

Volume II

Comprehensive Plan Inventory



Town of Aurelius
Cayuga County, New York

March 2006



Engineers • Environmental Scientists • Planners • Landscape Designers

Town of Aurelius

**The Town of Aurelius
Community Comprehensive Plan**

**VOLUME II
Community Inventory**

November 2005



Engineers • Environmental Scientists • Planners • Landscape Designers

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Syracuse, New York 13220**

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1.0 Introduction

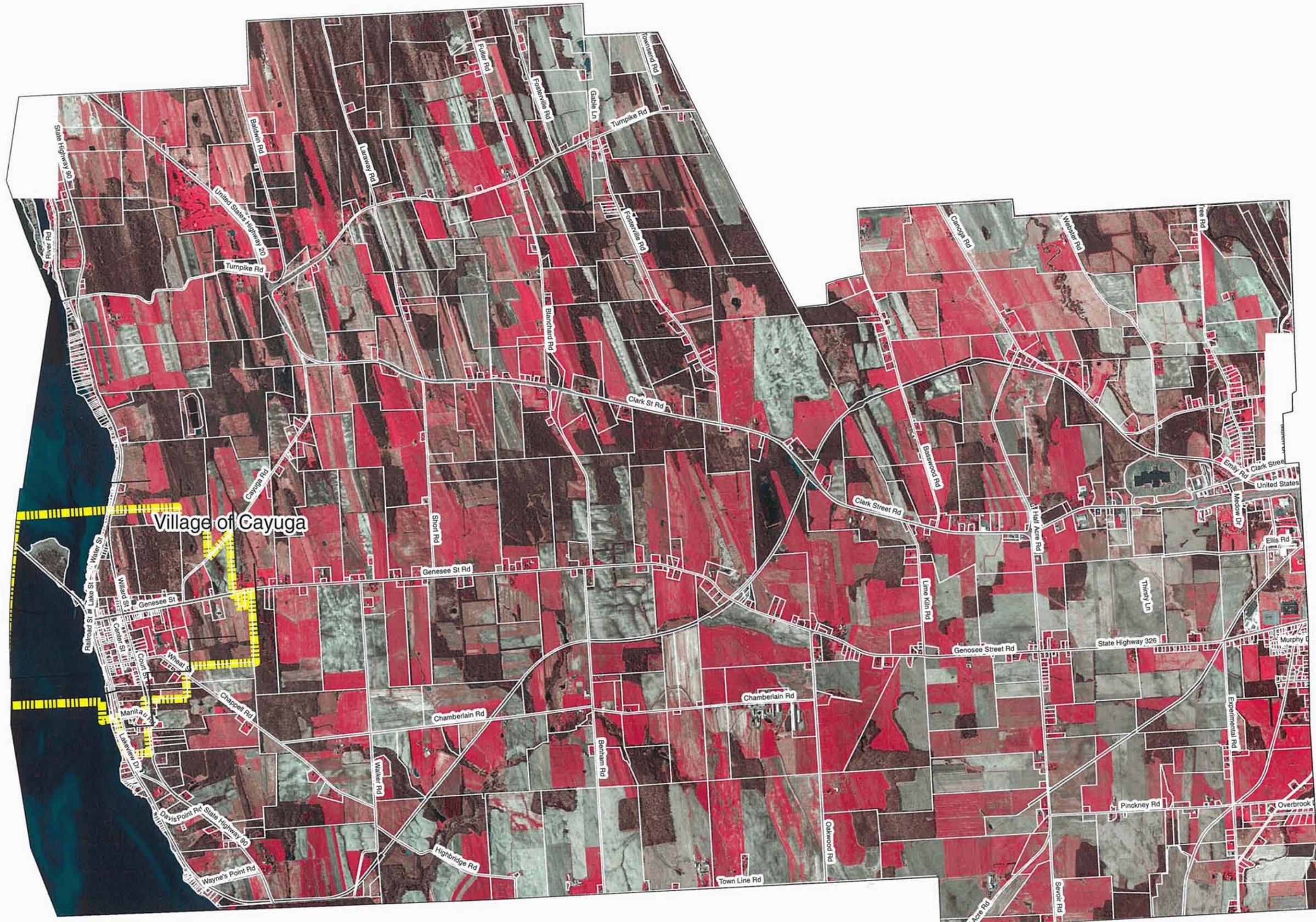
1.1 Authorization

In September of 2004, the Aurelius Town Board authorized Barton & Loguidice, P.C. to undertake and update to the Town Comprehensive Plan (The Plan) pursuant to, and in accordance with Section 272-a of New York State Town Law. Upon adoption of this resolution, the Town Board authorized the formation of an a Special Board (AD-HOC Committee) consisting on one or more members of the Town Planning Board appointed by the Town Board to develop a vision for the future of the community.

1.2 Purpose

The primary purpose of the Town of Aurelius Comprehensive Plan is to provide guidance to local officials and residents as they work to accommodate the physical growth and development of the community. The plan addresses areas within the Town including the Village of Cayuga. The plan provides a statement of community Goals and Objectives and includes policies that are based upon a comprehensive inventory and analysis pursuant to citizen input and public participation. The plan provides guidance to at least three levels of community interest.

First, the plan serves as a guide to both municipalities as they take a coordinated approach to planning for the future as a natural neighbor to the City of Auburn. Secondly, the plan provides guidance to State and County agencies for the development and maintenance of facilities within the Town. Third, the plan will guide public agencies, private business, not for profit agencies and citizens in working toward a collective vision for the Town of Aurelius. The plan considers that the Town is part of a region and the interests of the Town are important in context of Cayuga County, and close proximity to the Fingerlakes and the City of Auburn (**figure 1-1**).



Village of Cayuga



The Town Board of Aurelius recognizes that the act of governance is the art of balancing limited resources with unlimited demands. During periods of limited public resources, Comprehensive Planning serves as a strategic guide to the public and private sectors. This guidance is necessary to provide effective and efficient expenditures of public funds for the maintenance and development of critical infrastructure and facilities. The plan will help the Town of Aurelius achieve its vision for the next generation and promote a sound and reasoned approach to public and private investment.

1.3 An Overview of the Comprehensive Plan

The Town of Aurelius Comprehensive Plan addresses four major subject areas with nine sub components based upon New York State Legislation defining a Town Comprehensive Plan. Ultimately sections of the plan address; Natural Resources, Historic Resources, Cultural Resources, Transportation, Infrastructure, housing, community facilities including parks recreation and open space, economic development in the context of local land claims and issues with respect to community design. Each section of the plan includes a profile and inventory of existing conditions, a discussion of trends relevant to the Town and an analysis of local opportunities and constraints for each of the four major sections of the plan. The plan also establishes community goals, objectives and strategies of the plan relating to each element. This element of the plan is to guide local policy toward achieving the future vision of the community.

An element of the final plan will include implementation strategies and describe how progress in achieving the goals of the community can be measured and monitored. The plan will also identify resources available to the community to facilitate and support community strategies. The key to the success of the plan lies within the Community Goals, objectives and Strategies that are established to achieve a vision for the next generation of residents.

Essentially, Goals, Objectives and Strategies are defined as follows:

Goal – A community Goal is a broad statement that represents a long-term goal of the community for each component of the plan. The combination of Goals sets the framework for the future long-term vision of the community.

Objective – Objectives are more specific steps toward achieving long-term goals but will take a period of time to accomplish. Objectives may require a periodic review and may be adjusted to changes in the regulatory landscape or unanticipated issues that may arise out of unforeseen trends.

Recommendations – recommendations are guidelines for policy changes to set the direction for each individual planning component. They provide direction toward the best approach in areas where alternatives were considered during the planning process. Recommendations assist the decision-making process of Town Officials based upon the analysis and evaluation of the best available alternatives suggested by panel experts, participating agencies and the planning consultant.

Strategy – Strategies are very specific, short-term policy oriented actions that should be initiated within a one to five-year time frame. The success of short-term strategies should be reviewed every five years and updated as they are accomplished. For example, development of improvements to the water supply system is a local objective, but the Town may target funding to complete the first of the water supply system to accommodate the Fingerlakes Crossing project within one to three years.

1.3.1 Plan Contents

The Aurelius Comprehensive Plan is designed to serve as a Generic Environmental Impact Statement and organized according to recommendation of the New York State Department of State. The Environmental, Historic and Cultural Resources describe the natural resource base of the area. This is organized in NRI (Natural Resources Inventory) format and is designed to satisfy the natural resource inventory under the State Environmental Quality Review Act. It

recommends measures to enhance and conserve the many values of local natural resources through cooperative management and public and private stewardship. Historic and Cultural Resources explore the ways in which local history and historic preservation efforts can become part of the community revitalization process, particularly in the Village. Historic and archeological resources enhance the understanding of how the local community developed over time and can assist in projecting the direction of current trends.

Water and wastewater utility planning addresses the basic needs of the community and provide for public health. Existing Water and sewer systems are described, demands on the resources are identified and challenges occurring in the way these services are provided are addressed. This is important in approaching the needs of the community in a cost effective and efficient manner.

The Transportation planning portion of the plan, including roads and multi-modal systems are described in ways that can effectively facilitate the safe and efficient flow of traffic within the community. In addition, the safety of bicyclists and pedestrians throughout the community will be addressed. The importance of maintaining a safe and efficient multi-modal transportation system are explained, and related to current Federal and State D.O.T. initiatives.

The Land Use portion of the plan pulls together all of the previous planning elements in a manner that determines the most appropriate land use decisions in order to achieve the Goals and objectives of the Plan. In essence the land use portion will address issues with respect to housing, commercial development, community facilities (i.e., libraries, public safety services etc.), agriculture and all of the forms of land use within the Town and puts all of the elements together within the context of how the land is utilized and how approaches like community design, residential housing, etc., can maintain and enhance the quality of life for the next generation of citizens. The land use portion of the plan will address current land use patterns and trends as the basis for making predictions as to the future impacts of land use within the Town.

1.3.2 The Planning Process

The timeframe for plan development was approximately 18 months utilizing a public visioning process. The process includes development of a Corridor Study for Route 5 and 20, Clark Street Road; and Design Guidelines for the Towns Commercial Zoning District. These visioning sessions were designed to maximize public input regarding the issues outlined above. The process involved six visioning sessions during the winter and summer of 2004-2005. The Ad-Hoc Committee and the planning consultant solicited public concerns regarding the Comprehensive Plan subject areas. Workshops with the Ad-Hoc Committee took place in advance of Visioning Sessions to prepare for the public input components of the plan. In addition, two community surveys were undertaken. The first was a survey of visual preference undertaken during the December 2004 Visioning Session. Attendees were asked to view slides and select building and site design that were preferable to fit within the context of the community. A second community survey was developed in June 2005 by the Ad-Hoc Committee and distributed to all Town Residents. The results of both surveys are included in Volume III of the Comprehensive Plan.

1.4 Town and Village Demographics - (See Volume I)

Many planning decisions rely on the demographic profile of a community. Demographics provide a basis to recognizing growth or non-growth population trends, the ethnic profile of the community and economic potential of the local work force. It is also helpful in establishing human patterns. For example, the location of employment opportunities may be evident by establishing how many people are employed locally as compared to the number of individuals who commute to other employment centers. Another example may be identifying a trend that may result in school expansion, development of senior assisted housing or the need for affordable housing, or evaluation of the median income of the local population to give some insight into the health of the local economy.

A detailed demographic analysis is contained in Volume I of the Comprehensive Plan. This information was developed early in the planning process as part of the Community Inventory. However, for the purposes of brevity, no further elaboration of demographics is included in the Volume II Inventory.

2.0 Natural and Cultural Resources

2.1 Natural Resource Inventory

Natural resources are the life-blood of a local community. In Aurelius, this is evident in the long and successful history of agriculture and agribusiness. It is also the basis for establishing quality of life for local residents and the economic potential of the area. Natural resources provide the setting for making long term planning decisions due to potentially constrained areas that may limit development. They are relevant to many issues with respect to septic systems, soils, and availability of groundwater for drinking water, steep slopes, and other natural factors. On the other hand Natural Resources provide opportunities with respect to economics, recreation, land use potential and land values. The inventory portion of the Natural Resources portion of the plan is thus important in establishing the setting for the future vision of Town residents and is useful in developing realistic goals and objectives to guide future policy.

2.1.1 Introduction

The Town of Aurelius is located in the Central Fingerlakes Region. The Town is within the Cayuga Lake Watershed and all of the surface drainage in the Town contributes to the 5,100 square mile Oswego River watershed via the Seneca River. Therefore, runoff from the Town contributes to a watershed area that includes the Finger Lakes, industries, municipalities, and extensive areas of farmland and forest that expand an area of over 5,000 square miles. The Oswego River is the second largest tributary to Lake Ontario and contributes a large amount of pollutants to the Lake. Upstream pollutants are known to have traveled through the river and have affected the Lake Ontario ecosystem, thereby forming the basis for the Area of Concern designation.

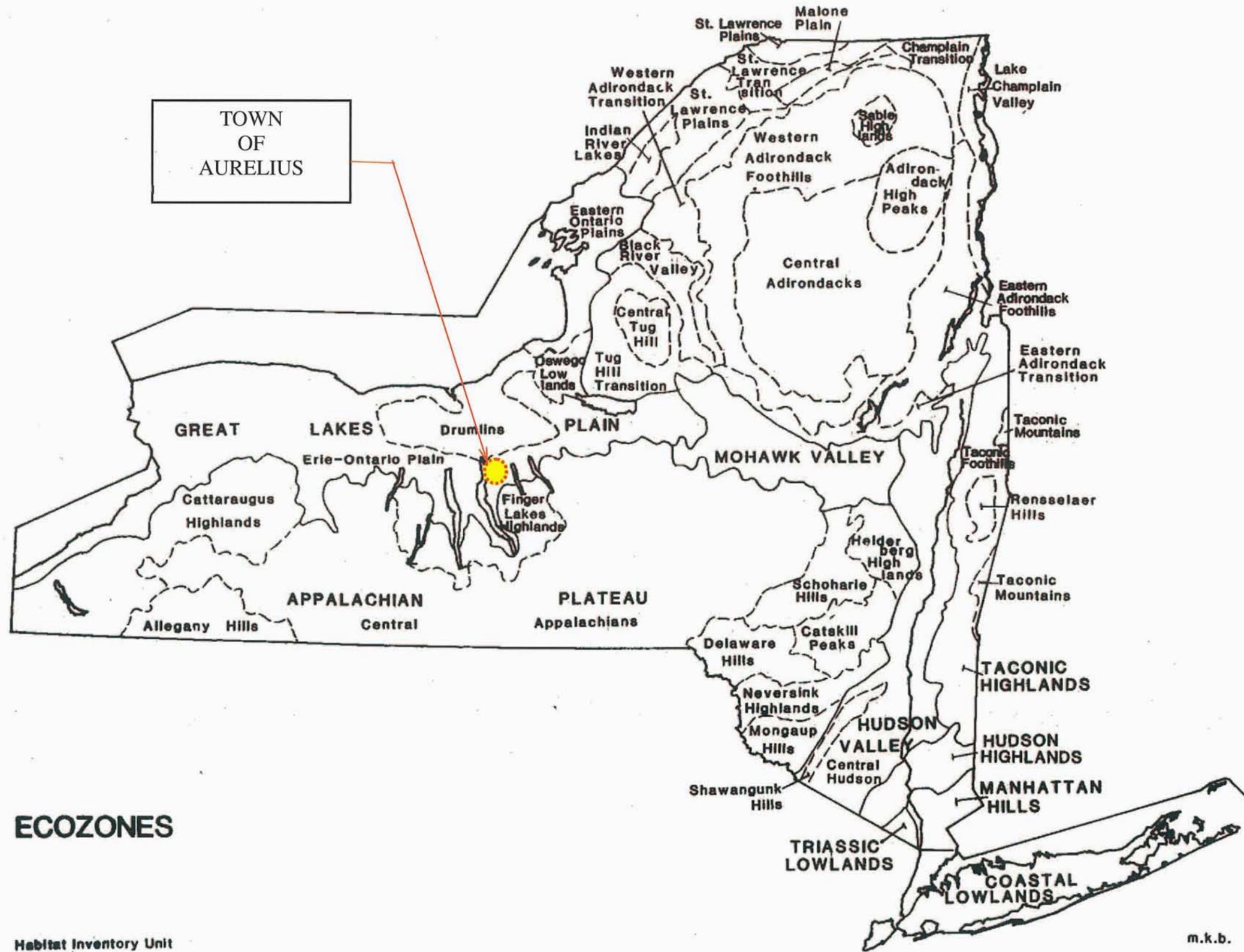
Aurelius lies between the three physiographic provinces of the Great Lakes Plain, the Appalachian escarpment and the Fingerlakes Region. The largest surface water body in the Town includes Cayuga Lake and its tributaries. The Cayuga Lake watershed covers an area of 785 square miles and includes 44

municipalities. The current water quality of the lake is generally very good and the lake is a valued community resource. The Lake is a major source of recreational opportunity and serves several communities as a public water supply. Although the water quality of the lake is generally considered very good there are several areas of concern in addressing the potential for long-term degradation of water quality. These concerns include increasing levels and concentrations of herbicides and pesticides, sediment loading, a growing presence of heavy metals and phosphorus and exotic species of plant and animals (including milfoil and zebra mussels).

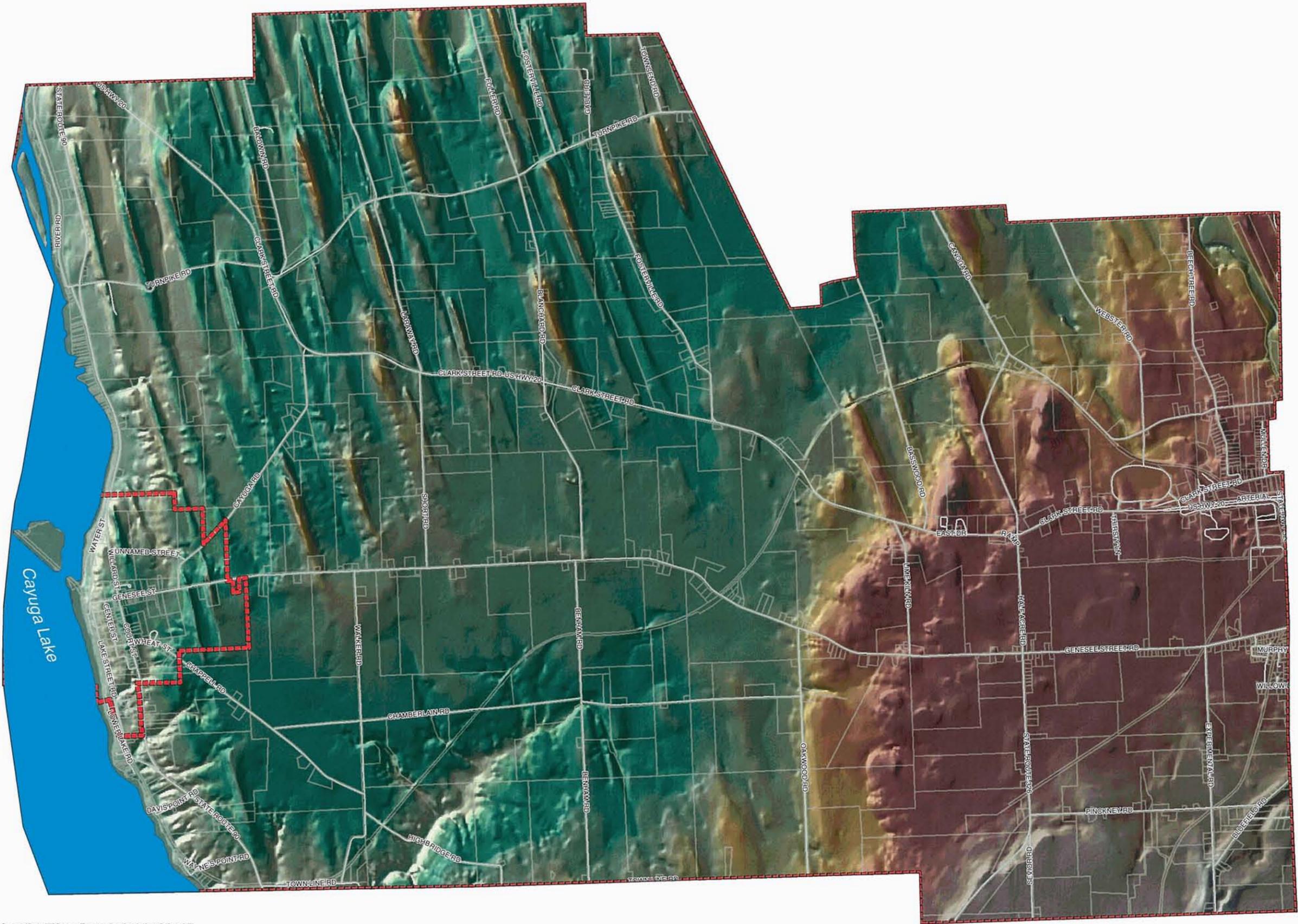
2.1.1.1 *Ecological Zones*

The land area of Aurelius is located at the transition of three ecological zones as classified by the New York State Department of Environmental Conservation (**see figure 2-1 Ecozone Map**). Most of the Town lies within the Great Lakes Plain. However, the Town does contain Drumlins caused by advancing glaciers approximately 10,000 years ago. The Southeastern portion of the Town lies within a transition zone between the Great Lakes Plain and the Finger Lake Highlands. The Finger Lakes Highlands form the foothills and the change in elevation between the Appalachian Plateau and the Great Lakes Plain (**see figure 2-2 Topography**). This southeast transition area contains the soils that are most suitable to farming, although farming is important throughout the Town.

Information on plants and wildlife of the Town is very limited. The natural vegetation of the Town has been significantly altered over the years as changes occurred during the Town's history. The clearing of forested areas gave way to agriculture as important and fertile farmland soils were exposed and farming became the dominant economic force in the landscape.



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Legend

Elevation(Meters)

Value

High : 299

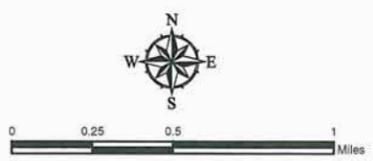
Low : 113

— Tax Parcel Boundary

- - - Municipal Boundary

■ Cayuga Lake

SOURCES: Cayuga County Department of Planning, N.Y.S. Department of Transportation, Cayuga County Real Property Tax Service, CUGR



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The dominant forest types, though variable throughout the town mainly consist of elm-red maple climax communities. In the southern upland portion of the town mixed northern hardwoods including Maple- Beech climax communities predominate. Bottomland hardwoods including black willow, eastern cottonwood, ash and black locust dominate a number of stream corridors including Yawger Creek and Crane Brook.

The location of Aurelius within the transitional context of these three ecological zones provides a wide range of diversity of plant and animal life. Essentially, the Town contains species associated with hydric environments, upland environments and transitional environs between upland and lowland locations. It also creates a great deal of variation with respect to the physical attributes of the Town. For example, soils within the lake plain will exhibit a greater degree of drainage limitations than soils in the southern portion of the Town. Furthermore, the variation in soil types and drainage provides a wide range of implications for farming activities and residential development in the most valued farmland soils are located in the southern and eastern portion of the Town.

2.1.1.2 Glacial Geology

Land is a basis for human activity but the land itself is a natural resource that includes minerals, soil, water, vegetation and wildlife. When using land for building, it must be kept in mind that some other use, such as cropland or open space is being displaced. This section explains the characteristics of the land in those areas where it is open and their implications for development. At the same time the suitability of the Town's soils for agriculture is considered.

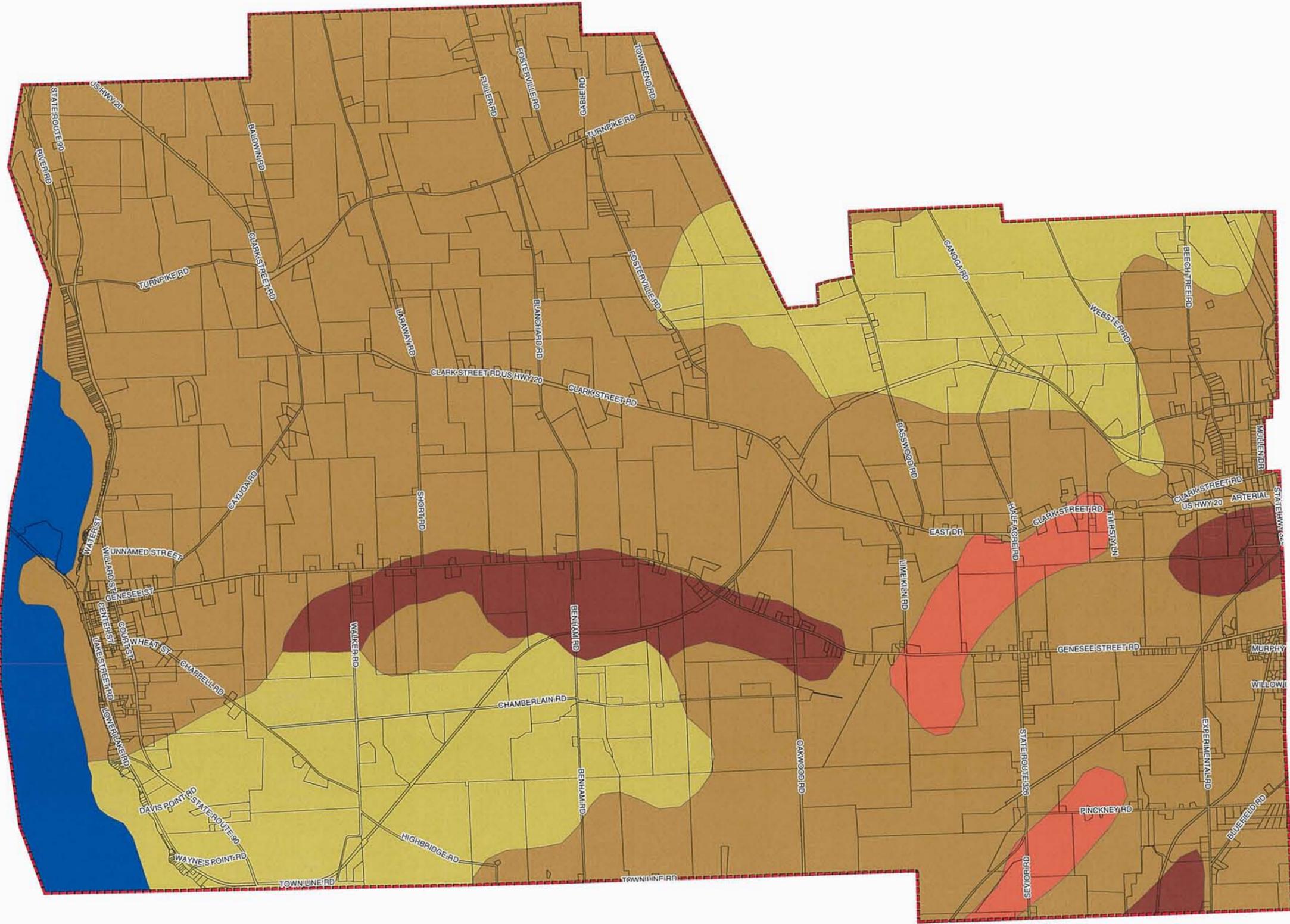
Five hundred million years ago almost all of New York was under water. As a result, a large area of the state received deposits of sand, mud, lime, and salt washed down from New England, parts of Canada, and the still dry Adirondacks. This process continued until bedrock of sandstone, shale, limestone, and rock salt was built over the majority of the state.

Cayuga County, for example, is underlain by sandstone in the Town of Sterling and by slate, shale, and schist in the other towns. There are also three narrow belts of limestone that cross the County from east to west. These limestone belts have been extremely important for agriculture in the County and in Aurelius (**see figure 2-3 Surficial Geology**).

A great upheaval took place about 200 million years ago that raised almost all of New York above sea level. The upheaval lifted the southern portion of the state to a generally higher elevation than the northern portion. The Appalachian Upland or southern portion has elevations usually greater than 1,000 feet while the Plain to the north has elevations generally less than 1,000 feet.

Both the Central Plain and the Appalachian Upland were swept over by a series of glaciers. The last glacier receded only 10,000 years ago. The glaciers are responsible to a large extent for the nature of the soil, the topography and the drainage systems that now prevail in New York.

The glaciers brought tons of rock, clay, silt, and sand which they left behind when they melted. This mixture is called glacial till, and it is the parent material for the soils of Aurelius and Cayuga County. Since the glacier receded such a comparatively short time ago, the soils are relatively new and fresh. There has been less time for phosphorous and other minerals they contain to be leached and they are much more favorable for crop growing than they would be if the soil had formed from bedrock weathered in place.



Legend

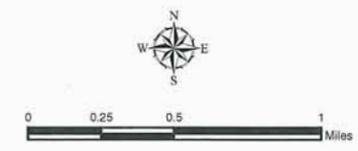
alis_roads_clp

Surficial Geology

MATERIAL

- Lacustrine silt and clay- generally laminated silt and clay, deposited in proglacial lakes, generally calcareous, low permeability, potential land instability, thickness variable (up to 50 meters).
- Bedrock- exposed or generally within 1 meter of surface, in some areas saprolite is preserved.
- Till Variable texture- (boulders to silt), usually poorly sorted sand-rich diamict, deposition beneath glacier ice, permeability varies with compaction, thickness variable (1-50 meters)
- Till moraine Variable texture- (size and sorting), generally low permeability, deposition adjacent to ice, thickness variable (10-30 meters).
- Water
- aquifrp025
- Municipal Boundary
- Tax Parcel Boundary

SOURCE: Cayuga County Real Property Tax Service, N.Y.S. Department of Transportation, CDR

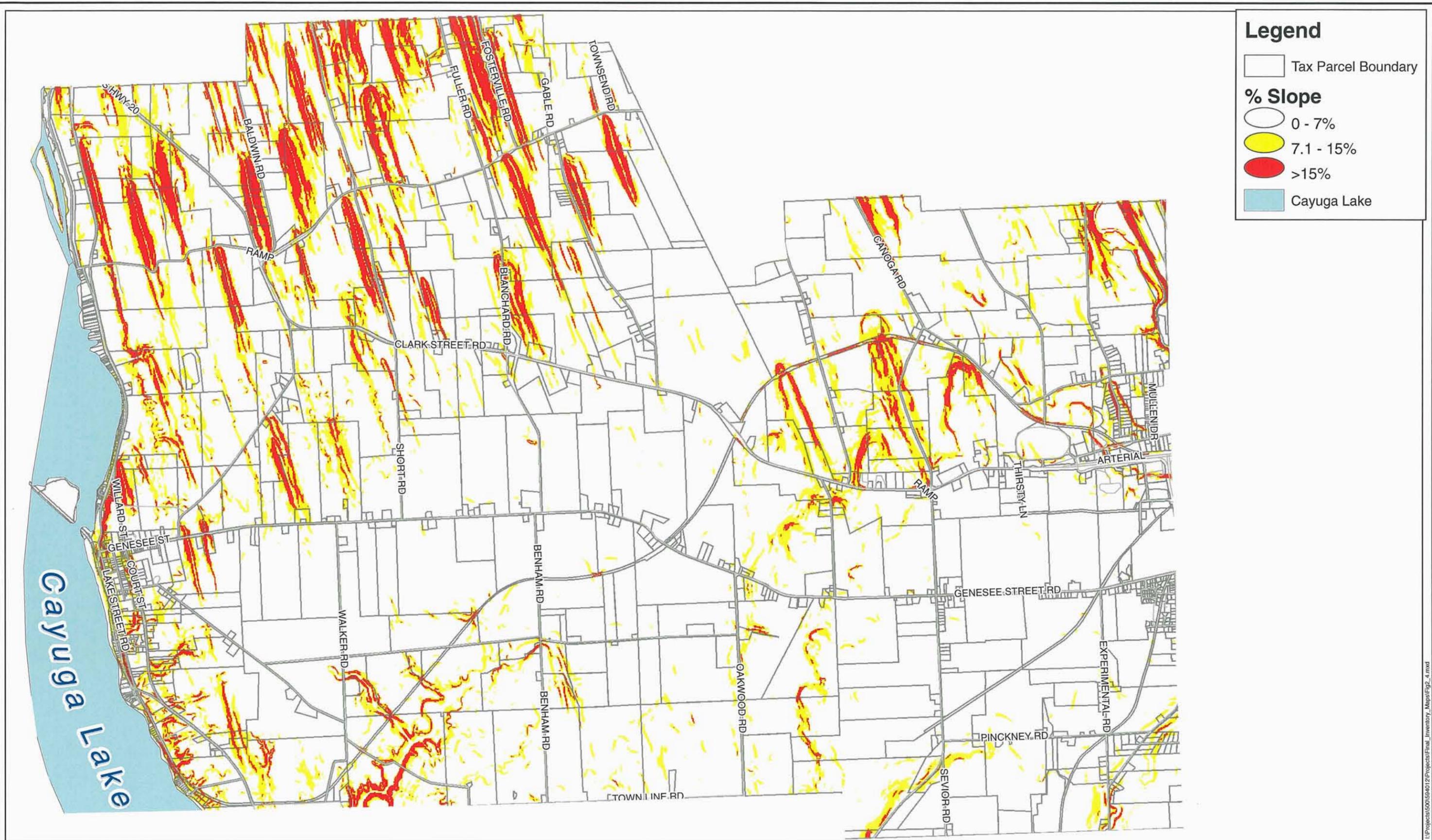


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Along with rocks and sand, the glacier moved great quantities of limestone from the narrow belts of limestone bedrock across the top and middle of Cayuga County and spread them over the rest of the Central Plain. This has been of importance for agriculture since the added lime has produced a neutral soil for crops to grow in. Neutral or basic soils are essential for agricultural success. "Acid soils make phosphorus unavailable, contain soluble iron and aluminum which are toxic to many crops, and limit the activity of micro-organisms that release plant nutrients such as nitrogen." Thus, the glacial mixing of limestone with the soils to the south of the limestone outcrops is of great benefit to farming in Aurelius.

At one point during the glacial period most of Aurelius was occupied by a lake. Rivers entering the lake first dropped the rocks and sand they carried. Silt and clay were carried further, "but eventually they settled in still water to form lake-laid or lacustrine silt and clay deposits." The filtering of silt and clay into the glacial lake that covered Aurelius is reflected by the composition of the Town's soils. Silt loams, which contain about 60 percent silt, 20 percent clay, and 20 percent sand are the most common kind of soil. Silty clays, silty clay loams, and loams also occur, although less frequently.

Most of the Town, then, is occupied by lake-laid soils that have high clay content. Portions of the Town which were not under water contain soils formed from glacial till. These portions are characterized by the drumlins and the Honeoye-Lima Plain. The drumlins stretch down into Aurelius to about Routes 5 and 20 and cover primarily the northwest corner of the Town. These long narrow hills are often tightly spaced. They are responsive to agriculture when the topography is not too rough (**see figure 2-4 Steep Slopes**). Valleys in between the hills are filled with clay and poorly drained. They are used for pasture plants and sometimes for vegetables.



Legend

- Tax Parcel Boundary
- % Slope**
- 0 - 7%
- 7.1 - 15%
- >15%
- Cayuga Lake

SOURCE: Cayuga County Department of Planning, N.Y.S. Department of Transportation, Cayuga County Real Property Tax Service, CURR



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2.1.1.3 Surficial Geology and Soils

To the south of Aurelius lies the Honeoye-Lima Plain, an extremely productive, mostly level area which includes the towns of Fleming, Springport, Scipio, Venice, Ledyard, and Genoa. Soils in the Plain are deep, well-drained, high in lime, and medium-textured. The Honeoye-Lima Plain is the best agricultural area in Cayuga County. A small section of it is found in southeastern Aurelius from about Pinckney Road south.

The soils in the Honeoye-Lima Plain present fewer problems for agriculture than do the lake-laid soils of Aurelius. Both areas enjoy a favorable topography and high lime and plant nutrient content, but the soils of the Clay Belt, as the land formed by the lake is called, are “difficult to handle and variable in drainage.” This means that their suitability for agriculture also varies.

Aurelius, then, has two basic kinds of soils—those formed on a glacial till and those formed as part of a lake bottom by sedimentation. The lake-laid soils were formed after the second glacier receded. The third glacier then scraped over them, removing some and leaving glacial till in their place. Thus the lake-laid soils are not all found in one place, nor do they follow the elevation as one might suppose.

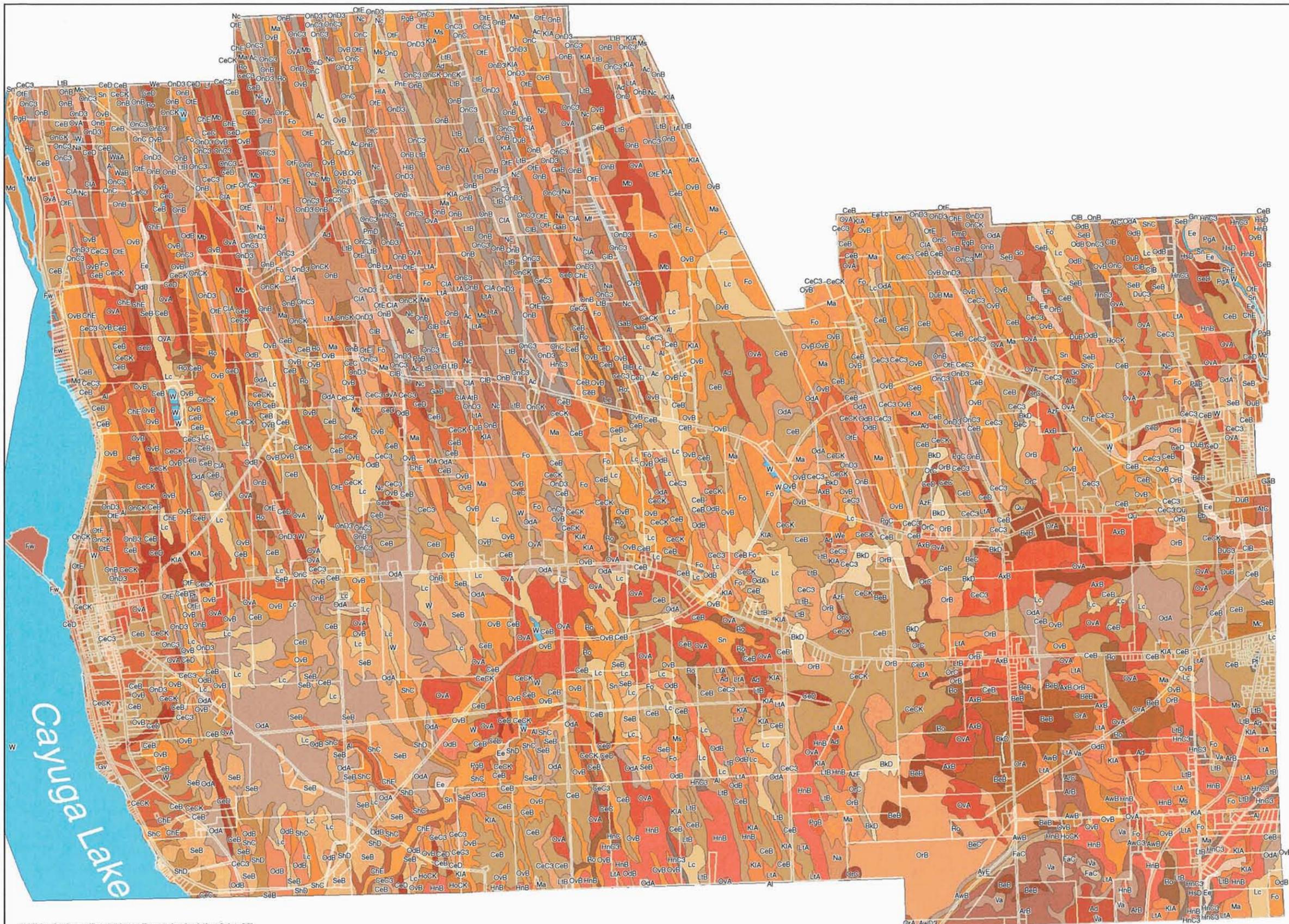
Soils formed on glacial till include Ontario, Honeoye, Cazenovia, Ovid, Romulus, and Lima. These soils are relatively stable and permeable. They are not strongly layered, but are open and uniform in the subsoil. They are also well-graded, that is, they contain substantial amounts of materials of different textures such as sands, silts, clays, and gravel.

