Black River Watershed Management Plan

Final Report Part II:

Appendices

May 2010

This watershed management plan was prepared for the New York State Department of State Division of Coastal Resources with funds provided under Title 11 of the Environmental Protection Fund, Local Waterfront Revitalization Program.

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8 Appendices

8.1 Watershed Glossary of Terms

Anaerobic – Occurring without oxygen, especially of an environment or organism.

Anoxic Sediments – Sediments in areas of fresh water that are depleted of dissolved oxygen.

Anthropogenic – Processes or materials that are derived from human activities, as opposed to those occurring in natural environments without human influence.

Biodiversity – Simply defined as the variety of life and all processes that keep life functioning. At the watershed level, biodiversity is the variation of life forms within a given ecosystem and is often used as a measure of the health of biological systems.

Built Environment – The man-made surroundings that provide the setting for human activity, ranging from the large-scale developments and transportation infrastructure to smaller residential areas. This term is often used in contrast to the "natural environment".

Contiguous – Areas that are in physical contact with one another. As it relates to flora and fauna, contiguous areas are those areas with similar ecological traits that are in physical contact with one another.

Ecozone – Individual geographic regions defined according to the geology, topography, climate, soils, vegetation, and land use of a given area.

Erosion – The removal of sediment, soil, rock and other particles in the natural environment by wind, water, or ice. Gravity and living organisms may also cause erosion.

Evapotranspiration – Describes the amount of water lost from a watershed through evaporation and transpiration. Evaporation is the movement of water to the air from surface water, soil, and canopy interception. Transpiration is the movement of water to the air from within plants.

Extirpation – The extinction of a species from a given study area, although that species still exists elsewhere (i.e., local extinction).

Groundwater – Water located beneath the ground surface in soil pore spaces and in the fractures of rock formations. Groundwater is naturally replenished by surface water from precipitation, streams, and rivers when this recharge reaches the water table.

Hydrology – The study of the movement, distribution, and quality of water in a given area.

Infiltration – Process by which water on the ground surface enters the soil. The infiltration rate is a measure of the rate at which soil is able to absorb rainfall or irrigation.

Macroinvertebrate – An invertebrate that is large enough to be seen without the use of a microscope. An invertebrate is an animal without a vertebral column and includes species such as worms, snails, and insects.

Moraines – Any glacially formed accumulation of unconsolidated glacial debris (soil and rock) which can occur in currently glaciated and formerly glaciated regions. Ground moraines are till covered areas with irregular topography and no ridges, often forming gently rolling hills or plains.

Nonpoint Source Pollution (NPS) – Water pollution affecting a water body from diffuse sources, such as polluted runoff from agricultural areas draining into a river or wind-borne debris blowing out to sea. NPS is derived from many different sources with no specific solution to rectify the problem, making it difficult to regulate. NPS is the leading cause of water pollution in the United States today.

Nutrient Load(ing) – The mass of nutrients carried by water into surrounding waterways over a period of time. Nutrients may enter the water from runoff, groundwater, or the air (in the form of wet deposition such as rain or snow as well as dry deposition).

Peak Flow – The largest discharge found in a stream channel in response to a particular rainfall or snowmelt event. The timing of peak flow after a given event is dependent on the imperviousness of the watershed, with peak flows occurring sooner in more heavily developed watersheds.

Permeability – The ability of water to move through soil. A soil's permeability is determined by its composition, with soils made up of larger particles (e.g., sand) being more permeable than those composed on smaller particles (e.g., clay).

Phytoplankton – Phytoplankton are microscopic plant-like organisms that live in water. These organisms are the foundation of the marine food chain.

Point Source Pollution – A single identifiable localized source of air, water, thermal, noise or light pollution. Point-source pollution generally comes from wastewater discharged from the pipes of industrial facilities and municipal sewage treatment plants into rivers, streams, lakes, and the ocean.

Potable Water – Water that is fit for consumption by humans and other animals (i.e., drinking water).

Sedimentation – Sedimentation is the deposition of eroded materials (i.e., soil) in a given waterbody. Deposits of sediments in ditches, streams, and rivers reduce their capacity to store water resulting in more frequent and severe flooding and increased property damage. Accumulations of sediment may result in severe damage to storm drain systems.
Siltation – see *Sedimentation*.

Stochastic Event – An event involving chance or probability.

Surface Water – Water collecting on the ground or in a stream, river, lake, wetland, or ocean. Surface water is naturally replenished by precipitation and naturally lost through discharge to evaporation and sub-surface seepage into the groundwater.

Taxon – A group of one or more organisms that have common characteristics (e.g., geographic population, genus, family, order) that differentiate the group from other such groups.

Topography – The surface shape and features of a given land area.

Turbidity – The cloudiness or haziness of water caused by individual particles (i.e., suspended solids). While heavier materials settle rapidly to the bottom, very small particles will settle only very slowly or not at all – these unsettled particles cause the water to appear turbid. Turbidity can be caused naturally by phytoplankton and natural sedimentation, as well as through human land disturbance activities, such as construction, that also lead to increased sedimentation.

Water Budget – A water budget is an assessment of all the inputs and outputs to a hydrologic system, including rainfall, evaporation, runoff, and seepage.

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8.2 Watershed Maps

MAP KEY
Map 1 – Project Location
Map 2 – Governance
Map 3 – Subwatersheds
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Map 6 – Land Cover
Map 7 – Population Density Year 1990
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Map 19 – Aquifers
Map 20 – Ecozones
Map 21 – Water Quality Results
Map 22 – Land Cover Results
Map 23 – Land Use & Ownership Results
Map 24 – Natural Resources Results

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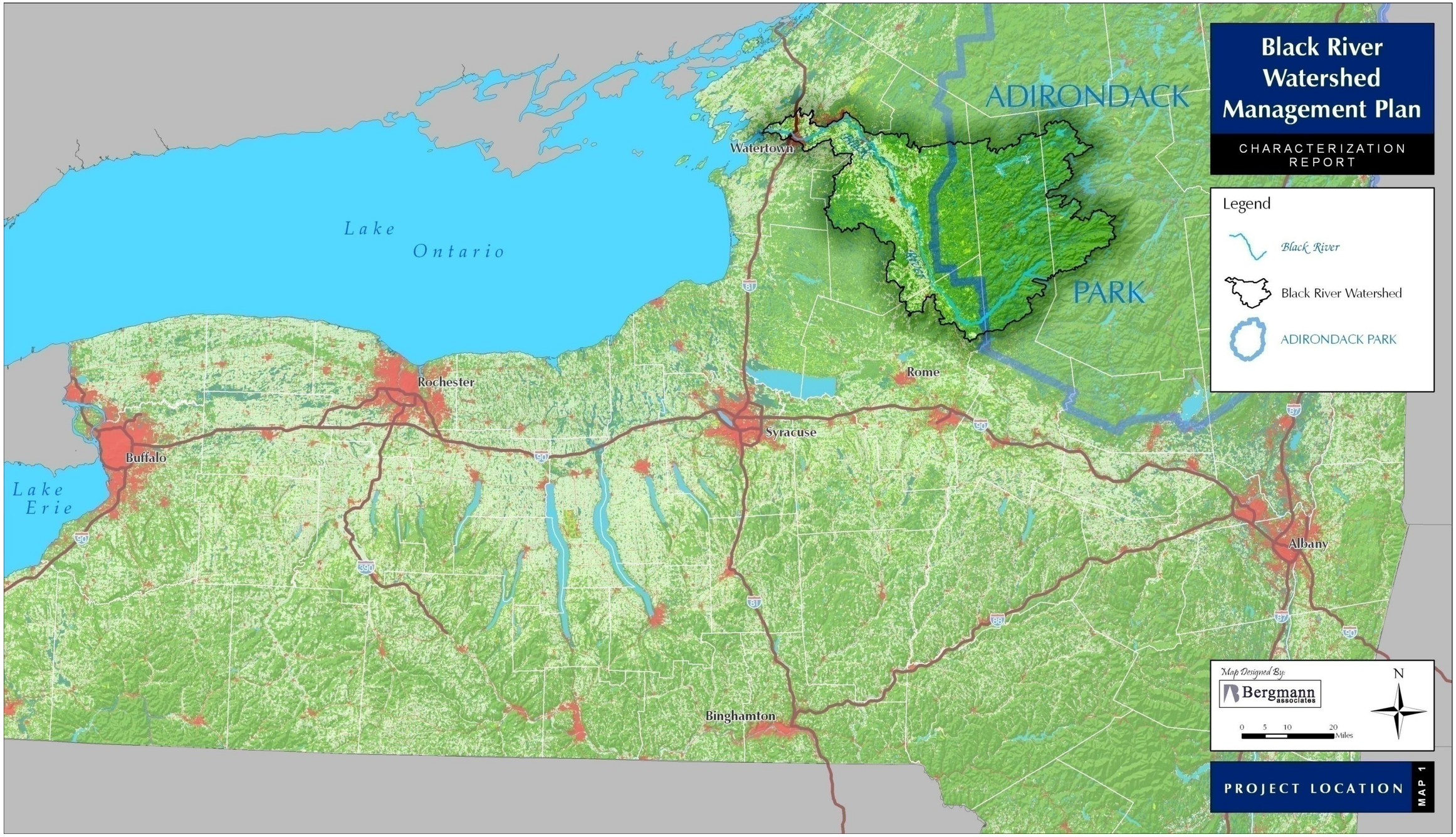
Black River Watershed Management Plan
CHARACTERIZATION REPORT
Legend
Black River
Black River Watershed
ADIRONDACK PARK
ADIRONDACK
PARK
Lake Ontario
Lake Erie
Watertown
Rochester
Buffalo
Syracuse
Rome
Albany
Binghamton
Map Designed By:
Bergmann associates
0 5 10 20
Miles
N
PROJECT LOCATION
MAP 1

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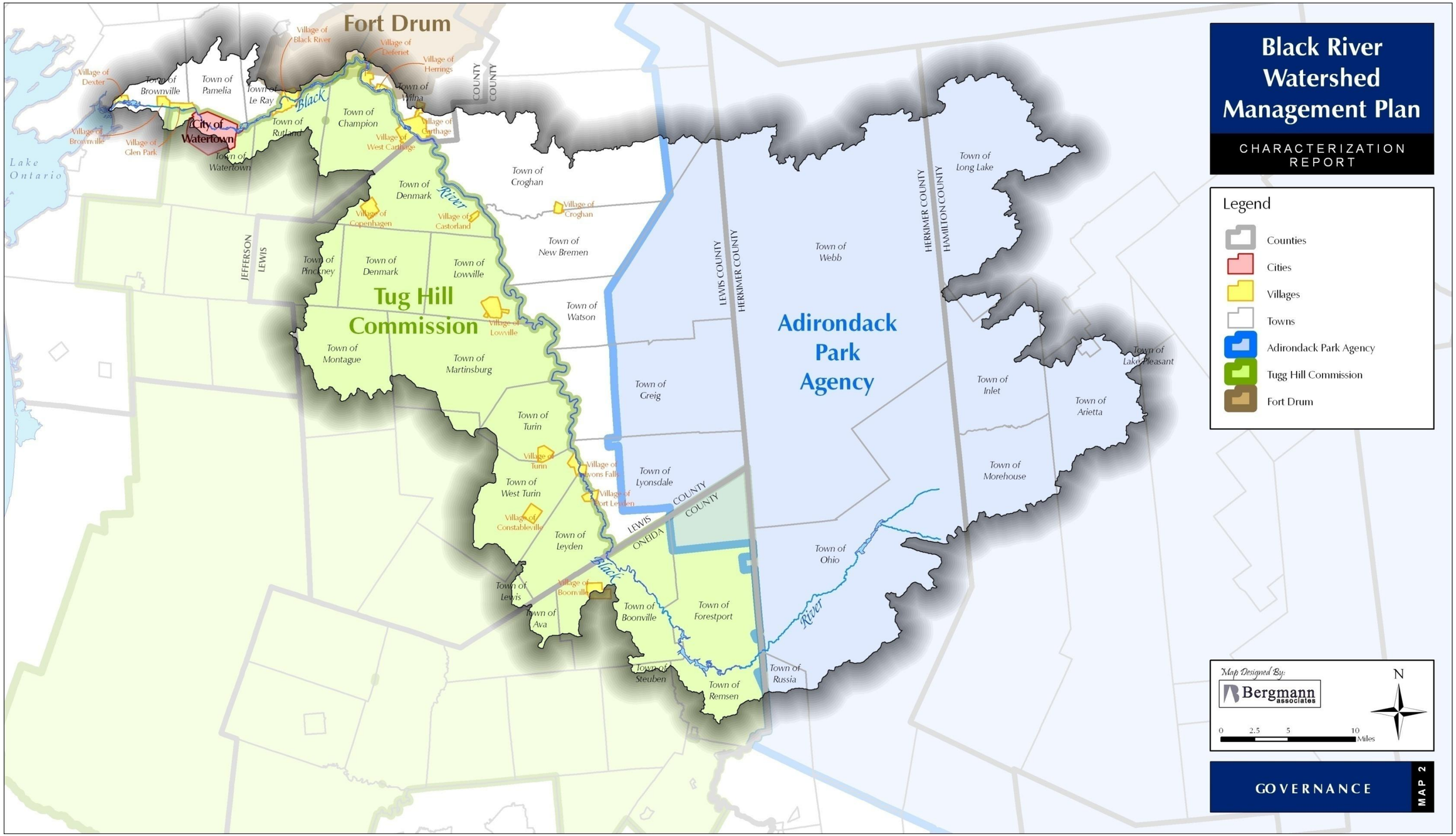
Fort Drum
Tug Hill Commission
Adirondack Park Agency
Lake Ontario
Black River
Village of Dexter
Village of Brownville
Village of Glen Park
Village of Black River
Village of Deferiet
Village of Herrings
Village of Carthage
Village of West Carthage
Village of Copenhagen
Village of Castorland
Village of Croghan
Village of Lowville
Village of Turin
Village of Lyons Falls
Village of Port Leyden
Village of Constableville
Village of Boonville
City of Watertown
Town of Brownville
Town of Pamelia
Town of Le Ray
Town of Rutland
Town of Champion
Town of Watertown
Town of Wilna
Town of Denmark
Town of Croghan
Town of New Bremen
Town of Pinckney
Town of Lowville
Town of Montague
Town of Martinsburg
Town of Watson
Town of Turin
Town of West Turin
Town of Leyden
Town of Lewis
Town of Ava
Town of Lyonsdale
Town of Boonville
Town of Forestport
Town of Steuben
Town of Remsen
Town of Webb
Town of Greig
Town of Ohio
Town of Russia
Town of Long Lake
Town of Inlet
Town of Morehouse
Town of Arietta
Town of Lake Pleasant
JEFFERSON COUNTY
LEWIS COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
ONEIDA COUNTY
Black River
Black River Watershed Management Plan
CHARACTERIZATION REPORT
Legend
Counties
Cities
Villages
Towns
Adirondack Park Agency
Tugg Hill Commission
Fort Drum
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
GOVERNANCE
MAP 2

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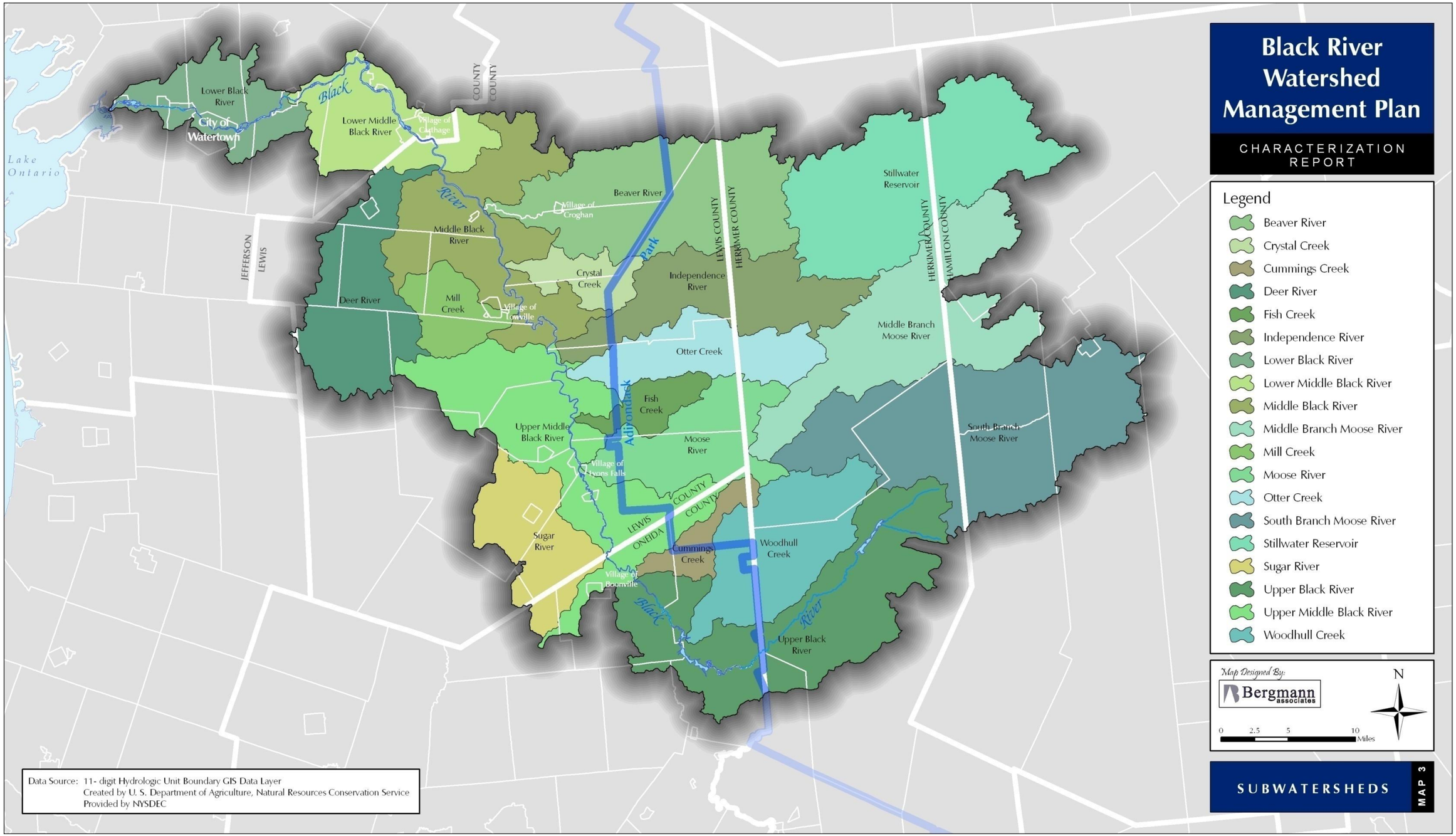
Black River Watershed Management Plan
CHARACTERIZATION REPORT
Legend
Beaver River
Crystal Creek
Cummings Creek
Deer River
Fish Creek
Independence River
Lower Black River
Lower Middle Black River
Middle Black River
Middle Branch Moose River
Mill Creek
Moose River
Otter Creek
South Branch Moose River
Stillwater Reservoir
Sugar River
Upper Black River
Upper Middle Black River
Woodhull Creek
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
SUBWATERSHEDS
MAP 3
Data Source: 11- digit Hydrologic Unit Boundary GIS Data Layer
Created by U. S. Department of Agriculture, Natural Resources Conservation Service
Provided by NYSDEC
Lake Ontario
Lower Black River
City of Watertown
Black River
Lower Middle Black River
Village of Carthage
Beaver River
Village of Croghan
Middle Black River
Crystal Creek
Deer River
Mill Creek
Village of Lowville
Independence River
Otter Creek
Fish Creek
Upper Middle Black River
Moose River
Village of Lyons Falls
Sugar River
Cummings Creek
Woodhull Creek
Village of Boonville
Upper Black River
Stillwater Reservoir
Middle Branch Moose River
South Branch Moose River
Adirondack Park
JEFFERSON COUNTY
LEWIS COUNTY
ONEIDA COUNTY
HERKIMER COUNTY
HAMILTON COUNTY

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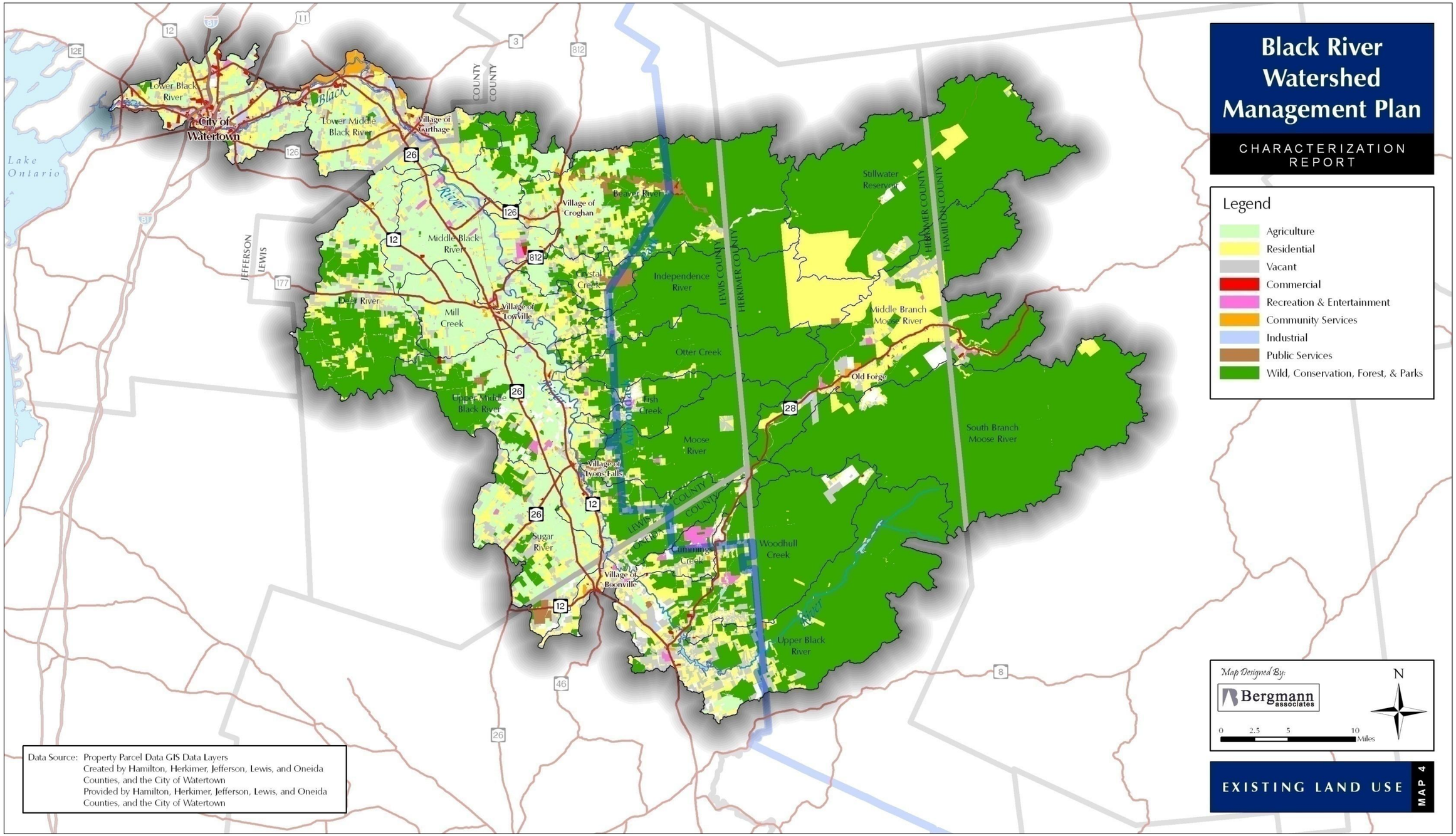
Black River Watershed Management Plan
CHARACTERIZATION REPORT
Legend
Agriculture
Residential
Vacant
Commercial
Recreation & Entertainment
Community Services
Industrial
Public Services
Wild, Conservation, Forest, & Parks
Lake Ontario
City of Watertown
Lower Black River
Lower Middle Black River
Village of Carthage
Middle Black River
Village of Croghan
Beaver River
Stillwater Reservoir
Independence River
Crystal Creek
Deer River
Mill Creek
Village of Lowville
Otter Creek
Middle Branch Moose River
Old Forge
Upper Middle Black River
Fish Creek
Moose River
South Branch Moose River
Village of Lyons Falls
Sugar River
Cummings Creek
Woodhull Creek
Village of Boonville
Upper Black River
JEFFERSON COUNTY
LEWIS COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
EXISTING LAND USE MAP 4
Data Source: Property Parcel Data GIS Data Layers
Created by Hamilton, Herkimer, Jefferson, Lewis, and Oneida Counties, and the City of Watertown
Provided by Hamilton, Herkimer, Jefferson, Lewis, and Oneida Counties, and the City of Watertown

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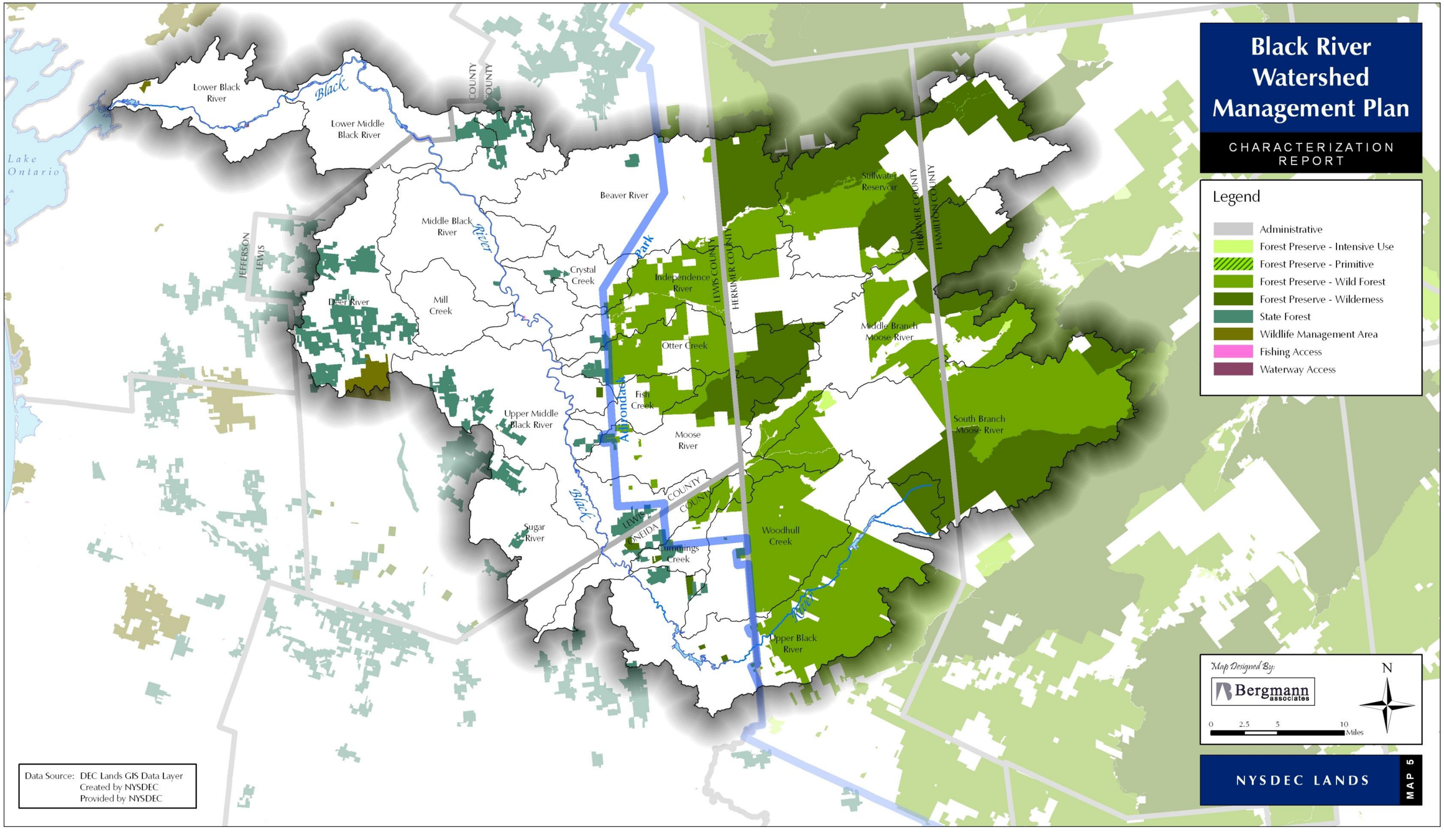
Black River Watershed Management Plan
CHARACTERIZATION REPORT
Legend
Administrative
Forest Preserve - Intensive Use
Forest Preserve - Primitive
Forest Preserve - Wild Forest
Forest Preserve - Wilderness
State Forest
Wildlife Management Area
Fishing Access
Waterway Access
Lake Ontario
Lower Black River
Lower Middle Black River
Middle Black River
Upper Middle Black River
Upper Black River
Beaver River
Deer River
Mill Creek
Crystal Creek
Independence River
Otter Creek
Fish Creek
Moose River
Sugar River
Cummings Creek
Woodhull Creek
Stillwater Reservoir
Middle Branch Moose River
South Branch Moose River
Black River
Adirondack Park
JEFFERSON COUNTY
LEWIS COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
ONEIDA COUNTY
Data Source: DEC Lands GIS Data Layer
Created by NYSDEC
Provided by NYSDEC
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
NYSDEC LANDS
MAP 5

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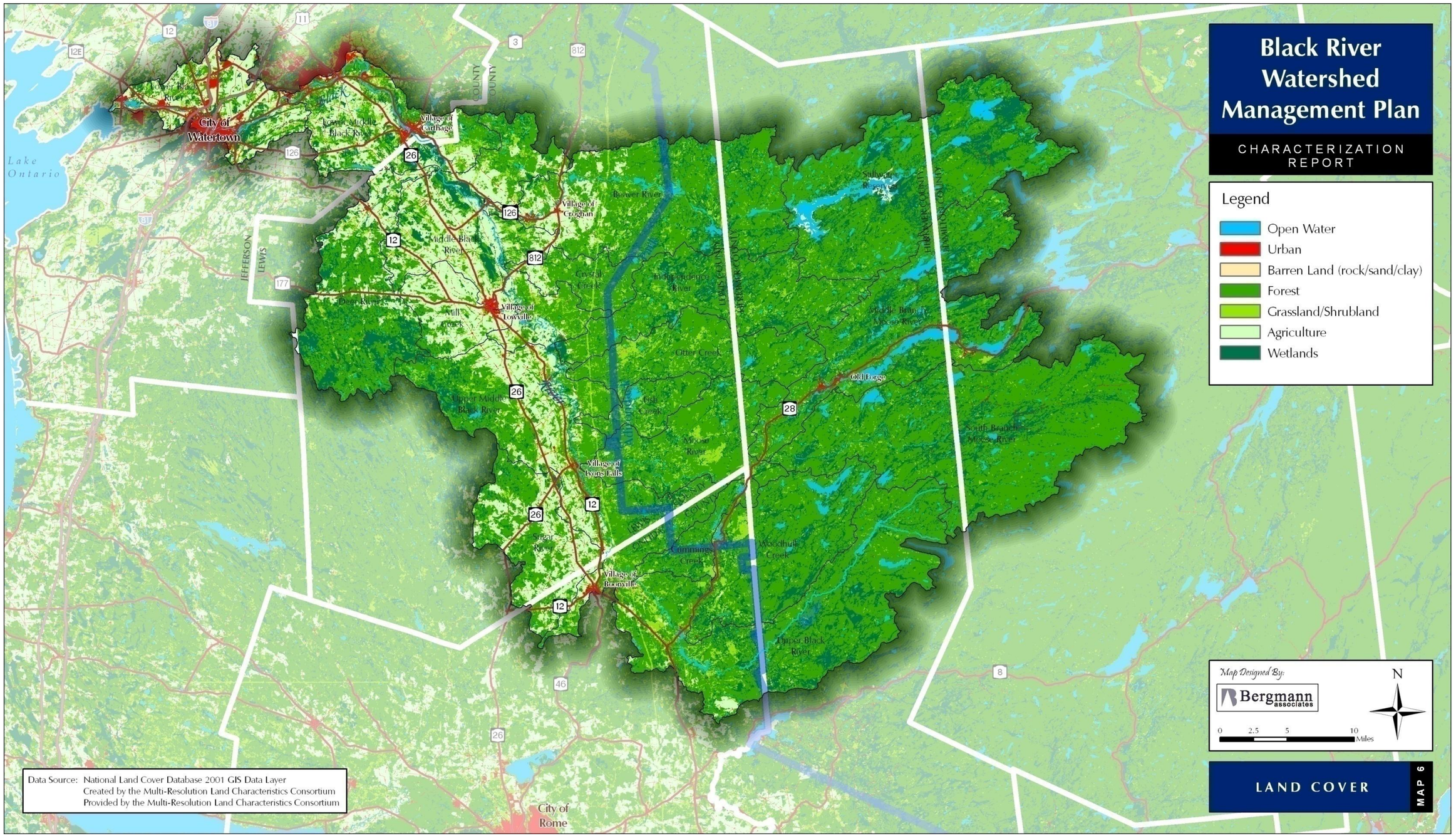
Black River Watershed Management Plan
CHARACTERIZATION REPORT
Legend
Open Water
Urban
Barren Land (rock/sand/clay)
Forest
Grassland/Shrubland
Agriculture
Wetlands
Lake Ontario
City of Watertown
Village of Carthage
Village of Croghan
Village of LowVille
Village of Lyons Falls
Village of Boonville
City of Rome
Lower Black River
Lower Middle Black River
Middle Black River
Upper Middle Black River
Upper Black River
Beaver River
Deer River
Mill Creek
Crystal Creek
Independence River
Otter Creek
Fish Creek
Moose River
Sugar River
Cummings Creek
Woodhull Creek
Sulphur Reservoir
Middle Branch Moose River
South Branch Moose River
Old Forge
JEFFERSON COUNTY
LEWIS COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
Data Source: National Land Cover Database 2001 GIS Data Layer
Created by the Multi-Resolution Land Characteristics Consortium
Provided by the Multi-Resolution Land Characteristics Consortium
LAND COVER
MAP 6

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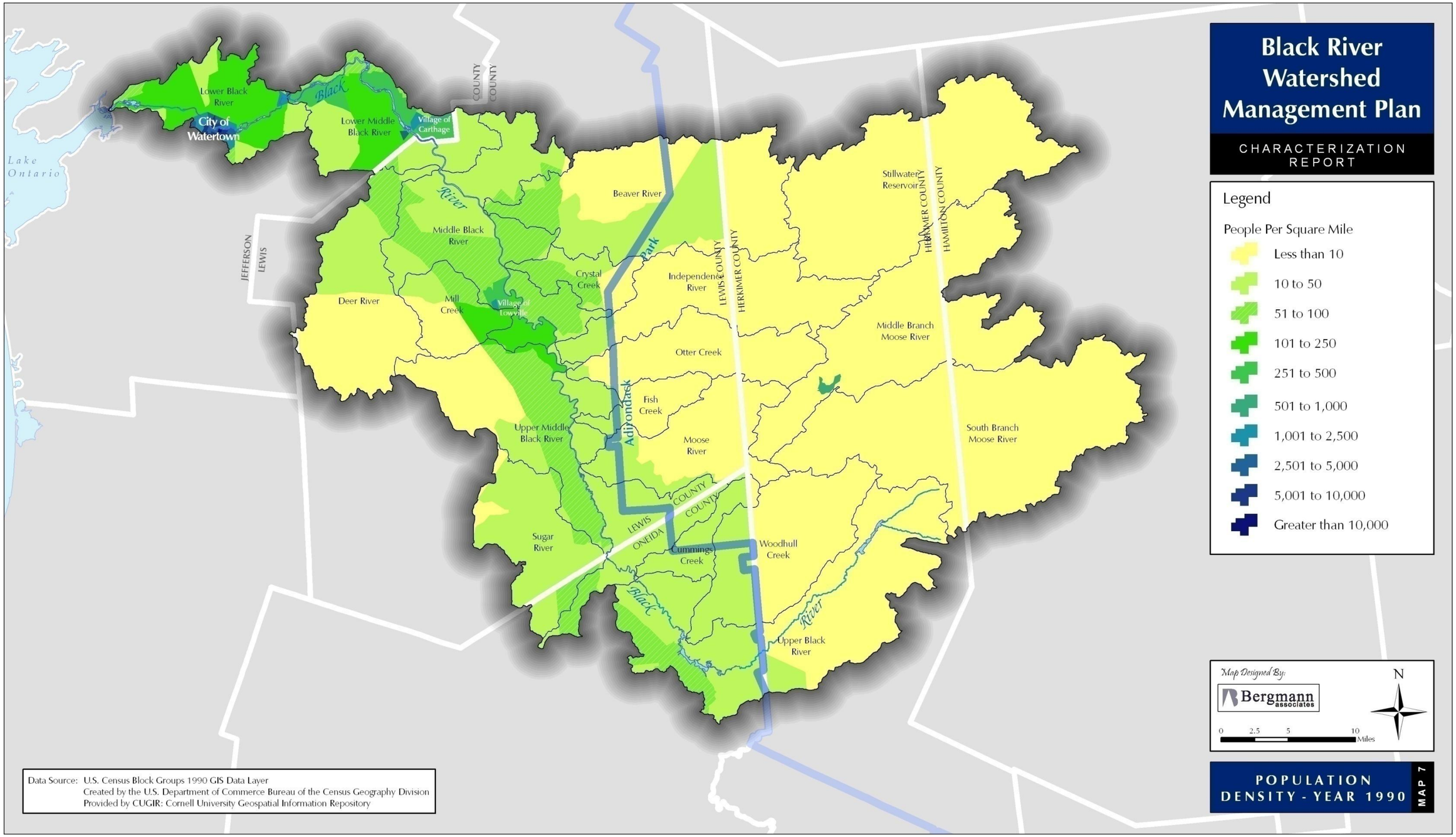
Black River Watershed Management Plan
CHARACTERIZATION REPORT
Legend
People Per Square Mile
Less than 10
10 to 50
51 to 100
101 to 250
251 to 500
501 to 1,000
1,001 to 2,500
2,501 to 5,000
5,001 to 10,000
Greater than 10,000
Lake Ontario
Lower Black River
City of Watertown
Lower Middle Black River
Village of Carthage
Black River
Middle Black River
Beaver River
Stillwater Reservoir
Crystal Creek
Independence River
Deer River
Mill Creek
Village of Lowville
Otter Creek
Middle Branch Moose River
Fish Creek
Upper Middle Black River
Moose River
South Branch Moose River
Sugar River
Cummings Creek
Woodhull Creek
Upper Black River
Adirondack Park
JEFFERSON COUNTY
LEWIS COUNTY
ONEIDA COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
Data Source: U.S. Census Block Groups 1990 GIS Data Layer
Created by the U.S. Department of Commerce Bureau of the Census Geography Division
Provided by CUGIR: Cornell University Geospatial Information Repository
POPULATION DENSITY - YEAR 1990
MAP 7

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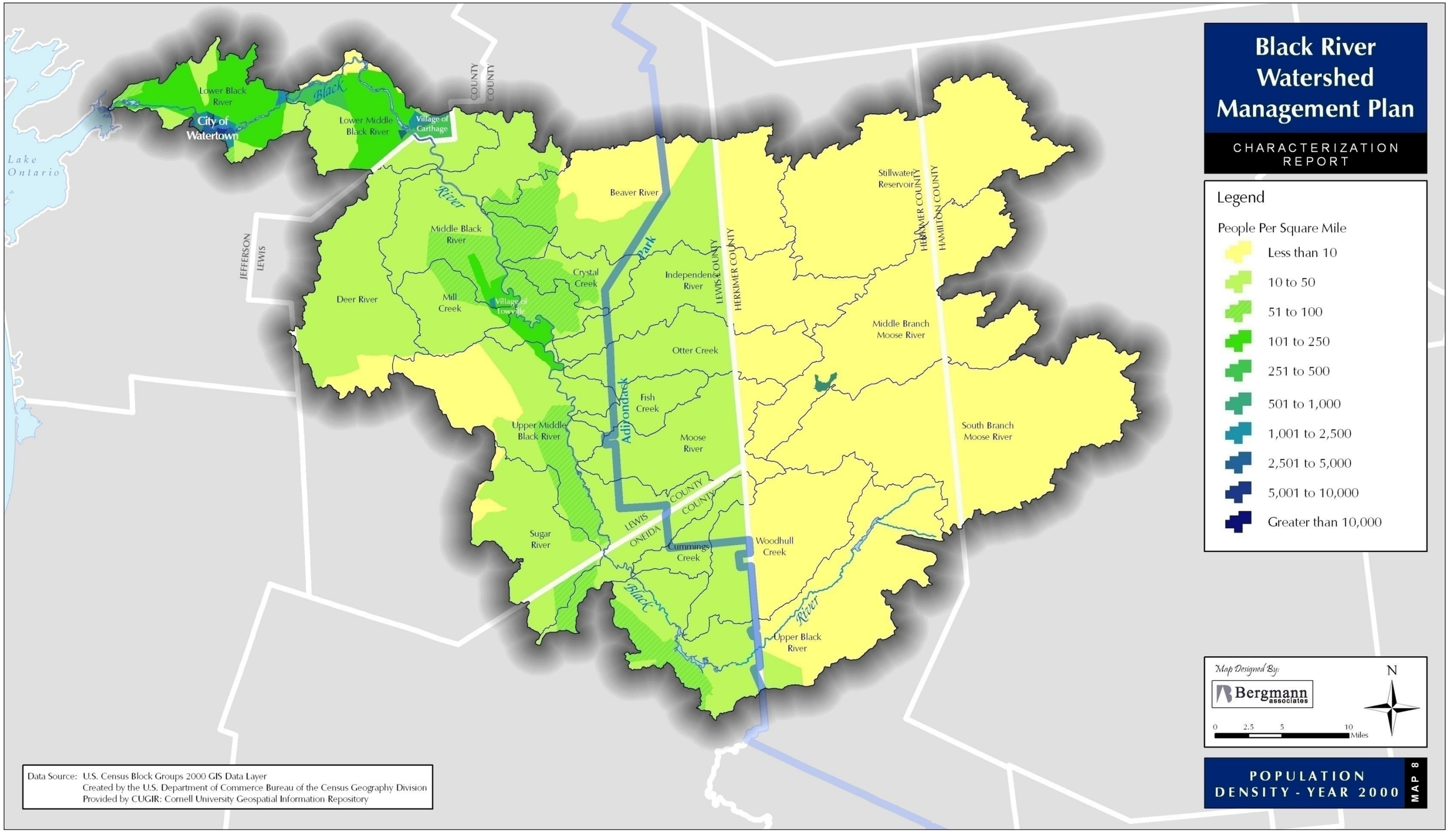
Black River Watershed Management Plan
CHARACTERIZATION REPORT
Legend
People Per Square Mile
Less than 10
10 to 50
51 to 100
101 to 250
251 to 500
501 to 1,000
1,001 to 2,500
2,501 to 5,000
5,001 to 10,000
Greater than 10,000
Lake Ontario
Lower Black River
City of Watertown
Black River
Lower Middle Black River
Village of Carthage
JEFFERSON COUNTY
LEWIS COUNTY
Beaver River
Middle Black River
Deer River
Mill Creek
Village of Lowville
Crystal Creek
Independence River
Stillwater Reservoir
HERKIMER COUNTY
HAMILTON COUNTY
Middle Branch Moose River
South Branch Moose River
Otter Creek
Fish Creek
Moose River
Adirondack Park
Upper Middle Black River
Sugar River
ONEIDA COUNTY
Cummings Creek
Woodhull Creek
Upper Black River
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
Data Source: U.S. Census Block Groups 2000 GIS Data Layer
Created by the U.S. Department of Commerce Bureau of the Census Geography Division
Provided by CUGIR: Cornell University Geospatial Information Repository
POPULATION DENSITY - YEAR 2000
MAP 8

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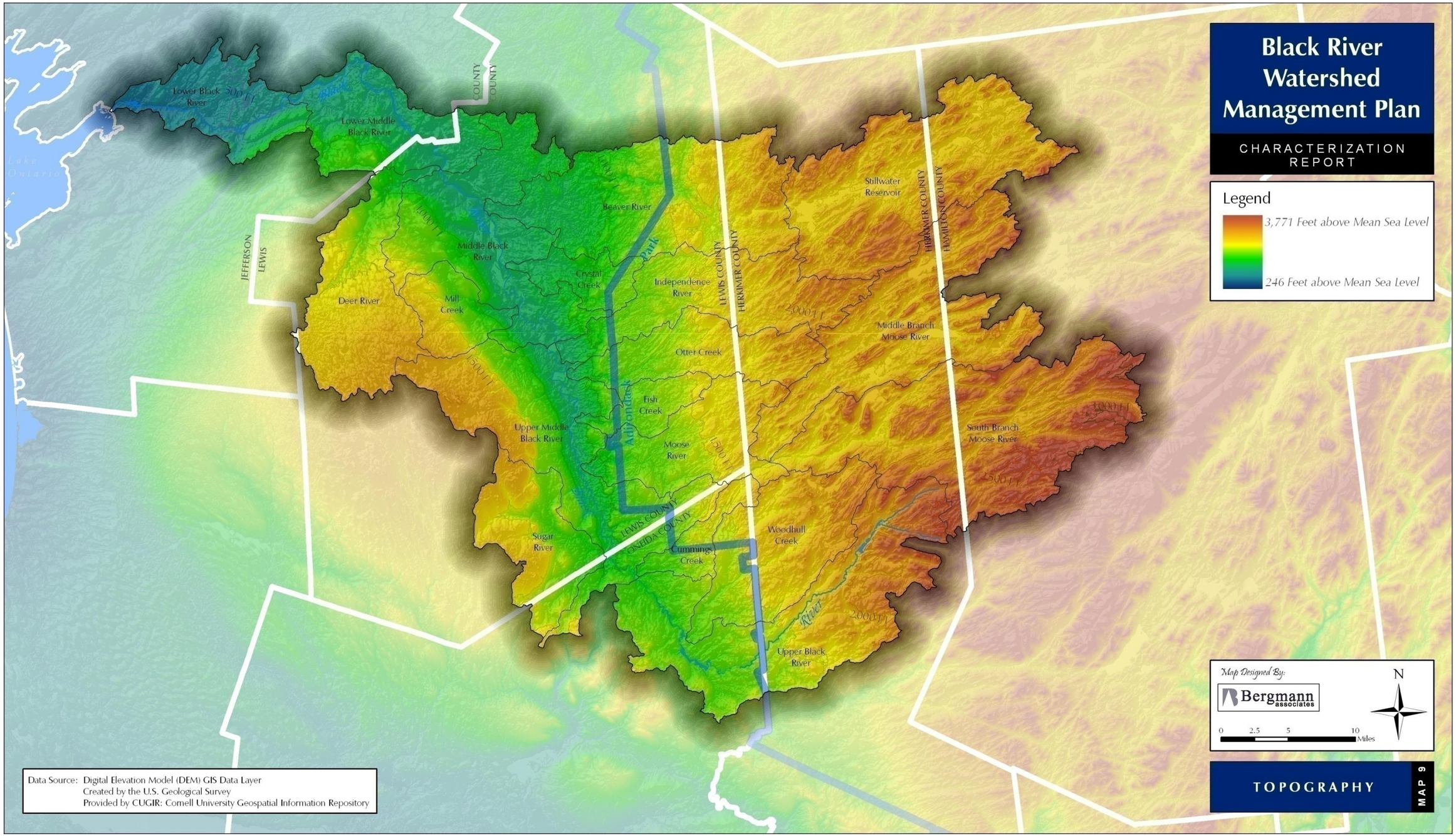
Black River Watershed Management Plan
CHARACTERIZATION REPORT
Legend
3,771 Feet above Mean Sea Level
246 Feet above Mean Sea Level
Lower Black River
Lower Middle Black River
Middle Black River
Upper Middle Black River
Upper Black River
Beaver River
Deer River
Mill Creek
Crystal Creek
Independence River
Otter Creek
Fish Creek
Moose River
Sugar River
Cummings Creek
Woodhull Creek
Stillwater Reservoir
Middle Branch Moose River
South Branch Moose River
Lake Ontario
Adirondack Park
JEFFERSON COUNTY
LEWIS COUNTY
ONEIDA COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
1000 FT
1500 FT
2000 FT
2500 FT
3000 FT
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
Data Source: Digital Elevation Model (DEM) GIS Data Layer
Created by the U.S. Geological Survey
Provided by CUGIR: Cornell University Geospatial Information Repository
TOPOGRAPHY
MAP 9

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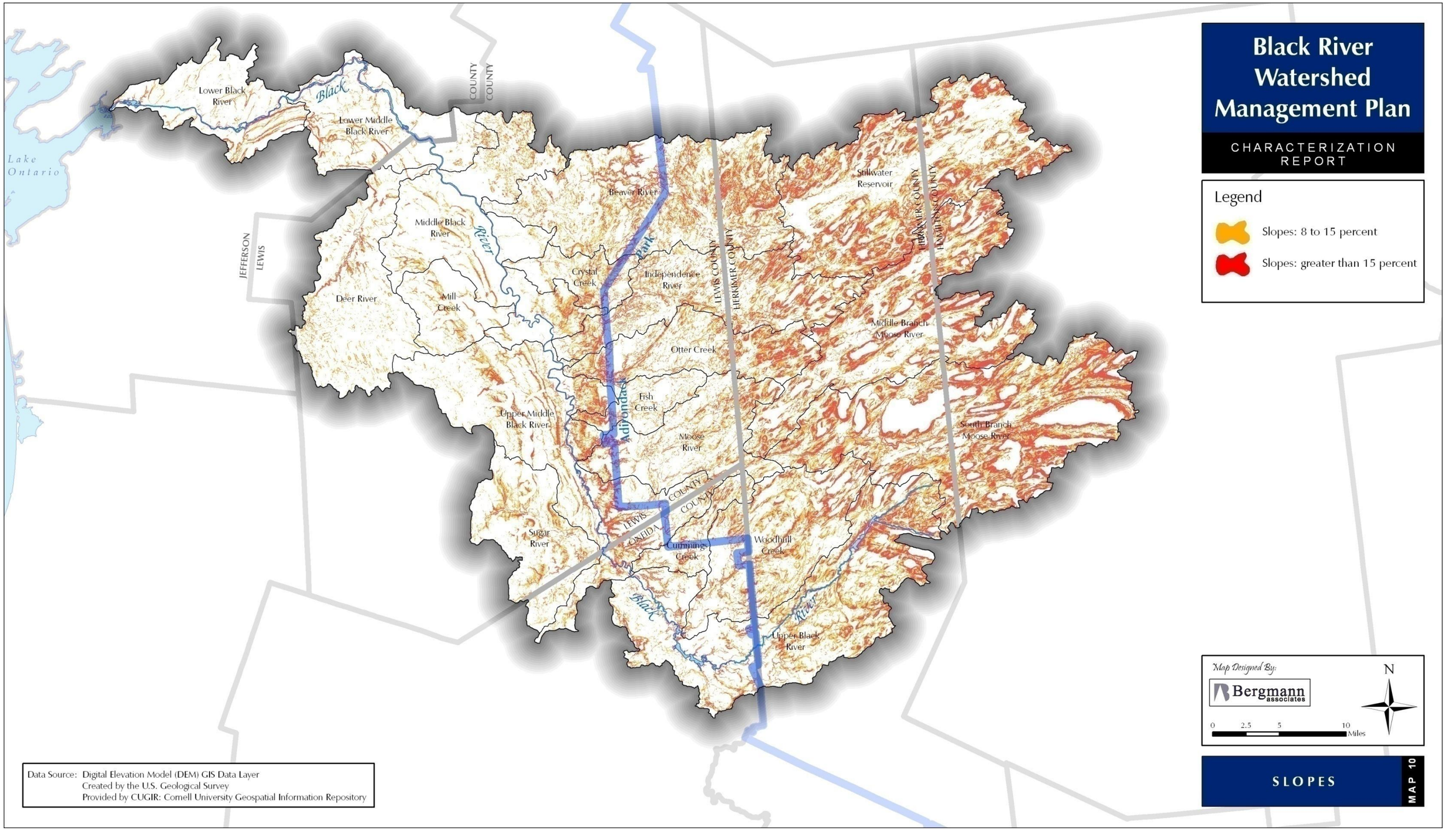
Black River Watershed Management Plan
CHARACTERIZATION REPORT
Legend
Slopes: 8 to 15 percent
Slopes: greater than 15 percent
Lake Ontario
Lower Black River
Black River
Lower Middle Black River
Middle Black River
Deer River
Mill Creek
Crystal Creek
Beaver River
Independence River
Otter Creek
Fish Creek
Moose River
Upper Middle Black River
Sugar River
Cummings Creek
Woodhull Creek
Upper Black River
Stillwater Reservoir
Middle Branch Moose River
South Branch Moose River
JEFFERSON COUNTY
LEWIS COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
ONEIDA COUNTY
Adirondack Park
Data Source: Digital Elevation Model (DEM) GIS Data Layer
Created by the U.S. Geological Survey
Provided by CUGIR: Cornell University Geospatial Information Repository
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
SLOPES
MAP 10

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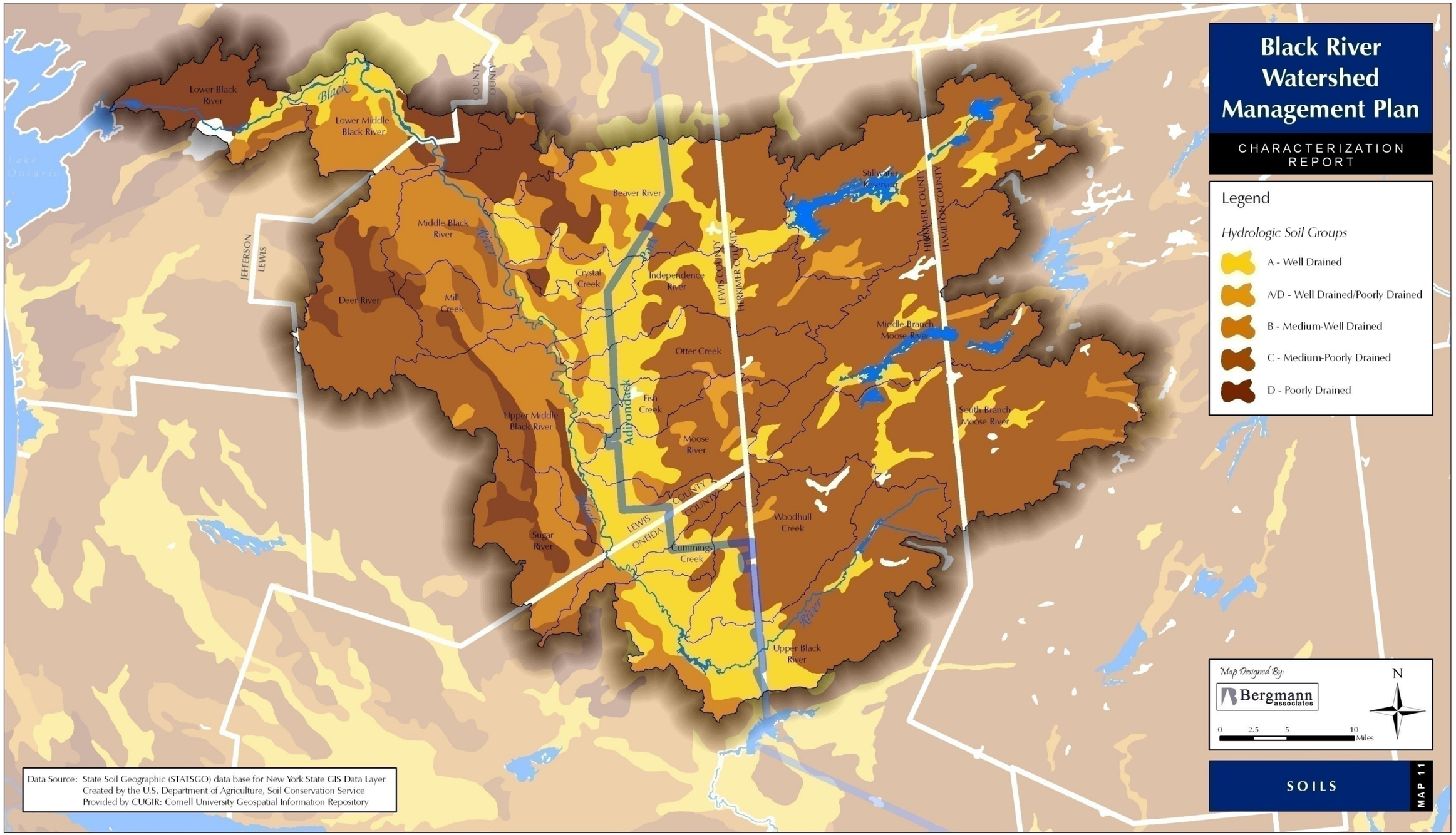
Black River Watershed Management Plan
CHARACTERIZATION REPORT
Legend
Hydrologic Soil Groups
A - Well Drained
A/D - Well Drained/Poorly Drained
B - Medium-Well Drained
C - Medium-Poorly Drained
D - Poorly Drained
Lake Ontario
Lower Black River
Lower Middle Black River
Middle Black River
Deer River
Mill Creek
Beaver River
Crystal Creek
Independence River
Otter Creek
Fish Creek
Moose River
Upper Middle Black River
Sugar River
Woodhull Creek
Cummings Creek
Upper Black River
Stillwater Reservoir
Middle Branch Moose River
South Branch Moose River
Black River
Adirondack
JEFFERSON COUNTY
LEWIS COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
ONEIDA COUNTY
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
Data Source: State Soil Geographic (STATSGO) data base for New York State GIS Data Layer
Created by the U.S. Department of Agriculture, Soil Conservation Service
Provided by CUGIR: Cornell University Geospatial Information Repository
SOILS
MAP 11

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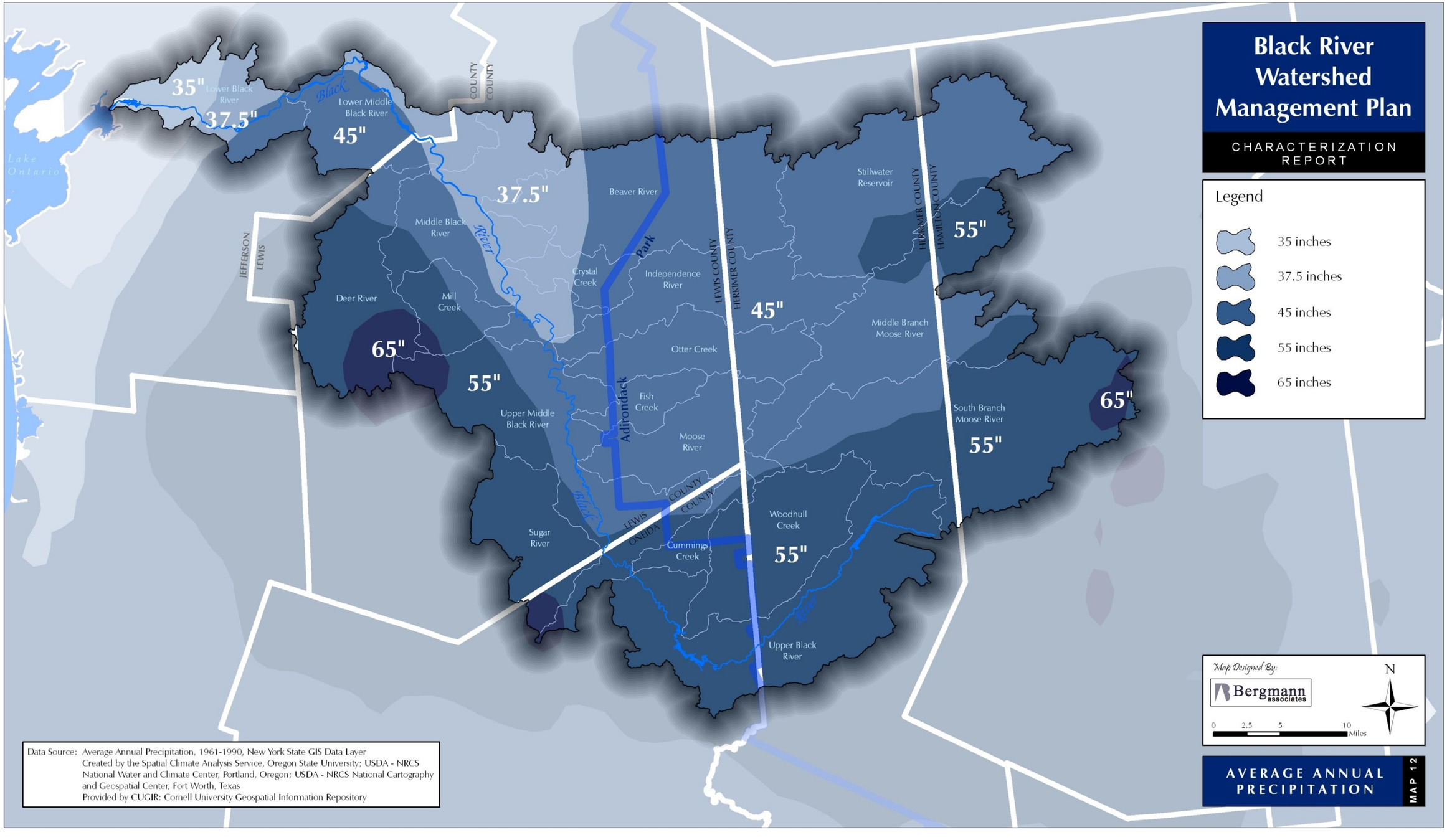
Black River Watershed Management Plan
CHARACTERIZATION REPORT
Legend
35 inches
37.5 inches
45 inches
55 inches
65 inches
35"
37.5"
45"
55"
65"
Lower Black River
Lower Middle Black River
Middle Black River
Beaver River
Deer River
Mill Creek
Crystal Creek
Independence River
Otter Creek
Fish Creek
Moose River
Upper Middle Black River
Stillwater Reservoir
Middle Branch Moose River
South Branch Moose River
Woodhull Creek
Cummings Creek
Sugar River
Upper Black River
Lake Ontario
Black River
Beaver River
Adirondack Park
JEFFERSON COUNTY
LEWIS COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
ONEIDA COUNTY
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
AVERAGE ANNUAL PRECIPITATION
MAP 12
Data Source: Average Annual Precipitation, 1961-1990, New York State GIS Data Layer
Created by the Spatial Climate Analysis Service, Oregon State University; USDA - NRCS National Water and Climate Center, Portland, Oregon; USDA - NRCS National Cartography and Geospatial Center, Fort Worth, Texas
Provided by CUGIR: Cornell University Geospatial Information Repository

