FACT SHEET

IROQUOIS WATERSHED
ILLINOIS RIVER ECOSYSTEM RESTORATION

MARCH 2002

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1. STUDY AUTHORITY. This site-specific evaluation is being conducted as a component of the Illinois River Ecosystem Restoration Study, which is a General Investigation study authorized by Section 216 of the Flood Control Act of 1970 with supplemental authority from Section 519 (Illinois River Basin Restoration) of the Water Resources Development Act of 2000. The study was initiated pursuant to the provision of funds in the Energy and Water Development Appropriations Act, 1998. The Feasibility Study was initiated in October 2000, with completion scheduled for December 2003.

2. STUDY PURPOSE. As stated in the Illinois River Ecosystem Restoration Project Study Plan, a number of site-specific evaluations will be conducted during the feasibility study. The site-specific evaluations will focus on developing detailed restoration alternatives for potential implementation at specific sites. A Restoration Needs Assessment (RNA) will be conducted to develop a comprehensive, basin-wide assessment of historic ecological change, existing conditions, predicted future conditions, and desired future conditions. If greater system needs are identified during the RNA, a larger list of potential improvements will be prepared and recommended for authorization. The main purpose of the document is to guide selection of the site-specific projects.

This document will: (1) provide a general description of the existing and anticipated future conditions of the Iroquois River, (2) identify problems, opportunities, and goals and objectives for restoration, (3) identify potential alternatives to address the problems in the basin, and (4) select a critical (pilot) project for the basin. Following the selection of the critical project, a Project Management Plan will be developed to identify the scope, schedule, and cost of the feasibility level investigation.

3. LOCATION OF STUDY AREA/CONGRESSIONAL DISTRICT.

The Iroquois River Watershed is a 2,137-square-mile watershed in eastern Illinois and western Indiana. Approximately half of the watershed is located in Iroquois County, Illinois. The Iroquois River is 94 miles long. The Illinois portion of the river is 55 miles long. The Iroquois River includes the incorporated areas of Watseka, Gilman, and Loda, as well as unincorporated areas of Iroquois County (see Figure 1).

The Iroquois Watershed is located in the 15th Congressional District (Tim Johnson - R).

4. DISCUSSION OF PRIOR STUDIES, REPORTS, AND EXISTING WATER PROJECTS.

a. <u>Prior Studies and Reports</u>. Two watershed planning documents were available for review. Additional studies and reports are listed in Section 14. References.

Kankakee River Area Assessment. 1998. Illinois Department of Natural Resources. Volumes 1-5.

Kankakee River Basin, Illinois and Indiana Reconnaissance Study. 1999. U.S. Army Corps of Engineers, Chicago District.

b. <u>Existing Water Projects in the Basin</u>. Several ongoing actions call for a collaborative effort between local, state, and federal agencies to address water and related land resources within the watershed. Significant actions include:

(1) Existing Corps of Engineers Activities in the Watershed.

Kankakee River Basin Feasibility Study, U.S. Army Corps of Engineers, Chicago District. The study will investigate flooding problems and recommend, as appropriate, flood protection, sediment control, and ecosystem restoration in the Kankakee River Basin, Illinois and Indiana. The Illinois Department of Natural Resources (ILDNR), Indiana Department of Natural Resources, and Kankakee River Basin Commission (co-signatory with Indiana DNR) are the cost share sponsors. The $3.3 million study was initiated in 1998 with completion scheduled for 2002. Initiatives in Illinois are tributary bank stabilization and advanced obstruction removal, vegetation strips along ditches and streams, and sediment control features in the main channel. Initiatives in Indiana are sediment traps on Singleton Ditch, restoration of river meanders and levee control at Horseshoe Bend, buffers, re-meander drainage ditches, and construction of marshes.

(2) Existing Federal Activities in the Watershed.

