NYS DEC, Division of Water, Search On: "Lawn Fertilizer (NYS Nutrient Runoff Law)"). It is a violation of Federal law to use pesticide products in a manner inconsistent with its labeling. Pesticide products include weed control products that may also contain fertilizer, commonly known as weed and feed. Pesticide labels define who may use the pesticide as well as where, how, how much, and how often it may be used.
Data for Mapping	Dataset begins with 2009 data and includes facility name, town, county and withdrawal information. It does not include Nassau and Suffolk counties. This dataset only includes golf courses who withdraw more than 100,000 gallons or more per day of surface or groundwater. Communities should use their local knowledge and information to add golf courses that may not be included in this publicly available layer. www.data.ny.gov / Search on: Water Withdrawals by Facility Datasets created as part of the NYS Statewide Parcel Map Program, including 2017 tax parcel polygons for 21 counties in New York State and a select set of counties not included in the NYS Tax Parcels dataset. Parcel data for counties not included in the NYS Tax Parcels layer or the website must be obtained directly from the county or municipality. www.gis.ny.gov / Search on: NYS Tax Parcels *Note: Communities can identify golf courses using the tax parcel layer and property type classification codes. A description of property class codes can be found on the NYS Department of Taxation and Finance website (www.tax.ny.gov) by searching on "property class codes."*

WORKING DRAFT

Marinas and Boat Launches	
Some marina activities such as boat washing, tank pump out and fueling can potentially pollute surface waterbodies. Communities are encouraged to apply local knowledge when gathering information about these facilities.	
Contaminant Categories of Concern	➢ Chemical – oil, gasoline and other chemicals can pollute the waterbody if not properly maintained or pumped out. ➢ Biological – holding tanks may contain bacteria, parasites and viruses. If improperly maintained or pumped out, these contaminants have the potential to contaminate the water supply causing potential health impacts.
Core Regulatory Requirement	Marinas and boat launches may be subject to the Protection of Waters Permit. This permit is required for constructing, reconstructing, or repairing docks or platforms and installing moorings on, in or above navigable waters to create docking facilities, mooring areas, or to facilitate other activities. For more information, visit www.dec.ny.gov/permits/6550.html (NYS DEC, Division of Environmental Permits, Search On: "Construction, Reconstruction or Expansion of Docking and Mooring Facilities"). Marinas and boat launches may also be subject to the Individual SPDES permit for non-stormwater discharges that might include oil, grease, solvents, detergents, or hazardous substances used to wash boats, pavement, or equipment.
Data for Mapping	Dataset from NYS Office of Parks, Recreation and Historic Preservation that includes facility name, category, county and links to learn more about each facility. Dataset only includes boat launch sites that are operated by NYS Office of Parks, Recreation and Historic Preservation. www.data.ny.gov / Search on: Boat Launch Sites by State Parks or Marine Facility

WORKING DRAFT

Stormwater	
Stormwater is water from rain or melting snow that doesn't soak into the ground but runs off into waterways. This can include water flowing from paved areas, bare soils or through sloped lawns. As stormwater flows, it can collect and transport contaminants such as nitrogen, phosphorus, pet and yard waste, oil and grease, pesticides and litter. Pollution conveyed by stormwater degrades the quality of drinking water.	
Contaminant Categories of Concern	➢ Chemical – stormwater runoff may contain nutrients such as nitrogen and phosphorus, pet and yard waste, oil and grease, pesticides and litter. ➢ Biological – common source of pathogens, typically from illicit discharge. ➢ If improperly maintained, these contaminants have the potential to contaminate the water supply causing treatment complications and potential health impacts.
Core Regulatory Requirement	There are three SPDES general permits required for activities associated with stormwater discharges. The permits are issued by DEC. ➢ Stormwater discharges from Municipal Separate Storm Sewer Systems (MS4s) are required to have an MS4 permit. The permit requires the management of the stormwater conveyance system and the quality of the discharged water through the development of a Stormwater Management Plan (SWMP) that includes six required program components including public education and outreach, public participation/involvement, illicit discharge detection and elimination, construction site runoff control, post-construction runoff control and pollution prevention/good housekeeping. To prevent discharges of construction-related pollutants to surface waters, construction activities must be authorized under the General Permit for Stormwater Discharges from Construction Activities. Permittees are required to develop a Stormwater Pollution Prevention Plans. ➢ Stormwater runoff from certain industrial activities are subject to the Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activities. This permit requires facilities to develop Stormwater Pollution Prevention Plans. ➢ For more information about regulatory requirements, visit: www.dec.ny.gov/chemical/8468.html (NYS DEC, Division of Water, Search On: "Stormwater").
Data for Mapping	The NLCD shows land cover for development (low, medium, high intensity, as well as, open space). Stormwater runoff is most likely to occur in areas of medium to high development. www.mrlc.gov / Search on: NLCD Land Cover

WORKING DRAFT

Toxic Release Inventory (TRI) Facilities	
In 1986, the Emergency Planning and Community Right to Know Act was enacted. Through the Act, Congress mandated that a TRI be made public. The Act requires manufacturers and other industry groups to report the chemicals manufactured or used in the facilities and the annual amount of these chemicals released to air, water and land, and otherwise managed in on- and off-site waste management facilities. In addition, they need to report off-site transfers for treatment or disposal at a separate facility. Facilities are also required to report on pollution prevention activities and chemical recycling. TRI-covered industries include mining, utilities, manufacturing, merchant wholesalers (non-durable goods), wholesale electronic markets and agent brokers, publishing, hazardous waste and federal facilities. Most reported TRI releases are permitted and regulated by state and federal programs.	
Contaminant Category of Concern	Chemical – general chemicals covered by the TRI Program are those that cause one of more of the following: cancer or other chronic human health effects, significant adverse acute human health effects and/or significant adverse environmental effects. If facilities are improperly managed, these chemicals can pose a serious threat to human health and/or the environment.
Core Regulatory Requirements	➢ United State facilities that meet TRI reporting criteria must submit TRI data to EPA and the relevant State or tribe by July 1st of each year. ➢ EPA investigates cases of Emergency Planning and Community Right-to-Know Act non-compliance and may issue civil penalties, including monetary fines and may also require correction of the violation.
Where to Obtain Potential Contaminant Source-Specific Information	➢ TRI data identifies chemicals industrial facilities are using and releasing into the environment. ○ To access, visit: www.epa.gov/toxics-release-inventory-tri-program/tri-data-and-tools (US EPA, Search On: "Toxics Release Inventory Program" and click on "Get TRI Data") and www.epa.gov/toxics-release-inventory-tri-program/tri-listed-chemicals (US EPA, Search On: "TRI-Listed Chemicals"). ➢ Examine compliance history of identified facilities using EPA's Enforcement and Compliance History Online (ECHO) website. ○ To access, visit www.echo.epa.gov/ (US EPA, Search On: "Enforcement and Compliance History Online").
Data for Mapping	Each data file accessible contains the 100 most-requested data fields from the TRI Reporting Form R and Form A www.epa.gov / Search on: TRI Basic Data Files: Calendar Years 1987 – 2017

WORKING DRAFT

Fire Training and Dedicated Fire Training Facilities	
Fire training facilities are used by municipal fire and emergency responders to practice for situations involving all types of fires, including flammable liquid fires that may require use of a foam suppressant. Emergency responders may utilize firefighting foams containing fluorinated surfactants such as Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS). These perfluorinated compounds are among a class of chemicals that improve the effectiveness of Class B firefighting foams in fighting petroleum and other fires. PFOA and PFOS are regulated hazardous substances in New York State. Communities are encouraged to apply local knowledge when gathering information about this facility. In addition to firefighting foams, oil and other flammable substances may be used during training exercises to ignite structures or vehicles to simulate live fire situations. If the area is not properly designed or maintained, chemicals used could potentially runoff into a storm drain or waterbody. Use of Class B foam containing PFOA and/or PFOS is prohibited for training purposes in New York State. To facilitate removal of unwanted stockpiles of foam, DEC worked with municipal fire and emergency response departments across the state to dispose of the unused Class B foam. As of summer, 2018, more than 25,000 gallons of foam has been collected and properly disposed; collections are ongoing.	
Contaminant Category of Concern	Chemical – firefighting foams, oil and other flammable substances may runoff into a nearby storm drain or waterbody if not properly maintained. These contaminants have the potential to contaminate the water supply causing potential health impacts.
Core Regulatory Requirements	If a facility is storing class B foam that contains 1% or more by volume of one or more of the hazardous substances listed in Part 597; and the Class B foam is stored in an aboveground storage tank (stationary device) of 185 gallons or greater, an underground tank of any size, or a container (non-stationary device) that is used to store 1,000 kilograms (2,200 pounds) or more for a period of 90 consecutive days or more, they are subject to the registration and storage requirements of DECs Chemical Bulk Storage regulations (Part 596 and 598). To learn more about the storage and use of Class B Firefighting Foams, visit: www.dec.ny.gov/regulations/106078.html (NYS DEC, Division of Environmental Remediation, Search On: “Storage and Use of Fire Fighting Foams – Fact Sheet”).
Data for Mapping	Not Available – Employ local knowledge

WORKING DRAFT

Nutrient Loading (Lakes Only)	
Nutrient loading can result from internal or external sources. Internal nutrient loading refers to a unique process involving the release of nutrients from sediments within a waterbody. External nutrient loading can result from upstream sediment or runoff containing nutrients from surrounding lands. Nutrient loading would be identified as a pollutant source for an impaired waterbody if a Total Maximum Daily Load (TMDL) plan was developed.	
Contaminant Categories of Concern	Chemical – release of phosphorus can contribute to the eutrophication of waterbodies. Eutrophication of waterbodies can lead to excessive plant growth and may increase the potential for the formation of disinfection byproducts in drinking water, as well as, nutrient impairment.
Core Regulatory Requirements	Communities should consult their Regional Permit Administrator to determine what permits are necessary for any proposed management methods to address nutrient loading. To find contact information by region, refer to *Appendix B: Contacts*.
Data for Mapping	Waterbody Inventory/Priority Waterbodies List Fact Sheet for streams within their source water protection area. These fact sheets can be found using DECinfo Locator (www.dec.ny.gov/pubs/109457.html) and will identify if sediment is a pollutant for the selected stream. Communities could also reach out to their local Soil and Water Conservation Districts who may have a stream bank erosion inventory.

Saltwater Intrusion	
Saltwater intrusion is the movement of saline water into a freshwater aquifer either due to lateral migration, induced infiltration or vertical upconing. Saltwater intrusion may occur naturally or due to human processes (e.g. groundwater pumping). Saltwater intrusion can increase public health concerns and could render some wells unusable. In New York, saltwater intrusion is only a concern for wells on Long Island. Communities should review their own monitoring/sampling data to determine if saltwater intrusion is occurring.	
Contaminant Category of Concern	Chemical – when salt dissolves in water, it forms sodium and chloride. High levels of sodium in drinking water can be a health concern for people with health conditions requiring low sodium diets.
Core Regulatory Requirements	N/A
Data for Mapping	Not Available – Employ local knowledge

WORKING DRAFT

Road Salt Application	
Road salt is one of the most common methods used by New York State for snow and ice control. With annual snowfall ranging from 30 inches to over 200 inches across NY, road salt is needed to provide the traveling public with passable and safe roadways. Application rates depend on a number of factors such as traffic, road conditions and weather. While road salt application is necessary to prevent ice and snow buildup on roadways, it can become a public health concern if it enters a source of public water. Sodium in drinking water is a concern for individuals who are on sodium restricted diets. Municipalities should have information on where and how much road salt is being applied within their community.	
Contaminant Category of Concern	Chemical – when salt dissolves in water, it forms sodium and chloride. High levels of sodium in drinking water can be a health concern for people with health conditions requiring low sodium diets.
Core Regulatory Requirements	N/A
Data for Mapping	Not Available – Employ local knowledge

WORKING DRAFT

Potential Contaminant Source Inventory Table - Example

Potential Source	Contaminant of Concern	Protection Area	Relevant Information
Agricultural Activities	Nutrients, specifically Nitrogen, Phosphorus and pesticides	Critical Area and Source Water Area	The previously approved Nine-Element (9E) Watershed Plan for Reservoir X indicated that agricultural runoff is a cause of nutrient impairment. Evidence of agricultural activities contributing to nutrient loading in Reservoir X and the percent land cover existing within critical area and source water area are potential risks to the water supply.
SPDES permitted discharge facility – Industrial Discharger	Likely hazardous chemicals	Critical Area	Information from the drinking water source assessment showed a surface wastewater discharge facility permitted under the NYS DEC SPDES program, located within the critical area. Facility specific information was gathered after speaking with the regulated entity using questions from Appendix C: Questions to Ask the Regulated Entity. Review of EPA's Enforcement and Compliance History Online (ECHO) database confirmed four consecutive quarters with a compliance violation. The industrial facility is also listed under EPA's Toxic Release Inventory. This facility is considered a risk to the water supply because the operations require handling and disposal of potentially hazardous chemicals within the critical area.
Projected high-intensity development (potential on-site septic systems, chemical storage tanks, oil and gas wells)	Likely chemical and microbial contaminants	Source Water Area	Although the source water area is not considered the highest priority area, nutrient loading from discharges associated with high-intensity development can pose a risk to the watershed as a whole. High intensity development would encompass several different potential sources of contamination. There are currently no laws within this projected area that are protective of the water supply.

Back to section ***2.3 Create a Potential Contaminant Source Inventory*** of the Framework.

WORKING DRAFT

3. Protection and Implementation Strategies

In this section you will find:

3.1 Identify Protection and Management Methods ……. 78

Protection Methods ……. 78

Management Methods for Existing Potential Contaminant Sources ……. 98

3.2 Develop an Implementation Strategy Timeline ……. 119

Implementation Strategy Timeline – Example …….. 120

Funding Strategies …… 124

WORKING DRAFT

3.1 Identify Protection and Management Methods

Protection Methods

Click the links below to learn more about specific protection methods that can be used to support a DWSP2 Plan. Protection methods come in many different forms, and communities are encouraged to utilize as many as needed. This list is not exhaustive and protection methods may be created to meet a specific goal.

Land Use Tools and Methods	**Monitoring and Reporting**
Regulatory • Municipal Comprehensive Plan • Zoning Ordinances • Special Use Permits • Site Plan Reviews • Subdivision Control • Critical Environmental Area (CEA) • New York State Watershed Rules and Regulations • Intermunicipal Agreements *Non-regulatory* • Land Purchase/Acquisition or Voluntary Conservation Easements • Transfer of Development Rights • Encouraging or Incentivizing the Use of Best Management Practices (BMPs) • Intermunicipal Organizations • Build-Out Analysis	• Review Existing Data • Expand Monitoring • Designated Drinking Water Source Inspector **Outreach and Education** • Digital/Social Media • Paid Advertising: News, Digital, Radio • Press Release/Editorials • Newsletters • Factsheets, Flyers, Direct Mail • Email Blasts • Signage • Tabling/Presenting at Events and/or Conferences • Community Events • Training

WORKING DRAFT

Land Use Tools and Methods

Regulatory

Municipal Comprehensive Plan	**What is it?** An expression of goals of a local government and recommended actions to achieve those goals. Those actions often take the form of zoning regulations, which should be in accordance with the comprehensive plan. The plan will guide the development of government structure as well as natural and built environments. The comprehensive plan and zoning regulations are the basis of local governments' protection of the health, safety and general welfare of their citizens. Having an updated comprehensive plan often increases the competitiveness of a local government's application for grant funding, particularly if that plan prioritizes actions that the funding is seeking.
	When to use: Comprehensive plans provide legal defense for regulations and a basis for other actions affecting the development of the community. For example, if a housing developer inquires about open space in a town, the town may refer to the comprehensive plan to guide their decision on allowing or inhibiting development of a certain area. The comprehensive planning process prioritizes areas to be developed and assets to be preserved by calling for policies such as regulation of waterfront uses, preservation of farming and farmland and enhancement of walkable business districts.
	Example: A comprehensive plan with the goal of protecting source water might include, as an implementation measure, zoning in the most sensitive areas for the lowest impact uses of recreation and very low-density residential development. Local officials, if challenged on those zoning designations, could use the articulated goal of protecting the quality of source water as support for those zoning regulations.
	Additional Information: www.dos.ny.gov/lg/publications/Zoning_and_the_Comprehensive_Plan.pdf (NYS DOS, Division of Local Government Services, Search On: "Zoning and the Comprehensive Plan"). *Note: Although local governments are encouraged to adopt comprehensive plans, New York State statutes do not require them to do so.*

WORKING DRAFT

Zoning Ordinances	**What is it?** Zoning regulates the use, density of development and placement of structures on a site. Municipalities can direct future development of certain areas by establishing different zoning districts with specified permitted uses. Land uses that are considered protective for source water include low-density residential use (with limited or no septic system use) and open space.
	When to use: The authority to regulate land in New York is at the local level, and local governments determine whether to adopt zoning and how extensively that zoning will regulate land uses. Where it is most successful, zoning is written in a way that compliments the planning goals of communities and addresses the needs of residents and businesses in the municipality. Zoning protects health and safety and property values by separating potentially incompatible uses. A well-written zoning regulation permits appropriate uses in each zone and can even regulate the location of the development on the site and its building design. If applied this way, zoning can preserve or even enhance the character of a neighborhood or community, as well as, protect source water.
	Examples: • Source Prohibitions – Where the storage or use of a dangerous material in a defined area is prohibited. Source prohibitions can be useful where there is no development in the drinking water source protection area, or where design and development standards will not be fully protective of the water supply. Source prohibitions can be used to address activities that typically require the use of hazardous materials, or restrictions on the use of specific hazardous materials. Examples of activities that may involve hazardous materials include coal combustion for power generation, manufacturing of automotive parts, plastics film manufacturing, chemical manufacturing, and metal coating. Prohibiting specific hazardous materials, such as heavy metals, solvents, petroleum products and radioactive materials, may also be effective. • Conservation Zoning District – Allows a municipality to limit land uses in the defined conservation zoning district. • Overlay Zoning – An overlay district can span across multiple zoning districts and can add requirements for sensitive areas. • Setbacks – Establish setbacks to limit certain activities in a designated area.
	Additional Information: For municipalities in New York State that are adopting zoning for the first time, visit: www.dos.ny.gov/lg/publications/Adopting_Zoning_for_the_First_Time.pdf (NYS DOS, Division of Local Government Services, Search On: "Adopting Zoning for the First Time"). For those with zoning that would like to enhance it, visit: www.dos.ny.gov/lg/publications/Creating_the_Community_You_Want.pdf (NYS DOS, Division of Local Government Services, Search On: "Creating the Community You Want: Municipal Options for Land Use Control").