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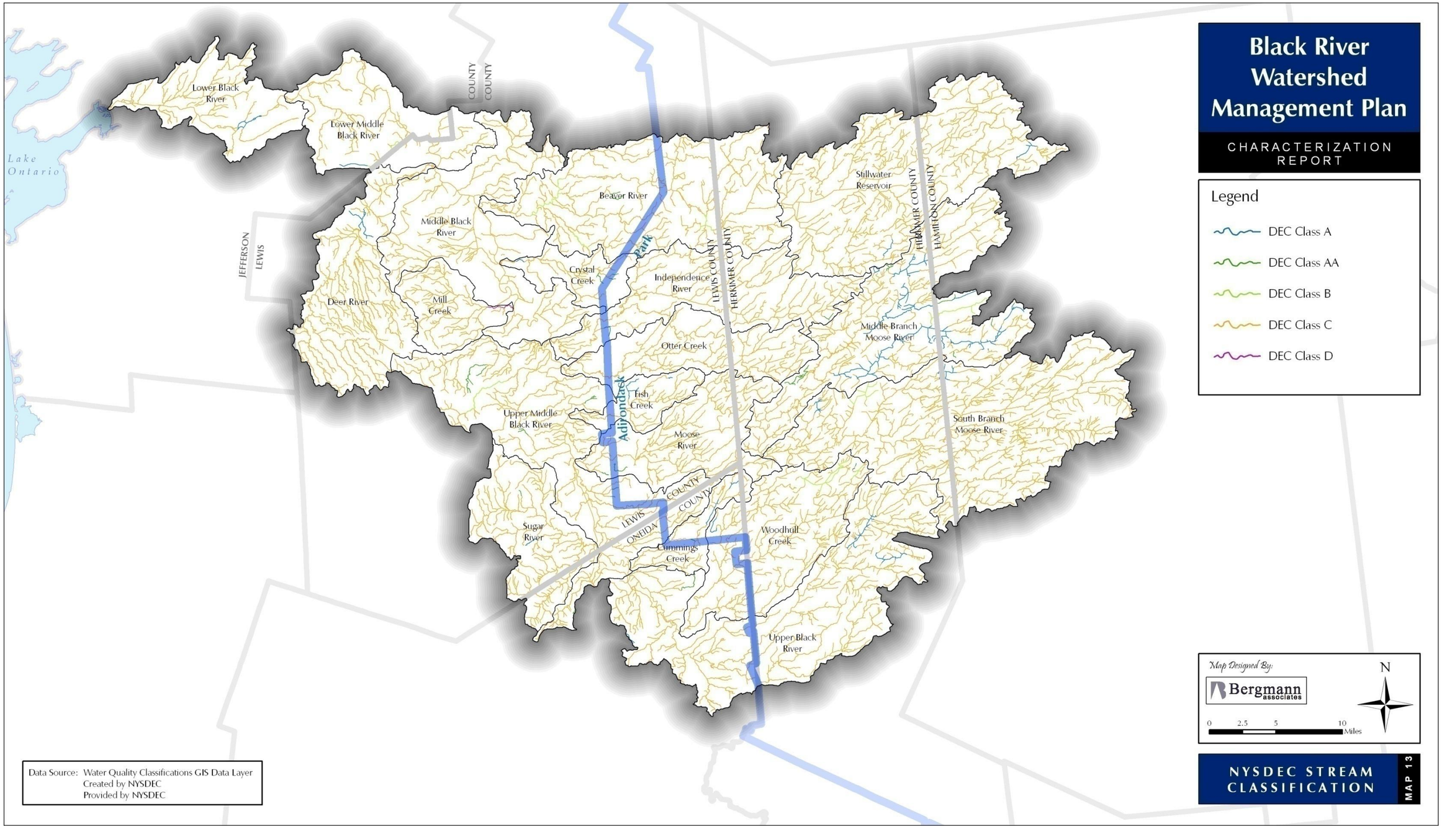
Black River Watershed Management Plan
CHARACTERIZATION REPORT
Legend
DEC Class A
DEC Class AA
DEC Class B
DEC Class C
DEC Class D
Lake Ontario
Lower Black River
Lower Middle Black River
Middle Black River
Beaver River
Stillwater Reservoir
Deer River
Mill Creek
Crystal Creek
Independence River
Otter Creek
Middle Branch Moose River
Fish Creek
Upper Middle Black River
Moose River
South Branch Moose River
Sugar River
Woodhull Creek
Cummings Creek
Upper Black River
Adirondack Park
JEFFERSON COUNTY
LEWIS COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
ONEIDA COUNTY
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
Data Source: Water Quality Classifications GIS Data Layer
Created by NYSDEC
Provided by NYSDEC
NYSDEC STREAM CLASSIFICATION
MAP 13

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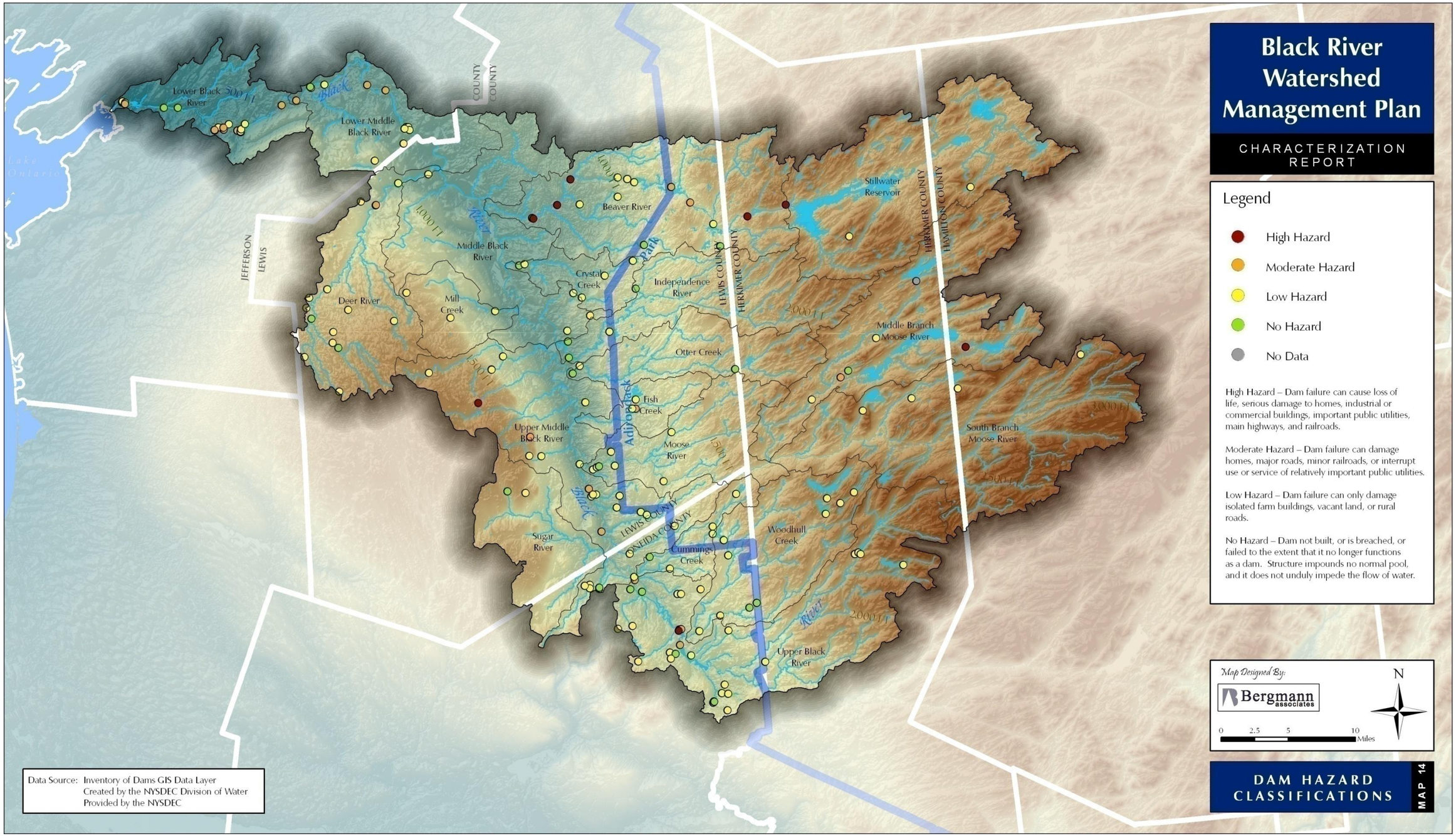
Black River Watershed Management Plan
CHARACTERIZATION REPORT
Legend
High Hazard
Moderate Hazard
Low Hazard
No Hazard
No Data
High Hazard – Dam failure can cause loss of life, serious damage to homes, industrial or commercial buildings, important public utilities, main highways, and railroads.
Moderate Hazard – Dam failure can damage homes, major roads, minor railroads, or interrupt use or service of relatively important public utilities.
Low Hazard – Dam failure can only damage isolated farm buildings, vacant land, or rural roads.
No Hazard – Dam not built, or is breached, or failed to the extent that it no longer functions as a dam. Structure impounds no normal pool, and it does not unduly impede the flow of water.
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
DAM HAZARD CLASSIFICATIONS
MAP 14
Data Source: Inventory of Dams GIS Data Layer
Created by the NYSDEC Division of Water
Provided by the NYSDEC
Lake Ontario
Lower Black River
Lower Middle Black River
Middle Black River
Upper Middle Black River
Upper Black River
Beaver River
Deer River
Mill Creek
Crystal Creek
Independence River
Otter Creek
Fish Creek
Moose River
Sugar River
Cummings Creek
Woodhull Creek
Stillwater Reservoir
Middle Branch Moose River
South Branch Moose River
Adirondack Park
JEFFERSON COUNTY
LEWIS COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
ONEIDA COUNTY
500 FT
1,000 FT
1,500 FT
2,000 FT
3,000 FT

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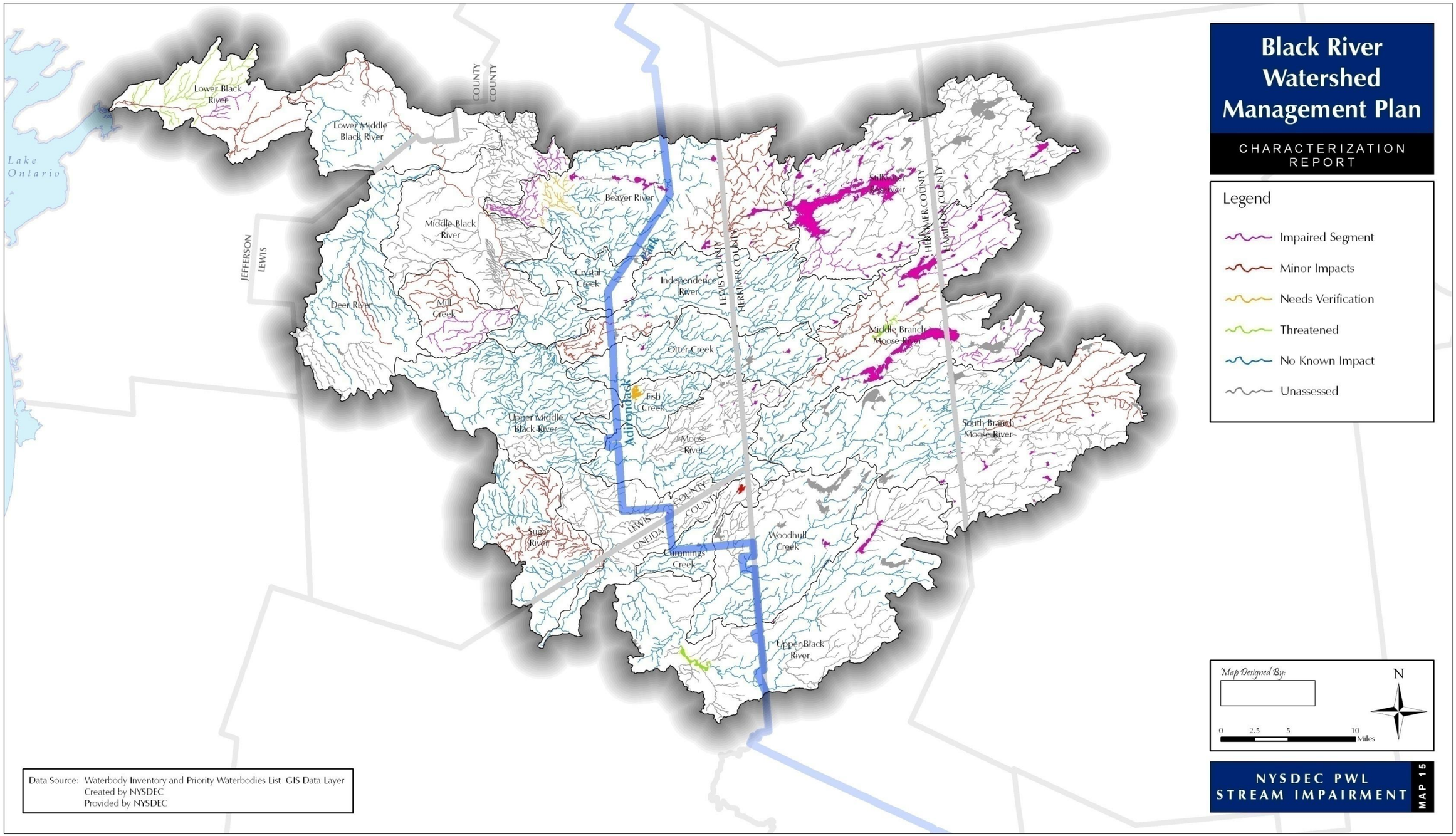
Black River Watershed Management Plan
CHARACTERIZATION REPORT
Legend
Impaired Segment
Minor Impacts
Needs Verification
Threatened
No Known Impact
Unassessed
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Lower Black River
Lower Middle Black River
Middle Black River
Beaver River
Deer River
Mill Creek
Crystal Creek
Independence River
Otter Creek
Fish Creek
Upper Middle Black River
Moose River
Sugar River
Cummings Creek
Woodhull Creek
Middle Branch Moose River
South Branch Moose River
Upper Black River
Stillwater Reservoir
Adirondack Park
JEFFERSON COUNTY
LEWIS COUNTY
ONEIDA COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
Map Designed By:
N
0 2.5 5 10 Miles
NYSDEC PWL STREAM IMPAIRMENT
MAP 15
Data Source: Waterbody Inventory and Priority Waterbodies List GIS Data Layer
Created by NYSDEC
Provided by NYSDEC

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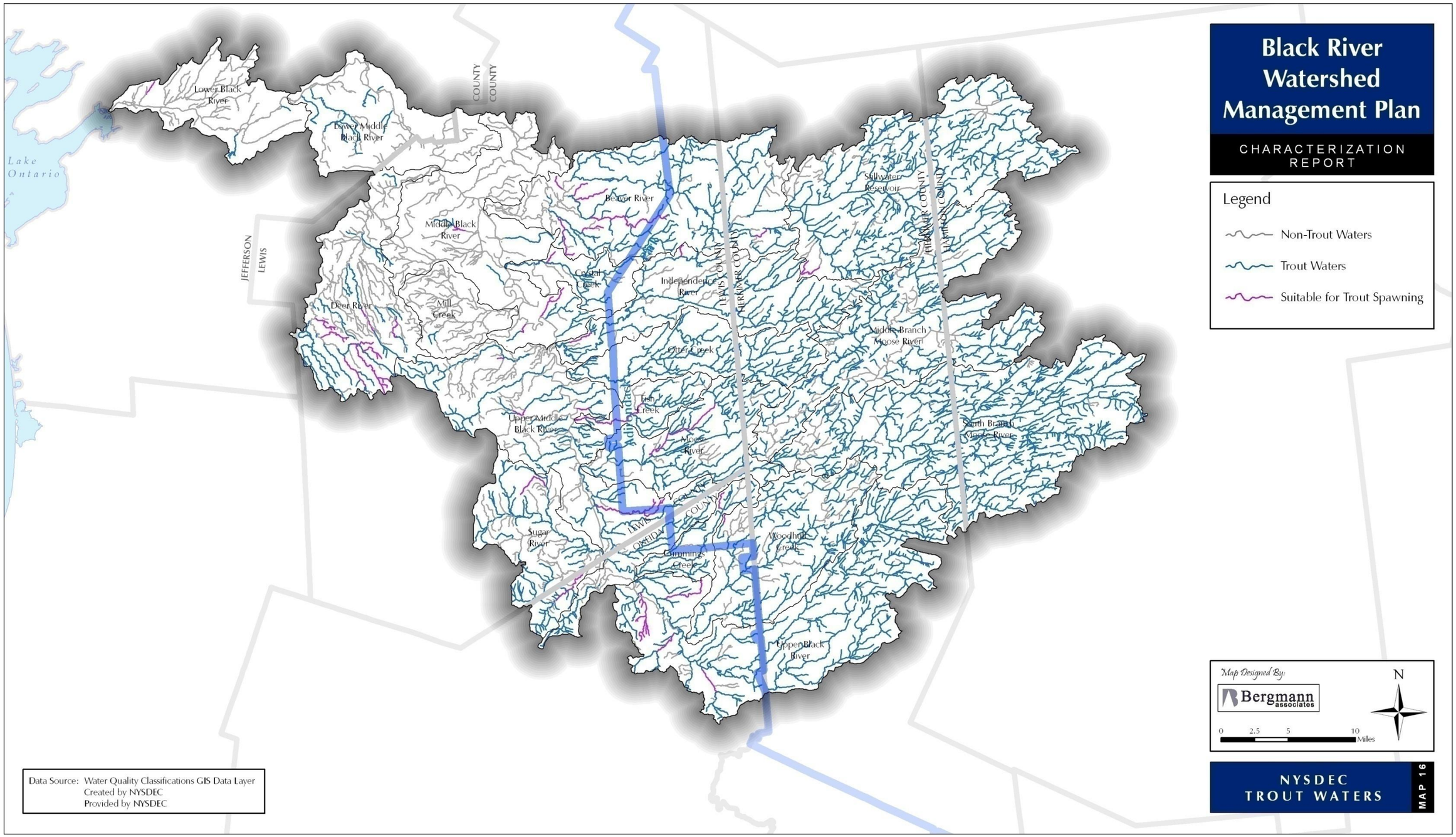
Black River Watershed Management Plan
CHARACTERIZATION REPORT
Legend
Non-Trout Waters
Trout Waters
Suitable for Trout Spawning
Lake Ontario
Lower Black River
Lower Middle Black River
Middle Black River
Beaver River
Stillwater Reservoir
Crystal Creek
Independence River
Deer River
Mill Creek
Otter Creek
Middle Branch Moose River
Fish Creek
Upper Middle Black River
Moose River
South Branch Moose River
Sugar River
Cummings Creek
Woodhull Creek
Upper Black River
JEFFERSON COUNTY
LEWIS COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
OneIDA COUNTY
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
NYSDEC TROUT WATERS
MAP 16
Data Source: Water Quality Classifications GIS Data Layer
Created by NYSDEC
Provided by NYSDEC

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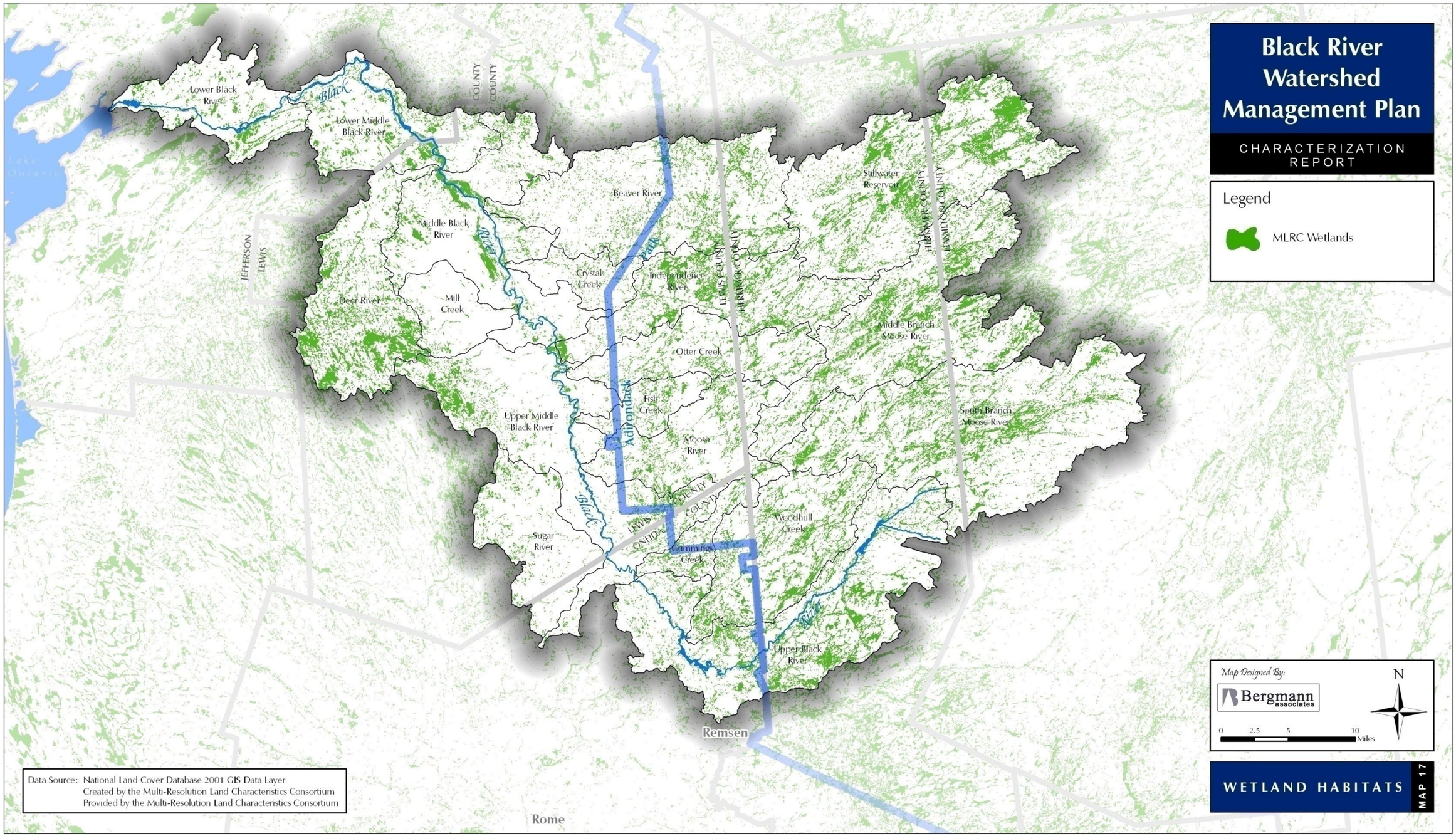
Black River Watershed Management Plan
CHARACTERIZATION REPORT
Legend
MLRC Wetlands
Lake Ontario
Lower Black River
Lower Middle Black River
Middle Black River
Deer River
Mill Creek
Beaver River
Crystal Creek
Independence River
Otter Creek
Fish Creek
Moose River
Upper Middle Black River
Sugar River
Cummings Creek
Woodhull Creek
Upper Black River
Stillwater Reservoir
Middle Branch Moose River
South Branch Moose River
Black River
Adirondack
JEFFERSON COUNTY
LEWIS COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
Remsen
Rome
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
WETLAND HABITATS
MAP 17
Data Source: National Land Cover Database 2001 GIS Data Layer
Created by the Multi-Resolution Land Characteristics Consortium
Provided by the Multi-Resolution Land Characteristics Consortium

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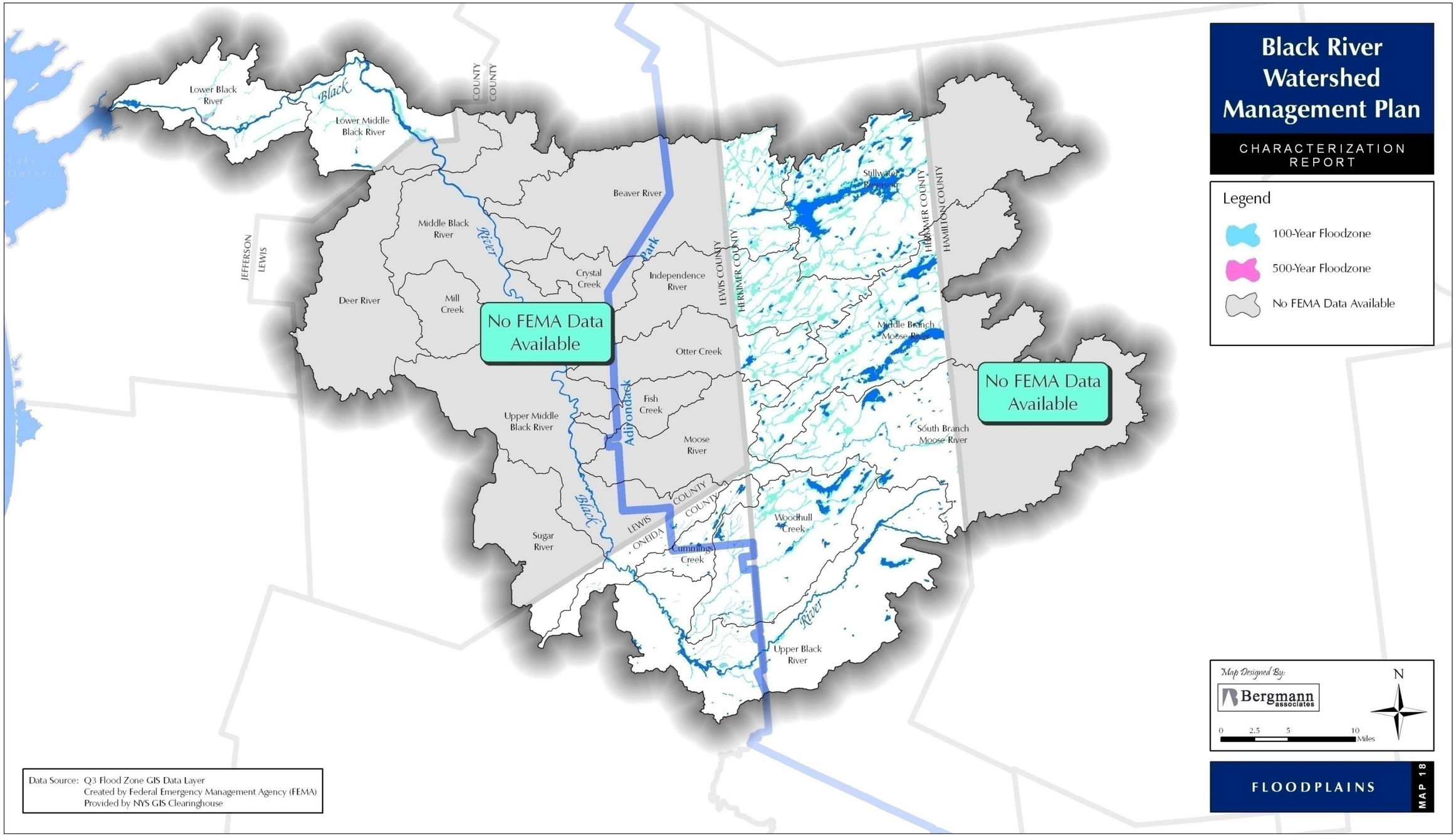
Black River Watershed Management Plan
CHARACTERIZATION REPORT
Legend
100-Year Floodzone
500-Year Floodzone
No FEMA Data Available
Lake Ontario
Lower Black River
Lower Middle Black River
Black
Beaver River
Middle Black River
Deer River
Mill Creek
Crystal Creek
Independence River
Otter Creek
Fish Creek
Moose River
Upper Middle Black River
Sugar River
Woodhull Creek
Cummings Creek
Upper Black River
Stillwater Reservoir
Middle Branch Moose River
South Branch Moose River
No FEMA Data Available
No FEMA Data Available
Adirondack Park
JEFFERSON COUNTY
LEWIS COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
ONEIDA COUNTY
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
FLOODPLAINS
MAP 18
Data Source: Q3 Flood Zone GIS Data Layer
Created by Federal Emergency Management Agency (FEMA)
Provided by NYS GIS Clearinghouse

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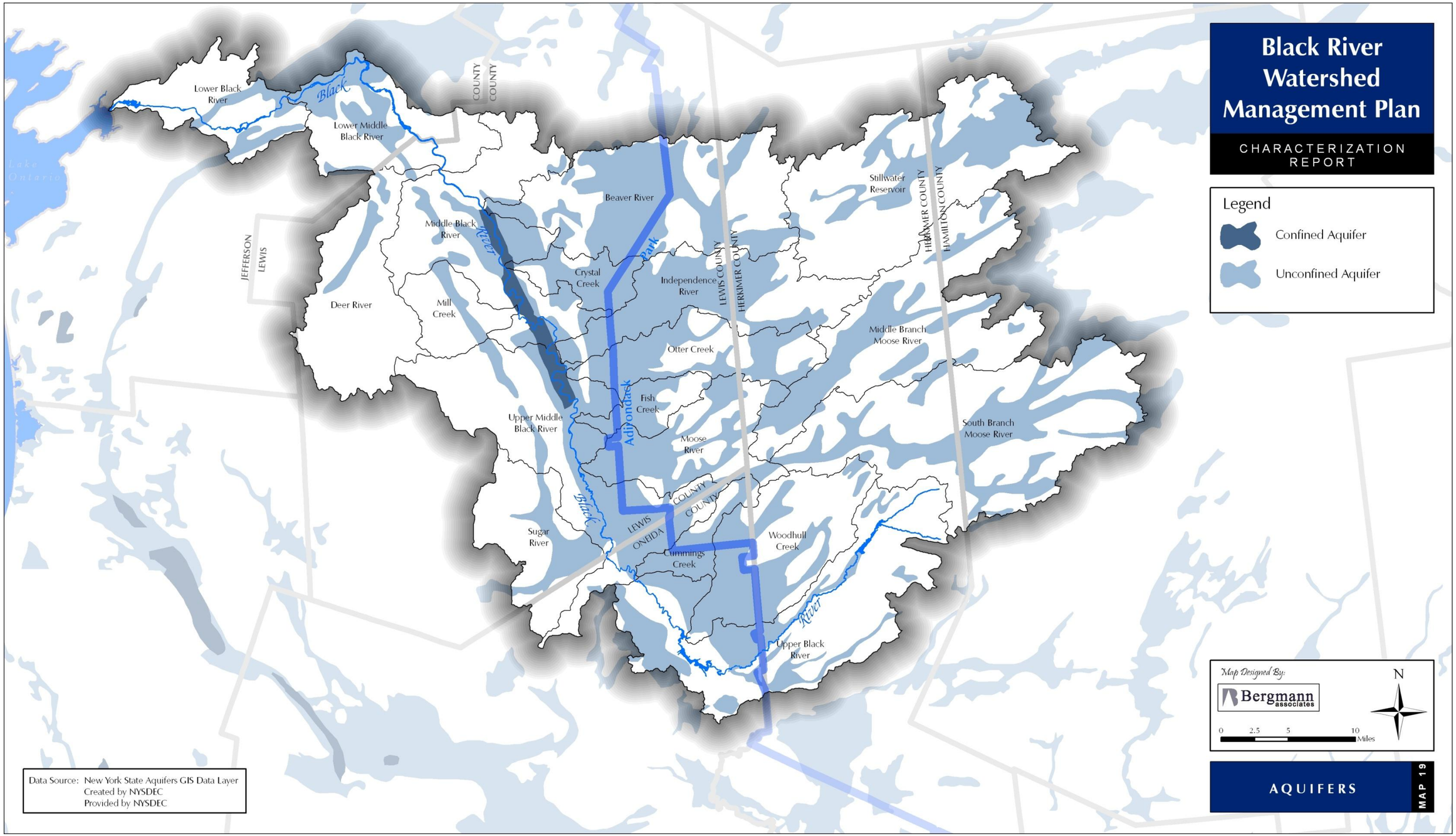
Black River Watershed Management Plan
CHARACTERIZATION REPORT
Legend
Confined Aquifer
Unconfined Aquifer
Lower Black River
Lower Middle Black River
Middle Black River
Beaver River
Stillwater Reservoir
Deer River
Mill Creek
Crystal Creek
Independence River
Otter Creek
Middle Branch Moose River
Fish Creek
Moose River
Upper Middle Black River
South Branch Moose River
Sugar River
Woodhull Creek
Cummings Creek
Upper Black River
Lake Ontario
Black River
Moose River
Adirondack Park
JEFFERSON COUNTY
LEWIS COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
ONEIDA COUNTY
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
Data Source: New York State Aquifers GIS Data Layer
Created by NYSDEC
Provided by NYSDEC
AQUIFERS
MAP 19

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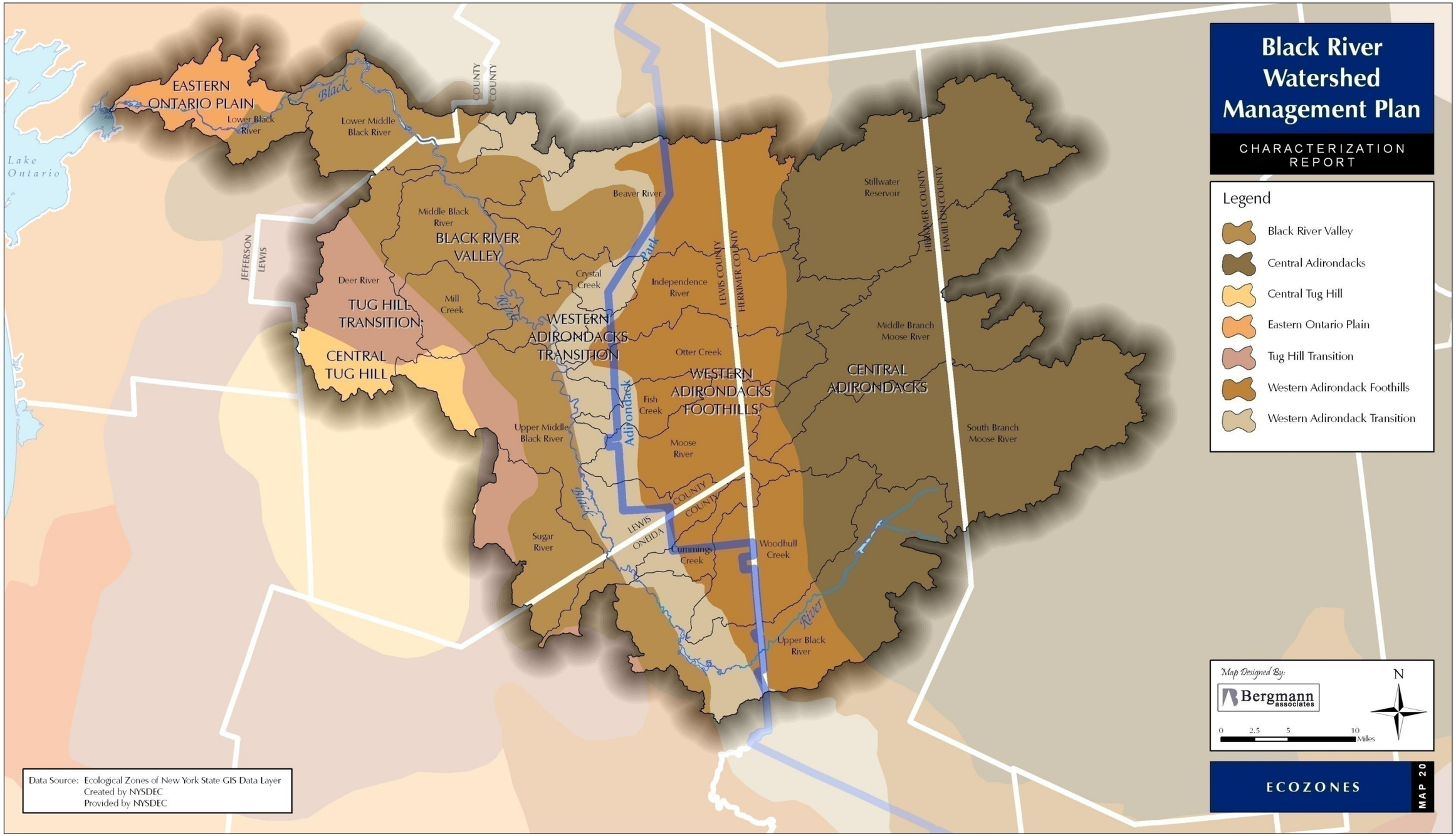
Black River Watershed Management Plan
CHARACTERIZATION REPORT
Legend
Black River Valley
Central Adirondacks
Central Tug Hill
Eastern Ontario Plain
Tug Hill Transition
Western Adirondack Foothills
Western Adirondack Transition
EASTERN ONTARIO PLAIN
BLACK RIVER VALLEY
TUG HILL TRANSITION
CENTRAL TUG HILL
WESTERN ADIRONDACKS TRANSITION
WESTERN ADIRONDACKS FOOTHILLS
CENTRAL ADIRONDACKS
Lake Ontario
Black River
Lower Black River
Lower Middle Black River
Middle Black River
Beaver River
Deer River
Mill Creek
Crystal Creek
Independence River
Stillwater Reservoir
Middle Branch Moose River
Otter Creek
Fish Creek
Moose River
South Branch Moose River
Upper Middle Black River
Sugar River
Cummings Creek
Woodhull Creek
Upper Black River
Adirondack Park
JEFFERSON COUNTY
LEWIS COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
ONEIDA COUNTY
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
ECOZONES
MAP 20
Data Source: Ecological Zones of New York State GIS Data Layer
Created by NYSDEC
Provided by NYSDEC

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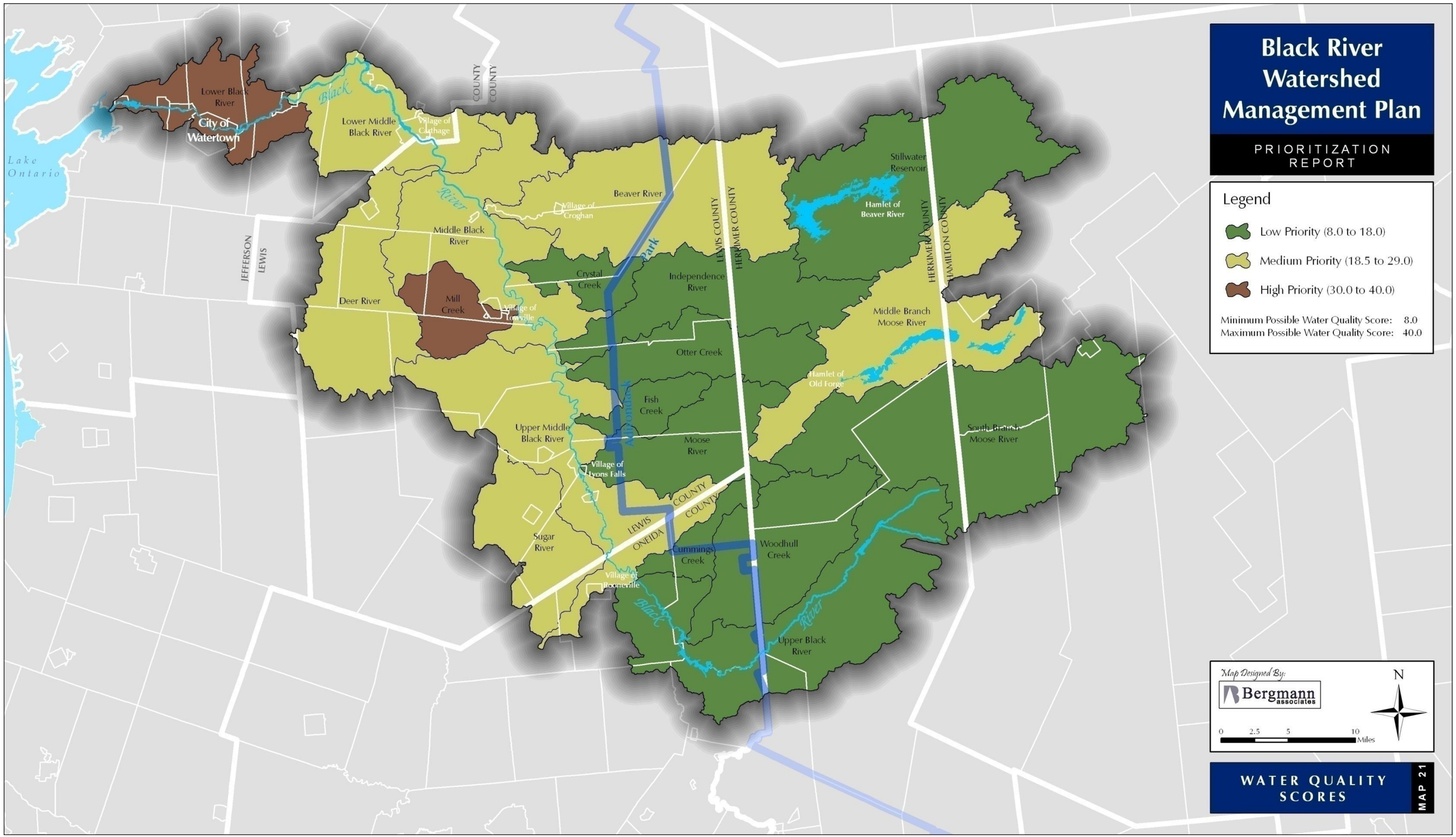
Black River Watershed Management Plan
PRIORITIZATION REPORT
Legend
Low Priority (8.0 to 18.0)
Medium Priority (18.5 to 29.0)
High Priority (30.0 to 40.0)
Minimum Possible Water Quality Score: 8.0
Maximum Possible Water Quality Score: 40.0
Lake Ontario
Lower Black River
City of Watertown
Black River
Lower Middle Black River
Village of Carthage
Beaver River
Village of Croghan
Middle Black River
Deer River
Mill Creek
Village of Lowville
Crystal Creek
Independence River
Stillwater Reservoir
Hamlet of Beaver River
Middle Branch Moose River
Hamlet of Old Forge
Otter Creek
Fish Creek
Moose River
South Branch Moose River
Upper Middle Black River
Village of Lyons Falls
Sugar River
Cummings Creek
Woodhull Creek
Village of Boonville
Upper Black River
Tug Hill
Park
JEFFERSON COUNTY
LEWIS COUNTY
ONEIDA COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
WATER QUALITY SCORES
MAP 21

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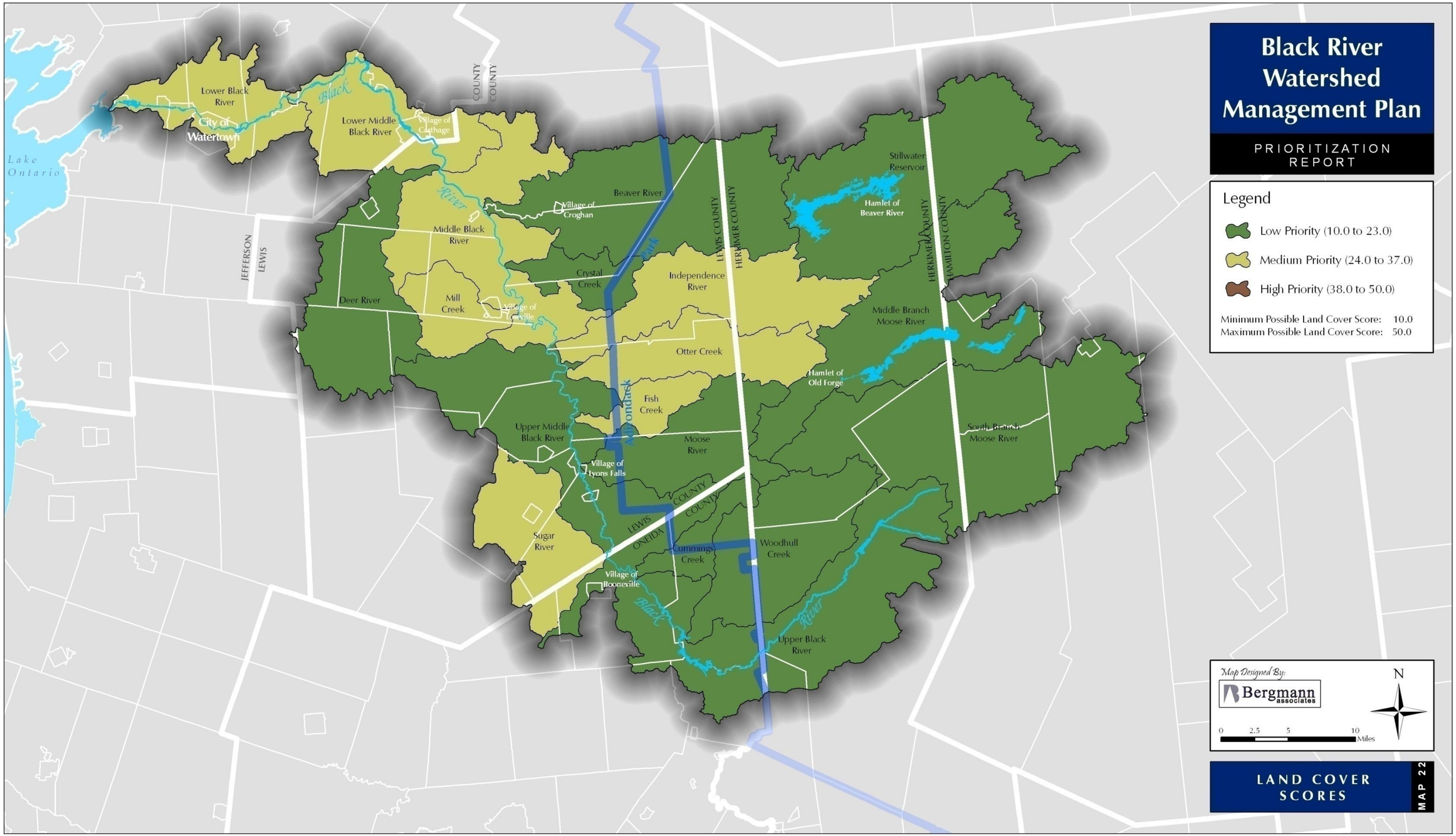
Black River Watershed Management Plan
PRIORITIZATION REPORT
Legend
Low Priority (10.0 to 23.0)
Medium Priority (24.0 to 37.0)
High Priority (38.0 to 50.0)
Minimum Possible Land Cover Score: 10.0
Maximum Possible Land Cover Score: 50.0
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
LAND COVER SCORES
MAP 22
Lake Ontario
Lower Black River
City of Watertown
Black River
Lower Middle Black River
Village of Carthage
Beaver River
Village of Croghan
Middle Black River
Crystal Creek
Deer River
Mill Creek
Village of Copenhagen
Independence River
Stillwater Reservoir
Hamlet of Beaver River
Middle Branch Moose River
Hamlet of Old Forge
Otter Creek
Fish Creek
Upper Middle Black River
Moose River
South Branch Moose River
Village of Lyons Falls
Sugar River
Cummings Creek
Woodhull Creek
Village of Booneville
Upper Black River
Adirondack Park
JEFFERSON COUNTY
LEWIS COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
ONEIDA COUNTY

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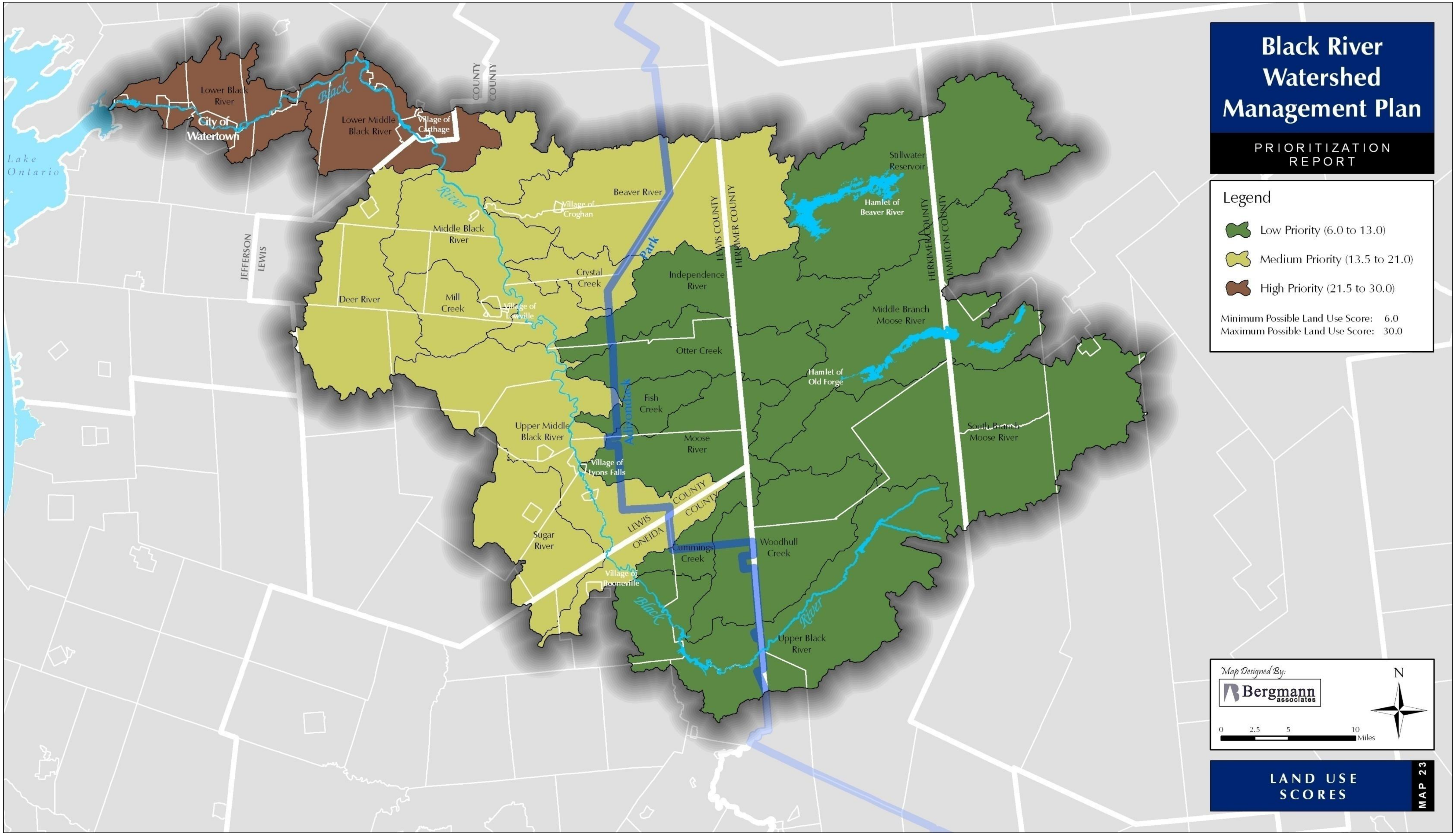
Black River Watershed Management Plan
PRIORITIZATION REPORT
Legend
Low Priority (6.0 to 13.0)
Medium Priority (13.5 to 21.0)
High Priority (21.5 to 30.0)
Minimum Possible Land Use Score: 6.0
Maximum Possible Land Use Score: 30.0
Map Designed By:
Bergmann associates
N
0 2.5 5 10 Miles
LAND USE SCORES
MAP 23
Lake Ontario
Lower Black River
City of Watertown
Lower Middle Black River
Village of Carthage
Black
River
Middle Black River
Deer River
Mill Creek
Village of Lowville
Beaver River
Village of Croghan
Crystal Creek
Independence River
Otter Creek
Fish Creek
Moose River
Upper Middle Black River
Village of Lyons Falls
Sugar River
Cummings Creek
Woodhull Creek
Village of Boonville
Upper Black River
Stillwater Reservoir
Hamlet of Beaver River
Middle Branch Moose River
Hamlet of Old Forge
South Branch Moose River
Adirondack Park
JEFFERSON
LEWIS
LEWIS COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
ONEIDA
COUNTY

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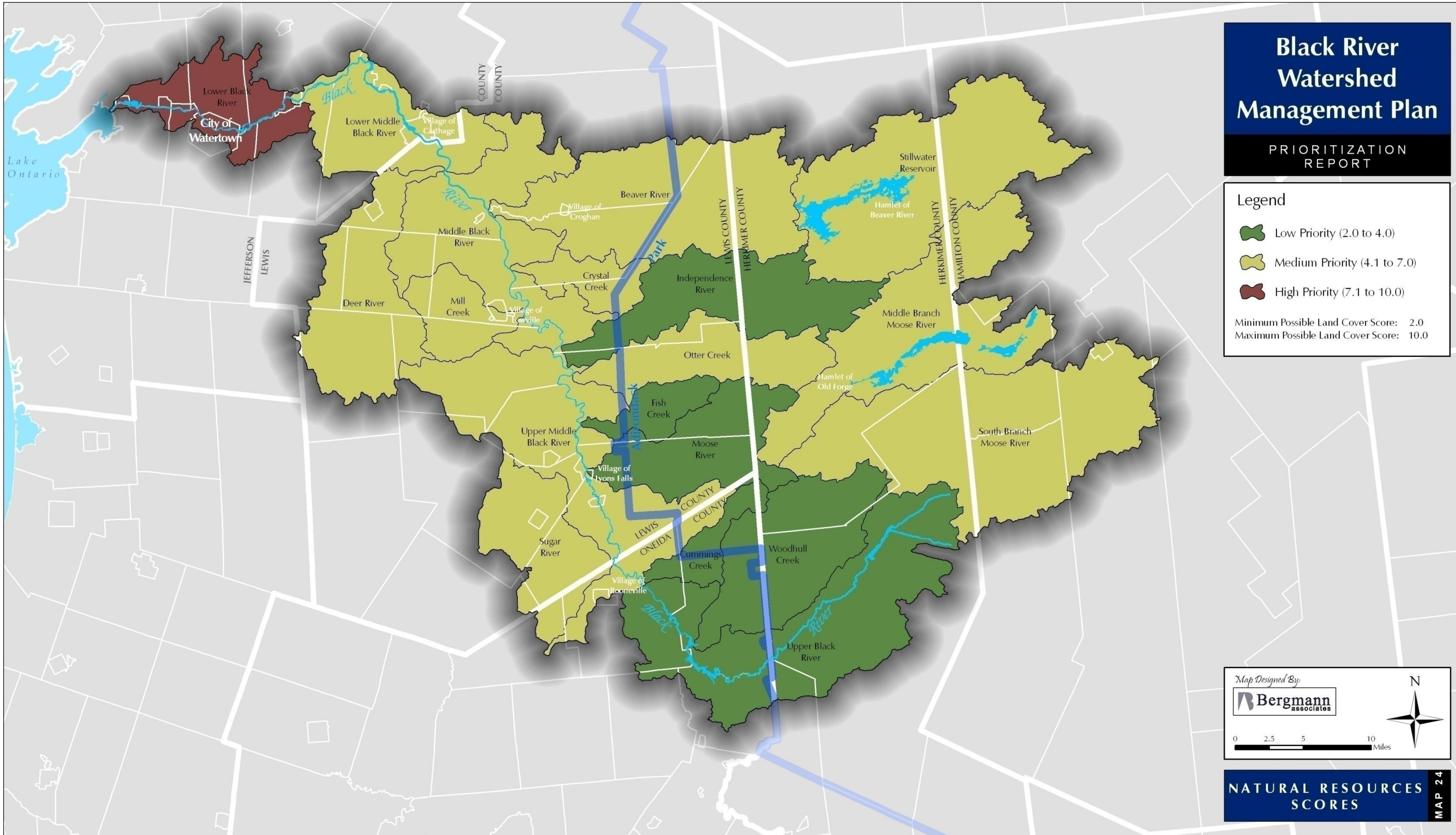
Black River Watershed Management Plan
PRIORITIZATION REPORT
Legend
Low Priority (2.0 to 4.0)
Medium Priority (4.1 to 7.0)
High Priority (7.1 to 10.0)
Minimum Possible Land Cover Score: 2.0
Maximum Possible Land Cover Score: 10.0
Map Designed By:
Bergmann associates
0 2.5 5 10 Miles
N
NATURAL RESOURCES SCORES
MAP 24
Lake Ontario
Lower Black River
City of Watertown
Lower Middle Black River
Village of Carthage
Black River
Beaver River
Village of Croghan
Middle Black River
Deer River
Mill Creek
Village of Lowville
Crystal Creek
Independence River
Stillwater Reservoir
Hamlet of Beaver River
Middle Branch Moose River
Hamlet of Old Forge
Otter Creek
Fish Creek
Moose River
Upper Middle Black River
Village of Lyons Falls
South Branch Moose River
Sugar River
Cummings Creek
Woodhull Creek
Village of Boonville
Upper Black River
Adirondack Park
JEFFERSON
LEWIS
COUNTY
LEWIS COUNTY
HERKIMER COUNTY
HAMILTON COUNTY
ONEIDA COUNTY

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8.3 Dams by Subwatershed

BEAVER RIVER SUBWATERSHED

The inventoried characteristics of the sixteen situated in the subwatershed are summarized in Table 8.3-1.

Table 8.3-1. Dams in the Beaver River Subwatershed

DAM NAME	COUNTY	STATE ID	YEAR COMPLETED	DAM TYPE	PURPOSE	DAM HEIGHT	OWNER TYPE	HAZARD CODE
FRANCIS LAKE DAM	LEWIS	125-0459	1917	TIMBER CR	RECREATION	4	STATE	D
PIETRIES MILL DAM	LEWIS	112-0404		TIMBER CR			PRIVATE	D
BEAVER MEADOW BROOK DAM	LEWIS	125-1124	1937	GRAVITY,EARTH	RECREATION	14	PRIVATE	A
BOISE CASCADE UPPER DAM	LEWIS	112-0324	1855	GRAVITY	HYDROELEC	25	PRIVATE	C
BOISE CASCADE LOWER DAM	LEWIS	112-0323	1865	GRAVITY	HYDROELEC	15	PRIVATE	B
MOSHIER DAM	HERKIMER	125-0831	1928	EARTH,GRAVITY	HYDROELEC	93	PRIVATE	C
CROGHAN DAM NORTH & SOUTH	LEWIS	112-0340	1919	GRAVITY	OTHER	12	PRIVATE	C
STEINERS MILL DAM	LEWIS	112-0356	1921	GRAVITY	HYDROELEC		PRIVATE	A
EAGLE FALLS DAM	LEWIS	125-0435	1914	GRAVITY	HYDROELEC	33	PRIVATE	B
CROGHAN RESERVOIR No. 2 DAM	LEWIS	112-5100		CONCRETE	WTR SUPPLY	7	LOCAL G'VT	A
SOFT MAPLE TERMINAL DAM	LEWIS	125-0424	1924	EARTH,GRAVITY	HYDROELEC	120	PRIVATE	B
EFFLEY FALLS DAM	LEWIS	112-0393	1903	GRAVITY	HYDROELEC	32	PRIVATE	A
HIGH FALLS DAM	LEWIS	112-0345	1925	GRAVITY	HYDROELEC	55	PRIVATE	C
BELFORT DAM	LEWIS	112-0370	1898	GRAVITY	HYDROELEC	19	PRIVATE	A
ELMER FALLS DAM	LEWIS	112-0388	1915	GRAVITY	HYDROELEC	23	PRIVATE	A
TAYLORVILLE DAM	LEWIS	112-0380	1914	GRAVITY	HYDROELEC	33	PRIVATE	A

Most, all but two, of the dams are in private hands. The Croghan Reservoir No. 2 Dam in Lewis County is owned by a local government and the Francis Lake Dam in Lewis County is owned by the New York State. Two of the sixteen dams are of significant height. The Soft Maple Terminal dam in Lewis County is 120 feet in height and the Moshier Dam in Herkimer County is 93 feet in height. All of the dams in the subwatershed are over fifty years old. Four of them are over one hundred years old and all four are situated in Lewis County. The Boise Cascade Upper Dam is one hundred fifty four years old, the Boise Cascade Lower Dam is one hundred forty four years old, the Belfort Dam is

one hundred eleven years old, and the Effley Falls Dam is one hundred six years old. The four dams classified as High Hazard are the Boise Cascade Upper Dam in Lewis County, the Moshier Dam in Herkimer County, the Croghan Dam North and South in Lewis County, and the High Falls Dam also in Lewis County. Two of the dams located in the subwatershed are classified as No Hazard: the Francis Lake Dam and the Pietries Mill Dam, both in Lewis County.