Iroquois County Priority Area for the USDA NRCS Environmental Quality Incentives Program (EQIP). The primary concerns identified in the Priority Plan for the Iroquois River Basin are soil erosion and water quality. Secondary resource concerns identified were livestock waste management, wildlife habitat management, and wetland preservation. Proposed solutions include implementing nutrient management plans, establishing shallow water developments, implementing livestock waste management systems, removing blockages along the river, and reducing sedimentation. The total EQIP request for financial assistance is $1,582,650. POC: Mike Kiefer, District Conservationist - Iroquois County, USDA Natural Resources Conservation Service.

Conservation Reserve Enhancement Program (CREP). As of June 2001, a total of 7,754 acres were enrolled in contracts under the Conservation Reserve Enhancement Program in Iroquois County. Land management practices included wetland restoration (4,334 acres), riparian buffer (1,724 acres), filter strips (1,311 acres), permanent wildlife habitat (383 acres), and wildlife food plots (2 acres).

(3) Partnerships and Ongoing Water Resource Projects and Programs.

Kankakee River Basin Partnership. The Kankakee River Basin Partnership is a coalition of local stakeholders in the Illinois portion of the basin. The partnership was formed under the ILDNR Conservation 2000 (C2000) Program to bring together local citizens and government to address the problems and issues facing the land and water resources of the Kankakee River Basin. The partnership has developed a Stewardship Plan for the Kankakee River Valley which has the support of 553 signatory groups, associations, and governmental entities. In 1998, the ILDNR granted to the Partnership under the C2000 Program nearly $1.0 million to complete several projects in the basin. POC: J. R. Black, Alliance to Restore the Kankakee.

5. PLAN FORMULATION. Rock Island District staff conducted site visits on May 15, 2001, and August 9, 2001, to the Iroquois River Watershed to meet with local representatives, identify problems and needs, and evaluate potential actions to be addressed in the study.

a. Identified Problems.

(1) Existing Conditions. The Iroquois River is the largest tributary of the Kankakee River. Originating in Jasper County, Indiana, the river flows southwest past Watseka and then flows north until it joins the Kankakee River at Aroma Park, Illinois. The Iroquois River is approximately 94 miles long and drains 2,137 square miles. The portion of the Iroquois River in Illinois is 55 miles long and drains 1,240 square miles (Healy 1979). The Iroquois River varies in width from 55 feet at the Illinois-Indiana state line to 400 feet at its mouth (Page et al. 1992). Much of this portion of the basin was originally prairie, having nearly level to gently sloping topography and poor drainage. Receding glaciers deposited broad moraines comprised of a heterogeneous

mix of silts or clays, although local deposits of sand are present in the Indiana portion of the basin and in northern Iroquois County.

Geology. The Iroquois River and its tributary headwaters start in glacial moraines from the east in Indiana and from the south in Vermilion and Ford Counties in Illinois. These headwater areas have glacial till soils with clayey to silty textures and include large areas of Sywgert-Bryce soils and Saybrook-Lisbon-Milford soils or other very similar soils. The middle and lower parts of the Iroquois River and its tributaries cut through Glacial Lake Watseka, the predominant part of the watershed. These silty, lacustrine sediments are primarily mapped as the Pella soil series. There are also narrow, sandy beach ridge soils such as Onarga in concentric rings around this glacial lake that demark fluctuations in historic lake elevations.

Between the headwaters of the Iroquois River/Sugar Creek part of the watershed and Glacial Lake Watseka, there are sandy to fine loamy deposits associated with the Kankakee Torrent. This cataclysmic event created vast sandy and loamy deposits that were sorted by the wind as dunes. The soils are represented by high ridges of the Sparta-Ade-Jasper soils and low areas of Granby-Gilford-Selma soils. The majority of runoff and subsurface waters comes from the headwaters and the Glacial Lake Watseka areas. Large subsurface water inputs come from the lakebed ditch and tile systems that are in the Pella soils in the lakebed area.

Streams. There are no dams on the Illinois portion of the Iroquois River, and the mainstem has not been channelized or dredged. Many of the tributaries have been channelized. Substrate in the Iroquois River is primarily silt; however, some gravel riffles do exist. Silty conditions can be attributed to the low gradient of the river, which has a slope of 0.008%. Figure 2 shows the elevation profile of the Iroquois River. The slope in the lower 80 miles of the river averages only 0.5 foot per mile (Knapp 1992). A prominent rock outcrop at Sugar Island near Chebanse maintains a nearly level pool for over 27 miles. In the western part of the basin near Gilman, there are many artesian wells that contribute to the flow of the river (Page et al. 1992).