WORKING DRAFT

Special Use Permits	**What is it?** Particular land uses, in accordance with a zoning local law, can be allowed only if granted a special use permit. The zoning regulations must define the criteria for when that use will be allowed. The authorized board shall have the authority to impose such reasonable conditions and restrictions as are directly related to and incidental to the proposed special use permit. Upon granting of the special use permit, any such conditions must be met in connection with the issuance of permits by applicable enforcement agents or officers of the municipality.
	When to use: Special use permits are most appropriate for uses that, in certain contexts, need conditions to harmonize with the surrounding community. The most effective special use permit regulations are those with detailed criteria for each special use in the district. If the proposed special use does not meet the stated criteria, the permit may not be granted. However, if the proposed use does meet the stated criteria, the review board must grant the special use permit.
	Example: A special use permit allows the review board (usually the planning board or zoning board of appeals) discretionary authority to review potential impacts of proposed uses and to attach conditions to them to lessen their impact on and enhance their benefit to the surrounding community. A restaurant might be granted a special use permit in a neighborhood commercial district with the conditions that the kitchen exhaust be kept from neighboring business and residential areas, adequate landscaping buffers be planted, signage and exterior lighting be more subdued than for a similar use in the central business district, and hours of operation be reflective of surrounding uses to minimize impact on nearby residential neighborhoods.
	Additional Information: For more information on special use permits call: The Department of State's Division of Local Government at 518-473-2255 to discuss the special use permit process and for sample regulations.

WORKING DRAFT

Site Plan Reviews	**What is it?** Site plan review looks at the proposed development design of a single parcel, usually with the goals of minimizing impact on neighboring properties, establishing compatible design and the efficient use of land. Local governments can have site plan review without zoning, but the process is much more effective when used in concert with zoning.
	When to use: Most cities, towns and villages review site plans for multi-unit residential uses and all commercial uses when the site is disturbed. The goal of site plan review is sound design with minimal impact on sensitive environmental areas. For example, in many local site plan review laws, steep slopes are to be avoided, grading and filling minimized, and ingress and egress designed to reduce the impact of additional traffic. It is in the site plan review process that low impact development and green infrastructure can be required, and pedestrian-friendly design assured.
	Example: The redevelopment of a 1960s single-story shopping center set back from the street with excessive surface parking presents an opportunity for municipalities with site plan review and zoning regulations that reflect more contemporary trends in planning. The redeveloped site might include the primary, multi-story and multi-use building close to the street and sidewalk with buffered parking on the side or rear of the building with landscaping and on-site stormwater retention.
	Additional Information: www.dos.ny.gov/lg/publications/Site_Development_Plan_Review.pdf (NYS DOS, Division of Local Government Services, Search On: "Site Plan Review").

WORKING DRAFT

Subdivision Control	**What is it?** Subdivision refers to the division of larger parcels into smaller parcels for sale and/or development. Local governments can administer subdivision regulations without zoning, but most have both and can use their subdivision regulations more effectively with zoning. Subdivision regulations used with zoning can improve traditional neighborhood development with interconnected streets and small lots. Larger parcels with curved streets and cul-de-sacs may require cluster or conservation subdivisions where the most sensitive areas are.
	When to use: Zoning regulates use, density, and location of buildings on a parcel. Subdivision regulations are concerned with how the land is divided. It attempts to ensure that when development does occur, it will be accompanied by adequate services and facilities. Subdivision development can change the character of a community. Once land is divided into lots and streets are laid out, development patterns are set. Subdivision design is among the most important means of influencing the future character of the community.
	Examples: • Subdivision regulations can control the location, scale and physical character of new development, as well as the way they would fit into the existing pattern of woods, open space and developed areas. • Subdivisions may also be built to assist in combating the effects of climate change by requiring conservation subdivisions with minimal disturbance to existing mature trees and minimizing impervious surfaces. • Poor subdivision designs create lots that are difficult to develop, use land inefficiently, and can negatively affect the community by increasing traffic and storm-water drainage on existing roads and streets, thereby increasing the need for additional public facilities. Failure to plan for the subdivision of land is felt by the local government in many areas such as tax burdens, high cost of extending utilities, street and traffic problems, and a loss of a sense of community. Where possible, comprehensive plans should prioritize redevelopment in previously disturbed areas and where sewer, water, road and sidewalk infrastructure exist and to design subdivision regulations based on the agreed upon goals of the comprehensive plan.
	Additional Information: www.dos.ny.gov/lg/publications/Subdivision_Review_in_NYS.pdf (NYS DOS, Division of Local Government Services, Search On: "Subdivision Review in New York State").

WORKING DRAFT

Critical Environmental Area (CEA)	**What is it?** A specific location in a community that has been identified because it has one or more of the following unique characteristics: • Is a benefit or threat to public health; • Has an important or unique natural setting (e.g. fish and wildlife habitat, forest and vegetation, open space and areas of important aesthetic or scenic quality); • Holds important agricultural, social, cultural, historic, archaeological, recreation, or educational values; or • Has an inherent ecological, geological, or hydrological sensitivity to change that may be adversely affected by any change.
	When to use: When a municipality wants to designate their critical area or source water area as a CEA, they can do so according to 617.14 (g) on govt.westlaw.com/nycrr (Westlaw, Search On: "6 CRR-NY 617.14 Individual agency procedures to implement SEQR"). CEAs will require future projects to consider effects on sensitive resources within the designated area.
	Example: For examples of CEAs throughout New York State, visit: www.dec.ny.gov/permits/6184.html (NYS DEC, Division of Environmental Permits, Search On: "Critical Environmental Areas").
	Additional Information: www.dec.ny.gov/permits/91771.html (NYS DEC, Division of Environmental Permits, Search On: "Question 12 – Impact on Critical Environmental Areas – Full EAF (Part 2)".

WORKING DRAFT

New York State Watershed Rules and Regulations	**What are they?** State public health law allows for entities having management and control of public water supplies to adopt rules and regulations within a watershed or well recharge area to prevent contamination of drinking water sources. New York State Watershed Rules and Regulations (WRR) are subject to approval from the NYS DOH. If adopted, the authorities in charge of the water supply or their duly authorized representatives may make regular inspections within the watershed or well recharge area to ascertain whether such rules and regulations are being met. WRR were first enacted in the late 19th century to protect drinking water and were some of the first environmental regulations in the nation. Today, there are extensive State and Federal Environmental Regulations, covering many aspects of environmental protection in New York and across the country. WRR must comply with other state and federal laws.
	When to use: In some cases, WRR are still an effective way to protect certain drinking water watersheds, especially in watersheds that fall within several municipalities. In addition, the DOH's Bureau of Water Supply Protection requires WRR for water systems with filtration avoidance as specified in 10 New York Codes, Rules and Regulations Part 5-1.30.
	Example: Visit: 131.1 City of Syracuse, Onondaga County govt.westlaw.com/nycrr, (Westlaw, Search On: "10 CRR-NY 131.1 City of Syracuse, Onondaga County") for an example of the City of Syracuse's Watershed Rules and Regulations.
	Additional Information: www.nysenate.gov/legislation/laws/PBH/1100 (The New York State Senate, Search On: "Public Health Law, Article 11, §1100").

WORKING DRAFT

Intermunicipal Agreements	**What is it?** An Intermunicipal Agreement (IMA) enables two or more municipalities to adopt compatible comprehensive plans, zoning laws, aquifer protection, watershed enhancement or other land use regulations. It creates a mutual understanding between two or more municipal parities and is typically a binding agreement. There are two basic types of municipal cooperation: • Joint or cooperative agreement – To perform a particular activity or project where there may be pooling of resources to achieve a mutually beneficial goal. • Service agreement – Where one or more of the participants may contract to provide a service or perform a function for the other participants.
	When to use: IMAs can protect each local government in the case of litigation, clearly state the tasks and arrangements between the partners, eliminate misunderstanding and promote fairness. Effective IMAs also promote continuity across municipal boundaries as well as continuity when personnel or elected officials change.
	Example: Watershed IMAs can encourage partnership on projects related to water quality, natural resource protection, public outreach and other coordinated efforts across municipal boundaries throughout the watershed. Models have been developed to calculate fees for individual municipalities to participate and contribute to the coordinated efforts to improve water quality within the watershed. For examples of intermunicipal agreements in New York State, visit: www.dos.ny.gov/lg/lge/ima.html (NYS DOS, Division of Local Government Services, Search On: "Intermunicipal Agreements").
	Additional Information: Call NYS DOS Department of Planning and Development at 518-473-3355.

WORKING DRAFT

Non-Regulatory

Land purchase/ acquisition or voluntary conservation easements	**What are they?** Land purchases or acquisition refers to the process of acquiring private land by the government, not-for-profits or its entities via donation, bargain sale, or purchase. Conservation easements differ from land acquisition and are used to protect natural resources and landscape values through legal agreements between a private landowner and a not-for-profit or government agency. The private landowner still owns the property but has sold or donated, via the conservation easement, their development rights to the not-for-profit or governmental agency. Conservation easements can also limit activities on the private property that would harm public water supplies. Voluntary conservation easements may be donated, bargain sale or purchased.
	When to use: Acquiring land located within a source water protection area can be an effective way to prevent future contamination of the water supply or to target watershed restoration actions. Conservation easements can be used as a tool to implement best management practices to control runoff from existing land uses.
	Example: New York City's Land Acquisition Program is a key component of their watershed management strategy for protecting the quality of its water supply. For more information, visit: www1.nyc.gov/assets/dep/downloads/pdf/watershed-protection/assistance-for-homeowners-landowners/2010_lap_brochure.pdf (NYC DEP, Search On: "New York City's Land Acquisition Program Brochure").
	Additional Information: Refer to the *Funding Strategies* section of the Resource Kit for potential funding opportunities for land acquisition and easements for the purpose of drinking water source protection. For more information on conservation easements, visit: www.dec.ny.gov/lands/41156.html (NYS DEC, Lands and Forests, Search On: "Conservation Easements").

WORKING DRAFT

Transfer of Development Rights	**What are they?** Transfer of Development Rights is a voluntary, incentive-based program that allows development rights to be transferred from one lot, parcel, or area of land to another.
	When to use: Transfer of Development Rights may be adopted by municipalities when they want to conserve environmentally sensitive lands, such as conservation zoning districts.
	Example: The Town of Lysander developed a Transfer of Development Rights program that established sending and receiving area overlays in an effort to maintain and protect agricultural uses and preserve open space areas. For more information, visit: www.parmany.org/farmlandandopenspace/plan/F-7A-TDR%20Language%20LYSANDER%2010-29-08.pdf (Town of Parma, Search On: "The Town of Lysander, Transfer of Development Rights").
	Additional Information: www.dos.ny.gov/lg/publications/Transfer_of_Development_Rights.pdf (NYS DOS, Division of Local Government Services, Search On: "Transfer of Development Rights").

Encouraging or incentivizing the use of best management practices (BMPs)	**What are they?** New programs or increased efforts to incentivize voluntary actions among both urban/suburban homeowners and landowners (e.g., fertilizer, pesticide, and other chemical education, stormwater management practices, stream restoration) and rural landowners (e.g., septic improvements, agricultural BMPs, chemical disposal education, stream restoration and buffering, etc.). *Note: Because many of these actions require landowners and homeowners to make voluntary changes, they can be time-consuming to implement. To be successful, the appropriate stakeholders are needed for planning and implementation.*
	When to use: A community determines that the activities/practices of homeowners and/or landowners are potential sources of contamination in their drinking water protection areas.
	Example: The Watershed Agricultural Council's Forestry Program provides incentives and technical support to help loggers plan and apply BMPs to protect water quality in the New York City (NYC) Watershed. For more information, visit: www.nycwatershed.org/bmp-program (Watershed Agricultural Council, Search On: "NYC Watershed, BMP Program").
	Additional Information: www.dec.ny.gov/chemical/96777.html (NYS DEC, Division of Water, Search On: "Nonpoint Source Guidance and Technical Assistance").

WORKING DRAFT

Intermunicipal Organizations	**What are they?** Intermunicipal Organizations (IMOs) are coordinated partnerships that can serve as a forum for local governments, state agencies, non-governmental organizations, and the public to unify and gain a consensus on required actions to preserve or restore a source of public water.
	When to use: Under the scenario where the community's drinking water source protection area crosses its municipal boundary, establishment of an IMO may be appropriate.
	Example: The Cayuga Lake Watershed IMO was established to bring municipalities together to work collectively and collaboratively on monitoring, protecting, and restoring the health of the Cayuga Lake watershed. This IMO is charged with administering the Cayuga Lake Watershed Restoration and Protection Plan by providing a forum for all municipalities within the watershed to interact, exchange information, and work together to protect the watershed as a whole.
	Additional Information: www.dos.ny.gov/opd/programs/waterResourcesMgmt/watershedplansNY.html# (NYS DOS, Division of Planning & Development, Search On: "Water Resources Management" and click on "Watershed Plans in New York").

WORKING DRAFT

Build-Out Analysis	**What is it?** A build-out analysis evaluates the potential for development of a specified area under a set of zoning and subdivision laws. The analysis will highlight areas where development is possible under the given set of laws and can quantify the amount of development allowed to occur. In addition, this analysis can lead to estimates of change in population and where a community's current infrastructure or the environment may be impacted. With a build-out analysis as an available tool, a community can make informed decisions on the best zoning and subdivision laws for their citizens and their environment.
	When to use: A build-out analysis can be used when a community has a need to understand future demands on its infrastructure and the environment. This type of analysis can be most useful when an area of concern is specified, such as source water. Its output can aid in determining the best set of zoning and subdivision laws to protect these areas of concern.
	Example: A build-out analysis can be done to understand how development might occur and impact areas surrounding source water. Multiple build-out analyses may be run to test different zoning and subdivision laws until a set are found that limit the impact on the public water supply. Greenplan, Inc. conducted a build-out analysis for the Town of Philipstown to estimate the impacts of residential growth. For more information, visit: www.philipstown.com/buildfinal.pdf (Town of Philipstown, Philipstown Buildout Analysis, Search On: "Final Report").
	Additional Information: The following New York State Regional Planning Councils may be able to provide communities with local resources and/or describe the benefits and basic process for completing a build-out analyses: ➢ Capital District Regional Planning Council ➢ Central New York Regional Planning and Development ➢ Genesee/Finger Lakes Regional Planning Council ➢ Hudson Valley Regional Council ➢ Lake Champlain – Lake George Regional Planning and Development Board ➢ Southern Tier Central Regional Planning and Development Board ➢ Southern Tier 8 ➢ Southern Tier West Regional Planning and Development Board For Regional Planning Council contact information, refer to *Appendix B: Contacts*.

WORKING DRAFT

Monitoring and Reporting

Review Existing Data	**Why?** To get a better understanding of what contaminants are being monitored, where pollution problems may exist and where to focus pollution control initiatives.
	When to use: When municipalities want to review and analyze existing drinking water quality monitoring data as well as ambient water quality data for increasing trends and potential surrogate contaminants.
	Additional Information: For more information, visit: www.dec.ny.gov/chemical/8459.html (NYS DEC, Division of Water, Search On: "Water Quality Monitoring & Assessment") or contact your regional or local health department.

Expand Monitoring	**Why?** To conduct additional monitoring and/or test for potential contaminants that are not regulated in New York State. Expanded monitoring may alert municipalities to any current or emerging problems and help determine if water quality is getting better, worse, or remaining the same.
	When to use: When municipalities want to conduct additional ambient water and/or drinking water quality monitoring based on the inventory of potential contaminants within their drinking water source protection areas. This could include current unregulated drinking water contaminants.
	Example: NYC DEP's Water Quality Monitoring Program tests for more contaminants than are required by law. For more information, visit: www1.nyc.gov/assets/dep/downloads/pdf/water/drinking-water/drinking-water-supply-quality-report/2018-drinking-water-supply-quality-report.pdf (NYC DEP, Search On: *"New York City 2018 Drinking Water Supply and Quality Report*").
	Additional Information: EPA's Contaminant Candidate List and Unregulated Contaminant Monitoring Rule (UCMR) are good resources to view potential new drinking water contaminants. For more information about EPA's Contaminant Candidate List and UCMR, visit: www.epa.gov/ccl (US EPA, Search On: "Drinking Water Contaminant Candidate List and Regulatory Determination") and www.epa.gov/dwucmr (US EPA, Search On: "Monitoring the Occurrence of Unregulated Drinking Water Contaminants").

WORKING DRAFT

Designated Drinking Water Source Inspector	**What is it?** Inspect existing sources and noting new sources of potential contamination within the drinking water source protection area. The Drinking Water Source Inspector could conduct routine inspections by vehicle and foot patrol of the entire source water protection area. At a minimum, inspection should occur annually. The inspector should follow the management methods outlined for each potential contaminant source under *Management Methods for Existing Potential Contaminant Sources*. This section will provide the inspector information on where to gather background information, what to check for and who to contact if there are any concerns. The drinking water source inspector should be involved in local zoning and land use decisions. Not only could the inspector become familiar with local zoning and land use, but they could aid with the management of future sources of potential contamination.
	When to use: Designating a drinking water source inspector may be appropriate if the community does not have Watershed Rules & Regulations that require an inspector. A drinking water source inspector may also be beneficial for sources of drinking water that cross municipal boundaries. A drinking water source inspector program could be developed through an intermunicipal agreement. This would allow for the entire source water protection area to be surveyed rather than just the area that pertains to the one community.
	Additional Information: Refer to *Management Methods for Existing Potential Contaminant Sources* in the Resource Kit for information about specific actions that can be taken to increase reporting, oversight, review and accountability for several existing potential contaminant sources, especially for regulated facilities.

WORKING DRAFT

Outreach and Education

When selecting an approach to outreach, consider your target audience(s) (demographics and location of the people you are trying to reach) and what you want them to do as a result of the information. It is important to inform relevant entities of the protection areas established by the community. Relevant entities may include neighboring communities, higher risk land uses, emergency management offices, spill response offices, and other agencies. Understanding your audience helps identify best ways to deliver your message, potential partners who may assist in getting your message out, as well as potential preconceptions or beliefs that you may want to consider when crafting key messages. Consider the following questions to help identify outreach approaches:

- 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)?
- What are your key messages and where do you want to direct people to get more information on the topic?
- Are messages short, long, require graphics etc.?
- How do you plan to get the information out? (in person, email, digitally, direct mail)?
- Who are partners who can help you get the information out?
- What is your budget?

Digital/Social Media	**Best For:** Short text/stories, illustrations/animated illustrations, videos to drive behavioral change; promote events, direct people to resources.
	Benefits: Flexible in terms of budget, ability to reach a wide audience or target demographics; great to link to additional resources. Flexible for text graphics or videos.
	Challenges: Messaging needs to be short and direct, cannot reach demographics that are not online or using media platforms.
	Example: NYC DEP engages its customers through several different social media outlets including Facebook, Instagram, Twitter and YouTube. Previous social media posts included information such as watershed history, new water testing programs, upcoming tours and events, and potential impacts of climate change on the water supply. For more information, visit: www1.nyc.gov (NYC DEP, Search On: “Social Media”).

