

3. NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

INTRODUCTION

The Town of Batavia is rich in natural resources. The Tonawanda Creek and other waterbodies, wetlands, woodlands and wildlife habitat are key parts of the regional ecosystem and are fundamental to the Town's rural character and recreational opportunities. In addition, more than 25% of the Town is underlain by large primary and secondary aquifers.

This chapter presents the Town's goals, describes the Town's natural resources, summarizes the analyses and recommendations of the following plans and initiatives, analyzes issues and opportunities, and recommends actions for natural resources and environmental protection. .:

This section incorporates key findings and recommendations from the following plans and studies:

- Green Genesee/ Smart Genesee (GSSG) (2016)
- Genesee County Multi-Jurisdictional All-Hazard Mitigation Plan (2008)
- Genesee & Wyoming Counties Joint Flood Mitigation Plan (2003)

The **Green Genesee/Smart Genesee** project is an innovative sustainable land use and energy conservation effort in Genesee County, NY. The purpose of GGSG is to protect the natural resource foundation of Genesee County's quality of life for all residents today and tomorrow. The green infrastructure approach applied by GGSG will help ensure that the character of the County and its abundant natural resources are intact and able to facilitate continued economic and community development. As a leader in the development of GGSG, the Town of Batavia is one of four Genesee County municipalities that developed a focused Green Action Plan (GAP). The Batavia GAP identifies specific strategies and recommendations to achieve the natural resource and environmental protection goals listed below. A more complete summary of the GGSG planning process and Batavia GAP is provided below and in the Green Action Plan prepared for the Town of Batavia (See Appendix A.)

The **Genesee County Multi-Jurisdictional All-Hazard Mitigation Plan**, completed in 2008 by the Genesee-Finger Lakes Regional Planning Council, identifies potential natural, technological and human-caused hazards that might affect Genesee County and its municipalities, assesses potential impacts and risks, and presents mitigation strategies and action plans for each municipality.

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GOALS

Over the past three years, the Town of Batavia has taken a proactive approach to inventory, assess, and plan for natural resource and environmental protection. The following goals include those identified in the ongoing Green Genesee/Smart Genesee (GGSG) project and integrates priorities identified in the 2007 Comprehensive Plan:

- A. **Protect Natural Resources** - Protect a connected network of undeveloped land including wetlands, streams and stream corridors, prime agricultural soils, forests, and wildlife habitat from adverse impacts, conversion, and development to support water quality, air quality, protection of farmland, and outdoor recreation.
- B. **Promote a “Green” Economy** - Integrate the unique natural assets of the Town of Batavia and resiliency into economic policy and investment decisions
- C. **Improve Ecological Resilience** - Improve performance and resiliency of natural systems under normal and extreme conditions including natural flow of streams, protection of floodplains and riparian corridors, reduce the potential for groundwater contamination associated with failing septic systems and agricultural practices.
- D. **Facilitate Municipal Stewardship** - Utilizing the work completed under GGSG (See Appendix A: Batavia Green Action Plan), provide a system and foundation for the development of meaningful and achievable conservation goals, measurable objectives, and implementation strategies with an emphasis on strong inter-municipal relationships and planning.

CURRENT CONDITIONS AND KEY ISSUES

NATURAL FEATURES

Natural features in the Town include streams and stream corridors, wetlands, woodlands, and other wildlife habitat. These areas are important to the long-term economic viability and community well-being because they support the fundamental need for clean water, clean air, and fertile soils. The wildlife, aesthetic, recreation, and educational value of these resources also provides significant reason to preserve, manage, and maintain them for the benefit of current and future community members.

This section describes the natural resources in the Town of Batavia and issues relating to water quality, flooding, and land conservation. It also identifies programs and tools available to the Town to protect natural resources and address the issues.

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WATERCOURSES AND DRAINAGE BASINS

There are dozens of streams, named and unnamed, that begin, end, and flow through the Town of Batavia. Tonawanda Creek is the largest riparian system and most prominent natural feature in the Town. Tonawanda Creek flows through the Town from the southern boundary, through an expansive floodplain along the east side of Route 98, through the City of Batavia and westerly through the western part of the Town along Route 5. Tonawanda Creek and its riparian corridor serve as a drinking water source, recreation opportunity, scenic vista, and wildlife habitat. Streambank erosion, flooding, and the lack of accurate floodplain mapping are common.



John T. O'Brien Canoe Launch at Kiwanis Park. Photo Credit: Doug Sitler

Other significant streams in the Town include Bowen Creek, a tributary of Tonawanda Creek located in the southwest portion of the Town, and Spring Creek, a tributary of Black Creek located east of Oak Orchard Road.

Most of the Town's land area is within the Upper Tonawanda Creek watershed. The northeast portion of the Town drains into Black Creek and the southwest portion drains into Murder Creek. Table 3 below summarizes the amount of land within each watershed. Watercourses and drainage basins are depicted in Map 8: Streams & Watersheds.

WATER QUALITY

The NYS Department of Environmental Conservation's (NYSDEC) Priority Waterbody List identifies Bowen Creek and the Tonawanda Creek segment in Batavia as "impaired" for both aquatic life and recreation. Known pollutants are nutrients from streambank erosion and stormwater runoff; agricultural runoff; and on-site septic systems. (See documentation in Appendix D.)

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SEDIMENTATION AND EROSION

Sediments that are carried into streams reduce the capacity of the stream channels to carry water and increase the likelihood of flooding. Sedimentation also affects the clarity of the water and may compromise fish habitats. The sediments may contain contaminants that degrade the quality of water.

Erosion occurs naturally along streambanks as the water scours the banks along bends in the streams. Natural vegetation helps to slow erosion, as roots hold the soil in place. When natural vegetation is removed, streambanks are more vulnerable to erosion and sedimentation.

Erosion and sedimentation also occur during construction, as soil is exposed to rain. In areas of steep slopes, erosion can be accelerated. Roadside ditches also contribute sediments to the streams, as stormwater scours the bottom of the ditch.

FLOOD HAZARDS

Large areas of the Town of Batavia are susceptible to flooding. As documented in the Genesee & Wyoming Counties Joint Flood Mitigation Plan prepared in 2003, both Tonawanda Creek and Little Tonawanda Creek flood periodically, typically during the late winter through early spring. Flooding causes damage to structures and occasionally requires residents to evacuate.

Following periods of heavy rains and/or melting ice or snow, the stream channel cannot carry all of the stormwater that drains to the creek. As a result, the creek overflows its relatively low banks. As the terrain surrounding Tonawanda Creek in the Town is relatively flat, flooding affects large areas of the Town (See Map 9: Wetlands & Flood Zones.)

Table 3: Watersheds in the Town of Batavia

Watershed	Acres	(%) of Total
Upper Tonawanda Creek	19,161.0	61.8%
Black Creek	4,617.6	14.9%
Ledge & Tonawanda Creeks	1,554.5	5.0%
Oak Orchard Creek	3,653.9	11.8%
Murder Creek	2,036.9	6.6%
	31,023.9	100.0%

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Source: Genesee & Wyoming Joint Flood Mitigation Plan - Town of Batavia

Structural damage caused by flooding results from:

- Buildings swept off their foundations
- Impacts from debris carried in fast-moving waters
- Damage to building foundations due to erosion and undercutting of streambanks
- Dry rot in flooded wood structures due to waterlogging

Residents of low-lying areas near Tonawanda Creek are frequently evacuated when flooding is predicted. When flooding is expected, the E-911 dispatch center sends automated phone messages to warn residents in affected areas of imminent flood dangers and either require or recommend evacuation. In Batavia, these areas include the Dreamland Trailer Park, Batavia Mobile Home Park and West Main Street Road.

