

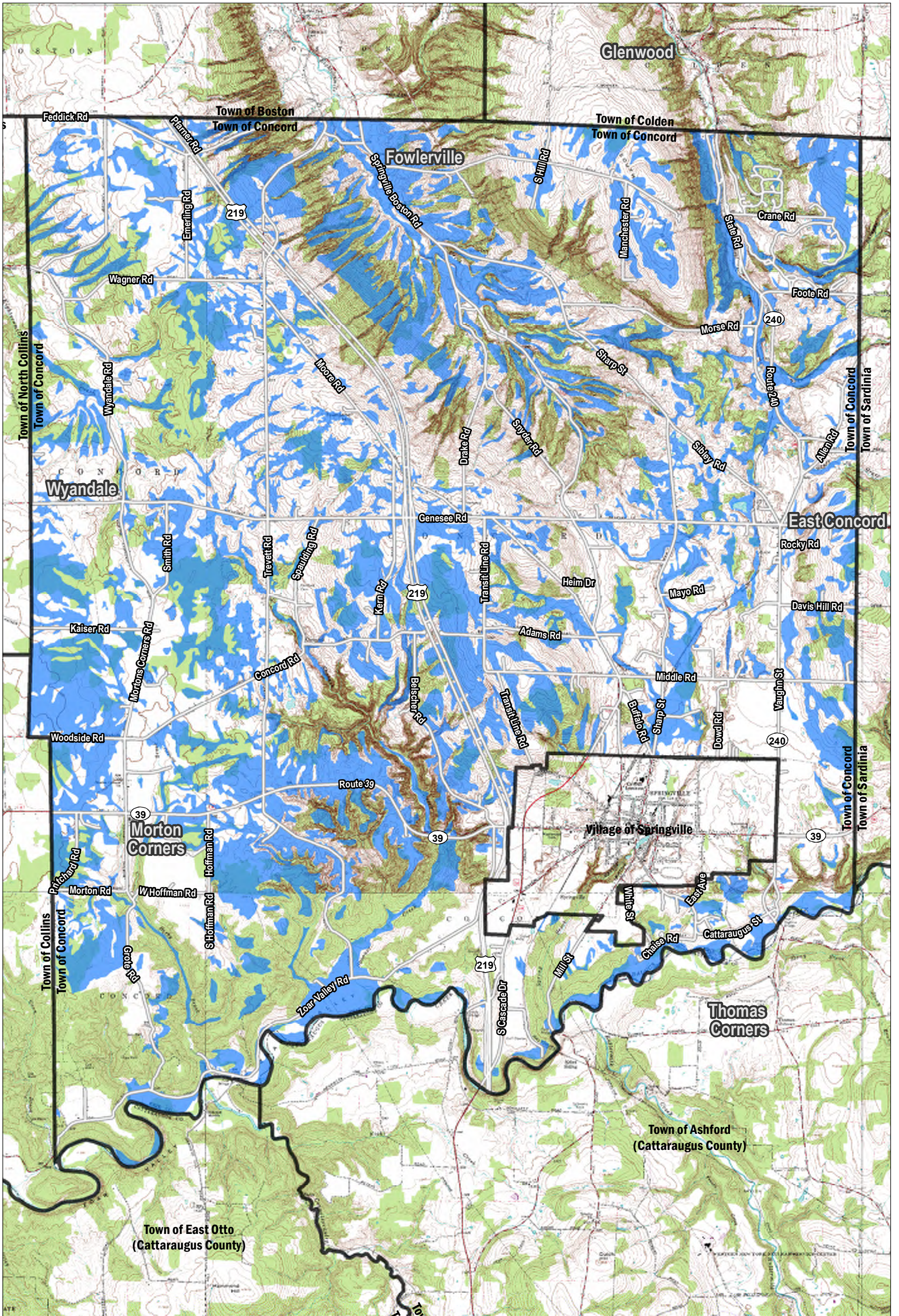


APPENDICES

TOWN OF CONCORD COMPREHENSIVE PLAN UPDATE


- MAPPING
- DECEMBER 2016 WORKING PAPER BY CAROL HOROWITZ, AICP
- PUBLIC MEETINGS INFORMATION
- SEQR DOCUMENTATION
- APPLICABLE SECTIONS FROM NIAGARA RIVER/LAKE ERIE WATERSHED MANAGEMENT PLAN

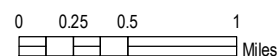
Mapping



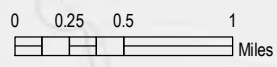
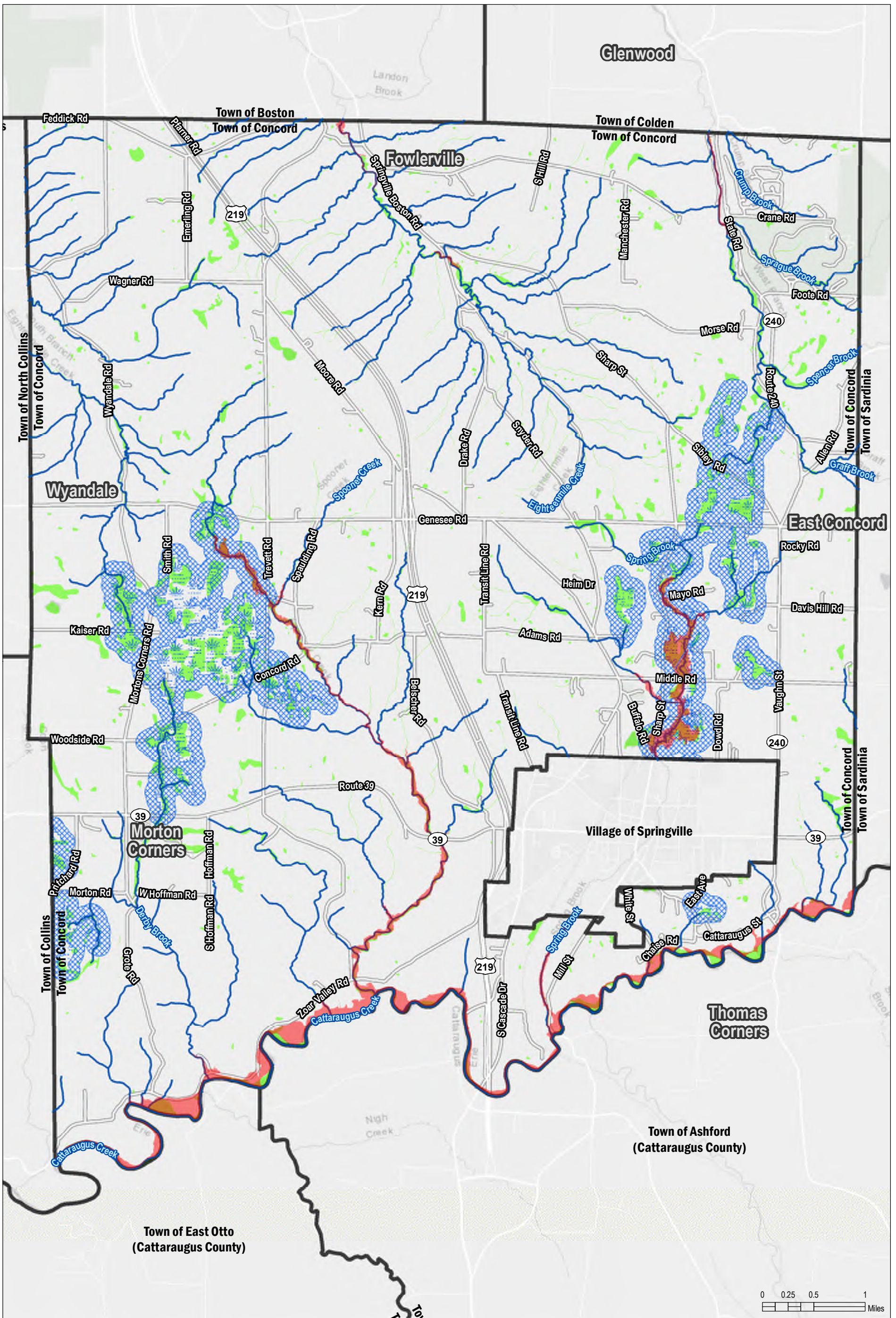
**Town of Concord
Comprehensive Plan**
ERIE COUNTY, NEW YORK
Map 1 - Topography & Hydric Soils

LEGEND

 Hydric Soils




WD Project # 498301
Map Created: February, 2018



Town of Concord Comprehensive Plan

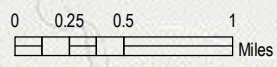
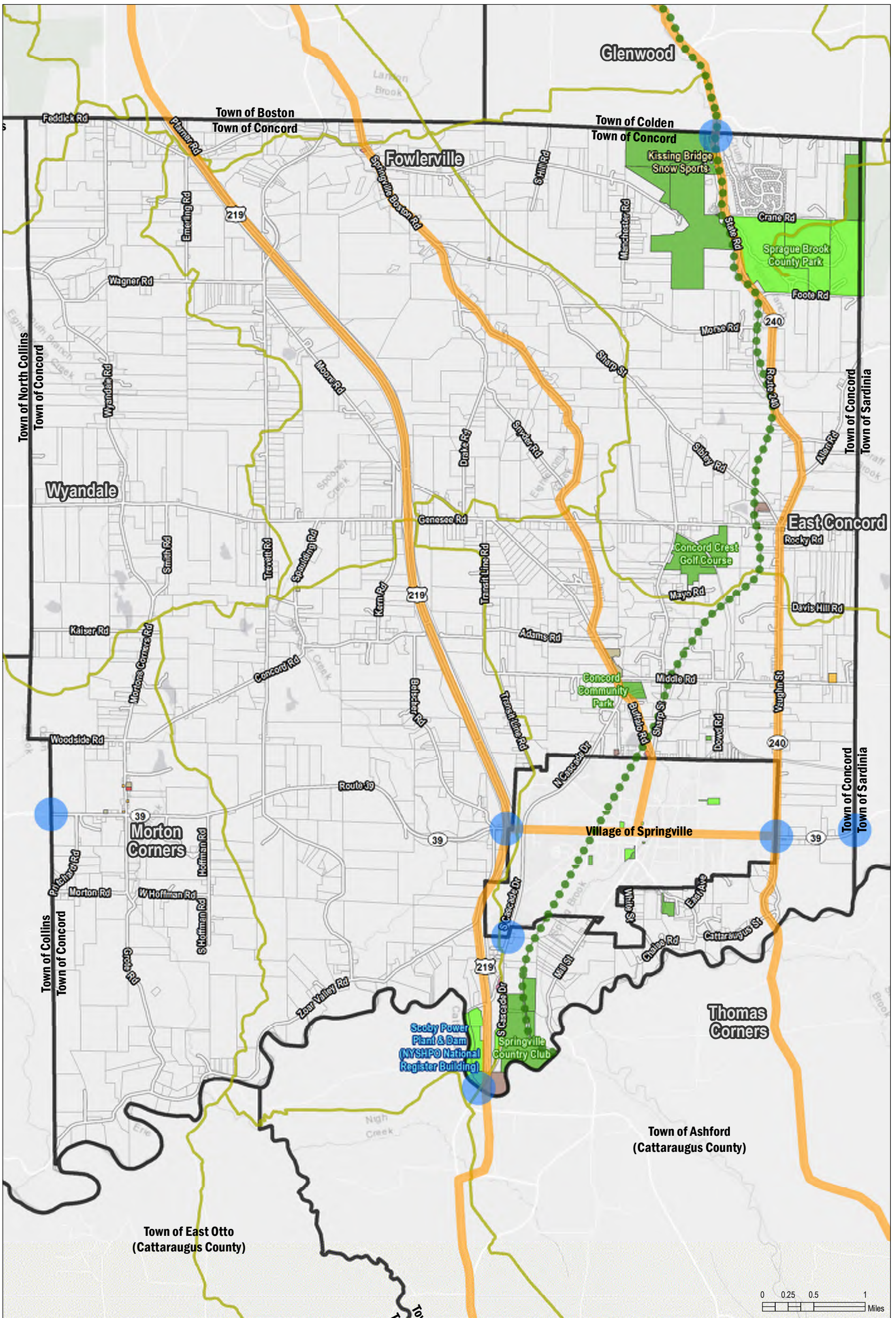
ERIE COUNTY, NEW YORK

Map 2 - Environmental Features

LEGEND

- Preliminary FEMA Flood Hazard Zones
- 100 Year Floodzone
- Waterway
- State Wetlands
- State Wetlands Checkzone
- Federal Wetlands





Town of Concord Comprehensive Plan

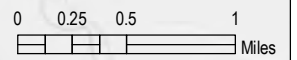
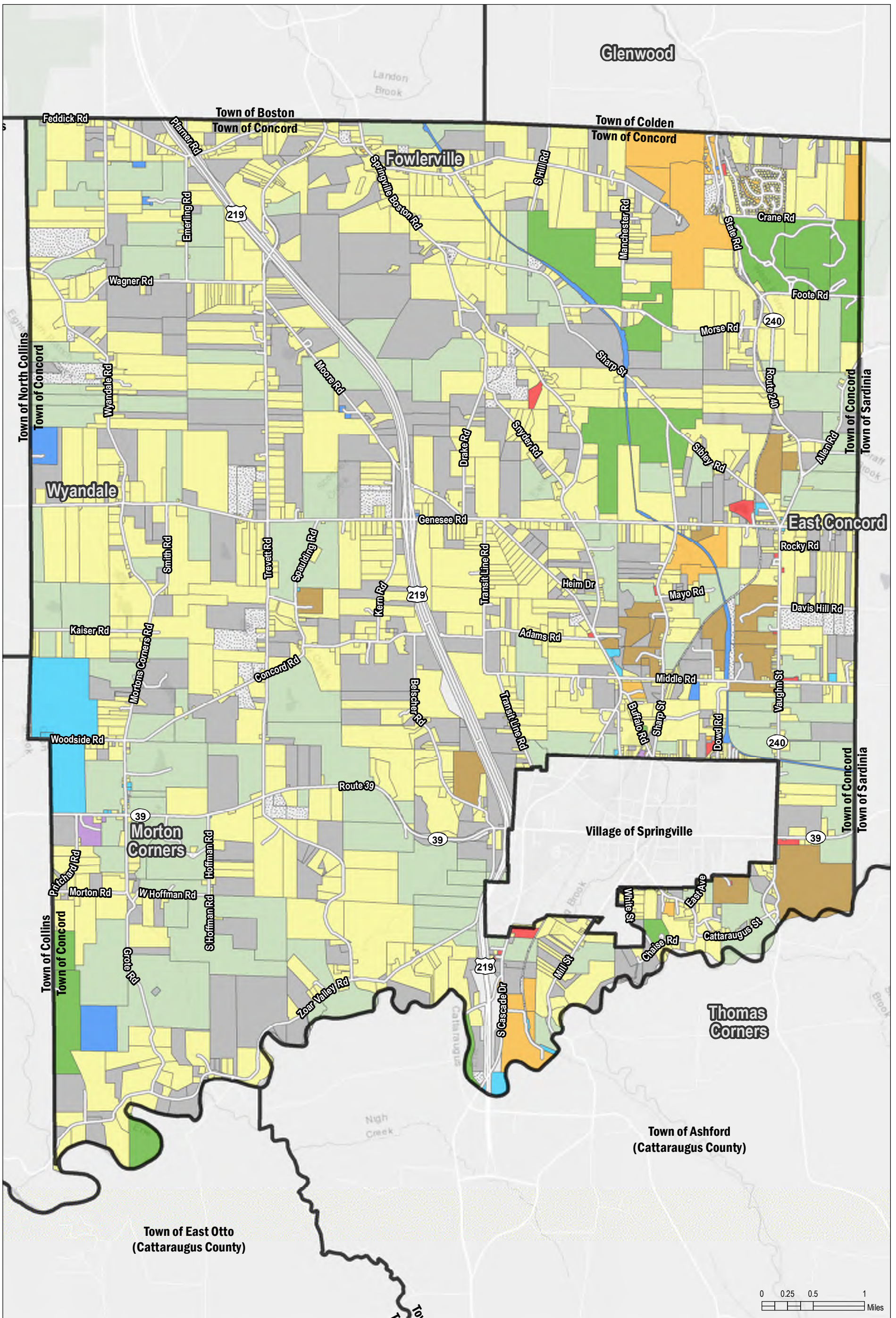
ERIE COUNTY, NEW YORK

Map 3 - Community Features

LEGEND

- | | | |
|---------------------------------|---------------------------|---------------------|
| Parcels (2016) | Cemetery | Park |
| NYS Snowmobile Trails 2017-2018 | Government | Police/Fire |
| Gateway | Indoor/Outdoor Recreation | Religious |
| Proposed Rails To Trails | Library | School |
| Scenic Byways | | Social Organization |





**Town of Concord
Comprehensive Plan**
ERIE COUNTY, NEW YORK
Map 4 - Existing Land Use

LEGEND

- | | | |
|--------------------------|----------------------------|---------------------------------|
| Existing Land Use (2016) | Vacant | Industrial |
| No Data | Commercial | Mine/Quarry |
| Agriculture | Recreation & Entertainment | Public Services |
| Residential | Community Services | Wild, Forest, Conservation Land |

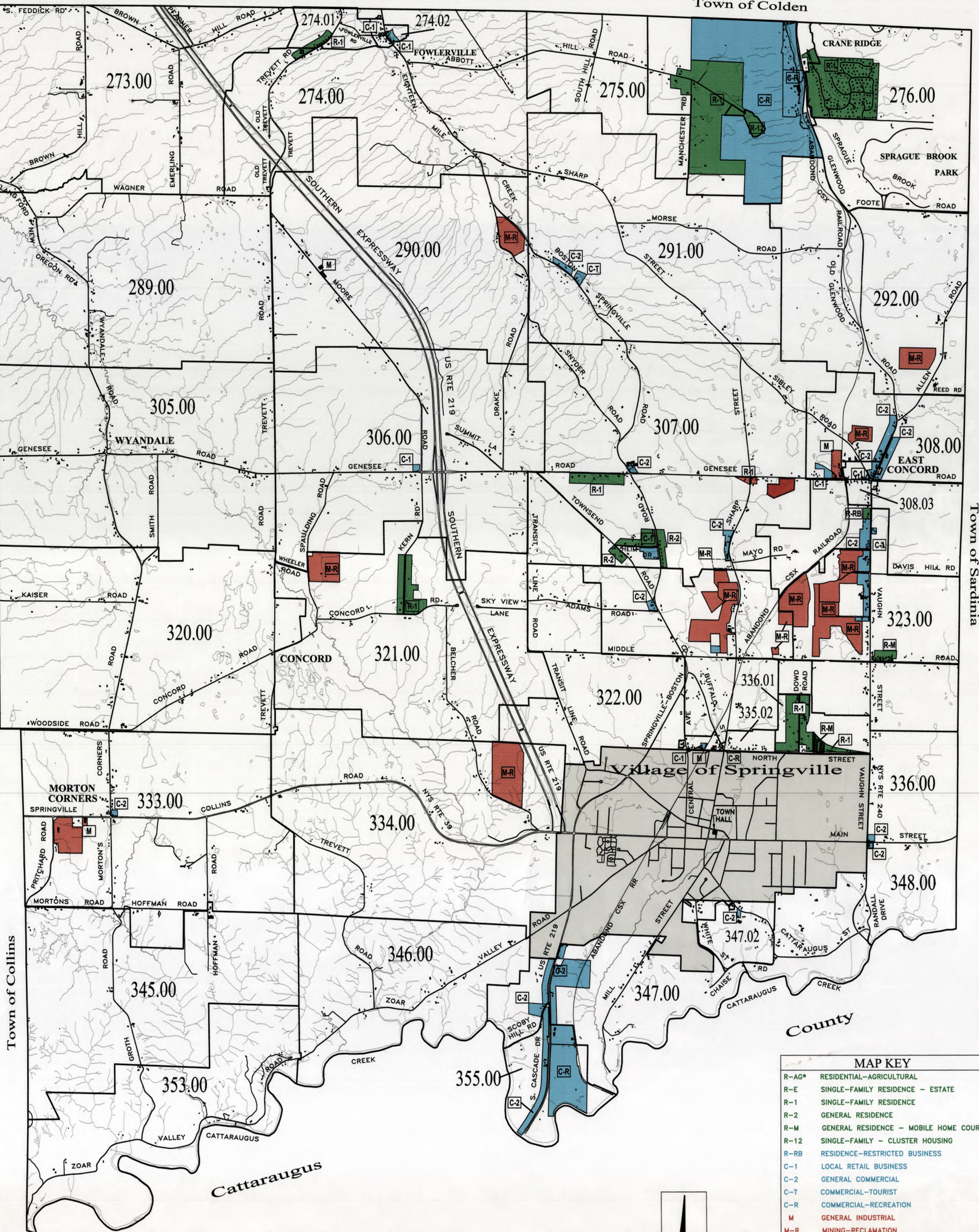


Town of Boston

Town of Colden

Town of North Collins

Town of Sardinia



MAP KEY

- R-AG* RESIDENTIAL-AGRICULTURAL
- R-E SINGLE-FAMILY RESIDENCE - ESTATE
- R-1 SINGLE-FAMILY RESIDENCE
- R-2 GENERAL RESIDENCE
- R-M GENERAL RESIDENCE - MOBILE HOME COURT
- R-12 SINGLE-FAMILY - CLUSTER HOUSING
- R-RB RESIDENCE-RESTRICTED BUSINESS
- C-1 LOCAL RETAIL BUSINESS
- C-2 GENERAL COMMERCIAL
- C-R COMMERCIAL-TOURIST
- C-R COMMERCIAL-RECREATION
- M GENERAL INDUSTRIAL
- M-R MINING-RECLAMATION
(Actual M-R boundary is as approved by NYS DEC mining permit)

*NOTE: All lands are zoned R-AG unless otherwise noted.

APPROXIMATE ZONING DISTRICT BOUNDARY

355.00 ZONING MAP No.



Map 5 - Zoning

REVISION	
DATE	DESCRIPTION
10/20/05	INCORPORATED 3/15/05 T. B. REZONING

THIS MAP SHOWS GENERAL LOCATIONS OF ZONING DISTRICTS ONLY
SEE INDIVIDUAL ZONING MAPS FOR OFFICIAL DISTRICT BOUNDARIES

TOWN OF CONCORD, ERIE COUNTY, NEW YORK

ZONING

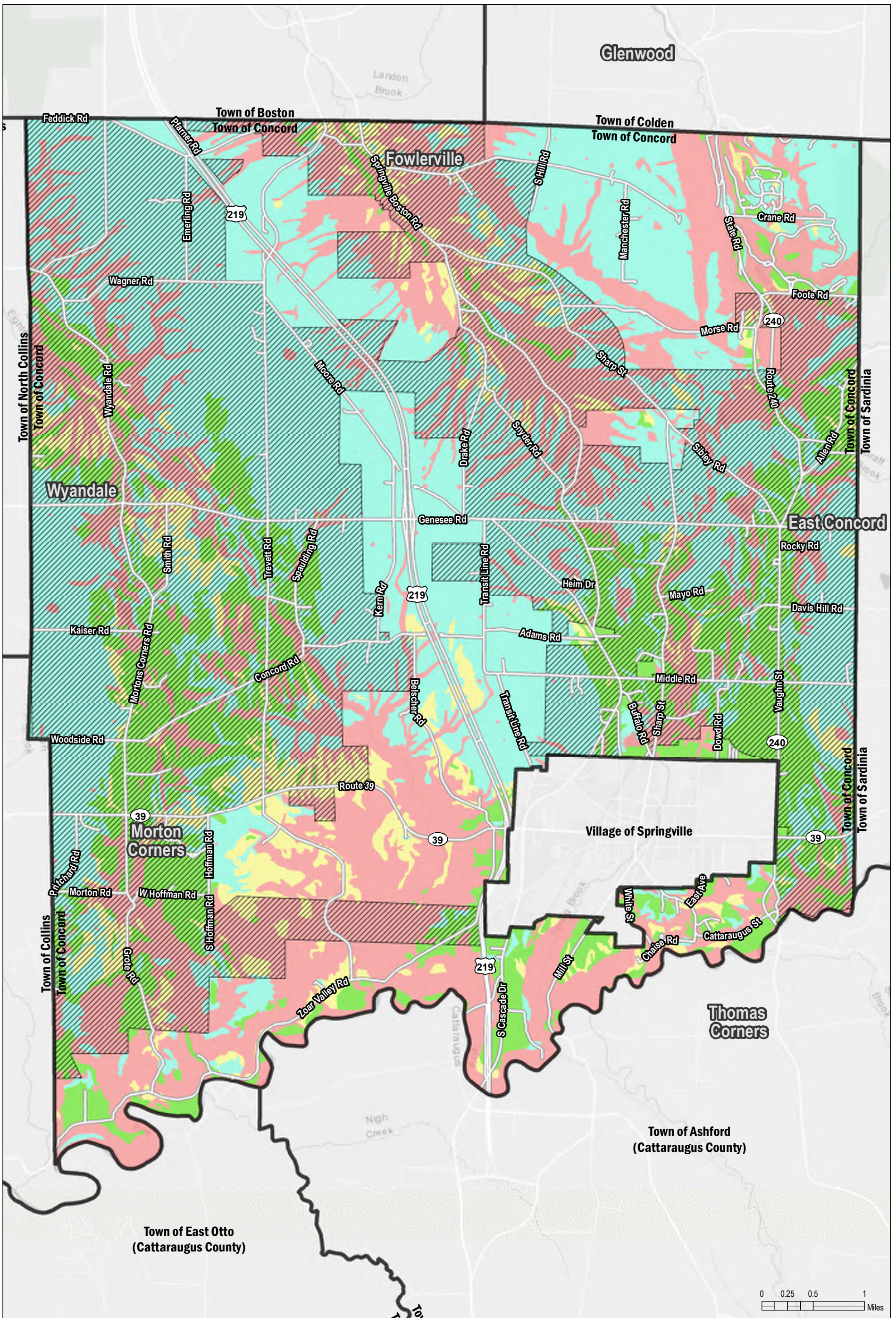
86 FRANKLIN STREET SPRINGVILLE, NEW YORK 14141

INDEX

ADOPTED March 9, 1998 SCALE N/A BY JD

NOTE: BASE MAP PREPARED FROM 1993 ERIE COUNTY TAX MAPS.
MAPS DO NOT NECESSARILY SHOW PROPERTY LINE OR S-B-L CHANGES AFTER 1993.

307-B Falls Street
Greenville, South Carolina 29601
(864) 271-9598 • Fax (864) 271-4135
sc@miloneandmacbroom.com

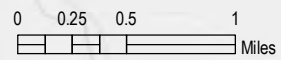
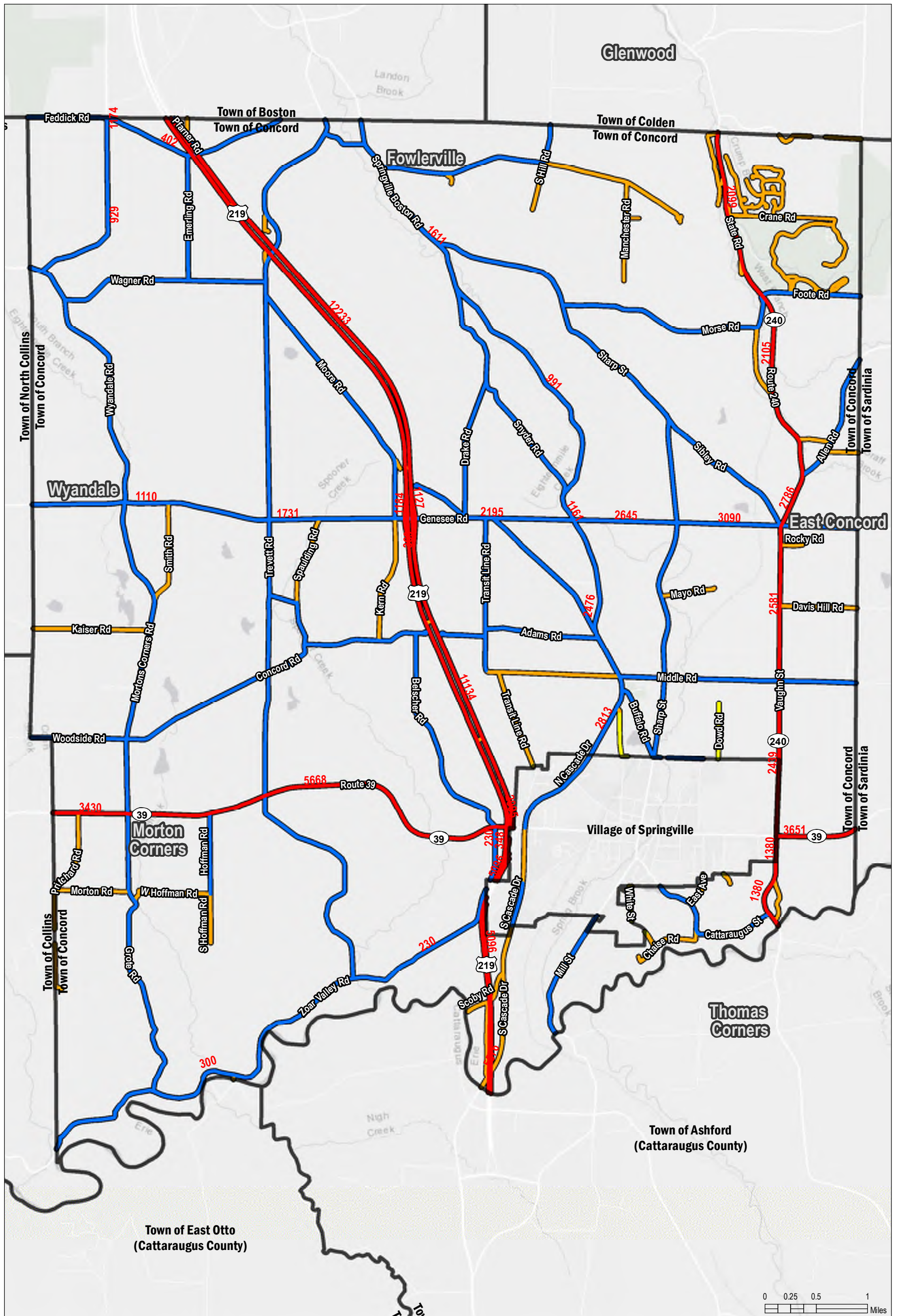


**Town of Concord
Comprehensive Plan**
ERIE COUNTY, NEW YORK
Map 6 - Agricultural Districts
and Farmland Soils

LEGEND

- | | |
|----------------------------------|-------------------------|
| Farmland Classification | Agriculture District 15 |
| All areas are prime farmland | |
| Farmland of statewide importance | |
| Not prime farmland | |
| Prime farmland if drained | |





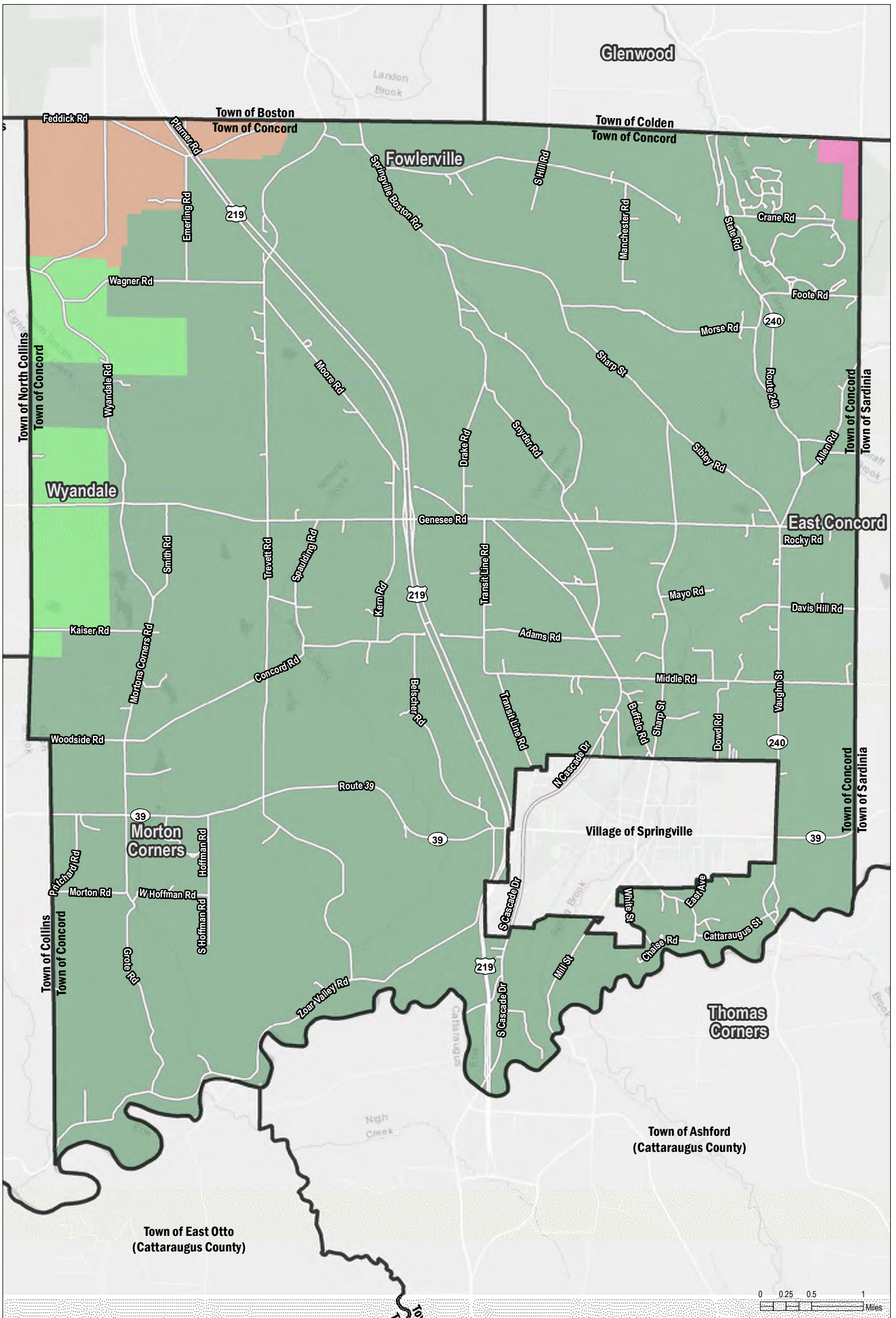
**Town of Concord
Comprehensive Plan**
ERIE COUNTY, NEW YORK
Map 7 - Transportation

LEGEND

- Road Jurisdiction**
- 01 - State Route
 - 02 - County Road
 - 03 - Town Road
 - 04 - Village Street


2015 Average Daily Traffic (Counts Labeled)






**Town of Concord
Comprehensive Plan**
ERIE COUNTY, NEW YORK
Map 8 - School Districts

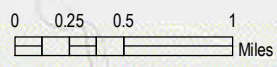
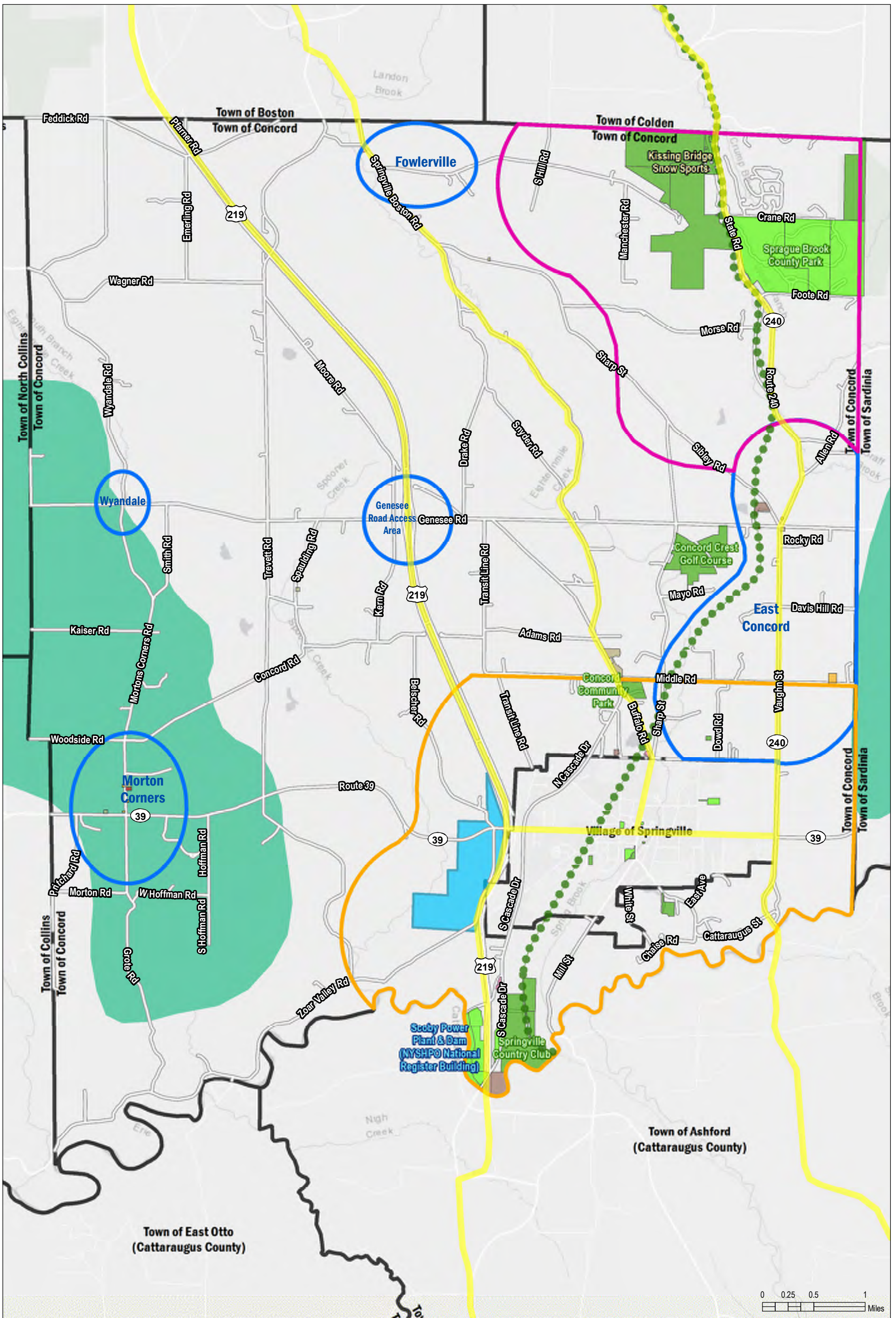
LEGEND	
School Districts	
	Eden CSD
	Holland CSD
	North Collins CSD
	Springville-Griffith Inst CSD





WD Project # 498301
Map Created: February, 2018

Wendel WD Architecture, Engineering, Surveying & Landscape Architecture, P.C. shall assume no liability for 1. Any errors, omissions, or inaccuracies in the information provided regardless of how caused or 2. Any decision or action taken or not taken by the reader in reliance upon any information or data furnished hereunder.
Data Sources: Esri, HERE, DeLorme, OpenStreetMap, NYS GIS Program Office, NYS Education Department



Town of Concord Comprehensive Plan

ERIE COUNTY, NEW YORK

Map 9 - Vision Map & Planning Areas

LEGEND

- | | | | |
|------------------------------|---------------------------------------|---------------------------|---------------------|
| Scenic Byways | Village Impact Area | Cemetery | Park |
| Proposed Rails To Trails | Hamlet (with Name) | Government | Police/Fire |
| Town Tourism/Recreation Area | Future Business Area | Indoor/Outdoor Recreation | Religious |
| | High Value Agriculture Soils (County) | Library | School |
| | | | Social Organization |



WD Project # 498301
Map Created: February, 2018

December 2016
Working Paper by
Carol Horowitz, AICP

Town of Concord Comprehensive Plan

Working Paper:

Inventory of Existing Conditions

II.1 Regional Setting

The Town of Concord is a rural community in southern Erie County, New York. Consisting of approximately 70 square miles, Concord is the largest town, by area, in Erie County. Concord contains the Village of Springville, which serves as the economic, civic, and cultural heart of the town. The historic hamlets of Mortons Corners, East Concord, Fowlerville, Glenwood and Wyandale are also located in the town. Outside of those areas of denser development, the town is primarily rural, with agriculture and residential development on large lots. Much of the landscape in Concord is dominated by steep wooded hillsides and stream valleys. The town contains a major regional park, ski resort, and many other recreational opportunities.

Due to its location on US Route 219, Concord is the southern gateway to Erie County. The town's location and the regional highway system provide easy access to other locations in the county and beyond. Concord is located approximately 30 miles south of the City of Buffalo and the Buffalo Niagara International Airport. It is approximately 20 miles south of Ralph Wilson Stadium in Orchard Park, home of the Buffalo Bills football team. The Peace Bridge linking Buffalo to Fort Erie, Canada is approximately 35 miles north of the Town.

II.2 History of the Town

The first non-Native American settler arrived in the area that is now Concord and Springville in 1807. The Town of Concord was established in 1812 and originally included the neighboring Towns of Sardinia, Collins, and North Collins. These abutting towns were established in 1822, when Concord took its present form. The Village of Springville was officially incorporated in 1834. Its name was derived from the many fresh water springs in the area.

Early in the nineteenth century Springville emerged as a regional center, with numerous small businesses. The economy of the surrounding town remained largely agricultural, including dairy farming, timbering and some crop production.

By late in the nineteenth and early twentieth centuries, railroad transportation was central to the regional economy. Two railroads served the Village: the Buffalo, Rochester and Pittsburgh, beginning service in 1878, and the Buffalo and Susquehanna, beginning service in 1906. During this time a number of businesses developed to process agricultural products and wood from the region, including gristmills, a cheese factory, a cannery, sawmills, a sash and blind factory, and furniture makers.

Among the town's early industries was Antidolar Manufacturing Company, which was founded by Dr. Ralph Waite, a pioneer in the use of novocaine to promote painless dentistry. This company

was one of the leading producers of anesthesia in the world when it was taken over by Sterling Products in 1928. Another famous resident is Glenn Scobey “Pop” Warner, who was born in Springville in 1871 and became the father of modern football.

Concord is the home of the first high school in Erie County, Springville Academy, which opened in 1830. Notably, the Dygert Farm on Elk Street was the location of the first Erie County Fair.

In recognition of its significant history, several sites in the Town and Village have been listed on the National Register of Historic Places. These sites are discussed later in this chapter.

II.3 Existing Land Use and Economic Activity

An understanding of the community’s existing land use patterns is an important component of the Comprehensive Plan. Since the use of land changes over time, knowledge of existing development patterns can be helpful in identifying trends and also may help to ensure that proposed future land uses are compatible with the current use of an area.

In order to assess the existing land use pattern in the Town, an Existing Land Use Study was conducted. Initially, a draft Land Use Map, showing all of the approximately 2700 parcels in the Town, was generated using GIS data from Erie County, which shows the land use on each parcel taken from Real Property assessment records. The property type classification codes were organized into broad land use categories, such as agriculture, public, vacant, or residential. Then a windshield survey of all parcels visible from public roads was conducted to field evaluate the land uses and to gain an understanding of the Town's overall development pattern, including the types and locations of various land uses. Although the windshield survey was conducted during the first two weeks in December 2015, weather conditions were ideal, with dry roads, no snow cover, and no foliage on deciduous trees. To complement the field survey, the 2014 Orthophotography Map, available on the Erie County website,¹ was consulted in order to assess the interior of some large parcels. The initial Land Use Map was updated based on information gathered during the windshield survey and the aerial photography records. The Land Use Map was further refined based on input from members of the Town of Concord Master Planning Committee.

Because the Existing Land Use Map is based on parcels, it assumes that only one land use is conducted on each parcel. However, there are many parcels that contain more than one land use, for example, parcels that have a single family home and also contain some type of agricultural activity. In those instances, the parcel is categorized according to the land use classification assigned by the assessor. This methodology may under-represent or over-represent some types of land uses in some instances; however, overall the existing land use survey provides a reasonable representation of Concord’s current development patterns, outside the Village of Springville.

Land uses in the Town of Concord are shown on Existing Land Use Map (Figure 1) and are summarized in the table below. Almost one-half (43%) of the land area in Concord is devoted to

¹ <http://gis2.erie.gov/HTML5/ErieCountyNY/PublicLaunchPage.aspx>

residential development. Agriculture and vacant land each comprise about one-quarter of the Town’s land area. The remaining twelve percent of land area is split among commercial, industrial and public land uses.

Table 1. Existing Land Uses, 2015

Type of Land Use	Calculated Acreage	Percentage	Rank
Agriculture	9,468	23.2	2
Residential	17,346	42.5	1
Commercial and Commercial Recreation	1,169	2.9	4
Industrial	111	0.3	10
Mineral Extraction	1,015	2.5	5
Utilities	385	0.9	9
Public	783	1.9	7
Public Forest	707	1.7	8
Private Forest	910	2.2	6
Vacant	8,921	21.9	3
Total	40,815	100.0	-

Source: MDA Consulting Engineers and Allegheny Planning Services

Residential Land Use

Approximately 43 percent of the land in Concord is residential. This category ranges from apartments to single family homes located on large and very large lots. Table 2 shows the variety of residential land use within the Town.

Table 2. Residential Land Uses, 2015

Residential Land Use	Acres	Percentage
Single Family	16,041	92.5
Two-Family	106	0.6
Multi-Family	1,187	6.8
Mobile Home Parks	12	0.07
Total	17,346	99.97 *

* Does not total 100% due to rounding

Source: MDA Consulting Engineers and Allegheny Planning Services

Single family homes comprise the vast majority of residential land usage. This is a broad category that encompasses a wide variety of housing types, ranging from homes on small lots in East Concord, Morton's Corners and other traditional hamlets to homes on very large lots.

The category of two family residences includes both traditional attached duplexes, such as those on Genesee Road west of Route 219, as well as lots containing two separate buildings. Similarly, multiple family residential includes both apartment buildings and lots with more than one residential structure.

Two mobile home parks are located in the Town, one on North Street and one at the corner of Vaughn Street and Middle Road.