WORKING DRAFT

Paid Advertising: News, Digital, Radio	**Best For:** Short newsworthy stories, events, public service announcements, stories to drive behavioral change.
	Benefits: Ability to localize and reach a wide audience, good for targeting older adults, great for video/audio storytelling, and publicizing advertisements.
	Challenges: Expensive to purchase choice media spots. Requires art and media development which is an added expense.
	Example: To spread public awareness about their different campaigns, NYC DEP posts advertisements around the City at selected subway stations and bus shelters, and on trains, buses, television and social media. For example, in 2019, NYC DEP launched a "Trash it. Don't Flush it." campaign to spread awareness that improperly disposing of grease, wet wipes and other trash can clog pipes, lead to sewer backups and cause flooding and costly damage. They launched a new website to further educate the public and partnered with other City Agencies to post flyers in public restrooms. For more information about the campaign, visit www1.nyc.gov/site/dep/whats-new/trash-it-dont-flush-it.page (NYC DEP, Search On: "Trash it. Don't Flush it.").

Press Release/Editorials	**Best For:** Short newsworthy stories to drive media coverage. Great for publicizing events, accomplishments and problem sharing.
	Benefits: Inexpensive way to get free press.
	Challenges: Requires editorial development. Needs to be picked up by media outlets to be successful.
	Example: NYC DEP issues press releases to share stories, accomplishments, new projects, make announcements, and more. For examples of their press releases, visit: www1.nyc.gov/site/dep/news/news.page?category=All (NYC DEP, Click On: "What's New" and filter by "Press Releases").

Newsletters	**Best For:** Sharing multiple stories, best management practices engaging audiences in submitting and sharing articles.
	Benefits: Flexible in terms of distribution and budget. Can produce digitally or in paper. Can reach a larger audience.
	Challenges: Can be expensive to develop and print. Time and resource intensive to obtain/write article, develop and maintain mailing lists, and may require staff to be sustaining.
	Example: Des Moines Water Works (of Iowa) sends a newsletter entitled *H2O Line* to its customers inside monthly water bill statements. The newsletter provides information on services and programs provided to customers. For examples of their newsletters, visit www.dmww.com/about-us/newsletters (Des Moines Water Works, Search On: "Newsletters").

WORKING DRAFT

Factsheets, Flyers, Direct Mail	**Best For:** Getting the word out about issues and events. Best if distributed in person rather than mailed.
	Benefits: Good way to reach people in target areas.
	Challenges: Could be expensive and wasteful if distributed by mail, i.e. "junk mail."
	Example: The Town of Oyster Bay, through an Environmental Protection Fund Local Waterfront Revitalization Program grant, worked together with The Friends of the Bay, Oyster Bay/Cold Spring Harbor Protection Committee, Hempstead Harbor and Manhasset Bay Protection Committees and more to develop an outreach campaign to address the importance of septic system maintenance and inspections. The GET PUMPED! Long Island campaign included a website, postcards and homeowner factsheets to provide direct information to residents. For more information about the campaign and specific fact sheets used, visit: www.getpumpedli.org (Town of Oyster Bay, Click On: "Resources").

Email Blasts	**Best For:** Getting the word out about issues and events. Great for linking to other resources.
	Benefits: Good way to reach people in target areas/demographics. Is relatively inexpensive.
	Challenges: Requires email, can be costly if you do not own mailing lists.
	Example: New York State offers NY-Alert which provides critical updates to those who sign up to receive notifications for categories such as severe weather, transportation, public health, etc. Whenever a critical event occurs, NYS sends an email, text message, or fax to all subscribed users to let them know the what, when and where. To sign up for NY-Alert, visit: www.alert.ny.gov (NYS, Search On: "NY Alert").

Signage	**Best For:** Localized messages, warnings, alerts.
	Benefits: Great for getting message(s) to people where they need it. Good for visual messages. Can reach a large and diverse audience.
	Challenges: Difficult to maintain (consider weatherized materials), must obtain landowner support for posting. Can be expensive.
	Example: NYC DEP has examples of watershed recreation signs that they post on their water supply lands. Signs are a simple way to raise awareness about source water areas, water quality and conservation. For examples of their signs, visit: www1.nyc.gov/site/dep/recreation/signs.page (NYC DEP, Search On: "Recreation, Signs").

WORKING DRAFT

Tabling/ Presenting at Events and/or Conferences	**Best For:** Face to face education, focus testing messages, interacting with audiences. The more interactive the better.
	Benefits: Great for interacting with your audiences, sharing messages and ideas, testing materials. Great for localized, one-time or repeat road show messaging. Ability to share materials.
	Challenges: Very targeted and resource intensive, may have to develop and bring in displays and materials.

Community Events	**Best For:** Face to face education and interaction with local residents.
	Benefits: Great for interacting/collaborating with local residents, sharing messages and materials. Offers two-way communication. Great way to make the community aware and engaged in source water protection.
	Challenges: May be very targeted and resource intensive, may have to develop and bring in materials. Requires significant planning time. Could be expensive.
	Example: Erie County, NY holds several household hazardous waste collection events for local residents throughout the year. Programs like these help people feel they are participating in cleaning up their local waterways, and they can help build public awareness and support for other water protection efforts. To learn more about Erie County's Program, visit: www2.erie.gov/recycling/index.php?q=hhw (Search On: "Erie County, NY, Recycling, Household Hazardous Waste Collection Events").

Training	**Best For:** Educating and interacting with audiences, focused subject matter.
	Benefits: Great for interacting/collaborating with audiences, sharing messages and materials. Can be done in person or online (i.e. online modules).
	Challenges: May be very targeted and resource intensive, may have to develop and bring in materials. Reaches smaller audiences. Person delivering the training could make it or break it.
	Example: NYS DEC developed a resource toolbox for wastewater treatment plant operators that provides resources, trainings and information for long-term planning, maintenance and growth of their treatment facilities. NYS DEC created "Nitrogen Training Material" to bring low cost operational tools to operators to enable them to evaluate and optimize nitrogen removal at their treatment facilities. The training material includes five self-training modules on nitrogen removal, worksheets, exercises and more. For more information on the training, visit: www.dec.ny.gov/chemical/8712.html (NYS DEC, Bureau of Water Compliance, Search On: "Nitrogen Training Material"). For more information on the resource toolbox, visit: www.dec.ny.gov/chemical/83360.html (NYS DEC, Bureau of Water Compliance, Search On: "Wastewater Treatment Plant Operator Toolbox").

WORKING DRAFT

For additional resources and information on how to form outreach programs and develop effective messages, visit:

- www.cfpub.epa.gov/npstbx/files/getnstepguide.pdf (US EPA, Search On: "*Getting in Step"*).
- www.epa.gov/sites/production/files/2015-09/documents/community_culture.pdf (US EPA, Search On: "*Community Culture and the Environment"*).
- www.urbanwaterslearningnetwork.org/wp-content/uploads/2016/04/Manual-Stormwater-Education-and-Outreach_2014.pdf (Urban Waters Learning Network, Search On: *"Developing an Effective Stormwater Education and Outreach Program for your Community"*).

WORKING DRAFT

Management Methods for Existing Potential Contaminant Sources

Click the links below to learn more about recommended management strategies for each potential contaminant source listed. This list is not exhaustive and does not encompass all potential facilities or activities that may impact the drinking water source. Management strategies for many DEC-regulated facilities involve enhanced communication with DEC regional staff to obtain facility-specific information.

Bulk Storage • Chemical Bulk Storage Facilities (e.g. chemical manufacturing) • Major Oil Storage Facilities (e.g. petroleum storage and distribution centers) • Petroleum Bulk Storage Facilities (e.g. gas stations) **Waste Management and Disposal** • Active Landfills • Inactive Landfills (Title 12) • Hazardous Waste Management Facilities • Land Application Sites • Vehicle Dismantling Facilities (e.g. junkyards) **Contamination Sites or Incidents** • Remediation Sites (e.g. State Superfund Sites, Brownfield Cleanup Sites, Environmental Restoration Program Sites, Federal Superfund Sites) • Spill Incidents **Mineral Extraction Sites** • Oil and Gas Wells • Orphan Oil and Gas Wells • Mines • Historical Abandoned Mines **Discharges to Water** • State Pollutant Discharge Elimination System Permitted Facilities (SPDES) (e.g. municipal wastewater treatment works, municipal separate storm sewer systems (MS4s), combined sewer overflows (CSO), concentrated animal feeding operations (CAFO), solid waste management facilities, manufacturing operations) • Combined Sewer Overflows (CSOs) and Sanitary Sewer Overflows (SSOs)	**Transportation** • Airports (e.g. de-icing operations) • Transportation Corridors (e.g. highways, railroads, hazardous material routes) • Road Maintenance Facilities • Salt and Deicers Storage **Agriculture** • Agricultural Activities **Residential Sources** • Onsite Septic Systems (e.g. septic tanks, cesspools) • Lawn and Garden Chemicals • Waterfront Property Management **Conveyances and Pipelines** • Oil and Gas Pipelines **Other** • Golf Courses • Marinas and Boat Launches • Stormwater • Toxic Release Inventory (TRI) Facilities • Fire Training and Dedicated Fire Training Facilities • Nutrient Loading (Lakes Only) • Saltwater Intrusion • Road Salt Application

WORKING DRAFT

Bulk Storage

Chemical Bulk Storage Facilities	1. Check to ensure each facility has a current registration including the owner and emergency contact information. Information for facilities can be accessed using the NYS DECinfo Locator at www.dec.ny.gov/pubs/109457.html (NYS DEC, Search On: "DECinfo Locator"). These facilities are required by state law to report any spills within two hours. Contact facilities and request they add the community's emergency contact to their spills notification procedures. 2. Regularly check the NYS DEC Spills Database at www.dec.ny.gov/chemical/8437.html (NYS DEC, Division of Environmental Remediation, Search on: "Environmental Site Database Search") for any spills from these facilities. Follow up with NYS DEC for clean-up information and any concern of impacting the community's drinking water supply. To find contact information by region, refer to *Appendix B: Contacts*. 3. To the extent the community has access to these facilities, regularly visit the facilities to see if there are any obvious spills and mis-handling of stored chemicals. Report any spills or obvious mis-handling of the stored materials that would likely cause a release of the materials to the environment to NYS DEC Spills Hotline. 4. Consider working with the local health department if interested in developing a raw water and/or ambient water sampling plan for contaminants of concern. 5. Conduct an annual emergency response practice to ensure that the emergency response plan is up-to-date.

Major Oil Storage Facilities	1. Check to ensure each facility has a current registration including the owner and emergency contact information. Information for facilities can be accessed using the NYS DECinfo Locator at www.dec.ny.gov/pubs/109457.html (NYS DEC, Search On: "DECinfo Locator"). These facilities are required by state law to report any spills within two hours. Contact all facilities and request they add the community's emergency contact to their spills notification procedures. 2. Regularly check the NYS DEC Spills Database at www.dec.ny.gov/chemical/8437.html (NYS DEC, Division of Environmental Remediation, Search on: "Environmental Site Database Search") for any spills from these facilities. Follow up with NYS DEC for clean-up information and any concern of impacting the community's drinking water supply. 3. To the extent the community has access to these facilities, regularly visit the facilities to see if there are any obvious spills and mishandling of stored chemicals. Report any spills or obvious mis-handling of the stored materials that would likely cause a release of the materials to the environment to NYS DEC Spills Hotline. 4. Consider working with the local health department if interested in developing a raw water and/or ambient water sampling plan for contaminants of concern. 5. Conduct an annual emergency response practice to ensure that the emergency response plan is up-to-date.

WORKING DRAFT

Petroleum Bulk Storage Facilities	1. Check to ensure each facility has a current registration including the owner and emergency contact information. Information for facilities can be accessed using the NYS DECinfo Locator at www.dec.ny.gov/pubs/109457.html (NYS DEC, Search On: "DECinfo Locator"). These facilities are required by state law to report any spills within two hours. Contact all petroleum bulk storage facilities and request them to add the community's emergency contact to their spills notification procedures. 2. Regularly check the NYS DEC Spills Database at www.dec.ny.gov/chemical/8437.html (NYS DEC, Division of Environmental Remediation, Search on: "Environmental Site Database Search") for any spills from these facilities. Follow up with NYS DEC for clean-up and any concern of impacting the community's drinking water supply. 3. To the extent the community has access to these facilities, regularly visit the facilities to see if there are any obvious spills and mis-handling of stored chemicals. Report any spills or obvious mis-handling of the stored materials that would likely cause a release of the materials to the environment to NYS DEC Spills Hotline. 4. Consider working with the local health department if interested in developing a raw water and/or ambient water sampling plan for contaminants of concern. 5. Conduct an annual emergency response practice to ensure that the emergency response plan is up-to-date.

Waste Management and Disposal

Active Landfills	1. Request a copy of the active landfill permit from NYS DEC's Division of Material Management Regional Office. To find contact information by region, refer to *Appendix B: Contacts*. 2. Check if the permit is current and inform Division of Materials Management if you know of any discrepancy with the owner and/or emergency contact information. 3. Request a meeting with the Regional Material Management Engineer that has jurisdiction of the active landfill. (The DEC Region Office should be on the permit). The purpose of the meeting is to discuss any violations at the landfill that could impact the public drinking water supply and to understand the contaminants of concerns related to the landfill. 4. Consider working with the local health department if interested in developing a raw water and/or ambient water sampling plan for contaminants of concern. 5. Report any detection of the contaminants of concern to the local health department and work with them for appropriate response.

WORKING DRAFT

Inactive Landfills (Title 12)	1. Request a copy of the New York Inactive Landfills Status Report from NYS DEC's Division of Material Management Regional Office. To find contact information by region, refer to *Appendix B: Contacts*. 2. Check if there is enough information on the status report that would eliminate potential risks posed by the inactive landfill(s) to the public drinking water supply. 3. If the information on the report does not eliminate the concerns, request a meeting with the Regional Material Management Engineer that has jurisdiction of the inactive landfill. The purpose of the meeting is to discuss potential impact to the public drinking water supply and to understand the contaminants of concern related to the inactive landfill. 4. Consider working with the local health department if interested in developing a raw water and/or ambient water sampling plan for contaminants of concern. 5. Report any detection of the contaminants of concern to the local health department and work with them for appropriate response.

Hazardous Waste Management Facilities	1. Request a copy of the facility permit from NYS DEC's Division of Material Management Regional Office. To find contact information by region, refer to *Appendix B: Contacts*. 2. Check if the permit is current and inform Division of Material Management if you know of any discrepancy with the owner and/or emergency contact information. 3. Request a meeting with the Regional Material Management Engineer that has jurisdiction of the facility. The purpose of the meeting is to discuss any violations at the facility that could impact the public drinking water supply and to understand the contaminants of concerns related to the facility. 4. Consider working with the local health department if interested in developing a raw water and/or ambient water sampling plan for contaminants of concern. 5. Report any detection of the contaminants of concern to the local health department and work with them for appropriate response.

Land Application Sites	1. Obtain a copy of the land application site permit from the NYS DEC Division of Materials Management Regional Office for the community and check that it is current. Use NYS DEC's page for Solid Waste Management Facilities to find information by facility type at www.dec.ny.gov/chemical/8495.html (NYS DEC, Division of Materials Management, Search on: "Solid Waste Management Facilities"). To find contact information by region, refer to *Appendix B: Contacts*. 2. Inquire from Division of Materials Management the compliance history of the site, and make sure all violations that can threaten the water supply have been corrected. 3. Partner with the local Soil & Water Conservation District and Cooperatives to encourage farmers/appliers to work with agricultural-focused entities (e.g. local cooperative extensions, Soil & Water Conservation Districts, etc.) to ensure best management practices are being employed.

WORKING DRAFT

Vehicle Dismantling Facilities	1. Obtain a copy of the registration from NYS DEC Division of Materials Management Regional Office for the community and check that it is current. To find contact information by region, refer to *Appendix B: Contacts*. 2. Inquire from Division of Materials Management the compliance history of the site, and make sure all violations that can threaten the surface water intake have been corrected.

Contamination Sites or Incidents

Remediation Sites	1. Use the NYS DECInfo Locator website to learn the contaminants of concern and the status of the clean-up at the site. The DECInfo Locator can be accessed at: www.dec.ny.gov/pubs/109457.html (NYS DEC, Search On: "DECinfo Locator"). 2. Contact NYS DEC Division of Environmental Remediation Regional Office and request a meeting to understand the cleanup process and ensure that the contaminants of concern are adequately contained and not migrating to the water supply. To find contact information by region, refer to *Appendix B: Contacts*. 3. Consider working with the local health department if interested in developing a raw water and/or ambient water sampling plan for contaminants of concern. 4. Inform the local health department of any detection of the contaminants.

Spill Incidents	1. Obtain a list of reported spill incidents within the critical area and the source water area. 2. Contact the NYS DEC Division of Environmental Remediation Regional Office for the community to request a meeting to understand the cleanup process of all the open spill incidents and ensure that the contaminants of concern are adequately contained and not migrating to the water supply. To find contact information by region, refer to *Appendix B: Contacts.* 3. For those spills incidents that will require long term remedial action, consider working with the local health department if interested in developing a raw water and/or ambient water sampling plan for contaminants of concern. 4. Inform the local health department of any detection of the contaminants.

WORKING DRAFT

Mineral Extraction Sites

Oil and Gas Wells	1. Obtain a copy of the permit from NYS DEC Division of Mineral Resources Regional Office for the community for all the oil and gas well sites and make sure that the permit is current. To find contact information by region, refer to *Appendix B: Contacts*. 2. Request a meeting with the Division of Mineral Resources and inquire about the compliance history of the permitted wells. 3. Any permit violation that presents a potential threat to the drinking water supply should be remediated as soon as possible by working with Division of Mineral Resources. 4. Consider working with the local health department if interested in developing a raw water and/or ambient water sampling plan for contaminants of concern. 5. Notify the local health department of any detection of the contaminants of concern.

Orphan Oil and Gas Wells	1. After locating abandoned and unplugged wells using the abandoned wells map, request a meeting with NYS DEC Division of Mineral Resources Regional Office and inquire about the closure status of those abandoned wells. To find contact information by region, refer to *Appendix B: Contacts*. 2. Consider working with the local health department if interested in developing a raw water and/or ambient water sampling plan for contaminants of concern for petroleum contaminants and sodium chloride. 3. Notify the local health department of any detection of the contaminants of concern.

Mines	1. Obtain a copy of the mine permit(s) from the NYS DEC Division of Mineral Resources Regional Office for the community and make sure they are all current. To find contact information by region, refer to *Appendix B: Contacts*. 2. Request a meeting with the Division of Mineral Resources and inquire about the compliance history of the permitted mine(s). 3. Any permit violation that presents a potential threat to the drinking water supply should be remediated as soon as possible by working with Division of Mineral Resources. 4. Consider working with the local health department if interested in developing a raw water and/or ambient water sampling plan for contaminants of concern related to the mining activity. 5. Notify the local health department of any detection of the contaminants of concern.

Historical Abandoned Mines	If such historical abandoned mines are found within the critical area or the source water area of the water supply intake, contact NYS DEC's Division of Mineral Resources Regional Office for the community for assistance. To find contact information by region, refer to *Appendix B: Contacts*.