Several factors can exacerbate the extent, frequency and damage caused by flooding.

- The removal of vegetation and development increases the amount of impervious surfaces in the flood plain. For example, the removal of vegetation along the Tonawanda Creek bank resulted in increased flooding of manufactured home parks located near the Creek.
- Debris reduces the capacity of the Creek channel to hold water. For example, large woody debris at sharp bends in the channel has exacerbated flooding west of the City between Route 5 and South Main Street and in the “flats” south of the City. In addition, junk cars

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from the former auto salvage yard located adjacent to Tonawanda Creek on Route 5 have been found in the stream channel. Trees fall into the Creek when erosion undercuts the stream bank, as a result of beaver activity and occasionally in conjunction with timber harvesting.

- Siltation due to sedimentation and erosion reduces the capacity of the stream channel to carry water. Sedimentation results from erosion associated with agricultural processes, land development, road cuts, steep hillsides and timber harvesting. Streambank erosion is accelerated where natural vegetation has been removed.
- Gravel and soil in culverts reduce their capacity to carry flows during storm events. Clogged culverts have increased flooding along Route 98 and on County and Town roads.
- Structural improvements intended to prevent flooding can have unintended impacts. For example, a dam was installed in 1999 to retain water and prevent flooding of the commercial area along Lewiston Road, Park Road and Veterans Memorial Drive from an unnamed tributary that flows southwest and crosses under Lewiston Road near Veterans Memorial Drive. Flooding problems occurred after the box culvert under Rt. 63 was replaced by a 54" arch pipe.
- Meandering of the stream channel occurs where land has been cultivated to the top of the stream bank. Stream channel straightening has contributed to channel erosion and upstream sedimentation, particularly west of the City to Wortendyke Road, and may have exacerbated flooding problems along Stegman Road, Wortendyke Road, South Main Street and Dorman Road.
- Ice-jamming due to sharp meanders near Wortendyke Road cause overbank flooding and shoreline erosion.

The following areas continue to be priority sites due to recurring flooding and property damage:

- Batavia Mobile Home Park – Route 5: 20 dwellings, approximately ¼ mile west of the City line.
- Dreamland Trailer Park: Approximately 20 dwellings, located on the southside of West Main Street Road approximately one mile west of the City line.
- Residential development along South Main Street west of City to Wortendyke Road
- Tonawanda Creek from Dorman Road to City line
- Stegman Road
- Wortendyke Road bend in Tonawanda Creek channel
- Areas south of South Main Street
- Tonawanda Creek tributary near Route 63 and Veterans Memorial Drive

FLOODPLAIN MAPPING AND REGULATIONS

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The Federal Emergency Management Agency (FEMA) maps Flood Hazard zones and floodways that are most susceptible to flood damage (see Map 9: Wetlands & Flood Zones.) Flood Hazard Areas located within the one hundred year flood boundary are expected to flood once every hundred years, on average. However, the frequency and intensity of rain events may be increasing due to climate change, resulting in more frequent and severe flooding.

A total of 4,020 acres within the Town of Batavia are in the Tonawanda Creek flood zone. A total of 77% of the land is used for agriculture and 23% is used for commercial, industrial or higher density residential uses.

The Town has adopted a local flood control ordinance that specifies, consistent with federal standards, the conditions under which development can occur in such areas. As a result, federal flood insurance is available to landowners within flood hazard zones.

Since 1978, the National Flood Insurance Program has issued a total of 39 policies for properties in the Town of Batavia. A total of 38 property owners submitted claims between 1978 through 2015 (six additional since 2007). Property in the Town is insured for a total of \$4,019,300 (increase of \$1,791,500 since 2007). A total of \$35,597 \$26,848 has been paid to cover losses since 1978 (increase of \$8,749 since 2007).³

WETLANDS



Core 2 from Galloway Road – S. Hess

Wetlands are located where surface water is retained and groundwater seeps to the surface for extended periods of time during the growing season. Wetlands are diverse in nature from small swales and wet meadows ubiquitous across the Town to large open water marshes and the forested swamps of Galloway. Because of the location of wetlands, their soils, and the vegetation communities they support, they provide excellent water filters (cleaning water of sediments, nutrients and toxins before releasing to streams or groundwater). Wetlands also provide unique and important habitat for wildlife and plants, they assist with flood control by storing a large quantity of stormwater, and they provide scenic, educational, and recreational opportunities. There are over 6,400 acres of Federal and State-mapped wetlands in the Town (See Map 9: Wetlands & Flood Zones).

³ SOURCE: Federal Emergency Management Agency, Policy & Claim Statistics for Flood Insurance, Loss statistics from January 1, 1978 through December 31, 2015 <http://bsa.nfipstat.fema.gov/reports/1040.htm#36>

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Mapping suggests location but field verification is required in order to determine actual size and function of wetland systems. Mapped wetlands and adjacent areas within one hundred feet of State-mapped wetlands are subject to regulations preventing filling or other development. Protection through State and Federal permitting programs is not absolute and most wetlands are vulnerable to conversion to other land uses unless specifically protected.

GROUNDWATER

A primary aquifer is located south of the City of Batavia underneath Tonawanda Creek and surrounding land. A secondary unconfined aquifer is located west of the City. The presence of the aquifer renders the area particularly sensitive to pollution from failed septic systems, stormwater infiltration and agricultural sources. These aquifers provide a significant (tapped and untapped) resource for the community. Groundwater systems can be complex to understand and manage but essentially, best management practices on the landscape that benefit surface water quality will also benefit the preservation of groundwater quality. The Town's Wellhead Protection Overlay District manages development in areas overlaying the aquifer. (See Map 10: Aquifers.)

SOILS

SOIL ASSOCIATIONS

Six Soil Associations designated by the USDA are found in the Town of Batavia. As information about Soil Associations is very general, the Soil Survey map and field testing is necessary to determine soil characteristics for particular sites.

Soils in the following associations are predominantly high-lime and developed from glacial till:

- Ontario-Hilton Association (1): Deep, well drained and moderately well drained soils having a medium-textured subsoil. These soils occupy areas in the north-central portion of the Town.
- Mohawk-Manheim association (2): Deep, well-drained to somewhat poorly drained soils having a medium-textured subsoil. These soils are located in the southwest portion of the Town.
- Benson-Honeoye Association (5): Shallow and moderately deep, well-drained soils having a medium-textured subsoil, over limestone bedrock.
- The Remsen-Darien association (7) is dominated by medium-lime soils that developed from glacial till. Soils are typically deep, somewhat poorly drained with a fine textured and moderately fine textured subsoil. A narrow band of this association is located in the southeast of the Town.
- Palmyra Association (9) is characterized by deep, well-drained, high-lime soils with a medium-textured subsoil over sand and gravel. These soils are located along the Tonawanda Creek valley and are derived from glacial outwash terraces and kames.

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- The Muck Association (11) is characterized by deep to shallow, very poorly drained organic soils that developed on organic material.

