Lake Champlain Non-Point Source Pollution Subwatershed Assessment and Management Plan Update

October 2024

Prepared by:

LAKE CHAMPLAIN–LAKE GEORGE REGIONAL PLANNING

With funding provided by:

PATRICK LEAHY Lake Champlain Basin Program

NE IW PCC

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Abbreviations & Acronyms

BRASS- Boquet River Association

CSO – Combined Sewer Overflow

CWICNY – Champlain Watershed Improvement Coalition of New York

HUC - Hydrologic Unit Code

I&I – Inflow and Infiltration

LCBP – Lake Champlain Basin Program

LCLGRPB – Lake Champlain Lake George Regional Planning Board

LGA – Lake George Association

mt/yr – Metric Tons per Year

NBRC – Northern Boarders Regional Commission

NRCC – Northeast Regional Climate Center

NYSAGM – New York State Department of Agriculture and Markets

NYSDEC – New York State Department of Environmental Conservation

NYSDOS – New York State Department of State

NYSDOT – New York State Department of Transportation

NYSEFC – New York State Environmental Facilities Corporation

NYSHCR – New York State Department of Homes and Community Renewal

SWCD – Soil and Water Conservation District

TMDL – Total maximum daily load

TP – Total phosphorus

USDA – United States Department of Agriculture

USEPA –United States Environmental Protection Agency

USFWS – United States Fish and Wildlife Service

WI/PWL – Waterbody Inventory & Priority Waterbodies List

WWTP – Wastewater Treatment Plant

Introduction

Lake Champlain is one of the largest freshwater lakes in the United States, with a watershed spanning two countries and two states, covering over 8,200 square miles (Map 1).

Improving water quality within the Lake Champlain watershed has been a priority for scientists, residents, and governmental agencies for decades and is best shown with the creation of a Total Maximum Daily Load (TMDL) for phosphorus by the United States Environmental Protection Agency (EPA) in the early 2000's. Since then, New York State, the Lake Champlain Basin Program (LCBP), municipalities, and watershed groups have invested hundreds of millions of dollars to improve water quality in the New York portion of the watershed alone.

Map 1. Lake Champlain Watershed Boundary

Prioritizing water quality improvement projects across the New York portion of the watershed ensures that investments are made in communities while also maximizing the pollution reduction efforts. In 2018, the Lake Champlain Lake George Regional Planning Board (LCLGRPB) developed the *Lake Champlain Non-Point Source Pollution Subwatershed Assessment and Management Plan* (The 2018 Plan). The plan was developed with input from stakeholders throughout the watershed and was created to assist local and regional resource managers in identifying targeted non-point source pollution projects and programs for water quality protection and improvement. The plan identified over 175 projects totaling almost $187 million in funding needs. LCLGRPB and other watershed partners have successfully leveraged that plan to secure funding for over 63 projects, totaling $36,725,000 in funding.

The 2018 Plan utilized a ranking matrix consisting of five categories of water quality, human use, phosphorus pollution vectors, geology, and land cover. Using this matrix, 79 HUC-12 subwatersheds were analyzed and ranked for potential phosphorus inputs and impacts.

The 19 highest scoring HUC-12 subwatersheds were identified as *high priority* for identification of water quality and natural resource protection projects and programs. The high priority HUC-12 subwatersheds as identified in the 2018 Plan are:

1. **Lake Champlain Direct (74 points)**
2. **Lower Boquet River (68 points)**
3. **Halfway Creek (64 points)**
4. **Wood Creek-Champlain Canal (59 points)**
5. **Ausable River (57 points)**
6. **Little Ausable River (57 points)**
7. **Poultney River – Head of Lake Champlain (54 points)**
8. **Headwaters Lake George (53 points)**
9. **Indian Brook – Lake George (50 points)**
10. **Bullis Brook – Great Chazy River (50 points)**
11. **Dead Creek (50 points)**
12. **Lake Champlain Canal (49 points)**
13. **Outlet Great Chazy River (49 points)**
14. **Mettawee River (48 points)**
15. **Outlet Lake George (48 points)**
16. **McKenzie Brook – Lake Champlain (47 points)**
17. **Rouses Point (46 points)**
18. **Headwaters Halfway Creek (45 points)**
19. **Hoisington Brook – Lake Champlain (44 points)**

Figure 1. HUC 12 watersheds listed in priority order according to the 2018 Plan
https://documentcloud.adobe.com/link/track?uri=urn:aaid:scds:US:5395420a-c462-4ac2-bc0e-853016294fcb

While this ranking matrix was not recreated for this plan update, this effort incorporates as much updated water quality monitoring data and other information pertaining to these areas as possible to continue to identify protection projects and programs.

This management plan update reaffirms many of the original priority issues and identifies new issues such as climate change and the proliferation of harmful algae blooms (HABs). The plan also recognizes and inventories some of the work already completed by watershed partners, the ongoing projects within the watershed, and identifies new water quality funding needs.

Watershed Characterizations Update

Population

The total watershed population in 2020 was 178,974. All watershed counties experienced decreasing populations with a total reduction of 4.2% across the region. Essex County saw a 6% reduction in its population, the largest of all the watershed counties (2020 US Census Bureau). The full population data can be found in Table 1.

Table 1: 2020 Population per County within the Lake Champlain Watershed of NY Source: 2020 United States Decennial Census

County	Total 2020 Population within Lake Champlain Watershed	Percent Change of Total Population in the Watershed 2010-2020
Clinton	78,078	-2.7%
Essex	34,022	-6%
Franklin	7,244	-5.6%
Warren	36,526	-4.4%
Washington	23,077	-5.5%
Totals	178,974	-4.2%

The largest population centers in the watershed include the City of Plattsburgh in the northern part of the watershed, as well as the Town of Queensbury and the City of Glens Falls in the southern part of the region as illustrated in Map 2.

Several communities within the New York watershed have been classified as disadvantaged by the Lake Champlain Basin Program (LCBP), including portions of the Village of Champlain and the Towns of Crown Point, Plattsburgh, Ticonderoga, Whitehall, and Granville. Disadvantaged communities are more susceptible to the impacts of poor water quality through increased health risks, such as exposure to harmful contaminants and decreased recreational opportunities.

Climate & Precipitation

The climate within northeastern New York is defined as Continental, which consists of long, snowy winters and shorter growing seasons. Temperatures vary from below zero in the winter months to the high nineties (°F) in the summer months. The average annual temperature in the watershed from 1991 – 2010 has ranged from 41°F to 46 °F (Figure 2).

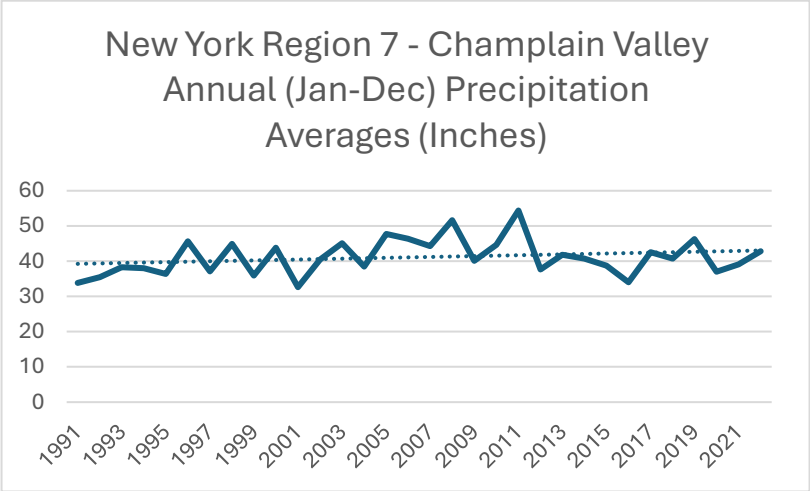


Figure 2. Champlain Valley Annual Temperature Source: NRCC

In recent years, the watershed has experienced significant seasonal changes, especially in the winter months. The average maximum temperature of winter months (December, January, and February) rose four times that rate – at 0.64°F per decade since 1970.

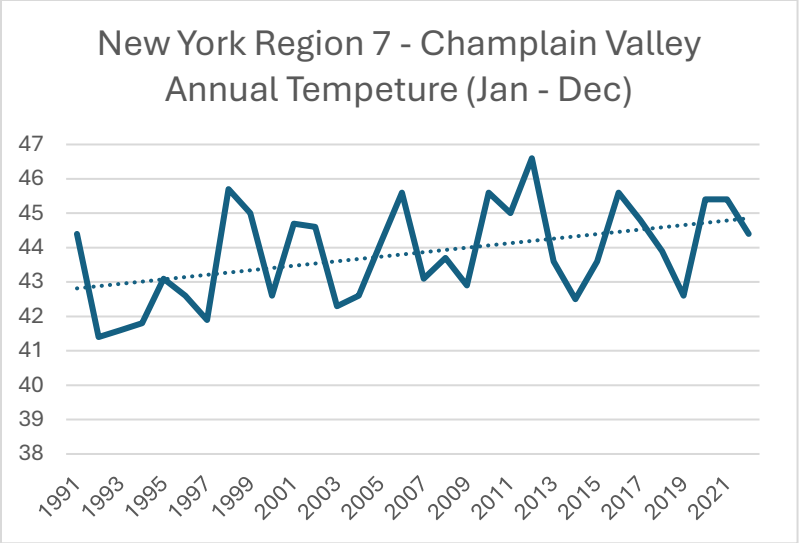


Figure 3. Champlain Valley Average Precipitation Source: NRCC

The watershed received an average of 41.5 inches of precipitation annually (Figure 3), with most rainfall occurring during the summer and fall months. In recent years, the region has witnessed an increase in extreme rainfall events, with short bursts delivering 3 to 9 inches of rain. This trend was particularly evident in 2023 when intense storms led to significant flooding and damage throughout the watershed.

The United States Geologic Survey (USGS) hosts a total of eight surface water gauge sites within the Lake Champlain Basin to monitor tributary flow and other physical water properties. Information collected at these gauges helps resource managers monitor the hydrologic networks in the watershed and inform flood forecasting tolls. Data has been collected on many of these gauges for decades. The average annual yearly flow from 1991 - 2021 and the 30-year average of the eight gauges is summarized in Figure 4. Flows into Lake Champlain reached their peak in 2011 due to rainfall as a result of Hurricane Irene, but have remained relatively steady otherwise. Additionally, the USGS is monitoring the lake level in Lake Champlain in Rouses Point, NY. The annual average of the lake level from 1990 -2021 was 96.8 ft, with its high in 2006 of 97.8 feet. Historical data of the lake level is shown in Figure 5.

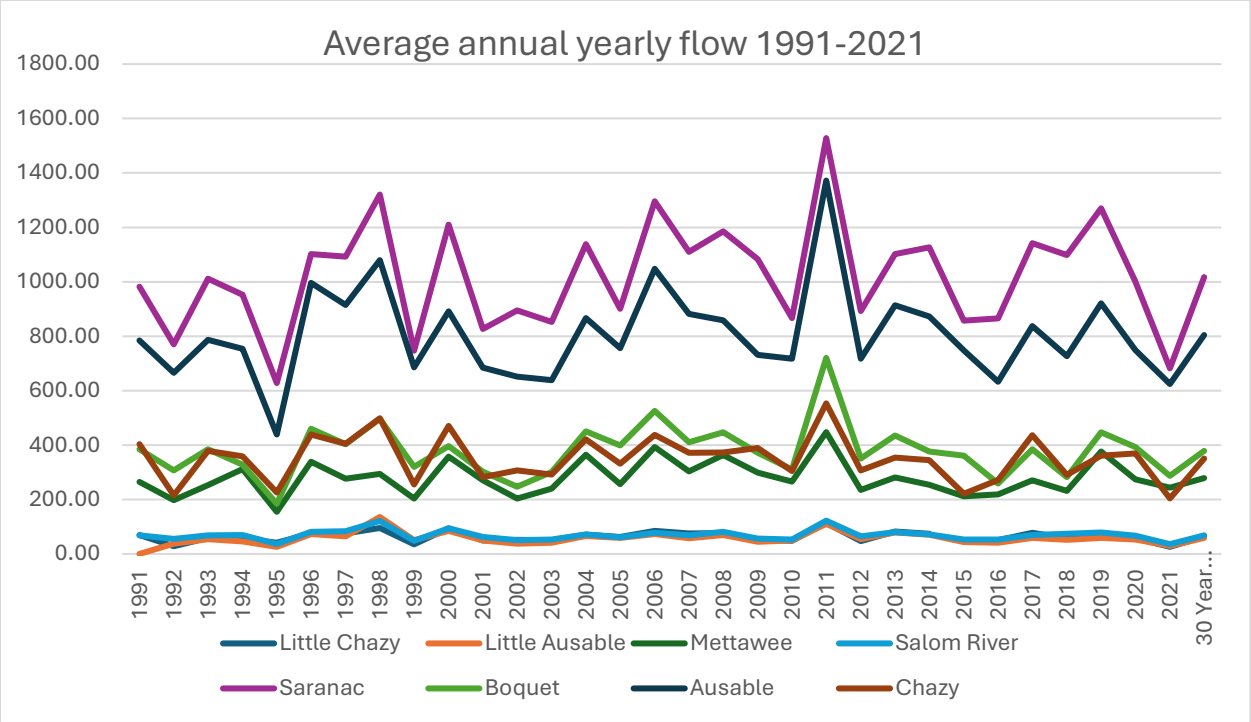


Figure 4. Average annual yearly flow at tributaries Source: USGS

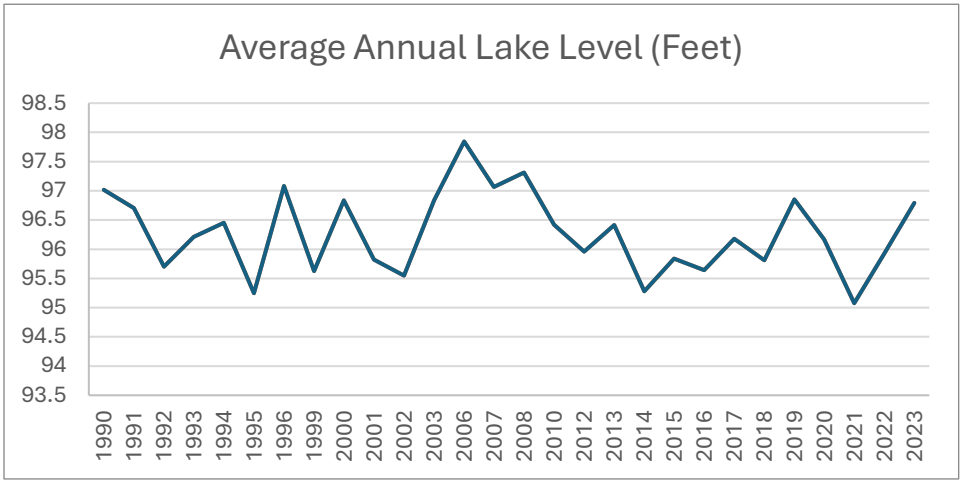
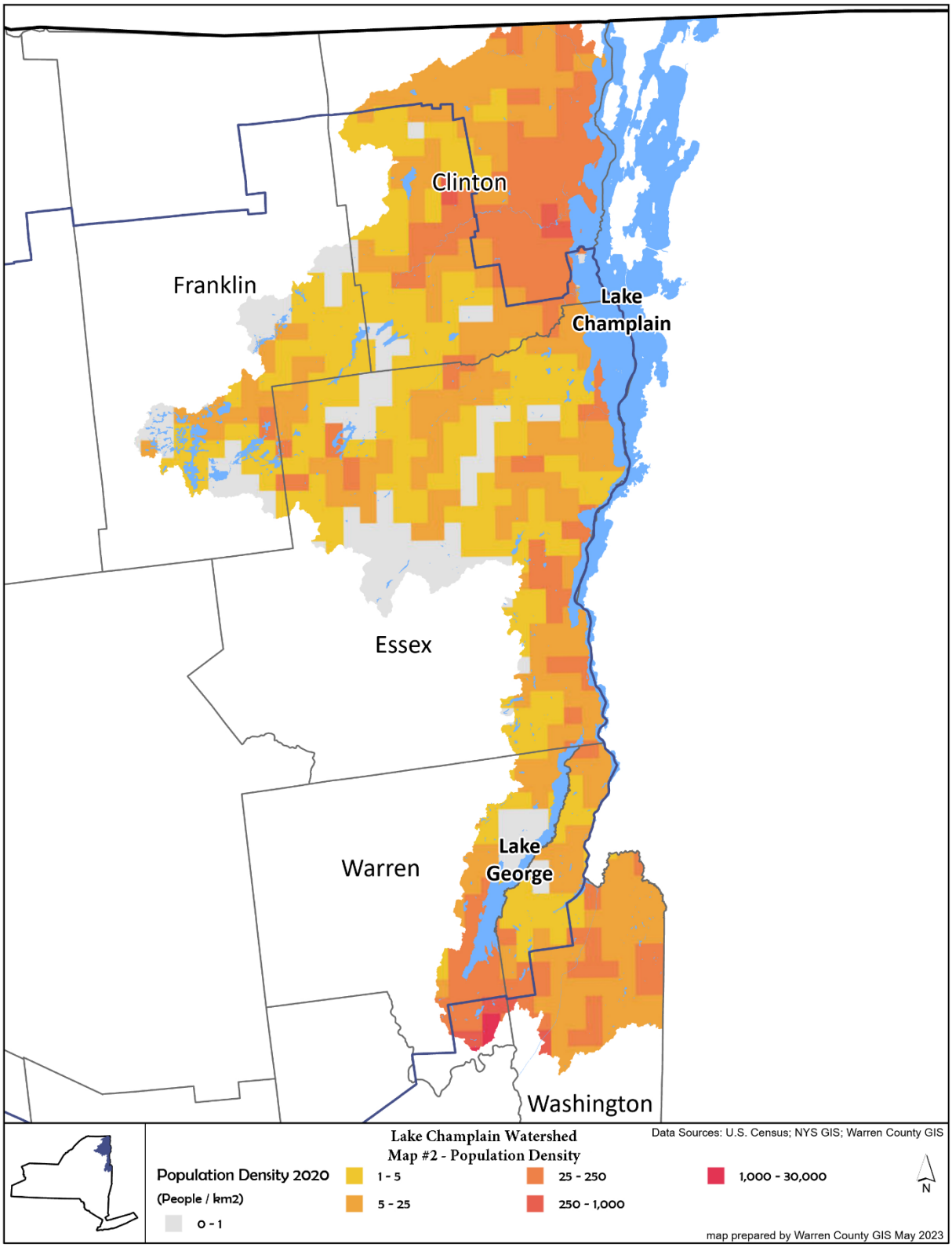