In contrast, the lacustrine soils—Odessa, Schoharie, Dunkirk, Kibbie, Canandaigua, Madalin, Collamer, and Toledo—are fine-textured and not well-graded. This makes them less permeable than the glacial till soils. Unlike glacial till soils, lacustrine soils were deposited in distinct layers. The layers often have very different characteristics. For example, the top layer may be quite permeable while the subsoil may contain a large amount of clay and be completely impermeable. This situation is commonly known as a hardpan. Thus lacustrine soils are not consistent. They do not always conform to generalizations made about them, and on-site tests are usually required to determine their exact permeability and stability.

The soils are shown (**see figure 2-5 Soils**) in the form of soil associations. The Ontario Association makes up the drumlins of the northwest part of the Town. Honeoye-Lima is found in the southeast portion. Cazenovia-Ovid and Odessa-Schoharie cover the great middle portion of the Town. To the east and south of Cayuga the Odessa-Schoharie association contains a substantial amount of Lakemont.

In general, the Odessa, Schoharie, and Lakemont soils, having been developed from lake-laid sediments, have a large proportion of clay in the subsoil and are thus limited both for agriculture and for urban uses. The Odessa and Lakemont soils are also very poorly drained.

Drainage problems exist in some of the other soils as well. Ovid is sometimes imperfectly drained and sometimes moderately well drained. The wettest soils are minor associations. These poorly drained soils (**see figure 2-6 Hydric Soils**) together with Ovid and the Odessa-Schoharie association occupy approximately one third of the Town's area. Thus many of Aurelius' soils are severely limited for both agricultural and urban uses unless artificial drainage can be installed.



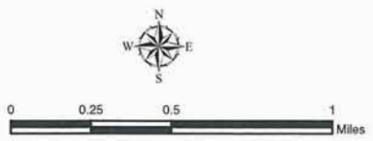
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Tax Parcel Boundary

SOILS SYMBOL, SOILS NAME

Ac. Alden mucky silt loam	Lt. Lamson fine sandy loam
Ad. Aden mucky silt loam, 10' substratum	Lia. Lima silt loam, 0 to 2 percent slopes
Al. Alluvial land	Llb. Lima silt loam, 3 to 8 percent slopes
Ab. Argilla silt loam, 1 to 6 percent slopes	Ma. Madalin silt loam
Ac. Argilla silt loam, 8 to 12 percent slopes	Mb. Madalin silt loam, sandy subsoil variant
Ab. Argilla fine sandy loam, 1 to 6 percent slopes	Mc. Made land, sanitary landfill
Ac. Argilla fine sandy loam, 8 to 12 percent slopes	Md. Made land, white
Ad. Aurora silt loam, 2 to 6 percent slopes	Me. Mazonia fine sandy loam
Ad. Aurora silt loam, 6 to 12 percent slopes, eroded	Mf. Much, unshale
Ad. Aurora silt loam, 12 to 18 percent slopes, eroded	Nc. Niagara fine sandy loam
Ab. Aurora silt loam, limestone substratum, 2 to 8 percent slopes	Nc. Niagara and Genesee silt loams
Aye. Aurora and Farmington clayey silt loam, 18 to 48 percent slopes	Oa. Odesa silt loam, 0 to 2 percent slopes
Ajf. Aurora, Farmington, and Benson very rocky soils, 20 to 70 percent slopes	Obl. Odesa silt loam, 2 to 6 percent slopes
Bb. Benson loam, 1 to 8 percent slopes	Oc. Ontario fine sandy loam, 0 to 14 percent slopes
Bc. Benson loam, 8 to 14 percent slopes	Od. Ontario loam, 2 to 8 percent slopes
Bd. Benson very rocky loam, 2 to 20 percent slopes	Oe. Ontario loam, 8 to 14 percent slopes
Bb. Bradford and Ludport silt clay loam, 2 to 8 percent slopes	Oe. Ontario loam, 8 to 14 percent slopes, eroded
Cb. Cazenovia silt loam, 2 to 8 percent slopes	Ock. Ontario loam, rolling
Cc. Cazenovia silt loam, 8 to 14 percent slopes	Od. Ontario loam, 14 to 20 percent slopes
Cck. Cazenovia silt loam, 5 to 14 percent slopes, eroded	Oe. Ontario loam, 14 to 20 percent slopes, eroded
Cck. Cazenovia silt loam, rolling	Oa. Ontario silt loam, moderately shallow variant, 0 to 3 percent slopes
Cd. Cazenovia silt loam, 12 to 20 percent slopes	Oa. Ontario silt loam, moderately shallow variant, 0 to 3 percent slopes
Ce. Cazenovia and Schenectady soils, 20 to 40 percent slopes	Oe. Ontario silt loam, moderately shallow variant, 8 to 14 percent slopes
Cd. Colburn silt loam, 0 to 2 percent slopes	Oe. Ontario, Honeye, and Lansing soils, 20 to 38 percent slopes
Cb. Colburn silt loam, 2 to 8 percent slopes	Oe. Ontario, Honeye, and Lansing soils, 20 to 38 percent slopes
Dd. Dunkirk silt loam, 1 to 6 percent slopes	Ov. Ovid silt loam, 0 to 2 percent slopes
Duc. Dunkirk silt loam, 6 to 12 percent slopes, eroded	Ov. Ovid silt loam, 2 to 8 percent slopes
Ea. East silt loam	Pa. Palmyra gravelly sandy loam, 0 to 8 percent slopes
Es. East silt loam, high bottom	Pb. Palmyra silt clay
Fa. Farmington clayey silt loam, 1 to 12 percent slopes	Pga. Palmyra gravelly loam, 0 to 3 percent slopes
Fu. Fudge mucky silt loam	Pgh. Palmyra gravelly loam, 2 to 8 percent slopes
Fv. Fresh water marsh	Pgd. Palmyra gravelly loam, 8 to 18 percent slopes
Ga. Galen fine sandy loam, 2 to 6 percent slopes	Phe. Palmyra, Howard, and Allen soils, 25 to 40 percent slopes
Gc. Genesee silt loam	Pl. Pile, sand and gravel
Gd. Genesee silt loam, high bottom	Qu. Quince
Gv. Genesee gravelly loam, fan	Rc. Romulus silt clay loam
Ha. Hilton loam, 0 to 3 percent slopes	Se. Schenectady silt loam, 2 to 8 percent slopes
Hb. Hilton loam, 3 to 8 percent slopes	Shc. Schenectady silt clay loam, 6 to 12 percent slopes
Hc. Honeye silt loam, 2 to 8 percent slopes	Shd. Schenectady silt clay loam, 12 to 20 percent slopes
Hnc. Honeye silt loam, 8 to 14 percent slopes	Sn. Snodgrass silt loam
Hoc. Honeye silt loam, 8 to 14 percent slopes, eroded	Va. Varco silt loam
Hod. Honeye soils, rolling	W. Water
Hud. Honeye and Lansing gravelly silt loam, 14 to 30 percent slopes	Wa. Wampsville gravelly silt loam, 0 to 3 percent slopes
Kia. Kendall and Lyons silt loam, 0 to 3 percent slopes	Wb. Wampsville gravelly silt loam, 3 to 8 percent slopes
Lc. Lakemont silt clay loam	Wc. Warners loam
La. Lamson fine sandy loam	

SOURCE: Cayuga County Department of Planning, N.Y.S. Department of Transportation, Cayuga County Real Property Tax Service, 2008

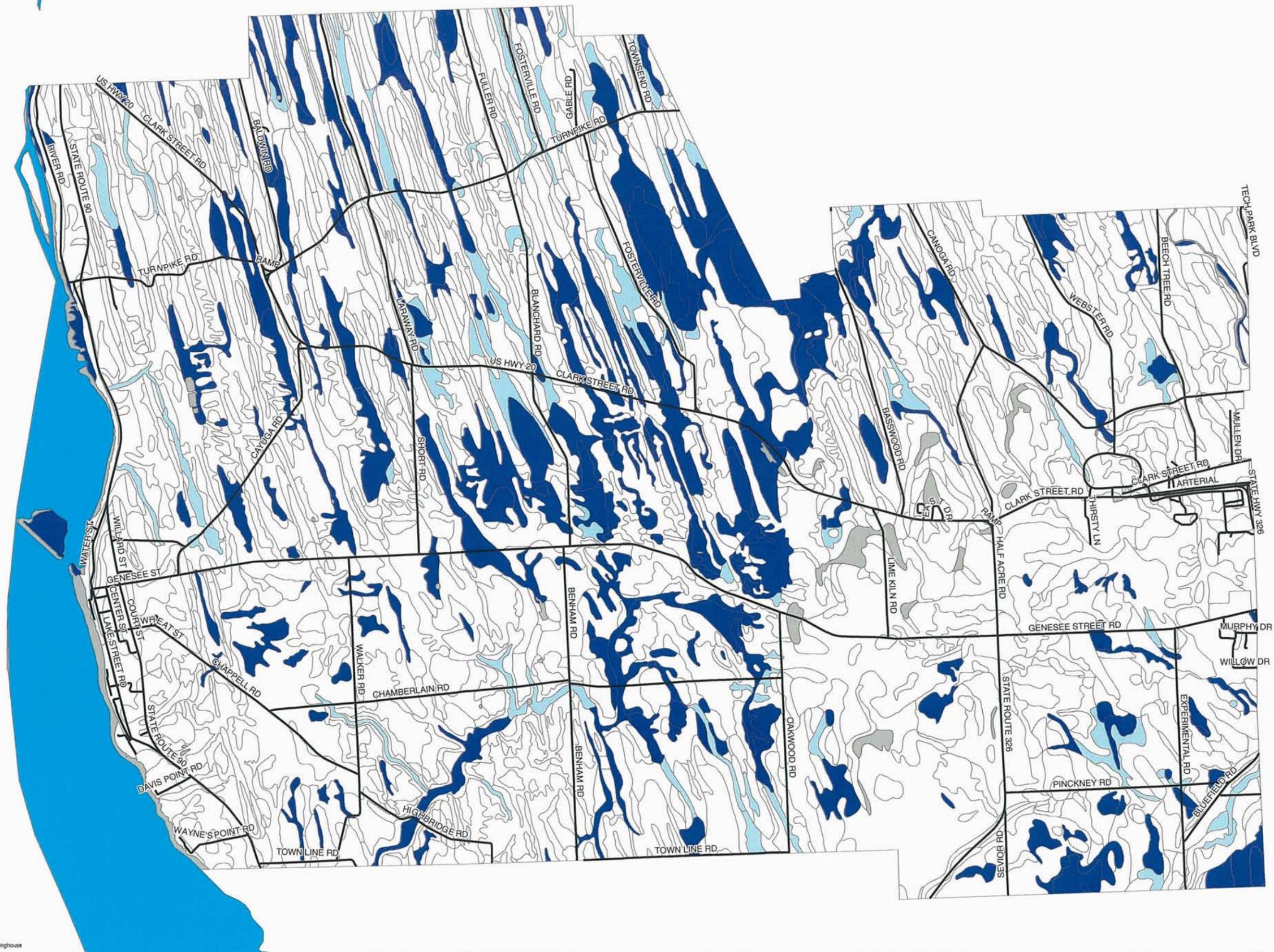


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Legend

Hydric Soil Classifications

-  Not hydric
-  Partially hydric
-  All hydric
-  Unknown
-  Cayuga Lake
-  Road Centerline



SOURCES: NRCS, NYS DOT, NYS GIS Clearinghouse



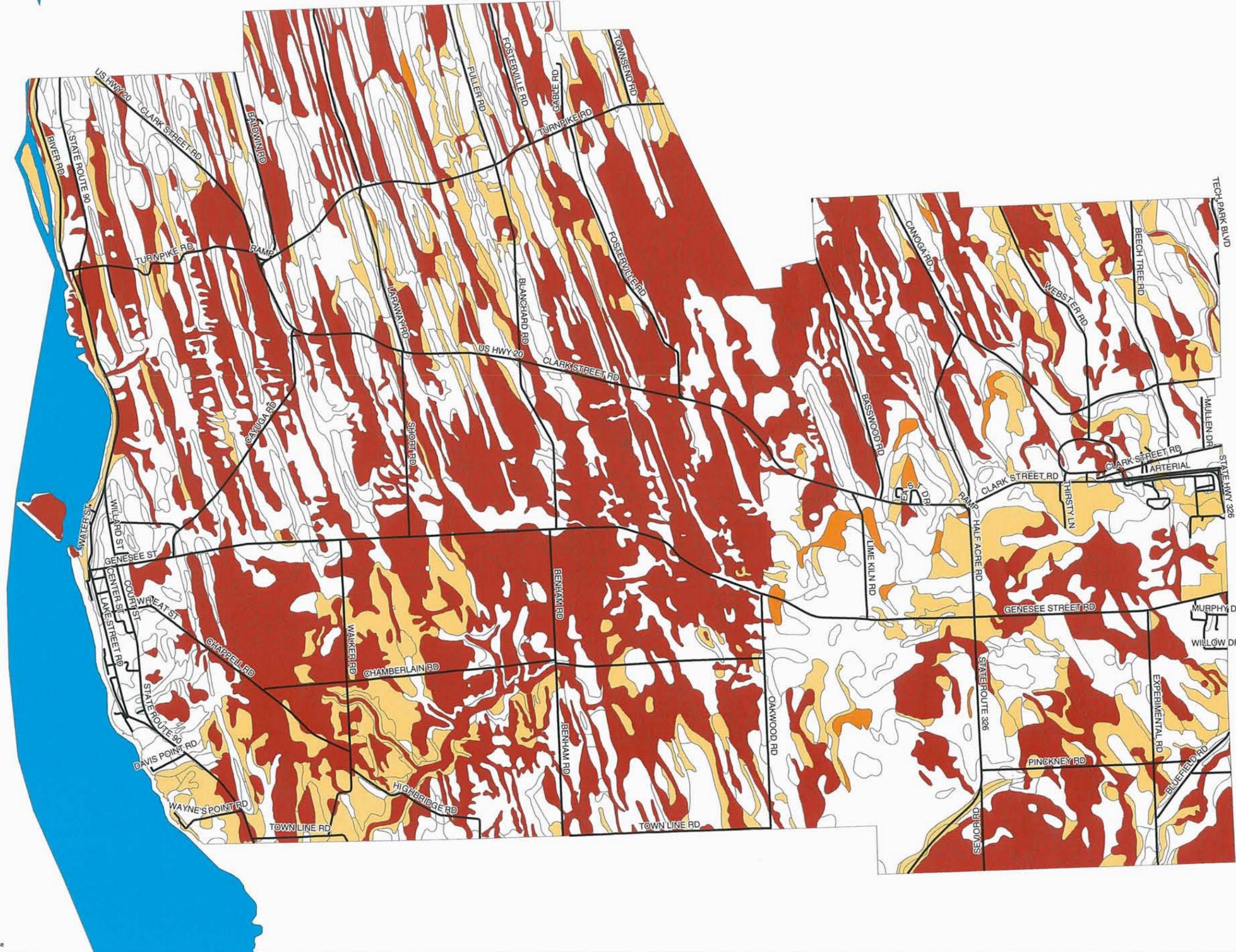
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The Ontario association is permeable, well-drained, and fertile, but is often limited by severe slopes. The Cazenovia-Ovid association is well-suited to certain crops and to most urban uses. Limitations arise from the fine texture of Cazenovia and, as mentioned above, the wetness of Ovid. The Honeoye-Lima association is regarded as one of the most productive in the State. It has few limitations for either agriculture or urban uses (**see figure 2-7 Soil by Drainage Class**).

The major constraints on development in the Town are high water table and drainage problems. Except for the drumlins, slopes are gentle. Nor are there broad flood plains in Aurelius. Alluvial land is found only along rather narrow stream beds, such as those of Crane Brook and Yawger's Creek (**see figure 2-8 Constrained Soils**).

Shallowness of some soils may also be a limitation. In the southeastern portion of the Town, from about Routes 5 and 20 south and about Route 326 east, a significant portion of the soils are 24 to 36-inches deep over bedrock. In some spots in this area the soils are 0 to 24-inches deep over bedrock. Agriculture does not appear to be hindered by this fact as the area delineated above is part of the best agricultural land in the Town. The shallowness of the soils does make excavating foundations for homes difficult, however, and also interferes with utilities.

The Soil Conservation Service has rated the soils in Cayuga County as to their limitations for homesites and septic tanks. A soil has slight or moderate limitations for building if it has a depth to seasonal high water table of at least 1 foot, a slope of not more than 25 percent, a depth to bedrock of at least 3 feet, not more than 10 percent rock on the surface, medium or coarse textured soils, and no possibility of flooding. Slight to moderate limitations for septic tanks require the same conditions except that the slope should be 15 percent or less, the soil must have a permeability of about 1-inch of water per hour, and there must be no hardpan present.

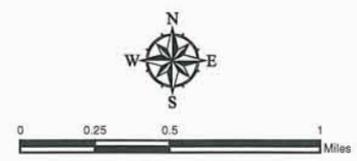


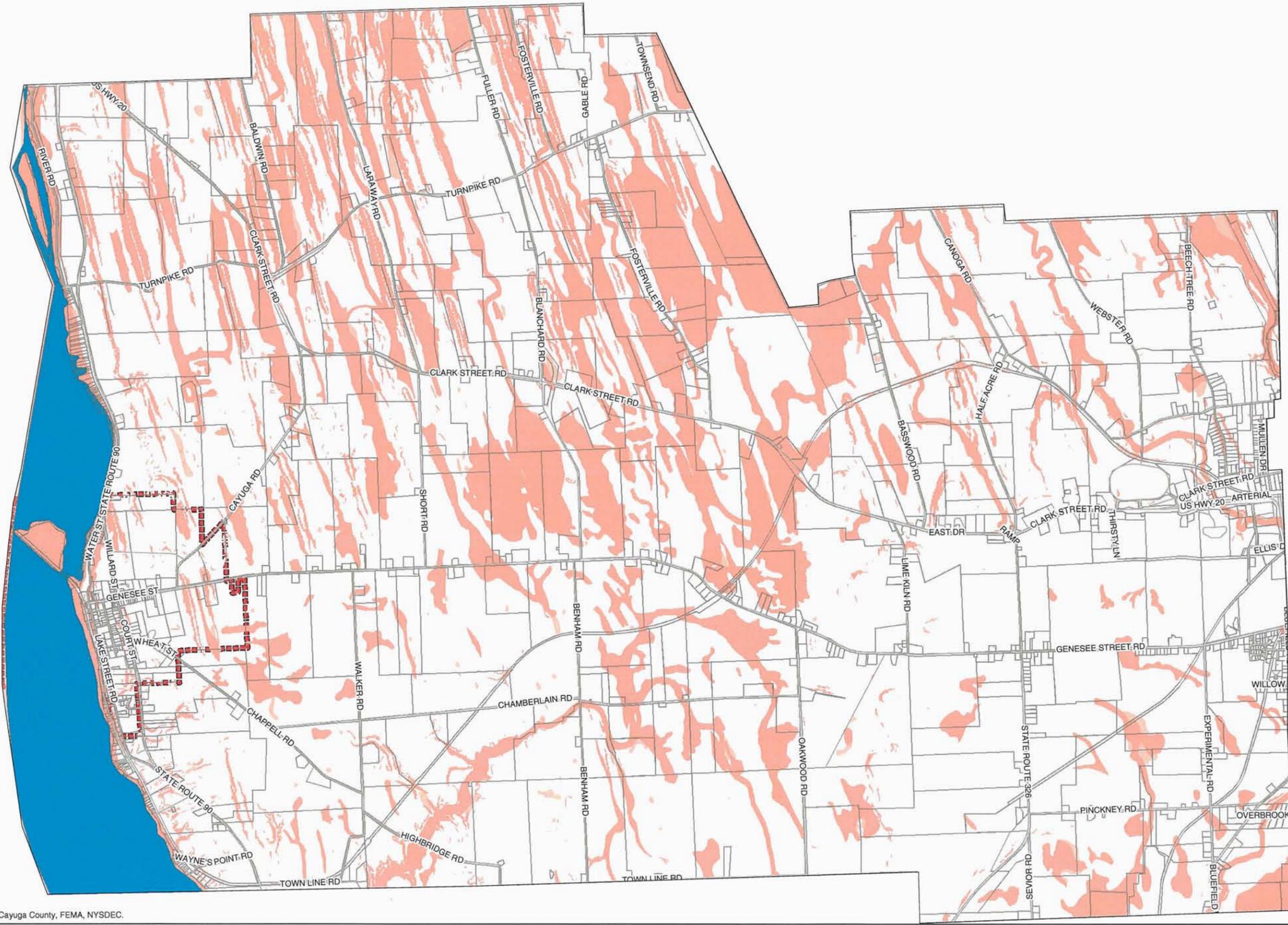
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Drainage Classifications

-  Well Drained
-  Moderately Well Drained
-  Excessively drained
-  Poorly Drained
-  Cayuga Lake
-  Road Centerline

SOURCES: NRCS, NYSDOT, NYS GIS Clearinghouse





Legend

- Constrained Area
- Tax Parcel Boundary
- Cayuga Lake

Sources: NRCS, Cayuga County, FEMA, NYSDEC.

Based upon hydric soils, steep slopes, State and NWI wetlands, flood plains and major water bodies.

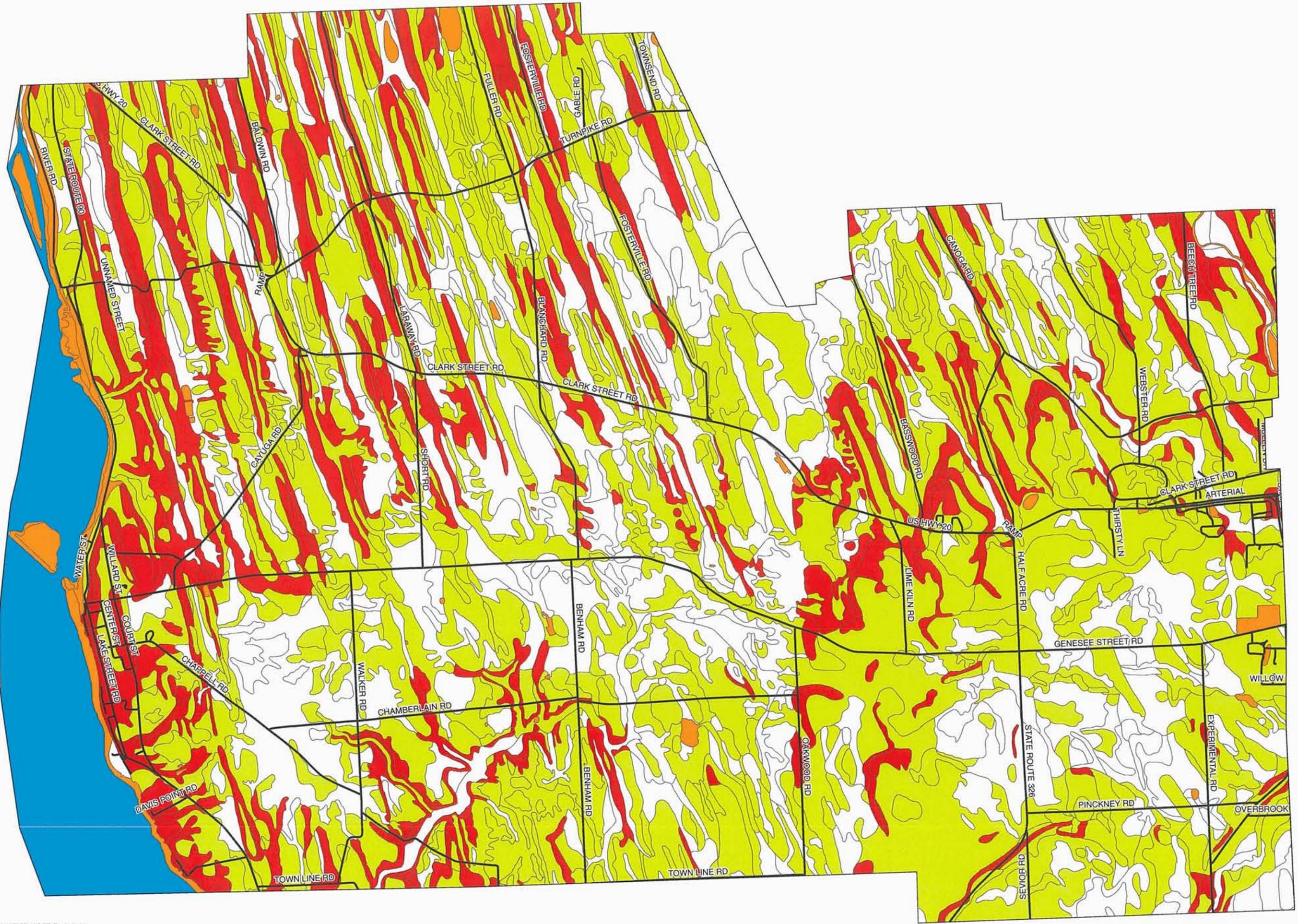


Ratings describe the difficulty or expense involved in developing a site for a stated purpose. The limitations can be overcome with a sufficient expenditure of money and skill. Thus a site with slight limitations for septic tanks may only require a tile field while one with severe limitations might need a sand filter.

Ratings for the major associations are as follows, where 1 equals slight limitations, 2 signifies moderate limitations, and 3, severe limitations.

	<u>Slope</u>	<u>Septic Tanks</u>	<u>Home-Sites</u>	<u>Sanitary Landfill</u>	<u>Roads</u>
Ontario	0-8%	2	1	2	2
	8-15%	2	2	2	2
	15%+	3	2-3	3	3
Honeoye-Lima	0-8%	2	1-2	1-2	2
	8-15%	2	2	2	2
	15%+	3	2	2	3
Cazenovia-Ovid	0-8%	3	2	2	2
	8-15%	3	2	2	2
Schoharie-Odessa	0-8%	3	3	2	3
	8-15%	3	3	2	3

From the Soil Conservation ratings it can be seen that the lacustrine associations, Schoharie-Odessa and Odessa-Lakemont, have severe limitations for homesites. This is reflected in areas of severe limitations is shown in the southwest section (**see figure 2-9 Septic Limitations**). Other areas of severe limitations are strips of wet soils between the drumlins and the section of moderately deep soils in the southeast. Spots along the lakefront which have severe limitations are a strip in the north that is alluvial land, some freshwater marsh areas south of that, and lacustrine soils which border the lake from the southern Town line north to a point just above the intersection of Route 90 and Lake Street.

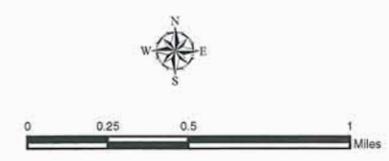


Legend

Limitations for Standard Septic Systems

- █ Severe Limitations for On-Site Systems
- █ Histosol - Not rated
- █ Probable Limitations for On-Site Systems
- █ Standard Systems Generally Suitable
- █ Cayuga Lake
- Road Centerline

SOURCES: NRCS, NYSDOT, NYS GIS Clearinghouse

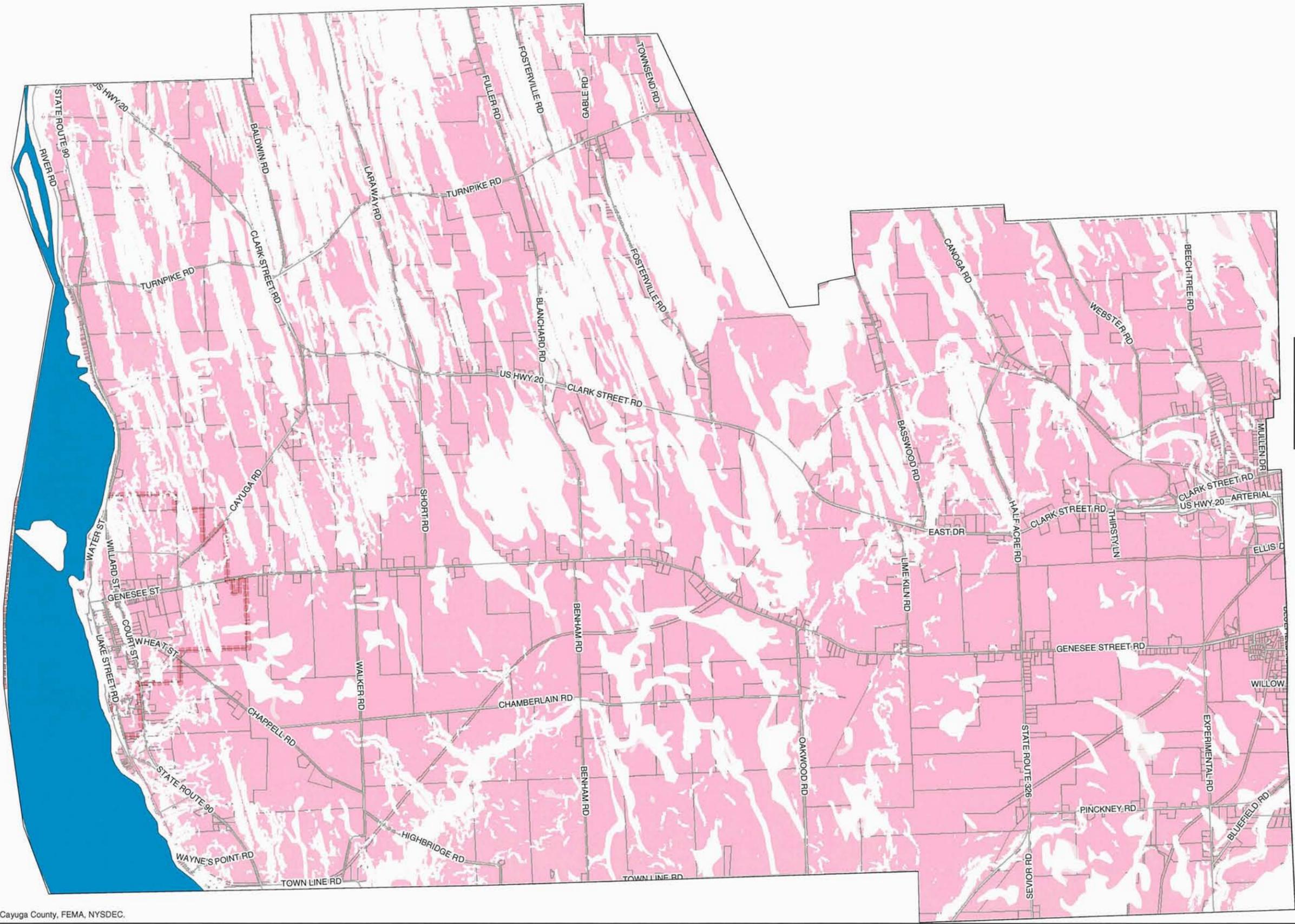


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The better part of the Town's soils have moderate limitations for homesites and high density residential development outside of planned water and sewer infrastructure could have negative impacts to local surface and groundwater quality. There are also strips of land among the drumlins that have only slight limitations. These strips are fairly level areas of Ontario soils. Areas in the southern portion of the Town with slight limitations are the result of the presence of the Honeoye-Lima soils. Since these soils are so productive agriculturally the community must give some thought as to whether these sites should be utilized for building or should be preserved in their present use.

When the areas of slight and moderate limitations are combined, a rather large portion of Aurelius consists of land that can accommodate homesites without undue difficulty or expense. Figure 2-10 (**see figure 2-10 Development Potential**) which shows the limitations of Aurelius soils for septic tanks. It can be readily seen, both from the map and also from the ratings, that most of the Town consists of soils which have severe limitations in regard to septic tanks. This should not be surprising since septic tanks perform best on gravelly soils and the majority of Aurelius' soils, such as the Cazenovia-Ovid and Odessa-Schoharie associations, are clay. Clay content reduces permeability. Septic tanks function properly only when the soil is permeable enough so that it allows effluent to be absorbed. (The minimum rate is usually considered to be one inch per hour.) Where absorption is retarded by clay soils the lots have to be enlarged so that broader drainage fields can be built.

Other factors which account for the severe limitations for septic tanks are the high water table of the "hydric soils", the steep slopes on the sides of the drumlins, and the shallowness of the soils in the southeast section.

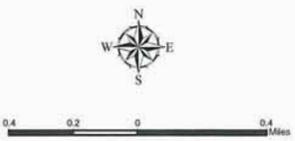


Legend

- Development Potential
- Cayuga Lake

Area of development potential with available sewer or adequate area for on-site wastewater treatment.

Sources: NRCS, Cayuga County, FEMA, NYSDEC.



Client Name	11/01/05	Figure
Areas with Development Potential		2-10
Cayuga County	New York	Project No. 594.012

The areas of moderate limitations for septic tanks are those occupied by the Ontario Association in the north and the Honeoye-Lima association in the south. As stated above, these soils were developed on glacial till rather than on lake-laid silts and clays. Their clay content is consequently lower and their permeability higher.

The few areas of slight limitations for septic tanks are spots where Palmyra, a gravelly soil formed in glacial outwash sand and gravel, is found.

Because of the clayey nature of the soils, then there are few areas in Aurelius where septic tanks will work and also be inexpensive. Most of the Town has severe limitations for septic tanks. It will cost money and take time to make sure that these systems will operate satisfactorily.

The potential benefit of sewer lines becomes apparent when the areas that have moderate limitations for homesites but severe limitations for septic tanks are outlined. Development would be greatly facilitated in these areas by the provision of public sewers. Practically the entire Village of Cayuga is included in this category.

The most economical areas in the Town for residential development make up only a small amount of the Town's total acreage. The two areas in the southern portion of the Town occupy good agricultural land. The area bordering Auburn in the northeast corner of the Town is separated from the rest of Aurelius by the Owasco Outlet and is adjacent to the Auburn City dump.

There are scattered spots of moderate limitations in the drumlin area. Large lot development in 5 or 10-acre parcels might be appropriate for this area. The terrain here is varied, and, if subdividing were carefully done, each lot could contain some forest, some rolling land, a good

building site, and possibly also some land on which to form a pond. This kind of environment might prove attractive to home buyers and beneficial to the Town.

But the acreage that could be developed in the drumlin area is not very large, and the kind of development for which it is best suited would probably be more costly than the average home.

2.1.1.4 *Climate*

Weather systems generally move from west to east from the Erie-Ontario Lake Plain over the Fingerlakes. The result is a high level of precipitation as air masses pass over Lake Ontario from the west and drop precipitation over the higher land area. Aurelius is part of a region with cold, snowy winters and warm, dry summers. Conditions are favorable for agriculture as the frost-free growing season is 172 days and there is a relatively large amount of energy—140 growing degree months—available for crop production.

Rainfall for the Town remains fairly even during the year with the least precipitation falling in the winter months of January and February and a peak occurring from May through July. Annual precipitation ranges from approximately 25 inches to 45 inches per year with the average yearly precipitation approximately 35 inches per year. Generally the summer months are the highest average daily precipitation rates (Northeast Regional Climate Center). One of the more persistent climatic features of the Cayuga Lake area is cloudiness, especially during the winter months. Prevailing winds in the area are from the southwest during the summer and the northwest in the winter. Velocities average 7-10 mph from May through October and 11-12 mph during the colder months.

Since precipitation during the growing season, roughly April to October, is not a great amount and radiation energy received is relatively high, the Town tends to be slightly droughty in the summertime. For the same reasons only about one-fourth of the annual precipitation escapes as stream flow. Streams are accordingly small and intermittent in character.

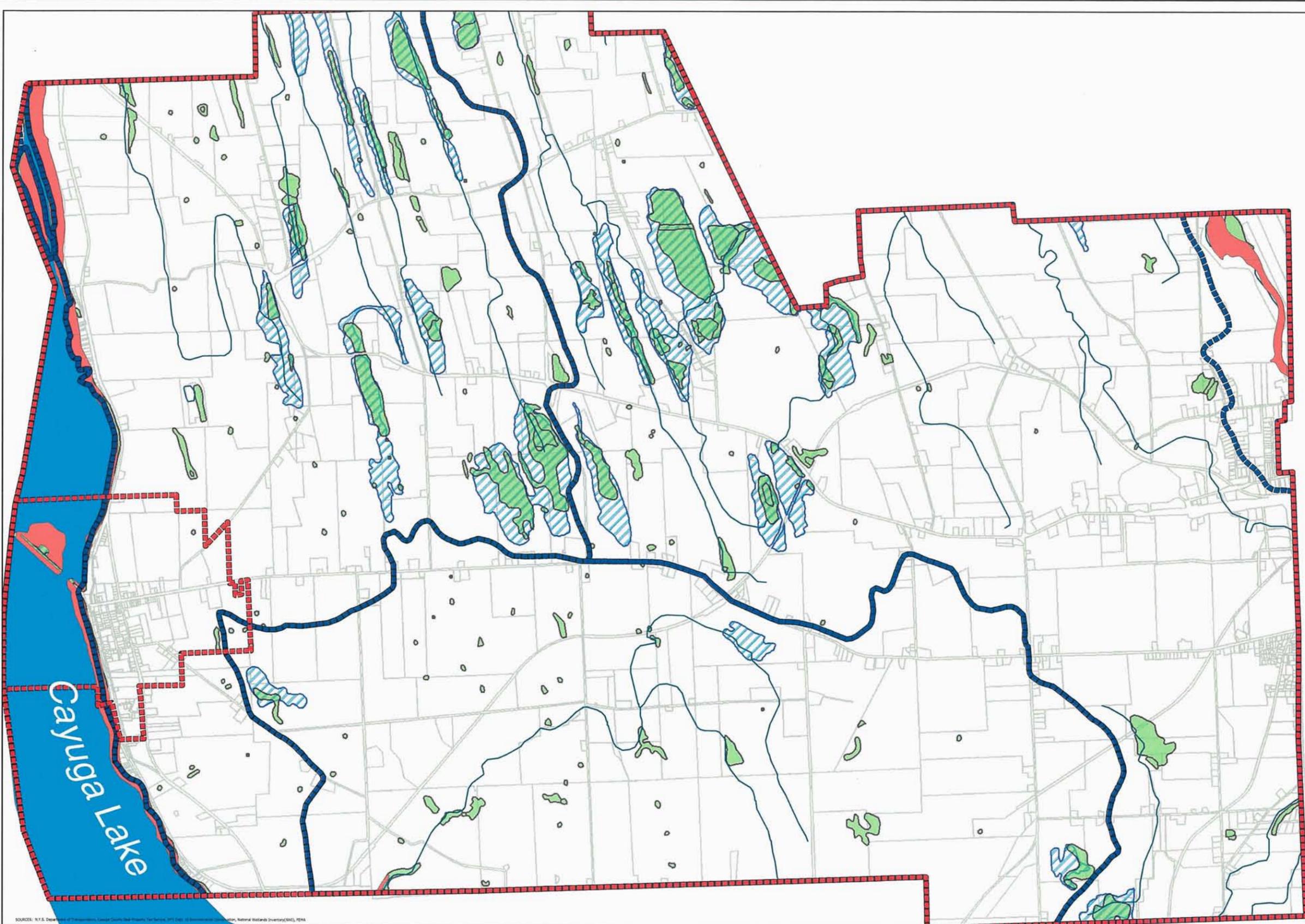
The temperature range in the Town is quite broad. Extremes are minus 30 degrees in winter and over 100 degrees in summer. Temperature variations are noticeable both from day to day and from morning to evening. Town residents live in a vigorous climate that demands response and inventiveness.