CRYSTAL CREEK SUBWATERSHED

The inventoried characteristics of the five dams situated in the subwatershed are summarized in Table 8.3.2.

Table 8.3-2. Dams in the Crystal Creek Subwatershed

DAM NAME	COUNTY	STATE ID	YEAR COMPLETED	DAM TYPE	PURPOSE	DAM HEIGHT	OWNER TYPE	HAZARD CODE
PASSENGERS POND DAM	LEWIS	112-2757	1959	GRAVITY	RECREATION	9	PRIVATE	A
LOWVILLE RESERVOIR DAM	LEWIS	112-5098			WTR SUPPLY	10	LOCAL G'VT	A
SASH & BLIND MILL DAM	LEWIS	112-0319		MASONRY, TIMBER CR		6	PRIVATE	D
CRYSTAL CREEK DAM	LEWIS	112-0325	1840	MASONRY, GRAVITY	RECREATION	12	PRIVATE	A
CRYSTAL LAKE DIKE	LEWIS	112-4571		EARTH	RECREATION, HYDROELEC	12	PRIVATE	A

All but one of the dams are in private hands. The Lowville Reservoir Dam in Lewis County is owned by a local government. None of the five dams are of significant height. The Passengers Pond Dam is fifty years old and the Crystal Creek Dam is one hundred sixty nine years old. All but one of the dams is classified as Low Hazard. The Sash and Blind Mill Dam in Lewis County is classified as a No Hazard.

CUMMINGS CREEK SUBWATERSHED

The inventoried characteristics of the five dams situated in the subwatershed are summarized in Table 8.3.3.

Table 8.3-3. Dams in the Cummings Creek Subwatershed

DAM NAME	COUNTY	STATE ID	YEAR COMPLETED	DAM TYPE	PURPOSE	DAM HEIGHT	OWNER TYPE	HAZARD CODE
PASSENGERS POND DAM	LEWIS	112-2757	1959	GRAVITY	RECREATION	9	PRIVATE	A
LOWVILLE RESERVOIR DAM	LEWIS	112-5098			WTR SUPPLY	10	LOCAL G'VT	A
SASH & BLIND MILL DAM	LEWIS	112-0319		MASONRY, TIMBER CR		6	PRIVATE	D
CRYSTAL CREEK DAM	LEWIS	112-0325	1840	MASONRY, GRAVITY	RECREATION	12	PRIVATE	A
CRYSTAL LAKE DIKE	LEWIS	112-4571		EARTH	RECREATION, HYDROELEC	12	PRIVATE	A

All five of the dams are located in Oneida County. All but one are privately owned. The Otter Lake Dam is owned by the New York State. Three of the five dams are older than fifty years and one of them is older than one hundred years. The Otter Lake Dam is one hundred twenty nine years old, the Anglers Club Pond Dam is ninety two years old, and the Long Lake Dam is seventy eight years old. All, except one, of the dams are classified as Low Hazard. The Utica YMCA Dam is classified as No Hazard.

DEER RIVER SUBWATERSHED

The inventoried characteristics of the sixteen dams situated in the subwatershed are summarized in Table 8.3-4.

Table 8.3-4. Dams in the Deer River Subwatershed

DAM NAME	COUNTY	STATE ID	YEAR COMPLETED	DAM TYPE	PURPOSE	DAM HEIGHT	OWNER TYPE	HAZARD CODE
WILLIAM J TUCKER DAM	LEWIS	101-0244	1910	EARTH	RECREATION	7	PRIVATE	A
PERRIGO CREEK DAM	LEWIS	090-0236	1916	TIMBER CR	HYDROELEC	7	PRIVATE	A
SEARS POND DAM	LEWIS	101-0246	1880	TIMBER CR	RECREATION	6	STATE	D
MARCELLUS MILL DAM	LEWIS	101-0239	1880	TIMBER CR	HYDROELEC		PRIVATE	A
MILLARD POND DAM	LEWIS	100-4231	1975	EARTH	RECREATION	9	PRIVATE	A
UNKURT DAM	LEWIS	100-5292		EARTH	RECREATION	8	PRIVATE	A
MILLARD & RICE DAM	LEWIS	089-0218					PRIVATE	D
H FARRINGTON YOUNG POND DAM	LEWIS	100-2743	1958	EARTH	RECREATION	11	PRIVATE	A
BIRCH WILDLIFE POND DAM No. 2	LEWIS	089-2658	1958	EARTH	RECREATION	6	PRIVATE	A
NYS DEC MARSH DAM	LEWIS	089-1718	1952	EARTH	FIRE/STOCK	7	STATE	A
NEIL BURNS MARSH DAM	LEWIS	100-2190	1954	EARTH	RECREATION	7	PRIVATE	A
COPENHAGEN DAM	LEWIS	100-0210	1920	TIMBER CR	IRRIGATION	10	LOCAL G'VT	D
HIGH FALLS DAM AT COPENHAGEN	LEWIS	100-0211	1909	GRAVITY	HYDROELEC	25	PRIVATE	B
MURROCK MARSH DAM	LEWIS	100-1850	1953	EARTH	RECREATION	5	PRIVATE	A
KINGS FALLS DAM	LEWIS	100-4951	1989	OTHER	HYDROELEC	12	PRIVATE	A
DEER RIVER VILLAGE DAM	LEWIS	100-0233	1918	TIMBER CR	HYDROELEC		PRIVATE	A

All but three of the sixteen dams are privately owned. All sixteen are located in Lewis County. Two, the Sears Pond Dam and the NYS DEC Marsh Dam, are owned by the New York. The Copenhagen Dam is owned by a local government. Twelve of the sixteen dams are over fifty years old and three of them are more than one hundred years old. The Sears Pond Dam and the Marcellus Mill Dam both completed in 1880 are the oldest structures. The High Falls Dam at Copenhagen is 25 feet in height making it the tallest dam in the sub-watershed. Three of the sixteen dams are classified as No Hazard. They included the Sears Pond Dam, the Millard and Rice Dam, and the Copenhagen Dam. Thirteen of the remaining dams are classified as Low Hazard. The High Falls Dam at Copenhagen is classified as Moderate Hazard.

FISH CREEK SUBWATERSHED

The inventoried characteristics of the three dams situated in the subwatershed are summarized in Table 8.3-5.

Table 8.3-5. Dams in the Fish Creek Subwatershed

DAM NAME	COUNTY	STATE ID	YEAR COMPLETED	DAM TYPE	PURPOSE	DAM HEIGHT	OWNER TYPE	HAZARD CODE
ADIRONDACK ACRES DAM A	LEWIS	113-3956A	1971	EARTH	RECREATION	24	PRIVATE	B
ADIRONDACK ACRES DAM B	LEWIS	113-3956B	1971	EARTH	RECREATION	6	PRIVATE	A
BRANTINGHAM LAKE DAM	LEWIS	113-0444	1914	EARTH	RECREATION	10	PRIVATE	A

All three of the dams are situated in Lewis County and are in private hands. One dam is over fifty years old; the Brantingham Lake Dam is the oldest having reached its ninety fifth anniversary. The Adirondack Acres Dam A, at 24 feet in height, is the tallest dam in the subwatershed. Both, the Adirondack Acres Dam B and the Brantingham Lake Dam are classified as Low Hazard, while the Adirondack Acres Dam A is classified as a Moderate Hazard.

INDEPENDENCE RIVER SUBWATERSHED

The inventoried characteristics of the four dams situated in the subwatershed are summarized in Table 8.3-6.

Table 8.3-6. Dams in the Independence River Subwatershed

DAM NAME	COUNTY	STATE ID	YEAR COMPLETED	DAM TYPE	PURPOSE	DAM HEIGHT	OWNER TYPE	HAZARD CODE
MILLARD POND No. 2 DAM	LEWIS	113-4404	1980	EARTH	RECREATION	16	PRIVATE	D
KENNETH CLARK POND DAM	LEWIS	112-1118	1937	EARTH		18	PRIVATE	D
CHASE LAKE DAM	LEWIS	112-4348					PRIVATE	A
BEACH MILL DAM	LEWIS	112-0409	1860	TIMBER CR		10		D

All of the four dams within in the subwatershed are in private hands. Only two of the dams are over fifty years old. The Kenneth Clark Pond Dam is seventy two years old and the Beach Mill Dam is one hundred forty nine years old. All, except one, of the dams are classified as No Hazard. The Chase Lake Dam is classified as Low Hazard dam.

LOWER BLACK RIVER SUBWATERSHED

The inventoried characteristics of the eighteen dams situated in the subwatershed are summarized in Table 8.3-7.

Table 8.3-7. Dams in the Lower Black River Subwatershed

DAM NAME	COUNTY	STATE ID	YEAR COMPLETED	DAM TYPE	PURPOSE	DAM HEIGHT	OWNER TYPE	HAZARD CODE
SEWALLS SOUTH CHANNEL DAM	JEFFERSON	089-0087	1978	GRAVITY	HYDROELEC	16	PRIVATE	B
BEEBEE ISLAND MAIN DAM	JEFFERSON	089-3266	1964	GRAVITY	HYDROELEC	18	PRIVATE	B
UPPER NORTH CHANNEL DAM	JEFFERSON	089-1303	1948	GRAVITY	HYDROELEC	24	PRIVATE	B
BEEBEE ISLAND DIVERSION DAM	JEFFERSON	089-1317	1931	MASONRY	HYDROELEC, OTHER	22	PRIVATE	B
DEXTER SOUTH CHANNEL DAM	JEFFERSON	078-0018	1924	GRAVITY	HYDROELEC	18	PRIVATE	B
DELANO ISLAND DIVERSION DAM	JEFFERSON	089-0106A	1923	GRAVITY	HYDROELEC	12	LOCAL GOVERN MENT	A
DEXTER NORTH CHANNEL DAM	JEFFERSON	078-0016	1923	GRAVITY	HYDROELEC	20	PRIVATE	A
BLACK RIVER POWER DAM	JEFFERSON	088-0128	1919	GRAVITY, EARTH	HYDROELEC	34	PRIVATE	B
WATERTOWN DOSING STATION DAM	JEFFERSON	089-0108	1917	GRAVITY	WTR SUPPLY	10	LOCAL GOVERN MENT	A
FACTORY SQUARE DAM	JEFFERSON	089-0086	1914	GRAVITY	HYDROELEC	20	PRIVATE	A
DIAMOND ISLAND DIVERSION DAM	JEFFERSON	089-0095	1914	GRAVITY	HYDROELEC	13	PUBLIC UTILITY	A
WATERTOWN MUNICIPAL POWER DAM	JEFFERSON	089-0106	1913	GRAVITY	HYDROELEC	12	LOCAL GOVERN MENT	B
DEXTER DAM	JEFFERSON	078-0015	1908	GRAVITY	HYDROELEC	15	PRIVATE	D
BROWNVILLE DAM	JEFFERSON	088-0043	1903	TIMBER CR	HYDROELEC	16	PRIVATE	D
PUMP HOUSE DAM	JEFFERSON	089-0106B	1895	GRAVITY	OTHER	16	LOCAL GOVERN MENT	A
GLEN PARK MILL C DAM	JEFFERSON	089-3375	1885	TIMBER CR, MASONRY			PRIVATE	D
DEXTER MIDDLE CHANNEL DAM	JEFFERSON	078-0017	1884	GRAVITY	HYDROELEC	8	PRIVATE	A
WATERTOWN SETTLING BASIN DAM	JEFFERSON	089-0107		GRAVITY	OTHER		LOCAL GOVERN MENT	A

All eighteen of the dams are located in Jefferson County. Twelve of the eighteen dams are privately held, five are owned by local governments, and only one is owned by a public utility. The oldest dam is the Dexter Middle Channel Dam which is one hundred twenty five years old. The tallest of these dams is the Black River Power Dam which is thirty four feet in height. There are a variety of hazard classifications associated with this subwatershed. Eight of the dams are classified as Low Hazard, seven are classified as Moderate Hazard, and the remaining three are classified as No Hazard.

LOWER MIDDLE BLACK RIVER SUBWATERSHED

The inventoried characteristics of the twelve dams situated in the subwatershed are summarized in Table 8.3 -8.

Table 8.3-8. Dams in the Lower Middle Black River Subwatershed

DAM NAME	COUNTY	STATE ID	YEAR COMPLETED	DAM TYPE	PURPOSE	DAM HEIGHT	OWNER TYPE	HAZARD CODE
PLEASANT LAKE DAM	JEFFERSON	100-4580		GRAVITY	WTR SUPPLY	5	LOCAL G'VT	A
LONG FALLS DAM	JEFFERSON	100-4632		TIMBER CR	HYDROELEC	10	PRIVATE	A
CARTHAGE STATE DAM	JEFFERSON	100-0231	1854	GRAVITY	NAVIGATION	8	STATE	A
LEFEBVRE MILL DAM	JEFFERSON	099-0165	1910	GRAVITY	HYDROELEC		PRIVATE	A
TANNERY ISLAND DAM	JEFFERSON	100-0229	1914	GRAVITY	HYDROELEC	15	PRIVATE	A
WEST END DAM	JEFFERSON	100-0227	1914	GRAVITY	HYDROELEC, OTHER	18	PRIVATE	A
VILLAGE OF CARTHAGE POOL DAM	JEFFERSON	100-1564	1952	EARTH	RECREATION	11	LOCAL G'VT	A
FELTS MILLS DAM	JEFFERSON	088-0147	1915	GRAVITY	HYDROELEC	20	PRIVATE	B
HERRINGS DAM	JEFFERSON	099-0206	1923	GRAVITY	HYDROELEC	25	PRIVATE	B
DEFERIET DAM	JEFFERSON	099-0195	1925	BUTTRESS, GRAVITY	HYDROELEC	24	PRIVATE	B
KAMARGO DAM	JEFFERSON	088-0133	1984	GRAVITY, BUTTRESS	HYDROELEC	34	PRIVATE	B
FELTS MILLS DIVERSION DAM	JEFFERSON	088-1736	1980	GRAVITY	HYDROELEC	47	PRIVATE	D

All twelve of the dams are located in Jefferson County. Nine of them are privately owned. The Pleasant Lake Dam and the Village of Carthage Pool Dam is owned by local governments. The Carthage State Dam is owned by the New York State. The Carthage State Dam oldest Dam also is the oldest of the dams at one hundred and fifty five years old. The Felts Mills Diversion Dam is the tallest measuring 47 feet in height. Seven of the twelve dams are classified as Low Hazard.

MIDDLE BRANCH MOOSE RIVER SUBWATERSHED

The inventoried characteristics of the six dams situated in the subwatershed are summarized in Table 8.3-9.

Table 8.3-9. Dams in the Middle Branch Moose River Subwatershed

DAM NAME	COUNTY	STATE ID	YEAR COMPLETED	DAM TYPE	PURPOSE	DAM HEIGHT	OWNER TYPE	HAZARD CODE
LAKE SERENE DAM	HERKIMER	140-4781	1982	EARTH	RECREATION	8	PRIVATE	D
THENDARA DAM	HERKIMER	126-4042	1980	GRAVITY, TIMBER CR	RECREATION	12	LOCAL GOVERNMENT	A
RONDAXE LAKE DAM	HERKIMER	139-1130	1937	ROCKFILL, TIMBER CR	RECREATION	5	PRIVATE	A
SIXTH LAKE DAM	HAMILTON	140-0860	1920	EARTH	RECREATION	16	STATE	C
OLD FORGE RESERVOIR DAM	HERKIMER	140-2000	1905	GRAVITY,EARTH	FLOOD CTRL, RECREATION	18	STATE	B
BIG MOOSE LAKE DAM	HERKIMER	139-4678		TIMBER CR	RECREATION	2	PRIVATE	

Three of the six dams are in private hands, two are owned by the New York State, and one, the Thendara Dam in Herkimer County, is owned by a local government. Three of them are over fifty years old. The Rondaxe Lake dam is seventy two years old, the Sixth Lake Dam is eighty nine years old, and the Old Forge Reservoir Dam is one hundred four years old. The Sixth Lake Dam is classified as High Hazard and the Lake Serene Dam is classified as No Hazard.

MIDDLE BLACK RIVER SUBWATERSHED

The inventoried characteristics of the three dams situated in the subwatershed are summarized in Table 8.3-10.

Table 8.3-10. Dams in the Middle Black River Subwatershed

DAM NAME	COUNTY	STATE ID	YEAR COMPLETED	DAM TYPE	PURPOSE	DAM HEIGHT	OWNER TYPE	HAZARD CODE
GLENN CREEK DAM	LEWIS	112-0373	1924	GRAVITY			PRIVATE	A
C HARRY EDICK POND DAM	LEWIS	112-3136	1963	EARTH	RECREATION	9	PRIVATE	A
WILERS MILL DAM	LEWIS	112-0377	1916	GRAVITY, EARTH			PRIVATE	A

All three of the dams are in private hands and are located in Lewis County. Only two of them are older than fifty years, the Glenn Creek Dam is eighty five years old and the Wilers Mill Dam is ninety three years old. All three are classified as a Low Hazard type dam.

MILL CREEK SUBWATERSHED

The inventoried characteristics of the three dams situated in the subwatershed are summarized in Table 8.3-11.

Table 8.3-11. Dams in the Mill Creek Subwatershed

DAM NAME	COUNTY	STATE ID	YEAR COMPLETED	DAM TYPE	PURPOSE	DAM HEIGHT	OWNER TYPE	HAZARD CODE
JEFFREY BEYER DAM	LEWIS	100-5245	1988	EARTH	WILDLIFE	16	PRIVATE	A
NOHLES MILL DAM	LEWIS	112-0320	1907	TIMBER CR	HYDROELEC		PRIVATE	A
EDWARD C YANCEY POND DAM	LEWIS	100-3001	1961	EARTH	RECREATION	13	PRIVATE	A

All three of the dams are privately owned and also are located in Lewis County. The Nohles Mill Dam is the oldest dam at one hundred two years old. All three of the dams are classified as a Low Hazard type dam.

MOOSE RIVER SUBWATERSHED

The inventoried characteristics of the seven dams situated in the subwatershed are summarized in Table 8.3-12.

Table 8.3-12. Dams in the Moose River Subwatershed

DAM NAME	COUNTY	STATE ID	YEAR COMPLETED	DAM TYPE	PURPOSE	DAM HEIGHT	OWNER TYPE	HAZARD CODE
LEON SCHUTT DAM	ONEIDA	126-4440		EARTH	RECREATION	10	PRIVATE	A
GOULDTOWN MILL No. 5 DAM	LEWIS	113-0445	1978	GRAVITY, TIMBER CR	HYDROELEC	19	PRIVATE	A
KOSTERVILLE LOWER DAM	LEWIS	113-0446	1982	TIMBER CR, GRAVITY	HYDROELEC	8	PRIVATE	A
KOSTERVILLE UPPER DAM	LEWIS	113-0447	1885	TIMBER CR	IRRIGATION	10	PRIVATE	D
LYONSDALE DAM	LEWIS	113-1052	1845	GRAVITY	HYDROELEC	19	PRIVATE	A
S L MEDA FISH POND DAM	LEWIS	113-1017	1934	GRAVITY		15	PRIVATE	A
JOHN TEAL RECREATIONAL POND DAM	LEWIS	126-4085	1973	EARTH	RECREATION	8	PRIVATE	A

All seven of the dams are in private hands and all, except one, are located in Lewis County. The Leon Schutt Dam is located in Oneida County. Three of the dams are older than fifty years and two of the three are older than one hundred years. The S L Meda Fish Pond Dam is seventy five years old, the Kosterville Upper Dam is one hundred twenty four years old, and the Lyonsdale Dam is one hundred sixty four years old. Two dams, the Gouldtown Mill No. 5 Dam and the Lyonsdale Dam,

are the tallest of the seven measuring nineteen feet in height. The Kosterville Upper Dam is the only one classified as No Hazard in the subwatershed.

OTTER CREEK SUBWATERSHED

The inventoried characteristics of the three dams situated in the subwatershed are summarized in Table 8.4-13.

Table 8.3-13. Dams in the Otter Creek Subwatershed

DAM NAME	COUNTY	STATE ID	YEAR COMPLETED	DAM TYPE	PURPOSE	DAM HEIGHT	OWNER TYPE	HAZARD CODE
OTTER CREEK POND DAM	LEWIS	113-0395	1925	ROCKFILL	RECREATION		PRIVATE	D
BIG OTTER LAKE DAM	LEWIS	126-0495	1873	TIMBER CR		8		D
OTTER CREEK DAM	LEWIS	113-0397	1907	MASONRY	HYDROELEC	52	PRIVATE	A

Two of the three dams are privately owned. The Big Otter Lake Dam does not have an owner type recorded for this inventory. All three are situated in Lewis County and also have progressed in years. The Otter Creek Pond Dam is eighty four years old, the Otter Creek Dam is one hundred two years old, and the Big Otter Lake Dam is one hundred thirty six years old. Not only is the Otter Creek Dam the oldest dam in the subwatershed, it also is the tallest measuring 52 feet in height. The Otter Creek Dam and the Big Otter Lake Dam are classified as No Hazard type, while the Otter Creek Dam is listed as Low Hazard.

SOUTH BRANCH MOOSE RIVER SUBWATERSHED

The inventoried characteristics of the four dams situated in the subwatershed are summarized in Table 8.4-14.

Table 8.3-14. Dams in the South Branch Moose River Subwatershed

DAM NAME	COUNTY	STATE ID	YEAR COMPLETED	DAM TYPE	PURPOSE	DAM HEIGHT	OWNER TYPE	HAZARD CODE
LITTLE MOOSE LAKE DAM	HERKIMER	140-0602	1900	MASONRY	RECREATION	2	PRIVATE	A
JOSLYN'S DAM	HERKIMER	140-0626	1900	TIMBER CR	RECREATION	14	PRIVATE	A
LEE POND DAM	HAMILTON	140-5688		EARTH	WILDLIFE, FIRE/STOCK	15	PRIVATE	A
LAKE KORA DAM	HAMILTON	155-2251	1977	GRAVITY	RECREATION	25	PRIVATE	A

All four of the dams are in private hands. Two of the dams, the Little Moose Lake Dam and the Joslyn's Dam, are located in Herkimer County. The other two dams, the Lee Pond Dam and the Lake Kora Dam, are located in Hamilton County. Two of the four dams, the Little Moose Lake Dam

and the Joslyn's Dam, are both one hundred nine years old. The Lake Kora Dam is the tallest measuring 25 feet in height. All four are classified as Low Hazard.

STILLWATER RESERVOIR SUBWATERSHED

The inventoried characteristics of the three dams situated in the subwatershed are summarized in Table 8.3-15.

Table 8.3-15 Dams in the Stillwater Reservoir Subwatershed

DAM NAME	COUNTY	STATE ID	YEAR COMPLETED	DAM TYPE	PURPOSE	DAM HEIGHT	OWNER TYPE	HAZARD CODE
WOODS LAKE DAM	HERKIMER	139-4677		EARTH, TIMBER CR	RECREATION	3	PRIVATE	A
STILLWATER RESERVOIR DAM	HERKIMER	125-0517	1924	EARTH	FLOOD CTRL, HYDROELEC	55	STATE	C
SHINGLE SHANTY POND DAM	HAMILTON	139-4652		EARTH,TIMBER CR	RECREATION	2	PRIVATE	A

All but one of the three dams are in private hands. The Stillwater Reservoir Dam in Herkimer County is owned by the New York State. This dam also is the tallest of the three measuring 55 feet in height and also is the only dam classified as High Hazard. The other two, the Woods Lake Dam in Herkimer County and the Shingle Shanty Pond Dam in Hamilton County, are classified as Low Hazard.

SUGAR RIVER SUBWATERSHED

The inventoried characteristics of the two dams situated in the subwatershed are summarized in Table 8.3-16.

Table 8.3-16 Dams in the Sugar River Subwatershed

DAM NAME	COUNTY	STATE ID	YEAR COMPLETED	DAM TYPE	PURPOSE	DAM HEIGHT	OWNER TYPE	HAZARD CODE
CONSTABLEVILLE DAM	LEWIS	113-0423		CONCRETE	WTR SUPPLY	20	LOCAL G'VT	A
LLOYD AKIN DAM	LEWIS	113-4255	1975	EARTH	RECREATION	20	PRIVATE	D

Both of the dams are located in Lewis County. The Constableville Dam is owned by a local government, while the Lloyd Akin Dam is privately owned. Both of the dams measure 20 feet in height. The Constableville Dam is a Low Hazard type dam and the Lloyd Akin Dam is classified as a No Hazard type dam.

UPPER BLACK RIVER SUBWATERSHED

The inventoried characteristics of the 31 dams situated in the subwatershed are summarized in Table 8.3-17.

Table 8.3-17. Dams in the Upper Black River Subwatershed

DAM NAME	COUNTY	STATE ID	YEAR COMPLETED	DAM TYPE	PURPOSE	DAM HEIGHT	OWNER TYPE	HAZARD CODE
JONES POND DAM	ONEIDA	127-0645	1925	EARTH	RECREATION, WTR SUPPLY		PRIVATE	A
BROWN DAM	ONEIDA	127-0646	1913	BUTTRESS		10	PRIVATE	A
DAVIS DAM C	ONEIDA	127-0630C	1895	GRAVITY		8	PRIVATE	A
DAVIS DAM E	ONEIDA	127-0630E	1913	CONCRETE, EARTH	RECREATION	12	PRIVATE	D
DAVIS DAM D	ONEIDA	127-0630D	1913	EARTH		10	PRIVATE	A
LAKE JULIA DAM	ONEIDA	127-0639	1907	TIMBER CR			PRIVATE	A
EVANS POND DAM	ONEIDA	127-0631	1892	EARTH		10	PRIVATE	A
JONES POND DAM	ONEIDA	127-0621	1924	EARTH	RECREATION		PRIVATE	A
MAPLE LAKE DAM	HERKIMER	127-0636	1905	EARTH	RECREATION	12	PRIVATE	A
RINKLE FISH POND DAM	ONEIDA	114-0570	1926	GRAVITY			PRIVATE	A
GARLICK DAM	ONEIDA	177-0576	1907	BUTTRESS		7	PRIVATE	A
CHARLES DAVIS POND DAM	ONEIDA	127-1110	1937	EARTH,GRAVITY		10	PRIVATE	A
GARLICK FARM DAM	ONEIDA	127-0575	1913	GRAVITY		6	PRIVATE	D
RICE DAM	ONEIDA	127-0574	1907	BUTTRESS	RECREATION		PRIVATE	A
KAYUTA LAKE DAM	ONEIDA	127-0580	1885	EARTH,TIMBER CR	HYDROELEC, FLOOD CTRL, RECREATION	23	STATE	B
ALDER POND DAM	ONEIDA	127-4417	1850	EARTH	HYDROELEC, NAVIGATION	15	STATE	C
LITTLE BEAVER LAKE DAM	ONEIDA	127-4748	1981	BUTTRESS	RECREATION	3	PRIVATE	A
GRIST MILL DAM	ONEIDA	127-0571	1855	GRAVITY,TIMBER CR			PRIVATE	D
FORESTPORT RESERVOIR DAM	ONEIDA	127-0572	1904	EARTH,OTHER	HYDROELEC, FLOOD CTRL, RECREATION	27	STATE	B
MILTON WISNIEWSKI WILDLIFE MARSH DAM	ONEIDA	114-2453	1956	EARTH		10	PRIVATE	A
JOHN GILBERT JR POND DAM	ONEIDA	114-1034	1965	EARTH		6	PRIVATE	A

KERNAN POND DAM	ONEIDA	127-4288	1979	EARTH	RECREATION	19	PRIVATE	A
JOSEPH BEATON DAM	ONEIDA	127-4232	1980	EARTH	RECREATION	17	PRIVATE	A
SEITER DAM	ONEIDA	114-0530	1903	TIMBER CR			PRIVATE	D
FORESTPORT RESERVOIR DAM	ONEIDA	127-0563	1912	BUTTRESS	WTR SUPPLY	7	LOCAL G'VT	A
HAYES DAM	ONEIDA	114-0522	1895	EARTH		10	PRIVATE	D
HAWKINSVILLE DAM	ONEIDA	114-0521	1915	GRAVITY	RECREATION	18	STATE	B
SOUTH LAKE DAM	HERKIMER	140-0682	1901	EARTH	NAVIGATION	30	STATE	A
NORTH LAKE A DAM (SPILLWAY)	HERKIMER	140-0648A	1850	EARTH	NAVIGATION	15	STATE	A
NORTH LAKE C DAM	HERKIMER	140-0648C	1850	EARTH	NAVIGATION	27	STATE	A
NORTH LAKE B DAM	HERKIMER	140-0648B	1850	EARTH	NAVIGATION	35	STATE	A

Twenty two of the thirty one dams are in private hands. Eight of the dams are owned by the New York State and only one, the Forestport Reservoir Dam in Oneida County, is owned by a local government. The tallest is the North Lake B Dam which measures 35 feet in height. Four of the dams, the Alder Pond Dam, the North Lake A Dam, the North Lake B Dam, and the North Lake C Dam, hold the record as being the oldest dams in the subwatershed at one hundred and fifty nine years old. The Alder Pond Dam is the only dam to be classified as High Hazard. There are five dams that are classified as No Hazard; the Grist Mill Dam, the Hayes Dam, the Seiter Dam, the Garlick Farm Dam, and the Davis Dam E.

UPPER MIDDLE BLACK RIVER SUBWATERSHED

The inventoried characteristics of the 27 dams situated in the subwatershed are summarized in Table 8.3-18.

Table 8.3-18. Dams in the Upper Middle Black River Subwatershed

DAM NAME	COUNTY	STATE ID	YEAR COMPLETED	DAM TYPE	PURPOSE	DAM HEIGHT	OWNER TYPE	HAZARD CODE
PORT LEYDEN UPPER DAM	LEWIS	113-0456	1984	GRAVITY	HYDROELEC	10	PRIVATE	A
RICHARD TROMBLEY POND DAM	LEWIS	113-4246	1976	EARTH	RECREATION	12	PRIVATE	A
TURIN RECREATION POND DAM	LEWIS	113-4744	1975	EARTH	RECREATION	14	LOCAL G'VT	A
BELA JACKSON FARM POND DAM	ONEIDA	114-1341	1949	EARTH	FIRE/STOCK, RECREATION	7	PRIVATE	A
FREDERIC MARCY POND DAM	ONEIDA	114-1281	1947	BUTTRESS	RECREATION	3	PRIVATE	A
ROARING BROOK DAM	LEWIS	101-0929	1931	EARTH	RECREATION	7	PRIVATE	A

VILLAGE OF TURIN WATER SUPPLY DAM	LEWIS	113-0394	1922	BUTTRESS		2	LOCAL G'VT	A
LYONS FALLS MILL 3 DAM	LEWIS	113-0436	1920	GRAVITY	HYDROELEC	11	PRIVATE	A
PORT LEYDEN POWER DAM	LEWIS	113-0456A	1914	EARTH	RECREATION	9	PRIVATE	A
CAPROLL DAM	ONEIDA	114-0500H	1913	GRAVITY	HYDROELEC		PRIVATE	A
PORT LEYDEN WATER SUPPLY DAM	LEWIS	113-0478	1912	EARTH	WTR SUPPLY	8	LOCAL G'VT	A
GRIEG DAM	LEWIS	113-0408	1902	TIMBER CR,MASONRY	RECREATION		PRIVATE	A
GLENDALE MILL DAM	LEWIS	113-0371	1875	MASONRY	HYDROELEC		PRIVATE	A
KEARNS MILL DAM	LEWIS	113-0337	1870	TIMBER CR	HYDROELEC		PRIVATE	A
BOONVILLE ROD & GUN CLUB DAM	ONEIDA	126-1392		EARTH		10	PRIVATE	A
BUCK LAKE DAM	ONEIDA	126-4724		EARTH	RECREATION	12	PRIVATE	A
MILE CREEK DAM	ONEIDA	113-5395		MASONRY	RECREATION	13	PRIVATE	A
LYONS FALLS WATER SUPPLY DAM No. 4	LEWIS	113-0448		EARTH	WTR SUPPLY	15	LOCAL G'VT	A
PORT LEYDEN RESERVOIR DAM	LEWIS	113-0483		EARTH, CONCRETE	WTR SUPPLY	6	LOCAL G'VT	A
MARTINSBURG RESERVOIR DAM	LEWIS	113-0338		ROCKFILL	WTR SUPPLY	8	LOCAL G'VT	A
TERRY SMITH DAM	LEWIS	113-4827		EARTH	RECREATION	8	PRIVATE	A
PORT LEYDEN LOWER DAM	LEWIS	113-0453	1985	GRAVITY	HYDROELEC	24	PRIVATE	B
DENLEY DAM	LEWIS	113-0484	1913	GRAVITY	HYDROELEC	29	PRIVATE	B
TURIN RESERVOIR DAM	LEWIS	113-0399	1905	GRAVITY	WTR SUPPLY	25	LOCAL G'VT	B
WHETSTONE GULF STORAGE DAM	LEWIS	101-2862	1961	EARTH	FLOOD CTRL, RECREATION	23	STATE	C
OLEARY DAM	ONEIDA	114-0500O	1875	TIMBER CR			PRIVATE	D
LYMAN DAM	ONEIDA	114-0500P		MASONRY, TIMBER CR			PRIVATE	D

Nineteen of the twenty seven dams are privately owned. Seven of them are owned by a local government and only one, the Whetstone Gulf Storage Dam, is owned by the New York State. The Denley Dam is the tallest of the dams in this subwatershed, measuring 29 feet in height. The Kerns Mill Dam is the oldest of the dams at one hundred thirty nine years old. The Denley Dam is the tallest measuring 29 feet in height. The Whetstone Gulf Storage Dam is the only dam that is

classified as High Hazard. There are two dams, the Oleary Dam and the Lyman Dam, that are classified as a No Hazard type dam.

WOODHULL CREEK SUBWATERSHED

The inventoried characteristics of the seven dams situated in the subwatershed are summarized in Table 8.3-19.

Table 8.3-19. Dams in the Woodhull Creek Subwatershed

DAM NAME	COUNTY	STATE ID	YEAR COMPLETED	DAM TYPE	PURPOSE	DAM HEIGHT	OWNER TYPE	HAZARD CODE
SNOW BIRD LAKE DAM	ONEIDA	127-3769	1967	GRAVITY,EARTH	RECREATION	18	PRIVATE	A
WHITE LAKE OUTLET DAM No. 1	ONEIDA	126-0564	1917	BUTTRESS	RECREATION	5		A
SECOND BISBY LAKE DAM	HERKIMER	140-0615	1914	EARTH	RECREATION	8	PRIVATE	A
SAND LAKE DAM	HERKIMER	140-0610	1901	MASONRY	NAVIGATION, RECREATION	30	STATE	A
FORESTPORT STATION DAM	ONEIDA	127-0586	1901	EARTH	RECREATION	6		A
WHITE LAKE OUTLET DAM No. 2	ONEIDA	126-0556	1901	EARTH	RECREATION			A
WOODHULL LAKE DAM	HERKIMER	140-0605	1853	EARTH,OTHER	NAVIGATION, RECREATION	25	STATE	A
BISBY LAKE DAM No. 3	HERKIMER	140-0611		EARTH	RECREATION	6	PRIVATE	A
CHASE DAVIS DAM No. 2	ONEIDA	127-0816A	1929	EARTH,GRAVITY			PRIVATE	D
CHASE DAVIS DAM No. 1	ONEIDA	127-0603	1926	GRAVITY,EARTH		15	PRIVATE	D

Of the ten dams, only two, the Sand Lake Dam and the Woodhull Lake Dam, are recorded to be owned by the New York State; the rest are in private hands. The Sand Lake Dam also is the tallest measuring 30 feet in height. The Woodhull Lake Dam is the oldest dam at one hundred fifty six years old. Also, all the dams are classified are a Low Hazard type dam, except two of them. The Chase Davis Dam No. 1 and the Chase Davis Dam No. 2 are classified as No Hazard type dams.

8.4 Subwatershed Prioritization Factors

WATER QUALITY

Factors categorized as *Water Quality* received the highest weight (2) as they represent the existing water quality conditions within each subwatershed. The minimum score a subwatershed could receive under this category is 8; the maximum possible score is 40.

This category includes four factors:

- Total Nitrogen Loads;
- Total Phosphorus Loads;
- NYSDEC Impairment Listings; and
- NYSDEC TMDL Requirement.

A detailed discussion of each factor can be found below.

Total Nitrogen Loads
This factor measures the total nitrogen load for each subwatershed based on the results of the ArcView Generalized Watershed Loading Function (AVGWLF) model (see Section 2.5.4). Nitrogen was selected as a metric for prioritizing subwatersheds as large amounts of this nutrient can accelerate the eutrophication process of waterbodies, resulting in depleted dissolved oxygen, fish kills, offensive odors, unsightliness, and reduced attractiveness of the water for recreation and other public uses. Thus, those subwatersheds with larger total nitrogen loads are assumed be of lower quality and thus higher priority.

Table 8.4-1. Total Nitrogen Loads Scoring System

SCORING SCALE[1]	SCORE VALUE	WEIGHT VALUE	WEIGHTED SCORE
Greater than 3.24 kg per acre	5	2	10
1.62 to 3.24 kg per acre	4	2	8
0.81 to 1.62 kg per acre	3	2	6
0.40 to 0.81 kg per acre	2	2	4
Less than 0.40 kg per acre	1	2	2

Source: ArcView Generalized Watershed Loading Function (AVGWLF) model results for the Black River watershed

Values for each subwatershed range from 0.32 kilograms per acre to 4.16 kilograms per acre. Table 8.4-1 provides a detailed breakdown of the scoring system used for this factor. The uppermost threshold identified in Table 8.4-1 was based on total nitrogen load thresholds developed to assist in the identification of impaired watersheds in Pennsylvania and the northeastern United States (see Section 2.5.4).

Total Phosphorous Loads

This factor measures the total phosphorus load for each subwatershed based on the results of the AVGWLF model (see Section 2.5.4). Like nitrogen, phosphorus also accelerates the eutrophication process of waterbodies, resulting in depleted dissolved oxygen, fish kills, offensive odors, unsightliness, and reduced attractiveness of the water for recreation and other public uses. Thus, those subwatersheds with larger total phosphorus loads are assumed to be of lower quality and thus higher priority.

Values for each subwatershed range from 0.05 kilograms per acre to 0.22 kilograms per acre. Table 8.4-2 provides a detailed breakdown of the scoring system used for this factor. The uppermost threshold identified in Table 8.4-2 was based on total phosphorous load thresholds developed to assist in the identification of impaired watersheds in Pennsylvania and the northeastern United States (see Section 2.5.4).

Table 8.4-2. Total Phosphorus Loads Scoring System

SCORING SCALE[1]	SCORE VALUE	WEIGHT VALUE	WEIGHTED SCORE
Greater than 0.12 kg per acre	5	2	10
0.10 to 0.12 kg per acre	4	2	8
0.08 to 0.10 kg per acre	3	2	6
0.06 to 0.08 kg per acre	2	2	4
Less than 0.06 kg per acre	1	2	2

Source: ArcView Generalized Watershed Loading Function (AVGWLF) model results for the Black River watershed

NYSDEC Impairment Listings

This factor measures the degree of waterbody impairment according to the NYSDEC 2006 Waterbody Inventory/ Priority Waterbodies List. More specifically, this factor considers the percent of assessed streams categorized as *Impaired Waters, Waters with Minor Impacts, Waters Needing Verification,* and *Threatened Waters* for each subwatershed; subwatersheds with higher percentages of these categories are assumed be characterized by lower water quality. Values for each subwatershed range from 0.0 percent to 100 percent. Table 8.4-3 provides a detailed breakdown of the scoring system used for this factor.

Table 8.4-3. NYSDEC Impairment Listing Scoring System

SCORING SCALE	SCORE VALUE	WEIGHT VALUE	WEIGHTED SCORE
80.1 to 100.0 percent	5	2	10
60.1 to 80.0 percent	4	2	8
40.1 to 60.0 percent	3	2	6
20.1 to 40.0 percent	2	2	4
Less than 20.1 percent	1	2	2

Source: NYSDEC 2006 Waterbody Inventory/ Priority Waterbodies List Geographic Information System (GIS) data

NYSDEC TMDL Requirement

This factor takes into account whether any waterbodies within a particular subwatershed require that a Total Maximum Daily Load (TMDL) be established as provided in Parts 1 and 2b of the NYSDEC 2008 303(d) List. TMDLs establish maximum pollution limits for industrial wastewater dischargers and have been used extensively by the U.S. Environmental Protection Agency and state environmental agencies in implementing the Clean Water Act. Due to the inherent difficulty of resolving water quality issues related to atmospheric deposition, waters included on Part 2a of the NYSDEC 2008 303(d) List were not included in this factor. A more detailed discussion of atmospheric deposition can be found in Sections 2.5.4, 3.1.2, and 3.1.3. Table 8.4-4 provides a detailed breakdown of the scoring system used for this factor.

Table 8.4-4. NYSDEC TMDL Requirement Scoring System

SCORING SCALE	SCORE VALUE	WEIGHT VALUE	WEIGHTED SCORE
Waterbodies requiring TMDL present	5	2	10
No waterbodies require TMDL	1	2	2

Source: New York State Section 303(d) List of Impaired/TMDL Waters (2008)

LAND COVER

Factors categorized as *Land Cover* also received the highest weighting as they were thought to have the greatest impact on water quality and influence on the other factors included in the prioritization model (for example, the amount of forest cover is directly related to water quality within a watershed). The scores for each factor within this category were multiplied by two. The minimum score a subwatershed could receive under this category is 10.0; the maximum possible score is 50.0.

This category includes five factors:

- Percent Forest and Wetland Cover;
- Percent Agricultural Cover;
- Percent Natural Riparian Cover;
- Percent in a Groundwater Recharge Area; and
- Projected Increase in Urban Lands.

A detailed discussion of each factor can be found below.

Percent Forest and Wetland Cover

This factor measures the percentage of forest and wetland cover within each of the 19 subwatersheds. Values for each subwatershed range from 27.5 percent to 94.4 percent. In terms of water quality, forest and wetland cover are the highest and best uses of land in a watershed and are superior to turf grass as a vegetative cover in terms of water storage, groundwater recharge, runoff reduction, pollutant reduction, and habitat. Table 8.4-5 provides a detailed breakdown of the scoring system used for this factor.

Table 8.4-5. Percent Forest and Wetland Cover Scoring System

SCORING SCALE	SCORE VALUE	WEIGHT VALUE	WEIGHTED SCORE
Less than 20.1 percent	5	2	10
20.1 to 40.0 percent	4	2	8
40.1 to 60.0 percent	3	2	6
60.1 to 80.0 percent	2	2	4
80.1 to 100.0 percent	1	2	2

Source: 2001 National Land Cover Data, Multi-Resolution Land Characteristics (MRLC) Consortium

Percent Agricultural Cover

This factor considers both croplands and pasture lands and is measured in terms of percent cover. Values for each subwatershed range from 0.1 percent to 62.7 percent. The extent of agriculture within a watershed can negatively impact water quality, with areas comprising larger amounts of agriculture often exhibiting higher sediment, bacteria, and nutrient loads. Table 8.4-6 provides a detailed breakdown of the scoring system used for this factor.

Table 8.4-6. Percent Agricultural Cover Scoring System

SCORING SCALE	SCORE VALUE	WEIGHT VALUE	WEIGHTED SCORE
Greater than 40.0 percent	5	2	10
30.1 to 40.0 percent	4	2	8
20.1 to 30.0 percent	3	2	6
10.1 to 20.0 percent	2	2	4
Less than 10.1 percent	1	2	2

Source: 2001 National Land Cover Data, Multi-Resolution Land Characteristics (MRLC) Consortium

Percent Natural Riparian Cover

This factor measures natural land cover (i.e., forests, wetlands, grasslands) within 150-feet on either side of all streams and waterbodies in each subwatershed. Riparian buffers function as water filters by trapping pollutants and eroded soil before they enter into a particular waterbody and thus positively affect water quality. Riparian buffers also stabilize creek banks, which helps prevent soil erosion. Table 3.7 provides a detailed breakdown of the scoring system used for this factor.

Table 8.4-7. Percent Natural Riparian Cover Scoring System

SCORING SCALE	SCORE VALUE	WEIGHT VALUE	WEIGHTED SCORE
Less than 20.1 percent	5	2	10
20.1 to 40.0 percent	4	2	8
40.1 to 60.0 percent	3	2	6
60.1 to 80.0 percent	2	2	4
80.1 to 100.0 percent	1	2	2

Source: 2001 National Land Cover Data, Multi-Resolution Land Characteristics (MRLC) Consortium

Percent Within a Groundwater Recharge Area

This factor measures the amount of confined and unconfined aquifers within each subwatershed in terms of percent cover. Values for each subwatershed range from 7.9 percent to 83.4 percent. Groundwater located in an aquifer can be highly susceptible to contamination from point sources of pollution such as landfills and petroleum storage tanks, as well as nonpoint sources of pollution from both urban and agricultural land uses. Thus, subwatersheds with higher percentages of aquifer coverage will be of higher priority than those with lower percentages. Table 8.4-8 provides a detailed breakdown of the scoring system used for this factor.

Table 8.4-8. Percent Within a Groundwater Recharge Area Scoring System

SCORING SCALE	SCORE VALUE	WEIGHT VALUE	WEIGHTED SCORE
80.1 to 100.0 percent	5	2	10
60.1 to 80.0 percent	4	2	8
40.1 to 60.0 percent	3	2	6
20.1 to 40.0 percent	2	2	4
Less than 20.1 percent	1	2	2

Source: Unconsolidated Aquifers GIS Data Layer, NYSDEC

Projected Increase in Urban Lands

This factor measures the percent increase in urban lands as presented in Section 2.2.2. Note that urban lands are defined as all developed areas, from high intensity areas where people reside or work in high numbers, to open areas with a mixture of some constructed materials and vegetation in the form of lawn grasses. Urban lands do not necessarily refer to urban city development. This factor is important as development intensities and patterns can play a significant role in water quality and overall watershed health. Given the large range of values for the subwatersheds compared to the overall value for the Black River watershed, the scoring scale attempts to approximate average population growth rates (the estimated 2008 growth rate for the United States is approximately 0.88 percent). Table 8.4-9 provides a detailed breakdown of the scoring system used for this factor.

Table 8.4-9. Projected Increase in Urban Lands Scoring System

SCORING SCALE	SCORE VALUE	WEIGHT VALUE	WEIGHTED SCORE
Greater than 10.0 percent	5	2	10
5.1 to 10.0 percent	4	2	8
2.1 to 5.0 percent	3	2	6
0.1 to 2.0 percent	2	2	4
Less than 0.1 percent	1	2	2

Source: Projections based on U.S. Census population data and 2001 National Land Cover

LAND USE AND OWNERSHIP

Factors categorized as *Land Use and Ownership* received the second highest weighting as they were thought to have some influence on both water quality and the factors included in the remaining three categories. For example, land use has a direct impact on the amount of impervious surface, which strongly correlates with water quality. The scores for each factor within this category were multiplied by 1.5. The minimum score a subwatershed could receive under this category is 6; the maximum possible score is 30.

This category includes four factors:

- Public Ownership;
- Number of Livestock per Acre
- Industrial Land Uses; and
- Known Hotspot Areas.

A detailed discussion of each factor can be found below.

Public Ownership

This factor measures the percentage of NYSDEC-owned lands, NY State Parks, lands owned by the Nature Conservancy, lands with conservation easements, and County-owned reforested lands within each of the 19 subwatersheds. Values for each subwatershed range from 0.1 percent to 74.9 percent. As development is unlikely to occur on these lands, subwatersheds comprising large amounts of these areas pose a lower risk to water quality than do subwatersheds comprising smaller amounts. Table 8.4-10 provides a detailed breakdown of the scoring system used for this factor.

Table 8.4-10. Public Ownership Scoring System

SCORING SCALE	SCORE VALUE	WEIGHT VALUE	WEIGHTED SCORE
Less than 10.0 percent	5	1.5	7.5
10.1 to 30.0 percent	4	1.5	6.0
30.1 to 50.0 percent	3	1.5	4.5
50.1 to 70.0 percent	2	1.5	3.0
Greater than 70.0 percent	1	1.5	1.5

Source: Property Parcel GIS Data provided by Hamilton, Herkimer, Jefferson, Lewis, and Oneida Counties

Number of Livestock per Acre

This factor measures the number of livestock per acre of total subwatershed area. While not all livestock use in a given watershed is detrimental to water quality, livestock use can impact water quality by increasing coliform bacteria, sedimentation, and water temperatures, as well as decreasing dissolved oxygen concentrations. Thus, watersheds with increased concentrations of livestock are considered to be of higher priority.

Data provided by the 2007 Census of Agriculture conducted by the U.S. Department of Agriculture was used to calculate the total number of livestock within each subwatershed. As it relates to livestock, the Census of Agriculture provides the total number of livestock and the total amount of pastureland and cropland used for grazing for all counties in the U.S. This information was used to calculate the number of livestock per acre of pastureland for each of the five counties traversed by the Black River watershed. This metric was then applied to the amount of land cover pastureland (from the 2001 National Land Cover data set) in each subwatershed for each county to determine the total number of livestock in each subwatershed. If a subwatershed was located in two counties, separate calculations were made for each, then summed. The resulting values were then divided by the total acreage of each subwatershed to provide a final number of livestock per acre of watershed.

Based on this analysis, the number of livestock per acre for each subwatershed ranges from 0.0 to 0.68. Table 8.4-11 provides a detailed breakdown of the scoring system used for this factor.

Table 8.4-11. Livestock per Acre Scoring System

SCORING SCALE	SCORE VALUE	WEIGHT VALUE	WEIGHTED SCORE
Greater than 0.40 per acre	5	1.5	7.5
0.21 to 0.40 per acre	4	1.5	6.0
0.11 to 0.20 per acre	3	1.5	4.5
0.01 to 0.10 per acre	2	1.5	3.0
Less than 0.01 per acre	1	1.5	1.5

Source: The Census of Agriculture (2007), U.S. Department of Agriculture

Industrial Land Uses

This factor measures the percent land cover of industrial land uses within each of the 19 subwatersheds. Values for each subwatershed range from 0.0 percent to 3.3 percent. Given that industrial uses can negatively impact water quality, subwatersheds with lower percentages will be considered of lower priority. Table 8.4-12 provides a detailed breakdown of the scoring system used for this factor.

Table 8.4-12. Industrial Land Uses Scoring System

SCORING SCALE	SCORE VALUE	WEIGHT VALUE	WEIGHTED SCORE
Greater than 2.7 percent	5	1.5	7.5
2.1 to 2.7 percent	4	1.5	6.0
1.4 to 2.0 percent	3	1.5	4.5
0.7 to 1.3 percent	2	1.5	3.0
Less than 0.7 percent	1	1.5	1.5

Source: Property Parcel GIS Data provided by Hamilton, Herkimer, Jefferson, Lewis, and Oneida Counties

Known Hotspot Areas

This factor includes State Pollutant Discharge Elimination System (SPDES) locations and unremediated waste sites (from the *Black River Watershed Groundwater Assessment and Recommendations Report*). The total number of sites were summed for each subwatershed and then used to calculate the density of these sites within each subwatershed. Values for each subwatershed range from 0.0 to 3.3 per 10,000 acres. Subwatersheds with lower densities pose a lower risk to water quality and are considered a lower priority. Table 8.4-13 provides a detailed breakdown of the scoring system used for this factor.

Table 8.4-13. Known Hotspot Areas Scoring System

SCORING SCALE	SCORE VALUE	WEIGHT VALUE	WEIGHTED SCORE
Greater than 1.0 per 10,000 acres	5	1.5	7.5
0.51 to 1.0 per 10,000 acres	4	1.5	6.0
0.26 to 0.50 per 10,000 acres	3	1.5	4.5
0.00 to 0.25 per 10,000 acres	2	1.5	3.0
None	1	1.5	1.5

Source: Black River Watershed Groundwater Assessment and Recommendations Report (based on a review of U.S. EPA and NYSDEC environmental waste site web-based databases

NATURAL RESOURCES

Factors categorized as *Natural Resources* received the lowest weighting; the scores for each factor within this category were multiplied by 1. While these factors can influence water quality, their impact is less than that of the factors included in the three categories discussed above. The minimum score a subwatershed could receive under this category is 2; the maximum possible score is 10.

This category includes two factors:

- Habitat and Biota; and
- High Erosion Areas.

A detailed discussion of each factor can be found below.

Habitat and Biota
This factor is an index that comprises three sub-scores:

- Threatened and endangered species scores;
- Fish occurrence scores; and
- Habitat scores.

The final score for each subwatershed is the sum of the individual sub-scores. Final scores range between 0.75 and 7.54. A discussion of each sub-score can be found below, while Table 8.4-15 provides a detailed breakdown of the overall scoring system used for this factor. As many of the species that inhabit these areas can be sensitive to environmental pollutants, subwatersheds with higher index scores will be of higher priority.

The threatened and endangered species scores measure the documented or potential occurrence of threatened and endangered species within each subwatershed. As previously noted, Federal and State laws have been enacted that identify and manage species threatened with extinction. Managing these species includes a hierarchical ranking according to the level of threat faced by each species, resulting in some species receiving greater government protection than others. To capture this hierarchical ranking within the prioritization model, the number of documented and potential occurrences of protected species were weighted according to the following:

- Federally endangered – weight factor of 2
- Federally threatened – weight factor of 1.75
- State endangered – weight factor of 1.5
- State threatened – weight factor of 1.25
- Species of special concern – weight factor of 1.1
- Other species of interest – weight factor of 1.0

Subsequent to this weighting of all occurrences, potential occurrences of protected species were further weighted by a factor of 0.75, reducing their affect on the prioritization model relative to documented occurrences. Note that this sub-factor measures the number of species, not the number of occurrences (i.e., only one species will be counted for a subwatershed that has 10 documented occurrences of the same species). The resulting scores for documented and potential occurrences

will then be summed for each subwatershed and then normalized by subwatershed area (per 10,000 acres).

Fish occurrence scores were calculated as the sum of weights for all species documented from the subwatershed. Weights for individual species were based on protective status and rarity of fish. The highest weight (5) was applied to species listed or likely to be listed as endangered. The next highest weights (3 and 2) were applied species that are relatively widespread in the drainage or the state, but vulnerable to disturbance and in decline in some regions. The higher weight was given to species that are considered to be restricted and vulnerable within the drainage. A weight of one was applied to species that are rare in the drainage but widespread in the state. To account for the varying size of subwatersheds, the final scores were normalized by stream miles, with the final score representing the weighted sum of occurrences per 10 miles of stream.

Habitat scores measure the presence of special habitat areas within each subwatershed in terms of relative cover. Special habitat areas include NYSDEC Wilderness areas, Important Bird Areas, parcels owned by The Nature Conservancy, and significant natural communities as provided by the New York Natural Heritage Program. While percent cover would normally be used, the resulting values were too large and outweighed the fish and endangered species scores; thus, to bring the values in line with the other sub-scores, the percent cover of special habitat areas within each subwatershed were divided by ten.

Table 8.4-15. Habitat and Biota Scoring System

SCORING SCALE	SCORE VALUE	WEIGHT VALUE	WEIGHTED SCORE
Greater than 6.0	5	1	5
4.0 to 6.0	4	1	4
2.0 to 4.0	3	1	3
1.0 to 2.0	2	1	2
Less than 1.0	1	1	1

Source: NYSDEC Lands GIS Data Layer; Property New York Natural heritage Program GIS data; Parcel GIS Data provided by Hamilton, Herkimer, Jefferson, Lewis, and Oneida Counties

High Erosion Areas

This factor measures the potential for erosion in residential and agricultural areas within each subwatershed using a combination of steep slopes (i.e., slopes greater than 8 percent) and soil erodibility factors (i.e., k-factors). The final score is the weighted average of k-factors for each subwatershed. Values for each subwatershed range from 0.00005 to 0.01975. Soil erosion impacts water quality by transporting nitrogen- and phosphorous-laden sediments from fields to surface waters, resulting in eutrophication and decreased levels of dissolved oxygen that can reduce water quality, fish populations, and other animal populations. Table 8.4-16 provides a detailed breakdown of the scoring system used for this factor.

Table 8.4-16. High Erosion Areas Scoring System

SCORING SCALE	SCORE VALUE	WEIGHT VALUE	WEIGHTED SCORE
Greater than 0.0159	5	1	5
0.01 to 0.0159	4	1	4
0.001 to 0.0099	3	1	3
0.0005 to 0.00099	2	1	2
Less than 0.0005	1	1	1

Source: Digital Elevation Model (U.S. Geological Survey); State Soil Geographic (STATSGO) GIS data set (U.S. Department of Agriculture)

8.5 Agricultural Best Management Practices

RIPARIAN BUFFERS

Naturally vegetated riparian and streambank buffers are effective at protecting waterbodies from nonpoint source pollution by intercepting pollutant (e.g., nitrogen and phosphorus) and sediment-laden runoff from adjacent land uses. Table 8.5.1 provides the buffer width requirements necessary to realize nitrogen removal efficiencies of 50 percent, 75 percent, and 90 percent for two riparian buffer types.

In terms of sediment, grass swales 14 feet in width can reduce the amount of sediment entering a given waterbody from a particular location by approximately 70 percent; a 28-foot grass buffer can reduce this load by almost 90 percent.[1]

Table 8.5.1. Riparian Buffers Widths and Nitrogen Removal Efficiencies[2]

RIPARIAN BUFFER COMPOSITION	50% NITROGEN REMOVAL	75% NITROGEN REMOVAL	90% NITROGEN REMOVAL
Grass	52.5 ft	154.2 ft	295.3 ft
Grass/Forest	16.4 ft	65.6 ft	154.2 ft

NO-TILL CROP PRODUCTION

In a no-till crop production system the field is left virtually undisturbed from harvest to planting (except for nutrient injection); fields are no longer plowed, and plant residues remain on the soil to offer protection from erosion; and a narrow seedbed is prepared by the planter or drill during the planting operation, to allow adequate seed and fertilizer placement. Table 8.5.2 provides the percent of pollutant removed resulting from three levels of no-till implementation (i.e., 25 percent, 50 percent, and 75 percent of agricultural land area). For example, if 75 percent of agricultural lands implement no-till crop production, watershed nitrogen loads from agricultural lands will be reduced by 41.1 percent.

Table 8.5.2. No-Till and Percent Removal Efficiencies[3]

POLLUTANT	25% OF AGRICULTURAL AREA	50% OF AGRICULTURAL AREA	75% OF AGRICULTURAL AREA
Sediment	13.0%	33.1%	49.8%
Total Nitrogen	11.0%	24.9%	41.1%
Total Phosphorus	11.1%	25.1%	41.7%

VEGETATIVE FILTER STRIPS

Filter strips are areas of either planted or indigenous vegetation located along cropland edges (generally grasses in this context). These areas remove pollutants from runoff, provide habitat for wildlife, and offer an area for field turn rows and haymaking. Filter strips may also increase farm safety by moving machinery operations away from steep stream and ditch banks. Table 8.5.3 provides the percent of pollutant removed resulting from three levels of vegetative filter strip implementation (i.e., 25 percent, 50 percent, and 75 percent of agricultural land area). For example, if 25 percent of agricultural lands in the basin drain through vegetative filter strips, watershed sediment loads from agricultural lands will be reduced by 19.8 percent.

Table 8.5.3. Vegetative Filter Strips and Percent Removal Efficiencies[4]

POLLUTANT	25% OF AGRICULTURAL AREA	50% OF AGRICULTURAL AREA	75% OF AGRICULTURAL AREA
Sediment	19.8%	34.6%	42.9%
Total Nitrogen	21.7%	34.4%	43.2%
Total Phosphorus	23.1%	35.8%	44.4%

COVER CROPS

Cover crops are crops sown after harvest of the main crop and, by providing protective cover for the soil, reduce erosion and associated nonpoint source pollution. Cover crops can also uptake excess nitrogen remaining in the soil following harvest, while also providing valuable organic matter that can be ploughed into the soil. Table 8.5.4 provides the percent of pollutant removed resulting from three levels of cover crop implementation (i.e., 25 percent, 50 percent, and 75 percent of agricultural land area). For example, if 50 percent of agricultural lands in the basin utilize cover crops during the off-season, watershed phosphorus loads from agricultural lands will be reduced by 21.1 percent.