Because there are very limited public water supply and public sanitary sewerage disposal services in the Town, most residential development occurs on larger lots that can accommodate private wells and septic systems. Due to these infrastructure constraints, there are very few traditional subdivisions on medium sized lots. Instead, the pattern has been to develop large lot subdivisions, on lots of five acres or more, with all lots taking access from existing public roads. The development of Townsend Road south of Genesee Road is an example of this type of subdivision pattern. The Crane Ridge subdivision, in the northeast section of the town, is an example of a subdivision on smaller lots; this subdivision is served by its own, dedicated water supply and sewage disposal systems, which support the smaller lot size.

Agriculture

Historically, the Town of Concord was a farming community, and the continued importance of agriculture in the local economy is indicated by the amount of land that is still in agricultural production. Almost one-quarter of the land in the Town is devoted to agriculture, which ranks second among land uses in Concord. Most likely the land use survey under-represents the amount of land devoted to agriculture, since the windshield survey indicated that there are many parcels that contain a single family home and also have some agricultural activity, such as the growing of hay or corn. One example of this is the Whitetail deer farm on Kern Road.

The agricultural land uses in Concord are diverse. They include dairy farms, commercial horse stable, field crops, poultry farm, maple syrup production and commercial tree farms. There are also greenhouses and several U-cut tree farms in the Town. Concord has recognized the importance of agriculture in the community by the passage of a local right to farm law.

The important role of agriculture in the local economy is reinforced by the amount of land that has been placed by local property owners in agricultural districts established by Erie County in accordance with Section 25AA of New York State Agriculture and Markets Law. These agricultural districts are distinct and separate from any agricultural zoning districts that may exist in a municipality. Participation in the Agricultural District program is completely voluntary, but there are benefits for farming operations that meet the criteria for inclusion. Article 25AA protects farms from local laws that unreasonably restrict farm operations. It also protects farms from private nuisance lawsuits when the farm is following sound, recognized agricultural practices. Other provisions make it more difficult for public agencies to acquire farmland through eminent

domain and limits access to public funds to construct facilities that encourage development. Perhaps most importantly, Article 25AA allows for a reduction in property tax assessment, because parcels are taxed as agricultural production, rather than for the development potential of the property. The agricultural assessment is available to all farming operations that meet the criteria in Article 25AA, not only those who are in an Agricultural District.

The town is located in the Concord Agricultural District (District #15), which also includes land in the Towns of Boston and Colden. With the exception of land in the Route 219 corridor, land around the Kissing Bridge Ski Resort, and land near Cattaraugus Creek, many of the parcels in the town are located in this agricultural district. The Agricultural Parcels and Cropland Coverage Map from the 2012 Erie County NY Agricultural & Farmland Protection Plan, which identifies agricultural parcels based on the presence of cropland, indicates that many of the parcels included in the Concord Agricultural District are being actively farmed.

The Clusters of Parcels with High Agricultural Values Map, also from the 2012 Erie County NY Agricultural & Farmland Protection Plan, identifies a cluster of parcels with high agricultural values in the central- and south-western part of Concord, bordering the Towns of Collins and North Collins. The County Plan also identifies (Agricultural Soils Rating Map) valuable agricultural soils based on a point system; this map indicates that the eastern and western ends of the town contain significant areas of agricultural soils with a rating between 40 to 400, where 400 is the highest.

The 2012 Erie County NY Agricultural & Farmland Protection Plan points to the importance of agriculture to the economy of Erie County and also identifies other benefits of active farmland to the community: “Farms also provide jobs, use less in services than they pay in property taxes, maintain wildlife habitat and water quality when well managed, create beautiful scenic vistas, highlight the cultural heritage of many rural areas in the county, and offer fresh, local food to county residents.” The County Plan identifies constraints to farming operations, such as the intermingling of new residential development with established agricultural areas. The Plan also highlights the changing nature of agriculture and the opportunities that this creates for farmers. One example is to develop new marketing strategies, such as direct sales through farmer’s markets, Community Supported Agriculture (CSAs) and direct sales to local restaurants. Another possibility is to take advantage of the growing demand for “agri-tourism,” where consumers tour the farms that provide certain products. The regional Maple Sugar Producers weekend, an annual springtime event, is an example of agri-tourism.

Commercial and Commercial Recreational Land Uses

Only 2.9 percent of Concord’s land area is devoted to commercial and commercial recreational uses (See Table 1), and much of that area is devoted to commercial recreation. Still, the commercial and commercial recreational category ranks fourth in land usage.

Traditionally, the Village of Springville served as the retail center for the town, and Springville has continued to be the pedestrian-oriented, retail center of the community. More recently, highway-dependent, commercial development has occurred near the intersection of Route 39 and

South Cascade Drive, in the vicinity of the Route 219 interchange. Most of this development is located in the Village, but there is some commercial activity in the Town on South Cascade Drive.

Because the Village is the commercial center of the community, there is no large center of commercial activity in the Town. However, there are pockets of commercial activity throughout the town. Many of these nodes of commercial activity are located in the town's historic hamlets, including East Concord and Mortons Corners. One of the largest of the commercial areas is in the hamlet of East Concord, which includes a post office, restaurant, inn, and other commercial activities. There is also a commercial area on Route 39 east of the Village, at the intersection of Vaughn Street.

Individual commercial parcels are scattered throughout the Town. These businesses include the auto repair facility on Fowler Road, Concord Amish village on the corner of Trevett Road and Route 39, and the auto body shop on Springville-Boston Road.

While not apparent from the data shown in Table 1, there is the significant amount of commercial activity in the town that occurs as home occupations and professional residence offices on parcels that are primarily used as single family residences. These home occupations include computer repairs, taxidermy, and contractors.

A sub-category of commercial land use is commercial recreational activities, which are privately-owned facilities that are open to the public, or to members, for recreation. Concord is home to several large commercial recreational facilities. These include Kissing Bridge Ski Resort, Concord Crest Golf Course on Sharp Street, and Springville Country Club on South Cascade Road. This category also includes the Hogarosa campground on Summit Lane and the commercial riding stable on Cattaraugus Street.

Industrial Land Use

There is not a significant amount of industrial land in Concord, and this category ranks tenth, and last, of the land use categories in the town. Similar to commercial land uses, industrial land is not concentrated in any one area. One example is a manufacturer of pre-cast concrete products located on Route 39 at Pritchard Road. Another industrial business is the milling company on Genesee Road in East Concord. Several other industrial parcels are scattered throughout the Town.

Mineral Extraction

The extraction of topsoil, sand, gravel and similar resources ranks fifth in land use categories, constituting approximately 2.5 percent of the land area in the Town. The majority of sites currently being mined tend to be located in the eastern part of Concord, near Route 240. Some of the parcels designated as Mineral Extraction on the land use map also contain other land uses, such as agriculture, on part of the property.

Utilities

This land use category includes several small, but important facilities. It includes parcels used to provide municipal water and sewer services, such as the Erie County Water Authority tank, near Route 219, at the intersection of Trevett and Old Trevett Roads. Other examples include the Crane Ridge Subdivision Wastewater Treatment Plant, located on Route 240, and the Kissing Bridge water district on Abbot Hill Road.

This category also includes privately-owned utilities, such as the Niagara Mohawk transmission line, which runs generally north-south through the Town. There is also a National Fuel Gas facility on Genesee Road, at the municipal border with the Town of North Collins. Also included are telecommunications facilities and towers that are owned by various companies. The Buffalo and Pittsburg railroad right of way is also included in this category.

Public land uses

Approximately two percent of the land area of the town is classified as public. This category includes parks and publicly-owned recreational sites, as well as publicly-owned land used for other purposes. This category also includes quasi-public land, such as cemeteries, churches, and fraternal organizations and other membership clubs.

The Town contains several large public parks. Sprague Brook Park is a 974-acre park owned by Erie County, which offers a wide variety of four season recreation, including camping, fishing, picnic sites, baseball diamonds, and tennis courts. An extensive trail system is available for hiking and mountain biking and for sledding, cross country skiing and snowshoeing in the winter. There are also designated snowmobile trails.

Other parks include Scoby Dam Park on Cattaraugus Creek, also owned by Erie County, which is a well-known steelhead trout fishing site. The Town of Concord Community Park is located on Buffalo Road.

The public land use category includes municipal facilities, such as the Erie County Department of Public Works highway garage, located on Sibley Road in East Concord, and Town of Concord highway garage on North Central Avenue. Also included are volunteer Fire Companies, such as Mortons Corners fire department and the East Concord fire department.

Fraternal organizations, such as the Veterans Boston Post in Fowlerville and the Moose lodge on Buffalo Road are included in this category. Private clubs, such as the Concord Horseshoe Club on Dowd Street and Springville Travellers Club on South Cascade Drive are also included.

Several cemeteries, some of which are quite old, are located throughout the Town. These include:

- the Griffith cemetery on Morse Road
- the East Concord cemetery, located on the corner of Genesee Road and Vaughn Street (Route 240)
- the Sibley Cemetery on Sharp Street
- Wheeler Hollow Cemetery on Spaulding Road (near Wheeler Road)

- Mortons Corners Cemetery on Mortons Corners Road
- Lutheran Cemetery on Route 39 (Collins Springville Road)
- Fairview Cemetery on Springville Boston road (at Middle Road)

Springbrook Springs is a water supply. Mayer Brothers collects and stores water from Spring Brook at three sites in Concord. The water is bottled off-site and sold by Mayer Brothers. The water supply sites include 9130 Middle Road, a parcel on Sharpe Street, and a parcel at the intersection of Route 39 and Morton's Corners Road.

Public and Private forests

A significant amount of public forest land is located in the northeast section of the Town. Erie County owns approximately 700 acres of reforestation land, in several non-contiguous parcels. There are also several large parcels of land, owned by various private owners, that are classified as private forest land. Two of these parcels are located in the northeast part of town and several are located in the southern part of the town. Private forestland includes the Springville Field and Stream parcel bounded by Chaise Road and White Street.

Vacant Land

Vacant land constitutes approximately one-quarter of all the land area in Concord, ranking third behind agriculture. Vacant parcels are located throughout the Town, and much of it is in blocks of relatively large parcels. Vacant land represents a substantial potential for future development.

II.4 Environmental Resources and Physical Features

Topography

The topography in the Town of Concord is varied, ranging in elevation above sea level from a high of about 1700 to 1750 feet at the peaks at Kissing Bridge Ski Resort and at Townsend Hill in northwest Concord, to a low of about 950 to 1000 feet in the Eighteen Mile Creek valley floor. Ridges and stream valleys generally run in a northwesterly-southeasterly direction. Hillsides are relatively steep, especially in the Eighteen Mile Creek and West Branch Cazenovia Creek valleys. Peak elevations are higher in the north, at about 1700 feet, than in the south, at about 1300 feet. The elevation in the Village of Springville, although variable, is about 1350 feet.

The Zoar Valley, through which flows Cattaraugus Creek, is located along the southern border of the Town. Zoar Valley is noteworthy for its spectacular gorges and pristine beauty. It is a popular spot for fishing, and during the spring for white-water rafting.

Streams

Four primary watercourses, and numerous tributaries, flow through the Town of Concord (See Figure 2, Physical Features Map). Although the entire town is located in the Lake Erie watershed, the town is split into two major sub-watersheds. Streams and watercourses in the northern part of

the Town generally flow northward. The southern part of the Town drains to the south, into Cattaraugus Creek, which then flows into Lake Erie. Major streams in Concord include Cattaraugus Creek, Eighteen Mile Creek, West Branch of the Cazenovia Creek, and Spring Brook.

Buffalo Niagara Riverkeeper recently completed a study, *Niagara River Habitat Conservation Strategy* (August 2014), which looked at sub-watersheds in the Niagara River watershed, which includes Eighteen Mile Creek, South Branch of Eighteen Mile Creek, and West Branch Cazenovia Creek. The goal of the Strategy is “to create a blueprint of the most effective opportunities for conserving biodiversity and ecological function in the Niagara River watershed.”²

The Lake Erie Watershed Protection Alliance (LEWPA)³ and Buffalo Niagara Riverkeeper recently received funding to prepare a Regional Niagara River/Lake Erie Watershed Management Plan – Phase 2. This study will continue the work begun in the *Niagara River Habitat Conservation Strategy*, (now referenced as the Niagara River Watershed Management Plan – Phase 1) and expand it to include the Lake Erie watershed, which includes Cattaraugus Creek and its tributaries. The Phase 2 Plan will also include additional studies of five prioritized sub-watersheds of the Niagara River watershed, which include Eighteenmile Creek and the Buffalo River. Work on the Phase 2 study is on-going and is expected to be completed in the winter/spring of 2017. Future recommendations of this study will apply to streams in both the north and south of the town.

Cattaraugus Creek, which is approximately 65 miles long, is the largest of the streams flowing through Concord. It forms the southern boundary of the Town and also of Erie County. Cattaraugus Creek flows westerly through Concord and then through Zoar Valley, ultimately flowing into Lake Erie.

Notably, Cattaraugus Creek has been ranked among the top ten fishing sites in New York State for steelhead trout. Steelhead, a type of migratory rainbow trout, make their annual spawning run from Lake Erie into Cattaraugus Creek and other tributary streams from October through April. Scoby Dam Park provides an excellent and well-known steelhead fishing location.

Scoby Dam is located on Cattaraugus Creek. The dam was built in the 1920s and up until 1998 it was used as an electrical power source for Springville. The dam is 182 feet long and 38 feet high. It is classified as a high hazard dam. The US Army Corps of Engineers and NYS Department of Environmental Conservation (NYSDEC) are currently conducting a feasibility study for a project that would lower the dam by 25 feet, to a height of 13 feet. The design phase of the project is expected to begin upon completion of the feasibility study, with construction expected to occur in 2018 or 2019. Benefits of the project include enhanced dam safety and improvements to the fishery in the creek. To benefit the fishery, the plan includes the installation of a ramp that will allow fish to continue up the Creek, thus opening up the 70 miles of Cattaraugus Creek upstream of the dam to migratory fish and linking the upper and lower parts of the Creek

² Buffalo Niagara Riverkeeper, *Niagara River Habitat Conservation Strategy*, August 2014.

³ The Lake Erie Watershed Protection Alliance (LEWPA) is an intermunicipal agency with representatives from Erie, Cattaraugus, and Chautauqua counties, which was formed to address water quality issues that affect the New York portion of the Lake Erie watershed and shoreline.

Spring Brook, a tributary to Cattaraugus Creek, flows southwesterly through southern Concord and the Village of Springville to the Village sewage treatment plant, then through a steep gorge that parallels the abandoned Baltimore and Ohio rail right-of-way, and into Cattaraugus Creek. NYS Department of Environmental Conservation divides Spring Brook into upper and lower segments at a 12 foot high “barrier,” which is located immediately upstream of South Buffalo Street in the Village of Springville.

According to a Fisheries Survey Summary of Spring Brook (2006-2007) prepared by NYS Department of Environmental Conservation: “The upper section of Spring Brook is unique in western NY. Wild brook trout are the only salmonid occupying the upper stream and it is our largest, high fertility stream where brook trout are found exclusively.” The NYSDEC report concluded that Spring Brook would benefit from conservation activities that would enhance the fishery potential of the stream: “Spring Brook has the potential to produce more and larger brook trout than most others where they are found in the region. This stream should be able to produce many more brook trout than our surveys have found. The reduced trout populations are likely a result of several factors including warm stream temperatures. In 2006, water temperatures as high as 74 degrees were recorded in the upper stream. High water temperatures are likely due to loss of shade where the stream runs through a golf course, a dairy farm and also due to several large beaver ponds on the upper stream. The second limiting factor is siltation, likely due to beaver activity, poor land use practices throughout the watershed and unstable, highly erodible clay banks on the lower stream. The wild brook trout population in Spring Brook is a unique resource in Erie County and Region 9 that needs further monitoring, rehabilitation and protection.”

Since the NYSDEC report, both DEC and Erie County Soils Conservation Service have worked with abutting landowners to enhance Spring Brook, which included planting trees along the stream. These agencies continue to work with landowners to enhance the stream; this work includes a plan for work to improve riparian buffers along the banks. When completed, the Regional Niagara River/Lake Erie Watershed Management Plan – Phase 2 may contain other recommendations for the enhancement of Spring Brook.

Eighteen Mile Creek, which is the second largest tributary of Lake Erie in New York State, has its headwaters in the Town of Concord. It flows northwesterly, more or less paralleling the Springville Boston Road. The **South Branch of Eighteen Mile Creek** also has its headwaters in Concord. The two branches flow in a northwesterly direction, converging in the Town of Hamburg. The creek enters Lake Erie approximately fifteen miles south of Buffalo, in the Town of Evans.

According to *Niagara River Habitat Conservation Strategy* (August 2014), prepared by Buffalo Niagara Riverkeeper, there are rainbow trout in the upper segments of Eighteen Mile Creek and brown trout in the upper reaches of South Branch of Eighteen Mile Creek, in the Town of Concord. In addition, steelhead migrate into the lower reaches of Eighteen Mile Creek during their spawning runs. Public fishing access is available on the lower reaches of Eighteen Mile Creek.

West Branch Cazenovia Creek, which flows northwesterly roughly paralleling Route 240, has its source in the Town of Concord. West Branch Cazenovia Creek is one of the headwaters of the

Buffalo River, which discharges into Lake Erie in the City of Buffalo. According to *Niagara River Habitat Conservation Strategy*, brook trout have been observed in the upper reaches of the West Branch in Concord.

The *Niagara River Habitat Conservation Strategy* addresses the importance of conserving biodiversity and ecological function in the Niagara River watershed, which includes the Eighteen Mile Creek and West Branch Cazenovia Creek. The *Strategy* points to the importance of preserving and restoring the region's headwaters, which in Concord includes the headwaters of West Branch Cazenovia Creek, Eighteen Mile Creek and South Branch Eighteen Mile Creek.

The NYS Department of Environmental Conservation (NYSDEC) administers the Protection of Waters Regulatory Program, which is designed to protect water resources, including rivers, streams, lakes and ponds, that are necessary for potable water; agricultural, commercial and industrial uses; and fish and wildlife habitats. Under this program NYSDEC has evaluated all water resources within New York State and has classified them in terms of their best usages, using an alphabetical classification system ranging from AA to D.

- Classification AA or A is assigned to waters used as a source of drinking water.
- Classification B indicates a best usage for swimming and other contact recreation, but not for drinking water.
- Classification C is for waters supporting fisheries and suitable for non-contact activities.

In addition to this classification system, NYSDEC further designates some streams as T or TS, which indicates the presence of trout and spawning trout, respectively.

Streams that are classified as C(T) or higher quality are considered protected streams. Permits from NYSDEC, issued pursuant to the Protection of Waters regulations, are required for activities that may affect the banks or bed of protected streams.

Many streams in Concord are protected streams. Under the NYSDEC classification system, streams are divided into stream segments, and segments are rated independently of one another, so streams may have more than one stream classification, depending upon the stream segment. The current NYSDEC classifications for the sections in Concord of the streams discussed above are:

Cattaraugus Creek	Class B
Spring Brook	Class B and C
Eighteen Mile Creek	Class A
South Branch Eighteen Mile Creek	Class C(T)
West Branch Cazenovia Creek	Class B

As noted in the *Niagara River Habitat Conservation Strategy*, trout have been observed in the upper stretches of both Eighteen Mile Creek and West Branch Cazenovia Creek, but the current NYSDEC classification does not reflect this observation.

Wetlands

Wetlands are areas of shallow surface water, or areas with waterlogged soils where certain types of plants grow but which do not necessarily contain standing water. Wetlands are valuable physical resources, which can provide flood control protection, surface and ground water protection, wildlife habitat and recreational opportunities.

Some wetlands are protected under the New York State Freshwater Wetlands Act of 1975, which is administered by New York State Department of Environmental Conservation (NYSDEC). Certain activities, such as filling and draining, that occur in a designated wetland or within 100 feet of its boundary are regulated by NYSDEC.

There are several areas in Concord that contain wetlands regulated by NYSDEC. These include:

- South of Genesee Road, in the southwest quadrant of the town, is a large grouping of wetlands, some of which are in the vicinity of Spooner Creek.
- Another, smaller grouping of wetlands is located along the southwestern boundary of the town, with Collins.
- There is a large conglomeration of wetlands in the eastern part of town, located roughly between Route 240 and the Springville-Boston Road. These wetlands extend from south of Morse Road into the Village of Springville.
- One isolated wetland is located south of the village, in the vicinity of Cattaraugus Street.

In addition, there may be other wetlands in the Town which are regulated by the US Army Corps of Engineers. USACE does not map its regulatory wetlands, but makes a determination on a case-by-case basis when developments that may affect regulatory wetlands are proposed.

Floodplains

The Federal Emergency Management Agency (FEMA), has mapped areas that are identified as having a significant risk of being flooded. These areas are known as Special Flood Hazard Areas (SFHA) and are also referred to as the 100-year floodplain. Statistically, land within the 100-year floodplain has a one percent chance of being inundated in any given year.

The SFHA is divided into a floodway and a floodway fringe. The floodway is the channel of the stream and any adjacent areas that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. The portion of the SFHA between the floodway and the boundary of the 100-year floodplain is known as the floodway fringe. FEMA regulations severely restrict development within the floodway. Development within the floodway fringe is regulated to minimize damage to persons and property.

The Physical Features Map shows the 100-year floodplain generalized from the FEMA maps. The town does not have any areas of expansive floodplain. Most of the identified 100-year flood plains are located in the southern part of the town. These include:

- A strip of floodplain is located along the entire length of Cattaraugus Creek through Concord.
- A very narrow floodplain along Spooner Creek, a tributary to Cattaraugus Creek, which flows south through the southwest quadrant of the town.
- Along Spring Brook, where the more extensive floodplain is located north of the village.

In the northern part of Concord, there are short, very narrow floodplains along West Branch Cazenovia Creek and Eighteen Mile Creek. There is also a short floodplain associated with Spencer Brook, along Allen Road.

Soils

Three major soil associations are predominant in the Town, according to the Soil Survey of Erie County New York, published by the US Department of Agriculture, Soil Conservation Service. These include:

- The Hudson-Varysburg-Valois association, found in the northeast and southwest portions of the Town. These are deep, moderately well to well-drained and moderately fine to fine-textured soils, typically found in areas that are gently sloping. These soils are underlain with glacial outwash and in steep areas these soils may have a tendency to slump or slip down slope.
- The Volusia-Mardin-Erie association, found in the central and northwest portions of the Town. These soils are deep, somewhat poorly drained to moderately well-drained, and are medium textured soils that have a fragipan, or impermeable subsoil layer. They are typically found in areas that are gently sloping to sloping. These soils were formed in glacial lake beds and contain sediment deposits.
- The Chenango-Castile-Varysburg association, found in the southeast portion of the Town around the Village of Springville. These are deep, somewhat excessively drained to moderately well-drained and are medium-textured soils, typically found in areas that are nearly level through moderately steep slopes. These soils were formed in areas of glacial outwash and contain large amounts of rounded gravel. The gravel in these soils may cause steep areas to have a tendency to slump or slip downslope.

All of these soil types are suitable for residential and other types of development, in areas where slopes are not greater than 15 percent. Some of the Town's soils, including Chenango, Castile and Valois, are extremely well-suited to agriculture, as they are deep and drain very well in the spring. The Varysburg, Volusia and Erie soils are moderately suited to agriculture, and some of the Hudson and Mardin soils are poorly suited to agriculture.

According to the Erie County Agricultural and Farmland Protection Plan October 24, 2012, the area in the southwest portion of the town, abutting Collins and North Collins, contains a cluster of parcels with “high agricultural soils values.”

Some of the areas within the Chenango-Castile-Varysburg association are suitable to be developed as a gravel resource using surface mining techniques (See Figure 3, Gravelly Soils). A number of such mines have been permitted and developed in the Town of Concord. The parcels currently in use for gravel mining are shown on the existing land use map and constitute approximately 1000 acres of land. As can be seen these are concentrated in the southeast corner of the Town mostly north of the Village of Springville in the East Concord area. These gravel mines are regulated by NYSDEC and must adhere to an approved mined land reclamation plan, which envision reuse of the property when the mining is completed. Several of the mines remove gravel from below the water table and will leave a small lake as the reclamation plan. These areas may one day, when mining is completed, develop as a recreational area. Other mines will return to agricultural use when the mining is completed.

Gravel is a valuable resource necessary for many public works construction projects. Mining must take place where the resource is present. However, the activities of gravel mining may not be compatible with the character of certain areas as they have developed within the Town. Some areas with large suitable gravel deposits have already developed into residential areas with sufficient density that gravel mining would be incompatible. Also, mining may be incompatible with agriculture, at least during the life of the mining operation. As noted above, some of the soils that are suitable for agriculture are also those that contain the gravel resource.

New York State law gives the authority to control gravel mining activities to NYSDEC and pre-empts local control to a great degree. The Town can, however, determine areas in the Town where this activity is not compatible with the character of the existing neighborhood and, through zoning, prohibit the activity in those zones. Under the current Town Zoning law gravel mining is only permitted in areas included within a Mined Land Reclamation Zone.

II.5 Transportation

Regional Highways

Concord is well served by the regional highway system. US Route 219 runs north-south through Concord. US Route 219 is part of the US highway system; it runs from Interstate 90 in West Seneca, New York for 535 miles to US Route 460 in Virginia. US Route 219 is a limited access roadway in Erie County and the northern part of Cattaraugus County. There are plans to extend the expressway portion to Interstate 86 in Salamanca, New York; however, no timetable for future construction has been established.

The town is served by two interchanges from US Route 219. One interchange is located at Genesee Street, an east-west county road (CR 409) that traverses the approximate middle of the Town. The other is located at NYS Route 39.

NYS Route 39 is a major east-west state highway located in the southern part of Concord. Route 39, which also runs through the Village of Springville, is an approximately 100 mile long roadway in western New York, which connects Fredonia in Chautauqua County to Avon in Livingston County.

NYS Route 240 runs north-south through the eastern part of Concord, connecting the town to Cattaraugus County and to northern Erie County. Route 240 provides access to the Kissing Bridge Ski Resort and to Sprague Brook County Park.

County and Local Road Systems

Erie County maintains many of the major local roadways in Concord. These include: Springville-Boston Road, Sharpe Road, Sibley Road, Wyandale Road, Concord Road, Trevett Road, Mortons Corners Road, Townsend Road, and Zoar Valley Road. The Town is responsible for the maintenance of the other roadways in the town, which tend to be minor local serving roadways.

Southtowns Scenic Byway

The Western New York Southtowns Scenic Byway (WNYSSB) runs through Concord. The Scenic Byways Program was created by the New York legislature in 1992 and is administered by NYS Department of Transportation (NYSDOT). The New York State legislature grants the Scenic Byway designation to transportation corridors that are of particular statewide interest for their scenic, recreational, cultural, natural, historic and/ or archaeological significance.

The Western New York Southtowns Scenic Byway was approved in 2008 for municipalities in southern Erie County, which include the towns of Orchard Park, Aurora, Boston, Colden and Concord and the villages of Orchard Park, Springville and East Aurora. In 2015 the Byway was extended to include the northern Cattaraugus County municipalities of the Towns of Ashford and Ellicottville and the Village of Ellicottville. The 2015 extension increased the Byway to a total length of 108 miles.

The main routes of the Byway are US Route 219 and NYS 240, with other connections made in various towns in order to loop the Byway. In Concord the main route of the Byway traverses US Route 219 and County Route 240. Springville-Boston Road and that part of Route 39 between US Route 219 and Route 240, which traverses the Village of Springville, are also included in the Scenic Byway designation.

The Scenic Byway route is indicated by signage throughout the Town. The Byway has also installed interpretive signs at some major sites of interest along the route. Several interpretive signs are located in Concord, at the Sprague Brook Park entrance, at Concord Community Park, at the Concord Town Hall and at Village Park.

Benefits of the Scenic Byway designation include being listing on NYSDOT's Scenic Byways webpage, which provides recognition for areas included in the program. The route is also

promoted on a dedicated Southtowns Scenic Byway website.⁴ There is also the opportunity for coordinated marketing efforts for activities and businesses that are located on or near the byway.

Airports

Concord is located 30 miles south of the Buffalo Niagara International Airport, which has approximately 100 non-stop flights per day serving 24 airport destinations, including Mexico and the Caribbean. Airlines that provide service at the airport include Jet Blue, Southwest, American, Delta and United. Cargo service is also available.

Concord also has a private airstrip, Ciszak Airport. It is located near the southeast intersection of Route 39 and Trevett Road. It has one turf runway, which is 1600 feet long by 50 feet wide. There is no regularly scheduled air service.

Recreational Trails

Railroads and the proposed “Rails to Trails” project

There is currently no passenger or freight rail service in Concord. The Buffalo and Pittsburgh railroad right-of-way runs north-south through the eastern part of the town, but the rails have been removed.

A nonprofit group, Erie Cattaraugus Rail Trail, Inc., is advocating for the construction of a 27 mile long, multi-use trail, which would run from Orchard Park in Erie County to West Valley in Cattaraugus County, through the Town of Concord. The Village of Springville has constructed a 1.7 mile long segment of trail on the rail right-of-way in part of the Village. That trail is opening in the fall of 2016. The trailhead is located on West Main Street, across from the historic rail depot.

Snowmobile Trails

New York State has a Snowmobile Program, which is administered by the Office of Parks, Recreation and Historic Preservation (OPRHP). The Statewide Snowmobile Trail System includes over 10,500 miles of trails, including trails in the Town of Concord.

Although some trails in the statewide system are located on lands under the jurisdiction of OPRHP and other state agencies, many trails are located on private property through agreements with individual property owners. Statewide, approximately 85% of the snowmobile trails are on private property.⁵ The state encourages private landowners to allow snowmobiling by providing insurance coverage through the state snowmobile program.

Trails are maintained by volunteer snowmobile associations. Trail maintenance is supported by the NYS Snowmobile Trail Development and Maintenance Fund, which is funded by snowmobile registration fees.

⁴ <http://wnyssb.org/>

⁵ New York Statewide Trails Plan, 2010, NYS Office of Parks, Recreation and Historic Preservation.

II.6 Utilities

Municipal Water Supply Systems

Very few sections of the Town have a municipal water supply system. The Village of Springville has a public water system that serves the Village. The Village's long-standing policy is that areas in the town that wish to be served by Village water must be annexed into the Village. Nevertheless, a very small section of the Town, consisting of less than 10 homes on Cattaraugus Street, is served by the Village water system. These homes began to be serviced by the Village before the policy developed and just recently, in approximately 2010, the Town formed a water district and entered into a formal agreement with the Village to continue this service with new water lines and services.

Concord Water District Number 1 was formed in 1993 to serve portions of the Kissing Bridge ski area known as the Bridge Top Subdivision. This water district has two wells that serve a small cluster of homes at the top of the ski hill off Abbott Hill Road. The main lodge at Kissing Bridge has its own private well and the homes that are a part of the Kissing Bridge subdivision at the base of the ski hill are served by their own private wells.

The Erie County Water Authority has recently extended its service into an area in the Trevett Road section of Town. This area is served from a waterline that comes south from the Town of Boston, feeding a water tank located near Route 219, at the intersection of Trevett and Old Trevett Roads.

Although not a municipally owned and operated system, the Crane Ridge subdivision, located in the northeast section of the Town, near Kissing Bridge, has a privately owned community water system that serves the subdivision of approximately 250 homes. The private water company, the Craneridge Water Company, is regulated by the Public Service Commission as a public utility. Water for the system is provided from wells owned by the water company.

Other than the districts listed above, water supply to lots in the town is from private wells on individual lots.

Municipal Sewer Systems

The Village of Springville has a municipal sewage treatment plant that is located off Mill Street. The plant provides advanced secondary treatment before sewage is discharged into Spring Brook. Similarly to the municipal water supply, the Village's long-standing policy is that areas in the town that wish to be served by the Springville sanitary sewer system must be annexed into the Village.

There are currently two sanitary sewer districts in the town, both of which are located in the northeast section of the town. Sewer District Number 1 serves the Crane Ridge Subdivision. There is no additional capacity in the system. Sewer lines in the district are 6 inch and 8 inch. Sewage collected from the homes in the district is treated at a secondary treatment plant and is then discharged into the West Branch of the Cazenovia Creek.

Sewer District Number 2 serves the Kissing Bridge ski area, the Bridgetop Subdivision and the Kissing Bridge Subdivision. Sewage collected from the homes in the district and the Kissing

Bridge facilities is treated at a secondary treatment plant and is then discharged into the West Branch of the Cazenovia Creek. Again, the plant cannot serve additional areas without improvements or expansion of the facility.

Parcels in the town that are not located within either of these sanitary sewer districts use individual septic systems.

Broadband

High speed access to the Internet, broadband is defined by the The US Federal Communications Commission (FCC). as: "... advanced communications systems capable of providing high-speed transmission of services such as data, voice, and video over the Internet and other networks..."⁶

The National Broadband Plan, released by the FCC on March 17, 2010, sets out a roadmap for initiatives to stimulate economic growth, spur job creation and boost America's capabilities in education, health care, homeland security and more. The plan includes sections focusing on economic opportunity, education, health care, energy and the environment, government performance, civic engagement and public safety.⁷

The National Broadband Plan recognizes that Broadband access is an essential component of economic development. High speed internet access allows businesses to share information almost instantaneously. Many businesses are dependent upon the Internet for some, if not all, of their operations. Moreover, the internet allows people to work from home, or to start up businesses in their home, and be competitive with larger businesses. Even when high speed access is not an essential component of the business, broadband access is desirable. As wireless broadband services become more widely available, people's expectations for internet availability increases. For example, many hotels, motels and coffee shops offer free internet access to their guests, and not offering this service could put such businesses at a competitive disadvantage.

Perhaps as importantly, the internet plays an increasing role in people's daily lives. Internet access is becoming increasingly important for social, educational, recreational and cultural experiences. Therefore, access to broadband internet services is a quality of life issue, as well as an economic development issue.

Although the demand for broadband access is increasing exponentially, rural areas such as the Concord have lagged behind urban areas in the availability of broadband access. This lack of access has been termed "the digital divide." Rural areas lag behind urban and suburban areas in availability of broadband access in part because it is economically more efficient to install infrastructure in more dense locations. However, rural communities run the risk of becoming even more economically isolated than they are at present if such services are not provided. Conversely, high speed internet offers the ability to work anywhere, remotely, and still be "connected" to the office. Therefore, access to broadband holds the promise to rural areas of increased economic development.

⁶ <http://www.fcc.gov/broadband>

⁷ <https://www.fcc.gov/general/national-broadband-plan>

Broadband access can be provided by several different technologies. These include DSL (Digital Subscriber Line), which is provided over telephone lines; coaxial cable; and fiber optic cable (FIOS). Satellite broadband service is another option; however, the signal delay makes this option less useful than other broadband technologies, and it also tends to be more costly to the individual. Broadband can be provided by either wired or wireless systems. The speed at which broadband is provided varies widely depending upon the type of service and the level of service that a consumer selects. The need for faster speeds has increased dramatically as more and more services are provided through the internet. Typical of rural areas, Concord has very limited access to broadband, except through wireless cell phone service, which is costly.

Municipal Electric Service

The Village of Springville provides municipal electric service to approximately 2500 customers. The franchise service area for the municipal utility includes all of the Village of Springville, and small areas of the Town of Concord adjacent to the village. Areas in the town in the service area include the entire southern section of the town south and east of the village, from US Route 219 to the Concord/Sardinia boundary. A small area west of the village in the vicinity of Zoar Valley Road and Route 39 is also included, as is a small area north of the village located in the triangle formed by Springville-Boston Road and Buffalo Road.

The Village receives a wholesale power allocation from the New York State Power Authority (NYSPA) and also obtains power through supplemental contracts through the New York State Municipal Power Agency (NYSMPA). The cost to customers within the municipal service area is lower than rates for customers in Western New York who are outside a municipal electric system. Lower cost power provides an economic development tool for those parcels that are within the service area.

II.7 Community Facilities

The Town of Concord is fortunate to have a wide range of important community facilities, which include a regional hospital, public library and Center for the Arts. These institutions play an important role in the civic and economic life of the community. The breadth of these facilities is especially impressive given that they are located in a small, rural community.

Health Care Facilities

Bertrand Chaffee Hospital is located on Route 39 (East Main Street) in Springville. The hospital is a non-profit, community hospital that serves a primarily rural population in southern Erie, northern Cattaraugus, and western Wyoming counties. The facility's service area encompasses about 525 square miles in the three-county area, with a population of approximately 55,000.

Established in 1946, the hospital today is a regional health care facility that includes a 24-bed short-term, acute care unit. The facility includes an emergency room, and physical therapy, laboratory and imaging services. The hospital also operates a Primary Care Center and a Heart Center.

Bertrand Chaffee Hospital serves as a hub for Mercy Flight, a regional medical transportation service that transports patients by helicopter. Mercy Flight has a hanger, which is staffed on a 24-hour basis, on the hospital grounds.

The hospital also operates the ***Jennie B. Richmond Nursing Home***, an 80-bed facility that offers 24-hour skilled nursing care. The facility provides both short-term rehabilitation services and long-term care.

Fiddlers Green Manor Nursing and Rehabilitation Center is an 82-bed, for-profit, health care facility located in Springville. The facility provides 24-hour skilled nursing care; physical, occupational and speech therapy; and hospice care.

Bertrand Chaffee Hospital and the two nursing homes are important community assets that serve a vital role in providing emergency, acute, and primary health care services in the community and in the wider region. As one of the area's largest employers, the hospital also is a significant component in the local economy.

Schools and Educational Facilities

The Town of Concord is served by the public ***Springville Griffith Institute Central School District***, which also serves the Village of Springville and the Towns of Colden and Collins, and parts of the Towns of Sardinia, Aurora, Boston, Ashford and East Otto. The School District's service area encompasses approximately 150 square miles. The District has about 1800 students.

The Springville Griffith District has four school buildings. Elementary schools (grades K-5) are located in Colden and Springville. A middle school (grades 6-8) and high school (grades 9-12) are located in Springville. The District is also a member of the Erie 2-Chautauqua-Cattaraugus BOCES.

In addition to the public school system, ***St. Aloysius Regional School***, a Catholic school, is located in Springville. St. Aloysius serves grades K-8 and also offers a Montessori pre-school program.

The Children's League, located in Springville, is a non-profit organization that provides special education and therapeutic services to children with developmental disabilities, including autism. The Children's League (TCL) serves families with children between birth to eight years of age. The organization was founded in 1961, as the League for the Handicapped, by parents of children with developmental disabilities. The Children's League's service area encompasses an area within a 50-mile radius of Springville, which includes portions of Erie, Wyoming, Allegany, Cattaraugus and Chautauqua counties. Currently, TCL serves 115 children in a center-based program (formerly known as Preschool Learning Center) and serves an additional 50 children in their homes or other community-based settings.

Services for Seniors

The *Town of Concord Senior Center* houses several organizations that address the needs of seniors. The *Springville/Concord Seniors* is an organization that is open to persons 55 of age or older who live in a Springville, East Concord or Glenwood Post Office zip code area. The Springville/Concord Seniors has a monthly meeting that features a guest speaker or entertainment. The organization also hosts a range of activities including trips and special events.

The *Springville Concord Elder Network (SCENE)* is an organization whose mission is to help residents age in place within their home community. Its programs are available to people aged 50 or older. SCENE provides a wide variety of activities, including a book club, garden club, euchre club, caregiver support group, and respite care for the memory impaired. SCENE is supported by Healthy Community Alliance, Inc.; Health Foundation for Western & Central New York; Town of Concord; and Erie County Department of Senior Services.

Services for Youth

The Boys and Girls Club of Springville, which is affiliated with the national Boys and Girls Club organization, offers a variety of summer and after school programs for children who are entering kindergarten through ninth grade. Their services include a licensed Child Care program for children from kindergarten through fifth grade, which runs both before and after school hours during the academic year at both Springville Elementary and Colden Elementary schools in the Springville Griffith Institute School District.

Springville Youth Inc. (S.Y.I.) is a non-profit organization that provides recreational services for the residents of Concord and Springville. Funding for the organization's programs is provided by the Town of Concord, the Village of Springville and program participant fees. S.Y.I. offers recreational programs throughout the year, which include, but are not limited to, indoor soccer, indoor basketball, ski and snowboard clubs, swimming lessons, and arts and theater programs. Springville Youth Inc. owns property in Springville that contains a community swimming pool, basketball courts, volleyball court, and playground equipment, among other facilities. S.Y.I.'s sports programs are open to children from 5 to 21 years of age. The organization also sponsors programs for adults, such as family swim nights.

Hulbert Library

The Town of Concord's Hulbert Library is located in the Village center, off Fiddlers Green Park. The building was constructed in 1994; it is wheelchair accessible and has a parking lot. In addition to books, the library has public computers and also offers free WI-FI throughout the building. The library has a meeting room available for public use.

Springville Center for the Arts

Springville Center for the Arts is a non-profit, community based organization. It is located in the historic Baptist Church in Springville. The Center provides performance space for theater and

concerts, and also has an art gallery with rotating exhibits. The Center offers art and craft workshops for adults and children.

II.8 Historic Resources

Several buildings and sites in Concord and Springville have been listed on both the New York State and the National Registers of Historic Places. The Registers recognize buildings, structures, districts and sites that are significant in the history, architecture, engineering, and culture of New York and the United States. In order to be listed, an application is made to the NY State Office of Historic Preservation (SHPO). When SHPO lists a building or district on the State register, it makes a recommendation to the National Park Service that the building, site or district also be listed on the National Register. Listing on the State Register is a prerequisite to listing on the National Register.

Private owners of buildings on the Registers may be eligible for federal income tax credit for the costs of substantial rehabilitation. There are no restrictions on private owners of registered properties, who may alter or sell the property as they wish. Municipal and not-for-profit owners of listed properties may apply for matching state historic preservation grants.

In the Town and Village there are currently five individual buildings and sites listed on the State and National Registers, in addition to two listed historic districts.

Scooby Power Plant and Dam was listed on the National Register of Historic Places in 1996, as being representative of a small hydroelectric generating facility from the early 20th century. The complex was constructed in 1925. The power plant was closed in 1998, and the site is now an Erie County Park that is a well-known fishing site. This site is the only Register-listed property that is outside of the Village of Springville.

The ***US Post Office***, located at 75 Franklin Street across from the Concord Town Hall, was listed on the National Register of Historic Places in 1989. It was designed by Louis A. Simon and was built in 1937. The building is in the Colonial Revival style of architecture and has a cupola. The lobby contains a 1938 mural, entitled “Fiddler’s Green,” painted by Victoria H. Huntley. The building is still used as a Post Office.

Citizens National Bank, located at 5 West Main Street, was listed on the National Register of Historic Places in 1996. The bank was built in 1939 in the Moderne style. The interior features a mural, painted by Louis Grell, entitled “Credit Man’s Confidence in Man.” The building served as a bank until 1968 and currently serves as the Village Municipal Building.

The Baptist Church of Springville, located at 37 North Buffalo Street, was listed on the National Register of Historic Places in 2008. It is a red brick, Gothic Revival style building, with a bell tower, that was constructed in 1869. The building currently houses the Springville Center for the Arts, a non-profit, multi-arts center.

Buffalo, Rochester and Pittsburgh Railroad Station, located at 227 West Main Street, was listed on the National Register of Historic Places in 1991. Built in 1910, it is a brick building with a hipped roof.

In addition to the five individual sites listed in the Town and Village, Springville has two recognized historic districts. The *East Main-Mechanic Streets Historic District*, located in the Village center, was placed on the National Register of Historic Places in 2002. It is a 5.5-acre district that encompasses 25 contributing structures; buildings in the district are primarily commercial.

The *East Hill Historic District* in the Village has recently been placed on the New York Register of Historic Places. This district, which encompasses 59 properties, extends along both sides of East Main Street from Franklin Street east to 397 East Main Street. NY State Office of Historic Preservation has nominated the district to the National Park Service for placement on the National Register.

II.9 Conclusions: Development Opportunities and Constraints

Concord has many assets that make it well-positioned for future growth. Its location on US Route 219 makes it the southern gateway to Erie County. The town has excellent access to the regional and national highway networks and is located in reasonable proximity to an international airport. The town has an abundance of recreational resources and is situated in a lovely scenic landscape. There is an adequate inventory of vacant land to support future development.

The town does have constraints which impede more intensive commercial and industrial development. These constraints include the lack of municipal water supply and sanitary sewage disposal systems. The lack of high speed internet access (broadband) is also an impediment.

Development patterns

Concord is primarily rural in character. Agriculture and residential development constitute the primary land uses, with development for the most part occurring on large lots. The town also contains several historic hamlet areas, which are characterized by more dense development on smaller lots. These areas also tend to have a variety of mixed public, residential and commercial activities. The largest hamlet is East Concord, but there are also well defined hamlets in Mortons Corners and Fowlerville.

One striking feature of the Town's development pattern is the intermingling of land uses. Although agriculture is an important land use, there are few areas where this is the predominant land use activity, except for the area around Allen Road in the northeastern part of the Town. In other locations agriculture and residential development are mixed. The intermingling of agriculture with residential development may over time result in development pressures to convert farmland to other land uses. Commercial land uses also tend to be mixed with residential and agricultural land. In some places this occurs in the traditional hamlets, but it also occurs elsewhere in the community, especially where the commercial uses are home occupations.

Another interesting feature of the land usage pattern in the Town of Concord is that many parcels contain more than one land use. For example, there are many parcels that contain both a single family home and some agricultural activity, such as the growing of hay or field crops.

Commercial Development

The Village of Springville has traditionally served as the retail and cultural center of the town, and that development pattern has continued, and is expected to be continued, in the future. Consequently, the town's commercial development tends to occur in small pockets in existing hamlets and at crossroads.

More recently, the area around the intersection of Route 39 and South Cascade Drive, in the vicinity of the Route 219 interchange, has been the location of automobile-dependent commercial development. Most of this development has occurred in the Village, but there is a small area of commercial development on South Cascade that is located in the town.