**Mean Monthly Temperatures for the Aurelius Region
(A. Titus 1993)**

<u>Month</u>	<u>Temp. (F)</u>	<u>Month</u>	<u>Temp. (F)</u>
January	25	July	75-80
February	25	August	75-80
March	35	September	65
April	45	October	55
May	55	November	30-45
June	65-70	December	25-30

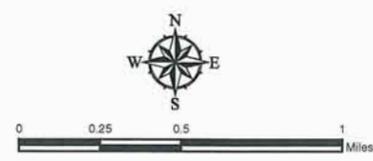
2.1.1.5 Wetlands

There are approximately +/- 1901 acres of regulated wetlands identified in the Town of Aurelius (**see figure 2-11**). Wetlands regulated by the New York State Department of Environmental Conservation are 12.4 acres of area or larger. Federal wetlands regulated by the US Army Corps of Engineers (ACOE) must be connected to the navigable waters of the United States and are generally indicated on National Wetlands Inventory maps. These maps are reviewed by permitting agencies to establish



- Legend**
-  Streams
 -  Major Watershed Boundary
 -  State Regulated Wetlands
 -  NWI Wetlands
 -  100 Year Flood Zones
 -  Municipal Boundary
 -  Cayuga Lake
 -  Tax Parcel Boundary

SOURCES: N.Y.S. Department of Transportation, Canal County Real Property Tax Service, 2001; U.S. Environmental Protection Agency, National Wetlands Inventory (NWI), FEMA



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whether a specific wetland (less than 12.4 acres in size) is considered a "jurisdictional wetland" regulated by the ACOE. There are currently +/- 1155 acres of State regulated wetlands in the Town of Aurelius. The remaining +/- 746 acres are wetlands indicated on National Wetland Inventory maps and may fall under federal regulatory guidelines.

While wetlands provide a number of constraints to development, they also serve a function to improve the water quality of surface runoff and provide valuable habitat for wildlife that is beneficial to the community. They also provide an opportunity for local recreational pursuits like hunting, fishing, trapping, hiking and nature appreciation.

Wetland areas in Aurelius are more closely associated with the Great Lakes Plain and result from a relatively high groundwater table and poorly drained flatland soils. While wetland soils and plants are effective in filtering pollutants from upland locations, they are relatively poor for standard on-site septic systems, leach fields or large quantities of input from storm sewers.

Wetlands in the northern portion of the town serve to filter agricultural runoff and non-point source pollutants but many of the preexisting wetlands were cleared to make way for farms and agriculture during the 19th Century. Due to their capacity for filtering natural pollutants, it is important that wetlands associated with streams, creeks, ponds and the Cayuga Lake shoreline are identified as important assets to the community and protected for the purposes of maintaining or improving the water quality of Cayuga Lake. Existing wetlands should also be considered important in providing habitat for wildlife and the traditional pursuits of hunting and fishing throughout the Town.

2.1.1.6 Surface Waters

Cayuga Lake, the second largest of New York's Finger Lakes, is situated in a steep-sided, glacially carved valley. The lake is long and narrow, extending 61.4 km (38 mi) north from Ithaca to the lake's outflow to the Seneca River in the Town of Aurelius. With a maximum depth of 132.6 m (435 ft) and a mean depth of 54.5 m (179 ft), Cayuga Lake has a large volume of deep water (referred to as the hypolimnion) that remains cold year round.

NYSDEC has promulgated best use classifications and ambient water quality standards for the state's surface waters. The classifications specify which types of human uses, such as drinking, swimming, and fishing, are appropriate within a given portion of a water body. The determination of "best use" is based on variables such as existing water quality, flows, and current and projected uses of the water body and its watershed. Ambient water quality standards are legally enforceable limits on certain factors that can affect water quality, such as chemicals and bacteria. These standards are adopted to protect the water body's designated best use.

Portions of Cayuga Lake are classified AA, A, and B (Figure 2.3.1-1). Class AA is the highest classification of surface waters in New York, and reflects a best usage for water supply without filtration. The best usage of Class A waters is for water supply after coagulation, sedimentation, and filtration. The best usage of Class B waters is for water contact recreation. The water quality standards that protect these uses are also protective of fish survival and propagation.

Note that all of Cayuga Lake's water segments, with the exception of the most southern, are required to meet water quality standards protective of salmonid fish as designated by the (T) notation shown in Figure 2.3.1-1. More stringent standards for dissolved oxygen and ammonia N are in place in (T) waters.

There are two major stream in Aurelius that are tributary to Cayuga lake and the Seneca River.

Groundwater is used by the residences in the central (north to South) portion of the Town. It provides water of satisfactory quality for household use after filtration, chlorination, and other standard procedures. Wells dug in the till and clay soils of the Town have functioned satisfactorily for years, but it is doubtful that they can meet the demands for more than 100 gallons/capita/day which are not common. The water table in till declines from 5 to 15 feet seasonally which may cause some wells to go dry. Aurelius is noticeably lacking (as out-lined in the previous section) in the sand and gravel soils that make the best aquifers. It is also underlain for the most part by shale which is one of the least productive bedrock units. Water from the shale has a high sulphur content. Thus wells over 50 or 60 feet deep in many parts of the Town produce water that is objectionable.

In the event that suburbanization moves into the Town from the City of Auburn, the potential for impacts to groundwater supplies will increase. Increases in buildings paved areas and impervious surfaces resulting from development increases the potential for groundwater contamination due to on-site wastewater disposal and a decrease in the infiltration capability of the soils. While agriculture may contribute to groundwater contamination it is a low density activity. According to Bob Somers of the New York state Department of Agriculture and Markets, they are seeing increasing impacts to surface and groundwater resources as suburban development begins to eclipse agriculture. This is due to the fact that sprawl into agricultural areas not only brings more biological and chemical contaminants to an area, it exacerbates the infiltration and distribution of agricultural pollutants into to soils, streams and waterbodies of a the area.

2.1.2 Vegetation and Wildlife

In the 1790's "More than 97 percent of the landscape [of the Central Finger Lakes Region] was forested. Beech/maple/basswood was the predominant forest type throughout the region", (Marks, Gardescu, and Seischab 1992: 1). Based on this research, the oak forest was the primary forest type between Seneca and Cayuga Lakes. Disturbances due to wind, fire, beavers, and people were recorded on only 1 percent in the region.

Throughout most of the Finger Lakes area, the present vegetation bears little resemblance to the original cover. The forest vegetation of the upland areas was profoundly modified by lumbering and fire in the earlier periods, followed by clearing for agriculture and more recently, suburban and urban development near the City of Auburn and the Village of Cayuga. Remnants of the original forest cover remain in only a few places, preserved in regionally located state parks and wildlife preserves. These remnants indicate that the forest was a hemlock-hardwood woodland in which hemlock (*Tsuga canadensis*), American beech (*Fagus grandifolia*), and sugar maple (*Acer saccharum*) (in that order) were the most abundant in the canopy, while American beech far outnumbered other species in the subdominant layer and was well represented in all size classes (Braun 1950). Other prevalent species were black cherry (*Prunus serotina*), black birch (*Betula lenta*), yellow birch (*Betula alleghaniensis*), red maple (*Acer rubrum*) and white ash (*Fraxinus americana*). Tulip tree (*Liriodendron tulipifera*), cucumber magnolia (*Magnolia acuminata*), and basswood (*Tilia americana*) were also present. Herbaceous plants included spinulose wood fern (*Dryopteris spinulosa*), shining clubmoss (*Lycopodium lucidulum*), white wood sorrel (*Oxalis montana*), partridge berry (*Mitchella repens*), and Canada mayflower (*Maianthemum canadense*).

Presently, northward extensions of oak and oak-chestnut forests reach into New York State and are mainly established on gravelly soils in the valley head moraine belt south of the Finger Lakes. Diversity in topography and soils and the admixture of southern species give the Finger Lakes area more variety in forest types than is typical of the Hemlock-White Pine-Northern hardwoods region

It should be noted that Cayuga Lake is an important link in the waterfowl flyway of the Atlantic Coast. Seasonal use includes approximately 314 bird species, including many shore birds and waders. Cayuga Lake has been designated as an Important Bird Area by the Audubon Society and the Montezuma National Wildlife refuge just north and west of the Town has been identified as an important flyway for migratory birds.

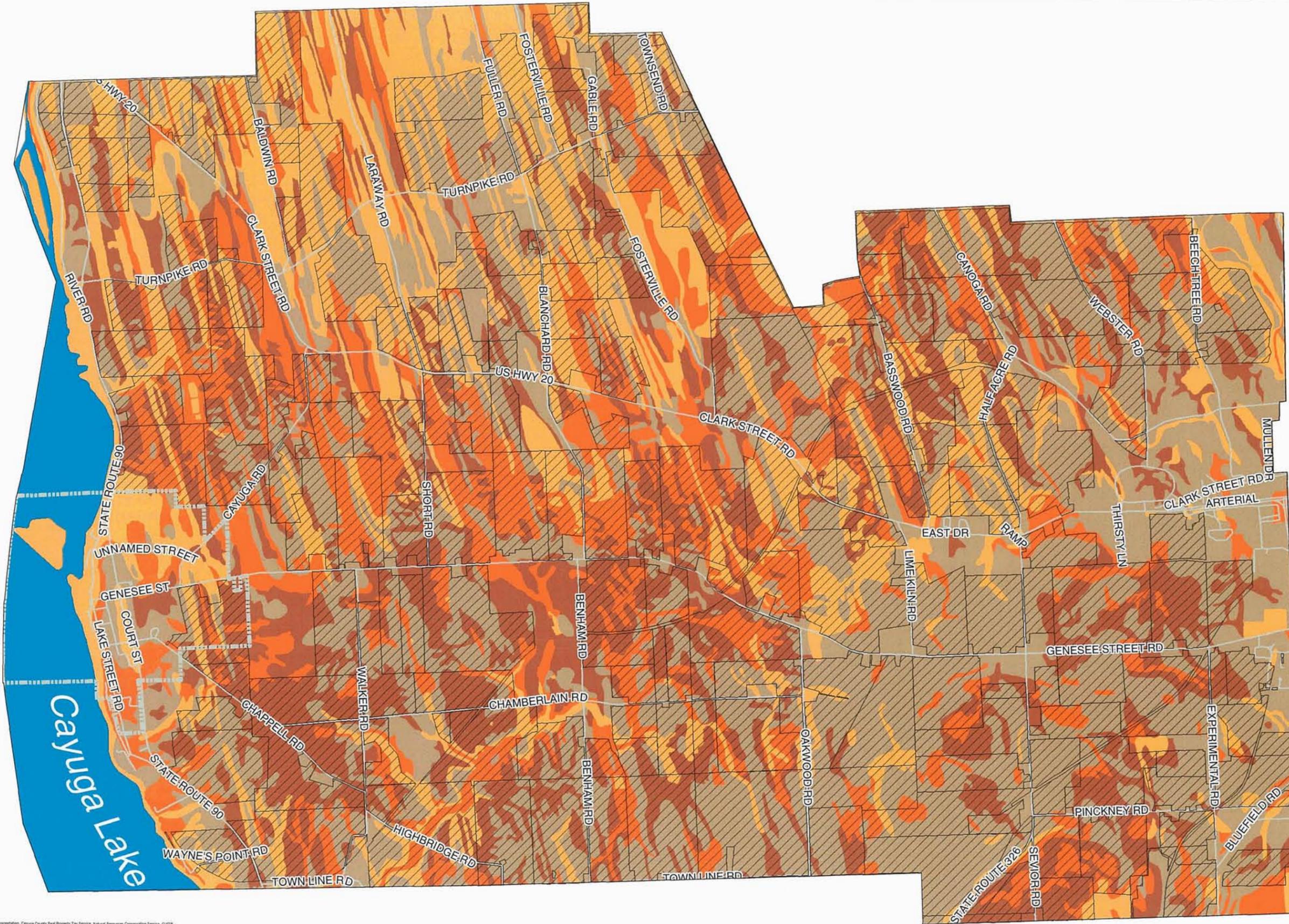
2.1.3 Agriculture

Farming is clearly a human activity in the landscape and a type of land use. However, agriculture is inherently tied to the natural resources of the Town. The pursuit of agriculture is also an important component of the local economy and Aurelius's dairy industry is a major factor in the health of the economy of Cayuga County. Dairy farming is the leading agricultural commodity on Cayuga County. According to the Cayuga County Planning department the County ranks eighth in agricultural production and the 11 member farmland Protection Board established a Farmland Protection plan to ensure the viability of farming in 1998.

There are approximately 13,645 acres of land in agricultural taxing districts in the Town of Aurelius. This accounts for about 78% percent of the towns land use activity. Soils are an important natural resource as an indicator of the agricultural potential of the land. There are approximately 13,291 acres of important farm soils in the Town of Aurelius (over 98% of soils in the Agricultural Districts). Important soils for the purposes of this report include soils of Statewide Agricultural soils classification of Class 1, 2 and 3 (Prime farmland soils, soils of Statewide Importance and Unique farmland soils) that are not required to be drained to allow for active farming (**see figure 2-12**).

2.2 Natural Resources Trends

It is difficult to address natural resource planning issues within the municipal borders of a township. Many of the areas of the State including the Fingerlakes region focus on local natural resource issues is beginning to take shape on a regional scale rather than as a municipal element of the planning process. Streams, rivers, vegetation, wildlife, wetlands and even cultural influences cross many jurisdictional boundaries. Due to the fact that natural resources do not necessarily coincide with municipal boundaries, issues with respect to natural resource trends may be applicable to regional as well as local planning initiatives.

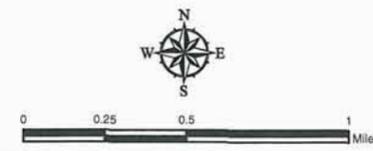


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Farmland Classification

- All areas are prime farmland
- Farmland of statewide importance
- Not prime farmland
- Prime farmland if drained
- Road Centerline
- Agricultural Tax District

SOURCES: N.Y.S. Department of Transportation, Cayuga County Real Property Tax Service, Natural Resources Conservation Service, CUGIS



2.2.1 Sustainable Development, Smart Growth and Quality Communities

In many forums these terms are used interchangeably and frequently refer to the natural resources component of the planning process. Essentially, they all refer to careful planning methods that consider the natural environment in all aspects of planning (Transportation, infrastructure etc) to make informed decisions about the future growth and quality of a local community. While "smart growth" and "quality communities" include the concepts of fiscal responsibility, sustainable economics and growth management, all of these terms ultimately are derived from the concept of sustainable development.

Sustainable development addresses the carrying capacity of local natural resources within the context of a community. This is used as the basis for determining the most appropriate type and density of development and how it effects the natural and physical environment. *The concept of sustainability involves the appropriate placement of buildings and infrastructure and the integration of natural process into the physical development of a site, location or community.*

Cluster development is one of the many methods of employing a sustainable approach to land use. Essentially, buildings are clustered in a manner that allows for the protection of open space, farmland and sensitive areas while concentrating development in the most suitable areas of the site. These concentrated areas may be more appropriate due to available water or sewer infrastructure or easily accessible to collector roads. Concentrated areas of development would be located away from wetlands, soils with low bearing strength, prime farmland soils, steep slopes or areas that are culturally important to the community.

In a commercial area, sustainable development may include creative storm water management. Runoff from roads and buildings may be directed to a naturalized pond or man made wetlands that not only enhance the scenic quality of

the site but also remove pollutants from storm water before it discharges into a stream or river or infiltrates back into the groundwater. Stormwater detention or retention ponds may also provide the secondary benefit as habitat for local wildlife.

As the result of changing concepts in sustainable development, New York State developed a Task Force to undertake a multifaceted and interdisciplinary study of issues that impact the creation of visions for the future of communities throughout the State in the late 1990s. The following is an excerpt from the New York State Quality Communities Task-Force that describes the State's intent with respect to sustainable development, smart growth and quality communities

"The Task Force was asked to inventory local, State and federal programs which affect community development, preservation and revitalization goals of urban, suburban and rural municipalities; to obtain broad public comment; to consider balanced growth and the need for economic development; to consider housing and other community service needs; and to develop recommendations to strengthen local capacity for change. These tasks were to be undertaken in light of general principles which included the revitalization of downtown areas, historic districts and Brownfield's and the preservation of community character and open space resources. Governor Pataki recognized that the State and local governments "require creative strategies to combine growth and environmental protection in order to enhance economic vitality and quality of life."

The Task Force worked diligently to meet the Governor's goals and expectations. An Advisory Committee was convened, composed of a broad representation of interests. The Committee held ten roundtables throughout the State to hear from government leaders, environmental advocates and members of the business community about the particular qualities which are important to communities in their regions and how these qualities can be attained.

The Task Force formed the following five subcommittees to consider issues identified at the Roundtables and matters within the particular expertise of the members:

- Revitalizing Central Cities, Main Streets and Small Towns – Chair, Secretary of State Alexander Treadwell;
- Agriculture and Farmland Protection – Chair, Commissioner Nathan Rudgers, Department of Agriculture and Markets;
- Preservation of Open Spaces and Other Critical Environmental Resources – Chair, Commissioner John Cahill, Department of Environmental Conservation;
- Transportation and More Livable Neighborhoods – Chair, Commissioner Joseph Boardman, Department of Transportation; and
- Sustainable Economic Development – Chair, Budget Director Carole Stone.

"Our urban problems are a very intricate web of issues, and you can't just tug on one strand; you really have to look at how that woven fabric comes together and how we patch it, how we intervene, and how we revitalize it."

2.2.2 Wetland Protection and Regulation

The Freshwater Wetlands Act adopted during the 1970's established a regulatory control over development and impacts in wetlands at the national level. The functional value of wetlands began gaining importance for wildlife habitat, flood storage, storm water attenuation, nutrient uptake and groundwater recharge. Ducks Unlimited was an important force in establishing a national approach to conserving wetland areas. In the 1960's, 70's and 80's, duck hunters began to notice a decline in duck and waterfowl populations, and linked the decline to the loss of habitat for ducks and their food sources. As groups began to lobby federal officials, a "no net loss" of wetlands policy was established by the federal government. Over time, States began exercising States rights and implemented their own wetland policies.

As the result, New York State Department of Environmental Conservation adopted a policy that regulates all wetlands 12.4 acres and larger. Wetlands less than 12.4 acres are regulated by the U.S. army Corps of Engineers.

Change in regulation of wetlands has become a constant battle. For example, the federal government recently determined that federally regulated wetlands (< 12.4 acres) must be hydrologically connected to surface water bodies in order to be regulated. While many individuals identify the need to protect wetlands due to their ability to protect surface and ground water quality, others see wetland regulation as an impediment to land development and agricultural operations. Essentially wetland issues have led to a conflict between the scientific community and political pressure to deregulate wetlands. This trend will likely continue into the future as the debate over the importance of wetlands and their functional value continues.

2.2.3 Flood Plain Protection and Regulation

Proper planning is necessary to ensure that development does not alter or inhibit flood plain areas. This is due to the resulting loss of life and property that can occur during flood events and the downstream damage that can occur due to debris being carried down stream. Regulation activities within the 100 year flood plain of creeks and rivers is an important aspect of environmental and community planning. Increased development pressure and clearing of stream bank vegetation and the addition of storm water outfalls can combine over time to increase the flood potential of local streams and down stream locations. Development within creek and stream corridors can have a marked impact on downstream flooding.

2.2.4 Groundwater Protection

Protection of groundwater is a major concern both state wide and nationally. Many of the human activities in the landscape ranging from septic systems and farming to storm water runoff and solid waste disposal can have a detrimental impact on local groundwater. Groundwater is prone to pollution that may not be detected until it appears in local wells and water supplies. Once

groundwater is contaminated it is nearly impossible to clean up. While the Department of Environmental Conservation regulates many large scale activities that can pollute groundwater (i.e., solid waste, oil and gas operations, mining and hazardous material storage) safe drinking water is regulated by the New York State and Cayuga County Health Department. In recent history, concerns regarding non-point source pollution of groundwater from construction sites, agricultural runoff and septic systems have become a concern to local health officials. Proper planning to protect groundwater has become an important aspect of protecting human health and safety.

Groundwater is a precious resource that is valuable to most local communities. Due to the limitations of water supply with the Town, groundwater is a critically important to the residents of the Town. With a few exceptions almost all of the residents in the Town utilize groundwater and rely on on-site septic systems.

2.2.5 Stream and River Corridor Planning

Waterfront programs are encouraged by Federal and State agencies in order to improve areas near urban and suburban populations. Some programs recognize corridors that have yet to experience development pressure. In simple terms this approach to corridor planning is known as Greenway Planning. These corridors and greenways are important to protect surface water quality and wildlife habitat and become the most attractive areas for future development. Greenways and stream corridors also present economic potential to the area for local residents and visitors. An integrated approach to planning in greenways is an effective method of establishing a quality community for current and future residents and visitors to the area.

The Cayuga Lake Shoreline and the Route 90 Scenic Byway for example, provides opportunity for conservation education and recreation in the form of trails, fishing access sites, canoe launches and interpretive programs. This provides substantial opportunity for waterfront planning, revitalization and a corridor that

may provide a linear system to connect parks, open space, neighborhoods and commercial areas. Through utilization of corridor planning concepts a community may increase the value and quality of the community for the local population.

2.2.6 Surface Water Quality Protection (Non-Point Source Pollution)

Trends in water quality management include a focus on regional watershed management rather than management within municipal jurisdictions. It is more effective to identify watersheds and manage surface water quality in a cooperative manner, on a regional basis. In many ways this has improved water quality in the Cayuga Lake and the Oswego River Watershed. However non-point source pollution continues to be a major concern. Agriculture, suburban development and urban areas contribute pollutants both natural and man-made such as oils, metals, salts, fertilizer, pesticides and excessive nutrients and nitrogen into local rivers creeks and ponds. An example of the impact of non-point source pollution was evident in Fulton New York during the spring of 2004. On Lake Neatawanta, just one mile from the Oswego Canal in Fulton a natural lake was overcome with a toxic form of algae due to large amounts of runoff entering the pond from the surrounding land area. The level of nutrients became great enough for algae growth to become potentially toxic to animals and humans. This event had an impact on local business and tourism related activity. Many of the factors contributing to surface water contamination are not always readily apparent. Failing septic systems can also contribute excessive nutrients (nitrates and nitrites) into local creeks, rivers and ponds and the runoff of soils and silt from construction sites can have a detrimental effect on local surface water quality.

Aurelius is fortunate in that there are a number of organizations that assist in community and regional water quality protection efforts. These organizations include the Department of Environmental Conservation, the local Soil and Water Conservation Service, the Cayuga County Planning Department, the Cayuga Lake Watershed Advisory Committee, and the Central New York Regional Planning Board.

2.2.7 Exotic Species

The proliferation of the Zebra Mussel throughout the waterways of Central New York is perhaps the most widely known example of exotic species introduced in recent years and their impact on local communities. However, many other exotic plant and animal species are becoming a nuisance to the local environment. Purple Loosestrife and Frangmites are plants that overwhelm wetlands and “choke out” native vegetation, habitat and food sources for wildlife. In many locations exotic species of plants, animals and fish have affected our land and water resources. Many of these species thrive in areas where excessive nutrients or pollutants enter local waterways. For example, Eurasian Water Milfoil is an aquatic plant from Asia that thrives in areas where failing septic systems or siltation from construction sites introduces excessive nutrients into streams or ponds. Addressing these concerns has become a nation wide trend and is clearly of concern to residents who benefit from local streams and creeks. Milfoil has become a major nuisance in the New York State Canal System and the Oswego River Watershed and is spreading to water bodies throughout Central New York.

2.2.8 Summary

These are some of the current trends in Natural and Cultural Resource Planning. While this list is not all inclusive, these trends are relevant to the Town and Central New York. Consideration of these trends is important for establishing Town Goals and Objectives with respect to Natural, Historic and Cultural elements of the Town and associated municipalities.

2.3 Cultural Resources

2.3.1 Historic Resources

There are no districts or structures within the Town of Aurelius that are currently listed in the National Register of Historic Places. However, several buildings and sites may be eligible for National Register Status. For example, the Long Pond Bridge upon completion in 1800, this one-mile, 132-foot long bridge

was the longest in North America. The bridge connected the Village of Cayuga on the east side of the lake to the hamlet of West Cayuga (later Bridgeport) on the west side, about a mile north of Cayuga Lake State Park. It replaced a ferry service that had provided transport previously.

In 1807, a harsh winter with heavy ice began to cause the bridge to tilt westward, and the bridge eventually collapsed. A replacement bridge was completed in 1813, which lasted for twenty more years; a third bridge replaced the second in 1833, and was used until a section collapsed in 1857. By this time, inexpensive barge transportation in the Erie Canal system was well established, and the bridge was not rebuilt.

A historic marker notes the Cayuga Long Bridge Site at the end of Genesee Street, off Route 90 and near the entrance to Harris Park. Bridges such as the Cayuga Long Bridge Site played an important role in westward expansion in this region before the development of the canal system. This span and site associated with the Bridge and historic sites identified in the Town have important historical and cultural implications.

A brief description of historic markers identified by local historians is as follows:

- Sullivan-Clinton marker at end of Genesee St., one-tenth mile off NYS Route 90 in Cayuga. Routes of the armies of General John Sullivan and General James Clinton, 1779. An expedition against the hostile Indian Nations, which checked the aggressions of the English and Indians on the frontiers of New York and Pennsylvania, extending westward the dominion of the United States. Erected by the State of New York in 1929.

- Col. John Harris marker in Cayuga on Lake St., two-tenths mile off NYS Route 90. Col. John Harris first white settler in Cayuga County. Built log cabin here 1788. Established Harris Ferry across Cayuga Lake. Erected by State Education Department in 1923.

Cayuga Reservation purchase marker in Cayuga on Lake St, three-tenths mile off NYS Route 90. Site of treaty for purchase of Cayuga Reservation from Indians. Red Jacket and Fish Carrier, representatives for the Cayuga Tribe. Erected by State Education Department, in 1932.

- Hutchinson Homestead marker at end of Genesee St. in Cayuga, six-tenths mile off NYS Route 90. Hutchinson Homestead built by John H. Davis, 1816, later by Mosely Hutchinson, county judge and assembly member. House burned in 1920 and was rebuilt by the Bassett family.
- First Cayuga County Court marker on NYS Route 90, in Cayuga. First Cayuga County Court was held at this location in 1799. The marker was removed to Aurora 1804 and to Auburn 1809. Erected by State Education Department in 1932.

2.4 Historic and Cultural Resource Trends

2.4.1 Historic Preservation Legislation

Historic Preservation became national policy through the passage of the Antiquities Act of 1906, the Historic Sites Act of 1935, and the National Historic Preservation Act of 1966 (National Register Bulletin 15, i). The Historic Sites Act authorized the Secretary of the Interior to identify properties of national significance. The National Historic Preservation Act was designed to expand historic preservation programs on the Federal, State and local levels. It authorizes the Department of Interior to recognize not only properties of national significance but also those of local and State significance worthy of preservation. The National Historic Preservation Act also established State Historic Preservation Officer

responsibilities, Grants-in-Aid program, Certified Local Government Program, Advisory Council on Historic Preservation, and Federal Agency responsibilities. The National Park Service sets program direction and assures consistency for preservation activities nationwide. As defined by the Department of the Interior, the goal of the national preservation program is to establish standards for historic preservation, to identify and document significant historic resources in the United States, to provide assistance to public and private agencies and organizations and to educate the general public concerning historic preservation (U.S. Department of the Interior, The National Register of Historic Places). Places that are important to the history of community provide useful information about how an area was settled, developed, or declined. It helps to identify and understand the economic, geographic, environmental, social, and cultural forces that shaped its development (Stokes and Watson, 38).

During the 1890's, many incentive programs suffered because of changes in political and public support. Changes with the federal Tax Reform Act of 1986 curtailed the attractiveness of tax credits by imposing restrictive passive-loss rules on the use of the credit and by denying its availability to wealthier taxpayers (Schwartz, 12). Previously, taxpayers could use all the credit available to them in the year the project was finished. Many state and local governments have tried to compensate for these changes; however, in light of current fiscal constraints it is unlikely that preservation tax credits will be restored to the levels of the 1970's.

2.4.1.1 Neighborhood Preservation

Over the past ten to fifteen years, attention has shifted from individual buildings to larger areas, neighborhoods, villages, and rural landscapes. Historic preservation trends focus on restoring the character and vitality of downtowns and neighborhoods, converting structures for new economic activities, and restoring outdated transportation routes for interpretation and recreation. Removing fake facades from store fronts is one step in restoring the historic character of downtowns and converting historical buildings to multiple-use is popular. For example, use of street

level space for commercial activities, second level for office activities, and the third level for residential is a popular trend in downtown revitalization. Gaps in historic neighborhoods are being filled with buildings of similar style to reflect the original character of the area. With the decline in manufacturing, empty factories, warehouses, and mills are being converted for commercial space and housing. Churches and schoolhouses have been converted to residential uses like apartments or condominiums.

2.4.1.2 Historic Agricultural Buildings

Rural farms and agricultural buildings represent a strong image of community spirit and history. Many communities view old barns as a link to history and their agricultural heritage. Old barns are often considered community landmarks that embody farming tradition, local customs and a way of life for many local residents. They view local farms as a symbol of stability, freedom and strong ties to the landscape, and farming evokes a sense of rural character within the community.

In 1997, the New York State Barn Coalition was formed and has successfully established an awareness of the importance of farm structures throughout New York State. The coalition was formed to increase public awareness of historic barns and agriculture. Their objectives include promoting the appreciation, rehabilitation, and reuse of older historic barns. Since their formation, a number of communities throughout Central New York have received historic preservation grants from the New York State Environmental Protection Fund to restore and rehabilitate old barns and farm structures.

2.4.1.3 Comprehensive Planning

Historic preservation has become an important component of comprehensive plans and the community design process since the late 1980's. Communities are now recognizing the aesthetic design and

economic values of preservation. Increasingly, municipalities include a historic preservation element in their comprehensive plans or at least use preservation techniques in other elements of the plan such as housing, economic development, or community design. Preservation is an effective tool in converting historically relevant buildings and places to accommodate new uses, populations and economic trends.

2.5 Parks and Recreational Resources

2.5.1 State Recreational Facilities

There are no State owned park or recreational facilities in the Town of Aurelius with the exception of the New York State Canal System. However, Route 90 is a State highway overlooking the eastern shore of Cayuga Lake. This 50-mile corridor, received State designation as a Scenic Byway in 1998 and boasts of picturesque countryside and spectacular views of the Lake. The highway links the Village of Cayuga and the Town with several small towns and villages between broad swaths of active farmland, giving the route a unique rural character. Scenic Route 90 runs from the Montezuma National Wildlife Refuge in the Town of Montezuma, south along the eastern shore of Cayuga Lake. It passes through the Towns of Aurelius, Springport, and Ledyard, along the shore of Cayuga Lake, to King Ferry. The rolling, dramatic hills typical of the Fingerlakes characterize this Scenic Byway as it then turns eastward, passing through Genoa, Locke and Summerhill, and continuing on to the Village of Homer in Cortland County.

The Cayuga County Planning Department, working in conjunction with the Route 90 Business Association and municipalities located along the highway, developed a Corridor Management Plan for the purpose of increasing economic development in the region of the Scenic Byway.

Specifically, the Corridor Management Plan identifies several economic opportunities relating to public recreation and tourism including:

1. Expansion and development of water access facilities
2. Hotel, motel, and bed & breakfast development
3. Expansion of festivals and special events
4. Development of agricultural attractions
5. Increased employment in the tourism sector

With these opportunities in mind, the Cayuga County Planning Department applied for and received a Technical Assistance Planning Grant from the New York State Governor's Office for Small Cities in 2001. This grant specifically focuses on the formation of a strategic economic development plan for the Village of Cayuga.

2.5.2 Local Parks and Recreation

The Cayuga Lake Watershed has numerous opportunities for residents and tourists to enjoy the amenities of the lake and the surrounding area. The natural resources of the area allow for water-based recreation including fishing, boating, and swimming. Cruises and charter boats also operate seasonally offering access to the water and activities for tourists. Marinas and boat launches are located along the lake with the largest concentration found at the southern end of the lake near Ithaca. The agricultural tradition of the watershed, that continues today, serves as the foundation for a number of "agri-tourism" businesses, most notably wineries. In addition, a rich cultural heritage is also present through museums and historic sites.

Aside from a great deal of informal recreational activity associated with Cayuga Lake and the Towns open space qualities, the Town of Aurelius has a limited number of opportunities for formal parks and athletic fields. However, extensive active recreational opportunities exist in the City of Auburn and in Springport.

Formal parks and recreation in the Town are limited to 3 main facilities, two in the Village of Cayuga and one along the Towns boundary with Auburn. Perhaps the greatest asset and recreational resource is the John Harris Park. This waterfront park was established on the site of a former New York Central railroad station. The park includes the Village offices, a public swimming area, and open space for waterfront recreation and picnicking. It is a historic site, owned and operated by the Village of Cayuga and summer swim programs are organized by the Cayuga-Aurelius Recreation Commission.

Athletic fields in the Town include McIntosh field, owned by the Village of Cayuga and the Auburn Babe Ruth Little League fields located on Route 326 on the border with the auburn. Both facilities include baseball and soccer fields. Soccer fields are also available at the Cayuga Elementary school in the Village.

(Figure 2-13, Recreation Facilities Map)

2.5.3 Current Trends in Parks and Recreation

In 2003, the New York State Office of Parks Recreation and Historic Preservation updated the Statewide Comprehensive Outdoor Recreation Plan (SCOPR). This document is very useful to municipalities in planning for the development and continued management of recreational facilities and programs. SCORP provides a great deal of useful information and is utilized as a reference for the Parks and Recreation portion of the Aurelius Community Comprehensive Plan in planning for recreational opportunity to local residents.

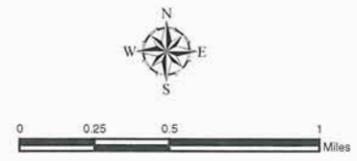
Based upon a statewide survey, SCORP identifies many of the trends that are applicable in the Aurelius area. Most of the data in the plan is collected at the county level and can be extracted from the report to make fairly accurate assumptions as to the planning direction the Town should take with respect to Parks and Recreation.



Legend

- Cayuga Lake
- Tax Parcel Boundary
- Village of Cayuga

SOURCES: Cayuga County Real Property Tax Services, N.Y.S. Department of Transportation © 2005



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In 1998, the greatest number of individuals surveyed in SCORP participated in passive park activity or "relaxing in a park." The relative number of individuals participating in this passive activity reflects the broad age group that can participate. This passive activity spans all age groups and provides opportunity to children, adults and senior citizens on an even basis. SCORP suggests that there will be a 5.26 percent growth in demand for passive activity by the year 2020.

In combination with the rating of other activities this provides an important indication of the potential type of park facilities that should be planned over the next 20 years. Of the activities that were undertaken by the most participants in 1998 the top five recreational activities include:

- a. relaxing in a park
- b. swimming
- c. bicycling
- d. golfing
- e. walking

These top five activities represent four of the major components of the proposed Town Park facility with the exception of swimming. Additional activities indicated in the Statewide Comprehensive Outdoor Recreation Plan and listed and the level of participants is shown in the following chart.

Table 2.22 - Activity Participants 1998 and 2020

	1998 Partic.	% pop 1998	2020 Partic.	% pop 2020	Growth	% Growth
Relaxing in Park	10,901,801	73.53%	11,475,496	77.40%	573,695	5.26%
Swimming	7,687,154	51.85%	8,033,555	54.18%	346,400	4.51%
Biking	5,242,681	35.36%	5,411,849	36.50%	169,168	3.23%
Golfing	2,378,038	16.04%	2,524,301	17.02%	146,263	6.15%
Walking	9,173,807	61.87%	9,692,892	65.37%	519,086	5.66%
Tennis	2,444,658	16.49%	2,543,334	17.15%	98,676	4.04%
Basketball	2,742,192	18.49%	2,757,299	18.60%	15,107	0.55%
Field Sports	3,086,053	20.81%	3,141,449	21.19%	55,386	1.79%
Historic Sites	3,682,223	24.83%	3,917,109	26.42%	234,886	6.38%
Camping	1,915,988	12.92%	2,016,290	13.60%	100,303	5.24%
Hunting	1,874,539	12.64%	1,985,486	13.39%	110,947	5.92%
Hiking	3,150,310	21.25%	3,303,820	22.28%	153,510	4.87%
Boating	3,564,820	24.04%	3,757,673	25.34%	192,854	5.41%
Fishing	3,462,233	23.35%	3,659,717	24.68%	197,485	5.70%
ATV	673,578	4.54%	706,253	4.51%	32,765	4.85%
Horseback Riding	1,362,542	9.1%	1,428,302	9.2%	65,760	4.83%
Ice Skating	2,224,410	15.00%	2,314,360	15.61%	89,950	4.04%
X-Country Skiing	779,626	5.26%	821,864	5.54%	42,238	5.42%
Downhill Skiing	1,626,855	10.97%	1,678,672	11.32%	51,818	3.19%
Snowmobiling	758,989	5.12%	790,897	5.33%	31,907	4.20%

2003 SCORP Activity Participant Projection

This chart is useful in determining the type and level of facilities that will be addressed in the Parks and Recreation component of the planning process. However, there are a few more generalized recreational trends that can compliment other planning components of the Comprehensive Plan. Some of these trends are applicable to the Aurelius area and are listed below.

2.5.3.1 Environmental Education and Interpretation

More and more people are becoming interested in the study of nature and our heritage through viewing wildlife in its natural habitat and naturalist recreation vacations. Environmental education programs can range from elementary school or high school level field study to guided nature tours, walks hiking or climbing in order to develop an appreciation for

the environment, wildlife and the study of ecology. Programs sponsored by local conservation groups, colleges and state and local agencies are very successful in educating people of all ages about our environment and current environmental issues.

Environmental, Historical and Cultural interpretation is a popular and effective method of educating residents and visitors to a local community. Interpretive programs are successfully implemented in greenways, along highways, at recreational facilities and in many locations throughout New York State. Interpretive signs and sites can be developed that help educate visitors who travel through the area about the local environment, history, cultural heritage and local goods and services. Interpretive information can be placed at rest areas, in public parks, scenic overlooks, fishing and boat launching access sites, local businesses and historical sites.

2.5.3.2 Wildlife Conservation

Over the past 25 years an increasing awareness of our impact upon the environment has evolved. Efforts to save endangered species are common knowledge from the comeback story of the Bald Eagle to controversy over the introduction of exotic species like the zebra mussel, or Eurasian milfoil into local waterways. For example, advocacy groups consisting of conservationists and local business owners have expressed concern regarding the invasion of milfoil and water chestnut on local tourism due to the harmful effects on boating, recreational fishing and swimming areas. This is significant in that diverse groups are recognizing that open space for nature and habitat must be conserved in order to provide for the future popular recreational activities like hunting, fishing, boating, trapping, and viewing wildlife. Many private organizations like the Boy Scouts and Girls Scouts of America, Local Sportsman Associations and public agencies like the Natural Resource Conservation Service (NRCS) and Cornell Cooperative Extension (CCE) are helping encourage

cooperation between public agencies and private landowners to deal with local natural resource and recreational issues and concerns. These groups open avenues of communication for concerns ranging from providing adequate open space for hunting and trapping to providing information to the public regarding conservation of the local fishery.

2.5.3.3 *Greenways*

Greenways are an important trend nationally and locally. Greenway planning is taking place from the Harlem waterfront in New York City; to the New York State Canal System or the Genesee River. Many communities throughout New York State are revitalizing waterfront lakes, rivers and streams through greenway planning programs. As part of a wider movement to protect linear features in the landscape, greenways are created around canals, waterfronts, rivers and shorelines. Greenways protect the natural areas and open spaces along key resources including lake shores, rivers and coastal zones. The greenway concept is to keep the corridor green with natural vegetation and create a way or integrated vehicular and trail system that connects points of interest along the corridor. Greenways have direct or indirect human benefit and use providing for hiking, wildlife observation, environmental interpretation, historical interest, fishing access, and stream bank or shoreline protection. They may also provide the setting for scenic by-ways, roads and bridges. In summary, they create a quality lifestyle for local residents.