Figure 5. Average Annual Lake Level of Lake Champlain Source: USGS


Clinton
Franklin
Lake
Champlain
Essex
Warren
Lake
George
Washington
Lake Champlain Watershed
Map #2 - Population Density
Data Sources: U.S. Census; NYS GIS; Warren County GIS
Population Density 2020
(People / km2)
0 - 1
1 - 5
5 - 25
25 - 250
250 - 1,000
1,000 - 30,000
N
map prepared by Warren County GIS May 2023

Waterbody Classification

All waterbodies in New York State are classified by the Department of Environmental Conservation (NYSDEC) according to their best uses/designated uses including public drinking water supply, swimming, fishing, and fish reproduction/habitat. The water quality classifications for each lake segment and major tributaries are listed in Table 2. The classification AA or A is assigned to waterbodies used as a source of drinking water, classification B indicates a best usage for swimming and other contact recreation, and classification C is for waters supporting fisheries and suitable for non-contact activities. Waters with classifications A, B, and C may also have a standard of (T), indicating that the waterbody may support a trout population, or (TS), indicating that the waterbody may support trout spawning.

Table 2: Lake Champlain Water Quality Classifications Source: NYSDEC

Lake Segment	Segment Classification	Major Tributary	Tributary Classification
South Lake B	B	Mettawee River	C
		Poultney River	C
South Lake A	B	Putnam Creek	C(T)*
Port Henry	A(T)*	N/A	N/A
Otter Creek	A(T)*	N/A	N/A
Main Lake	A(T)*	Salmon River	C(T)*
		Little Ausable River	C
		Boquet River	C(T)*
		Ausable River	C(T)*
Cumberland Bay	B	Saranac River	C(TS)**,C
Isle La Montte	A(T)*	Little Chazy River	C
		Great Chazy River	C,A

Waterbody Impairments

As part of the classification process, the NYSDEC assigns impairments to waterbodies and updates its Section 303(d) list, as required by the Clean Water Act. This list enumerates impaired surface waters that do not meet water quality standards, fail to support their best uses, and necessitate the development of a total maximum daily load (TMDL). Several watershed waterbodies qualify for this list due to pollutants such as total phosphorus, Iron, silt/sediment, and PCBs, as well as water quality indicators like dissolved oxygen (DO) and pH. To support this assessment, the NYSDEC publishes the Waterbody Inventory and Priority Waterbodies List (WIPWL), which catalogs all water bodies in the state, identifies known or suspected water quality issues, and prioritizes those with the most significant problems. Map 3 shows the 2020/2022 New York 303(d) list of waterbodies in the Lake Champlain watershed, of which 18 are currently listed.

Lake Champlain Total Maximum Daily Load (TMDL)

A TMDL is a federally approved document that outlines the estimated quantity of a specific pollutant that can be discharged to a waterbody without causing impairment to the receiving waters. The 2002 Lake Champlain TMDL, developed jointly by the states of New York and Vermont, establishes target phosphorus reduction goals for both point source and non-point source pollution sources.

In 2002, the combined loading target was set at 439 metric tons/year (mt/yr), with 319.2 mt/yr assigned to Vermont and 119.8 mt/yr assigned to New York. Of New York's phosphorus allocation, 35.50 mt/yr was divided among wastewater facilities located throughout the watershed and the remainder was assigned to non-point sources, including agricultural, forest, and urban land sectors (Table 3).

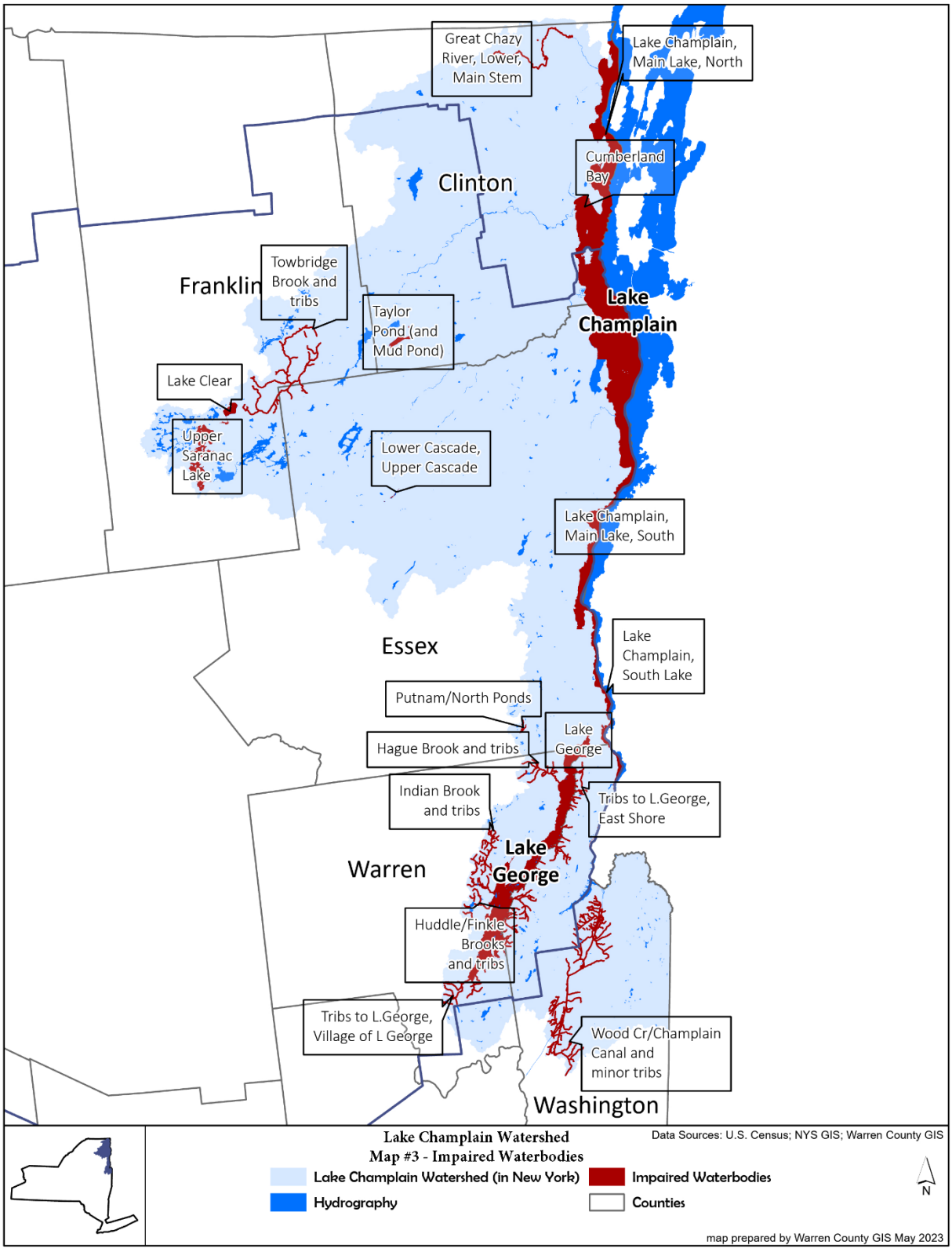
While some lake segments currently meet the water quality goals set by the 2002 TMDL and continue to have good water quality, other segments are not meeting the targets set by the TMDL and do not support all uses (Table 4). According to the NYSDEC, several factors may explain why water quality in certain lake segments has not improved, even with the implementation of water quality improvement projects. Climate change, expansion of impervious surfaces (Map 4), and land use conversion (Map 5) can counteract efforts to reduce nutrient loading, which may help clarify why tributary loads have remained relatively stable since the 1991 baseline conditions. Additionally, Lake Champlain's high land-to-lake ratio complicates efforts to effectively mitigate nutrient pollution. Specifically, for every square mile of surface water, 18 square miles of upland watershed contribute runoff and associated pollutants to the lake (NYSDEC, 2024).

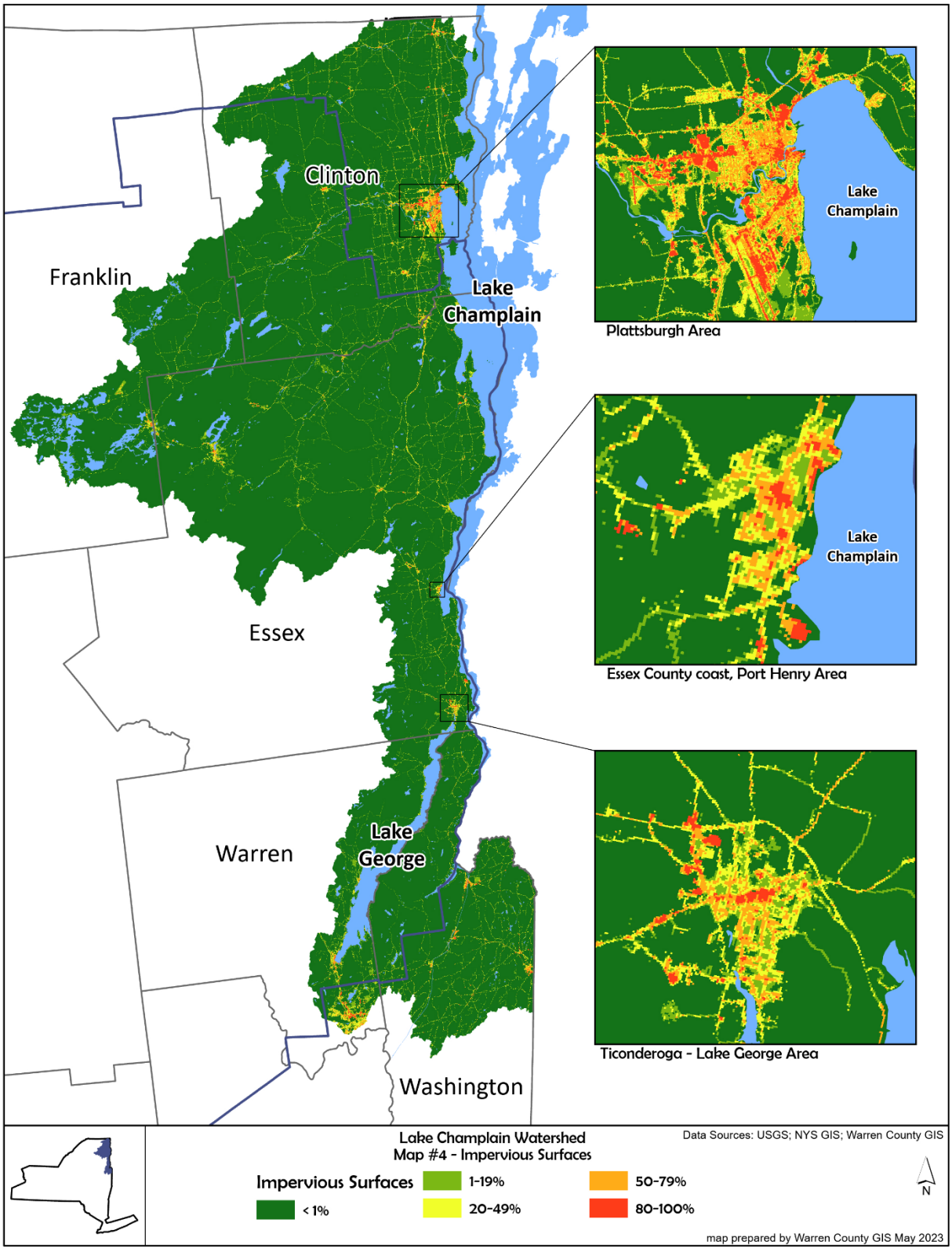
Lake Champlain TMDL Watershed Implementation Plan

In early 2024, the NYSDEC released a watershed implementation plan to provide an updated analysis of the geographic sources of phosphorus by each source sector and prioritize areas need for improvement. To complete the analysis the DEC's Loading Estimator of Nutrient Sources (LENS) screening tool was used to provide an estimate of the total phosphorus (TP) to the lake by each source sector (agricultural, forest, urban, septic, and wastewater). The implementation plan ranks each subwatershed by source sector based on the estimated annual load and provides recommendations on future projects that can be prioritized for implementation in the highest loading subwatersheds.

According to the LENs tool, estimated phosphorus contribution from each source sector varies by TMDL lake segment. The tool indicates that forest sectors are the greatest contributors (53%), followed by agricultural areas (27%), followed by urban land uses (9%), wastewater (9%), and septic (2%) (Figure 6).

Using the LENs tool, the NYSDEC assessed the contribution of each phosphorus loading sector to every HUC-12 subwatershed in the New York portion of the Lake Champlain watershed. With the exception of Rouses Point, all high-priority watersheds identified in the 2018 management plan contain the highest phosphorus loading sector for their respective HUC-12 watersheds. This indicates that these HUC-12 watersheds should continue to be prioritized for water quality implementation projects, with a specific focus on addressing the identified loading sectors.


Great Chazy River, Lower, Main Stem
Lake Champlain, Main Lake, North
Cumberland Bay
Clinton
Franklin
Towbridge Brook and tribs
Taylor Pond (and Mud Pond)
Lake Champlain
Lake Clear
Upper Saranac Lake
Lower Cascade, Upper Cascade
Lake Champlain, Main Lake, South
Essex
Lake Champlain, South Lake
Putnam/North Ponds
Lake George
Hague Brook and tribs
Indian Brook and tribs
Tribs to L.George, East Shore
Warren
Lake George
Huddle/Finkle Brooks and tribs
Tribs to L.George, Village of L George
Wood Cr/Champlain Canal and minor tribs
Washington
Lake Champlain Watershed
Map #3 - Impaired Waterbodies
Data Sources: U.S. Census; NYS GIS; Warren County GIS
Lake Champlain Watershed (in New York)
Impaired Waterbodies
Hydrography
Counties
N
map prepared by Warren County GIS May 2023


Clinton
Franklin
Lake Champlain
Essex
Warren
Lake George
Washington
Lake Champlain
Plattsburgh Area
Lake Champlain
Essex County coast, Port Henry Area
Ticonderoga - Lake George Area
Lake Champlain Watershed
Map #4 - Impervious Surfaces
Data Sources: USGS; NYS GIS; Warren County GIS
Impervious Surfaces
< 1%
1-19%
20-49%
50-79%
80-100%
N
map prepared by Warren County GIS May 2023