Table 8.5.4. Cover Crops and Percent Removal Efficiencies[5]

POLLUTANT	25% OF AGRICULTURAL AREA	50% OF AGRICULTURAL AREA	75% OF AGRICULTURAL AREA
Sediment	7.8%	18.5%	23.9%
Total Nitrogen	10.1%	21.4%	27.2%
Total Phosphorus	10.5%	21.1%	26.3%

CONTOUR FARMING

One of the simplest approaches to reducing erosion on agricultural lands is contour farming – performing field activities (e.g., plowing, sowing, fertilizer application) along existing topographic contours. The purpose of contour farming is to slow the flow of runoff and allow water to infiltrate into the soil, which results in reduced rates of erosion. The effectiveness of this BMP decreases as slope gradient and length increase, with implementation on slopes between 2 percent and 10 percent being most effective. Table 8.5.5 provides removal efficiencies associated with the implementation of contour farming:

Table 8.5.5. Contour Farming Percent Removal Efficiencies[6]

POLLUTANT	REMOVAL EFFICIENCY
Sediment	41%
Total Nitrogen	23%
Total Phosphorus	40%

TERRACING

Use terracing to intercept runoff water and reduce soil erosion on cultivated steep slopes. Terraces are earthen embankments or ridges, often with an associated channel, built across the slope parallel to one another, with each down-slope terrace collecting excess water from the terrace above. Terracing can reduce soil erosion by breaking long slopes into a series of shorter ones, protect water quality by intercepting agricultural runoff, prevent gully formation by directing runoff to stable outlets, make it easier to farm steep slopes, and improve soil quality and productivity by improving moisture retention and reducing soil erosion. The following three terrace types should be implemented where appropriate:

- Broad-based terraces are designed to be entirely farmed; they are generally suitable for long, uniform gentle slopes of up to 6% or so.
- Grassed back-slope terraces are designed to be farmed on the front slope of the ridge but the back slope is graded to a steep pitch and grassed; they are generally suitable on slopes up to 15%.
- With narrow-based terraces, the entire ridge is grassed instead of just the back slope, and both sides of the ridge are steeply pitched; the narrow ridges require only a small part of the field to be removed from production.

PRESCRIBED GRAZING

Prescribed grazing can help to improve or maintain surface and/or subsurface water quality and quantity, riparian watershed function, the quantity and quality of food and/or cover available for wildlife, and reduce accelerated soil erosion and maintain or improve soil condition.[7] To implement prescribed grazing, the following criteria should be met:

1. Minimize concentrated livestock areas, trailing, and trampling to enhance nutrient distribution and improve or maintain ground cover and to reduce soil compaction, excess runoff, and erosion.
2. Plan intensity, frequency, timing and duration of grazing and/or browsing to
    a. minimize deposition or flow of animal wastes into water bodies;
    b. minimize leaching of nutrients to the groundwater;
    c. minimize animal impacts on streambank or shoreline stability to reduce erosion and excessive sediment deposition;
    d. provide adequate ground cover and plant density to maintain or improve infiltration capacity and the filtering capacity of the vegetation, and to reduce runoff;
    e. maintain adequate riparian community structure and function to sustain associated riparian, wetland, floodplain and stream species.
    f. provide for the development and maintenance of the plant structure, density and diversity needed for the desired fish and wildlife species of concern.
3. Plan management unit layout and facilitating practice placement to minimize livestock trail erosion.
4. Indentify species of concern in the objectives of the prescribed grazing plan.
5. Provide rest from grazing during critical nesting and brooding periods.
6. Include resting areas critical for the wildlife of concern

CONTROL SILAGE LEACHATE RUNOFF

Silage, a nutrient-rich feed for livestock, can also produce liquid effluents, or leachate, gases, malodors, undesirable microorganisms, and waste or spoiled silage that can negatively affect water quality. These problems most often occur when forage is harvested containing a dry matter content of less than 30 percent or when precipitation flows through silage and transports the nutrients and other chemicals into surface water and groundwater. There are several methods for controlling silage leachate runoff:

1. Locate silos as far as possible from water resources — surface water, wells, sink holes, and any direct path to groundwater. The minimum recommended distance is 300 feet.
2. Divert leachate to a well-ventilated, open-top manure storage facility or filter it through the use of buffer areas or constructed wetlands. Do not add silage leachate to enclosed storage facilities. When mixed with manure, silage leachate produces hydrogen sulfide and other hazardous gases that can kill animals and humans.
3. Keep clean water from mixing with the silage with diversion trenches, roofs or covers over the silo. This protects the quality of the silage and decreases the potential for leachate runoff.
4. Dilute silage leachate with equal parts of milk parlor wash water or feedlot runoff to use for irrigating crops.

5. Poor covering lets in rain and air, which increases leachate and decreases silage quality. Cover stacks during and immediately after filling. Seal the edges to keep rain out. Keep the cover as intact as possible when you start to feed out.

REDUCE LIVESTOCK ACCESS TO STREAMS

Allowing livestock access to streams often results in the deposition of manure and urine directly into or near surface waters and can accelerate erosion and sedimentation, change stream flow, and destroy aquatic habitats. Additionally, grazing in riparian areas can reduce their capacity to filter nutrients and stabilize stream banks. Reducing livestock access to streams involves two separate activities – off-stream watering tanks and controlled stream crossings and exclusionary fencing. Table 8.5.6 provides removal efficiencies associated with reducing livestock access to streams. For example, a livestock farm can reduce the amount of total nitrogen entering a stream on its property by 56 percent if livestock are excluded.

Table 8.5.6. Reducing Livestock Access to Streams Percent Removal Efficiencies

POLLUTANT	REMOVAL EFFICIENCY
Sediment	76%
Total Nitrogen	56%
Total Phosphorus	78%

8.6 State and Federal Agencies and Programs

This section of the Black The Black River Watershed Management Plan provides an overview of the state and federal regulatory conditions that currently exist within the Black River watershed as they apply to water quality. This overview is not meant to be an exhaustive review of state and federal programs, but rather to highlight particular agencies and legislation that directly address water quality.

At the federal level, this section reviews the following seven pieces of legislation or programs:

- The Clean Water Act;
- The Clean Water Action Plan;
- The Safe Water Drinking Act;
- The Coastal Zone Management Act;
- The Great Lakes Compact;
- The Great Lakes Restoration Initiative; and
- The Federal Insecticide, Fungicide, and Rodenticide Act.

In addition to these Federal legislative acts, this report also examines five departments within the New York State government, as well the State Environmental Quality Review Act (SEQRA). The departments evaluated include:

- The NYS Department of State;
- The NYS Department of Environmental Conservation;
- The NYS Department of Agriculture and Markets;
- The NYS Department of Health; and
- The Adirondack Park Agency.

8.6.1 Federal Regulations

The following section summarizes the major federal regulations effecting nonpoint source pollution.

CLEAN WATER ACT

The Clean Water Act (CWA) is the primary federal law regulating surface water quality in the United States. More specifically, the Clean Water Act refers to the 1977 amendments to the Federal Water Pollution Control Act of 1972, which switched the focus from controlling receiving water standards to regulating discharge standards. Both legislative acts were in response to severe pollution problems on some of the nation's best-known waterways – the Great Lakes, the Potomac River, the Cuyahoga River – as well as nationwide beach closures resulting from polluted waters. Additional amendments to the 1972 legislation were enacted under the Water Quality Act of 1987.

The purpose of the CWA is to reduce pollution in U.S. waterways. The statute uses a combination of regulatory and non-regulatory tools to reduce direct and indirect pollutant discharges into waters of the U.S. and to finance municipal wastewater treatment facilities.[8] Waters of the U.S. are specifically defined in 40 CFR 230.3(s) and generally include all navigable waters and territorial seas, as well as other water features including intermittent streams, playa lakes, prairie potholes, sloughs, and

wetlands. While the regulatory and non-regulatory tools were initially employed to maintain the chemical integrity of waters, these tools are now utilized to restore and maintain the chemical, physical, and biological integrity of the nation's waters so that they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water". [9]

As part of the move to broaden the scope of protection, programs developed under the CWA have shifted from a program-by-program, source-by-source, pollutant-by-pollutant approach to a more holistic, watershed-based approach that places as much emphasis on protecting healthy waters as it does on restoring impaired ones. [10] This change in approach also included the involvement of various stakeholder groups in developing and implementing strategies for achieving and maintaining state water quality goals.

In terms of process, the U.S. Environmental Protection Agency (USEPA) requires that states establish water quality standards that are consistent with the statutory goals of the CWA. Identification of designated uses, water quality criteria, and an anti-degradation policy are the three primary components comprising the Water Quality Standards Program. [11] Once the USEPA has approved these standards, states must develop a monitoring program to determine whether water quality standards are being met. As part of the monitoring program, states are required to provide the results of their monitoring efforts in the form of two biennial reports submitted to USEPA and made available to the public.

The first report – the "305(b) Report" – should include information on the condition of all waters in the state, as well as data regarding which pollutants (e.g., chemicals, sediments, nutrients, metals, temperature, pH) and other stressors (e.g., altered flows, modification of the stream channel, introduction of exotic invasive species) are the most common causes of impairments a for waterbodies. [12] If, based on the results of the monitoring program, a waterbody is not meeting the state's water quality standards, it is considered impaired and is placed on the "303(d) List", the second report required by the USEPA (waters that are threatened to be impaired should also be included in this report). Starting in 2002, the USEPA requested that states submit these separate reports as one consolidated report, with all waters being placed in one of five categories according to the condition of the waterbody and the amount of information available. [13] The New York State Department of Environmental Conservation (NYSDEC) *Waterbody Inventory/Priority Waterbodies List Reports* fulfill these requirements of the CWA.

For those waterbodies placed on the 303(d) list, the state must develop strategies to ensure they meet water quality standards in the future. Once a strategy, or series of strategies, is identified and implemented, monitoring of ambient conditions continues and the results are compared again to the water quality standards. This iterative process is continued until the standards are met.

One of the most common strategies is the development of a Total Maximum Daily Load (TMDL) for impaired waterbodies. TMDLs are used to determine what levels of pollutant loadings would allow a given waterbody to meet the state's water quality standards. TMDLs also allocate acceptable loads among sources of the relevant pollutants.[14] To achieve the reductions in pollutant loadings necessary to meet the aforementioned standards, states implement strategies authorized by the CWA, as well as other tools available from federal, state, and local governments and nongovernmental organizations. A few of the major CWA tools are:

- The National Pollutant Discharge Elimination System (NPDES) Program;
- The Nonpoint Source Program;
- The Section 404 Program;
- The State Water Quality Certification; and
- The State Revolving Fund (SRF).

A more detailed discussion of each program can be found below:

National Pollutant Discharge Elimination System (NPDES) Program

Section 402 of the CWA established the National Pollutant Discharge Elimination System (NPDES) program to regulate point sources of pollution discharging into a surface waterbody. As part of the 1987 amendment to the CWA, the NPDES program makes it illegal to discharge pollutants from a point source into waters of the U.S. without first obtaining a discharge permit from the proper authority. The purpose of the NPDES program is not to prohibit all discharges into waters of the U.S., but rather to set regulatory limits on the amount of various pollutants that a source can discharge in a given time. Point sources include pipes, ditches, channels, tunnels, certain kinds of ships, and offshore oil rigs, as well as industrial and municipal discharges, discharges from storm sewer systems in larger cities (i.e., combined sewer overflows and municipal separate storm sewer systems), storm water associated with numerous kinds of industrial activity, runoff from construction sites, mining operations, and animal feedlots or aquaculture facilities above certain thresholds. [15] Note that as of 2003, regulations promulgated under Phase II of the NPDES program are in effect. Phase II regulations expanded the Phase I program's reach by including all municipalities, industrial dischargers, constructions sites greater than one acre, and other large property owners (e.g., school districts). [16]

In 1977, the NYSDEC was formally delegated the authority by the USEPA to administer its State Pollutant Discharge Elimination System (SPDES) program in lieu of the NPDES program in New York State. A discussion of the SPDES program in New York can be found in Section 8.5.2.

Nonpoint Source Program

Section 319 of the CWA established a federal program that provides grants to states for the development and implementation of programs to reduce nonpoint source pollution. Unlike the authority granted over point sources of pollution, the CWA provides no federal regulatory authority over nonpoint sources.[17] As the CWA does not provide a detailed definition of nonpoint sources, they are instead defined by exclusion as anything not considered a point source by the CWA and USEPA regulations. Note, however, that sediment is not identified as a pollutant of concern, even though it might be one of the most significant sources.

Generally, all nonpoint sources of pollution are the result of precipitation runoff above or below the ground's surface (e.g. runoff from row-crop and livestock farming). According to states' 305(b) and 303(d) reports, these sources represent the most significant source of pollution in the United States – more miles of rivers and acres of lakes are impaired by nonpoint sources than by "industrial facilities, municipal sewage plants, and point source runoff from municipal storm sewer systems and storm water associated with industrial activity". [18] Pollutants commonly associated with nonpoint sources include salt, pesticides, excess nutrients (e.g., nitrogen and phosphorous), and oil or grease. An additional nonpoint source of pollution is atmospheric deposition, which often results in the acidification of waterbodies.

Funding for nonpoint pollution programs is made available to states once the USEPA has approved a state's nonpoint source program. If a state elects to pursue Section 319 funding, it must complete and update a nonpoint source management plan every five years. States can also choose to pursue additional federal, state, local, or private programs for funding (e.g., Farm Bill). [19]

Section 404 Program

Section 404 of the CWA regulates the placement of dredged or fill materials into wetlands and other waters of the U.S. As previously noted, waters of the U.S. include all navigable waters and territorial seas, as well as other water features including intermittent streams, playa lakes, prairie potholes, sloughs, and wetlands. Additionally, 33 CFR 28.3(b) specifically defines wetlands as:

> *Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil*. [20]

In other words, for an area to be considered a wetland it must exhibit characteristics of all three key features – hydrology, wetland-dependent vegetation (i.e., hydrophytes), and soil types associated with water-saturated conditions (i.e., hydric soils). Additionally, for wetlands to fall under the purview of the CWA, they must exhibit a surface hydrologic connection to a navigable water of the U.S. [21] Thus, areas can be classified as wetlands by exhibiting characteristics of all three key features noted above, but be outside the purview of the CWA by being isolated from any navigable water of the U.S.; many states, however, have assumed some sort of regulatory authority over these isolated wetlands.

While the Section 404 permit program is administered jointly by the USEPA and the U.S. Army Corps of Engineers (USACE), the USACE is the lead agency in terms of actual permit issuance and ensuring permit compliance, as well as determining whether a given plot of land meets the aforementioned wetland criteria. [22] Two types of permits are available through the Section 404 program – general permits and individual permits.

General permits are further divided into regional and nationwide general permits, with both applying only to those proposed activities that are minor in scope with minimal projected impacts; activities that involve more than minimal impacts require an individual permit. As their names imply, regional permits typically apply to a certain state or region within a state, whereas nationwide general permits authorize specific types of activities anywhere in the U.S. The purpose of a nationwide general permit is to reduce the time and effort required to complete the regulatory process. General permits are valid only if the conditions applicable to the permits are met. If the conditions cannot be met, an individual permit is required. It should be noted that major changes have been made to the nationwide general permit in recent years, with certain activities that were previously allowed either made ineligible for the permit or requiring additional notification

As part of the permitting process, the USACE is also required to gain state water quality certification before a permit can be issued as provided under Section 401 of the CWA. If Section 401 certification is denied, no permit can be issued under the Section 404 program.

Finally, Section 404(f) of the CWA provides exceptions for certain discharges so as to not require a permit, including activities that are part of normal, ongoing farming, ranching, and silviculture practices (e.g., plowing, seeding, cultivating, harvesting).

For more information on the Section 404 program, please contact:

US Army Corps of Engineers,
Buffalo District
1776 Niagara Street
Buffalo, NY 14207
(716) 879-4330

State Water Quality Certification

As required by Section 401 of the CWA, federal agencies cannot issue a license or permit that may result in any discharge to waters of the U.S without first obtaining state certification that the discharge is consistent with the CWA. This includes attainment of applicable state ambient water quality standards from the state in which the proposed project is located.[23] The CWA also allows downstream states whose water quality may be affected by a federally-permitted or licensed project to be involved in the Section 401 process.

For more information on the State Water Quality Certification program, please contact:

NYSDEC Division of Environmental Permits
4th Floor
625 Broadway
Albany, NY 12233-1750
(518) 402-9167

Clean Water State Revolving Funds

As part of the 1987 amendment to the CWA, Congress phased out the previous construction grants program and replaced it with the Clean Water State Revolving Fund (CWSRF), which provides funding for municipal wastewater treatment, stormwater management, nonpoint source pollution control and estuary protection projects. Under this program, the USEPA provides annual capitalization grants to states, which are then used to provide low-interest loans to a variety of borrowers (e.g., municipalities, communities of all sizes, farmers, homeowners, small businesses, nonprofit organizations) for a wide range of water quality projects. For communities with demonstrated financial hardship, including many of the communities in the Black River watershed, the interest rate may be as low as zero for the duration of the financing. It should be noted that states must provide a 20 percent local funding match for every one dollar of federal funds received.[24]

Funding from the CWSRF can only be used to pay for the capital costs of water quality projects, including traditional infrastructure expenditures (e.g., pipes, pumps and treatment plants), as well as unconventional infrastructure costs (e.g., land conservation, tree plantings, equipment purchases, planning and design, environmental cleanups and even the development and initial delivery of environmental education programs). The CWSRF can also be used to fund green infrastructure projects such as:

- Tree Boxes;
- Green Roofs;
- Vegetated Swales;
- Riparian Buffers;
- Vegetated Median Strips;
- Parks & Greenways;
- Cisterns & Rain Barrels;
- Permeable Pavements;
- Land Conservation & Reforestation;
- Wetland & Floodplain Construction;
- Downspout Disconnections; or
- Rain Gardens & Bioinfiltration Practices.

To date, most of the funding provided through the CWSRF have gone towards the construction, expansion, repair, or upgrading of municipal sewage collection and treatment systems. However, CWSRF funds can also be used for nonpoint source pollution control projects consistent with an existing CWA Section 319 program, or for implementation of a management plan developed under the National Estuary Program. [25]

For more information on the CWSRF program, please contact:

David Morseman
NYS Environmental Facilities Corporation
625 Broadway
Albany, NY 12207-2997
(518) 402-7396

CLEAN WATER ACTION PLAN (CWAP)

In October of 1997, during the 25th anniversary of the CWA, the Clean Water Action Plan (CWAP) was developed by the Clinton Administration to renew the commitments of all levels of government to the goals of the original Clean Water Act, which was to provide fishable and swimmable waters to all Americans. The CWAP was a cooperative effort between several federal agencies, including the USEPA, to develop a blueprint for restoring and protecting the nation's precious water resources by building upon the accomplishments of the original CWA and proposing aggressive new actions to strengthen the program. [26]

The CWAP focuses on four key elements:

- A watershed approach;
- Strong federal and state standards;
- Natural resource stewardship; and
- Informed citizens and officials.

A more detailed description of each element can be found below.

Watershed Approach

Working at the watershed level is the most effective approach for bringing together state, tribal, federal, and local programs to protect and restore water resources. This approach will also encourage the public to become more involved in said efforts. Additionally, focusing on watersheds most effectively balances the myriad of efforts that could be implemented to clean up rivers and lakes, such as controlling point and nonpoint source pollution, protecting drinking water sources, or restoring sensitive natural resources (e.g., wetlands). [27] The CWAP watershed approach includes four fundamental components:

- Unified watershed assessments;
- Watershed restoration action strategies;
- Watershed pollution prevention; and
- Watershed assistance grants.

Strong Federal and State Standards

Although the CWA provided much needed protections to water resources in the U.S., many gaps still exist. The CWAP seeks to close these gaps by calling on governmental agencies at all levels to review and revise standards where needed and to make existing programs more effective. Improving on the effectiveness of these programs is essential to protecting public health, preventing polluted runoff, and ensuring accountability. Some of the specific actions called for in the CWAP include:

- Improve assurance that fish and shellfish are safe to eat;
- Ensure safe beaches;
- Expand control of storm water runoff;
- Improve state and tribal enforceable authorities to address polluted runoff;
- Define nutrient reduction goals; and
- Reduce pollution from animal feeding operations.

Natural Resource Stewardship

Cropland, pasture, rangeland, and forests comprise a considerable portion of the nation's lands and, as such, much of the water that flows through our rivers, lakes, and streams first falls on these lands as precipitation. Accordingly, clean water is dependent upon the effective management of these areas, as well as the conservation and stewardship of the various natural resources within a given watershed. Thus, the CWAP commits all federal natural resource, conservation, and environmental agencies to apply their collective resources and technical expertise to state and local watershed restoration and protection. [28] The CWAP identifies four primary tools to accomplish this commitment:

- Federal land stewardship;
- Protect and restore wetlands;
- Protect coastal waters; and
- Provide incentives for private land stewardship.

Informed Citizens and Officials

Clear, accurate, and timely information is the foundation of a sound and accountable water quality program. Informed citizens and officials make better decisions about their watersheds. The CWAP

calls on federal agencies to improve the information available to the public, governments, and others about the health of their watersheds and the safety of their beaches, drinking water, and fish. [29]

SAFE DRINKING WATER ACT

Originally passed in 1974 to protect public health by regulating the nation's water supply, the Safe Drinking Water Act (SDWA) was amended in 1986 and 1996 to recognize source water protection (e.g., rivers, lakes, reservoirs, springs, ground water wells), operator training, funding for water system improvements, and public information as important components of improving the safety of drinking water.[30] The SDWA provides the USEPA with regulatory authority over every public water system in the U.S., of which there are currently more than 170,000, as well groundwater wells that serve 25 or more individuals.

As part of the SDWA, the USEPA is authorized to set national health-based standards for drinking water to protect against both naturally-occurring and man-made contaminants that may be found in drinking water. [31] These standards, otherwise known as the National Primary Drinking Water Regulations, identify maximum levels for particular contaminants in drinking water, as well as methods for treating water to remove said contaminants. Supplementary to these standards are requirements for water systems to monitor their water for contaminants to ensure the standards are met. In addition to setting these standards, USEPA also provides guidance, assistance, and public information about drinking water, collects drinking water data, and oversees state drinking water programs. [32]

The SDWA also provides individual states the authority to implement the SDWA within their jurisdictions, assuming they adopt standards at least as stringent as those promulgated by USEPA and ensure that water systems meet these standards. All states and territories, with the exception of Wyoming and the District of Columbia, currently implement the SDWA. To receive such authority, states must develop programs to certify water system operators and make sure that new water systems have the technical, financial, and managerial capacity to provide safe drinking water. [33] To assist states with SDWA requirements, the USEPA provides grants to implement state drinking water programs and to help each state set up a special fund to assist public water systems in financing the costs of improvements (i.e., the Drinking Water State Revolving Fund).

To ensure that water quality standards are being met, water systems serving year-round populations must provide annual consumer confidence reports on the source and quality of their tap water. Additionally, states and the USEPA must prepare annual summary reports of water system compliance with drinking water safety standards and make these reports available to the public. Finally, in terms of enforcement, both the USEPA and implementing states can take action against water systems not meeting safety standards, including the issuance of administrative orders, taking legal action, or through monetary fines.

COASTAL ZONE MANAGEMENT ACT

The Coastal Zone Management Act (CZMA) was passed by Congress in 1972 in an effort to confront the continued development in coastal zones and "to preserve, protect, develop, and where possible, restore or enhance valuable natural coastal resources such as wetlands, floodplains, estuaries, beaches, dunes, barrier islands, and coral reefs, as well as the fish and wildlife using those habitats".[34] The geography encompassed by the CZMA includes areas bordering the Atlantic, Pacific, and Arctic Oceans, the Gulf of Mexico, Long Island Sound, and the Great Lakes. Administered by the National

Oceanic and Atmospheric Administration (NOAA) Office of Ocean and Coastal Resource Management (OCRM), the CZMA provides financial assistance to any coastal state, tribe, or territory that is willing to develop and implement a comprehensive coastal management program; most states/tribes currently participate in the program. [35]

Outlined within the CZMA are two national programs – the National Coastal Zone Management Program and the National Estuarine Research Reserve System. The National Coastal Zone Management Program works with 34 coastal and Great Lakes states, territories, and commonwealths that have approved coastal management programs to protect more than 99 percent of the nation's 95,331 miles of ocean and Great Lakes coastline. [36] By balancing coastal development with resource conservation, this program ensures that the nation's coasts and oceans, including the Great Lakes and island territories, are healthy and thriving for this and future generations. The second program – the National Research Reserves System – is a partnership program between NOAA and the coastal states. Encompassing 27 research reserves throughout the country, this program provides funding, national guidance and technical assistance long-term research, education, and coastal stewardship. [37]

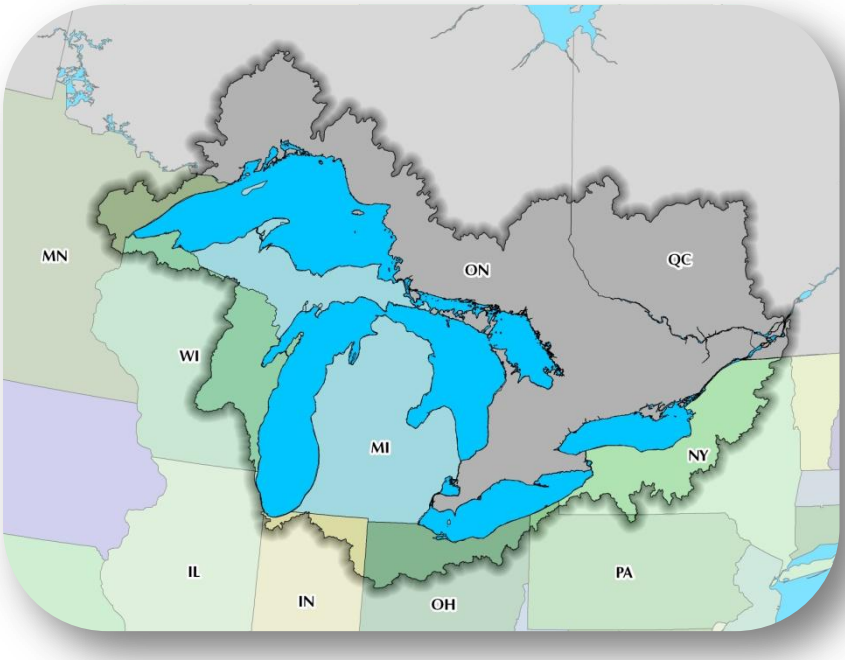
As part of the 1990 reauthorization of the CZMA, nonpoint source pollution was identified as a major factor in the continuing degradation of coastal waters. [38] As the most effective solutions to nonpoint source pollution are implemented at the state and local levels, Congress added Section 6217, which requires states/tribes with federally approved coastal zone management programs to develop and implement coastal nonpoint pollution control programs. [39]

GREAT LAKES COMPACT

The Great Lakes Compact is Congressionally-approved agreement between the eight Great Lake states (Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, and Wisconsin) and the two Great Lakes Canadian provinces (Ontario and Quebec) that established new environmental protection and water conservation standards for water use in the region, including the prevention of most diversions of water from the Great Lakes. More specifically, the purposes of the compact are:

- To promote the orderly, integrated, and comprehensive development, use, and conservation of the water resources of the Great Lakes Basin (hereinafter called the Basin).
- To plan for the welfare and development of the water resources of the Basin as a whole as well as for those portions of the Basin which may have problems of special concern.
- To make it possible for the states of the Basin and their people to derive the maximum benefit from utilization of public works, in the form of navigational aids or otherwise, which may exist or which may be constructed from time to time.
- To advise in securing and maintaining a proper balance among industrial, commercial, agricultural, water supply, residential, recreational, and other legitimate uses of the water resources of the Basin.
- To establish and maintain an intergovernmental agency the end that the purposes of this compact may be accomplished more effectively.[40]

Further, by placing riparian water use rules and environmental protection standards into a public law regime, the Great Lakes Compact uses the minimum standards administered primarily under the authority of individual states to protect and manage this freshwater resource. The standards developed under the compacts represent "numerous advances in the development of water use law, including uniform treatment of ground and surface water withdrawals, water conservation, return flow, and prevention of environmental impacts". [41]



Member states and provinces of the Great Lakes Compact

Established under the Great Lakes Compact is the Great Lakes Commission (Commission), an interstate agency whose purpose is to carry out the terms and requirements of the compact. The Commission addresses a wide range of issues, including environmental protection, resource management, transportation and economic development. The Commission draws its membership from each of the eight Great Lakes states and the two Canadian provinces, with each jurisdiction appointing a delegation of three to five members. These delegations comprise senior agency officials, legislators and/or appointees of the governor or premier. A committee and task force structure is the primary vehicle for identifying and addressing issues and recommending the adoption of policy positions by the membership. [42]

For more information regarding the Great Lakes Compact and Great Lakes Commission, please contact:

Great Lakes Commission
Eisenhower Corporate Park
2805 S. Industrial Hwy, Suite 100
Ann Arbor, MI 48104-6791
(734) 971-9135
http://www.glc.org/

GREAT LAKES RESTORATION INITIATIVE

The Great Lakes Restoration Initiative (GLRI) is a new USEPA-led, interagency restoration initiative that provides $475 million beginning in 2010 to target the most significant problems in the Great Lakes region, including invasive aquatic species, non-point source pollution, and contaminated sediments. (http://www.epa.gov/glnpo/glri/) More specifically, the GLRI uses outcome-oriented performance goals to direct funding towards five focus areas:

- Toxic Substances and Areas of Concern;
- Invasive Species;
- Nearshore Health and Nonpoint Source Pollution;
- Habitat and Wildlife Protection and Restoration; and
- Accountability, Monitoring, Evaluation, Communication, and Partnerships.

Funding made available through this initiative will be used to strategically implement federal projects and competitive grants. For more information regarding the Great Lakes Restoration Initiative and its associated funding, please see the information at the following internet site:

Great Lakes Restoration Initiative Funding Guide: http://greatlakesrestoration.us/action/?p=161

FEDERAL INSECTICIDE, FUNGICIDE, AND RODENTICIDE ACT (FIFRA)

In 1910, the United States enacted its first pesticide law, which was primarily targeted towards protecting consumers from ineffective products and deceptive labeling. Building on this legislation, the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 7 U.S.C. § 136 et seq., was passed in 1947, establishing labeling provisions and procedures for registering pesticides with the U.S. Department of Agriculture.[43] FIFRA was significantly amended in 1972 by the Federal Environmental Pesticide Control Act (FEPCA) and in 1996 by the Food Quality Protection Act (FQPA). These amendments shifted the focus from pesticide efficacy and required that the USEPA regulate the use and sale of pesticides to protect human health and preserve the environment. [44]

The purpose of the FIFRA is to provide federally regulatory authority over the distribution, sale, and use of pesticides in the United States. To ensure that pesticides will be properly labeled and that, if used properly, will not cause unreasonable harm to the environment, this legislation mandates that all pesticides used in the U.S. are registered with the USEPA. Additionally, the current form of FIFRA authorizes the following actions by the USEPA: [45]

- Strengthen the registration process by shifting the burden of proof to the chemical manufacturer;
- Enforce compliance against banned and unregistered products; and
- Promulgate the regulatory framework missing from the original law.

Although the FIFRA provides the USEPA with the authority to oversee the sale and use of pesticides, it does not fully preempt state/tribal or local laws that govern the use of pesticides.

8.6.2 New York State Agencies and Regulations

The following section summarizes the New York State agencies with water resource regulatory authority effecting nonpoint source pollution and their associated programs.

NEW YORK STATE DEPARTMENT OF STATE (NYSDOS)

Established as the Office of the Secretary of State in 1778, the New York State Department of State (NYSDOS) has been historically known as the "Keeper of Records", while also overseeing a wide range of additional functions and evolving programs including professional licensure, training and technical assistance to local governments, and providing financial assistance to help New York's communities become better places to live, work and visit. [46] Specific to New York's communities, the Office of Local Government Services "provides training and technical assistance to local governments and community organizations throughout the state and helps local officials solve problems involving basic powers and duties, public works, municipal organization, planning, land use and regulatory controls, and community development". [47] Five offices or divisions are housed within the Office of Local Government Services:

- The Division of Coastal Resources and Waterfront Revitalization;
- The Office for Fire Prevention and Control;
- The Division of Code Enforcement and Administration;
- The Division of Community Services; and
- The Office of Regional Affairs.

As it relates to water resource issues, the Division of Coastal Resources is involved in a wide variety of programs and initiatives that help revitalize, promote and protect New York's communities and waterfronts. For more than 20 years, the Division has assisted local communities to prepare Local Waterfront Revitalization Programs, expand public waterfront access, reinvigorate urban waterfronts, restore habitats, and strengthen local economies. [48] In terms of financial assistance, the Division of Coastal Resources has provided grant funding from three primary sources to communities across the State:

- The Environmental Protection Fund Local Waterfront Revitalization Program;
- The Clean Water/Clean Air Bond Act; and
- The Great Lakes Coastal Watershed Restoration Program. [49]

Specific to watershed protection, the Division of Coastal Resources has developed an "integrated, comprehensive approach to watershed planning that relies on sound science and community consensus to set a shared vision for the future, identify problems, find solutions, and create an action strategy to make a difference". [50] The resulting intermunicipal watershed plans provide a flexible framework for managing both water quality and quantity, while also balancing socioeconomic needs and natural resource protection and preservation.

The NYSDOS is also responsible for processing and filing local laws. Subsequent to passing a given piece of legislation, local municipalities must provide a copy of the legislation to the NYSDOS where it is referred to the State Records and Law Bureau to verify compliance with the formal requirement of the Municipal Home Rule Law and the rules of the Department of State. [51] If these requirements are met, the law is filed and indexed (indices of all local laws are maintained in Albany by the

Secretary of State). If, however, the requirements are not met, the State Records and Law Bureau returns the law and identifies what needs to be done to make the local law acceptable for filing. It should be noted that counties must publish local laws in their official newspapers as required by County Law, Section 214. [52]

DEPARTMENT OF ENVIRONMENTAL CONSERVATION (NYSDEC)

A key moment in New York's history of environmental conservation occurred when, in 1885, the New York State Legislature established the Forest Preserve of New York State, which identified lands in the Adirondack and Catskill Mountains to be protected as "forever wild" and established land use regulations and guidelines for the remaining areas not classified as such. A decade later, the Fisheries, Game and Forest Commission was created to implement and enforce fish and game, hunting season, and poaching regulations.[53] In 1927, this Commission was replaced by the Conservation Department and included a Division of Parks, which supervised all State parks, reservations, historic sites, and recreational areas (except the forest preserve).[54] Finally, in 1970, the Department of Environmental Conservation (NYSDEC) was established to bring together, in a single state agency, all programs directed toward protecting and enhancing the environment. [55, 56]

The enacting legislation that established the NYSDEC and authorizes its programs is the Environmental Conservation Law.[57] According to Article 1 of the Environmental Conservation Law, the mission of the NYSDEC is as follows:

> *The quality of our environment is fundamental to our concern for the quality of life. It is hereby declared to be the policy of the State of New York to conserve, improve and protect its natural resources and environment and to prevent, abate and control water, land and air pollution, in order to enhance the health, safety and welfare of the people of the state and their overall economic and social well-being.*

Given the breadth of its mission, the NYSDEC comprises 17 divisions, which are further subdivided into bureaus, to fulfill the functions and regulations established by Title 6 of New York Codes, Rules and Regulations (6NYCRR), as well as those established by federal law. As it relates to water quality and quantity, the Division of Water is tasked with protecting and conserving the water resources of New York through a wide range of programs and activities (note that additional Divisions within the NYSDEC may also have purview over programs that address water quality). [58] By using a variety of programs, training, and outreach, the Division of Water protects and conserves water resources throughout the state. These programs are implemented through one of five bureaus located within the Division:

- The Bureau of Water Assessment and Management;
- The Bureau of Water Permits;
- The Bureau of Water Compliance;
- The Bureau of Water Resource Management; and
- The Bureau of Program Resources.

While many of these programs are statewide in their scope, other efforts are targeted to address water quality and quantity issues in specific regions of the state, focusing on waterbodies or watersheds where these issues are of particular concern. Additionally, other programs are targeted towards specific contaminants (e.g., mercury) or sources (e.g., stormwater runoff). A brief description

of the key programs administered by these bureaus, and others, can be found below (where specific programs fall under the purview of a Division other than the Division of Water, it is noted).

Unified Watershed Assessments

Traditionally, water quality regulations have focused on managing individual wastewater discharges and have thus overlooked the impact of diffuse sources of polluted runoff (e.g., land development, agriculture). To address these upstream impacts on downstream water quality, natural resource agencies at the national, State, and local levels have increasingly adopted the concept of "watersheds" in their policy and programmatic approaches.

As such, the 1998 federal Clean Water Action Plan (CWAP) commited additional Section 319 funding to assist states further their water quality restoration efforts by requiring each state to prepare a Unified Watershed Assessment (UWA).[59] As a result of this program, most NYSDEC water quality programs (e.g., monitoring and assessment, discharge permitting, stormwater and other nonpoint source controls) are implemented on a watershed basis.

More specifically, the CWAP requires that a UWA be prepared for each USGS 8-digit Hydrologic Unit Code watershed within a state to determine where additional funding will help achieve "fishable and swimmable" waters for all Americans; New York State has 54 such watersheds, including the Black River watershed. The UWA is based on expertise, public input, and the evaluation of general watershed factors, natural resource factors, and water quality factors. A list of these factors can be found below (New York State's Unified Watershed Assessment and Watershed Restoration Priorities were prepared by a team of professional staff from the Department of Environmental Conservation's Division of Water and Division of Fish, Wildlife and Marine Resources, and staff from the USDA Natural Resources Conservation Service): [60]

General Watershed Factors

- Watershed statistics, including miles of streams and square miles of drainage area; number of sites monitored, segments requiring Total Maximum Daily Load (TMDL) assessments of specific pollutants, and number of waterbodies on the Priority Waterbody List (PWL).
- Wetlands that have been mapped pursuant to the state's Freshwater Wetlands Act, in acres.
- Remedial Action Plans for the six Great Lakes Areas of Concern in New York State, Management Plan areas, Heritage River designation and other areas of special focus, including New York's critical and sensitive groundwater and primary aquifer systems on Long Island and upstate.
- Agricultural data, including runoff potential based on soils information and EPA's Index of Watershed Indicators. Information from the Environmental Quality Incentive Program and priorities of the Natural Resources Conservation Service were also included as agricultural information.

Natural Resource Factors

- Fish and wildlife population levels.
- Loss of Aquatic habitat, including wetlands and riparian habitat.
- Endangered species, including state and federally endangered, threatened and special concern fish and wildlife species that are listed because of reasons associated with perturbations of the aquatic resource (such as loss of habitat).
- Flow modification due to water withdrawals for water supply and irrigation, and release patterns from hydroelectric generation.

Water Quality Factors

- Priority Waterbodies List (PWL) TMDL waters in New York State.
- Fish consumption advisories for specific waters.
- Lakes and streams affected by acid deposition.
- Priority Waterbodies List (PWL) waters whose water quality is being degraded and cannot be fully used as a resource.

Following the completion of the evaluations, each of the 54 watersheds was placed into one of the following four categories:

Category I - Watersheds in need of restoration. These watersheds do not now meet, or face imminent threat of not meeting, clean water and other natural resources goals. New York State has 26 watersheds in this category; substantial restoration work is under way in 21 of these watersheds.

Category II - Watersheds meeting goals. This includes those needing action to sustain water quality. New York has 22 watersheds in this category, including the Black River watershed.

Category III - Watersheds with pristine or sensitive aquatic system conditions on lands administered by federal, state, and tribal governments. New York has no watersheds in this category.

Category IV - Watersheds with insufficient data to make an assessment. New York has 6 watersheds in this category.

Water Quality Monitoring, Assessment, and Planning

The NYSDEC has implemented several programs to monitor the waters of the state, evaluate data and information against standards and criteria to assess the quality of these waters, conduct research to better define the nature of pollutants, sources and impacts on waters and their uses, and develop management strategies to enhance and protect these waters.[61] A summary of the key water quality monitoring, assessment, and planning programs can be found below.

Routine Statewide Monitoring

The Division of Water is responsible for the routine monitoring to determine the overall quality of waters, trends in water quality, and identification of water quality problems and issues. This monitoring effort is coordinated through the Rotating Integrated Basin Studies (RIBS) Program and includes Stream Biomonitoring, Lake Classification and Inventory, Citizens Statewide Lake Assessment Program (CSLAP), and the Groundwater Sampling Program.[62]

Rotating Integrated Basin Studies – RIBS monitoring is conducted in two to four of New York's 17 major drainage basins each year, resulting in data available statewide over a five-year cycle. These data include water column, sediment, and organism tissue chemistry and biological assessment of water quality using macroinvertebrate community analysis and toxicity testing.

Stream Biomonitoring Unit – The NYSDEC Stream Biomonitoring Program uses resident benthic macroinvertebrate communities as indicators of water quality in rivers and streams. This program was begun in 1972 and has been instrumental in identifying temporal trends in water quality throughout the state.

Lake Assessments (CSLAP, LCI) – Two programs are responsible for monitoring lakes, ponds, and reservoirs – the Lake Classification and Inventory (LCI) and the Citizens Statewide Lake Assessment Program (CSLAP). The LCI is conducted by NYSDEC staff and follows the five-year rotating basin schedule of the RIBS program; CSLAP is run by volunteers from individual lake associations with the direction of NYSDEC staff.

Groundwater Sampling Program – The groundwater sampling program conducts yearly comprehensive sampling and analysis of groundwater including field and physical parameters, bacteria, nutrients, inorganics, organics (including pesticides and VOCs), and radiochemicals. This program also parallels the five-year rotating RIBS program schedule by concentrating on approximately 1/5 of the state each year. Sampling is conducted by the USGS using both public and private wells. Sampling results and data reports are available for each major basin through the USGS website.

Water Quality Assessments and Reporting

The Water Quality Assessments and Reporting program evaluates monitoring results and reports on water quality through the Waterbody Inventory/Priority Waterbodies List, the New York State Water Quality Report (Section 305(b)) Report, and the Section 303(d) List of Impaired Waters. A brief discussion of each can be found below:[63]

Waterbody Inventory/Priority Waterbodies List (WI/PWL) – The Waterbody Inventory/Priority Waterbodies List is an inventory of all waterbodies in New York State that is used to track the status of water quality in the state. For each waterbody, the WI/PWL characterizes available information on general water quality, the degree to which designated water uses (e.g., water supply, recreation, aquatic life support) are supported, and information on the identification of water quality problems, sources and restoration and protection efforts.

New York State Water Quality Report (Section 305(b) Report) – Section 305(b) of the Clean Water Act requires states to submit a report on the quality of their state's waters every two

years. This report is a compilation of water quality assessment information contained in the WI/PWL Basin Reports.

List of Impaired/TMDL Waters (Section 303(d) List) – Section 303(d) of the Clean Water Act requires states to compile and submit every two years a list of those waters that do not meet water quality standards and support uses, and that require the development of a Total Maximum Daily Load (TMDL) or other appropriate strategy to restore the water use.

Water Quality Research and Special Projects

The Water Quality Research and Special Projects program investigates, through sampling investigation and research, other issues and questions bearing on water quality by focusing on specific waterbodies, contaminants, pollution sources or trends. While these water quality research projects may be short- or long-term efforts, they are typically of limited duration.[64] These more focused studies and research efforts include:

- Lake Monitoring, Management, and Research
- Nonpoint Source/Event Monitoring in New York City Watershed
- Adirondack Effects Assessment Program (AEAP)
- Finger Lakes Monitoring
- Hudson River Pathogens
- New York Harbor/Contaminated Assessment and Reduction Program (CARP)
- Sediment Assessment and Management

Water Quality Standards and Analytical Support

The Water Quality Standards and Analytical Support program provides technical support for the Division of Water's monitoring, assessment and research functions, as well as its permitting and compliance efforts. These activities include the development of water quality standards and criteria as a basis for controlling pollution and to guide the assessment of monitoring results, the management of analytical resources available to the division/department, conducting QA/QC reviews to insure data quality of monitoring programs and projects, implementation of a health and safety program, and research into new analytical technologies, sample collection methods and emerging contaminants.

Water Quality Standards and Classifications – Water classifications identify the best uses of the waters of the State, while water quality standards establish chemical-specific standards that waters must meet in order to fully support these uses.

Analytical Services and Resources – The analytical requirements and guidelines for the monitoring programs of the Division and Department are outlined in the Analytical Services Protocol (ASP). Information regarding contract laboratories that provide analytical services to the Division/Department is also available from this program.

Quality Assurance/Quality Control – The Division of Water's Quality Assurance Management Plan outlines the management processes and structures for assuring environmental data generated and processed will be of known and acceptable quality. This program is also responsible for reviewing the Division of Water Quality Assurance Project Plans and Standard Operating Procedures.

Division of Water Health and Safety – The development of general and program/project specific training and other health and safety needs is provided through the Division of Water's Health and Safety Program.

Water Quality Management

The Water Quality Management program oversees the development of strategies to restore waters that do not support identified uses, reverses identified declining water quality trends, and provides adequate protection to all NYS waters. These activities include establishing water quality based permit limits, participation in watershed-specific management groups and activities, and coordination of Total Maximum Daily Load (TMDL) development and other appropriate strategies to address impaired waters.[65] A brief discussion of these activities can be found below:

Watershed Management/Upstate – These activities comprise watershed-specific management programs in the upstate region and include the Lake Champlain Basin Program, the Great Lakes Programs, the Delaware River Basin Commission, and the Susquehanna River Basin Commission/Chesapeake Bay Program.

Watershed Management/Downstate – These activities comprise watershed-specific management programs in the downstate region and include the New York/New Jersey Harbor Estuary Program, the Hudson River Estuary Program, the Long Island Sound Study, and the Peconic Estuary Program.

Water Quality Based Effluent Limits – This program evaluates proposed effluent discharge permit limits to determine if technology-based limits are adequate to meet water quality standards, or if more stringent water quality-based limits are necessary.

Water Quality Restoration Strategies/TMDLs – For waters that do not meet water quality standards and do not support uses, TMDL or other appropriate strategies are necessary to bring the water back into compliance with standards and restore uses.

Dredge Materials Management – River and lake bottoms are often the final resting place for historically discharged contaminants. The dredging of these sediments (e.g., for navigation, habitat restoration) needs careful management to ensure they are collected and disposed of properly.

Anti-Degradation Policy – The purpose of this policy is to maintain the water quality of those waters whose quality is higher than the standards require, unless it is demonstrated that allowing the lowering of water quality is necessary to accommodate significant economic or social development in the affected area. Lowered water quality must still meet the existing use standards for that waterbody.

Water Supply & Conservation

New York State's waters serve a variety of functions, including domestic, municipal, agricultural, commercial, industrial, power, recreational and other important public purposes. To ensure that the water supply can meet both present and future needs, the NYSDEC regulates and offers technical guidance for public water supply wells, registers water well contractors, and provides information to the public about droughts.[66]

Established in 1905, the Public Water Supply Program is one of the first efforts to "conserve and develop the waters of the state for all beneficial uses for the public".[67] Administered by the NYSDEC, this program conserves and protects available water supplies by ensuring equitable and wise use by those who distribute potable water to the public. Additional legislation in 1989 added water conservation to the standards for permit issuance and required each applicant to document the local water conservation measures taken and those measures planned for future implementation.

Wetlands

The Freshwater Wetlands Act was passed by the NYS Legislature in 1975 to "preserve, protect and conserve freshwater wetlands and their benefits, consistent with the general welfare and beneficial economic, social and agricultural development of the state".[68] The Division of Fish, Wildlife and Marine Resources' Bureau of Habitat is responsible for setting the direction of the freshwater wetlands program, with regional staff implementing most aspects of the program.

The Freshwater Wetlands Act identifies wetlands based on vegetation, while hydric soils and wetland hydrology provide additional information that should be used to assist in documenting the presence of a wetland and the location of its boundary.[69] For an identified wetland to be protected under the Freshwater Wetlands Act, it must be at least 12.4 acres in size; wetlands smaller than this, however, may be protected if they are considered of unusual local importance. Inside the Adirondack Park, all wetlands greater than one acre in size are protected, although delineations for all watersheds inside the Park are not yet complete. Additionally, a 100-foot buffer that extends around every NYSDEC wetland is also regulated.

According to the Freshwater Wetlands Act, certain activities within and around wetlands require a permit, while other activities are specifically exempt from regulation and do not require a permit. A list of some common activities and their regulatory status can be found below:

Exempt Activities (these activities do not require a wetlands permit):

- Normal agricultural practices (except filling and clear cutting).
- Recreational activities such as fishing, hunting, hiking, swimming, camping or picnicking.
- Ordinary, routine maintenance of existing structures or buildings, existing lawns, and similar facilities.
- Selectively cutting trees and harvesting fuel wood, but not clear cutting trees or wetland vegetation.

Regulated Activities with minor impacts

- Installing utilities to a residence (exempt in an adjacent area).
- Drilling a water well in an adjacent area to serve an individual residence.
- Replacing existing, functional bulkheads.
- Installing docks, piers, or wharves.

Regulated Activities with major impacts

- Filling (including filling for agricultural purposes) and grading.
- Erecting buildings, including houses, barns, garages, commercial and industrial facilities.
- Restoring, modifying, or expanding existing structures.
- Draining, (except for agriculture), dredging, or otherwise changing water levels in wetlands, including breaching of beaver dams.
- Constructing or removing bulkheads, dikes, or dams.
- Constructing roads.
- Applying pesticides in wetlands.
- Clear cutting trees or other vegetation.
- Mining.

To differentiate between the variety and degree of functions and benefits provided by wetlands, the Freshwater Wetlands Act requires that the NYSDEC rank wetlands into one of four classes – Class I to Class IV. The highest quality wetlands are identified as Class I and can be characterized by their large size, diversity of vegetative communities, or the presence of rare or endangered species. [70] Class IV wetlands, on the other hand, do not provide the ecological benefits that are provided by wetlands of the other three classes and, as such, are not considered as valuable. Wetlands in this class can be characterized by their small size or the presence of invasive and/or exotic species, for example.[71] The permit requirements are more restrictive for Class I wetlands than for Class IV wetlands.

Dams & Flood Protection

To protect people against loss of life and property from flood and dam failure, the NYSDEC has been legislated regulatory authority over dams. The Department oversees a statewide program responsible for dam safety inspections, technical review of proposed dam construction or modification, monitoring of remedial work for compliance with dam safety criteria and emergency preparedness. The NYSDEC also provides technical support to local governments and owners of dams, oversees dam maintenance, operation and repair, and promotes floodplain management in communities across the state.[72]

To assist communities in finding ways to reduce or protect against physical and property damage caused by flooding, the NYSDEC works on structural flood control projects to prevent flood waters from damaging communities, as well as assisting in the development of sustainable floodplain management programs to mitigate the potential for flooding. Finally, the Department works with those communities participating in the National Flood Insurance Program to administer local regulations and building standards for flood damage prevention.[73]

Pesticides

As provided by the NYS Environmental Conservation Law, the NYSDEC has jurisdiction in all matters pertaining to the distribution, sale, use, and transportation of pesticides, including the registration, commercial use, purchase and custom application of pesticides.[74] The Division of Solid & Hazardous Materials is responsible for compliance assistance, public outreach activities and enforcement of State pesticide laws, which can be found under Article 33 and parts of Article 15 of

the Environmental Conservation Law, and regulations, Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York Parts 320-329.[75]

States must also comply with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), including the development of an adequate pesticide container residue removal program. Without such a program, states cannot maintain their FIFRA authority for certification of pesticide applicators and primary pesticides enforcement. As such, the NYSDEC Bureau of Pesticides Management is establishing a State residue removal program that will address residue removal for refillable and non-refillable pesticide containers, including requirements regarding:[76]

- Rinsing instructions for container labels;
- Residue removal procedures (registrants provide to refillers);
- Cleaning refillable containers; and
- Non-refillable container residue removal standards.

The 2006 Federal Pesticide Container and Containment Rule that established this requirement stated that the regulatory community must comply by 2009 or 2011, depending on the provision. By August 16, 2009, "registrants must ensure that the labels of refillable and non-refillable containers include the required cleaning instructions, pesticide users must empty and clean containers according to those label instructions, and registrants must ensure that certain non-refillable containers are capable of attaining the 99.99% residue removal standard".[77] The August 16, 2011 deadline requires that all "registrants must develop the residue removal procedure, provide it to refillers and keep records; refillers must obtain the procedure and keep records; refillers must clean refillable containers before repackaging, if necessary under the requirements".[78]

Neighbor Notification Law

To provide neighbors time to take measure to reduce their risk of exposure to pesticides, the New York State Legislature enacted the Neighbor Notification Law (6 NYCRR Part 325 Section 41). This new legislation requires that 48 hour notice be provided to neighbors of certain commercial lawn applications, that visual notification markers be posted for most residential lawn applications, that notice is provided to occupants of multiple dwellings and other occupied structures, and that retailers who sell general use lawn pesticides post an information sign.[79]

The Neighbor Notification Law and associated regulations, however, are only effective in counties (and New York City) that have adopted local laws opting into this legislation in its entirety. As of January 1, 2008, the following counties have opted into this program:

- Albany County
- Erie County
- Monroe County
- Nassau County
- Rockland County
- Suffolk County
- Tompkins County
- Ulster County
- Westchester County
- New York City.

The Neighbor Notification Law also provides for exemptions for commercial lawn applicators that use certain pesticides, including "certain antimicrobial pesticides, certain pesticides that meet all of the requirements for minimum risk pesticides, and certain pesticides that meet the U.S. Environmental Protection Agency requirements for reduced risk pesticides or biopesticide".[80]

State Pollution Discharge Elimination System (SPDES)

To protect and maintain New York State's valuable surface and groundwater resources, Article 17 of the Environmental Conservation Law was enacted and authorized creation of the State Pollutant Discharge Elimination System (SPDES). New York's SPDES program has been approved by the USEPA for the control of wastewater and stormwater discharges in accordance with the Clean Water Act; this program is broader in scope than is required by the Clean Water Act as it controls point source discharges to groundwaters as well as surface waters.[81] The Division of Environmental Permits is responsible for managing this permitting program.

Under the SPDES program, permits are required for the following activities:

- Constructing or using an outlet or discharge pipe (referred to as a "point source") that discharges wastewater into the surface waters or ground waters of the state; or
- Constructing or operating a disposal system such as a sewage treatment plant

Generally, SPDES permits are not required for facilities whose total discharges to the groundwater are less than 1,000 gallons per day of sewage-wastewater that contains no industrial or other non-sewage wastes.[82] Note that these discharges may be subject to approval from the appropriate city health department, county health department, or district office of the New York State Department of Health before a system (e.g., cesspool, septic system) can be built. Additional NYSDEC or other agency permit approvals may also be required.

Activities that generate only minor impacts may be eligible for a general permit under the SPDES program. SPDES projects with minor impacts include discharges of less than 10,000 gallons per day of treated sanitary wastes only, without the admixture of industrial waste, from on-site treatment systems serving private (including qualifying single and multi-family dwellings), commercial and institutional facilities.[83] All other activities will likely require an individual permit.

As part of the permitting requirements, applicants may be required to develop and implement a stormwater pollution prevention plan (SWPPP). These plans must include "a site description, including a map that identifies sources of storm water discharges on the site, anticipated drainage patterns after major grading, areas where major structural and nonstructural measures will be employed, surface waters, including wetlands, and locations of discharge points to surface waters". [84] Other items included in a SWPPP are descriptions of the measures that will be used to protect existing vegetation, where possible, and to stabilize any disturbed areas following construction.

Of particular importance to the Black River watershed are the SPDES General Permits for Concentrated Animal Feeding Operations (CAFOs). CAFOs fall under the jurisdiction of the SPDES program as they are considered point sources of pollution. According to the NYSDEC…

> *…Concentrated Animal Feeding Operation (CAFO) means an Animal Feeding Operation (AFO) that is defined as a Large CAFO or as a Medium CAFO, or that is designated by the Department or USEPA Regional Administrator as a CAFO.*

The NYSDEC also provides guidelines for determining whether a given CAFO is "Large" or "Medium". For example, the NYSDEC indicates that large CAFOs include those operations with at least 700 mature dairy cows (whether milked or dry), while medium CAFOs include those operations with between 200 and 699 mature dairy cows (whether milked or dry). These types of guidelines are provided for all forms of livestock.

There are two permit options for CAFOs in New York State:

- General Permit GP-0-09-001; and
- General Permit GP-0-09-002.

General Permit GP-0-09-001 is a general permit issued pursuant to the Environmental Conservation Law for CAFO operations and is not eligible for facilities that discharge or propose to discharge. CAFO facilities that discharge or propose to discharge must apply for coverage under the federal Clean Water Act SPDES General Permit GP-0-09-002.

For more information regarding the SPDES program, including CAFOs, in New York State, please contact:

NYSDEC Division of Water
625 Broadway
Albany, NY 12233-3505
(518) 402-8111

State Environmental Quality Review Act (SEQR)

Implemented on November 1, 1978 (revised effective June 1, 1987 and January 1, 1996), the purpose of the New York State Environmental Quality Review Act (SEQR) is to ensure that all state and local government agencies equally consider the environmental, social, and economic factors during discretionary decision-making (i.e., permit approvals).[85] In addition to state or local government agencies, districts and special boards and authorities must also assess the environmental significance whenever they must approve or fund a privately or publicly sponsored action. Often, this requires preparing and environmental impact assessment so that all significant environmental impacts are identified and mitigated.

More specifically, an "action" under SEQR comprises those actions of the state or local government including:

- The approval or direct development of physical projects (e.g., shopping centers, public buildings, roads, etc.);
- The approval or direct development of physical projects (e.g., park development plans, comprehensive plans, etc.); and
- The Adoption of agency rules, regulations, procedures and policies (e.g., local zoning, public health regulations, wetlands protection, etc.).

When actions consist of several steps or sets of activities, the entire set must be considered the action, even if several separate agencies are involved. Segmentation of an action into components for individual review is contrary to the intent of SEQR.

The first step under the SEQR process is to identify whether the proposed action is Type I, Type II, or Unlisted. Type I actions meet or exceed thresholds listed in the statewide or agency SEQR regulations and are likely to require, although not always, the preparation of and environmental assessment or environmental impact statement (EIS). A prime example of a Type I Action is a non-residential development that will physically alter 10 or more acres of land. Type II Actions have been determined not to have a significant adverse impact on the environment and thus never require further SEQR review. The list below provides several examples of Type II Actions:

- Rebuilding or replacement of facilities, in-kind, on the same site;
- Minor structures, such as garages, barns or home swimming pools, routine permit and license renewals with no substantial change in permitted activities;
- Routine activities of educational institutions, including expansions of existing facilities by less than 10,000 square feet;
- maintenance and repair activities;
- Emergency actions; and
- Actions subject to environmental review under the Adirondack Park Agency or Public Service Laws.

Finally, Unlisted Actions are those that do not meet the thresholds established for Type I Actions, but that may still require an EIS. This includes activities such as nonresidential projects physically altering less than 10 acres of land or the adoption of regulations, ordinances, local laws and resolutions that may affect the environment.

If the action was determined to be Type I or Unlisted, the project sponsor/applicant completes an Environmental Assessment Form and establishes which of the involved agency will be the "lead agency". On completing an EAF, the lead agency assesses whether or not the proposed project will have a significant adverse impact on the environment (i.e., SEQR Determination). The SEQR Determination can result in one of the following three declarations:

- *Negative Declaration* – If an action is determined not to have significant adverse environmental impacts, a determination of non-significance is prepared.

- *Conditioned Negative Declaration* – If the action can be made to equate to a non-significant action through enforceable terms conditions placed on a permit or license, a "conditioned negative declaration" may be prepared.

- *Positive Declaration* – If an action is determined to have potentially significant adverse environmental impacts, an Environmental Impact Statement is required and the applicant must submit a Draft Environmental Impact Statement (DEIS).

The purpose of an EIS is to examine ways to avoid or reduce adverse environmental impacts related to a proposed action, including an analysis of all reasonable alternatives to the action. Upon completion and submittal of a DEIS, the lead agency reviews the document to determine whether it

is adequate for public review in terms of scope and content. Once the lead agency determines that it is suitable for review, the minimum 30-day public comment period begins and provides all concerned parties the opportunity to offer their comments to the lead agency.

Following the public comment period, a Final EIS is prepared and the lead agency makes a final decision. A positive findings statement issued by the lead agency indicates that the project/action is approvable as-is, best avoids or minimizes adverse environmental impacts, and weighs and balances them with social, economic and other essential considerations. A negative findings statement is issued when the project/action is not approvable; negative findings statements must document the reasons for the denial.

In terms of SEQR enforcement, each agency of government is responsible to see that it meets its own obligations to comply. Thus, while the NYSDEC provides informal interpretations and guidance about the conduct of SEQR, it cannot provide formal legal opinions about the conduct of SEQR by other agencies. State and local agencies and other interested parties should consult with their own legal counsel for formal interpretations of SEQR law and regulations.

If an agency makes an improper decision or allows a project that is subject to SEQR to start without undertaking a proper review, citizens or groups who can demonstrate that they may be harmed by this failure may take legal action against said agency under Article 78 of the New York State Civil Practice Law and Rules. This can result in project approvals being rescinded by a court and a new review required under SEQR. New York State's court system has consistently ruled in favor of strong compliance with the provisions of SEQR.

DEPARTMENT OF AGRICULTURE AND MARKETS

The Department of Agriculture and Markets seeks to foster a competitive food and agriculture industry in New York State that benefits producers and consumers alike. As its lands comprise one-quarter of the land in New York, agriculture contributes significantly to the State's quality of life through the generation of economic activity and the production of wholesome products to nourish our families. To ensure its continued viability, the NYS Department of Agriculture and Markets works diligently to promote this industry, foster agricultural environmental stewardship, and safeguard our food supply.[86] To accomplish its goals, the responsibilities of the NYS Department of Agriculture and Markets is distributed to one of fifteen Divisions, of which the Soil and Water Conservation Committee is most relevant to water quality and environmental stewardship.

Soil and Water Conservation Committee

According to the NYS Department of Agriculture and Markets, the mission of the Soil and Water Conservation Committee (SWCC) is "to develop and oversee implementation of an effective soil and water conservation and agricultural nonpoint source water quality program for the State of New York that is implemented primarily through county Soil and Water Conservation Districts".[87] Comprising both voting and advisory members, the SWCC represents a wide range of agricultural, environmental and other interests, which allows it to carry out its work through a network of partnerships between state, federal, and local agencies, as well as citizen interests and the private sector.[88] The responsibilities of the SWCC include the following:

- Serves as an information and idea exchange between member agencies and groups, which improves trust and cooperation and results in better program implementation.