The greenway approach is a response to the recognition that these environments are complex and sensitive to development while demand for property along waterfronts, streams and ponds is steadily increasing. As water elements in more populated areas become congested, we can expect an increase in the number of people who will want to move to less populated streams, valleys and scenic areas. Due to the fact that these

types of resources are sensitive to unplanned human impacts, the need for open space planning is important if we are to conserve the resources that play a key role in attracting thousands of fishermen, conservationists and residents to enjoy the benefits of rural and scenic landscapes.

2.5.3.4 Multi-Modal Trails and Routes

Much of the interest in pedestrian connectivity, trails, and recreation corridors was catapulted by the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). In this federal legislation railtrail conversion was listed among the 10 specific enhancement recommendations. Approximately 17 percent of ISTEA funds have been granted to rail trail projects. Recreation trails take the form of linear parks that connect park, recreation and open spaces together providing an alternative to driving as a means to access recreational facilities. These trails and pedestrian routes can be planned to be integrated with streets, sidewalks and parking facilities and connect those facilities to commercial and residential areas. Today the incorporation of multi-modal (meaning facilities for pedestrians, bicyclists and other transportation options) is an integral component of transportation programs like T-21 funding through the New York State Department of Transportation and the Environmental Protection Program through the New York State Office of Parks recreation and Historic Preservation. The current focus of multi-modal projects is for pedestrian safe routes and connections particularly along community streets and thoroughfares and between residential areas and commercial centers.

2.5.3.5 Historic Tourism

Local historians see history and local heritage as a special component of the recreational potential of the area. Museums and agri-tourism are growing in popularity both nationally and locally, providing an important framework for education, interpretation and investigation of local

resources. Madison County for example, is planning for the rehabilitation of historic barns to increase the tourism potential of local farms and agricultural businesses.

Large farms, equestrian stables and more recently farms converted to vineyards and wineries provide the opportunity for understanding local agricultural history and provide a vehicle for learning and agritourism which is growing on farms, orchards and during seasonal festivals.

2.5.3.6 Corporate Green-Space and Recreational Areas

Another important trend is the willingness of companies to allow conservation and recreation easements. According to "The Conservationist" corporations own a large percentage of land in North America comprising perhaps 1/4 of the land base in the United States (Vol. 48, #5 and 6). Companies normally keep spare land as buffers for security or safety reasons and as space for future expansion.

Today companies realize that protecting the environment is a genuine concern of the majority of Americans. Many of the most successful companies recognize that conservation is a sound business strategy that beneficial to "green" their corporate image.

2.5.3.7 Scenic Byways

Transportation corridors provide recreational opportunities that complement greenways. Many of the parkways that Robert Moses developed earlier in the century remain quality scenic routes that link parks, waterfronts, scenic landscapes and population centers. In Aurelius, State Route 90 and West Genesee Street Road provide scenic multi-modal routes that link to many parks and greenways like the State Canal System and population centers in the City of Auburn and the Village of Cayuga. It also provides connectivity to locations state wide that can be accessed by

vehicle or bicycle. According to the President's Commission on American Outdoors, nearly 80 percent of Americans enjoy driving for pleasure and sightseeing. If these areas are planned and developed properly they can provide a wide range of opportunity. However, without formal recognition of their value and action to protect the attractiveness of the routes, scenic assets may be lost through lack of protection for visual quality and future infrastructure pressure from development that the community may want to attract.

Although this list is not all inclusive, it identifies a number of trends that are relevant to the Aurelius Area. The presence of the Route 90 Scenic Byway and Cayuga Lake, and the exceptional scenic quality of the southern portion of the Town of Aurelius provide an important backdrop to these trends that are explored through the planning process.

2.6 Archeological and Cultural Resources

The presence of archeological resources along the Iroquois trail corridor is extensive. Prior to the arrival of European settlers this trail was considered by the local Houdonose as the central corridor between the "east door and the west door" of the Iroquois confederacy. Many of the grounds were utilized for hunting and fishing and Cayuga Lake is known to be popular for hunting and fishing among the Cayugas.



General Area of Archeological Resources in the Town of Aurelius

The New York State Office of Parks Recreation and Historic Preservation have mapped all of the known archeological resources of the State. These locations are indicated on an Archeological Sensitivity Map that is filed with OPRHP Offices in Albany. Based on our evaluation, it is evident that most of the archeologically sensitive areas are concentrated along the shore line of Cayuga Lake, signifying the general location of past Iroquois camps and settlements.

3.0 Water and Wastewater Inventory

3.1 Introduction

The Town of Aurelius is witnessing an increase in economic growth with recent improvements to Finger Lakes Mall and the 2004 opening of New York State's first Bass Pro Shops outlet, located on NYS Route 5 and 20 in the Town. As a result, the Town is anticipating additional "spin-off" development which is very likely to put increased pressure on the existing water/wastewater infrastructure. To better understand existing forces and trends with respect to the Town's existing infrastructure, an inventory and assessment of the current conditions and capacity of such infrastructure has been conducted which will provide for the basis of recommended goals and actions in the updated Comprehensive Plan.

Taking notice and anticipating this additional pressure on public infrastructure, the Town authorized B&L to conduct an engineering assessment (June, 2004) of the current condition and capacity of the Town's sewer infrastructure serving the Village and the area adjacent to the City of Auburn and Finger Lakes Mall (August, 2004). These reports have since been completed, and the findings of those reports are outlined in the following sections.

3.2 Existing Water Infrastructure Description

3.2.1 Town of Aurelius (Excluding the Village of Cayuga)

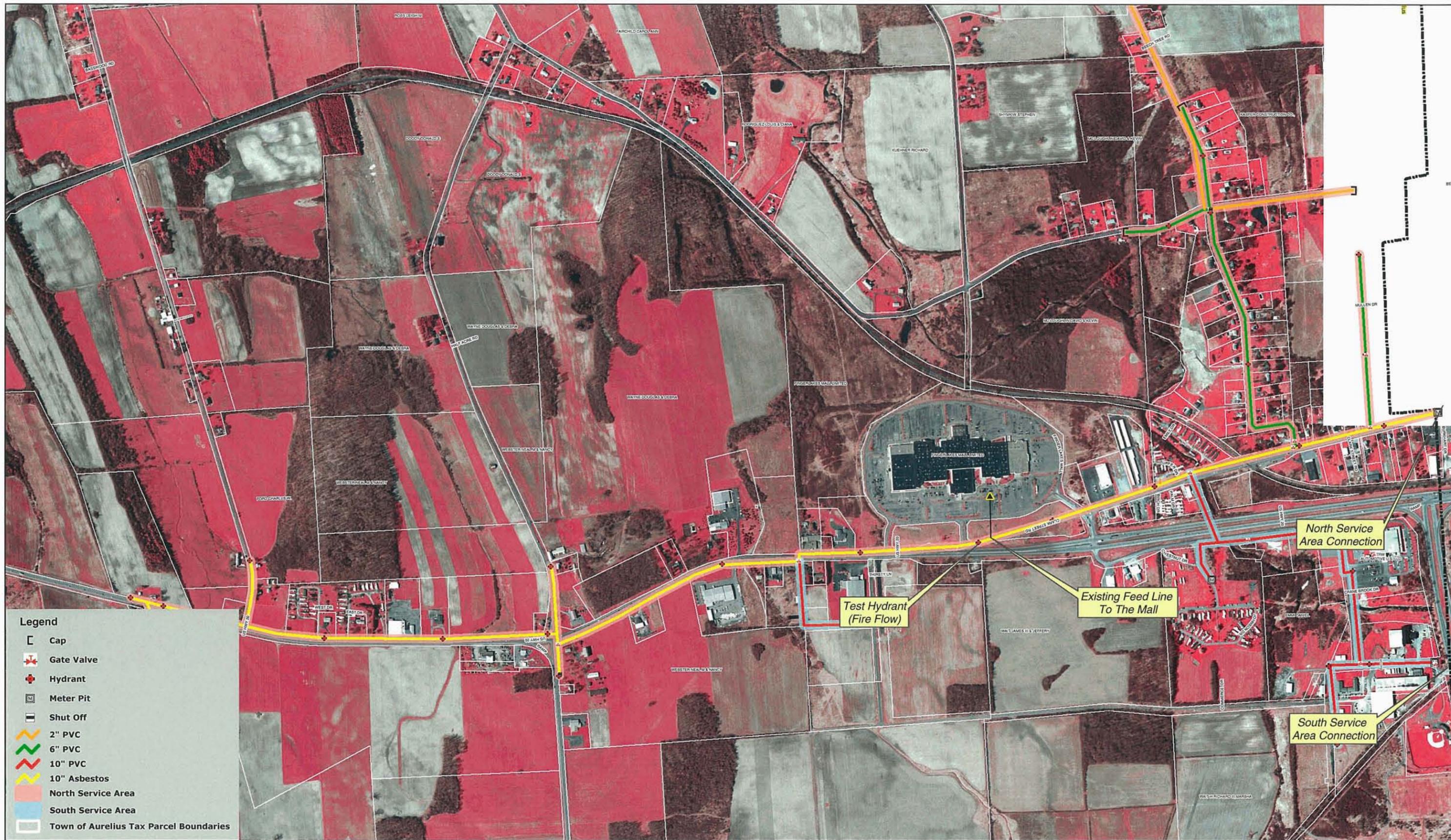
The eastern portion of the Town adjacent to Finger Lakes Mall and the Cayuga County Industrial Park obtains water from the City of Auburn by two (2) connections at Ellis Drive and Clark Street. The existing water infrastructure was evaluated in an August 2004 Engineering Report and is summarized here. The water system in this portion of Town is within the Town of Aurelius Water District No. 2. The District's water system consists of approximately 20,120 linear feet (LF) of 10-inch water main, 5,930 linear feet of 6-inch water main, and 3,800 linear feet of 2-inch water main, which is privately owned.

In addition, there is approximately 13,570 linear feet of 10-inch asbestos cement water main extending from the metering location at Clark Street serving residential and commercial areas along Clark Street, NYS Route 5 and 20, Half Acre Road, and Basswood Drive to Lime Kiln Road. The configuration of existing infrastructure is illustrated on **figure 3-1**. The Finger Lakes Mall has its own private water distribution system which obtains water from this 10-inch asbestos cement water main.

Areas immediately south of the Corridor in the eastern portion of the Town are connected to the City of Auburn's distribution system via a metered connection to the City's 12-inch distribution main at Ellis Drive. This main primarily serves residents along Wright Avenue and NYS Route 326. Other areas south of the Corridor are serviced by approximately 5,300 linear feet of 10-inch PVC water main. According to the August 2004 Engineering Report conducted by B&L, this water system serves various commercial uses such as TRW Automotive, and also serves the mobile home park located on Crane Brook Drive/Johnson Drive.

There is also a small area south of the Corridor serviced by a small section of 10-inch PVC water main (approximately 1,250 linear feet) extending along an easement off of the 10-inch water main located along Route 5 and 20, which serves the Cayuga County Industrial Park.

As part of the August 2004 Engineering Report, water system capacities were evaluated for the system's ability to accommodate average and peak water demands for the area adjacent to the City of Auburn and Finger Lakes Mall. Additionally, the water system was evaluated for its ability to provide adequate pressures for fire protection purposes for the eastern portion of the Town as well.



- Legend**
- Cap
 - Gate Valve
 - Hydrant
 - Meter Pit
 - Shut Off
 - 2" PVC
 - 6" PVC
 - 10" PVC
 - 10" Asbestos
 - North Service Area
 - South Service Area
 - Town of Aurelius Tax Parcel Boundaries



According to the August 2004 Engineering Report, the minimum static pressure needed for a typical household per state design standards under normal operating conditions (average daily demands) is 35 psi. During peak water usage and fire flow conditions, pressures should not drop to less than 20 psi at any point in the distribution system.

For smaller systems such as these, fire flow demands typically govern the system capacity rather than the average/peak water demand by the systems users. It should be noted that the private portion of the distribution system was not intended to, and can not provide adequate fire protection to even the areas currently served by that pipe due to the small pipe diameter (2-inch).

In addition, as part of the August 2004 Engineering Report, a computer based hydraulic model of the study area's water system was developed as part of the assessment capacity. Based on the model results, it was concluded in the Engineering Report that the Town-owned system currently has adequate capacity to meet foreseeable future residential demands as indicated by the Town. The modeling also confirmed that the private 2-inch water mains do not have capacity to accommodate fire flows (typically 500 gallons per minute).

3.2.2 Village of Cayuga

The Village of Cayuga owns and operates its own water supply treatment and distribution system that serves a population of approximately 600 people through 240 service connections.

The Village of Cayuga water treatment plant is located on the shore of Cayuga Lake. The plant's intake extends about 200 feet out into the lake. In 1982, the village installed Culligan pressure filters rated at 150,000 gallons per day (gpd). The plant supplies an average daily demand that varies from 45,000 gpd in the winter to 65,000 gpd in the summer.

The Cayuga Water Treatment Plant consists of the following primary components:

- Two raw water pumps each with an estimated capacity of 75 gallons per minute (gpm);
- Two Culligan cyclone separators for removing large raw water particles;
- Three Culligan Multi-Tech filter trains. Each train consists of a 36-inch diameter depth clarifier and a 36-inch depth filter;
- Three Culligan carbon filters each 42 inches in diameter;
- A 15,000 gallon unbaffled clearwell;
- Two high lift pumps (a 110 gpm centrifugal and a 100 gpm submersible);
- Two Grundfos 3 HP backwash pumps that draw from the clearwell;
- Pre-filtration chemical feed systems for feeding potassium permanganate for zebra mussel control, and for feeding alum and polymer for coagulation;
- A post-filtration chemical feed system for feeding liquid sodium hypochlorite for disinfection; and,
- A 0.3 million gallon (MG) finished water storage tank.

Potassium permanganate is injected at the intake to control zebra mussels. Raw water collected at the intake flows via a 6-inch diameter cast iron (CI) main to the filtration plant where it is lifted by a raw water pump at 75 gpm. Only one of the two raw water pumps is operated at anytime. The raw water pump discharges through two Culligan Cyclone Separators, which are operated in parallel. The separators use centrifugal action to remove 95 percent of all particles larger than 75 microns. The separators get automatically flushed twice a day. The raw water under pressure flows up to the second floor where alum and a polymer are added. The chemically treated water flows into a header that feeds three parallel Culligan Multi-Tech filter units. The filter effluent flows into a header that feeds three parallel carbon filters. Chlorine solution is then added to

the combined carbon filter effluent line that discharges to the clearwell. The finished water is then pumped from the clearwell into the Village's distribution system. Only one of the two finished water pumps is operated at any time. The distribution system consists mostly of 6-inch diameter mains with some 8-inch, 10-inch, and 2-inch sizes, and a 0.3-MG steel storage tank. The storage tank is a ground level tank located on a hill east of the Village. The tank is constructed around 1986 and was repainted in June 2000.

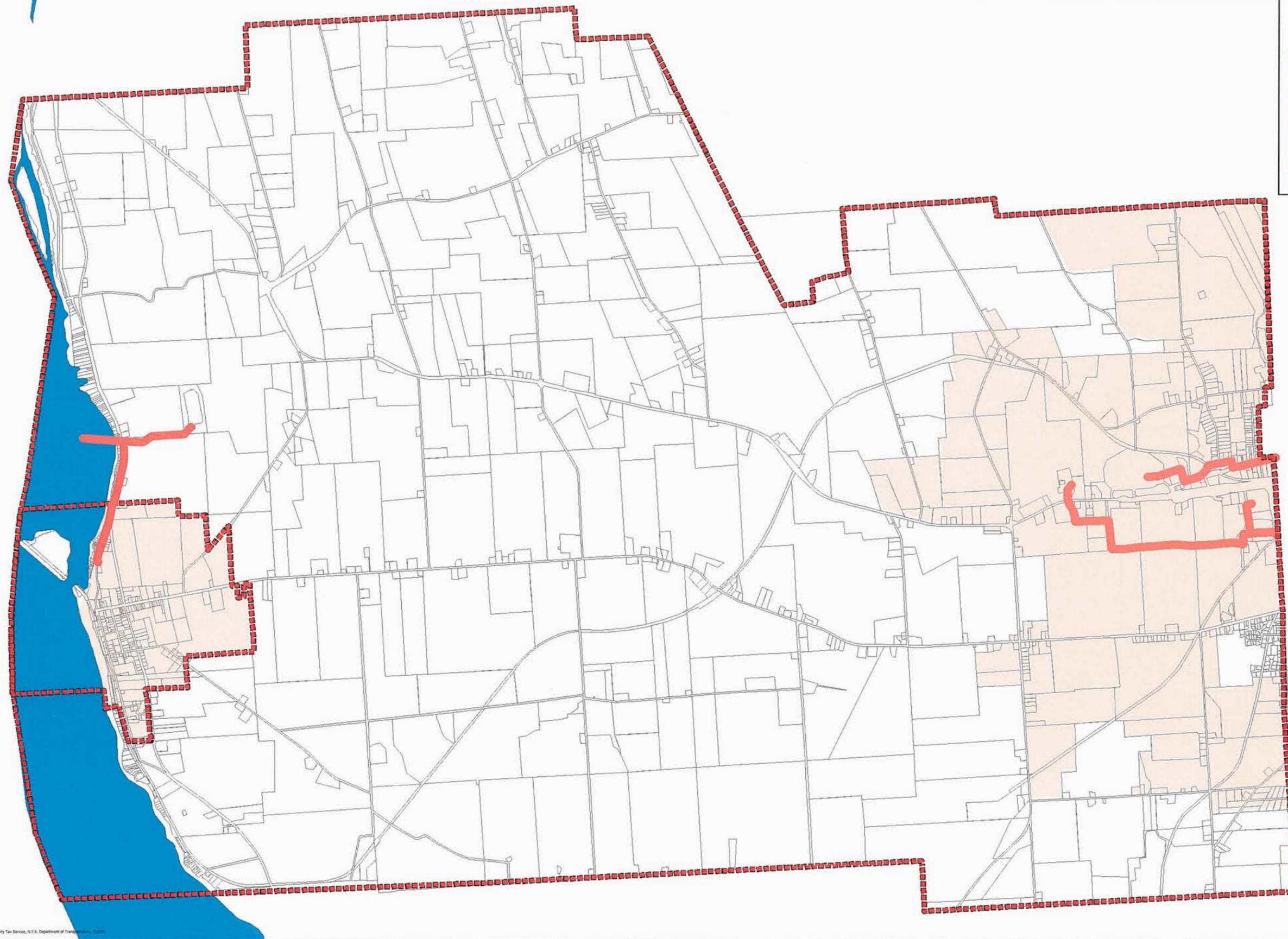
A high lift pump comes on when the system's telemetry indicates that the elevation in the storage tank is 23 feet; the pump shuts off at 26 feet.

This plant's treatment process is categorized as direct filtration, which is not considered conventional. The applicability of future regulations depends on the type of filtration utilized.

3.3 Existing Wastewater Infrastructure Description

3.3.1 Town of Aurelius

According to the August 2004 Engineering Report, the eastern portion of Town adjacent to the City of Auburn and Finger Lakes Mall is currently served by both public and private sewer collection systems which are within the Town of Aurelius Sewer District formed in 1998/1999. The area north of the Route 5 and 20 Corridor adjacent to the Mall is served by sewers extending from the Mall to the City of Auburn along Clark Street Road as shown on **figure 3-1 and figure 3-2**. In the past, there have been additional residential and commercial tie-ins to the Mall's force main and gravity sewer. The Mall's force main/sewer consists of approximately 3,800 linear feet of 6-inch PVC pipe discharging to an 8-inch diameter asbestos cement gravity sewer pipe running along Clark Street for about 1,000 feet to the City of Auburn Sewer System at the Town line. One large private user of the Mall's infrastructure is the Garropy Mobile Home Park and the Garropy Restaurant.



Legend

- Sewer Lines
- Town Sewer District Boundary
- Village Sewer Service Area
- Municipal Boundary
- Cayuga Lake

SOURCES: Cayuga County Real Property Tax Service, N.Y.S. Department of Transportation, 2005



Engineers • Environmental Scientists • Planners • Landscape Designers



Town of Aurelius November 2005
Existing Wastewater Infrastructure
Town of Aurelius Comprehensive Plan
 Cayuga County New York

Figure
 3-2
 Project No.
 594.012

The study also describes other commercial establishments (e.g., Aldi Inc., Cheche Funeral Home) who have tied into the aforementioned force main at Clark Street using individual private grinder pumps.

The areas south of the Corridor, consists of sewer infrastructure designed to accommodate wastewater from D.W. Diesel, Electric, Inc., the Cayuga County Industrial Park, TRW Automotive, and various other commercial establishments along Ellis Drive which discharge into the City of Auburn sewer system. Sewer infrastructure in this area is currently owned and operated by the Town.

In the western portion of the Town, sewerage disposal north and south of the Village of Cayuga is currently provided by private disposal systems. Problems with malfunctioning individual subsurface disposal systems have been reported in the past. Seasonal residences area also reportedly served by individual waste holding tanks that are pumped as needed (no subsurface discharge).

3.3.2 Existing System Capacities

According to the August 2004 Engineering Report, the Finger Lakes Mall pump station was obviously found to have adequate remaining capacity to accommodate the addition of Bass Pro Shops to the Mall. However, it was recommended that the pump station be re-evaluated in terms of its pumping capacity before any future expansion to the Mall or addition of flows to the pump station occurs. It was also noted that the pump station is over 20 years old, and that its mechanical equipment may be nearing the end of its useful life.

South of the Corridor in the eastern part of Town there is only one user tied into the 10-inch gravity sewer section along Commerce Drive. The sewer system south of the Corridor is currently limited by the carrying capacity of the 8-inch gravity sewer as it was initially constructed to serve the Ellis Drive area but later expanded to accommodate the flows coming in from Commerce Drive, which includes flows from the D.W. pump station. As a result, the Engineering

which includes flows from the D.W. pump station. As a result, the Engineering Study noted that the Ellis Drive pump station has no remaining capacity left to accommodate any additional flow with its present configuration.

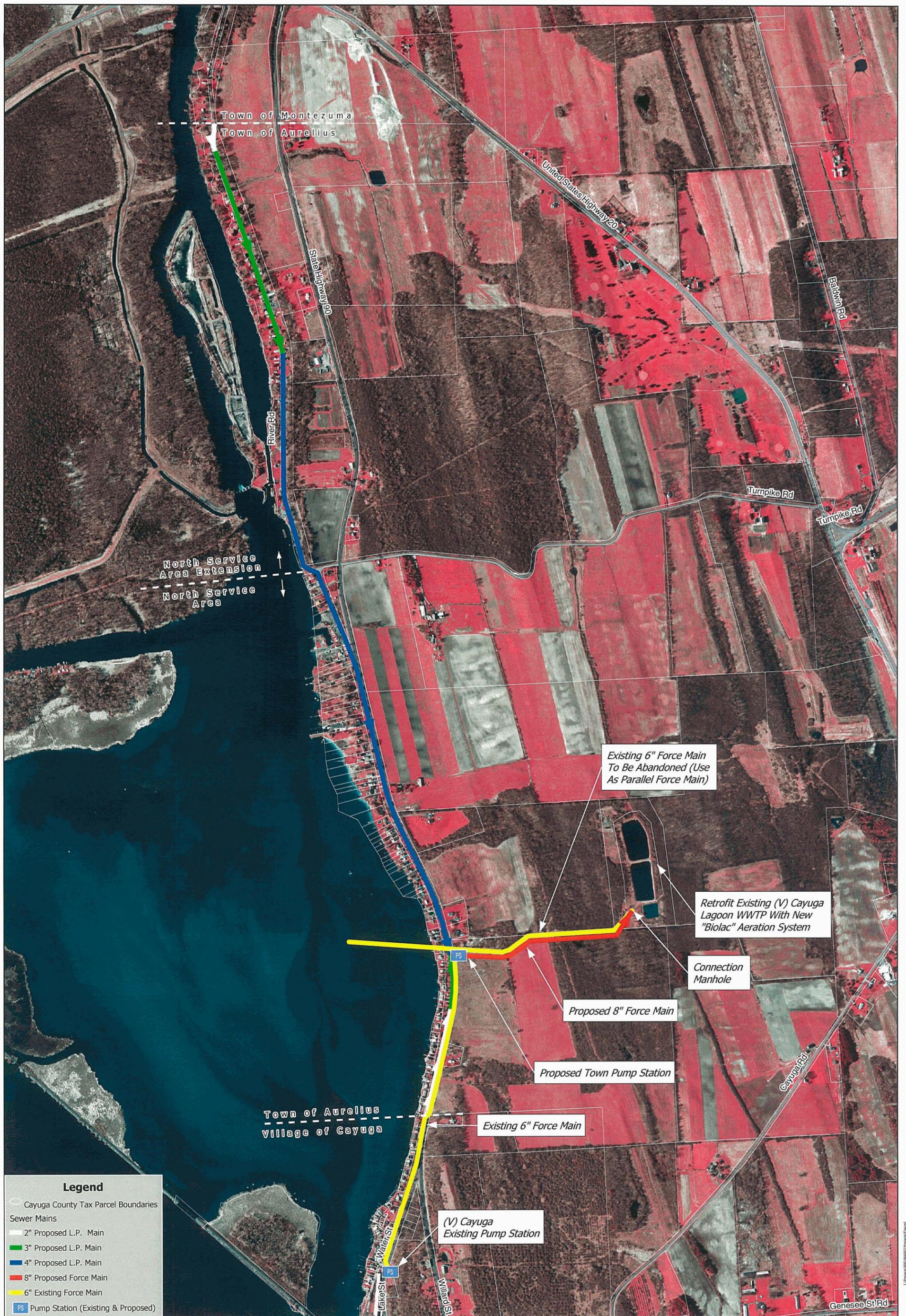
3.3.3 Long-Term Wastewater Improvements

The following potential wastewater improvements are alternatives discussed in a June 2004 Preliminary Engineering Report for a Regional Wastewater Collection and Treatment Plant for the Village of Cayuga and the Town of Aurelius, primarily serving the western portion of the Town.

The study area for this particular report generally included the Village of Cayuga; the findings and alternatives of which will be discussed in sections to come; and the lakefront portions of the Town of Aurelius north and south of the Village. Both lakeshore areas of the Town are bounded on the east by NYS Route 90.

The Town of Aurelius north of the Village was added to the study area following discussions with the Village and Town concerning public sewer needs in the area. This portion of the Town along the lakeshore is comprised of densely developed year-round and seasonal residences that are close to the water. For the purposes of the June 2004 Engineering Report, the area in the Town of Aurelius north of the Village was divided into two sub-areas as follows and as seen on **figures 3-3 and 3-4**:

- 1) The North Service Area included approximately 76 residential and vacant parcels between the Village line and River/Turnpike Road.



Data Sources: NYS GIS Clearinghouse, Seneca County

Barton & Loguidice, P.C.

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1,000 500 0 1,000 Feet

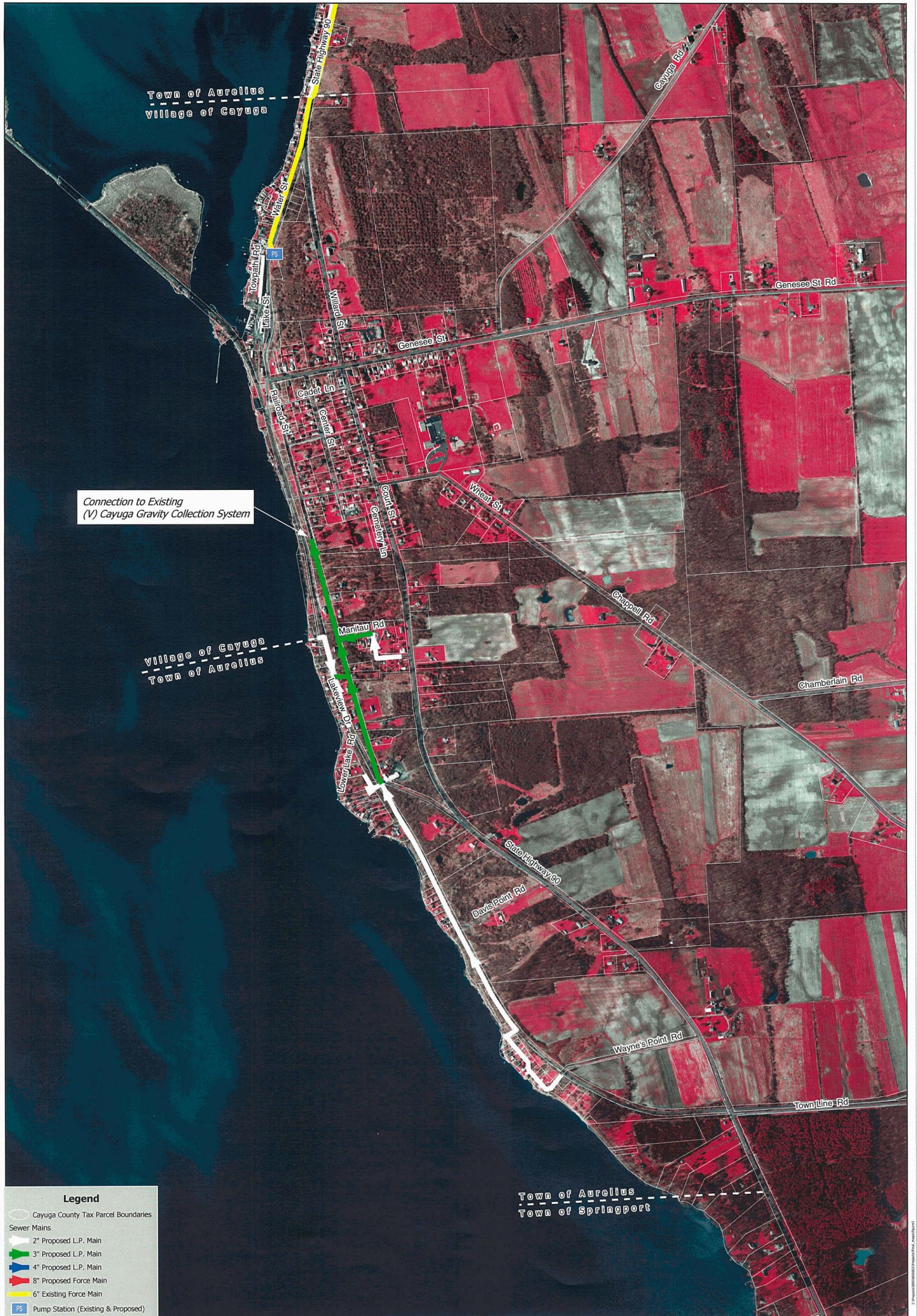
November 2005

Village of Cayuga/Town of Aurelius
**Potential Wastewater Improvements
 North Service Area**
 Town of Aurelius Comprehensive Plan

Cayuga County New York

Figure
 3-3
 Project No.
 594.012

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Connection to Existing
(V) Cayuga Gravity Collection System

Village of Cayuga
Town of Aurelius

Town of Aurelius
Town of Springport

Legend

- Cayuga County Tax Parcel Boundaries
- Sewer Mains**
- 2" Proposed L.P. Main
- 3" Proposed L.P. Main
- 4" Proposed L.P. Main
- 8" Proposed Force Main
- 6" Existing Force Main
- PS Pump Station (Existing & Proposed)

Data Sources: NYS GIS Clearinghouse, Seneca County



Engineers • Environmental Scientists • Planners • Landscape Designers



1 inch equals 1,000 feet

November 2005

Village of Cayuga/Town of Aurelius
Potential Wastewater Improvements
South Service Area
Town of Aurelius Comprehensive Plan

Cayuga County New York

Figure
3-4
Project No.
594.012

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- 2) Extension No. 1 included approximately 44 dwellings along River/Turnpike Road to the north Town line that are all located on lands owned by the New York State Thruway Authority. Residents along River Road do not own property but instead have a short-term lease agreement with the Thruway Authority. The willingness of these residents to finance public sewers is unknown due to the current leasing situation. As such, Extension No.1 was therefore evaluated separately from the North Service Area.

Low-pressure collection systems were discussed as alternatives for the Town of Aurelius north and south of the Village of Cayuga for the western portion of Town along the lakeshore, and are shown on **figures 3-3 and 3-4**. As outlined in the June 2004 Engineering Report, these systems would include the following low-pressure pipe systems:

- 1) North of the Village, it was discussed to have approximately 1,300 LF of 2-inch low pressure HDPE main; 700 LF of 3-inch main; and 4,400 LF of 4-inch main to serve north of the Village within the Town from the Village line to River/Turnpike Road (1.21 miles; this includes pipe capacity to serve north of the Village plus Extension No. 1 with individual pumps, even though shared pumps were initially proposed).
- 2) A proposed Town Extension No. 1 would include approximately 400 LF of 2-inch low-pressure HDPE main; 2,400 LF of 3-inch main; and 2,700 LF of 4-inch main to serve the River/Turnpike Road area only north from this intersection with NYS Route 90.
- 3) The Town south of the Village would be serviced by approximately 5,300 LF of 2-inch low-pressure HDPE main; and 3,500 LF of 3-inch main from the Village to Wayne's Point Road (1.67 miles; includes capacity to serve Manitau Road In the Village).

Grinder pumps were also recommended as part of the June 2004 Engineering Report in an effort to reduce capital, operation and maintenance costs. This alternative discussed the possibility of the Town constructing a low-pressure collection system where pumps would be shared between two (2) adjacent residences where possible due to lot densities. Where this would not be feasible due to isolated dwellings or larger lots, it was discussed that individual pumps would be installed at individual lots.

Based on aerial photos and site reconnaissance, the following pump breakdown was estimated in the Engineering Report:

- 1) North of the Village (from Village line to River/Turnpike Road: 33 individual pump; 23 shared pumps.
- 2) Extension No. 1: 16 individual pumps; 14 shared pumps.
- 3) Area south of the Village: 67 individual pumps; 57 shared pumps.

3.3.4 Village of Cayuga

The Village of Cayuga currently owns and operates a 100,000 gallon per day (gpd) facultative (no aeration) lagoon system that treats, on average, approximately 73,000 gpd of wastewater. The plant discharges to a stream that is not tributary to Cayuga Lake, and operates under a SPDES permit. The June 2004 Engineering Report anticipated that the Village's plant may eventually require an upgrade to comply with more stringent SPDES permit limits (possibly as SPDES permit renewal).

3.3.5 Existing System Capacities

The collection system serving the Village of Cayuga is comprised of gravity sewers that were constructed during the mid-1960's. Gravity sewers flow to a main pumping station located on Lake Street near the northwest corner of the Village. This duplex, dry-pit submersible pump station pumps 100 percent of

the Village's wastewater through approximately 1.2 miles of 6-inch force main to the Village's WWTP located east of NYS Route 90. The estimated pumping capacity of the main pump station is 250 gpm @ 120 feet TDH with one pump, and 280 gpm @ 127 feet TDH with two pumps operating. The Village completed rehabilitation work in its collection system in 1991 to reduce levels of inflow/infiltration (I/I).

The Village of Cayuga WWTP was constructed in the late 1960's and operates under SPDES Permit NY-0025241. The facility is permitted for an average daily flow of 100,000 gpd. The plant utilizes two (2) facultative (no aeration) lagoons in series to treat the Village's wastewater to the effluent limits outlined in the facility's SPDES permit. Lagoon No.1 has a volumetric capacity of approximately 748,000 gallon; Lagoon No. 2 also has a volumetric capacity of approximately 748,000 gallons.

In order to assess the current flows and loads at the Village of Cayuga WWTP, influent and effluent data were obtained during the June 2004 Engineering Study and summarized the three-year period 2001-2003. Data was obtained from the facility's Discharge Monitoring Reports (DMRs) on the EPAs website. As such, the following observations were made:

- 1) The average daily flow to the plant is 73,000 gpd; the maximum 30-day average daily flow to the plant was 180,000 gpd (May 2002). On average, the plant is operating at approximately 73 percent of its design average daily flow. Season influent flows to the plant are reflective of inflow/infiltration, with an average peaking factor of 2.5;
- 2) The average daily BOD concentration and load are 208 mg/l and 114 lbs per day, respectively, and could therefore be considered as "normal" strength waste;

- 3) The average daily TSS concentration and load are 173 mg/l and 93 lbs per day, respectively, and could therefore be considered as “normal” strength waste;
- 4) There were a total of four (4) effluent flow excursions, three (3) occurring during wet months (March, April, May) and one in December when there was also “no discharge” reported. The three excursions may be indicative of collection system I/I, and may have caused the BOD and TSS excursions reported for the same months. Short circuiting and suspension of solids in the shallower lagoons may occur at the higher flows.
- 5) There were a total of five (5) effluent BOD concentrations and two (2) corresponding BOD effluent load excursions reported. The May 2002 excursion may be attributable to elevated flows; the July excursion may be attributable to floating solids during warmer temperatures. There was one percent BOD removal excursion reported.

A total of 24 SPDES permit excursions occurred during the period from November 2000 through February 2004. Based on these occurrences, it was recommended that improvements be considered at the WWTP which target full SPDES permit compliance.

3.3.6 Planned or Potential Wastewater Improvements

The June 2004 Engineering Report recommended that the Village of Cayuga, under a joint (regional) project with the Town of Aurelius, construct improvements to the Village’s existing facultative lagoon system. The improvement plan was meant to target utilization of existing infrastructure to the fullest extent possible while complying with current design standards. On such a basis, it was recommended that the Village retrofit the first of two lagoons with an aeration system that is designed for treating projected flows and loads to no less than secondary effluent standards.

A preliminary basis of design for the lagoon aeration system was prepared during the Study, conceptual improvements to be constructed were summarized, and an itemized preliminary estimate of probable project costs for the proposed Village of Cayuga WWTP improvements were given. The total proposed project costs for such improvements were estimated to be approximately \$1.16M.

3.4 Issues Raised at Public Visioning Sessions

Public Visioning sessions were held throughout the data collection phase of the Route 5 and 20, Clark Street Road Corridor Study and Comprehensive Plan update to solicit public participation and gain input with respect to current and future issues facing the Town of Aurelius and Village of Cayuga.

On January 11, 2005, the Town of Aurelius Ad-Hoc Committee held such a visioning session that focused on public and private water and wastewater infrastructure and its relationships to land use and transportation planning and future development scenarios. The issues outlined below reflect important and prudent discussions that took place at that particular session, which will be taken into consideration when planning for future infrastructure improvements within the Town and Village.

A summary of issues raised by the public is as follows:

- 1) Concentrated public infrastructure such as sewer and water in areas of existing development densities will reduce the long-term costs associated with operation and maintenance of systems. Some of the impacts that affect the local and state wide tax base include:
 - a) Taxes/fees for long-term maintenance increases to people within a district if infrastructure extensions are not planned strategically.

- b) Infrastructure is relatively inexpensive to maintain in the short term – but what about 25 or 50 years down the road? Many communities are struggling to maintain aging water and sewer lines and the costs associated to improve them are staggering when unprepared.
 - c) Opportunities to extend infrastructure are constrained due to the current location of agricultural districts in the Town.
 - d) If water and sewer were to be extended to anywhere in the Town, it would likely promote and result in commercial and suburban sprawl.
- 2) Dave Miller, a representative the Cayuga County Department of Planning and Development, stated that extending water in agricultural districts would likely force farmers out of business.
 - 3) Costs associated with extending water along the entire Route 5 and 20 Highway would not be efficient because laterals are not permitted in agricultural districts, which would only permit those residents with road frontage to benefit.
 - 4) It is important to plan sewer and water extensions strategically in accordance with a Comprehensive Plan or other adopted Town planning documents because a Town can expose areas to development that it does not want or plan to have developed in a manner that could result from unplanned infrastructure extensions, thus, creating permanent unforeseen problems.