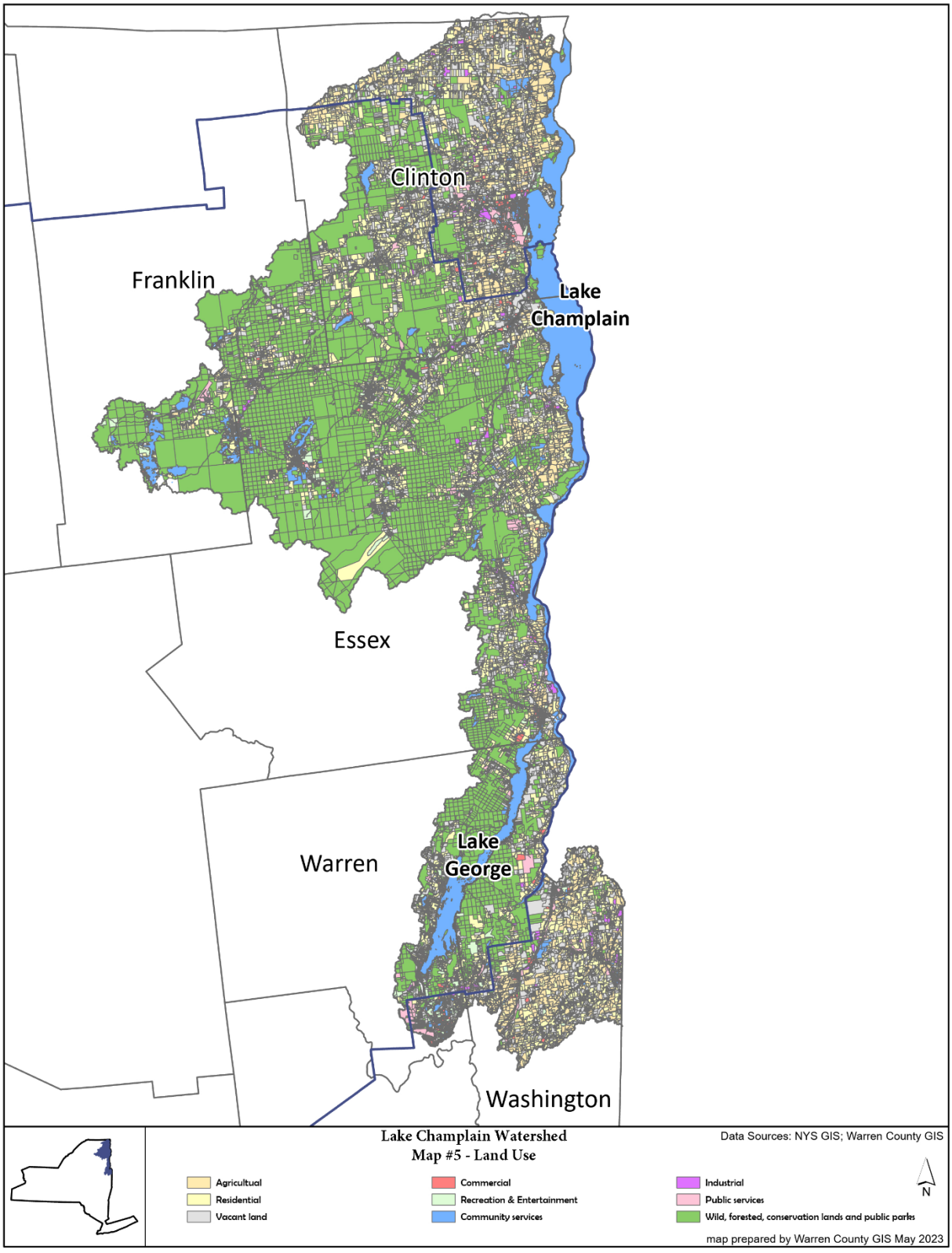

Clinton
Franklin
Lake
Champlain
Essex
Warren
Lake
George
Washington
Lake Champlain Watershed
Map #5 - Land Use
Data Sources: NYS GIS; Warren County GIS
Agricultual
Residential
Vacant land
Commercial
Recreation & Entertainment
Community services
Industrial
Public services
Wild, forested, conservation lands and public parks
N
map prepared by Warren County GIS May 2023

Table 3: New York Nonpoint Source and Point Source Allocations by Lake Segment (mt/yr) Source: NYSDEC, 2024				
Lake Segment	**Agriculture**	**Urban**	**Forest**	**Wastewater**
South Lake B	14	6.9	1.1	1.94
South Lake A	0.4	2.2	0.3	7.9
Port Henry / Otter Creek	1	1.2	0.3	0.89
Main Lake	1.1	19.4	9	4.22
Cumberland Bay	1.1	5.1	1.9	17.12
Isle La Motte	14.9	3.1	0.9	3.43

Table 4: Observed TP Mean Concentration Compared to TMDL Criteria (mg/L) Source: NYSDEC, 2024			
Lake Segment	**TMDL Total TP Criteria**	**TMDL Baseline TP Mean Concentration (1990–1991)**	**TP Mean Concentration (2002–2019)**
South Lake B	0.054	0.058	0.052
South Lake A	0.025	0.034	0.036
Port Henry	0.014	0.015	0.015
Otter Creek	0.014	0.015	0.015
Main Lake	0.010	0.012	0.012
Cumberland Bay	0.014	0.014	0.014
Isle La Motte	0.014	0.012	0.017

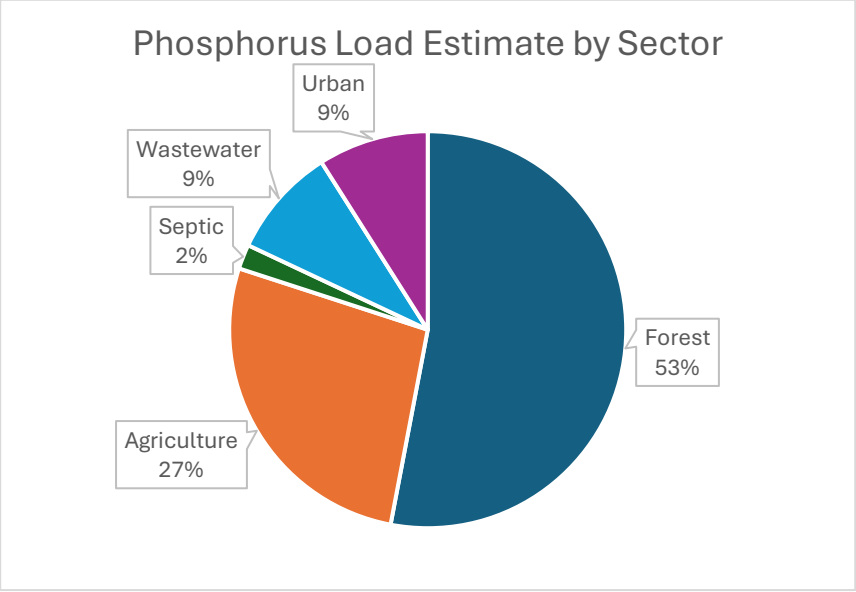


Figure 6. Phosphorus Load Estimate by Sector Source: NYSDEC, 2024

Updated Priority Issues

The Lake Champlain Watershed continues to face a wide range of emerging issues that threaten its ecological health and the well-being of its communities. These issues have been recognized through extensive public outreach and stakeholder engagement, and many of the priorities identified remain aligned with those outlined in the 2018 Plan, particularly concerning stormwater runoff and aging or inadequately maintained septic systems.

However, this update introduces new insights and emerging threats as new research gains public awareness. Issues such as climate change, which continues to intensify, has brought shifts in weather patterns leading to more extreme precipitation events further exacerbating erosion and nutrient runoff into the lake. Additionally, the increasing prevalence of HABs pose significant risks to water quality and public health, impacting recreational activities and drinking water sources, further complicating conservation efforts.

Climate Change

The Lake Champlain Watershed is experiencing the impacts of climate change in the region, which has the potential to affect water resources. Climate change can best be described as a threat multiplier affecting different parts of the natural environment, increasing water quality risks. These risks include increased precipitation in short time spans leading to higher runoff, and higher temperatures that create more suitable environments for invasive species and HAB growth.

Warming trends in the Lake Champlain watershed are expected to continue, with the region's average temperatures projected to rise to between 48-50°F by 2050 (Figure 7). This warming trend poses significant risks to smaller waterbodies within the watershed, which are particularly vulnerable to temperature fluctuations and environmental changes. As these smaller waterbodies warm, they may experience shifts in aquatic ecosystems, including species composition and a decline in native fish populations that thrive in cooler conditions.

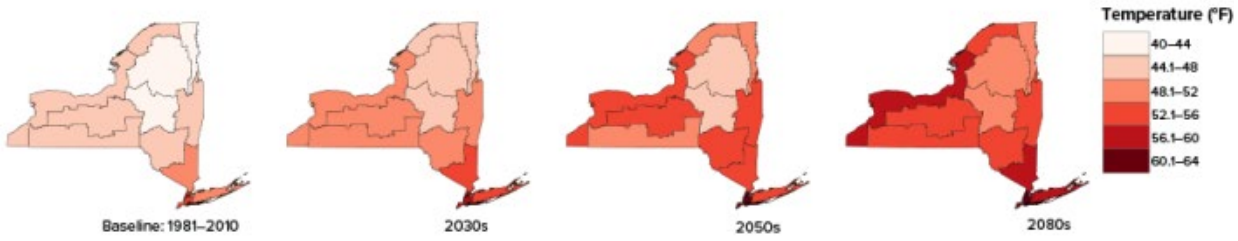


Figure 7. Projected annual average temperature in New York State during the 21st century. Source: NYS Climate Impacts Assessment

Warmer temperatures can also promote the growth of HABs, which can deplete oxygen levels and produce toxins harmful to aquatic life and human health. The higher air temperatures that coincide with increasing water temperatures can have direct impacts on certain elements of water quality like oxygen content and DO levels. Additionally, increases in water temperatures can directly stress aquatic organisms, particularly cold-water fish such as trout, and may lead to increased algal

growth and increased dissolved organic matter being transported from soils and wetlands which can impact recreational use and normal ecosystem function.

The winter season has experienced the most significant change due to rising temperatures. Seasons are now shorter with higher temperatures and reduced snowfall (Figure 8). Warmer winter temperatures, with fewer days below freezing, are bringing more winter precipitation as rain, less snow, reduced snow cover, and earlier spring snowmelt. This can lead to dryer soil conditions and limit the infiltration rate of stormwater runoff.

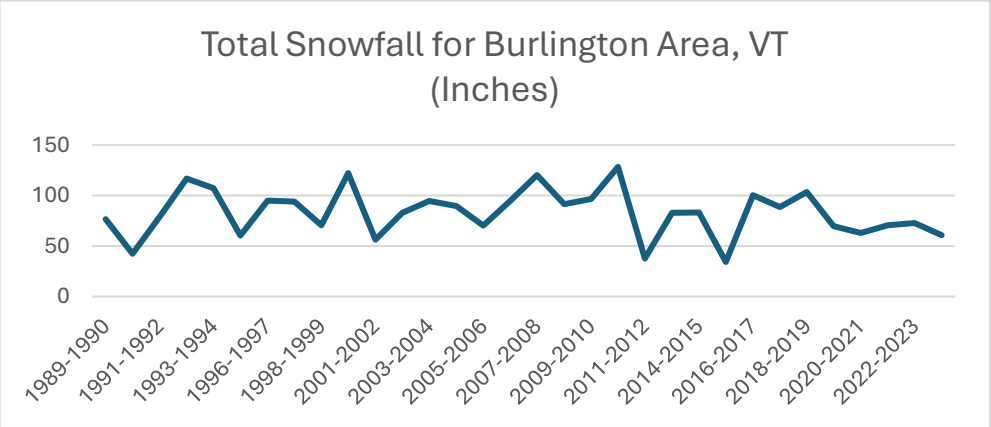


Figure 8. Historical Total Snowfall in Burlington VT Source: National Weather Service

Finally, climate change can affect the rate of precipitation in the watershed. The northeastern Unted States experienced an over 70% increase in heavy precipitation from 1958 to 2010 and is expected to increase in the watershed region by 7-8% by 2050 (Figure 9), with precipitation coming as longer and more frequent events with heavier downpours. These heavy downpours contribute to sedimentation and increasing stormwater runoff. In severe conditions, heavy rainfall can create an excessive amount of stormwater that can overwhelm stormwater systems and combined sewage treatment systems can overflow into the watersheds lakes, rivers, and streams further increasing nutrient pollution.

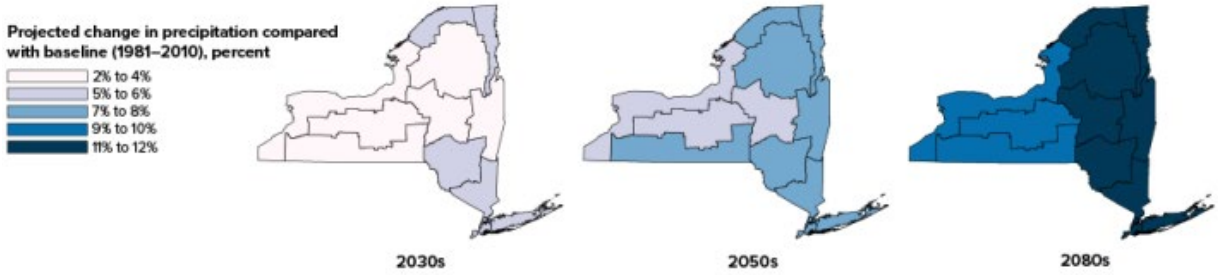


Figure 9. Projected annual precipitation in New York State during the 21st century Source: NYS Climate Impacts Assessment

Harmful Alge Blooms (HABs)

HABs are an overgrowth of algae, specifically cyanobacteria, in water bodies that can have detrimental effects on the ecosystem and human health. These blooms can produce toxins that contaminate drinking water, harm aquatic life, and cause respiratory issues in humans and animals. HAB occurrences are becoming increasingly common within the Lake Champlain Watershed, with several waterbodies including Lake Champlain and Lake George reporting confirmed instances. HABs can occur for many reasons though excessive nutrient loading, particularly phosphorus from sources like residential fertilizer usage and failing septic systems.

HABs in Lake Champlain have become an increasingly pressing concern due to their growing extent, duration, and impact in various areas of the lake. In response, New York State established a Water Quality Rapid Response Team in 2018, aimed at developing strategic plans for 12 priority lakes across the state that were either experiencing or were at risk for HABs. Among these, Lake Champlain and Lake George were identified as key waterbodies for which HABs Actions Plans were created. While HABs have been reported in numerous locations throughout Lake Champlain, the Lake Champlain HAB Action Plan specifically identifies nutrient loading and sediment inputs from the Port Henry and Isle La Motte Lake segments.

The Isle La Motte Lake Segment has an estimated 34.2 mt/yr total phosphorus load from all sectors while the Port Henry Lake Segment contributes approximately 7.4 mt/yr of phosphorus from all loading sectors. The Lake Champlain HABs Plan Identifies the primary factors contributing to this loading, including agriculture, roadside erosion, stormwater runoff, and wastewater treatment plant discharges.

The LCBP previously monitored HABs, the environmental conditions that impact their formations, and their associated toxins. This monitoring has since been taken over by the Vermont DEC. There is no identifiable trend in the number of HABs identified in Lake Champlain between 2012 and 2019, however, the peak year was 2016 with eight blooms identified in the lake. In total, over the eight-year period, there have been 30 HAB occurrences in Lake Champlain.

Septic Systems

Aging on-site septic systems and outdated technology can have significant impacts on water quality, public health, and the local economy. Approximately 23% of US households have on-site septic systems and the United States Environmental Protection Agency (USEPA) estimates that there is an average 20% failure rate for on-site systems nationwide (USEPA, 2017). Many homeowners rely on their septic systems for safe and effective treatment of their wastewater before it filters into the soil. Recycled water from a septic systems can help replenish groundwater supplies, but if the system is not working properly, it can contaminate nearby waterbodies and drinking water wells. Aging and antiquated septic systems are among the main sources of increasing nutrients in waterbodies in the United States (USEPA, 2023).

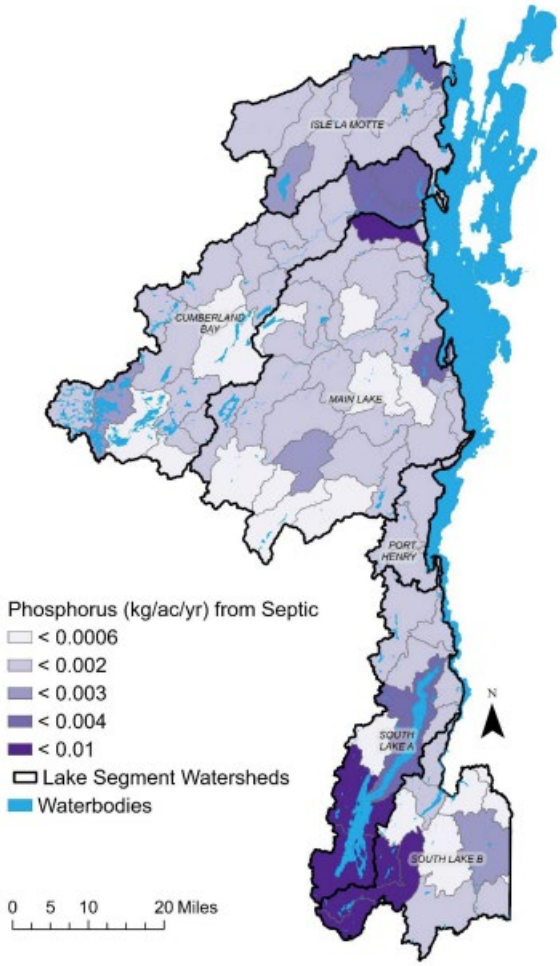


Figure 10. Phosphorus loading estimates from septic systems by HUC 12 watershed Source: NYSDEC, 2024

Phosphorus loading from septic systems was not factored into the original considerations for the 2002 Lake Champlain TMDL but has been calculated for the 2024 Watershed Implementation plan using tax parcel information, and default values and coefficients that were derived from a literature review of loading models. Using this model, the NYSDEC calculated an estimated winter and summer phosphorus load for septic systems for each lake segment. Based on this calculation, failing septic systems contribute to a total phosphorus load of 3.62 mt/yr from the New York side of the Lake Champlain watershed. South Lake B, South Lake A, and Main Lake contain the HUC-12 subwatershed with the highest contributors of phosphorus from septic (Figure 10).