WORKING DRAFT

Discharges to Water

State Pollutant Discharge Elimination System (SPDES) Facilities	1. After identifying all the SPDES permitted facilities in the critical area and source water area, obtain a copy of their current permits. 2. Identify whether the facility is an industrial or municipal sewage wastewater treatment plant (WWTP). 3. For an industrial facility or a municipal WWTP that has industrial discharges to the sewer system, consider taking the following steps: a. Using the facility information on the permits, contact the facility owners to provide them with the proper contact for emergency notifications of any unpermitted wastewater discharges. b. Make sure the water system emergency response plan is up-to-date to deal with any unpermitted discharges from any facilities. c. Consider working with the local health department if interested in developing a raw water and/or ambient water sampling plan for contaminants of concern. d. Notify the local health department of any detection of the contaminants of concern 4. For municipal WWTP, consider doing the following: a. Using the facility information on the permits, contact the facility owners to provide them with the proper contact for emergency notifications of any unpermitted wastewater discharges. b. Make sure the water system emergency response plan is up-to-date to deal with any unpermitted discharges from any facilities. 5. Follow up with NYS DEC Division of Water Regional Office if there are concerns of the facility impacting the community's drinking water supply. To find contact information by region, refer to *Appendix B: Contacts*.

Combined Sewer Overflows (CSOs) and Sanitary Sewer Overflows (SSOs)	1. Check for reports of any SSO or CSO discharges as required by the 2013 Sewage Pollution Right to Know Act. 2. Using the Potential Sources of Contamination map that was created, work with the local health department to develop an emergency response plan for SSO and CSO discharges within the public water supply critical area or source water area.

WORKING DRAFT

Transportation

Airports	1. Obtain a copy of the current Multi-Sector General Permit (MSGP) for the facility from NYS DEC Division of Water Regional Office. For more information about the MSGP, visit: www.dec.ny.gov/chemical/9009.html (NYS DEC, Division of Water, Search On: "Multi-Sector General Permit"). To find contact information by region, refer to *Appendix B: Contacts*. 2. Request a copy of the facility's Comprehensive Stormwater Pollution Prevention Plan (SWPPP) from the facility owner or operator to ensure compliance with the conditions of the MSGP. For more detailed information about the NYS DEC MSGP, visit: www.dec.ny.gov/docs/water_pdf/msgp017004.pdf (NYS DEC, Search On: "SPDES Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity" and click on "Sector S - Air Transportation"). 3. Use the DECInfo Locator website to learn the contaminants of concern and, if applicable, the status of any clean-ups at the site. The NYS DECInfo Locator can be accessed at: www.dec.ny.gov/pubs/109457.html (NYS DEC, Search On: "DECinfo Locator"). 4. Review EPA's ECHO database for facility-specific information including monitoring data, permit data, inspection dates and findings, violations, enforcement actions and penalties assessed. The EPA ECHO database can be accessed at: wwww.echo.epa.gov (US EPA, Search On: "Enforcement and Compliance History Online"). 5. Any permit violation that presents a potential threat to the drinking water supply should be remediated as soon as possible by working with Division of Water. 6. Regularly check the NYS DEC Spills Database for any spills from the facility. Follow up with NYS DEC for clean-up and any concern of impacting the community's drinking water supply. The NYS DEC Spills Database can be accessed at: www.dec.ny.gov/chemical/8437.html (NYS DEC, Division of Environmental Remediation, Search on: "Environmental Site Database Search"). 7. Make sure the emergency response plan is up-to-date to deal with any spills from the facility. 8. Airports may use firefighting foam. See Fire Training Centers and Designated Fire Training Facilities for management methods to address using and disposing of the foam. 9. Consider working with the local health department if interested in developing a raw water and/or ambient water sampling plan for contaminants of concern. 10. Inform the local health department of any detection of the contaminants.

WORKING DRAFT

Transportation Corridors	Community lies within MS4 Area 1. Obtain a copy of the current MS4 General Permit from NYS DEC Division of Water Regional Office. To find contact information by region, refer to *Appendix B: Contacts*. 2. Request a copy of the Stormwater Management Program (SWMP) Plan. For more detailed information, visit: www.dot.ny.gov/divisions/engineering/environmental-analysis/water-ecology/stormwater-management (NYS DOT, Engineering Division, Search On: "Stormwater Management" and click on "NYS DOT Stormwater Management Program Plan"). 3. If available, review outfall mapping from the MS4 Permit to assess potential impact. 4. Review MS4 annual compliance report. 5. If construction activities are being conducted on the transportation corridor, request a copy of the NYS DEC SPDES General Permit for Stormwater Discharges from Construction Activity. For more information about the permit, visit: www.dec.ny.gov/docs/water_pdf/gp015002.pdf (NYS DEC, Permit No. GP-0-15-002, Search On: "SPDES General Permit for Stormwater Discharges from Construction Activity"). 6. Any permit violation that presents a potential threat to the drinking water supply should be remediated as soon as possible by working with Division of Water. 7. Regularly check the NYS DEC Spills Database for any spills on the transportation corridor in the community. Follow up with NYS DEC for clean-up and any concern of impacting the community's drinking water supply. The NYS DEC Spills Database can be accessed at: www.dec.ny.gov/chemical/8437.html (NYS DEC, Division of Environmental Remediation, Search on: "Environmental Site Database Search"). 8. Make sure NYS DOT's emergency response plan is up-to-date to deal with any spills. Community does not lie within MS4 Area 1. Reference the regulatory guidance to develop stormwater management objectives. For more information about the MS4 Permit, visit: www.dec.ny.gov/chemical/43150.html (NYS DEC, Division of Water, Search On: "Stormwater MS4 Permit and Forms"). 2. Request a map of outfall locations from County or State level DOT. 3. Review Minimum Control Measures 6: Pollution Prevention/Good Housekeeping of the MS4 guidelines for additional management methods. Communities may want to work with County or State level DOT to routinely inspect and maintain catch basins, replace closed drainage with grass swales, etc. 4. Regularly check the NYS DEC Spills Database for any spills on the transportation corridor in the community. Follow up with NYS DEC for clean-up and any concern of impacting the community's drinking water supply. The NYS DEC Spills Database can be accessed at: www.dec.ny.gov/chemical/8437.html (NYS DEC, Division of Environmental Remediation, Search on: "Environmental Site Database Search"). 5. Make sure NYS DOT's emergency response plan is up-to-date to deal with any spills.

WORKING DRAFT

Transportation Corridors Continued	NYS DOT uses an Integrated Vegetation Management Program on State highway rights-of-way to manage vegetation. Integrated Vegetation Management helps NYS DOT select the best vegetation management and control methods while keeping in mind safety, operational, environmental and community concerns. Municipalities may want to work with their County or State level DOT to develop or enhance a right-of-way vegetation management plan for their community. Management measures to take into consideration include: ➢ Dividing the roadside into management zones. The character of these zones will dictate the level of management needed and control techniques. ➢ Developing a well-planned mowing program to maintain good quality turf while reducing erosion and protecting water quality. ➢ Participating in NYS DOT's Conservation Alternative Mowing Plans Program. ➢ Implementing cultural and biological methods to help control and enhance roadside vegetation. ➢ Employing best management practices when applying herbicides and fertilizer. ➢ DOT staff participating in the Green and Blue Highways Initiative to help plan and deliver stewardship activities. For more detailed information, visit: www.dot.ny.gov/divisions/engineering/environmental-analysis/repository/oprhbook.pdf (NYS DOT, Search On: *"Environmental Handbook for Transportation Operations"*).

WORKING DRAFT

Road Maintenance Facilities	<u>Facility lies within MS4 Area</u> 1. Obtain a copy of the MS4 General Permit from NYS DEC Division of Water Regional Office. To find contact information by region, refer to *Appendix B: Contacts*. 2. Request a copy of the Stormwater Management Program (SWMP) Plan. 3. Ensure the SWMP includes Minimum Control Measure 6: Pollution Prevention/Good Housekeeping. Ensure the facility is implementing the program to prevent or reduce pollutant runoff from operations. a. For an overview of the minimum control measures, visit: www.dec.ny.gov/chemical/8695.html (NYS DEC, Division of Water, Search on: MS4 Toolbox). 4. Review MS4 annual compliance report. 5. Any permit violation that presents a potential threat to the drinking water supply should be remediated as soon as possible by working with Division of Water. <u>Facility does not lie within MS4 Area</u> 1. Obtain the Multi-Sector General Permit (MSGP) from NYS DEC Division of Water Regional Office. Ensure the facility has a Stormwater Pollution Prevention Plan (SWPPP) and that it is current and in compliance with the permit. a. For more information, visit: www.dec.ny.gov/chemical/9009.html (NYS DEC Division of Water, Search On: "Multi-Sector General Permit"). 2. Obtain the Annual Certification form for the facility and review the visual monitoring and inspection portions. a. Review the monitoring and reporting table for deadlines and what is reported to NYS DEC at: www.dec.ny.gov/docs/water_pdf/monreptbgp.pdf (NYS DEC, Search On: "MSGP 0-17-004 Monitoring/Reporting Submission Deadlines"). 3. Review Minimum Control Measures 6: Pollution Prevention/Good Housekeeping of the MS4 guidelines for additional management methods. Municipalities should work with county or state level DOT to gather additional information on road maintenance facilities. • NYS DOT contact information can be found at: www.dot.ny.gov/about-nysdot/faq/residencies (NYS DOT, Search On: "Transportation Maintenance Residences by County").

WORKING DRAFT

Salt and Deicers Storage	➢ Store, load and unload salt on an impervious surface. ➢ Salt storage areas should always be covered. Covering should be impermeable to rain/snow and wind. ➢ Minimize stormwater runoff from adjacent areas from contacting stored road salt. Apply for funding to cover a salt or salt/sand mixture storage pile. ➢ Relocate salt storage to location outside of the drinking water critical area. ➢ Use good housekeeping practices. For information, visit *The Salt Storage Handbook* at: www.idot.illinois.gov/Assets/uploads/files/Transportation-System/Manuals-Guides-&-Handbooks/T2/L016%20The%20Salt%20Storage%20Handbook.pdf (The Salt Institute, Search On: "The Salt Storage Handbook"). ➢ Store liquid brine in non-corrosive and leak proof container with secondary containment.

Agriculture

Agricultural Activities	Establish a relationship with the County Soil & Water Conservation District or County Natural Resource Conservation District (NRCS). The main purpose of these agencies is to work with landowners, organizations and government to protect soil, water quality and other natural resources. Soil and Water Conservation Districts/NRCS can be used as a resource to: ➢ Provide technical assistance to farmers on Agricultural Environmental Management (AEM) assessments and planning. ○ AEM is a voluntary program that provides one-on-one assistance to farms to document environmental stewardship and assess environmental risks. Using a tiered process, AEM resource professionals work with farms to develop comprehensive farm plans which can identify appropriate best management practices (BMPs). ➢ Establish partnerships needed to implement agricultural conservation practices. ➢ Provide a link between land owners and a host of conservation practice providers. ➢ Coordinate with federal and state agencies and farmers. ➢ Prepare long-range plans to address conservation needs of the District. ➢ Work with farmers to seek and secure necessary funding to implement programs and BMPs. To learn more about Soil and Water Conservation Districts, visit: www.nys-soilandwater.org (New York State, Search On: "Soil and Water Conservation Committee"). To access the NYS Soil and Water Conservation Committee's *Agricultural Best Management Practice Systems Catalogue*, visit: www.agriculture.ny.gov/soil-and-water/agricultural-non-point-source-abatement-and-control#resources (NYS DAM, Search On: "Agriculture Non-point Source Abatement and Control").

WORKING DRAFT

Residential Sources

On-site Septic Systems	➢ Become familiar with all regulatory agencies that hold standards for the watershed of the septic system installation.
	  o The EPA has developed resources to help communities establish comprehensive on-site septic management programs. For more information, visit: www.epa.gov/septic/septic-systems-guidance-policy-and-regulations (US EPA, Search On: "Septic System Guidance" and click on "Guidance, policy, and regulations").
	➢ Educate homeowners within the drinking water source protection area about how to properly maintain their septic system.
	  o To access NYS DOH's guidance about how to properly operate and maintain septic systems, visit: www.health.ny.gov/publications/3208/ (NYS DOH, Search On: "Septic System Operation and Maintenance").
	  o To access EPA's resources, visit: www.epa.gov/septic (US EPA, Search On: "Septic Systems").
	➢ If individual sewage systems overlay a drinking water aquifer, local health departments may establish density limits and minimum lot sizes for residential development with on-site sewage treatment systems. For more information, visit: www.health.ny.gov/regulations/nycrr/title_10/part_75/appendix_75-a.htm (NYS DOH, Search on: "NYS DOH Appendix 75-A Wastewater Treatment Standards for Residential Onsite Systems"). To find contact information by region, refer to *Appendix B: Contacts*.
	➢ Sewer densely populated residential areas within the drinking water source protection area.
	➢ Contact County Soil and Water Conservation Districts to inquire about technical assistance (e.g. septic system inspections).
	➢ Apply for funding to replace septic systems within the drinking water source protection area. Refer to the *Funding Strategies* section of the Resource Kit for information on the Septic Replacement Program.

WORKING DRAFT

Lawn and Garden Chemicals	Municipalities can take advantage of publicly available resources to educate communities on fertilizer and pesticide BMPs, including information about: ➢ When to apply fertilizer. ➢ When to apply and handle pesticides. ➢ The appropriate application setbacks from a waterbody. ○ To learn more about the Nutrient Runoff Law, visit: www.dec.ny.gov/chemical/67239.html (NYS DEC, Division of Water, Search On: "Lawn Fertilizer (NYS Nutrient Runoff Law)"). ➢ Recommending a minimum mower height of 3 inches to increase nutrient uptake and reduce lawn runoff. ➢ Maintaining a dense cover of grass or conservation landscape. ➢ Adopting a Reduce Rate/Monitor Strategy when fertilizing. ○ To learn more, visit: *www.chesapeakestormwater.net/bmp-resources/urban-nutrient-management* (Chesapeake Stormwater Network, Search On: *"Urban Nutrient Management"* and click on *Final Report(s)*). ➢ Fertilizer application for Long Island communities. To learn more, visit: ○ www.dec.ny.gov/docs/water_pdf/ffstiming.pdf (NYS DEC, Search On: *"Timing Fertilizer Application on Long Island: Green Practices for Green Grass"*) ○ www.dec.ny.gov/docs/water_pdf/linapfertilizer.pdf (NYS DEC, Search On: "*Recommendations for Fertilizer Nitrogen Applications on Residential and Commercial Turfgrass*") ○ www.dec.ny.gov/docs/water_pdf/ffsirrigation.pdf (NYS DEC, Search On: "*Managing Irrigation*")

WORKING DRAFT

Waterfront Property Management	Communities can educate waterfront property owners on best management practices that can reduce the number of contaminants from reaching the adjacent waterbody. ➢ Educate homeowners on effective pollution controls. ○ To learn more, visit: www.dec.ny.gov/docs/water_pdf/dietlakech9.pdf (NYS DEC and NYS Federation of Lake Associations, Search On: *"Diet for a Small Lake"* and click on *Chapter 9 – Watershed Management*). ➢ Limit the amount of runoff entering the waterfront with a native vegetative buffer. ➢ Recommend homeowners along streambanks to prune rather than remove natural vegetation altogether. ➢ Inspect and maintain septic systems regularly. ➢ Minimize impervious surfaces using porous landscape materials, such as paving stones, to allow water to seep to the ground rather than runoff to the surface waterbody. ➢ Recommend a minimum mower height of 3 inches to increase nutrient uptake and reduce lawn runoff. ➢ Adopt a Reduce Rate/Monitor Strategy when fertilizing. ○ To learn more, visit: www.chesapeakestormwater.net/bmp-resources/urban-nutrient-management (Chesapeake Stormwater Network, Search On: *"Urban Nutrient Management"* and click on *Final Report(s)*). ➢ Educating Long Island communities on fertilizer application. To learn more, visit: ○ www.dec.ny.gov/docs/water_pdf/ffstiming.pdf (NYS DEC, Search On: *"Timing Fertilizer Application on Long Island: Green Practices for Green Grass"*) ○ www.dec.ny.gov/docs/water_pdf/linapfertilizer.pdf (NYS DEC, Search On: "*Recommendations for Fertilizer Nitrogen Applications on Residential and Commercial Turfgrass*") ○ www.dec.ny.gov/docs/water_pdf/ffsirrigation.pdf (NYS DEC, Search On: "*Managing Irrigation*")

Conveyances and Pipelines

Oil and Gas Pipelines	➢ Review annual reports for inspection planning. To access annual reports, visit: www.phmsa.dot.gov/data-and-statistics/pipeline/gas-distribution-gas-gathering-gas-transmission-hazardous-liquids (US DOT, Pipeline and Hazardous Materials Safety Administration, Search On: "Gas Distribution, Gas Gathering, Gas Transmission, Hazardous Liquids, Liquefied Natural Gas, and Underground Natural Gas Storage Annual Report Data"). ➢ Community Liaisons (formerly known as CATS Managers) are available to assist the public, state or local officials and other stakeholders with inquiries concerning pipeline safety-related matters. To learn more about Community Liaisons by State, visit: www.primis-stage.phmsa.dot.gov/comm/CATS.htm (US DOT, Pipeline and Hazardous Materials Safety Administration, Search On: "Community Liaison Services").

WORKING DRAFT

Other

Golf Courses	1. Educate golf course superintendents about the relationship between proper handling and application of chemicals and water quality. ➢ Encourage golf course superintendents to use *Best Management Practices for New York State Golf Courses* published by Cornell University. To learn more, visit: www.nysgolfbmp.cals.cornell.edu/ny_bmp_feb2014.pdf (Cornell University, Search On: *"Best Management Practices for New York State Golf Courses"*).

Marinas and Boat Launches	➢ Provide pump-out service at convenient times of day when customers want to use them. o To learn more, visit: www.epa.gov/sites/production/files/2015-10/documents/2001_10_30_nps_mmsp_section4.pdf (US EPA, Search On: "Marinas and Recreational Boating" and click on *"National Management Measures Guidance to Control Nonpoint Source Pollution from Marinas and Recreational Boating"* and then *"Section 4: Management Measures"*). ➢ Construct grass swales, vegetated strips or infiltration basins to manage stormwater at the marina. ➢ Boat washing should be done over a drain connected to a sanitary sewer. ➢ Ensure holding tanks are emptied using pump-out stations away from the shoreside. o To learn more, visit: www.dec.ny.gov/docs/water_pdf/marinasbmp.pdf (NYS DEC, Search On: *"Marina Operations for Existing Facilities"*). ➢ Install signs explaining proper fueling, spill prevention and spill reporting procedures at fueling stations. ➢ Use automatic shutoffs on fuel lines and at hose nozzles to reduce fuel loss. ➢ Build curbs, berms or other barriers around areas used for liquid material storage to contain spills. ➢ Designate hull maintenance areas outside of the waterbody to encourage marina patrons to avoid doing any hull maintenance while their boats are in the water.