3.5 Trends in Public Infrastructure Planning

In the 1960s and 1970s, the goal of sanitary wastewater engineers was to provide sewage treatment to densely populated areas. Wastewater treatment is now widespread, and different challenges face wastewater operators and designers. Cutting-edge technology is allowing these challenges to be addressed with an emphasis on quality treatment and cost-effective management.

Today, some sewerage providers, especially in densely settled or rapidly developing areas, are capping the amount of additional wastewater they will accept and adding to the list of restricted contaminants because of a lack of funds and space constraints on capital upgrades. In some states, the regulatory climate points to a trend away from large treatment plant expansions. As a consequence, utilities do not want more or cannot accept more wastewater or wastewater with higher treatment needs.

Also, as growth is reaching its limits in some urban and suburban areas, development is occurring in rural locations without sewage infrastructure. In these locations the drinking water source is usually limited to ground water, small lakes, and streams. To protect the quality and quantity of the ground water supply, state regulators may restrict its use to drinking water and effluent discharge forcing developers to seek ways to conserve and reuse the water.

These challenges create new demands that innovative technology and management techniques can address. With a need for tertiary treatment and indirect water reuse, small community wastewater treatment systems, such as those that employ membrane technology, are becoming workable solutions to a growth-limiting problem. In addition to advances in treatment technology—based on new guidelines for constructed wetlands—bio-uptake of wastewater is an environment-friendly alternative to traditional treatment methods.

Other technological advancements in disinfection, such as ultraviolet treatment, are allowing municipalities to meet stricter regulations in a safe and effective manner. Improved technologies can treat biosolids efficiently to meet land-spreading regulations that restrict the amount of contaminants that may remain in the biomass. Energy conservation has increasingly taken on a creative application by using gas produced by biological activity (for example digester gas and methane) to create energy and partially to power plants.

3.5.1 Community Systems

Residential, commercial, and even industrial development is moving beyond the suburbs, but the infrastructure for water or wastewater treatment is not keeping pace. Well water is used for potable water in isolated developments, but for multifamily complexes and shopping centers, septic systems are not acceptable for wastewater treatment. Small community systems with tertiary treatment are becoming popular in such locations. As an added benefit, they return treated water to the aquifer.

New treatment technologies for low-flow include fixed-film package treatment systems, geotextile filtration, and membrane filtration. Other methods include drip irrigation, evapotranspiration systems, and mound systems. These systems are now being fine-tuned for unique problems encountered with small-scale flows.

The major benefit of these new systems is that the higher quality effluent can be discharged to ground water for indirect reuse. Because of low flows, the size of these systems is small; they are generally easy to operate and are inexpensive. Beyond small community developments, they can also be used as temporary infrastructure at military camps, large construction sites, disaster relief operations, concerts, festivals, and seasonal camps.

3.5.2 Membranes

Chemical and biological processes can eliminate most pollutants and pathogens in municipal wastewater. Physical processes, such as separation and rejection, are imperative for removing small particulate contaminants including *Cryptosporidium*, *Giardia lamblia*, viruses, pesticides, metal ions, and other dissolved solids. Membranes can perform this physical removal. Membrane filter systems vary by pore size (the smallest particle that can pass through).

Category	Pore Size	Description
Microfiltration	0.1-10 μ	Removes particulate matter and is the most common method of municipal filtration
Ultrafiltration	0.01 μ	Generally remove pathogens and separate biomass from treated effluent (more commonly used in drinking water systems)
Nanofiltration	0.001 μ	Remove pesticides and herbicides (from, say, CSO and other source of infiltration)
Reverse osmosis*	0.0001 μ	For water reuse applications, frequently used to remove ionic species and salt from solution and all dissolved constituents

*Highest level of treatment.

Because of the level of secondary treatment currently required, membrane filtration has become an increasingly popular solution for small systems and small municipalities. Membrane microfiltration is replacing secondary clarification because it gives wastewater plants the ability to operate with poor settling sludge, smaller space requirements, higher efficiency, and ease of operation. These benefits exist because the method requires no process adjustments or controls as are needed with clarifiers. Moreover, it is cost-effective to use filtration over traditional treatment on small-scale applications.

In many cases, separate developments such as assisted-living complexes and residential complexes are turning to a potent and economical combination of biological treatment and microfiltration for their wastewater needs. These combined systems are gaining increased popularity and acceptance from regulators because of their treatment capabilities, and from private developers for their reduced capital and O&M costs.

3.5.3 Reuse

Tertiary treatment, such as membrane filtration, is not only valuable for protecting human health, but it also provides a new opportunity for industry to limit water use and wastewater production. The catalysts for these reuse projects include the scarcity of ground water and the generation of high-salt and high-BOD wastewater that local utilities may not accept.

New reverse-osmosis filtration systems, sequencing batch reactors and cloth filter systems, clarifier-continuous backwash systems, and DAF-filter systems (dissolved air filtration) are solutions for water recycling in industrial plants. Because of the outstanding performance of these new technologies, water use in some of plants has decreased by as much as 90 percent, and wastewater generation has been eliminated.

3.5.4 Wetlands

In the past, constructed wetlands were only used for tertiary treatment of small volumes of water. With publication of the USEPA manual, "Constructed Wetlands Treatment of Municipal Wastewaters" (Fall 2000), small communities' use of wetlands as their basic wastewater treatment has been made acceptable. With sufficient land area, wetlands can provide adequate passive treatment. Aerobic and anaerobic conditions of these systems with microorganisms and with vegetation and gravel filters provide the majority of treatment.

3.5.5 Wetland Treatment: Pros and Cons

Pro	Con
<ul style="list-style-type: none"> -Requires minimal skilled labor -Natural appearance and ecological benefits -Little energy required. 	<ul style="list-style-type: none"> -Large area needed for complete treatment -Lack of data on cost-effective construction and operation.

3.5.6 UV Treatment

Final disinfection is a constant hurdle among operators and designers because of the need to balance costs and treatment effectiveness. Chlorine is the traditional form of disinfection because of its relative low costs and competence. However, but it is also a "super biotoxin" and creates problems

with chemical handling, storage, and organic interactions forming chlorine-produced oxidants. It is well known that when chlorine and organic matter have significant time for interaction, chloroform, bromodichloromethane, and other trihalomethane compounds can form.

UV technology disinfects by radiating microorganisms to prevent their replicating and requires only a short contact time. Chlorine and other chemical disinfectants, on the other hand, cause chemical reactions within microorganisms and require a contact time of up to 180 times that of UV light. Pulsed UV light systems are on the forefront of wastewater technology because they destroy pathogens more effectively and at a higher rate than traditional disinfection and standard UV light.

Since the early 1940s, guidelines for UV disinfection have been available. The high cost of UV treatment and the lack of a residual following application had made it unpopular for potable water disinfection; however, these concerns are not as relevant in wastewater treatment.

UV treatment is becoming an economical alternative because it can diminish costs for power, labor, parts, chemicals, and overall O&M. Moreover, advances in lamp and ballast design, cleaning mechanisms, and power modulation have led to a decrease in costs over the past few years.

3.5.7 Biosolids

Engineers have few options for disposal of biosolids. Land-spreading and incineration have been the standard methods of disposal, but new restrictions on reuse of biosolids reuse are making land-spreading less desirable. To address these restrictions, biosolids require more thorough treatment to decrease the levels of nitrates, fecal coliform, and pathogenic bacteria.

Temperature-phased anaerobic digestion (TPAD) is a new technology that can improve the quality of biosolids by combining thermophilic and mesophilic anaerobic digestion. TPAD consumes biosolids more rapidly than other methods, produces more methane (which can become usable energy), creates less biosolids mass, and destroys most coliform and pathogenic bacteria usually found in municipal biosolids. A municipal treatment plant in Independence, Iowa uses TPAD to produce Class A biosolids that have a low pathogenic organism content. The product can be applied on land in public access areas.

3.5.8 Control Systems

Energy is the largest and most variable cost for a wastewater treatment plant. Instrumentation and controls can address energy scarcity. Control systems, such as programmable Logic Controllers (PLCs) and SCADA systems, can help to conserve energy with variable-frequency drives, energy-efficient motors, heating, cooling and ventilation improvements, lighting modifications, and fuel cells. Load management strategies, demand strategies, and cogeneration are also feasible energy conservation techniques.

3.5.9 Asset Management Systems

Over the past 50 years, spending on infrastructure in the U.S. has focused on construction with little regard for the cost of necessary O&M. Today, sewage infrastructure and wastewater treatment plants are aging and deteriorating without a ready source of funding for improvement.

Regulations and standards of practice are now being implemented for infrastructure management, accounting, and financing to prevent this problem from escalating. In 2000, the Governmental Accounting Standards Board introduced Statement 34 (GASB 34), a governmental accounting process that requires municipalities to account for their fixed (infrastructure) assets. Unlike

accounting practices in the past, municipalities must either depreciate their wastewater infrastructure assets or use an asset management program to support maintenance and preservation of their capital.

For GASB 34 to be effective, an asset management program is necessary to plan for and fund O&M and capital improvements. Such a program is needed to budget for maintenance, determine asset reliability, and develop a capital replacement schedule. By focusing on the critical assets of a municipality, a team of engineers, operators, and accountants can integrate their knowledge to increase a wastewater facility's life.

Engineers will be able to provide the expertise to determine the current value and condition of infrastructure as well as the best schedule for maintaining these assets. By using broad system planning, engineering models can be developed to determine tradeoffs for maintenance, rehabilitation, and replacement for aging infrastructure. This important management technique will allow better planning for O&M rather than rebuilding infrastructure.

3.5.10 Revenue Generation

Revenue generating practices are becoming popular for treatment plants with excess capacity. An appropriate time to determine excess capacity is when a municipality is analyzing methods to extend the life of a treatment plant through asset management.

Because the incremental cost of treating additional sewage is small, treatment plants can sell their excess capacity to small communities and industry either to treat primary influent and/or dispose of biosolids. Another method of revenue generation credit trading for effluent that is currently under discussion and will be designed after the successful air emissions trading program. This

incentive program will give well-performing wastewater treatment plants an opportunity to benefit financially from their quality effluent. Such an arrangement, though not yet near implementation, can motivate municipal managers to maintain and improve their treatment abilities.

3.5.11 SSOs and CMOM

Throughout the nation and especially in the urban Northeast, sanitary sewer overflow (SSO) and combined sewer overflow (CSO) lead to unregulated discharges. The Wet Weather Water Quality Act of 2000 addressed these problems through the Capacity, Management, Operations and Maintenance Program (CMOM). CMOM aims to help local sewage authorities develop a site-specific plan of capital improvements and maintenance for their collection systems. It encourages the development of a management plan to outline steps to mitigate SSOs and CSOs.

A variety of grants and potential aid are available to help institute a CMOM program. The money can be used to intercept, transport, control, or treat municipal CSOs and SSOs. The Urban Wet Weather Priorities Act is a federal grant program to fund urban wet weather initiatives including overflows. The goals of the CMOM initiative fall within these two grant categories.

Municipal wastewater treatment technology and management continue to evolve and have a variety of advances in both areas. As regulations and approaches to wastewater change, new methods for dealing with water quality must be promoted. New technology in the areas of small community treatment, membrane filtration, UV radiation, constructed wetlands, and control systems will enhance the ability of water quality professionals to address their treatment issues. Reuse, asset management, final bio-solid treatment, revenue generation and CMOM will allow wastewater treatment plant operators to address new regulations and increase their efficiency. (Source: Interdonato and McCarthy, (c) 2001).

4.0 Transportation Infrastructure

In an effort to determine the future highway transportation needs and safety requirements for planning purposes an understanding of the existing highway system within and adjacent to the Route 5 and 20, Clark Street Road Corridor Study Area is necessary since this is the principal arterial in the community. Characteristics of a highway system include jurisdiction, traffic volume, street and right of way widths, shoulder conditions, accident frequency and long term improvements proposed by State and Local highway officials. All of these elements of highway planning are tied to land use and the function of the existing highway system.

4.1 Highway Function

Highway function refers to the role of a particular road in context of the overall highway network. For planning purposes, function is inherently tied to existing adjacent land use and future land use potential. All public roads have two major functions as follows:

1. To carry traffic in a safe and efficient manner.
2. To provide access to adjacent land.

Highway function is often impacted as development occurs adjacent to the highway right of way. As changes in land use and the subdivision of land occurs, conflicts arise that restrict the flow of traffic. In essence, an increase in the number of driveways, street intersections, the availability of lanes and turning movements all impact the safety and efficiency of a highway.

4.2 Highway Functional Classification

Highway function is broken down into a classification system according to capacity. This relates to their use as a freeway, arterial, collector or local road. This is very important in land use planning in that the location of large scale development in an

area with limited collector or arterial streets can place a burden on the carrying capacity and maintenance requirements of local roads. It can also reduce the safe and efficient flow of traffic and increase potential hazards to pedestrians who frequently use local roads for walking, jogging or bicycling.

This section lists the primary function of roads based upon their classification as a local street, collector or arterial. There are currently no freeways or limited access highways in the Town of Aurelius, however the portion of Route 5 and 20 between Fingerlakes Mall and the City of Auburn is a limited access highway and principal arterial.

4.2.1 Local Streets



- Access to abutting property.
- Intra-neighborhood traffic.
- Travel within a neighborhood.
- Pedestrian friendly
- Moving traffic is a secondary function.
- Should NOT carry through traffic.

4.2.2 Collectors:



- Collects traffic from local streets.
- Conducts local traffic to arterials.
- Provides inter-neighborhood traffic.
- Provide bicycle and pedestrian links.
- Designated crossings.
- Access to adjacent land is a secondary function

4.2.3 Arterials:



- Primary function is moving traffic.
- Moves higher volumes of traffic at higher speeds.
- Provides inter-community traffic.
- Pedestrian links should be separate.
- Access to adjacent land should be minimized

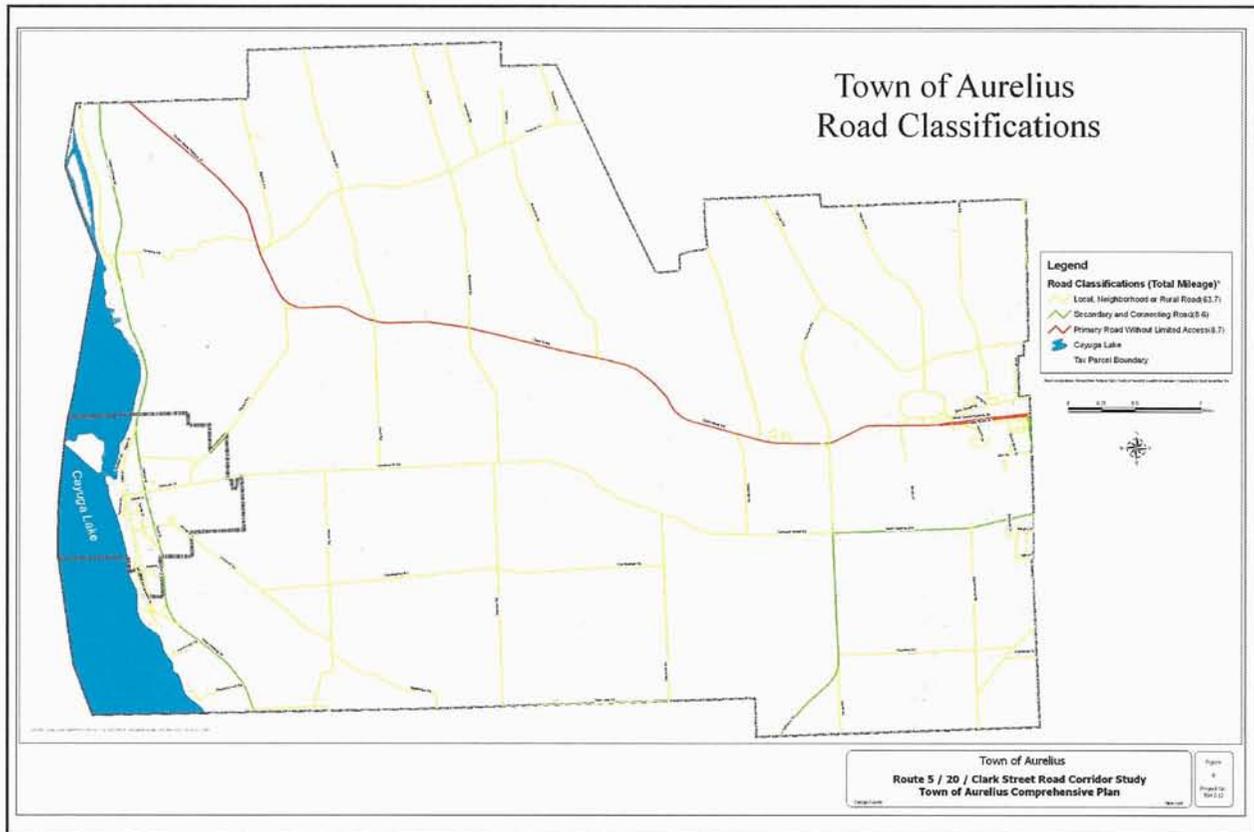
4.2.4 Limited Access/Freeway:



- Carrying Traffic is the only function
- Land access is not permitted

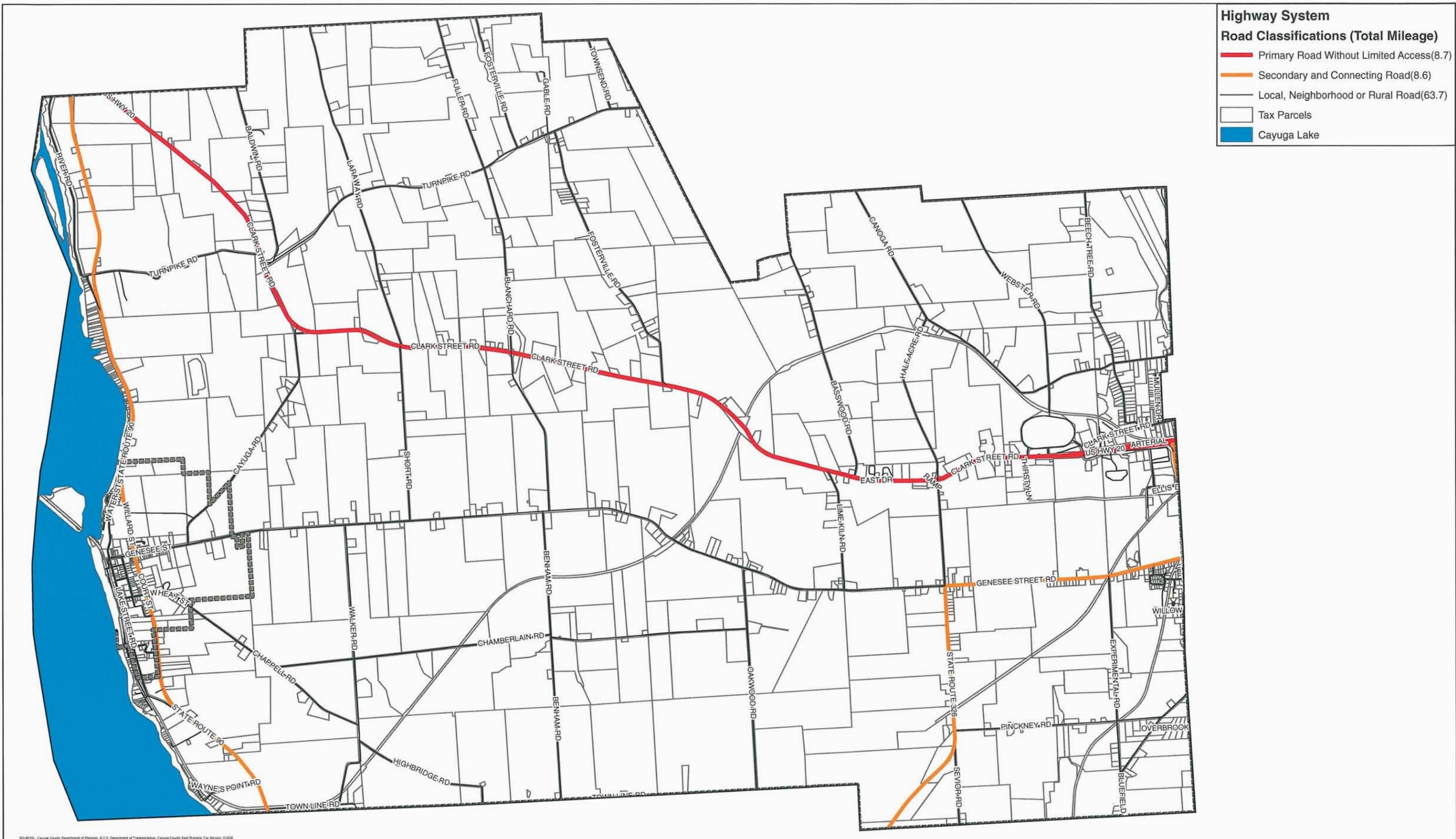
Highway	Function
Local Street	Provides access to abutting properties (land service).
	Provides intra-neighborhood traffic; should not carry through traffic.
	Moving Traffic is a secondary function.
Collector Street	Collects traffic from local streets and conducts it to arterials.
	Provides inter-neighborhood traffic.
	Land access is a secondary function.
Arterial	Moves larger volumes of vehicles from one area to another (inter-community traffic movement).
Limited Access (Freeway)	Land Access is a secondary function.
	Carrying traffic is the only function.
	No land access is permitted.

The functional classification system within the Town of Aurelius is illustrated on the following page.



4.2.5 Current System Characteristics

The current transportation system in Aurelius is similar to many towns in upstate New York: state and federal highways are the primary commuting routes which carry commuters to destination points and neighboring municipalities; county highways are typically collector roads that carry traffic from the local or neighborhood street network to highways; and local roads are generally limited as residential streets and/or rural linkages (**figures 4-1 and 4-2**).



Highway System

Road Classifications (Total Mileage)

- Primary Road Without Limited Access(8.7)
- Secondary and Connecting Road(8.6)
- Local, Neighborhood or Rural Road(63.7)
- Tax Parcels
- Cayuga Lake

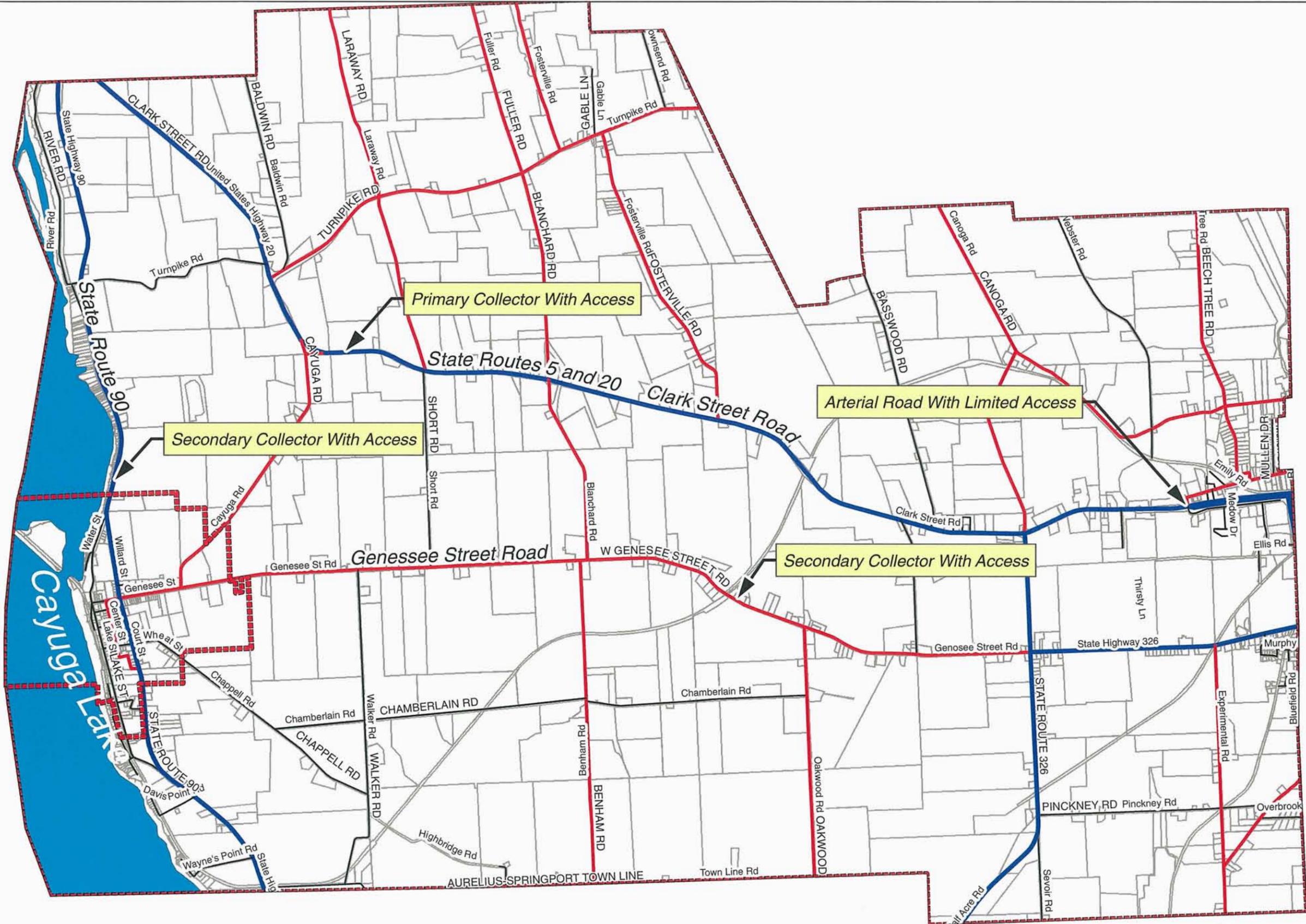
SOURCES: Cayuga County Department of Planning, N.Y.S. Department of Transportation, Cayuga County Real Property Tax Service, CUGR

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Map Legend

Road Type

-  Local Road
-  County Highway
-  State Route
-  Tax Parcel Boundary
-  Cayuga Lake



SOURCES: Cayuga County Department of Planning, N.Y.S. Department of Transportation, Cayuga County Real Property Tax Service, DGGIS

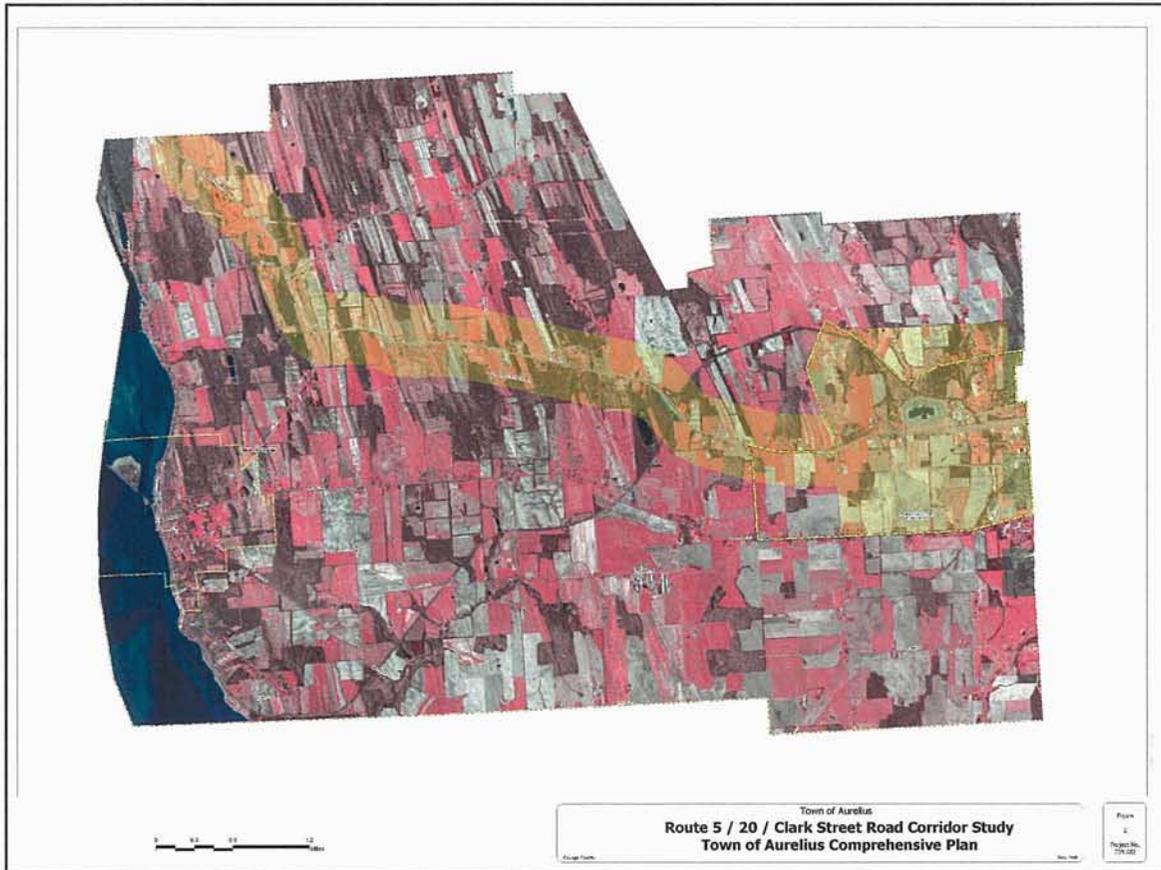
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4.3 Corridor Study Area Inventory

The entire length of the Route 5 and 20, Clark Street Road corridor (herein referred to as the corridor) will be analyzed for the purposes of this report, however the primary land use/corridor study area is that area which lies between Half Acre Road and the Auburn City line, south of the rail road tracks and north of Genesee Street.

Currently, the entire primary study area is serviced in terms of transportation by the Route 5 and 20, Clark Street Road corridor. Local roads north of Finger Lakes mall distribute traffic from residential properties south to this corridor in addition to existing traffic volumes from the various commercial properties that have frontage along the road. Much of the land area south of Finger Lakes Mall is either vacant, agricultural or scattered low-density residential. These existing conditions allow the corridor to continue to provide for convenient inter-community circulation patterns as the primary traffic generator is the mall. However, with the recent opening of the Bass Pro Shops store at the mall, spin-off development is starting to occur in the form of additional commercial project proposals for vacant and agricultural areas south of the mall. These proposals may extend future development into traditionally agricultural and rural areas, causing concern among residents and Town officials in regards to traffic congestion and the general degradation of quality of life within the Town.

Currently, the primary study area around Finger Lakes Mall is lacking an adequate local road network that could distribute traffic generated by future commercial and/or industrial development over a wider network of streets. This means that, with the existing network in place, all of the traffic from future developments would either have to utilize the corridor or existing local roads, thus compromising how those roads function.



Local roads are not meant to be primary traffic movers due to their rural nature and the potential for safety hazards as a result of scattered residential units along them. The implementation of a local road system incorporated into the planning process inherent within the implementation of a PDD District would help accommodate future traffic and enhance the overall character of the primary study area. The balance of the corridor traverses the length of the Town in an east-west-northwest direction. The majority of the parcels adjacent to the corridor are classified as either agricultural or residential use with much of the residential properties being low-density, single family units on large lots.

The current zoning along this corridor encourages typical suburban strip development evident in many towns across the country. At least 500 feet north and south of the road, centerline between the easterly Town line and Short Road is zoned for commercial use. This type of land use and zoning pattern along a primary transportation

corridor is the prototypical big-box environment. The strip zoning currently implemented invites commercial sprawl to spread the length of this corridor, jeopardizing the vitality and quality of life within the Town and creating unpleasant driving conditions.

4.3.1 Context within the Region

The hierarchy of roads in Aurelius is an extension of a larger transportation network within Cayuga County which consists of local roads, collectors, major collectors, and arterial highways. The City of Auburn, just adjacent to the east of the Town of Aurelius is located in the geographic heart of the County. Auburn's location in relation to the Town emphasizes Fingerlakes Mall as strategic extension of commercial or downtown activity that is seen in the city to the east.



The Route 5 and 20, Clark Street Road corridor and Genesee Street to the south of the corridor are the two primary state and county collector roads leading out of the City of Auburn into Aurelius. These roads are intended to function as inter-community traffic movers and it is important to maintain these as such as the Town experiences future growth.

Cayuga Lake acts as a natural border for the western edge of the Town and the Village of Cayuga. The primary north-south transportation route for the Town is State Route 90 that runs along the eastern edge of the Lake right through the Village. The balance of north-south oriented traffic within the Town must use the various rural, two-lane county highways and local roads that

intersect the Route 5 and 20, Clark Street Road corridor in the northern portion of the Town and Genesee Street in the southern half. Almost all of the roads running north – south link to the larger regional transportation network through adjacent municipalities.

4.4 Existing Conditions

4.4.1 Volumes

Analyzing traffic volumes and destinations of travelers helps determine which roads within the highway network receive the most usage, where congestion may occur and where future infrastructure investments may need to be made. Traffic congestion is the result of specific work trip destinations, shopping and recreational trips, and special events that occur at regular intervals. The table below gives an accurate representation travel volumes along the Route 5 and 20, Clark Street Road corridor from 1998 to 2003.

<i>Recorded Traffic Volumes From 1992-2003 Along the Route 5 and 20, Clark Street Road Corridor.</i>				
Traffic Routes	Miles	2003 AADT	2002 AADT	1998 AADT
From Rt. 90 to Half Acre Road	6.52 Miles	8825	8735	7786
From Half Acre Road to Auburn City Line	1.58 Miles	9135	9042	9963

AADT: Annual Average Daily Traffic

Volumes within the corridor west of Half Acre Road have steadily increased since 1998 for every year volumes were recorded by NYSDOT. On the other hand, volumes decreased east of Half Acre Road to the Auburn city line between 1998 and 2002, and then slightly increased between 2002 and 2003. This likely means that the residential population in the western portion of the

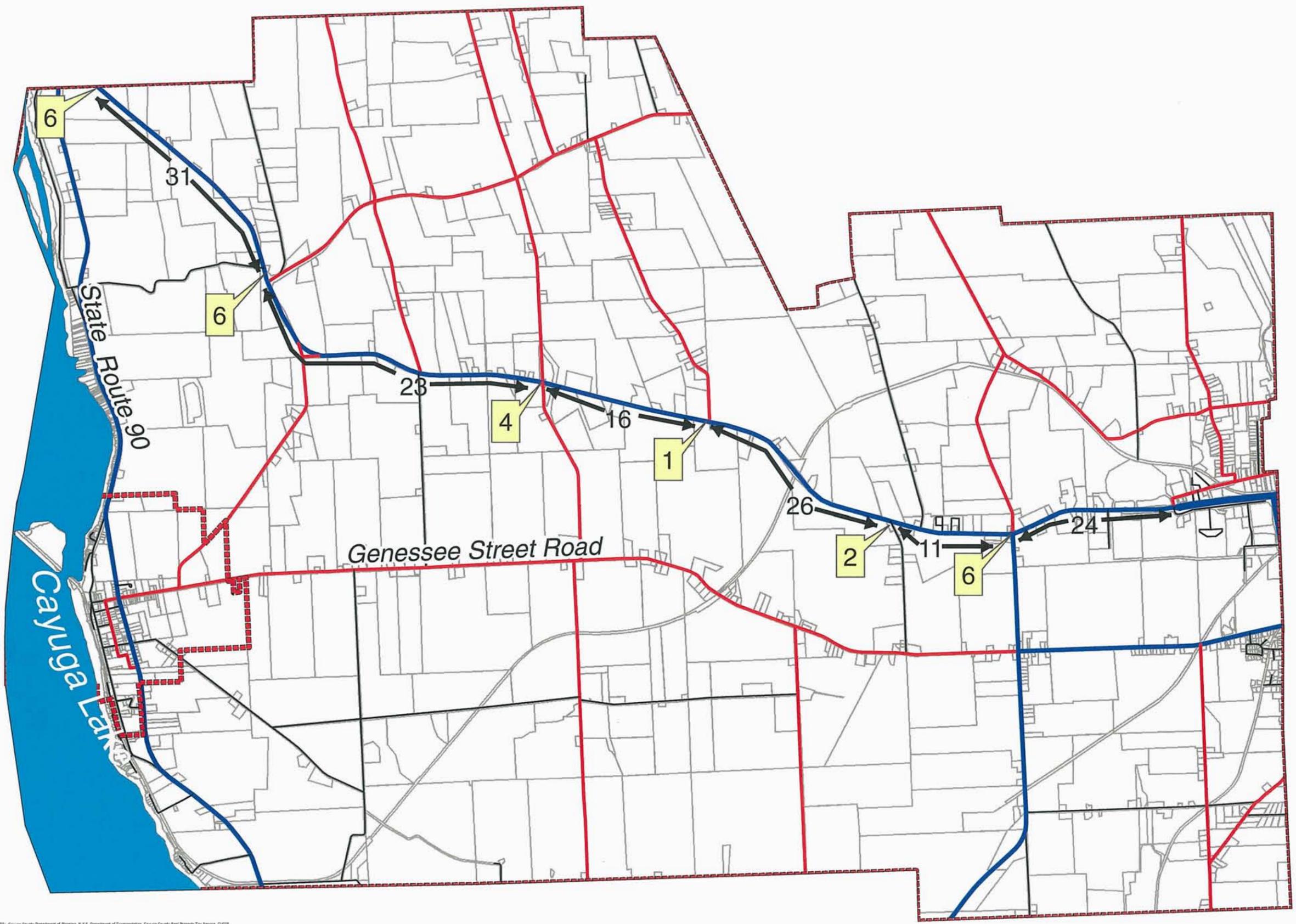
Town could have increased, causing an increase in traffic volumes within the corridor, whereas the decline in volumes from 1998 to 2003 could represent a decline in residents and visitors frequenting the Finger Lakes Mall.

However, it is likely that traffic volumes have increased since then with the advent of the new Bass Pro Shops and improvements to the mall. Anticipated future spin off development will certainly cause an even greater increase in volumes along this portion of the corridor in the future. Adequate planning must be implemented to ensure quality, safe and efficient movement along the roadway so as not to detract from the overall quality of the area and what the Town would like to achieve, which is a greater amount of visitors to its regional commercial area – Finger Lakes Mall.

4.4.2 Accident Rates

Between June 1999 and May 2002, there were a total of 113 accidents along the length of this corridor with approximately half of them occurring between Half Acre Road and the Auburn city line. The figure below shows a relatively steady number of accidents throughout the entire road with the majority of accidents occurring near the Route 90/Route 20 intersection as well as around the Half Acre Road/Clark Street intersection. There were a total of 14 accidents at the three entrances of the Finger Lakes Mall with most of them occurring at Shopping Mall Drive and Clark Street entrance (**figure 4-3**).

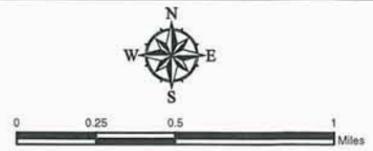
It is clear that major long-term investments that will significantly reduce travel times and improve access, mobility, safety and system reliability are needed to achieve economic development goals for the entire corridor, particularly the primary study area around Finger Lakes Mall. As future development pressures around this area increase, improvements to the corridor will be necessary to ensure the safety and efficiency of its users and to minimize conflicts and traffic accidents.



Road Type

-  Local Road
-  County Highway
-  State Route
-  Tax Parcel Boundary
-  Cayuga Lake

SOURCES: Cayuga County Department of Planning, N.Y.S. Department of Transportation, Cayuga County Real Property Tax Service, CGIS



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4.4.3 Planned Improvements

Based upon ongoing discussions with N.Y.S. Department of Transportation Region 3 officials there are three primary planned improvements to the Route 5 and 20, Clark Street Road Corridor. These improvements are concentrated in the area between Half Acre Road and the City of Auburn municipal boundary. The proposed projects are as follows:

- Improvements to the east entry of Fingerlakes Mall and Cranebrook Drive.
- Intersection improvement to Half Acre Road and Route 5 and 20, Clark Street Road.
- Planned internal - marginal access and circulation between Half Acre Road and the City Line from the railroad tracks to Genesee Street Road.
- Proposed limited access and arterial extension between the City of Auburn and Half Acre Road.