The Index of Biotic Integrity (IBI) for the Iroquois River mainstem ranged from 40-46 for five sites in 1994 (Pescitelli 1995). The Iroquois River is rated as a “B” (Highly Valued Aquatic Resource) stream (Bertrand et al. 1994) (Figure 3). The entire Iroquois River watershed is classified as “Full Use Support” except for portions of Langan Creek and Clifton South Creek which have a “Nonsupport” status, and portions of Ashkum and Shavetail Creeks which are designated as “Partial Support” (ILEPA 2000).

Other than the major streams, most of the waterways in the watershed are low-gradient drainage ditches, constructed in the late 1800's, with channel slopes typically no greater than 3 feet per mile. Most of the larger tributaries have not been extensively modified. There is only minor entrenchment of the streams into the landscape, including the Iroquois River; consequently, there is frequent flooding along the Upper Iroquois River and its major tributaries. The lower one-half of the Iroquois River is more entrenched, thus having high banks and reduced flooding. The Iroquois River has two major tributaries—Spring Creek, which drains the southwest portion of Iroquois County and part of Ford County, and Sugar Creek, which drains most of the southeastern portions of the county and part of northern Vermilion County.

Spring Creek is the longest tributary of the Iroquois River, originating in Ford County just north of Paxton and draining 288 square miles. Spring Creek has two dams near its origin. The farthest upstream dam forms the 124-acre Bayles Lake. The second dam is just downstream from Bayles Lake and forms the 72-acre Lake Iroquois. Both lakes were built to provide housing developments with recreational activities. Substrates vary with portions consisting of almost all silt, to areas where gravel comprises 21% to 39% and clay comprises 23% to 48%. The IBI for Spring Creek ranged from 34 to 43 at three different sites in 1994. The portion of Spring Creek upstream of Shavetail Creek is rated as a “B” (Highly Valued Aquatic Resource) stream, while the area downstream from Shavetail to the mouth is rated as a “C” (Moderate Aquatic Resource) stream.

Sugar Creek originates in Indiana and flows northwesterly, entering the Iroquois River just west of Watseka. It has a watershed of 556 square miles and 38 miles of stream in Illinois. Silt comprised only 5% to 15% of the substrate; sand (39%-46%) and gravel (29%-54%) dominated in the four stations sampled in 1994. The IBI for Sugar Creek ranged from 40 to 52 for these four sites. Sugar Creek is rated as a "B" (Highly Valued Aquatic Resource) stream in Illinois.

The lowest IBI scores were found on sites sampled on Shavetail Creek (36) and Mud Creek (30), with the highest IBI scores found on Beaver Creek (54) and Langan Creek (58).

Riparian Corridors. According to data from the Illinois Streams Information System (ISIS), 90% of the 1,203 bank miles on the Iroquois River are adjacent to agricultural land uses (1,079 bank miles) without any riparian buffer. Only 9% of the bank miles are buffered, with 77 bank miles buffered by forest, 21 bank miles buffered by grass, and 11 bank miles buffered by a mix of forest and grass.

Flow Obstructions. A number of large flow obstructions (log jams) occur on the Iroquois River and many of its tributaries. There are a large number of dead trees along the Iroquois River upstream of Watseka into Indiana. These trees are likely contributing to the flow obstruction problem. The flow obstructions are blocking movement of fish, causing channel instability and minor flooding of agricultural fields.

Water Quality. Only one creek in the Iroquois River Basin was listed in the Clean Water Act Section 303(d) List in 1998. Waters listed on the 303(d) list are waters where it is known that water quality does not meet applicable water quality standards and does not meet applicable designated use. Shavetail Creek is a tributary of Spring Creek. Based on 1994 data, it has a restricted overall use status. The cause is high siltation along with slight effects from organic enrichment and suspended solids. The source is considered to be agricultural runoff from non-irrigated cropland (ILEPA 1998).