The figure below depicts the major Soil Associations found in the Town of Batavia.

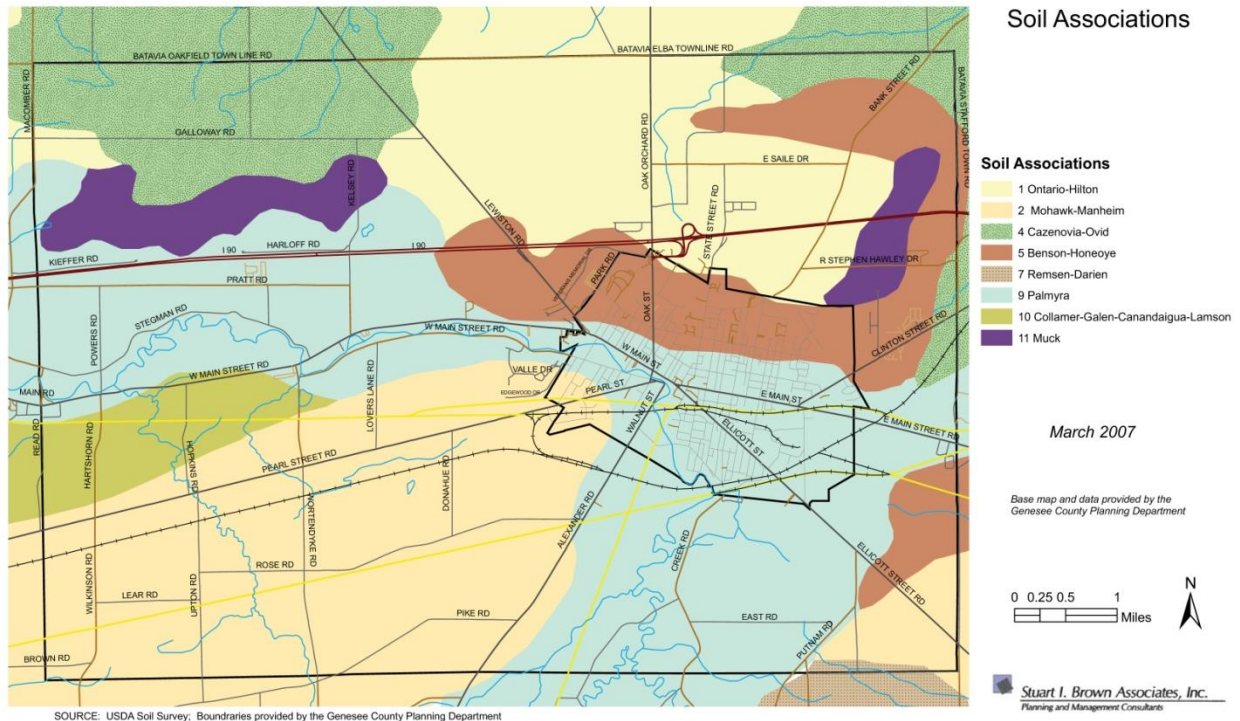


Figure 2: Soil Associations Map

SOIL LIMITATIONS

In many areas in the Town of Batavia, soil characteristics limit the potential for development. Map 11: Soil Limitations for Development identifies areas where the water table is persistently or seasonally high, areas where bedrock is found within 3 feet of the surface, areas with steep slopes, and areas with permeability. In areas with high water tables and slow permeability, the use of on-site septic systems is compromised. Shallow depth to bedrock limits heavy construction which requires deep footers. Steep slopes are prone to erosion.

WOODLANDS

Intact expanses of woodland (forest blocks) provide important benefits to the landscape. In general, the larger the block, the more valuable. Benefits include economic value in sustainable harvest and timber sales, scenic and outdoor recreation value, wildlife habitat, air quality, and water quality.

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There are few large (> 25-acre) forest blocks in the Town of Batavia (see the Green Action Plan excerpts later in this section) and those that are present are often forested wetland systems that were not suitable or logistically feasible to drain for farming. Forested wetlands have some protection associated with permit requirements. However, there is very little protection for the conversion of upland forests. Mature forest takes decades to replace.



Woodland Scene - S. Hess

PROTECTED LAND

A small portion of the Town's natural resource base (350 acres) is currently protected. These protected areas have been established to protect open space and natural resources for public use and benefit.

OPEN SPACE, VISUAL RESOURCES AND VIEWSCAPES



Wetland Vista from Shepard Road - S. Hess

Open space, and the visual resources and viewscapes it supports, provides an important resource for the Town of Batavia. It defines its character, it can have a positive effect on property values, and open space has been shown to support the health and well-being of community residents. In addition to the natural resources described above, including wetlands, riparian areas, and woodlands, the presence of viable agricultural operations and continued use of lands for agriculture helps to preserve open space in the Town of Batavia and contribute to the rural character. Often called "working lands," actively farmed agricultural soils provide important economic value in

addition to ecological services to the Town of Batavia.

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Farming provides an undeveloped buffer for natural areas and supports the rural character of the Town. Prime farm soils need protection from development and from agricultural practices that result in the erosion or contamination of this unique resource. The Town recently adopted an Agriculture and Farmland Protection Plan. Issues relating to farmland retention are addressed in the Farmland and Agriculture Chapter.



Agricultural Viewscap Genesee County - S. Hess

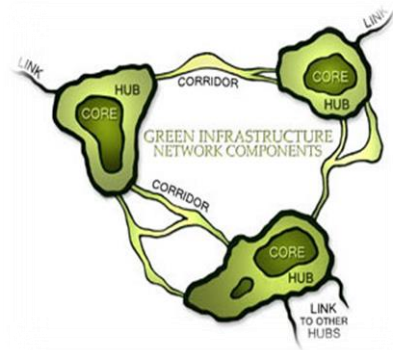
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Relevant Recommendations of Other Plans