The area around the newly-constructed Zoar Valley Road provides a potential area for new commercial development. This area is adjacent to the Route 39/South Cascade commercial area, in close proximity to the Route 219 interchange, so expansion into this area would be a continuation of the existing development pattern within the village. It would appear to be an ideal location for hotels, restaurants, and similar types of highway commercial development. However, in order to promote development in this area, municipal water supply and sanitary sewer services are needed. In addition, the area needs to be rezoned to a district that would accommodate commercial land uses.

The town contains a significant number of home occupations, which are defined as commercial activities that occur on a property where the primary use is residential, by the residents of that property. A fairly substantial number of residential properties appear to contain home occupations, based on the windshield survey. Therefore, home occupations represent a current and potential future growth area for employment for residents. Home occupations also provide an opportunity for small scale, local start-up businesses, which if successful, would then move out of the residential areas into a location that is more appropriate for a larger-scale commercial enterprise.

Tourism and commercial recreation

Commercial recreational facilities are an important component of the commercial activity in Concord. The Kissing Bridge Ski Resort and Sprague Brook Park together form a recreational activity center in the northeast section of Concord. Cattaraugus Creek and the scenic Zoar Valley form the southern boundary of the town. The town has an abundance of streams with native trout, which are prized by sports fishermen. The Western New York Southtowns Scenic Byway (WNYSSB) loops through the town and its beautiful landscape. These resources provide four seasons of outdoor recreational opportunities for both residents and tourists. Therefore, promotion of tourism should be one component of the town's economic development strategy.

Recreational Trails

Recreational trails can also be a component of the town's economic development strategy. The town should support the Erie Cattaraugus Rail Trail project.

Recreational trails provide many benefits. Trails can be used for a variety of activities, such as bicycling, hiking, skating, walking, jogging, running, snowshoeing, cross-country skiing, horseback riding and snowmobiling. Some trails are dedicated to a single use and others allow multiple uses. As stated in the New York Statewide Trails Plan,⁸ trails encourage an active lifestyle for all ages, improving physical and mental health. Trails provide an opportunity for people to connect with nature, and to watch birds and other wildlife. For some, trails may serve as a transportation corridor, providing an alternative to travel by vehicles.

Trails also provide economic benefits to the community. A 1992 study by the National Park Service found that "trail use generated from \$1.2 to \$1.9 million annually in economic activity and pumped from \$294,000 to \$630,000 into the economies of trail communities. Per user direct expenditures ranged from a low of \$3.97 to \$11.02 for consumable items and \$130 to \$250 for durable goods associated with trail use in the prior year. Consumable items included food, lodging, transportation and any visits to local attractions while durable goods were primarily recreation specific clothing accessories and equipment (e.g. bicycles)."⁹

As stated in *An Analysis of the 2015 Trail User Survey & Count*¹⁰: "The benefits of multi-use trails have been well documented both in terms of human health and economic impacts to the communities that host these trails. A 2014 study prepared by Clough Harbor Associates (CHA) for the New York State Canal Corporation estimated that the Erie Canalway Trail provides over 6 billion dollars of total economic impact. A study released the same year by Dr. Scipione at the State University of New York at Geneseo for Parks and Trails New York (PTNY) found that 253 million dollars in sales is generated from roughly 1.6 million visits to the Erie Canalway Trail each year. Average spending per person per visit ranged from \$26.37 for day trips to \$531.47 for overnight visits."

During the summer of 2015 NYS Office of Parks, Recreation and Historic Preservation conducted a survey of trail users of 15 multi-use trails. The trails were selected, in part, to represent a geographic diversity throughout the state. Trails surveyed in Western New York included Chautauqua Rails to Trails, Genesee Valley Greenway, and Lancaster Heritage Trail. The survey found that "health and exercise" was the primary reason for trail usage (60% of respondents), followed by recreation (30% of respondents). Biking was the most popular reported activity (70%), followed by walking/hiking (60%), and 28% of respondents reported having run/jogged on the trail over the past 12 months, which indicates that trail users participate in more than one

⁸ New York Statewide Trails Plan, 2010, NYS Office of Parks, Recreation and Historic Preservation.

⁹ Every Mile Counts: An Analysis of the 2008 Trail User Surveys, NYS Office of Parks, Recreation and Historic Preservation (September 2010).

¹⁰ An Analysis of the 2015 Trail User Survey & Count, NYS Office of Parks, Recreation and Historic Preservation (February 2016).

activity throughout the year. The predominate usage of the trail varies with each trail surveyed and may be related to the varying surfaces of the trails (asphalt, grass, stone dust, etc.).

The 2015 OPRHP study also looked at how far trail users had traveled to get to the trail. Non-local users were defined as “residing in a zip code 30 miles or more from the trail.” The survey found that 14% of trail users were non-local.

The 2015 OPRHP study also estimated the economic impact of trail users for each trail; however, the study did not provide a statewide average for expenditures. The earlier 2008 OPRHP study indicated that user spending averaged \$28.90 per user, statewide, with a median expenditure of \$3.10 per user. Both studies concluded that trails with a high proportion of local users have a limited positive economic impact on the local community, but the community still receives other benefits, such as health benefits for more active residents.

Studies specific to snowmobilers indicate that this winter activity has a significant positive economic impact. “The total economic impact of snowmobiling in NYS was estimated to be \$476.2 million for the 1996-1997 season. A 2003 study estimated that the snowmobiling industry contributes approximately \$850 million statewide, including \$217 million in direct expenditures.”¹¹

Studies have also looked at the relationship between proximity to trails and property values. “A Massachusetts study of communities through which the Minuteman Bikeway and Nashua River Rail Trail pass found that homes along the trail sold for a higher percentage of their asking price and sold faster than homes away from the trail within the same towns (Della Penna 2006). This result complements the findings of a survey of 2000 new home buyers undertaken by the National Association of Realtors and the National Association of Homebuilders. When asked what local amenity could influence them in their purchase of a home, the proximity of greenway trails was identified by 36% of the respondents, exceeded only by highway access (National Association of Realtors 2002).”¹²

Other concerns relating to the establishment of new trails include private property owner’s concerns about vandalism, litter, privacy, and safety. The NY Statewide Trails Plan discusses various ways that property owners’ concerns can be addressed, including early and continued involvement of landowners and abutters in the trail planning process, which can then incorporate strategies to address their legitimate concerns.

Maintenance is another issue that should be addressed early in the planning process. There are several management models. Trails can be maintained by not-for-profit trail organizations, by volunteer “friends of the trail” organizations, or by other organizations, including municipalities. A well-thought out, long-term maintenance plan and designation of responsibility for maintenance is an essential component of the development of a new trail.

¹¹ New York Statewide Trails Plan, 2010, NYS Office of Parks, Recreation and Historic Preservation.

¹² New York Statewide Trails Plan, 2010, NYS Office of Parks, Recreation and Historic Preservation.

Agriculture

Agriculture historically has been an important component of Concord's economy, and it retains this important role. Erie County has recently completed an Agricultural and Farmland Protection Plan,¹³ which highlights the importance of agriculture in the county, threats to traditional agricultural activities, and new opportunities that may result from local food movements. The Plan points out that agriculture is a significant contributor to Erie County's rural economy, providing \$117 million in agricultural sales in 2007.

As stated above, the town's development pattern, with its intermingling of land uses, may put pressure on agricultural land to convert to another use. In addition, prime agricultural farmland may also be located over substantial gravel deposits. The town should develop policies to address this conundrum. Developing a local farmland protection plan would be one way of addressing these issues.

Commercial Solar Farms

The town has an abundance of vacant land and access to 3-phase electrical systems, which could be attractive to commercial solar facilities. The town should explore the solar potential of the town for feasibility of this type of commercial use. If suitable, the town could seek to attract solar facilities, and try to tap into the "new green energy" economy.

Utilities

There are very limited public water supply and public sanitary sewerage disposal services in the Town. This limits the potential for intensive commercial and industrial development in the town. Due to the lack of public utilities, future residential development will continue to be located on larger lots that can accommodate private wells and septic systems.

Broadband internet service is also a critical utility. Most areas of the town are underserved by available, affordable high speed internet access. Improving internet access should be a component of the town's economic development strategy.

A small portion of the town is served by Springville's municipal electric system. This includes the area around the Zoar Valley Road and Route 39 interchange. The possibility of lower-cost electrical power in this location should be an advantage in trying to attract development to that area.

Community Facilities

Concord is fortunate to have a robust variety of community facilities, especially given its rural location. These facilities include the regional Bertrand Chafee Hospital, Hulbert Library, and the Springville Center for the Arts.

¹³ Erie County Agricultural and Farmland Protection Plan, prepared by Erie County Department of Environment and Planning in conjunction with the Erie County Agricultural and Farmland Protection Board, October 24, 2012.

Planning and Zoning Considerations

It appears that there has been a tendency in the town to rezone specific parcels as needed to support commercial and industrial businesses. This is bad planning practice and also potentially could be construed to be spot zoning, which has been prohibited by court decisions.

In order to identify appropriate areas for commercial development, as part of the comprehensive planning process the town should review both the text of the zoning districts and the zoning map. Attachment 1, Analysis of zoning districts, provides a starting point by comparing the various residential and commercial zoning districts with each other. Following a review, the zoning ordinance could be revised, if deemed necessary or desirable, to allow some types of commercial activities, compatible with residential and/or agricultural land uses, within certain zoning districts without the need for rezoning an individual parcel. These commercial activities could be regulated by requiring a special use permit instead of allowing them by right, and/or by requiring site plan review. That will provide some degree of oversight and provide the ability to set conditions on the land use to ensure that it does not unduly affect pre-existing abutting land uses.

Attachments

Attachment 1: Analysis of zoning districts (Rev.3: 2016.10.27)

Attachment 2: Bibliography and Sources

Attachment 3: List of Figures and Tables

Town of Concord Analysis of Zoning Districts

December 28, 2015

Introduction

There are currently 13 zoning districts in the Town of Concord, which is a large number for a municipality of this size. These include four commercial districts, a manufacturing district, a mining district, and seven residential districts.

A review of the zoning map, which dates from 1998, indicates that many of the mapped districts, especially some commercial districts, are small in size and may encompass only one or two tax map parcels. In addition, the land use survey indicates that some of the areas that are currently zoned commercially have been converted to residential or some other non-commercial use.

These changed circumstances offer the opportunity to review the current zoning districts to determine if they are appropriate for the current land use patterns in the Town and to ensure that the current zoning districts are appropriate to meet the Town's needs in the future, especially in order to accommodate future development in the vicinity of the Zoar Valley connector road.

The analysis below reviews the permitted uses in each zoning district, in order to determine if some of the current zoning districts can be combined, modified or eliminated, in order to better serve the current needs of the Town.

Residential Zoning Districts

There are currently seven residential zoning districts listed on the Zoning Map. These are:

- R-E Single-family residence - Estate
- R-1 Single family residence
- R-2 General Residence
- R-M General Residence- Mobile Home court
- R-AG: Residential Agricultural
- R-RB Residence- restricted business
- R-12 Single family - cluster housing

Appendix A contains a table comparing the principal allowable land uses in each residential district. Although the R-E, Single-family residence - Estate Zoning District is listed on the Zoning Map and described in the Zoning Ordinance, no areas of the town are located in this zoning district.

R-AG: Residential Agricultural Zoning District

Most of town is located in this Zoning District, which is a mixed use district that allows a range of residential land uses, including single family homes, two family homes, and multiple family

homes. A wide variety of agricultural uses are also permitted in this district. Quasi-public uses such as schools and charitable organizations are also permitted. A variety of commercial recreation facilities, such as campgrounds and seasonal cottages are permitted with a special use permit from the Town Board. Utility scale and small scale Wind Energy Conversion Systems (WECS) are permitted with a special use permit. As an accessory use, professional residence offices are permitted with a special use permit. Roadside farm stands and home occupations are permitted as accessory uses.

R-1 Single family residence Zoning District

The R-1 Zoning District is the most restrictive district, allowing only single family homes and several quasi-public uses, such as fire stations, churches, and schools. The R-1 Zoning District is the most commonly mapped residential district after R-AG. Areas that are zoned R-1 include the Crane Ridge Subdivision, residential areas to the west of Kissing Bridge Ski Resort, Trevett Road near Fowlerville Road, Genesee Road west of Boston Springville Road, Kern Road north of Concord Road, and an area on North Street, centered on Dowd Road.

R-2 General Residence Zoning District

The R-2 District is relatively restrictive in allowable land uses, which includes single family homes. However, two family homes, multiple family homes, and group homes are also allowed. Dwelling Groups, which appear to allow more than one single family home to be constructed on a lot, are allowed. Several types of quasi-public land uses are also allowed. Only one area, Helm Road, a private road between Snyder and Townsend roads, is zoned R-2. However, the land use survey indicates that there are many areas in town that contain two-family and dwelling groups that are not located in the R-2 zoning district.

R-M General Residence- Mobile Home court Zoning District

The list of allowable land uses in the R-M District is identical to the R-1 District, except that mobile home courts are also allowed. The only two areas in Concord that are zoned R-M are the two mobile home courts, one on North Street and one on Middle Road at Vaughn Street.

R-RB Residence- restricted business Zoning District

The R-RB District is designed to be a mixed use district that allows a range of residential, quasi-public and office land uses. It could be a useful zoning district for the traditional hamlet areas in the Town, since it can accommodate the range of land uses that are typically found in the hamlets. However, only one parcel, in East Concord on west side of Vaughn Street, south of Genesee Road, is now zoned R-RB.

R-12 Single family - cluster housing Zoning District

This zoning district is quite restrictive. Only Single family homes, churches and schools are permitted. The district requires both public water and sewer services and a minimum lot size of 12 acres. Clustering of lots is permitted in this district, with subdivision approval granted by the Town Board. Only one area in Town, a townhouse development in Kissing Bridge Ski Resort is currently zoned R-12.

Commercial Zoning Districts

There are currently four commercial zoning districts mapped on the Zoning Map. These are:

- C-1 Local Retail Business
- C-2 General Commercial
- C-T Commercial Tourist
- C-R Commercial Recreation

Appendix B contains a table that compares the principal permitted land uses in each commercial district. The C-1 and C-2 Districts allow a range of land uses, while the C-T and C-R Districts are special purpose commercial districts that allow limited land uses.

C-1 Local Retail Business and C-2 General Commercial Zoning Districts

Appendix B demonstrates that there are not many differences in land uses allowed in the C-1 and C-2 Districts. Both districts allow a range of residential land uses (single family, two family, and multiple family); quasi-public land uses, such as philanthropic organizations and schools; nursing homes; some office uses; banks; theaters; restaurants; automotive sales and services; and gasoline stations.

The major difference between these two districts is that retail sales ("retail sales, but not including any use first permitted in any other C District or first permitted in any M District") are allowed only in the C-1 District, and the C-2 District allows a range of light industrial (custom shops, dairy, commercial dry cleaning plant) and commercial recreation (golf driving range, drive-in theater) that are not permitted in the C-1 District.

The C-1 District allows some office uses that are not allowed in the C-2 District. However, the distinctions between these types of offices appears to be arbitrary. For example, "optician, optometrist, ophthalmologist" is allowed in both districts, but "medical/dental buildings, clinics and laboratories" are only allowed in the C-1 District. "Real estate or insurance office" is allowed in both districts, but "administrative & professional offices" are only allowed in the C-1 Districts. All these office uses would appear to be similar.

There are several small areas of both C-1 and C-2 Districts distributed throughout the Town. Looking at the zoning map, more commercial land is located in the C-2 District. The largest concentrations of the C-2 District are located in East Concord on Route 240 in two locations, one along Allen Street north of Genesee Road and the other on the west side of Vaughn Street, north and south of Davis Hill Road. There is a strip of C-2 on South Cascade, south of the village. There is a small C-2 District on Route 39 west of the Village, which contains a small pocket of commercial development. A small area on Route 39 at Morton's Corners Road is zoned C-2. Several small areas zoned C-2 are scattered throughout the Town, including a single parcel on Cattaraugus Street and a small district on the Springville-Boston Road.

Areas zoned C-1 are located throughout the Town, although not as widely distributed as the C-2 District. A C-1 District is located in East Concord, on Genesee Street. A small C-1 District is located on North Street. Other areas zoned C-1 include small districts on Helm Road and in Fowlerville.

C-T Commercial-tourist Zoning District

The C-T District allows a very limited list of land uses. The only permitted use is gasoline stations. Single family and two family homes, restaurants, and hotels and motels are permitted with site plan approval from the Town Board. Only one small area is currently zoned C-T. This is a parcel on Springville-Boston Road that is currently residential in use.

C-R Commercial-recreation Zoning District

The C-R District also has a very limited list of allowable land uses. Golf course, golf driving range, mini-golf facilities, downhill ski centers, commercial stables and campgrounds are allowed with site plan approval from the Town Board. No residential uses are permitted in the district, although it appears that there are some residential units at Kissing Bridge that are included in the C-R district. There are two areas that are zoned C-R, the Springville Country Club golf course on South Cascade Drive and the Kissing Bridge Ski Resort.

Industrial Zoning Districts

M General industrial Zoning district

The allowable land uses in this District are restricted to industrial manufacturing, research and development, and adult uses. Only two areas of Concord are located in this district. One is a lot on Route 39 at Pritchard Road, which contains a manufacturer of pre-cast concrete products. The other is in East Concord on Genesee Road.

M-R Mining Reclamation Zoning District

There are several active mines in the Town that are located in this Zoning District. However, it appears, based on the 1998 Zoning Map, that there are areas where mining is occurring, but are not zoned M-R. For example, a parcel on the south side of Middle Street, near the intersection with Vaughn Street, is currently mined, but is not in the M-R district. Other examples of this situation are the 286-acre La Farge property off South Vaughn Street and the nearby 59-acre Gernatt property off Benz Drive; both of these parcels are actively mined, but are not in the M-R District. Similarly, parcels in the vicinity of Sharp Street north of Middle Road appear from the land use map to have more mining activity than the area described on the zoning map as M-R.

Conclusions

When developing zoning districts and drawing zoning district boundary lines, there are several overarching principles that the Town may want to consider during its review of the current zoning districts. Each Zoning District should have a brief statement of purpose, which will provide a focus for the uses that are permitted in that District. The permitted uses in each Zoning District should be carefully considered to implement the purpose of the zoning district, whether that is to designate areas that are restricted for single family home development or to designate mixed use areas where a range of compatible land uses are allowed.

District boundary lines should reflect both existing land uses and the range of land uses that the Town would like to promote in the future. Wherever possible, zoning district boundary lines should follow tax map parcel boundaries. To the maximum extent feasible, the Town should avoid zoning districts that encompass only one or two parcels, since this could be construed to be spot zoning.

Dimensional regulations are another consideration; in some circumstances it may be appropriate to develop zoning districts that have similar permitted land uses, but different minimum lot size, minimum lot width, and setbacks, depending upon existing conditions. Minimum lot size is also dependent upon whether or not municipal water supply and sanitary sewer services are available, which would allow smaller lot sizes.

Below are several conclusions from the preceding analysis of the Town's current Zoning Districts, which the Town may want to consider during its review.

Residential Districts

Because there is no land currently zoned R-E Single-family residence - Estate Zoning District, it appears that this zoning district would be a good candidate for elimination. In addition, only one small area is currently zoned R-RB. Further review may indicate that this Zoning District can be applied to other areas, but if not, the Town could consider deleting this district. The list of uses that area allowed in the R-2 District make it a useful tool, one which appears to have been underutilized.

Commercial Districts

Because the C-1 and C-2 Districts are both effectively mixed use districts, the list of permitted uses within these districts should be re-examined. These districts potentially could be combined into one commercial District. The list of permitted uses in the C-R district could potentially be expanded to include some types of residential development; alternatively, commercial recreation could be allowed in a different commercial zoning district. The C-T district currently is the only zoning district in which hotels and motels are allowed. However, these uses could easily be allowed in a different commercial district, and the C-T District could be eliminated.

Industrial District

The current M District is a very traditional heavy manufacturing district. However, many of the land uses in the Town fit more readily into a light industrial category. The list of permitted uses in this district could be potentially expanded to include some of the uses now permitted only in the C-2 District, such as custom shops.

M-R Mining Reclamation Zoning District

The Town's current policy toward mining activities is to rezone specific properties to allow mineral extraction on a case-by-case basis as applications are made. Instead of this ad hoc process, the Town should consider developing a policy that would determine where mining may be appropriate in the Town and then zone that area to allow mining, without the need for rezoning every time an application is received. Local control over this land use activity could be maintained through the Special Use Permit process.

Appendix A
Comparison of Permitted Uses in Residential Zoning Districts

Principal Permitted uses	R-E	R-1	R-2	R-M	R-AG	R-RB	R-12
single family	P	P	P	P	p	p	P
Church or place of religious education, parish house, convent, rectory, or parsonage	P	P	P	P	p	p	p
Fire Station without club facilities	P	P	P	P	p	p	
golf Course	P	P	P	P	p	p	
manufactured housing (not mobile home) ***		P	P	P		p	
public school, library, museum		P	P	P	p	p	
private elementary, secondary school		P	P	P	p	p	P
Two family dwelling			P		p	p	
multiple family			P		p		
dwelling group, providing for future subdivision			P			p	
Hospital or religious, charitable or philanthropic organizations			P		P	p	
Group home			p			p	
nursing home			P			p	
nursery school			P			p	
Mobile home courts				P			
Agriculture, etc.					P		
Nursery and farming					P		
Veterinarian, dog kennels					P		
private wildlife					P		
cemeteries					P		
non-profit club					P		
radio or TV transmission facilities					sp		
gun club, etc					sp		
private airport					sp		
seasonal cottages, as rentals					sp		
picnic grounds for fee					sp		
fur-bearing animals					sp		
campgrounds					sp		
commercial extraction of topsoil, etc.					sp		
Bed & Breakfast establishment						p	
tourist home up to 8 people						p	
funeral parlor						p	

Principal Permitted uses	R-E	R-1	R-2	R-M	R-AG	R-RB	R-12
telephone exchange						p	
real estate or insurance office						p	
optician, optometrist, ophthalmologist						p	
art, dance music or photography studios						p	
antique stores						p	
meeting rooms for private club, lodger or fraternal organization						p	
medical/dental buildings, clinics and laboratories						p	
trade school						p	
administrative & professional offices						p	
utility scale WECS					sp		
small scale WECS					sp		

Key to Table:

P = permitted

SP = permitted with special use permit

site plan = permitted with site plan approval

no letter = not permitted

Note to Table:

1. The land uses listed in the "Principal Permitted Uses" column are, in some cases, a summary of the use as listed in the zoning ordinance, for brevity.

Appendix B
Comparison of Permitted Uses in Commercial Zoning Districts

Principal Permitted uses	C-1	C-2	C-T	C-R
single family	P	P	site plan	
Church or place of religious education, parish house, convent, rectory, or parsonage	P	P		
Fire Station without club facilities	P	P		
Golf Course	P	P		site plan
manufactured housing (not mobile home)	P	P		
public school, library, museum	P	P		
private elementary & secondary school	P	P		
Two family dwelling	P	P	site plan	
multiple family	P	P		
dwelling group, providing for future subdivision	P	P		
Hospital or religious, charitable or philanthropic organizations	P	P		
Group home	P	P		
nursing home	P	P		
nursery school	P	P		
Mobile home courts				
Bed & Breakfast Establishment	P	P		
tourist home up to 8 people	P	P		
funeral parlor	P	P		
telephone exchange	P	P		
real estate or insurance office	P	P		
optician, optometrist, ophthalmologist	P	P		
art, dance music or photography studios	P	P		
antique stores	P	P		
meeting rooms for private club, lodge or fraternal organization	P			
medical/dental buildings, clinics and laboratories	P			
trade school	P			
administrative & professional offices	P			
Retail sales	p			
personal service establishment	P	p		
bank or financial institution	P	P		
hand laundry, laundromat, dry cleaning or laundry pickup stations	P	P		
theater, bowling alley, skating rink, dance hall, billiard hall, restaurant, tavern	P	P		
Auditorium, assembly hall	P	P		
passenger depot or terminal	P	P		
automotive sales and service	P	P		

Principal Permitted uses	C-1	C-2	C-T	C-R
gasoline station	P	P	P	
Retail sales est. for garden products and /or produce, with restriction on bulk products		P		
eating & drinking est.		P		
custom shops		p		
dairy, bottling of non-alcoholic beverages		P		
wholesale sales and distribution		P		
Dry cleaning plant or laundry		P		
drive-in theater		P		
golf driving range or mini-golf		P		site plan
commercial car wash		P		
boat or marine sales & service		P		
warehouse		P		
Restaurant			site plan	
Hotel/motel			site plan	
downhill ski center				site plan
commercial stables				site plan
campground				site plan

Key to Table:

P = permitted

SP = permitted with special use permit

site plan = permitted with site plan approval

no letter = not permitted

Notes to Table:

1. The land uses listed in the "Principal Permitted Uses" column are, in some cases, a summary of the use as listed in the zoning ordinance, for brevity.
2. "Restaurants and taverns" are included in the category "theater, bowling alley, skating rink, dance hall, billiard hall, restaurant, tavern," which is allowed in both the C-1 and C-2 Districts. "Eating & drinking establishments" are listed separately as an allowable use in the C-2 District. "Restaurants" are listed separately in the C-T District as a use that is allowable with a site plan approved by the Town Board. The distinction among these terms is not clear.

**Appendix C
Gravel Mining Sites**

tax map number	address/ intersection	owner	zoning classification	assessed use	land use map
290.00-2-4.111	0 Snyder Rd. Between Snyder and Springville-boston Rd.	Gernatt	MR	rural vacant	vacant
292.00-2-4.111	Glenwood Rd. @ Rte 240	M. Hannon	MR	rural vacant	vacant
308.00-1-5.2	Sibley Rd.	triple R Properties	MR (in part)	abandoned agriculture	mineral extraction
323.00-1-24.111	12316 Vaughn St @ Davis Hill Rd.	G. Waterman	MR	Nursery	mineral extraction
323.00-1-19	12506 Vaughn St.	D. Wendel	MR (in part)	rural residential	residential
323.00-1-37.12	0 Vaughn St @ north side of Middle St.	G. Dewald	MR (in part)	rural vacant	mineral extraction
323.00-2-22.11	9283 Middle St. South side of Middle @ Vaughn	G. Dewald	R-AG	rural residential	mineral extraction
323.00-1-2.1	9080 Middle Rd (parcel has no frontage on Middle)	R. Gentner	MR (in part)	field crops	mineral extraction
323.00-1-5	Middle Rd (abuts NiMo power line)	Gernatt	MR (in part)	vacant farmland	agriculture
322.00-2-40	12608 Sharp St.	D. Gentner	MR (in part)	vacant farmland	vacant
322.00-2-34	9078 Middle rd.	S. Gurbacki	MR (in part)	rural vacant	vacant
322.00-2-23.1	12370 Sharp St.	R. King	MR (in part)	vacant farmland	mineral extraction
322.00-2-23.2	0 Sharp St.	D. McEwan	MR	rural vacant	mineral extraction
322.00-2-49.1	0 Boston Springville Rd	R. King	MR	rural vacant	mineral extraction
322.00-2-42.113	Sharp St.	D. McEwan	MR	rural vacant	mineral extraction
322.00-2-41	12610 Sharp St.	Cold Spring Const.	MR	mine	mineral extraction

tax map number	address/ intersection	owner	zoning classification	assessed use	land use map
322.00-2-15.12	Middle Rd. (landlocked)	Cold Spring Const.	R-AG	mine	mineral extraction
321.00-1-4	12467 Spaulding	J. McCarthy	MR	rural residential	residential
334.00-2-32.1	Belscher Rd @ route 219	Gernatt	MR	vacant	vacant
348.00-3-2.12	S. Vaughn St	La Farge Corp.	R-AG	mine	mineral extraction
348.00-2-23.21	off Cattaraugus St.	Gernatt	R-AG	mine	mineral extraction

Public Meeting Materials

Public Information Meeting #1

Sign-In Sheet

55 people signed in.

How Did They Hear?

Word of Mouth – IIII IIII III – 11

Social Media – IIII I – 5

Civic – IIII III – 7

Newspaper – IIII I – 5

E-Mail – IIII IIII IIII IIII IIII – 20

Left Blank – IIII III – 7

Comment Sheet Comments

- Make sure “improvements” does not take away from local business (i.e. adult rec for free impacts local fitness centers);
- Need high speed internet, improvements to parks/trails (previous plan) not visible, public broadband service (education & economic issue);
- Support for rail trail completion, protecting green spaces, cultural tourism, support for the arts, senior services, recreation and tourism, limiting sprawl, concentrating development, smart growth, support for village downtown;
- Arts & cultural tourism, energy & alternative energy policy, sprawl – keep development in Village;
- Arts & cultural, support & develop BP railroad to rails to trails, walkability from outside Village center to adjacent areas;
- Complete Ere Catt rail trail, accessible walkways/Town parks, modern bathrooms (accessible) - ____ park, coordinated senior services; and
- Main concerns are to keep the Arts flourishing locally and increase high speed internet access.

Notepad Comments

Carol Horowitz Notes f/Notepad:

- Bill Gugins
- Ken Kassel
- Bruce Luns
- Ken Zittel
- Clyde Drake
- Jim Kregmien
- Bill Synder
- MDA Consulting Engineers, Erie County, Wendel
- Money Mile
- Master Plan Comprehensive Plan – began several years ago
- Revision of 1998-1999 – overdue – 5-10-years
- 9 Towns now involved with Erie County funding

Priorities

The Environment	# of Votes
Sensitive Environmental Features	12
Farmland and Agriculture	1
Open Space	2
Control Gravel Mining	0
West Valley Cleanup	2
Recycling/Waste Disposal	4
Economic Development	
Exurban Growth/Regional Gateway	0
Strengthen Downtown Springville	10
Cascade Drive – Auto Oriented	0
Development on 219	2
Retain Industries and Businesses	4
Tourism	0
Promote Assets to Attract New Business	3
Partner w/Adjacent Communities	1
Expand High Speed Internet	15
Home Based Startups	1
Residential Development	
Protect Good Housing	1
Locate New Housing @ Existing Utilities	2
High Density Residential in Village/Hamlets	1
Multi-Family in Village for Seniors	1
Cluster Housing to Protect Environmental Features	1
Affordable Housing	0
Urban Design and Historic Preservation	
Historic Sites and Structures	0
Walkways and Bicycle Paths	7
Parks and Recreation	
Maintain and Improve Existing Parks, Recreational	2
Scoby Hill Dam Improvements	1
Greenway	5
Additional Trails	10
Community Services	
Major Civic & Cultural Institutions in Springville	13
Sharing Facilities and Services b/t Town and Village	5
Transportation	
Re-Routing Truck Traffic Away f/Main Street and Village	2
Purchase and Reuse of the B&P Rail Line	1
Bus Service in Springville	4
Park and Ride	1
Infrastructure	
Extend Village Utilities to Town	1
Extend Utilities	1
Obtain Water from ECWA	0
Natural Gas	0

Priorities by # of Votes

The Environment	# of Votes
1. Expand High Speed Internet (Economic Development)	15
2. Major Civic & Cultural Institutions in Springville (Community Services)	13
3. Sensitive Environmental Features (The Environment)	12
4. Strengthen Downtown Springville (Economic Development)	10
5. Additional Trails (Parks and Recreation)	10
6. Walkways and Bicycle Paths (Urban Design and Historic Preservation)	7
7. Greenway (Parks and Recreation)	5
8. Sharing Facilities and Services b/t Town and Village (Community Services)	5
9. Recycling/Waste Disposal (The Environment)	4
10. Retain Industries and Businesses (Economic Development)	4
11. Bus Service in Springville (Transportation)	4
12. Promote Assets to Attract New Business (Economic Development)	3
13. Open Space (The Environment)	2
14. West Valley Cleanup (The Environment)	2
15. Development on 219 (Economic Development)	2
16. Locate New Housing @ Existing Utilities (Residential Development)	2
17. Maintain and Improve Existing Parks, Recreational (Parks and Recreation)	2
18. Re-Routing Truck Traffic Away f/Main Street and Village (Transportation)	2
19. Farmland and Agriculture (The Environment)	1
20. Partner w/Adjacent Communities (Economic Development)	1
21. Home Based Startups (Economic Development)	1
22. Protect Good Housing (Residential Development)	1
23. High Density Residential in Village/Hamlets (Residential Development)	1
24. Multi-Family in Village for Seniors (Residential Development)	1
25. Cluster Housing to Protect Environmental Features (Residential Development)	1
26. Scoby Hill Dam Improvements (Parks and Recreation)	1
27. Purchase and Reuse of the B&P Rail Line (Parks and Recreational)	1
28. Park and Ride (Transportation)	1
29. Extend Village Utilities to Town (Infrastructure)	1
30. Extend Utilities (Infrastructure)	1
31. Control Gravel Mining (The Environment)	0
32. Exurban Growth/Regional Gateway (Economic Development)	0
33. Cascade Drive - Auto Oriented (Economic Development)	0
34. Tourism (Economic Development)	0
35. Affordable Housing (Residential Development)	0
36. Historic Sites and Structures (Urban Design and Historic Preservation)	0
37. Obtain Water from ECWA (Infrastructure)	0
38. Natural Gas (Infrastructure)	0
Economic Development	36
Residential Development	6
Urban Design and Historic Preservation	7
Parks and Recreation	18
Community Services	18
Transportation	8
Infrastructure	2

Sticky Note Comments

1. Blue reflective signs to mark addresses of homes on rural roads for emergency vehicles;
2. Great school district;
3. Art center and arts led development and branding;
4. The rural atmosphere and people;
5. Enforce environmental regulation at Kissing Bridge;
6. Street design, pavement to sidewalks, Main Street to wide in places, needs bump-outs;
7. Sense of community;
8. The Center for the Arts, it helps so many. Makes all the difference;
9. Parks good, but could be phenomenal with trail connections;
10. Good stores;
11. Code enforcement;
12. Sound control;
13. Parks;
14. Concerned about sprawl, big box;
15. Main Street traffic, _____ + fast, needs calming;
16. Improve high speed internet access;
17. Downtown is hurting;
18. Zoning changes;
19. Local business;
20. Spring Brook is disgusting, should be a feature;
21. Bike paths;
22. Extend rail trail, new bathroom in park;
23. Scene
24. Walkable, quiet, safe, healthy;
25. Historic assets;
26. Farms and agriculture;
27. Scoby Hill Dam Park is awesome;
28. Scene great for seniors;
29. Rail trails;
30. Availability and access to drug treatment facilities;
31. Bike trails, dog park, rail trails completion;
32. Modern bathrooms, town parks accessibility, paved paths;
33. Recycling, composting, green initiatives;
34. Sense of community;
35. Bike trail, safe walkable, pretty streetscape, accessibility;
36. Accessibility of parks/open space;
37. Rails to trails;
38. Dog park;
39. Love the new parks and Franklin Street improvements;
40. Rail trail;
41. Rail trail;
42. Parks, outdoor recreation;
43. Art Center;
44. Springville Center for the Arts;
45. Solar energy;
46. Village improvements on Franklin Street and downtown;
47. Arts;
48. New businesses on Main Street;
49. Rail trail;
50. Solar energy;
51. Access to phenomenal outdoor recreation;
52. Support new farms and protect open land;
53. Coordinate senior services, partnerships;
54. Strong schools;
55. Arts community;
56. Rebirth of Main Street and Village Center, arts;
57. Rails to trails;
58. The arts flourishing;
59. Cost of power;
60. Arts and lots of historic/green preservation;
61. Importance placed on historical properties;
62. Scoby Hill Dam recreational improvements;
63. Police listen to citizens' concerns, retailers are friendly;
64. Rails to trails;
65. Springville Center for the Arts and small business on Main Street;
66. Increase broadband access;
67. Public broadband for all;
68. Trails, parks, nature experiences (make great market);
69. Town and Village should coordinate more (planning);
70. Culture, also more benefits for children. Also less speeding and crossing yellow line;
71. Dense downtown core;
72. Develop industry/jobs;
73. Stop sprawl;
74. Friendly, walkable, Art Center, green roof, rail trail;
75. Coordination, collaboration – partnerships;
76. Additional retail stores, more industry, housing for seniors need improvement;
77. Solar energy;
78. Solar energy, electric vehicle infrastructure;
79. Location;
80. Sense of community, quality of life;
81. Zoar Valley Nature Area;
82. Solar energy;
83. Losing farmland;
84. Make sure we are in line with One Regional Forward and the WNY REDC and smart growth strategies;
85. Develop industry/jobs;
86. People who live there/here (?) support from Town and Village officials. Variety of _____.

Concord Comprehensive Plan – Easel Notes f/Meeting

Page 1

Consider Village also;

Wetlands? (Federal and state regulations, not Town)

Economic Development – very important – local jobs

- Preserve existing retail and industry
- Attract new businesses
- Including agriculture and tourism (Center for the Arts)

Broadband internet for all residents

- Critical for Business
- Even affects home values

Page 2

Concern – impacts from motorsports (noise, dust, etc.). Is there a noise ordinance?

Preserve green space, parks, and trails

Get diverse input (including committee)

Groups (Arts Center, hospital, etc.) – outreach

New technology (alternative energy, solar laws, alternative vehicles, etc.)

Transportation

- Trucks on 219?/39? Other roads?
- Park and Ride
- Connectivity: Walk/Bike
- Public transportation – None to Buffalo
- Limited van service
- Especially for those who can't drive
- SRTS

Childhood obesity, ways to get kids active (parks, trails, etc.)

Page 3

Agriculture – concern about sprawl, development pressures

Downtown – “Main Street” – important for whole town (not just village)

All generations – age in place, youth safe places to bike, crosswalks, etc.

Draw visitors for rural character

RTT; links Parks w/trail system to parks in adjacent towns – network

Accessibility – paved paths (toddlers & seniors)

Improvements @ parks – modern, accessible restrooms, drinking fountains, amenities

Assets/Strengths

- Green space
- Center for Arts
- Quaintness of Town, preserve it

Page 4

Hospital – asset “gem” – support it

Wellness Issues

- Medical transport
- Obesity
- Opiate issue

Historic buildings – preservation

- Maintain historic buildings – reuse
- Scoby Hill Dam – on National Register
- Rail Trail – adaptive reuse of former rail (historic value)

Senior center – what are the plans?

Implementation

- Partnerships with existing groups/collaborations (Erie County, IRF, others)
- Arts Center, very important
- Events, also important
- Streetscape, etc. – quaintness, quality of life
- Crane Ridge – mapping for EMS, fire

Page 5

Recreation program is strong (non-profit)

- Opportunity to grow
- Will help attract families with children
- Add adult recreation
- Coordinate with schools, especially indoor recreation in winter

Environmental leadership

- Alternative energy, watershed planning

Public Information Meeting #2

BREAK OUT GROUP INSTRUCTIONS

You will be marking up the maps as a group – please discuss each item and come to a consensus on how to mark up the map. You are encouraged to make additional notes/explanations in the text box.

Transportation/Connectivity

Please think about and mark the map to address the following:

- Transportation problems (bad intersections, unsafe roads) – **(BLACK X)**
- Where sidewalks/connectivity are needed **(DOTTED BLACK LINE)**
- Bike lanes **(DOTTED BLUE LINE)**
- Roadway segments where there should be roadway improvements (trees, lighting, etc. **(BLUE BOX)**)
- Any other types of connectivity or transportation improvements [your choice – ADD NOTE]

Parks/Open Space/ Community Facilities- Features

- Park improvements **[GREEN CIRCLE]**
- Important places to protect (environmental features, views) **[circled P]**
- Off-road trails **[DOTTED GREEN LINE]**
- Areas for historic preservation or Character protection **[STAR AND NOTE]**
- Other Unique Town places **[STAR AND NOTE]**

Growth Areas/ Land Use Patterns

- Use a **green** marker to draw the boundary to show the areas of the Town which should remain primarily “**RURAL/AGRICULTURAL**” in character
- Areas where new or existing businesses should be encouraged **(RED B)**
- Areas where new or existing industrial growth should be encouraged **(RED X)**
- Areas where new or existing retail activity should be encouraged **(RED R)**
- Use a **blue** marker to draw the boundary to show the areas of the Town where growth and development should be encouraged (“**Developing**” areas)

Other

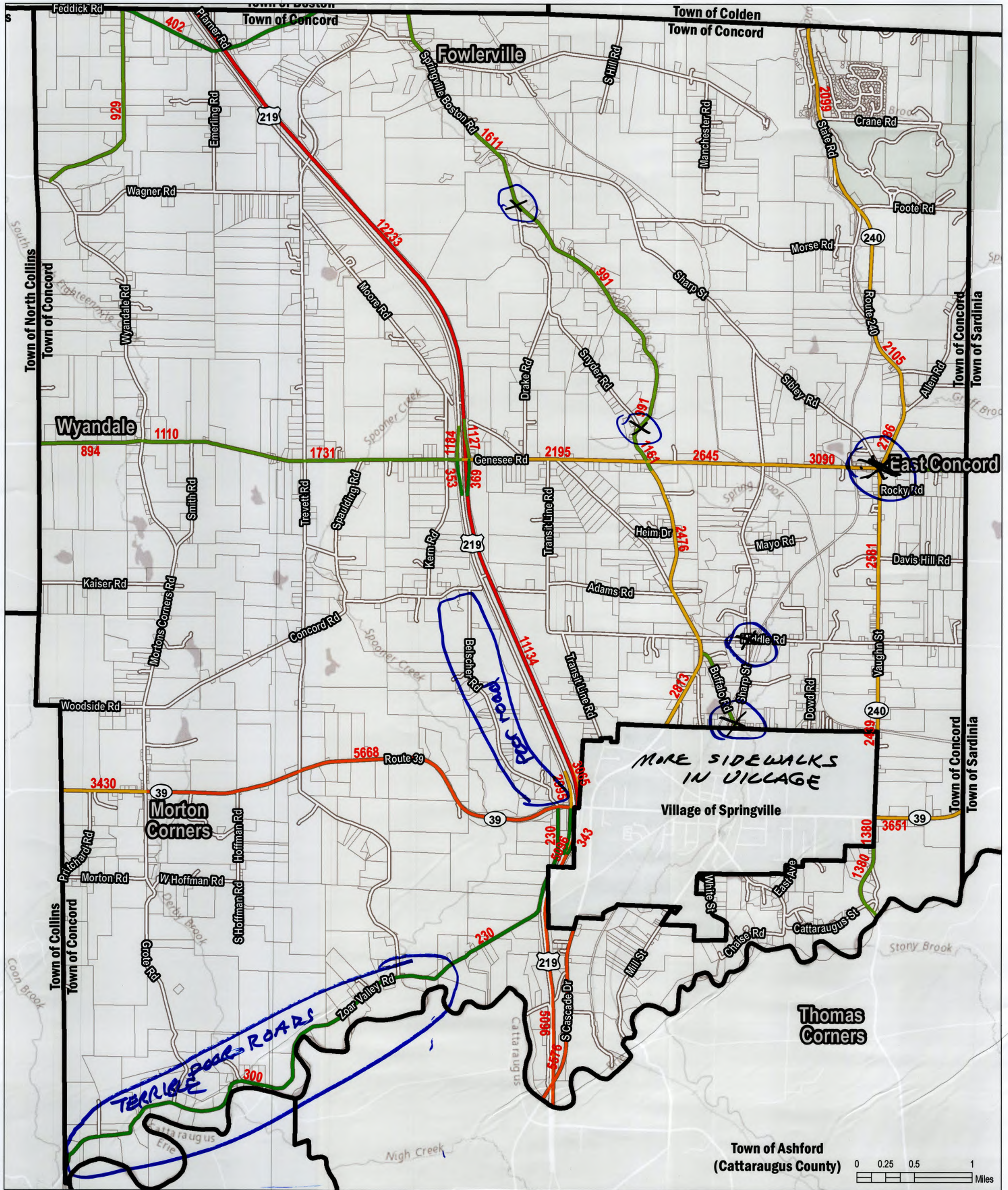
Please add any other ideas you have for the Town

When you have finished marking up the map, please decide as a group the TOP 3 issues facing the Town and note them with the DOTS.

Pick a spokesperson to report your priority findings.