The Illinois River Basin is a significant source of nutrients in the Mississippi River Basin. The National Oceanic and Atmospheric Administration (NOAA) conducted investigations to identify the sources of nutrients in the Mississippi River. The Iroquois River Basin was evaluated as part of the Upper Illinois River Basin, upstream of Marseilles, Illinois. The Upper Illinois River Basin yields 2,270 kg/km^2/year of nitrates. This is the second highest nitrate yield of the 42 basins evaluated (Goolsby et al. 1999).

Land Use. Land use in the Iroquois Basin is predominantly agriculture (Figure 1). Land cover in the Iroquois Basin is:

Landcover	Acreage
Urban	6,217
Ag	670,638
Grassland	115,605
Forest	13,467
Wetland	10,305
Water	3,333
Barren Land	171
Total	819,736

Flooding. The Illinois Department of Transportation, Division of Water Resources conducted a flood control study of the Iroquois River, Watseka, Illinois, in the early 1980's. The study recommended construction of a levee along the Iroquois River north and northwest of the city

of Watseka and along Sugar Creek south and southwest of the city. In the late 1980's, the Corps conducted a flood damage reduction feasibility study for the Iroquois River and Sugar Creek at Watseka, Illinois. The study recommended a plan to provide a 100-year level of protection for the northwestern portion of the city of Watseka and lower level levees to reduce flood damages and traffic disruptions at the intersection of U.S. Route 24 and State Route 1. In July 1989, the city of Watseka withdrew participation in the study due to near-term budget constraints and more immediate needs in the community.

(2) Expected Future Conditions. Modifications of tributaries to the Iroquois River are expected to continue. Continued ditching and straightening will increase velocities, bed and bank erosion, and the sediment load carried by the streams to the Iroquois River and eventually Illinois River. Dead and dying trees along the Iroquois River upstream of Watseka will eventually fall into the stream and further aggravate bank erosion and flow obstructions. The Iroquois Basin is expected to continue to be a significant source of nutrients.

(3) Planning Objectives and Constraints. The primary problems in the Iroquois River Basin are flow obstructions, high sediment load, unstable banks, and unstable tributary streams. All of these problems reduce the suitability and diversity of the aquatic and riparian ecosystems. The principal focus of study is to identify opportunities to restore degraded ecosystem structure and function, including the ecosystem's hydrology, plant, fish, and wildlife communities.

Planning Objectives:

- Identify unstable stream reaches
- Reduce the amount of sediment the Iroquois River Watershed contributes to the Illinois River
- Remove flow obstructions and discourage their formation in the future
- Improve riparian and instream habitat
- Improve water quality by reducing input of nutrients

Planning Constraints:

- Minimize negative impacts to aquatic flora and fauna including mussels
- Must not increase flood heights
- Must not damage to infrastructure
- No control over delivery of sediment or tree debris from Indiana
- No control over modification of tributary streams in Indiana

b. Alternative Plans. There must be a collaborative effort with a variety of local, state, and federal stakeholders who are concerned about or charged with the protection and restoration of the Iroquois River Watershed. Potential alternatives to be developed in the feasibility phase to address the above objectives include, but are not limited to, the following:

- Flow obstruction removal
- Restore habitat value of existing easement lands
- Ponds/retention
- Lateral wetlands
- Stabilization of stream beds and banks
- Acquisition of critical areas
- Restore riparian corridors

c. Preliminary Evaluation of Alternatives. The study team will evaluate a comprehensive list of restoration practices that address the identified problems. The cost and benefit will be evaluated for each restoration practice. Some practices will be evaluated by conducting detailed evaluation at a specific sites to be identified by the interagency team. Other practices will be evaluated based on restoration already completed. Benefits may be quantified in terms of habitat

units, reduction in sediment delivery, and/or water quality improvements. Problems will be evaluated to determine if there is a federal and state interest in conducting the restoration practice and, if so, if it falls within the Corps' authority to conduct the restoration practice.