In recognition of the issues that failing and inadequate on-site septic systems can have on water quality, New York State, state agencies, and local governments have enacted policies and programs aimed at reducing the number of failing septic systems near New York's important waterways. Examples of septic programs throughout the watershed can be found in below:

1. Town of Queensbury and Town of Bolton, Warren County

These towns have passed ordinances requiring homeowners to obtain a detailed inspection of the on-site wastewater treatment system by a certified professional or a town-designated official. During a house sale, the real estate agent is required by law to disclose any information about failing infrastructure on the property including the septic system. Any inadequacies in the system

must be repaired prior to the completion of any property transfer. Since the onset of this program, the Town of Queensbury has found that approximately 80% of systems that have been inspected needed replacement or repairs. Similar programs throughout the country have found that this number drastically reduces after the first year of the program.

2. Lake George Park Commission Septic Inspection Program

Approximately 6,000 septic systems are within the Lake George Park, of which 2,500 are within 200 feet of the Lake or 100 feet of its tributaries. In 2022, the Lake George Park Commission passed regulations requiring the inspection of septic systems, as well as new septic design standards for future systems. In 2023, the first year of the program, 313 inspections were completed finding 16% were substandard (undersized) and a failing rate of 23%. Overall, the program has been considered an immediate success, with inspection expected to continue on a five year rotating cycle.

3. New York State Septic Replacement Fund

The Septic System Replacement Fund is a New York State program aimed at protecting water quality. This program specifically targets property owners who need to replace outdated cesspools and septic systems that could potentially affect designated waterbodies. Eligible homeowners who have met the requirements of the program may receive reimbursement of up to 50% of the cost (up to a maximum of $10,000) of their eligible septic system project. This program has been successfully used to replace septic systems throughout Clinton, Essex, Warren, and Washington Counties in the Lake Champlain Watershed.

4. Education and Outreach Initiatives

The LCLGRPB's Septic Smart Campaign, created in partnership with the Lake George Park Commission and the Warren County Planning Department, deployed targeted outreach to residents, and short-term rental hosts and guests. This campaign consisted of direct mailings of educational postcards (Figure 11), short-term rental owner placards, and social media outreach. This initiative has been successfully recreated for residents of the Upper Saranac Lake region.

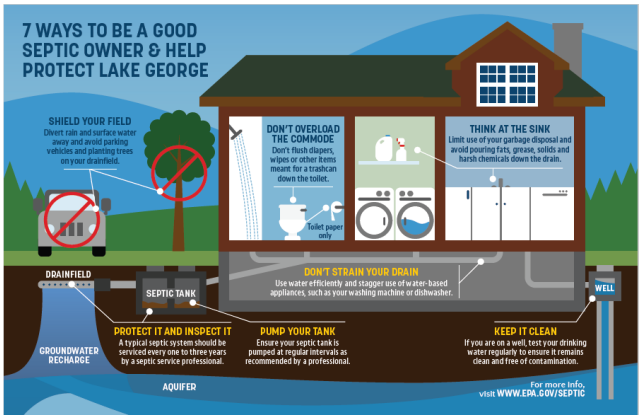


Figure 11. Figure 11: LCLGRPB Septic Smart Campaign Graphic. LCLGRPB, 2022. https://www.lclgrpb.org/educational-resources

Public Outreach

Throughout the winter of 2023 to early summer of 2024, the LCLGRPB conducted an online public survey regarding water quality throughout the New York portion of the Lake Champlain Watershed. The survey allowed respondents to give feedback on their waterbody usage and noticeable potential water quality impairments. Respondents shared their observations based on time spent in the watershed. Additionally, parts of the survey were compared to the responses given during the 2014 public outreach efforts for the 2018 Plan. This was done to identify new and emerging threats over the past decade, as well as to understand the effects of the wide education and outreach efforts that have been completed by the LCLGRPB and other watershed partners.

Survey Results:

Responses were received from all five counties in the watershed, the majority coming from residents within Essex County. Additionally, many waterbodies were represented by responses, the majority referenced Lake George and Lake Champlain.

Waterbody use varied, with the top uses being aesthetic enjoyment, swimming, and paddling activities. All respondents felt their waterbody was in some way an asset to their community (Figure 13), which is a similar response when compared to 2014 results. Similarly, the majority of respondents identified the water quality of their lake, river, or stream positively, listing it as Good (44%), Fair (28%), or Excellent (28%), with none as Poor. For waterbody users, the top five threats to water quality were identified as road salt (76%), impacts from agriculture (68%), sedimentation from erosion (64%), outdated or underperforming septic systems (60%), and HABs (56%) (Figure 12). Comparing responses to the 2014 survey impacts, agriculture is considered to be less of a threat than before.

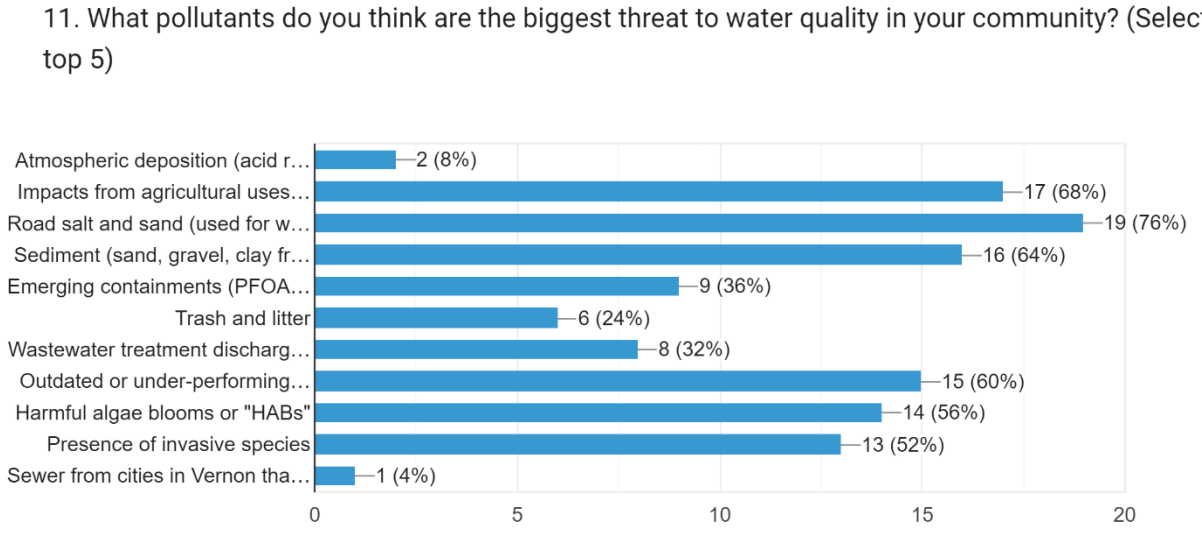


Figure 12. Survey Question: What pollutants do you think are the biggest threats to water quality in your community?

Illustrating the changes in watershed management and research, HABs were not identified as a threat in 2014, but are considered to be one of the biggest now. Respondents were also asked to list the uses that are being affected by the impairments and negative water quality (Figure 13). Drinking water usage and recreational usage were both considered the biggest uses that are affected by decreasing water quality. Concerns about terrestrial and aquatic habitats were also clear.

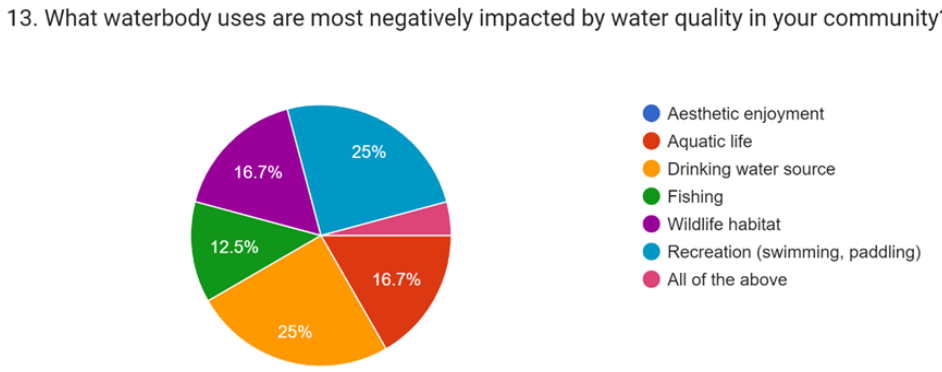


Figure 13. Survey Question: What waterbody uses are most negatively impacted by water quality in your community

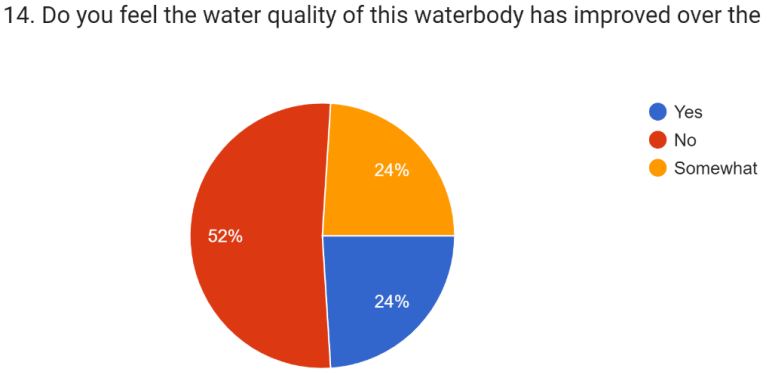


Figure 14. Survey Question: Do you feel water quality has improved over the last 10 years?

Finally, respondents were asked if water quality has improved over the last decade (Figure 14). With a majority listing no (52%), yes, and somewhat (both 24%).

Outreach

Public outreach for this planning process also included various engagement events and presentations to gain feedback on the plan. Several events were attended, including World Water Day, tabling at Farmers Markets, and presentations given to the Champlain Watershed Improvement Coalition of New York (CWICNY) and the Water Quality Coordinating Committees in watershed counties. Dozens of people were connected with and gave input on the emerging issues within the watershed, priority areas for improvements, and general thoughts on the management within the watershed.

Picture 1. Outreach in Warren County Source: LCLGRPB

Throughout the planning process, LCLGRPB staff also sought input and feedback through targeted stakeholder outreach and interviews with watershed professionals and municipal staff in all five counties of the watershed.

Stakeholder interviews were conducted through direct email and phone correspondence and mainly focused on the solicitation and identification of water quality improvement projects at a local level. Staff from various non-profit watershed organizations, elected officials, and local and county highway departments for all municipalities were contacted to gather the greatest amount of input.

Updated Implementation Strategy

The purpose of the 2018 Plan Update is to incorporate emerging issues and identify new projects to improve the overall water quality of the lake and its subwatersheds. These new projects were identified based on many new factors and emerging threats to Lake Champlain which weren't previously understood or did not have as big of a need.

Projects that have been identified come from all five counties of the Watershed and represent a significant financial and environmental need. Projects were provided by representatives of municipalities and watershed organizations through direct outreach and engagement. This plan identifies 99 projects and programs, including 37 new projects, requiring a total of over $197,355,000 in funding needed to address water quality impairments.

Projects have been organized by their subwatersheds according to their priority ranking from the 2018 Plan (Figure 15). In addition to these, projects located outside of the high-priority subwatershed have been included. While these projects are not in the top-priority areas, their implementation is expected to have a significant positive impact on localized water quality. These new projects have been incorporated into this plan to help secure future implementation funding. Potential costs, partners, and funding agencies have been identified for each project.

1	1. Lake Champlain Direct
2	2. Lower Boquet River
3	3. Halfway Creek
4	4. Wood Creek-Lake Champlain Canal
5a	5. Ausable River
5b	6. Little Ausable River
7	7. Poultney River- Head of Lake Champlain
8	8. Headwaters Lake George
9a	9. Indian Brook – Lake George
9b	10. Bullis Brook – Great Chazy River
9c	11. Dead Creek
12a	12. Lake Champlain Canal
12b	13. Outlet Great Chazy River
14a	14. Mettawee River
14b	15. Outlet Lake George
16	16. McKenzie Brook- Lake Champlain
17	17. Rouses Point
18	18. Headwaters Halfway Creek
19	19. Hoisington Brook-Lake Champlain

Figure 15. Priority subwatersheds in order according to the 2018 Plan

Project Profiles

As a part of the development of this implementation strategy, project profiles were created for projects that are considered ready for implementation and illustrate various water quality improvement techniques and best practices. These projects have been identified with a star symbol (*) in the accompanying project table.

These profiles serve as concise documents that summarize the essential elements of a project, offering stakeholders a clear understanding of its background, objectives, and potential environmental impact. The potential nutrient load reductions found in the project profiles have been calculated using the NYSDEC Pollutant Load Reduction Calculator. (https://dec.ny.gov/sites/default/files/2024-06/bmpcalcguide.pdf)

Priority Subwatershed #1 - Lake Champlain Direct

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Town of Plattsburgh	44°40'02.1"N 73°27'23.3"W	New York Road Rehabilitation project implementation	$1,500,000	NYSDEC, LCBP	Town, City, NYSDOT, County	1-3 years

Priority Subwatershed #2 - Lower Boquet River

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Essex County	Various	Hydrogeomorphic study of the Boquet River	$500,000	NYSDEC, LCBP	Essex Co. SWCD, BRASS	3-5 years

Priority Subwatershed #3 - Halfway Creek

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Town of Queensbury	43°21'50.3"N 73°40'26.3"W	Glen Lake septic disposal district	$500,000	NYSDOS, NYSDEC, NYSEFC	Town, Lake Association	5-10 years
Town of Queensbury	43°21'50.3"N 73°40'26.3"W	Long-term water quality monitoring of Glen Lake	$100,000	NYSDEC, LCBP	Town, SUNY ADK, Waren Co. SWCD, Lake Association	3-5 years
Town of Queensbury	43°22'54.3"N 73°38'29.8"W	Dream Lake wastewater assessment	$15,000	NYSDOS, NYSDEC, LCBP	Town, LCLGRPB	1-3 years

Priority Subwatershed #4 – Wood Creek – Lake Champlain

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Town of Hartford	43°22’19.28”N 73°23’19.33”W	Town DPW stormwater management	$300,000	NYSDEC,LCBP	Town, Washington Co. SWCD	3-5 years
Village of Fort Ann	43°24’59.77”N 73°29’07.28”W	Retrofit of wastewater treatment plant	$10M	NYSDOS,NYSDEC, NYSEFC,USDA	Village	1-3 years

Priority Subwatershed #5a - Ausable River

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Hamlet of Keeseville	Various	Upgrade of stormwater management system within the Hamlet	$4M	NYSDOS,NYSDEC, LCBP	Town, Essex Co. SWCD	1-3 years
Town of Ausable *	44°30'12.7"N 73°29'11.1"W	Implementation of stormwater controls	$1,000,000	NYSDEC,NYSHCR, LCBP	Town, County, NYSDOT, NYSDEC	3-5 years

Priority Subwatershed #5b - Little Ausable River

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Town of Peru	44°33'35.2"N 73°36'10.8"W	Creation of a Watershed Assessment and Management Plan for Town drinking water sources	$100,000	NYSDEC, LCBP, NYSDOS	Town, LCLGRPB	1-3 years
Town of Peru	Various	Creation of a Stormwater Management Plan	$75,000	NYSDEC, LCBP	Town, LCLGRPB	1-3 years
Town of Peru	44°34'45.5"N 73°31'16.3"W	Wastewater Treatment Plant Upgrades	$20M+	NYSDEC, NBRC, NYSEFC, LCBP	Town	5-10 years

Priority Subwatershed #7 - Poultney River- Head of Lake Champlain

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Village of Whitehall *	Various	Implementation of Village Green Infrastructure Plan (2022)	$160,000	NYSDEC, LCBP	Village, Washington Co. SWCD NYSDEC, LCLGRPB	1-3 years
Village of Whitehall	43°32’47.92”N 73°24’11.21”W	Village WWTP upgrades	$20M	NYSDEC, NYSDOS, NYSEFC, USHUD,USDA	Village, NYSDEC	5-10 years
Village of Whitehall	Various	Village wastewater system upgrades and I&I reduction	$2M	NYSDEC, NYSDOS, NYSEFC, USHUD,USDA	Village, NYSDEC	3-5 years