- Establishes policy to guide the programs of New York's 58 County Soil and Water Conservation Districts.
- Helps Soil and Water Conservation Districts organize, develop, and carry out their programs
- Advises all agencies of government on matters relating to soil and water conservation.
- Serves as "lead agency" for New York State's agricultural nonpoint source pollution control programs.

The SWCC also implements two programs designed to foster environmental stewardship on agricultural lands – the Agricultural Environmental Management (AEM) Program and the New York State Agricultural Nonpoint Source Abatement and Control Program. A brief discussion of each can be found below.

Agricultural Environmental Management (AEM)
The primary goal of the AEM program is to protect and enhance the environment while maintaining the viability of agriculture in New York State. Implemented as a voluntary, incentive-based program, it provides one-on-one assistance to farmers to identify environmental risks on their farms. Once these risks are identified, the AEM program provides farmers with technical assistance (i.e., planning, design, and help obtaining financial assistance) to correct existing problems and prevent future ones.[89]

When farmers decide to participate in the AEM program, resource professionals assist the farmer in developing a comprehensive farm plan based on the following tiered process:

- *Tier 1 (Inventory)* – Inventory current activities, future plans and potential environmental concerns.
- *Tier 2 (Assessment)* – Document current land stewardship; assess and prioritize areas of concern.
- *Tier 3 (Plan Development)* – Develop conservation plans addressing concerns and opportunities tailored to farm goals.
- *Tier 4 (Plan implementation)* – Implement plans utilizing available financial, educational and technical assistance.
- *Tier 5 (Plan Evaluation)* – Evaluate to ensure the protection of the environment and farm viability.

This process helps to target limited local, state, and federal technical and financial resources to farms with the greatest potential for impacting the environment. The farmer is always the ultimate decision-maker in cooperation with members of local AEM teams and qualified private consultants which help to ensure that farm business objectives are met while also achieving local, state and federal environmental and water quality goals.[90] As such, a farmer can halt the process at any point (e.g., a farmer can finish the Tier 2 Assessment phase and decide not to complete the Tier 3 Plan Development phase). Note that the AEM program can only be used for non-CAFO farms (see the SPDES discussion for more information on CAFOs).

For more information regarding the AEM process, please contact the appropriate County Soil & Water Conservation District:

Hamilton County SWCD
Box 166 Rt 8
Lake Pleasant, NY 12108-0166
(518) 548-3991
hcswcd@frontiernet.net
www.hamiltoncountyswcd.com

Herkimer County SWCD
5653 State Route 5
Herkimer, NY 13350
(315) 866-2520 ext.3
deb.michael@ny.nacdnet.net

Jefferson County SWCD
PO Box 838
21168 NYS RT 232
Watertown, NY 13601
(315) 782-2749 or 786-0486
bwohnsiedler@centralny.twcbc.com
www.jeffersoncountyswcd.org

Lewis County SWCD
January 8, 1946
5274 Outer Stowe Street, Suite #1
Lowville, New York 13367
(315) 376-6122
nbillhardt@lewiscountyny.org
www.lewiscountysoilandwater.com

Oneida County SWCD
USDA Service Center
9025 River Road
Room 204
Marcy, NY 13403
(315) 736-3334/3335
Kevin-lewis@oneidaswcd.org

Two additional programs worth noting are located under the umbrella of the AEM program – Comprehensive Nutrient Management Plans and the NYS Conservation Reserve Enhancement Program.

Comprehensive Nutrient Management Plan (CNMP)
Comprehensive Nutrient Management Plans (CNMP) are conservation plans designed to evaluate all aspects of farm production and offer conservation practices that help achieve both production and natural resource conservation goals. While CNMPs are the basis for the NYSDEC Concentrated Animal Feeding Operations (CAFOs) regulatory program, they are also required for farms seeking federal or state cost-sharing to construct manure storage structures. Additionally, any livestock farm

seeking to maximize production, while efficiently managing their natural resources and protecting the environment can develop a CNMP.[91]

A CNMP is designed to enhance the natural resources on the farm and to reduce the potential for off-site impacts by addressing the following issues:

- The production, handling, storage and/or treatment of animal manure, its organic by-products, and fertilizers;
- The amount, source, form, placement, and timing of the application of these materials to the land;
- The loss of soil from water and wind erosion; and
- The long-term economic viability and efficiency of animal feeding operations.

Additionally, recent changes to the federal Environmental Quality Incentives Program (EQIP) now require all participating farms to prepare a CNMP.

Conservation Reserve Enhancement Program
The goal of the NYS Conservation Reserve Enhancement Program (CREP) is to reduce pollution in streams by assisting agricultural land owners with voluntarily planting trees, shrubs, and grasses along streambanks to trap sediment-, pesticide-, and fertilizer-laden runoff.[92] To offset the loss productive agricultural land, landowners are compensated through annual rental payments and upfront incentive payments based on the total acreage dedicated to forested buffers or vegetated filter strips.[93] Landowners are also eligible for cost-share funding up to 50 percent (with an additional 40 percent available in incentive payments) for the procurement of planting materials, fencing, watering facilities, and stream crossings. To participate in the CREP, landowners must agree to maintain the buffers for either 10 or 15 years.

To be eligible, a given waterbody must be listed on the 1996 NYS Priority Waterbodies List (PWL) for impacts related to agricultural activities. Based on this information, there are 12 major basins that have been targeted for the program and each watershed was chosen because segments within them had documented water quality impacts from agriculture, including the Black River watershed. Any CREP activities in these watersheds will be guided by locally led pollution prevention and conservation efforts and will build on a voluntary partnership between producers, governmental entities and nongovernmental organizations for addressing watershed quality problems and protecting public health.[94]

Agricultural Nonpoint Source Abatement and Control Program
Enacted in 1994, the New York State Agricultural Nonpoint Source Abatement and Control Program provides farms with cost-share funding and technical assistance to correct and prevent water pollution from farming activities. The program is a competitive grant program and County Soil & Water Conservation Districts apply for the grants on behalf of farmers; the districts also coordinate any funded activities. Grants can be awarded up to 75 percent of a project's cost in one of two general areas – planning (funds awarded to conduct environmental planning) and implementation (funds awarded to construct or apply management practices).

DEPARTMENT OF HEALTH

The primary role of the NYS Department of Health (NYSDOH) as it relates to water quality is to ensure the safety of drinking water in New York. By working with its partners (e.g., county health departments), the NYSDOH regulates the operation, design and quality of public water supplies and commercial bottled water suppliers; assures water sources are adequately protected; provides financial assistance to public water suppliers, reviews and approves plans for proposed realty subdivisions, and sets standards for constructing individual water supplies and individual wastewater systems (septic systems).[95]

The NYSDOH fulfills these responsibilities primarily through two programs – the Source Water Assessment Program and the Wellhead Protection Program. A discussion of each can be found below.

Source Water Assessment Program (SWAP)

In 1996, the U.S. Congress amended the Safe Drinking Water Act (SDWA) to emphasize the protection of surface and ground water sources used for public drinking water. The result of these amendments is that each state must develop a Source Water Assessment Program (SWAP) to complete assessments of sources of public drinking water and make the assessments available to the public. Within the NYSDOH, the Bureau of Public Water Supply Protection is responsible for ensuring that source water assessments are completed for all of New York's public water systems.[96]

The SWAP requires that source water assessments be completed for all public drinking water sources that are used by public water systems, including surface waters. These assessments will provide information on the potential contaminant threats and include:

- A delineation of the source area (i.e., aquifer, surface waters, watershed area) contributing to the drinking water supply;
- An inventory of the potential contaminant sources within these defined areas that may pose a threat to the drinking water quality (i.e., contaminant source inventory); and
- An evaluation of the likelihood that the drinking water supply could become contaminated (i.e., susceptibility analysis). [97]

By using these assessments to direct local and state efforts to protect public drinking water sources, they will provide a rational basis for future source water protection activities as they identify the most significant threats of contamination to a particular source of public drinking water.[98] Specific to the Black River watershed, it is important to note that the source of drinking water for the City of Watertown is the Black River. Given the City's location near the mouth of the river, the entire watershed is thus responsible for source water protection.

Wellhead Protection Program (WPP)

The purpose of New York State's Wellhead Protection Program (WPP) is to protect the ground water sources and wellhead areas that supply public drinking water systems from contamination. Approved by the USEPA in 1990 as a result of 1986 amendments to the Safe Drinking Water Act, New York's WPP recognizes and includes the existing federal, state, and county programs that protect groundwater and complements these programs through a combination of activities and efforts using existing public and private agencies and organizations at all levels. Originally developed under the

NYSDEC, jurisdiction over the WPP was transferred to the NYSDOH in 1998 to improve program efficiency and compatibility with the NYSDOH's Source Water Assessment Program. [99]

Using the SWAP process noted above, information related to wellhead protection efforts will be reviewed and utilized whenever possible. Additionally, the WPP requires developing a specific management plan for protecting the ground water resource, which may also include a detailed delineation to determine where the ground water is coming from within an aquifer. Also included in the management plan is an inventory of possible sources of contamination that could affect the water quality of the ground water resource. Communities developing a wellhead protection program should contact their local health department to formulate a strategy to integrate their Source Water Assessment into their Wellhead Protection Program. [100]

Septic Systems

To ensure the proper design and construction of new septic systems in New York State, the NYSDOH Administrative Rules and Regulations (10NYCRR 75) requires that all new individual sewage treatment systems shall be designed and constructed in accordance with 10NYCRR Appendix 75-A (*Wastewater Treatment Standards – Individual Household Systems*) as the generally accepted standard for individual sewage treatment systems.[101] These standards include detailed design specifications for septic system components based on estimated water usage, and where the system components can be installed in the landscape.

To provide guidance in uniformly implementing these design standards, the NYSDOH has also produced a handbook – *Wastewater Treatment Standards: Individual Household Systems*. This handbook addresses the "effective design, construction and maintenance of individual household sewage treatment systems for use by homeowners, design professionals, builders, contractors, local community officials and health department officials".[102]

For more information regarding these septic system regulations in Jefferson and Lewis Counties, please contact:

New York State Department of Health
Watertown District Office
Dulles State Office Bldg.
317 Washington Street
Watertown, NY 13601-3741
(315) 785-2277

For more information regarding these septic system regulations in Herkimer County, please contact:

New York State Department of Health
Herkimer District Office
5665 State Route 5
Herkimer, NY 13350-9721
(315) 866-6879

For more information regarding these septic system regulations in Hamilton County, please contact:

New York State Department of Health
Saranac Lake District Office
41 St. Bernard St.
Saranac Lake, NY 12983-1839
(518) 891-1800

ADIRONDACK PARK AGENCY

Established by the New York State Legislature in 1892 as a forest preserve, the Adirondack Park is the culmination of a preservation movement that began amid concerns for the water and timber resources of the region.[103,104] Originally comprising 681,000 scattered acres, over the past century the Adirondack Park has grown to encompass approximately 6 million acres. Of these 6 million acres, 48 percent are constitutionally protected to remain "forever wild" forest preserve making it the largest complex of wild public lands in the eastern United States.[105] The remaining 52 percent of lands within the park boundary are privately owned and include human settlements, farms, timber lands, businesses, and camps.[106, 107] The landscape associated with these private lands, including the historic character and natural environment, is also afforded a degree of protection.

To develop and implement long-range land use plans for the public and private lands located within the park boundary, the Adirondack Park Agency (APA) was created in 1971 by the New York State Legislature.[108] Soon after its formation, the APA prepared the State Land Master Plan (adopted in 1972) and the Adirondack Park Land Use and Development Plan (adopted in 1973), both of which are periodically revised to reflect changes and current trends and conditions.[109]

As noted above, nearly 3.5 million acres of land within the Adirondack Park are privately owned and are home to 130,000 people.[110] To conserve the Park's natural resources and ensure that development is well-planned, the APA regulates development on private land in the Adirondack Park.[111] To regulate development, all private lands within the park boundary are classified into one of six categories based on several factors, including:

- Existing land use and population growth patterns;
- Physical limitations related to soils, slopes and elevations;
- Unique features such as gorges and waterfalls;
- Biological considerations such as wildlife habitat, rare or endangered plants or animals, wetlands and fragile ecosystems; and
- Public considerations such as historic sites, proximity to critical state lands, and the need to preserve the open space character of the Park.[112]

The purpose of this classification system is to direct "growth into the areas where it can best be supported and to minimize the spread of development in areas less suited to sustain such growth". [113] Thus, the APA has developed intensity guidelines for areas within the Adirondack Park based on a given area's land use classification. A brief summary of each of the six land use categories can be found below: [114]

Hamlet
These areas are identified as the growth and service centers of the Adirondack Park and, as such, the APA has limited permit requirements in hamlet areas to encourage development. The following activities, however, do require an APA permit – erecting buildings or structures over 40 feet in height; projects involving more than 100 lots, sites or units; projects involving wetlands, airports, watershed management projects; and certain expansions of buildings and uses. Hamlet boundaries are established well beyond existing settlements to ensure room for future expansion.

Moderate Intensity Use
Most uses are permitted in this category, although relatively concentrated residential development is considered most appropriate.

Low Intensity Use
Most uses are permitted in this category, although residential development at a lower intensity than hamlet or moderate intensity is considered most appropriate.

Rural Use
Most uses are permitted in this category, although residential uses and reduced intensity development that preserves rural character is considered most suitable.

Resource Management
Special care is taken to protect the natural open space character of the lands within this land use category. Accordingly, most development activities in resource management areas will require an APA permit. Uses compatible with the goals of this category include residential uses, agriculture, and forestry.

Industrial Use
This category includes lands where industrial uses exist or have existed, and areas which may be suitable for future industrial development. Additionally, industrial and commercial uses are also allowed in other land use area classifications.

While the APA regulates land use within the Adirondack Park, the Adirondack Park Agency Act allows any local government within the Park to develop its own local land use regulatory tools. These tools, if approved by the APA, may transfer some permitting authority to the local government's jurisdiction.[115]

In addition to the six land use categories noted above, the APA has identified subcategories of the general land use area classifications within the park boundaries known as Critical Environmental Areas (CEAs). Critical Environmental Areas are the more sensitive features of the Park's natural environment and are provided extra protection under the law.[116] These areas include:

- Land at elevation of 2,500 feet or more (except in Hamlet areas) to protect thin soils and open space;
- Land within 1/8 mile of state wilderness, primitive or canoe areas (except in Hamlets);
- Land within 150 feet (in a Rural Use area) or within 300 feet (in a Resource Management area) of the edge of the right-of-way of a federal or state highway;

- Wetlands (under the APA Act and the NYS Freshwater Wetlands Act, almost all land uses, such as draining, dredging, placing fill, structures, and subdivisions in or involving wetlands require an Agency permit); and
- Land within 1/4 mile of rivers under study for inclusion in the Wild Scenic and Recreational Rivers System, except in Hamlet areas. (Land within 1/4 mile of rivers already classified Wild, Scenic or Recreational is subject to special regulation outside of Hamlet and Moderate Intensity Use areas, and are not designated as Critical Environmental Areas.)

The APA has also developed a series of setback, lot width, and cutting regulations along Adirondack shorelines to protect water quality and aesthetics.[117] These regulations apply to "all lakes and ponds, all rivers being studied for inclusion in the Wild, Scenic and Recreational Rivers System, and all other rivers and streams navigable by boat, including canoe". Additionally, shoreline regulations apply to all structures greater than 100 square feet in size, except docks and boathouses, regardless as to whether an APA permit is required or not. Depending on the land use category, shoreline setbacks range from 50 feet to 100 feet, with a 100-foot setback for sewage disposal systems required in all categories. [118]

In terms of cutting regulations, the following restrictions are in place along shoreline areas:

- Within 6 feet of shore, not more than 30 percent of the shoreline may be cleared of vegetation (bushes and trees) on any one lot.
- Within 35 feet of shore, not more than 30 percent of trees in excess of 6 inches in diameter at 4.5 feet above the ground may be cut over a 10-year period. [119]

Generally, however, no restrictions apply to tree harvesting on non-shoreline parcels except for activities that will clear-cut more than 25 upland acres or 3 wetland acres, as well as activities on properties in a Designated River Area.[120]

As noted above, local municipalities within the Adirondack Park can develop its own land use regalotry program and assume some permitting authority from the APA. For those communities that have approved local land use programs, landowners should always consult both with the local government and the APA prior to development activities. As of 2001, only one Town within the Black River watershed has an APA-approved local land use regulatory program:

- Town of Arietta (Hamilton County)

In addition, 15 Towns within the Adirondack Park but outside of the Black River watershed have APA-approved local land use regulatory programs:

- Town of Bolton (Warren County)
- Town of Caroga (Fulton County)
- Town of Chesterfield (Essex County)
- Town of Colton (St. Lawrence County)
- Town of Day (Saratoga County)
- Town of Edinburg (Saratoga County)
- Town of Hague (Warren County)
- Town of Horicon (Warren County)

- Town of Indian Lake (Hamilton County)
- Town of Lake George (Warren County)
- Town of Newcomb (Essex County)
- Town of Queensbury (Warren County)
- Town of Westport (Essex County)
- Town of Willsboro (Essex County)
- Village of Lake George (Warren County) [121]

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8.7 Funding Section – agency, purpose, eligible, cost share, application, website

8.7.1 Agricultural Funding Sources

Conservation Funding Programs	Financial Benefits			Conservation Plans and Practices Funded																									
	% Cost Supported	Annual Payment	Paid Easement	Conservation Planning	Nutrient Management	Manure Storage & Treatment	Soil Management & Erosion Control	Barnyard Runoff Management	Silage Leachate Control	Process Waste Water Management	Pest & Pesticide Management	Pasture Management	Stream Corridor/Floodplain Mgmt.	Feed Management	Livestock Odor Mgmt./Air Quality	Pathogen Management	Water Management & Irrigation	Forest Management & Tree Planting	Wildlife Habitat Management	Wetland Creation & Protection	Wetland Protection	Farmland Protection	Energy Creation & Conservation	Transition to Organic Farming
Agricultural Management Assistance (AMA) provides cost-share assistance to agricultural producers to voluntarily address issues such as water management, water quality, and erosion control by incorporating conservation into their farming operations. There is a 5 to 10 year contract period. For more information contact your county's USDA Natural Resources Conservation Service (NRCS) or Soil & Water Conservation District (SWCD) or find sign-up information online at: www.nrcs.usda.gov/programs/ama/	75%						●				●	●												●
Agricultural Nonpoint Source Abatement and Control Grant Program (Ag NPS) assists farmers in preventing water pollution from agricultural activities by providing technical and cost-share assistance. The grant program is coordinated at the local level by the SWCD, which identifies priority needs within the county and works with farm operators to prepare grant proposals. Planning grants are used for farm specific environmental planning that also serves as the groundwork for implementation grants that construct or apply best management practices (BMPs) to the farm operation. For more information contact your local SWCD or visit: www.nys-soilandwater.org	up to 87.5%			●	●	●	●	●	●	●	●	●	●	●		●	●							
Conservation Reserve Program (CRP) is a voluntary program for agricultural landowners, which provides annual rental payments and cost-share assistance to establish long-term, resource conserving covers on eligible farmland. Annual rental payments are made based on the agriculture rental value of the land, and provide cost-share assistance for up to 50% of the participant's costs in establishing approved conservation practices. Participants enroll in CRP contracts for 10 to 15 years. For more information contact your local USDA Farm Service Agency (FSA) or visit: www.fsa.usda.gov/dafp/cepd/crp.htm	50%	●					●											●	●					
Continuous Enrollment Conservation Reserve Program (CCRP) is similar to CRP except that it focuses on smaller parcels of land that provide especially high environmental benefits, and allows enrollment in 10 to 15 year contracts at any time, without a competitive bidding process. To offer land for continuous sign-up, producers should contact their local FSA or visit: www.fsa.usda.gov/pas/publications/facts/html/crpcont03.htm	50%	●					●						●						●	●	●			
Conservation Reserve Enhancement Program (CREP) places environmentally sensitive land that is located near streams, lakes, water bodies, and public wellhead areas into an approved vegetative cover for a period of 10 to 15 years. In return, farmers are paid annual rental payments and reimbursed for establishing recognized conservation practices. For more information contact your county's FSA, NRCS, SWCD or visit: www.fsa.usda.gov/pas/publications/facts/html/crepny03.htm	50%	●					●						●						●	●	●			
Conservation Security Program (CSP) supports ongoing stewardship of private agricultural lands by providing payments for maintaining and enhancing natural resources. CSP identifies and rewards those farmers who are meeting the highest standards of conservation and environmental management on their operations, and provides incentives for other producers to meet those same standards of conservation performance. A staged, watershed-based implementation will be used until landowners in every watershed have had a chance to participate. CSP contracts last a minimum of 5 years. For more information contact your local NRCS or visit: www.ny.nrcs.usda.gov/programs/programs/CSP/cspinfo.html	50% or 55%	●			●		●				●	●	●				●						●	
Debt for Nature Program, also known as the Debt Cancellation Conservation Contract Program, is available to persons with FSA loans secured by real estate. Under this program, a borrower can apply to enter into a conservation contract for 10, 30 or 50 years and have some portion of their debt cancelled. Borrowers can conserve wildlife habitat and improve the environmental and scenic value of their farms by establishing contracts on marginal cropland and other environmentally sensitive lands for conservation, recreation, and wildlife purposes. For more information contact your local FSA or visit: www.fsa.usda.gov/pas/publications/facts/html/dfn01.htm			●				●						●					●			●			
Emergency Conservation Program (ECP) provides funding for farmers to rehabilitate farmland damaged by wind erosion, drought, floods, hurricanes, or other natural disasters, and for carrying out water conservation measures during periods of severe drought. Emergency practices to rehabilitate farmland damaged by wind erosion and other disasters, including drought, may include debris removal, providing water for livestock, fence restoration, grading and shaping of farmland, restoring conservation structures, and water conservation measures. County FSA committees set eligibility for ECP assistance and cost-share levels. For more information contact your local FSA or visit: www.fsa.usda.gov/pas/publications/facts/html/ecp00.htm	64%		●																					
Environmental Farm Assistance and Resource Management Program (EFARM) provides reimbursement grants to permitted NYS Department of Environmental Conservation (DEC) Concentrated Animal Feeding Operations to help pay for the costs of preparing and updating a Comprehensive Nutrient Management Plan (CNMP). For more information contact your CNMP Planner or visit the New York State Environmental Facilities Corporation website, www.nysefc.org and click on "Programs" and then "EFARM".	up to 90%		●	●																				
Environmental Quality Incentives Program (EQIP) is a voluntary conservation program for farmers that promotes agricultural production and environmental quality. EQIP offers financial and technical assistance to eligible participants for the installation or implementation of structural and management practices on eligible agricultural land. The maximum cost-share rate is 75%, except in the case of beginning farmers or other limited resource farmers, for whom the rate is 90%. Contact your county's NRCS or find sign-up information online at: www.nrcs.usda.gov/programs/eqip/	up to 75% or 90%		●	●	●	●	●	●	●	●	●	●	●	●	●	●		●		●			
Farmland Protection Program (FPP) provides state assistance payments to eligible counties and towns to cover up to 50% of the costs to develop agricultural and farmland protection plans. Payments are also available to municipalities to cover up to 75% of the total costs for the purchase of development rights on viable farmland. Several grants of up to $50,000 each are awarded on a rolling basis each year to counties that apply. For more information contact the NYS Department of Agriculture and Markets or visit: www.agmkt.state.ny.us/AP/agservices/farmprotect.html	75%		●																			●		
Farmland Viability provides financial assistance in the form of matching grants to applicants for projects which contribute to overall farm profitability and sound environmental management. Grant funds may be used by a county to implement a portion of its agricultural and farmland protection plan or may be used by an individual farm to develop or implement a business management plan. For this program, a CNMP, which meets the requirements of the NRCS Standard NY-312, will be considered a component of a Farmland Viability Plan. All CNMPs must be developed by a certified or conditionally certified AEM planner. For more information contact the NYS Department of Agriculture and Markets or visit: www.agmkt.state.ny.us	75%			●	●																			
Forest Land Enhancement Program (FLEP) promotes sound stewardship of non-industrial, privately-owned forest land by offering owners technical assistance, educational programs and cost-sharing grants for issues relating to forest and wildlife management. DEC foresters should be contacted before a landowner initiates any projects with hopes of receiving cost-share payments. The program will support riparian forest buffers, forest regeneration, invasive plant control and other forestry projects. For more information contact your local SWCD or visit the DEC Division of Lands and Forest website at: www.dec.state.ny.us/website/dlf/privland/flep/index.html	65%												●					●	●					
Farm and Ranch Lands Protection Program (FRPP) provides financial assistance to municipalities and non-governmental organizations (NGOs) for the purchase of development rights on eligible prime farmland. Eligible entities apply on behalf of landowners that are currently enrolled in a local farmland protection program. Entities who apply to the FRPP for matching funds to purchase conservation easements must provide a minimum of 25% of the appraised fair market value in cash, or 50% of the purchase price of the conservation easement. For more information, contact your local NRCS office, or visit: www.nrcs.usda.gov/programs/frpp/	50%		●																			●		
Grassland Reserve Program (GRP) funds restoration and preservation of pasture and grassland with easements, rental agreements, and cost-share payments. Eligible GRP land includes private grassland, shrubland, land containing forbs, or land located in an area historically dominated by grassland, shrubland, or forbs with the potential to serve as animal or plant habitat. The program offers several enrollment options. For more information contact your local NRCS, FSA, SWCD or find sign-up information online at: www.nrcs.usda.gov/programs/GRP/	75%	●	●									●							●			●		
New York State Energy Research and Development Authority (NYSERDA) offers cost-sharing and low-interest financing through its agricultural programs to help farms throughout the State save energy, develop new products, and increase profits. NYSERDA has provided funding to help farmers lower on-farm energy costs, use more environmentally friendly manure-management methods, improve profitability through value-added products, and generate their own electricity. For more information call 1-866-NYSERDA or visit: www.nyserda.org/incentives.asp	50%				●																		●	
New York State Grazing Lands Conservation Initiative (NYSGLCI) is a voluntary and cooperative effort led by a coalition representing several producer, conservation, scientific, and environmental organizations. The collaborative process provides technical assistance from NRCS to owners and managers of private grazing land to voluntarily conserve or enhance their resources to meet ecological, economic, and social demands. Consultants are available to assist with species selection, the planning and design of grazing systems, and assistance with ration balancing with managed intensive grazing. For more information contact your local SWCD or call NYSGLCI at 607-753-0851 ext. 117.				●								●												
Wetlands Reserve Program (WRP) provides technical and financial support to help landowners with their wetland restoration efforts, and offers landowners an opportunity to establish long-term conservation and wildlife practices and protection by retiring marginal land from agriculture. Landowners may file an application for a conservation easement or a cost-share restoration agreement to restore and protect wetlands at any time. For more information contact your local NRCS, SWCD or find sign-up information online at: www.nrcs.usda.gov/programs/wrp/	75% to 100%		●																●	●				
Wildlife Habitat Incentives Program (WHIP) provides technical and financial assistance to landowners to develop upland, wetland, riparian, and aquatic habitat areas on their property. NRCS works with the landowner to develop a wildlife habitat development plan, and provides cost-share payments to landowners under agreements that are usually 5 to 10 years in duration, depending upon the types of practices to be installed. Interested landowners may enter into cost-share agreements at any time. For more information contact your local NRCS, SWCD or find sign-up information online at: www.nrcs.usda.gov/programs/whip/	75%																		●	●				
Please Note: Any of the programs described here may change and new programs may become available. Contact your County Soil & Water Conservation District for the latest information and recommendations that would be most appropriate for your farm.																								

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8.7.2 Other Funding Sources

Source	Program	Description	Money Available	Related Black River Watershed Recommendations	Weblink
EPA	C.A.R.E. - Community Action for a Renewed Environment	A competitive grant program that offers an innovative way for a community to organize and take action to reduce toxic pollution in its local environment. Through CARE, a community creates a partnership that implements solutions to reduce releases of toxic pollutants and minimize people's exposure to them.	Level I Agreement (about $90,000) Level II Agreement (about $275,000)	Partnerships and Collaboration; TMDL (Phosphorous) Input Reduction	http://www.epa.gov/CARE/
USDA	W.H.I.P. - Wildlife Habitat Incentives Program	A voluntary program for people who want to develop and improve habitat primarily on private land.	Provides up to 75 percent cost-share assistance to establish and help improve fish and wildlife habitat (i.e. invasive species, insects, animals, diseases, etc.)	Invasive Species; Submerged Aquatic Vegetation & Algae	http://www.invasivespeciesinfo.gov/toolkit/grants.shtml
USDA	E.Q.I.P. - Environmental Quality Incentives Program	To provide a voluntary conservation program for farmers and ranchers that promotes agricultural production and environmental quality as compatible national goals. EQIP offers financial and technical assistance.	May cost-share up to 75 percent of the costs of certain conservation practices. Limited resource producers and beginning farmers and ranchers may be eligible for cost-shares up to 90 percent.	Invasive Species; Agricultural Practices and Management	http://www.invasivespeciesinfo.gov/toolkit/grants.shtml
USDA	Wildlife Services Operations	Protects US Agriculture, natural resources, property and human safety and health from wildlife damage and wildlife-borne diseases. The program works with affected States to manage certain invasive species.	Normally provides 50 percent of a project's cost.	Invasive Species	http://www.invasivespeciesinfo.gov/toolkit/grants.shtml
USDA	Rural Utilities Service Water and Wastewater Disposal Loan and Grant Program	Provides loans and grants to water and wastewater facilities and services to low-income rural communities whose residents face significant health risks with service area populations up to 10,000.	Loan terms up to 40 years. The interest rate is indexed to the Median Household Income of the service area. Minimum "Poverty Rate" is 4.5%. The "Market and Intermediate" rates vary as per the Federal Financing Bank Rate every three months.	Water and Wastewater	http://www.usda.gov/rus/water/program.htm
Local Municipality	Stormwater Utility Program	Generates revenue to help local municipalities address obstacles associated with funding for new/improved infrastructure, as well as costs associated with stormwater and runoff problems.	Fee is established by the local municipality based on local conditions, problems and needs.	Infrastructure; Green Infrastructure, stormwater management;	Various case studies are available and may be provided, if this is a feasible source.
NYSDEC	Water Quality Improvement Projects (WQIP) program		Successful applicants can be reimbursed for up to 75% or 85% of the total cost of the project	Infrastructure;	

Source	Program	Description	Money Available	Related Black River Watershed Recommendations	Weblink
NYSDEC	Section 604(b) of the federal Clean Water Act (American Recovery and Reinvestment Act ARRA).	The ARRA provides $1.7 million to New York State for planning activities associated with: Green Infrastructure; Total Maximum Daily Loads (TMDLs); Phase II Stormwater for Municipal Separate Storm Sewer Systems (MS4s); and Water Quality Management.	Various	Infrastructure; Pollution Control	http://www.dec.ny.gov/public/53160.html
NYS Environmental Facilities Corporation/ NYS Department of Health	Drinking Water State Revolving Fund	Provides low interest rate financings for drinking water projects including upgrades, treatment facilities, storage facilities, transmission and consolidation of water supplies.	Interest-free short-term loans with terms up to 3 years and low-interest rate long-term financing with terms up to 20 years.	Water Quality and Supply	
NYS Environmental Facilities Corporation/ NYS Department of Health	Drinking Water State Revolving Fund Hardship Assistance	Provides interest-free 20 year and up to 30 year financings and grants for projects previously described.	Interest-free 20 year and up to 30 year financings and grants of up to $2 million or 75% of eligible costs, whichever is less.	Water Quality and Supply	
NYS Office of Community Renewal	Small Cities Community Development Block Grant	Provides grants for community and economic development activities, wastewater and drinking water facilities, housing and public infrastructure projects.	*Annual Round Competition (Public Facilities Category)*: Grants up to $400,000 for cities, towns and villages; $600,000 for counties and joint applications. Public facilities projects will solve serious problems affecting the public health, welfare and safety. *Economic Development Open Round*: Grants from $100,000 - $750,000 may be requested for projects providing water, wastewater or other infrastructure to create or retain jobs for low- to moderate- income persons (at $15,000 per job created/retained).	Infrastructure	http://nysdhcr.gov/Programs/NYS-CDBG/Funding.htm
New York State	Economic Recovery Handbook	Stimulus Money Availability; various agencies and topic areas.	Various.	Environment and Water Quality.	http://www.recovery.ny.gov/Recovery%20Book%20-%205%201%2009.pdf

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8.8 Tables

Table 8.8-1. Land Use by Subwatershed

Land Use Classification	Beaver River Subwatershed				Crystal Creek Subwatershed				Cummings Creek Subwatershed				Deer River Subwatershed				Fish Creek Subwatershed				Independence River Subwatershed				Lower Black River Subwatershed			
	Number of Parcels	Percent of Total	Total Acres	Total Acres Percent Cover	Number of Parcels	Percent of Total	Total Acres	Total Acres Percent Cover	Number of Parcels	Percent of Total	Total Acres	Total Acres Percent Cover	Number of Parcels	Percent of Total	Total Acres	Total Acres Percent Cover	Number of Parcels	Percent of Total	Total Acres	Total Acres Percent Cover	Number of Parcels	Percent of Total	Total Acres	Total Acres Percent Cover	Number of Parcels	Percent of Total	Total Acres	Total Acres Percent Cover
Agriculture	2,889	52.7%	14,477	14.7%	58	6.8%	2,689	15.7%	0	0.0%	0	0.0%	327	15.5%	14,323	23.0%	6	0.7%	154	1.0%	7	0.5%	56	0.1%	230	1.9%	12,670	32.1%
Residential	1,460	26.7%	13,776	13.9%	415	48.3%	4,672	27.3%	679	52.0%	2,579	18.1%	795	37.8%	9,577	15.4%	558	60.9%	1,804	12.1%	525	40.5%	16,016	26.2%	7,405	62.4%	12,004	30.4%
Vacant	512	9.3%	3,742	3.8%	197	22.9%	1,633	9.6%	366	28.0%	1,473	10.4%	488	23.2%	6,498	10.4%	217	23.7%	1,361	9.1%	277	21.4%	1,130	1.8%	2,261	19.0%	7,764	19.6%
Commercial	71	1.3%	179	0.2%	9	1.0%	10	0.1%	7	0.5%	7	0.0%	32	1.5%	50	0.1%	5	0.5%	2	0.0%	2	0.2%	1	0.0%	1,018	8.6%	2,499	6.3%
Recreation & Entertainment	9	0.2%	12	0.0%	3	0.3%	31	0.2%	6	0.5%	1,773	12.5%	0	0.0%	0	0.0%	6	0.7%	220	1.5%	1	0.1%	46	0.1%	43	0.4%	578	1.5%
Community Services	45	0.8%	338	0.3%	14	1.6%	42	0.2%	5	0.4%	54	0.4%	28	1.3%	105	0.2%	2	0.2%	8	0.1%	4	0.3%	3	0.0%	183	1.5%	788	2.0%
Industrial	14	0.3%	91	0.1%	4	0.5%	153	0.9%	0	0.0%	0	0.0%	3	0.1%	13	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	74	0.6%	1,286	3.3%
Public Services	57	1.0%	3,387	3.4%	21	2.4%	1,541	9.0%	1	0.1%	1	0.0%	18	0.9%	101	0.2%	1	0.1%	1	0.0%	6	0.5%	216	0.4%	161	1.4%	1,190	3.0%
Wild, Conservation, Forest, & Parks	420	7.7%	62,760	63.5%	138	16.1%	6,313	37.0%	113	8.6%	7,143	50.3%	411	19.5%	31,524	50.6%	119	13.0%	11,094	74.1%	471	36.3%	43,605	71.4%	21	0.2%	545	1.4%
left blank	0	0.0%	0	0.0%	0	0.0%	0	0.0%	130	9.9%	1,182	8.3%	1	0.0%	79	0.1%	3	0.3%	321	2.1%	3	0.2%	1	0.0%	478	4.0%	207	0.5%
Total	**5,477**	**100.0%**	**98,761**	**100.0%**	**859**	**100.0%**	**17,085**	**100.0%**	**1,307**	**100.0%**	**14,212**	**100.0%**	**2,103**	**100.0%**	**62,270**	**100.0%**	**917**	**100.0%**	**14,966**	**100.0%**	**1,296**	**100.0%**	**61,074**	**100.0%**	**11,874**	**100.0%**	**39,532**	**100.0%**

Land Use Classification	Lower Middle Black River Subwatershed				Middle Black River Subwatershed				Middle Branch Moose River Subwatershed				Mill Creek Subwatershed				Moose River Subwatershed				Otter Creek Subwatershed			
	Number of Parcels	Percent of Total	Total Acres	Total Acres Percent Cover	Number of Parcels	Percent of Total	Total Acres	Total Acres Percent Cover	Number of Parcels	Percent of Total	Total Acres	Total Acres Percent Cover	Number of Parcels	Percent of Total	Total Acres	Total Acres Percent Cover	Number of Parcels	Percent of Total	Total Acres	Total Acres Percent Cover	Number of Parcels	Percent of Total	Total Acres	Total Acres Percent Cover
Agriculture	236	4.4%	14,343	27.6%	878	21.5%	46,938	57.7%	0	0.0%	0	0.0%	360	23.5%	16,980	75.4%	1	0.1%	95	0.2%	3	0.4%	40	0.1%
Residential	3,618	67.0%	17,185	33.1%	2,054	50.2%	13,987	17.2%	3,474	57.4%	24,415	25.7%	724	47.2%	2,709	12.0%	241	28.1%	2,160	4.6%	272	36.2%	1,907	4.5%
Vacant	955	17.7%	9,496	18.3%	692	16.9%	7,205	8.9%	1,708	28.2%	6,001	6.3%	171	11.1%	1,236	5.5%	222	25.9%	1,822	3.9%	140	18.6%	696	1.6%
Commercial	255	4.7%	708	1.4%	89	2.2%	336	0.4%	244	4.0%	409	0.4%	169	11.0%	197	0.9%	2	0.2%	6	0.0%	6	0.8%	22	0.1%
Recreation & Entertainment	20	0.4%	179	0.3%	17	0.4%	1,063	1.3%	31	0.5%	675	0.7%	5	0.3%	11	0.0%	2	0.2%	80	0.2%	0	0.0%	0	0.0%
Community Services	95	1.8%	3,127	6.0%	78	1.9%	392	0.5%	41	0.7%	534	0.6%	41	2.7%	126	0.6%	1	0.1%	1	0.0%	1	0.1%	1	0.0%
Industrial	31	0.6%	1,285	2.5%	12	0.3%	136	0.2%	3	0.0%	168	0.2%	8	0.5%	46	0.2%	7	0.8%	94	0.2%	0	0.0%	0	0.0%
Public Services	115	2.1%	1,932	3.7%	54	1.3%	302	0.4%	17	0.3%	39	0.0%	25	1.6%	101	0.5%	13	1.5%	366	0.8%	2	0.3%	79	0.2%
Wild, Conservation, Forest, & Parks	62	1.1%	3,574	6.9%	207	5.1%	10,908	13.4%	322	5.3%	61,923	65.3%	27	1.8%	976	4.3%	363	42.4%	42,028	90.0%	325	43.3%	39,436	93.5%
left blank	10	0.2%	157	0.3%	12	0.3%	86	0.1%	215	3.6%	717	0.8%	4	0.3%	130	0.6%	5	0.6%	59	0.1%	2	0.3%	0	0.0%
Total	**5,397**	**100.0%**	**51,985**	**100.0%**	**4,093**	**100.0%**	**81,353**	**100.0%**	**6,055**	**100.0%**	**94,880**	**100.0%**	**1,534**	**100.0%**	**22,512**	**100.0%**	**857**	**100.0%**	**46,711**	**100.0%**	**751**	**100.0%**	**42,181**	**100.0%**

Land Use Classification	South Branch Moose River Subwatershed				Stillwater Reservoir Subwatershed				Sugar River Subwatershed				Upper Black River Subwatershed				Upper Middle Black River Subwatershed				Woodhull Creek Subwatershed			
	Number of Parcels	Percent of Total	Total Acres	Total Acres Percent Cover	Number of Parcels	Percent of Total	Total Acres	Total Acres Percent Cover	Number of Parcels	Percent of Total	Total Acres	Total Acres Percent Cover	Number of Parcels	Percent of Total	Total Acres	Total Acres Percent Cover	Number of Parcels	Percent of Total	Total Acres	Total Acres Percent Cover	Number of Parcels	Percent of Total	Total Acres	Total Acres Percent Cover
Agriculture	0	0.0%	0	0.0%	0	0.0%	0	0.0%	417	22.4%	19,524	43.6%	20	0.5%	1,954	1.7%	547	8.7%	27,823	27.3%	0	0.0%	0	0.0%
Residential	201	21.2%	2,305	1.7%	220	31.8%	13,056	11.9%	766	41.2%	10,049	22.5%	1,879	45.1%	15,781	13.7%	2,936	46.6%	16,536	16.2%	913	42.1%	4,972	7.9%
Vacant	88	9.3%	656	0.5%	179	25.9%	932	0.8%	416	22.4%	7,089	15.8%	1,058	25.4%	12,848	11.1%	1,266	20.1%	8,967	8.8%	727	33.5%	4,219	6.7%
Commercial	1	0.1%	15	0.0%	2	0.3%	7	0.0%	23	1.2%	74	0.2%	35	0.8%	215	0.2%	212	3.4%	430	0.4%	16	0.7%	80	0.1%
Recreation & Entertainment	0	0.0%	0	0.0%	0	0.0%	0	0.0%	3	0.2%	132	0.3%	5	0.1%	276	0.2%	38	0.6%	1,032	1.0%	13	0.6%	533	0.9%
Community Services	1	0.1%	26	0.0%	0	0.0%	0	0.0%	32	1.7%	76	0.2%	34	0.8%	264	0.2%	114	1.8%	514	0.5%	7	0.3%	28	0.0%
Industrial	0	0.0%	0	0.0%	0	0.0%	0	0.0%	4	0.2%	54	0.1%	4	0.1%	181	0.2%	27	0.4%	517	0.5%	2	0.1%	114	0.2%
Public Services	0	0.0%	0	0.0%	4	0.6%	89	0.1%	43	2.3%	1,240	2.8%	33	0.8%	213	0.2%	83	1.3%	787	0.8%	2	0.1%	9	0.0%
Wild, Conservation, Forest, & Parks	637	67.1%	131,963	97.2%	243	35.2%	95,091	86.5%	76	4.1%	5,402	12.1%	485	11.6%	77,870	67.5%	634	10.1%	40,017	39.2%	326	15.0%	50,176	80.1%
left blank	21	2.2%	748	0.6%	43	6.2%	816	0.7%	79	4.2%	1,092	2.4%	616	14.8%	5,839	5.1%	439	7.0%	5,394	5.3%	161	7.4%	2,530	4.0%
Total	**949**	**100.0%**	**135,713**	**100.0%**	**691**	**100.0%**	**109,992**	**100.0%**	**1,859**	**100.0%**	**44,732**	**100.0%**	**4,169**	**100.0%**	**115,439**	**100.0%**	**6,296**	**100.0%**	**102,016**	**100.0%**	**2,167**	**100.0%**	**62,661**	**100.0%**

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Table 8.8-2. Land Cover by Subwatershed

Land Cover Classification	Beaver River Subwatershed		Crystal Creek Subwatershed		Cummings Creek Subwatershed		Deer River Subwatershed		Fish Creek Subwatershed		Independence River Subwatershed		Lower Black River Subwatershed		Lower Middle Black River Subwatershed		Middle Black River Subwatershed		Middle Branch Moose River Subwatershed	
	Total Acres	Percent Cover	Total Acres	Percent Cover	Total Acres	Percent Cover	Total Acres	Percent Cover	Total Acres	Percent Cover	Total Acres	Percent Cover	Total Acres	Percent Cover	Total Acres	Percent Cover	Total Acres	Percent Cover	Total Acres	Percent Cover
Open Water	3,550	3.6%	154	0.9%	440	3.1%	687	1.1%	426	2.8%	1,137	1.9%	948	2.4%	2,021	3.9%	1,401	1.7%	9,638	10.2%
Agriculture	9,853	10.0%	2,056	12.0%	41	0.3%	10,689	17.2%	150	1.0%	115	0.2%	15,933	40.3%	15,965	30.7%	32,002	39.3%	113	0.1%
Urban	713	0.7%	127	0.7%	40	0.3%	725	1.2%	16	0.1%	15	0.0%	7,308	18.5%	3,669	7.1%	1,969	2.4%	1,363	1.4%
Barren Land (Rock/Sand/Clay)	3	0.0%	11	0.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	166	0.4%	73	0.1%	119	0.1%	1	0.0%
Forest	61,054	61.8%	11,135	65.2%	9,903	69.7%	29,926	48.1%	10,232	68.4%	39,367	64.5%	6,507	16.5%	14,830	28.5%	25,768	31.7%	57,050	60.1%
Grassland/Shrub	8,913	9.0%	2,269	13.3%	1,296	9.1%	3,154	5.1%	2,013	13.5%	5,922	9.7%	3,934	10.0%	7,573	14.6%	10,278	12.6%	3,987	4.2%
Wetlands	14,674	14.9%	1,333	7.8%	2,491	17.5%	17,089	27.4%	2,129	14.2%	14,517	23.8%	4,737	12.0%	7,853	15.1%	9,817	12.1%	22,728	24.0%
Total	**98,761**	**100.0%**	**17,085**	**100.0%**	**14,212**	**100.0%**	**62,270**	**100.0%**	**14,966**	**100.0%**	**61,074**	**100.0%**	**39,532**	**100.0%**	**51,985**	**100.0%**	**81,353**	**100.0%**	**94,880**	**100.0%**

Land Cover Classification	Mill Creek Subwatershed		Moose River Subwatershed		Otter Creek Subwatershed		South Branch Moose River Subwatershed		Stillwater Reservoir Subwatershed		Sugar River Subwatershed		Upper Middle Black River Subwatershed		Upper Black River Subwatershed		Woodhull Creek Subwatershed	
	Total Acres	Percent Cover	Total Acres	Percent Cover	Total Acres	Percent Cover	Total Acres	Percent Cover	Total Acres	Percent Cover	Total Acres	Percent Cover	Total Acres	Percent Cover	Total Acres	Percent Cover	Total Acres	Percent Cover
Open Water	68	0.3%	931	2.0%	690	1.6%	4,908	3.6%	11,531	10.5%	95	0.2%	1,514	1.5%	2,725	2.4%	3,011	4.8%
Agriculture	14,119	62.7%	79	0.2%	33	0.1%	8	0.0%	8	0.0%	16,960	37.9%	21,640	21.2%	2,489	2.2%	83	0.1%
Urban	857	3.8%	65	0.1%	32	0.1%	228	0.2%	62	0.1%	735	1.6%	2,325	2.3%	458	0.4%	99	0.2%
Barren Land (Rock/Sand/Clay)	1	0.0%	12	0.0%	0	0.0%	0	0.0%	1,242	1.1%	4	0.0%	28	0.0%	0	0.0%	4	0.0%
Forest	5,173	23.0%	33,374	71.4%	30,411	72.1%	103,815	76.5%	67,971	61.8%	20,752	46.4%	51,998	51.0%	79,012	68.4%	41,266	65.9%
Grassland/Shrub	1,281	5.7%	5,908	12.6%	5,222	12.4%	2,489	1.8%	2,260	2.1%	3,030	6.8%	12,703	12.5%	8,724	7.6%	4,573	7.3%
Wetlands	1,012	4.5%	6,341	13.6%	5,793	13.7%	24,265	17.9%	26,918	24.5%	3,155	7.1%	11,809	11.6%	22,030	19.1%	13,626	21.7%
Total	**22,512**	**100.0%**	**46,711**	**100.0%**	**42,181**	**100.0%**	**135,713**	**100.0%**	**109,992**	**100.0%**	**44,732**	**100.0%**	**102,016**	**100.0%**	**115,439**	**100.0%**	**62,661**	**100.0%**

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Table 8.8-3. Land Cover Change by Subwatershed

Land Cover Classification	Beaver River Subwatershed				
	Acres Lost	Acres Gained	Net Acres (1992 to 2001)	Percent Change (1992 to 2001)	1992 acres
Open Water	108	231	123	3.6%	3,427
Agriculture	45	265	220	2.3%	9,633
Urban	13	44	30	4.4%	683
Barren Land (Rock/Sand/Clay)	0	0	0	0.0%	3
Forest	548	115	-433	-0.7%	61,486
Grassland/Shrub	0	295	295	3.4%	8,618
Wetlands	382	146	-236	-1.6%	14,910

Land Cover Classification	Crystal Creek Subwatershed				
	Acres Lost	Acres Gained	Net Acres (1992 to 2001)	Percent Change (1992 to 2001)	1992 acres
Open Water	3	8	5	3.3%	149
Agriculture	9	111	102	5.2%	1,954
Urban	9	6	-4	-2.7%	130
Barren Land (Rock/Sand/Clay)	0	1	1	13.3%	10
Forest	168	15	-153	-1.4%	11,289
Grassland/Shrub	0	67	67	3.0%	2,202
Wetlands	38	19	-18	-1.4%	1,351

Land Cover Classification	Cummings Creek Subwatershed				
	Acres Lost	Acres Gained	Net Acres (1992 to 2001)	Percent Change (1992 to 2001)	1992 acres
Open Water	12	28	16	3.8%	424
Agriculture	6	2	-4	-8.0%	44
Urban	0	0	0	0.0%	40
Barren Land (Rock/Sand/Clay)	0	0	0	0.0%	0
Forest	24	19	-6	-0.1%	9,909
Grassland/Shrub	0	47	47	3.8%	1,249
Wetlands	65	10	-54	-2.1%	2,545

Land Cover Classification	Deer River Subwatershed				
	Acres Lost	Acres Gained	Net Acres (1992 to 2001)	Percent Change (1992 to 2001)	1992 acres
Open Water	289	253	-36	-5.0%	723
Agriculture	22	227	205	2.0%	10,484
Urban	10	48	38	5.6%	686
Barren Land (Rock/Sand/Clay)	0	0	0	0.0%	0
Forest	614	103	-511	-1.7%	30,438
Grassland/Shrub	0	255	255	8.8%	2,899
Wetlands	399	447	49	0.3%	17,040

Land Cover Classification	Fish Creek Subwatershed				
	Acres Lost	Acres Gained	Net Acres (1992 to 2001)	Percent Change (1992 to 2001)	1992 acres
Open Water	13	9	-4	-0.8%	430
Agriculture	7	6	-1	-0.7%	151
Urban	0	2	2	10.8%	14
Barren Land (Rock/Sand/Clay)	0	0	0	0.0%	0
Forest	31	18	-13	-0.1%	10,245
Grassland/Shrub	0	87	87	4.5%	1,926
Wetlands	91	20	-71	-3.2%	2,200

Land Cover Classification	Independence River Subwatershed				
	Acres Lost	Acres Gained	Net Acres (1992 to 2001)	Percent Change (1992 to 2001)	1992 acres
Open Water	96	193	98	9.4%	1,039
Agriculture	14	13	-1	-1.1%	116
Urban	0	0	0	0.0%	15
Barren Land (Rock/Sand/Clay)	0	0	0	0.0%	0
Forest	179	54	-125	-0.3%	39,492
Grassland/Shrub	0	157	157	2.7%	5,765
Wetlands	246	117	-129	-0.9%	14,646

Land Cover Classification	Lower Black River Subwatershed				
	Acres Lost	Acres Gained	Net Acres (1992 to 2001)	Percent Change (1992 to 2001)	1992 acres
Open Water	20	128	108	12.8%	840
Agriculture	93	307	215	1.4%	15,718
Urban	61	412	351	5.0%	6,957
Barren Land (Rock/Sand/Clay)	0	26	26	19.0%	140
Forest	535	37	-498	-7.1%	7,005
Grassland/Shrub	0	156	156	4.1%	3,777
Wetlands	432	73	-358	-7.0%	5,095

Land Cover Classification	Lower Middle Black River Subwatershed				
	Acres Lost	Acres Gained	Net Acres (1992 to 2001)	Percent Change (1992 to 2001)	1992 acres
Open Water	80	500	421	26.3%	1,600
Agriculture	86	471	385	2.5%	15,580
Urban	74	304	231	6.7%	3,439
Barren Land (Rock/Sand/Clay)	0	12	12	20.4%	61
Forest	965	98	-868	-5.5%	15,697
Grassland/Shrub	0	451	451	6.3%	7,123
Wetlands	906	274	-632	-7.4%	8,485

Land Cover Classification	Middle Black River Subwatershed				
	Acres Lost	Acres Gained	Net Acres (1992 to 2001)	Percent Change (1992 to 2001)	1992 acres
Open Water	107	488	381	37.4%	1,020
Agriculture	220	1,552	1,332	4.3%	30,669
Urban	32	129	97	5.2%	1,872
Barren Land (Rock/Sand/Clay)	0	63	63	114.1%	56
Forest	2,504	96	-2,408	-8.5%	28,176
Grassland/Shrub	0	590	590	6.1%	9,688
Wetlands	533	477	-56	-0.6%	9,873

Land Cover Classification	Middle Branch Moose River Subwatershed				
	Acres Lost	Acres Gained	Net Acres (1992 to 2001)	Percent Change (1992 to 2001)	1992 acres
Open Water	73	299	226	2.4%	9,412
Agriculture	14	25	12	11.5%	101
Urban	2	82	80	6.2%	1,282
Barren Land (Rock/Sand/Clay)	0	0	0	0.0%	1
Forest	412	43	-369	-0.6%	57,419
Grassland/Shrub	0	78	78	2.0%	3,909
Wetlands	211	184	-27	-0.1%	22,755

Land Cover Classification	Mill Creek Subwatershed				
	Acres Lost	Acres Gained	Net Acres (1992 to 2001)	Percent Change (1992 to 2001)	1992 acres
Open Water	12	20	8	13.3%	60
Agriculture	12	199	187	1.3%	13,932
Urban	11	65	54	6.8%	803
Barren Land (Rock/Sand/Clay)	4	0	-4	-72.7%	5
Forest	271	22	-249	-4.6%	5,422
Grassland/Shrub	0	53	53	4.3%	1,228
Wetlands	79	29	-50	-4.7%	1,063

Land Cover Classification	Moose River Subwatershed				
	Acres Lost	Acres Gained	Net Acres (1992 to 2001)	Percent Change (1992 to 2001)	1992 acres
Open Water	166	185	19	2.1%	912
Agriculture	23	11	-12	-12.9%	91
Urban	0	2	2	2.8%	64
Barren Land (Rock/Sand/Clay)	0	3	3	33.4%	9
Forest	207	69	-138	-0.4%	33,512
Grassland/Shrub	0	240	240	4.2%	5,669
Wetlands	224	110	-114	-1.8%	6,455

Land Cover Classification	Otter Creek Subwatershed				
	Acres Lost	Acres Gained	Net Acres (1992 to 2001)	Percent Change (1992 to 2001)	1992 acres
Open Water	98	82	-16	-2.3%	707
Agriculture	13	0	-13	-28.0%	45
Urban	3	0	-3	-9.0%	35
Barren Land (Rock/Sand/Clay)	0	0	0	0.0%	0
Forest	106	43	-63	-0.2%	30,474
Grassland/Shrub	0	193	193	3.8%	5,028
Wetlands	161	62	-98	-1.7%	5,892

Land Cover Classification	South Branch Moose River Subwatershed				
	Acres Lost	Acres Gained	Net Acres (1992 to 2001)	Percent Change (1992 to 2001)	1992 acres
Open Water	20	339	319	6.9%	4,589
Agriculture	8	0	-8	-48.6%	16
Urban	0	3	3	1.2%	225
Barren Land (Rock/Sand/Clay)	0	0	0	0.0%	0
Forest	370	10	-360	-0.3%	104,175
Grassland/Shrub	0	10	10	0.4%	2,479
Wetlands	168	204	36	0.1%	24,229

Land Cover Classification	Stillwater Reservoir Subwatershed				
	Acres Lost	Acres Gained	Net Acres (1992 to 2001)	Percent Change (1992 to 2001)	1992 acres
Open Water	85	346	261	2.3%	11,270
Agriculture	55	0	-55	-87.0%	63
Urban	0	1	1	2.2%	61
Barren Land (Rock/Sand/Clay)	0	52	52	4.4%	1,190
Forest	1,000	142	-858	-1.2%	68,829
Grassland/Shrub	0	97	97	4.5%	2,162
Wetlands	369	869	500	1.9%	26,417

Land Cover Classification	Sugar River Subwatershed				
	Acres Lost	Acres Gained	Net Acres (1992 to 2001)	Percent Change (1992 to 2001)	1992 acres
Open Water	29	46	17	22.4%	78
Agriculture	10	194	183	1.1%	16,776
Urban	1	14	13	1.8%	722
Barren Land (Rock/Sand/Clay)	0	3	3	150.1%	2
Forest	258	88	-170	-0.8%	20,922
Grassland/Shrub	0	82	82	2.8%	2,948
Wetlands	175	46	-128	-3.9%	3,284

Land Cover Classification	Upper Black River Subwatershed				
	Acres Lost	Acres Gained	Net Acres (1992 to 2001)	Percent Change (1992 to 2001)	1992 acres
Open Water	37	151	114	4.4%	2,612
Agriculture	12	39	27	1.1%	2,462
Urban	4	3	0	-0.1%	458
Barren Land (Rock/Sand/Clay)	0	0	0	0.0%	0
Forest	333	43	-290	-0.4%	79,303
Grassland/Shrub	0	146	146	1.7%	8,578
Wetlands	204	208	4	0.0%	22,026

Land Cover Classification	Upper Middle Black River Subwatershed				
	Acres Lost	Acres Gained	Net Acres (1992 to 2001)	Percent Change (1992 to 2001)	1992 acres
Open Water	120	313	193	12.7%	1,514
Agriculture	60	394	334	1.5%	21,640
Urban	10	129	119	5.1%	2,325
Barren Land (Rock/Sand/Clay)	0	6	6	21.6%	28
Forest	814	242	-572	-1.1%	51,998
Grassland/Shrub	0	469	469	3.7%	12,703
Wetlands	743	195	-548	-4.6%	11,809

Land Cover Classification	Woodhull Creek Subwatershed				
	Acres Lost	Acres Gained	Net Acres (1992 to 2001)	Percent Change (1992 to 2001)	1992 acres
Open Water	30	162	132	4.6%	2,879
Agriculture	4	65	61	268.4%	23
Urban	2	7	5	5.5%	94
Barren Land (Rock/Sand/Clay)	0	0	0	0.0%	4
Forest	205	14	-191	-0.5%	41,457
Grassland/Shrub	0	50	50	1.1%	4,522
Wetlands	120	63	-57	-0.4%	13,683

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Table 8.8-4. Projected Land Cover by Subwatershed

Land Cover Classification	Beaver River Subwatershed			Crystal Creek Subwatershed			Cummings Creek Subwatershed			Deer River Subwatershed			Fish Creek Subwatershed			Independence River Subwatershed			Lower Black River Subwatershed		
	Total Acres (2001)	Total Acres (2020)	Percent Cover (2020)	Total Acres (2001)	Total Acres (2020)	Percent Cover (2020)	Total Acres (2001)	Total Acres (2020)	Percent Cover (2020)	Total Acres (2001)	Total Acres (2020)	Percent Cover (2020)	Total Acres (2001)	Total Acres (2020)	Percent Cover (2020)	Total Acres (2001)	Total Acres (2020)	Percent Cover (2020)	Total Acres (2001)	Total Acres (2020)	Percent Cover (2020)
Open Water	3,550	3,550	3.6%	154	154	0.9%	440	440	3.1%	687	687	1.1%	426	426	2.8%	1,137	1,137	1.9%	948	935	2.4%
Agriculture	9,853	9,860	10.0%	2,056	2,056	12.0%	41	41	0.3%	10,689	10,692	17.2%	150	150	1.0%	115	115	0.2%	15,933	15,843	40.1%
Urban	713	562	0.6%	127	104	0.6%	40	41	0.3%	725	641	1.0%	16	46	0.3%	15	18	0.0%	7,308	8,030	20.3%
Barren Land (Rock/Sand/Clay)	3	3	0.0%	11	11	0.1%	0	0	0.0%	0	0	0.0%	0	0	0.0%	0	0	0.0%	166	166	0.4%
Forest	61,054	61,172	61.9%	11,135	11,148	65.2%	9,903	9,903	69.7%	29,926	30,001	48.2%	10,232	10,202	68.2%	39,367	39,365	64.5%	6,507	6,131	15.5%
Grassland/Shrub	8,913	8,913	9.0%	2,269	2,269	13.3%	1,296	1,296	9.1%	3,154	3,154	5.1%	2,013	2,013	13.5%	5,922	5,922	9.7%	3,934	3,934	10.0%
Wetlands	14,674	14,701	14.9%	1,333	1,344	7.9%	2,491	2,491	17.5%	17,089	17,095	27.5%	2,129	2,129	14.2%	14,517	14,516	23.8%	4,737	4,494	11.4%
Total	**98,761**	**98,761**	**100.0%**	**17,085**	**17,085**	**100.0%**	**14,212**	**14,212**	**100.0%**	**62,270**	**62,270**	**100.0%**	**14,966**	**14,966**	**100.0%**	**61,074**	**61,074**	**100.0%**	**39,532**	**39,532**	**100.0%**

Land Cover Classification	Lower Middle Black River Subwatershed			Middle Black River Subwatershed			Middle Branch Moose River Subwatershed			Mill Creek Subwatershed			Moose River Subwatershed			Otter Creek Subwatershed		
	Total Acres (2001)	Total Acres (2020)	Percent Cover (2020)	Total Acres (2001)	Total Acres (2020)	Percent Cover (2020)	Total Acres (2001)	Total Acres (2020)	Percent Cover (2020)	Total Acres (2001)	Total Acres (2020)	Percent Cover (2020)	Total Acres (2001)	Total Acres (2020)	Percent Cover (2020)	Total Acres (2001)	Total Acres (2020)	Percent Cover (2020)
Open Water	2,021	2,021	3.9%	1,401	1,401	1.7%	9,638	9,638	10.2%	68	68	0.3%	931	931	2.0%	690	690	1.6%
Agriculture	15,965	15,940	30.7%	32,002	32,039	39.4%	113	114	0.1%	14,119	14,122	62.7%	79	79	0.2%	33	32	0.1%
Urban	3,669	3,951	7.6%	1,969	1,469	1.8%	1,363	1,303	1.4%	857	830	3.7%	65	50	0.1%	32	43	0.1%
Barren Land (Rock/Sand/Clay)	73	72	0.1%	119	119	0.1%	1	1	0.0%	1	1	0.0%	12	12	0.0%	0	0	0.0%
Forest	14,830	14,698	28.3%	25,768	26,137	32.1%	57,050	57,107	60.2%	5,173	5,196	23.1%	33,374	33,389	71.5%	30,411	30,404	72.1%
Grassland/Shrub	7,573	7,573	14.6%	10,278	10,278	12.6%	3,987	3,987	4.2%	1,281	1,281	5.7%	5,908	5,908	12.6%	5,222	5,222	12.4%
Wetlands	7,853	7,729	14.9%	9,817	9,911	12.2%	22,728	22,731	24.0%	1,012	1,014	4.5%	6,341	6,341	13.6%	5,793	5,790	13.7%
Total	**51,985**	**51,985**	**100.0%**	**81,353**	**81,353**	**100.0%**	**94,880**	**94,880**	**100.0%**	**22,512**	**22,512**	**100.0%**	**46,711**	**46,711**	**100.0%**	**42,181**	**42,181**	**100.0%**

Land Cover Classification	South Branch Moose River Subwatershed			Stillwater Reservoir Subwatershed			Sugar River Subwatershed			Upper Middle Black River Subwatershed			Upper Black River Subwatershed			Woodhull Creek Subwatershed		
	Total Acres (2001)	Total Acres (2020)	Percent Cover (2020)	Total Acres (2001)	Total Acres (2020)	Percent Cover (2020)	Total Acres (2001)	Total Acres (2020)	Percent Cover (2020)	Total Acres (2001)	Total Acres (2020)	Percent Cover (2020)	Total Acres (2001)	Total Acres (2020)	Percent Cover (2020)	Total Acres (2001)	Total Acres (2020)	Percent Cover (2020)
Open Water	4,908	4,908	3.6%	11,531	11,531	10.5%	95	95	0.2%	1,514	1,514	1.5%	2,725	2,725	2.4%	3,011	3,011	4.8%
Agriculture	8	8	0.0%	8	8	0.0%	16,960	16,960	37.9%	21,640	21,822	21.4%	2,489	2,511	2.2%	83	83	0.1%
Urban	228	229	0.2%	62	82	0.1%	735	624	1.4%	2,325	1,934	1.9%	458	197	0.2%	99	79	0.1%
Barren Land (Rock/Sand/Clay)	0	0	0.0%	1,242	1,242	1.1%	4	4	0.0%	28	28	0.0%	0	0	0.0%	4	4	0.0%
Forest	103,815	103,814	76.5%	67,971	67,951	61.8%	20,752	20,848	46.6%	51,998	51,998	51.0%	79,012	79,197	68.6%	41,266	41,286	65.9%
Grassland/Shrub	2,489	2,489	1.8%	2,260	2,260	2.1%	3,030	3,030	6.8%	12,703	12,703	12.5%	8,724	8,724	7.6%	4,573	4,573	7.3%
Wetlands	24,265	24,265	17.9%	26,918	26,918	24.5%	3,155	3,171	7.1%	11,809	12,017	11.8%	22,030	22,085	19.1%	13,626	13,626	21.7%
Total	**135,713**	**135,713**	**100.0%**	**109,992**	**109,992**	**100.0%**	**44,732**	**44,732**	**100.0%**	**102,016**	**102,016**	**100.0%**	**115,439**	**115,439**	**100.0%**	**62,661**	**62,661**	**100.0%**

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Table 8.8-5. Ecozones by Subwatershed

Ecozone	BLACK RIVER WATERSHED (acres)	Subwatersheds																	
		Beaver River (acres)	Crystal Creek (acres)	Cummings Creek (acres)	Deer River (acres)	Fish Creek (acres)	Independence River (acres)	Lower Black River (acres)	Lower Middle Black River (acres)	Middle Black River (acres)	Middle Branch Moose River (acres)	Mill Creek (acres)	Moose River (acres)	Otter Creek (acres)	South Branch Moose River (acres)	Stillwater Reservoir (acres)	Sugar River (acres)	Upper Middle Black River (acres)	Upper Black River (acres)	Woodhull Creek (acres)
Black River Valley	270,196	24,999	8,504	--	11,250	--	--	10,759	48,429	65,504	--	14,809	4	--	--	--	31,258	38,111	16,567	--
Central Adirondacks	425,539	3,428	--	--	--	--	14,368	--	--	--	89,740	--	876	7,057	133,828	109,904	--	--	47,366	18,961
Central Tug Hill	26,572	--	--	--	14,878	--	--	--	--	--	--	972	--	--	--	--	83	10,638	--	--
Eastern Ontario Plain	28,763	--	--	--	--	--	--	28,773	20	--	--	--	--	--	--	--	--	--	--	--
Tug Hill Transition	71,093	--	--	--	36,142	--	--	--	--	708	--	6,731	--	--	--	--	13,391	13,519	596	--
Western Adirondack Foothills	270,527	53,136	116	10,889	--	10,398	41,943	--	--	--	5,140	--	38,231	31,129	1,885	88	--	9,519	27,871	40,172
Western Adirondack Transition	125,384	17,198	8,465	3,323	--	4,568	4,763	--	3,536	15,141	--	--	7,600	3,995	--	--	--	30,229	23,039	3,528
TOTALS	**1,218,075**	**98,761**	**17,085**	**14,212**	**62,270**	**14,966**	**61,074**	**39,532**	**51,985**	**81,353**	**94,880**	**22,512**	**46,711**	**42,181**	**135,713**	**109,992**	**44,732**	**102,016**	**115,439**	**62,661**

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The following key terms are used in subsequent tables related to species in ecological communities in New York State

Abbreviation	Meaning
Dom	Dominant, comprising majority of cover
Co-dom	Co-dominant, a few species together comprising majority of cover
Char	Characteristic; typically found in type
Ass	Associated; Often occurring in type, though not necessarily in high abundance
Alt	Alternate; found as co-dom or associate in some subtypes
Occ	Occasional; sometimes occurs
Subcan	Subcanopy
nonvasc	nonvascular- moss
graminoid	grass or grass-like plant
Inv	Invasive species
Not BRD	Not known to occur in Black River drainage, but found in community in other parts of New York State
fac	Facultative species
obl	Obligate species
indic. sp.	indicator species

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Table 8.8-6. Summary of Presence and Abundance of Plant Communities

Trees, shrubs, and mosses represented in various sub-habitats within the open uplands.