Group 1

Community Comments



**Town of Concord
Comprehensive Plan**
ERIE COUNTY, NEW YORK
Transportation/Connectivity

LEGEND

- Parcels (2016)
- 2015 Average Daily Traffic (Counts Labeled)
 - 230 - 500
 - 501 - 2000
 - 2001 - 4000
 - 4001 - 6000
 - 6001 - 12233

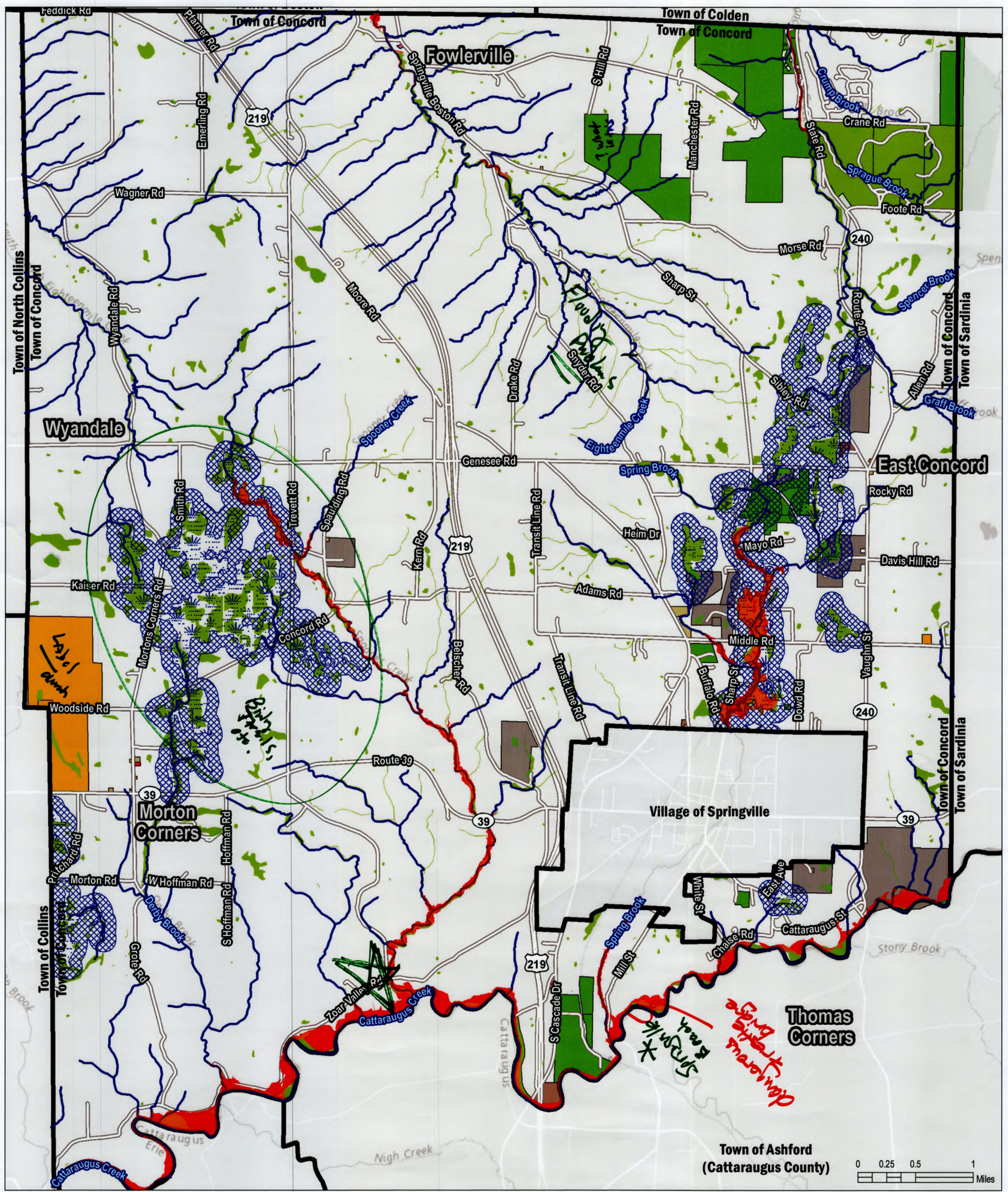


Community Comments

Add County Owned Forestry
 Creeks important
 Found A1y Geosce tunnel to woodland

State Rd 219
 Alternate / Biker's Note where in Plan
 OP → Elliptical

RAILS TO TRAILS VS PRIVATE PROPERTY



Town of Concord Comprehensive Plan
 ERIE COUNTY, NEW YORK
 Environmental/Community Features

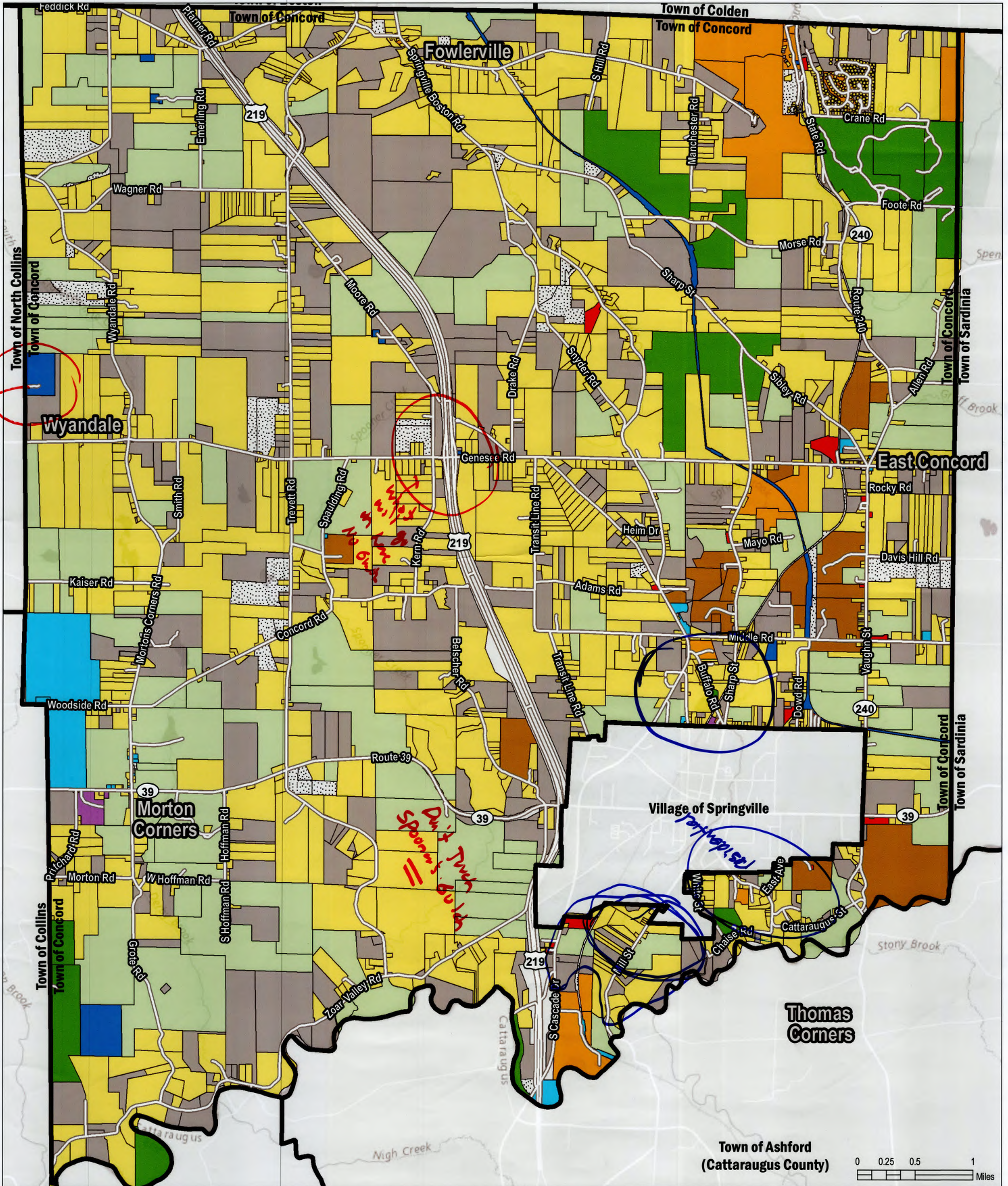
Preliminary FEMA Flood Hazard Zones		Community Features	
[Red Box]	100 Year Floodzone	[Brown Box]	Cemetery
[Blue Line]	Waterway	[Dark Green Box]	Government
[Blue Dotted Box]	State Wetlands	[Light Green Box]	Indoor/Outdoor Recreation
[Blue Cross-hatched Box]	State Wetlands Checkzone	[Yellow Box]	Library
[Green Box]	Federal Wetlands	[Green Box]	Park
		[Red Box]	Police/Fire
		[Dark Brown Box]	Quarry
		[Orange Box]	Religious
		[Blue Box]	School
		[Pink Box]	Social Organization

0 0.25 0.5 1 Miles

wendel
 WD Project # 498301
 Map Created: September, 2017

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 Data Sources: Esri, HERE, DeLorme, OpenStreetMap, NYS GIS Program Office, NYSDAC, USFWS, USGS, FEMA

Community Comments



**Town of Concord
Comprehensive Plan**
ERIE COUNTY, NEW YORK
Land Use / Growth Areas

LEGEND

- | | | |
|--------------------------|----------------------------|---------------------------------|
| Existing Land Use (2016) | Vacant | Industrial |
| No Data | Commercial | Mine/Quarry |
| Agriculture | Recreation & Entertainment | Public Services |
| Residential | Community Services | Wild, Forest, Conservation Land |

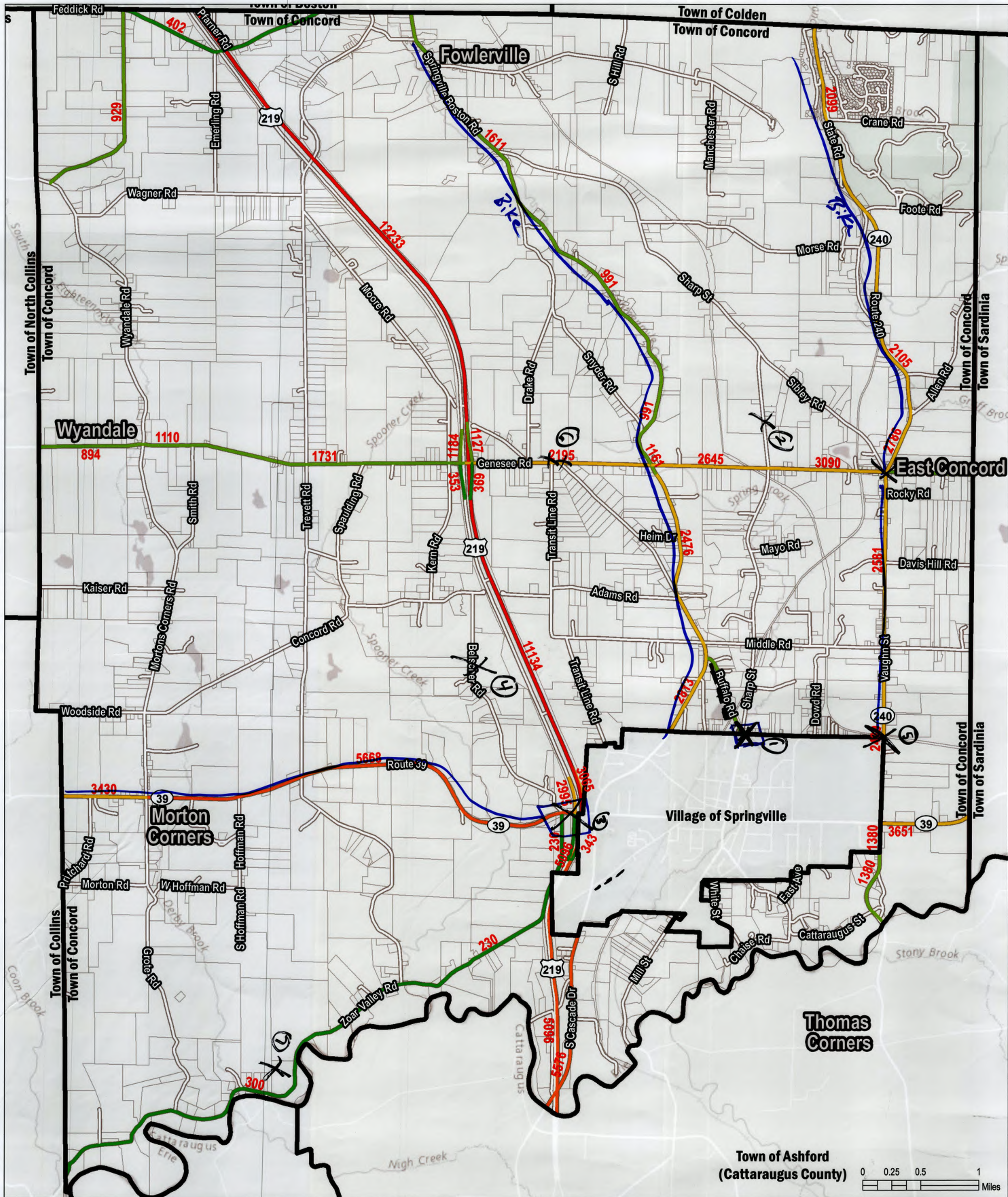


WD Project # 498301
Map Created: September, 2017

Group 2

Community Comments

- ① Buf. / N Buf. / Sharpst
- traffic Mgmt
- ② Speeding
- ③ Both illumination + Traffic Visual
- ④ Single Lane light
- ⑤ Accident; line of sight
- ⑥ Line sight is poor
- ⑦ Wash out



**Town of Concord
Comprehensive Plan**
ERIE COUNTY, NEW YORK
Transportation/Connectivity

LEGEND

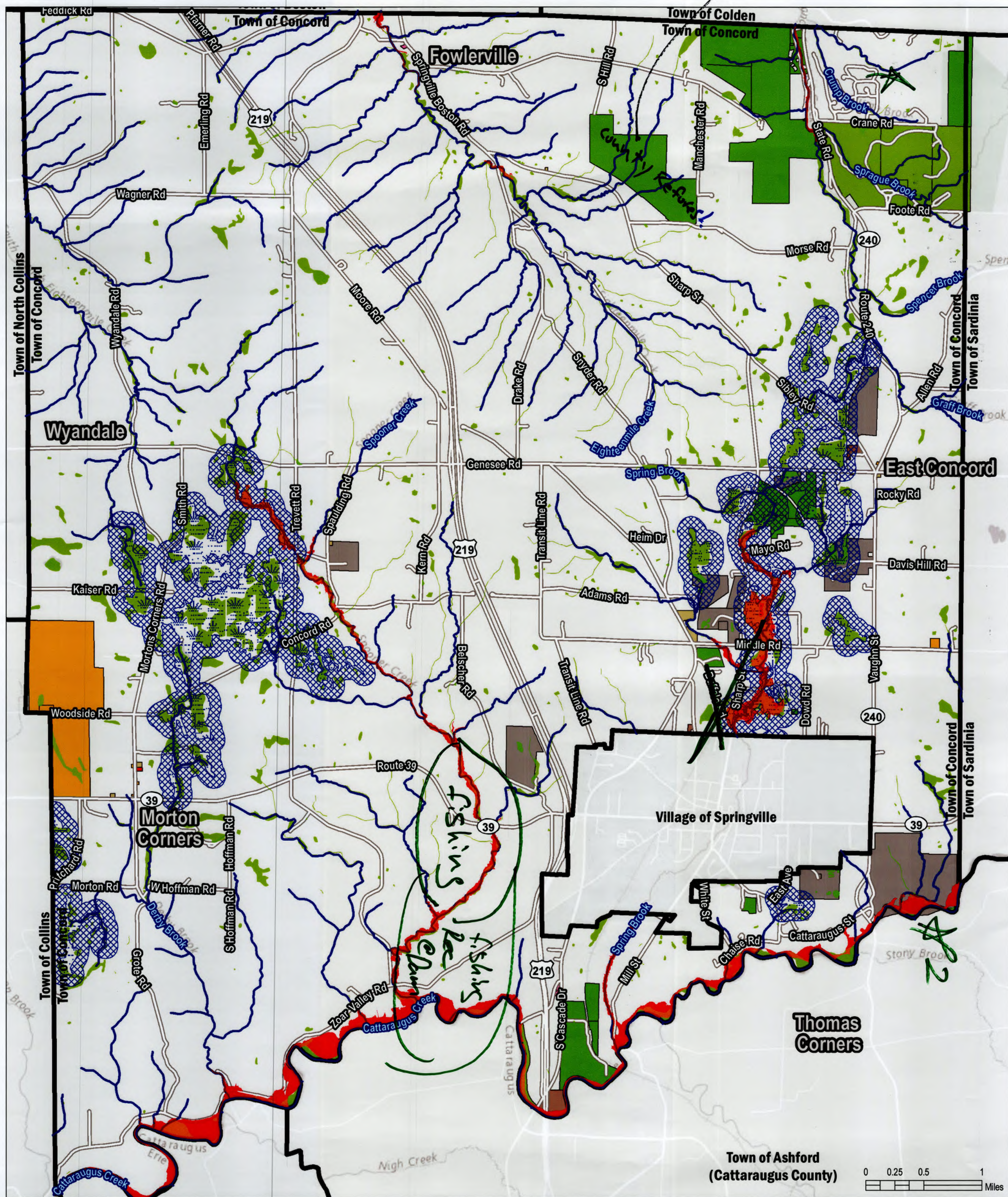
Parcels (2016)	2015 Average Daily Traffic (Counts Labeled)	4001 - 6000
	230 - 500	6001 - 12233
	501 - 2000	2001 - 4000



Community Comments


- KB Moto not zoned
- * Crane Ridge = character protection
- Expansion of Rail Trail
- * 2 - Catt Creek Kayak/Recreation

Handwritten scribbles and notes in the top right corner of the map area.



**Town of Concord
Comprehensive Plan
ERIE COUNTY, NEW YORK
Environmental/Community Features**

LEGEND	
█ Preliminary FEMA Flood Hazard Zones	█ Cemetery
█ 100 Year Floodzone	█ Government
~ Waterway	█ Indoor/Outdoor Recreation
█ State Wetlands	█ Library
█ State Wetlands Checkzone	█ Park
█ Federal Wetlands	█ Police/Fire
	█ Quarry
	█ Religious
	█ School
	█ Social Organization

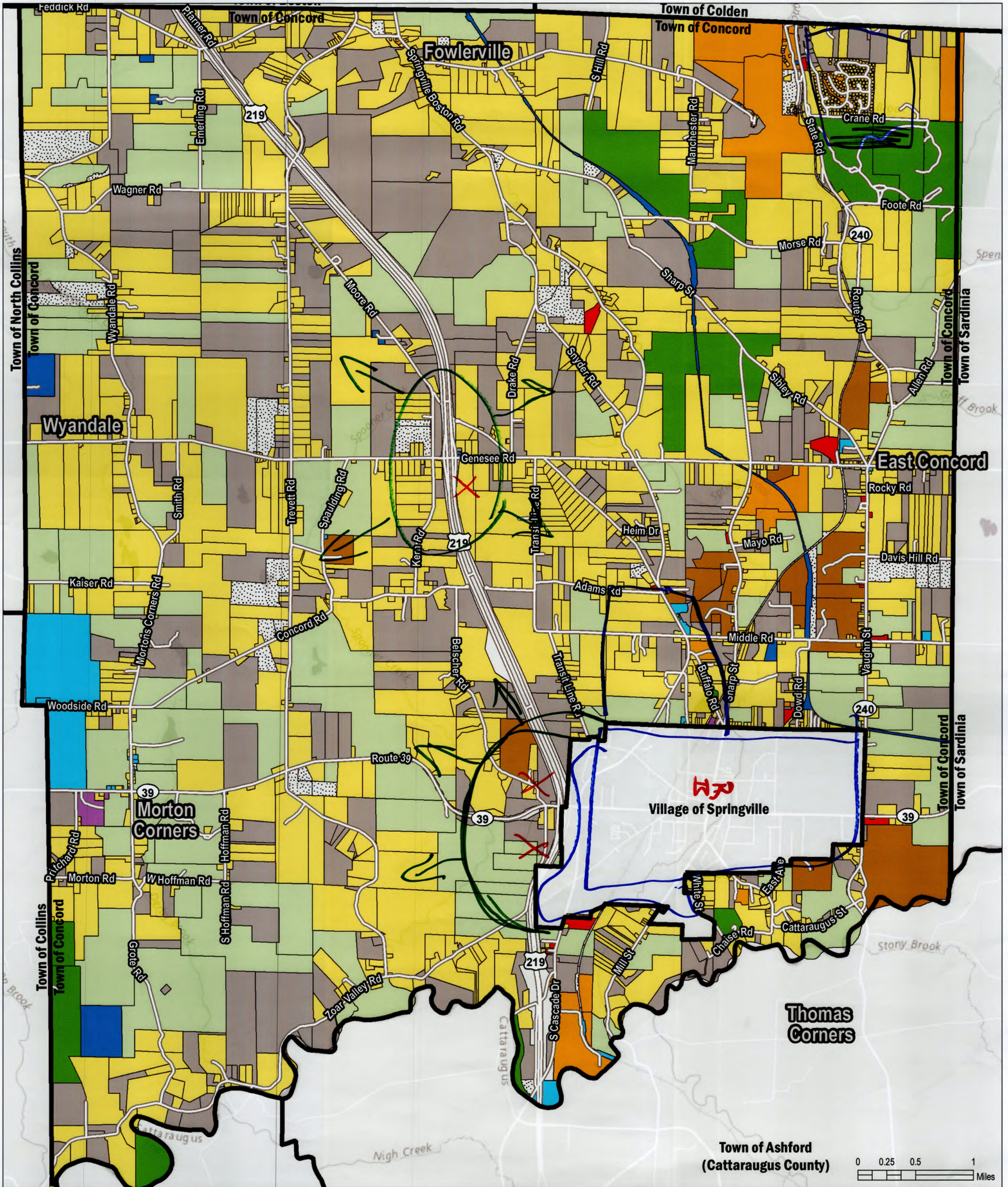


WD Project # 498301
Map Created: September, 2017

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Community Comments

Broadband = business anywhere



**Town of Concord
Comprehensive Plan**
ERIE COUNTY, NEW YORK
Land Use / Growth Areas

LEGEND

- | | | |
|--------------------------|----------------------------|---------------------------------|
| Existing Land Use (2016) | Vacant | Industrial |
| No Data | Commercial | Mine/Quarry |
| Agriculture | Recreation & Entertainment | Public Services |
| Residential | Community Services | Wild, Forest, Conservation Land |



wendel
WD Project # 498301
Map Created: September, 2017

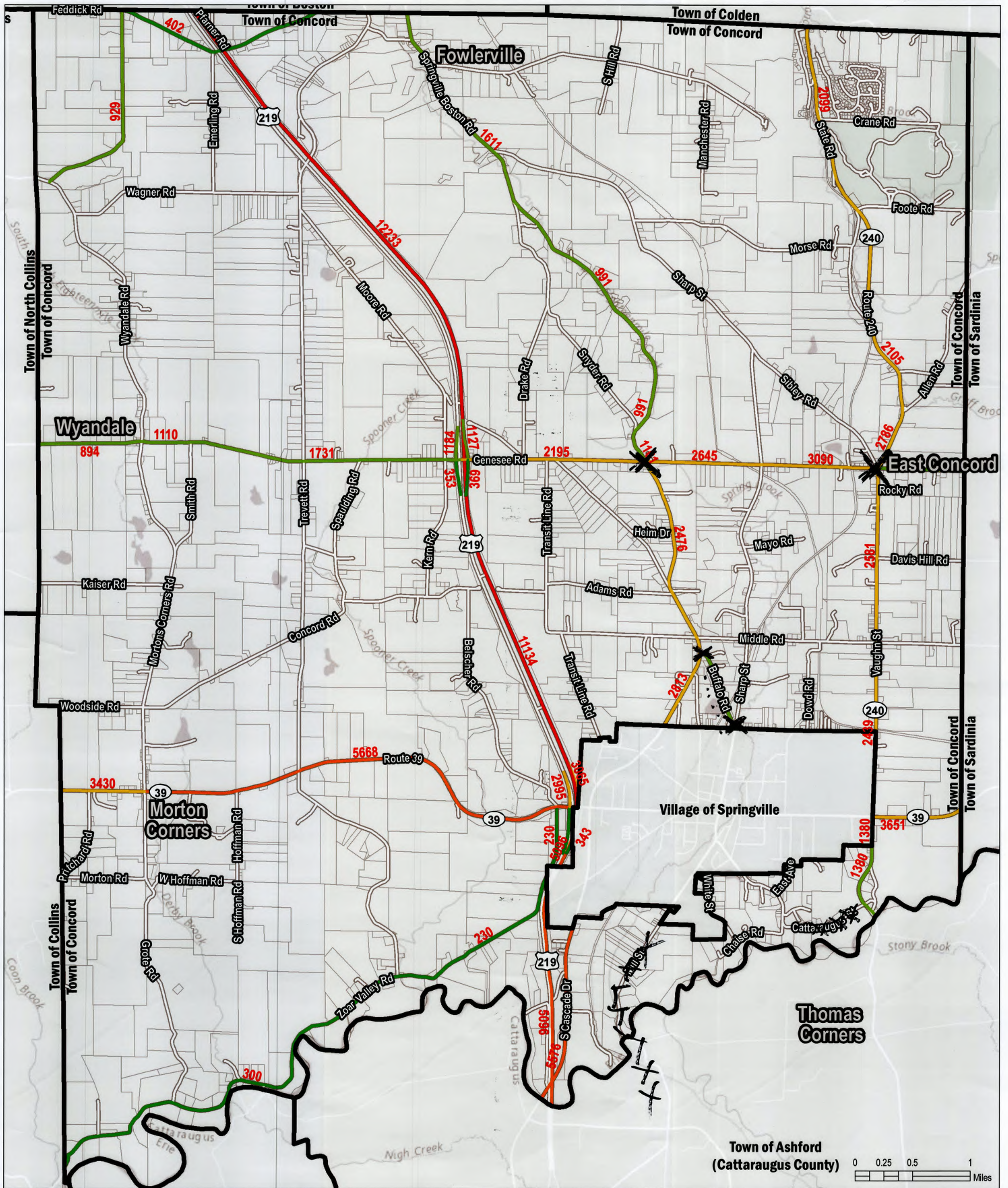
Group 3

Community Comments

Consider connectivity to Town Park.

240 unsafe maintain.

Lighting- consider light pollution. Preserve dark skies.



**Town of Concord
Comprehensive Plan**
ERIE COUNTY, NEW YORK
Transportation/Connectivity

LEGEND

- Parcels (2016)
- 2015 Average Daily Traffic (Counts Labeled)
 - 230 - 500
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 - 2001 - 4000
 - 4001 - 6000
 - 6001 - 12233



wendel
WD Project # 498301
Map Created: September, 2017

Protect Spring Brook
 Scenic around 219 - no additional exits, protect woodlands/hills

Community Comments

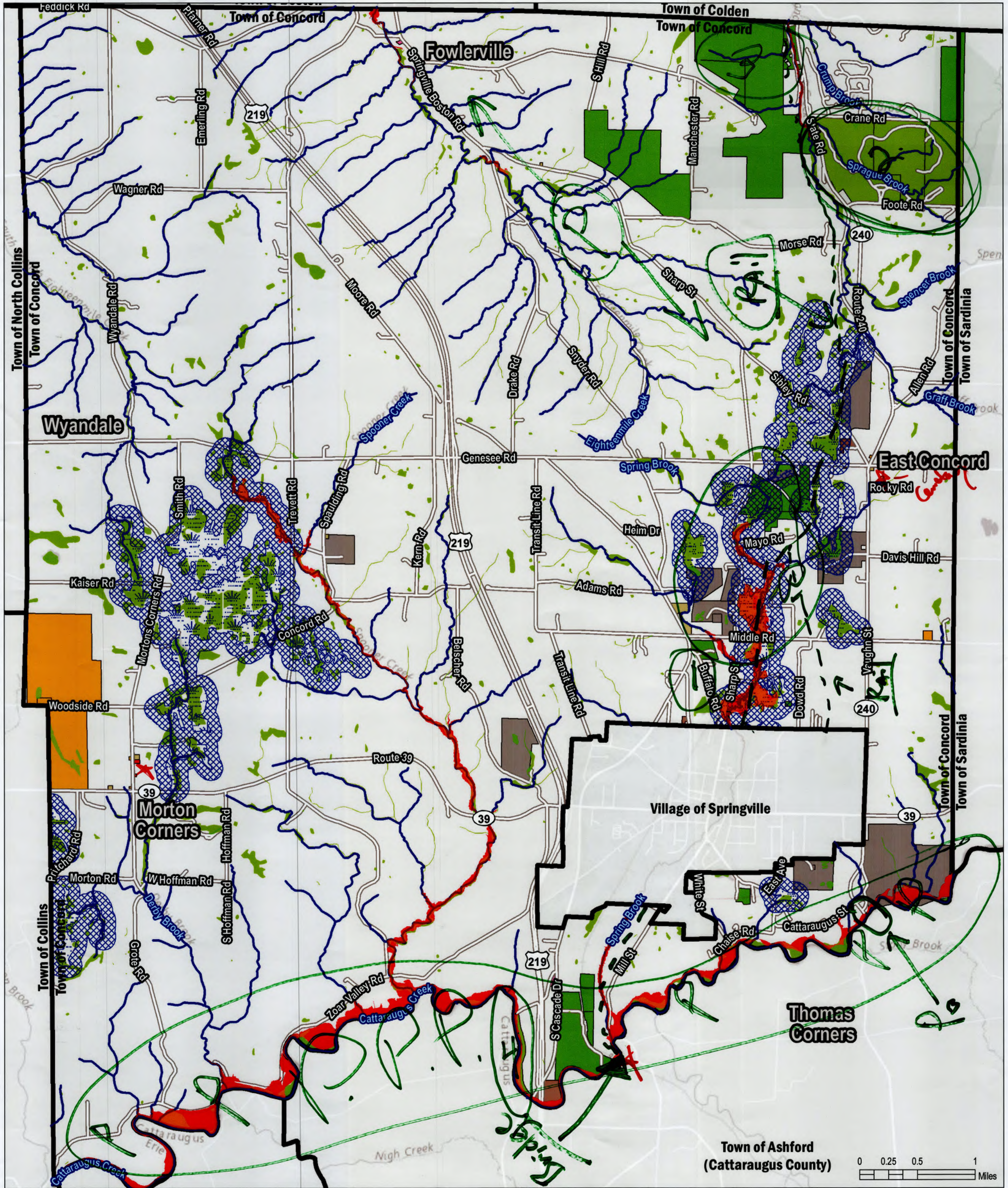
1. Town Park Amenities
2. Resource, encourage maintenance promote
3. ~~K&M~~ - noise, dust pollution, environmental impact.
4. CAREFUL DEVELOPMENT PASSIVE RECREATION

Blue Bridge

Middle Road / Spring Brook important to protect wetlands
Other town. Rail line
Keep Snowmobile Trails to County Parks
Trails at town park

Sharp street
Junio ZEAR VALLEY

B.P. Rail Line + Bridge



**Town of Concord
 Comprehensive Plan
 ERIE COUNTY, NEW YORK
 Environmental/Community Features**

Preliminary FEMA Flood Hazard Zones		Community Features			
[Red Box]	100 Year Floodzone	[Brown Box]	Cemetery	[Green Box]	Park
[Blue Box]	Waterway	[Dark Brown Box]	Government	[Red Box]	Police/Fire
[Light Blue Box]	State Wetlands	[Green Box]	Indoor/Outdoor Recreation	[Dark Brown Box]	Quarry
[Blue Hatched Box]	State Wetlands Checkzone	[Yellow Box]	Library	[Orange Box]	Religious
[Dark Green Box]	Federal Wetlands			[Blue Box]	School
				[Pink Box]	Social Organization

0 0.25 0.5 1 Miles

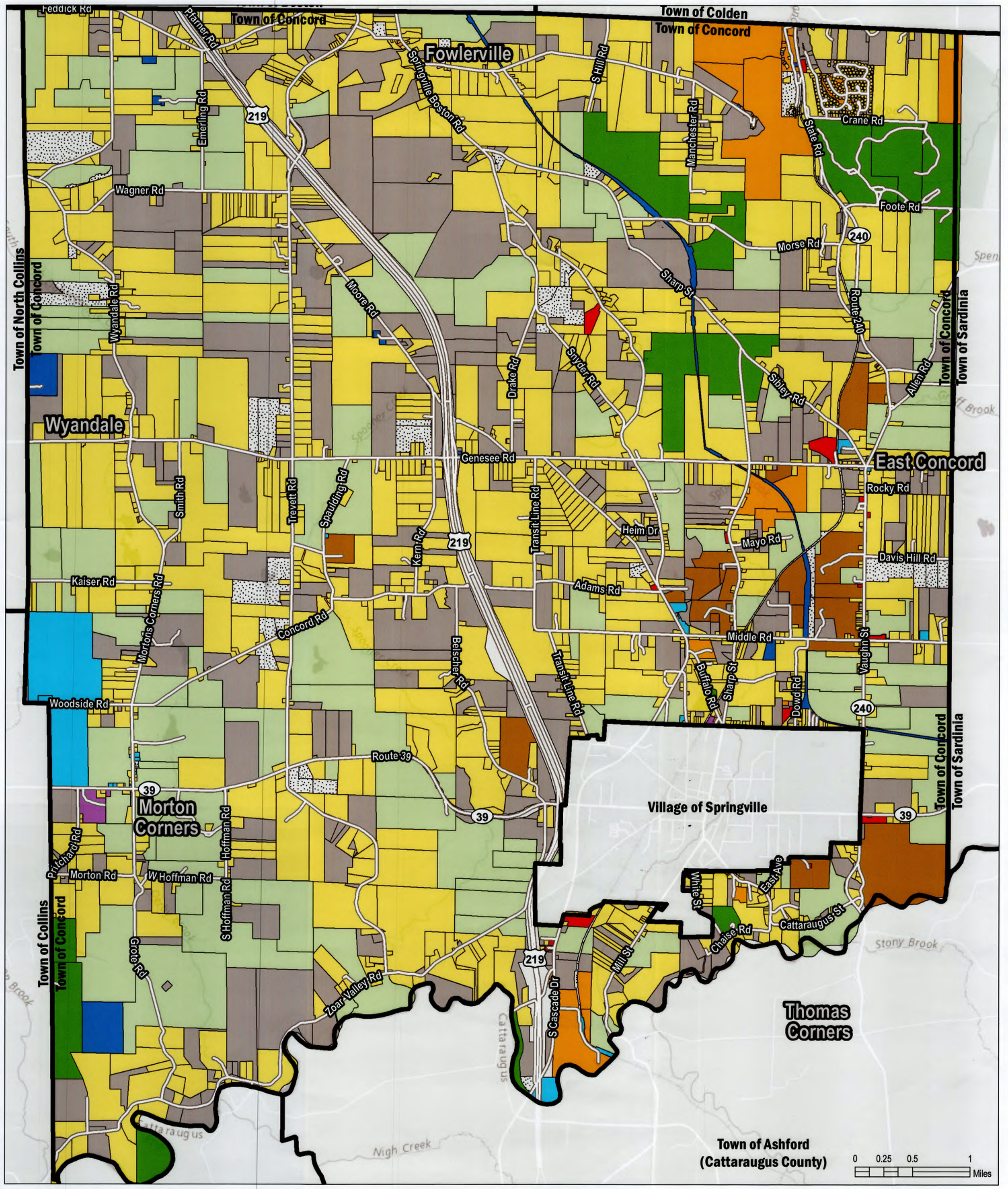
wendel
 WD Project # 498301
 Map Created: September, 2017

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Community Comments

*Concentrate
Business in Village Center.
Detail, Industrial etc.*

*Avoid Orchard Park
Style Housing development.
Crawford industry model
for development.*



**Town of Concord
Comprehensive Plan**
ERIE COUNTY, NEW YORK
Land Use / Growth Areas

LEGEND

- | | | |
|--------------------------|----------------------------|---------------------------------|
| Existing Land Use (2016) | Vacant | Industrial |
| No Data | Commercial | Mine/Quarry |
| Agriculture | Recreation & Entertainment | Public Services |
| Residential | Community Services | Wild, Forest, Conservation Land |



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Group 4

Community Comments

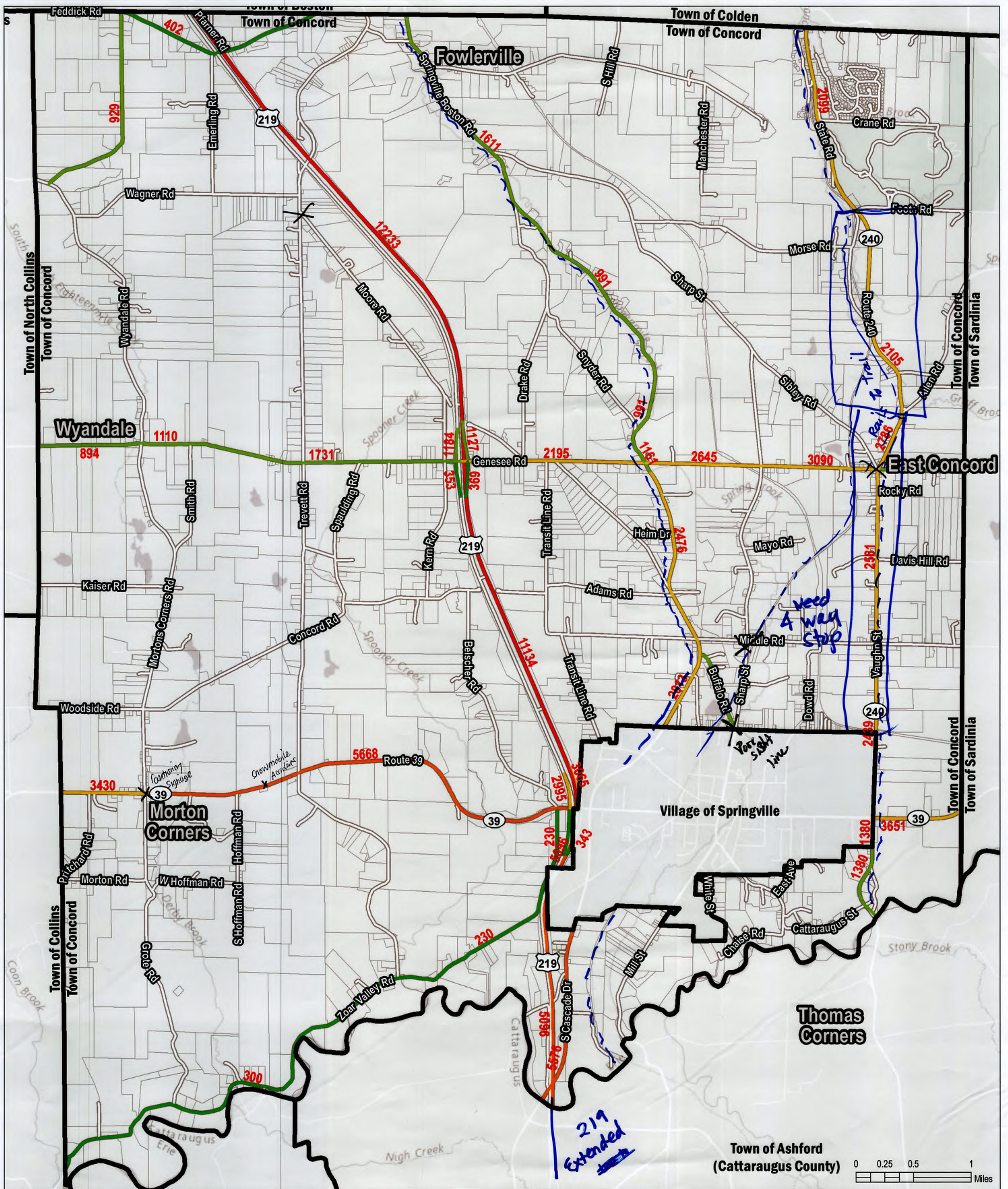
When road improvements are made, make them ~~at~~ top of line, not temporary fixes.

\$ for adequate staffing to construct & maintain roads

Pursue grant money for improvements to Scenic Byways

Wide shoulders for bikes

Roundabout @ Genesee & 240 & Sharp / North / N. Buffalo



**Town of Concord
Comprehensive Plan**
ERIE COUNTY, NEW YORK
Transportation/Connectivity

LEGEND

- Parcels (2016)
- 2015 Average Daily Traffic (Counts Labeled)
 - 230 - 500
 - 501 - 2000
 - 2001 - 4000
 - 4001 - 6000
 - 6001 - 12233

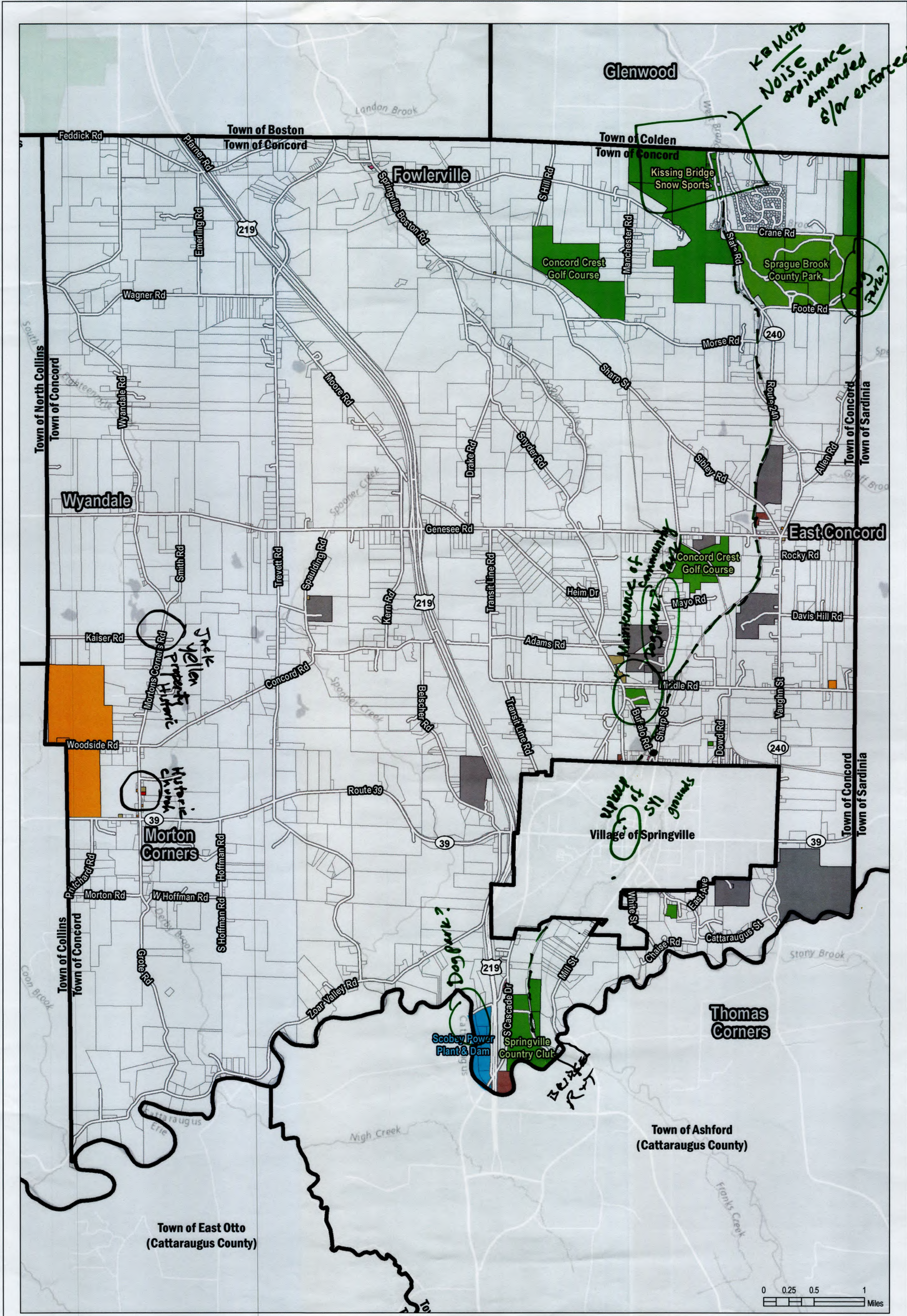


Snowmaking eqpt. for Sprague Brook - ice rink, skiing, sledging

Protection of native species/ planning to avoid invasive species
 (fish, brown trout, brook trout)

Adequate maintenance of rec. facilities (recycling, garbage clean up)

K&Moto Noise ordinance amended &/or enforced



Town of Concord Comprehensive Plan
 ERIE COUNTY, NEW YORK
 Map X - Community Features

LEGEND

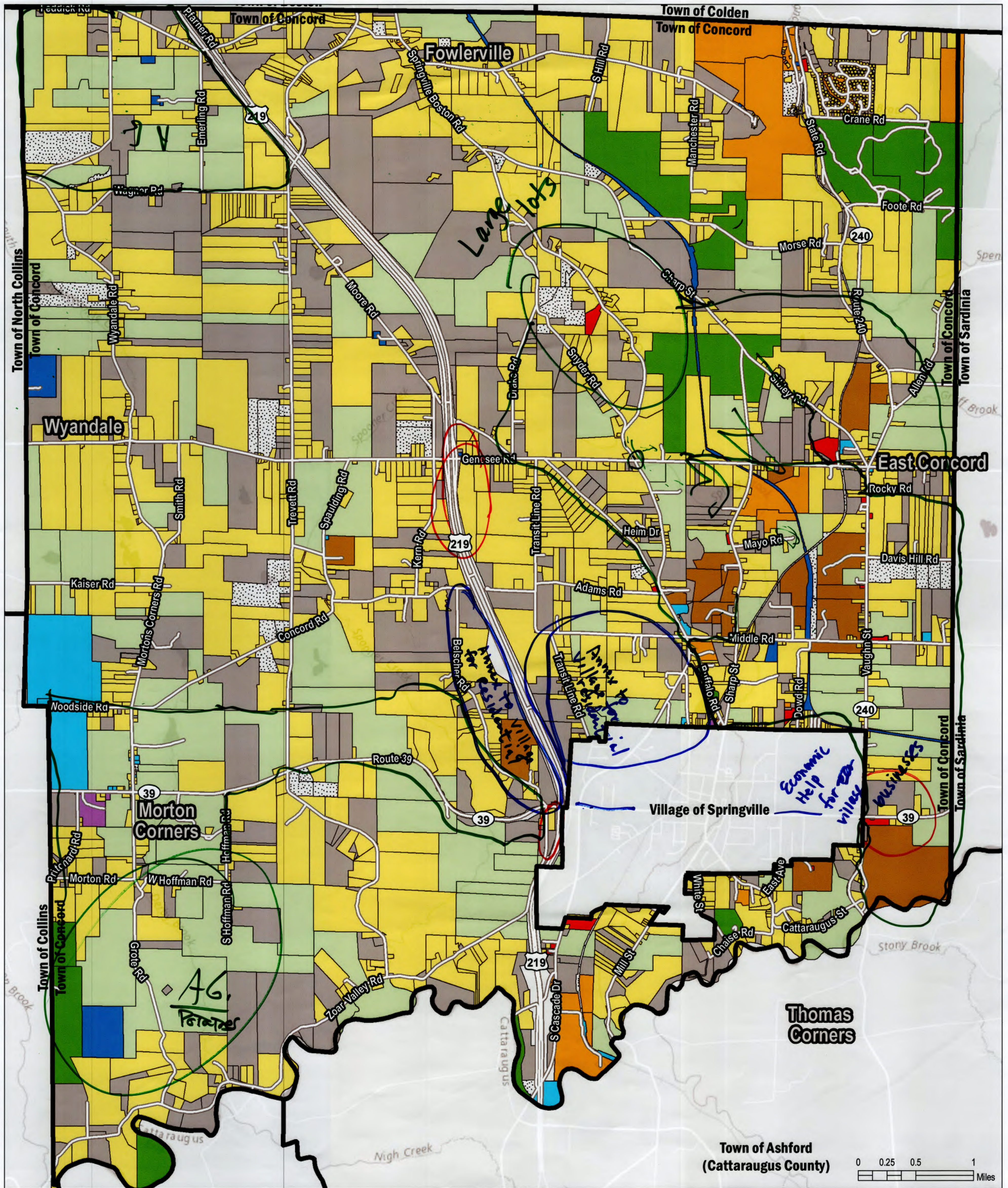
Parcels (2016)	Community Features	Library	Religious
Cemetery	Park	School	Social Organization
Government	Indoor/Outdoor Recreation	Police/Fire	Quarry

wendel
 WD Project # 498301
 Map Created: September, 2017

Wendel WD Architecture, Engineering, Surveying & Landscape Architecture, P.C. shall assume no liability for 1. Any errors, omissions, or inaccuracies in the information provided regardless of how caused or 2. Any decision or action taken or not taken by the reader in reliance upon any information or data furnished hereunder.
 Data Sources: Esri, HERE, DeLorme, OpenStreetMap, NYS GIS Program Office, The National Register of Historic Places

Community Comments

Retain & encourage growth of younger families / Economic development



**Town of Concord
Comprehensive Plan**
ERIE COUNTY, NEW YORK
Land Use / Growth Areas

LEGEND

- | | | |
|--------------------------|----------------------------|---------------------------------|
| Existing Land Use (2016) | Vacant | Industrial |
| No Data | Commercial | Mine/Quarry |
| Agriculture | Recreation & Entertainment | Public Services |
| Residential | Community Services | Wild, Forest, Conservation Land |



Public Information Meeting #3

Town of Concord
Comprehensive Plan Update

Public Information Meeting #3
January 18, 2018

What is a Comprehensive Plan?