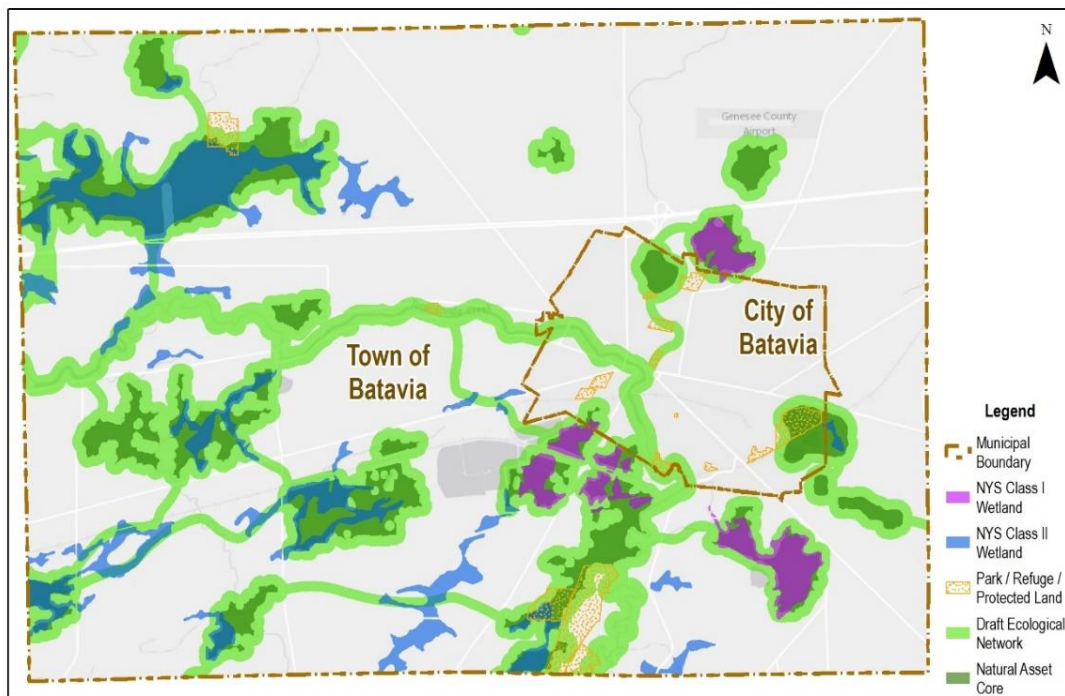
GREEN GENESEE ROAD MAP/ TOWN OF BATAVIA GREEN ACTION PLAN

As introduced above, the Green Genesee/ Smart Genesee (GGSG) project provided detailed inventory and analysis of natural resources in Genesee County and mapped out an ecological network as part of a green infrastructure plan. Green infrastructure is a network of interconnected natural areas such as forests, wetlands, and streams key to the protection of air and water quality, conservation of soils, support for wildlife populations, and a source of outdoor recreation and scenic resources. The basic components of green infrastructure planning are cores, hubs, and corridors.

- Cores: relatively large, ecologically significant natural areas
- Buffers: an area defined by compatible cover type and land use that protect and support cores
- Hubs: cores and buffers together create hubs that are then connected by corridors
- Corridors: linear features that functionally connect hubs allowing transfer of energy and materials, wildlife and people, necessary to maintain ecological integrity of the cores



The GGSG project resulted in a County-level Green Genesee Road Map which was refined to the municipal level for the Town of Batavia in the Batavia Green Action Plan (GAP). The GAP provides a green infrastructure strategy and tool to facilitate protection of a connected network of the Town's



key natural resources (See Appendix A).

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Relevant Recommendations of Other Plans

The green infrastructure mapping process, as explained in detail in the Green Genesee Road Map, resulted in the creation of the Batavia GAP Map (above). The GAP Map will guide land use decisions in the Town as a component of the Town's Comprehensive Plan and as a reference for zoning and development reviews. The map provides an awareness of where important environmental resources lie and reveals the interconnectedness of those resources. The Batavia GAP will help elected officials, town staff, community organizations, residents, and land owners to consider the Town's needs as a whole. It supports and informs existing plans and processes by providing a foundation and framework for protecting open space, managing water resources, and making land use decisions. Land use decisions based on the Batavia GAP will help avoid opportunistic development that leads to fragmentation and sprawl, and ensure that land use decisions are cost effective, protective, and sustainable.

The Batavia GAP includes the following goals, strategies, and recommended actions:

Goal 1: Protect Natural Resources

Protect a connected network of undeveloped land including water resources, prime agricultural soils, and forests from adverse impacts, conversion, and development (See Green Infrastructure Map).

Strategies

- Encourage development in areas with existing infrastructure and services.
- Educate the public about the ecological and economic value of connected natural systems.
- Inventory lands and parcels for high priority water resources and significant ecological and/or scenic value and prioritize for protection and restoration.
- Implement and continue water quality monitoring programs and use for public education and policy guidance.
- Develop and integrate watershed management plan priorities into municipal plans and policies.
- Implement land use tools such as purchase of development rights (PDR), incentive zoning, conservation easements, and other incentives to preserve natural resources.
- Develop landowner assistance and landowner incentive programs that promote best management practices for soil and water quality.
- Encourage, educate, and incentivize farmers with property within or adjacent to the green infrastructure network to
 - implement natural resource conservation and restoration programs and seek assistance from U.S. Department of Agriculture (USDA); and
 - apply best management practices to minimize soil disturbance and compaction and help maintain biodiversity.
- Identify and fill data gaps associated with natural communities in asset cores

Goal 2: Promote a "Green" Economy

Integrate the unique natural assets of the Town of Batavia and resiliency into economic policy and investment decisions.

Strategies

- Protect, enrich, and market natural assets.

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Relevant Recommendations of Other Plans

- Develop a municipal ecotourism and recreation (gateway and greenway) plan
- Promote growth of ecotourism-based economy through marketing, increased opportunities and amenities, and improved access.
- Invest in projects with green infrastructure elements including habitat restoration, water quality protection and improvements, water recycling, and reduced erosion.
- Invest in projects that integrate ecological systems, improve water access, retain water quality and increase water safety.
- Explore the use of natural systems for flood protection and wastewater treatment.
- Encourage brownfield development

Goal 3: Improve Ecological Resilience

Improve performance and resiliency of natural systems under normal and extreme conditions.

Strategies

- Utilize natural systems to improve the performance of built systems including stream corridor restoration and stabilization, wetland restoration, sediment and erosion control projects, net zero pervious surfaces, watershed management to reduce risks of flooding.
- Encourage development outside of stream corridors and mapped floodplains.
- Provide technical assistance and training for local governments to manage floodplains and reduce flooding.
- Encourage communities to adopt climate smart policies.

Goal 4: Facilitate Municipal Stewardship and Energy Conservation

Provide a foundation for the development of meaningful and achievable conservation goals, measurable objectives, and implementation strategies with an emphasis on strong inter-municipal relationships and planning.

Strategies

- Provide information and promote awareness regarding the location of high quality natural assets in the Town of Batavia and in neighboring communities and the importance of these assets to long-term vitality and quality of life.
- Encourage use of the County online mapping tool to guide municipal government, residents, prospective developers, regulatory agencies, and other public and private entities in making land use decisions that conserve and enhance a diverse system of natural cores, hubs, and connecting corridors sufficient to protect clean air, clean water, habitat for plants and animals, and outdoor recreation opportunities for people.
- Develop model comprehensive plan policies and model ordinances that support sustainable land use decisions
- Facilitate development of a new/updated comprehensive plan and zoning that incorporate the GAP Map, land use protection, sustainability, and resilience.
- Develop specific vision plans for community centers that lead to “livable communities.”
- Provide technical assistance and training to support local government in the implementation of land use

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Relevant Recommendations of Other Plans

regulations that protect natural resources including soils, forests, and wetlands.

- Coordinate efforts with local, county, state, federal and tribal entities to assure wise land use, protect natural resources and leverage private and public investment in the region.

GENESEE COUNTY MULTI-JURISDICTIONAL ALL-HAZARD MITIGATION PLAN

The Genesee County Multi-Jurisdictional All-Hazard Mitigation Plan, completed in 2008 by the Genesee-Finger Lakes Regional Planning Council, identifies potential natural, technological and human-caused hazards that might affect Genesee County and its municipalities, assesses potential impacts and risks, and presents mitigation strategies and Action Plans for each municipality. The Plan identified the following hazards as priorities for the Town of Batavia:

Hazmat (in transit)
Ice Storm
Fire
Flood
Hazmat (Fixed Site)
Transportation Accident
Earthquake
Severe Winter Storm
Severe Storm

The Action Plan for the Town of Batavia identifies the following hazards that the Town will be responsible for addressing:

Hazard	Town Leadership Role
Flooding	Prevention, property protection and public education and awareness
Ice storm, winter storm, severe storm, tornado and utility failure	Prevention and property protection
Earthquake	Property prevention
Water supply contamination	Prevention
Hazardous Materials	Natural resource protection

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Relevant Recommendations of Other Plans

GENESEE & WYOMING COUNTIES JOINT FLOOD MITIGATION PLAN (AUGUST 2003)

The 2003 Flood Mitigation Plan recommended several Action Steps to reduce the risk of and potential damage from flooding. These include Preventative Measures, Natural Resource Protection, Property Protection, Structural Measures, Emergency Services, and Public Awareness.

