Genesee River Watershed (Great Lake Basin) Character Statement

The Genesee Watershed covers 2,500 square miles and includes parts of ten counties, nine in New York and one, Potter County, in Pennsylvania. The total length of the river is 157 miles, with approximately 11 miles running through Pennsylvania and draining approximately 99 square miles. The headwaters of the Genesee begin on the Allegheny Plateau at the 42nd parallel, near the village of Ulysses in the rural farmland of northern Potter County.

The river flows in a south to north direction and empties into Lake Ontario. The Genesee basin collects water from 5048 miles of streams and includes 31 notable lakes, ponds and reservoirs (Rose Lake in Pennsylvania). Moving downstream, post-glacial, rocky gorges dominate the landscape. The Genesee eventually moves through a steep gorge with three waterfalls in Letchworth State Park and is controlled by the largest flood control dam east of the Mississippi in Mt. Morris, New York. The landscape then changes to gently rolling hills of mixed forest and farmland. Continuing downstream, the river moves into a broad floodplain, where it crosses the Erie Canal near Rochester, and enters another steep gorge with three waterfalls before reaching Lake Ontario. Population and intensive development are concentrated here.

Geology

The youngest rocks of the Genesee Watershed occur on the hilltops in the headwaters area. Progressively older rocks are exposed downstream, lower in the geologic section. The older rocks include sandstone, shale, limestone, and dolomite. The younger are mostly sandstone and shale. These rocks were deposited in a series of inland seas and reflect changing depositional environments from deep water through near shore and delta deposits. The land area was raised in elevation during the same events that caused the folding in the Valley and Ridge Province in central Pennsylvania. During the much more recent ice age, the area was covered by glaciers which eroded the bedrock and left behind deposits to form the landscape features we see today. The basin varies in elevation from 2,500 feet in Pennsylvania to 246 feet at Lake Ontario. Steep slopes are generally concentrated along the walls of the major river valleys, particularly in the headwaters area and in the gorges through Letchworth State Park and Rochester.

History

The history of the Genesee is rich with stories of American Indians, soldiers, canalers, engineers, and early pioneers. The Seneca tribe occupied territory from the Genesee River to Canandaigua Lake in New York. The Seneca considered themselves the “Keeper of the Western Door” of the great Iroquois Confederacy. The called the upper reaches of the river the *Genesee*, meaning “beautiful valley” while the lower reaches were referred to as *Casconchiagon* meaning “river of falls upon it.” Their villages were sedentary and relied heavily on agriculture for food.

In 1779, General George Washington sent General John Sullivan to attack and destroy the villages of the Iroquois Cofederacy due to their alignment with the British during the American Revolution. With the end of that war in 1790, the area was opened to land investors. Oliver Phelps and Nathanial Gorham purchased 2.6 million acres of land from the Iroquois, encompassing the watershed from Canaseraga Creek to Lake Ontario. The lands included in

Phelps/Gorham purchase were changed forever as fields were cultivated, forest cleared, and the power of the river harnessed for energy. The Genesee is nonnavigable along the upper reaches until it joins with Canaseraga Creek near Mount Morris, which is the halfway mark for the watershed. The Susquehanna and Allegheny rivers became the main artery for trade and transportation for this portion of the Genesee basin.

Transportation along the Genesee was always difficult as the water was swift flowing at times, seasonally high in the spring, and nearly dry in the summer. Canals and railroads provided the answer. The Erie Canal, completed in 1823, provided east/west travel in the Rochester area. The Genesee Valley Canal was begun in 1836 in order to connect the Erie Canal to the Mississippi River System. It began in Rochester and continued upriver to Mt. Morris and reached Olean on the Allegany River in 1860. Water-related issues were a concern even then, as millers complained that water from the river would be used to fill the canal. The canal never really lived up to its expectations for it took too long to build and by then the railroad had taken much of its promised freight. It was abandoned around 1878 and sold to the Genesee Valley Canal Railroad in 1880.

Communities that sprang up on the east and west sides of the Genesee in the 1800's were isolated. Bridges were an engineering challenge over the Genesee due to raging seasonal waters and unstable, glacial soil and rocky gorges. Before Rochester's bridge was built, the only bridge on the river was at Avon, 20 miles to the south. In 1850, the Erie Railroad completed the trans-New York State tracks running from the Hudson River to Lake Erie along a well-used Indian trail. The area was known as Portage and was located south of Mt. Morris. The Portage High Bridge spanned 820 feet across the gorge uniting both sides of the river.

Rochester is an important city in the Genesee Basin has known many names throughout its history. It was once called the "city by the falls" although "flour city" is much more commonly used in histories and references as the three falls in the city were harnessed to power grain mills producing flour. Post 1890, the name changed once more to "flower city" as grain mills moved further west and floral nurseries took hold in the Rochester area. These nurserymen took a great interest in the development of Rochester's park system and their influence is still visible today through the plantings and design of these areas.