WORKING DRAFT

Stormwater	MS4 ➢ Review MS4 General Permit under the State Pollutant Discharge Elimination System. The permit requires the development of a Stormwater Management Program Plan (SWMP Plan) that includes six required program components including public education and outreach, public participation/involvement, illicit discharge detection and elimination, construction site runoff control, post-construction runoff control, and pollution prevention/good housekeeping (PP/GH) ➢ Upon request, review outfall mapping from MS4 to assess potential impact, review illicit discharge detection program periodically and ensure there are measures to notify the MS4 when there is an illicit discharge to a drinking water source. ➢ Review MS4 annual compliance report. ➢ For certain industrial activities, obtain a Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activities to address stormwater runoff. Alternatively, the MS4 may choose to incorporate the site into their SWMP Plan and address the stormwater runoff under their MS4 permit. ➢ Construction activities disturbing one or more acres of soil must be reviewed for approval by the MS4 and authorized under the General Permit for Stormwater Discharges from Construction Activities. ➢ Develop a Stormwater Pollution Prevention Plan (SWPPP). ➢ Attend a NYS DEC Stormwater Management Training. ➢ For more information, visit: www.dec.ny.gov/chemical/8468.html (NYS DEC, Division of Water, Search On: "Stormwater"). Non-MS4 ➢ Develop a long-term stormwater plan. The EPA created a comprehensive long-term community stormwater guidance: *Community Solutions for Stormwater Management: A Guide for Voluntary Long-Term Planning*. The guidance integrates stormwater management with communities' plans for economic development, infrastructure investment and environmental compliance. For more information, visit: www.epa.gov/npdes/stormwater-planning (US EPA, National Pollutant Discharge Elimination System, Stormwater Planning, Search On: "Community Solutions for Voluntary Long-Term Stormwater Planning"). ➢ Develop an operation and maintenance plan for stormwater maintenance systems. ○ The EPA provides guidance on developing operation and maintenance plans. For more information, visit: www.epa.gov/npdes/stormwater-maintenance (US EPA, National Pollutant Discharge Elimination System, Search On: "Stormwater Maintenance"). ○ NYS DEC has maintenance guidance for stormwater management practices. For more information, visit: www.dec.ny.gov/chemical/8694.html (NYS DEC, Division of Water, Search On: "Maintenance Guidance for Stormwater Management Practices").

WORKING DRAFT

Stormwater Continued	➢ Implement sustainable stormwater management at facilities through site grading, vegetation, soils and natural processes that absorb and filter stormwater onsite. Practices may include: green roofs, bioretention areas, vegetated swales, vegetated filter strips, constructed wetlands and/or riparian buffers. ➢ For certain industrial activities, obtain a MSGP for stormwater discharges associated with Industrial activities to address stormwater runoff. Although communities may not fall within an MS4 area, they can still reference the MS4 guidance to develop their stormwater management objectives.

Toxic Release Inventory (TRI) Facilities	1. Establish a relationship with identified businesses/industries and identify appropriate BMPs for the facilities to utilize. 2. Download TRI data to identify what chemicals industrial facilities are using and releasing into the environment. a. To access, visit: www.epa.gov/toxics-release-inventory-tri-program/tri-data-and-tools (US EPA, Search On: "Toxics Release Inventory Program" and click on "Get TRI Data") and www.epa.gov/toxics-release-inventory-tri-program/tri-listed-chemicals (US EPA, Search On: "TRI-Listed Chemicals"). 3. Examine compliance history of identified facilities using EPA's ECHO website. a. To access, visit www.echo.epa.gov/ (US EPA, Search On: "Enforcement and Compliance History Online").

WORKING DRAFT

Fire Training and Dedicated Fire Training Facilities	1. Using local knowledge, identify fire training facilities within the source water protection area. 2. Review the Class B Fire Suppression Foam Usage Survey at: www.dec.ny.gov/docs/remediation_hudson_pdf/pfoasurvey3.pdf (NYS DEC, Search On: "Fire Fighting Foam" and click on "Class B Fire Suppression Foam Usage Survey") to determine if a facility within the source water protection area is storing, has stored, has used, or experienced a leak of Class B foam. 3. If the fire training center is not listed in the Class B Fire Suppression Foam Usage Survey, work with the facility to identify whether they have any Class B firefighting foam. 4. If Class B firefighting foam is found, work with the NYS DEC Division of Materials Management to properly recycle or dispose of hazardous foam. To find contact information by region, refer to *Appendix B: Contacts*. BMPs for future facilities or upgrades to an existing facility: • Testing facilities are located away from storm drain inlets, drainage facilities, or waterbodies. • An Oil/Water separator is used for effluent from burning pits before discharge. • Firefighting foam should not contain PFOA/s/x. • Firefighting foam discharge is collected, drummed and transported to an approved permitted facility. • Training facilities are paved with concrete or asphalt or stabilized with an aggregate base. • Facilities are bermed to contain and prevent run-off. • Discharge area is configured with a sump to allow collection and disposal of liquid effluent.

WORKING DRAFT

Nutrient Loading (Lakes Only)	Where nutrient loading is present, communities may already have management practices outlined in Nine-Element (9E) Watershed Plans or Total Maximum Daily Load (TMDL) plans. If one or both of these plans exist for a watershed, they should be referenced for additional guidance.
	➢ For more information, visit: www.dec.ny.gov/docs/water_pdf/dietlakech7.pdf (NYS DEC and NYS Federation of Lake Associations, Search On: *"Diet for a Small Lake"* and click on *"Chapter 7 – Algae and Other Undesirables"*).
	
	<u>Internal Nutrient Loading:</u>
	➢ Add aeration systems to replenish dissolved oxygen in waterbodies.
	➢ Install a pipe or siphon to withdraw oxygen depleted water from the waterbody.
	➢ Dredge lakes to eliminate the enriched sediment layer.
	  ○ For more information on in-waterbody best management practices, visit: www.dec.ny.gov/docs/water_pdf/wqipinwaterbody.pdf (NYS DEC, Bureau of Water Resource Management, Search On: *"In-Waterbody Best Management Practices")*
	
	<u>External Nutrient Loading:</u>
	➢ Limit the removal of vegetation along the streambank or shoreline.
	➢ Establish vegetative riparian buffers using native, deep rooting vegetation.
	  ○ Link to NYS DECs *Riparian Buffers*: www.dec.ny.gov/chemical/106345.html (NYS DEC, Division of Water, Search on: "Riparian Buffers")
	➢ Clearing and grading of steep slopes should be avoided entirely.
	➢ Create erosion and sedimentation control plans.
	  ○ Link to *National Management Measures to control Nonpoint Source Pollution from Hydromodification*: www.epa.gov/sites/production/files/2015-09/documents/hydromod_all_web.pdf (US EPA, Search on: "Hydromodification and Habitat Alteration").
	  ○ Link to DECs *Shoreline Stabilization:* www.dec.ny.gov/permits/50534.html (NYS DEC, Division of Environmental Permits, Search on: "Shoreline Stabilization")
	➢ Review the New York State Standards and Specifications for Erosion and Sediment Control blue book to minimize erosion and sediment impacts from construction activity involving soil disturbance.
	  ○ Link to *New York State Standards and Specification for Erosion and Sediment Control Blue Book*: www.dec.ny.gov/chemical/29066.html (NYS DEC, Division of Water, Search on: "New York State Standards and Specifications for Erosion and Sediment Control")

WORKING DRAFT

Saltwater Intrusion	Communities should work with NYS DEC and USGS to mitigate impacts from saltwater intrusion. A few management methods that can be utilized are: 1. Ensure wells are pumped at a sustainable rate. This may require enhanced water quality monitoring, sophisticated groundwater modeling or coordination with other local water users. 2. New wells should be carefully located and pumped at a rate chosen with a thorough understanding of the aquifer resource and all current local pumping conditions. 3. Develop and institute conservation measures: a. Install water meters to detect leaks. b. Encourage and promote consumer conservation through education, rebate and consumption monitoring programs. c. Develop and institute voluntary and mandatory restriction policies. 4. Develop and institute system design and operation measures that minimize impacts to the aquifer (e.g. increase frequency and reduce duration of well pumping).

Road Salt Application	NYS DOT has developed guidelines and handbooks to provide the public with safe roadways while also employing best management practices to prevent the potential negative impacts of road salt on public health and the environment. ➢ To learn more about NYS DOT's environmental initiatives, visit: www.dot.ny.gov/divisions/engineering/environmental-analysis/repository/oprhbook.pdf (NYS DOT, Search On: *"Environmental Handbook for Transportation Operations"*). ➢ To learn more about NYS DOT's snow and ice control, visit: www.dot.ny.gov/divisions/operating/oom/transportation-maintenance/repository/NYS_SI_Manual_Apr2006_RevJan2012.pdf (NYS DOT, Search On: "Snow and Ice Control"). A few management actions that can be utilized are: 1. Regularly calibrate salt spreading equipment. 2. Avoid salt spillage. Do not overload the material spreader. 3. Return unused materials to stockpiles. 4. Reduce vehicle speed and spreading speed to prevent bounce and scatter of salt into the environment. 5. Use Automatic Vehicle Location equipment that can track salt application rates.

Back to section ***3.1 Identify Protection and Management Methods*** of the Framework.

WORKING DRAFT

3.2 Develop an Implementation Strategy Timeline

Creating an implementation timeline will allow the community to organize protection efforts, develop reasonable expectations and encourage completion of the work. The following steps may be used to generate an implementation strategy timeline:

Step 1: Identify the priority issue to be addressed.

After identifying facilities or operations within the drinking water source protection areas, determine the specific activities within those facilities or operations that threaten the drinking water source to help focus protection actions.

Step 2: Identify goals and appropriate protection and/or management method

Once the priority issues have been identified, the community may review and identify protection methods and/or management methods that would be most appropriate to mitigate or eliminate risk. Protection actions may be chosen to manage existing potential contaminant sources or protect against future potential contaminant sources. In general, management methods have a narrower focus aimed at addressing specific existing facilities or operations, whereas protection methods tend to take a broader approach aimed at addressing land use decisions and community-wide strategies. Refer to the *Protection Methods* and *Management Methods for Existing Potential Contaminant Sources* sections of the Resource Kit for information about potential implementation actions.

Step 3: Determine cost and funding mechanisms.

There may be costs associated with certain protection and management methods. Communities are encouraged to explore funding opportunities to help subsidize those costs. Refer to the *Funding Strategies* section of the Resource Kit for information about state and national funding opportunities that may help fund projects.

Step 4: List parties needed to successfully implement the protection methods.

Successful implementation often requires input and expertise from multiple individuals and entities. Identify parties essential to undergoing the identified protection and management methods early in the implementation process to prevent future roadblocks.

Step 5: Identify individual steps and amount of time needed to accomplish protection methods.

Protection and management methods may be broken down into steps or actionable tasks. These steps can be useful to monitor progress of implementation actions in the community. Breaking down each method into actionable tasks may also help the community estimate a reasonable timeframe for completion.

Step 6: Compile the information into a table format.

Organizing the above steps into a single table may make the information more comprehensible and digestible for those interested in progress of implementation projects. Refer to the *Implementation Strategy Timeline – Example* in the subsequent section of the Resource Kit for examples.

Step 7: Share the implementation strategy timeline with the stakeholder group.

Stakeholder group members may have valuable connections and/or expertise that may help speed up the implementation process.

WORKING DRAFT

Implementation Strategy Timeline – Examples

Priority Issue	Targeted Potential Contaminant Source(s)	Goal	Protection Method and/or Management Method	Potential Cost	Potential Funding Sources	Project Leader and Partnerships Needed	Implementation Timing
1. Nutrient impairment in critical area and source water area	Agricultural Activity	Mitigate nutrient runoff and protect land through conservation easements	BMPs	$___.___	NYS DAM Soil and Water Conservation Committee Agricultural Nonpoint Source Abatement & Control Grant Program and USDA NRCS Agricultural Conservation Easement Program	– County Soil and Water Conservation District Representative – Agricultural Business Representative – Agricultural Advisory Committee Member – Farmers in the community – Affected landowners	5 years
			Conservation easements	$___.___	NYS DAM Soil and Water Conservation Committee Source Water Buffer Program and NYC DEC Water Quality Improvement Project (WQIP)		5-10 years
2. SPDES discharge by facility X located in the critical area	Industrial SPDES discharge	Enhanced communication to properly inform of potential risks to the public water supply	Enhanced communication and notification	None	N/A	– Municipal Code Enforcement Officer – Regional DEC Division of Water staff	On-going
3. Projected high-intensity development in the source water area	Potential chemical and microbial sources associated with development including septic systems, chemical bulk storage tanks, and oil and gas wells	Discourage high-intensity development within the source water area	Establish a CEA	None	N/A	– Town Board members – Conservation Board members – Planning Department member – Affected property owners	3 months

WORKING DRAFT

Implementation Strategy – Example 1

Priority Issue: Nutrient impairment in critical area and source water area.

Targeted Potential Contaminant Source: The previously approved Nine-Element (9E) Watershed Plan for Reservoir X indicated that agricultural runoff is a cause of nutrient impairment. Evidence of agricultural activities contributing to nutrient loading in Reservoir X and the percent agricultural land cover existing within critical area and source water area are potential risks to the water supply.

Goal: Use of best management practices (BMPs) will be encouraged and incentivized among landowners. Land will be protected through conservation easements.

Protection Method and/or Management Method: BMPs to protect against fertilizer leaching and runoff, such as management of nutrient plans and fertilizer applications, will help prevent nutrient impairments. Purchasing conservation easements will enhance water quality protection.

Potential Cost: $___.___

Potential Funding Sources: NYS DAM Soil and Water Conservation Committee Agricultural Nonpoint Source Abatement & Control Grant Program, USDA NRCS Agricultural Conservation Easement Program, NYS DAM Soil and Water Conservation Committee Source Water Buffer Program, NYS DEC WQIP.

Implementation Steps:

Step 1: Gather information on soil type and testing schedules, crop uptake and current management practices. Information on fertilizer use (type(s), quantity, timing and schedule of application and management) will also be collected. Review the 9E Watershed Plan and history of nutrient impairments on Reservoir X.

Step 2: Using the information gathered, partner with the County Soil and Water Conservation District Representative and Agricultural Business Representative from the stakeholder group. The county and local Soil and Water Conservation Districts will work jointly to engage farmers in the communities surrounding Reservoir X.

Step 3: The County Soil and Water Conservation District Representative will coordinate with local Soil and Water Conservation District and farm operators to prepare grant proposals. Continue outreach efforts to target the farming community and landowners.

Step 4: If awarded the NYS DAM Soil and Water Conservation Committee Agricultural Nonpoint Source Abatement & Control Grant, use funds to conduct environmental planning of nutrient management and fertilizer application plans. Encourage farmers through financial incentives to actively participate in the process. If awarded funds from the NYS DAM Source Buffer Program or the NYS DEC WQIP, purchase conservation easements on agricultural land that will be used to implement the above-mentioned BMPs. Inform participating farmers of the timeline.

Step 5: Develop outreach materials and educational tools that highlight the possible health and financial benefits of active participation.

Step 6: Implement nutrient management and fertilizer application plans on participating farms and those acquired through conservation easement. Build communication and coordination efforts between Soil and Water Conservation District and farmers. Develop an effective monitoring system.

WORKING DRAFT

Implementation Strategy – Example 2

Priority Issue: State Pollution Discharge Elimination System (SPDES) discharge by facility X located in the critical area.

Targeted Potential Contaminant Source: Industrial SPDES discharge

Goal: Enhanced communication with NYS DEC regional staff and the owner of the permitted facility will be accomplished over the next year to properly inform of potential risks to the public water supply.

Protection Method and/or Management Method: Work with NYS DEC regional staff to enhance communication. Notify the owner of the permitted facility that the facility is discharging in the critical area.

Potential Cost: None

Potential Funding Sources: N/A

Implementation Steps:

Step 1: Use DECinfo Locator Environmental Quality Map Viewer to obtain a copy of the SPDES permit. The permit may include information including effluent limitations, monitoring requirements and compliance schedules.

Step 2: Review DEC's Permit Applications Database for information about the permit application history of the facility.

Step 3: Use information and data collected from speaking with the regulated facility using *Appendix C: Questions to Ask the Regulated Entity* and EPA's Enforcement and Compliance History Online (ECHO) database to record facility-specific information including monitoring data, permit data, inspection dates and findings, violations, enforcement actions and penalties assessed.

Step 4: Using the facility information from DEC and EPA, notify the owner of the facility that the facility is discharging in the critical protection area.

Step 5: Using the facility information on the permits from DEC and EPA, provide the owner of the permitted facility with the proper contact for emergency notifications of any untreated wastewater spills.

Step 6: Make sure the facility emergency response plan for spills is up-to-date.

Step 7: Work with the local health department to develop a raw water and/or ambient water sampling plan for contaminants of concern.

Step 8: Notify the local health department of any detection of the contaminants of concern.

Step 9: Follow up with NYS DEC Division of Water if there are concerns of the facility impacting the community's drinking water supply.

WORKING DRAFT

Implementation Strategy – Example 3

Priority Issue: Projected high-intensity development in the source water area.

Targeted Potential Contaminant Source: Septic systems, chemical bulk storage tanks and oil and gas wells.

Goal: The community will strive to utilize a tool available under the State Environmental Quality Review (SEQR) Act, specifically the designation of a Critical Environmental Area (CEA), to ensure that high-intensity development is discouraged within the source water area.

Protection Method and/or Management Method: Designate portion of the source water area as a CEA.

Potential Cost: None

Potential Funding Sources: N/A

Implementation Steps:

Step 1: Communicate with the County Planning Department and request assistance to create an official map of the proposed CEA.

Step 2: Prepare an inventory of any landowners and/or parties that may be impacted by the CEA designation.

Step 3: Gather information specifying:

- Characteristics of the potential CEA that make it worth considering for designation.
- The kind of actions that would require environmental review under SEQR by the proponent agency and by other likely involved agencies.
- Possible CEA boundaries.
- Adverse impacts likely to be incurred if the area is not designated as a CEA.
- Management plans for the CEA.

Step 4: Prepare a generic Environmental Impact Statement on the proposed CEA and present the potential CEA to the Town Board.
Note: A concise General Environmental Impact Statement on a proposed CEA could provide an effective tool to adequately inform landowners, the general public and the decision makers reviewing the CEA proposal.

Step 4*:* The Town Board will schedule and hold a public informational meeting with all affected landowners, other interested agencies and the public. Present the information gathered in Step 3 of the implementation strategy at the public informational meeting.

Step 5: If the proposed CEA is approved, submit documentation that the area has been designated as a CEA to the Commissioner of the DEC and other relevant parties. The designation will take effect 30 days after the filings have taken place.

WORKING DRAFT

Funding Strategies

The following section includes a number of state and national funding sources that can be used to implement many of the management methods identified above. The list below provides several funding sources, and each has additional information on where communities can go to learn more. This list does not include every potential source of funding. Communities are encouraged to conduct their own research when identifying which source(s) of funding would support the implementation of their chosen management methods.