		Sub-habitat	Riverside sand/gravel bar	Shoreline outcrop	Calcareous shoreline outcrop	Cobble shore	Calcareous cliff comm.	Successional fern meadow	Successional blueberry heath	Successional N sandplain grassland	Successional old field	Successional shrubland
		Sub-habitat number	10	11	12	13	18	22	23	24	25	26
		Primary location	all of state	upstate NY	upstate NY	upstate NY	upstate NY	upstate NY	all of state		all of state	all of state
		Notes	meadow community, sparse veg.	wave action, sparse veg.	lake shores, sparse veg	high-energy areas, active & stable shores	vertical exp, minimum soil, sparse vegetation	on sites cleared for farm., logging	Acidic soil areas cleared for farming, logging	Open sandplains, dom. By low, dry turf, sand patches	abandoned meadow	atleast 50% shrub cover
Layer	**Scientific name**	**Common name**										
tree	*Cornus rugosa*	Round-leaf dogwood					char					
tree	*Juniperus virginiana*	Eastern red cedar					char				char	char
tree	*Ostrya virginiana*	Eastern hop hornbeam					char					
tree	*Prunus serotina*	Black cherry					char					
tree	*Thuja occidentalis*	Northern white cedar					char					
shrub	*Amelanchier spp.*	Serviceberry species										char
shrub	*Aquilegia canadensis*	Wild columbine			char		char					
shrub	*Cornus amomum*	Silky dogwood			char						char	
shrub	*Cornus foemina ssp. racemosa*	Gray dogwood									char	char
shrub	*Cornus sericea*	Redosier dogwood			char							
shrub	*Crataegus spp.*	Hawthorn species										char
shrub	*Epigaea repens*	Trailing arbutus							char			
shrub	*Gaultheria procumbens*	Wintergreen							char			
shrub	*Gaylussacia baccata*	Black huckleberry		char					char			
shrub	*Prunus americana*	American plum										char
shrub	*Prunus pumila*	Sandcherry	char									
shrub	*Prunus virginiana*	Choke-cherry										char
shrub	*Rhus glabra*	Smooth sumac									char	char
shrub	*Rhus typhina*	Staghorn sumac									char	char
shrub	*Rosa multiflora*	Multiflora rose										char
shrub	*Rubus spp.*	Raspberry species									char	char
shrub	*Salix exigua*	Sandbar willow	char									
shrub	*Taxus canadensis*	Canada yew					char					
shrub	*Toxicodendron radicans*	Poison ivy	char									
shrub	*Vaccinium angustifolium, V. pallidum*	Blueberry species		char				ass	char			
shrub	*Viburnum lentago*	Nanny-berry										char
shrub	*Viburnum rafinesquianum*	Downy arrow-wood					char					
shrub	*Viburnum recognitum*	Southern arrowwood									char	char
nonvasc	*Anomodon attenuatus*	Moss species					char					
nonvasc	*Anomodon rostratus*	Moss species					char					
nonvasc	*Brachythecium spp.*	Moss species					char					
nonvasc	*Polytrichum juniperinum*	Haircap moss										
nonvasc	*Thuidium spp.*	Moss species					char					
nonvasc	*Tortella tortuosa*	Tortured tortella			char							
nonvasc	*Tortula ruralis*	Tortula moss			char							

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Table 8.8-7. Summary of Presence and Abundance of Plant Fauna

Herbs and grasses and birds represented in various sub-habitats within the open uplands.

		Sub-habitat	Riverside sand/gravel bar	Shoreline outcrop	Calcareous shoreline outcrop	Cobble shore	Calcareous cliff comm.	Successional fern meadow	Successional blueberry heath	Successional N sandplain grassland	Successional old field	Successional shrubland
		Sub-habitat number	10	11	12	13	18	22	23	24	25	26
		Primary location	all of state	upstate NY	upstate NY	upstate NY	upstate NY	upstate NY	all of state		all of state	all of state
		Notes	meadow community, sparse veg.	wave action, sparse veg.	lake shores, sparse veg	high-energy areas, active & stable shores	vertical exp, minimum soil, sparse vegetation	on sites cleared for farm., logging	Acidic soil areas cleared for farming, logging	Open sandplains, dom. By low, dry turf, sand patches	abandoned meadow	atleast 50% shrub cover
Layer	**Scientific name**	**Common name**										
tree	*Cornus rugosa*	Round-leaf dogwood					char					
tree	*Juniperus virginiana*	Eastern red cedar					char				char	char
tree	*Ostrya virginiana*	Eastern hop hornbeam					char					
tree	*Prunus serotina*	Black cherry					char					
tree	*Thuja occidentalis*	Northern white cedar					char					
shrub	*Amelanchier spp.*	Serviceberry species										char
shrub	*Aquilegia canadensis*	Wild columbine			char		char					
shrub	*Cornus amomum*	Silky dogwood			char						char	
shrub	*Cornus foemina ssp. racemosa*	Gray dogwood									char	char
shrub	*Cornus sericea*	Redosier dogwood			char							
shrub	*Crataegus spp.*	Hawthorn species										char
shrub	*Epigaea repens*	Trailing arbutus							char			
shrub	*Gaultheria procumbens*	Wintergreen							char			
shrub	*Gaylussacia baccata*	Black huckleberry		char					char			
shrub	*Prunus americana*	American plum										char
shrub	*Prunus pumila*	Sandcherry	char									
shrub	*Prunus virginiana*	Choke-cherry										char
shrub	*Rhus glabra*	Smooth sumac									char	char
shrub	*Rhus typhina*	Staghorn sumac									char	char
shrub	*Rosa multiflora*	Multiflora rose										char
shrub	*Rubus spp.*	Raspberry species									char	char
shrub	*Salix exigua*	Sandbar willow	char									
shrub	*Taxus canadensis*	Canada yew					char					
shrub	*Toxicodendron radicans*	Poison ivy	char									
shrub	*Vaccinium angustifolium, V. pallidum*	Blueberry species		char				ass	char			
shrub	*Viburnum lentago*	Nanny-berry										char
shrub	*Viburnum rafinesquianum*	Downy arrow-wood					char					
shrub	*Viburnum recognitum*	Southern arrowwood									char	char
nonvasc	*Anomodon attenuatus*	Moss species					char					
nonvasc	*Anomodon rostratus*	Moss species					char					
nonvasc	*Brachythecium spp.*	Moss species					char					
nonvasc	*Polytrichum juniperinum*	Haircap moss										
nonvasc	*Thuidium spp.*	Moss species					char					
nonvasc	*Tortella tortuosa*	Tortured tortella			char							
nonvasc	*Tortula ruralis*	Tortula moss			char							

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Table 8.8-8. Summary of Presence and Abundance of Plant Communities

Vines, trees, and shrubs represented in various sub-habitats within the barrens and woodlands.

		Sub-habitat	Pitch pine-hearth barrens	Boreal heath barrens	Limestone woodland	Ice cave talus	Calcareous talus slope woodland	Acidic talus slope woodland	Shale talus slope woodland	Red pine rocky summit	Spruce-fir rocky summit	Successional red cedar woodland
		Sub-habitat number	8	9	13	15	16	17	18	20	21	24
		Primary location	N to N cent NY, Great Lakes Plain, W Adir. Foothills, Champlain Valley	Adirondacks	upstate NY	Adirondacks and Shawangunk Hills	upstate NY	upstate NY	upstate NY	Adirondack, maybe Catskills		throughout NY
Layer	**Scientific name**	**Common name**		dom. by heath shrubs		Not well known			unstable subst, <50% canopy cover			<1000' elevations
vine	*Adlumia fungosa*	Climbing fumitory					char					
vine	*Celastrus scandens*	Bittersweet					char					
vine	*Parthenocissus quinquefolia*	Virginia creeper					char					
tree	*Abies balsamea*	Balsam fir			char						char	
tree	*Acer pensylvanicum*	Striped maple						char				
tree	*Acer saccharum*	Sugar maple			char		char					
tree	*Acer spicatum*	Mountain maple						char				
tree	*Betula cordifolia*	Mountain paper birch						char			char	
tree	*Betula lenta*	Black birch						char				
tree	*Betula papyrifera*	Paper birch						char				
tree	*Betula populifolia*	Gray birch										ass
tree	*Carya glabra*	Pignut hickory							char			
tree	*Carya ovata*	Shagbark hickory			char							
tree	*Cornus rugosa*	Round-leaf dogwood					char					
tree	*Fraxinus americana*	White ash					char		char			ass
tree	*Gaultheria hispidula*	Creeping snowberry				char						
tree	*Juglans cinerea*	Butternut					char					
tree	*Juglans nigra*	Black walnut										ass
tree	*Juniperus virginiana*	Eastern red cedar					char		char			dom
tree	*Larix laricina*	Tamarack		char								
tree	*Ostrya virginiana*	Eastern hop hornbeam			char		char					
tree	*Picea glauca*	White spruce			char							
tree	*Picea mariana*	Black spruce		char		char						
tree	*Picea rubens*	Red spruce									char	
tree	*Pinus banksiana*	Jack pine	alt									
tree	*Pinus resinosa*	Red pine						char		dom		
tree	*Pinus rigida*	Pitch pine	dom									
tree	*Pinus strobus*	White pine	alt	char	char			char	char	co-dom		
tree	*Populus grandidentata*	Bigtooth aspen	alt									
tree	*Prunus serotina*	Black cherry		char								
tree	*Quercus alba*	White oak			char			char	char			
tree	*Quercus ilicifolia*	Scrub oak						char	char			
tree	*Quercus macrocarpa*	Bur oak			char							
tree	*Quercus montana*	Chestnut oak						char	char			
tree	*Quercus rubra*	Red oak			char			char	char	co-dom		
tree	*Sorbus americana*	Mountain ash				char					char	
tree	*Thuja occidentalis*	Northern white cedar			char		char					
tree	*Tilia americana*	American basswood			char		char					
tree	*Tsuga canadensis*	Eastern hemlock				char					ass	
tree	*Ulmus rubra*	Slippery elm					char					
tree	*Zanthoxylum americanum*	Prickly ash					char					
shrub	*Amelanchier spp.*	Serviceberry species			char							
shrub	*Aralia nudicaulis*	Wild sarsaparilla	char					char				
shrub	*Arctostaphylos uvaursi*	Bearberry								char		
shrub	*Aronia melanocarpa*	Black chokeberry		dom								
shrub	*Comptonia peregrina*	Sweet-fern	dom									
shrub	*Cornus canadensis*	Bunchberry									char	
shrub	*Cornus foemina ssp. racemosa*	Gray dogwood			char							
shrub	*Crataegus spp.*	Hawthorn species										ass
shrub	*Epigaea repens*	Trailing arbutus								char		
shrub	*Gaultheria procumbens*	Wintergreen	char							char		
shrub	*Gaylussacia baccata*	Black huckleberry	dom					char				
shrub	*Hamamelis virginiana*	American witchhazel						char				
shrub	*Kalmia angustifolia*	Sheep laurel	dom									
shrub	*Kalmia latifolia*	Mountain laurel						char				
shrub	*Lonicera dioica*	Wild honeysuckle			char							
shrub	*Lonicera villosa*	Mountain fly honeysuckle		dom								
shrub	*Rhamnus alnifolia*	Alder-leaf buckthorn			char							
shrub	*Rhamnus cathartica*	Buckthorn										ass
shrub	*Rhus glabra*	Smooth sumac							char			
shrub	*Ribes cynos-bati*	Prickly gooseberry			char							
shrub	*Rubus hispidus*	Bristly dewberry		char								
shrub	*Rubus idaeus*	American red raspberry			char							
shrub	*Rubus occidentalis*	Black raspberry			char							
shrub	*Spiraea latifolia*	Meadow-sweet		dom								
shrub	*Staphylea trifolia*	Bladdernut			char		char					
shrub	*Toxicodendron radicans*	Poison ivy			char				char			
shrub	*Vaccinium angustifolium, v. pallidum*	Blueberry species	dom	dom						char	char	
shrub	*Viburnum rafinesquianum*	Downy arrow-wood					char					

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Table 8.8-9. Summary of Presence and Abundance of Plant Communities

Herbs, grasses, mosses, and lichens – and animals - represented in various sub-habitats within the barrens and woodlands.

		Sub-habitat	Pitch pine-hearth barrens	Boreal heath barrens	Limestone woodland	Ice cave talus	Calcareous talus slope woodland	Acidic talus slope woodland	Shale talus slope woodland	Red pine rocky summit	Spruce-fir rocky summit	Successional red cedar woodland
		Sub-habitat number	8	9	13	15	16	17	18	20	21	24
		Primary location	N to N cent NY, Great Lakes Plain,	Adirondacks	upstate NY	Adirondacks and Shawangunk Hills	upstate NY	upstate NY	upstate NY	Adirondack, maybe Catskills		throughout NY
Layer	**Scientific name**	**Common name**		dom. by heath shrubs		Not well known			unstable subst, <50% canopy cover			<1000' elevations
herb	Actaea pachypoda	White baneberry					char					
herb	Antennaria plantaginifolia	Woman's tobacco							char			
herb	Arabis lyrata	Lyre-leaved rock cress					char					
herb	Asarum canadense	Wild ginger					char					
herb	Asplenium rhizophyllum	Walking fern					char					
herb	Asplenium trichomanes	Maidenhair spleenwort					char					
herb	Aster acuminatus	Whorled aster									char	
herb	Aster divaricatus	White wood aster					char					
herb	Aster macrophyllus	Big-leaf aster			char							
herb	Athyrium filix-femina var. asplenioides	Lady fern					char					
herb	Botrychium virginianum	Rattlesnake fern			char							
herb	Campanula rotundifolia	Harebell									char	
herb	Caulophyllum thalictroides	Blue cohosh					char					
herb	Cypripedium acaule	Moccasin flower	char									
herb	Cystopteris bulbifera	Bulbet fern					char					
herb	Dryopteris marginalis	Marginal wood fern			char			char				
herb	Elymus hystrix	Bottlebrush grass					char					
herb	Euthamia graminifolia	Flat-top goldenrod		char								
herb	Fragaria virginiana	Wild strawberry	char		char							
herb	Geranium robertianum	Herb robert			char		char					
herb	Gymnocarpium dryopteris	Oak fern					char					
herb	Lycopodium dendroideum	Northern tree clubmoss		char								
herb	Lycopodium digitatum	Runningpine		char								
herb	Maianthemum canadense	Canada mayflower	char		char							
herb	Melampyrum lineare	Cow-wheat	char									
herb	Penstemon hirsutus	Penstemon							char			
herb	Polygonatum pubescens	Solomon's-seal					char					
herb	Polypodium virginianum	Rock polypody						char				
herb	Polystichum acrostichoides	Christmas fern						char				
herb	Potentilla tridentata	Three-toothed cinquefoil									char	
herb	Pteridium aquilinum	Bracken fern	char		char							
herb	Sanguinaria canadensis	Bloodroot					char					
herb	Sanicula marilandica	Black snakeroot			char							
herb	Smilacina racemosa	False Solomon's-seal			char							
herb	Solidago caesia	Blue-stem goldenrod			char		char					
herb	Solidago canadensis	Canada goldenrod		char								
herb	Solidago macrophylla	Large-leaf goldenrod									char	
herb	Solidago spathulata var. randii	Mountain goldenrod									char	
herb	Thalictrum dioicum	Early meadow-rue			char		char					
herb	Trillium grandiflorum	White trillium			char							
herb	Waldsteinia fragarioides	Barren strawberry			char							
herb	Woodsia ilvensis	Rusty woodsia						char				
graminoid	Carex eburnea	Bristeleaf sedge			char							
graminoid	Carex pensylvanica	Pennsylvania sedge	char		char			char	char	char		
graminoid	Carex platyphylla	Broadleaf sedge			char							
graminoid	Danthonia spicata	Poverty-grass								char		
graminoid	Deschampsia flexuosa	Wavy hairgrass								char	char	
graminoid	Oryzopsis asperifolia	Spreading ricegrass		char								
graminoid	Oryzopsis pungens	Small ricegrass		char							char	
graminoid	Oryzopsis racemosa	Ricegrass					char					
graminoid	Poa compressa	Canada bluegrass										char
graminoid	Poa pratensis	Kentucky bluegrass										char
nonvasc	Anastrophyllum saxicola					Rare						
nonvasc	Dicranum spp.			char								
nonvasc	Hylocomium splendens	Stair-step moss					char					
nonvasc	Mnium hymenophylloides	Bryophyte species				Rare						
nonvasc	Mylia taylorii	Bryophyte species				Rare						
nonvasc	Pleurozium schreberi	Schreber's big red stem moss		char								
nonvasc	Polytrichum commune	Polytrichum moss		char								
lichen	Cladina rangiferina	Greygreen reindeer lichen		char								
lichen	Cladonia alpestris			char								
lichen	Cladonia pyxidata	Cup lichen		char								
mammal	Microtus chrotorrhinus	Rock vole				char						
bird	Catharus fuscescens	Veery	char									
bird	Dendroica discolor	Prairie warbler										char
bird	Dendroica pensylvanica	Chestnut-sided warbler	char									
bird	Geothlypis trichas	Common yellowthroat	char									
bird	Hylocichla mustelina	Wood thrush	char									
bird	Seiurus aurocapillus	Ovenbird	char									
reptile	Agkistrodon contortrix	Copperhead						Rare (not BRD)				
reptile	Crotalus horridus	Timber rattlesnake						Rare (not BRD)				

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Table 8.8-10. Summary of Presence and Abundance of Plant Communities

Represented in various sub-habitats within the forested uplands.

		Sub-habitat	Beech-maple mesic forest	maple basswood rich mesic	hemlock-northern hardwood	pine-northern hardwood forest	spruce flats	balsam flats	spruce-northern hardwood	mountain spruce-fir	mountain fir	succ northern hardwood	succ s hardwoods
		Sub-habitat number	17	18	19	20	21	22	23	24	25	26	27
		Primary location	Throughout NY	great lake plain	Throughout NY	Upstate NY	Adirondacks	Adirondacks	Adirondacks, Tug Hill			Upstate NY	Mainly south NY
Layer	**Scientific name**	**Common name**			hemlock var abund	gravelly outwash plains, delta sands, eskers, dry lake sands				3000-4000'	3500-4500'		
tree	*Abies balsamea*	Balsam fir						dom	scattered	dom	dom		
tree	*Acer pensylvanicum*	Striped maple	char		often com				subcan dom	ass			
tree	*Acer rubrum*	Red maple	ass		co-dom	occ	dom	occ	co-dom				
tree	*Acer saccharum*	Sugar maple	co-dom	dom	co-dom				co-dom				
tree	*Acer spicatum*	Mountain maple		char					subcan dom				
tree	*Betula alleghaniensis*	Yellow birch	ass	ass	co-dom	occ	ass	occ	co-dom	ass			
tree	*Betula cordifolia*	Mountain paper birch								ass	low dens		
tree	*Betula lenta*	Black birch			co-dom								
tree	*Betula papyrifera*	Paper birch				ass						alt dom	
tree	*Betula populifolia*	Gray birch										alt dom	
tree	*Carpinus caroliniana*	American hornbeam	char	ass									
tree	*Carya cordiformis*	Bitternut hickory		ass									
tree	*Carya ovata*	Shagbark hickory		ass									
tree	*Fagus grandifolia*	American beech	co-dom	ass	co-dom		unc		co-dom				
tree	*Fraxinus americana*	White ash	ass	dom								ass	
tree	*Fraxinus pennsylvanica*	Green ash										ass	
tree	*Juglans cinerea*	Butternut		ass									
tree	*Larix laricina*	Tamarack					alt co-dom						
tree	*Liriodendron tulipifera*	Tulip-tree		ass									
tree	*Ostrya virginiana*	Eastern hop hornbeam	ass	ass									
tree	*Picea glauca*	White spruce					alt char						
tree	*Picea mariana*	Black spruce					alt co-dom	alt co-dom					
tree	*Picea rubens*	Red spruce	low density			occ	com	co-dom	co-dom	dom	low dens		
tree	*Pinus resinosa*	Red pine				dom							
tree	*Pinus strobus*	White pine			co-dom	dom						alt dom	
tree	*Populus balsamifera*	Balsam poplar										alt dom	
tree	*Populus grandidentata*	Bigtooth aspen										alt dom	
tree	*Populus tremuloides*	Quaking aspen				ass						alt dom	
tree	*Prunus pensylvanica*	Pin cherry								ass		alt dom	
tree	*Prunus serotina*	Black cherry			co-dom		ass	occ				alt dom	
tree	*Quercus rubra*	Red oak		ass	co-dom								
tree	*Tilia americana*	American basswood		dom	co-dom								
tree	*Tsuga canadensis*	Eastern hemlock	low density		Dom		ass						
tree	*Ulmus americana*	American elm										ass	char
tree	*Ulmus rubra*	Slippery elm											char
shrub	*Alnus viridis*	Green alder									occ		
shrub	*Amelanchier canadensis*	Canadian serviceberry				char							
shrub	*Cornus alterniflora*	Alternate-leaved dogwood	char	char									
shrub	*Hamamelis virginiana*	American witchhazel	char	char						subcan			
shrub	*Kalmia angustifolia*	Sheep laurel					char						
shrub	*Ledum groenlandicum*	Bog labrador tea					alt char				occ		
shrub	*Lonicera canadensis*	American fly honeysuckle								char			
shrub	*Nemopanthus mucronatus*	Mountain holly								char			
shrub	*Ribes glandulosum*	Skunk currant									recently dist		
shrub	*Rubus idaeus*	American red raspberry									recently dist		
shrub	*Rubus pubescens*	Dwarf red blackberry								char			
shrub	*Rubus spp.*	Raspberry species			char								
shrub	*Sambucus racemosa*	Red elderberry								char			
shrub	*Sorbus americana*	American mountain ash						char		subcan	low dens		
shrub	*Vaccinium angustifolium*	Lowbush blueberry				char	char						
shrub	*Vaccinium myrtilloides*	Velvetleaf huckleberry				char	char						
shrub	*Viburnum acerifolium*	Mapleleaf viburnum			char								
shrub	*Viburnum cassinoides*	Withe-rod						char					
shrub	*Viburnum lantanoides*	Hobblebush	char		char	char		char					
herb	*Arisaema triphyllum*	Jack-in-the-pulpit	ass										
herb	*Dryopteris intermedia*	Intermediate wood fern	dom										
herb	*Lycopodium lucidulum*	Shining clubmoss	dom										
herb	*Maianthemum canadense*	Canada mayflower	dom										
herb	*Oxalis montana*	Common wood-sorrel	dom										
herb	*Polystichum acrostichoides*	Christmas fern	ass										
herb	*Smilacina racemosa*	False Solomon's-seal	ass										
herb	*Spring ephemerals*			abund, div, char									
herb	*Trientalis borealis*	Star flower	dom										
herb	*Trillium erectum*	Purple trillium	dom										
herb	*Trillium undulatum*	Painted trillium	dom										

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Table 8.8-11. Summary of Presence and Abundance of Bird Species

Represented in various sub-habitats within the forested uplands.

		Sub-habitat	Beech-maple mesic forest	maple basswood rich mesic	hemlock-northern hardwood	pine-northern hardwood forest	spruce flats	balsam flats	spruce-northern hardwood	mountain spruce-fir	mountain fir	succ northern hardwood	succ s hardwoods
		Sub-habitat number	17	18	19	20	21	22	23	24	25	26	27
		Primary location	Throughout NY	great lake plain	Throughout NY	Upstate NY	Adirondacks	Adirondacks	Adirondacks, Tug Hill			Upstate NY	Mainly south NY
Layer	**Scientific name**	**Common name**			hemlock var abund	gravelly outwash plains, delta sands, eskers, dry lake sands				3000-4000'	3500-4500'		
bird	*Carpodacus purpureus*	Purple finch									char		
bird	*Catharus bicknelli*	Bicknell's Thrush								rare	rare		
bird	*Catharus minimus*	Gray-cheeked thrush									char		
bird	*Catharus ustulatus*	Swainson's thrush								char			
bird	*Dendroica caerulescens*	Black-throated blue warbler	char		char								
bird	*Dendroica coronata*	Yellow-rumped warbler								char	char		
bird	*Dendroica magnolia*	Magnolia warbler									char		
bird	*Dendroica pensylvanica*	Chestnut-sided warbler										char	char
bird	*Dendroica pinus*	Pine warbler				char							
bird	*Dendroica striata*	Blackpoll warbler								char	char		
bird	*Dryocopus pileatus*	Pileated woodpecker			char	char			char				
bird	*Empidonax flaviventris*	Yellow-bellied flycatcher							char	char	char		
bird	*Empidonax minimus*	Least flycatcher	char										
bird	*Empidonax virescens*	Acadian flycatcher	char		char								
bird	*Melanerpes carolinus*	Red-bellied woodpecker	char										
bird	*Meleagris gallopavo*	Wild Turkey			char								
bird	*Parus hudsonicus*	Boreal chickadee								char			
bird	*Perisoreus canadensis*	Gray jay							char				
bird	*Regulus satrapa*	Golden-crowned kinglet			char		char		char	char			
bird	*Seiurus aurocapillus*	Ovenbird	char										
bird	*Setophaga ruticilla*	American redstart	char										
bird	*Sphyrapicus varius*	Yellow-bellied sapsucker										char	
bird	*Troglodytes troglodytes*	Winter wren								char	char		
bird	*Vermivora ruficapilla*	Nashville warbler									char	char	
bird	*Vireo olivaceus*	Red-eyed vireo	char										
bird	*Zonotrichia albicollis*	White-throated sparrow							char	char	char		

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Table 8.8-12. Summary of Presence and Abundance of Plant and Animal Species

Vines, trees, and shrubs represented in various sub-habitats within the terrestrial cultural communities.

		Sub-habitat	Cropland/row crops	Cropland/ field crops	Pastureland	Orchard
		Sub-habitat number	1	2	3	5
		Primary location	throughout NY	throughout NY	throughout NY	throughout NY
		Notes				at low elevations
Layer	**Scientific name**	**Common name**				
shrub	*Rhus typhina*	Staghorn sumac				common
shrub	*Toxicodendron radicans*	Poison ivy				common
herb	*Solidago spp.*	Goldenrod species				common
bird	*Ammodramus savannarum*	Grasshopper sparrow		char	char	
bird	*Bartramia longicauda*	Upland sandpiper		char	char	
bird	*Charadrius vociferus*	Killdeer			char	
bird	*Dolichonys oryzivorous*	Bobolink		char		
bird	*Eremophila alpestris*	Horned lark			char	
bird	*Pooecetes gramineus*	Vesper sparrow		char	char	
bird	*Sphyrapicus varius*	Yellow-bellied sapsucker				char
bird	*Turdus migratorius*	American robin				char
bird	*Tyrannus tyrannus*	Eastern kingbird				char
bird	*Zenaida macroura*	Mourning dove		char		char

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Table 8.8-13. Summary of Presence and Abundance of Plant Communities

Trees, shrubs, and grasses represented in various sub-habitats within the open mineral wetlands.

		Sub-habitat	Deep emergent marsh	Shallow emergent marsh	Shrub swamp	Inland non-calcareous lake shore	Sinkhole wetland	Pine barrens vernal pond
		Sub-habitat number	1	2	3	6	8	10
		Primary location	throughout NY	throughout NY	throughout NY	upstate NY	N of coastal lowland	Sandplains in Great Lakes Plain
Layer	**Scientific name**	**Common name**						
tree	*Acer rubrum*	Red maple					dom	char
tree	*Betula populifolia*	Gray birch						char
tree	*Fraxinus americana*	White ash					dom	
tree	*Fraxinus pennsylvanica*	Green ash					dom	
tree	*Pinus rigida*	Pitch pine						char
tree	*Populus tremuloides*	Quaking aspen						char
tree	*Quercus bicolor*	Swamp white oak					dom	
tree	*Quercus macrocarpa*	Bur oak					dom	
tree	*Ulmus americana*	American elm					dom	
shrub	*Alnus incana ssp. rugosa*	Speckled alder		scattered	dom			
shrub	*Alnus serrulata*	Smooth alder			char			
shrub	*Cephalanthus occidentalis*	Buttonbush		scattered	dom			
shrub	*Chamaedaphne calyculata*	Leatherleaf						char
shrub	*Cornus amomum*	Silky dogwood		scattered	dom			
shrub	*Cornus foemina ssp. racemosa*	Gray dogwood			char			
shrub	*Cornus sericea*	Redosier dogwood		scattered	dom			
shrub	*Decodon verticillatus*	Water willow		scattered	dom			
shrub	*Ilex verticillata*	Winterberry						char
shrub	*Lindera benzoin*	Spicebush			char			
shrub	*Lyonia ligustrina*	Maleberry			char			
shrub	*Rhododendron viscosum*	Swamp azalea			char			
shrub	*Salix spp.*	Willows		scattered	dom char		char	
shrub	*Spiraea alba var. latiflolia*	Meadow sweet		scattered	char			
shrub	*Spiraea tomentosa*	Steeple-bush			char			
shrub	*Vaccinium corymbosum*	Highbush blueberry			char			char
shrub	*Viburnum recognitum*	Southern arrowwood			char			
graminoid	*Calamagrostis canadensis*	Bluejoint grass	most abund	most abund			char	
graminoid	*Carex canescens*	Silvery sedge						dom
graminoid	*Carex stricta*	Tussock sedge						char
graminoid	*Cyperus squarrosus*	Bearded flatsedge				char		
graminoid	*Eleocharis acicularis*	Needle spikerush					char	
graminoid	*Eleocharis smalliana, E. obtusa*	Spikerush species		most abund		char		
graminoid	*Fimbristylis autumnalis*	Slender fimbry				char		
graminoid	*Glyceria acutiflora*	Mannagrass					char	
graminoid	*Glyceria canadensis*	Rattlesnake mannagrass		most abund				
graminoid	*Glyceria pallida*	False mannagrass		most abund				
graminoid	*Juncus articulatus*	Jointed rush				char		
graminoid	*Juncus canadensis*	Canadian rush		char				
graminoid	*Juncus effusus*	Soft rush		char				dom
graminoid	*Juncus militaris*	Bayonet rush	most abund					
graminoid	*Leersia oryzoides*	Rice cutgrass	most abund					
graminoid	*Scirpus cyperinus, S. atrovirens*	Bulrush species		most abund			char	dom
graminoid	*Zizania aquatica*	Wild rice	most abund					
novasc	*Sphagnum fallax*	Sphagnum moss						char

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Table 8.8-14. Summary of Presence and Abundance of Herbs

Vines represented in various sub-habitats within the open mineral wetlands.

		Sub-habitat	Deep emergent marsh	Shallow emergent marsh	Shrub swamp	Inland non-calcareous lake shore	Sinkhole wetland	Pine barrens vernal pond
		Sub-habitat number	1	2	3	6	8	10
		Primary location	throughout NY	throughout NY	throughout NY	upstate NY	N of coastal lowland	Sandplains in Great Lakes Plain
Layer	**Scientific name**	**Common name**						
herb	*Acorus americanus*	Sweetflag		most abund				
herb	*Alisma plantago-aquatica*	Water plantain					char	
herb	*Angelica atropurpurea*	Purple-stem angelica		char				
herb	*Asclepias incarnata*	Swamp milkweed		char				
herb	*Aster umbellatus, A. puniceus*	Aster species		char				
herb	*Biden discoidea*	Small beggar-ticks					char	
herb	*Bidens frondosa*	Beggar-ticks		char				
herb	*Brasenia schreberi*	Water-shield	most abund					
herb	*Campanula aparinoides*	Marsh bellflower		char				
herb	*Carex spp.*	Sedge species		most abund			char	
herb	*Ceratophyllum demersum*	Coontail	most abund					
herb	*Chara globularis*	Chara	most abund					
herb	*Chelone glabra*	Turtlehead		char				
herb	*Cicuta bulbifera*	Water-hemlock		char				
herb	*Dulichium arundinaceum*	Threeway sedge		most abund				dom
herb	*Elodea canadensis*	Canadian waterweed	most abund					
herb	*Equisetum fluviatile*	Water horsetail	most abund					
herb	*Eriocaulon aquaticum*	Sevenangle pipewort	most abund					
herb	*Eupatorium maculatum*	Spotted joe pye weed		most abund				
herb	*Eupatorium perfoliatum*	Common boneset		most abund				
herb	*Galium palustre*	Common marsh bedstraw		most abund				
herb	*Gratiola neglecta*	Mud-hyssop				char		
herb	*Heteranthera dubia*	Grassleaf mudplantain	most abund					
herb	*Hydrocharis morus-ranae*	Frog's-bit	most abund					
herb	*Impatiens capensis*	Jewelweed		most abund				
herb	*Iris versicolor*	Blue flag iris		char				
herb	*Lemna minor*	Common duckweed	most abund					
herb	*Lemna trisulca*	Star duckweed	most abund					
herb	*Lobelia cardinalis*	Cardinal flower		char				
herb	*Lobelia dortmanna*	Water Lobelia	most abund			char		
herb	*Ludwigia palustris*	Water purslane		char		char	char	
herb	*Lycopus uniflorus, L. americanus*	Water-horehound species		char				
herb	*Lysimachia ciliata*	Fringed loosestrife		most abund				
herb	*Lysimachia terrestris*	Earth loosestrife		most abund				
herb	*Lysimachia thyrsiflora*	Tufted loosestrife		most abund				
herb	*Lythrum salicaria*	Purple loosestrife	dom weed*					
herb	*Myriophyllum sibericum*	Northern milfoil	most abund					
herb	*Myriophyllum spicatum*	Eurasian watermilfoil	most abund					
herb	*Najas flexilis*	Naiad	most abund					
herb	*Nuphar variegata*	Spatterdock	most abund					
herb	*Nymphaea ordorata*	Fragrant water lily	most abund					
herb	*Onoclea sensibilis*	Sensitive fern		char				
herb	*Osmunda cinnamomea*	Cinnamon fern		char				char
herb	*Osmunda regalis*	Royal fern		char				
herb	*Peltandra virginica*	Arrow arum	most abund	char				
herb	*Phragmites austsralis*	Reedgrass	dom weed*					
herb	*Polygonum amphibium*	Water smartweed		most abund				
herb	*Polygonum coccineum*	Smartweed		most abund				
herb	*Polygonum hydropiperoides*	Smartweed		most abund				
herb	*Polygonum pensylvanicum*	Pennsylvania smartweed				char		
herb	*Pontederia cordata*	Pickerel weed	most abund					
herb	*Potamogeton amplifolius*	Largeleaf pondweed	most abund					
herb	*Potamogeton crispus*	Curly pondweed	most abund					
herb	*Potamogeton epihydrus*	Ribbonleaf pondweed	most abund					
herb	*Potamogeton friesii*	Fries' pondweed	most abund					
herb	*Potamogeton natans*	Floating pondweed	most abund					
herb	*Potamogeton oakesianus*	Oakes' pondweed	most abund					
herb	*Potamogeton pusillus*	Small pondweed	most abund					
herb	*Potamogeton richardsonii*	Richardson's pondweed	most abund					
herb	*Potamogeton spirillus*	Spiral pondweed	most abund					
herb	*Potamogeton spp.*	Pondweed species						char
herb	*Potamogeton strictifolius*	Narrowleaf pondweed	most abund					
herb	*Potamogeton zosteriformis*	Flatstem pondweed	most abund					
herb	*Potentilla palustris*	Marsh cinquefoil		char				
herb	*Rhynchospora capillacea*	Beak rush					char	
herb	*Riccia fluitans*	Crystalwort	most abund					
herb	*Rumex orbiculatus*	Greater water dock		char				
herb	*Rumex verticillatus*	Swamp dock		char				
herb	*Sagittaria latifolia*	Arrowhead	most abund	most abund				
herb	*Scirpus acutus*	Hardstem bulrush	most abund					
herb	*Scirpus americanus*	Chairmaker's bulrush	most abund					
herb	*Scirpus fluviatilis*	River bulrush	most abund					
herb	*Scirpus heterochaetus*	Slender bulrush	most abund					
herb	*Scirpus pungens*	Common threesquare	most abund					
herb	*Scirpus tabernaemontani*	Softstem bulrush	most abund	most abund				
herb	*Scutellaria galericulata*	Common skullcap		char				
herb	*Sium suave*	Waterparsnip		char			char	
herb	*Solidago gigantea*	Giant goldenrod		most abund				
herb	*Solidago rugosa*	Wrinkleleaf goldenrod		most abund				
herb	*Sparganium americanum*	American bur-reed		char				
herb	*Sparganium androcladum*	Branched bur-reed	most abund					
herb	*Sparganium eurycarpum*	Broadfruit bur-reed	most abund	char				
herb	*Thalictrum pubescens*	Tall meadow-rue		most abund				
herb	*Thelypteris palustris*	Marsh fern		most abund				char
herb	*Trapa natans*	Water-chestnut	most abund					
herb	*Triadenum virginicum*	Marsh St. John's-wort		most abund				char
herb	*Typha angustifolia*	Narrowleaf cattail	most abund	most abund				
herb	*Typha latifolia*	Broadleaf cattail	most abund	most abund				
herb	*Typha x glauca*	Hybrid cattail		most abund				
herb	*Utricularia intermedia*	Flatleaf bladderwort	most abund					
herb	*Utricularia vulgaris*	Common bladderwort	most abund					
herb	*Vallisneria americana*	American eelgrass	most abund					
herb	*Wolffia spp.*	Watermeal species	most abund					
herb	*Woodwardia virginica*	Virginia chain fern		char				char

*marshes that have been disturbed are frequently dominated by these two aggressive weedy species

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Table 8.8-15. Summary of Presence and Abundance of Animals

Vines represented in various sub-habitats within the open mineral wetlands.

		Sub-habitat	Deep emergent marsh	Shallow emergent marsh	Shrub swamp	Inland non-calcareous lake shore	Sinkhole wetland	Pine barrens vernal pond
		Sub-habitat number	1	2	3	6	8	10
		Primary location	throughout NY	throughout NY	throughout NY	Upstate NY	N. of coastal lowland	Sandplains in Great Lakes Plain
Layer	**Scientific name**	**Common name**						
amphibian	*Bufo americanus*	American toad		char				char
amphibian	*Plethodon c. cinereus*	Northern redback salamander		char				
amphibian	*Pseudoacris c. crucifer*	Northern spring peeper		char				char
amphibian	*Rana catesbeiana*	Bullfrog	common					
amphibian	*Rana clamitans melanota*	Green frog		char				char
amphibian	*Rana sylvatica*	Wood frog		char				char
reptile	*Chelydra serpentina*	Common snapping turtle						char
reptile	*Chrysemys picta*	Painted turtle	common					
reptile	*Clemmys guttata*	Spotted turtle						char

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Table 8.8-16. Summary of Presence and Abundance of Plant Communities

Trees, shrubs, and grasses represented in various sub-habitats within the open peat lands.

		Sub-habitat	Sedge meadow	Marl pond shore	Marl fern	Rich graminoid fen	Rich shrub fen	Medium fen	Inland poor fen	Patterned peatland	Dwarf shrub bog	Highbush blueberry bog thicket
		Sub-habitat number	2	3	4	6	7	8	9	14	15	16
		Primary location	Adirondacks	Appalachian Plateau, Great Lakes Plain	Erie-Ontario Plain	upstate NY	upstate NY	sparsely, upstate NY	upstate, NY	W Adirondack foothills	upstate NY	throughout NY
Layer	**Scientific name**	**Common name**										
tree	*Acer rubrum*	Red maple				char	char	char	scattered		scattered	low density
tree	*Betula pumila*	Big birch					ass					
tree	*Chamaecyparis thyoides*	Atlantic white cedar										scattered
tree	*Picea mariana*	Black spruce							scattered	char	scattered	scattered
tree	*Pinus rigida*	Pitch pine										scattered
tree	*Pinus strobus*	White pine										scattered
tree	*Thuja occidentalis*	Northern white cedar			char		ass					
shrub	*Alnus incana ssp. rugosa*	Speckled alder				char	char	char				
shrub	*Alnus spp.*	Alder species	sparse									
shrub	*Andromeda glaucophylla*	Bog rosemary						char	char	common	ass	
shrub	*Aronia arbutifolia*	Red chokeberry										indic. sp.
shrub	*Aronia melanocarpa*	Black chokeberry					char	ass	char	char	ass	
shrub	*Cephalanthus occidentalis*	Buttonbush										indic. sp.
shrub	*Chamaedaphne calyculata*	Leatherleaf	sparse					char	char	common	dom	
shrub	*Clethra alnifolia*	Sweet pepperbush										indic. sp.
shrub	*Cornus sericea*	Redosier dogwood				char	char					
shrub	*Decodon verticillatus*	Water-willow									ass	indic. sp.
shrub	*Gaylussacia baccata*	Black huckleberry									ass	char
shrub	*Ilex verticillata*	Winterberry										char
shrub	*Juniperus horizontalis*	Prostrate juniper			char (not BRD)							
shrub	*Kalmia angustifolia*	Sheep laurel							char	common	prominent	
shrub	*Kalmia polifolia*	Bog laurel							char	common	prominent	
shrub	*Larix laricina*	Tamarack					ass		scattered	char	scattered	scattered
shrub	*Ledum groenlandicum*	Bog labrador tea							char	common	prominent	
shrub	*Leucothoe racemosa*	Fetterbush										indic. sp.
shrub	*Lonicera oblongifolia*	Swamp fly honeysuckle					char					
shrub	*Lyonia ligustrina*	Maleberry										indic. sp.
shrub	*Myrica gale*	Sweet gale	sparse				char	dom	char			
shrub	*Myrica pensylvanica*	Bayberry				char	ass					
shrub	*Nemopanthus mucronatus*	Mountain holly										co-dom
shrub	*Rhamnus alnifolia*	Alder-leaf buckthorn				char	char					
shrub	*Rhododendron viscosum*	Swamp azalea										indic. sp.
shrub	*Rosa palustris*	Swamp rose						ass				
shrub	*Rubus pubescens*	Dwarf red blackberry					ass					
shrub	*Salix candida*	Sageleaf willow				char	ass					
shrub	*Salix pedicellaris*	Bog willow						ass				
shrub	*Spiraea alba var. latifolia*	Meadow sweet	sparse				ass	ass		char	ass	
shrub	*Toxicodendron vernix*	Poison sumac				char	char					
shrub	*Vaccinium angustifolium*	Lowbush blueberry								char		
shrub	*Vaccinium corymbosum*	Highbush blueberry					ass				ass	dom, char
shrub	*Vaccinium macrocarpon*	Cranberry						char	char		prominent	
nonvasc	*Aneura pinguis*	Liverwort				char						
nonvasc	*Campylium stellatum*	Star campylium moss			char	char						
nonvasc	*Chara vulgaris*	Algae			char							
nonvasc	*Drepanocladus revolvens*	Moss				char						
nonvasc	*Sphagnum angustifolium*	Sphagnum moss							char		char	
nonvasc	*Sphagnum cuspidatum*	Sphagnum moss							char	common		
nonvasc	*Sphagnum fallax*	Sphagnum moss							char		char	
nonvasc	*Sphagnum fuscum*	Sphagnum moss							char		char	
nonvasc	*Sphagnum majus*	Sphagnum moss								common		
nonvasc	*Sphagnum megellanicum*	Sphagnum moss							char		char	
nonvasc	*Sphagnum papillosum*	Sphagnum moss							char		char	
nonvasc	*Sphagnum rubellum*	Sphagnum moss							char	dom	char	
nonvasc	*Sphagnum russowii*	Sphagnum moss							char			
nonvasc	*Sphagnum spp.*	Sphagnum moss species										char

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Table 8.8-17. Summary of Presence and Abundance of Herbs

Trees, shrubs, and grasses represented in various sub-habitats within the open peat lands.

		Sub-habitat	Sedge meadow	Marl pond shore	Marl fern	Rich graminoid fen	Rich shrub fen	Medium fen	Inland poor fen	Patterned peatland	Dwarf shrub bog	Highbush blueberry bog thicket
		Sub-habitat number	2	3	4	6	7	8	9	14	15	16
		Primary location	Adirondacks	Appalachian Plateau, Great Lakes Plain	Erie-Ontario Plain	upstate NY	upstate NY	sparsely, upstate NY	upstate, NY	W Adirondack foothills	upstate NY	throughout NY
Layer	**Scientific name**	**Common name**										
herb	*Acorus americanus*	Sweetflag	ass									
herb	*Angelica atropurpurea*	Purple-stem angelica	ass									
herb	*Aster umbellatus*	Flat-top white aster				ass						
herb	*Bromus ciliatus*	Fringed brome				ass						
herb	*Calla palustris*	Water arum										char
herb	*Calopogon tuberosus*	Grass pink				ass						
herb	*Drosera rotundifolia*	Round-leaf sundew				char		char	char		ass	
herb	*Dulichium arundinaceum*	Threeway sedge	ass					char				indic. sp
herb	*Equisetum arvense*	Common horsetail				ass						
herb	*Equisetum fluviatile*	Water horsetail	ass				char					
herb	*Equisetum variegatum*	Variegated horsetail			char							
herb	*Eupatorium maculatum*	Spotted joe pye weed	ass			ass						
herb	*Eupatorium perfoliatum*	Common boneset		char		ass						
herb	*Iris versicolor*	Blue flag iris				char						
herb	*Lobelia cardinalis*	Cardinal flower		char								
herb	*Lobelia kalmii*	Kalm's lobelia			char	ass						
herb	*Lycopus uniflorus, L. americanus*	Water-horehound species		char	char	ass						
herb	*Lysimachia terrestris*	Swamp loosestrife	ass									
herb	*Maianthemum trifolium*	False Solomon's-seal								char		
herb	*Mentha arvensis*	Field mint		char		ass						
herb	*Menyanthes trifoliata*	Buckbean				ass		char				
herb	*Onoclea sensibilis*	Sensitive fern	ass									
herb	*Osmunda cinnamomea*	Cinnamon fern										char
herb	*Osmunda regalis*	Royal fern				char	char	char				
herb	*Parnassia glauca*	Grass-of-Parnassus			char	char						
herb	*Peltandra virginica*	Arrow arum						char				
herb	*Pogonia ophioglossoides*	Rose pogonia				ass		char				
herb	*Polygonum amphibium*	Water smartweed		char								
herb	*Potentilla anserina*	Silverweed cinquefoil		char								
herb	*Potentilla fruticosa*	Shrubby cinquefoil			char	char	char					
herb	*Potentilla palustris*	Marsh cinquefoil	ass			ass						
herb	*Rhynchospora alba*	White beakrush				char		char	char	char	ass	
herb	*Rhynchospora capillacea*	Beak rush			char							
herb	*Sarracenia purpurea*	Purple pitcher-plant			char			char	char	char	ass	char
herb	*Scirpus acutus*	Hardstem bulrush			char	char						
herb	*Scirpus hudsonianus*	Alpine bulrush				ass						
herb	*Scirpus spp.*	Bulrush species	ass									
herb	*Senecio aureus*	Golden ragwort				ass						
herb	*Smilacina trifolia*	Three-leaved false Solomon's-seal										char
herb	*Solidago ohioensis*	Ohio goldenrod			char	ass						
herb	*Solidago patula*	Spreading goldenrod				ass						
herb	*Solidago uliginosa*	Swamp goldenrod				char		char				
herb	*Thalictrum pubescens*	Tall meadow-rue	ass				char					
herb	*Thelypteris palustris*	Marsh fern				char	char	char				char
herb	*Triadenum virginicum*	Marsh St. John's-wort	ass			ass	char	char			ass	indic. sp.
herb	*Typha latifolia*	Broadleaf cattail				char	char					
herb	*Utricularia intermedia*	Flatleaf bladderwort				ass		char				
herb	*Woodwardia virginica*	Virginia chain fern										indic. sp.

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Table 8.8-18. Summary of Presence and Abundance of Grasses and Animals

Trees, shrubs, and grasses represented in various sub-habitats within the open peat lands.

		Sub-habitat	Sedge meadow	Marl pond shore	Marl fern	Rich graminoid fen	Rich shrub fen	Medium fen	Inland poor fen	Patterned peatland	Dwarf shrub bog	Highbush blueberry bog thicket
		Sub-habitat number	2	3	4	6	7	8	9	14	15	16
		Primary location	Adirondacks	Appalachian Plateau, Great Lakes Plain	Erie-Ontario Plain	upstate NY	upstate NY	sparsely, upstate NY	upstate, NY	W Adirondack foothills	upstate NY	throughout NY
Layer	**Scientific name**	**Common name**										
graminoid	*Agrostis scabra*	Rough bentgrass	ass									
graminoid	*Calamagrostis canadensis*	Bluejoint grass	co-dom				char					
graminoid	*Carex aquatilis*	Water sedge				char						
graminoid	*Carex canescens*	Silvery sedge	co-dom						char		ass	
graminoid	*Carex crawei*	Crawe's sedge			ass							
graminoid	*Carex eburnea*	Bristeleaf sedge			ass							
graminoid	*Carex elixis*	Bristeleaf sedge							char	char		
graminoid	*Carex flava*	Yellow sedge			char	char						
graminoid	*Carex hystericina*	Bottlebrush sedge				char						
graminoid	*Carex lasiocarpa*	Sedge				char		dom				
graminoid	*Carex limosa*	Mud sedge							char	char		
graminoid	*Carex oligosperma*	Fewseed sedge							char	char		
graminoid	*Carex pauciflora*	Fewflower sedge								char	ass	
graminoid	*Carex paupercula*	Boreal bog sedge							char			
graminoid	*Carex prairea*	Prairie sedge				char						
graminoid	*Carex sterilis*	Dioecious sedge				char						
graminoid	*Carex stricta*	Tussock sedge	dom			ass	char					
graminoid	*Carex trisperma*	Threeseeded sedge							char		prominent	char
graminoid	*Carex utriculata*	Northwest territory sedge	co-dom						char			
graminoid	*Carex vesicaria*	Blister sedge	co-dom									
graminoid	*Carex viridula*	Little green sedge		char								
graminoid	*Cladium mariscoides*	Bogrush			char	char						
graminoid	*Deschampsia flexuosa*	Wavy hairgrass		char								
graminoid	*Eleocharis acicularis*	Needle spikerush	ass									
graminoid	*Eleocharis obtusa*	Blunt spikerush	ass									
graminoid	*Eleocharis palustris*	Common spikerush		char								
graminoid	*Eleocharis rostellata*	Beaked spikerush			char	char						
graminoid	*Eriophorum viridicarinatum*	Cotton-grass				ass			char	char	prominent	
graminoid	*Glyceria canadensis*	Rattlesnake mannagrass	ass									
graminoid	*Juncus articulatus*	Jointed rush			char							
graminoid	*Muhlenbergia glomerata*	Spike muhly				char						
graminoid	*Scheuchzeria palustris*	Pod-grass								char		
graminoid	*Scleria verticillata*	Nutrush			char							
graminoid	*Triglochin palustre*	Arrow-grass			char	ass						
mammal	*Sorex cinereus*	Masked shrew									char	
mammal	*Synaptomys cooperi*	Southern bog lemming									char	
mammal	*Zapus hudsonius*	Meadow jumping mouse									char	
bird	*Geothlypis trichas*	Common yellowthroat									char	
bird	*Melospiza melodia*	Song sparrow									char	
bird	*Passerculus sandwichensis*	Savannah sparrow									char	
amphibian	*Rana sylvatica*	Wood frog									char	

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Table 8.8-19. Summary of Presence and Abundance of Plant Communities

Vines, trees, and shrubs represented in various sub-habitats within the forested wetlands.

		Sub-habitat	Floodplain forest	Red maple-hardwod swamp	Vernal pool	Hemlock-hardwood swamp	Spruce-fir swamp
		Sub-habitat number	1	2	6	8	9
		Primary location	upstate NY	throughout NY	throughout NY	upstate NY	
Layer	**Scientific name**	**Common name**					
vine	*Clematis virginiana*	Virgin's bower	most abund				
vine	*Menispermum canadense*	Moonseed	less frequent				
vine	*Parthenocissus quinquefolia*	Virginia creeper	most abund				
vine	*Vitis riparia*	Wild grapes	most abund				
tree	*Abies balsamea*	Balsam fir					co-dom
tree	*Acer negundo*	Box elder	most abund				
tree	*Acer rubrum*	Red maple	most abund	dom, co-dom		co-dom	
tree	*Acer saccharinum*	Silver maple	most abund				
tree	*Acer saccharum*	Sugar maple	less frequent				
tree	*Betula alleghaniensis*	Yellow birch		co-dom		co-dom	
tree	*Betula nigra*	River birch	most abund				
tree	*Carya cordiformis*	Bitternut hickory	most abund				
tree	*Carya laciniosa*	Shellbark hickory	most abund				
tree	*Carya ovata*	Shagbark hickory	most abund				
tree	*Celtis occidentalis*	Hackberry	less frequent				
tree	*Fraxinus americana*	White ash	most abund	co-dom			
tree	*Fraxinus nigra*	Black ash	most abund	co-dom			
tree	*Fraxinus pennsylvanica*	Green ash	most abund	co-dom			
tree	*Juglans cinerea*	Butternut	most abund				
tree	*Juglans nigra*	Black walnut	most abund				
tree	*Liriodendron tulipifera*	Tulip tree	less frequent				
tree	*Picea glauca*	White spruce					co-dom
tree	*Picea mariana*	Black spruce					co-dom
tree	*Picea rubens*	Red spruce					dom
tree	*Platanus occidentalis*	Sycamore	most abund				
tree	*Populus deltoides*	Cottonwood	most abund				
tree	*Quercus bicolor*	Swamp white oak	most abund	co-dom			
tree	*Quercus palustris*	Pin oak	most abund				
tree	*Sambucus canadensis*	Common elderberry		char			
tree	*Tilia americana*	American basswood	less frequent				
tree	*Tsuga canadensis*	Eastern hemlock				dom	
tree	*Ulmus americana*	American elm	most abund	co-dom			
tree	*Ulmus rubra*	Slippery elm	most abund	co-dom			
shrub	*Alnus incana ssp. rugosa*	Speckled alder	most abund	char			
shrub	*Carpinus carolinianus*	Ironwood	most abund				
shrub	*Clethra alnifolia*	Sweet pepperbush				char	
shrub	*Cornus spp.*	Dogwood species	most abund	char			
shrub	*Ilex verticillata*	Winterberry		char			
shrub	*Lindera benzoin*	Spicebush	most abund	char			
shrub	*Nemopanthus mucronatus*	Mountain holly					char
shrub	*Rhododendron maximum*	Great laurel				char	
shrub	*Staphylea trifolia*	Bladdernut	most abund				
shrub	*Toxicodendron radicans*	Poison ivy	most abund				
shrub	*Vaccinium corymbosum*	Highbush blueberry		char		dom	
shrub	*Viburnum spp.*	Viburnum species	most abund	char			

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Table 8.8-20. Summary of Presence and Abundance of Plant Communities

Herbs, grass, and mosses represented in various sub-habitats within the forested wetlands.