This list is based upon preliminary review of current proposals before the Town Planning Board and ongoing discussions with N.Y.S. Department of Transportation Region 3 and Cayuga County Planning and Development. A list of private proposals in the areas is included in section 15.

4.5 Trends in Transportation Planning

4.5.1 Linking Transportation with Land Use

The Inter-modal Surface Transportation Efficiency Act of 1991 (ISTEA) and the 1997 Transportation Equity Act for the 21st Century (TEA 21) emphasized the incorporation of multi-modal transportation into the current highway system. However most of the authorized funding went into the construction of new

highways and repairs to existing highways. This ultimately continued to encourage suburban sprawl. This has resulted to a number of impacts particularly in rural areas that lack updated land use plans and zoning requirements.

In the face of this spending the demand for more bicycle and pedestrian friendly streets and rural transit has increased as the result of suburban sprawl. America's reliance on motor vehicles will continue into the foreseeable future but the need for multi-modal transportation will only increase as time goes on. New road construction, bypasses and widening without addressing adjacent land use is not the best method for creating and planning for quality communities.

Therefore the trend in linking land use with Transportation planning is becoming more prevalent as communities continue to spread out. Transportation officials are encouraging communities to develop land use plans that compliment the highway system and reduce costly road expansions and congestion reduction.

More emphasis is being placed on pedestrian walkways and bike paths that interconnect neighborhoods and connect neighborhoods with commercial areas, parks and community facilities like schools and municipal buildings. The trend to inter-connect neighborhoods to work centers and commercial areas with bicycle and pedestrian trails will continue into the foreseeable future.

Ultimately the emphasis between land use and the transportation system is important because mixed use zoning, neo-traditional design and effective planning can help reduce the need for long commuter distances. By encouraging a variety of land uses close together and by employing growth management through land use planning, communities can reduce the congestion that reduces the quality of life in rural communities. At the same time proper planning can reduce costly improvements that are driven by poor land use practices.



Photo A – Discourage



Photo B Encourage

Photo A and B - The costs to taxpayers for widening the highway and improving pedestrian safety on the left would require condemnation and demolition of signs, buildings and infrastructure as compared to the costs associated with purchasing a right of way with collector road setback requirements on 5 and 20 on the right. The taxpayer cost on the left is astronomical compared to the costs associated with widening Route 5 and 20 if appropriate setbacks are incorporated into planning.

For example, communities that build in appropriate setbacks from collector highways and arterial routes actually reduce the costs associated with the future widening of the highway. If these measures are not taken the costs associated with land acquisition and condemnation become the burden of the taxpayers. Essentially, it is more cost effective to provide appropriate setbacks so that future highway right of ways can be purchased without the condemnation and demolition of buildings, gas stations and relocation of utilities. This is only one example of how land use planning can effectively improve quality of life and reduce costly infrastructure improvements.

Also, by incorporating the concept of 'people places' into the overall layout and design of future commercial areas, and planning ahead to provide linkages to surrounding existing and future residential neighborhoods, as well as to adjacent commercial and industrial sites could help create an atmosphere that would allow people a choice to get out of their cars and walk around and stay in the area a while. Planning strategically and providing a mix of retail, commercial,

office, industrial, and residential uses within the study area would help create and establish a center of activity that doesn't just thrive after people get out of work and on the weekends, but throughout the day, every day. This type of development style would provide uses and amenities to people of all ages, giving them choices and encouraging them to walk around and shop as opposed to driving to one store, getting what they need and then getting in their car to drive back home or to the next town over to shop for something else. Encouraging people to drive to a center of activity, such as the Finger Lakes Mall, and making it possible for them to walk from the mall to future commercial or retail sites adjacent to it would also minimize traffic congestion and conflicts associated with people constantly having to drive from one parcel to the adjacent parcel due to a lack of pedestrian connections. Above all else, these kinds of 'people places' attract visitors because they want to be in those environments, and make local residents proud to have such places in their town, as opposed to being deprived of choice and being forced to live next to places with no sense of scale, or community character.

4.5.2 Corridor Management

Corridor management is a concept that utilizes the coordinated application of various measures to obtain control of or otherwise protect the right-of-way for a planned land use and/or transportation facility. Some of the objectives of corridor management include: preservation of highway function, coordination of strategies for land use development along transportation corridors, prevention of inconsistent development, reduction of costly infrastructure expansion and access management controls that ensure neighborhoods have safe and easy access for pedestrians, transit, bicyclists, trucks and cars. By identifying issues, opportunities and strategies to improve access and mobility along the existing street network, the Town of Aurelius can accommodate the growth expected in the future without compromising quality of life issues or the function of the existing highway system.

4.5.3 Access Management

Access management is the process by which access to land development is provided while simultaneously preserving the flow of traffic on the surrounding road system in terms of safety, capacity and speed (NYSDOT). Strategic access management practices can help coordinate the location, number, spacing and design of access points to minimize site access conflicts and maximize the traffic capacity of a roadway. Uncoordinated growth along the Route 5 and 20, Clark Street Road corridor can result in strip development and a proliferation of access points. In most instances, each individual development along the Towns corridors has its own access driveway. Numerous access points along a corridor create conflicts between turning and through traffic which increases delay and accidents.

Historically, transportation and access management planning concentrated primarily on the movement of vehicles. Current planning efforts focus on all modes of transportation including vehicles, public transit, bicycles and pedestrians. Guidelines should consider all of these modes of transportation and discuss: the net reduction of access drives to arterials and collectors, maintaining or reducing existing intersections, combination of access to arterials and collectors where appropriate and the incorporation of access management principles into the subdivision of land.

In addition to conserving capacity, access management techniques can be coordinated with design guidelines to significantly enhance the aesthetics of a roadway corridor. A common vision that includes guidelines for access in addition to a unified design for signage, landscaping and pedestrian facilities can drastically improve the function and aesthetics of a roadway corridor.

Numerous benefits are derived from the process of access management that has an impact on motorists, land uses along a roadway and overall community character. The benefits include:

- Improving overall roadway safety;
- Reducing the total number of vehicle trips;
- Decreasing interruptions in traffic flow;
- Minimizing traffic delays and congestion;
- Maintaining roadway capacity;
- Avoiding costly highway projects;
- Improving air quality;
- Encouraging compact development patterns;
- Improving access to adjacent land uses; and
- Enhancing pedestrian and bicycle facilities.

While individual landowners may see regulations as restricting access to their property, a well-managed transportation system will improve access to properties and maintain travel efficiency, thereby enhancing economic prosperity for local businesses. Strong access management practices also have the benefit of closely coordinating land use and transportation decisions to improve the overall quality of life and economic status of the Town of Aurelius.

4.5.4 Multi-Modal Transportation

As stated in an prior section, the Inter-modal Surface Transportation Efficiency Act of 1991 (ISTEA) and the 1997 Transportation Equity Act for the 21st Century (TEA 21) emphasized the incorporation of multi-modal transportation into the current highway system. Multi-modal transportation planning is a multi faceted approach which considers all modal options and is characterized by input and participation from the public. This concept recognized the fact that efficient movement of goods and people is accomplished through a system of transportation and land use planning and also that the concerns and

needs of all users of the system should be considered. Multi-modal transportation planning should identify specific transportation issues and service investments that need to be made so that improvements to the transportation network in the Town can keep pace with future development. There are four primary modes of transportation that should be addressed to suit the needs of the Town and to comply with new energy conservation mandates on behalf of the State DOT: automobile, transit, pedestrian, and bicycle.

4.5.5 Bicycle and Pedestrian Connections

Bicycling and walking are fundamental travel modes and integral components of an efficient transportation network. Appropriate bicycle and pedestrian accommodations provide the public, including the disabled community, with access to the transportation network; connectivity with other modes of transportation; added recreational opportunities; and independent mobility regardless of age, physical constraints, or income. Effective bicycle and pedestrian accommodations enhance the quality of life and benefit any community or environment. Bicycling and walking are successfully accommodated when travel by these modes is efficient, safe, and comfortable for the public. A strategic transportation planning approach will consistently incorporate the consideration and provision of bicycling and walking accommodations into the decision-making process for the Town of Aurelius's transportation network. Factors that support the need to provide bicycle and pedestrian accommodations include:

- Provides a connection to public transportation services and facilities.
- Serves areas or population groups with limited transportation options.
- Provides a connection to bicycling and walking trip generators such as employment, education, retail, recreation, residential centers and public facilities.

- Routes can provide a regional connection or can be of regional or state significance.
- Provide links to other bicycle and pedestrian accommodations.
- Provide a tourism and economic development opportunity.
- Maintains safety for all users.

4.6 Identifying Potential Impacts

4.6.1 Spin-off Development

It is the understanding and intent of this report to address the immediate growth corridor (Route 5 and 20, Clark Street Road) by establishing strategies to plan for development that may compliment the new Bass Pro Shops and improvements to the Finger Lakes Mall complex. As a result of these recent developments, proposals and potential growth scenarios may open the door to “spin-off” development that must be considered in the context of local highways, infrastructure and agricultural operations.

While preparation of this Phase I Corridor Study is designed to address the short-term impacts of development proposals, it is important to consider this ‘growth corridor’ as an integral component of the Town of Aurelius and the Corridor Study as an integral component of the long-term direction of this Comprehensive Plan to establish a vision for the local community and for the next generation of residents. Adequate planning practices and a vision for how the Route 5 and 20, Clark Street Road corridor should coalesce as a ‘community center’ needs to be established prior to approval of future development proposals (spin off development as a result of existing commercial uses) in order to manage future growth in a manner that does not eventually create a burden on local infrastructure and an annoyance for local residents.

4.6.2 Bass Pro Shop

In the spring of 2004, Bass Pro Shops Inc: (Bass Pro) developed a mega-sporting goods store in the Fingerlakes Mall complex. Bass Pro is renowned for creating a regional market due to the uniqueness of their retail stores. The store has been a catalyst for a revitalization of the Mall. For the first time in more than two decades, the mall is operating at almost full capacity and Bass Pro is even considering developing a local museum within the upper story.

The regional draw of Bass Pro is generating spin-off potential as other smaller businesses seek to profit from the expanded market area and the resulting tourism. Town officials recognized this spin-off potential in the wake of Bass Pro and began developing an approach to planning in the corridor. This foresight by the Town Board has become a reality. In the months following the Bass Pro opening, several proposals have been set forth in the Towns Commercial and Industrial district. As of February 2005, five major development proposals are being considered in close proximity to Fingerlakes Mall. All but one proposal involves spin-off commercial retail opportunity as the direct result of Bass Pro.

A brief summary of project proposals is as follows:

- **Fingerlakes Out-parcel Development:** The owners of the Fingerlakes Mall complex have interest in developing several out-parcels within close proximity to the mall. Greenfield Associates is currently requesting Site Plan Review from the Town to review new commercial uses for all of the out parcels.
- **Fingerlakes Crossing:** Cameron Group, LLC has submitted an application to the Town for a zone change from Commercial-Industrial to a Planned Development District. The intent is to develop a 47-acre parcel south of Fingerlakes Mall to include a big box retail store and up to 13 additional

commercial-retail businesses. This project will require a new access point to Route 5 and 20, Clark Street Road across from, and south of, the east entrance to Fingerlakes Mall.

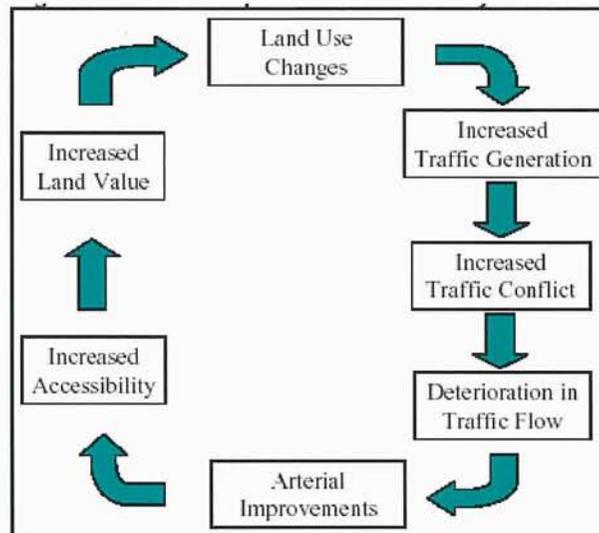
- Hotel Facility and Conference Center: Hospitality Development Corp. of Morgantown West Virginia has announced plans to develop an 18 million dollar motel facility next to Fingerlakes mall. The proposed complex will include a 10,000 square foot conference center and an attached Houlihan's Restaurant.
- BOCES Vocational / Education Campus: In December of 2004, Nine component school districts approved the construction of a 43.5 million dollar BOCES campus in the Town. The campus site encompasses 44 acres of land south of the proposed Fingerlakes Crossing and Johnson Paper Co. and will be located between Route 5 and 20, Clark Street Road and Genesee Street.

The combined impact of all of these development proposals will increase the development potential of the area as a regional attraction. The location of a new BOCES campus will also increase the need for vehicle and pedestrian safety throughout the areas east of Half Acre Road.

As the growth potential of Planning Area A increases, there may be smaller proposals in Planning Area B including fast food, service stations, and support services to new business and other less desirable forms of development. These may begin to collectively constrain traffic flow and safety within the corridor and begin to influence the surrounding network of local roads.

4.6.3 Unplanned Growth vs. Community Planning

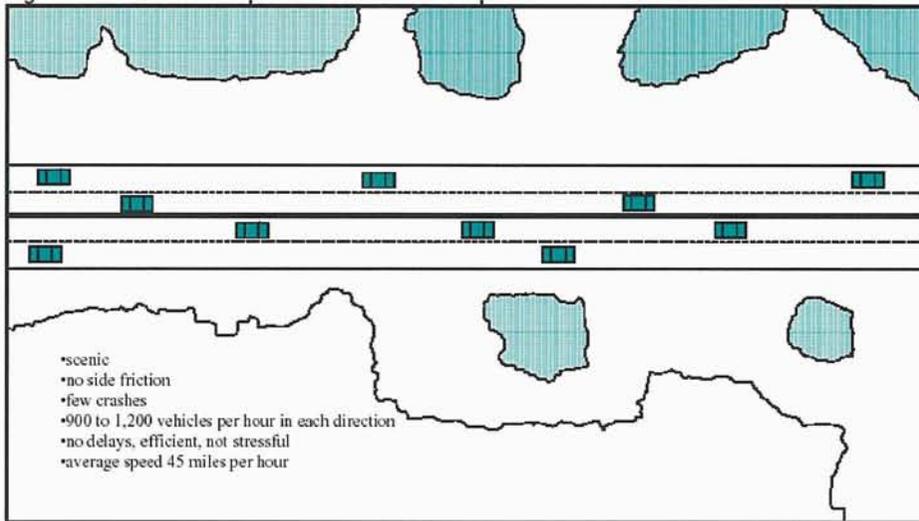
The state of New York has invested enormous amounts of resources into its transportation network system, particularly arterials. Roads and their networks, such as the Route 5 and 20, Clark Street corridor and its supporting local street systems, are vital links between their communities and serve as essential corridors for commerce, trade, tourism and recreational travel. However, in an all too familiar pattern, residential and commercial growth has occurred along some of these corridors in a manner that eventually creates a need for expensive highway improvements including additional travel lanes, bypasses, turning lanes, and intersection signalization.



Transportation Land Use Cycle

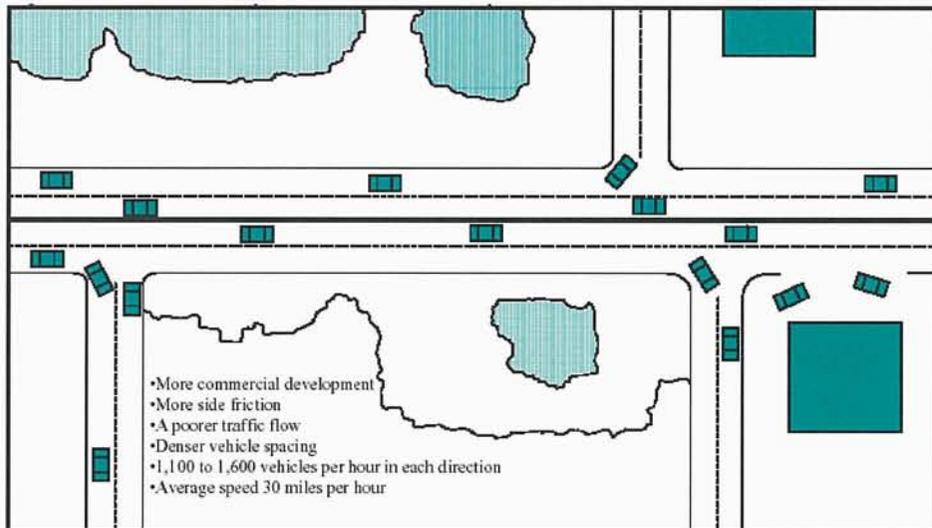
Unfortunately, few communities have enacted practices to control the rate and quality of this corridor roadside development, and taxpayers must bear the costs associated with strip development, traffic congestion, safety problems, and expensive remedial highway improvements.

This type of strip development occurs so slowly that it is seldom viewed as a crisis until traffic problems become severe. Development therefore is often allowed to continue in a haphazard manner until the problems become unbearable.



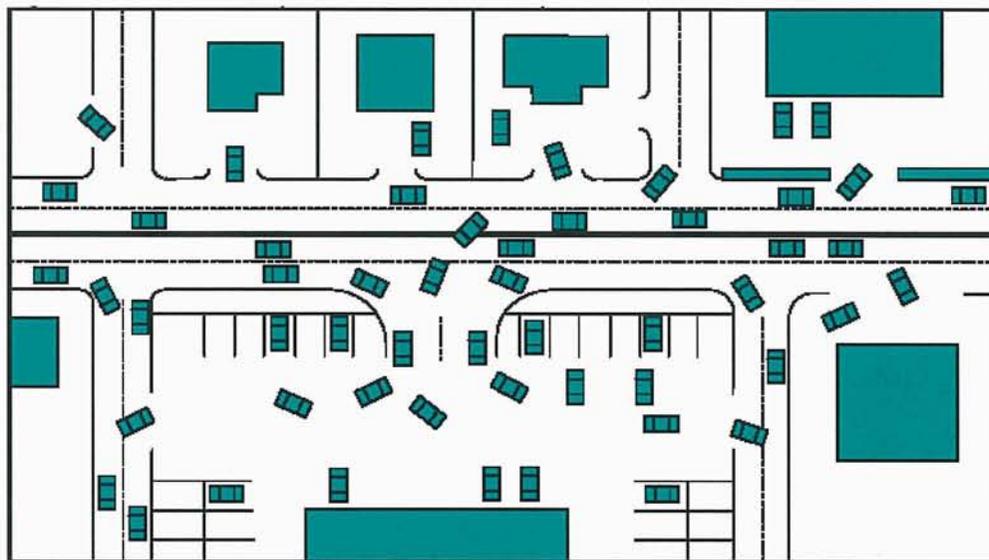
Cumulative Impact of Roadside Development over time.

Corridors such as Route 5 and 20, Clark Street Road that carry large volumes of traffic are attractive locations for strip development. Residential and commercial developments locate along the arterial over time until strip development becomes the predominant land use pattern. The ability of the corridor to move traffic then becomes seriously compromised, resulting in increased traffic congestion and reduced safety. Ironically, it is often the small and medium-scale businesses like Appleby's and Staples that cumulatively create the worst problems.



Cumulative Impact Continued

Inefficient zoning and street layout forces a business to connect driveway access to the corridor. If an internal circulation pattern had been developed adequately, driveway access could have been rerouted to these streets.



- Too much side friction
- Excessive congestion
- More crashes

- Through traffic slowed
- Too many driveways and intersections
- Inadequate spacing between driveways and intersections
- Too many conflict points and left turns

- Highly stressful
- 1,300 to 2,000 vehicles per hour in each direction
- Average speed 20 miles per hour.

Cumulative Impacts Continued

State and Local Collaboration

The New York State Department of Transportation (DOT) has the right to restrict access on the Route 5 and 20, Clark Street Road corridor, but when this road passes through Aurelius, both the DOT and the municipality must agree to allow access to a business or residence. The level of restriction that the DOT can exert over an arterial depends on the level of access control rights that have been purchased. Every parcel of land is required by law to have reasonable access to it, and it is not always possible to limit driveways to a set spacing throughout the length of an arterial. In many cases, Towns have zoned a section of land in such a way that many small parcels must be granted access onto the arterial or else they would have no access at all. The state cannot solve all of these development problems by itself.

Town and county governments have the potential to better control all land development along an arterial. If it is a state controlled roadway, the Town and the state jointly control the roadway and access to it. In New York, reasonable access does not mean that access has to be provided directly off a main street or highway. In some cases, reasonable access may be provided off side streets or roads. Local governments therefore can prepare and adopt comprehensive planning and zoning ordinances to guide the overall development patterns and even prohibit strip development. Regardless of the existence of an effective comprehensive plan, Towns can also enact access management controls to regulate the placement and design of driveways.

4.6.4 Commercial Impacts

In many rural communities similar to Aurelius, commercial development typically occurs first at primary intersections within the town, creating identifiable village centers. With the advent of the automobile, it slowly began to form in linear patterns along well-traveled roadways. This trend has continued over the past seventy-five years, producing countless miles of commercial strip development, a blight that seems to plague many heavily-traveled main roads or highways in upstate New York.

Commercial roadside development has sucked the strength of our 'downtown' business districts, created serious traffic congestion, reduced the capacity of arterial routes to move through-traffic safely and efficiently, and spawned some of the least pleasing visual environments created in recent history.

In approaching the task of regulating new commercial development along the Route 5 and 20, Clark Street Road corridor, the Town needs to evaluate almost certain impacts associated with the type of strip development the current zoning encourages.

Harmony in Scale

In most cases, the scale of new commercial structures would be inharmonious with pre-existing traditional buildings and their rural surroundings in a town like Aurelius.

The zoning should be designed so that lot sizes, bulk, height, and total floor space allowed in any given commercial or industrial structure can be limited to protect existing surrounding building scale.

Signage

Signage is essential to draw customers to businesses. Signs perform the dual function of attracting attention to a given establishment while also directing motorists in the proper direction to find it. However, signage can be detrimental to any commercial area when it overwhelms either the motorist or the surrounding landscape and Town. Excessive number of competing signs is possibly the largest visual problem associated with commercial districts today.

A comprehensive sign bylaw can effectively cure the ailment, through a combination of well-reasoned standards governing new signs, and an equitable amortization provision to bring existing non-conforming signs into character with new signage policies.

Access and Circulation

As commercial areas become more densely developed and as traffic volumes rise, roads become more congested and accidents increase. Many of these accidents are in large part due to poorly controlled vehicular circulation and poorly designed road access points.

The following diagrams present common scenarios showing typical evolution of commercial development the current zoning ordinance could have on the Town of Aurelius, as opposed to planning strategically for a better, more sustainable alternative.

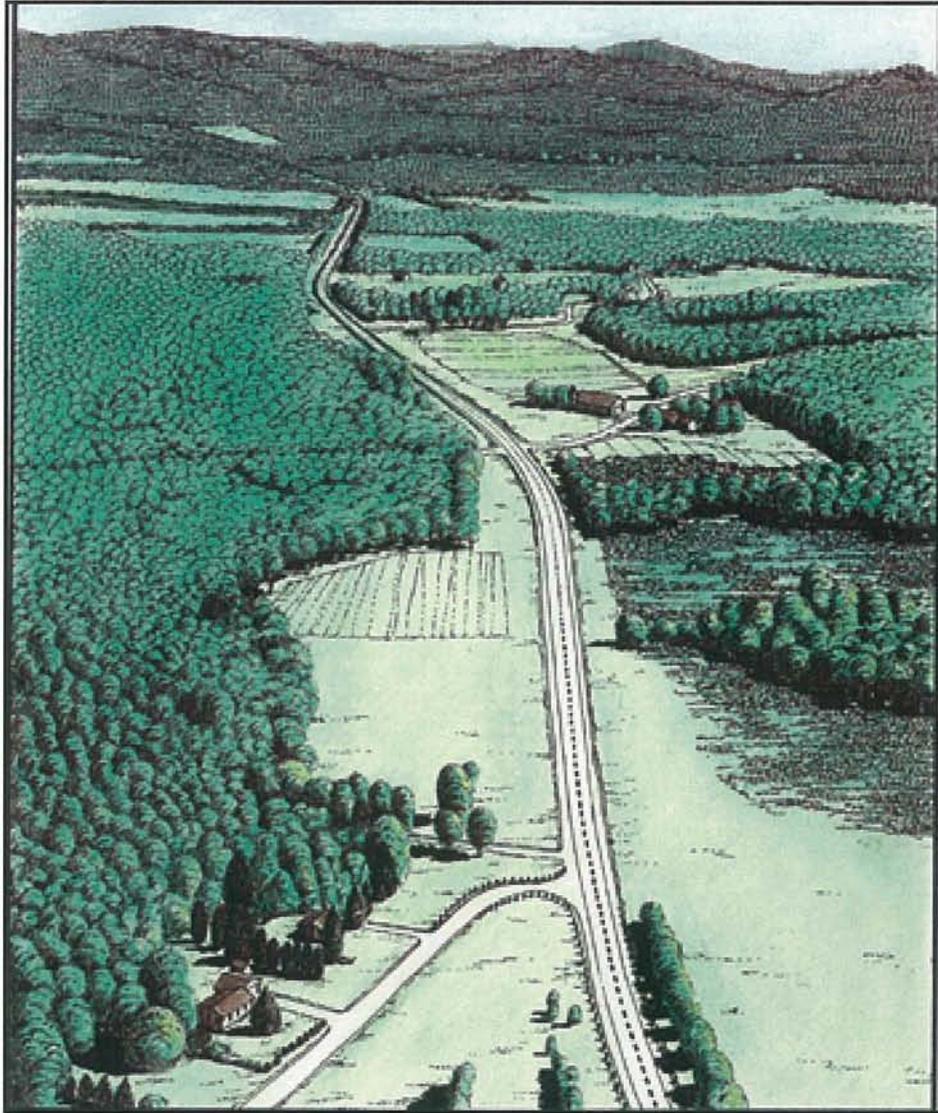


Illustration of Land before Commercial Development

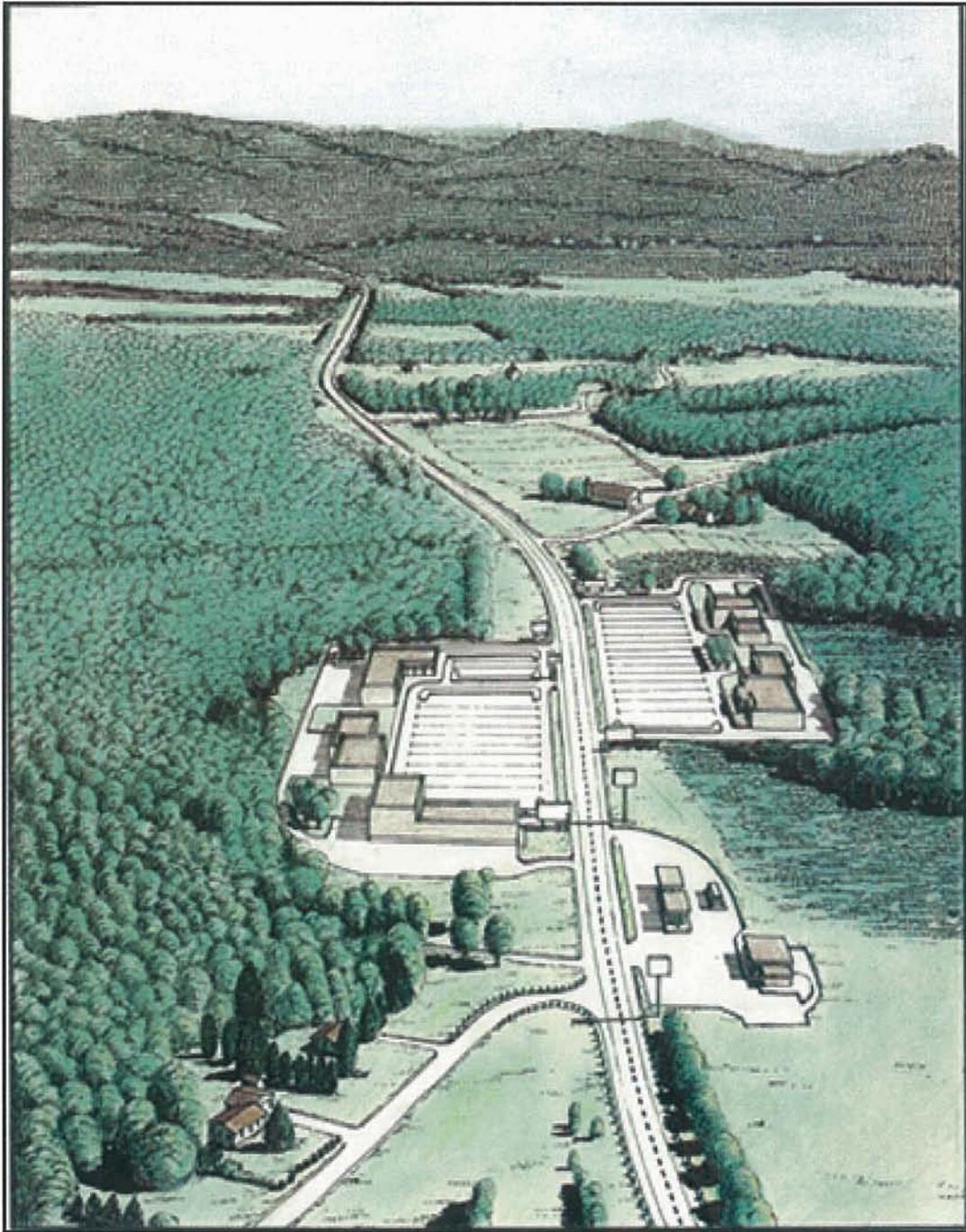


Illustration after Typical Commercial Development

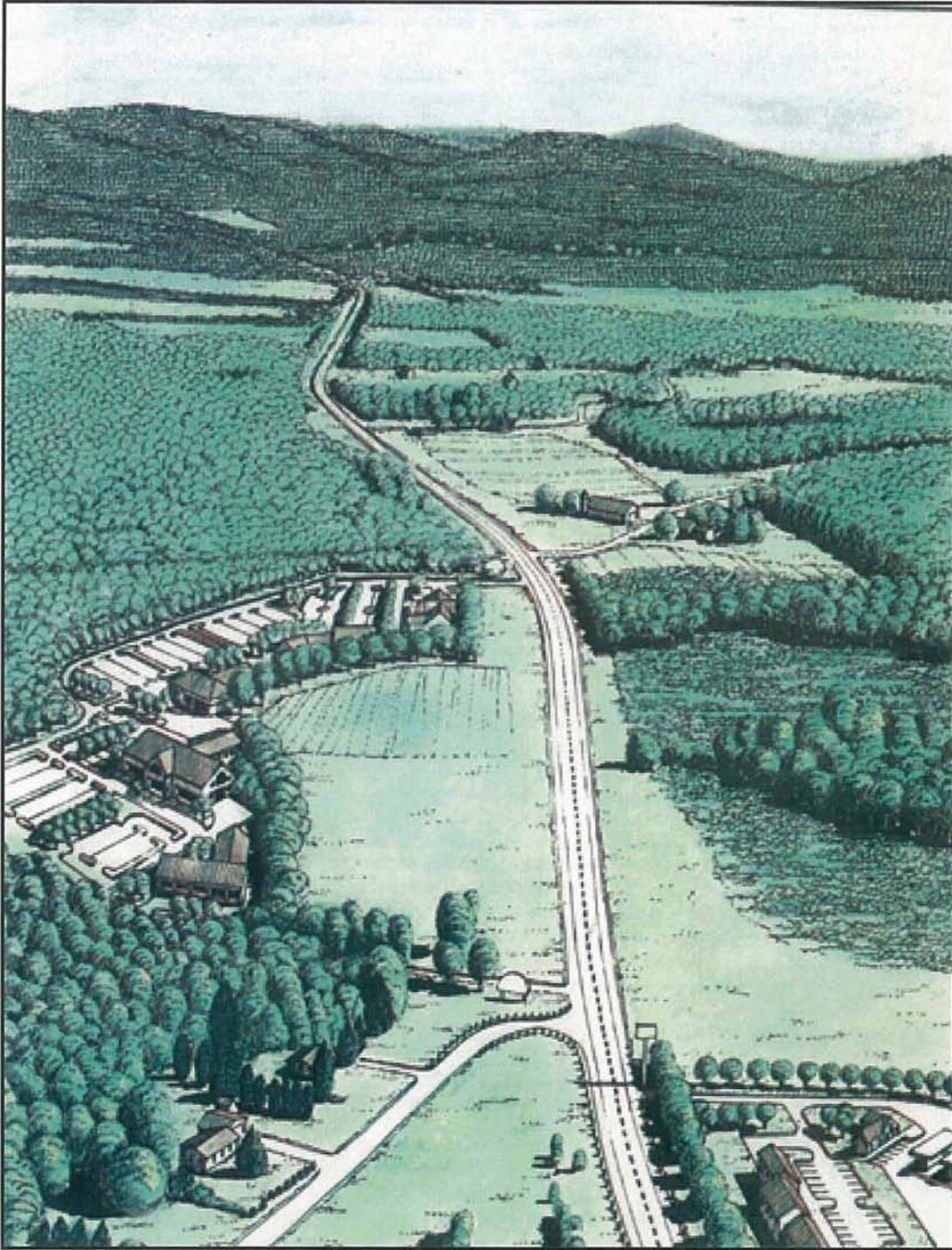


Illustration after Planned Commercial Development that is Sustainable

4.6.5 Residential Impacts

Residential impacts along the Route 5 and 20, Clark Street Road corridor impose similar problems to that of commercial development. This corridor is intended to function as a means to distribute traffic through the Town at speeds typically higher than local roads which are primarily meant to provide access to adjacent properties, and to distribute traffic as a secondary priority. The way the current zoning is designed in the Town, strip commercial development along the corridor would dissipate at the intersection of Short Road and meld into scattered rural residential character areas. Not only would the function of the corridor be jeopardized by all the commercial development lining the roadway, but frequent driveways onto the corridor from residential use along the western portion of this road would not be compatible with adjacent zoning and would generally create a haphazard development pattern that would detract from the overall character of the Town.

Illustrated here are examples of the impact residential development along rural roadways such as Route 5 and 20, Clark Street Road would have on the environment.