Priority Subwatershed #8 - Headwaters Lake George

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
All Municipalities	Various	Development of a subwatershed assessment for the Headwaters of Lake George	$100,000	NYSDEC, LCBP, NYSDOS, LGA	Warren Co. SWCD, LGA, LCLGRPB, municipalities	1-3 years
Town of Bolton	43°30'36.9"N 73°41'28.1"W	Implement Coolidge Hill Road stormwater remediation project	$250,000	NYSDOS, NYSDEC, LCBP, LGA	LGA, Lake Associations, Town	1-3 years
Town of Lake George	43°25'17.9"N 73°41'45.9"W	Correction of stormwater runoff from Lake Street	$75,000	NYSDEC, LCBP, Landowner	Landowner, LGA, Warren Co. SWCD	3-5 years
Town of Lake George	Various	Creation and adoption of Town redevelopment/retrofit code requirements	$15,000	NYSDOS	Town, LCLGRPB, LGA	1-3 years
Town of Lake George	43°24'32.3"N 73°42'39.1"W	Implementation of additional stormwater controls along Rte. 9 corridor	$300,000	LGA, LCBP	Town, LGA, Warren Co. SWCD	3-5 years
Town of Lake George	Various	Town-wide stormwater reduction implementation program	$250,000	NYSDOS, NYSDEC, LCBP, LGA	Town, LGA, Warren Co. SWCD	3-5 years

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Town of Lake George	Various	English Brook streambank stabilization	$200,000	NYSDOS, NYSDEC, NYSEFC, LCBP, LGA	Town, NYSDOT, LGA, Warren Co. SWCD	3-5 years
Town of Lake George	Various	West Brook watershed assessment for natural stream design and erosion control	$75,000	LCBP, LGA	Warren Co. SWCD, LGA, Town of Lake Geroge, Village of Lake George	1-3 years
Town of Lake George	Various	Implementation of West Brook watershed assessment	$100,000	LCBP, LGA	Warren Co. SWCD, LGA, Town of Lake Geroge, Village of Lake George	3-5 years
Town of Lake George	43°26’09.35”N 73°42’28.00”W	Sewer extension up Rt.9N to Tahoe Resort	$10M	NYSDEC, NYSEFC, USDA	Town	3-5 years
Town of Lake George	Various	Implementation of Town septic initiative	$500,000	NYSDEC,NYSEFC,USDA	Town	3-5 years
Town of Lake George	43°35'37.5"N 73°39'15.6"W	Bolton Road Reconstruction Project	$10,000,000	NYSDEC, LCBP, NYSDOT	Warren Co. SWCD, NYSDOT, LGA, Town, Village	3-5 years

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Town of Lake George	Various	Implement a Save the Rain Program in developed areas of the watershed similar to Onondaga County's program and includes stormwater retrofits	$1,500,000	NYSDEC, LCBP, NYSDOS	Warren Co. SWCD, Town, Village, LGA, LCLGRPB	3-5 years
Town of Queensbury	Various	Assembly Point, Cleverdale, Rockhurst, and Pilot Knob homeowner green infrastructure education and implementation program	$50,000	LCBP, LGA	Town, LGA, LCLGRPB	3-5 years
Town of Queensbury	43°28'12.7"N 73°39'22.1"W	Assembly Point engineering assessment for stormwater reduction	$75,000	LCBP, LGA	Town, Assembly Point Association	1-3 years
Town of Queensbury	43°28'04.5"N 73°38'09.0"W	Sewer line extension to Rockhurst community	$1,000,000+	NBRC, NYSEFC	Town, Lake Associations	5-10 years
Town of Queensbury	43°28'12.7"N 73°39'22.1"W	Implementation of green infrastructure, stormwater reduction, and infiltration at Assembly Point	$1,500,000	NYSDEC, LCBP, LGA,	Town, Warren Co. SWCD	1-3 years

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Town of Queensbury	Various	Community septic assessment for Assembly Point and Cleverdale/Rockhurst	$200,000	NYSDOS, NYSDEC, NYSEFC	Town, LGA	3-5 years
Town of Queensbury	43°26'47.8"N 73°40'30.1"W	Installation of drywells on Lockhart Loop	$25,000	NYSDEC, LCBP, NYSDOS, LGA	Town, LGA, Warren Co. SWCD	1-3 years
Town of Queensbury	Various	Cleverdale/Rockhurst stormwater reduction and infiltration	$10,000	NYSDEC, LCBP, NYSDOS, LGA	Town, Warren Co. SWCD, LGA	1-3 years
Village of Lake George	43°25'18.4"N 73°43'07.1"W	Retrofit of Village DPW for increased stormwater protection	$1,000,000	NYSDEC, LCBP, NYSDOS	Village, LGA, Warren Co. SWCD	1-3 years
Village of Lake George	Various	Complete a stormwater engineering assessment for Prospect Mountain Brook watershed looking at runoff velocity reduction and flood attenuation	$150,000	NYSDEC, LCBP	Village	1-3 years
Village of Lake George	Various	Retrofit of Village DPW for increased stormwater protection	$250,000	NYSDOS,NYSDEC, LCBP	Village, LGA, Warren Co. SWCD	1-3 years

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Village of Lake George	Various	Implement recommendations from Prospect Mountain Brook watershed engineering assessment	$350,000	NYSDEC, LCBP	Village, Warren Co. SWCD	3-5 years
Village of Lake George	43°25'34.1"N 73°42'40.4"W	Redesign parking lot at the Boardwalk Restaurant to incorporate green infrastructure elements to improve onsite stormwater infiltration	$75,000	LCBP, LGA, NYSEFC	Village, Landowner, LGA, LCLGRPB	5-10 years
Village of Lake George	Various	Creation and adoption of Village redevelopment/retrofit code requirements	$15,000	NYSDOS	Village, LGA, LCLGRPB	3-5 years

Priority Subwatershed #9a - Indian Brook-Lake George

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Town of Bolton	Various	Finkle Brook Watershed assessment	$10,000	NYSDEC, NYSDOS, LCBP, LGA	Town, LGA, Warren Co. SWCD	1-3 years
Town of Bolton	Various	Trout Lake and Trout Brook Watershed assessment	$15,000	NYSDEC, NYSDOS, LCBP, LGA	Warren Co. SWCD, LGA	1-3 years
Town of Bolton	43°33'18.8"N 73°39'40.2"W	Elimination/reduction of infiltration and intrusion of wastewater lines	$2,500,000	NYSDEC, NBRC, NYSEFC	Town	1-3 years
Town of Bolton	Various	Upgrade 9N stormwater conveyance system	$5,000,000	NYSDOT	NYSDOT	5-10 years
Town of Bolton	43°33'36.8"N 73°39'39.2"W	Streambank erosion reduction in Dula Pond headwaters	$50,000	LCBP, LGA	Town, Landowner, LGA, Warren Co. SWCD	1-3 years
Town of Bolton	Various	Slip-line wastewater conveyance system and upgrade manholes	$250,000	NYSDEC,NYSDOS,LCBP, LGA	Town	1-3 years
Town of Bolton	Various	Implementation of roadside erosion and sediment control projects	$300,000	NYSDEC, LCBP	Town, Warren Co. SWCD, LCLGRPB	3-5 years
Town of Bolton	43°33'18.8"N 73°39'40.2"W	Wastewater Treatment Plant upgrades	$30,000,000	NYSDEC, NBRC, NYSEFC	Town	3-5 years

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Town of Bolton	43°33'18.6"N 73°39'12.3"W	Replacement of Main Pump Station at Rogers Park	$4,000,000	NYSDEC, NBRC, NYSEFC	Town	1-3 years
Town of Bolton	43°34'43.0"N 73°38'49.0"W	Pioneer Village Road engineering planning study and final design for stormwater solutions	$50,000	NYSDEC, LCBP, Landowner	Landowner, LGA, Warren Co. SWCD	1-3 years
Town of Bolton	43°34'43.0"N 73°38'49.0"W	Pioneer Village Road implementation of stormwater plan	$200,000	NYSDEC, LCBP, Landowner	Landowner, LGA, Warren Co. SWCD	1-3 years
Town of Fort Ann	Various	Perform watershed assessment of Fort Ann portion of LG watershed	$10,000	NYSDEC, NYSDOS, LCBP, LGA	Town, Washington Co. SWCD, LCLGRPB	1-3 years
Priority Subwatershed #9b – Bullis Brook-Great Chazy River						
Location	**Location (Lat/Long)**	**Project Narrative**	**Project Cost**	**Potential Funding Sources**	**Involved Parties**	**Timeframe**
All Municipalities	Various	Comprehensive water quality assessment of tributaries to Great Chazy River	$100,000	NYSDEC,NYSDOS, LCBP	Clinton Co. SWCD,LCLGRPB	3-5 years
All Municipalities	Various	Completion of comprehensive nutrient management plans	$100,000	NYSAGM,USDA,LCBP	Clinton Co. SWCD	3-5 years

Priority Subwatershed #9c - Dead Creek

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
City of Plattsburgh	Various	Implement residential green infrastructure program	$50,000	LCBP, NYSDEC	City, LCLGRPB	1-3 years
City of Plattsburgh	Various	Promote and implement City's Urban Forestry program	$75,000	NYSDEC, NYSDOS, LCBP	City, LCLGRPB	1-3 yeas
Town of Beekmantown	Various	Comprehensive water quality assessment of Dead Creek and its tributaries	$75,000	NYSDEC, NYSDOS, LCBP	Clinton Co. SWCD, LCLGRPB	3-5 years
Town of Plattsburgh	Various	Improved planning and implementation to reduce ag runoff	$1,500,000	USDA, NYSAGM, LCBP	Clinton Co. SWCD, Landowner	3-5 years

Priority Subwatershed #12a - Lake Champlain Canal

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
All Municipalities	Various	Comprehensive water quality assessment for tributaries to Lake Champlain Canal	$55,000	NYSDEC, NYSDOS, LCBP	Washington Co. SWCD, LCLGRPB	3-5 years
Town of Fort Ann	43°25'54.7"N 73°26'00.8"W	Stabilize Winchell Creek Slide on Deweys Bridge Road	$750,000	NYSDEC	Town, Washington County	1-3 years

Priority Subwatershed #12b - Outlet Great Chazy River

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Town of Champlain	Various	Implement streambank restoration program on Great Chazy	$500,000	NYSDEC, NYSAGM, USFWS, LCBP	Clinton Co. SWCD, Town	3-5 years
Village of Champlain	Various	Creation of a Stormwater Master Plan	$75,000	NYSDEC, LCBP	Village, LCLGRPB	1-3 years
Village of Champlain	Various	Implement residential stormwater reduction plan	$100,000	LCBP	Clinton Co. SWCD	3-5 years

Priority Subwatershed #14a - Mettawee River

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
All Municipalities	Various	Mettawee River streambank restoration and buffer installation program	$350,000	NYSAGM, FSA, USFWS, LCBP	Washington Co. SWCD, Landowners	3-5 years
Town of Whitehall	Various	Assessment of culverts within the Town, especially those connecting wetlands	$35,000	NYSDEC, NYSDOS, LCBP	Washington Co. SWCD, Town	1-3 years
Town of Whitehall	Various	Remediation of failing culverts identified in the assessment	$1,000,000	NYSDEC, NYSDOS, LCBP	Washington Co. SWCD, Town	3-5 years

Priority Subwatershed #14b - Outlet Lake George

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Town of Hague	Various	Comprehensive Hague Brook watershed study	$75,000	NYSDOS, LCBP, LGA	Warren Co. SWCD, LGA, LCLGRPB	1-3 years
Town of Hague	43°41'46.8"N 73°30'20.0"W	Implementation of Stormwater Retrofit Plan (2013)	$2,500,000	NYSDEC, LCBP, Silver Bay YMCA	Silver Bay YMCA, LGA	3-5 years
Town of Putnam	43°43'54.7"N 73°27'38.4"W	Crow Point Wastewater system assessment and community system installation	$750,000	LCBP, LGA	Washington Co. SWCD, Town, LGA, LCLGRPB	1-3 years
Town of Putnam	43°47'32.7"N 73°26'52.9"W	Black Point Road/Anthony's Nose stormwater assessment	$15,000	NYSDEC, NYSDOS, LCBP, LGA	Washington Co. SWCD, Town, LGA	1-3 years
Town of Ticonderoga	43°50'02.90"N 73°25'37.04"W	Implementation of stormwater reduction reduction methods in Tin Pan Alley watershed	$2.5M	NYSDEC, NYSDOS, LCBP, LGA	Town, LGA	3-5 years
Town of Ticonderoga	43°49'52.10"N 73°25'50.90"W	Wastewater system assessment in Outlet Drive subwatershed	$20,000	NYSDEC, NYSDOS, LCBP, LGA	Town, LGA, LCLGRPB, Essex Co. SWCD	1-3 years

Priority Subwatershed #16 - McKenzie Brook- Lake Champlain

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Town of Moriah	44°02'54.9"N 73°27'34.6"W	Creation of a Stormwater Master Plan for Hamlet of Port Henry	$75,000	NYSDEC, LCBP	Town, Essex Co., LCLGRPB	1-3 years
Town of Moriah	44°02'12.6"N 73°27'24.6"W	Bulwagga Bay beach streambank stabilization and erosion reduction	$4.5M	NYSDEC, LCBP	Town, Essex Co. SWCD	3-5 years

Priority Subwatershed #17 - Rouses Point

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Village of Rouses Point	Various	Complete comprehensive stormwater management plan	$75,000	NYSDEC, NYSDOS, LCBP	Village, LCLGRPB	1-3 years
Village of Rouses Point	Various	Implement recommendations in stormwater management plan	$1.5M	NYSDEC, NYSDOS, NYSEFC, LCBP	Village	3-5 years

Priority Subwatershed # 18 - Headwaters Halfway Creek

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
City of Glens Falls	43°19'11.1"N 73°39'32.4"W	Crandall Pond Outlet Reconstruction	$500,000	NYSDEC, NYSDOS, LCBP	City, Warren Co. SWCD	3-5 years
City of Glens Falls	Various	Expand implementation of porous sidewalks in key areas for stormwater reduction	$750,000	NYSDOS	City, Warren Co. SWCD	3-5 years

Priority Subwatershed #19 - Hoisington Brook/ Lake Champlain

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Town of Westport	44°11’07.81”N 73°25’55.70”W	Removal of a sediment delta located at the mouth of Hoisington Brook	$80,000	NYSDEC, NYSDOS	Town, Essex Co. SWCD	5-10 years
Town of Westport	44°10’55.05”N 73°25’58.43”W	Complete a Town stormwater assessment and management plan	$100,000	NYSDEC, NYSDOS, LCBP	Town, LCLGRPB	1-3 years
Town of Westport	Various	Implement projects identified in stormwater assessment	$2M	NYSDEC, NYSDOS, LCBP	Town, Essex Co. SWCD	5-10 years

Subwatershed – Wells Brook – Mettawee River

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Village of Granville	43°24'46.2"N 73°16'26.2"W	Creation of a Stormwater Master Plan	$75,000	NYSDEC, NEIWPCC	Village, LCLGRPB	1-3 years

Subwatershed - Charter Brook-Lake Champlain

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Town of Putnam	43°47'01.3"N 73°21'54.6"W	Assessment for shoreline stabilization Cummings Memorial Park	$100,000	NYSDEC, LCBP	Town	1-3 years
Town of Putnam	43°47'01.3"N 73°21'54.6"W	Implementation of shoreline stabilization assessment	$2,000,000	NYSDEC, LCBP	Town, NYSDEC, Washington Co. SWCD	3-5 years

Subwatershed - Lower East Branch Ausable River

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Town of Jay	44°21'31.7"N 73°44'33.3"W	Implementation of the East Branch Ausable Restoration Program report (2019)	$300,000	NYSDEC, LCBP, USDA, USFWS	Towns of Black Brook, Jay, AuSable Forks, Essex Co. SWCD, AFC	1-3 years
Towns of Jay, Black Brook *	44°26'29.1"N 73°40'15.4"W	East Branch Restoration Program-Priority Project Implementation	$3,000,000	NYSDOS, NYS DEC, LCBP, USDA, USFWS	Towns of Black Brook, Jay, AuSable Forks, Essex Co. SWCD, AFC	3-5 years
Town of Jay	44°26'48.9"N 73°39'16.5"W	Long-term upgrades to the Town of Jay/Town of Black Brook Wastewater Treatment Plant	$2,000,000	NYSDEC, NYSEFC	Town of Jay, Town of Black Brook, Essex Co.	3-5 years
Town of Jay	44°26'48.9"N 73°39'16.5"W	Upgrade lagoons at the Town of Jay/Town of Black Brook Wastewater Treatment Plant	$5,000,000	NYSDEC, NYSEFC	Town of Jay, Town of Black Brook, Essex Co.	1-3 years

Subwatershed - Outlet Little Ausable River

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Town of Peru	44°33'35.2"N 73°36'10.8"W	Creation of a Watershed Assessment and Management Plan for Town drinking water sources	$100,000	NYSDEC, LCBP, NYSDOS	Town, LCLGRPB	1-3 years
Town of Peru	Various	Creation of a Stormwater Management Plan	$75,000	NYSDEC, LCBP	Town, LCLGRPB	1-3 years
Town of Peru	44°34'45.5"N 73°31'16.3"W	Wastewater Treatment Plant Upgrades	$20,000,000+	NYSDEC, NBRC, NYSEFC, LCBP	Town	5-10 years

Subwatershed - Putnam Creek

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
Town of Crown Point	43°55'16.7"N 73°29'25.9"W	Replacement of Single Culvert with Bridge on Bush Road	$2,000,000	NYSDEC, LCBP	Town, Essex Co. SWCD	1-3 years
Town of Crown Point	43°57'39.9"N 73°31'21.8"W	Replacement of Triple Culverts on Hogan Hill Road on Phelps Brook	$2,000,000	NYSDEC, LCBP	Town, Essex Co. SWCD	5-10 years
Town of Crown Point	43°56'59.9"N 73°30'00.0"W	Replacement of Double Culverts on Treadway Road	$1,500,000	NYSDEC, LCBP	Town, Essex Co. SWCD	3-5 years
Town of Crown Point	43°57'36.5"N 73°30'34.9"W	Replacement of Culvert on Breed Hill Road	$1,500,000	NYSDEC, LCBP	Town, Essex Co. SWCD	1-3 years

Watershed Wide

Location	Location (Lat/Long)	Project Narrative	Project Cost	Potential Funding Sources	Involved Parties	Timeframe
All Municipalities	Various	Preplanning engineering program for culvert replacement, green infrastructure, drainage	$500,000	NYSDEC,LCBP	County SWCDs	1-3 years
All Municipalities	Various	Culvert upkeep and replacement program	$10M+	NYSDEC,LCBP	County SWCDs	5-10 years

Completed Watershed Projects

Since 2018, the members of CWINCY, municipalities, and various other groups within the watershed have successfully completed or made significant progress on 62 projects identified in the 2018 Non-Point Source Management Plan. These initiatives represent a substantial investment of time, resources, and funding of over $36,425,000 aimed at enhancing the health of the Lake Champlain Watershed.