Preventative Measures include the preparation of an All-Hazard Mitigation Plan (completed), participation in the Community Rating System, updated floodplain mapping and ongoing training for the Town's Flood Plain Administrator. The following specific measures were recommended for the Town of Batavia.

- Re-examine zoning to ensure that commercial and industrial uses are kept out of flood prone areas. This is especially critical along the Route 5 corridor, which faces higher than average development pressure.
- Vigorously enforce building codes within flood prone areas.
- To protect residential development along South Main Street, evaluate the feasibility of flood-proofing public utilities and seek easements from private property owners along the channel to permit access for stream channel monitoring and removal of woody debris and ice jams.
- Increase the amount of land in flood prone areas used for parks or recreation.

Natural Resource Protection Measures address debris removal and the prevention of siltation from erosion. Debris removal must be coordinated with the NYS DEC, Army Corps of Engineers, Genesee County, neighboring municipalities and landowners to address permitting, timing, and funding. Measures to prevent erosion include maintaining buffers along streams, agricultural best management practices, streambank restoration and improved maintenance of road ditches.

Property Protection Measures address insured properties that suffer repetitive losses. In general, properties covered by flood insurance contracts that suffer flood damage on two or more occasions over a 10-year period should consider filing for Repetitive Loss coverage to implement long-term structural solutions to flooding problems. In Batavia specifically, the following measures were recommended:

- Remap the Flood Insurance Rate Map to include land located outside of mapped areas that is subject to flooding, in particular residential development south of South Main Street.
- Purchase and relocate the manufactured home park on West Main Street Road (Route 5)
- Purchase and relocate houses along Dorman Road.

Structural Measures include improving stormwater management to reduce the impact of impervious surfaces, maintaining culverts, and improving drainage associated with abandoned railroads and the regular inspection and maintenance of dams. Measures recommended for sites in the Town of Batavia include:

- Place rip-rap along the outside bend just north of Route 5 near Stegman Road to protect the road and/or move the roadway north, away from the Creek.
- At the Dreamland Trailer Park and Batavia Mobile Home Park sites, upgrade structures with first floor elevation below the base flood elevation and site infrastructure to meet current floodplain development standards.
- At the Valu Plaza on West Main Street Road, retrofit stormwater management facilities.
- Conduct a study to address flooding along a small unnamed tributary of Tonawanda Creek near Route 63

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Relevant Recommendations of Other Plans

and Veterans Memorial Drive to identify appropriate stormwater management options.

Emergency Services Measures include an emergency flood notification system for mobile home park residents, relocation assistance to those residents whose pads are most frequently affected by flooding and an alarm system at the Wortendyke Road bend site that warns residents if ice builds up.

Public Awareness and Information Measures include making copies of the FIRM maps, Letters of Map Amendments and the Flood Mitigation Plan available at libraries and the Town Hall and disclosing flood hazards to potential property owners. Residents of the Dreamland Trailer Park and Batavia Mobile Home Park should be educated about emergency evacuation procedures through a brochure that shows evacuation routes and emergency shelter locations.

In summary, the following measures are recommended for the Town:

- Improve public awareness of potential flood hazards and provide information about evacuation routes and emergency shelter locations.
- Install an alarm system to warn residents of ice jamming at the Wortendyke Road bend in Tonawanda Creek.
- Eliminate industrial and commercial zoning districts within flood hazard areas, especially in areas of higher development pressure, such as along Route 5 west of the City.
- Clarify the designation and role of the Town's Flood Plain Administrator.
- Address flooding problems along South Main Street Road.
- Consider remapping the FIRM to include properties outside of designated flood hazard, such as the area south of South Main Street Rd., that have reported periodic flooding.
- Purchase dwellings that flood repeatedly and relocate their residents, including those in the West End Trailer Park, houses along Dorman Road, and in the Dreamland Trailer Park and Batavia Mobile Home Park.
- Consider upgrading structures in the Dreamland Trailer Park and Batavia Mobile Home Park that have first floor elevations below the base flood elevation; site infrastructure to meet current floodplain development standards.
- Evaluate the feasibility of elevating structures along South Main Street.
- Place rip-rap along outside bend just north of Route 5 near Stegman Road to protect the road; and/or move roadway north, away from the Creek.

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TOOLS AND TECHNIQUES

To protect and enhance its natural resources and address the issues that affect them, the Town of Batavia can apply a variety of regulatory tools, obtain technical assistance from other governmental agencies and not-for-profit organizations, and seek funding through grants. This section summarizes the programs and sources of technical assistance and funding that are available to the Town for natural resource conservation.

STORMWATER MANAGEMENT/ EROSION AND SEDIMENTATION CONTROL

Stormwater management utilizes a system of vegetative and structural measures to control the increased rate and volume of stormwater runoff that results from new development. Such measures must be designed as part of new development to ensure that stormwater is properly filtered before flowing into streams, and that the flow is managed to prevent flooding. Specific techniques include retention ponds, drainage swales, and artificial wetlands.

Local governments have the authority to require effective storm- water management and erosion control techniques to be incorporated into the design of new development as part of the subdivision or site plan review process. The NYSDEC's Stormwater Management Design Manual presents technical standards for the design of stormwater management practices associated with building construction. http://www.dec.ny.gov/docs/water_pdf/swdm2015entire.pdf

Individual property owners can help to manage stormwater by limiting the amount of impermeable surfaces and allowing stormwater to filter into the ground before flowing into streams. Property owners can install rain gardens, rain barrels, green roofs, permeable pavement and other types of "green infrastructure" to reduce the amount of stormwater that runs off the property. For more information, see: <http://www.dec.ny.gov/lands/58930.html>

Training programs and materials to help Highway Department staff learn techniques to reduce erosion from road projects are available through the Cornell Local Roads Program: <http://www.clrp.cornell.edu/workshops/drainage.html>

Programs that provide technical assistance and cost sharing for agricultural best management practices include the Agricultural Environmental Management (AEM) program (<http://www.dec.ny.gov/pubs/4774.html>) and USDA Natural Resource Conservation Service (NRCS) easement programs <http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/>).

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ZONING APPROACHES

As land use and development can impact natural resources and water quality, the Town can apply zoning regulations and the development review process to limit or manage these impacts. Zoning tools can also protect sensitive natural areas with conservation easements or stream setback provisions.

CONSERVATION OVERLAY ZONING DISTRICTS

A **Conservation Overlay District** provides additional protections to sensitive natural features such as stream corridors, wooded areas, or scenic views. The requirements of the Conservation Overlay District supplement the land use and dimensional requirements of the underlying zoning district.