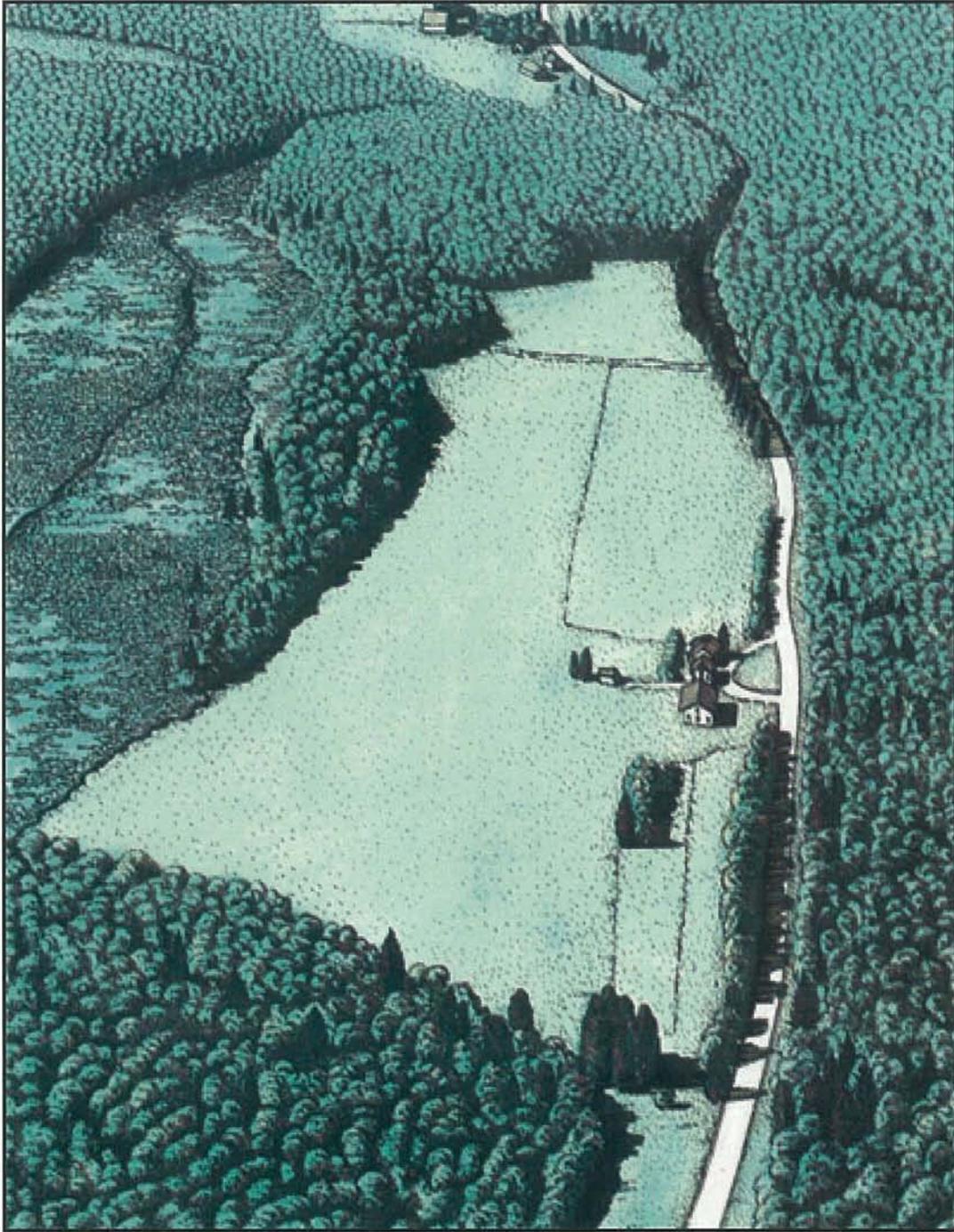


Illustration of Rural Area before Residential Development
(Source: Rural by Design, Randall Arendt)

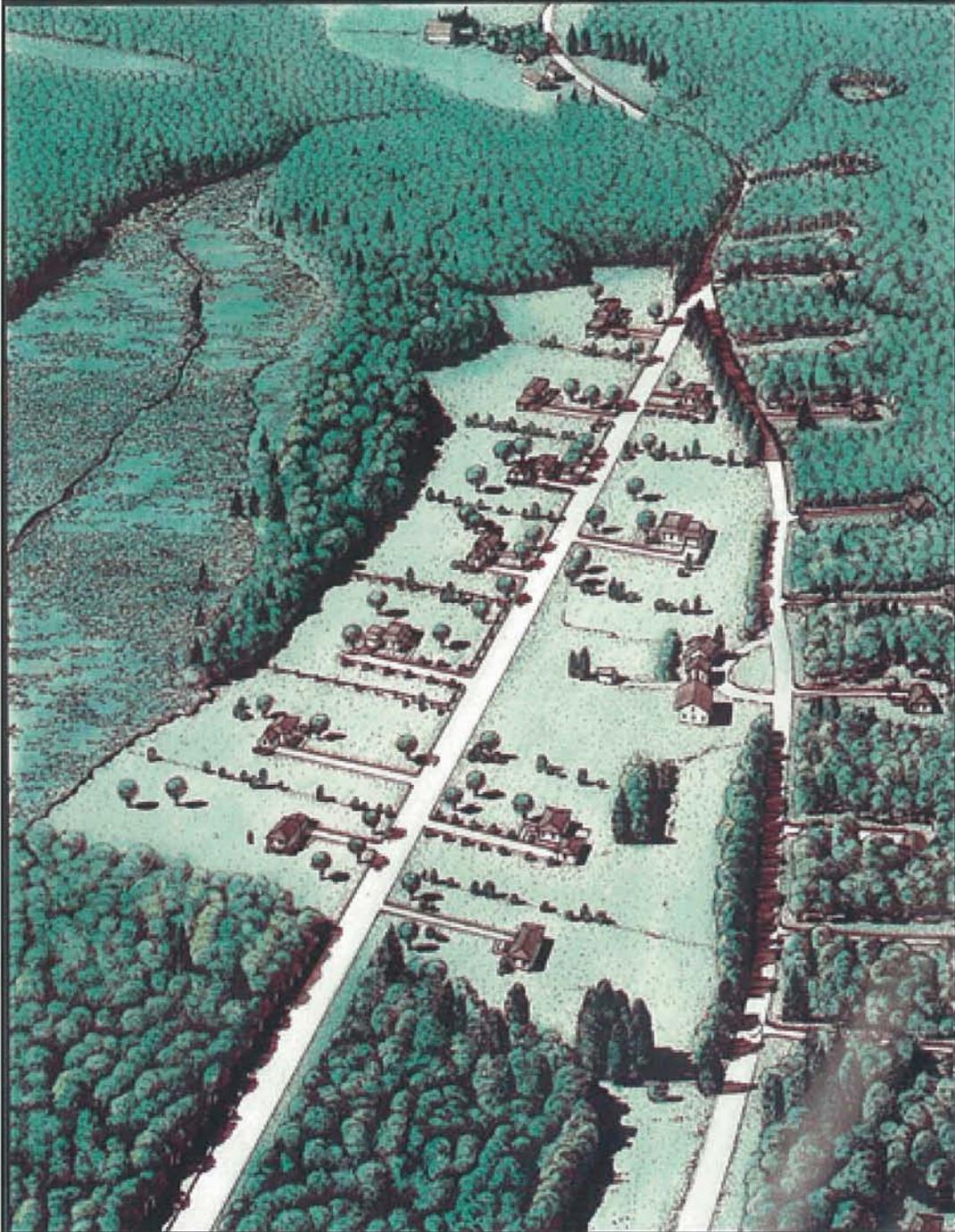


Illustration of Area after Typical Strip Residential Development
(Source: Rural by Design, Randall Arendt)

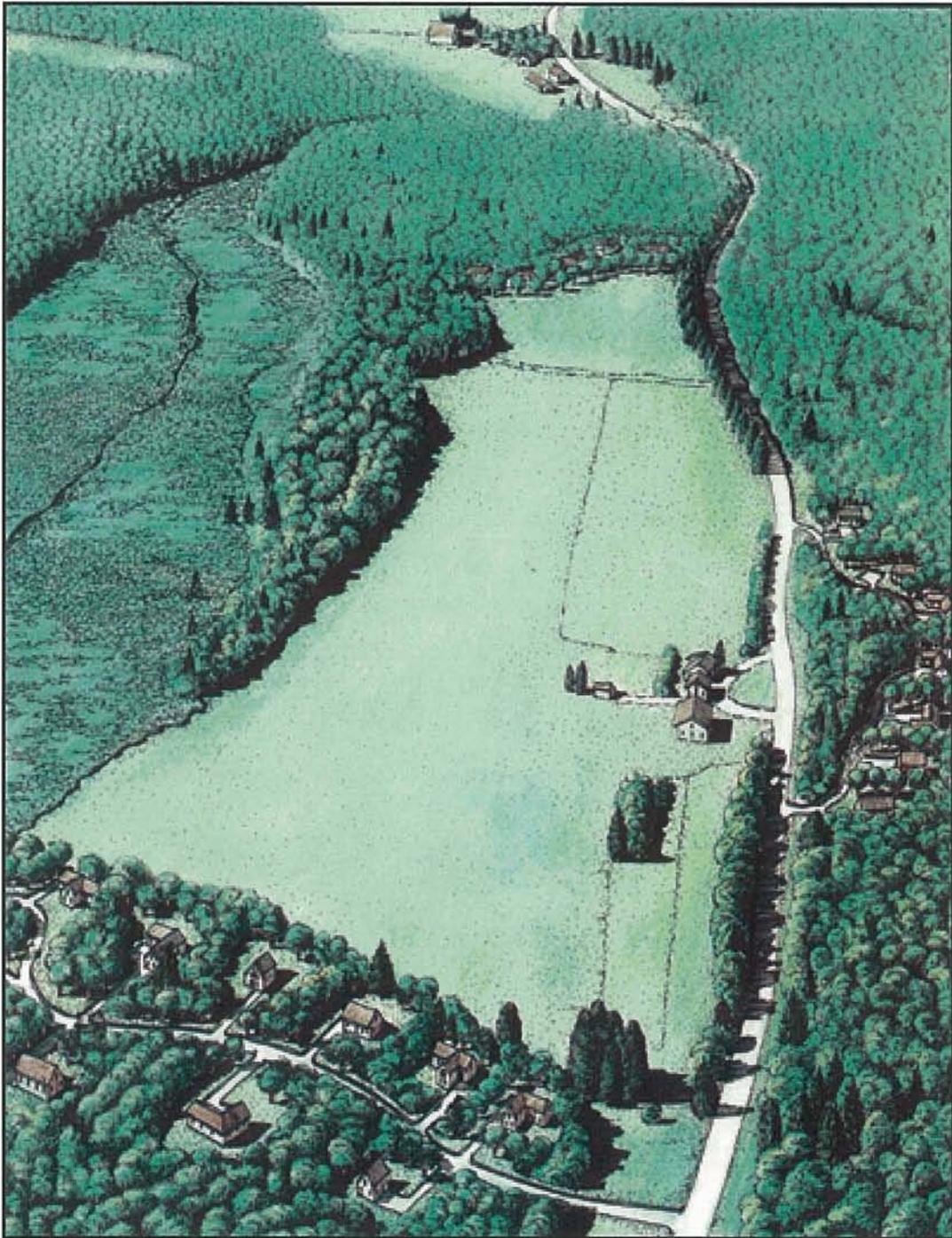
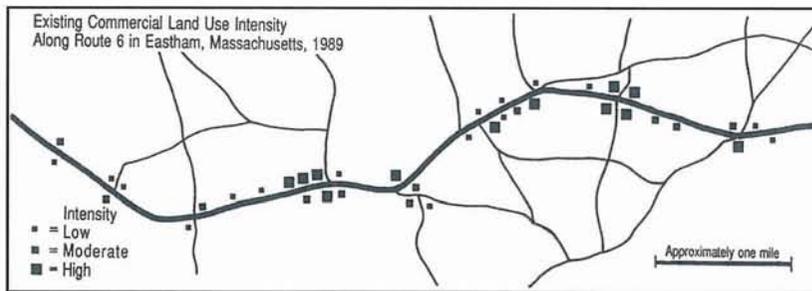


Illustration of Planned Sustainable Residential Development
(Source: Rural by Design, Randall Arendt)

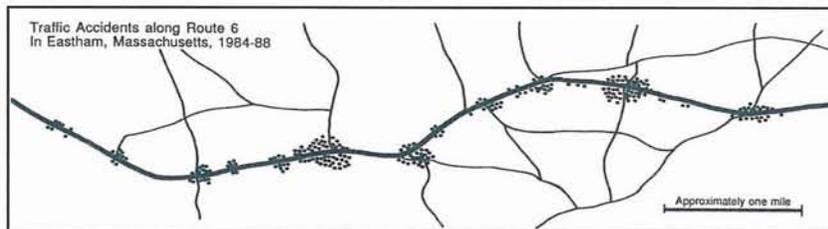
4.6.6 Cumulative Impact of Poor Planning and Management

Insofar as local municipalities depend heavily upon local property-tax revenues, it makes good economic sense to designate generous lengths of roadway for commercial use, which can be taxed at higher rates than homes, and which typically place the smallest burden on public services.

The long-term consequences of following such an open policy, however are illustrated by the experience Eastham, Massachusetts, as explained by Randall Arendt in the book, *Rural by Design*. The town of Eastham had for three decades ignored all major recommendations for controlling highway land use contained in local and regional plans and studies. The current situation in Eastham is graphically depicted by the diagrams below.



Commercial land use intensity along a road in Eastham similar to that of Route 5 and 20, Clark Street Road.



Location of traffic accidents showing the high correlation between accidents and intensive land uses depicted above.

The diagrams above show the close correlation between high-intensity roadside strip development such as gas stations, restaurants, big-box retailers and so on, and the location and incidents of traffic accidents. This corridor has grown today to take on the reputation of having the highest corridor fatality rate in the entire Commonwealth area, and has actually detracted residents and visitors from frequenting there due to the quality of the environment and effort and time it takes to travel the length of the corridor. Many of the commercial entities in Eastham have since been forced to close and move out due to the decline in visitors, which is proving to be extremely detrimental to the local tax base as a result of residents following the trend and moving away from the area to be closer to places that are attractive and without blight.

4.7 Planning Strategies/Techniques

4.7.1 Regional Transportation Planning

The structure of the primary study area as it relates to the Town within the overall region of Cayuga County, and the livability of its communities is determined in significant measure by the structure of its transportation network. The strategies and general policies below address those issues that should be considered when planning transportation at the regional scale.

4.7.2 Intermodal Balance

The Town should seek to work with the county and state to achieve a balance between transportation modes, including cars, transit, bicycles and walking. The costs of a car-dominant society have recently become apparent, as described by State DOT representatives throughout various visioning meetings with the Ad-Hoc committee. While it is unrealistic to suggest that the automobile will soon cease to exist, the cost of automobile use could be mitigated by focusing state energy initiatives on achieving a better balance among the full range of transportation modes within the county.

4.7.3 Induced Traffic Capacities

Induced traffic is a recently-documented phenomenon acknowledged by Andres Duany and transportation experts but is often not considered in local planning decisions. The concept of induced traffic acknowledges how most road-building and widening efforts intend to reduce traffic congestion but fail because the new roadway capacity is quickly absorbed by those drivers who were choosing alternative routes because of its former lack of highway functionality. As demonstrated in a study pertaining to thirty California municipalities in the 1970s and 1980s, for every 10 percent increase in roadway capacity, traffic increased 9 percent within four years time. By considering the phenomenon of induced traffic as it pertains to the Route 5 and 20, Clark Street Road corridor and future development proposals in the primary study area, investments in implementing an internal local road network to accommodate future traffic demands may perhaps be directed by the Town.

4.7.4 Bicycle Network

Bike trails are dedicated travel paths detached from high-speed roadways. Bike lanes, however can be incorporated into moderate-speed roadway systems. While not every road can or should provide bicycle access, the bicycle network of trails, lanes and routes should provide access throughout the County and Town. Expensive trails and travel lanes are not necessary for an effective network. A few key routes, combined with low to moderate-speed streets can certainly constitute an effective bicycle system. A bicycle system as such should be supplemented with a safe a secure parking system at facilities like Finger Lakes Mall and other future commercial destinations. While bicycle ridership is not currently widespread in Cayuga County, the County and State's transportation decisions should acknowledge that such ridership is unlikely to increase without an effective bicycle infrastructure in place to help reduce vehicle miles traveled.

4.7.5 Corridor & Access Management

As communities grapple with development or redevelopment pressure on their major arterials, many turn to corridor management strategies to maintain or improve the safety and operation of their roadways. Strategies could include redesign of medians allowing full or restricted turning movements, establishing driveway connection spacing, and promoting alternative access through shared driveways, service roads and street connectivity. More recent techniques, particularly in the south include roundabouts and ITS improvements – specifically network surveillance, surface street control, and incident management. Implementing strategic corridor management practices is dependent on authorizing policies, intergovernmental coordination, and implementation techniques.

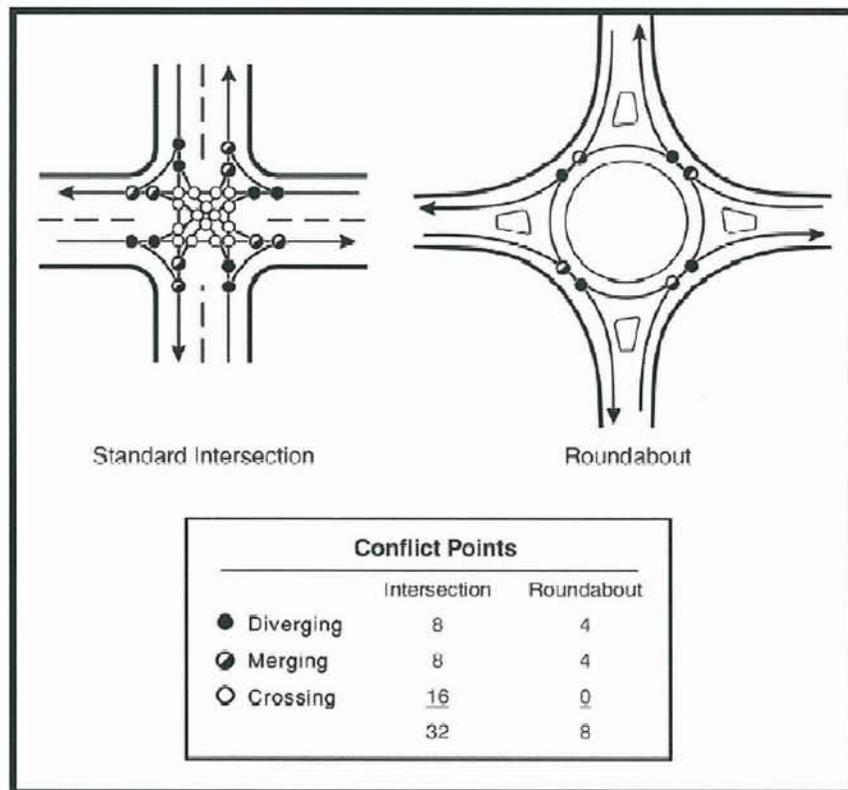
Effective corridor management could be implemented using a variety of strategies. A key element to corridor management strategies is alternative access. Many communities have developed corridor management plans and programs that involve the provision of service roads, shared driveways, and inter-parcel or inter-roadway connections that reduce the need for individual sites to have direct driveway access to a major Town road like the Route 5 and 20, Clark Street Road corridor. In addition, roundabouts are not being considered as an effective corridor management tool. Although accomplishing alternative access can be challenging in today's development environment, outlined below are some strategies for alternative access that can be used by the Town of Aurelius in coordination with NYSDOT and MPOs.

4.7.6 Roundabouts

Used in Europe for decades, roundabout use is now on the rise in the United States, particularly in the south. In 2000, the Federal Highway Administration (FHWA) published *Roundabouts: An Informal Guide to Information on Modern Roundabouts*. Roundabouts are an alternative form of traffic control that usually takes the place of traffic signals or stop signs. Benefits attributable to

roundabouts include increased safety (reduction of conflict points), increased vehicular capacity (up to 50 percent), reduced fuel consumption and improved air quality, lower cost (construction, operation and maintenance), aesthetics (landscaped median), easy U-turns and traffic calming.

Roundabouts also reduce conflict points, defined by the FHWA as “a location where the paths of two vehicles, or a vehicle and bicycle or pedestrian, merge, diverge or cross behind each other. Looking at the illustration below, a conventional intersection which could be any of those along the Route 5 and 20, Clark Street Road corridor, may contain up to 32 conflict points, whereas a single-lane roundabout contains only eight conflict points, including diverging and merging conflicts that can result in low speed sideswipes and rear end crashes. By eliminating the need for left turns, which account for the majority of access related accidents, roundabouts can offer clear safety and efficiency benefits over traditional intersection designs.



Vehicular Conflict Point Comparison

Source: Effective Strategies for Comprehensive Corridor Management. (FHWA, 2002)

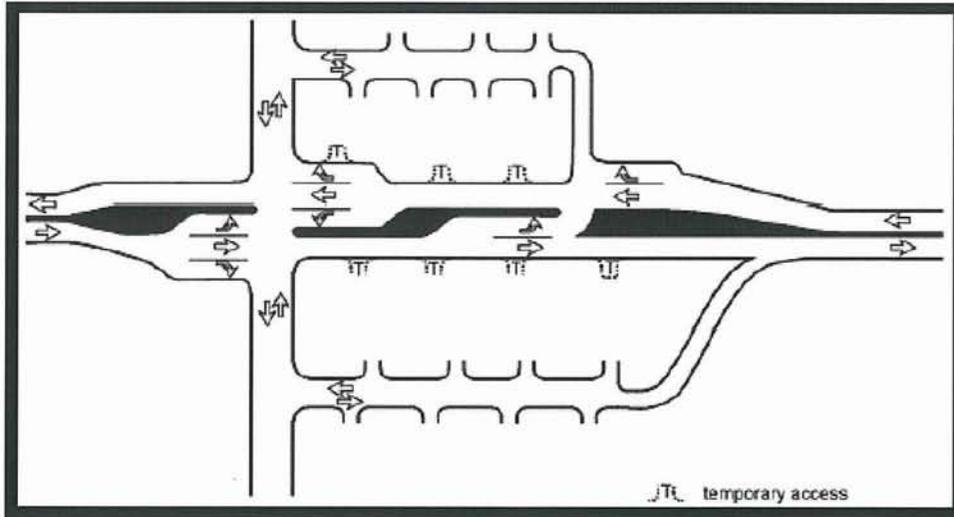
Another benefit of roundabouts is that vehicles must slow down on the approach to check for circulating vehicles. This slower speed contributes to the lower rate and severity of crashes as well as to increased pedestrian safety. The FHWA estimates up to a 90 percent reduction in fatalities, a 76 percent reduction in injury crashes, and a 30-40 percent reduction in pedestrian-related crashes is possible with the use of roundabouts (4). The slow speeds and right-turning movements are also safe and easy for drivers with slower reflexes, such as the elderly.

In addition to safety benefits, an increase in traffic capacity as well as a decrease in corridor travel time may be attributed to roundabouts. The FHWA estimates that roundabouts can provide a 30-50 percent increase in traffic capacity at a given intersection allowing a per lane volume increase from 800 to 1,200 vehicles per lane (4).

Between 1998 and 1999, the City of Golden, Colorado installed a series of four roundabouts on South Golden Road (5). Despite merchant and public opposition in the beginning, most users have grown to appreciate the roundabouts. The facility has experienced a decrease in both the number (-40 percent) and severity of accidents, as well as a decrease in average speed and corridor travel time. These benefits will also help abide by recent standards necessary for NYSDOT assistance in regards to energy efficiency.

4.7.7 Service Roads (Reverse Access, Cross Access, Marginal Access)

Service roads are local or collector roads that generally provide alternative access to small commercial tracts along a major roadway such as the Route 5 and 20, Clark Street Road corridor. They are often referred to as frontage roads or reverse frontage roads. Frontage roads are a type of service road that parallels an arterial roadway or freeway between the roadway right-of-way and the front building setback line. Frontage roads can work well for light office or single family residential developments, where they begin and end between major road intersections. However, continuous frontage roads can lead to crashes and operational problems if they connect too close to a major roadway intersection. Providing buildable sites between the service road (or reverse frontage/backage road) and the major road right-of-way thereby moving the service road to the rear of individual sites creates a safer condition.



Sample Service Road Configuration. (FHWA 2000).

The double median or “Parisian Boulevard” is another type of road where local traffic is separated from through traffic. This road “has a central roadway for through traffic separated on either side from local traffic and pedestrian ways by tree-lined medians.” While this “livable” style of street provides good access and a pedestrian-friendly environment, there are some safety issues at intersections. “The Boulevard Book” by Allan B. Jacobs, Elizabeth Macdonald, and Yodan Rof details this type of street including design and safety guidelines.

4.7.8 Street Network and Connectivity

Many communities have developed in strips or ribbons along major arterial roadways. Local and collector street networks are often underdeveloped and major highways are used as access roads. The resulting conflicts between higher speed traffic and turning vehicles, bicycles, and pedestrians, have led not only to unsafe conditions but also to greater dependence on driving. These problems can be addressed through policies that promote activity centers and a connected network of local and collector streets.

Smaller blocks and a balanced, connected network of streets and sidewalks make an area more pedestrian, bicycle, and transit friendly, while increasing opportunities for alternative access. Therefore, corridor access management practices should include measures to improve the connectivity of local street networks. Although local streets help reduce the need for driveway access, too many minor street connections on major roadways can lead to the same safety and operational problems as having too many driveways. One way to address this issue is to evaluate all proposed street connections to major arterial roadways to assure that they conform to adopted access spacing standards or would otherwise pose no safety or operational concerns.

Existing local street systems provide a framework for a corridor access management plan. Where the local street system is not adequate, a long-range plan could be developed to identify preferred future street locations. Side streets may be laid out in a general grid pattern or branch out to accommodate terrain or other natural features. A system of parallel roads or service roads could run behind corridor properties with side streets intersecting the arterial at reasonably spaced intervals.

An example in practice is Fort Collins, Colorado, which promotes a supporting street network on arterials through street spacing and connectivity requirements in its land development code. The requirements are implemented mainly in developing areas through the development review process and applicants are required to submit an access management plan that advances the standards. The code ties street spacing with access spacing criteria, as follows:

Spacing of Full Movement Collector and Local Street Intersection with Arterial Streets.

Potentially signalized, full-movement intersections of collector or local streets with arterial streets shall be provided at least every one thousand three hundred and twenty (1,320) feet or one-quarter ($\frac{1}{4}$) mile along arterial streets, unless rendered infeasible due to unusual topographic features, existing

development, or a natural area or feature. State Highway Access Control Code or specific access control plan adopted according to that code shall determine the location of collector or local street intersections with state highways.

Spacing of Limited Movement Collector or Local Street Intersections with Arterial Streets. Additional non-signalized, potentially limited movement, collector or local street intersections with arterial streets shall be spaced at intervals not to exceed six hundred and sixty (660) feet between full movement collector or local street intersections, unless rendered infeasible due to unusual topographic features, existing development, or a natural area or feature.

4.7.9 Alternative Access in Subdivision Regulations

Alternative access is best accomplished when new lots are being created on major roadways or land is being subdivided for development. Unmanaged subdivision activity on major roadways is a key constraint to accomplishing alternative access. Even communities with effective subdivision regulations can face access problems from minor land divisions that are exempted from plat requirements.

Platting exemption problems can be avoided by enacting a few basic changes to common development requirements. One such change is to increase the minimum lot frontage requirement for properties abutting major transportation routes. A variation of this technique is to tie minimum lot frontage to connection spacing standards, where they exist. (Note – the term “connection” includes spacing standards for driveways and street connections.) Property owners could then be allowed to further subdivide the parcel into smaller frontages, but only where each lot is served by alternative access (e.g. a local street, cross access easement, or service road).

For example, Levy County, in rural west central Florida, established a requirement for its primary arterial (U.S. Highway 19), by tying minimum lot frontage to the 660 ft access spacing requirement of the Florida Department of Transportation. A similar example is a prohibition on the creation of new lots that fail to meet adopted access spacing criteria, as in the following regulation currently under consideration in Tallahassee, Florida:

Section 2.3 New lots or parcels on arterial and collector roadways.

No new lot or parcel shall be created along arterial or collector roadways in the City of Tallahassee or Leon County that would result in connection spacing that does not comply with the connection spacing or corner clearance standard(s) for the abutting roadway(s) due to inadequate lot frontage, or the lack of alternative access where smaller lots are proposed.

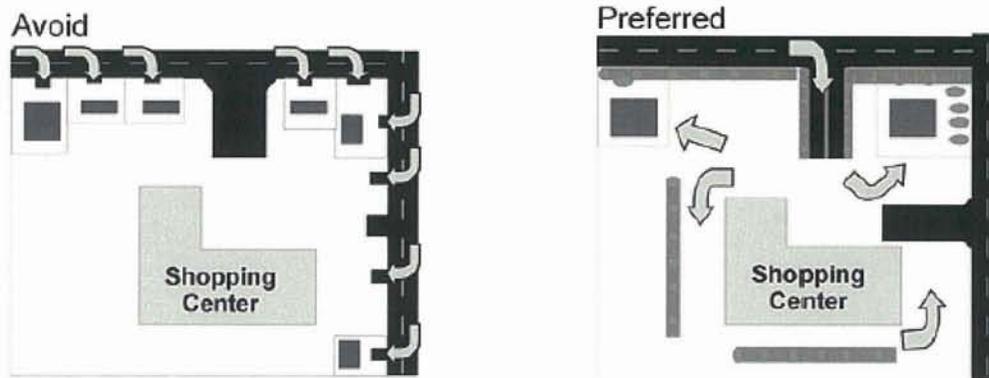
All lots and parcels that are proposed on or after the effective date of this ordinance must be reviewed for conformance with this section by the jurisdiction where they are proposed *and approved, prior to being recorded in the property records of Leon County.*

Another important provision common to most subdivision ordinances is a requirement that residential subdivisions on major roads provide access to individual lots from a local street rather than the major arterial. Most communities require all new lots to have access to a public road and to meet minimum lot size and frontage requirements. Reviewing new lots for conformance with these provisions is an opportunity to evaluate whether the proposed lots should provide for alternative access in accordance with other local policies. A streamlined review process for lot splits and other minor subdivision activity that may otherwise be exempted from subdivision review helps assure that lots have appropriate access, without placing an unnecessary review burden on the property owner.

4.7.10 Unified Access to Shopping Centers

4.7.10 Unified Access to Shopping Centers

Another alternative access issue relates to shopping center outparcels – lots created along thoroughfare frontage of shopping center sites and leased or sold separately due to their high value location. If treated separately in development review and site planning, these lots could each have individual driveways on a major road, sometimes with no internal connection to the surrounding development resulting in a great number of conflict points.



Promote Internal Access to Shopping Center Outparcels. (FHWA) 2000.

To avoid this problem, local governments can establish a requirement that properties consolidated for development or those under common ownership, will be treated as one property for the purposes of access review. Regulations should also require out parcels to be tied into the on-site circulation system of the larger shopping center.

5.0 Land Use

5.1 Housing Characteristics

In 2000, the housing census data states that there were 1516 housing units within the Town including the Village. A housing unit is the living portion of a building and is included in structures such as single and multiple family dwellings, apartments, and mobile homes. In the same year, there were 790 owner-occupied housing units. These represent approximately 52 percent of the housing units in the Town, including the Village. The remaining housing units are rentals.

The age of the housing structures in the Town will help determine what units may have to be replaced or need major renovations to comply with building code safety standards in the future, or may simply be left vacant if not already due to the recent trend of people's desires to move into more modern homes. Below is a list of the age of housing structures in the Town.

Structures Built in the Town of Aurelius (including the Village)	
Year Housing Structures Built	Number of Housing Structures
1999-2000	4
1995-1998	53
1990-1994	125
1980-1989	126
1970-1979	140
1960-1969	161
1940-1959	275
1939 or earlier	632

As seen above, the number of new housing units being built in recent years has declined quite rapidly, which enforces an earlier finding that, unless triggered by new growth in the commercial or industrial sectors, the Town's residential base will likely continue to decline or stay as is until outside populations find a reason to move to town. However, recent commercial proposals may have the potential to bring new demand for residential development into the Town's rural areas. This growth potential could mirror growth currently being generated in the Town of Sennett and planning should recognize this growth potential throughout the planning horizon.

In 2000, housing values for the Town, including the village, had an estimated median value of \$ 73, 275. The median housing value for the Village was slightly lower at an estimated cost of \$72,000.

5.2 Existing Land Use

The purpose of this land use analysis is to review and document existing land use patterns at a broad scale within the Town and the primary study area around the Finger Lakes Mall and along the Route 5 and 20, Clark Street corridor. Land Use planning policies within the Town were also examined. In addition, planned and proposed developments were reviewed. GIS parcel-based data was incorporated into this review for the purposes of inventorying patterns of land use and calculating percentages based on 2004 data.

For the purposes of producing a Corridor Plan as Phase I of the overall Comprehensive Plan, the land use analysis will keep data specific to the primary Phase I study area before incorporating data at a town-wide scale.

5.3 Corridor Study Area

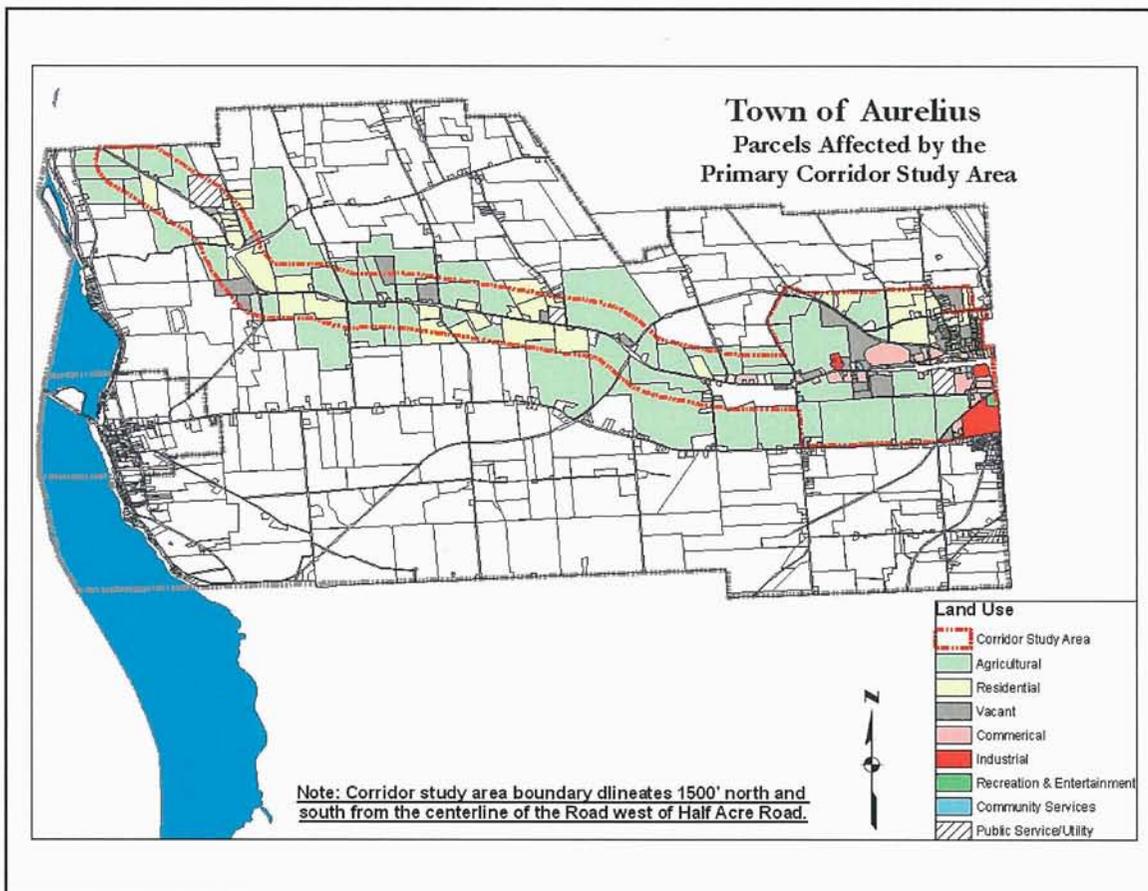
As the primary growth area of the Town, this section will focus on land use patterns along the Route 5 and 20, Clark Street Road corridor with commercial and industrial uses being the primary focus.

The development and growth of a community's commercial and industrial economy is influenced by several factors. Among these factors are:

- regional location;
- existing commercial and industrial development patterns;
- characteristics of the community population;
- availability of adequate sites for future growth, and,
- the existing transportation system.

All of these factors are influenced by or have an influence on existing land use patterns within the Town and primary corridor study area. An assessment of existing commercial and industrial development patterns within the corridor study area will help understand future areas for growth and where improvements to the transportation network should be made in order to handle such growth.

The map below shows the physical land use patterns that currently exist along the Route 5 and 20, Clark Street Road corridor and around the Finger Lakes Mall area.



Existing Land Use on parcels Affected by the Primary Corridor Study Area

The Primary Corridor Study Area boundary is defined as the area immediately adjacent to the Finger Lakes Mall and that area that encompasses 1500 feet north and south of the centerline of the Route 5 and 20, Clark Street Road corridor. Currently there are 37 lots within the primary study area shown above that are designated for

commercial use. Of the 300 parcels affected by the primary study area boundary, commercial use represents only 12 percent of that area while industrial uses represent just more than one percent with only four parcels being used for industrial purposes.

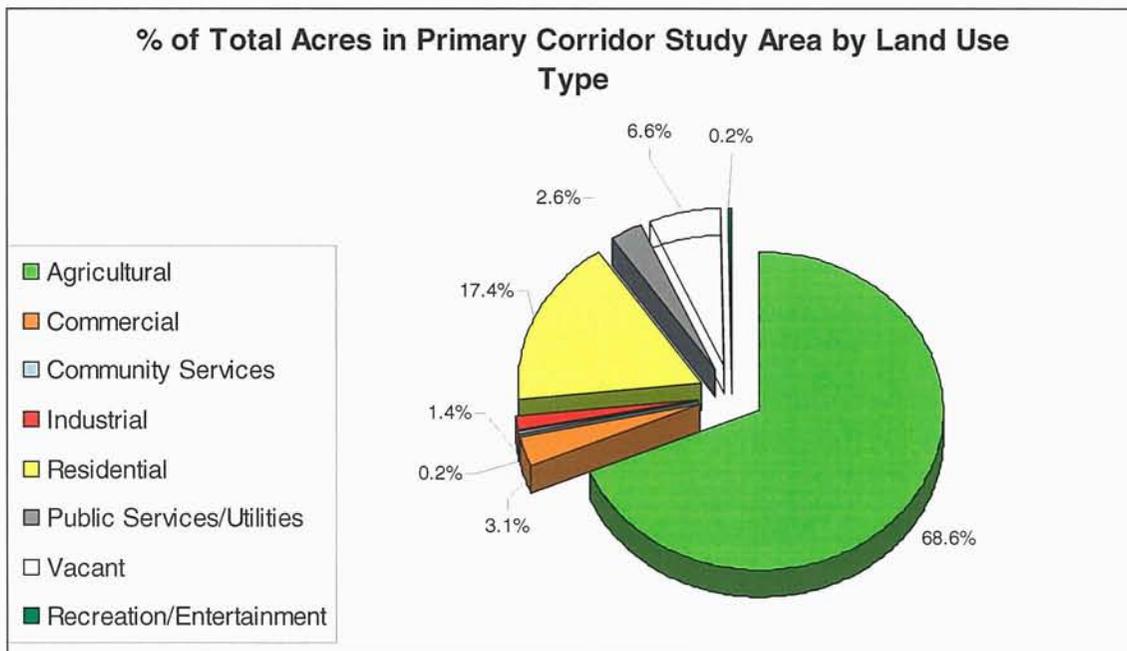
With the exception of a couple of small commercial business scattered along the length of this corridor, all of the commercial and industrial activity is centered adjacent to the Finger Lakes Mall portion of the primary corridor study area. There is a small cluster of commercial businesses at the intersection of the corridor and Half Acre Road, a few to along the corridor west of the Half Acre intersection, with the balance of commercial activity located to the south and east of Finger Lakes Mall.

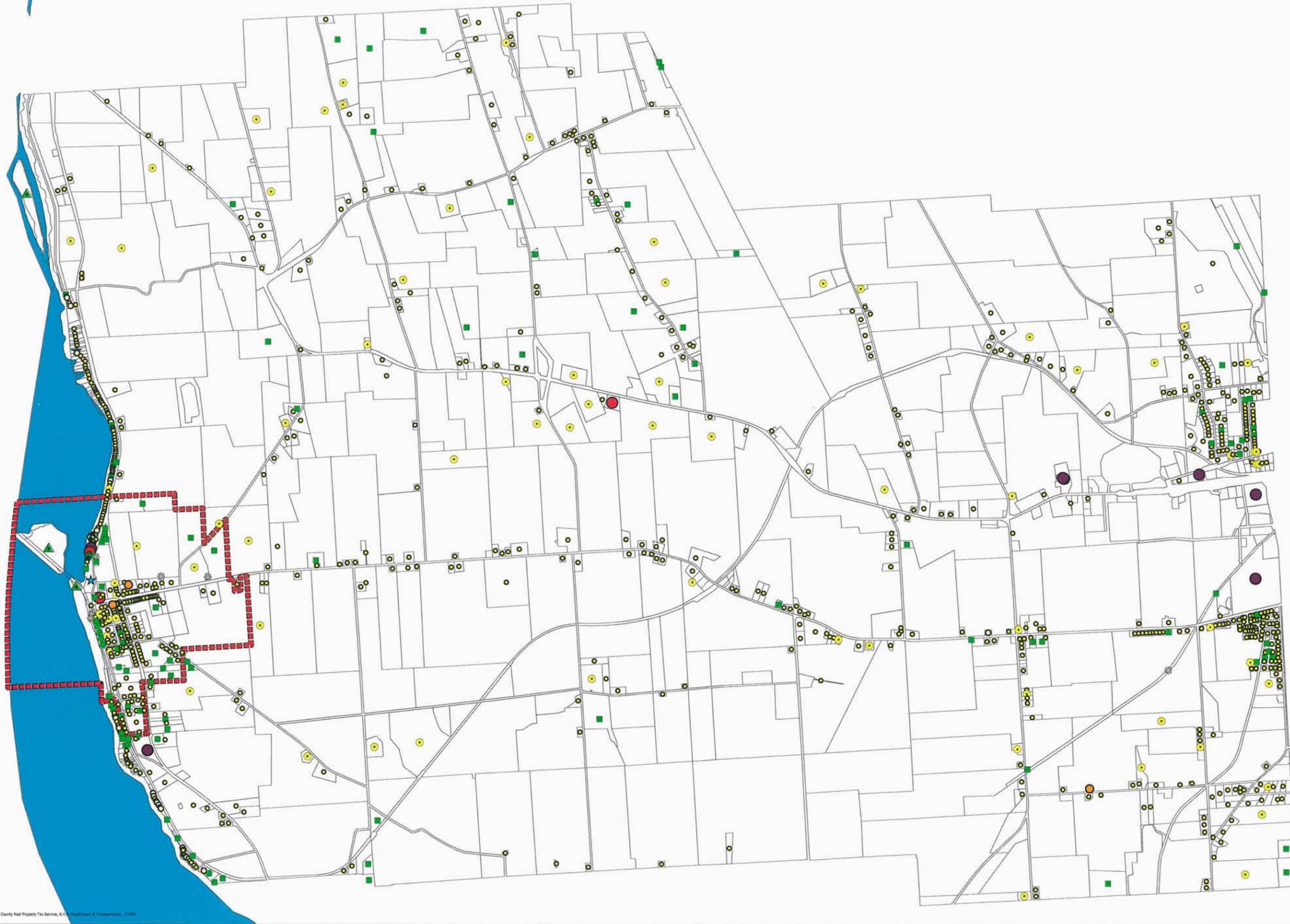
There are a total of six parcels used for industrial activity in the entire Town, including the Village of Cayuga, four of which are located in the Primary Corridor Study Area. General Electric accounts for most of the 71 total acres designated for industrial use within the corridor study area. In fact, all of the industrial properties within the corridor study area are located adjacent to Finger Lakes Mall east of Half Acre Road.