The need for implementation of each restoration practice will be identified for the mainstem and tributary watersheds. Evaluations of stream stability and an erosion/sedimentation inventory will be conducted to identify restoration needs within the watershed.

d. Recommendation on Critical Restoration Areas. Based on preliminary evaluations, all of the above options were selected for further feasibility level evaluation. Reasons for the selection of all of the options include the fact that the proposals address a number of the critical restoration needs in the basin, and the federal, state, and Corps interests in conducting these watershed-wide restoration practices need to be evaluated. Further formulation and evaluation of alternatives will take place in the next phase. The next phase will be initiated by development of a Project Management Plan, which will outline the scope, schedule, and cost of the feasibility level investigation.

9. ESTIMATED MILESTONES. The following is a draft schedule subject to revision during the development of the detailed Project Management Plan.

Complete Project Management Plan	April 2002
Initiate Feasibility Level Study	April 2002
Formulate Alternatives	June 2002
Evaluate Alternatives	August 2002
Complete Feasibility Level Analysis and Draft NEPA Documentation (Environmental Analysis)	November 2002

11. RECOMMENDATIONS. The Corps, the ILDNR, and other state and federal agencies should initiate development of the Project Management Plan and feasibility level study for the Iroquois River site-specific projects.

12. VIEWS OF OTHER RESOURCE AGENCIES. This fact sheet was developed in partnership with the Corps of Engineers, the Illinois Department of Natural Resources, and the USDA Natural Resources Conservation Service. Meetings also have been held with the local groups.

13. PROJECT AREA MAP. The project area map is included as Figure 1.

14. REFERENCES

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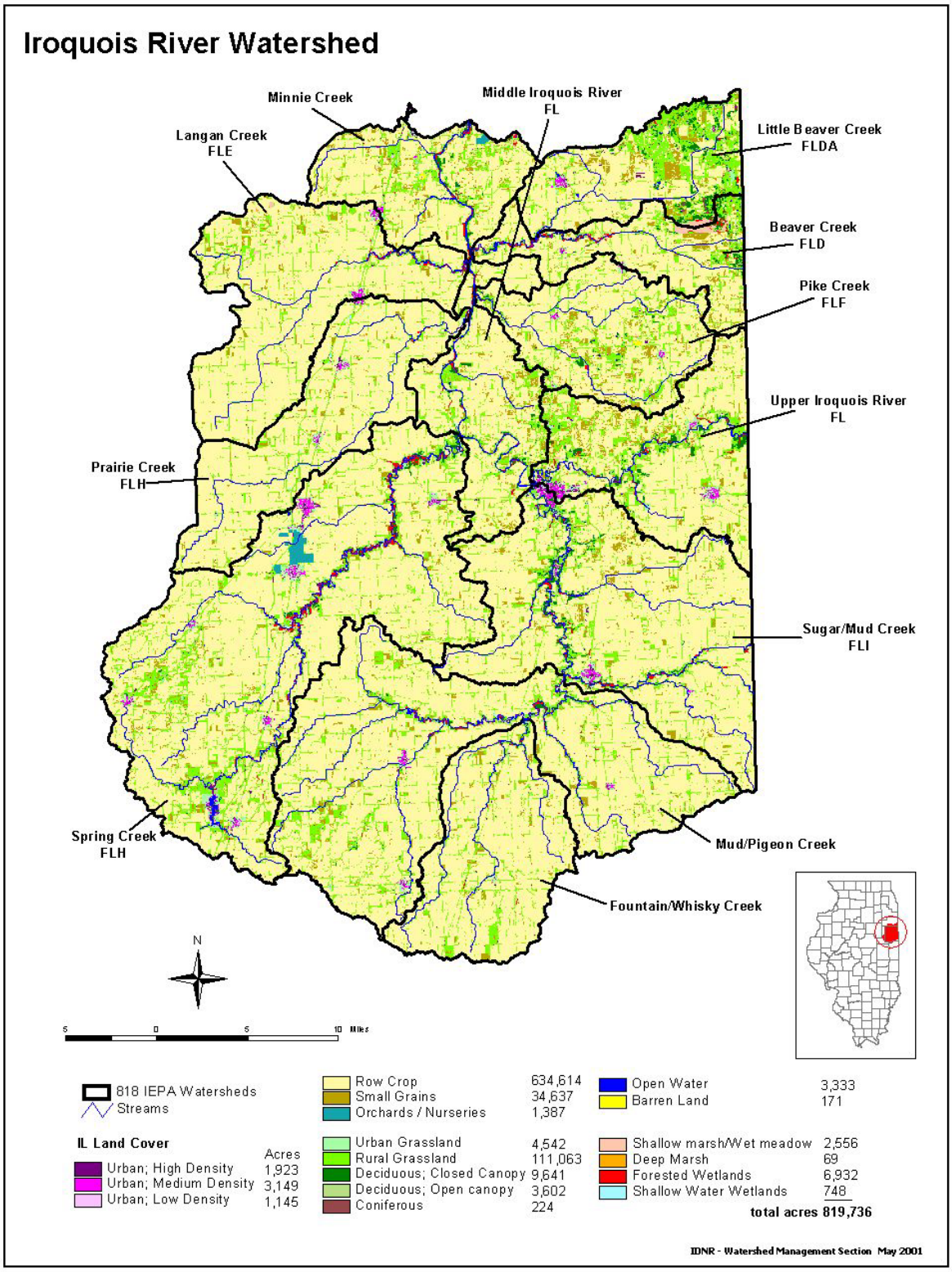