Overlay regulations may limit the removal of natural vegetation within stream corridors or protect mature trees in wooded areas. Draft Stream Corridor and Conservation Overlay district regulations prepared as part of the Green Genesee/ Smart Genesee initiative are included in Appendix C.

CLUSTER DEVELOPMENT AND CONSERVATION SUBDIVISIONS

Clustered subdivisions, also known as conservation subdivisions or “density averaging,” allow dwelling units to be constructed on lots smaller than the “minimum lot size” required by zoning, while ensuring that the maximum density allowed in a zoning district is not exceeded. For example, if zoning regulations require a minimum lot size of 2.5 acres, approximately 40 dwelling units would be permitted on a 100-acre parcel. With clustering, the 40 units could be placed on 1-acre lots, with approximately 60 acres set aside as permanent open space.

Conservation subdivisions utilize design to maximize the amount of usable open space in a clustered subdivision. Once the permitted number of dwelling units is determined, the developer and the Planning Board apply the following design process to a parcel to be subdivided:

- Identify lands with conservation value. These include areas that must remain undeveloped, such as wetlands, floodplains and very steep slopes, as well as areas that contribute to the character of the area, such as active farmland, views, wooded areas, or streams. The remaining lands are best suited for development.
- Locate homes on the land identified as best suited for development.
- Once homes are sited, sketch in a network of streets and trails.
- Finally, draw the lot lines.

The Planning Board’s review of a clustered or conservation subdivision is more challenging than that of traditional subdivisions. In addition, the Town needs to be prepared to hold and monitor conservation easements in perpetuity. The Planning Board will also need to work closely with

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developers to create subdivision designs that maximize the protection of open space and natural features.

Conservation subdivisions can result in permanent protection of resources at low cost to the Town, as open areas would be protected by conservation easements. This technique is most effective for the preservation of environmentally sensitive areas, open space and scenic views that are located on the same lot as proposed residential development. As clustering does not reduce the number of building lots that can be developed on a parcel, it is generally acceptable to landowners and developers. However, clustering works best when zoning district regulations requires low densities or large minimum lot sizes. Unless the Town of Batavia reduces maximum densities in rural parts of the Town to approximately one dwelling unit per two or three acres (current minimum lot size requirements allow approximately one house per one-half acre), clustering would not result in significant protection of natural areas.

RECOMMENDED ACTIONS

2007 COMPREHENSIVE PLAN RECOMMENDATIONS AND CURRENT STATUS

Natural Resources and Environmental Protection	
2007 Comprehensive Plan Recommendation	Status
Work with public and private entities to reduce flood hazards, consistent with Genesee County's Hazard Mitigation Plans.	Ongoing: Town Planning Board, Code Enforcement Office in cooperation with Genesee County
Apply appropriate standards to new development to minimize erosion and sedimentation associated with new construction.	Ongoing: Town Planning Board
Utilize the subdivision and site plan review process to preserve significant natural and scenic resources as part of the design of new development.	Ongoing: Town Planning Board
Establish recreational facilities in conjunction with natural features.	Partially Complete: The Town established a boat launch at Kiwanis Park.

RECOMMENDED ACTIONS TO IMPLEMENT GREEN GENESEE ACTION PLAN

1. Designate a liaison to work with NY Green and Genesee County's implementation committee (Green Genesee Task Force) to assist with and coordinate implementation of the Green Genesee Action Plan. Duties may include:
 - Identify funding sources and secure resources for implementation of recommended initiatives
 - Develop and distribute educational materials

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- Secure legislative support
- Prioritize strategies and actions
- Develop a process to measure, monitor, and report progress, based on indicators specified in the Green Action Plan
- Coordinate celebrations and events

Responsible entity: Town Board

Partner entities: Genesee County Green Genesee Task Force
NY Green
Genesee County Soil & Water Conservation District
Tonawanda Creek Watershed Association

2. Encourage owners of land within designated Asset Cores and Ecological Corridors to maintain these lands in a natural state. Provide information about techniques to protect natural habitats.

Responsible entity: Town Board

Partner entities: NY Green/ Green Genesee implementing committee
Genesee County Soil & Water Conservation District
Tonawanda Creek Watershed Association
Black Creek Watershed Association
Oak Orchard Watershed Alliance

3. Incorporate additional stormwater management provisions into site plan review criteria, subdivision regulations, and construction and design specifications to support “low impact development,” consistent with the NYS Stormwater Management Design Manual. Ensure that regulations are enforceable and that the Town’s fee schedule authorizes developer fees to cover costs for specialized review.

Responsible entities: Town Board
Building and Zoning staff
Planning Board

Partner entities: NYS Department of Environmental Conservation (NYS DEC)
Genesee County Soil & Water Conservation District (SWCD)

4. Create a Conservation Overlay District to manage development, retain ecological function and limit the removal of natural vegetation within the Asset Cores and Buffers of the Ecological Networks delineated in the Green Genesee Action Plan and within stream corridors within 100 feet of rivers and streams.

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Responsible entities: Town Board
Building and Zoning staff
Planning Board

Partner entities: NY Green
Genesee County Soil & Water Conservation District

5. Partner with Genesee County, community and educational organizations to promote public awareness and education about the value of Batavia's green infrastructure.

Responsible entities: Town Board
Planning Board

Partner entities: Genesee County Soil & Water Conservation District
Genesee Community College
NY Green
Batavia School District
Community organizations

RECOMMENDED ACTIONS TO ADDRESS FLOOD HAZARDS

1. Target land within floodprone areas for public and private recreational and conservation uses. Obtain funding to acquire land for this purpose.

Responsible entities: Town Board

Partner entities: NYS Dept. of Environmental Conservation (DEC); State and Federal Grant funding agencies