The completed and ongoing projects have meaningful impacts on mitigating non-point source pollution in the watershed. Key efforts include roadside erosion mitigation, green infrastructure installation, water quality assessments, education and outreach initiatives, and culvert replacement projects. Through these diverse initiatives, watershed partners have not only addressed immediate environmental challenges but also fostered community involvement and stewardship, ensuring the long-term sustainability of the Lake Champlain Watershed.

Projects were carried out across the majority of priority subwatersheds (Figure 16), primarily within the Headwaters of Lake George subwatershed, in which 11 have been completed. These completed projects effectively addressed identified phosphorus loading concerns, with the majority targeting stormwater issues (Figure 17).

2018 Project ID	Project Description	Subwatershed	Completed or Ongoing	Identified Cost
1-2	Stormwater reduction/ GI infiltration work at the US Oval municipal parking lot and roadway	Lake Champlain Direct	Complete	$600,000
1-7	Reduce roadside erosion and stabilize ditch	Lake Champlain Direct	Complete	$10,000
2-2	Implement roadside erosion control program	Lower Boquet River	Ongoing	$150,000
2-7	Joe Rivers Road Roadside bank stabilization project	Lower Boquet River	Complete	$20,000
3-3	Vaugh Road road bank stabilization	Halfway Creek	Complete	$45,000
3-11	Implementation of Town's MS4 Stormwater Management Program	Halfway Creek	Ongoing	$400,000
4-2	Promote forestry management plans and best management practices	Wood Creek/Lake Champlain	Ongoing	$60,000
4-5	Stormwater management assessment and implementation along Towpath Road	Wood Creek/Lake Champlain	Complete	$50,000

2018 Project ID	Project Description	Subwatershed	Completed or Ongoing	Identified Cost
4-8	Manure management and barnyard runoff mitigation program	Wood Creek/Lake Champlain	Complete/Ongoing	$750,000
4-9	Installation of new culvert and stabilization of road slide on Co. Rte 41	Wood Creek/Lake Champlain	Complete	$75,000
4-10	Planning for upgrades of the Fort Ann wastewater treatment plant	Wood Creek/Lake Champlain	Complete	$100,000
4-12	Heightened implementation of regional cover cropping program	Wood Creek/ Lake Champlain	Complete/Ongoing	$100,000
5a-1	Town of Ausable - Perform water quality assessments of tributaries to the Ausable River	Ausable River	Complete	$25,000
5a-4	Town of Chesterfield - Perform water quality assessments of tributaries to the Ausable River	Ausable River	Complete	$25,000
5b-4	Ag waste system upgrades	Little Ausable River	Ongoing	$400,000
5b-5	Implement Trees for Tribs Program along Little Ausable River	Little Ausable River	Complete	$50,000
5b-7	Perform water quality assessments of tributaries to the Ausable River	Little Ausable River	Complete	$25,000
7-2	Whitehall DPW site stormwater retention and erosion reduction	Poultney River/Head of Lake Champlain	Complete	$150,000
7-5	Implementation of improved ag practices	Poultney River/Head of Lake Champlain	Complete	$2.5M
7-6	Promote forestry BMP and expand RC&D Skidder Bridge Program	Poultney River/Head of Lake Champlain	Complete	$65,000
8-6	Lakeview Circle Dr. stormwater infiltration and sediment retention project implementation	Headwaters Lake George	Complete	$125,000

2018 Project ID	Project Description	Subwatershed	Completed or Ongoing	Identified Cost
8-8	Installation of check dams and live stakes on Interstate 87 stormwater swales discharging to West Brook	Headwaters Lake George	Complete	$20,000
8-9	Implementation of Town's MS4 Stormwater Management Program Plan	Headwaters Lake George	Ongoing	$250,000
8-10	Wastewater infrastructure I&I reduction - slip lining town pipes	Headwaters Lake George	Complete	$150,000
8-19	Installation of stormwater controls west of Tahoe Resort	Headwaters Lake George	Complete	$200,000
8-22	Stormwater infiltration on Cedar Ln/ Beatty Rd	Headwaters Lake George	Ongoing	$60,000
8-23	Removal of paved drainage ditches and installation of vegetated swales with check dams at I-87 Exit 22 south bound off ramp	Headwaters Lake George	Complete	$50,000
8-31	Installation of a hydrodynamic separator at the bottom of Lower Amherst St. and bioretention area at Shepard's Park Beach	Headwaters Lake George	Complete	$120,000
8-40	Reconstruction of the wastewater treatment plant	Headwaters Lake George	Complete	$18M
8-48	Implementation of Village's MS4 Stormwater Management Program Plan	Headwaters Lake George	Ongoing	$250,000
8-50	Complete a comprehensive analysis of the effects of alternative de-icing products as they pertain to phosphorus inputs	Headwaters Lake George	Complete	$40,000
9a-2	Install tree boxes and curb cut median at Municipal Parking Lot behind Bolton Town Hall	Indian Brook/ Lake George	Complete	$100,000

2018 Project ID	Project Description	Subwatershed	Completed or Ongoing	Identified Cost
9a-3	Bolton hamlet stormwater reduction program	Indian Brook/ Lake George	Complete	$125,000
9a-4	Stewart Brook stream bank stabilization, stormwater infiltration, and education	Indian Brook/ Lake George	Complete	$100,000
9a-5	Installation of vegetated swales on Valley Woods Road	Indian Brook/ Lake George	Complete	$60,000
9a-7	Install check dams and live stakes in new stone lined ditches on Frank Cameron Rd.	Indian Brook/ Lake George	Complete	$10,000
9a-11	Installation of porous asphalt at Rogers Park Lot	Indian Brook/ Lake George	Complete	$100,000
9a-17	Install trench drain and stormwater infiltration units along road next to Fort Ann Beach	Indian Brook/ Lake George	Complete	$15,000
9b-1	Livestock exclusion fencing and riparian buffer program	Bullis Brook/Great Chazy River	Ongoing	$150,000
9b-2	Great Chazy River watershed management plan	Bullis Brook/Great Chazy River	Complete	$50,000
9b-3	Implementation of Trees for Tribs on Great Chazy River	Bullis Brook/Great Chazy River	Ongoing	$50,000
9b-6	Implementation of manure management systems	Bullis Brook/Great Chazy River	Ongoing	$1.5M
9c-5	Implement manure storage and silage leachate projects	Dead Creek	Ongoing	$2.5M
9c-6	Stormwater drainage study for water quality impacts - Tom Miller Rd./Newell Ave. subwatershed	Dead Creek	Ongoing	$50,000
12a-1	County Route 17 roadside slide stabilization	Lake Champlain Canal	Complete	$100,000
12a-2	Reduce nutrient runoff from agricultural operations	Lake Champlain Canal	Ongoing	$2.5M

2018 Project ID	Project Description	Subwatershed	Completed or Ongoing	Identified Cost
12b-1	Promote and implement ag waste storage systems	Outlet Great Chazy River	Ongoing	$260,000
12b-2	Implement agricultural riparian buffer program	Outlet Great Chazy River	Ongoing	$225,000
14a-2	Stabilization of streambank on Upper Turnpike Road	Mettawee River	Complete	$200,000
14a-3	Implement manure storage management practices	Mettawee River	Complete	$1.5M
14b-1	Route 8/Route 9N intersections stormwater reduction engineering report	Outlet Lake George	Complete	$45,000
14b-2	Conduct four culvert replacements for erosion reduction	Outlet Lake George	Complete	$75,000
14b-7	Completion of a Gull Bay upland stormwater assessment	Outlet Lake George	Complete	$15,000
14b-10	County Rte 1 sediment basin installation project	Outlet Lake George	Complete	$25,000
14b-11	Implement projects identified in Army Corps of Engineers Plan for Glenburnie	Outlet Lake George	Complete	$45,000
14b-14	Engineering assessment of Tin Pan Alley for high volume stormwater treatment system	Outlet Lake George	Complete	$30,000
14b-21	Address roadside erosion issues throughout the Town on local, county and state roads	Outlet Lake George	Ongoing	$60,000
18-2	Continued Implementation of City CSO Long-Term Control Plan	Headwaters Halfway Creek	Ongoing	$1M
18-4	Repair access road to Wilkie Reservoir	Headwaters Halfway Creek	Complete	$20,000
18-16	Implement curbside infiltration utilizing green infrastructure practices	Headwaters Halfway Creek	Complete	$250,000
19-7	Implementation of stormwater control measures at County Fair Grounds	Hoisington Brook/ Lake Champlain	Complete	$300,000

2018 Project ID	Project Description	Subwatershed	Completed or Ongoing	Identified Cost
19-9	Implementation of a roadside erosion reduction program	Hoisington Brook/ Lake Champlain	Ongoing	$100,000

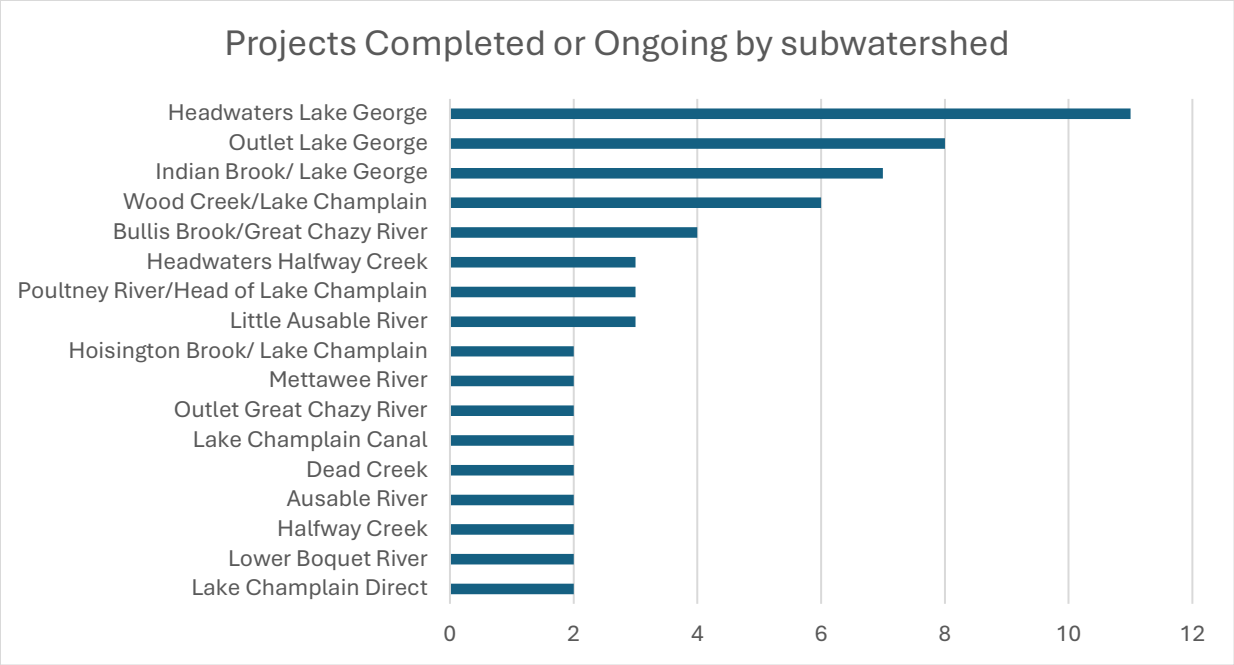


Figure 16. Number of projects completed and ongoing in priority watersheds since 2018

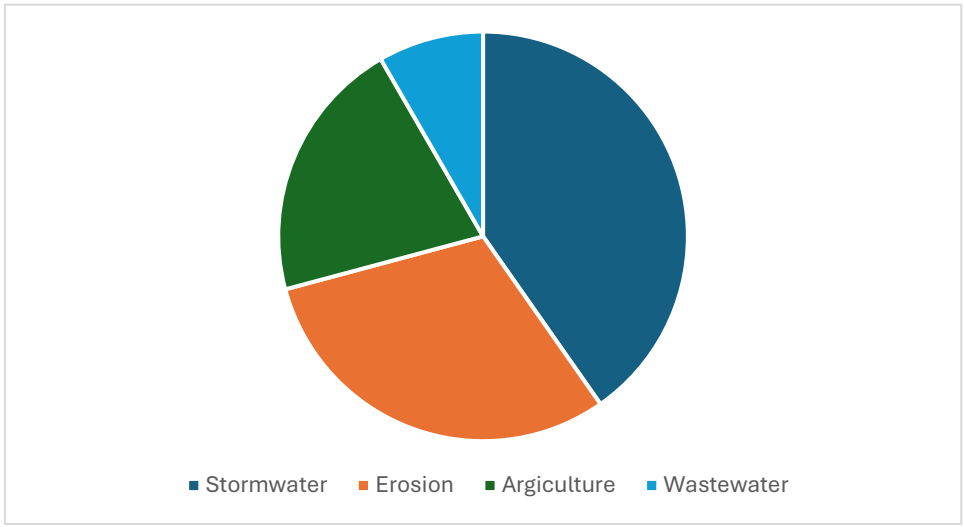
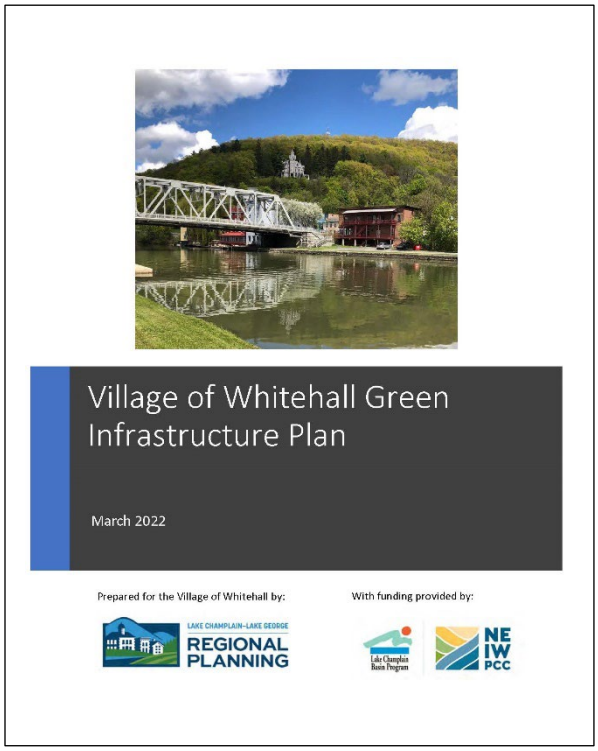


Figure 17. Phosphorus loading concerns addressed by completed and ongoing projects

Project Profile: Implementation of Village of Whitehall Green Infrastructure Plan

Project Background: The Village of Whitehall is located within the South Lake B lake segment and Poultney River/Head of Lake Champlain HUC-12 subwatershed. This subwatershed ranked 7th of the 19 priority subwatersheds identified in the 2018 Plan.

Whitehall is a 5.9 square mile urbanized village that is serviced by a municipal wastewater sewer system, which is also connected to the Village's municipal stormwater sewer system. This is known as a combined sewer system, wherein stormwater is collected from the streets into the same underground pipe system with wastewater from homes and businesses. The combined water is then transported to the municipal wastewater treatment facility. Occasionally, during heavy rain events or snowmelts, too much stormwater enters the system, and the wastewater treatment facility cannot handle the increased water volume, triggering the release of the combined sewer overflow (CSO) into the nearest surface water. The release of the CSO relieves the pressure on the wastewater treatment facility while negatively impacting the quality of the receiving waterbody.