"An organized set of materials and information that identifies goals, objectives, principles, guidelines and policies for the immediate and long-term protection, enhancement, growth and development of a community."

~ Town Law 272-1
~ Village Law 7-722



Benefits of a Comprehensive Plan

- Establish a joint community vision;
- Gain a better understanding of assets, issues;
- Protect important assets (historic, cultural, natural);
- Develop a strategy for enhancing the communities;
- Increase local control (State agencies must "consider"); and
- Improve access to grants, technical assistance.

Why Keep Your Plan Up-To-Date?

Circumstances Change!

- Relevance – addressing important current issues
- Influence – demonstrates community support
- Effectiveness – coordinate with regional planning
 - New York State Smart Growth legislation
 - Erie County "One Region Forward"
 - Regional Economic Development Council's (REDC) and Consolidated Funding Application (CFA)

Where are we now?

We have completed:

- Inventory of Existing Conditions;
- Mapping
- Findings (from Data & Public Input);
- Vision and Goals and Objectives; and
- **Draft Recommendations.**

Recommendations Discussion

Recommendation #1: Zoning Code

- Update the Town's Zoning Code
- R-AG District needs revising to be more focused
 - fewer allowed and special permit (SUP) uses
 - Expand agriculture related uses, Agri-business, Agri-tourism and other support type businesses.
 - Restrict residential subdivisions, increase lot size.
- Industrial District – modernize to allow Light Industry and Business.
- Remove zoning districts not utilized or underutilized.

Recommendation #2: Agriculture

- Need Agricultural Protection Plan that considers:
 - PACE (Purchase of Agricultural Easements)
 - PDR's (Purchase of Development Rights)
 - TDR (Transfer of Development Rights) research.
- Assistance to farmers (market issue).
- Other tools to consider include zoning revisions
 - help farmers succeed, do not focus on removing rights



Recommendation #3: Mining/Uses

- Mining Law revisions to consider:
 - Improve Special Use Permit (SUP) standards or
 - create Incentive Zoning (identify non-allowable areas and needs/concerns of the Town).
- Create a Vision Map to illustrate where the Town is headed, areas to be protected and where appropriate development should take place.



Recommendation #4: Commercial

- Support and assist with the creation of the **Zoar Valley Road Ext. Commercial Area**
 - Village and Town work together – this issue is in both community plans
- Action could include the annexation of land to the Village and the construction of new infrastructure.



Recommendation #5: Gateways

- Work with the Village to create gateways at major points between the Town and Village.
- Identify and enhance key gateways into the Town from other communities
- Possible gateways include:
 - Route 39/Cascade Drive
 - East Main Street/ Route 240
 - South Cascade Drive
 - Route 240 and 39 at Town boundaries



Recommendation #6: Transportation

- Advocate for improved public transportation services, and park and ride upgrades.
- Advocate for improvements to County roads.
- Investigate bike and pedestrian improvements on roads around the Village (Complete streets)



Recommendation #7: Environmental Protection

- Create a **Conservation Area Law or Environmental Protection Overlay**.
 - Identify these important features; steep slopes, wetlands, stream/creek corridors, major wooded areas, unique features, etc.
 - Provide protections/regulations and processes for approvals in these areas.



Recommendation #8: Resources

- Continue support for the protection of the significant natural and important man-made recreations/environmental features in the Town: parks, creeks and streams, recreation areas (passive and active), Scoby Dam, etc.

Recommendation #9: Home Business

- Create a **Home-based Business Law** that appropriately defines the different levels of home based occupations and regulates them differently than the current code.

Recommendation #10: Housing

- Research the adoption of a law to accommodate more creative housing types
- In the Town, this law may:
 - not include large multi-unit buildings
 - include creative tools like in-law apartments, multi-generational housing, ageing in place standards, conversions of existing homes, adding second small building to the site, etc.

Recommendation #11: Recreation

- Target important projects that will improve the recreation opportunities in the Town (passive and active).
- Work with residents to re-assess and evaluate the Rails to Trails project.
- Research and evaluate the creation of an outdoor performance amphitheater and arts park.
- Town Park improvements:
 - improved energy efficient lighting,
 - snack building improvements and
 - bathroom improvements including a paved approach



Recommendation #12: Other laws

- Consider the implementation of
 - watershed management initiatives
 - a "dig-once" Law (per County Broadband Study recommendations)
 - create Complete Street regulations (especially in areas abutting the Village).

What next?

- Finalize Recommendations
- Develop Implementation Plan
- Combine all sections into Draft Comprehensive Plan
- Add draft Plan to Town website
- Work with Comprehensive Plan Committee to refine/edit/finalize
- Complete Final Draft Comprehensive Plan by March 1, 2018
- Adoption process

Questions and Comments?

We Need Your Input!



CONCORD@WENDELCOMPANIES.COM

SEQR Documentation

Full Environmental Assessment Form
Part 1 - Project and Setting

Instructions for Completing Part 1

Part 1 is to be completed by the applicant or project sponsor. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification.

Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information; indicate whether missing information does not exist, or is not reasonably available to the sponsor; and, when possible, generally describe work or studies which would be necessary to update or fully develop that information.

Applicants/sponsors must complete all items in Sections A & B. In Sections C, D & E, most items contain an initial question that must be answered either “Yes” or “No”. If the answer to the initial question is “Yes”, complete the sub-questions that follow. If the answer to the initial question is “No”, proceed to the next question. Section F allows the project sponsor to identify and attach any additional information. Section G requires the name and signature of the project sponsor to verify that the information contained in Part 1 is accurate and complete.

A. Project and Sponsor Information.

Name of Action or Project:		
Project Location (describe, and attach a general location map):		
Brief Description of Proposed Action (include purpose or need):		
Name of Applicant/Sponsor:		Telephone:
		E-Mail:
Address:		
City/PO:	State:	Zip Code:
Project Contact (if not same as sponsor; give name and title/role):		Telephone:
		E-Mail:
Address:		
City/PO:	State:	Zip Code:
Property Owner (if not same as sponsor):		Telephone:
		E-Mail:
Address:		
City/PO:	State:	Zip Code:

B. Government Approvals

B. Government Approvals, Funding, or Sponsorship. (“Funding” includes grants, loans, tax relief, and any other forms of financial assistance.)

Government Entity	If Yes: Identify Agency and Approval(s) Required	Application Date (Actual or projected)
a. City Council, Town Board, or Village Board of Trustees <input type="checkbox"/> Yes <input type="checkbox"/> No		
b. City, Town or Village Planning Board or Commission <input type="checkbox"/> Yes <input type="checkbox"/> No		
c. City Council, Town or Village Zoning Board of Appeals <input type="checkbox"/> Yes <input type="checkbox"/> No		
d. Other local agencies <input type="checkbox"/> Yes <input type="checkbox"/> No		
e. County agencies <input type="checkbox"/> Yes <input type="checkbox"/> No		
f. Regional agencies <input type="checkbox"/> Yes <input type="checkbox"/> No		
g. State agencies <input type="checkbox"/> Yes <input type="checkbox"/> No		
h. Federal agencies <input type="checkbox"/> Yes <input type="checkbox"/> No		
<p>i. Coastal Resources.</p> <p><i>i.</i> Is the project site within a Coastal Area, or the waterfront area of a Designated Inland Waterway? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><i>ii.</i> Is the project site located in a community with an approved Local Waterfront Revitalization Program? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><i>iii.</i> Is the project site within a Coastal Erosion Hazard Area? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>		

C. Planning and Zoning

C.1. Planning and zoning actions.

Will administrative or legislative adoption, or amendment of a plan, local law, ordinance, rule or regulation be the only approval(s) which must be granted to enable the proposed action to proceed? Yes No

- **If Yes**, complete sections C, F and G.
- **If No**, proceed to question C.2 and complete all remaining sections and questions in Part 1

C.2. Adopted land use plans.

a. Do any municipally- adopted (city, town, village or county) comprehensive land use plan(s) include the site where the proposed action would be located? Yes No

If Yes, does the comprehensive plan include specific recommendations for the site where the proposed action would be located? Yes No

b. Is the site of the proposed action within any local or regional special planning district (for example: Greenway Brownfield Opportunity Area (BOA); designated State or Federal heritage area; watershed management plan; or other?) Yes No

If Yes, identify the plan(s):

c. Is the proposed action located wholly or partially within an area listed in an adopted municipal open space plan, or an adopted municipal farmland protection plan? Yes No

If Yes, identify the plan(s):

C.3. Zoning

a. Is the site of the proposed action located in a municipality with an adopted zoning law or ordinance. Yes No
If Yes, what is the zoning classification(s) including any applicable overlay district?

b. Is the use permitted or allowed by a special or conditional use permit? Yes No

c. Is a zoning change requested as part of the proposed action? Yes No

If Yes,

i. What is the proposed new zoning for the site? _____

C.4. Existing community services.

a. In what school district is the project site located? _____

b. What police or other public protection forces serve the project site?

c. Which fire protection and emergency medical services serve the project site?

d. What parks serve the project site?

D. Project Details

D.1. Proposed and Potential Development

a. What is the general nature of the proposed action (e.g., residential, industrial, commercial, recreational; if mixed, include all components)?

b. a. Total acreage of the site of the proposed action? _____ acres
b. Total acreage to be physically disturbed? _____ acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? _____ acres

c. Is the proposed action an expansion of an existing project or use? Yes No
i. If Yes, what is the approximate percentage of the proposed expansion and identify the units (e.g., acres, miles, housing units, square feet)? % _____ Units: _____

d. Is the proposed action a subdivision, or does it include a subdivision? Yes No
If Yes,

i. Purpose or type of subdivision? (e.g., residential, industrial, commercial; if mixed, specify types)

ii. Is a cluster/conservation layout proposed? Yes No

iii. Number of lots proposed? _____

iv. Minimum and maximum proposed lot sizes? Minimum _____ Maximum _____

e. Will proposed action be constructed in multiple phases? Yes No

i. If No, anticipated period of construction: _____ months

ii. If Yes:

- Total number of phases anticipated _____
- Anticipated commencement date of phase 1 (including demolition) _____ month _____ year
- Anticipated completion date of final phase _____ month _____ year

• Generally describe connections or relationships among phases, including any contingencies where progress of one phase may determine timing or duration of future phases: _____

f. Does the project include new residential uses? Yes No
 If Yes, show numbers of units proposed.

	<u>One Family</u>	<u>Two Family</u>	<u>Three Family</u>	<u>Multiple Family (four or more)</u>
Initial Phase	_____	_____	_____	_____
At completion	_____	_____	_____	_____
of all phases	_____	_____	_____	_____

g. Does the proposed action include new non-residential construction (including expansions)? Yes No
 If Yes,

i. Total number of structures _____

ii. Dimensions (in feet) of largest proposed structure: _____ height; _____ width; and _____ length

iii. Approximate extent of building space to be heated or cooled: _____ square feet

h. Does the proposed action include construction or other activities that will result in the impoundment of any liquids, such as creation of a water supply, reservoir, pond, lake, waste lagoon or other storage? Yes No
 If Yes,

i. Purpose of the impoundment: _____

ii. If a water impoundment, the principal source of the water: Ground water Surface water streams Other specify: _____

iii. If other than water, identify the type of impounded/contained liquids and their source. _____

iv. Approximate size of the proposed impoundment. Volume: _____ million gallons; surface area: _____ acres

v. Dimensions of the proposed dam or impounding structure: _____ height; _____ length

vi. Construction method/materials for the proposed dam or impounding structure (e.g., earth fill, rock, wood, concrete): _____

D.2. Project Operations

a. Does the proposed action include any excavation, mining, or dredging, during construction, operations, or both? Yes No
 (Not including general site preparation, grading or installation of utilities or foundations where all excavated materials will remain onsite)
 If Yes:

i. What is the purpose of the excavation or dredging? _____

ii. How much material (including rock, earth, sediments, etc.) is proposed to be removed from the site?

- Volume (specify tons or cubic yards): _____
- Over what duration of time? _____

iii. Describe nature and characteristics of materials to be excavated or dredged, and plans to use, manage or dispose of them. _____

iv. Will there be onsite dewatering or processing of excavated materials? Yes No
 If yes, describe. _____

v. What is the total area to be dredged or excavated? _____ acres

vi. What is the maximum area to be worked at any one time? _____ acres

vii. What would be the maximum depth of excavation or dredging? _____ feet

viii. Will the excavation require blasting? Yes No

ix. Summarize site reclamation goals and plan: _____

b. Would the proposed action cause or result in alteration of, increase or decrease in size of, or encroachment into any existing wetland, waterbody, shoreline, beach or adjacent area? Yes No
 If Yes:

i. Identify the wetland or waterbody which would be affected (by name, water index number, wetland map number or geographic description): _____

ii. Describe how the proposed action would affect that waterbody or wetland, e.g. excavation, fill, placement of structures, or alteration of channels, banks and shorelines. Indicate extent of activities, alterations and additions in square feet or acres:

iii. Will proposed action cause or result in disturbance to bottom sediments? Yes No

If Yes, describe: _____

iv. Will proposed action cause or result in the destruction or removal of aquatic vegetation? Yes No

If Yes:

- acres of aquatic vegetation proposed to be removed: _____
- expected acreage of aquatic vegetation remaining after project completion: _____
- purpose of proposed removal (e.g. beach clearing, invasive species control, boat access): _____
- proposed method of plant removal: _____
- if chemical/herbicide treatment will be used, specify product(s): _____

v. Describe any proposed reclamation/mitigation following disturbance: _____

c. Will the proposed action use, or create a new demand for water? Yes No

If Yes:

i. Total anticipated water usage/demand per day: _____ gallons/day

ii. Will the proposed action obtain water from an existing public water supply? Yes No

If Yes:

- Name of district or service area: _____
- Does the existing public water supply have capacity to serve the proposal? Yes No
- Is the project site in the existing district? Yes No
- Is expansion of the district needed? Yes No
- Do existing lines serve the project site? Yes No

iii. Will line extension within an existing district be necessary to supply the project? Yes No

If Yes:

- Describe extensions or capacity expansions proposed to serve this project: _____
- Source(s) of supply for the district: _____

iv. Is a new water supply district or service area proposed to be formed to serve the project site? Yes No

If Yes:

- Applicant/sponsor for new district: _____
- Date application submitted or anticipated: _____
- Proposed source(s) of supply for new district: _____

v. If a public water supply will not be used, describe plans to provide water supply for the project: _____

vi. If water supply will be from wells (public or private), maximum pumping capacity: _____ gallons/minute.

d. Will the proposed action generate liquid wastes? Yes No

If Yes:

i. Total anticipated liquid waste generation per day: _____ gallons/day

ii. Nature of liquid wastes to be generated (e.g., sanitary wastewater, industrial; if combination, describe all components and approximate volumes or proportions of each): _____

iii. Will the proposed action use any existing public wastewater treatment facilities? Yes No

If Yes:

- Name of wastewater treatment plant to be used: _____
- Name of district: _____
- Does the existing wastewater treatment plant have capacity to serve the project? Yes No
- Is the project site in the existing district? Yes No
- Is expansion of the district needed? Yes No

• Do existing sewer lines serve the project site? Yes No
 • Will line extension within an existing district be necessary to serve the project? Yes No
 If Yes:
 • Describe extensions or capacity expansions proposed to serve this project: _____

iv. Will a new wastewater (sewage) treatment district be formed to serve the project site? Yes No
 If Yes:
 • Applicant/sponsor for new district: _____
 • Date application submitted or anticipated: _____
 • What is the receiving water for the wastewater discharge? _____

v. If public facilities will not be used, describe plans to provide wastewater treatment for the project, including specifying proposed receiving water (name and classification if surface discharge, or describe subsurface disposal plans):

vi. Describe any plans or designs to capture, recycle or reuse liquid waste: _____

e. Will the proposed action disturb more than one acre and create stormwater runoff, either from new point sources (i.e. ditches, pipes, swales, curbs, gutters or other concentrated flows of stormwater) or non-point source (i.e. sheet flow) during construction or post construction? Yes No
 If Yes:
 i. How much impervious surface will the project create in relation to total size of project parcel?
 _____ Square feet or _____ acres (impervious surface)
 _____ Square feet or _____ acres (parcel size)
 ii. Describe types of new point sources. _____

iii. Where will the stormwater runoff be directed (i.e. on-site stormwater management facility/structures, adjacent properties, groundwater, on-site surface water or off-site surface waters)?

 • If to surface waters, identify receiving water bodies or wetlands: _____

• Will stormwater runoff flow to adjacent properties? Yes No

iv. Does proposed plan minimize impervious surfaces, use pervious materials or collect and re-use stormwater? Yes No

f. Does the proposed action include, or will it use on-site, one or more sources of air emissions, including fuel combustion, waste incineration, or other processes or operations? Yes No
 If Yes, identify:
 i. Mobile sources during project operations (e.g., heavy equipment, fleet or delivery vehicles)

 ii. Stationary sources during construction (e.g., power generation, structural heating, batch plant, crushers)

 iii. Stationary sources during operations (e.g., process emissions, large boilers, electric generation)

g. Will any air emission sources named in D.2.f (above), require a NY State Air Registration, Air Facility Permit, or Federal Clean Air Act Title IV or Title V Permit? Yes No
 If Yes:
 i. Is the project site located in an Air quality non-attainment area? (Area routinely or periodically fails to meet ambient air quality standards for all or some parts of the year) Yes No
 ii. In addition to emissions as calculated in the application, the project will generate:
 • _____ Tons/year (short tons) of Carbon Dioxide (CO₂)
 • _____ Tons/year (short tons) of Nitrous Oxide (N₂O)
 • _____ Tons/year (short tons) of Perfluorocarbons (PFCs)
 • _____ Tons/year (short tons) of Sulfur Hexafluoride (SF₆)
 • _____ Tons/year (short tons) of Carbon Dioxide equivalent of Hydroflouorocarbons (HFCs)
 • _____ Tons/year (short tons) of Hazardous Air Pollutants (HAPs)

h. Will the proposed action generate or emit methane (including, but not limited to, sewage treatment plants, landfills, composting facilities)? Yes No

If Yes:

i. Estimate methane generation in tons/year (metric): _____

ii. Describe any methane capture, control or elimination measures included in project design (e.g., combustion to generate heat or electricity, flaring): _____

i. Will the proposed action result in the release of air pollutants from open-air operations or processes, such as quarry or landfill operations? Yes No

If Yes: Describe operations and nature of emissions (e.g., diesel exhaust, rock particulates/dust):

j. Will the proposed action result in a substantial increase in traffic above present levels or generate substantial new demand for transportation facilities or services? Yes No

If Yes:

i. When is the peak traffic expected (Check all that apply): Morning Evening Weekend
 Randomly between hours of _____ to _____.

ii. For commercial activities only, projected number of semi-trailer truck trips/day: _____

iii. Parking spaces: Existing _____ Proposed _____ Net increase/decrease _____

iv. Does the proposed action include any shared use parking? Yes No

v. If the proposed action includes any modification of existing roads, creation of new roads or change in existing access, describe:

vi. Are public/private transportation service(s) or facilities available within 1/2 mile of the proposed site? Yes No

vii. Will the proposed action include access to public transportation or accommodations for use of hybrid, electric or other alternative fueled vehicles? Yes No

viii. Will the proposed action include plans for pedestrian or bicycle accommodations for connections to existing pedestrian or bicycle routes? Yes No

k. Will the proposed action (for commercial or industrial projects only) generate new or additional demand for energy? Yes No

If Yes:

i. Estimate annual electricity demand during operation of the proposed action: _____

ii. Anticipated sources/suppliers of electricity for the project (e.g., on-site combustion, on-site renewable, via grid/local utility, or other):

iii. Will the proposed action require a new, or an upgrade to, an existing substation? Yes No

l. Hours of operation. Answer all items which apply.

<p><i>i.</i> During Construction:</p> <ul style="list-style-type: none"> • Monday - Friday: _____ • Saturday: _____ • Sunday: _____ • Holidays: _____ 	<p><i>ii.</i> During Operations:</p> <ul style="list-style-type: none"> • Monday - Friday: _____ • Saturday: _____ • Sunday: _____ • Holidays: _____
---	--

<p>m. Will the proposed action produce noise that will exceed existing ambient noise levels during construction, operation, or both? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If yes:</p> <p>i. Provide details including sources, time of day and duration:</p> <p>_____</p> <p>_____</p>	
<p>ii. Will proposed action remove existing natural barriers that could act as a noise barrier or screen? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Describe: _____</p> <p>_____</p>	
<p>n.. Will the proposed action have outdoor lighting? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If yes:</p> <p>i. Describe source(s), location(s), height of fixture(s), direction/aim, and proximity to nearest occupied structures:</p> <p>_____</p> <p>_____</p>	
<p>ii. Will proposed action remove existing natural barriers that could act as a light barrier or screen? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Describe: _____</p> <p>_____</p>	
<p>o. Does the proposed action have the potential to produce odors for more than one hour per day? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If Yes, describe possible sources, potential frequency and duration of odor emissions, and proximity to nearest occupied structures: _____</p> <p>_____</p> <p>_____</p>	
<p>p. Will the proposed action include any bulk storage of petroleum (combined capacity of over 1,100 gallons) or chemical products 185 gallons in above ground storage or any amount in underground storage? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If Yes:</p> <p>i. Product(s) to be stored _____</p> <p>ii. Volume(s) _____ per unit time _____ (e.g., month, year)</p> <p>iii. Generally describe proposed storage facilities: _____</p> <p>_____</p>	
<p>q. Will the proposed action (commercial, industrial and recreational projects only) use pesticides (i.e., herbicides, insecticides) during construction or operation? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If Yes:</p> <p>i. Describe proposed treatment(s):</p> <p>_____</p> <p>_____</p> <p>_____</p>	
<p>ii. Will the proposed action use Integrated Pest Management Practices? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	
<p>r. Will the proposed action (commercial or industrial projects only) involve or require the management or disposal of solid waste (excluding hazardous materials)? <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If Yes:</p> <p>i. Describe any solid waste(s) to be generated during construction or operation of the facility:</p> <ul style="list-style-type: none"> • Construction: _____ tons per _____ (unit of time) • Operation : _____ tons per _____ (unit of time) <p>ii. Describe any proposals for on-site minimization, recycling or reuse of materials to avoid disposal as solid waste:</p> <ul style="list-style-type: none"> • Construction: _____ _____ • Operation: _____ _____ <p>iii. Proposed disposal methods/facilities for solid waste generated on-site:</p> <ul style="list-style-type: none"> • Construction: _____ _____ • Operation: _____ _____ 	

s. Does the proposed action include construction or modification of a solid waste management facility? Yes No
 If Yes:
 i. Type of management or handling of waste proposed for the site (e.g., recycling or transfer station, composting, landfill, or other disposal activities): _____
 ii. Anticipated rate of disposal/processing:
 • _____ Tons/month, if transfer or other non-combustion/thermal treatment, or
 • _____ Tons/hour, if combustion or thermal treatment
 iii. If landfill, anticipated site life: _____ years

t. Will proposed action at the site involve the commercial generation, treatment, storage, or disposal of hazardous waste? Yes No
 If Yes:
 i. Name(s) of all hazardous wastes or constituents to be generated, handled or managed at facility: _____

 ii. Generally describe processes or activities involving hazardous wastes or constituents: _____

 iii. Specify amount to be handled or generated _____ tons/month
 iv. Describe any proposals for on-site minimization, recycling or reuse of hazardous constituents: _____

 v. Will any hazardous wastes be disposed at an existing offsite hazardous waste facility? Yes No
 If Yes: provide name and location of facility: _____

 If No: describe proposed management of any hazardous wastes which will not be sent to a hazardous waste facility:

E. Site and Setting of Proposed Action

E.1. Land uses on and surrounding the project site

a. Existing land uses.
 i. Check all uses that occur on, adjoining and near the project site.
 Urban Industrial Commercial Residential (suburban) Rural (non-farm)
 Forest Agriculture Aquatic Other (specify): _____
 ii. If mix of uses, generally describe:

b. Land uses and covertypes on the project site.

Land use or Covertypes	Current Acreage	Acreage After Project Completion	Change (Acres +/-)
• Roads, buildings, and other paved or impervious surfaces			
• Forested			
• Meadows, grasslands or brushlands (non-agricultural, including abandoned agricultural)			
• Agricultural (includes active orchards, field, greenhouse etc.)			
• Surface water features (lakes, ponds, streams, rivers, etc.)			
• Wetlands (freshwater or tidal)			
• Non-vegetated (bare rock, earth or fill)			
• Other Describe: _____ _____			

c. Is the project site presently used by members of the community for public recreation? Yes No
i. If Yes: explain: _____

d. Are there any facilities serving children, the elderly, people with disabilities (e.g., schools, hospitals, licensed day care centers, or group homes) within 1500 feet of the project site? Yes No
If Yes,
i. Identify Facilities:

e. Does the project site contain an existing dam? Yes No
If Yes:
i. Dimensions of the dam and impoundment:

- Dam height: _____ feet
- Dam length: _____ feet
- Surface area: _____ acres
- Volume impounded: _____ gallons OR acre-feet

ii. Dam's existing hazard classification: _____
iii. Provide date and summarize results of last inspection:

f. Has the project site ever been used as a municipal, commercial or industrial solid waste management facility, or does the project site adjoin property which is now, or was at one time, used as a solid waste management facility? Yes No
If Yes:
i. Has the facility been formally closed? Yes No

- If yes, cite sources/documentation: _____

ii. Describe the location of the project site relative to the boundaries of the solid waste management facility:

g. Have hazardous wastes been generated, treated and/or disposed of at the site, or does the project site adjoin property which is now or was at one time used to commercially treat, store and/or dispose of hazardous waste? Yes No
If Yes:
i. Describe waste(s) handled and waste management activities, including approximate time when activities occurred:

h. Potential contamination history. Has there been a reported spill at the proposed project site, or have any remedial actions been conducted at or adjacent to the proposed site? Yes No
If Yes:
i. Is any portion of the site listed on the NYSDEC Spills Incidents database or Environmental Site Remediation database? Check all that apply: Yes No
 Yes – Spills Incidents database Provide DEC ID number(s): _____
 Yes – Environmental Site Remediation database Provide DEC ID number(s): _____
 Neither database
ii. If site has been subject of RCRA corrective activities, describe control measures: _____

iii. Is the project within 2000 feet of any site in the NYSDEC Environmental Site Remediation database? Yes No
If yes, provide DEC ID number(s): _____
iv. If yes to (i), (ii) or (iii) above, describe current status of site(s):

v. Is the project site subject to an institutional control limiting property uses? Yes No

- If yes, DEC site ID number: _____
- Describe the type of institutional control (e.g., deed restriction or easement): _____
- Describe any use limitations: _____
- Describe any engineering controls: _____
- Will the project affect the institutional or engineering controls in place? Yes No
- Explain: _____

E.2. Natural Resources On or Near Project Site

a. What is the average depth to bedrock on the project site? _____ feet

b. Are there bedrock outcroppings on the project site? Yes No
 If Yes, what proportion of the site is comprised of bedrock outcroppings? _____%

c. Predominant soil type(s) present on project site: _____ %
 _____ %
 _____ %

d. What is the average depth to the water table on the project site? Average: _____ feet

e. Drainage status of project site soils: Well Drained: _____ % of site
 Moderately Well Drained: _____ % of site
 Poorly Drained _____ % of site

f. Approximate proportion of proposed action site with slopes: 0-10%: _____ % of site
 10-15%: _____ % of site
 15% or greater: _____ % of site

g. Are there any unique geologic features on the project site? Yes No
 If Yes, describe: _____

h. Surface water features.

i. Does any portion of the project site contain wetlands or other waterbodies (including streams, rivers, ponds or lakes)? Yes No

ii. Do any wetlands or other waterbodies adjoin the project site? Yes No
 If Yes to either *i* or *ii*, continue. If No, skip to E.2.i.

iii. Are any of the wetlands or waterbodies within or adjoining the project site regulated by any federal, state or local agency? Yes No

iv. For each identified regulated wetland and waterbody on the project site, provide the following information:

- Streams: Name _____ Classification _____
- Lakes or Ponds: Name _____ Classification _____
- Wetlands: Name _____ Approximate Size _____
- Wetland No. (if regulated by DEC) _____

v. Are any of the above water bodies listed in the most recent compilation of NYS water quality-impaired waterbodies? Yes No
 If yes, name of impaired water body/bodies and basis for listing as impaired: _____

i. Is the project site in a designated Floodway? Yes No

j. Is the project site in the 100 year Floodplain? Yes No

k. Is the project site in the 500 year Floodplain? Yes No

l. Is the project site located over, or immediately adjoining, a primary, principal or sole source aquifer? Yes No
 If Yes:
 i. Name of aquifer: _____

<p>m. Identify the predominant wildlife species that occupy or use the project site: _____ _____ _____</p>	
<p>n. Does the project site contain a designated significant natural community? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes: <i>i.</i> Describe the habitat/community (composition, function, and basis for designation): _____ _____ <i>ii.</i> Source(s) of description or evaluation: _____ <i>iii.</i> Extent of community/habitat: • Currently: _____ acres • Following completion of project as proposed: _____ acres • Gain or loss (indicate + or -): _____ acres</p>	
<p>o. Does project site contain any species of plant or animal that is listed by the federal government or NYS as endangered or threatened, or does it contain any areas identified as habitat for an endangered or threatened species? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	
<p>p. Does the project site contain any species of plant or animal that is listed by NYS as rare, or as a species of special concern? <input type="checkbox"/> Yes <input type="checkbox"/> No</p>	
<p>q. Is the project site or adjoining area currently used for hunting, trapping, fishing or shell fishing? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, give a brief description of how the proposed action may affect that use: _____ _____</p>	
<p>E.3. Designated Public Resources On or Near Project Site</p>	
<p>a. Is the project site, or any portion of it, located in a designated agricultural district certified pursuant to Agriculture and Markets Law, Article 25-AA, Section 303 and 304? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes, provide county plus district name/number: _____</p>	
<p>b. Are agricultural lands consisting of highly productive soils present? <input type="checkbox"/> Yes <input type="checkbox"/> No <i>i.</i> If Yes: acreage(s) on project site? _____ <i>ii.</i> Source(s) of soil rating(s): _____</p>	
<p>c. Does the project site contain all or part of, or is it substantially contiguous to, a registered National Natural Landmark? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes: <i>i.</i> Nature of the natural landmark: <input type="checkbox"/> Biological Community <input type="checkbox"/> Geological Feature <i>ii.</i> Provide brief description of landmark, including values behind designation and approximate size/extent: _____ _____ _____</p>	
<p>d. Is the project site located in or does it adjoin a state listed Critical Environmental Area? <input type="checkbox"/> Yes <input type="checkbox"/> No If Yes: <i>i.</i> CEA name: _____ <i>ii.</i> Basis for designation: _____ <i>iii.</i> Designating agency and date: _____</p>	

e. Does the project site contain, or is it substantially contiguous to, a building, archaeological site, or district which is listed on, or has been nominated by the NYS Board of Historic Preservation for inclusion on, the State or National Register of Historic Places?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If Yes:	
<i>i.</i> Nature of historic/archaeological resource: <input type="checkbox"/> Archaeological Site <input type="checkbox"/> Historic Building or District	
<i>ii.</i> Name: _____	
<i>iii.</i> Brief description of attributes on which listing is based: _____	
f. Is the project site, or any portion of it, located in or adjacent to an area designated as sensitive for archaeological sites on the NY State Historic Preservation Office (SHPO) archaeological site inventory?	<input type="checkbox"/> Yes <input type="checkbox"/> No
g. Have additional archaeological or historic site(s) or resources been identified on the project site?	
If Yes:	
<i>i.</i> Describe possible resource(s): _____	
<i>ii.</i> Basis for identification: _____	
h. Is the project site within five miles of any officially designated and publicly accessible federal, state, or local scenic or aesthetic resource?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If Yes:	
<i>i.</i> Identify resource: _____	
<i>ii.</i> Nature of, or basis for, designation (e.g., established highway overlook, state or local park, state historic trail or scenic byway, etc.): _____	
<i>iii.</i> Distance between project and resource: _____ miles.	
i. Is the project site located within a designated river corridor under the Wild, Scenic and Recreational Rivers Program 6 NYCRR 666?	<input type="checkbox"/> Yes <input type="checkbox"/> No
If Yes:	
<i>i.</i> Identify the name of the river and its designation: _____	
<i>ii.</i> Is the activity consistent with development restrictions contained in 6NYCRR Part 666?	
	<input type="checkbox"/> Yes <input type="checkbox"/> No

F. Additional Information

Attach any additional information which may be needed to clarify your project.

If you have identified any adverse impacts which could be associated with your proposal, please describe those impacts plus any measures which you propose to avoid or minimize them.

G. Verification

I certify that the information provided is true to the best of my knowledge.

Applicant/Sponsor Name _____ Date _____

Signature _____ Title _____

Applicable Sections from Niagara River/Lake Erie Watershed Management Plan

Chapter 2: Eighteenmile Creek

The Eighteenmile Creek Sub-watershed (EC) is located in the southernmost section of the Niagara River/Lake Erie Watershed. It has an area of 76,843.1 acres, or 120.1 square miles, and includes 273.8 miles of waterways. Located in Erie County, EC includes the Towns of Hamburg, Eden, Evans, North Collins, Orchard Park, Boston, Colden, and Concord. Also located within EC is the Village of Hamburg. The sub-watershed is shown in Map 2.1.

Eighteenmile Creek is a large, meandering stream with spring-fed headwater tributaries and upland forests. Its landscape consists of natural overhanging cover that provides material contribution in the form of woody debris and beneficial nutrients, all contributing to overall physical conditions. The creek’s principal tributary, South Branch, flows through steep-sided, wooded gorges which remain mostly undeveloped. Cold springs and groundwater seeps are commonplace along the 70 to 150-foot-tall shale cliffs. Making its way toward the eastern end of Lake Erie, the last half-mile is of low gradient, 75-100 feet wide, with a broad floodplain.

EC has the highest amount of non-impaired aquatic habitat in the Niagara River Watershed, due to large amounts of natural conditions. The NYS Coastal Management Program has designated the EC gorge in Hamburg as a ‘significant coastal fish and wildlife habitat area,’ the Town of Hamburg has designated it as a ‘critical environmental area,’ and Erie County has designated the area near the confluence of the North and South Branches as a conservation park.

Land Use/Land Cover

Land Use/Land Cover (LULC) classifications for EC were derived from 2010 NOAA LULC data, and similar classifications were consolidated into groups that reflect the overall LULC classification.²² The LULC groups can be seen below in Table 2.1.

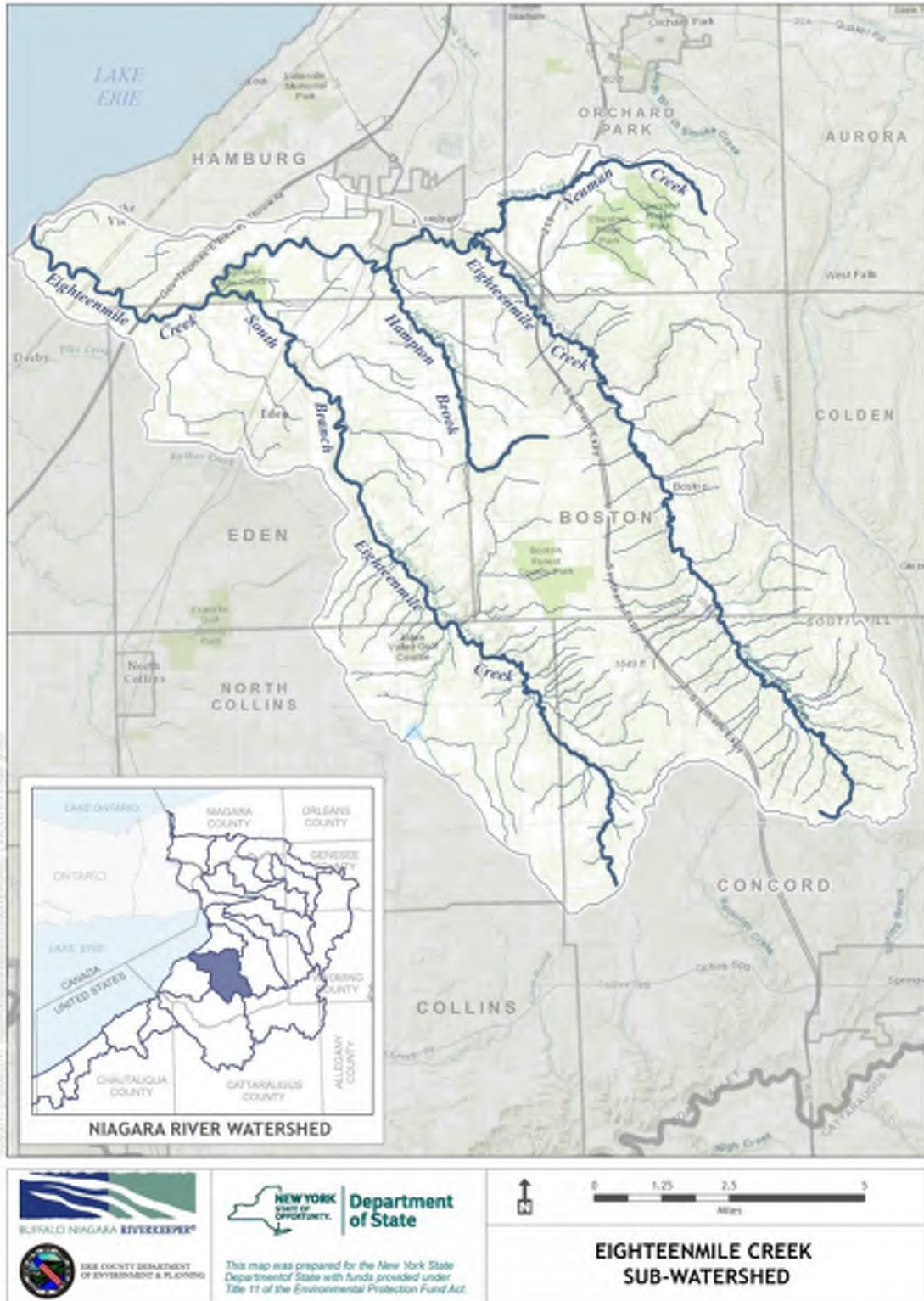
Table 2.1: LULC Groups and percentages

LULC Class	% by general LULC
Developed, High Intensity	Developed: 6.06%
Developed, Medium Intensity	
Developed, Low Intensity	
Developed, Open Space	
Cultivated Crops	Agriculture: 38.13%
Pasture/Hay	
Deciduous Forest	Forest: 47.61%
Evergreen Forest	
Mixed Forest	
Palustrine Forested Wetland	Wetland: 5.88%
Palustrine Scrub/Shrub Wetland	
Palustrine Emergent Wetland	
Open Water	Water: 0.27%
Palustrine Aquatic Bed	Other: 2.04%
Grassland/Herbaceous	
Scrub/Shrub	
Unconsolidated Shore	
Bare Land	

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As seen in Map 2.2, EC is characterized by high concentrations of undeveloped headwater forests, the most dominant land cover in EC is classified as forest (47.6%). The second highest classification is agriculture (38.1%). Together, these two classifications account for 85.7% of land use in EC.

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Map 2.1: Eighteenmile Creek Sub-watershed

Active River Area

The Active River Area model, as discussed in Chapter 1, was applied to the sub-watershed to determine the extent of the ARA, and focus area for this project. The ARA within the EC sub-watershed is generally evenly distributed, encompassing narrow strips of land in the headwaters, where Eighteenmile Creek flows through the steep gorges, limiting its floodplain and in effect, the ARA. As the creek and tributary streams approach the northwestern portion of the sub-watershed, near Lake Erie, the ARA widens, mostly due to flatter topography and more wetland LULC that interacts directly with waterbodies.

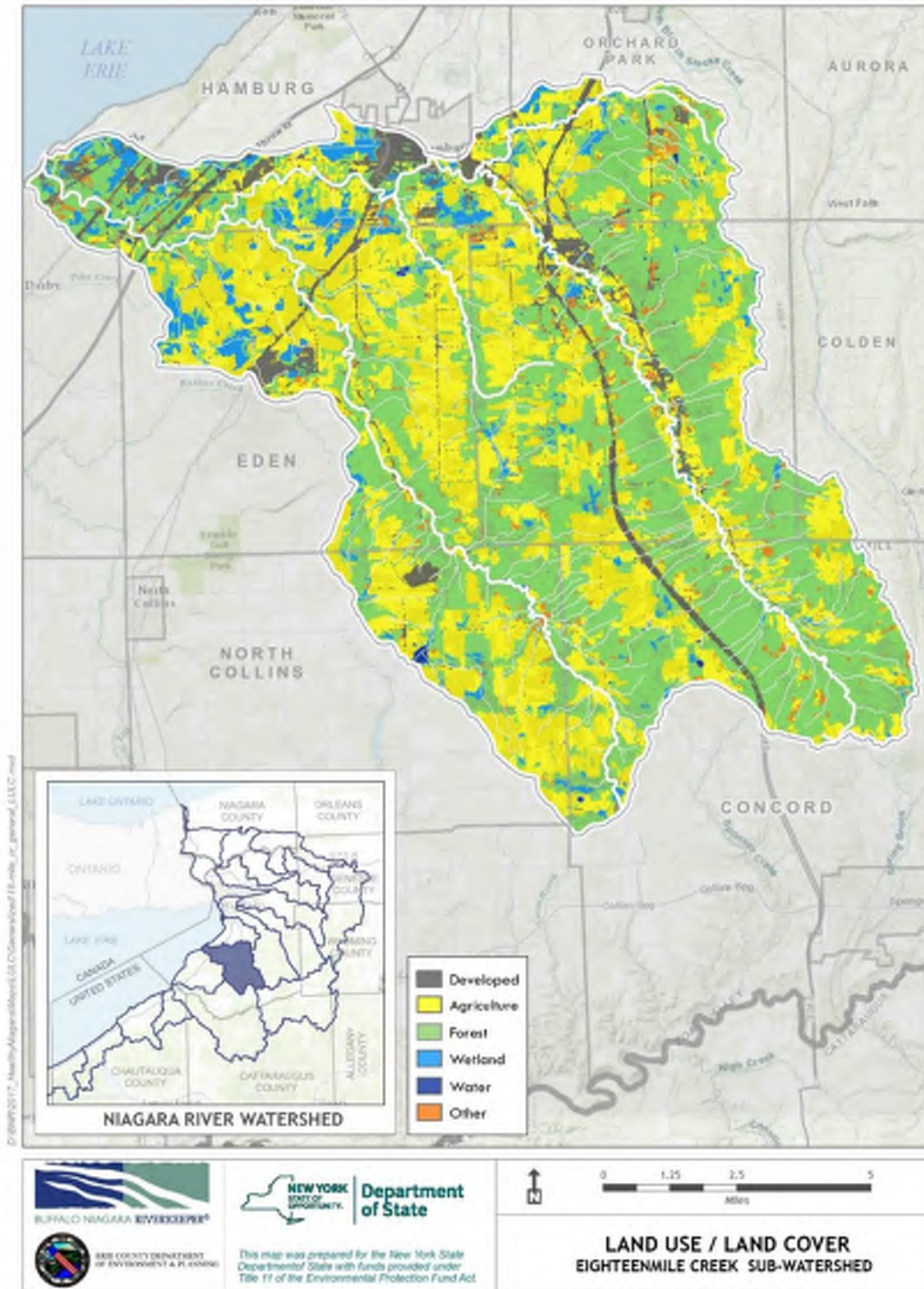
The ARA within EC encompasses 24% of its total area, as seen in Map 2.3.

Land Use/Land Cover in the Active River Area

Potential sources of contaminants entering waterways from surrounding lands were identified by overlaying the ARA model on LULC data, to plot where specific land uses interact with streams through natural hydrologic mechanisms. Map 2.4 displays LULC limited to the bounds of the ARA, indicating where contaminants on land may have direct interaction with stream waters.