Click the links below to learn more about each funding source.

New York State Funding Sources:

1. NYS DEC Water Quality Improvement Project (WQIP) Program - Land Acquisition for Source Water Protection
2. NYS DEC WQIP Program - Other Projects
3. NYS DEC Non-Agricultural Nonpoint Source Planning Grant Program
4. NYS DEC Trees for Tribs
5. NYS DEC Climate Smart Communities Grant Program
6. NYS Department of Agriculture and Markets (DAM) NYS Soil and Water Conservation Committee Agricultural Nonpoint Source Abatement & Control Grant Program
7. NYS DAM/NYS Soil and Water Conservation Committee Source Water Buffer Program
8. NYS DAM/NYS Soil and Water Conservation Committee Climate Resilient Farming Program
9. NYS DOS Local Waterfront Revitalization Program
10. Clean Water State Revolving Fund
11. Drinking Water State Revolving Fund
12. NYS Environmental Facilities Corporation (EFC) Green Innovation Grant Program
13. NYS EFC Integrated Solutions Construction Grant Program
14. NYS DEC/EFC Engineering Planning Grant Program
15. NYS EFC Water Infrastructure Improvement Act
16. NYS EFC Intermunicipal Water Infrastructure Grants
17. NYS EFC Septic System Replacement Program

National Funding Sources:

18. US Environmental Protection Agency (EPA) Urban Waters Small Grants Program
19. USDA National Resources Conservation Service (NRCS) Environmental Quality Incentives Program
20. USDA NRCS Conservation Stewardship Program
21. USDA NRCS Agricultural Conservation Easement Program
22. USDA NRCS Health Forests Reserve Program
23. USDA Solid Waste Management Grants
24. National Fish and Wildlife Foundation/Wildlife Habitat Council Five Star and Urban Waters Restoration Grant Program

WORKING DRAFT

1. NYS DEC Water Quality Improvement Project (WQIP) Program - Land Acquisition for Source Water Protection	
The WQIP Program - Land Acquisition for Source Water Protection funds projects or programs aimed at protecting sources of public drinking water through land acquisition. Land Acquisition for Source Water Protection applicants must either identify parcels of land to acquire or commit to acquiring parcels of land for water quality improvement purposes.	
Cost Share (Yes/No)?	Yes. Check the Request for Applicants for percent or dollar amount match required.
Eligible Applicants	Municipalities, Not-for-Profit Corporations and Soil and Water Conservation Districts
Resource / Link for More Information	www.dec.ny.gov/pubs/4774.html (NYS DEC, Division of Water, Search On: "Water Quality Improvement Project (WQIP) Program").

2. NYS DEC WQIP Program - Other Projects	
The WQIP Program has project categories related to nonagricultural nonpoint source abatement and control, salt storage, aquatic habitat restoration, municipal separate storm sewer systems (MS4) and municipal wastewater treatment. Municipalities can apply for WQIP Program funding for any combination of project types, up to five projects.	
Cost Share (Yes/No)?	Yes. Check the Request for Applicants for percent or dollar amount match required.
Eligible Applicants	Municipalities, Municipal Corporations, Regulated Traditional MS4s, Soil and Water Conservation Districts and Not-for-Profit Corporations (only for land acquisition for source water protection or aquatic habitat restoration projects)
Resource / Link for More Information	www.dec.ny.gov/pubs/4774.html (NYS DEC, Division of Water, Search On: "Water Quality Improvement Project (WQIP) Program").

3. NYS DEC Non-Agricultural Nonpoint Source Planning Grant Program	
The Non-Agricultural Nonpoint Source Planning Grant Program provides funding to municipalities and Soil and Water Conservation Districts for initial planning of non-agricultural nonpoint source water quality improvement projects. Applicants will provide reports that outline an improvement project to address a nonpoint source of pollution.	
Cost Share (Yes/No)?	Yes. Check the Request for Applicants for percent or dollar amount match required.
Eligible Applicants	Municipalities and Soil and Water Conservation Districts
Resource / Link for More Information	www.dec.ny.gov/pubs/116725.html (NYS DEC, Division of Water, Search On: "Non-Agricultural Nonpoint Source Planning Grant").

WORKING DRAFT

4. NYS DEC Trees for Tribs	
The Trees for Tribs Grant Program helps to fund communities in planting young trees and shrubs along stream corridors, also known as riparian areas, to prevent erosion, increase flood water retention, improve wildlife and stream habitat, as well as protect water quality. Applicants should demonstrate appropriate planting techniques and include an education and volunteer engagement component.	
Cost Share (Yes/No)?	No
Eligible Applicants	Municipalities, Academic Institutions and 501(c)(3) not-for-profit corporations. Other groups such as unincorporated river associations must apply through a municipality, not-for-profit, or academic institution as the designated lead.
Resource / Link for More Information	www.dec.ny.gov/animals/113412.html (NYS DEC, Search On: "Trees for Tribs Grant Program").

5. NYS DEC Climate Smart Communities Grant Program	
Climate Smart Communities Grant Program offers funding to municipalities to inventory, assess, plan and implement projects that address climate change. Projects can be adaptive or mitigative. Adaptation project types include flood risk reduction, increasing or preserving natural resilience and emergency preparedness.	
Cost Share (Yes/No)?	Yes. Check the Request for Applicants for percent or dollar amount match required.
Eligible Applicants	New York State cities, towns, villages and counties (or boroughs of New York City)
Resource / Link for More Information	www.dec.ny.gov/energy/109181.html (NYS DEC, Office of Climate Change, Search On: "Climate Smart Communities Grant Program").

6. NYS Soil and Water Conservation Committee Agricultural Nonpoint Source Abatement & Control Grant Program	
The Agricultural Nonpoint Source Abatement & Control Grant Program provides cost share assistance for prevention of water pollution from agricultural activities. Funding is for farm-specific planning or project implementation to improve water quality.	
Cost Share (Yes/No)?	Yes. Check the Request for Applicants for percent or dollar amount match required.
Eligible Applicants	County Soil and Water Conservation Districts (on behalf of farmers).
Resource / Link for More Information	www.nys-soilandwater.org/aem/nonpoint.html (NYS DAM, Soil & Water Conservation Committee, Search On: "Agricultural Nonpoint Source Abatement & Control Grant Program").

WORKING DRAFT

7. NYS DAM/NYS Soil and Water Conservation Committee Source Water Buffer Program	
The Source Water Buffer Program provides assistance to County Soil and Water Conservation districts on behalf of farmers for the purchase of conservation easements on agricultural lands to protect active sources of public drinking water and support, expand or enhance water quality protection, thereby preserving or establishing buffers for public drinking water supplies. To be eligible, the agricultural lands must be: directly adjacent to surface drinking water sources, wetland areas adjacent to surface drinking water sources, within a DOH designated wellhead protection area, or a contributing area to an aquifer sinkhole.	
Cost Share (Yes/No)?	Yes. Check the Request for Applicants for percent or dollar amount match required.
Eligible Applicants	County Soil and Water Conservation Districts (on behalf of farmers).
Resource / Link for More Information	www.agriculture.ny.gov/RFPS.html (NYS DAM, Search On: "RFA0181 – Source Water Buffer Program").

8. NYS DAM/NYS Soil and Water Conservation Committee Climate Resilient Farming Program	
The Climate Resilient Farming Program provides funding to County Soil and Water Conservation Districts on behalf of farmers for projects that mitigate the impact of agriculture on climate change and enhance the on-farm adaptation and resiliency to projected climate conditions.	
Cost Share (Yes/No)?	Yes. Check the Request for Applicants for percent or dollar amount match required.
Eligible Applicants	County Soil and Water Conservation Districts (on behalf of farmers).
Resource / Link for More Information	www.nys-soilandwater.org/programs/crf.html (NYS DAM, Soil & Water Conservation Committee, Search On: "Climate Resilient Farming (CRF) Program").

9. NYS DOS Local Waterfront Revitalization Program	
The Local Waterfront Revitalization Program provides funding for eligible municipalities to develop comprehensive Watershed Management Plans with the intent to protect or restore water quality in specific waterbodies and their watersheds by reducing point and nonpoint source pollution.	
Cost Share (Yes/No)?	Yes. Check the Request for Applicants for percent or dollar amount match required.
Eligible Applicants	Villages, towns and cities - and counties on behalf of one or more villages, towns or cities - located along New York's coasts or designated inland waterways.
Resource / Link for More Information	www.dos.ny.gov/opd/programs/lwrp.html (NYS DOS, Office of Planning and Development, Search On: "Local Waterfront Revitalization Program").

WORKING DRAFT

10. Clean Water State Revolving Fund (CWSRF)	
The Clean Water State Revolving Fund provides interest-free or low-interest rate financing for wastewater, water quality improvement, point and non-point source and national estuary projects to municipalities throughout New York State.	
Cost Share (Yes/No)?	N/A
Eligible Applicants	Any county, city, town, village, district corporation, county or town improvement district, Indian reservation wholly within New York State, any public benefit corporation or public authority established pursuant to the laws of New York, or any agency of New York State which is empowered to construct and operate a project, or any two or more of the foregoing which are acting jointly in connection with a project.
Resource / Link for More Information	www.efc.ny.gov/CWSRF (NYS EFC, Loan Programs, Search On: "Clean Water State Revolving Fund").

11. Drinking Water State Revolving Fund	
The Drinking Water State Revolving Fund provides market-rate and below market-rate financing for the construction of certain eligible public water system projects for the protection of public health. Eligible projects include investments to upgrade or replace infrastructure needed to achieve or maintain compliance with federal or state health standards, and projects to provide the public with safe, affordable drinking water.	
Cost Share (Yes/No)?	N/A
Eligible Applicants	Municipalities, including any county, city, town, village, district corporation, county or town improvement district, school district, Indian nation or tribe recognized by the State or the United States with a reservation wholly or partly within the boundaries of New York State, any water authority now existing in a city, or any agency of New York State which is empowered to construct and operate an eligible project.
Resource / Link for More Information	www.efc.ny.gov/drinkingwater (NYS EFC, Loan Programs, Search On: "Drinking Water State Revolving Fund").

12. NYS Environmental Facilities Corporation (EFC) Green Innovation Grant Program	
The Green Innovation Grant Program supports projects across New York State that utilize unique stormwater infrastructure design and create cutting-edge green technologies to improve water quality.	
Cost Share (Yes/No)?	Yes. Check the Request for Applicants for percent or dollar amount match required.
Eligible Applicants	Municipalities, two or more municipalities with a shared water quality infrastructure project, state agencies, interstate agencies, private entities and Soil & Water Conservation Districts.
Resource / Link for More Information	www.efc.ny.gov/GIGP (NYS EFC, Grant Programs, Search On: "Green Innovation Grant Program").

WORKING DRAFT

13. NYS EFC Integrated Solutions Construction Grant Program	
The Integrated Solutions Construction Grant Program funds projects that incorporate green infrastructure into CWSRF projects. Successful applicants will construct projects that remove stormwater from combined, sanitary or storm sewers. The projects should demonstrate the value of integrating green practices into traditional gray infrastructure to provide water quality benefits.	
Cost Share (Yes/No)?	Yes. Check the Request for Applicants for percent or dollar amount match required.
Eligible Applicants	Municipalities, including any county, city, town, village, district corporation, county or town improvement district, Indian reservation wholly within New York State, any public benefit corporation or public authority established pursuant to the laws of New York or any agency of New York State which is empowered to construct and operate a project, or any two or more of the foregoing which are acting jointly in connection with a project. In accordance with the laws, rules and regulations governing the CWSRF, projects defined in the federal Clean Water Act, Section 212 as treatment works must be publicly-owned. (Income restrictions apply).
Resource / Link for More Information	www.efc.ny.gov/ISC (NYS EFC, Grant Programs, Search On: "Integrated Solutions Construction Grant Program").

14. NYS DEC/EFC Engineering Planning Grant Program	
The Engineering Planning Grant Program advances water quality projects to construction by providing funding to municipalities for initial planning of eligible Clean Water State Revolving Fund water quality projects, as well as WQIP Program projects. Funding can be used by municipalities for the preparation of an engineering report.	
Cost Share (Yes/No)?	Yes. Check the Request for Applicants for percent or dollar amount match required.
Eligible Applicants	Municipalities with a median household income: a) ≤ $65,000 according to the United States Census 2015 American Community Survey for municipalities located in Regional Economic Development Council regions of the Capital District, Southern Tier, North Country, Mohawk Valley, Central NY, Finger Lakes, or Western NY; or b) ≤ $85,000 according to the United States Census 2015 American Community Survey for municipalities located in Regional Economic Development Council regions of Long Island, New York City and Mid-Hudson. Municipalities may have no more than two active Engineering Planning Grant awards at the same time.
Resource / Link for More Information	www.efc.ny.gov/EPG (NYS EFC, Grant Programs, Search On: "Engineering Planning Grant Program").

WORKING DRAFT

15. NYS EFC Water Infrastructure Improvement Act	
The Water Infrastructure Improvement Act invest in clean and drinking water infrastructure projects and water quality protection across New York State. These grants are available for sewage treatment works. Funds are also available for drinking water treatment projects, although drinking water treatment projects do not aim to protect the sources of drinking water.	
Cost Share (Yes/No)?	Yes. Check the Request for Applicants for percent or dollar amount match required.
Eligible Applicants	Municipalities, including any county, city, town, village, district corporation, county or town improvement district, school district, Indian nation or tribe recognized by the State or the United States with a reservation wholly or partly within the boundaries of New York State, any public benefit corporation or public authority established pursuant to the laws of New York or any agency of the State that is empowered to construct and operate a water quality infrastructure project. School districts are eligible for a Water Infrastructure Improvement Act grant but are ineligible for CWSRF financial assistance.
Resource / Link for More Information	www.efc.ny.gov/WIIA (NYS EFC, Grant Programs, Search On: "Water Infrastructure Improvement Act").

16. NYS EFC Intermunicipal Water Infrastructure Grants Program	
The Intermunicipal Water Infrastructure Grants Program assists municipalities in supporting intermunicipal water quality infrastructure projects by helping to fund both drinking water and sewage treatment works projects that serve multiple municipalities.	
Cost Share (Yes/No)?	Yes. Check the Request for Applicants for percent or dollar amount match required.
Eligible Applicants	Municipalities, including any county, city, town, village, district corporation, county or town improvement district, school district, Indian nation or tribe recognized by the state or the United States with a reservation wholly or partly within the boundaries of New York State, any public benefit corporation or public authority established pursuant to the laws of New York or any agency of the State that is empowered to construct and operate a water quality infrastructure project. A school district is eligible to apply for an Intermunicipal Water Infrastructure grant and Drinking Water State Revolving Fund financing assistance but is ineligible for CWSRF financial assistance.
Resource / Link for More Information	www.efc.ny.gov/IMG (NYS EFC, Grant Programs, Search On: "Intermunicipal Water Infrastructure Grants Program").

WORKING DRAFT

17. NYS EFC Septic System Replacement Program	
The Septic System Replacement Program uses the Septic System Replacement Fund, established in the Clean Water Infrastructure Act, to provide grants to partially reimburse property owners for septic system projects. Septic system projects include the replacement of a cesspool with a septic system, installation of a septic system, replacement or upgrade of a septic system or its components and installation of treatment technologies.	
Cost Share (Yes/No)?	Yes. Check the Request for Applicants for percent or dollar amount match required.
Eligible Applicants	New York State Counties that are deemed priority geographic areas based on NYS DEC and NYS DOH based on vulnerability to contamination (e.g. the presence of a sole-source aquifer, or a known water-quality impairment), population density, soils, hydrogeology, climate and reasonable ability for septic system projects to mitigate water quality impacts.
Resource / Link for More Information	www.efc.ny.gov/SepticReplacement (NYS EFC, Other Programs, Search On: "Septic System Replacement Program").

18. US Environmental Protection Agency (EPA) Urban Waters Small Grants Program	
The Urban Waters Small Grants Program provides funding for projects that will help communities engage in activities that improve quality in urban waters. Grants are awarded every two years.	
Cost Share (Yes/No)?	Yes. Check the Request for Applicants for percent or dollar amount match required.
Eligible Applicants	States, local governments, Indian Tribes, public and private universities and colleges, public or private nonprofit institutions/organizations, intertribal consortia and interstate agencies.
Resource / Link for More Information	www.epa.gov/urbanwaters/urban-waters-small-grants (US EPA, Search On: "Urban Waters Small Grant").

19. USDA National Resources Conservation Service (NRCS) Environmental Quality Incentives Program	
The Environmental Quality Incentives Program provides financial assistance to cover part of the costs of implementing conservation practices outlined in a conservation plan that NRCS develops with the producer.	
Cost Share (Yes/No)?	Yes. Check the Request for Applicants for percent or dollar amount match required.
Eligible Applicants	Farmers apply directly to County USDA NRCS offices.
Resource / Link for More Information	www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/eqip (USDA/NRCS, Search On: "Environmental Quality Incentives Program").

WORKING DRAFT

20. USDA NRCS Conservation Stewardship Program	
The Conservation Stewardship Program helps agricultural producers maintain and improve their existing conservation systems and adopt additional conservation activities to address priority resource concerns. Participants earn Conservation Stewardship Program payments for conservation performance—the higher the performance, the higher the payment.	
Cost Share (Yes/No)?	No
Eligible Applicants	Agricultural produces - Applicant must comply with highly erodible land and wetland conservation requirements and have current farm records with USDA Farm Service Agency. Must have effective control of the land for the term of the proposed contract, be actively engaged in the day-to-day management of the agricultural operation and share in the risks associated with agricultural production. Must also be meeting the stewardship threshold for at least two resource concerns at the time of application.
Resource / Link for More Information	www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/csp (USDA/NRCS, Search On: "Conservation Stewardship Program").

21. USDA NRCS Agricultural Conservation Easement Program	
Through the Agricultural Conservation Easement Program, NRCS provides financial assistance to eligible landowners, land trusts and other entities to protect, restore and enhance wetlands, grasslands and working farms and ranches.	
Cost Share (Yes/No)?	Yes. Check the Request for Applicants for percent or dollar amount match required.
Eligible Applicants	Eligible landowners, land trusts and other entities. Land eligible for agricultural easements includes cropland, rangeland, grassland, pastureland and nonindustrial private forest land. NRCS will prioritize applications that protect agricultural uses and related conservation values of the land and those that maximize the protection of contiguous acres devoted to agricultural use.
Resource / Link for More Information	www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/easements/acep (USDA/NRCS, Search On: "Agricultural Conservation Easement Program").