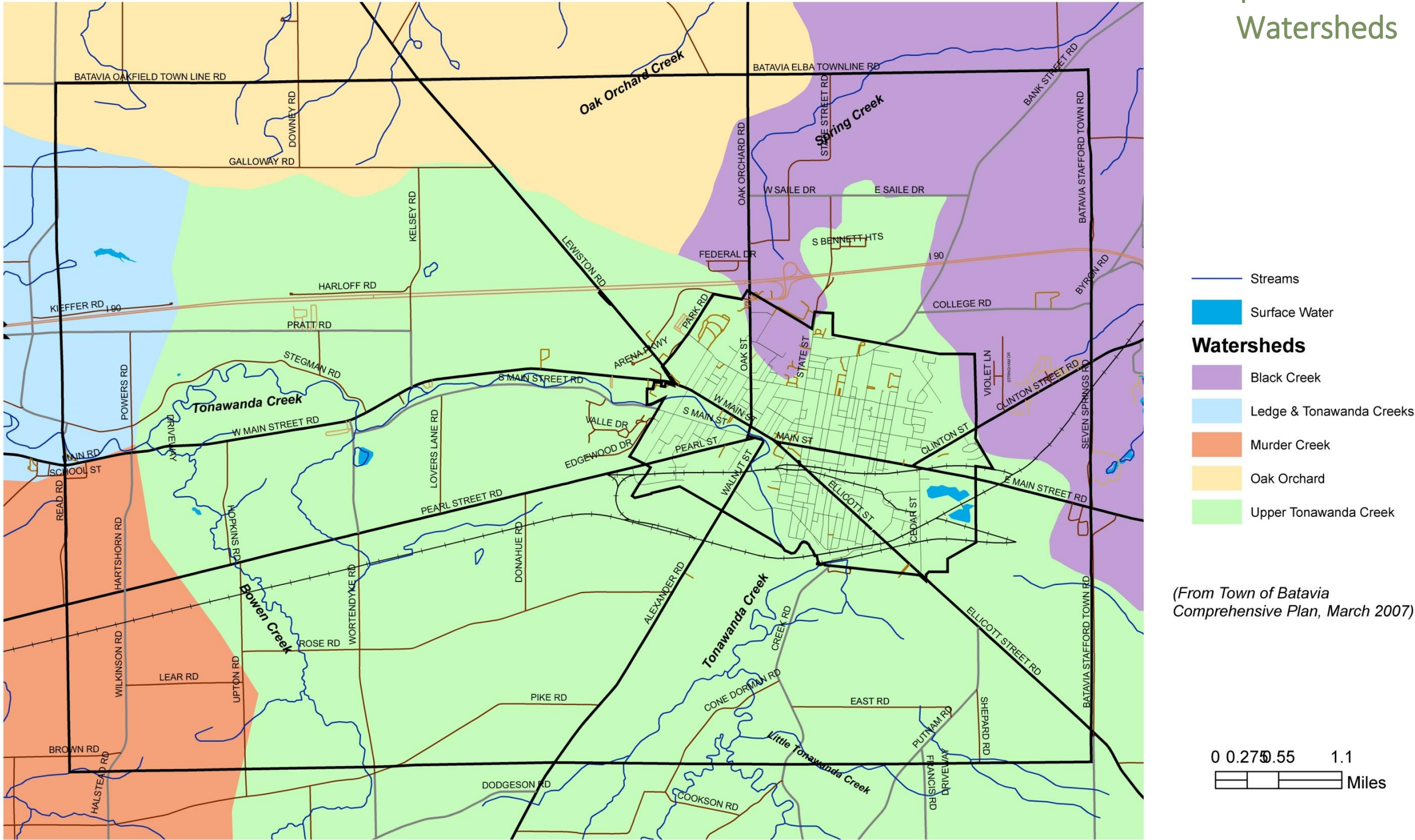
2. Acquire properties within flood hazard areas that are subject to repeated flooding.

Responsible entities: Town Board
Planning Board

Partner entities: NYS Department of Environmental Conservation
Federal Emergency Management Agency (FEMA)
NY Green
Genesee County Emergency Management
Landowners

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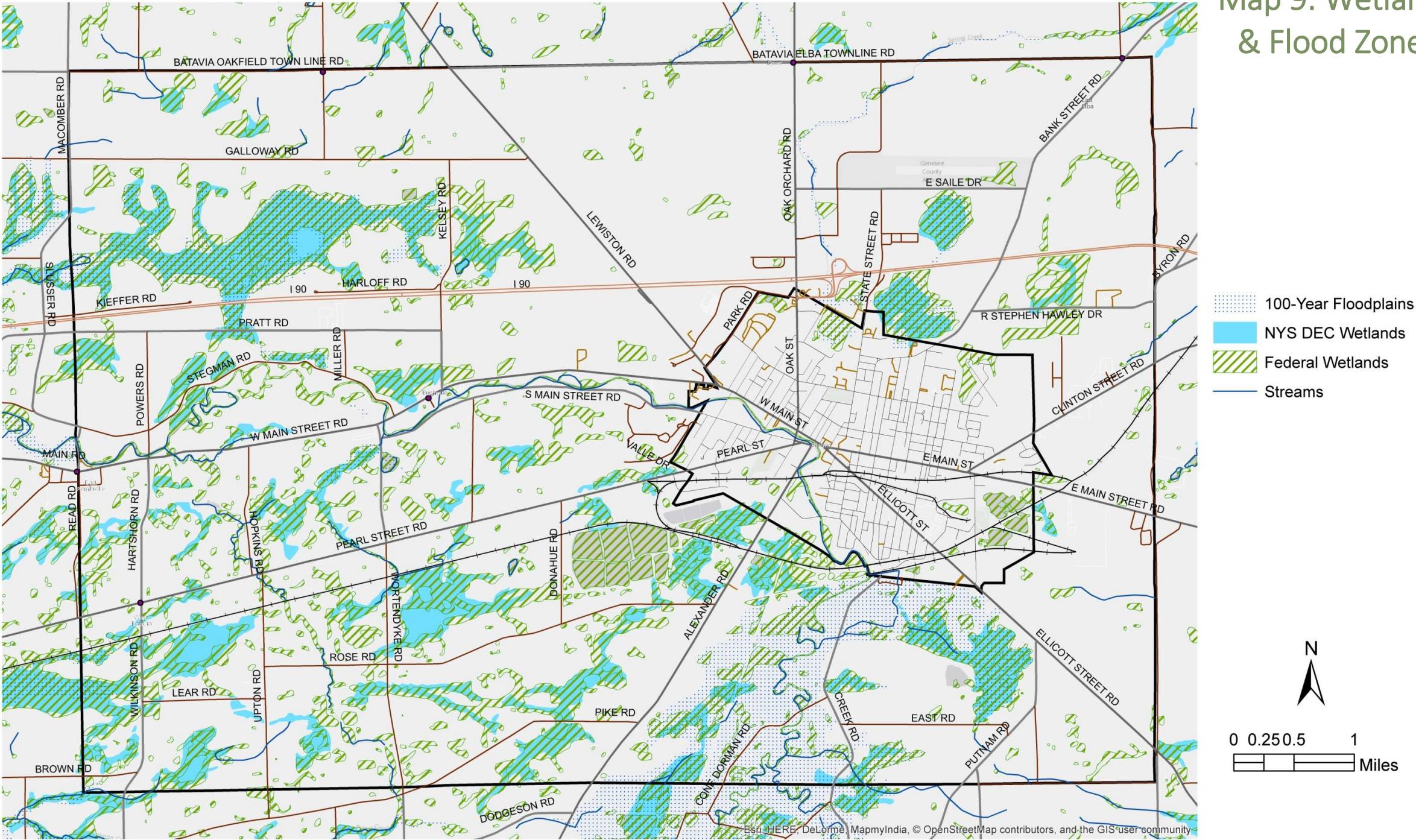
Map 8: Streams & Watersheds