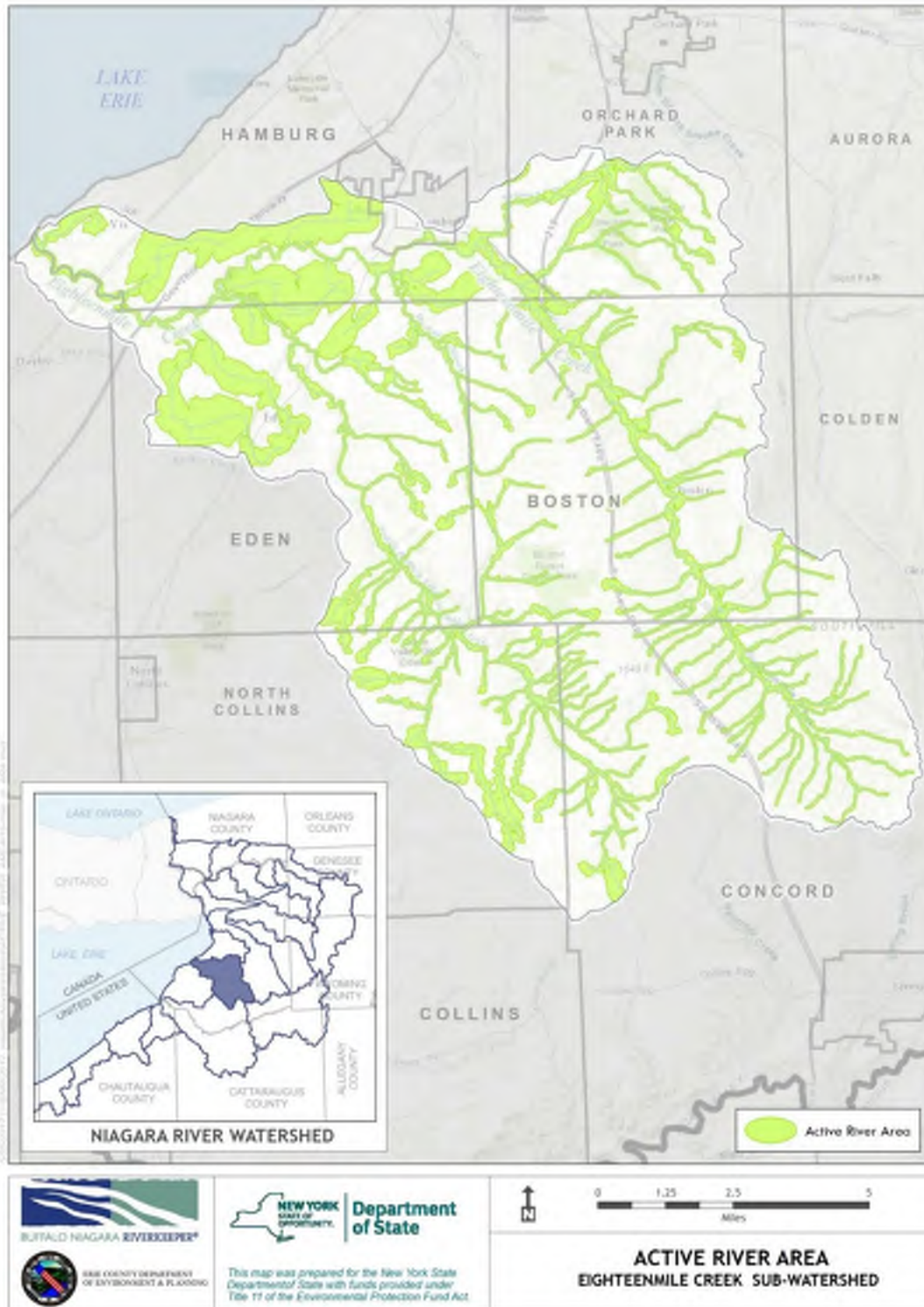
Tributaries to Eighteenmile Creek and South Branch Eighteenmile Creek flow through mostly forested LULC, as many sections of the creeks generally reside in gorges that drain steep topography. Because of an abundance of steep slopes in many sections of EC, development on lands adjacent to these water bodies is difficult or outright impossible, leaving pristine riparian forests that produce high value habitat and clean drinking water resources. While both Eighteenmile Creek and South Branch Eighteenmile Creek pass through agricultural, developed, and other LULC classifications, it isn't until the waterbodies flow through the towns of Eden and Hamburg that agriculture and developed LULC becomes dominant, and runoff from agricultural and urban sources becomes concentrated in both main stream channels and tributaries.

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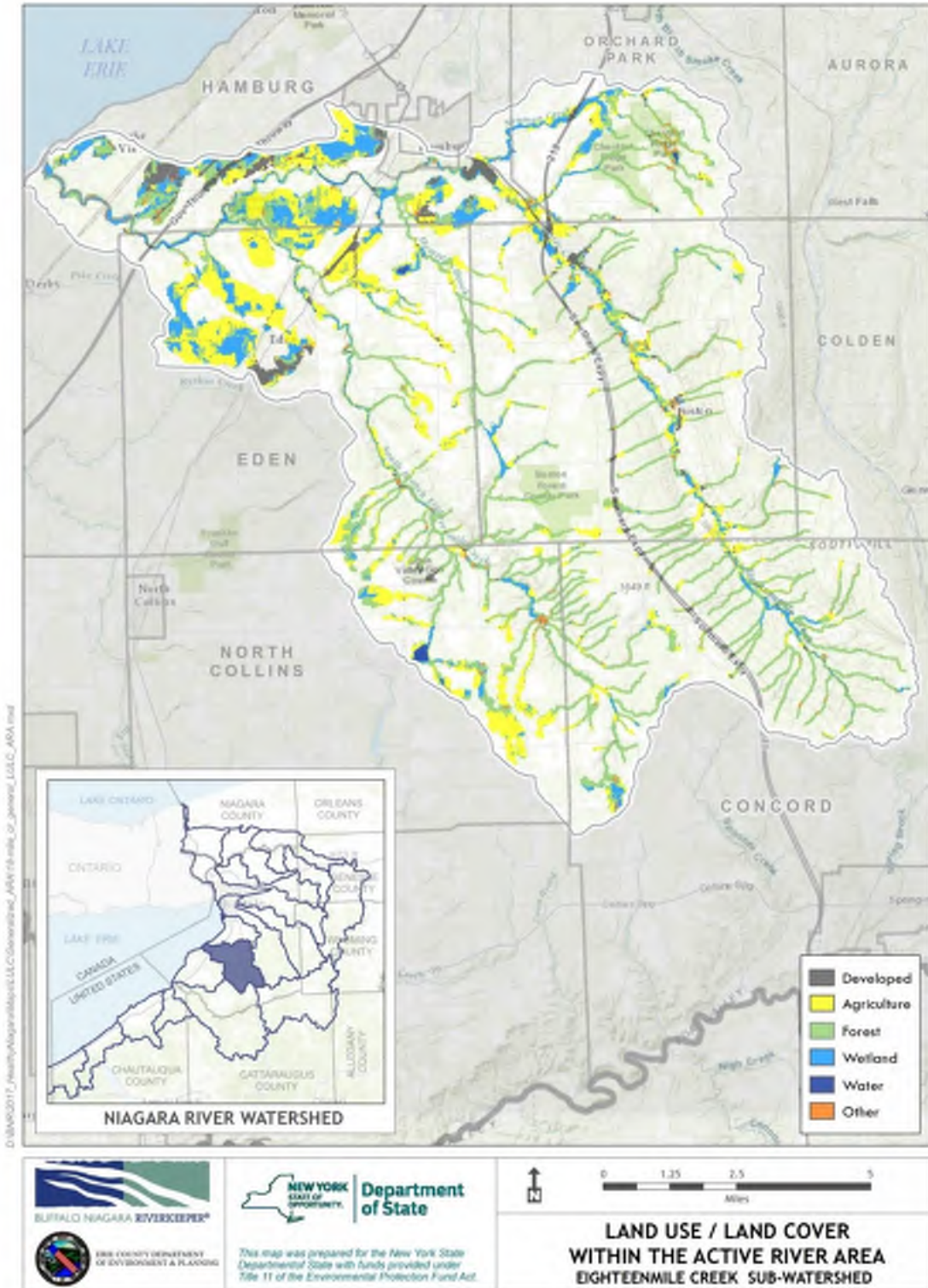
Map 2.2: Eighteenmile Creek Sub-watershed Land Use/Land Cover

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Map 2.3: Eighteenmile Creek Sub-watershed Active River Area

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Map 2.4: LULC and ARA Interaction

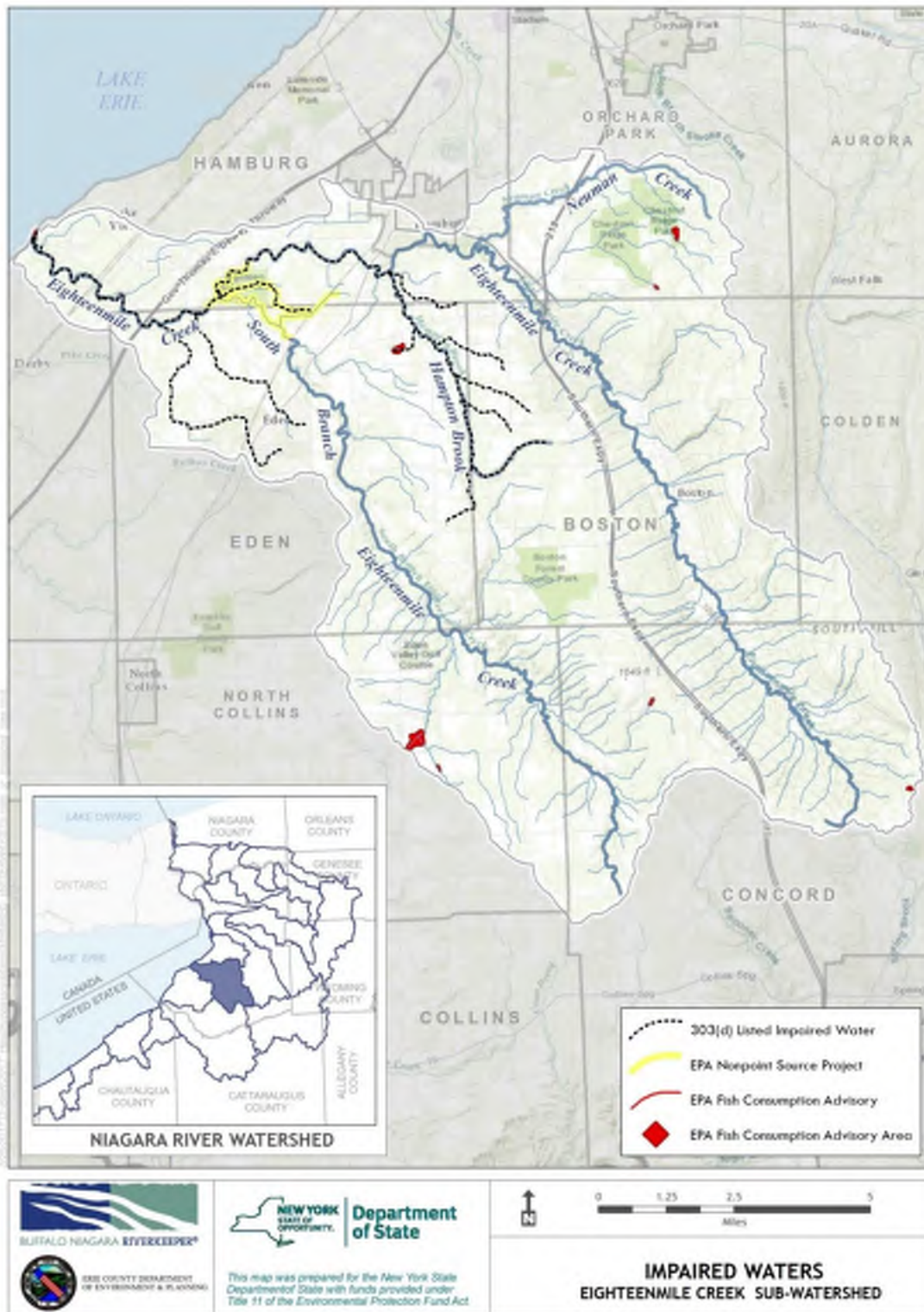
Impaired Waters

The NYSDEC WI/PWL catalogs two waterbody segments within EC, encompassing 47.5 miles, or 17.4% under the 'Minor Impacts' classification. These segments include Eighteenmile Creek (Lower and minor tributaries) and Hampton Brook and its respective tributaries. The remaining waterbody segments within EC are cataloged as No Known Impact.

As depicted in Map 2.5, a portion of Eighteenmile Creek and Hampton Brook are listed on the 303(d) list, indicating impaired waterways, while several small tributaries are listed under EPA Fish Advisories. A small portion of Eighteenmile Creek (Main Stem and South Branch) are listed on the EPA Nonpoint Source Project, a program established under Section 319 of the Clean Water Act, and administered by the NYS Department of Environmental Conservation (NYS DEC), to "control pollution from nonpoint sources to the waters of the state and to protect, maintain, and restore waters of the state that are vulnerable to, or are impaired by nonpoint source pollution."⁹

NYS DEC categorizes waterways according to a class system related to uses.¹² Stream classifications for waterways assessed in this project are listed below in Table 2.2. Streams with AA or A classifications are suitable for use as drinking water sources, while streams classified as B, C, or D support descending numbers of uses. The addition of a (T) to a stream classification indicates that the stream may support trout populations, while a (TS) waterway may support trout spawning.

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Map 2.5: Eighteenmile Creek Sub-watershed Impaired Waterways

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Table 2.2: NYSDEC Priority Waterbody Classifications

Priority Waterbody	Stream Class	Designated Use(s) Not Supported by the Waterbody			Pollutant(s) of Concern		Source(s) of Pollution	
		Use(s) Impacted	Severity of Impact	Documentation	Type of Pollutant	Documentation	Source	Documentation
Eighteenmile Creek, Lower, minor tributaries	B(T); Tribes- B, C	Fish Consumption Recreation Habitat/Hydrology	Stressed Stressed Stressed	Possible Suspected Suspected	Silt/Sediment Priority Organics - PCBs Pathogens Thermal Changes	Suspected Suspected Suspected Possible	Streambank Erosion Urban Runoff Agriculture Hydrologic Modification Toxic/Contaminated Sediment	Suspected Suspected Suspected Suspected
Eighteenmile Creek, Middle, and tributaries	A	No Use Impairment	---	---	---	---	---	---
Eighteenmile Creek, Upper, and tributaries	A, A(T); Tribes- A	No Use Impairment	---	---	---	---	---	---
South Branch Eighteenmile Creek, Lower, and tributaries	B, B(T); Tribes- B	No Use Impairment	---	---	---	---	---	---
South Branch Eighteenmile Creek, Upper, and tributaries	C(TS); Tribes- C	No Use Impairment	---	---	---	---	---	---
Hampton Brook and tributaries	B	Aquatic Life	Stressed	Known	Nutrients (phosphorus) Dissolved Oxygen/Oxygen Demand Pathogens	Known Suspected Possible	Agriculture Urban Runoff	Suspected

Stream Visual Assessment & Water Quality Data Collection

In order to supplement existing data and fill in data gaps, BNR conducted water sampling and stream assessments throughout portions of the sub-watershed. Sampling took place along four streams in EC during the 2015 field season.

Waterways within EC were assessed from July 30, 2015 to September 1, 2015. Within three stream bodies, 331 reaches were assessed. The streams assessed were Eighteenmile Creek (Main and South Branches), Hampton Brook, and Neuman Creek. Each stream was broken up into segments, and assigned a unique identifier based on location (18S, 18W 18M, SB, SSB, HAM, NEU).

Within EC, 17 of the total 273.8 miles (6.2%) of waterways were assessed using a modified version of the Stream Visual Assessment Protocol (SVAP).²¹ Table 2.3 presents the segments assessed.

Stream miles were calculated using ArcGIS software so that stream segments and sample sites could be assigned a unique “mile marker” along each waterway for reference. Mapped segments with mile markers can be seen below in Map 2.6.

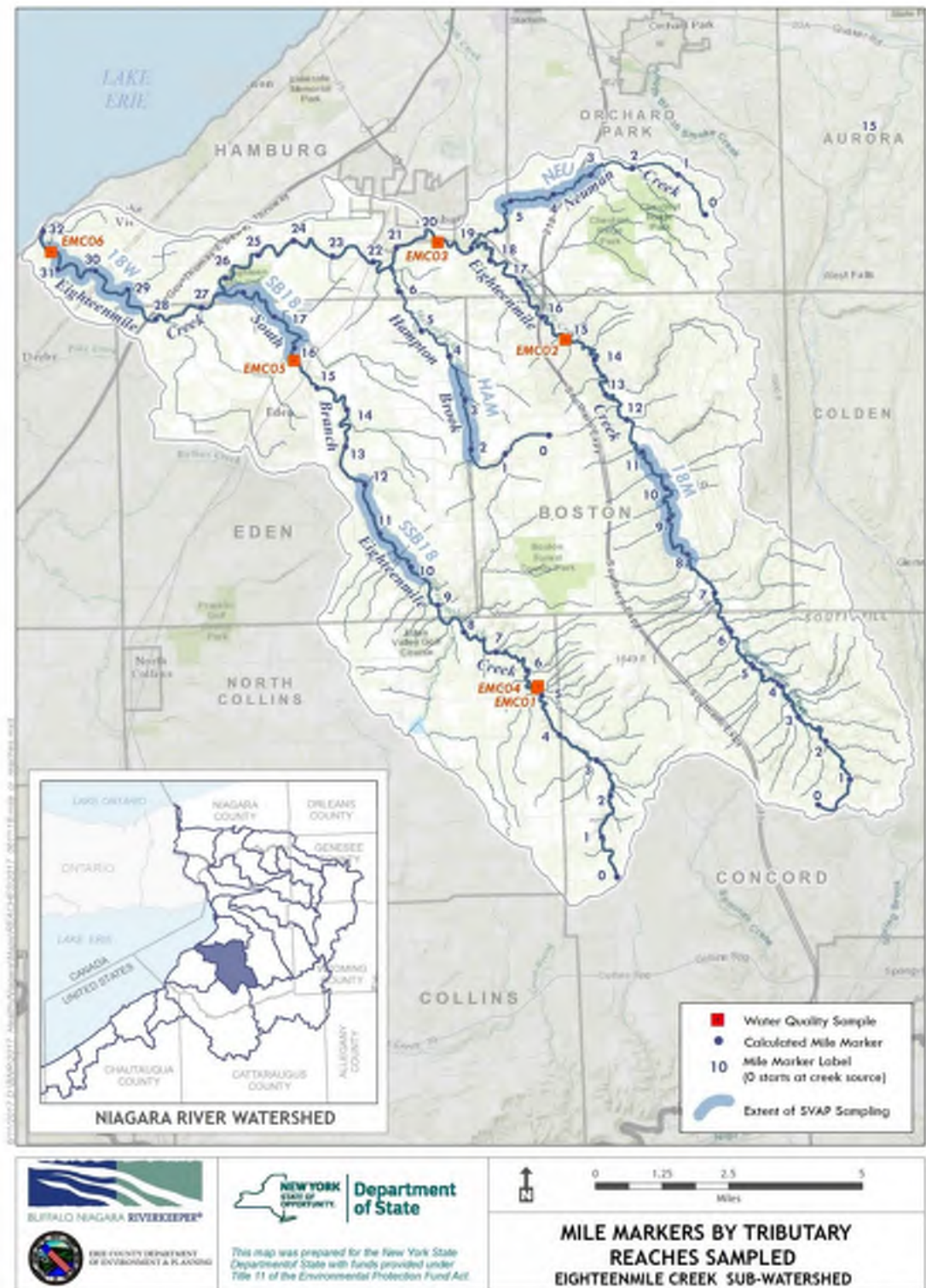
Figure 2.1: Stream visual assessment in Eighteenmile Creek (BNR)



Table 2.3: Streams Assessed in Lower Tonawanda Creek Sub-watershed

Stream Assessed	Stream Class	Miles Assessed
Eighteenmile Creek - Main Stem	B(T), A	4.78
Eighteenmile Creek - South Branch	B	8.76
Hampton Brook	B	1.74
Neuman Creek	A	2.06

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Map 2.6: Stream Segments Assessed

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Physical Properties

As seen in Table 2.4, EC recorded an average depth of 9.8 inches for the four streams assessed. The sub-watershed recorded an average bankfull width of 55.7 feet and an average baseflow width of 32 feet.

Table 2.4: Eighteenmile Creek Sub-watershed Physical Properties

Stream	Average Depth (in.)	Average Bankfull Width (ft.)	Average Baseflow Width (ft.)
Eighteenmile Creek Main Stem	10.3	85	55.3
Eighteenmile Creek South Branch	6.8	81	44.9
Hampton Brook	9.6	34.8	14.1
Neuman Creek	12.5	22.1	13.7
Sub-watershed Average	9.8	55.7	32

Stream Visual Assessment and Water Quality Findings

During the Phase 1 process, EC was chosen based on the priority to preserve and protect conditions leading to good water quality and healthy habitat. Throughout the fieldwork process, it became apparent that while many stream segments were indeed in good overall health, there were several in poor condition. Overall SVAP findings from the four assessed water bodies within the sub-watershed resulted in a score of ‘good’ (7.8). Neuman Creek, which flows primarily through agricultural land and is a Class A stream, begins south of the hamlet of Ellicott and joins Eighteenmile Creek east of Hamburg, recorded the lowest average SVAP score in the sub-watershed of ‘fair’ (6.7). The other three assessed waterbodies, Hampton Creek (8.4), Eighteenmile Creek (7.6), and Eighteenmile Creek South Branch (8.2) all recorded ‘good’ scores.

Table 2.5 presents an SVAP score summary for EC, and a full SVAP summary is available in Appendix C.

Table 2.5: Eighteenmile Creek Sub-watershed SVAP Element Summary

	Channel Conditions	Riparian Zone Left Bank	Riparian Zone Right Bank	Bank Stability Left Bank	Bank Stability Right Bank	Water Appearance	Nutrient Enrichment
<i># of scores average</i>	329 9.6	330 8.7	330 9.2	330 7.6	330 7.8	330 7.6	331 6.4
	Instream Fish Cover	Pools	Invertebrate Habitat	Canopy Cover	Manure Presence	Riffle Embeddedness	
<i># of scores average</i>	331 5.8	326 5.9	331 8.9	237 5.2	1 1	301 9.4	

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Substrate in EC is predominantly bedrock, with 39% of assessed reaches having a bedrock substrate. Cobble was observed to account for 32% of the sub-watershed's assessed substrate. Gravel comprised 23%, with sand, silt, silt/clay mix, and boulders making up only 6% of the substrate of assessed reaches, cumulatively.

Channel conditions throughout the sub-watershed were scored as 'excellent' (9.6+). Assessed stream channels were largely un-altered with limited channelization or use of rip-rap. These natural stream conditions have a positive impact on wildlife and overall stream health.

Japanese Knotweed was observed in 66% of assessed stream reaches in EC, and was evident in some capacity in every stream segment assessed within the sub-watershed. Purple Loosestrife was observed in 33% of assessed reaches, while Phragmites was observed in only 3% of all assessed reaches.

Japanese knotweed

(*Polygonum cuspidatum*), an invasive plant introduced to the US from Eastern Asia, was observed at 66% of reaches assessed in the sub-watershed. Historically, the plant was used for erosion control, and thick growths tend to mask poor bank conditions that would otherwise be assessed as eroding. It spreads very quickly via a rhizome (underground) root system, thriving in recently disturbed areas and forming monoculture stands. Resistant to drought and high temperatures, Japanese knotweed can out-compete native plant communities

which are depended on by many wildlife species and important to the health and biodiversity of local habitats. As seen in Figure 2.2, large stands of Japanese knotweed were observed along the banks of Eighteenmile Creek.

Additional water quality sampling was performed at six sites within EC from June 25, 2015 to November 30, 2015. Of those six sites, three were sampled again from April 28, 2016 to November 15, 2016. It must be noted however, that as discussed above, 2016 sampling took place during drought conditions, and fewer storm events would have contributed to less runoff bringing nutrients into waterways.

Figure 2.2: Japanese Knotweed growth along Eighteenmile Creek (BNR)



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Table 2.6 displays water quality parameters measured during SVAP, including the number of measurements performed, high and low values measured, and the average value recorded for each parameter. Full water quality parameter results can be found in Appendix C and D.

Table 2.6 Eighteenmile Creek Sub-watershed Water Quality Element Summary

	Temperature °C	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	Conductivity (uS/cm)	Total Dissolved Solids (mg/L)
<i># of meas.</i>	119	118	118	119	119
<i>low value</i>	15.9	6.2	66.2	318	228.5
<i>high value</i>	29.0	15.2	184.1	781.9	403
<i>average</i>	21.0	9.6	107.6	495.8	347.2
	pH	Turbidity (NTU)	Phosphorus (µg/L)	Nitrate (µg/L)	
<i># of meas.</i>	119	149	150	125	
<i>low value</i>	7.7	0.6	6.6	3,000	
<i>high value</i>	9.5	32.8	303.6	21,400	
<i>average</i>	8.18	5.4	79.2	10,300	

Baseline Indicators

Through the fieldwork portion of this project, parameters that either indicated pervasive impairments throughout the sub-watershed, or had high numbers of water quality parameters exceeding relevant standards or guidance values were isolated for further discussion. These baseline indicators begin to give us a picture of the sub-watershed’s health or impairment status during normal, baseline conditions.

Baseline Indicators for the Eighteenmile Creek Sub-watershed are identified as:

- Land Use/Land Cover
 - LULC in EC directly affects water quality throughout the sub-watershed. Runoff from stormwater and agriculture is a major vector transporting contaminants from surrounding land into waterways. LULC also helps to determine suggested management actions, as those actions that are able to be performed on agricultural or forested land may not be appropriate for more developed land.
- Riparian Zone and Bank Stability
 - The riparian zone within EC was rated as ‘good’, but several individual reaches recorded fair and poor scores. A poor riparian zone allows stream banks to erode more readily, and for contaminants in runoff to flow uninterrupted into a water body. Bank stability is grouped with riparian zone, as a poor riparian zone generally coincides

with poor bank stability. While some reaches scored very high, erosion issues were prevalent throughout the sub-watershed, and ‘poor’ bank stability scores were recorded in every stream segment SVAP assessments occurred in.

- *E. coli*
 - *E. coli* measurements performed in the sub-watershed had levels greatly exceeding recommended levels for primary contact recreation.
- Nutrient Load
 - Phosphorus and nitrate within the sub-watershed are consistently high, indicating that elevated levels of these parameters are entering waterways.

Baseline Indicators Discussion

Land Use/Land Cover

EC contains extensive quantities of high quality of riparian forest, abundant canopy cover along waterways, and low overall impervious surface (3.45%). Land cover directly affects watershed health, making conservation of forested cover vital to maintain water quality. There have already been steps taken in this direction. Most recently, in 2015, Buffalo Niagara Riverkeeper (BNR), in partnership with The Nature Conservancy and Erie County Department of Parks, Recreation and Forestry, raised funds to acquire a 230-acre forest within the sub-watershed. This action connected a series of critical forested areas within the upper EC sub-watershed and can be used as a model for future land protection and partnership efforts.

EC contains approximately 3,595.3 acres (4.7%) of protected land, the smallest amount of any sub-watershed in the Niagara River Watershed. Land protection and conservation, including easements and regulatory protections (such as state parks, state forests, etc.), is a critical component in preserving water quality. With protection, these areas will not succumb to urban sprawl or development, which will assist in preserving water quality of nearby rivers and streams.

Figure 2.3: Eighteenmile Creek Riparian Zone (BNR)



Riparian Zone and Bank Stability

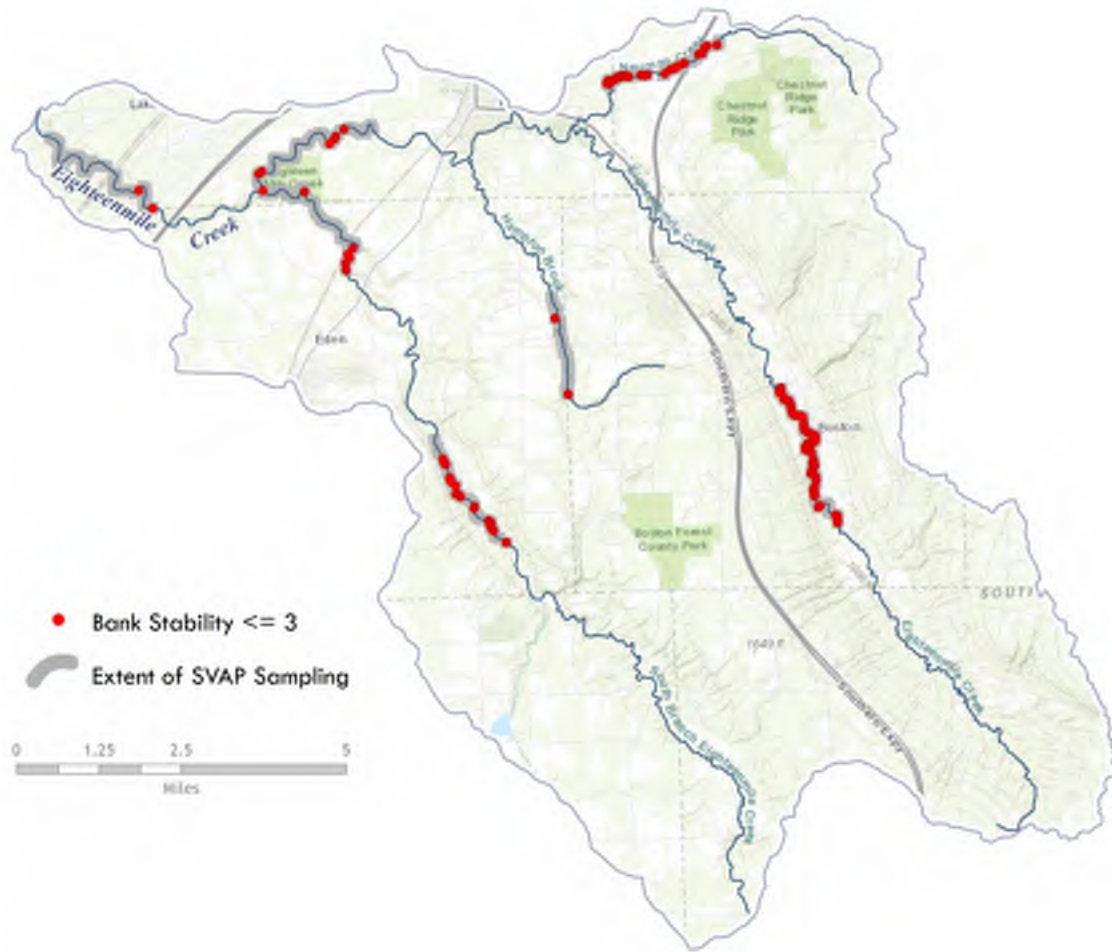
The riparian zone, or area of natural vegetation bordering waterbodies, along assessed stretches received either ‘good’ or ‘excellent’ average scores throughout the sub-watershed. Figure 2.3 presents an example of a healthy riparian zone observed along Eighteenmile Creek. Poor scores indicate a lack of riparian cover or a narrow riparian zone width in comparison to the stream’s active channel. Excellent scores refer to a riparian zone extending at least two times the width of the stream’s active channel. This zone is a vital component to a healthy water body, as the roots of riparian vegetation naturally stabilize banks and control erosion. This zone of vegetation also functions as a surface water filter, slowing and absorbing stormwater runoff and the various pollutants it may be transporting and provides natural shade helping to regulate water temperature. Neuman Creek received the lowest average score of ‘good’ (8.1). Characterized by abundant riparian vegetation, there were a few sites observed where the riparian zone was lacking due to residential mowing.

Coinciding with riparian zone scores, Neuman Creek also received the lowest average score for bank stability of ‘poor’ (4.1). Low scores indicate sites with a higher potential for stream bank erosion. Several sites with considerable stream bank erosion were observed, as seen in Figure 2.4. Assessed segments along Eighteenmile Creek and Hampton Creek recorded much higher average bank stability scores. For example, Eighteenmile Creek’s South Branch recorded a bank stability average of ‘good’ (8.72). Bank stability scores under 3 for the sub-watershed are shown in Map 2.7

below. A score of 3 indicates that “banks are moderately unstable, typically high, actively eroding at bends; ~50% rip-rap; excessive erosion” while a score of 1 represents “Unstable high banks, actively eroding at bends throughout; dominated by rip-rap.” It must be noted that large amounts of invasive species may mask eroding stream banks, and that SVAP did not assess reaches in the headwaters of EC. Main Stem and South Stem EC reaches assessed separately by Erie County Soil and Water Conservation District in 2000-2001 show 78 severely eroding sites, totaling 11,500 linear feet, and other assessments have shown similar erosion issues throughout EC.

Figure 2.4: Neuman Creek Bank Erosion (BNR)





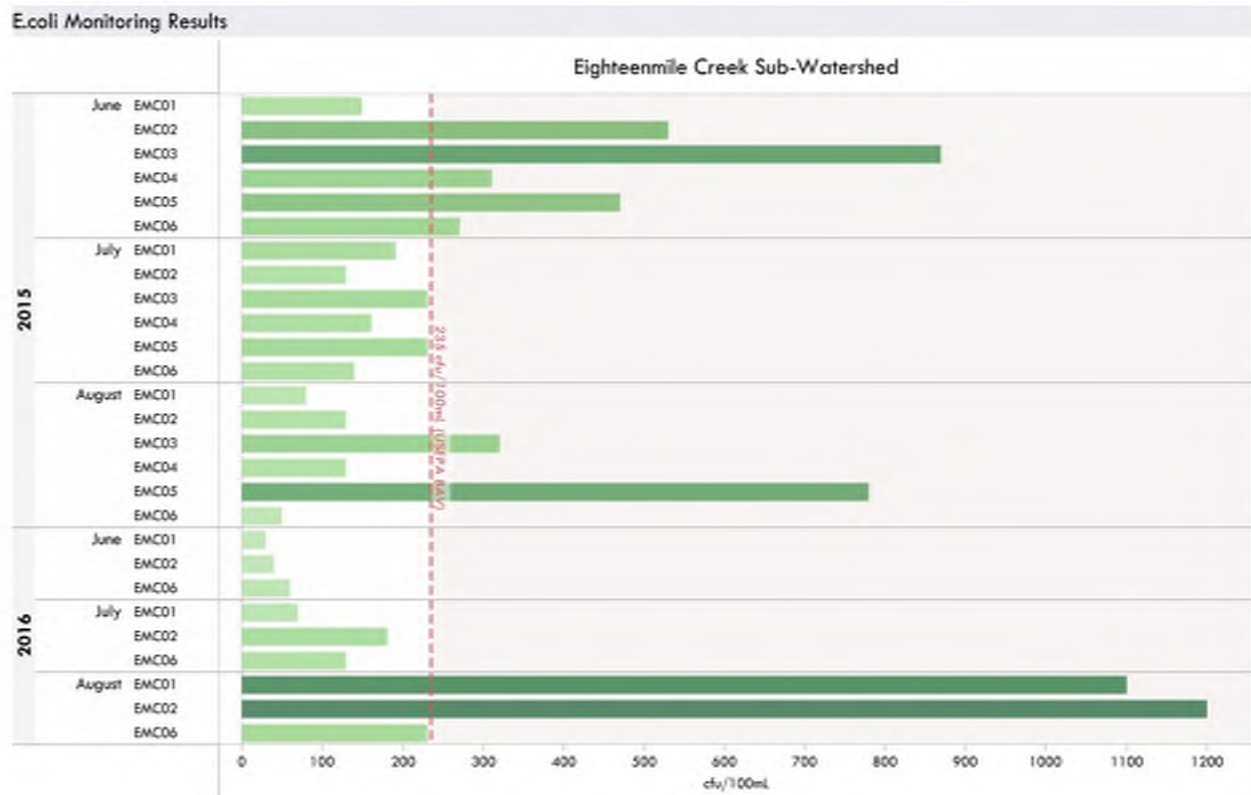
Map 2.7: Bank Stability Score 1-3

E. coli

While manure presence was only observed at one location along Neuman Creek, other sampling locations throughout the sub-watershed recorded elevated *E. coli* levels. Samples were collected at six sites within EC during 2015 and 3 sites in 2016. Several results from both years recorded above the USEPA Beach Action Value (BAV) of 235 cfu/100mL as seen in Figure 2.5. The BAV is a tool often used to assist in making beach notifications and closures.²⁹

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Figure 2.5: *Escherichia coli* Monitoring Results



Cattle tracks were observed within the stream. Manure was also detected within this reach. As seen in Figure 2.6, a path used by cattle leads directly to the stream. Neuman Creek contained the reach that received the lowest overall score within the sub-watershed. The reach in question received a 'poor' score (4.2) and was located near a farm.

Figure 2.6: Livestock Access to Neuman Creek (BNR)



Nutrient Load

Livestock activity in the riparian zone of streams has the potential to degrade vegetation and escalate bank erosion. Manure can result in elevated pathogen and nutrient levels. Most samples collected to assess nutrient levels, both phosphorus and nitrate, displayed results well above the NYSDEC guidance and standard values. Eighteenmile Creek South Branch recorded average nitrate readings of 15,958.1 µg/L while the standard is 10,000 µg/L. Phosphorus levels were also elevated within the assessed waterbodies. Neuman Creek recorded the highest average phosphorus reading of 103.6 µg/L, well above the guidance value for Lake Erie Eastern basins of 10 µg/L.⁶

During monthly water quality sampling, phosphorus reached its highest measured levels in June 2015 with a sub-watershed average value of 471.9 µg/L, and the highest value in 2015 (of 765.6 µg/L) being measured at the South Branch Eighteenmile Creek site (EMC06). Phosphorus levels in 2015 trended downward from June through November, indicating that the bulk of phosphorus is entering waterways in the early summer seasons. In the 2016 sampling season, the sub-watershed's highest average phosphorus levels occurred in May, with measurements for that month averaging 110.0 µg/L.

Nitrogen and phosphorus are natural constituents of the environment, but can also be introduced into a water body via fertilizers and sewage inputs such as septic systems, which are prevalent in rural communities in this watershed. Most traditional fertilizers, used both for agricultural or residential purposes, contain nitrogen, phosphorus, and potassium (or potash). Animal manure and commercial fertilizer, used as a crop fertilizer, is a primary source of nitrogen and phosphorus to surface and groundwater via runoff or infiltration.²⁶

While nitrogen and phosphorus are vital for a healthy stream, the correct balance is critical to sustain aquatic life.¹⁸ High nutrient levels can fuel excessive growth of aquatic vegetation and algae which can congest streams. With elevated plant respiration and decomposition, dissolved oxygen levels become depleted. These-oxygen depleted environments can stress and have detrimental impacts on aquatic life. At times, algae will grow in large, expansive colonies often referred to as an algal bloom. Under the right conditions, some algal blooms will produce toxins that can be dangerous to both wildlife and human health.¹

Eighteenmile Creek Critical Source Areas

CSAs in EC are depicted in Map 2.8, and displays CSAs using the methodology described on page 1-9.

The CSAs in EC are those areas which are thought to be actively contributing to impairments found through assessments. In EC, these “critical” or “contributing” areas are those agricultural, and developed land uses within the ARA. These critical areas represent the priority areas for intervention in the sub-watershed. Undeveloped, forested, or wetlands within the ARA are shown to be “Non-

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Critical Areas”, meaning that they are not actively contributing impairments, but and are priority areas for conservation and protection. These Non-Critical areas can generally be described as a large area which contains important riparian forest tracts, critical for preventing future pollutants from entering surrounding waterways.

CSA Conservation Priorities

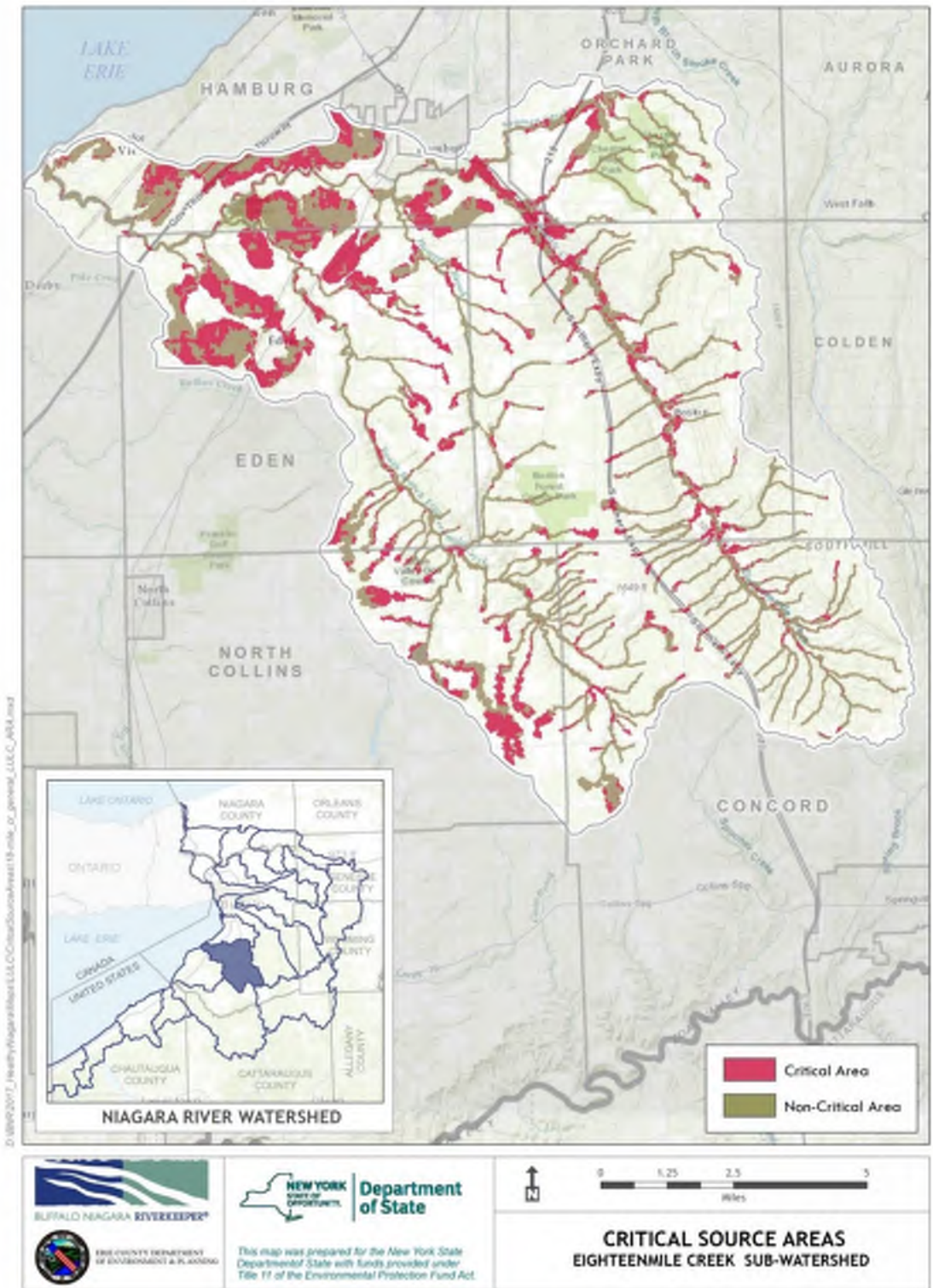
Three core forest areas are identified in the headwaters of the sub-watershed as protection priorities in order to maintain climate resiliency. These three core forest areas are located in headwaters of both the north and south branches of Eighteenmile Creek. Four potential fish barrier removal projects are identified in the headwaters of the sub-watershed. Two are located on the north branch of Eighteenmile Creek while two are located on the southern branch.

The Eighteenmile Creek Sub-watershed features several critical headwater forests and parks. Included in this list are Chestnut Ridge Park, Boston Forest County Park, and Fowlerville forest - a privately owned, 1,300-acre block which helps to mitigate downstream stream and bank erosion.

Many headwater streams in both branches of Eighteenmile Creek suffer from incorrect classifications which limit protections. For example, despite State-documented trout observations throughout these streams, the NYS DEC water quality classifications have not been updated to include protections appropriate for trout habitat and trout spawning streams. This prevents those streams from being adequately protected when bridge or culvert infrastructure is replaced. It is recommended that existing data be assessed to enact appropriate policy changes needed to update regional stream classifications.

Several conservation projects have been identified through Buffalo Niagara Riverkeeper’s Niagara River Habitat Conservation Strategy, which are seen as priority projects for conservation lands that may directly address impairments in the sub-watershed. These projects are included as Appendix E.

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Map 2.8: Critical Source Areas

Target Goals for Baseline Indicators

As specific management actions are carried out, baseline indicators can be used for comparison or to determine the effectiveness of implementation efforts. Suggested management actions are also developed to address baseline indicators, as these indicators can vary regionally and can be tuned to address a sub-watershed's unique characteristics.

Land Cover: Land cover can provide valuable information related to water quality and overall watershed health. With increased development and urbanization, areas with impervious cover will also increase. According to the Center for Watershed Protection, water quality can begin to degrade at 10% impervious cover.^{1,3}

Future Goal: Reduce the amount of impervious cover within the sub-watershed.

Target: As of 2005, EC contains 3.45% impervious cover. This percentage should be analyzed in future years with a target of it remaining at or below 3.45%.

Future Goal: Conserve and protect undeveloped land in the sub-watershed.

Target: Engage communities in the sub-watershed to develop a cross-municipal land conservation strategy.

Riparian Zone and Bank Stability: Vegetation bordering waterways naturally stabilizes banks, controls erosion, functions as a natural filter for water runoff, and cools water temperatures via shading. The natural riparian zone should not be compromised during the course of new development or implementation of agricultural practices.

Future Goal: Reduce erosion by increasing the length and width of riparian vegetation along streams within the sub-watershed, and incentivize and encourage riparian buffer ordinances.

Target: Increase the width of riparian vegetation to two times the active channel or 300ft, whichever is greater.

Future Goal: Work with communities, agencies, and municipalities to implement stream bank stabilization programs at actively eroding sites.

Target: Stream stabilization at reaches scoring 3 and below in SVAP Bank Stability (Map 2.7).

E. coli: As a bacterial indicator, *E. coli* is used to monitor the presence of human/animal waste in waterbodies. Sources may include fertilizer, livestock, sanitary discharges, or compromised septic systems.

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Future Goal: Reduce access of livestock to streams and stream banks thereby limiting bacterial inputs.

Future Goal: Provide resources to communities to upgrade outdated and deteriorated septic systems.

Future Goal: Municipalities continue to prevent sanitary sewer overflows from discharging into waterways.