Figure 1. Iroquois River Basin sub-watersheds and land cover

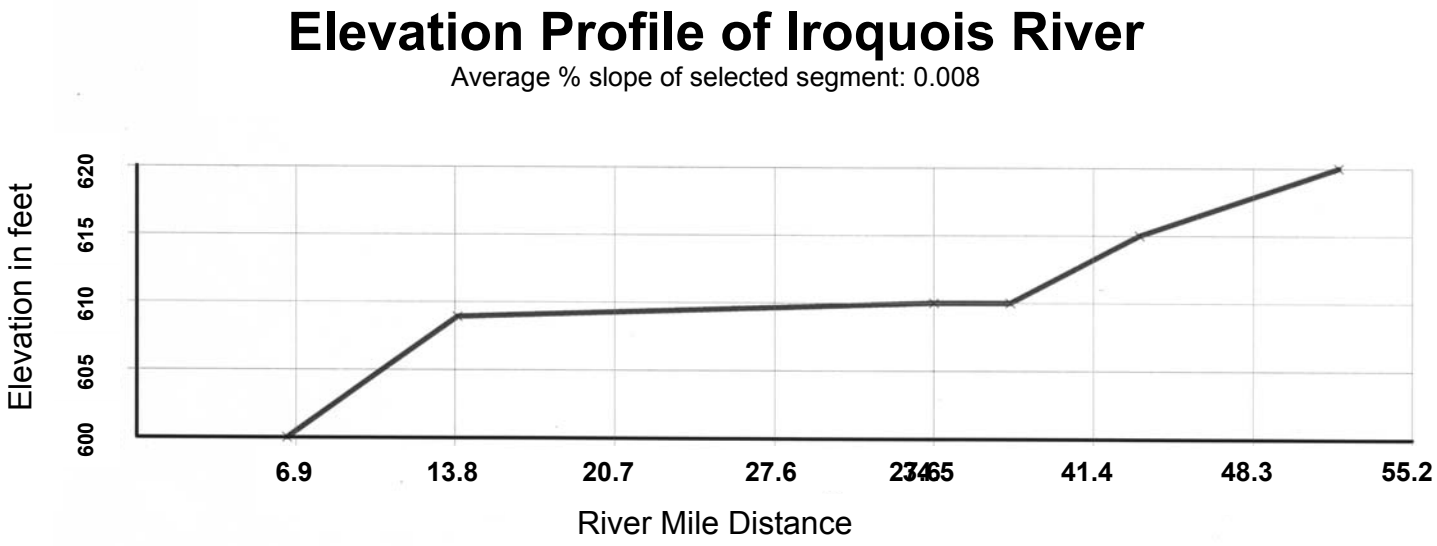

Figure 2. Elevation profile of the Iroquois River