Picture 2. Village of Whitehall Green Infrastructure Plan, Lake Champlain Lake George Regional Planning Board https://cdn.prod.website-files.com/6061d6e26f7b483eac92adfd/6290c1eefcac1c0e8a54af1b_FINAL%20Village%20of%20Whitehall%20GSI%20Plan_March2022.pdf

Project Title	**Village of Whitehall Green Infrastructure Plan Implementation**
Priority Issue	Stormwater
Priority Level	High
Impacted area	Village of Whitehall
Subwatershed (HUC 12)	Poultney River-Head of Lake Champlain (043001010307)
Pollutant load reduction*	
Phosphorus	5.02 lbs./year
Nitrogen	18.49 lbs./year
Sediment	0.07 lbs./year
***Calculations derived from USEPA STEPL Model Lake Champlain Lake George Regional Planning Board (2022)**	

Water Quality Issue: During a CSO event, untreated wastewater and stormwater are released into surface waters, increasing phosphorus pollution. But separating a combined sewer system is costly and takes years to implement. Implementing green infrastructure (GI) projects is a more immediate way to reduce stormwater inputs into combined sewer systems. The cost of implementing GI projects is a fraction of the cost of sewer separation and supports the long-term goal of reducing CSO discharges into nearby waterways.

Implementation Action: Managing stormwater more effectively through GI solutions before it enters the municipal stormwater sewer system is a resilient and cost-effective approach to addressing CSO's. GI places an emphasis on low-impact development with nature-based practices to capture stormwater runoff and promote filtration, evapotranspiration, and transpiration to enhance water quality and reduce stormwater volume in a combined sewer system.

Picture 3. Proposed Rain Barrel Locations, Village of Whitehall. The Chazen Companies, 2021

The Village of Whitehall Green Infrastructure Plan, completed in 2022 by LCLGRPB with funding from the LCBP, identifies ten GI practices on municipally owned property for implementation. GI project types identified include rain barrels and rain gardens. Each site was identified using an analysis matrix with the following considerations: land use, ownership, and constructability. Once implemented, these projects will lessen impacts on the Village's combined sewer system and result in a reduction of 5.02 lb./year of phosphorus loading in the South Lake B lake segment/Poultney River/Head of Lake Champlain HUC-12 subwatershed.

Implementation Cost	$350,000
Funding Sources	NYS DEC, LCBP
Project Partners	Village, Washington Co. SWCD, LCLGRPB
Implementation Timeframe	1-3 years

Project Profile: Implementation of Cedar Court Stormwater Collection System Preliminary Engineering Report (PER)

Project Background: A residential 1950s-era subdivision in the Town of Ausable, Clinton County, known as Cedar Court, was designed without adequate considerations for site grading and stormwater control measures. These design issues combined with sandy soils and a relatively shallow groundwater table result in localized flooding and freezing during extreme weather events. This causes road closures and damage to Town owned infrastructure while also negatively impacting nearby waterways by transporting phosphorus and other pollutants when the flood waters subside.

Picture 4. Image of a flooding event, Cedar Court, Town of Ausable. AES Northeast, 2020

Water Quality Issue: Flooding affects water quality by increasing surface runoff and transporting large quantities of phosphorus from the land into nearby surface waters via stormwater. Phosphorus that is attached to soil particles is mobilized in floodwaters and carried into waterbodies. This can cause spikes in phosphorus concentrations in the receiving surface waters, particularly in runoff from developed lands like the study area. In general, developed land uses account for a disproportionately higher amount of phosphorus loading per acre than other land uses (LCLGRPB, 2023).

Project Title	**Implementation of Cedar Court Stormwater Collection System (PER)**
Priority Issue	Stormwater
Priority Level	High
Impacted area	Town of Keeseville, NY
Subwatershed (HUC 12)	Ausable River (043001040302)
Pollutant load reduction	
Phosphorus	30 lbs./year
Nitrogen	206.50 lbs./year
Sediment	15,100 lbs./year

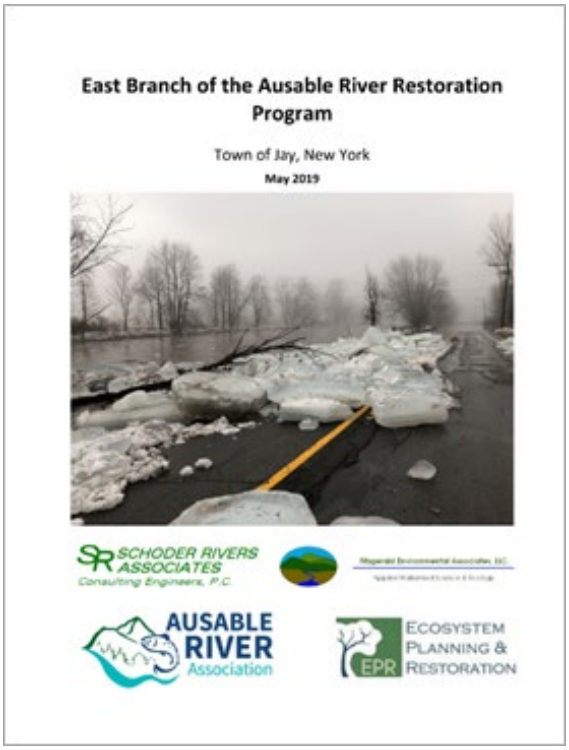
Implementation Action: The PER proposes two alternatives to address flooding concerns in the Cedar Court development and the surrounding area. Both solutions include the installation of a municipal stormwater system that is enhanced by green infrastructure (GI), including vegetated drainage swales to reduce runoff in priority areas. Best practices are to be implemented for erosion and sediment control practices during and after the construction of the new system for stormwater controls in and around the development.

Implementation Cost	$1,500,000
Funding Sources	NYS DEC, LCBP
Project Partners	Town, County, NYS DOT, NYS DEC
Implementation Timeframe	3-5 years

Project Profile: Implementation of East Branch Restoration Program: Project Area 13

Project Background: The East Branch of the Ausable River Restoration Program is a culmination of years of federal and local funding to develop informed plans, including the 2014 NY Rising Community Reconstruction Plan for the Towns of Jay and Keene, the 2016 Ausable River Watershed Management Plan, and the 2017 Au Sable Forks Long-Term Community Recovery Plan. Other partnership opportunities include involving local community members and municipality leaders through education and outreach, such as holding public workshops.

Project Area 13 is the last of 13 projects designed in the Ausable River Restoration Program (2019). This stretch of the river has excessive sediment deposition which was exacerbated by post-Hurricane Irene recovery work which pushed materials towards the narrow reach of the river.



Picture 5. East Branch of the Ausable River Restoration Program. Ausable River Association, et al. (2019). https://www.ausableriver.org/programs/healthy-streams/ausable-river-restoration-program

Project Title	East Branch Restoration Program: Project Area 13
Priority Issue	Erosion
Priority Level	Moderate
Impacted area	Town of Jay, Town of AuSable, and Town of Black Brook
Subwatershed (HUC 12)	Lower East Branch Ausable River (043001040105), Lower West Branch Ausable River (043001040206), Palmer Brook-Ausable River (043001040301)
Pollutant Load Reduction	
Phosphorus	1.05 lbs./year
Nitrogen	1.13 lbs./year
Sediment	3,720 lbs./year

Water Quality Issue:

Erosion, sedimentation, and sediment deposition all play significant roles in increasing the availability of phosphorus in local waterways by mobilizing and redistributing phosphorus-rich particles from the land into water systems. As soil is eroded, phosphorus that is bound to soil particles is carried into nearby surface waters. Over time, these sediments accumulate, often leading to higher concentrations of phosphorus in the water, which can contribute to nutrient imbalances.

Implementation Cost	$3,000,000
Funding Sources	NYS DOS, NYS DEC, LCBP, USDA, US FWS
Project Partners	Town of Black Brook, Town of Jay, Essex County, Clinton County, NYS DEC, Ausable Freshwater Center consultants
Implementation Timeframe	5-10 years

Implementation Action:

Recommendations for Project Area 13 include the excavation of an excessive sediment deposit that will increase channel flow and reduce flooding, ice jams, and future sediment and erosion potential in this stretch of the Ausable River.

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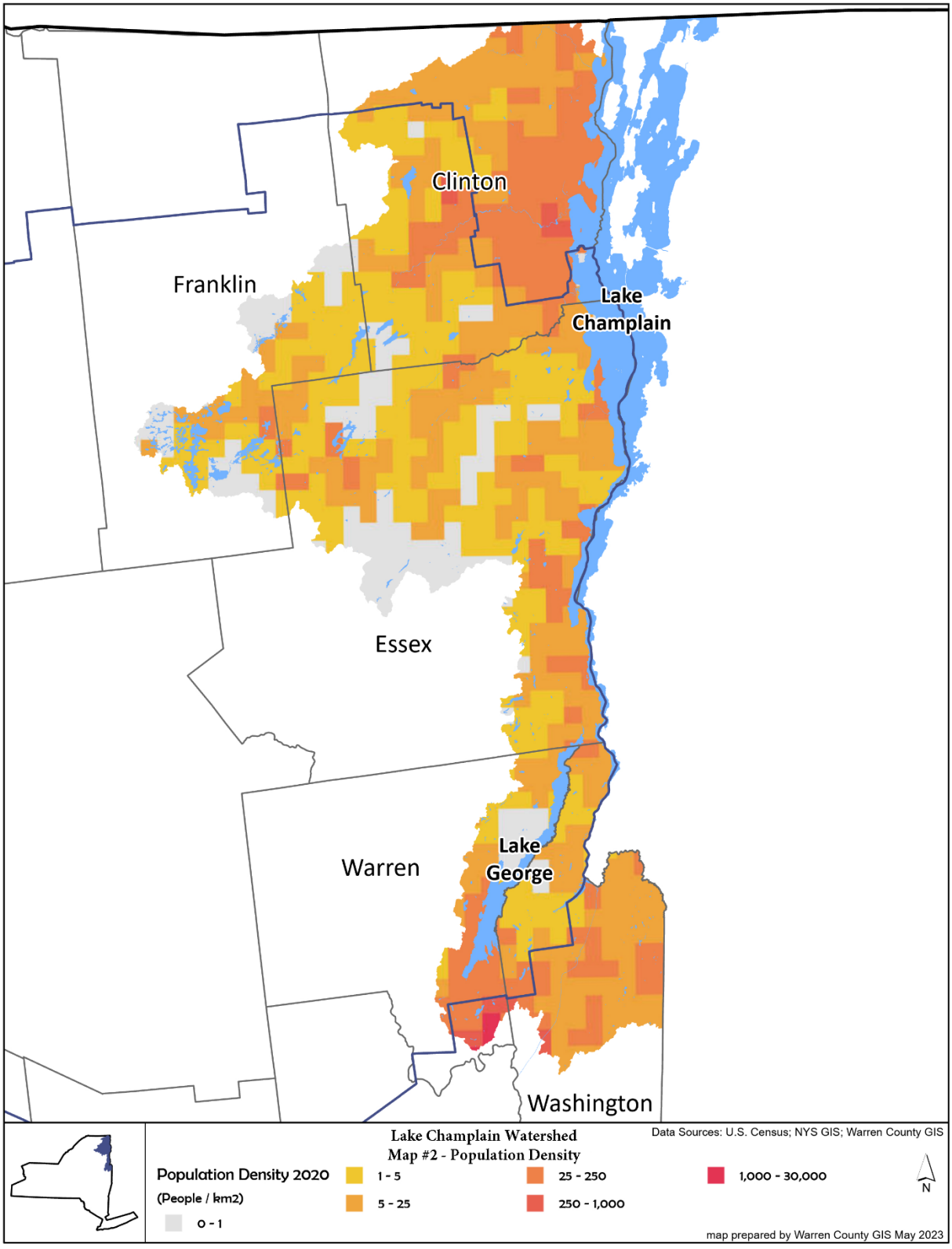
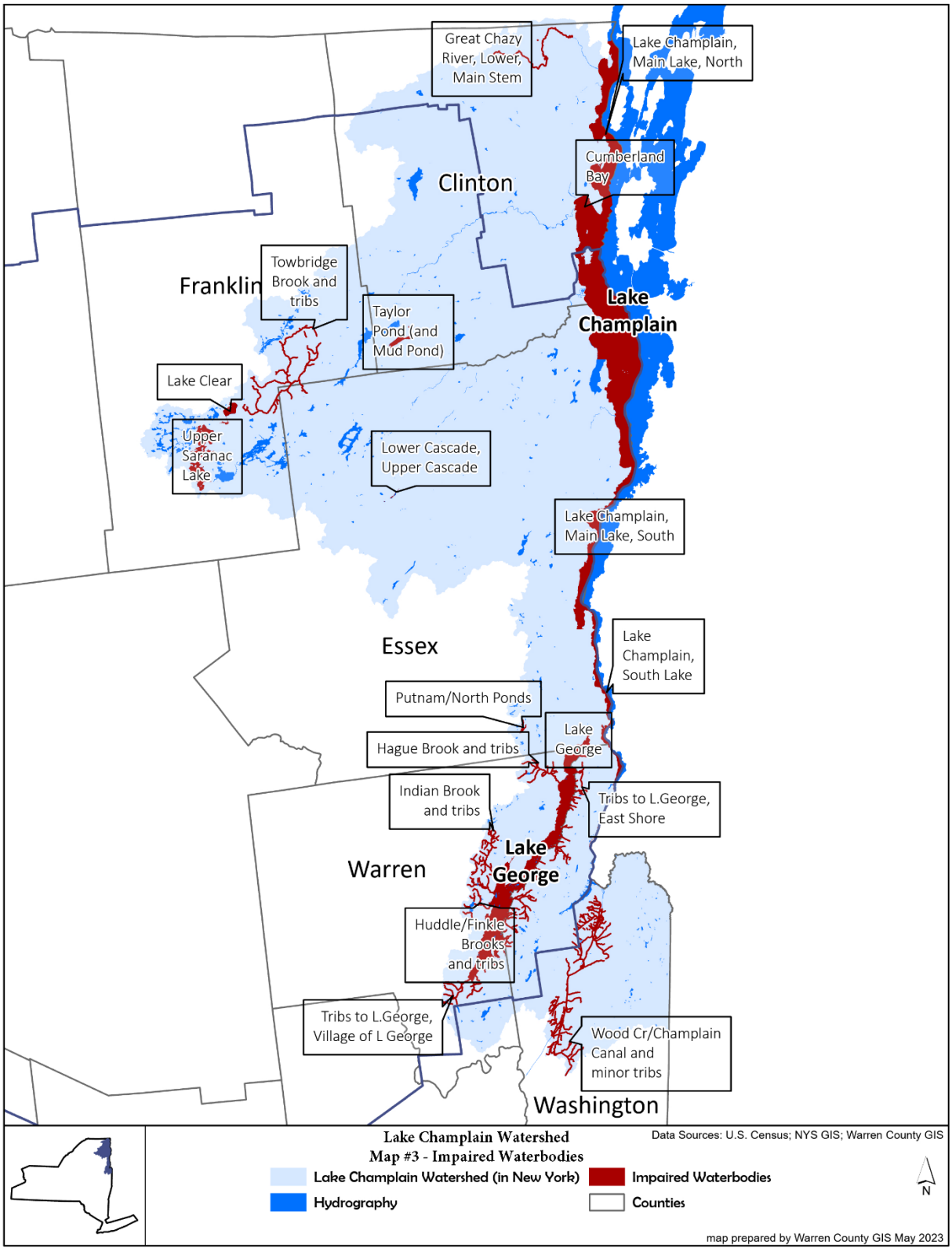
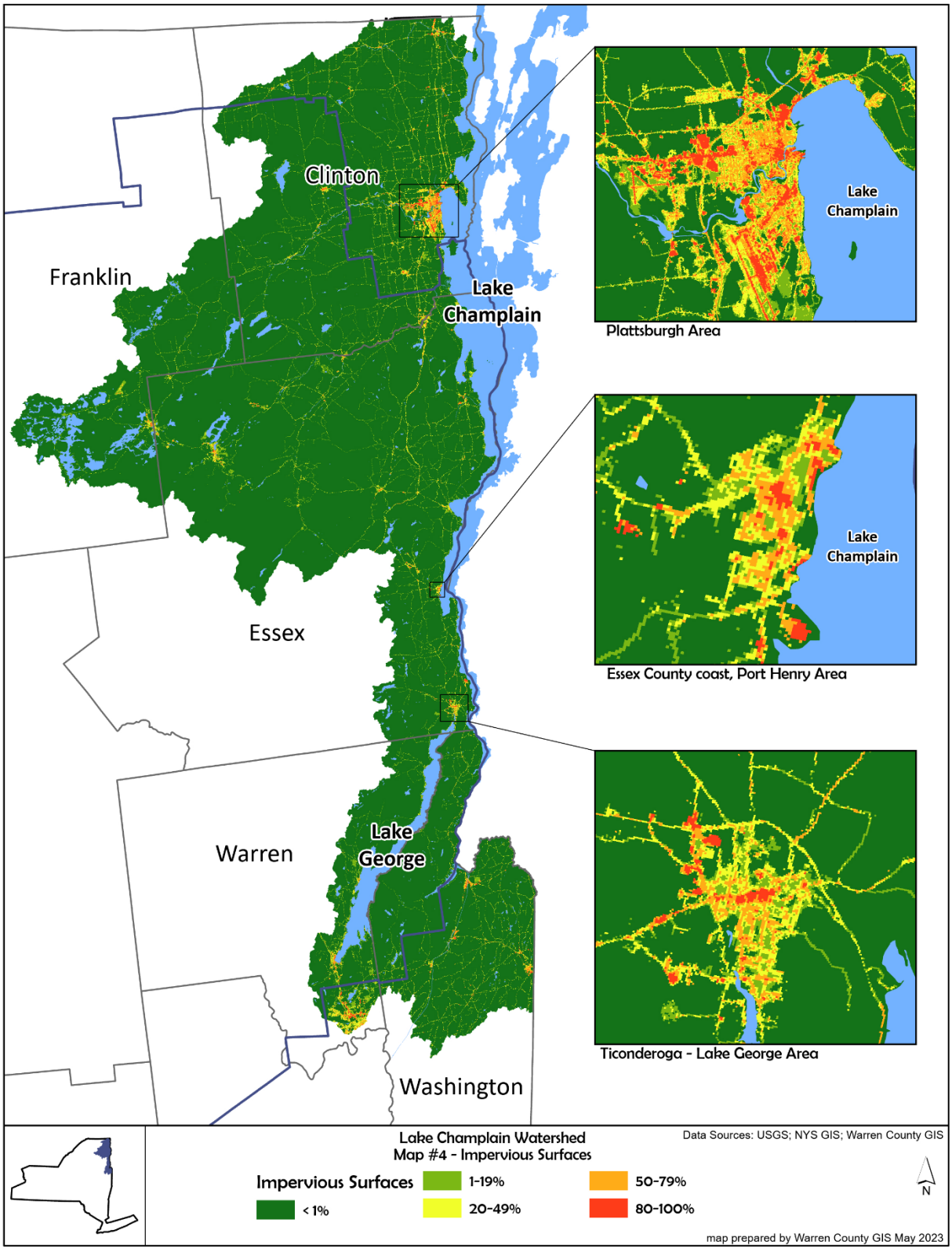
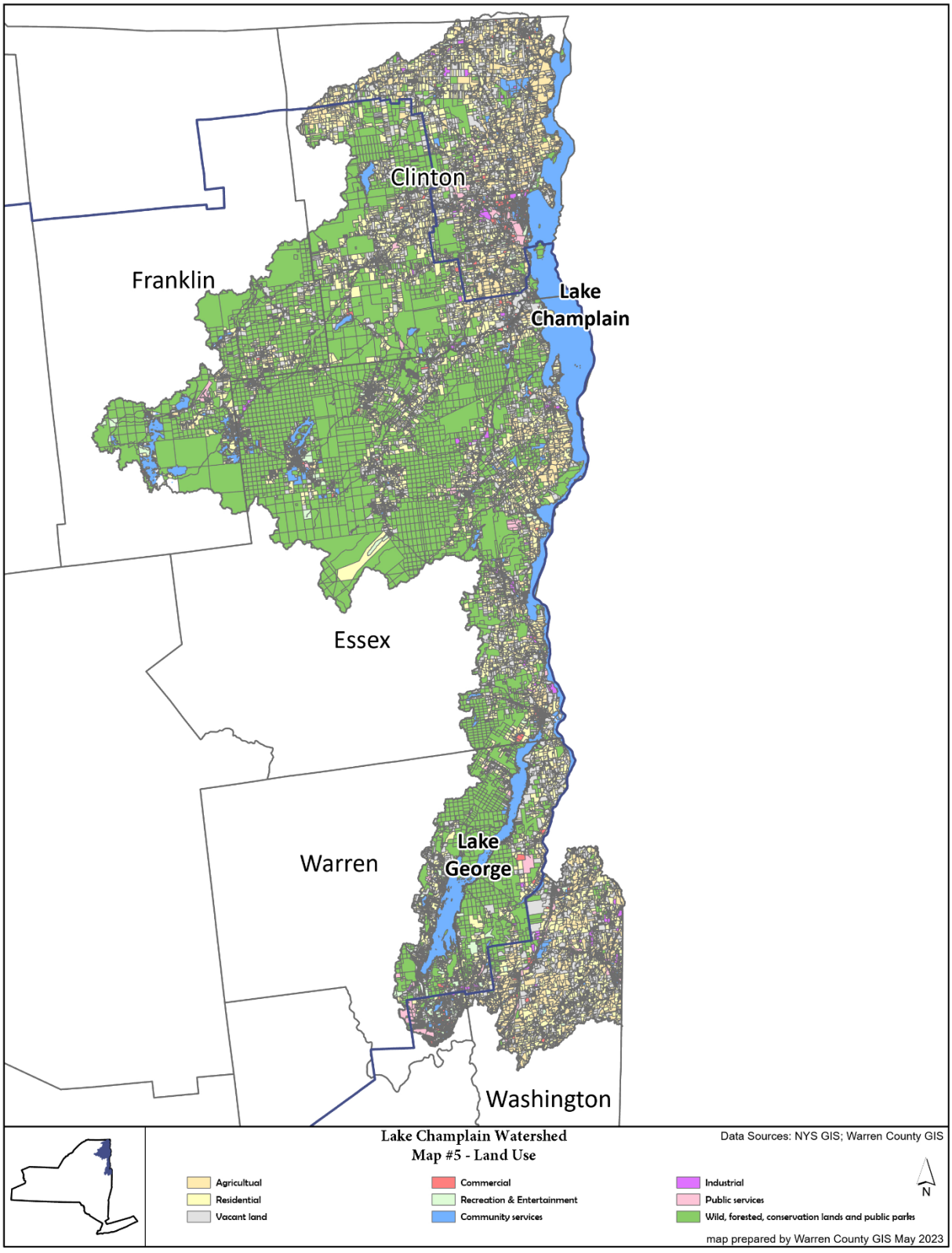
Appendix A: Watershed Characterization Maps