Target: Samples test at or below USEPA BAV throughout the sub-watershed, or reduce 30-day geometric mean value to meet USEPA recommended value of 126 cfu/100mL.

Nutrient load: Resulting from stormwater runoff, inputs from wastewater treatment plants, septic systems, and (possible) fertilizer use, high nutrient levels are commonplace throughout the sub-watershed.

Future Goal: Reduce loadings of nutrients, specifically phosphorus and nitrate.

Target: Meet NYS DEC guidance values

- Phosphorus NYS DEC guidance value for Lake Erie Eastern basins of 10 µg/L
- Nitrate NYSDEC standard value of 10,000 µg/L

Suggested Management Actions

The work performed during this project, along with the compilation of preceding data collection and inventory of watershed characteristics is intended to support the development of an action plan consisting of suggested management actions. Actions suggested below are intended to be part of an ongoing, dynamic process, in which management actions are periodically revisited to address changing conditions and management goals with the Niagara River/Lake Erie Watershed.

By implementing the general strategies and recommendations detailed here, the sub-watershed will be on track to meet the previously listed targets for various baseline indicators. These recommendations focus on key issues facing the sub-watershed that were identified through this effort and are not intended to act as a comprehensive list of everything that could be implemented. These suggested management actions apply to: homeowners, municipalities, volunteer groups, agricultural landowners, organizations and agencies working within the sub-watershed.

Land Use

Goal: Protect existing open space and headwater forested area from development

Benefit: According to the Center for Watershed Protection, water quality begins to degrade at 10% impervious cover, because of the loss of groundwater recharge through percolation, and the surge in runoff entering waterways, altering natural flow regimes and overwhelming sewer systems.³ Currently, the sub-watershed has only 3.45% impervious cover, well below the suggested best practice. Eighteenmile Creek sub-watershed is almost half forested (47.6%) and about 87% of the entire sub-watershed is classified as forested or agricultural land yet only 4.7% of the sub-watershed is protected. Within the suburban population centers in the sub-watershed, efforts to retrofit existing spaces should include increasing pervious surface and decreasing overall imperviousness. In addition, because the sub-watershed has limited development, protecting the forested or open space in perpetuity would greatly benefit long-term water quality.

Best Management Practices

The actions outlined in the table below are organized into three broad categories: green and living infrastructure, land use policy changes, and community engagement.

Implement Green Infrastructure | Living Infrastructure

By incorporating simple living infrastructure practices such as bioswales or rain gardens into small-scale development plans or implementing broader techniques across a larger scale, the resulting effect will be to help to collect rain water before it is able to flow over impervious surfaces, collect pollution and enter bodies of water. In addition, the use of porous material in constructing roadways and parking lots beyond what is required by the NYS Stormwater Manual, rain barrels to disconnect rooftop runoff and incorporation of strategically preserved or placed green and living spaces into landscaping plans will reduce runoff from impervious surfaces directly into waterways and lessen the negative impacts of combined sewer overflows and stormwater discharges.

Land Use Policy

Recommended changes in land use policies include actions like updating a municipality's Comprehensive Plan or amending zoning codes. A Comprehensive Plan allows the municipality to clearly state its long-term goals and priorities for a community. While this document is not law, it does inform the law as a municipality would write zoning codes and ordinances that enable it to meet the goals outlined in the Comprehensive Plan. Conservation updates that can be made to code include: conservation overlay districts, steep slope requirements to limit erosion, minimum setback requirements from waterbodies (sometimes called a "waterfront yard" or "buffer" requirement) on new development, or requirements and standards for vegetated buffers along waterways on all lands.

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Implementing conservation easements to protect existing open space, critical headwater forests, and prevent suburban sprawl, as well as farmland protection planning that restricts development on agricultural lands would have the greatest impact in this sub-watershed. For example, the Town of Eden has a codified conservation easement program enabling the town to purchase or request gifts or bequests of land for the protection of open space.⁴ Similarly Riverkeeper helped to facilitate the purchase of property for inclusion into a County Forest, creating 1,000 acres of headwater forest in the Town of Concord protected in perpetuity.

Community Education and Engagement

While regulation through zoning codes forces those living in a municipality to abide by a certain set of laws, some practices are better implemented through landowner cooperation and collaboration. For example, almost 40% of the EC sub-watershed is classified as agricultural land and data analysis suggests that agricultural lands may be contributing to water quality impairments in places across the EC sub-watershed. Here, encouraging landowners to voluntarily participate in conservation initiatives can greatly benefit a community. These initiatives include landowner stewardship like utilizing a vegetated riparian buffer along a shoreline or installing a rain barrel to disconnect gutters and collect rainwater for reuse. Similarly, hosting town clean-ups or invasive species removal days can help people feel more connected to their environment, thereby fostering a greater sense of community ownership and stewardship. Invasive species, such as Japanese knotweed, were observed in the sub-watershed. Japanese knotweed requires a multi-step removal process in order to eradicate it and it will overtake as a nuisance weed without control. Implementing a community work day targeted towards removal of Japanese knotweed would be a great step towards achieving improved conditions in EC.

Recommended Actions to increase green space and protect existing open space:

Short Term	<ul style="list-style-type: none"> • Reclaim unused or underutilize impervious spaces and develop into “green” spaces like rain gardens or community gardens <ul style="list-style-type: none"> ○ Cost: Medium • Host sustainable development workshops for municipalities and agricultural landowners <ul style="list-style-type: none"> ○ Cost: Low • Promote recreational use of natural areas to increase land protection and awareness <ul style="list-style-type: none"> ○ Cost: Low • Create agricultural and farmland protection easements and programs <ul style="list-style-type: none"> ○ Cost: Low
	<ul style="list-style-type: none"> • Revise zoning regulations to limit expansion of impervious surfaces <ul style="list-style-type: none"> ○ Cost: Low • Revise zoning codes to include waterfront yard, buffers and increased setback requirements

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Long Term	<ul style="list-style-type: none">○ Cost: Low• Creative incentive and educational programs for green and living infrastructure implementation<ul style="list-style-type: none">○ Cost: Medium• Promote the conservation of open spaces through conservation easements and land acquisition.<ul style="list-style-type: none">○ Cost: Medium to high• Develop vegetative buffer standards to protect stream quality<ul style="list-style-type: none">○ Cost: Low
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Riparian Zone and Bank Stability

Goal: Increase the length and width of riparian vegetated buffers along stream banks within the sub-watershed

Benefit: Native vegetation bordering waterways naturally stabilizes banks, controls erosion, functions as a natural filter for pollutants, and cools water temperature by providing shade over the water. As noted above, the riparian zone across this entire sub-watershed received average ‘good-excellent’ (8.7-9.2) SVAP scores, although many known areas of severe erosion exist. Increasing the width of vegetated riparian zones to twice the width of the stream channel or 300 feet, whichever is greater, would provide the greatest impact to the health of the waterway. Planting native vegetation and large trees to combat invasive species would also have beneficial effects on water health.

Best Management Practices

Stream Stabilization

Stabilization of actively eroding shorelines using living and natural infrastructure is recommended where appropriate. Other engineered stabilization techniques should be used only in extreme cases.

Add Vegetation

Hosting community tree planting days in a municipality can provide great benefit to the riparian corridor and improve waterway health with limited costs borne by the municipality. Trees can even be obtained at no cost through the NYS DEC “Trees for Tribs” Program.⁵

Invasive Species Control

Eradication and control invasive species in this sub-watershed is a priority issue that should be coordinated with local agencies and groups such as WNY PRISM.

Develop Ordinances

Including a vegetated buffer or setback requirements into a municipality’s zoning code is one regulatory mechanism to ensure measures are taken to protect water health. Not all land can be regulated through laws so in some instances encouraging best management practices or utilizing

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incentive programs may be a more effective approach. Although located in the Lower Tonawanda sub-watershed, the town of Amherst provides a great example of a buffer ordinance. Goal 4-4 of The Bicentennial Comprehensive Plan for the Town of Amherst (amended Feb 2011) is: “To establish buffer/setback standards for new development to help protect streams of significance.” This goal is then applied in the Town’s zoning code as, “Lots abutting a watercourse.”¹⁶ This section requires that lots abutting a watercourse install a 50-foot wide riparian buffer on either side of a watercourse and further, any building must be set back another 10 feet from the buffer. Additionally, ordinances restricting development which encroaches on floodplains will benefit riparian zones and floodplain management.

Recommended Actions to increase the length and width of riparian zones:

Short Term	<ul style="list-style-type: none"> • Host tree plantings with volunteers <ul style="list-style-type: none"> ○ Cost: Low • Develop programs to encourage the installation of riparian buffers <ul style="list-style-type: none"> ○ Cost: Low to Medium • Implement stream and bank stability projects to stop erosion <ul style="list-style-type: none"> ○ Cost: High
Long Term	<ul style="list-style-type: none"> • Develop vegetated buffer requirements for development in riparian areas <ul style="list-style-type: none"> ○ Cost: Low • Develop setback ordinances for new development in riparian areas <ul style="list-style-type: none"> ○ Cost: Medium • Encourage collaboration amongst municipalities and agencies to develop zoning codes to encourage conservation and best management practices across waterways that span municipalities <ul style="list-style-type: none"> ○ Cost: Low

E. coli

Goal: Reduce bacterial inputs into streams throughout the sub-watershed

Benefit: *E. coli* is a fecal indicator bacteria used to monitor the presence of human/animal waste in water bodies. Because few strains of *E. coli* naturalize in the environment, the presence of *E. coli* almost certainly suggests that fecal matter is contaminating a body of water. Sources may include fertilizer, livestock, sanitary sewer discharges, or compromised septic systems. Water bodies with high levels of *E.coli* are not suitable for consumption or recreation and can result in a chain-reaction of negative human health and economic effects including beach closures. Reducing *E. coli* levels to meet USEPA’s recommended value of 126 cfu/100ml (30 day geometric mean) would greatly improve water quality. Combating *E. coli* requires that the sources inputting the bacteria into waterways be mitigated, such as CSO/SSO outfalls and livestock exclusion.

Best Management Practices

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Livestock

When livestock is able to freely roam in and across streams, they can produce a number of undesirable effects such as trampling banks, increasing erosion, and directly inputting sources of bacteria such as *E. coli* into water bodies through excrement. In addition, livestock fecal contamination releases a large amount of antibiotics into waterways, contributing to widespread naturalized antibiotic resistance. If livestock cannot be completely excluded from streams, then at a minimum, limit access by creating a designated crossing. Similarly, some lands have seen success by placing water troughs near the water body so that the cows can easily get to the stream water they may use for drinking but are not directly standing in the stream.

Update and Upgrade Septic Systems

Leaking septic systems are a direct input of bacteria into groundwater which can pollute drinking water and contaminate streams. It is important to recall that the presence of *E. coli* is not the only indicator species of biological pollution—it is just the simplest and most widely tested for. *E. coli* often occurs in tandem with other pathogenic bacteria, viruses and protozoans, such as those that cause cholera, dysentery, and Giardia. Upgrading septic systems with denitrification systems and fixing leaking systems is a necessary solution to mitigate this input.

Green and Living Infrastructure

In more populous areas, CSOs can be a large source of contaminants (particularly bacteria). CSOs occur where a municipality has combined storm and sanitary pipes and where rainfall inundates the system, resulting in more water than the pipes can handle. This results in an overflow situation where the pipes discharge excess untreated water directly into waterbodies. Implementing green and living infrastructure in both urban and suburban areas can drastically mitigate CSO events. By utilizing green and living infrastructure elements like rain barrels, raingardens, wetlands, and other installations meant to trap rainwater and runoff, less water goes into the sewer system resulting in fewer overflow events. In agricultural or suburban areas with larger swaths of open land, utilizing living infrastructure such as woodlands, meadows, and riparian buffers, and living shorelines to intercept stormwater and overland runoff can also help reduce runoff.

In addition to the modifications noted above, large-scale infrastructure improvement projects can be extremely beneficial as well as a catalyst for major change. For example, the completion of the Crescent Avenue Pumping Station in the Village of Hamburg was the final step to eliminate SSOs in the village. Over seven years, in partnership with Erie County, the village undertook four major grey infrastructure improvement projects to rehabilitate and/or replace aging portions of the sewer system. Immediately following the completion of the final stage, there were no recorded SSO events in either 2012 or 2013. The total cost to construct these projects was \$3.9 million. These upgrades had not only

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ecological benefits by eliminating overflows into Eighteenmile Creek, a designated Critical Environmental Area which boasts a NYS DEC fishing access point, but also helped the village to meet the goals stated in their Comprehensive Plan. As Mayor Moses stated,

“By eliminating overflows into Eighteenmile Creek from the Village and removing a pump station from the creek bank these projects are not only helping the environment, they are also helping the Village to attain one of the strategies in our Comprehensive Plan- which is to increase access and recreational opportunities along 18 Mile Creek for residents and visitors so that we can all enjoy the natural resource that flows through our community.”¹³

Recommended Actions to reduce bacterial inputs into streams:

Short Term	<ul style="list-style-type: none"> • Install livestock exclusion fencing to limit livestock access to and crossing of streams <ul style="list-style-type: none"> ○ Cost: Medium • Disconnect gutters and install rain barrels to collect and reuse storm water <ul style="list-style-type: none"> ○ Cost: Low • Build rain gardens <ul style="list-style-type: none"> ○ Cost: Low • Develop and host septic system maintenance workshops <ul style="list-style-type: none"> ○ Cost: Low • Install liquid manure retention and targeted spreading systems to prevent manure runoff from crop fields. <ul style="list-style-type: none"> ○ Cost: High
Long Term	<ul style="list-style-type: none"> • Encourage the installation of wetland treatment systems or other living infrastructure to replace grey systems <ul style="list-style-type: none"> ○ Cost: Low to Medium • Install vegetated bio-filtration systems such as bioswales and rain gardens <ul style="list-style-type: none"> ○ Cost: Low • Install Living Shorelines along riparian land <ul style="list-style-type: none"> ○ Cost: Low to High • Replace aging infrastructure and remove CSO/SSO outfalls from municipal sewer systems <ul style="list-style-type: none"> ○ Cost: High

Nutrient Load

Goal: Reduce loadings of nutrients, specifically phosphorous

Benefit: Limiting phosphorus limits algae growth (including nuisance blue-green algae such as *Microcystis spp.*) and allows for more dissolved oxygen, resulting in better aquatic species health and cleaner water.

Best Management Practices

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High levels of nutrients such as phosphorous and nitrates were found the in the creeks and streams sampled in the sub-watershed. Sources of nutrients include: stormwater runoff, wastewater treatment plants, CSOs, septic systems, fertilizers, agricultural runoff, and improper disposal of lawn debris. Two of the best ways to combat nutrient inputs are through improving land use practices and education.

Land Use

Making minor to moderate changes to the way in which a person or industry interacts with their land can have significant benefits to water body health. The actions outlined below provide examples of tactics both private homeowners and agricultural landowners can implement.

Education

Many of the changes that could result in the greatest improvement on the overall health of water bodies are behavioral. Encouraging changes in actions or promoting different protocols can be beneficial to combatting nutrient loadings along waterways. For instance, while in the field, the data collection team observed a number of piles of grass clippings abutting the stream and getting blown into the water. Inputs of grass clippings and yard waste into a waterway cause a direct increase in nutrients. Similar minor changes in farming practices or utilizing well known best practices can have significant impacts to the health of a waterbody. Suburban communities can benefit from individual small changes like using phosphorous-free fertilizer and consulting local town or village officials on lawn debris pick-up policies. Some towns, like Orchard Park, even have their own compost facilities where homeowners can bring yard waste.

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Recommended Actions to reduce nutrient loadings:

<p>Short Term</p>	<ul style="list-style-type: none"> • Host educational workshops for riparian landowners pertaining to funding opportunities and financial assistance for implementing best management practices or runoff mitigation • Enact best management practices to reduce nutrients and sediments entering local waterbodies <ul style="list-style-type: none"> ○ Agricultural Environmental Management Program ○ NYS Agricultural Nonpoint Source abatement and Control Grant Program <ul style="list-style-type: none"> ○ Cost: Low • Encourage no till farming practices <ul style="list-style-type: none"> ○ Cost: Low • Provide educational stormwater management trainings for designers and highway officials to ensure stormwater law compliance <ul style="list-style-type: none"> ○ Cost: Low • Implement “no mow” zones <ul style="list-style-type: none"> ○ Cost: Low • Appropriately dispose of lawn debris – consult local town or village <ul style="list-style-type: none"> ○ Cost: Low • Use phosphorous-free fertilizer <ul style="list-style-type: none"> ○ Cost: Low
<p>Long Term</p>	<ul style="list-style-type: none"> • Develop and implement educational trainings for homeowners about lawn care techniques, debris disposal, native plant species etc. <ul style="list-style-type: none"> ○ Cost: Low • Implement and enforce pesticide and fertilizer use standards and regulations <ul style="list-style-type: none"> ○ Cost: Low • Increase watershed stewardship by installing markers and signage for things like storm drains <ul style="list-style-type: none"> ○ Cost: Medium • Limit manure applications timeframes; i.e. not on frozen ground <ul style="list-style-type: none"> ○ Cost: Low

Chapter 3: Buffalo River

The Buffalo River Sub-watershed (BR) is located on the southern section of the Niagara River Watershed. It has an area of 105,392 acres, or 164.7 square miles, and includes 312 miles of waterways, including Cazenovia Creek, Pipe Creek, the Buffalo River, along with many unnamed low-order tributaries and ephemeral headwater streams.

Located in Erie County, BR includes the following municipalities: The City of Buffalo, the Villages of East Aurora and Sloan, the Towns of West Seneca, Elma, Aurora, Colden, Holland, Concord, Cheektowaga, Boston, Wales, and Sardinia. The sub-watershed is shown in Map 3.1.

BR's varies across ecoregions – from high quality upland forests and streams down to the urban-industrial corridor and “Area of Concern” (AOC) approaching Lake Erie. The headwaters include the East and West Branches of Cazenovia Creek, which rise in the Towns of Sardinia and Concord respectively, and flow northwest to join in the Village of East Aurora. These upland landscapes are comprised of several protected areas including: Erie County Forests, eight NYS DEC Class 1 wetlands, and two large grassland areas (Knox Farm and Sprague Brook Park), and large open spaces such as Tift Nature Preserve in Buffalo, and Emery Park in South Wales.

Land Use/Land Cover

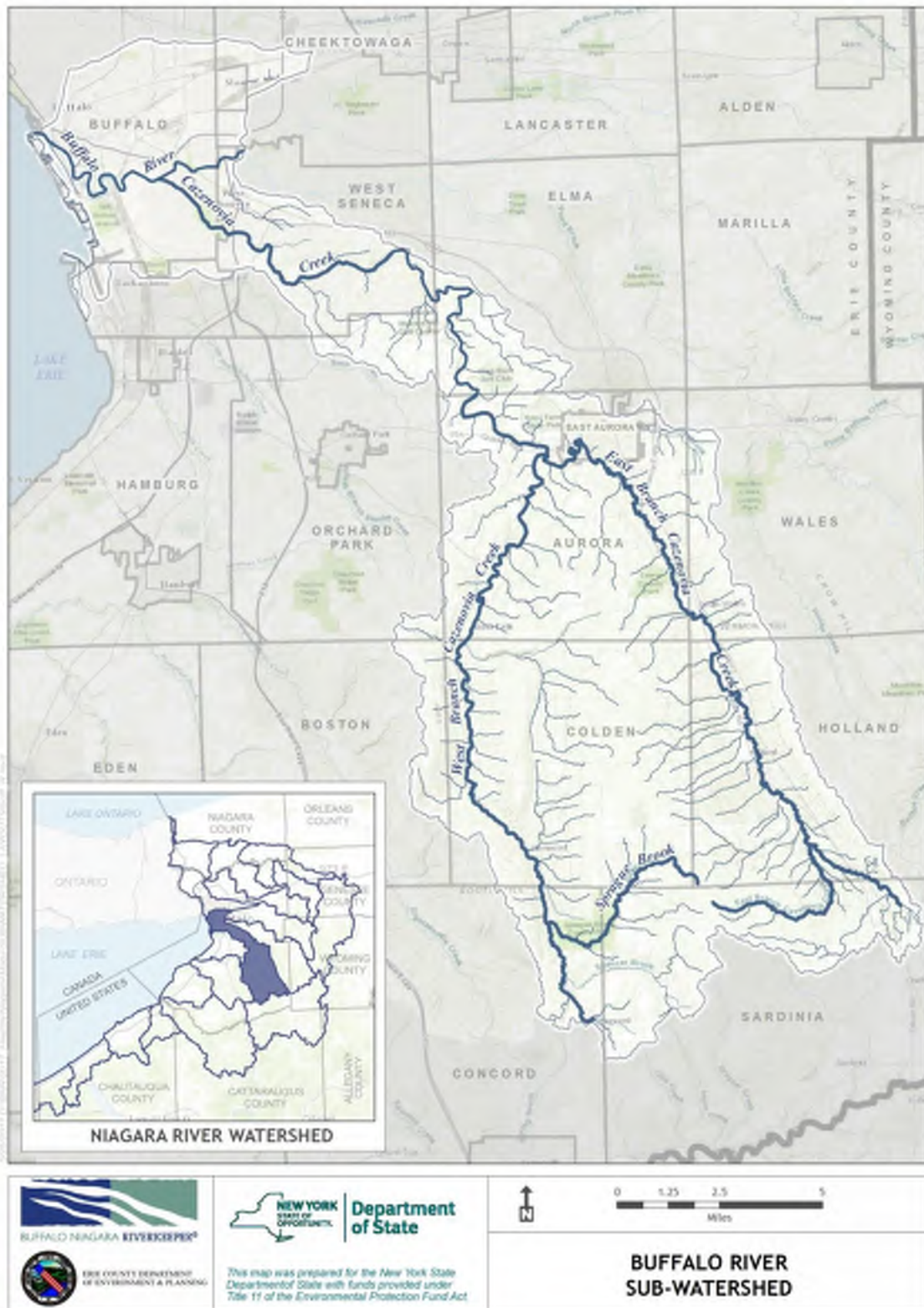
Land Use/Land Cover (LULC) classifications for BR were derived from 2010 NOAA LULC data, and similar classifications were consolidated into groups that reflect the overall LULC classification.²² The LULC groups can be seen in Table 3.1.

Characterized by high concentrations of urban and suburban development, the most dominant land use in BR is residential (48%), followed by vacant land (22%). Vacant land is property either not in use, in temporary use, or lacking permanent improvement. This can be comprised of vacant industrial, residential, commercial, and rural or public utility lands. LULC within BR is shown in Map 3.2.

Table 3.1: LULC Groups and Percentages

LULC Class	% by general LULC
Developed, High Intensity	Developed: 21.89%
Developed, Medium Intensity	
Developed, Low Intensity	
Developed, Open Space	
Cultivated Crops	Agriculture: 22.09%
Pasture/Hay	Forest: 47.95%
Deciduous Forest	
Evergreen Forest	
Mixed Forest	Wetland: 4.53%
Palustrine Forested Wetland	
Palustrine Scrub/Shrub Wetland	
Palustrine Emergent Wetland	
Estuarine Emergent Wetland	Water: 0.61%
Open Water	
Palustrine Aquatic Bed	Other: 2.93%
Grassland/Herbaceous	
Scrub/Shrub	
Unconsolidated Shore	
Bare Land	

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Map 3.1 Buffalo River Sub-watershed

Active River Area

The Active River Area model, as discussed in Chapter 1, was applied to the sub-watershed to determine the extent of The ARA, and focus area for this project. The ARA in BR is generally more constrained in the headwaters, becoming more expansive as waterbodies in the sub-watershed approach Lake Erie in the City of Buffalo.

The ARA in BR encompasses 23% of its total area, as seen in Map 3.3.

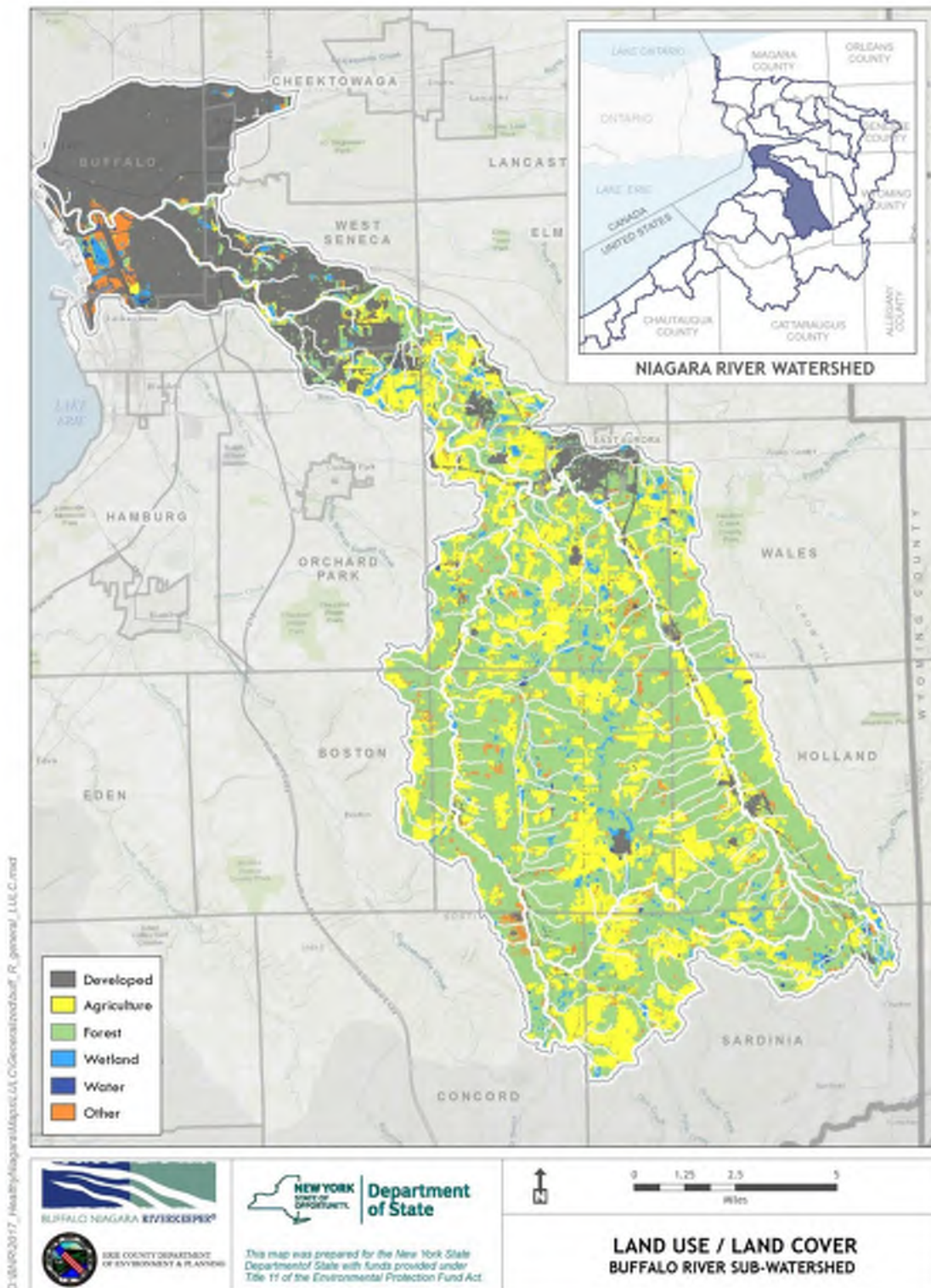
Land Use/Land Cover in the Active River Area

Potential sources of contaminants entering waterways from surrounding LULC were identified by overlaying the ARA model on LULC data, to plot where specific land uses interact with streams through hydrologic mechanisms. Map 3.4 displays LULC limited to the bounds of the ARA, indicating where contaminants on land may have direct interaction with stream waters.

Tributaries to the East and West Branch of Cazenovia Creek flow through mostly forest LULC, as many sections of the creeks generally reside in gorges that drain steep topography. Because of an abundance of steep slopes in many sections of BR, development on waterbody-adjacent lands is difficult or outright impossible, leaving pristine riparian forests that produce high value habitat and clean drinking water resources. Steep slopes, while keeping development off of streambanks, tend to push development away from streams into the larger floodplain, resulting in issues due to poor floodplain management.

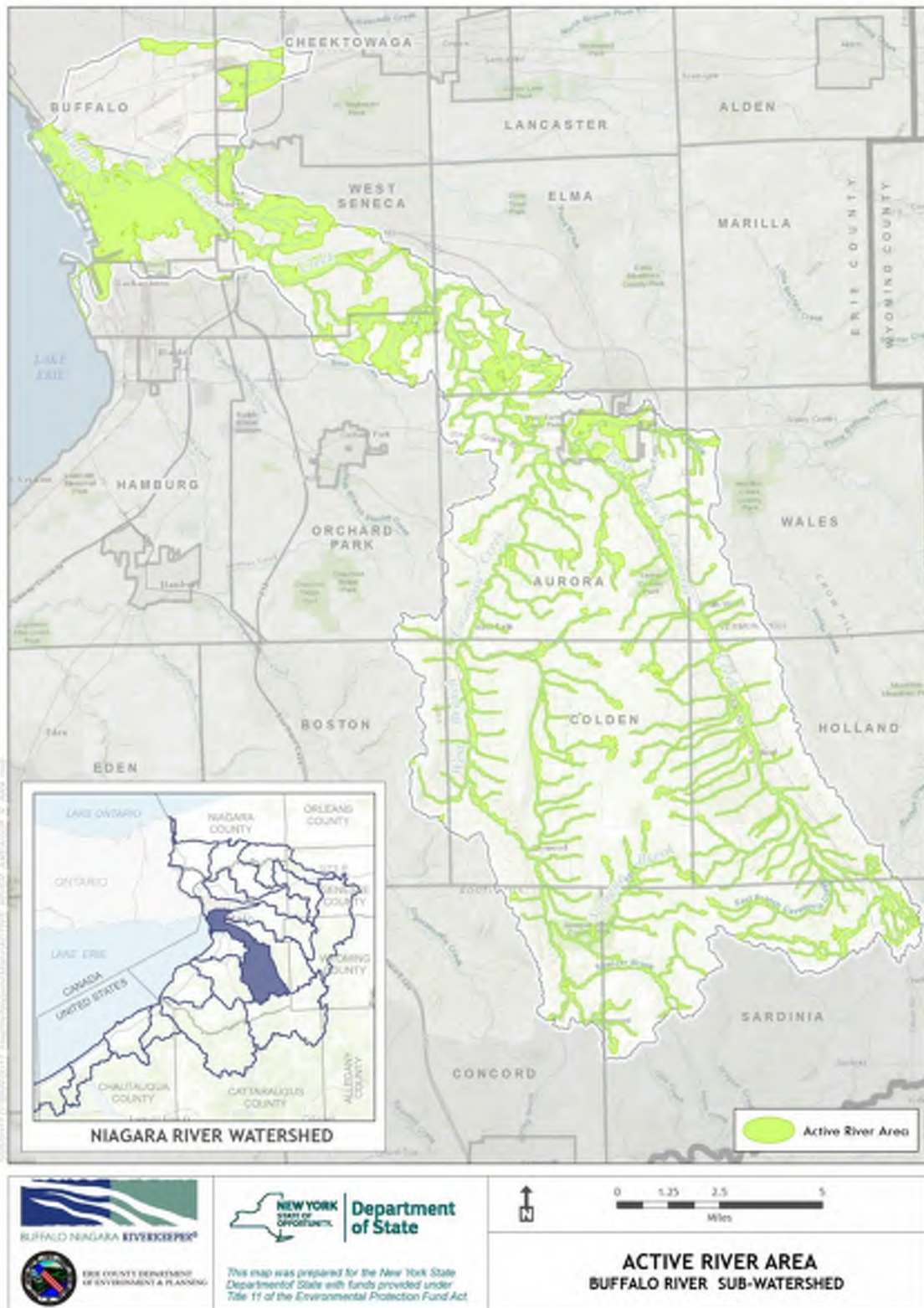
The East Branch of Cazenovia Creek flows through the developed Hamlet of Holland, the heavily developed Village of East Aurora before joining with the West Branch, and becoming Cazenovia Creek. Cazenovia Creek continues on through highly developed West Seneca, before joining Buffalo Creek within the City of Buffalo and becoming the Buffalo River, a highly modified and impaired urban waterway with adjoining industrial landscapes.

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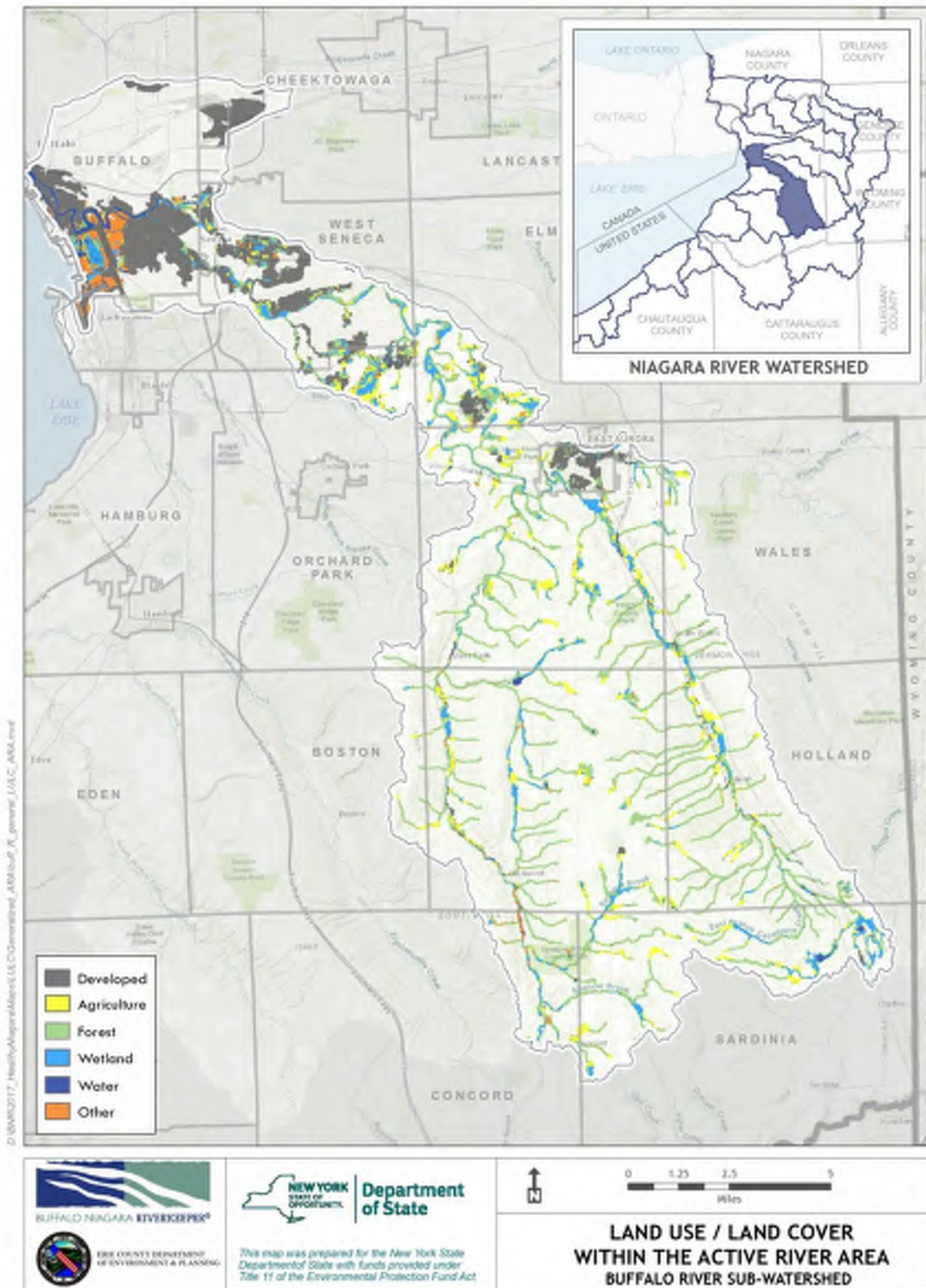
Map 3.2: Buffalo River Sub-watershed Land Use/Land Cover

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Map 3.3: Buffalo River Sub-watershed Active River Area

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Map 3.4 LULC and ARA Interaction

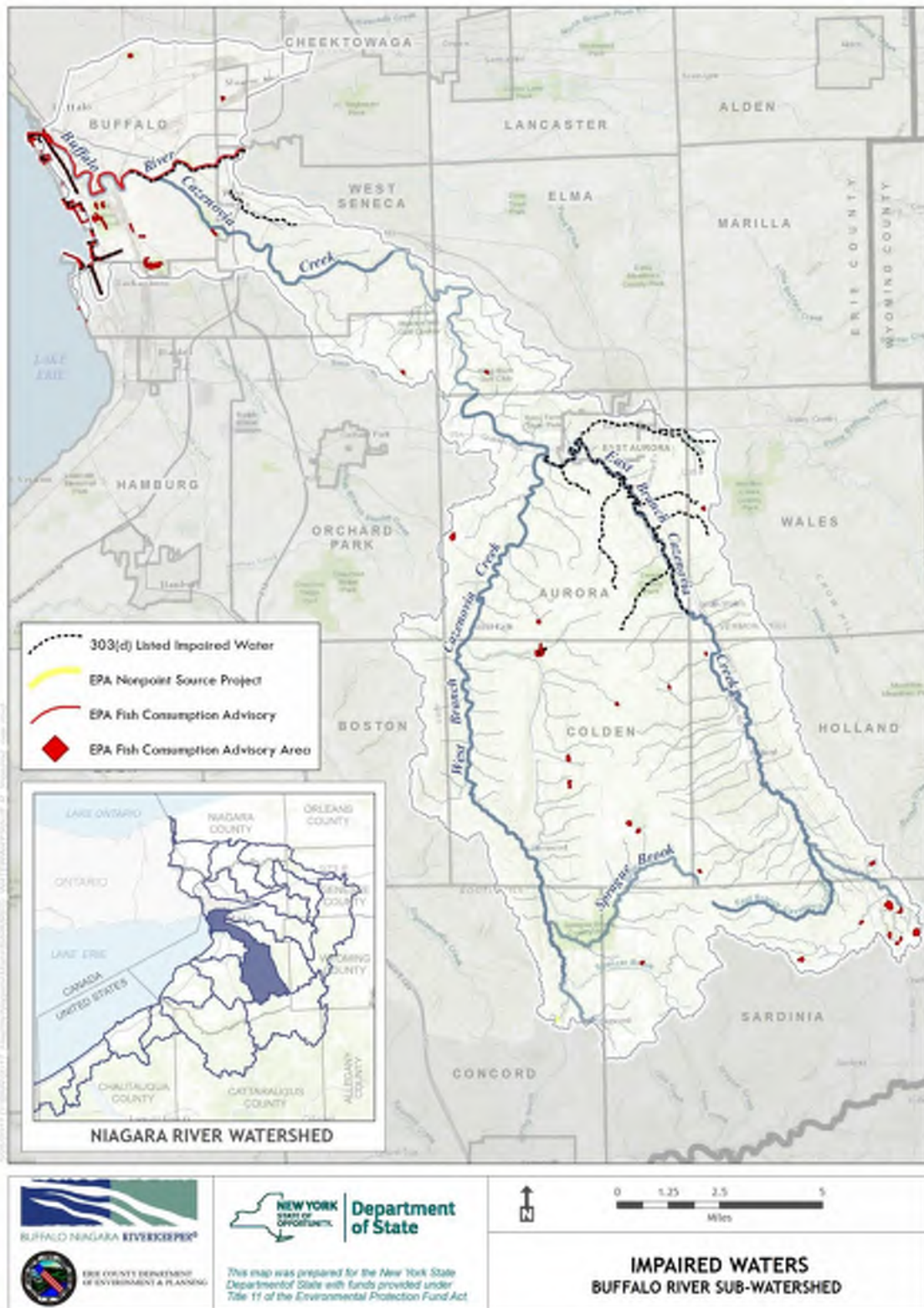
Impaired Waters

The NYSDEC WI/PWL catalogs several waterbody segments within BR, encompassing 17.8 miles, or 5.7% as impaired. Impaired segments include the Outer Harbor (North and South) of Lake Erie and the main stem of the Buffalo River. Specifically, the 6.2 miles of the Lower Buffalo River to Lake Erie that comprises the AOC has a number of impairments. The health of an AOC is determined by impairments to designated beneficial uses or “BUIs.” There are fourteen possible BUIs that can plague a body of water. Of those fourteen, the Buffalo River has nine impairments (two criteria are not applicable to the river): (1) Restrictions on Fish & Wildlife Consumption; (2) Tainting of Fish & Wildlife Flavor; (3) Degradation of Fish & Wildlife Populations; (4) Fish Tumors and Other Deformities; (5) Bird or Animal Deformities or Reproductive Problems; (6) Degradation of Benthos; (7) Restrictions on Dredging; (8) Degradation of Aesthetics; and (9) Loss of Fish and Wildlife Habitat. The habitat restoration, federally and state funded sampling and data collection, and massive dredging operations have been initiated in order to remedy these impairments and ultimately “delist” the Buffalo River, in the hopes that one day it may be fishable, swimmable, and drinkable. The remaining waterbody segments within BR are cataloged as Minor Impacts or No Known Impacts.

As depicted in Map 3.5, many of the sub-watershed’s streams including the Buffalo River, the East Branch Cazenovia Creek, and the Outer Harbor are listed on the 303(d) list, another indication of impaired waterways. Waterways in this sub-watershed may additionally be listed as EPA Fish Consumption Advisory Areas, or as part of the EPA Nonpoint Source Project, a program instituted by the EPA to provide funding opportunities through Section 319 of the Clean Water Act and administered by the NYS DEC to “control pollution from nonpoint sources to the waters of the state and to protect, maintain and restore waters of the state that are vulnerable to, or are impaired by nonpoint source pollution.”⁹

NYSDEC categorizes waterways according to a class system related to uses.¹² Stream classifications for waterways assessed in this project are listed below in Table 3.2. Streams with AA or A classifications are suitable for drinking water sources, while streams classified as B, C, or D support descending numbers of uses. The addition of a (T) to a stream classification indicates that the stream may support trout populations, while a (TS) stream may support trout spawning.

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Map 3.5: Buffalo River Sub-watershed Impaired Waterways

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Table 3.2: NYSDEC Priority Waterbody Classifications

Priority Waterbody	Stream Class	Designated Use(s) Not Supported by the Waterbody			Pollutant(s) of Concern		Source(s) of Pollution	
		Use(s) Impacted	Severity of Impact	Documentation	Type of Pollutant	Documentation	Source	Documentation
Lake Erie (Outer Harbor, North)	B	Fish Consumption	Impaired	Known	Priority Organics - PCBs	Known	Toxic/Contaminated Sediment	Suspected
Lake Erie (Outer Harbor, South)	C	Fish Consumption	Impaired	Known	Priority Organics - PCBs	Known	Toxic/Contaminated Sediment	Suspected
Buffalo River, Main Stem	C	Fish Consumption Aquatic Life Recreation	Precluded Stressed Stressed	Known Suspected Known	Priority Organics - PCBs Dissolved Oxygen/Oxygen Demand Pathogens Silt/Sediment	Known Suspected Suspected Suspected	Toxic/Contaminated Sediment Habitat Modification Hydrologic Modification Urban Runoff Combined Sewer Overflow Industrial Landfill/Land Disposal Municipal Other Sanitary Discharge	Known Known Known Suspected Possible Possible Possible
East Branch Cazenovia, Lower, and tributaries	B; Some tribs C (Including Tannery Brook)	Aquatic Life Recreation	Stressed Stressed	Known Suspected	Nutrients (phosphorus) Unknown Toxicity	Known	Urban Runoff	Known
East Branch Cazenovia, Upper, and tributaries	B, C(T); Tribs- B, C, C(T)	No Use Impairment	---	---	---	---	---	---
West Branch Cazenovia, Lower, and tributaries	B, A; Tribs- B	No Use Impairment	---	---	---	---	---	---
West Branch Cazenovia, Upper, and tributaries	B (Includes Crump Brook, Sprague Brook, Spencer Brook, Graff Brook)	No Use Impairment	---	---	---	---	---	---
Pipe Creek and tributaries	UNASSESSED	UNASSESSED	UNASSESSED	UNASSESSED	UNASSESSED	UNASSESSED	UNASSESSED	UNASSESSED
		Uses Evaluated		Confidence				
Cazenovia Creek and tributaries	B	Water Supply Public Bathing Recreation Aquatic Life Fish Consumption	Not Available Stressed Stressed Threatened Fully Supported	--- Suspected Suspected Suspected Unconfirmed	Pathogens	Known	Other Non-permitted Sanitary Discharge Urban Runoff	Known Suspected

Stream Visual Assessment & Water Quality Data Collection

In order to supplement existing data and fill in data gaps, BNR conducted water sampling and stream assessments throughout the sub-watershed. Sampling took place in five streams in BR during the 2015 field season.

Waterways within BR were assessed from May 18, 2015 to August 4, 2015. Within five stream bodies, 525 reaches were assessed. The streams assessed were Graff Brook, Cazenovia Creek (main, west, and east branches), and Sprague Brook.

Each stream was broken up into segments and assigned a unique identifier based on location (MCAZA, MCAZB, GRF, SECAZ, NWCAZ, NECAZ, MECAZ).