Iroquois River BSC

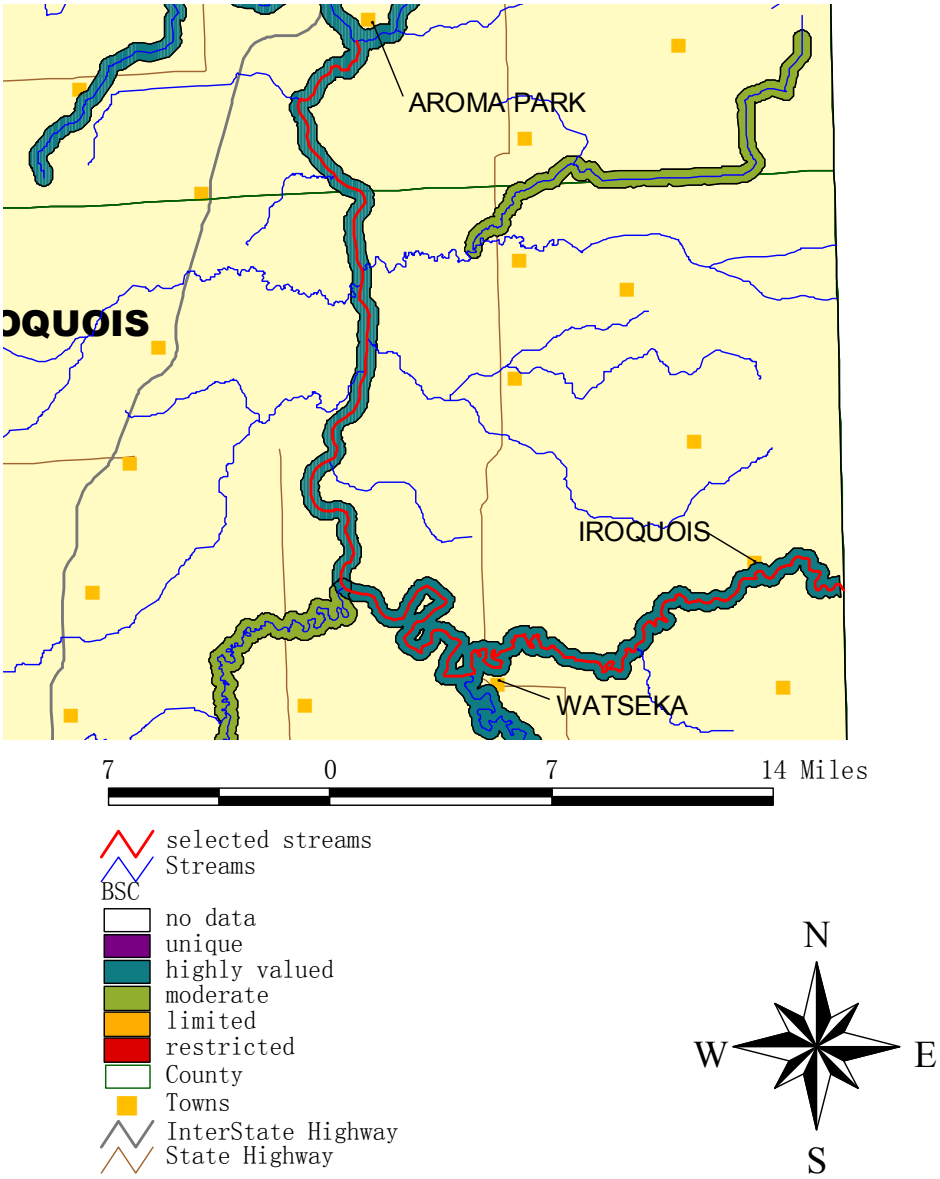

Figure 3. Biological Stream Characterization of streams in the Iroquois River Watershed