		Sub-habitat	Floodplain forest	Red maple-hardwod swamp	Vernal pool	Hemlock-hardwood swamp	Spruce-fir swamp
		Sub-habitat number	1	2	6	8	9
		Primary location	upstate NY	throughout NY	throughout NY	upstate NY	
Layer	**Scientific name**	**Common name**					
herb	Boehmeria cylindrica	False nettle	most abund	char			
herb	Caltha palustris	Marsh marigold		char			
herb	Cicuta bulbifera	Water-hemlock			char		
herb	Coptis trifolia	Gold thread					char
herb	Cornus canadensis	Bunchberry					char
herb	Dalibarda repens	Dewdrop					char
herb	Eupatorium rugosum	White snakeroot	most abund				
herb	Gaultheria hispidula	Creeping snowberry					char
herb	Hottonia inflata	Featherfoil		char, rare in other areas			
herb	Impatiens capensis, I. pallida	Jewelweed species	most abund	char			
herb	Laportea canadensis	Wood nettle	most abund				
herb	Lemna minor	Common duckweed			char		
herb	Ludwigia palustris	Water purslane			char		
herb	Matteuccia struthiopteris	Ostrich fern	most abund				
herb	Najas flexilis	Naiad			char		
herb	Onoclea sensibilis	Sensitive fern	most abund	dom		char	
herb	Osmunda cinnamomea	Cinnamon fern		dom		char	
herb	Osmunda regalis	Royal fern		dom			
herb	Oxalis acetosella	Wood sorrel					char
herb	Peltandra virginica	Arrow arum		char			
herb	Polygonum virginianum	Jumpseed	most abund				
herb	Saururus cernuus	Lizard's tail	most abund				
herb	Solidago spp.	Goldenrod species	most abund				
herb	Symplocarpus foetidus	Skunk cabbage		char			
herb	Thalictrum pubescens	Tall meadow-rue		char			
herb	Thelypteris palustris	Marsh fern		dom			
herb	Trientalis borealis	Star flower					char
herb	Veratrum viride	White hellebore		char			
graminoid	Carex folliculata	Northern long sedge					char
graminoid	Carex intumescens	Greater baldder sedge		char			
graminoid	Carex lacustris	Sedge species		char			
graminoid	Carex stricta	Tussock sedge		char			
graminoid	Carex trisperma	Threeseeded sedge					char
graminoid	Eleocharis acicularis	Needle spikerush			char		
nonvasc	Glyceria spp.	Mannagrass species			char		
nonvasc	Sphagnum spp.	Sphagnum moss species					dom
bird	Dryocopus pileatus	Pileated woodpecker	char				
bird	Melanerpes carolinus	Red-bellied woodpecker	char				
bird	Parus bicolor	Tufted titmouse	char				
bird	Seiurus noveboracensis	Northern waterthrush					char
bird	Vireo flavifrons	Yellow-throated vireo	char				
reptile	Chelydra serpentina	Common snapping turtle			fac		
reptile	Chrysemys picta	Painted turtle			fac		
reptile	Clemmys guttata	Spotted turtle			fac (not BRD)		
amphibian	Ambystoma jeffersonianum	Jefferson's salamander			obl		
amphibian	Ambystoma laterale	Blue-spotted salamander			obl		
amphibian	Ambystoma maculatum	Spotted salamander			obl		
amphibian	Ambystoma opacum	Marbled salamander			obl (not BRD)		
amphibian	Bufo americanus	American toad			fac		
amphibian	Bufo woodhousei fowleri	Fowler's toad			fac (not BRD)		
amphibian	Hemidactylium scutatum	Four-toed salamander			fac		
amphibian	Hyla versicolor	Gray tree frog			fac		
amphibian	Notophthalmus viridescens	Red-spotted newt			fac		
amphibian	Pseudacris crucifer	Spring peeper			fac		
amphibian	Rana clamitans	Green frog			fac		
amphibian	Rana sylvatica	Wood frog			obl		

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Table 8.8-21. Summary of Presence and Abundance of Plant Communities

Trees, shrubs, and herbs represented in various sub-habitats within the forested peatlands.

		Sub-habitat	Red maple-tamarack peat swamp	Pitch pine blueberry peat swamp	Northern white cedar swamp	Black spruce-tamarack bog
		Sub-habitat number	3	4	5	7
		Primary location	upstate NY	Erie-Ontario plain	upstate NY	
Layer	**Scientific name**	**Common name**				
tree	*Abies balsamea*	Balsam fir			char	
tree	*Acer rubrum*	Red maple	dom	ass	char	
tree	*Betula alleghaniensis*	Yellow birch			char	
tree	*Betula populifolia*	Gray birch		ass		
tree	*Fraxinus nigra*	Black ash			char	
tree	*Larix laricina*	Tamarack			char	char
tree	*Picea mariana*	Black spruce			char	char
tree	*Pinus rigida*	Pitch pine		dom		
tree	*Pinus strobus*	White pine			char	
tree	*Thuja occidentalis*	Northern white cedar			char	
tree	*Tsuga canadensis*	Eastern hemlock			char	
shrub	*Alnus incana ssp. rugosa*	Speckled alder	char			
shrub	*Aronia melanocarpa*	Black chokeberry	less frequent			
shrub	*Chamaedaphne calyculata*	Leatherleaf				char
shrub	*Cornus sericea*	Red osier dogwood	char		char	
shrub	*Ilex verticillata*	Winterberry	char			
shrub	*Kalmia angustifolia*	Sheep laurel				char
shrub	*Ledum groenlandicum*	Bog labrador tea				char
shrub	*Lonicera oblongifolia*	Swamp fly honesuckle			char	
shrub	*Nemopanthus mucronatus*	Mountain holly	less frequent			char
shrub	*Rubus pubescens*	Dwarf red blackberry	char		char	
shrub	*Salix spp.*	Willow species	char			
shrub	*Vaccinium corymbosum*	Highbush blueberry	char	dom	char	char
shrub	*Viburnum cassinoides*	Withe-rod				char
herb	*Caltha palustris*	Marsh marigold	char			
herb	*Clintonia borealis*	Blue bead lily			char	
herb	*Coptis trifolia*	Gold thread			char	
herb	*Cornus canadensis*	Bunchberry			char	char
herb	*Cypripedium calceolus*	Yellow lady's-slipper			char	
herb	*Cypripedium reginae*	Showy lady's-slipper			char	
herb	*Dryopteris cristata*	Crested wood fern	char		char	
herb	*Gaultheria hispidula*	Creeping snowberry			char	
herb	*Gymnocarpium dryopteris*	Oak fern			char	
herb	*Lycopus uniflorus, L. americanus*	Water-horehound species	char			
herb	*Maianthemum canadense*	Canada mayflower			char	
herb	*Mitchella repens*	Partridge berry			char	
herb	*Mitella nuda*	Miterwort			char	
herb	*Onoclea sensibilis*	Sensitive fern			char	
herb	*Osmunda cinnamomea*	Cinnamon fern	char		char	char
herb	*Osmunda regalis*	Royal fern	char		char	
herb	*Sarracenia purpurea*	Purple pitcher-plant				char
herb	*Senecio aureus*	Golden ragwort			char	
herb	*Symplocarpus foetidus*	Skunk cabbage	char			
herb	*Thelypteris palustris*	Marsh fern	char		char	
herb	*Trientalis borealis*	Star flower			char	

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Table 8.8-22. Summary of Presence and Abundance of Plant and Animal Communities

Grasses and moss represented in various sub-habitats within the forested peatlands.

		Sub-habitat	Red maple-tamarack peat swamp	Pitch pine blueberry peat swamp	Northern white cedar swamp	Black spruce-tamarack bog
		Sub-habitat number	3	4	5	7
		Primary location	upstate NY	Erie-Ontario plain	upstate NY	
Layer	**Scientific name**	**Common name**				
graminoid	*Carex eburnea*	Bristleaf sedge			char	
graminoid	*Carex interior*	Inland sedge	char			
graminoid	*Carex intumescens*	Greater baldder sedge			char	
graminoid	*Carex lacustris*	Sedge species	char			
graminoid	*Carex leptalea*	Bristlystalked sedge	char		char	
graminoid	*Carex stricta*	Tussock sedge	char			
graminoid	*Carex trisperma*	Threeseeded sedge	char			char
graminoid	*Eriophorum viridicarinatum*	Cotton-grass				char
nonvasc	*Bazzania trilobata*	Leafy liverworts			char	
nonvasc	*Hylocomium splendens*	Stair-step moss			char	
nonvasc	*Sphagnum angustifolium*	Moss species	dom			
nonvasc	*Sphagnum megellanicum*	Moss species	dom			
nonvasc	*Sphagnum spp.*	Moss species			char	dom
nonvasc	*Sphagnum warnstorfii*	Moss species	dom			
bird	*Contopus borealis*	Olive-sided flycatcher				char
bird	*Dendragapus canadensis*	Spruce grouse				char
bird	*Melospiza lincolnii*	Lincoln's sparrow				char
bird	*Perisoreus canadensis*	Gray jay				char
bird	*Picoides articus*	Black-backed woodpecker				char
bird	*Picoides tridactylus*	Three-toed woodpecker				char
bird	*Regulus satrapa*	Golden-crowned kinglet			char	char
bird	*Seiurus noveboracensis*	Northern waterthrush			char	
bird	*Troglodytes troglodytes*	Winter wren			char	
bird	*Zonotrichia albicollis*	White-throated sparrow			char	char
amphibian	*Hemidactylium scutatum*	Four-toed salamander				char

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Table 8.8-23. Summary of Presence and Abundance of Herbs and Algae

Vines, trees, and shrubs represented in various sub-habitats within the natural lake pond communities.

		Sub-habitat	Bog lake	Oligotrophic dimictic lake	Mesotrophic dimictic lake	Eutrophic dimictic lake	Meromictic lake	Oxbow lake	Oligotrophic pond	Eutrophic pond
		Sub-habitat number	4	5	6	7	10	13	15	16
		Primary location	upstate NY	throughout NY	throughout NY	throughout NY	N of coastal Lowlands	upstate NY	throughout NY	throughout NY
Layer	**Scientific name**	**Common name**					uncommon in upstate NY			
herb	*Brasenia schreberi*	Water-shield	char			char		char		
herb	*Ceratophyllum demersum*	Coontail								char
herb	*Chara spp.*	Stonewort species					char			
herb	*Elatine minima*	Mud purslane		char						
herb	*Elodea spp.*	Waterweed species					char			char
herb	*Eriocaulon aquaticum*	Pipewort		char					char	
herb	*Heteranthera dubia*	Grassleaf mudplantain								char
herb	*Isoetes echinospora ssp.*	Quillwort species		char					char	
herb	*Lemna minor*	Common duckweed								char
herb	*Lobelia dortmanna*	Water lobelia		char					char	
herb	*Myriophyllum alterniflorum*	Alternateflower watermilfoil		char						
herb	*Myriophyllum farwellii*	Farwell's watermilfoil							char	
herb	*Myriophyllum tenellum*	Slender watermilfoil		char						
herb	*Najas flexilis*	Naiad								char
herb	*Nuphar lutea*	Yellow pond-lily	char			char				char
herb	*Nymphaea odorata*	White water-lily	char					char		
herb	*Nymphoides cordata*	Floating-heart							char	
herb	*Potamogeton confervoides*	Tuckerman's pondweed							char	
herb	*Potamogeton spp.*	Pondweeds	char	char		char	char	char	char	char
herb	*Ranunculus reptans*	Creeping buttercup		char						
herb	*Scirpus subterminalis*	Clubrush	char							
herb	*Sparganium fluctuans*	Floating burreed							char	
herb	*Sparganium spp.*	Burreed species	char			char				
herb	*Utricularia geminiscapa*	Hiddenfruit bladderwort							char	
herb	*Utricularia spp.*	Bladderwort species	char	char						char
herb	*Utricularia vulgaris*	Common bladderwort							char	
herb	*Vallisneria americana*	American eelgrass		char		char				char
algae	*Cladophora spp.*	Algae								

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Table 8.8-24. Summary of Presence and Abundance of Fish and Invertebrates

Represented in various sub-habitats within the natural lake pond communities.

		Sub-habitat	Bog lake	Oligotrophic dimictic lake	Mesotrophic dimictic lake	Eutrophic dimictic lake	Meromictic lake	Oxbow lake	Oligotrophic pond	Eutrophic pond
		Sub-habitat number	4	5	6	7	10	13	15	16
		Primary location	upstate NY	throughout NY	throughout NY	throughout NY	N of coastal Lowlands	upstate NY	throughout NY	throughout NY
Layer	**Scientific name**	**Common name**					uncommon in upstate NY			
fish	*Ambloplites rupestris*	Rock bass		char						
fish	*Ameirus nebulosus*	Brown bullhead	char			char	char			
fish	*Aphredoderus sayanus*	Pirate perch				char (not BRD)				
fish	*Catastomus commersoni*	White sucker				char	char			
fish	*Cottus bairdi*	Mottled sculpin		char (not BRD)						
fish	*Cottus cognatus*	Slimy sculpin		char						
fish	*Esox lucius*	Northern pike			char					
fish	*Esox niger*	Chain pickerel				char				
fish	*Ictalurus natalis*	Yellow bullhead				char				
fish	*Lepomis auritus*	Redbreast sunfish		char						
fish	*Lepomis gibbosus*	Pumpkinseed		char	char	char				
fish	*Lepomis macrochirus*	Bluegill			char	char				
fish	*Luxilus cornutus*	Common shiner				char				
fish	*Micropterus dolomieui*	Smallmouth bass		char	char					
fish	*Micropterus salmoides*	Largemouth bass			char	char				
fish	*Morone americana*	White perch				char				
fish	*Notemigonus crysoleucas*	Golden shiner				char				
fish	*Perca flavescens*	Yellow perch		char	char	char	char			
fish	*Phoxinus eos*	Northern redbelly dace				char				
fish	*Prosopium cylindraceum*	Round whitefish		char						
fish	*Salvelinus fontinalis*	Brook trout							char	
fish	*Salvelinus namaycush*	Lake trout		char					char	
fish	*Semotilus atromaculatus*	Creek chub							char	
fish	*Umbra pygmaea*	Eastern mudminnow				char				
invert	*Aeshna*	Odonates							char	char
invert	*Amnicola spp.*	Amnicola species		char						
invert	*Campeloma decisum*	Mystery snail		char						
invert	*Chaoborus spp.*	Phantom midges	char	char		char				
invert	*Chironomus*	Midge larvae	char			char				
invert	*Elliptio complanata*	Eastern elliptio		char						
invert	*Heliosoma trivolvis*	Snails ramshorn snail		char						
invert	*Heterotrissocladius spp.*	Midge species		char, dom						
invert	*Hyalella azteca*	Amphipod	char							
invert	*Lampsilis radiata*	Eastern lampmussel		char						
invert	*Musculium spp.*	Mollusk species	char							
invert	*Oligochaeta*	Oligochaeta		char, dom		char				
invert	*Phaenopsectra spp.*	Midge species	char							
invert	*Physa heterostropha*	Physid snail		char						
invert	*Pisidium spp.*	Clam species			char				char	
invert	*Procladious spp.*	Midge species		char, dom						
invert	*Pyganodon cataracta*	Eastern floater		char						
invert	*Sialis spp.*	Alderfly species		char, dom						
invert	*Stenonoma spp.*	Midge species		char, dom						
invert	*Tanytarsus*	Midge larvae		char						
invert	*Tribelos spp.*	Midge species	char							
invert	*Trichoptera*	Caddisfly species		char, dom						
invert	*Zalutschia spp.*	Midge species	char							

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Table 8.8-25. Summary of Presence and Abundance of Plants and Animals

Represented in various sub-habitats within the lacustrine cultural communities.

		Sub-habitat	Acidified lake	Cult eutrophic lake	Farm/artifical pond	Resevoir/artif. Impoundment
		Sub-habitat number	2	3	4	5
		Primary location	Adirondacks	throughout NY	throughout NY	throughout NY
Layer	**Scientific name**	**Common name**				
nonvasc	*Sphagnum spp.*	Moss species	growth increase			
herb	*Utricularia spp.*	Bladderwort species	growth increase			
herb	*Utricularia geminiscapa*	Hiddenfruit bladderwort	restricted to <5.1 pH ponds			
herb	*Potamogeton confervoides*	Tuckerman's pondweed				
herb	*Myriophyllum spicatum*	Eurasian watermilfoil		char		
herb	*Trapa natans*	Water chestnut		char		
herb	*Potamogeton crispus*	Curly pondweed		char		
fish	*Lepomis macrochirus*	Bluegill			stocked	char
fish	*Perca flavescens*	Yellow perch			stocked	
fish	*Esox niger*	Chain pickerel				char
fish	*Esox* spp.	Pickerel species				char
fish	*Ameirus nebulosus*	Brown bullhead				char
fish	*Ictalurus natalis*	Yellow bullhead				char
fish	*Lepomis gibbosus*	Pumpkinseed				char
fish	*Notemigonus crysoleucas*	Golden shiner				char
fish	*Pimephales promelas*	Fathead minnow				char
fish	*Salmo gairdneri*	Rainbow trout				stocked

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Table 8.8-26. Recent Occurrence of Fish Species

Table is adapted from Table 4 in Carlson (2007); recent data are primarily from NYSDEC 2006 survey, with notes on other records.

Common name	Scientific name	Status	Black River				Philo-mel	Beaver	Moose	Indepen-dence	Sugar	Deer	Mill	Wood-hull	Notes
			Entire	Lower: below Carthage	Middle: Carthage-Lyons	Upper: above Lyons									
sea Lamprey	*Petromyzon marinus*	N mouth	m												
lake sturgeon	*Acipenser fulvescens*	N mouth	m	x											
longnose gar	*Lepisosteus osseus*	N mouth	m												
bowfin	*Amia calva*	N mouth	m												
American eel	*Anguilla rostrata*	N nr ext	x	x				om							
gizzard shad	*Dorosoma cepedianum*	N mouth	m												
cisco	*Coregonus artedii*	IF													failed intro to L Woodhull
lake whitefish	*Coregonus clupeaformis*	I													lakes
round whitefish	*Prosopium cylindraceum*	N exp													Little Moose Lake; introduced four others
sockeye salmon	*Oncorhynchus nerka*	I													annual stocking; caught in four lakes
chinook salmon	*O. tshawytscha*	I mouth	m	x											
rainbow trout	*O. mykiss*	I	x	x		x			x		x	x	x		Known reproduction L Ontario only
Atlantic salmon	*Salmo salar*	N lower	m						d						In four lakes
brown trout	*S. trutta*	I	x	x	x	x		x	x		x		x	x	
brook trout	*Salvelinus fontinalis*	N	x	x	x	x		x	x	x	x	x	x	x	
lake trout	*S. namaycush*	N													in 26 lakes +others on ALC
splake	*S. fontinalix x namaycush*	IH							x						in about 10 lakes; no longer stocked
rainbow smelt	*Osmerus mordax*	I local							x						In about 12 lakes
central mudminnow	*Umbra limi*	N lower	x	x	x			x	x	x		x	x		
grass pickerel	*Esox americanus*	N	x		x										
northern pike	*E. lucius*	N exp	x	x	x					m		x			
chain pickerel	*E. niger*	N	x	x	x	x		x	m	m		x	x		
tiger muskellunge	*E. lucius x masquinongy*	IH	x	x				x							Nisger Res, Soft Maple Res, Third L
central stoneroller	*Campostoma anomalum*	I local					x								
redside dace	*Clinostomus elongatus*	N									x	x			
lake chub	*Couesius plumbeus*	N	x			x		x	x						
grass carp	*Ctenopharyngodon idella*	I													Lake of the Pines
common carp	*Cyprinus carpio*	I	x	x	x	x		x	x				x		mainly Black River
cutlip minnow	*Exoglossum maxillingua*	N	x	x		x			x		x	x		x	
brassy minnow	*Hybognathus hankinsoni*	N													
eastern silvery minnow	*H. regius*	N	m		x										
hornyhead chub	*Nocomis biguttatus*	I local										x			
golden shiner	*Notemogonus crysoleucas*	N exp	x	x	x	x		x	x	m		x	x		
satinfin shiner	*Cyprinella analostana*	I local	x	x	x					m		x	x		
spotfin shiner	*C. spiloptera*	N nr ext	e	o	o							o	o		None in 2006; older records (o)
common shiner	*Luxilus cornutus*	N	x	x	x	x		x	x	m	x	x	x		
blacknose shiner	*Notropis heterolepis*	N										x			
spottail shiner	*N. hudsonius*	N	x	x	x	x		m			x	m			
mimic shiner	*N. volucellus*	N													hist from Lower Black and lower Sugar Riv
northern redbelly dace	*Phoxinus eos*	N	x	x			x	x	d			x			Frequent in lakes
finescale dace	*P. neogaeus*	N nr ext	o				o								
bluntnose minnow	*Pimephales notatus*	N	x	x	x	x	x		x		x	x	x		
fathead minnow	*P. promelas*	N	x	x			x		x			x	x		
e.blacknose dace	*Rhinichthys atratulus*	N	x	x	x	x		x	x	x	x	x	x	x	
longnose dace	*R. cataractae*	N	x	x	x	x		x	x	x	x	x	x	x	
creek chub	*Semotilus atromaculatus*	N	x	x	x	x		x	x	x	x	x	x	x	
fallfish	*S. corporalis*	N lower	x	x	x	x		m	m	m	x	m	x		
pearl dace	*Margariscus margarita*	N					x					x			
quillback	*Carpiodes cyprinus*	N mouth	m												
longnose sucker	*Catostomus catostomus*	N	x	x				x	x					x	Also in lakes
summer sucker	*C. utawana*	N						o	d						L Moose L; Squaw L; historical B Moose L
white sucker	*C. commersoni*	N	x	x	x	x	x	x	x	x	x	x	x	x	
northern hog sucker	*Hypentelium nigricans*	N lower	x	x	x	x			x		x	x	x		
redhorse	*Moxostoma cf anisurum*	N mouth	m	m											
brown bullhead	*Amieurus nebulosus*	N	x	x	x	x		x	x	x	x	x		x	
channel catfish	*Icatlurus punctatus*	N lower	x	x											Also in lakes
stonecat	*Noturus flavus*	N		x							x	m			
margined madtom	*N. insignis*	I local	x	x	x	x			x	m		x			
burbot	*Lota lota*	N	x	x	x					m		m	m		
banded killifish	*Fundulus diaphanus*	N lower	x	x	x		x	x	m			x			
brook stickleback	*Culaea inconstans*	N	x	x			x					x	x		
white perch	*Morone americana*	I	m												
rock bass	*Ambloplites rupestris*	N	x	x	x	x		x	x	m		x	x		
green sunfish	*Lepomis cyanellus*	I local							x				x		
pumpkinseed	*L. gibbosus*	N	x	x	x	x	x	x	x	m		x	x	x	
bluegill	*L. macrochirus*	N lower	x	x	x		x								
smallmouth bass	*Micropterus dolomieu*	N exp	x	x	x	x		x	x			x	x		
largemouth bass	*M. salmoides*	N exp	x	x	x			x	x				x		
black crappie	*Pomoxis nigromaculatus*	N lower	x	x				x							
fantail darter	*Etheostoma flabellare*	N	x	x	x	x					x	x			
johnny darter	*E. nigrum*	N	x												Some authenticated records
tessellated darter	*E. olmstedi*	N	x	x	x	x		x	x	x	x	x	x	x	
yellow perch	*Perca flavescens*	N exp	x	x	x	x		x	x			x	x		
logperch	*P. caprodes*	N	x	x								m			
walleye	*Sander vitreum*	N lower	x	x	x			m					m		
slimy sculpin	*Cottus cognatus*	N													In lakes

Key				
N	Native; extant			
N mouth	Native; only in mouth of river			
N nr ext	Native; nearly extirpated			
N lower	Native in lower drainage; introduced upstream			
N exp	Native in drainage; introduced in lakes			
I	Introduced species			
I mouth	Introduced species; only in river mouth			
IH	Introduced hybrid			
I local	Introduced to drainage; native in region			
IF	Failed introduction			
d	Documented in other surveys			
o	None in 2006 survey, but older records			

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Table 8.8-27. Identified Black River Watershed Municipal Waste Water Treatment Plants

Table is taken from the *GROUNDWATER ASSESSMENT AND RECOMMENDATIONS REPORT for the Black River Watershed, New York.*

Sewage Plant Name	County	Receiving Waters	Daily Discharge	Latitude	Longitude
Jefferson County					
City of Watertown	Jefferson	Black River	16.0 Million GPD	43° 59' 24"	75° 55' 38"
Carthage/West Carthage	Jefferson	Black River	4.0 Million GPD	43° 59' 02"	75° 37' 14"
Village of Brownville	Jefferson	Black River	650,000 GPD	44° 01' 00"	75° 59' 06"
Village of Deferiet	Jefferson	Black River	41,000 GPD	44° 02' 29"	75° 40' 45"
Village of Dexter	Jefferson	Black River	250,000 GPD	44° 0' 19"	76°02' 35"
Village of Herrings	Jefferson	Black River	12,650 GPD	44° 01' 18"	75° 39' 39"
Lewis County					
Beaver Falls - Croghan	Lewis	Beaver River	20,000 GPD	43° 53' 10"	75° 26' 20"
Village of Castorland	Lewis	Black River	45,000 GPD	43° 53' 40"	75° 30' 25"
Village of Copenhagen	Lewis	Deer River	110,000 GPD	43° 53' 33"	75° 40' 04"
Village of Croghan	Lewis	Beaver River	70,000 GPD	43° 53' 50"	75° 23' 45"
Village of Lowville	Lewis	Mill Creek to Black River	1.8 Million GPD	43° 47' 02"	75° 28' 35"
Town of Martinsburg	Lewis	Black River	40,000 GPD	43° 43' 04"	75° 23' 50"
Oneida County					
Village of Boonville WWTP	Oneida	Mill Creek	1.1 million GPD	43° 29 ' 30"	75° 00' 15"
Forestport Sewage Treatment Plant	Oneida	Black River	24,000 GPD	43° 26' 15"	75° 12' 30"
Herkimer County					
Old Forge Waste Water Treatment Plant-Town of Webb	Herkimer	Middle Brach Moose River	45,000 GPD	43 ° 42' 00"	74° 58' 00"
Hamilton County					
None identified					

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8.9 AGWLF Results

Table 8.9-1. Total Nitrogen Load by Subwatershed

Subwatershed	Acres	Total N Sources											Total N Loads
		Croplands (kg/year)	Hay/Pasture (kg/year)	High Intensity Development (kg/year)	Low Intensity Development (kg/year)	Groundwater (kg/year)	Septic (kg/year)	Streambank (kg/year)	Quarry (kg/year)	Transition (kg/year)	Forest (kg/year)	Wetlands (kg/year)	
Beaver River	98,761	3,499.0	14,141.0	730.3	210.3	85,075.9	317.2	42.0	8.4		2,506.8	1,701.9	108,232.7
Crystal Creek	17,085	899.5	2,888.8	32.2	12.3	19,213.1	31.7	2.2	8.3	180.4	453.7	5.5	23,727.6
Cummings Creek	14,212	35.5	11.9	101.2	12.5	5,661.3	25.3	4.0		1,807.9	627.3	215.0	8,501.7
Deer River	62,270	3,265.6	14,301.4	317.2	59.2	88,970.4	117.9	17.7			990.5	405.1	108,445.0
Fish Creek	14,966	62.2	100.4	21.4	4.1	4,422.5	0.2	2.1			387.1	328.5	5,328.6
Independence River	61,074	336.6	269.8	32.2	4.1	15,890.0	280.0	16.2	0.5	63.8	1,789.1	1,681.7	20,363.7
Lower Black River	39,532	6,524.5	20,277.4	8,074.5	826.8	91,172.2	360.7	21.8	158.6		920.8	48.6	128,386.0
Lower Middle Black River	51,985	6,273.8	18,014.9	2,974.3	464.3	100,963.4	147.3	23.1	57.6	4,822.0	1,727.9	260.8	135,729.3
Middle Black River	81,353	9,965.7	12,827.5	726.4	158.6	203,617.1	252.8	40.5	17.3		2,516.7	290.7	230,413.3
Middle Branch Moose River	94,880	522.5	458.7	1,261.0	21.6	18,387.0	522.1	29.3	4.3		8,025.3	2,800.6	32,032.2
Mill Creek	22,512	5,897.2	5,737.6	701.3	55.2	81,137.1	40.4	4.1			185.0	18.8	93,776.7
Moose River	46,711	368.8	223.1	91.7	34.1	14,225.7	64.4	18.3		103.1	1,998.4	1,448.2	18,575.7
Otter Creek	42,181	152.3	214.3	0.0		11,231.9	162.0	13.4		707.7	1,315.4	1,417.6	15,214.6
South Branch Moose River	135,713	749.5	113.3	50.9		24,059.1	504.2	56.3			12,965.5	4,065.9	42,564.6
Stillwater Reservoir	109,992	137.6	236.5	97.5		19,457.5	521.8	31.5			8,215.3	2,513.1	31,210.8
Sugar River	44,732	7,616.2	29,237.8	111.6	38.5	128,492.5	52.9	14.5	0.4		1,014.1	213.4	166,791.9
Upper Black River	115,439	2,712.6	9,254.4	1,219.5	102.9	71,291.6	620.4	47.0	1.8	329.6	5,143.0	2,911.0	93,633.6
Upper Middle Black River	102,016	13,474.3	15,646.8	1,673.3	246.0	207,357.4	124.0	74.6	21.1	2,469.9	2,771.8	825.7	244,684.9
Woodhull Creek	62,661	240.4	326.5	617.4	80.3	16,541.6	319.3	22.6		643.6	6,562.1	2,885.9	28,239.6
BLACK RIVER WATERSHED	**1,218,075.2**	**62,733.7**	**144,281.9**	**18,833.7**	**2,330.7**	**1,207,167.0**	**4,464.8**	**481.0**	**278.2**	**11,128.0**	**60,115.9**	**24,037.8**	**1,535,852.5**

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Table 8.9-2. Total Nitrogen Load per Acre by Subwatershed

Subwatershed	Acres	Total N Sources											Total N Loads per Acre
		Croplands (kg/acre/year)	Hay/Pasture (kg/acre/year)	High Intensity Development (kg/acre/year)	Low Intensity Development (kg/acre/year)	Groundwater (kg/acre/year)	Septic (kg/acre/year)	Streambank (kg/stream mile/year)	Quarry (kg/acre/year)	Transition (kg/acre/year)	Forest (kg/acre/year)	Wetlands (kg/acre/year)	
Beaver River	98,761	2.50	1.44	2.96	1.11	--	--	0.119	0.424	0.00	0.03	0.14	1.12
Crystal Creek	17,085	1.79	1.45	2.61	0.99	--	--	0.040	0.168	2.52	0.03	0.06	1.40
Cummings Creek	14,212	1.11	0.15	3.41	1.27	--	--	0.093	0.000	3.00	0.05	0.19	0.62
Deer River	62,270	2.09	1.09	2.92	1.04	--	--	0.088	0.000	0.00	0.02	0.11	1.75
Fish Creek	14,966	0.87	0.67	2.17	0.82	--	--	0.037	0.000	0.00	0.03	0.14	0.37
Independence River	61,074	1.66	0.66	2.60	0.82	--	--	0.080	0.069	1.36	0.04	0.14	0.34
Lower Black River	39,532	2.35	1.11	2.92	1.04	--	--	0.212	0.494	0.00	0.07	0.18	3.30
Lower Middle Black River	51,985	2.24	1.10	2.53	0.93	--	--	0.212	0.417	3.07	0.06	0.18	2.68
Middle Black River	81,353	1.28	0.43	2.53	0.93	--	--	0.122	0.411	0.00	0.06	0.11	2.85
Middle Branch Moose River	94,880	2.82	1.57	2.63	0.97	--	--	0.134	0.192	0.00	0.11	0.22	0.37
Mill Creek	22,512	2.21	0.45	2.53	0.93	--	--	0.057	0.000	0.00	0.03	0.11	4.16
Moose River	46,711	2.93	0.99	2.47	0.98	--	--	0.095	0.000	0.00	0.05	0.19	0.40
Otter Creek	42,181	1.58	0.77	0.00	0.00	--	--	0.090	0.000	0.00	0.04	0.22	0.37
South Branch Moose River	135,713	2.71	1.39	2.94	0.00	--	--	0.134	0.000	0.00	0.12	0.21	0.32
Stillwater Reservoir	109,992	2.53	0.66	2.63	0.00	--	--	0.127	0.000	0.00	0.10	0.14	0.32
Sugar River	44,732	3.02	1.70	2.82	1.20	--	--	0.077	0.055	0.00	0.04	0.25	3.73
Upper Black River	115,439	2.20	2.03	2.48	0.99	--	--	0.156	0.079	5.34	0.06	0.19	0.82
Upper Middle Black River	102,016	1.95	0.75	2.82	1.20	--	--	0.179	0.533	1.96	0.04	0.16	2.42
Woodhull Creek	62,661	2.21	1.00	2.47	0.98	--	--	0.143	0.000	3.03	0.13	0.30	0.47
BLACK RIVER WATERSHED	**1,218,075**	**2.00**	**0.98**	**2.74**	**1.02**	--	--	**0.126**	**0.415**	**2.55**	**0.07**	**0.18**	**1.30**

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Table 8.9-3. Total Phosphorous Load by Subwatershed

Subwatershed	Acres	Total P Sources											Total P Loads
		Croplands (kg/year)	Hay/Pasture (kg/year)	High Intensity Development (kg/year)	Low Intensity Development (kg/year)	Groundwater (kg/year)	Septic (kg/year)	Streambank (kg/year)	Quarry (kg/year)	Transition (kg/year)	Forest (kg/year)	Wetlands (kg/year)	
Beaver River	98,761	347.6	1,323.2	81.0	30.6	6,485.4	48.6	18.5	1.4	0.0	129.3	56.5	8,521.9
Crystal Creek	17,085	104.8	289.1	3.6	1.8	1,288.6	1.7	1.0	1.5	23.7	19.5	0.2	1,735.4
Cummings Creek	14,212	3.5	1.2	11.2	1.8	967.7	4.3	1.7	0.0	186.0	27.1	7.1	1,211.6
Deer River	62,270	390.2	1,500.1	35.2	8.6	4,722.7	14.5	7.8	0.0	0.0	46.1	13.3	6,738.5
Fish Creek	14,966	6.5	9.6	2.4	0.6	796.6	0.0	0.9	0.0	0.0	16.3	10.9	843.8
Independence River	61,074	32.4	25.5	3.6	0.6	3,155.1	43.5	7.1	0.1	5.0	100.5	55.3	3,428.5
Lower Black River	39,532	1,122.2	2,711.6	895.4	120.3	3,450.9	45.2	9.6	48.9	0.0	51.8	1.6	8,457.4
Lower Middle Black River	51,985	861.1	2,050.1	329.8	67.5	4,365.0	9.4	10.2	13.6	656.5	70.4	8.5	8,442.1
Middle Black River	81,353	1,379.4	1,529.1	80.6	23.1	8,215.7	28.1	17.8	4.4	0.0	95.1	9.6	11,382.8
Middle Branch Moose River	94,880	52.8	43.8	139.8	3.1	3,957.3	87.8	12.9	0.6	0.0	465.5	91.9	4,855.4
Mill Creek	22,512	960.2	822.7	77.8	8.0	2,903.8	5.1	1.8	0.0	0.0	18.8	0.6	4,798.8
Moose River	46,711	40.2	21.5	10.2	5.0	2,980.3	11.9	8.1	0.0	9.0	88.3	47.9	3,222.2
Otter Creek	42,181	14.0	21.2	0.0	0.0	2,195.5	23.0	5.9	0.0	57.3	73.7	46.1	2,436.7
South Branch Moose River	135,713	78.4	10.6	5.6	0.0	5,677.6	83.5	24.8	0.0	0.0	930.6	139.6	6,950.6
Stillwater Reservoir	109,992	13.1	22.5	10.8	0.0	4,523.9	94.6	13.9	0.0	0.0	429.7	83.2	5,191.7
Sugar River	44,732	1,027.8	3,474.3	12.4	5.6	5,283.5	5.1	6.4	0.1	0.0	57.6	6.9	9,879.6
Upper Black River	115,439	256.5	835.5	135.2	15.0	8,167.9	112.5	20.7	0.3	26.8	254.7	95.6	9,920.4
Upper Middle Black River	102,016	1,636.7	1,734.0	185.6	35.8	10,270.8	15.3	32.8	4.5	269.0	142.4	27.0	14,353.7
Woodhull Creek	62,661	23.1	31.8	68.5	11.7	3,360.9	59.6	10.0	0.0	67.7	285.2	94.4	4,012.7
BLACK RIVER WATERSHED	**1,218,075**	**8,350.2**	**16,457.2**	**2,088.5**	**339.0**	**82,769.4**	**693.5**	**211.6**	**75.3**	**1,300.8**	**3,302.2**	**796.3**	**116,384.1**

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Table 8.9-4. Total Phosphorous Load per Acre by Subwatershed

Subwatershed	Acres	Total P Sources											Total P Loads per Acre
		Croplands (kg/acre/year)	Hay/Pasture (kg/acre/year)	High Intensity Development (kg/acre/year)	Low Intensity Development (kg/acre/year)	Groundwater (kg/acre/year)	Septic (kg/acre/year)	Streambank (kg/stream mile/year)	Quarry (kg/acre/year)	Transition (kg/acre/year)	Forest (kg/acre/year)	Wetlands (kg/acre/year)	
Beaver River	98,761	0.249	0.135	0.328	0.161	--	--	0.052	0.069	0.00	0.0018	0.0046	0.089
Crystal Creek	17,085	0.209	0.146	0.289	0.145	--	--	0.018	0.031	0.33	0.0014	0.0022	0.102
Cummings Creek	14,212	0.108	0.016	0.378	0.184	--	--	0.041	0.000	0.31	0.0023	0.0063	0.088
Deer River	62,270	0.250	0.114	0.324	0.152	--	--	0.039	0.000	0.00	0.0011	0.0035	0.109
Fish Creek	14,966	0.091	0.064	0.241	0.119	--	--	0.016	0.000	0.00	0.0014	0.0046	0.058
Independence River	61,074	0.160	0.062	0.289	0.119	--	--	0.035	0.009	0.11	0.0021	0.0045	0.057
Lower Black River	39,532	0.404	0.148	0.324	0.152	--	--	0.093	0.152	0.00	0.0038	0.0060	0.218
Lower Middle Black River	51,985	0.308	0.125	0.281	0.135	--	--	0.093	0.098	0.42	0.0026	0.0058	0.166
Middle Black River	81,353	0.177	0.051	0.281	0.135	--	--	0.054	0.105	0.00	0.0024	0.0035	0.141
Middle Branch Moose River	94,880	0.285	0.150	0.292	0.141	--	--	0.059	0.028	0.00	0.0064	0.0073	0.056
Mill Creek	22,512	0.359	0.065	0.281	0.135	--	--	0.025	0.000	0.00	0.0028	0.0036	0.213
Moose River	46,711	0.319	0.096	0.274	0.143	--	--	0.042	0.000	0.19	0.0023	0.0063	0.070
Otter Creek	42,181	0.145	0.076	0.000	0.000	--	--	0.039	0.000	0.12	0.0021	0.0073	0.058
South Branch Moose River	135,713	0.283	0.130	0.326	0.000	--	--	0.059	0.000	0.00	0.0083	0.0073	0.052
Stillwater Reservoir	109,992	0.242	0.063	0.292	0.000	--	--	0.056	0.000	0.00	0.0054	0.0045	0.053
Sugar River	44,732	0.408	0.202	0.313	0.174	--	--	0.034	0.012	0.00	0.0024	0.0082	0.221
Upper Black River	115,439	0.208	0.184	0.275	0.144	--	--	0.069	0.012	0.43	0.0028	0.0063	0.087
Upper Middle Black River	102,016	0.237	0.083	0.313	0.174	--	--	0.079	0.113	0.21	0.0022	0.0052	0.142
Woodhull Creek	62,661	0.212	0.098	0.274	0.143	--	--	0.063	0.000	0.32	0.0058	0.0097	0.067
BLACK RIVER WATERSHED	**1,218,075**	**0.267**	**0.112**	**0.304**	**0.149**	--	--	**0.055**	**0.112**	**0.30**	**0.0039**	**0.0060**	**0.098**

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Table 8.9-5. Total Sediment Load by Subwatershed

Subwatershed	Acres	Total Sediment Sources											Total Sediment Loads (mg/year)
		Croplands (mg/year)	Hay/Pasture (mg/year)	High Intensity Development (mg/year)	Low Intensity Development (mg/year)	Groundwater (mg/year)	Septic (mg/year)	Streambank (mg/year)	Quarry (mg/year)	Transition (mg/year)	Forest (mg/year)	Wetlands (mg/year)	
Beaver River	98,761	99.3	78.8	1.71	1.39	--	--	839.9	2.7	0.0	126.1	6.94	1,156.8
Crystal Creek	17,085	63.4	26.4	0.04	0.05	--	--	44.2	2.7	31.8	11.1	0.04	179.6
Cummings Creek	14,212	1.7	0.8	0.85	0.11	--	--	78.9	0.0	255.4	20.8	0.89	359.4
Deer River	62,270	167.2	131.7	0.91	0.77	--	--	353.5	0.0	0.0	28.1	1.05	683.2
Fish Creek	14,966	6.1	5.1	0.02	0.01	--	--	42.5	0.0	0.0	11.7	1.60	66.9
Independence River	61,074	17.0	12.6	0.56	0.01	--	--	323.4	0.2	2.7	130.0	6.52	492.9
Lower Black River	39,532	535.1	291.2	56.38	14.67	--	--	435.2	51.8	0.0	27.1	0.12	1,411.6
Lower Middle Black River	51,985	438.4	220.0	12.72	7.36	--	--	461.5	18.8	637.6	25.5	0.38	1,822.2
Middle Black River	81,353	568.8	215.4	2.89	1.79	--	--	809.4	5.6	0.0	23.0	0.59	1,627.4
Middle Branch Moose River	94,880	34.5	15.8	5.71	0.11	--	--	586.7	1.3	0.0	626.9	10.18	1,281.1
Mill Creek	22,512	385.9	194.1	7.82	2.04	--	--	81.3	0.0	0.0	15.4	0.06	686.6
Moose River	46,711	39.0	8.7	0.83	0.14	--	--	365.7	0.0	7.5	70.4	6.04	498.3
Otter Creek	42,181	5.5	18.8	0.00	0.00	--	--	268.6	0.0	40.9	100.6	4.29	438.7
South Branch Moose River	135,713	53.2	1.9	0.83	0.00	--	--	1,125.1	0.0	0.0	1,392.5	29.85	2,603.4
Stillwater Reservoir	109,992	4.9	9.3	0.29	0.00	--	--	630.0	0.0	0.0	512.3	11.65	1,168.4
Sugar River	44,732	342.1	246.5	0.44	0.61	--	--	289.5	0.1	0.0	37.5	0.28	917.1
Upper Black River	115,439	75.5	33.5	3.44	0.78	--	--	939.7	0.5	16.9	263.4	10.33	1,344.0
Upper Middle Black River	102,016	676.4	315.6	5.40	1.48	--	--	1,492.0	6.8	227.2	100.4	1.73	2,826.9
Woodhull Creek	62,661	7.7	13.5	1.59	0.69	--	--	452.1	0.0	93.0	215.2	8.94	792.7
BLACK RIVER WATERSHED	**1,218,075**	**3521.33**	**1839.50**	**102.43**	**32.01**	--	--	**9,619.2**	**90.5**	**1,313.1**	**3,737.9**	**101.5**	**20,357.4**

mg = megagrams (or 1,000 kilograms)

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Table 8.9-6. Total Sediment Load per Acre by Subwatershed

Subwatershed	Acres	Total Sediment Sources											Total Sediment Loads per Acre
		Croplands (mg/acre/year)	Hay/Pasture (mg/acre/year)	High Intensity Development (mg/acre/year)	Low Intensity Development (mg/acre/year)	Groundwater (mg/acre/year)	Septic (mg/acre/year)	Streambank (mg/stream mile/year)	Quarry (mg/acre/year)	Transition (mg/acre/year)	Forest (mg/acre/year)	Wetlands (mg/acre/year)	
Beaver River	98,761	0.071	0.008	0.007	0.007	--	--	2.379	0.136	0.00	0.0018	0.0006	0.012
Crystal Creek	17,085	0.126	0.013	0.003	0.004	--	--	0.801	0.054	0.44	0.0008	0.0005	0.011
Cummings Creek	14,212	0.052	0.010	0.029	0.011	--	--	1.860	0.000	0.42	0.0017	0.0008	0.026
Deer River	62,270	0.107	0.010	0.008	0.014	--	--	1.756	0.000	0.00	0.0007	0.0003	0.011
Fish Creek	14,966	0.085	0.034	0.002	0.002	--	--	0.734	0.000	0.00	0.0010	0.0007	0.005
Independence River	61,074	0.084	0.031	0.045	0.002	--	--	1.599	0.020	0.06	0.0027	0.0005	0.008
Lower Black River	39,532	0.193	0.016	0.020	0.018	--	--	4.245	0.161	0.00	0.0020	0.0004	0.036
Lower Middle Black River	51,985	0.157	0.013	0.011	0.015	--	--	4.241	0.136	0.41	0.0010	0.0003	0.036
Middle Black River	81,353	0.073	0.007	0.010	0.010	--	--	2.433	0.134	0.00	0.0006	0.0002	0.020
Middle Branch Moose River	94,880	0.186	0.054	0.012	0.005	--	--	2.670	0.058	0.00	0.0086	0.0008	0.015
Mill Creek	22,512	0.144	0.015	0.028	0.034	--	--	1.144	0.000	0.00	0.0023	0.0003	0.030
Moose River	46,711	0.309	0.038	0.022	0.004	--	--	1.900	0.000	0.16	0.0019	0.0008	0.011
Otter Creek	42,181	0.057	0.067	0.000	0.000	--	--	1.791	0.000	0.08	0.0029	0.0007	0.011
South Branch Moose River	135,713	0.192	0.023	0.048	0.000	--	--	2.677	0.000	0.00	0.0124	0.0016	0.020
Stillwater Reservoir	109,992	0.090	0.026	0.008	0.000	--	--	2.538	0.000	0.00	0.0065	0.0006	0.012
Sugar River	44,732	0.136	0.014	0.011	0.019	--	--	1.550	0.012	0.00	0.0016	0.0003	0.020
Upper Black River	115,439	0.061	0.007	0.007	0.008	--	--	3.116	0.023	0.27	0.0029	0.0007	0.012
Upper Middle Black River	102,016	0.098	0.015	0.009	0.007	--	--	3.571	0.173	0.18	0.0015	0.0003	0.028
Woodhull Creek	62,661	0.071	0.041	0.006	0.008	--	--	2.869	0.000	0.44	0.0044	0.0009	0.013
BLACK RIVER WATERSHED	**1,218,075**	**0.112**	**0.013**	**0.015**	**0.014**	--	--	**2.517**	**0.135**	**0.30**	**0.0044**	**0.0008**	**0.017**

mg = megagrams (or 1,000 kilograms)

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8.10 Public Outreach

Black River Watershed Management Plan
Community Participation Plan

A. Introduction

1) **Purpose of the Plan:**
The Community Outreach Plan (COP) identifies a variety of forums and outreach mechanisms to engage interested persons in the development and preparation of the Black River Watershed Management Plan. This plan is a *guide* to involving the community in the inter-municipal planning process, not a checklist of required actions. Some elements of the plan may change as the planning process unfolds. Other opportunities for public engagement, not identified in this plan, may be identified. The COP is consistent with the Department of State Work Plan.

2) **Elements of the Plan:**
- Project Advisory Committee Meetings
- Public Meeting – Draft Characterization Report
- Public Meetings – Draft Prioritization
- Public Meetings – Draft Regulatory & Programmatic Environment Report
- Public Meeting – Draft Management Strategy Report
- Public Meeting – Draft Watershed Management Plan

3) **Partners (Project Advisory Committee Membership):**
See Appendix A for a listing of Project Advisory Committee members.

4) **Contacts:**
For further information, or questions, please contact the following individuals:
- Nichelle Billhardt, Lewis County Soil and Water Conservation District
  nbillhardt@lewiscountyny.org, (315) 376-6122
- Kevin Millington, NYS Department of State
  kevin.millington@dos.state.ny.us, 518-473.2460
- Andrew Raus, AICP, Bergmann Associates
  araus@bergmannpc.com, (585) 232-5135
- Kimberly Baptiste, Bergmann Associates
  kbaptiste@bergmannpc.com, (585)232-5135 ext. 323

5) **Overall Community Outreach Schedule**
See Appendix B for proposed schedule of community outreach tasks.

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B. Elements of the Community Outreach Plan

Project Advisory Committee Meetings

1) **Purpose:**
   - The Project Advisory Committee is charged with directing the overall vision of the plan and its recommendations. The Project Advisory Committee is the primary group guiding the preparation of the plan, functioning as the lead in its detailed development.
   - For the purposes of this project, the Project Advisory Committee will be the working entity on this project and will have the greatest contact with and oversight of the consultant.

2) **Membership:**
   - The committee shall be representative of project stakeholders, including representatives of the various municipalities within the Black River watershed as well as state and regional agencies, non-governmental organizations, and community based organizations.
   - Appendix A includes a draft list of the committee's representation.

3) **Public Participation:**
   - Meetings shall be open to the public for attendance. However, in the interest of ensuring productive meetings, comments or participation from the public in meeting proceedings are at the discretion of the Project Advisory Committee.

4) **Notification:**
   - E-mail from Nichelle Billhardt, Lewis County Soil and Water Conservation District, with coordination from Bergmann staff.

5) **Schedule:**
   - To be scheduled in conjunction with the submittal of draft documents. Please refer to Attachment B – Overall Project Schedule, for anticipated Project Advisory Committee meeting dates. Specific dates will be determined as needed.
   - There are up to six meetings currently scheduled for the project.

Public Meeting – Draft Characterization Report

1) **Purpose:**
   - To review, present, and discuss the Draft Characterization Report.
   - To solicit public input on the Draft Characterization Report.

2) **Membership:**
   - General public.

3) **Public Participation:**
   - Meeting will be advertised to the public in advance, and is open to all.
   - Bergmann will provide presentation materials after each meeting for posting on the project website.

4) **Notification:**
   - All meeting notification, including agendas, public notices, and press releases shall be reviewed and approved by the DOS Project Manager prior to distribution. All publicly distributed materials related to the project will reference that project funding is provided under Title 11 of the Environmental Protection Fund.
   - Lewis County and/or the Tug Hill Commission will be responsible for posting announcements on the County website (lewiscountyny.org) and Tug Hill Commission website, along with relevant print media (Watertown Times, Lowville Journal, Boonville Herald, etc).
   - All public notice submissions are the responsibility of the Project Advisory Committee, with assistance from Bergmann Associates.
   - Steering Committee and Project Advisory Committee members will be encouraged to forward notifications to their respective network of stakeholders and known interested parties.

5) **Meeting Coordination:**
   - Meeting date, time, and location will be determined by members of the Steering Committee, in consultation with Bergmann Associates and DOS.
   - Responsibility for obtaining an appropriate meeting venue and assisting, where possible, with required media technology needs lies with Lewis County and/or Tug Hill Commission.
   - Bergmann Associates and other project consultants will provide laptops, projectors, and other hardware as appropriate.
   - Refreshments will be provided and coordinated by the Steering Committee.
   - Bergmann Associates will prepare a written summary of public input obtained at the meeting and submit to the Steering Committee and DOS Project Manager for review and comment.

6) **Schedule:**
   - See Appendix B for preliminary scheduling.
   - One meeting will be facilitated by the consultant team, per the requirements of the DOS Work Plan. Additional meetings, utilizing the same materials and format, may be facilitated by members of the Steering Committee or their agencies.

Public Meeting – Draft Prioritization

1) **Purpose:**
   - To review, present, and discuss the Draft Prioritization Report as defined in the DOS Work Plan.
   - To solicit public input on the draft document.

2) **Membership:**
   - General public.

3) **Public Participation:**
   - Meeting will be advertised to the public in advance, and is open to all.
   - Bergmann will provide presentation materials after each meeting for posting on the project website.

4) **Notification:**
   - All meeting notification, including agendas, public notices, and press releases shall be reviewed and approved by the DOS Project Manager prior to distribution. All publicly distributed materials related to the project will reference that project funding is provided under Title 11 of the Environmental Protection Fund.
   - Lewis County and/or the Tug Hill Commission will be responsible for posting announcements on the County website (lewiscountyny.org) and Tug Hill Commission website, along with relevant print media (Watertown Times, Lowville Journal, Boonville Herald, etc).
   - All public notice submissions are the responsibility of the Project Advisory Committee, with assistance from Bergmann Associates.
   - Steering Committee and Project Advisory Committee members will be encouraged to forward notifications to their respective network of stakeholders and known interested parties.

5) **Meeting Coordination:**
   - Meeting date, time, and location will be determined by members of the Steering Committee, in consultation with Bergmann Associates and DOS.
   - Responsibility for obtaining an appropriate meeting venue and assisting, where possible, with required media technology needs lies with Lewis County and/or Tug Hill Commission.
   - Bergmann Associates and other project consultants will provide laptops, projectors, and other hardware as appropriate.
   - Refreshments will be provided and coordinated by the Steering Committee.
   - Bergmann Associates will prepare a written summary of public input obtained at the meeting and submit to the Steering Committee and DOS Project Manager for review and comment.

6) **Schedule:**
   - See Appendix B for preliminary scheduling.
   - One meeting will be facilitated by the consultant team, per the requirements of the DOS Work Plan. Additional meetings, utilizing the same materials and format, may be facilitated by members of the Steering Committee or their agencies.

Public Meeting – Draft Regulatory and Programmatic Environment Report

1) **Purpose:**
   - To review, present, and discuss the Draft Regulatory and Programmatic Environment Report, as defined in the DOS Work Plan.
   - To solicit public input on the draft documents.

2) **Membership:**
   - General public.

3) **Public Participation:**

- Meeting will be advertised to the public in advance, and is open to all.
- Bergmann will provide presentation materials after each meeting for posting on the project website.

4) **Notification:**
   - All meeting notification, including agendas, public notices, and press releases shall be reviewed and approved by the DOS Project Manager prior to distribution. All publicly distributed materials related to the project will reference that project funding is provided under Title 11 of the Environmental Protection Fund.
   - Lewis County and/or the Tug Hill Commission will be responsible for posting announcements on the County website (lewiscountyny.org) and Tug Hill Commission website, along with relevant print media (Watertown Times, Lowville Journal, Boonville Herald, etc).
   - All public notice submissions are the responsibility of the Project Advisory Committee, with assistance from Bergmann Associates.
   - Steering Committee and Project Advisory Committee members will be encouraged to forward notifications to their respective network of stakeholders and known interested parties.

5) **Meeting Coordination:**
   - Meeting date, time, and location will be determined by members of the Steering Committee, in consultation with Bergmann Associates and DOS.
   - Responsibility for obtaining an appropriate meeting venue and assisting, where possible, with required media technology needs lies with Lewis County and/or Tug Hill Commission.
   - Bergmann Associates and other project consultants will provide laptops, projectors, and other hardware as appropriate.
   - Refreshments will be provided and coordinated by the Steering Committee.
   - Bergmann Associates will prepare a written summary of public input obtained at the meeting and submit to the Steering Committee and DOS Project Manager for review and comment.

6) **Schedule:**
   - **a.** See Appendix B for preliminary scheduling.
   - **b.** One meeting will be facilitated by the consultant team, per the requirements of the DOS Work Plan. Additional meetings, utilizing the same materials and format, may be facilitated by members of the Steering Committee or their agencies.

Public Meeting – Draft Watershed Management Strategy Report

1) **Purpose:**
   - To review, present, and discuss the Draft Watershed Management Strategy Report.
   - To solicit public input on the Draft Watershed Management Strategy Report.

2) **Membership:**
   - General public.

3) **Public Participation:**
   - Meeting will be advertised to the public in advance, and is open to all.
   - Bergmann will provide presentation materials after each meeting for posting on the project website.

4) **Notification:**
   - All meeting notification, including agendas, public notices, and press releases shall be reviewed and approved by the DOS Project Manager prior to distribution. All publicly distributed materials related to the project will reference that project funding is provided under Title 11 of the Environmental Protection Fund.
   - Lewis County and/or the Tug Hill Commission will be responsible for posting announcements on the County website (lewiscountyny.org) and Tug Hill Commission website, along with relevant print media (Watertown Times, Lowville Journal, Boonville Herald, etc).
   - All public notice submissions are the responsibility of the Project Advisory Committee, with assistance from Bergmann Associates.
   - Steering Committee and Project Advisory Committee members will be encouraged to forward notifications to their respective network of stakeholders and known interested parties.

5) **Meeting Coordination:**
   - Meeting date, time, and location will be determined by members of the Steering Committee, in consultation with Bergmann Associates and DOS Project Manager.
   - Responsibility for obtaining an appropriate meeting venue and assisting, where possible, with required media technology needs lies with Lewis County and/or Tug Hill Commission.
   - Bergmann Associates and other project consultants will provide laptops, projectors, and other hardware as appropriate.
   - Refreshments will be provided and coordinated by the Steering Committee.
   - Bergmann Associates will prepare a written summary of public input obtained at the meeting and submit to the Steering Committee and DOS Project Manager for review and comment.

6) **Schedule:**
   - See Appendix B for preliminary scheduling.
   - One meeting will be facilitated by the consultant team, per the requirements of the DOS Work Plan. Additional meetings, utilizing the same materials and format, may be facilitated by members of the Steering Committee or their agencies.

Public Meeting – Draft Watershed Management Plan

1) **Purpose:**
   - To review, present, and discuss the Draft Watershed Management Plan.
   - To allow for public review and to solicit public input on the Draft Watershed Management Plan.

2) **Membership:**
   - General public.

3) **Public Participation:**
   - Meeting will be advertised to the public in advance, and is open to all.
   - Bergmann will provide presentation materials after each meeting for posting on the project website.

4) **Notification:**
   - All meeting notification, including agendas, public notices, and press releases shall be reviewed and approved by the DOS Project Manager prior to distribution. All publicly distributed materials related to the project will reference that project funding is provided under Title 11 of the Environmental Protection Fund.
   - Lewis County and/or the Tug Hill Commission will be responsible for posting announcements on the County website (lewiscountyny.org) and Tug Hill Commission website, along with relevant print media (Watertown Times, Lowville Journal, Boonville Herald, etc).
   - All public notice submissions are the responsibility of the Project Advisory Committee, with assistance from Bergmann Associates.
   - Steering Committee and Project Advisory Committee members will be encouraged to forward notifications to their respective network of stakeholders and known interested parties.

5) **Meeting Coordination:**
   - Meeting date, time, and location will be determined by members of the Steering Committee, in consultation with Bergmann Associates and DOS Project Manager.
   - Responsibility for obtaining an appropriate meeting venue and assisting, where possible, with required media technology needs lies with Lewis County and/or Tug Hill Commission.
   - Bergmann Associates and other project consultants will provide laptops, projectors, and other hardware as appropriate.
   - Refreshments will be provided and coordinated by the Steering Committee.
   - Bergmann Associates will prepare a written summary of public input obtained at the meeting and submit to the Steering Committee and DOS Project Manager for review and comment.

6) **Schedule:**
   - See Appendix B for preliminary scheduling.
   - One meeting will be facilitated by the consultant team, per the requirements of the DOS Work Plan. Additional meetings, utilizing the same materials and format, may be facilitated by members of the Steering Committee or their agencies.

Black River Watershed Planning Initiative
AGRICULTURAL FOCUS GROUP
July 30, 2008 in Lowville, NY

Attendees: Allan Brown
Gloria Brown
Glenn Belker
John Roh
John Bartow
Michele Ledoux
Warren Rosenthal

1. What recent trends are impacting the region's agricultural base?

   - Farm consolidation
   - Agricultural land reduction in certain areas, although increasing in other areas
   - Sporadic land sales in active agricultural areas
   - Greater diversification of product in County – still primarily dairy but other sectors are growing
   - Farmland for renewable energy
   - Small and large farms are increasing, medium sized farms are dropping off
   - Land base is limiting expansion
   - Government regulations of CAFO's – farmers are staying below CAFO limits to avoid excess regulation
   - Recreation is taking land out of development – prime and/or formerly farmed areas
   - Land flooding due to Watson Road and 812 improvements
   - Amish transition

2. What threats to the agricultural industry do you see in the region?

   - Schools do not understand the diversity of professionals needed for farming; not encouraging them to look at the profession
   - Land value of residential is higher than in production
   - Sale of parcels in active farming areas
   - Lack of next generation to take over farming business
   - Sale of agricultural lands is increasing
   - CAFO is unfair to larger farms, smaller farms have no regulations
   - Potential loss of immigrant labor force
   - Wind farms take some land out of production
   - Loss of railroads
   - Cost of fuel and trucking

3. Which sectors within the agricultural industry are expanding? Which are in decline?

- Niche goods – winery, beef, cheese, organic expanding
- Local foods movement
- Maple syrup
- Dairy is stable
- Decline of forestry value added services, raw materials are still stable

4. What ideas do you have for diversifying the region's agricultural sector? What kinds of investment would be required to facilitate this?