Figure 3.1: Stream visual assessment in Cazenovia Creek (BNR)

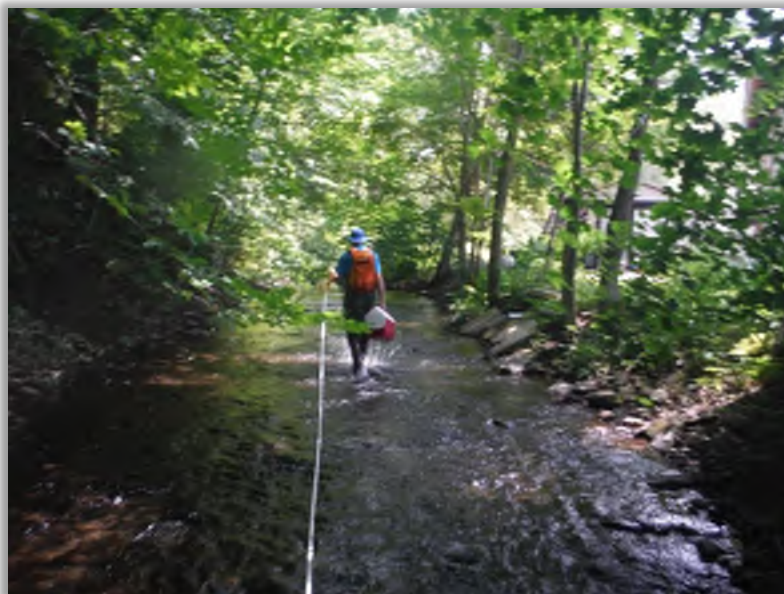


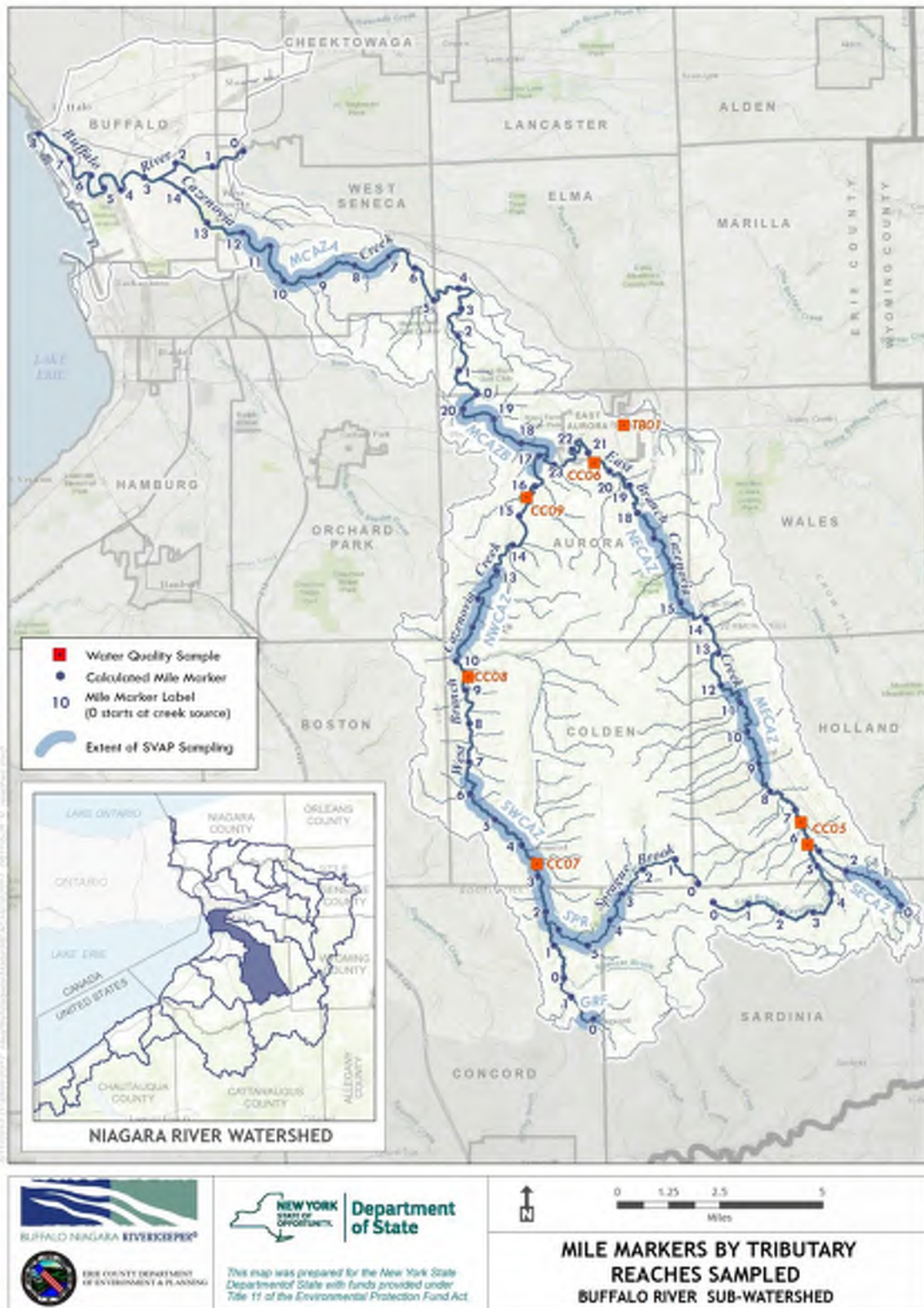
Table 3.3: Streams Assessed in Buffalo River Sub-watershed

Stream Assessed	Stream Class	Miles Assessed
Cazenovia Creek - Main Stem	B	8.7
Cazenovia Creek - West Branch	B	7.16
Cazenovia Creek - East Branch	B	7.13
Graff Brook	B	0.2
Sprague Brook	B	3.25

Within BR, 26 of the total 318.7 miles (8.15%) of waterways were assessed using a modified version of the Stream Visual Assessment Protocol (SVAP).²¹ Table 3.3 presents the segments assessed.

Stream miles were calculated using ArcGIS software so that stream segments and sample sites could be assigned a unique “mile marker” within the waterways for reference. Mapped segments with mile markers can be seen below in Map 3.6. Additionally, the map shows stationary water quality sites.

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Map 3.6: Stream Segments Assessed

Physical Properties

As seen in Table 3.4, the sub-watershed recorded an average depth of 8.7 inches for the five streams assessed. The average bankfull width of 50.1 feet and an average baseflow width of 38.4 feet.

Table 3.4: Buffalo River Sub-watershed Physical Properties

Stream	Average Depth (in.)	Average Bankfull Width (ft.)	Average Baseflow Width (ft.)
Cazenovia Creek Main Stem	11.1	102.6	83.3
Cazenovia Creek South Branch	8.1	58.7	40.1
Cazenovia Creek East Branch	13.4	47.2	28.2
Graff Brook	4.8	21.0	18.0
Sprague Brook	6.3	40.9	22.6
Sub-watershed Average	8.7	50.1	38.4

Stream Visual Assessment and Water Quality Findings

During the Phase 1 process, BR was chosen based on the priority to preserve and protect conditions leading to high water quality and healthy habitat.¹ Throughout the fieldwork process, it became apparent that while many stream segments were indeed in good overall health, many others were in poor condition, exhibiting impairments. Overall SVAP findings from the five assessed waterbodies within the sub-watershed resulted in an average score of ‘fair’ (7.3). The lowest assessed SVAP score for an individual reach was ‘poor’ (3.7) at MCAZA24 in Cazenovia Creek, while the highest score was ‘excellent’ (9.6) at SECAZ2 and SECAZ3 in the East Branch of Cazenovia Creek.

Within the sub-watershed, the MCAZB stream segment had the highest average SVAP score, ‘good’ (8.3). The lowest score recorded in the MCAZB stream segment was ‘fair’ (6.6) and the highest score was ‘excellent’ (9.3). The stream segment found to have the poorest health was the MCAZA segment in Cazenovia Creek with an average SVAP score of ‘fair’ (6.4), a low score of ‘poor’ (3.7), and a high score of ‘good’ (8.1).

Table 3.5 presents an SVAP score summary for BR, and a full SVAP summary is available in Appendix C.

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Table 3.5: Buffalo River Sub-watershed SVAP Element Summary

	Channel Conditions	Riparian Zone Left Bank	Riparian Zone Right Bank	Bank Stability Left Bank	Bank Stability Right Bank	Water Appearance	Nutrient Enrichment
<i># of scores</i>	506	508	506	502	498	510	509
<i>average</i>	8.9	8.5	8.3	7.3	7.0	8.9	6.6
	Instream Fish Cover	Pools	Invertebrate Habitat	Canopy Cover	Manure Presence	Riffle Embeddedness	
<i># of scores</i>	510	504	508	316	4	431	
<i>average</i>	4.8	5.1	8	4.7	5	9.1	

Substrate in BR is predominantly cobble, with 49% of assessed reaches having a cobble substrate. Bedrock was observed to cover 14% of BR’s assessed substrate. Gravel comprised 10% of the assessed substrate, while sand, silt, and clay comprised 2%, and boulders made up 1% of BR’s assessed substrate.

Japanese Knotweed was observed in 43% of all stream reaches, Phragmites (or Common Reed) was observed at 12% of sites, and Purple Loosestrife was observed at 7% of all assessed reaches.

All waterbodies assessed were found to have average channel condition scores of ‘good’ to ‘excellent’ (8.1-9.8). Assessed stream channels were generally un-altered with limited channelization or use of rip-rap. This lack of modification has a positive impact on wildlife and overall stream health. Areas of channel alteration were concentrated around areas of development or where infrastructure was located near streams, as seen in Figure 3.2. While channel conditions skewed towards good, many problems related to erosion in this area exist, as shown by inspections and erosion control projects undertaken by the Erie Wyoming County Joint Watershed Board. These areas are concentrated in the East Branch from Savage Road in Holland to East Aurora, and in the West Branch from Glenwood to Jewett Holmwood Road, among

Figure 3.2: Altered Stream Channel east of Orchard Park - Cazenovia Creek West Branch (BNR)



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various other sites in the main stem such as intersections with Northrup Road and Union Road. Additionally, heavily modified stream and fish barriers such as Legion Dam in East Aurora further degrade stream channels in BR.

Water appearance was also noted during assessments, and the sub-watershed recorded a ‘good’ (8.9) average SVAP score. This element takes into account the relative cloudiness, color, and other visual characteristics of the water including sheens, films, foam, or algal mats. Good scores indicate a lack of these characteristics.

Water quality data for the Buffalo River Sub-watershed was collected from May 18, 2015 to August 4, 2015. In Table 3.6 below, the data collected is compiled, along with number of measurements: lowest recorded value, highest recorded value, and overall average for each measured water quality criteria. Full water quality parameter results can be found in Appendix C and D.

Table 3.6: Buffalo River Sub-watershed Water Quality Element Summary

	Temperature °C	Dissolved Oxygen (mg/L)	Dissolved Oxygen (%)	Conductivity (uS/cm)	Total Dissolved Solids (mg/L)
<i># of scores</i>	136	111	111	120	120
<i>low value</i>	13.2	4.6	47.2	236.2	195
<i>high value</i>	25.9	12.8	154.6	409.5	409.5
<i>average</i>	19.5	10.0	109.6	422.2	304.2
	pH	Turbidity (NTU)	Phosphorus (µg/L)	Nitrate (µg/L)	
<i># of scores</i>	120	242	236	235	
<i>low value</i>	7.4	0.2	33	500	
<i>high value</i>	8.7	20.9	1320	20,200	
<i>average</i>	8.2	1.5	264	10,200	

Baseline Indicators

Through the fieldwork portion of this project, parameters that either indicated pervasive impairments throughout the sub-watershed, or had high numbers of water quality parameters exceeding relevant standards or guidance values were isolated for further discussion. These so-called baseline indicators begin to develop a picture of the sub-watershed’s health or impairment status during normal, baseline conditions.

Baseline indicators for the Buffalo River Sub-watershed are identified as:

- Land Use/Land Cover

- LULC directly affects water quality throughout the sub-watershed, and stormwater and agricultural runoff is a major vector transporting contaminants from surrounding land into waterways. LULC also affects suggested management actions, as those actions that are able to be performed on agricultural or forested land may not be appropriate for more developed land.
- Riparian Zone and Bank Stability
 - The riparian zone, which measures the expanse of a natural vegetated strip, was rated as ‘good’, but many individual reaches recorded ‘fair’ and ‘poor’ scores. A ‘poor’ riparian zone allows stream banks to erode more readily, and for contaminants in runoff to flow uninterrupted into a waterbody. Bank stability is grouped with riparian zone, as a poor riparian zone generally coincides with poor bank stability. While some reaches scored very high, erosion issues were prevalent throughout the sub-watershed, and ‘poor’ bank stability scores were recorded in every stream segment SVAP assessments occurred in.
- *E. coli*
 - *E. coli* measurements performed in the sub-watershed had levels greatly exceeding recommended levels for recreational use.
- Nutrient Load
 - Phosphorus and Nitrate within the sub-watershed are consistently high, indicating that elevated levels of these parameters are entering waterways.

Baseline Indicators Discussion

Land Use/Land Cover

In contrast to the high amount of residential and vacant land, BR also contains nearly 8,500 acres of protected land. Land protection and conservation, including conservation easements and regulatory protections (such as state parks, forests, etc.), are critical components in preserving water quality. These areas will not succumb to urban sprawl or development and will assist in preserving water quality of nearby rivers and streams. However, there remains a high concentration of industry and infrastructure in closer proximity to the City of Buffalo. There are many facilities and sites such as CSOs, remediation sites, superfund sites, and hazardous waste sites that have the potential to negatively impact water quality.

Large amounts of developed LULC are concentrated in the northern region of the sub-watershed. Because BR reaches its terminus at the City of Buffalo’s Lake Erie shoreline, the sub-watershed represents an archetypal rural to urban transect: tributaries begin in far off forested headwaters and

traverse through agricultural regions before flowing through increasingly developed and populated land, including the industrial and downtown core of the City of Buffalo.

Riparian Zone and Bank Stability

The riparian zone, or area of natural vegetation bordering waterbodies, along assessed stretches of Cazenovia Creek, excluding the Main Stem, received average scores of ‘good’ to ‘excellent’ (8.4+). The Main Stem of Cazenovia Creek received the lowest average riparian zone score of ‘fair’ (7.3). As Cazenovia Creek flows toward the city of Buffalo, it meanders through many suburban areas with heightened residential and commercial development. In these areas, riparian vegetation along the creek is often compromised or removed as seen below in Figure 3.3. In these areas, the potential for urban stormwater runoff is elevated.

Figure 3.3: Compromised riparian vegetation along Cazenovia Creek, Main Stem (Google Maps)



Figure 3.4: Riparian vegetation along Sprague Brook (BNR)

In areas closer to the headwaters, further removed from the pressures of development, riparian vegetation remains well intact. A segment of Sprague Brook over three miles long was assessed within the limits of Sprague Brook County Park. This segment received the highest average score for riparian zone within the entire sub-watershed of ‘excellent’ (9.9). This waterbody was characterized by extensive riparian vegetation, as



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seen in Figure 3.4.

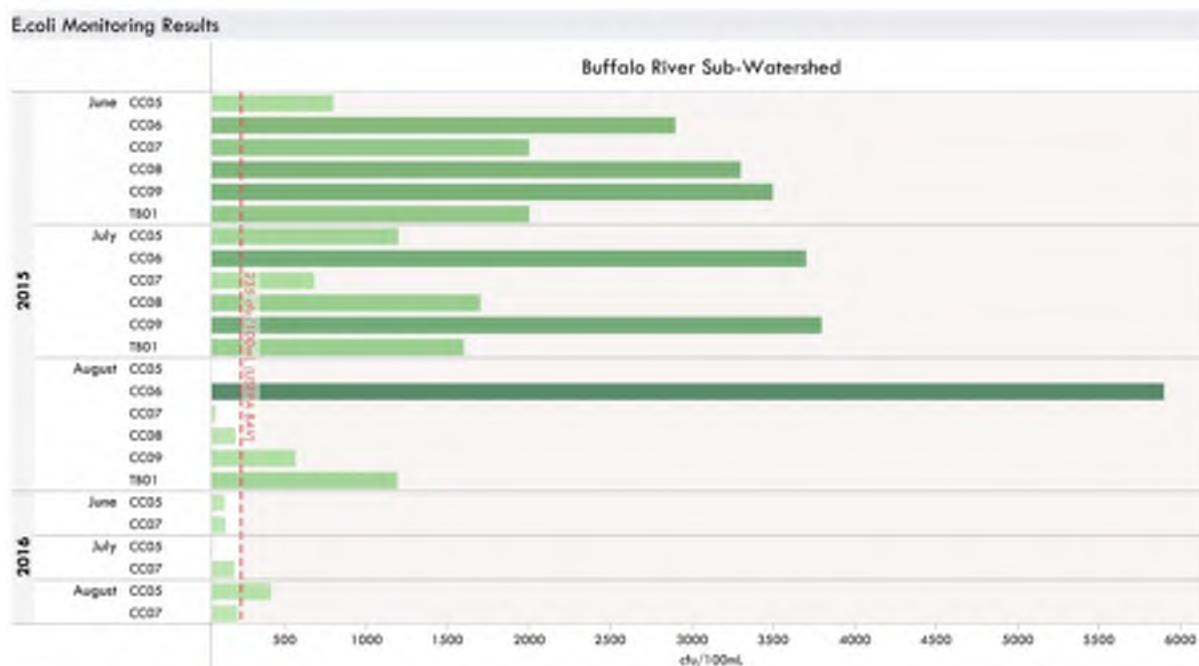
Bank stability within the sub-watershed recorded an average score of 'fair' (7.2). Bank stability scores can be impacted by the height of stream banks, current evidence or lack of erosion, and presence or absence of rip-rap. Bank stability was variable from reach to reach with 44% of reaches assessed recorded an 'excellent' score and 31% of reaches recorded a 'poor' score. Bank stability scores under 3 for the sub-watershed are shown in Map 3.7 below. A score of 3 indicates that "banks are moderately unstable, typically high, actively eroding at bends; ~50% rip-rap; excessive erosion" while a score of 1 represents "Unstable high banks, actively eroding at bends throughout; dominated by rip-rap." As noted prior, inspections and ongoing active bank management projects by the Erie Wyoming County Joint Watershed Board show heavy erosion at locations in the sub-watershed that may be masked by thick growths of invasive plants.



Map 3.7: Bank Stability Score 1-3

Escherichia coli (*E. coli*) samples were collected within BR at six sites during 2015 and two sites during 2016. Results were frequently above the USEPA Beach Action Value (BAV) of 235 cfu/100mL as seen in Figure 3.5. The BAV is a tool often used to assist in making beach notifications and closures.²⁹ Extremely high *E. coli* levels seen at CC06 may be due to septic leakage from a nearby trailer park. The site is also downstream of the Town of Holland WWTP.

Figure 3.5: *Escherichia coli* Monitoring Results



Nutrient Load

Samples to assess nutrient levels (phosphorus and nitrate) within the sub-watershed were also collected and processed. All waterbody segments sampled within the Buffalo River Sub-watershed recorded average phosphorus readings above the NYS DEC guidance value for Lake Erie Eastern basins of 10 µg/L. Sprague Brook, portions of which are located in agricultural LULC, recorded the highest average phosphorus reading of 642.4 µg/L. Cazenovia Creek (Main, West and East branches) all recorded average nitrate readings above the NYSDEC standard value of 10,000 µg/L.

Nitrogen and phosphorus are natural constituents of the environment, but can also be introduced into the system via fertilizers and sewage inputs. Most traditional fertilizers, used both for agricultural or residential purposes, contain nitrogen, phosphorus, and potassium (or potash). Animal manure, sanitary discharges, combined sewer overflows, and stormwater runoff in urban areas can also contribute excess nutrients and pathogens into the system.

While nitrogen and phosphorus are vital for a healthy stream, the correct balance is critical to sustain aquatic life.¹⁸ High nutrient levels can fuel growth of aquatic vegetation and algae which can congest streams, restricting water flow and fish movement. With elevated plant respiration and decomposition, dissolved oxygen levels become depleted. These oxygen-depleted environments can stress and have detrimental impacts on aquatic life. At times, algae will grow in large, expansive colonies often referred to as an algal bloom. Under the right conditions, some algal blooms will produce toxins that can be dangerous to wildlife and human health.¹⁴

Monthly water quality sampling of phosphorus reached its highest measured levels in June 2015 with a sub-watershed average value of 557.2 ug/L, with the highest value in 2015 (of 877.8 ug/L) being measured at a West Branch of Cazenovia Creek (CC09) site, well above the 10 ug/L EPA guidance values for. Phosphorus levels in 2015 trended downward from June through October, with a small spike at all sites in November, indicating that the bulk of phosphorus is entering waterways in the summer seasons, and levels are very dependent on rainfall amounts. In the 2016 sampling season, the sub-watershed's highest average phosphorus levels occurred in July, with measurements for that month averaging 140.3 ug/L. The highest individual value was recorded at CC07, at 161.7 ug/L. Overall levels in 2016 peaked in the summer and fall.

Nitrate levels during 2015 were measured only in June, due to equipment malfunctions, but averaged at a sub-watershed wide average of 2,666.7 for that month, well below the 10,000 ug/L NYS DEC standard value. Measurements performed in 2016 however, were extremely high, with measurements made in April averaging 17,300 ug/L, and a high reading at CC07 of 27,400 ug/L. All other nitrate levels measured in the sub-watershed were below the NYSDEC standard of 10,000 ug/L.

Buffalo River Critical Source Areas

CSAs in BR are depicted in Map 3.8 and displays CSAs using the methodology described in Chapter 1.

“Critical” source areas are those land uses known to contribute to impairments, and are designated as priority areas for intervention. “Non-Critical” sources are those passive land uses such as forested lands that do not actively contribute impairments.

CSA Priorities

Sources of impairment and priority conservation areas in BR can generally be split into two main areas. These areas are best described as the southernmost headwater forests and the more developed downstream reaches to the north. The result of this split is two very different focus areas in which opportunities to address current impairments and prevent future impacts to water quality health can be identified.

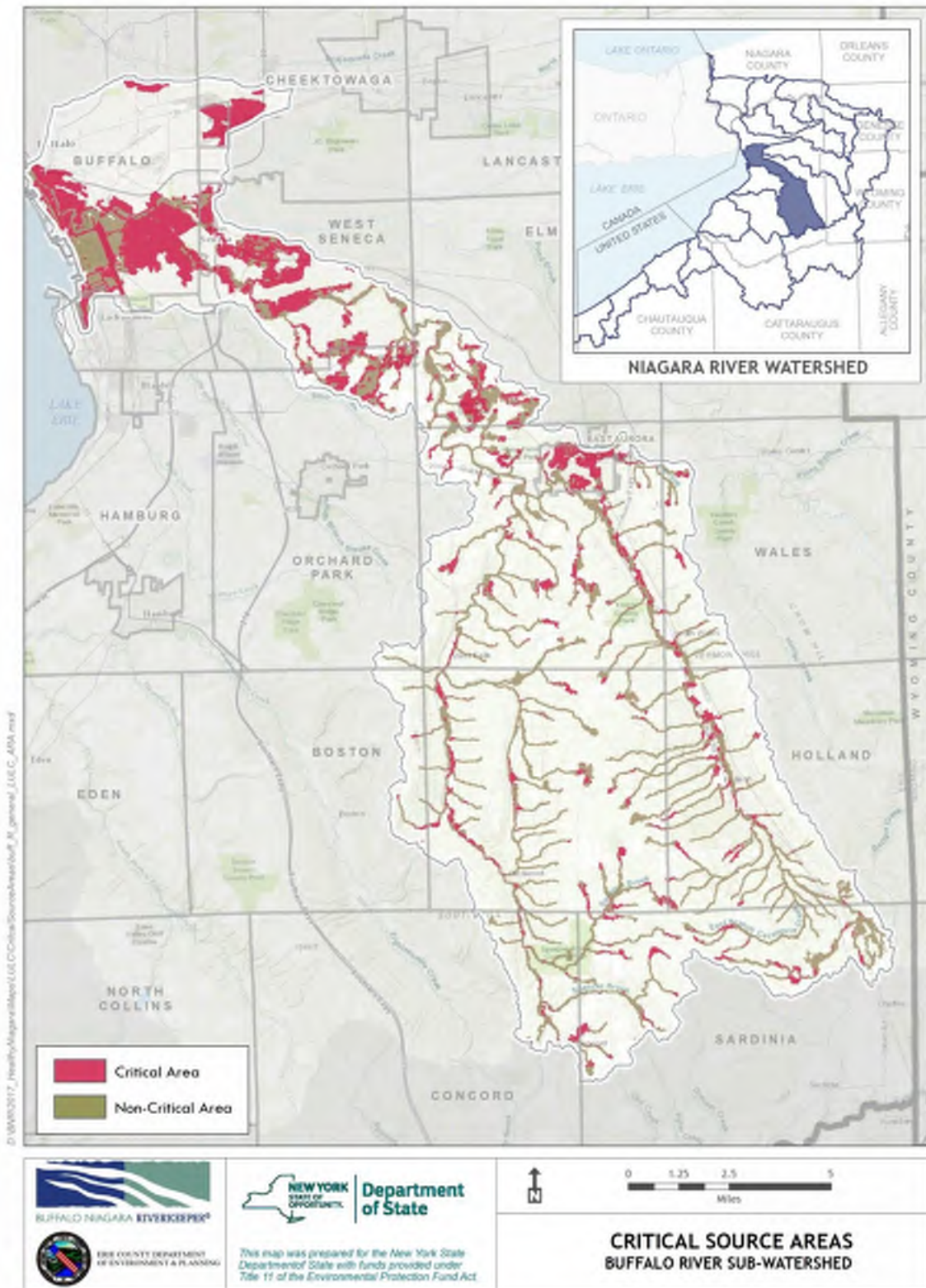
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Opportunities to address impairments in the headwaters of the sub-watershed mostly focus around the protection of riparian forests. The area surrounding Sprague Brook, located just upstream from Sprague Brook County Park, has been identified as containing critical headwater forests of high priority for protection. The riparian forests surrounding Pipe Creek in Colden, NY are considered at risk for degradation and are also of increased importance in the headwater area of the Buffalo River Sub-watershed. Protection of these riparian forests is vital for stream structure, water quality, and health of riparian species throughout the entire sub-watershed. Multiple priority fish barriers are also identified throughout the upper portions of BR. Seven of these barriers occur on the West Branch of Cazenovia Creek and one occurs on the East Branch of Cazenovia Creek. Large agricultural areas where best management practices should be applied also occur sporadically throughout the BR headwaters. These agricultural best management practices limit impacts to streams related to bank stability and erosion, inputs of excess nutrients and pollutants, and additional discharges.

Further downstream in the more urbanized reaches of Cazenovia Creek, priority headwater forests occur in Elma, NY and West Seneca, NY. Due to the increased development in this area of the sub-watershed, these priority headwater forests are located directly adjacent to areas where high levels of impervious surfaces serve as sources of impairments, and therefore at risk for development.

Several projects have been identified through Buffalo Niagara Riverkeeper's Niagara River Habitat Conservation Strategy, which are seen as priority projects for conservation lands that may directly address impairments in the sub-watershed. These projects are included as Appendix F.

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Map 3.8: Critical Source Areas

Target Goals for Baseline Indicators

As specific management actions are carried out, these indicators can be used for comparison or to determine the effectiveness of implementation efforts. Suggested management actions are also developed to address baseline indicators, as these indicators can vary regionally and can be tuned to address a sub-watershed's unique characteristics.

Land Cover: Land cover can provide valuable information related to water quality and overall watershed health. With increased development and urbanization, areas with impervious cover will also increase. According to the Center for Watershed Protection, water quality can begin to degrade at 10% impervious cover. ^{1,3}

Future Goal: Reduce the amount of impervious cover within the sub-watershed.

Target: As of 2005, the Buffalo River Sub-watershed contains 11.85% Impervious Cover. ²² This percentage should be analyzed in future years with a target of reducing it to below 10%.

Future Goal: Conserve and protect undeveloped land in the sub-watershed.

Target: Engage communities in the sub-watershed to develop a cross-municipal land conservation strategy.

Riparian Zone and Bank Stability: Vegetation bordering waterways naturally stabilizes banks, controls erosion, functions as a natural filter for runoff, and cools water temperatures via shading. The natural riparian zone has been removed or altered at several locations throughout the sub-watershed.

Future Goal: To increase the length and width of riparian vegetation along streams within the sub-watershed, and incentivize and encourage riparian buffer ordinances.

Target: Increase the width of riparian vegetation to two times the active channel or 300ft, whichever is greater.

Future Goal: Work with communities, agencies, and municipalities to implement stream bank stabilization programs at actively eroding sites.

Target: Stream stabilization at reaches scoring 3 and below in SVAP Bank Stability (Map 3.7).

E. coli: As a bacterial indicator, *E. coli* is used to monitor the presence of human/animal waste in waterbodies. Sources may include fertilizer, livestock, sanitary discharges or compromised septic systems.

Future Goal: Reduce access of livestock to streams and stream banks thereby limiting bacterial inputs.

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Future Goal: Provide resources to communities to upgrade outdated and deteriorated septic systems.

Future Goal: Municipalities continue to disconnect sanitary sewer overflows from discharging into waterways.

Target: Samples at or below USEPA BAV throughout the sub-watershed or reduce 30-day geometric mean value to meet USEPA recommended value of 126 cfu/100mL.

Nutrient load: Resulting from stormwater runoff, discharges from wastewater treatment plants, septic systems, and fertilizers, high nutrient levels are commonplace throughout the sub-watershed.

Future Goal: Reduce loadings of nutrients, specifically phosphorus.

Target: Meet NYSDEC guidance values

- Phosphorus NYSDEC guidance value for Lake Erie Eastern basins of 10 µg/L
- Nitrate NYSDEC standard value of 10,000 µg/L

Suggested Management Actions

The work performed during this project, along with the compilation of preceding data collection and inventory of watershed characteristics is intended to support the development of an action plan consisting of suggested management actions. Actions suggested below are intended to be part of an ongoing, dynamic process, in which management actions are periodically revisited to address changing conditions and management goals with the Niagara River/Lake Erie Watershed.

By implementing the general strategies and recommendations detailed here, the sub-watershed will be on track to meet the previously listed targets for various baseline indicators. These recommendations focus on key issues facing the sub-watershed that were identified through this effort and are not intended to act as a comprehensive list of everything that could be implemented.

These suggested management actions apply to: homeowners, municipalities, volunteer groups, agricultural landowners, organizations and agencies working within the sub-watershed.

Land Use

Goal: Reduce the amount of impervious cover within the Buffalo River Sub-watershed from 11.9% to 10%.

Benefit: According to the Center for Watershed Protection, water quality begins to degrade at 10% impervious cover, because of the loss of groundwater recharge through percolation, and the surge in runoff entering waterways, altering natural flow regimes and overwhelming sewer systems.³

Currently, the sub-watershed has 11.9% impervious cover, which is above the 10% threshold

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recommended above. Ideally, the sub-watershed impervious coverage should be decreased to <5% over the next ten years. Suggested techniques to achieve this goal include: using porous material in constructing roadways and parking lots, as well as including strategically placed green spaces like rain gardens and bioswales. These practices reduce direct run-off from impervious surfaces which would otherwise flow directly into waterways or trigger CSO/SSO events.

In addition, the use of porous material in constructing roadways and parking lots beyond what is required by the NYS Stormwater Manual, rain barrels to disconnect rooftop runoff and incorporation of strategically preserved or placed green and living spaces into landscaping plans will reduce runoff from impervious surfaces directly into waterways and lessen the negative impacts of combined sewer overflows and stormwater discharges.

Best Management Practices

The actions outlined in the table below are organized into three broad categories: green and living infrastructure, land use policy changes, and community engagement.

Implement Green Infrastructure | Living Infrastructure

By incorporating simple living infrastructure practices such as bioswales or rain gardens into small-scale development plans or implementing broader techniques across a larger scale, the resulting effect will be to help to collect rain water before it is able to flow over impervious surfaces, collect pollution and enter bodies of water. In addition, the use of porous material in constructing roadways and parking lots beyond what is required by the NYS Stormwater Manual, rain barrels to disconnect rooftop runoff and incorporation of strategically preserved or placed green and living spaces into landscaping plans will reduce runoff from impervious surfaces directly into waterways and lessen the negative impacts of combined sewer overflows and stormwater discharges.

As noted in the NYS DEC Stormwater Management Design Manual, a one-acre parking lot can produce 16 times more stormwater runoff than a one-acre meadow each year.”¹⁰ Because of this, in a sub-watershed such as the Buffalo River that extends into a once-industrialized urban area, many additional opportunities exist to increase the amount of green space by reclaiming abandoned buildings or parcels for reuse in green infrastructure designs.

Land Use Policy

Recommended changes in land use policies include actions such as updating a municipality’s Comprehensive Plan or amending zoning codes. A Comprehensive Plan allows the municipality to clearly state its long-term goals and priorities for a community. While this document is not law, it does inform the law as a municipality would write zoning codes and ordinances that enable it to meet the goals outlined in the Comprehensive Plan. Conservation updates that can be made to code

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include: conservation overlay districts, steep slope requirements to limit erosion, minimum setback requirements from waterbodies (sometimes called a “waterfront yard” or “buffer” requirement) on new development, or requirements and standards for vegetated buffers along waterways on all lands.

In the less densely-developed southwestern portion of the sub-watershed, implementing conservation easements to protect existing open space, critical headwater forests, and prevent suburban sprawl would have the greatest impact in this sub-watershed. Additionally, agriculture and farmland protection, including the purchasing of development rights on agricultural lands is a strategy recommended to keep sprawl development from agricultural properties, and preserve open space.

In more urbanized sections, different approaches to land use policy can be undertaken. For example, the City of Buffalo has recently undergone a large multi-year effort to completely revise its zoning code and land use plan to reflect form-based code and some environmental protection features such as shoreline setbacks, other municipalities in the sub-watershed should follow suit.

Community Education and Engagement

While regulation through zoning codes forces those living in a municipality to abide by a certain set of laws, some practices are better implemented through landowner cooperation and collaboration. For example, nearly 20% of the sub-watershed is classified as agricultural land and data analysis suggests that agricultural lands may be contributing to water quality impairments in places across the sub-watershed. Here, encouraging landowners to voluntarily participate in conservation initiatives can greatly benefit a community. These initiatives include landowner stewardship like utilizing a vegetated riparian buffer along a shoreline, even if it isn’t mandatory or installing a rain barrel on a property to collect rainwater for reuse. Similarly dedicating open space or hosting local clean-up or invasive species removal days can help people feel more connected to their environment thereby fostering a greater sense of community and stewardship.

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Recommended Actions to reduce impervious land cover:

<p>Short Term</p>	<ul style="list-style-type: none"> • Utilize green and living infrastructure practices; rain barrels; no-mow areas; buffers and rain gardens <ul style="list-style-type: none"> ○ Cost: Low • Reclaim unused or underutilized impervious spaces and develop into “green” spaces like meadowlands, rain gardens or community gardens <ul style="list-style-type: none"> ○ Cost: Low to Medium • Host sustainable development workshops for municipalities and private landowners <ul style="list-style-type: none"> ○ Cost: Low • Promote recreational use of natural areas to increase land protection and awareness <ul style="list-style-type: none"> ○ Cost: Low • Create agricultural and farmland protection easements and programs to keep agricultural land undeveloped. <ul style="list-style-type: none"> ○ Cost: Low
<p>Long Term</p>	<ul style="list-style-type: none"> • Improve/incorporate stormwater management on paved and unpaved roads/parking lots <ul style="list-style-type: none"> ○ Cost: Medium to High • Reduce new parking lot sizes in urban areas <ul style="list-style-type: none"> ○ Cost: Medium • Use pervious surfaces and materials when constructing new parking lots or updating existing parking lots beyond the percentage required by the New York State Stormwater Management Design Manual <ul style="list-style-type: none"> ○ Cost: Medium • Develop vegetative buffer standards to protect stream quality <ul style="list-style-type: none"> ○ Cost: Low • Creative incentive and educational programs for green infrastructure implementation <ul style="list-style-type: none"> ○ Cost: Medium • Promote the conservation of open spaces through conversation easements and parks. <ul style="list-style-type: none"> ○ Cost: Low

Riparian Zone

Goal: Increase the length and width of riparian vegetated buffers along stream banks within the sub-watershed

Benefit: Vegetation bordering waterways naturally stabilizes banks, controls erosion, functions as a natural filter for pollutants and cools water temperature by providing a shade over the water. The natural riparian zones in the lower portions of the Buffalo River sub-watershed have been affected by development and upstream, are subject to agricultural stressors. Increasing the width of vegetated riparian zones to twice the width of the stream channel or 300 feet, whichever is greater, would provide the greatest improvement to the health of the waterway.

Best Management Practices

Stream Stabilization

Stabilization of actively eroding shorelines using living and natural infrastructure is recommended where appropriate. Other engineered stabilization techniques should be used only in extreme cases.

Add Vegetation

Hosting community tree planting days in a municipality can provide great benefit to the riparian corridor and improve waterway health with limited costs borne by the municipality. Trees can even be obtained at no cost through the NYSDEC “Trees for Tribes” Program.⁵ Similarly installing appropriately sized vegetated buffers in the more open and agricultural areas on the sub-watershed would be very beneficial.

Develop Ordinances

As noted above, including vegetated buffer or setback requirements into a municipality’s zoning code is one regulatory mechanism to ensure measures are taken to protect water health. Not all land can be regulated through laws so in some instances encouraging best management practices or utilizing incentive programs may be a more effective approach. Located into the Lower Tonawanda sub-watershed, the Towns of Amherst and Pendleton both include language in their zoning codes for vegetated buffers. For example, Goal 4-4 of The Bicentennial Comprehensive Plan for the Town of Amherst (amended Feb 2011) sets a goal, “To establish buffer/setback standards for new development to help protect streams of significance.” This goal is then applied in the town’s zoning code in Chap. 204, Part 3 §3-5-6, “Lots abutting a watercourse.” This sections requires that lots abutting a watercourse install a 50 foot wide riparian buffer on either side of a watercourse and further, any building be an additional 10 feet from the buffer. This type of ordinance could be applied in the

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upper reaches of the Buffalo River sub-watershed in order to limit runoff from yard waste, non-point sources of pollution, and development.

Recommended Actions to increase the length and width of riparian zones:

Short Term	<ul style="list-style-type: none"> • Host tree plantings with volunteers <ul style="list-style-type: none"> ○ Cost: Low • Develop programs to encourage the installation of riparian buffer and cover crops <ul style="list-style-type: none"> ○ Cost: Low to Medium • Invasive species eradication and control programs. <ul style="list-style-type: none"> ○ Cost: Medium • Implement stream and bank stability projects to stop erosion <ul style="list-style-type: none"> ○ Cost: High
Long Term	<ul style="list-style-type: none"> • Develop vegetated buffer requirements for development in riparian areas <ul style="list-style-type: none"> ○ Cost: Low • Develop setback ordinances for new development in riparian areas <ul style="list-style-type: none"> ○ Cost: Medium • Encourage collaboration amongst municipalities and agencies to develop zoning codes to encourage conservation and best management practices across waterways that span municipalities <ul style="list-style-type: none"> ○ Cost: Low

E. coli

Goal: Reduce bacterial inputs into streams

Benefit: *E. coli* is a fecal indicator bacteria used to monitor the presence of human/animal waste in waterbodies. Because few strains of *E. coli* naturalize in the environment, the presence of *E. coli* almost certainly suggests that fecal matter is contaminating a body of water. Sources may include fertilizer, livestock, sanitary sewer discharges, or compromised septic systems. Waterbodies with high levels of *E. coli* are not suitable for consumption or recreating and can result in a chain-reaction of negative human health and economic effects. Reducing *E. coli* levels to meet USEPA’s recommended value of 126 cfu/100ml (30 day geometric mean) would greatly improve water quality. Combating *E. coli* requires that the sources inputting the bacteria into waterways be mitigated, such as CSO/SSO outfall mitigation and livestock exclusion.

Best Management Practices

Livestock

When livestock is able to freely roam in and across streams, they can produce a number of undesirable effects such as trampling banks, increasing erosion, and directly inputting sources of bacteria such as *E. coli* into water bodies through excrement. In addition, livestock fecal contamination releases a large amount of antibiotics into waterways, contributing to widespread

naturalized antibiotic resistance. If livestock cannot be completely excluded from streams, then at a minimum, limit access by creating a designated crossing. Similarly, some lands have seen success by placing water troughs near the water body so that the cows can easily get to the stream water they may use for drinking but are not directly standing in the stream.

Update and Upgrade Septic Systems

Leaking septic systems are a direct input of bacteria into groundwater which can pollute drinking water and contaminate streams. It is important to recall that the presence of *E. coli* is not the only indicator species of biological pollution—it is just the simplest and most widely tested for. *E.coli* often occurs in tandem with other pathogenic bacteria, viruses and protozoans, such as those that cause cholera, dysentery, and Giardia. Upgrading septic systems with denitrification systems and fixing leaking systems is a necessary solution to mitigate this input.

Green and Living Infrastructure

In more populous areas, CSOs can be a large source of contaminants (particularly bacteria). CSOs occur where a municipality has combined storm and sanitary pipes and where rainfall inundates the system, resulting in more water than the pipes can handle. This results in an overflow situation where the pipes discharge excess untreated water directly into waterbodies. Implementing green and living infrastructure in both urban and suburban areas can drastically mitigate CSO events. By utilizing green and living infrastructure elements like rain barrels, raingardens, wetlands, and other installations meant to trap rainwater and runoff, less water goes into the sewer system resulting in fewer overflow events. In agricultural or suburban areas with larger swaths of open land, utilizing living infrastructure such as woodlands, meadows, and riparian buffers, and living shorelines to intercept stormwater and overland runoff can also help reduce runoff. It is important to note that the City of Buffalo is currently undertaking a large scale rehabilitation of its sewer infrastructure and implementation of green infrastructure under a consent decree from United States Environmental protection Agency. The City has been exploring new and innovative ways to reduce inputs to the storm sewer system.

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Recommended Actions to reduce bacterial inputs into streams :

Short Term	<ul style="list-style-type: none"> • Utilize livestock exclusion fencing to limit livestock access to and crossing of streams <ul style="list-style-type: none"> ○ Cost: Medium • Install alternative watering facilities for livestock away from streams <ul style="list-style-type: none"> ○ Cost: Medium • Install riparian buffers and covers crops to reduce stormwater runoff which can wash animal byproduct directly into waterways <ul style="list-style-type: none"> ○ Cost: Medium • Install liquid manure retention and targeted spreading systems to prevent manure runoff from crop fields. <ul style="list-style-type: none"> ○ Cost: High
Long Term	<ul style="list-style-type: none"> • Encourage the installation of wetland treatment systems or other living infrastructure to replace grey systems <ul style="list-style-type: none"> ○ Cost: Low to Medium • Install vegetated bio-filtration systems such as bioswales and rain gardens <ul style="list-style-type: none"> ○ Cost: Low • Install Living Shorelines along riparian land <ul style="list-style-type: none"> ○ Cost: Low to High • Replace aging infrastructure and remove CSO/SSO outfalls from municipal sewer systems <ul style="list-style-type: none"> ○ Cost: High

Nutrient Load

Goal: Reduce loadings of nutrients, specifically phosphorous

Benefit: Limiting phosphorus limits algae growth (including nuisance blue-green algae such as *Microcystis spp.*) and allows for more dissolved oxygen, resulting in better aquatic species health and therefore cleaner water.

Best Management Practices

High levels of nutrients such as phosphorous and nitrates were found in the waterbodies tested within the sub-watershed. As stated above, all the waterbody segments sampled within the Buffalo River Sub-watershed recorded average phosphorus readings above the NYSDEC guidance value for Lake Erie Eastern basins of 10 µg/L with Sprague Brook recording the highest average phosphorus. Interestingly, as the map shows there is agricultural activity in the upper reaches of Sprague Brook. Although this may suggest correlation, it does not show causation. Similarly, nitrate measurements were also found to be above NYSDEC standard value of 10,000 µg/L. The prevalence of high nutrient levels is likely due to the number of sources or inputs including: storm water runoff, wastewater

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treatment plants, CSOs, septic systems, fertilizers, and improper disposal of lawn debris. Two of the best ways to combat nutrient inputs are through improving land use practices and education.

Land Use

Making minor to moderate changes to the way in which a person interacts with their land can have significant benefits to waterbody health. The actions outlined below provide examples of tactics both private homeowners and agricultural landowners can implement.

Education

Many of the changes that could result in the greatest improvement on the overall health of water bodies are behavioral. Encouraging changes in actions or promoting different protocols can be beneficial to combatting nutrient loadings along waterways. For instance, while in the field, the data collection team observed a number of piles of grass clippings abutting the stream and getting blown into the water. Inputs of grass clippings and yard waste into a waterway cause a direct increase in nutrients. Similar minor changes in farming practices or utilizing well known best practices can have significant impacts to the health of a waterbody. Suburban communities can benefit from individual small changes like using phosphorous-free fertilizer and consulting local town or village officials on lawn debris pick-up policies.

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Recommended Actions to reduce nutrient loadings:

Short Term	<ul style="list-style-type: none"> • Agricultural landowners should coordinate with Erie County Soil and Water Conservation District to enact best management practices which reduce nutrient and sediment loading from entering local waterways. <ul style="list-style-type: none"> ○ Cost: Low • Municipalities should host educational workshops for riparian landowners pertaining to funding opportunities and financial assistance for implementing best management practices for runoff mitigation <ul style="list-style-type: none"> ○ Cost: Low • Encourage no till farming practices <ul style="list-style-type: none"> ○ Cost: Low • Utilize cover crops to keep fertilizer laden soil in place <ul style="list-style-type: none"> ○ Cost varies by crop planted and need to be addressed. For example, planting clover can be inexpensive and eliminate some nitrogen from the soil • Provide educational stormwater trainings for designers and highway officials to ensure stormwater law compliance <ul style="list-style-type: none"> ○ Cost: Low • Implement “no mow” zones <ul style="list-style-type: none"> ○ Cost: Low • Appropriately dispose of lawn debris <ul style="list-style-type: none"> ○ Cost: Low • Use phosphorous-free fertilizer <ul style="list-style-type: none"> ○ Cost: Low
Long Term	<ul style="list-style-type: none"> • Develop and implement educational trainings for homeowners about lawn care techniques, debris disposal, native plant species <ul style="list-style-type: none"> ○ Cost: Low • Promote rotation grazing for livestock <ul style="list-style-type: none"> ○ Cost: Low • Implement and enforce pesticide and fertilizer use standards and regulations. <ul style="list-style-type: none"> ○ Cost: Low • Increase watershed stewardship by installing markers and signage for storm drains. <ul style="list-style-type: none"> ○ Cost: Medium