Until Hurricane Agnes in 1972, the flood of 1865 was the most devastating in the history of the Genesee Valley and destroyed many areas of Rochester. Retaining walls confined the river to a narrow channel that could not restrain the raging river. The embankments along the river were greatly enlarged but major floods continued about every 7 years. In an attempt to control the severity of flooding, the Army Corps of Engineers built the only flood control dam on the Genesee at Mt. Morris. It was fully operational by 1951 and was tested dramatically in 1972 when Hurricane Agnes' rain threatened to overtop the dam. Releases and careful control prevented overtopping and the dam prevented an estimated $200 million dollars in damage from occurring mainly near Rochester.

Problems and Solutions

"The Genesee River Basin has yielded enormous benefits to its residents, embodied by a variety of land and water uses such as navigation, recreation, energy production, wildlife habitat, and fresh

water for drinking, irrigation, industrial uses and sanitation. Unfortunately, a general atmosphere of neglect coupled with the steady increase in the intensity of human activities on the land and water in the Basin has steadily led to the degradation of these and other uses to varying degrees. Agricultural and industrial activities, stormwater runoff, inadequate waste treatment, hydrologic and habitat modification, and invasive species are a sample of the types of issues that inhabitants and their local, state, and federal governments and associated agencies have been grappling with in recent time."

Genesee River Basin Action Strategy, 2004

Agriculture - A variety of land use practices have, and continue to, affect the Genesee River. By far, agriculture is the biggest contributor through sedimentation/siltation and nutrient runoff. A variety of recommendations and programs are currently being implemented to reduce the phosphorus load and repair riparian areas including, but not limited to, Agriculture Environmental Management, Comprehensive Nutrient Management Plans (CNMP), State Pollution Discharge Elimination Systems (related to NPDES) permits, etc.

Streambank Erosion – Also of particular concern in the Genesee River Basin, streambank erosion problems put a huge amount of sediment and silt into the waterways making the stream brown and muddy in appearance and negatively affecting fish and macroinvertebrate populations throughout the basin. Streambank inventories to assess and prioritize efforts are planned to be followed by implementation of various control practices. Plans also exist to initiate model riparian corridor and shoreline protection practices to minimize the possibly of erosion in areas that are currently not affected.

Stormwater Runoff – Stormwater runoff events following rain/snow that is unable to infiltrate into groundwater systems can wash a multitude of pollutants into local waterways as it flows over the ground. The addition of these nutrients and sediments can greatly degrade water quality. Compliance with NPDES permit Phase II regulations will go a long way in controlling this pollution source. For more information on these permits, please refer to page _____.

Hydrologic and Habitat Modification – This effect includes activities that will change the natural stream course and processes such as channel modification, draining or altering wetlands, and dam construction. Such modifications greatly alter natural processes and can result in reduced ability to absorb hydraulic energy, reduced pollutant filtration, interruption of natural life cycle processes for macroinvertebrates, a change in stream temperature, rates and paths of sediment erosion and deposition, etc. Oftentimes, channel modification also requires regular maintenance and inspection. The Genesee River Basin Action Strategy calls for: an assessment of how significant water withdrawals will impact local waterbody health and function, increased awareness and understanding of water quality impacts resulting from diversion to and from the canals, the planning of annual workshops about the benefits of wetlands and the effects land use decisions have for local officials and the public, and the implementation of a program to identify and prioritize critical habitat in and along waterways with the goal of restoring, enhancing and protecting the highest priority habitats.

Failing On-site Wastewater Treatment Systems – This problem is widespread but relatively unknown and often overlooked. Onsite systems are composed of several interrelated components requiring regular maintenance and inspection for proper operation. When this routine maintenance is neglected, systems can fail suddenly from localized damage or gradually through

the natural accumulation of biological debris or from vegetative growth. This causes water quality issues including nutrient loading, low dissolved oxygen and pathogens, beach closings, adverse health effects among human and animal populations and an overall decline in water quality and aesthetics. Effects to water quality can be greatly reduced through strict adherence to state and local standards, public outreach and education regarding proper management, routine inspection, and the implementation of more highly efficient and environmentally sound plumbing options as they become available.

Municipal Drainage/Industrial Discharge - Municipal drainage and industrial discharge consists primarily of domestic wastes from households and industrial wastewater from manufacturing and commercial activities. Both types of wastewater are generally collected in sanitary sewers and conveyed to municipal wastewater treatment plants. State and federal regulations must be upheld and facilities inspected to ensure that no leaking or failing systems are introducing additional pollutants to waterways. Communities should develop plans for meeting state and federal NPDES mandates and the Clean Water Act. Updates of changes to the chemicals of greatest concern should be relayed immediately and effectively to facilities.

Toxic and Contaminated Sediments – Historically, hazardous discharges into the waters of the Genesee River Basin have decreased over time but have left toxic and contaminated bottom sediments behind. These problems are among the most expensive to treat in the Genesee River Basin and poses several difficulties, including the prevention of their re-suspension and locating appropriate disposal sites when remediation takes place. To combat this problem, the Genesee River Basin Action Strategy makes the following recommendations.

1) Develop a program for removal and disposal of equipment containing PCBs
2) Educate developers about the history of contamination in the Genesee River gorge
3) Establish chemical sediment quality goals
4) Update and maintain long-term agreements regarding the type of dredging activities, including their extent, with relevant authorities