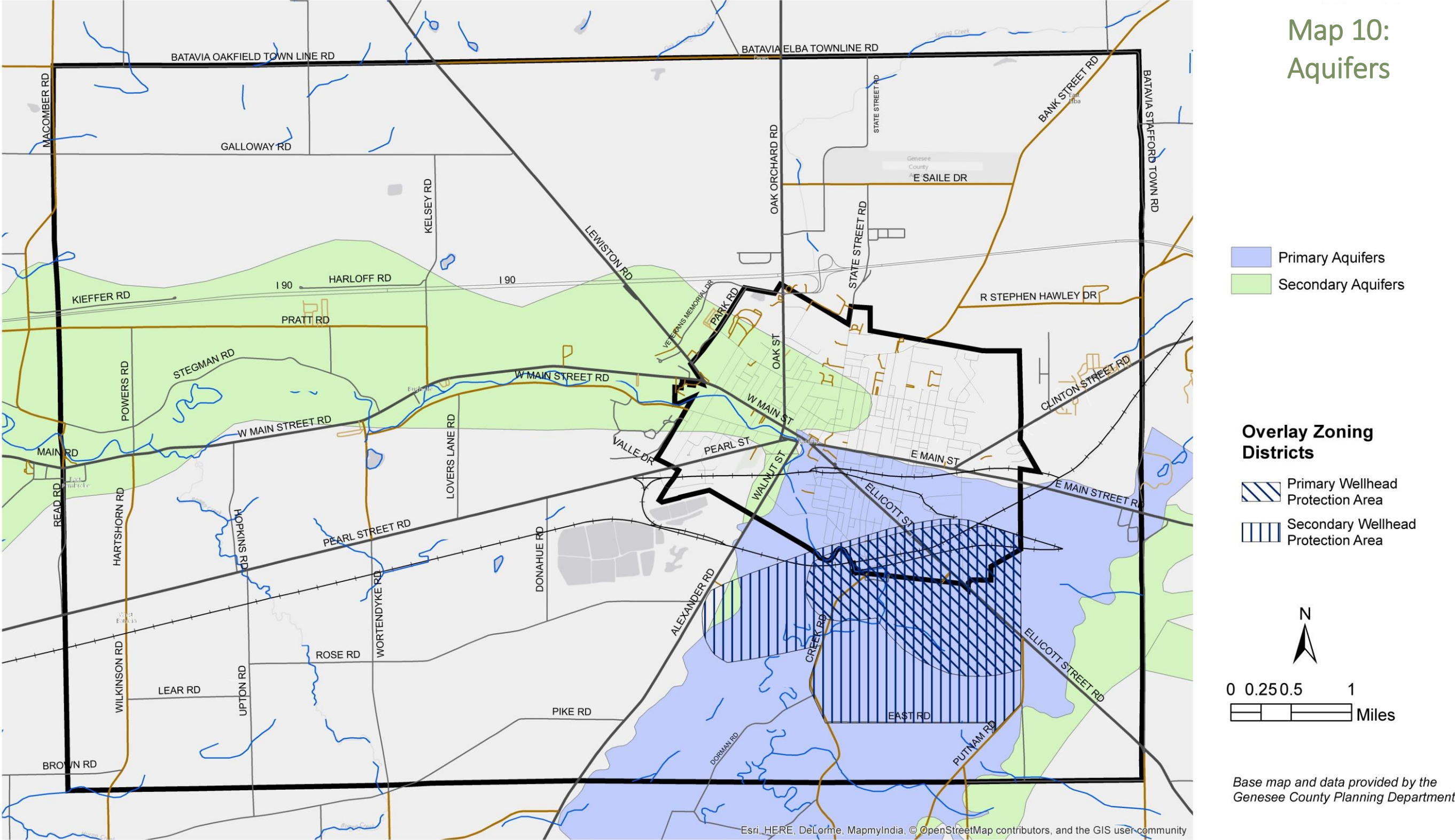
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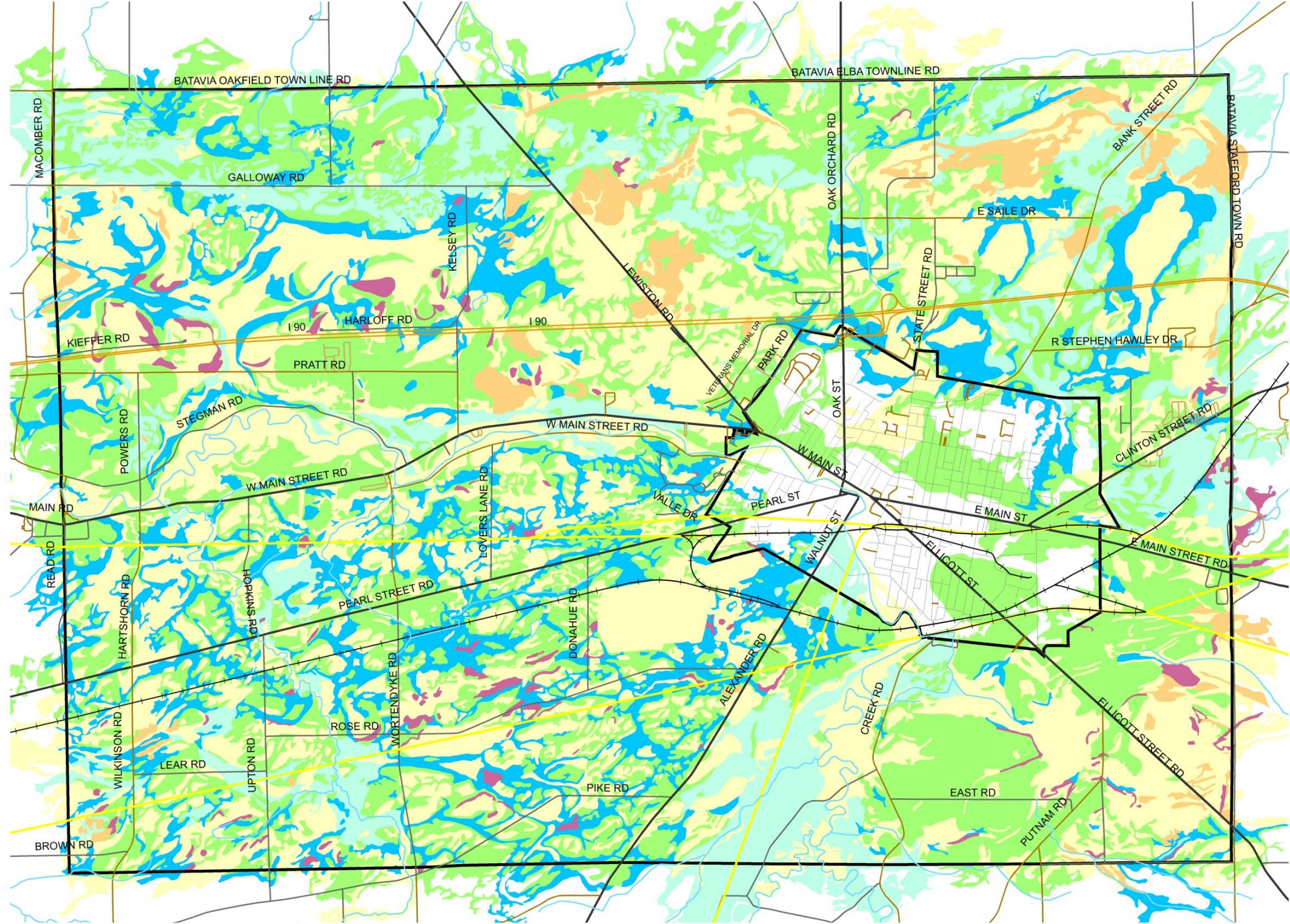
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Map 9: Wetlands & Flood Zones



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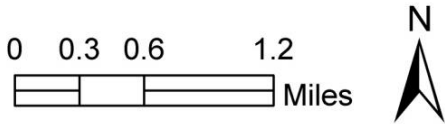




Map 11: Soil Limitations for Development

- Development Limitations**
- Slight to Moderate Limitations
 - High Water Table
 - Seasonally High Water Table
 - Slow Permeability/ Ponding
 - Shallow to Bedrock
 - Steep Slopes

Base map and data provided by the Genesee County Planning Department



SOURCE: USDA Soil Survey; Boundaries provided by the Genesee County Planning Department