    - No need to diversify as long as milk remains profitable
    - Diversification is happening on its own
    - If feasible, maybe renewable energy agriculture
    - Wind energy – transmission lines are limiting factor
    - Maple processing
    - Commercial kitchen for value added products

5. How do agricultural businesses affect the natural environment? What are the significant environmental issues? How are they addressed?

    - Manure management
    - Small farm cow impacts on streams
    - Small farms are not managed well
    - CAFOs are managed correctly, lower impact

6. What do you like best about living/working in the region today?

    - People
    - Relaxed environment
    - Rural environment
    - Know your neighbors
    - Weather
    - Good schools
    - Concentration of farms

7. What do you like least about living/working in the region today?

    - Taxes
    - Transportation
    - Access to services
    - Being rural
    - Lack of good paying jobs

8. Look back 10-15 years. How would you compare the state of the Black River between then and today?

    - River is silted up, more flooding
    - Water is cleaner
    - Increasing tourism and recreation
    - More organized activities on the River

9. Look forward 10-15 years. How do you think the current trends may impact the watershed over the next decade? What will be the most significant differences between today and in 2025?

    - Continued CAFO issues
    - Sporadic land development – need to manage growth
    - Floodplain accuracy – needs to be rezoned
    - Continued consolidation of farms

10. Is the Black River region still a place you want to be in 2025?

    - Yes for all

11. What are the three most important projects you would like to see undertaken to help mitigate trends and change over the next decade?

    - Protection of farmland
    - Land use management
    - Education of farmers
    - Soil survey update
    - Natural gas exploration
    - Shared highways

Black River Watershed Planning Initiative
ECONOMIC DEVELOPMENT FOCUS GROUP
July 31, 2008 in Carthage, NY

Attendees: Larry Dolhor, LCDC
David Meade, Town of Greig
Glen Gagnier, Village of Croghan
Warren Rosenthal, Lewis County
Emily McKenna, Tug Hill Commission

1. How would you describe the regions economic base? What industries contribute most to the region's economy? Which industries are growing? Which are shrinking?

    - Agriculture is growing
    - Largest industry is the dairy industry
    - Milk production has been pretty level – number of farms has declined but production has stayed the same because of more efficiencies
    - Mercers Dairy
    - Maple industry – trying to grow and add value
    - Tourism (recreation) is growing – falls under recreation umbrella
    - Winter recreation growth is flat
    - Growth potential is with other three seasons
    - Lewis County doesn't have enough beds in winter, no place to put anybody
    - County is opening back up some ATV trails
    - Forestry and wood products
    - Lots of land is maturing and rotting – need to get managed forests on state land
    - Hunting and sportsmen activities
    - Government facilities and employment numbers are shrinking
    - Mills have closed
    - Lewis County General hospital is a big employer and hospital is growing / Carthage Hospital is expanding / Watertown hospital is growing and expanding (Samaritan)
    - More nursing home beds – County's beds are filling up
    - School districts are good size employers, all are expanding near the fort to accommodate military children
    - Growth in town is all related to snowmobilers

2. Why do businesses choose to locate in the region? What makes it difficult for businesses to locate here? What makes it difficult to stay and grow? What facilitates expansion of existing businesses?

    a. Population concentration
    b. Income levels
    c. Distance for shipping products

d. To do business in NYS – regulation and tax wise – doesn't stand a chance when compared to other areas
e. Watertown – Chick hatching facility – market is Canada
f. Take advantage of location to other larger markets
g. Most industries were tied to lower energy
h. Missing the boat on recreation – could be Aspen of the East
i. Could be a bigger recreational/economic business but we don't have state support
j. All bed tax money designated for tourism marketing and advertising
k. Have to be able to promote – promote what you have and build on it
l. Don't have infrastructure for more tourists right now
m. No industrial park in LC or Hamilton County
n. Need to redevelop a small industrial park and identify locations
o. Downside, don't have educational facilities or younger workforce or social activities / culture to attract these types of employers
p. Need some satellite college courses

3. What opportunities do you see for diversification of the region's economic base? What industries are well suited for the region and why? What kinds of investments / programs are needed to attract those industries?

a. Otter Creek horse trails
b. Still have a lot of power – can we tap into lower cost hydro power
c. Hydropower is a difficult issue
d. Methane gas electric – peel off some power to tomato hydroponis organization
e. Lots of opportunities – recreation wise – tourism
f. So many things in such a small area – how do you package the message?
g. Transmission line limitations are an issue – capacity isn't there
h. Renewable / green energy – wind, hydro, biomass
i. Area way ahead, not intentionally but because we have the opportunities
j. Two pilot projects going on simultaneously – scrub willow and ethanol
k. Scrub willow doesn't need good soil – not going to compete with corn
l. Floodplains not in production – is this a good place for scrub willow – yes it would serve a dual purpose as it could also be a buffer
m. ESF website – willow biomass page
n. Catalyst Renewables
o. Brings tax dollars but not a big job generator
p. Anti-growth mentality in Lewis County – new industries have to be able to deal with outcry
q. Water bottling? Town of Greig? Village of Croghan?
r. Value added dairy and maple industries have potential for job growth in future
s. Wine ice cream
t. All comes down to cost of energy

u. Opportunity for growth of some paper operations
v. Project with 50 jobs is appropriate for region – be realistic about what types of projects are a good fit for these communities
w. Important to diversify – better to have a bunch of smaller industries than one large one
x. ESD has no one at the helm right now – decision making – change in leadership, focus, and priority
y. ESD is an important partner
z. Partnering with colleges and ESF
aa. Need partnerships to be successful here
bb. Big question is Governors cuts? Nobody knows what will happen next.

4. What would sustainable economic growth in the region look like to you? What does that phrase mean to you?

a. Manufacturing – hard time recruiting managers
b. Workforce situation – have an aging workforce, average age is 50, in 10 years who will take their place
c. Regionally getting manufacturers together to determine how they can be more proactive – reach out to younger people and tell them what opportunities are available
d. Young people aren't learning about the sophisticated opportunities associated with ag and farming, etc.
e. Industries need to become much more involved
f. Regional workforce board (J, L, and SL)
g. Come Farm With Us
h. Adirondack Harvest Label
i. Home brand – way to sustain growth
j. Maintaining the Fort
k. Need government support – local, regional, and statewide
l. Tourism, maple, and manufacturing

5. What do you like best about living/working in the region today?

a. Left in 1986 and came back
b. Friendly people
c. Clean air
d. Minimal drug problems
e. Best locations in US to live
f. Great climate
g. Four seasons – doesn't get terribly hot
h. No spiders or rattlesnakes
i. No tornados or hurricanes

j. Small town community character
k. Four seasons or recreational opportunities
l. Golf courses
m. Outdoor recreation – have everything you could ask for
n. Friendlier on west side of watershed
o. More commercialized on east side
p. Health care facilities in west are better

6. What do you like least about living/working in the region today?

a. Those three weeks in winter…
b. Commuting costs
c. Distance to services – clothes, doctors, shopping
d. Limitation on arts and culture – perception

7. Look back 10-15 years. How would you compare the state of the Black River between then and today?

a. Highway systems improved
b. Rail system deteriorated
c. Loss of small farmers
d. Subdivision of farmland
e. Smaller end growth from Amish (Lewis County)

8. Look forward 10-15 years. How do you think the current trends may impact the watershed over the next decade? What will be the most significant differences between today and in 2025?

a. Cost of energy is going to have a huge impact – which communities are going to grown and which are going to shrink – whats the future of Villages – won't be economically sustainable (small Villages) – larger Villages may see growth (Lowville)
b. Will depend on level of services
c. Freight
d. More rail service
e. County bus service
f. People will always need food and energy from this region
g. Consolidations of Villages and Towns
h. Regional departments as opposed to individual municipalities – more County services
i. Fewer jurisdictions in Lewis County
j. School districts consolidating
k. Internet based small businesses

l. Technology is going to be important
m. More home based workers and businesses

9. Is the Black River region still a place you want to be in 2025?

a. Yes from all

10. What are the three most important projects you would like to see undertaken to help mitigate trends and change over the next decade?

a. Industrial park
b. Expanding renewable energy
c. Value added production
d. Creating a tourism infrastructure
e. Bio-mass is very important

Black River Watershed Planning Initiative
ENVIRONMENTAL FOCUS GROUP
July 30, 2008 in Lowville, NY

Attendees: Linda Garrett, Tug Hill Tomorrow Land Trust
Robert Cataldo, Lyons Falls
Nichelle Billhardt, Lewis County Soil and Water
Tom Voss, NYS DEC
Tom Eewes, Dairy Farmer
Jerome Demko, Dairy Farm
Peg Cook, Cook's Consulting

1. What are the most significant threats to the quality of natural resources in the region?

   - City of Watertown dumps snow into Black River and needs to stop
   - Low flow levels increases concentration of nutrients
   - Seasonal home development
   - Lack of planning, zoning, enforcement, training of board members
   - More intensive streams increases erosion
   - Boreal forest animal habitat
   - Mercury loads from acid rain
   - Cow and cattle impact on shoreline conditions
   - Limited buffering / conductivity
   - Adirondack Rivers are increasing acidification resulting in PH levels in some areas around 5

2. How are these threats currently addressed?

   a. Out of basin transfer (north lake) managed by Canal Corporation
   b. FERC – Black River / Hudson River – much of this is managed by dams, minimum low flow levels set
   c. Felts Mills and Great Bend are potential locations for future hydro facilities
   d. APA has standards, lack of infrastructure decreases year round development potential
   e. Lack of local planning
   f. Ag environmental management and CAFO laws
   g. State program – Conservation Reserve Enhancement
   h. Northeast Regional Plan

3. What opportunities exist for the protection and conservation of natural resources in the region? What programs are currently underway that target environmental protection and conservation?

a. Improve enforcement of laws and regulations
b. PDR Programs

4. What investment is needed to address environmental concerns in the region?

a. Inter-municipal cooperation for planning
b. Need better capacity to serve on boards
c. Improved road salting process and education

5. What do you like best about living/working in the region today?

a. People
b. Family oriented
c. Rural character
d. Schools
e. Proximity to natural resources and recreation opportunities
f. No traffic jams
g. Don't know any better
h. Affordable to live
i. No natural disasters

6. What do you like least about living/working in the region today?

a. Lack of cultural opportunities
b. Seasonal population
c. Limited job opportunities
d. Kids leave – no expectation that they will stay

7. Look back 10-15 years. How would you compare the state of the Black River between then and today?

a. Pollution was worse 15 years ago
b. Loss of pulp and paper mills results in better water quality
c. Greater tourism
d. Increased snowmobile and ATV usage

8. Look forward 10-15 years. How do you think the current trends may impact the watershed over the next decade? What will be the most significant differences between today and in 2025?

a. Land use, government changes likely
b. Potential improvements due to – reduction in industry, improved farming practices, greater seasonal tourism, recreation, energy

c. Property tax
d. Alternative energies
e. Carbon credits

9. Is the Black River region still a place you want to be in 2025?

    a. Yes to all

10. What are the three most important projects you would like to see undertaken to help mitigate trends and change over the next decade?

    a. Land use planning
    b. Dredge Black River from Lyons Falls – Carthage
    c. Stream bank erosion
    d. Subsidies to agricultural uses to implement stream bank erosion
    e. Public benefit of harnessing renewable resources in the future

Black River Watershed Planning Initiative
FORESTRY FOCUS GROUP
July 30, 2008 in Old Forge, NY

Attendees: Brian Wohnsiedler, Jefferson County SWCD
Chanda Lindsay, USDA-NRCS
George Cateldo, Town of Greig
Nick Polce, Gateway Properties
Gerry Ritter, NOCCOG

1. Where are the most significant resources for the forestry industry in the region?

    - Not in park
    - Outside park on public and private lands
    - Some from within the park but that's private sector
    - Mostly non-industrial lands

2. Describe recent trends impacting the forestry sector.

    a. Increased land tax
    b. Property taxes
    c. Fuel costs
    d. Burdensome for large property owners, more expensive to maintain
    e. Development, fragmenting land takes it out of forestry
    f. Loss of Ethan Allen (Boonville), Lyons Falls Pulp and Paper – two local markets have disappeared
    g. More value to subdividing land then keeping it
    h. Shift in DEC in stream crossing permits, used to deal with forest rangers, now dealing with ECO and biologists who don't know forest industry, taking longer to get permits (about a year ago)
    i. State boundaries aren't being maintained well, especially in Park

3. What are the most significant environmental issues associated with the forestry industry in the region?

    a. Hard to operate on sensitive soils during winter without frost on ground
    b. Some areas impacted because limited to frozen ground harvesting
    c. More winds, stronger winds
    d. Stream crossings, wetlands

4. What threats do you see to the future of the forestry sector in the region?

    a. DEC

b. Insect infestation
c. Higher taxes, landowners looking to sell to develop
d. Educational trends – wood products are renewable, not promoting conservation versus preservation
e. Revamp 480A system – tax strategy to reduce property taxes up to 80% as long as landowner follows management plan – places lien against property – works for clubs, etc. – doesn't seem to work if its just a family
f. For 50 contiguous acres, maybe it needs to go down to 30 or 29
g. Need better incentives to keep open space and grow timber
h. Additional acquisitions of private forest lands by the state, remove from tax base, shifts demand from private lands to other private lands, demand for wood products is decreasing
i. At one point do you have enough parkland?
j. Fuel costs
k. Need to find woodlot tailored to market conditions, only thing paying anything now is hard maple
l. Demand for fire wood is going to be way up this year as people look for new ways to heat their home

5. What kinds of investments, if any, are required to ensure the viability of the forestry industry in the region?

a. Local governments don't realize the importance of the forestry industry anymore
b. Fewer local people in industry with closing of mills
c. Maintain and protect remaining mills from leaving region
d. Only two mills left
e. The cost of fuel has required loggers to look for shorter routes, some traffic now going through back roads that weren't built for that type of traffic
f. Structure to act as dispatch to help independent structures to find the best routes
g. Timber in JC headed to Canada
h. NE wood pellet, Schuyler not taking any wood product from region, just wood pellets
i. Education in local governments and local population to value of forestry industry – not educated about positives or timber management
j. Public officials sit down with mills and find out what they need and what their concerns are – site down with people in industry
k. NYS Timber Producers in Boonville
l. Standing timber is real property and can be taxed

6. What do you like best about living/working in the region today?

a. 38 inches of rain
b. Near lakes

c. Thankful to those who preserve the Park
d. Open space
e. Recreational opportunities – anything non mechanized
f. Not evacuated
g. No forest fires
h. Low crime rate
i. Great family place
j. Slower pace of life
k. No traffic jams
l. Fresh air
m. Good water, an abundance of fresh water

7. What do you like least about living/working in the region today?

a. Threats of outsiders coming in
b. Development
c. Motorized vehicles damaging natural resources
d. Lack of suitable employment
e. Hard to retain youth
f. Revamp tax system on property
g. People impacted by outsiders buying properties as property taxes increase
h. Land is worth more, taxes become more
i. Demand has impacted land values
j. Individuals who have lived here are paying for outsider increases
k. Reduce tax burden on locals
l. Infrastructure going to hell – where are the taxes going
m. Outsiders are high maintenance

8. Look back 10-15 years. How would you compare the state of the Black River between then and today?

a. 6 paper mills have closed from Lyons Falls to Lake Ontario
b. 300+ employed at each
c. Mills were committed to community
d. Impact on community service – fires during the day
e. Taxes weren't a concern
f. Seasonal population has greatly increased

9. Look forward 10-15 years. How do you think the current trends may impact the watershed over the next decade? What will be the most significant differences between today and in 2025?

a. Lose more mills and loggers

b. Bigger mills but wood will be problem
c. Loss of competitive advantage
d. Demand for different types of forest products
e. More self sufficient with regards to how we live
f. Local economy
g. More people working from home, tele-commuting
h. No tele-commuting infrastructure in many areas, however
i. More conservation easements, protect watersheds

10. Is the Black River region still a place you want to be in 2025?

a. People are here because they want to be, not because of opportunities
b. Kids will move where they want
c. Yes

11. What are the three most important projects you would like to see undertaken to help mitigate trends and change over the next decade?

a. Restrictions on exporting water from watershed
b. Tax programs
c. Education and information about timber industry
d. More ways to get rid of waste products locally
e. Incentives
f. Forestry friendly government changes – incentives
g. Workers comp – insurance rates for lumberers
h. Jobs aren't encouraged in schools
i. Full scale environmental assessment of AP on lands not unique – culturally, ecologically – what is practical to use for forestry products – wise use of resources
j. Be on guard for potential garbage dumps

Black River Watershed Planning Initiative
OUTDOOR RECREATION FOCUS GROUP
July 31, 2008 in Carthage, NY

Attendees: Jan Brabant
Jackie Pitts
Joe Brosk
Sheree Brosk
Norm Wayte
Tom O'Riley

1. What activities or attractions draw significant numbers of visitors to the region? At what times of year?

    - Canoeing
    - Kayaking
    - Hiking
    - Hunting
    - Fishing
    - Snowmobiling
    - Snowshoe
    - Cross country ski
    - Kite ski
    - Geo-cashing, high tech / organized littering
    - Jet ski
    - Fly fishing
    - Maple syrup tours
    - Fall foliage tours
    - Mountain biking
    - Jeep jamboree
    - Water cross on snowmobiles

2. Where do most of the visitors to the region come from? Do you see differences in visitor origins when you look at destinations across the region?

    a. New Jersey
    b. Pennsylvania
    c. Connecticut
    d. Massachusetts
    e. All of New England
    f. East coast as far as North Carolina – Kite skiing
    g. One the BR – new locals who have recently relocated
    h. Paddle clubs from throughout world (white water element)

i. Canadians and connections to wilderness tours (white water element)

3. What are some of the issues facing outdoor recreation amenities / tourism destinations?

   a. Perception of dirty river
   b. Not packaged well – water resources are phenomenal
   c. River lacks romance
   d. Don't have accommodations
   e. Black Water Development created a campgrounds of their ideal of the type they want to see along the river
   f. Need collaboration – chambers, business community
   g. Need to identify where to pull in and where to pull out, don't need amenities but just need place to get out of boat
   h. Stretch of water with no place to get out
   i. Permission to enhance – legally get out every 10 miles right now
   j. No place to go!
   k. It is still an economic river, it is an agricultural river
   l. Need a 30-minute "rest step" for river users
   m. Its not a wilderness river
   n. Nobody promotes river well enough
   o. River clean-up in Watertown (Norm) – pick up trash and debris – also a beautification project
   p. Shoreline erosion at north shore access

4. Are there any tourism markets that you think the region could attract that are not being targeted? What are some of the opportunities?

   a. Canoe race down the Black River
   b. No place for spectators
   c. Have water all year long – not many rivers do
   d. People need to know what is here
   e. Rafting companies bring in a lot of people
   f. Rafting – ¾ as significant as in Colorado
   g. Local people would never use it to that extent
   h. Need to market together to connect the dots
   i. Tell the whole story visually
   j. Urban Adventure Tourism
   k. Unite fishing, white water, flat water, etc.
   l. Industrial day is gone focus should be on tourism and recreation
   m. Draw attention to this area than administrative in-house stuff – series of events need to be held on river over season – flat water, fishing derby, white water, etc.
   n. Canoe camp along the river
   o. Draw on regional people

p. No leg of trail longer than 5 miles
q. Carthage up to Lyons Falls and determine who owns the land
r. Farmers – campsites
s. It's a day-use river – start trying to attract them first
t. Black River gets lumped into Thousand Islands
u. Pool resources of different organizations
v. 8.5M in river monies to Watertown
w. Target local youth who have no pre-conceived views of river
x. Redesigned Black River guide
y. Connect dots from Dexter to Lyons Falls and then encompass the Thousand Islands – were not doing that
z. Adventure Sports theme
aa. Internet – create usable website with web cam
bb. Word press – you can change your content
cc. Internet links on site to other major players
dd. Now you need a blog, need a hook
ee. Promote differences in character
ff. Television – consensus

5. Any negative impacts to natural resources?

a. Enhances
b. Low impact
c. Think about how to access the water
d. Zoning issues on the river
e. Balance recreation with development
f. Carry in and carry out
g. Agriculture has a big impact and lots of run-off
h. Liability – solved that question (ACA) – insurance policy – kayak legal liability free
i. Administrations in each community
j. Manure spreaders, run-off in river
k. Impacts of farming communities
l. Save the River – paint the drainage with stencils
m. Secondary run-off from combined water and sewer in Watertown

6. What do you like best about living/working in the region today?

a. Quality of life
b. Lack of people
c. Isolation
d. Beauty
e. Undeveloped

f. Secret places that no one knows about
g. Hidden treasures
h. Schools
i. Weather
j. Love the River
k. Less developed than similar areas
l. People are friendly
m. Low crime
n. Big workforce in Watertown area

7. What do you like least about living/working in the region today?

a. Employment
b. Duplication of government
c. Tax rate
d. Winter is an interesting monster

8. Look back 10-15 years. How would you compare the state of the Black River between then and today?

a. A lot of growth
b. Military came in and made it grow
c. High quality industrial jobs to more of a service type sector
d. Losing a lot of young people in area
e. Government has gotten lazy at attracting new industry
f. Was more activity, more population, more jobs
g. Job creation is minimum wage jobs
h. Mills have closed
i. Industrial-based river to tourism and recreation based river
j. New industry – Department of Corrections
k. Telecommunication, more and more people getting away from rat race and working from home – "last mile of high speed"
l. Not a lot of cultural and arts stuff going on
m. TIPAC
n. Higher taxes now
o. Energy costs are higher
p. Cost of transportation is higher
q. Housing was lower
r. River had bad image – pollution
s. Less traffic
t. Less housing development

9. Look forward 10-15 years. How do you think the current trends may impact the watershed over the next decade? What will be the most significant differences between today and in 2025?

    a. More recreation
    b. More tourism
    c. Identify an image / character
    d. Growing outdoor recreation jobs in the community
    e. Education
    f. No schools in area that are teaching relative career that people can use along the river
    g. Focus on schools is too much on physical education
    h. People do not get taught leisure skills
    i. Less retention of youth
    j. Fort Drum in not sustainable
    k. Want sustainable growth – service, agriculture, skilled labor force
    l. Nothing has changed in Adirondacks – park is not suppose to change and have timeless quality
    m. "Frontier" communities attract eccentric people
    n. Don't see a lot of change
    o. Hard to get off treadmill of not getting things done
    p. More dependent on federal money and activities
    q. Watertown is 50% subsidized today
    r. Need to teach community activism
    s. Market the people that enjoy the calmness and natural resources
    t. Key people need to act to get stuff done

10. Is the Black River region still a place you want to be in 2025?

    a. Depends, my lifestyle is married to business of white water
    b. Yes, all others

Black River Watershed Planning Initiative
TOURISM/RECREATION FOCUS GROUP
July 30, 2008 in Old Forge, NY

Attendees: Dan Tickner, Tickner's Canoes
Scott Locoini, Adirondack Exposure
Diane Gaige, Rivett's Marine
Chris Gaige, Rivett's Marine
Bob Wheeler, Fulton Chain of Lakes Association

1. What activities or attractions draw significant numbers of visitors to the region?

- Boating
- Outdoor activities
- Hiking
- Water Safari
- Adirondack train
- Campgrounds
- Rental properties on lakes
- Local ski area
- Snowmobiling
- Cultural activities – art center in old forge
- Central Adirondack Association
- Car shows, special events
- Events are saturated between Forestport and Long Lake
- Scientific lab for researchers – Colgate, Cornell, Fisheries
- Youth camp
- Youth camp at Raquette Lake
- Adirondack Museum
- Camp for Deaf on Fourth Lake

2. Where do most of the visitors to the region come from? Do you see differences in visitor origins when you look at destinations across the region?

a. New York and New Jersey
b. Utica, Rome bring most
c. Rochester area bigger than Syracuse
d. Buffalo, Albany, Binghamton
e. Snowmobiles – counties down near PA border (Ulster, etc.)
f. Not a lot of Canadians
g. High end trips – Baltimore, DC, Cleveland, Carolinas
h. New York City and Long Island – no public transit to here
i. Former Lake George people now coming here – more pleasurable

j. WARDA survey of property owners – Western Adirondack Recreation Development Association
k. McCully Mountain – owned by Town – WARDA through CAP 21

3. What are some of the issues facing tourism amenities/destinations?

a. Town government is not keeping up with people spending money here
b. Houses with no lights – houses bought by part-time users
c. New people have higher expectations and look for "better" things
d. Town has been targeting a lower economic group with regards to amenities offered to visitors
e. Won't have activities and amenities that higher economic strata is looking for that can afford to support economy
f. Town is not doing job of supporting organizations and businesses that want to offer upper scale amenities
g. Higher quality product offered for rent – people want more of it
h. Big spenders will come back again and again
i. Wealthy residents want people to clean homes, maintenance, etc.
j. Affordable places for workers
k. Towns not keeping up with clientele
l. Water itself – lake levels weren't up in time (late June)
m. BRHR Water Regulating District – they report to no one (there is no oversight or accountability)
n. People come for mountains and water and it is a problem when its not available
o. NYS is biggest threat to business
p. APA is biggest threat to my business
q. Property dispute – have APA permit – landowner has it – APA did walk-thru, no advertising or signage no longer allowed on front lawn – bus off property because it is considered advertising
r. No tourist map
s. Regulations – State and APA
t. Old Forge is Herkimer's cash cow – Old Forge wants to leave County

4. Are there any tourism markets that you think the region could attract that are not being targeted?

a. Don't do a good job of bundling amenities
b. Custom Adirondack trips – don't even ask what it will cost
c. Shoulder recreation / fishing – White Lake
d. State grant money available to promote fishing in region
e. Park area in Town of Webb – promoting things that can be done – hiking trails
f. Hiking trails
g. Ski hill not promoted well enough (McKully Mountain)

h. Cross country skiing
i. Snowshoe trails
j. Town doesn't have clue how to go after a higher level market

5. What are the most significant impacts that recreation / tourism activities in the region have on the quality of natural resources?

a. Not to that extent
b. Natural resources aren't being trampled and misused
c. People use and leave, not a bad thing
d. Looks better now than then
e. Town doesn't deal well with congestion at high times, Town needs to be busy but maybe could be handled better
f. No plans to deal with congestion

6. What do you like best about living/working in the region today?

a. Outdoor recreation
b. Like activities in winter and summer
c. Change of seasons
d. Winter is fun time
e. Trees, water
f. People are nice
g. Good restaurants and shops
h. School system is excellent

7. What do you like least about living/working in the region today?

a. Working within NYS government (49th worst state for small business)
b. Lack of medical facilities, demographics are really crappy
c. Young families can't afford to stay here
d. Need jobs
e. Need affordable housing

8. Look back 10-15 years. How would you compare the state of the Black River between then and today?

a. Water issue, 60 or 70 years ago Moose River was a sewer, Fulton Chain Improvement Association has managed lake well, cleaned it up and improved it greatly
b. People have lobbied for water levels
c. Cleaning lakes helped Rivers
d. New sewage treatment plan has helped clean up the river

e. River has more and more valuable properties and room for expansion of significant properties
f. What is status of fish below McKee to Lyons Falls
g. Black River near Watertown poor water quality – will burn your eyes!
h. Waterfall are great now
i. Invasive aquatics – aware of it now and have been attacking issue (on-going maintenance costs are an issue)

9. Look forward 10-15 years. How do you think the current trends may impact the watershed over the next decade? What will be the most significant differences between today and in 2025?

a. River will be able to manage itself, lobby for itself, and be heard – will become more important
b. Cater to affluent or leave them behind
c. Maybe we will revert back to the great camps
d. Community could go away
e. Without tourists, no way to support the local economy
f. Water quality – we are 40 years ahead of may other places
g. Seasonal population doesn't have same commitment to community
h. Regulating district – they need more water, they will take it
i. Livelihood is with man with big red button controlling water levels

10. Is the Black River region still a place you want to be in 2025?

a. Yes
b. Yes
c. Yes
d. Yes
e. Yes

11. What are the three most important projects you would like to see undertaken to help mitigate trends and change over the next decade?

BLACK RIVER WATERSHED PLANNING INITIATIVE
Summary of Community Visioning Workshops

Meetings: **May 20, 2008, 3:00 PM, Watertown (Meeting #1)**
May 20, 2008, 7:00 PM, Lowville (Meeting #2)
May 21, 2008, 6:00 PM, Old Forge (Meeting #3)

Summary of 2020 Exercise, all meetings

Meeting #1
- More tourism
- Less government
- More camping and overnight opportunities
- More government involvement for trail and recreation development
- Utilization of existing seasonal roads
- Stronger, diversified economic base
- Research and development
- Improved agricultural viability
- Overall promotion of healthier behavior – weight, air, social
- Fort Drum – Use 10% local products as in original plan
- Rehabilitation for people with disabilities (make use of recreation resources)
- Same rural communities and landscapes
- Waterfront development
- Brownfield redevelopment
- More organized creative community
- Intermunicipal cooperation
- Good access to white water
- Economic development of LF Old Mill
- Optimism – change of perception
- More self-reliant regarding energy (alternatives)
- Recognize unique character of communities and manage growth / change
- Variety of industries

Meeting #2
- Is agriculture and tourism sustainable?
- Same – good property and healthcare
- Good recreation opportunities
- Nice people and communities
- Continued growth in manufacturing
- Black River used more for recreation
- Better organization and access to river
- Commercial growth – support services
- Natural character preserved
- Balanced development
- Thriving communities
- Hydropower on River
- Better water quality monitoring

- Forestry, ag, and recreation – Retain critical mass of support services
- Same peace, tranquility, and open space
- Amount of tillable land put to use for generation of green energy
- Recreation opportunities for older population
- Walking paths along river
- Free recreation for all to enjoy
- Dams as energy generators
- More accessibility to river
- Make river user-friendly
- More young people staying in area
- Improve tax rates and structure
- Fewer government entities – consolidation
- Higher population densities in already developed areas
- Main Street revitalization

Meeting #3

- Shoreline vegetation protection
- Diversified economy
- Green technologies
- Better retention of youth through better jobs
- Satellite of University equals family
- Destination catalyst in region – build on regional strength
- Uniqueness of Adirondacks
- Preservation of open space and natural resources
- Economy that benefits from resource that does not deplete it
- Allow people to age in place
- Railroad back in service

Summary of Opportunities, all meetings

Meeting #1

- Tourism
- Watershed
- Lifestyle – good base of people, retirees, second homeowners
- Tremendous number of seasonal homes has significant impacts
- Ease of transportation – good roads and bridges
- Large amount of water-based recreation
- Wilderness – AP preservation
- Recreation
- Quantity of significant, precious limited resources
- Protection of hydric soils (awareness)
- Water-based recreation opportunities
- City of Watertown faces the river
- Scenic
- Digital soil survey is a great resource
- Brownfield redevelopment money
- Municipalities work together, get farther
- Some municipal electric
- What is going to replace fuel oil?
- Diversify land base opportunities (vineyards)
- Establish greenway buffers like the Town of Leray
- Educational opportunities for landowners – need people to implement
- Need alternative transportation
- Focus on streams that are really good and keep good – prevent contamination (Felts Mills Creek)
- Felts Mills Creek is a model for what we want to have
- Watertown CSO program – good work, especially important with white water rafting
- White water
- Quality of life in region
- Environmental quality improvements
- Regulation of water levels – quantity
- Accessibility to river
- Intermunicipal cooperation to implement goals and objectives for watershed area
- Better management and regulation of CAFOs
- Waterfront development
- Maintain diversity of land use
- Conservation of water
- Hydro power
- Improving fishery in flat lands
- Monitoring water quality and oxygen
- River navigability
- Shared services between all municipalities along water
- Promotion of creative community
- Tourism is easiest economy to grow
- Tourists spend differently – is service economy
- Synergy with Great Lakes communities

- Farmland protection planning
- Access to markets
- Locally based tourism
- More organic farming
- Proximity to Canadian border
- Alternatives to fuel
- Local farms – food supply

Meeting #2

- Plan growth
- Recreation – increase synergy
- Take advantage of what is here now
- Cleanest watershed – monitor
- Create inventory of all attributes to market
- Education in schools –student involvement in community
- Reverse rulings of APA and DEC regarding ATV use
- Expand on specialty agriculture – wineries, etc.
- Value added agriculture
- Expand on existing resources – trails, gorges, access, parks, bicycles
- Market whole package of region
- Year round tourism – make small changes to allow
- Need small branded hotel in Lewis County outside Watertown
- Extension of broadband capabilities
- Need incubator business

Meeting #3

- Multi-generational population – school age, seniors age in place, retired community
- Gateway community to Adirondacks – Old Forge
- Science and Arts complex – green / LEED demosntration
- Eco-tourism marketing and branding
- Mass transit
- International workforce
- Recreation tourism branding
- Age in place, services required
- Youth retention
- Green technologies
- Diversified economy
- Power / Broadband / Utilities
- Hydro and municipal power
- Decrease consumption
- Geo-thermal
- Moose River
- Involvement of seasonal population

Summary of Constraints, all meetings

Meeting #1

- Local governments need to be more proactive – not just respond to development
- Need to educate public
- Inter-municipal cooperation, towns and villages don't talk
- Too many extra layers of government
- Geothermal not scaled for residential use yet, not many suppliers
- Large CAFO's putting small farms out of business
- Need to farm in a different way – better ecologically
- Riparian buffers – will eventually need more buffers
- How is development impacting ground water recharge?
- Cottages along the lakes / flood zones
- Individual septics need work
- Most of big septic sources have been taken care of, need to focus on the smaller ones
- Need local code enforcement to solve problems
- Energy issues
- Public attitude, weak stewardship
- Potential contaminents in sedimentation
- Resources taken for granted
- Limited financial local resources
- Northern New York narrow-mindedness
- Turf issues
- Maintaining sustainability
- Bottled water being shipped out of region
- Lack of state and federal support for rural areas
- Need to have comparable programs and consideration as the Great Lakes
- Lack of education / understanding for encouraging entrepreneurship / cultural development
- Desperation based development
- Geographic scale
- Control invasive species
- Cost of fuel has widespread impacts
- Some of greatest polluters are farmers
- Water usage is going to be an issue
- Structures along river are in disrepair
- Utilities planned for a different economy
- Levels of government – consolidation would make things easier
- Infrastructure hard to rehab – paper mills
- Municipalities don't have capacity for development
- All municipalities have different regulations
- No regional plan for development
- Hard to rent vacant storefronts
- Local taxes increasing with influx of new residents
- Progression of NYC and NJ residents
- Widespread regional sprawl from second homes
- Lack of permanent residents impacts community culture and volunteerism
- Greater draw on County resources – aging population

- Attitudes – loss of jobs, sometimes settle when we shouldn't
- Loss of mills creates depressed feeling
- "Brain Drain" of youth
- High cost of living and low wages

Meeting #2

- Impacts of windmills on natural character
- Sustainability of projects – long term maintenance
- Feed costs
- Deterioration of community
- Lack of public transportation
- Funding and financing
- Getting people to work together
- External pressures
- Energy costs caused by remoteness
- Lack of support services, such as hotels
- Maintenance of infrastructure
- Working across multiple government agencies to implement projects
- Rising land prices
- Seasonal residents – start to lose sense of community
- Seasonal roads want more roads and infrastructure and they have costs
- More people = more water and sewer needed

Meeting #3

- Distance between places with regards to energy and transportation
- Low paying jobs
- Heating costs
- Global warming
- Dependence on seasonal economy
- Jurisdictional restrictions – administration, programming, funding
- Town versus County taxes
- Affordable housing
- Three populations to address – permanent, seasonal, mobile (how do we identify and address in socio-economic analysis)

Prioritized List of Opportunities and Constraints (and Actions)

Meeting #1, Group 1

- Public attitude
  - Educate, media campaign,
  - Information dispersion
  - Coordination of planning efforts
- Intergovernmental cooperation
  - Promote local ownership through involvement
  - Technical assistance
  - Incentives
  - Regional Conference
  - Community exchanges of municipal officials
- Maintain and improve environmental quality
  - Identify actions at local level
  - Monitor water and air quality
  - Public involvement
- Maintain sustainability
  - Inter-governmental cooperation
  - Champion
  - Follow and update plan
  - Volunteers
- Desperation based development
  - Education of better alternative
  - Promote better models – success breeds success
  - Vision of future – willing ness

Meeting #1, Group 2

- Improving and increasing recreation – trails, water, all kinds
- Conserve and preserve forests (both in and out of Park), wetlands, water quality
- Quantity of water – needed for development
- Recreation support facilities needed – appropriate trails, bathrooms, amenities, housing
- Funding for all types of projects
- Lack of cooperation between municipalities and agencies

Meeting #1, Group 3

- Tourism
- Ease of transportation
- Ability to regulate flows of the Black River
- Water usage, both surface and groundwater
- Cost of fuel has widespread impacts
- No regional plan for development

Meeting #2

- Sustainability
  - Project in forefront, demonstrate results
  - Local government involvement
  - Inter-municipal cooperation
  - Involvement from schools and colleges
  - Effective materials for promotion
  - Green energies that will be sustainable over time
- Green energy
  - Partner with SUNY ESF
  - Enhance exiting hydro facilities
  - Wind energy and smart expansion
  - Need local ordinances (wind, etc.)
  - Digestors – cooperative methane plant
- Expand on what we have (recreation)
  - Regional marketing
  - Piggyback on Chamber of Commerce
  - Use bed tax for promotion of programs
  - Need facilities to support horse trail users
  - Destination trail network
  - Black River Blueway Trail – national level
  - Promote on Black River corridor website – www.blackriverny.com
- Lack of public transportation
  - Transportation Plan needed – coordinated regionally
  - Coordinate existing providers
  - Coordinate transit planning with future land use planning
- Value added agriculture
  - Farmers markets and cooperation with Amish
  - Maple syrup, vineyards, etc.
  - Expand "Made in Lewis County"
  - Slaughterhouse
  - Niche dairy
  - Kiln

Meeting #3

- Science / Arts complex
- Affordable housing
- Low paying jobs
- Eco-tourism marketing and branding
- Gateway community to Adirondacks

OPEN HOUSE SUMMARY

Strategies & Recommendations

Date: November 17, 2009

Time: 3:00 PM to 7:00 PM

Location: Tug Hill Vineyards

Attendees: Approximately 30 people were in attendance, plus members of the Steering Committee

Meeting Summary:

The purpose of the Open House was to provide the public the opportunity to review the draft preliminary management strategies and express their relative level of agreement or disagreement with each.

The format of the Open House utilized a *Walk Around Survey* that provided attendees the opportunity to indicate their preference for particular strategies and to provide comments at eight separate category stations:

- Partnerships, Collaboration & Education;
- Development & Stormwater Management;
- Wastewater Management;
- Agricultural Practices & Management;
- Floodplain Management;
- Forest Management & Recreation
- Invasive Species; and
- Planning & Land Use.

The results of the *Walk Around Survey* and all corresponding comments are provided in the attached tables. A brief summary of the results for each category is provided on the following pages.

Partnerships, Collaboration & Education Station

The *Partnerships, Collaboration & Education* category included 11 recommendations that address the general goals of improving watershed stakeholder communication and education, and

enhancing local knowledge of water resources and how they are linked to ecology, geology, heritage, and human impacts within the Black River watershed. The number of people responding to recommendations at this station ranged from 15 to 25.

Generally, most of the respondents agreed with the suggested recommendations. One recommendation received a larger proportion of "disagree" votes than the others. The results of this indicate that watershed residents, while generally in approval of increased collaboration and education, do not favor increased regulation.

1. *Develop a Watershed Advisory Council that would consist of representatives from each of the municipalities located within the watershed. The purpose of the Watershed Advisory Council would be to maintain and enhance the high water quality of the watershed through education, research, restoration and, if necessary, regulation* (18 agree/1 unsure/6 disagree).

   Comments associated with this recommendation included:

   - Who would have regulatory authority?
   - Lastly by regulation.
   - Enough agencies already.
   - Agree with "enough agencies".

Development & Stormwater Management Station

The *Development & Stormwater Management* category included ten recommendations that address the general goals of reducing peak stream flows, reducing inputs of nutrients, sediments, and other contaminants, and significantly improving the effectiveness of stormwater management practices. Based on the results of the *Walk Around Survey*, the total number of responses for this category ranged from 16 to 20.

Of the ten recommendations provided for review and comment, five received a relatively large number of "unsure" votes, indicating that watershed residents may not fully understand the issue or may be reluctant to favor recommendations that have the potential to result in increased government controls, increased taxes, and or require personal time to implement:

1. *Develop a model stormwater ordinance that municipalities in the Black River watershed can modify and adopt* (11 agree/8 unsure/1 disagree).

   The following comments were made regarding this recommendation:

   - Not sure because of funding
   - Use services of NYCOM and Association of Towns
   - Absolutely

2. *Develop and implement an interagency and intermunicipal communication program on all stormwater permitting at the regional, county, and local levels* (11 agree/5 unsure/1 disagree).

   The following comments were made regarding this recommendation:

   - Make it subject to SEQR
   - Great idea, but each town has different funding ability

3. *Create a county staff position to monitor construction activities and verify compliance with stormwater and erosion regulations. Given the varying capacities of watershed municipalities, this activity should be conducted at the county level* (4 agree/5 unsure/11 disagree).

   The following comments were made regarding this recommendation:

   - Unfunded mandate
   - Should be by local permitting enforcement, county level is too high
   - No more County employees
   - Soil & Water as the agency
   - Fund program by fines

4. *Work with county and local highway departments to establish protocols for minimizing pollution through street sweeping. Street sweeping can remove sediment, debris, and gross particulate matter and may also prevent pipes and outlet structures in stormwater detention facilities from becoming clogged with debris and trash* (9 agree/7 unsure/4 disagree).

   The following comment was made regarding this recommendation:

   - Is this a problem?

5. *Develop a formalized voluntary erosion monitoring program for construction projects, as well as roads and ditches. This could include a formalize list of rotating volunteers, or an informal internet-based system where watershed residents could provide input based on what they see on a daily basis* (2 agree/8 unsure/4 disagree).

   The following comments were made regarding this recommendation:

   - The enforcing body must monitor, volunteers have too many other problems
   - Won't work

Wastewater Management Station

The *Wastewater Management* category included six recommendations that address the general goals of reducing the input of phosphorous, nitrogen, and other pollutants into the Black River

watershed. Based on the results of the *Walk Around Survey*, the total number of responses for this category ranged from 20 to 25.

While no recommendation received more "disagree" votes than "agree" votes, two received several "disagree" votes and four of the recommendations received a large number of "unsure" votes. Recommendations and strategies receiving "disagree" and "unsure" votes are summarized below. Generally, results from this station indicate that watershed residents may not fully understand the various alternative treatment systems and are concerned about the potential cost of improvements and upgrades.

1. *Work with NYSDEC and local sewer districts to upgrade existing Wastewater Treatment Plants as required to meet minimum environmental standards. This may involve local capital funding, grant writing, or other measures* (18 agree/5 unsure/0 disagree).

   The comments associated with this recommendation include:

   - All already required to meet state and federal requirements. Work to fund replacement and upkeep on infrastructure
   - Require ongoing maintenance and funding for future upgrades
   - Communities need professional help to meet current requirements

2. *Work with the County Departments of Health to implement a procedure for identifying failing septic systems* (16 agree/5 unsure/3 disagree).

   One comment was provided:

   - Should be at the local level of enforcement

3. *Where density allows, increase the number of residences served by the existing municipal systems. Generally, conventional sewer systems should only be used where 100 or more houses will be connected for every mile of sewer line. Currently, only 16 of 56 watershed municipalities provide municipal wastewater treatment. This should be expanded where appropriate* (14 agree/2 unsure/4 disagree).

   The comments associated with this recommendation include:

   - Cost to homeowner too high for lesser numbers per mile
   - Need specifics before even starting a program - available funding
   - "Smart Growth" is critical to future of region - maintain open space and reduce infrastructure costs
   - Yes, but who should pay?

4. *Encourage the use of alternative/innovative treatment systems, such as cluster/community-based septic systems, constructed wetlands, or composting toilets, particularly where lot sizes do not meet minimum on-site septic system requirements* (15 agree/10 unsure/0 disagree).

   The comments associated with this recommendation include:

   - If they work
   - Absolutely!

5. *Support the State's efforts to reduce phosphorous levels in dishwasher detergent and lawn fertilizers. One example of support could be a formal letter signed by the Watershed Advisory Council, or by elected officials in the watershed* (16 agree/7 unsure/0 disagree).

   There were no written comments associated with this recommendation.

Agricultural Practices & Management Station

The *Agricultural Practices & Management* category included ten recommendations that address the general goals of maintaining the viability of agriculture in the Black River watershed, while minimizing the negative impacts that some agricultural practices can have on water quality.

Based on the results of the *Walk Around Survey*, the total number of responses for this category ranged from 17 to 20. While the majority of votes cast were in agreement with the recommendations, all ten recommendations received at least one "disagree "vote and eight of the ten received "unsure" votes.

The two that received the most "disagree" votes are included below. These results indicate that many residents are concerned with increasing the burden of local farmers who are struggling to get by, or are concerned that the management plan will result in a one-size-fits-all approach:

1. *Reduce access of livestock to streams and stream banks. This involves two separate activities – providing off-stream watering tanks and controlling stream crossings with exclusionary fencing* (12 agree/1 unsure/5 disagree).
   The comments associated with this recommendation include:

   - You imagine a utopian world. We have to get real as to what is doable here/now
   - Who will pay for this? Milk prices are down
   - The reason farmers exist near the river is the ease of access to water
   - Cost-cost-cost?
   - Who will police this?
   - Size of herd - 1,000 different than 25

2. *Protect and/or restore natural streambank buffers through zoning regulations* (13 agree/0 unsure/7 disagree).

   The only comment associated with this recommendation is identified below:

   - You imagine a utopian world. We have to get real as to what is doable here/now

The strategies that received the most "unsure" votes are included below. These results indicate that many residents are concerned with increasing the burden on local farmers or are unfamiliar with the various strategies that farmers can use to reduce runoff and erosion:

3. *Implement prescribed grazing techniques (pasture/grazing management) to improve or maintain water quality and improve or maintain riparian watershed function. This includes managing the frequency, intensity, and timing of grazing, although specific techniques will vary by farm* (8 agree/7 unsure/2 disagree).

   The comments associated with this recommendation include:

   - You imagine a utopian world. We have to get real as to what is doable here/now
   - Everybody complains about looking at windmills, what about cow runoff?
   - Farmers don't like regulation of their activities - they already feel over-regulated

4. *Use cover crops during off-season to reduce soil erosion and runoff. The specific cover crop and timing will vary according to each farmer's planting schedule* (10 agree/6 unsure/3 disagree).

   The comments associated with this recommendation include:

   - You imagine a utopian world. We have to get real as to what is doable here/now
   - Combine with residue management
   - If we had growing seasons I am sure the farmers would place and cash crops not for sediment control

5. *Implement contour farming. By performing field activities along existing topographic contours, farmers can slow the flow of runoff and allow water to infiltrate into the soil, which results in reduced rates of erosion* (7 agree/7 unsure/4 disagree).

   The comments associated with this recommendation include:
   - You imagine a utopian world. We have to get real as to what is doable here/now
   - Many farms too small for contour tillage programs
   - This has been done the last 60 years

Floodplain Management Station

The *Floodplain Management* category included six recommendations that address the general goals of increasing the coverage and improving the accuracy of flood mapping within the Black River watershed. Based on the results of the *Walk Around Survey*, the total number of responses for this category ranged from 20 to 25. While all six recommendations received "disagree" votes, only two recommendations received more than two "disagree" votes. Responses generally indicate that watershed residents are in favor of updating the existing floodplain mapping and that development in floodplains should be better regulated, but are unsure or unaware of the specifics:

1. *Maintain, enhance, and increase the connectivity of seasonally-flooded habitats along the Black River by using the newly delineated floodplains to preserve the most sensitive riparian and lacustrine corridors through the prohibition of development, acquisition of development rights, or purchase of easements and rights-of-way* (18 agree/1 unsure/3 disagree).

   Only one comment was provided:

   - USDA has wetland preservation currently but no funding

2. *All communities should adopt the most recent NYSDEC Model Local Law for Flood Damage Reduction. The most recent model law includes optional language should a community wish to enact additional requirements to increase the level of safety* (15 agree/8 unsure/3 disagree).

   Only one comment was provided:

   - I am sure funding is connecting with the adoption of flood programs such as FEMA

Forest Management & Recreation Station

The *Forest Management & Recreation* category included eight recommendations that address the general goals of ensuring the continued viability of forestry in the Black River watershed, minimizing the negative impacts that some forestry practices can have on water quality, minimizing forest fragmentation, and ensuring that recreation in the watershed occurs in a responsible manner. Based on the results of the *Walk Around Survey*, the total number of responses for this category ranged from 22 to 24.

Five of the nine recommendations received "unsure" votes, while eight received "disagree" votes. The majority of votes, however, were cast in agreement with the recommendations. The three recommendations that generated the most "disagree" votes are listed below:

1. *Promote through municipalities and not-for-profit conservation organizations the NYS Conservation Easement Tax Credit, which provides landowners a 25 percent property tax refund*

annually up to $5,000 with no impact to local property tax revenues (15 agree/4 unsure/3 disagree).

No comments were made for this recommendation.

2. *To reduce forest fragmentation during timber harvest, do not remove trees within 200 feet of a stream, minimize new road construction or road widening when harvesting, sufficiently space canopy openings to prevent fragmentation, and do not "open up" more than 10 percent of the total forest area during any one harvest* (7 agree/7 unsure/9 disagree).

   The comments associated with this recommendation include:

   - Why 200 feet?
   - This is not fragmentation. Wrong!
   - 200 feet not practical (200' x 200' = 1 acre). Every 100 linear feet of stream would take an acre out of production
   - 200' - where does this come from and how does it prevent fragmentation?
   - This does not prevent fragmentation

3. *Minimize impacts from water-based recreation by inspecting boats and trailers for invasive species, conducting fueling and maintenance away from water, and reducing your wake to prevent shoreline damage and erosion* (20 agree/0 unsure/4 disagree).

   The following comments were provided for this recommendation:

   - Yes, yes, yes. Watch your wake
   - Who would implement and enforce
   - Sounds like a job program
   - Sounds great - how do we do it?

Invasive Species Station

The *Invasive Species* category included nine recommendations that address the general goals of preventing the introduction and establishment of invasive species in the watershed and providing local control or eradication of invasive species, particularly in ecologically or recreationally important areas. Based on the results of the *Walk Around Survey*, the total number of responses for this category ranged from 21 to 25.

Only two recommendations received "disagree" votes. Both recommendations that generated "disagree" votes are listed below. These results may indicate that the vast majority of residents are in agreement with the recommendations addressing invasive species.

1. *Provide local resources for the eradication of invasive species. Local municipalities and counties should identify local resources to dedicate towards the removal on invasive species in the watershed* (19 agree/1 unsure/2 disagree).

   The following comment was provided for this recommendation:

   - This is a statewide issue and should be funded by the state/feds

2. *Provide washing stations at public marinas and boat launches to facilitate the removal of invasive species from boats before and after entering the water. This helps to prevent the transport of invasive species from Lake Ontario into the upper drainage, the transport of species between locations within the drainage, and the export of species from the drainage* (22 agree/1 unsure/2 disagree).

   The following comment was provided for this recommendation:

   - Manpower and money are critical
   - Grant money for Brantingham Community Association! We will furnish manpower
   - Boat washing station
   - What do you do with waste? Cost of disposal?
   - Too costly

Planning & Land Use Station

The *Planning & Land Use* category included 11 recommendations that address the general goal of aligning local planning and land use practices to minimize the water quality impacts of existing and future development in the Black River watershed. Based on the results of the *Walk Around Survey*, the total number of responses for this category ranged from 18 to 25.

While six of the eleven recommendations received "disagree" votes, the majority of votes cast were in agreement with the recommendations. The four recommendations that generated the most "disagree" votes are listed below.

In general, respondents favored the use of planning and land use tools to reduce the negative impacts that development can have on water quality. The majority of disagreement was associated with increasing the existing regulatory framework as some residents were concerned that new regulations would be costly and prevent new development from occurring in the watershed.

1. *Add shoreline overlay section to all municipal zoning ordinances to ensure that a strip of natural vegetation (e.g. a shoreline buffer of 25' to 50') is established along streams. This overlay district*

should be located along all waterbody shorelines in all watershed municipalities (14 agree/4 unsure/7 disagree).

Three comments were associated with this recommendation:

- Implement all of this and we will have no growth. Last one in is last one in.
- Only for new development, not retroactive to existing lots
- Agree with above comment

2. *All watershed municipalities should adopt standards for total impervious surface area. Impervious surfaces include buildings, roads, sidewalks, decks, and other hard surfaces. Impervious surfaces should be no greater than 15 percent or 2,500 square feet of any lot, whichever is greater, unless a system of storm water management and artificial recharge of precipitation is developed* (11 agree/8 unsure/6 disagree).

   The following comments were received:

   - At what cost? Who's going to pay?
   - Not all have zoning
   - Only for new development, not retroactive to existing lots
   - Too much restriction

3. *To protect environmentally sensitive lands, local landowners, land trusts, and watershed counties and municipalities should work together to acquire conservation easements* (17 agree/1 unsure/6 disagree).

   No comments were received for this recommendation.

4. *To absorb stormwater runoff and minimize pollution, new housing developments should set aside natural open space areas between new home sites and stream shorelines* (16 agree/4 unsure/5 disagree).

   The following comments were received:

   - The State has plenty of open space (NYSDEC lands)
   - Yes, if you want to stop runoff

Next Steps:

The Project Advisory Committee should review the results and comments generated during the Open House *Walk Around Survey* to determine whether modifications to the existing recommendations and strategies are necessary. A meeting or conference call between the consultant team and steering committee should be arranged to discuss revisions and options.

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8.11 Memorandum of Understanding (MOU)

Lewis County
Soil and Water Conservation District
5274 Outer Stowe Street, Suite #1, Lowville, NY 13367 Phone (315) 376-6122 Fax (315) 376-8717

December 22, 2009

To Whom It May Concern,

I am writing to you today on behalf of the Black River Watershed Steering Committee, a locally driven group effort to create a Black River Watershed Management Plan. The Lewis County SWCD is acting as the project manager and the Town of Greig, in Lewis County, is the project sponsor. Local collaborating partners include the NYS DEC and the NYS Tug Hill Commission.

Enclosed with this cover letter is a memorandum of understanding (MOU) that is meant to be distributed with anticipation that communities within the Black River Watershed sign on. The MOU is meant to both raise awareness to the communities about the Plan's existence and to outline that each community agrees to work within its' own boundaries with governmental and non-governmental organizations to protect and restore water quality in the Black River watershed, as outlined in the Plan. It is also meant to facilitate communication and cooperation of the involved local governments, which are essential to the preparation and implementation of the Plan.

We would like to request that each interested community review the enclosed MOU, sign and return to the address above. For purposes of this MOU, the relationship among the municipalities within each of the Black River Watershed Counties is cooperative and advisory only, that the municipalities within each of Counties will share information about activities that affect water and work together on activities that affect water quality. It also asks that the Counties each designate one or more Official County representatives to assist with review and implementation of the Black River Watershed Management Plan.

For more information regarding the Black River Watershed Initiative visit www.tughill.org or www.blackriverstudy.org. If you have any questions, please feel free to contact me at the number listed above. I would be happy to discuss this with you further. Thank you in advance for your participation.

Sincerely,

Nichelle Billhardt
District Manager

Intermunicipal Memorandum Of Understanding

Intermunicipal Memorandum Of Understanding (MOU) among Lewis, Jefferson, Oneida, Herkimer and Hamilton Counties (hereinafter referred to as the Counties), Soil and Water Conservation Districts in the Counties (hereinafter referred to as the Districts), City, Towns and Villages in the Counties (listed below and hereinafter referred to as the City, Towns and Villages) regarding water quality in the Watershed of the Black River.

Hamilton County	Herkimer County	Jefferson County	Lewis County	Oneida County
Town of Arietta	Town of Ohio	City of Watertown	Town of Croghan	Town of Ava
Town of Inlet	Town of Russia	Town of Brownville	Town of Denmark	Town of Boonville
Town of Lake Pleasant	Town of Webb	Town of Champion	Town of Greig	Town of Forestport
Town of Long Lake		Town of Hounsfield	Town of Harrisburg	Town of Remsen
Town of Morehouse		Town of LeRay	Town of Lewis	Town of Steuben
Village of Speculator		Town of Pamelia	Town of Leyden	Village of Boonville
		Town of Rutland	Town of Lowville	Village of Remsen
		Town of Watertown	Town of Lyonsdale	
		Town of Wilna	Town of Martinsburg	
		Town of Worth	Town of Montague	
		Village of Black River	Town of New Bremen	
		Village of Brownville	Town of Pinckney	
		Village of Carthage	Town of Turin	
		Village of Deferiet	Town of Watson	
		Village of Dexter	Town of West Turin	
		Village of Glen Park	Village of Castorland	
		Village of Herrings	Village of Constableville	
		Village of West Carthage	Village of Copenhagen	
			Village of Croghan	
			Village of Lowville	
			Village of Lyons Falls	
			Village of Port Leyden	
			Village of Turin	

WHEREAS, the Counties, Districts, City, Towns and Villages recognize the benefits of cooperating to achieve improved water quality in the Black River watershed; and

WHEREAS, the Counties coordinate water quality management activities through their Districts, Water Quality Coordinating Committees and Planning Departments; and

WHEREAS, in 2007, the Town of Greig received two grants (Phase I and Phase II) totaling $160,000 from New York State Department of State Division of Coastal Resources with funds provided under Title 11 of the Environmental Protection Fund Black River Watershed Management Plan; and

WHEREAS, in 2007, the Lewis County Soil and Water Conservation District became the community contact and project manager for the Black River Watershed Management Plan project, and

WHEREAS, the Counties, Districts, City, Towns and Villages recognize that the Black River watershed encompasses all or part of the communities in the table above and that the land uses in these jurisdictions have an impact on water quality within the Black River Watershed,

NOW, THEREFORE, in consideration of the mutual covenants and agreements hereinafter set forth, the Counties, Districts, City, Towns and Villages hereto mutually agree as follows:

1. The term of this MOU shall be from, 2010 through December 31, 2013. At such time, this MOU may be renewed, amended, or terminated. Any party may terminate this MOU upon 60 days written notice to the other parties.

2. The goals to be accomplished pursuant to this agreement are as follows:
   a. Ensure the completion, publication and distribution of the Black River Watershed Management Plan.
   b. Assist the Project Manager in gathering data and information.
   c. Encourage participation by all Black River watershed Counties, Districts, City, Towns and Villages, as well as participation by environmental organizations, economic interests, and citizens.
   d. Establish and encourage participation in an Annual Conference to provide all who live, work, recreate, or have an interest in the Black River Watershed, an opportunity to learn about and discuss issues that face the Black River, as well as how to become better stewards of the Black River. The Annual Conference will cover an array of issues ranging from such topics as storm water management, invasive species, and water-based recreation to water quality and watershed protection. This Annual Conference may also offer local planning and zoning board members the opportunity to partake in newly identified annual training requirements.
   e. Educate the public within the Black River watershed about the Black River Watershed Management Plan and water quality management principles and programs.
   f. Work cooperatively to protect and restore water quality in the Black River watershed and to meet federal, state, and local regulations pertaining to water quality.

3. The working relationship among the participating agencies is to be based on the following principles:
   a. For purposes of this MOU, the relationship among the Counties, Districts, City, Towns and Villages is cooperative and advisory.
   b. The Counties, Districts, City, Towns and Villages will share information about activities that affect water and work together on activities that affect water quality.

4. The Counties will each designate one or more Appointed Designees to assist with review and implementation of the Black River Watershed Management Plan. Any City, Town or Village may also sign on to this MOU and designate an Appointed Designee to assist with review and implementation

5. This MOU may be modified or amended only in writing duly executed by all parties, which shall be attached to and become a part of this MOU.

6. If any of the Counties, Districts, City, Towns or Villages in the Black River Watershed who are not currently a party to this MOU chooses to become a party to this MOU, they can do so upon notice to all the Counties, Districts, City, Towns and Villages.

7. This MOU constitutes the entire agreement among the Counties, Districts, City, Towns and Villages. The MOU shall be governed by and, construed in accordance with the laws of New York State without regard or reference to its conflict of laws and principles.

8. Each signatory to this MOU will be responsible for its own acts and omissions, and shall not be responsible for the acts or omissions of any other party. Further, each signatory to this MOU specifically reserves its rights to seek relief in the appropriate forum for any loss or damage incurred as a result of the acts or omissions of others, whether or not they me a party to this agreement.

SIGNATURE PAGE

OFFICIAL SIGNATORY TO THE MOU

Signature	Printed Name
Title	Name of Municipality or Organization
Email Address	Phone Number
Mailing Address	Date

APPOINTED DESIGNEE (If different than the above Official Signatory)

Printed Name of Appointed Designee	Title of Appointed Designee
Email Address of Appointed Designee	Agency, Club, Group, other, etc. represented by the Appointed Designee
Mailing Address of Appointed Designee	Phone Number of Appointed Designee

8.12 Endnotes

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