WORKING DRAFT

22. USDA NRCS Healthy Forests Reserve Program	
The Healthy Forests Reserve Program provides landowners with 10-year cost-share agreements (10YR), 30-year contracts or easements (30YR) or permanent easements to help restore, enhance and protect forestland resources on private and tribal lands.	
Cost Share (Yes/No)?	Yes. Check the Request for Applicants for percent or dollar amount match required.
Eligible Applicants	Landowners. Healthy Forests Reserve Program applicants must provide proof of ownership, or an operator (tenant) must provide written concurrence from the landowner of tenancy for the period of the Healthy Forests Reserve Program restoration agreement in order to be eligible. Land enrolled in Healthy Forests Reserve Program easements must be privately owned or owned by Indian tribes.
Resource / Link for More Information	www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/easements/forests (USDA/NRCS, Search On: "Healthy Forests Reserve Program").

23. USDA Solid Waste Management Grants	
Solid Waste Management Grants provide funding to organizations of rural areas that provide technical assistance or training with the goal of improving the planning and management of solid waste sites.	
Cost Share (Yes/No)?	No
Eligible Applicants	Applicants must be from rural areas and towns with a population of 10,000 or less. Most state and local governmental entities, nonprofits, federally recognized tribes and academic institutions are eligible to apply. Special considerations may be given to: • Projects serving an area with fewer than 5,500 people. • Regional, multi-state or national areas. • Lower-income populations.
Resource / Link for More Information	www.rd.usda.gov/programs-services/solid-waste-management-grants (USDA, Rural Development, Search On: "Solid Waste Management Grants").

WORKING DRAFT

24. National Fish and Wildlife Foundation/Wildlife Habitat Council Five Star and Urban Waters Restoration Grant Program	
The Five Star and Urban Waters Restoration Grant Program provides modest financial assistance to diverse local partnerships focused on improving water quality, watersheds and the species and habitats they support.	
Cost Share (Yes/No)?	Yes. Check the Request for Applicants for percent or dollar amount match required.
Eligible Applicants	Non-profit 501(c) organizations, state government agencies, local governments, municipal governments, Indian tribes and educational institutions.
Resource / Link for More Information	www.nfwf.org/fivestar/Pages/home.aspx (National Fish and Wildlife Foundation, Search On: "Five Star and Urban Waters Restoration Grant Program").

Back to section ***3.2 Develop an Implementation Strategy Timeline*** of the Framework.

WORKING DRAFT

4. Progression and Maintenance

In this section you will find:

4.1 Designate a Plan Management Team ……136

Progress Report Template ……136

WORKING DRAFT

4.1 Designate a Plan Management Team

The Plan Management Team is tasked with overseeing the implementation of the DWSP2 Plan. One responsibility of the Plan Management Team is to generate and share progress reports with the community to build support for implementation strategies. The progress report template below shows relevant categories that the Plan Management Team may want to consider when documenting progress.

Progress Report Template

Click the image below, or copy and paste the link below into a browser, to be taken to the Progress Report Template.

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	
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	

Link to Progress Report Template: ftp://ftp.dec.state.ny.us/dow/DWSP2/DWSP2DataSummaryExcel.xlsx

Back to section ***4.1 Designate a Plan Management Team*** of the Framework.

WORKING DRAFT

APPENDICES

WORKING DRAFT

Appendix A

Climate Change Resiliency

WORKING DRAFT

Climate Change Resiliency

In New York State, climate change impacts have already occurred and may continue to rise with global warming. Public health, water supply and quality, natural resources, agriculture, public infrastructure, energy and several other sectors can be affected. With predictions of increasing temperature and changes in participation patterns, climate change may cause complications for drinking water supplies.

Potential climate change impacts that affect the quality and quantity of drinking water sources include, the following:

- Increased frequency, intensity and duration of extreme precipitation events causing increased nutrient loading, increasing the likelihood of harmful algal bloom events.
- Increased flooding events causing overwhelmed wastewater treatment plants and combined sewer overflow discharges into source waters.
- Sea level rise increasing the likelihood of salt water contamination of Long Island Aquifers.
- Increased frequency and intensity of warm season droughts, especially as development intensifies, causing a decrease in groundwater recharge and quantity concerns. (NYSERDA. 2014. Responding to Climate Change in New York State (CLIMAID) Report). *Further information about the report can be found below.*

Adapting to potential impacts of climate change requires identifying available resources that can be used to mitigate those impacts to protect sources of drinking water. Below are a few resources that may be useful for communities:

Reports and Guidance Documents

Responding to Climate Change in New York State: The ClimAID Integrated Assessment for Effective Climate Change Adaptation in New York State

- This was an assessment conducted by the New York State Energy and Research and Development Authority to highlight potential climate change impacts and adaptation strategies for eight sectors in New York State. The sectors include water resources, coastal zones, ecosystems, agriculture, energy, transportation, telecommunications, and public health.
    - www.nyserda.ny.gov/About/Publications/Research%20and%20Development%20Technical%20Reports/Environmental%20Research%20and%20Development%20Technical%20Reports/Response%20to%20Climate%20Change%20in%20New%20York (NYSERDA, Search On: *"Responding to Climate Change in New York State (ClimAID)"*).

U.S. Global Change Research Program's *Fourth National Climate Assessment*

- The U.S. Global Change Research Program is required to deliver a climate report to Congress and the President no less than every four years. The purpose of the Fourth National Climate Assessment is to highlight the effects of climate change on the U.S. and to inform stakeholders including utility and natural resource managers, public health officials, emergency planners, and decision makers.
    - www.nca2018.globalchange.gov (U.S. Global Change Research Program, Search On: "*Fourth National Climate Assessment, Volume II: Impacts, Risks, and Adaptation in the United States"*).

WORKING DRAFT

New York State Department of Health *Building Resilience Against Climate Effects in New York State*

- This report summarizes and links climate projections with public health impacts in New York State. The report also provides recommended resilience strategies.
  - www.health.ny.gov/environmental/weather/docs/climatehealthprofile6-2015.pdf (NYS DOH, Climate and Health Profile, Search On: *"Building Resilience Against Climate Effects in New York State"*).

New York State Laws

Community Risk and Resiliency Act

- The purpose of the bill is to ensure that certain state monies, facility-siting regulations and permits include considerations of the effects of climate risk and extreme-weather events.
  - www.dec.ny.gov/energy/104113.html (NYS DEC, Office of Climate Change, Search On: "Community Risk and Resiliency Act Provisions").
- One of the five major provisions in the Community Risk and Resiliency Act was for NYS DOS, in cooperation with NYS DEC, to develop model local laws that include consideration of future risk due to sea-level rise, storm surge and/or flooding.
  - www.dos.ny.gov/opd/programs/resilience/index.html (NYS DOS, Office of Planning & Development, Search On: "Model Local Laws to Increase Resilience").

Interactive Tools

US EPA *Climate Resilience Evaluation and Awareness Tool*

- This tool can be used to assist water utility owners and operators in understanding potential climate scenarios and risks that those scenarios would pose to a water supplier. This tool also allows the user to compare costs of different adaptation options.
  - www.epa.gov/crwu/creat-risk-assessment-application-water-utilities (US EPA, Search On: "CREAT Risk Assessment Application for Water Utilities").

US EPA Climate Ready Water Utilities *Resilient Strategies Guide for Water Utilities*

- This tool can be used by water utilities to develop plans to address specific resilience needs and priorities. The guide highlights the resilience planning process and the user can download a utility-specific report.
  - www.epa.gov/crwu/plan-extreme-weather-events-our-adaptation-strategies-guide (US EPA, Creating Resilient Water Utilities, Search On: "CRWU" and click on "Use the Resilient Strategies Guide").

WORKING DRAFT

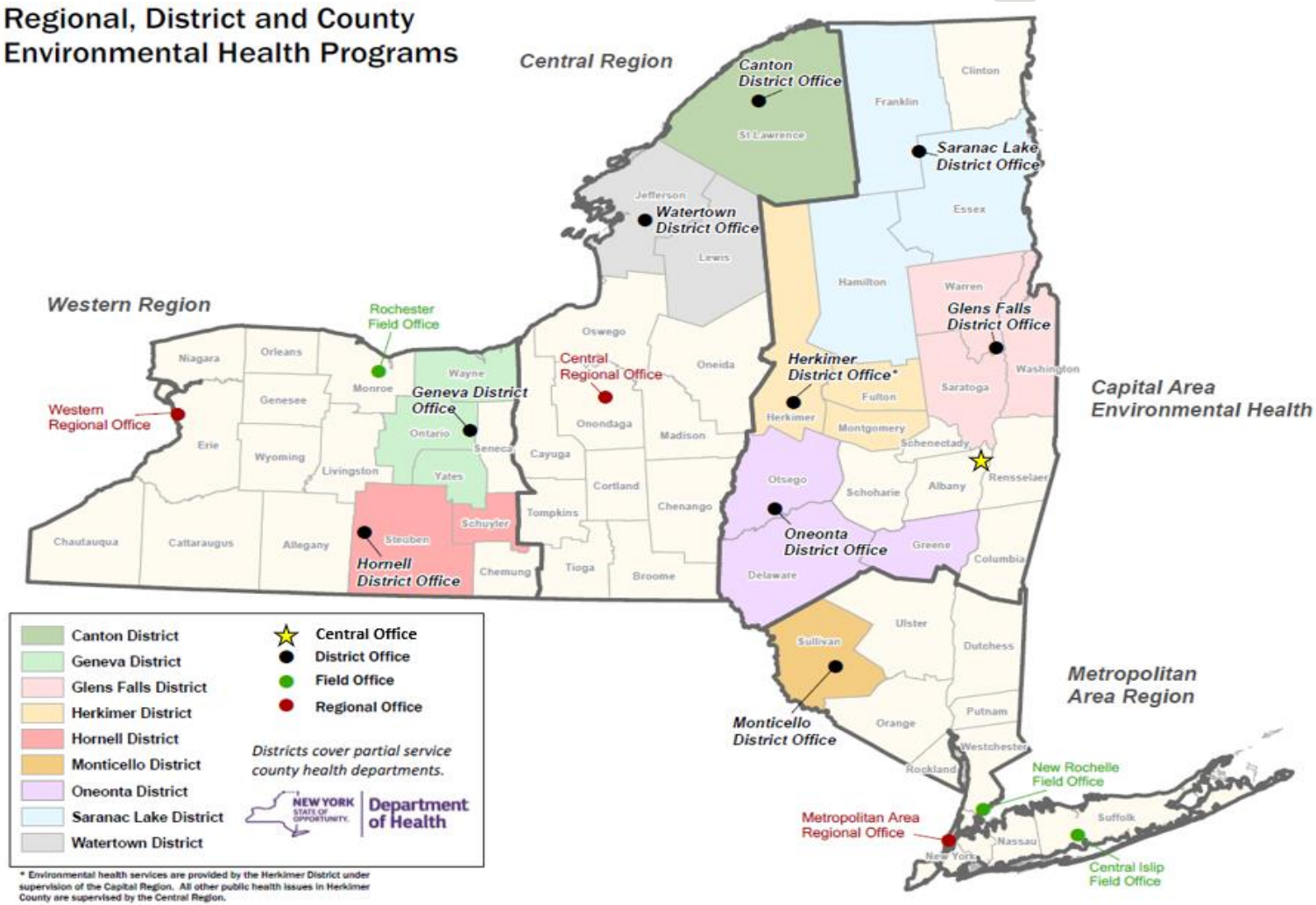
Appendix B

Contacts

WORKING DRAFT

DOH Regional Contacts

Below is a map of the four DOH regions, each with its own regional office and many district offices (for counties covered by partial local health departments). Included is also a directory for each region, which provides contact information for regional and district offices as well as local health departments. For source water inquiries, questions or additional information regarding the source water program, please contact your regional office.



Western Region

Regional Office

Region	Phone Number
Western	585-423-8076

District Offices

District	Counties Served	Phone Number
Geneva	Ontario, Wayne, Yates	315-789-3030
Hornell	Schuyler, Steuben	607-324-8371

Local Health Departments

County	Phone Number
Allegany	585-268-9266
Cattaraugus	716-701-3386
Chautauqua	716-753-4481
Chemung	607-737-2019
Erie	716-961-6800
Genesee	585-344-2580 x5000
Livingston	585-243-7270
Monroe	585-753-2991
Niagara	716-439-7444
Orleans	585-589-2855
Seneca	315-539-1945
Wyoming	585-786-8894

WORKING DRAFT

Central Region

Regional Office

Region	Phone Number
Central	315-477-8481

District Offices

District	Counties Served	Phone Number
Canton	St. Lawrence	315-386-1040
Watertown	Jefferson, Lewis	315-785-2277

Local Health Departments

County	Phone Number
Broome	607-778-2847
Cayuga	315-253-1405
Chenango	607-337-1673
Cortland	607-753-5035
Madison	315-366-2526
Oneida	315-798-5064
Onondaga	315-435-6623
Oswego	315-349-3557
Tioga	607-687-8565
Tompkins	607-274-6688

WORKING DRAFT

Capital Region

Regional Office

Region	Phone Number
Capital Area	518-402-7500

District Offices

District	Counties Served	Phone Number
Glens Falls	Saratoga, Warren, Washington	518-793-3893
Herkimer	Fulton, Herkimer, Montgomery	315-866-6879
Oneonta	Delaware, Greene, Otsego	607-432-3911
Saranac Lake	Essex, Franklin, Hamilton	518-891-1800

Local Health Departments

County	Phone Number
Albany	518-447-4620
Clinton	518-565-4870
Columbia	518-828-3358
Rensselaer	518-270-2632
Schenectady	518-386-2818
Schoharie	518-295-8382

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Metropolitan Area Region

Regional Office

Region	Phone Number
Metropolitan	845-794-2045

District Office

District	Counties Served	Phone Number
Monticello	Sullivan	845-794-2045

Local Health Departments

County	Phone Number
Dutchess	845-486-3404
Nassau	516-227-9723
Orange	845-291-2331
Putnam	845-808-1390 x43166
Rockland	845-364-2608
Suffolk	631-852-5800
Ulster	845-340-3010
Westchester	914-864-7331
City	**Phone Number**
New York	646-632-6403 *(Environmental Health)* 718-310-2840 *(Environmental Sciences & Engineering)*

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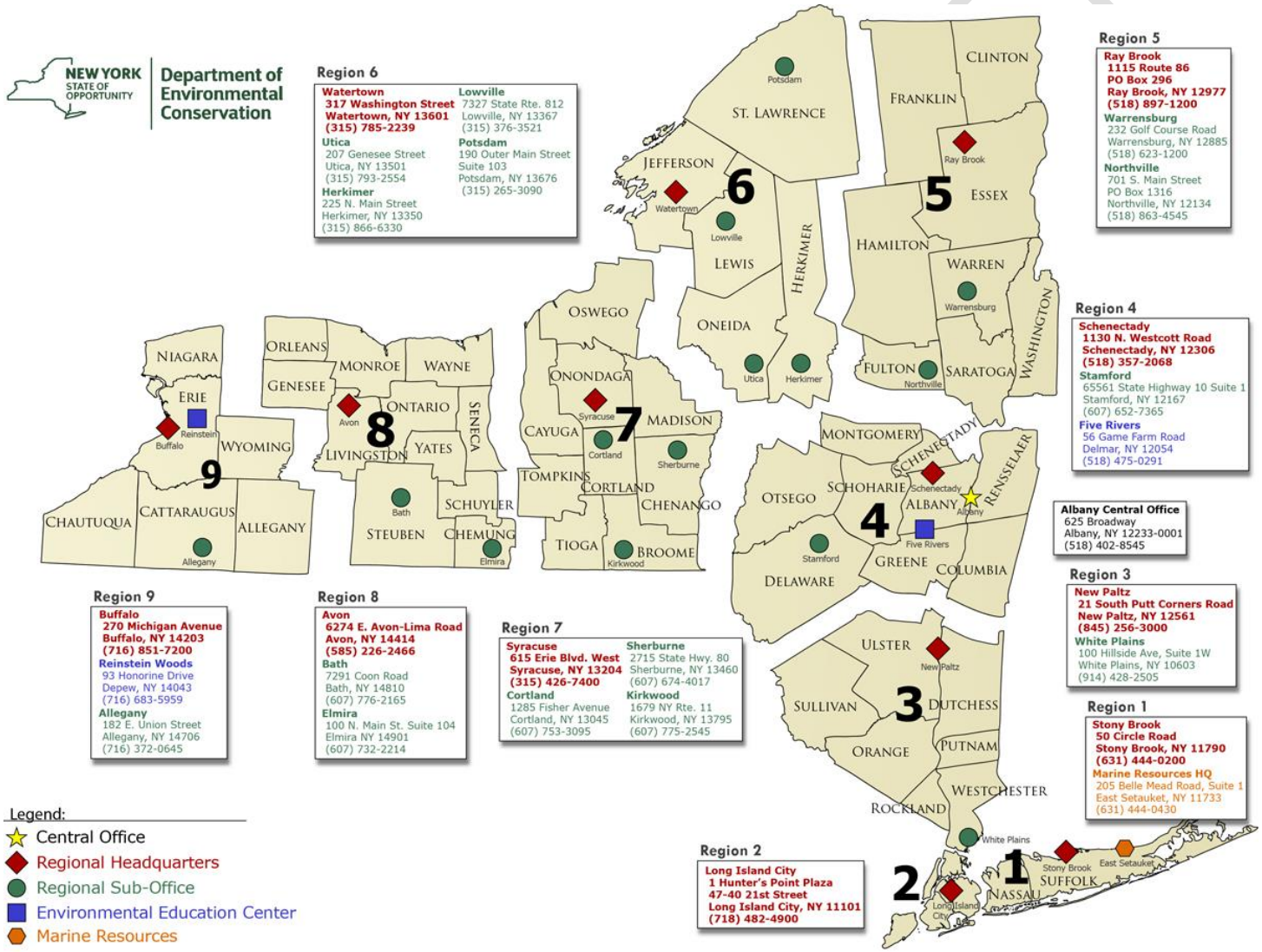
DEC Regional Contacts

Below is a map of the nine DEC regions, each with its own headquarters and many sub-offices. Included is also a directory for each region, the first point of contact for questions or additional information regarding a potential contaminant source identified within the source water protection area.