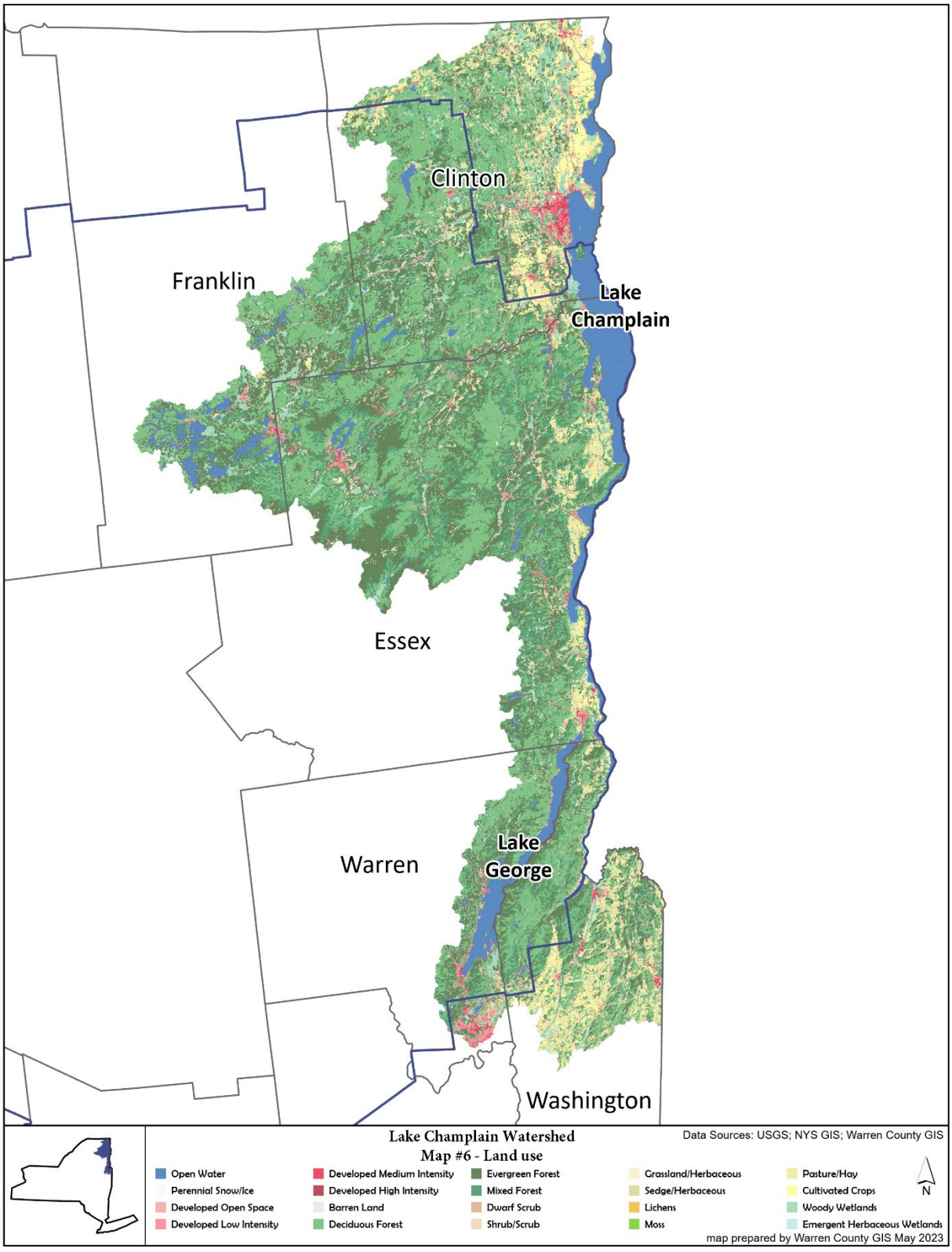

CANADA
Clinton
Franklin
Lake
Champlain
VERMONT
Essex
Warren
Lake
George
Washington
Lake Champlain Watershed
Map #1 - Watershed Boundary
Data Sources: USGS; NYS GIS; Warren County GIS
Adirondack Park
Counties
Hydrography
Lake Champlain Watershed (in New York)
N
map prepared by Warren County GIS May 2023

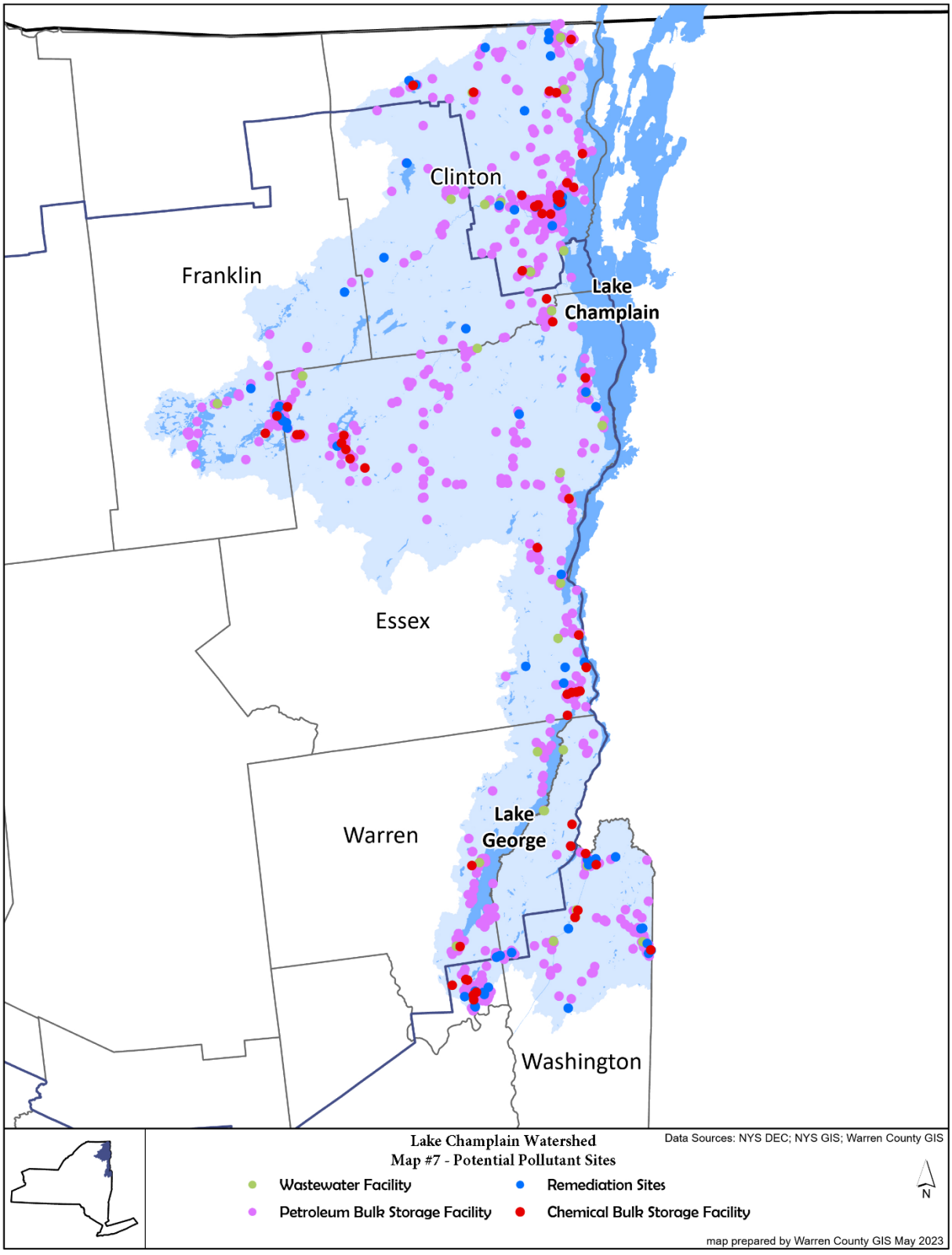

Clinton
Franklin
Lake
Champlain
Essex
Warren
Lake
George
Washington
Lake Champlain Watershed
Map #2 - Population Density
Data Sources: U.S. Census; NYS GIS; Warren County GIS
Population Density 2020
(People / km2)
0 - 1
1 - 5
5 - 25
25 - 250
250 - 1,000
1,000 - 30,000
N
map prepared by Warren County GIS May 2023


Great Chazy River, Lower, Main Stem
Lake Champlain, Main Lake, North
Cumberland Bay
Clinton
Franklin
Towbridge Brook and tribs
Taylor Pond (and Mud Pond)
Lake Champlain
Lake Clear
Upper Saranac Lake
Lower Cascade, Upper Cascade
Lake Champlain, Main Lake, South
Essex
Lake Champlain, South Lake
Putnam/North Ponds
Lake George
Hague Brook and tribs
Indian Brook and tribs
Tribs to L.George, East Shore
Warren
Lake George
Huddle/Finkle Brooks and tribs
Tribs to L.George, Village of L George
Wood Cr/Champlain Canal and minor tribs
Washington
Lake Champlain Watershed
Map #3 - Impaired Waterbodies
Data Sources: U.S. Census; NYS GIS; Warren County GIS
Lake Champlain Watershed (in New York)
Impaired Waterbodies
Hydrography
Counties
N
map prepared by Warren County GIS May 2023


Clinton
Franklin
Lake Champlain
Essex
Warren
Lake George
Washington
Lake Champlain
Plattsburgh Area
Lake Champlain
Essex County coast, Port Henry Area
Ticonderoga - Lake George Area
Lake Champlain Watershed
Map #4 - Impervious Surfaces
Data Sources: USGS; NYS GIS; Warren County GIS
Impervious Surfaces
< 1%
1-19%
20-49%
50-79%
80-100%
N
map prepared by Warren County GIS May 2023


Clinton
Franklin
Lake
Champlain
Essex
Warren
Lake
George
Washington
Lake Champlain Watershed
Map #5 - Land Use
Data Sources: NYS GIS; Warren County GIS
Agricultual
Residential
Vacant land
Commercial
Recreation & Entertainment
Community services
Industrial
Public services
Wild, forested, conservation lands and public parks
N
map prepared by Warren County GIS May 2023


Clinton
Franklin
Lake
Champlain
Essex
Warren
Lake
George
Washington
Lake Champlain Watershed
Map #6 - Land use
Data Sources: USGS; NYS GIS; Warren County GIS
Open Water
Perennial Snow/Ice
Developed Open Space
Developed Low Intensity
Developed Medium Intensity
Developed High Intensity
Barren Land
Deciduous Forest
Evergreen Forest
Mixed Forest
Dwarf Scrub
Shrub/Scrub
Grassland/Herbaceous
Sedge/Herbaceous
Lichens
Moss
Pasture/Hay
Cultivated Crops
Woody Wetlands
Emergent Herbaceous Wetlands
N
map prepared by Warren County GIS May 2023


Clinton
Franklin
Lake
Champlain
Essex
Warren
Lake
George
Washington
Lake Champlain Watershed
Map #7 - Potential Pollutant Sites
Data Sources: NYS DEC; NYS GIS; Warren County GIS
Wastewater Facility
Remediation Sites
Petroleum Bulk Storage Facility
Chemical Bulk Storage Facility
N
map prepared by Warren County GIS May 2023

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