Region 1 - Nassau and Suffolk Counties

Division		Phone Number	Fax Number
Environmental Remediation		(631) 444-0320	(631) 444-0328
Materials Management		(631) 444-0375	(631) 444-0231
Mineral Resources	Mined Land	(631) 444-0274	(631) 444-0272
	Oil and Gas	(518) 402-8056	(518) 402-9032
Water		(631) 444-0405	(631) 444-0424
Water Engineer		(631) 444-0415	(631) 444-0373

Region 2 - Brooklyn, Bronx, Manhattan, Queens, and Staten Island

Division	Phone Number	Fax Number
Environmental Remediation	(718) 482-4995	(718) 482-6358
Materials Management	(718) 482-4896	(718) 482-6391
Mineral Resources, Oil and Gas	(518) 402-8056	(518) 402-9032
Water	(718) 482-4933	(718) 482-6516
Water Engineer	(718) 482-4930	(718) 482-6516

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Region 3 – Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester Counties

New Paltz sub-office

Division		Phone Number	Fax Number
Environmental Remediation		(845) 256-3137	(845) 255-3414
Materials Management		(845) 256-3123	(845) 255-3414
Mineral Resources	Mined Land	(845) 256-3128	(845) 255-4659
	Oil and Gas	(518) 402-8056	(518) 402-9032
Water		(845) 256-3000	(718) 482-6516
Water Engineer		(845) 256-3179	(914) 428-0323

White Plains sub-office

Division	Phone Number	Fax Number
Environmental Remediation	(845) 357-2273	(845) 255-3414
Materials Management	(845) 256-3000	(845) 255-3414
Mineral Resources	N/A	N/A
Water	(914) 803-8157	(718) 482-0323
Water Engineer	(845) 256-3179	(914) 428-0323

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Region 4 - Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie Counties

Division		Phone Number	Fax Number
Environmental Remediation		(518) 357-2045	(518) 357-2398
Materials Management		(518) 357-2243	(518) 357-2398
Mineral Resources	Mined Land	(518) 357-2254	(518) 357-2460
	Oil and Gas	(518) 402-8056	(518) 402-9032
Water		(518) 357-2045	(518) 357-2398
Water Engineer		(518) 357-2219	(518) 357-2398

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Region 5 – Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington Counties

Ray Brook sub-office

Division		Phone Number	Fax Number
Environmental Remediation		(518) 897-1241	(518) 897-1245
Materials Management		(518) 897-1215	(518) 897-1394
Mineral Resources	Mined Land	(518) 897-1305	(518) 897-1370
	Oil and Gas	(518) 402-8056	(518) 402-9032
Water		(518) 897-1241	(518) 897-1245
Water Engineer		(518) 623-1222	(518) 623-3603

Warrensburg sub-office

Division		Phone Number	Fax Number
Environmental Remediation		(518) 623-1200	(518) 623-3603
Materials Management		(518) 623-1203	(518) 623-4559
Mineral Resources	Mined Land	(518) 623-1287	(518) 623-3603
	Oil and Gas	(518) 402-8056	(518) 402-9032
Water		(518) 623-1200	(518) 623-3603
Water Engineer		(518) 623-1222	(518) 623-3603

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Region 6 - Jefferson, Lewis, St. Lawrence, Herkimer and Oneida Counties

Watertown sub-office

Division		Phone Number	Fax Number
Environmental Remediation		(315) 785-2513	(315) 785-2422
Materials Management		(315) 785-2513	(315) 785-2422
Mineral Resources	Mined Land	(315) 785-2269	(315) 785-2242
	Oil and Gas	(585) 226-5376	N/A
Water		(315) 785-2513	(315) 785-2242
Water Engineer		(315) 785-2513	(315) 785-2242

Utica sub-office

Division		Phone Number	Fax Number
Environmental Remediation		(315) 793-2554	(315) 793-2748
Materials Management		(315) 793-2554	(315) 793-2748
Mineral Resources	Mined Land	(315) 793-2664	(315) 793-2748
	Oil and Gas	(585) 226-5376	N/A
Water		(315) 793-2554	(315) 793-2748

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Region 7 - Broome, Cayuga, Chenango, Cortland, Madison, Onondaga, Oswego, Tioga and Tompkins Counties

Division		Phone Number	Fax Number
Environmental Remediation		(315) 426-7519	(315) 426-2653
Materials Management		(315) 426-7535	(315) 426-7487
Mineral Resources	Mined Land	(315) 426-7412	(315) 426-7489
	Oil and Gas	(585) 226-5376	N/A
Water		(315) 426-7500	(315) 426-7459
Water Engineer		(315) 426-7471	(315) 426-7459

Region 8 - Chemung, Genesee, Livingston, Monroe, Ontario, Orleans, Schuyler, Seneca, Steuben, Wayne and Yates Counties

Division		Phone Number	Fax Number
Environmental Remediation		(585) 226-5353	(585) 226-8696
Materials Management		(585) 226-5411	(585) 226-2909
Mineral Resources	Mined Land	(585) 226-5372	(585) 226-6323
	Oil and Gas	(585) 226-5376	N/A
Water		(585) 226-5450	(585) 226-9485
Water Engineer		(585) 226-5445	(585) 226-9485

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Region 9 - Allegany, Cattaraugus, Chautauqua, Erie, Niagara and Wyoming Counties

Division	Phone Number	Fax Number
Environmental Remediation	(716) 851-7220	(716) 851-7226
Materials Management	(716) 851-7220	(716) 851-7226
Mineral Resources	(716) 372-0645	(716) 372-2113
Water	(716) 851-7070	N/A
Water Engineer	(716) 851-7070	(716) 851-7009

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DOS Contacts

Office of Planning and Development

The Department of State's Office of Planning Development and Community Infrastructure (OPD&CI) increases resilience and sustainable growth of New York communities by advancing progressive land use solutions, community-based development and building standards and codes. This is accomplished through partnerships with community-based organizations, academia, governments including development, natural resource and social service agencies and other stakeholders. OPD&CI provides funding through Title 11 of the New York State Environmental Protection Fund to assist communities in the creation of watershed plans to effectively and comprehensively address water quality issues throughout their watershed, while balancing the need for economic growth and development. For questions regarding watershed planning and other OPD&CI programs contact:

New York Department of State
Suite 1010
One Commerce Place, 99 Washington Avenue
Albany, New York 12231-0001
(518) 474-6000
Email: opd@dos.ny.gov
Website: www.dos.ny.gov/opd/

Division of Local Government Services

The Division of Local Government Services is a principal resource for New York's local governments by providing training and technical assistance to local governments and community organizations throughout the state, and helps local officials to solve problems involving basic powers and duties, public works, municipal organization, planning, land use and regulatory controls, and community development. Services provided by the Division reflect New York's commitment to strengthening state and local partnerships to improve the quality of life for all New Yorkers.

Division of Local Government Services
New York Department of State
One Commerce Plaza
99 Washington Ave., 10th Floor
Albany, NY 12231-0001
(518) 473-3355
E-mail: localgov@dos.ny.gov
Website: www.dos.ny.gov/lg/index.html

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New York Rural Water Association (NYRWA) Contact

NYRWA's federally-funded Source Water Protection Technical Assistance Program provides free technical assistance with the development and implementation of local source water protection plans. Steve Winkley has provided technical assistance to rural communities and small water systems regarding source water protection since 1995. For additional information regarding NYRWA's Source Water Protection Program, please contact:

Steven Winkley, P.G.
New York Rural Water Association
P.O. Box 487
Claverack, NY 12513
Phone: (518) 828-3155, extension 170
Email: winkley@nyruralwater.org

New York State Association of Regional Councils

The New York State Association of Regional Councils (NYSARC) is composed of regional councils throughout New York State, representing 45 of the 62 counties in New York. New York's regional councils provide comprehensive planning for the coordinated growth and development of their regions. For more information regarding NYSARC's Source Water Protection Program work in your area through DECs Clean Water Act Section 604(b) Water Quality Management Planning Program, please contact:

Capital District Regional Planning Commission
One Park Place, Suite 102, Albany, N.Y. 12205
Tel: (518) 453-0850
Fax: (518) 453-0856
Web site: www.cdrpc.org

Central New York Regional Planning and Development Board
126 N. Salina St., Suite 200, Syracuse, N.Y. 13202
Tel: (315) 422-8276
Fax: (315) 422-9051
Web site: www.cnyrpdb.org
E-mail: mail@cnyrpdb.org

Genesee/Finger Lakes Regional Planning Council
City Place, 50 W. Main St., Suite 8107, Rochester, N.Y. 14614
Tel: (585) 454-0190
Fax: (585) 454-0191
Web site: www.gflrpc.org
E-mail: gflrpc@gflrpc.org

Herkimer-Oneida Counties Comprehensive Planning Program
Boehlert Center @ Union Station, 321 Main Street, Utica, N.Y. 13501
Tel: (315) 798-5710
Fax: (315) 798-5852
Web site: www.ocgov.net//oneida/planning
E-mail: planning@co.oneida.ny.us

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Hudson Valley Regional Council
3 Washington Center, 2nd floor, Newburgh, NY 12550
Tel: (845) 564-4075
Fax: (845) 564-4718
Web site: www.hudsonvalleyregionalcouncil.org

Lake Champlain-Lake George Regional Planning and Development Board
P.O. Box 765, Lake George Institute, 310 Canada Street, Lake George, N.Y. 12845
Tel: (518) 668-5773
Fax: (518) 668-5774
Website: www.lclgrpb.org
E-mail: lclgrpb@verizon.net

Southern Tier Central Regional Planning and Development Board
145 Village Square, Painted Post, N.Y. 14870
Tel: (607) 962-5092
Fax: (607) 962-3400
Web site: www.stcplanning.org
E-mail: stcrpdb@stny.rr.com

Southern Tier 8
49 Court State Street, Suite 222 MetroCenter Binghamton, N.Y. 13901
Tel: (607) 724-1327 ext. 0
Fax: (607) 287-9536
Web site: www.southerntier8.org

Southern Tier West Regional Planning and Development Board
4039 Route 219, Suite 200, Salamanca, N.Y. 14779
Tel: (716) 945-5301
Fax: (716) 945-5550
Web site: www.southerntierwest.org

Soil and Water Conservation Districts Contacts

New York State's 58 Soil and Water Conservation Districts are recognized as local leaders on water quality, soil health, community and natural resource resiliency, green infrastructure, and other local natural resource concerns. To find contact information or learn more about county Soil and Water Conservation Districts, visit: www.nysagmkt.maps.arcgis.com/apps/MapSeries/index.html?appid=9ff0baba0d9b4fd9815eeac1667a9c5a

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Appendix C

Questions to Ask the Regulated Entity

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Questions to Ask the Regulated Entity	
Regulatory authority:	
Regulatory authority contact:	
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?	

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Glossary

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Advanced Analytic Element Modeling – A groundwater delineation method based upon the superposition of "element" analytical solutions where each element corresponds to a particular hydrogeologic feature function. To use an analytical element model, groundwater flow direction, aquifer transmissivity, aquifer thickness, recharge, pumping rates and porosity must be known or reliably estimated.

Ambient Water – Refers to water in lakes, reservoirs, rivers, streams, or groundwater that is used as a drinking water source but has not been conveyed for treatment.

Analytic – A groundwater delineation method that uses equations to calculate the distance for a source water protection area. Analytic methods use either a volumetric calculation based upon the pumping rate and common values of aquifer porosity (i.e. the calculated fixed radius or cylinder method), or other volumetric shape methods such as the so-called half-circle method that incorporates an inferred flow direction that alters the shape of the calculated circle, but not the area.

Best Management Practices (BMPs) – Practical, effective and technically feasible actions intended to minimize adverse impacts to natural resources. BMPs focus on managing the impacts caused by specific potential contaminant sources.

Contaminant Categories of Concern – The SDWA defines the term "contaminant" as meaning any physical, chemical, biological, or radiological substance or matter in water. Physical refers to contaminants that primarily impact the physical appearance or other physical properties of water. Chemical contaminants are elements or compounds that are either naturally occurring or man-made. Biological contaminants are organisms in water, which include bacteria, viruses, protozoan and parasites. Radiological contaminants are chemical elements with an unbalanced number of protons and neutrons resulting in unstable atoms that can emit ionizing radiation.

Control and Monitoring Area – For surface waters, it is recommended that the owner of the water system possess legal title to lands within 100' of the waterbody and control by ownership, lease, easement or other legally enforceable arrangement the land use activities within 200' of the waterbody.

Core Regulatory Requirement – Refers to a potential contaminant source that is regulated or has applicable regulatory requirements pertaining to source water protection.

Critical Area – The area of land that is directly surrounding the drinking water source.

Delineation – The process of defining or mapping a boundary that approximates the areas that contribute water to a particular water source used as a public water supply. For surface waters, the land area usually consists of the watershed for a reservoir or stream. For groundwater sources, the boundary typically approximates the surface area that contributes water to the aquifer.

Drinking Water Source Assessment – An assessment that includes an overview of the water system, a delineation of protection areas around the drinking water source, and an inventory of potential contaminant sources that might lead to the release of contaminants within the delineated areas.

Drinking Water Source Protection Area – The watershed area that contributes surface water and/or ground water flow to the drinking water intake or well. Depending on the drinking water source, these areas are often divided into a control area, critical area and source water area in an effort to prioritize source protection efforts. Communities may choose to establish additional or customized areas based on local needs. The terms Drinking Water Source Protection Area and Source Water Protection Area may be used interchangeably.

Drinking Water Source Protection Map – Displays drinking water source protection areas, potential contaminant sources, and land use. This map will help a community to create a potential contaminant source inventory.

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Drinking Water Source Protection Program (DWSP2) – A New York State program that provides municipalities with the resources and tools to proactively protect their drinking water sources. The goal of the program is to help municipalities develop and implement a DWSP2 Plan for the source(s) of their drinking water.

DWSP2 Plan – A detailed description of a municipality's source water, the potential threats, best management practices to mitigate potential threats, and strategies to protect the source.

Emergency Response Plan (ERP) – Describes strategies, resources, plans, and procedures utilities can use to prepare for and respond to an incident, natural or man-made, that threatens life, property, or the environment. In New York State, all community water systems that serve more than 3,300 people are required by State Public Health Law (§ 1125) to prepare and submit a water supply emergency plan.

Finished Water – Water that is introduced into the distribution system of a public water system and is intended for distribution and consumption without further treatment, except as necessary to maintain water quality in the distribution system (e.g. booster disinfection, addition of corrosion control chemicals).

Framework – A guide to help New York communities develop a tailored protection plan to protect sources of drinking water from potential contamination.

Geometric – A groundwater delineation method that is the least complex of all of the available delineation methods for groundwater sources and are appropriate when little or no site-specific groundwater data is available. Geometric methods use a fixed radius and utilize no aquifer-specific information.

Ground Water Under the Direct Influence of Surface Water (GWUDI) – Any water beneath the surface of the ground which exhibits significant and rapid shifts in water characteristics such as turbidity, temperature, conductivity or pH which closely correlates to climatological or surface water conditions and/or which contains macro-organisms, algae, large diameter (three microns or greater) pathogens or intersects parts of a surface water origin.

Hydrogeographic Setting – Refers to the natural features of the groundwater source and its contributing area. Information may include type of aquifer, aquifer materials and drainage features.

Hydrogeologic Mapping – A groundwater delineation method which provides a delineation of the Source Water Protection Area through the mapping of aquifer boundaries, static and pumping groundwater levels and elevations, zones of influence and contribution, as well as calculation of aquifer hydraulic parameters from pumping test data, and determination of groundwater flow rates and times of travel.

Hydrologic Unit Code (HUC) – A geographic numbering system developed by the United States Geological Survey to identify and differentiate particular watersheds. The numbering system is somewhat akin to zip codes in that digits are added to further refine location (i.e. an eleven digit code denotes a much smaller watershed area than an eight digit code).

Land Cover – Represents the actual or physical presence of vegetation (or other materials where vegetation is nonexistent) on the land surface. It is one means to describe landscape patterns and characteristics that are critical in understanding aspects of the environment, such as the potential for dispersion of chemicals and other pollutants.

Management Methods – Approaches a municipality can utilize to protect against an existing potential contaminant source. These methods are specific to a potential contaminant source.

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Maximum contaminant level (MCL) – The maximum permissible level of a contaminant in water, which is delivered to any user of a public water system.

Nonpoint source – Nonpoint source pollution is caused by water moving over and through the ground picking up and carrying away natural and human-made pollutants and depositing them into lakes, rivers and groundwaters.

Non-transient – A public water system that is not a community water system but is a subset of a noncommunity water system that regularly serves at least 25 of the same people, four hours or more per day, for four or more days per week, for 26 or more weeks per year. Examples include schools, offices and businesses that have their own drinking water source.

Numerical Modeling – A computer-based groundwater delineation method that can provide the best understanding of both horizontal and vertical groundwater flow conditions when used with adequate hydrogeologic data. It can be applied to several hydrogeologic settings. It calculates water level, flow rates and flow direction, and can provide a multi-layer 3D presentation of groundwater flow conditions.

Ownership and Control Area – Wells serving public water systems shall be located such that the owner of the water system possesses legal title to lands within 100' of the well and the owner controls by ownership, lease, easement or other legally enforceable arrangement the land use activities within 200' of the well. Required under the NYS Sanitary Code (Part 5, Subpart 5-1, Public Water Systems-Appendix 5-D.2 of NYS Sanitary Code).

Point Source – Source of pollution originating from a single identifiable source.

Potential Contaminant Source – An activity or facility that stores, uses, and/or produces chemicals, and has the potential to release contaminants in amounts that could significantly impact drinking water sources.

Protection Methods – Overarching approaches a municipality can implement to protect the source water protection area. These methods are not specific to a potential contaminant source and can be utilized for existing and/or future potential contaminant sources.

Public Water System – A community, noncommunity or non-transient noncommunity water system which provides water to the public for human consumption through pipes or other constructed conveyances, if such system has at least five service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.

Raw Water – Water immediately before the first or only point of drinking water disinfection or other treatment.

Resource Kit – Tailored to the needs of the community, the Resource Kit is designed to provide accessible, comprehensive resources to help support the development of a DWSP2 Plan. The Resource Kit includes step-by-step guidance, forms, examples, methods and more.

Safe Drinking Water Act (SDWA) – Federal law that protects public drinking water supplies throughout the United States. Under the SDWA, EPA sets standards for drinking water quality and, with its partners, implements various technical and financial programs to ensure drinking water safety.

Service Connection – The pertinent pipes, valves and fittings that connect a distribution system to a consumer's facility.

Source Water Area – The area of land that extends beyond the critical area. This area has the potential to contribute water to the drinking water source.

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Source Water Assessment Program (SWAP) – Congress amended the Safe Drinking Water Act (SDWA) in 1996 and added a new program that required states to evaluate sources of water that are used to supply public drinking water. This program was called SWAP. The NYS DOH implemented the program for New York State by creating source water assessment reports for each source of water. These source water assessment reports included source water assessment area delineations, potential contaminant source inventories, and evaluations of the likelihood of contamination.

Source Water/Drinking Water Source – Any aquifer, surface water body, or watercourse from which water is taken either periodically or continuously by a public water system for drinking or food processing purposes, or which has been designated for present or future use as a source of water supply for domestic or municipal purposes.

Time of Travel – Describes the distance a particle will move through an aquifer and/or surface water body in a specified amount of time, or the area that contributes ground water to a well within a specified amount of time.

Transient – A noncommunity water system that does not regularly serve at least 25 of the same people over six months per year. Examples include restaurants and parks that have their own drinking water source.

Unregulated Contaminant Monitoring Rule (UCMR) – Collects data for contaminants that are suspected to be present in drinking water and do not have health-based standards set under the SDWA.

Vulnerability Assessment (VA) – Lists and prioritizes a public water system's assets, identifies potential threats, and records the changes needed to mitigate the most serious vulnerabilities for the most vital resources. Required by the Public Health Security and Bioterrorism Preparedness and Response Act of 2002.

Field Survey – A comprehensive, visual survey of the geography, land and water uses, potential and actual pollution sources, and history of the water source and its watershed.

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