Fifty three (53) parcels (18 percent) of the 300 total parcels affected by the Primary Corridor Study area are classified as agricultural use. A high percentage of lands adjacent to Finger Lakes Mall as well as those that run along the length of the corridor are currently designated for agricultural land use purposes. Eighteen percent of the total parcels within this primary study area accounts for 67 percent of the total acreage in the same area. Other primary land uses within the corridor study area are either residential uses on large lots or lands classified as vacant. Much of the vacant lots are large lots located immediately adjacent to the Finger Lakes Mall to the north and south of the corridor. West of Half Acre Road, many of the parcels not used for agricultural purposes are primarily classified as residential or vacant. There are currently 135 residential lots used for residential purposes that accounts for approximately 20 percent of the total acreage in the study area while there are 48 lots consisting of about 6.5 percent of the total acreage. This means that many of these parcels are very large lots, many of which are not actively farmed, making them desirable for residential subdivisions or big-box retail due to their location relative to the Towns primary transportation route.

North of Finger Lakes Mall is an established suburban density of residential development that is oriented toward their prospective local roads which surrounds a fair amount of open space. This area would be a strategic location for future residential development providing the neighborhood easy access, with the proper improvements to the transportation system for residents to be able to walk to the mall and other future commercial properties within the area. Below is a table and chart illustrating the breakdown of land use classifications within the primary corridor study area along the Route 5 and 20, Clark Street Road corridor in the Town of Aurelius.

Breakdown of Land Use by Total Number of Parcels and Total Percentage of Acreage for Primary Corridor Study Area				
Land Use	No. of Parcels	% if Total Parcels in Town	No. of Acres	% of Total Acres in Town
Agricultural	53	18%	3357	67%
Commercial	37	12%	149	3.00%
Community Services	6	2.00%	10	0.20%
Industrial	4	1.30%	71	1.40%
Residential	135	45%	825	17%
Public Services/Utilities	10	3.30%	128	2.50%
Vacant	48	16.00%	317	6%
Recreation/Entertainment	3	1.00%	9	0.20%



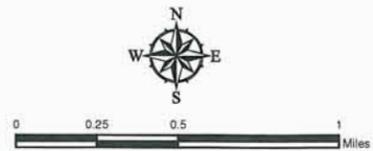


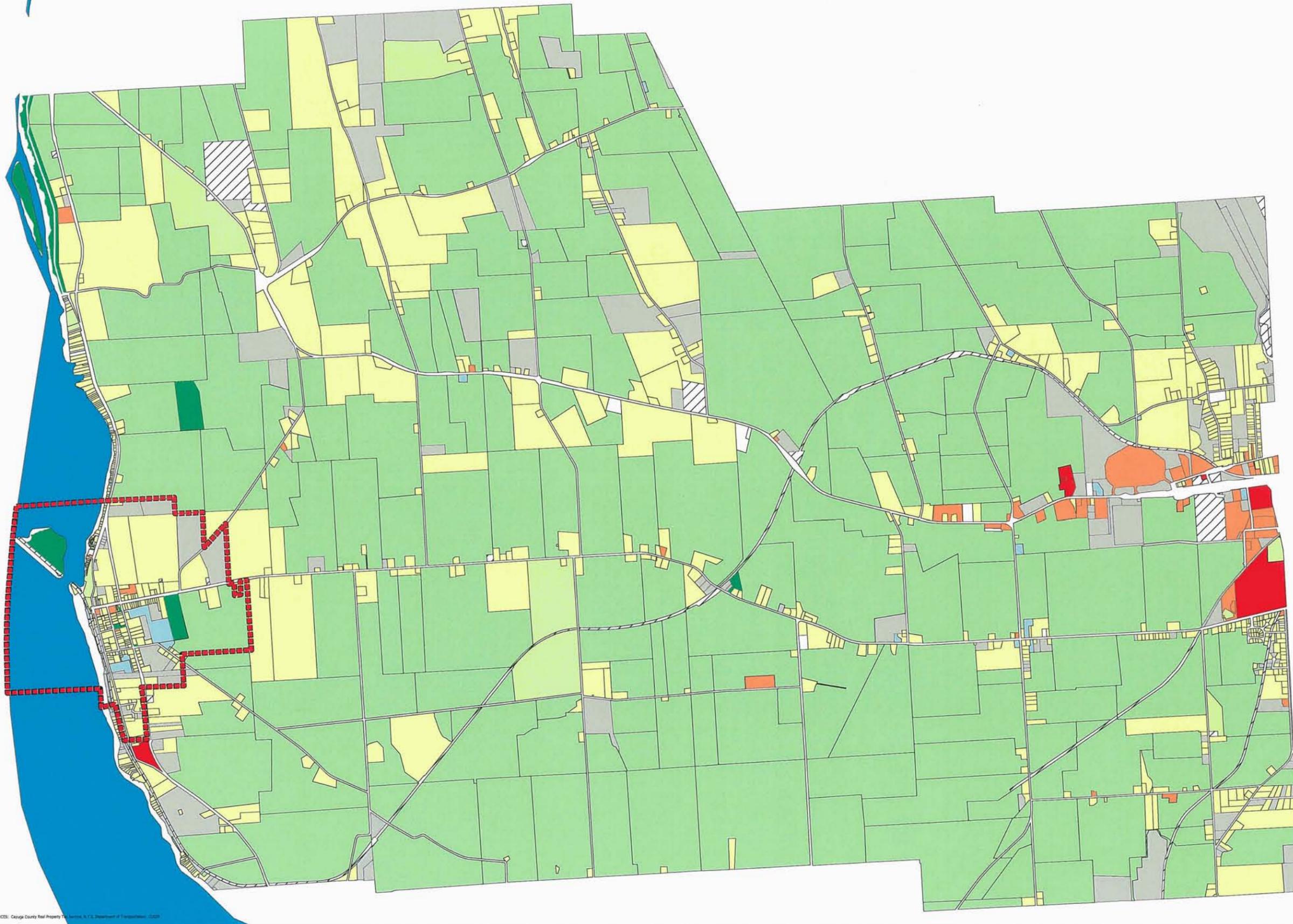
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Property Classification

- Industrial
- Commercial
- ★ Commercial Marina
- Residential - Single Family
- Residential - Two Family
- Residential - Rural
- Residential - Seasonal
- Commercial - Multifamily
- Vacant
- ▲ Public Park
- * Public Service
- Cayuga Lake

SOURCES: Cayuga County Real Property Tax Service, N.Y. Department of Transportation, USGS





Legend

- Agriculture
- Residential
- Commercial
- Industrial
- Conservation / Forested Lands
- Recreation and Entertainment
- Community Services
- Public Services / Utility
- Classified as Vacant
- Not Currently Classified
- Municipal Boundary
- Cayuga Lake

SOURCE: Cayuga County Real Property Tax Service, N.Y.S. Department of Taxation, 2005



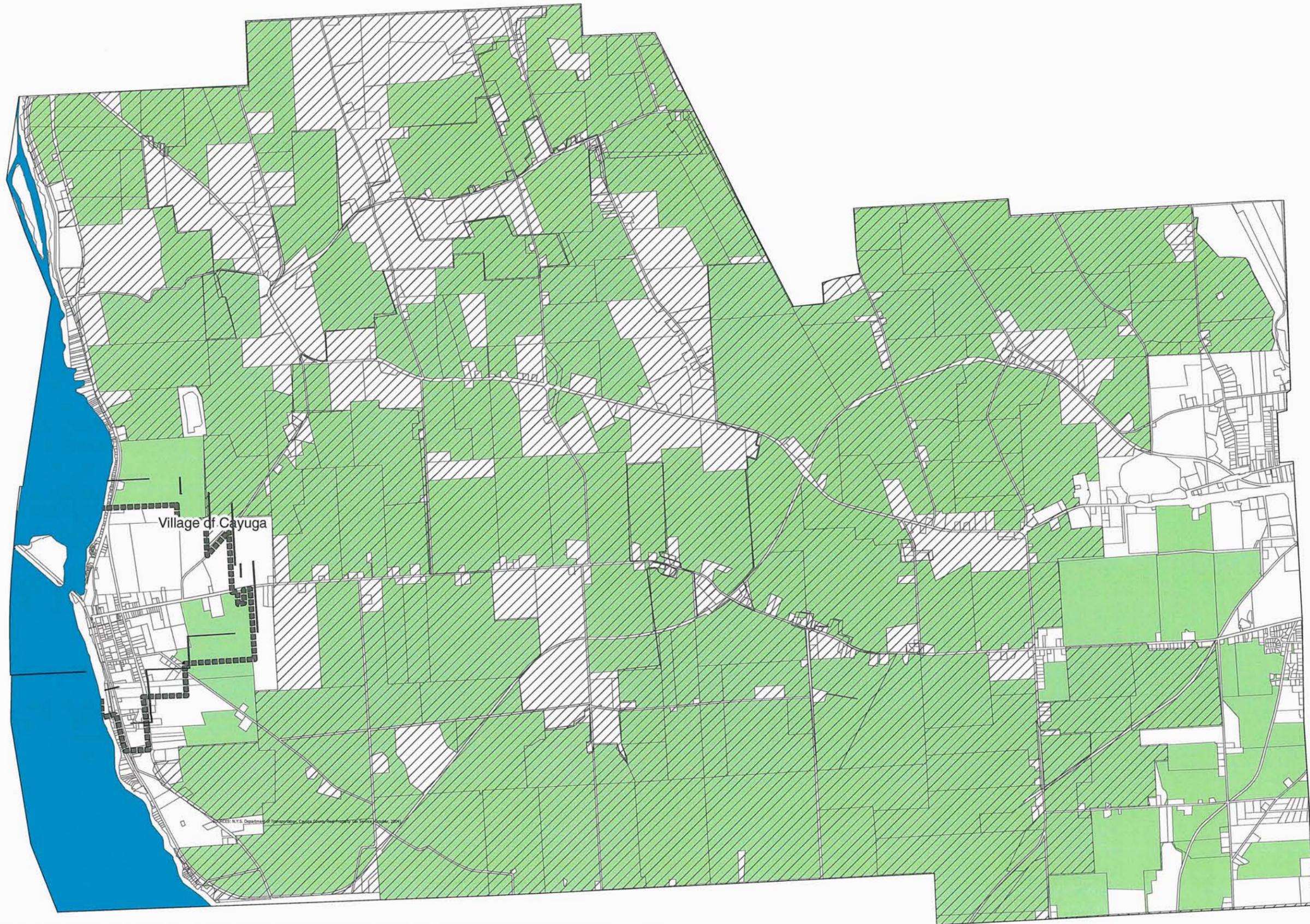
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5.4 Town – Wide

Agricultural

Land uses calculations with respect to the entire Town are proportionate to those uses located within the primary corridor study area. For example, 232 parcels throughout the Town, including the Village of Cayuga are designated for agricultural uses. This makes up only 15 percent of the total parcels in the entire Town however that 15 percent results in 72 percent of the total acreage in the Town for agricultural uses. It is important to understand the potential adverse impact on the transportation network of lands that are designated for agricultural land use that may no longer be used for active farming. The location of large undeveloped lots along the town-wide transportation network could have a lasting adverse impact on the Town if not properly managed, and thus, poorly planned for with respect to any future development on such lots (see **figure 5-3**).

Just because these lots are classified as showing agricultural land use, does not necessarily mean that that is what they are being “used” for. Often times, it is the intent of a property owner to hold on to land until development patterns in the Town make it profitable for that landowner to sell to a commercial or industrial developer for a use that is not compatible for that particular part of the Town or neighborhood. This is why strategic land use planning is necessary to provide the Town with an adequate understanding of how planning for and encouraging growth in certain parts of the Town will have a stronger economic impact on the community.



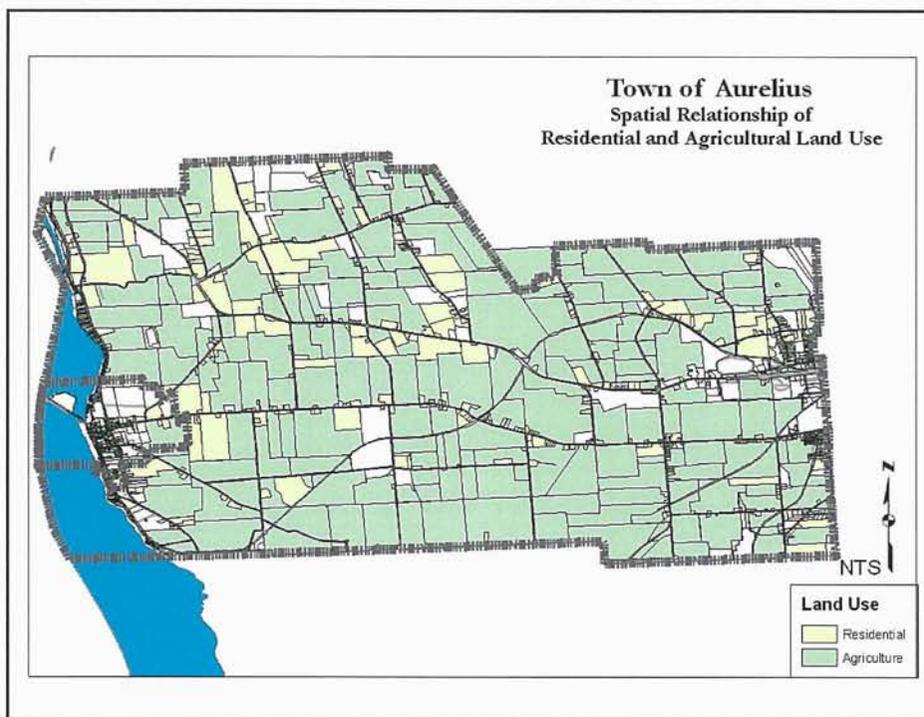
Existing Land Use

- Agriculture or Vacant Farmland
- Agricultural Taxing Districts
- Tax Parcel Boundaries

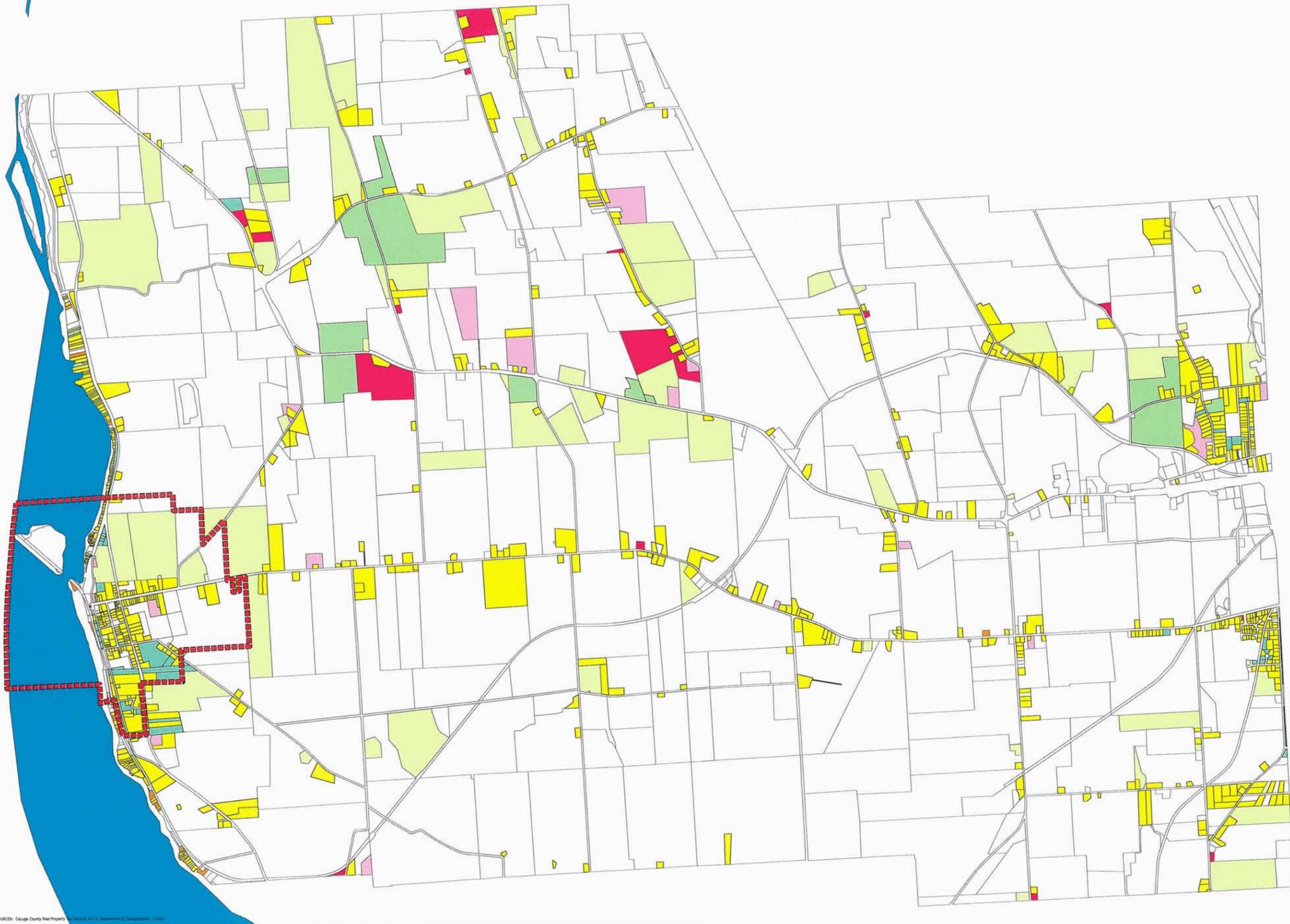
Village of Cayuga

Residential

Residential land use patterns in the Town exhibits the form of typical rural residential strip development. Much of the Towns residential stock is located along its transportation network with no real presence of any cohesive neighborhood outside of the Village. The intersection of Half Acre Road and Genesee Street has taken on the form of what appears to be an attempt at the establishment of a rural hamlet that never materialized in its capacity to function as such. Much of the residential lots in the eastern part of Town within close proximity to the City of Auburn are of smaller lots sizes than those in the western part of Town (**figure 5-4**).



Map illustrating spatial relationships of residential and agricultural land uses.



Legend

-  Municipal Boundary
-  Single Family Residence
-  Two Family Residence
-  Three Family Residence
-  Rural Residence
-  Seasonal Residence
-  Mobile Home
-  Residence w/ Multiple Use
-  Vacant Residential Land
-  Accessory Residential Land
-  Cayuga Lake
-  Tax Parcels

SOURCE: Cayuga County Real Property Records, N.Y.S. Department of Taxation, 2005

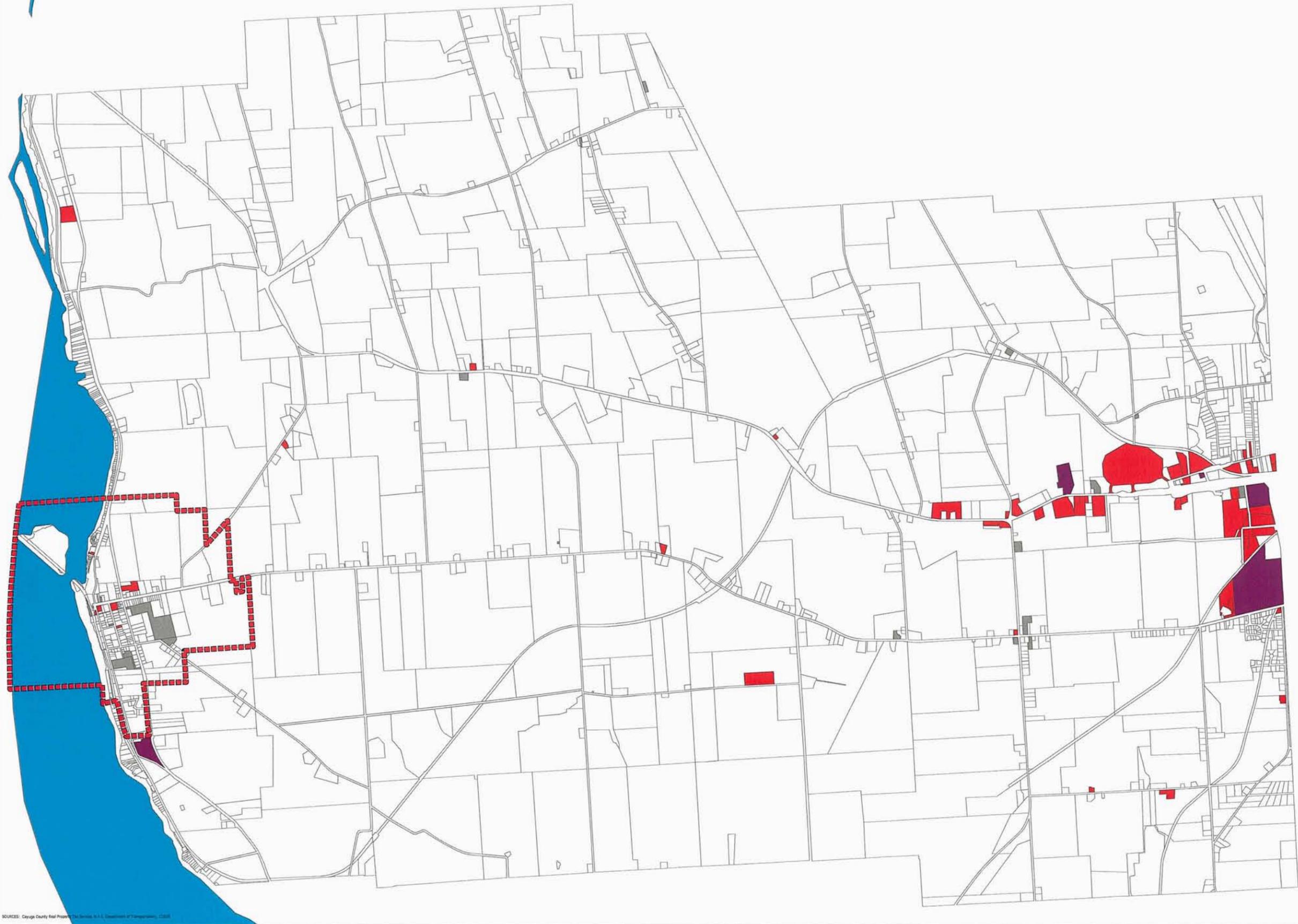
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The Town of Aurelius has 902 parcels (58 percent) of its total land coverage classified as residential land use. That is almost 700 more parcels for residential use than agricultural use, however the total acreage only equates to approximately 2925 acres (15 percent), which means that residential lots in the Town of Aurelius contain an average of approximately 3.25 acres. This may seem an excessive amount of acreage on average for residential use per lot considering the size and number of lots that are located along the Town's local road network. However, that figure indicates that there are many parcels that are also used for single-family residential purposes that sit on lots ranging in size from five to ten acres and even more in some instances. Many of these large residential lots are located in the central and northwestern portions of the Town as seen on the map above.

Commercial/Industrial

Existing commercial and industrial land uses within the Town of Aurelius are located either along or within the primary corridor study area or in the Village of Cayuga. For the purposes of this inventory, refer to the Corridor Study Area section of the land use portion of this report as it relates to most of the commercial and industrial uses within the Town. Outside of the primary corridor study area around Finger Lakes Mall, there are a few scattered commercial sites along Pinkney Road and Genesee Street Road. The spatial location of commercial and industrial sites can be seen in **figure 5-5**.

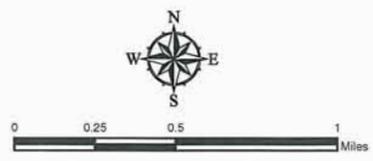
The location and siting of the mall and other commercial and industrial properties within close proximity of the City of Auburn creates an opportunity for the Town to provide services to residents of Auburn that differ from those within city limits. It also limits the travel distance residents will have to endure from the east to get to the mall and the Bass



Legend

- Commercial
- Community service
- Industrial
- Cayuga Lake
- Tax Parcels
- Municipal Boundary

SOURCES: Cayuga County Real Property Tax Service, N.Y.S. Department of Transportation, CS&ES



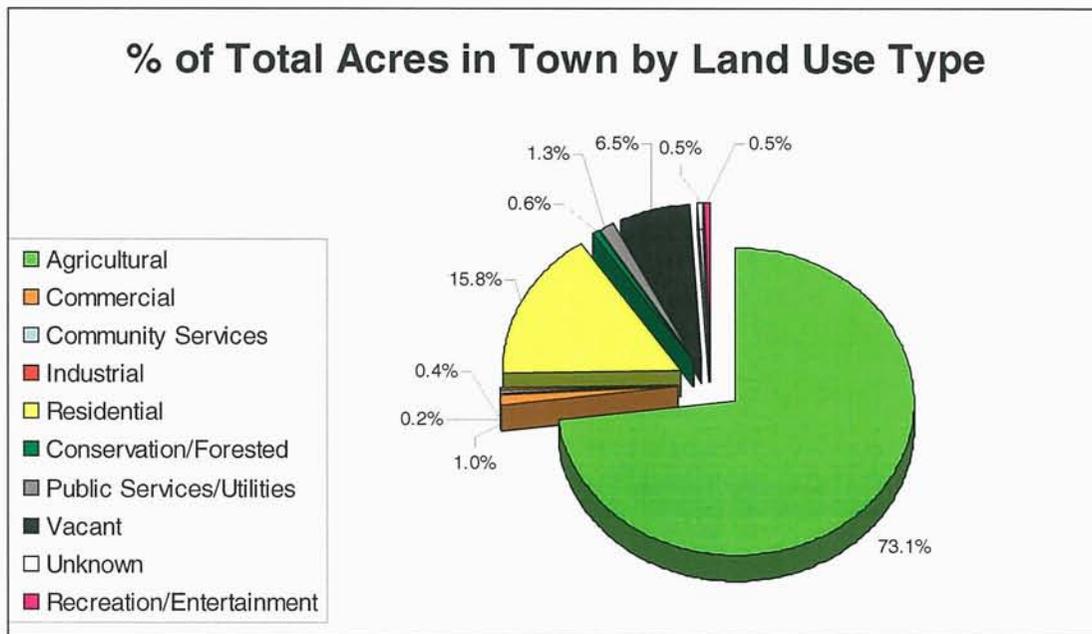
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Pro Shops and any future development that will occur as spin off development. This proximity to the City of Auburn, coupled with the amount of undeveloped agricultural and vacant land around the mall and the current available capacity of public sewer and water services makes the area around the mall very desirable to developers. Planning accordingly for a mix of uses that include commercial, residential, industrial, recreation and open space can establish a unique setting or "district" that acts as a Town Center for not only residents of the Town, but for those who live in the City of Auburn and other nearby municipalities.

The map above also shows vacant lands that are typically classified as either vacant residential, commercial, or industrial parcels. Adjacent land use often dictates what type of vacant use a particular parcel is. For example, those vacant parcels immediately surrounding the mall are classified as vacant commercial use, whereas those large lots in the northwest portion of the Town are classified as vacant residential. Outside of agricultural and residential land use in the Town, vacant land occupies 6 percent of the land – the third largest percentage of land dedicated to one classification. There are a total of 235 vacant parcels in the Town including the Village of Cayuga which equates to approximately 1195 acres.

Other land uses in the Town include Community Services, such as schools, government buildings, fire houses, and church's; Recreation and Entertainment uses, Public Service/Utility uses, and Conservation/Forested land uses. Below is a table summarizing all of the land uses in the Town of Aurelius including the Village of Cayuga and a chart illustrating the breakdown of land use by total percentage of acreage.

Breakdown of Land Use by Total Number of Parcels and Total Percentage of Acreage				
Land Use	No. of Parcels	% if Total Parcels in Town	No. of Acres	% of Total Acres in Town
Agricultural	232	15%	13464	72%
Commercial	54	3%	177	1.00%
Community Services	20	1.30%	39	0.20%
Industrial	6	0.40%	79	0.40%
Residential	902	5%	2925	16%
Conservation/Forested	17	1%	114	1%
Public Services/Utilities	46	3.00%	239	1.30%
Vacant	235	15.50%	1195	6%
Unknown	22	1%	467	1%
Recreation/Entertainment	10	0.60%	90	0.50%



5.5 Existing Zoning

Zoning is used to control the location of different land uses in a community. Historically, zoning was established to regulate the use of land so one use does not adversely impact the use of another. It was not the intention of zoning to completely

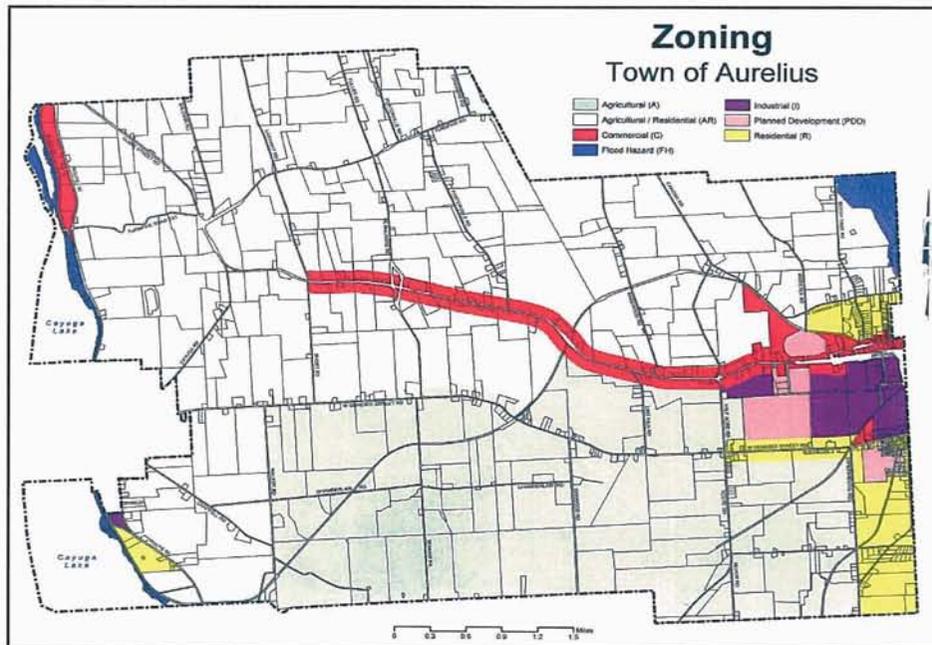
isolate land uses from one another to the point where neighborhoods and commercial districts are pockets within themselves, creating voids of any sense of place. The establishments of zoning regulations are intended to ensure different land uses adjacent to one another coexist in harmony with one another and the environment upon where they are located.

Zoning is a tool to help restrict the types of uses to which land may be put and the intensity of the development. By regulating location, use, and density (intensity), zoning can have a significant impact on protecting critical features in a community like Aurelius, such as agriculture, rural hamlets and villages, and historical or critical environmental areas.

5.5.1 Corridor Study Area

One of the primary reasons B&L has been retained to conduct a thorough inventory and analysis and ultimately to produce a Corridor Study for the Route 5 and 20, Clark Street Road corridor and Comprehensive Plan for Aurelius is to provide alternative solutions to existing conditions that are the result of the current zoning ordinance and subsequent map.

According to Aurelius's 1970 Town Comprehensive Plan, it was strongly recommended that the zoning ordinance did not recommend commercial strip development. The current zoning deliberately encourages exactly that – a suburban commercial strip seen in many communities across upstate New York and the entire country. Currently, the three primary zone district classifications within the corridor study area are (C) Commercial, (PDD) Planned Development District, and (I) Industrial. Finger Lakes Mall and land south of the corridor are zoned for PDD. On the south side of the corridor, those PDD parcels are flanked immediately to the east and west by Industrial zoned land. All of the land zoned commercial in the primary corridor study area are those vacant commercial lands that surround the mall, and parcels, or portions thereof encompassed by 500 feet north and south of the centerline of the corridor from the eastern Town line to the Short Road intersection (see the following map).



Existing Town Zoning Map

The purpose of the PDD is “to provide for flexible land use and design regulations through the use of performance criteria and land impact considerations so that developments incorporating individual building sites, common property, singular land use, and mixed uses may be planned and developed as a unit...” Finger Lakes Mall is zoned as PDD as is approximately 220 acres across from it on the south side of the corridor. Within the primary corridor study area east of Half Acre Road, land zoned for PDD is surrounded by either commercial or industrial zoning, with approximately 200 acres zoned AR on the northern side of the corridor between the mall and Half Acre Road. The potential environment that can be created by the concentration of these intended land uses in one area of Town sets the stage for creating an economic hub adjacent to the City of Auburn. Adjustments to the current zoning, however, will need to be undertaken to ensure that commercial development does not spill out over the length of the corridor as is encouraged by existing conditions. Design standards and lot dimensions will also need to be revised to reflect a style of design that incorporates neo-traditional planning principles into the layout and siting of future development within the primary corridor study area around the

Finger Lakes Mall. In order to create an environment that is attractive to the automobile and pedestrians, internal circulation patterns, pedestrian linkages to areas outside of the primary corridor study area, and access management controls will need to be implemented in the design and layout of future development sites.

Land along the corridor zoned for residential use is regulated by the (A) Agricultural and (A/R) Agricultural/Residential districts.

5.5.2 Town – Wide Dimensional Requirements

TABLE OF DIMENSIONAL REQUIREMENTS

Dist.	Min. Lot Size	Min. Lot Width (feet)	Min. Front	Yards (feet) Side	Rear	Max. Build Cover	Max. Build Height
A	40,000 Sq. Ft.	100	50	25	20	10%	35 Ft.
AR	40,000 Sq. Ft.	100	50	25	20	10%	35 Ft.
*R	20,000 Sq. Ft.	100	35	25	20	30%	35 Ft.
*C	20,000 Sq. Ft.	75	35	15	20	30%	35 Ft.
I	1 Acre	150	100	40	40	35%	45 Ft.
*PH	20,000 Sq. Ft.	100	50	25	20	10%	35 Ft.

* Minimum Lot Size of 20, 000 sq. ft. assumes that the lot is served by public sewer and water. Lots in these zones not served by such utilities shall meet the standards of the AR District.

NOTE:

Lot sizes are subject to approval and possible revision by the Cayuga County Health Department but shall not be less than the dimensional requirements stated herein.

5.6 Subdivision Regulations

5.6.1 Town – Wide

Although the 1993 Zoning Law identifies Town Subdivision Regulations, there is no evidence that they were adopted and recorded according to the Town Law of New York State. Therefore, the Town of Aurelius currently has no subdivision regulations in force to address the future subdivision of land outside of the Town Commercial District. This condition is extremely detrimental to the Town particularly if spin-off commercial development leads to further residential land subdivision in the future. This potential presents a significant obstacle to achieving the Town goals as outlined in this corridor study and subsequent goals and objectives of the Town Comprehensive Plan to follow.

5.7 Community Facilities and Services

5.7.1 Schools

The Cayuga Elementary School is part of the Union Springs Central School District. It is the only school facility currently located within the Town of Aurelius. The Union Springs Central School District has four schools located within three buildings. The High School, grades 9-12, is located in the secondary building at 239 North Cayuga Street in Union Springs, N.Y. Other facilities in the district include:

- The Middle School, grades 7 and 8, is also located in the secondary building.
- A.J. Smith Elementary, grades 4-6, is located at 26 Homer Street; Union Springs, NY.
- Cayuga Elementary, grades K-3, is located at 255 Wheat Street; Cayuga, NY.

All students in the Union Springs School District begin their educational experience at Cayuga Elementary, located in the Village of Cayuga. It is the primary facility for kindergarten, first, second and third grade students. To meet the diverse needs of these students the school district offers a choice of a traditional graded or multi-age class, for all students. These programs have different structures that emphasize integrated English Language Arts and progressive mathematics programs.

Some statistics of the Cayuga Elementary School facility:

Estimated Student Enrollment	335
Number of Teachers	21
Number of Paraprofessionals	13
Other Professionals	2

5.7.2 Fire Protection and Emergency

There are two firefighting and life safety facilities located in the Town of Aurelius. The "East Fire House" is located approximately 2/10 of a mile south of the intersection of Route 5 and 20 and Half Acre Road. The "West Fire House" is located on Route 5 and 20 (Clark Street Road) approximately 5 miles west of the Auburn municipal boundary.

The department is all-volunteer and provides the Aurelius community with local firefighting, BLS Emergency Medical Service, ALS Emergency Medical Service and Vehicle Rescue. The department also has search and rescue capabilities.

5.8 Land Use Trends

Future development is inevitable; however, its negative impacts on the surrounding environment and region are not. Unbridled growth threatens air and water quality, clogs roads and highways, and results in tax increases to cover additional costs of servicing sprawling development. Proper land use planning along the Route 5 and 20, Clark Street Road corridor can help preserve and enhance irreplaceable resources

and sense of place by strategic siting of commercial and industrial land uses while minimizing negative environmental and community impacts of growth. This section explores recent national development trends with respect to land use planning and the Town of Aurelius.

5.9 Access Management Principles in Subdivision of Land Along Roads

Subdivision regulations are typically implemented as added measure to help protect communities and ensure building lots provide a wholesome living environment for future residents. They help ensure: proper street layout in relation to existing or planned roadways; adequate space for emergency access and utilities; adequate water, drainage, and sanitary sewer facilities; and appropriate site design.

A Towns subdivision ordinance should establish: the administrative review and evaluation procedure for processing conceptual, preliminary, and final plats; information that must be included on the plat; design principles and standards for lots, blocks, streets, public places, pedestrian ways, and utilities; required improvements, including streets, sidewalks, water, sewer, and curbs and gutters; and financing and maintenance responsibilities. This section discusses recent trends regarding the subdivision of land as it relates to infrastructure, site design and transportation.

Driveway Spacing Requirements

Spacing standards limit the number of driveways on a roadway by mandating a minimum separation distance between driveways. These driveways help reduce the potential for collision as travelers enter or exit the roadway, encourage sharing of access for smaller parcels, and can improve community character by discouraging haphazard placement of driveways along corridors such as the Route 5 and 20, Clark Street Road corridor. Driveway spacing intersections and corners should provide adequate site distance and response times and be mindful of permitting adequate stacking space.

Driveway spacing standards should be tied to the state DOT access classification and driveway permitting standards for the state highway system. Driveway spacing standards on other roadways may be tied to the posted speed limit or functional classification of the roadway, with the minimum distance between driveways greater as speed limits increase. Some communities also provide variable spacing depending upon the land use intensity of the site served and that of adjacent sites.

Outparcel Requirements

Outparcels are lots on the perimeter of a larger parcel that abut a roadway. Outparcel regulations are adopted for commercial corridors to foster coordinated on-site circulation systems that serve outparcels as well as interior development, thereby reducing the need for driveways on an arterial. Outparcel regulations may include standards governing: the number of outparcels; minimum lot frontage; access; unified parking and circulation; landscaping and pedestrian amenities; building height, coverage, and setback requirements; and signage.

Corridor Overlay Zones

Overlay zones are a growing method for managing access along commercial corridors. The technique is used to overlay a special set of requirements onto an existing zoning district, while retaining the underlying zoning and its associated requirements. Text that specifies standards for the access management overlay district is included in the land development (or zoning) code and then corridors are designated on the zoning map. Overlay requirements may address any issues of concern, such as joint access, parking lot cross access, reverse frontage, driveway spacing, and limitations on new driveways.

Sample regulations for the Grand Traverse Bay Region in Michigan apply to the area 300 feet on either side of the designated corridor, establish minimum lot frontage of 400 feet, and permit only one access per 400 foot lot (Wyckoff, M., Sept. 1992). Service drive provisions freeze the number of driveways on a designated corridor to one per existing parcel having a single tax code number at the date of the amendment. When subsequently subdivided, all parcels must provide access via subdivision roads, other private or public roads, or by service drives in conformance with specified design requirements.

Commercial driveway location and spacing standards are provided for regional arterials and other types of roads. Parcels with less than 100 feet of frontage may be permitted a driveway, but in certain cases a shared driveway or alternative means of access may be required. Requirements for minimum intersection or corner sight distance are tied to AASHTO guidelines and somewhat lower standards tied to the posted speed limit are provided for special circumstances, such as inadequate frontage.

5.10 Planning in a Regional Context

Municipal boundaries are arbitrary and the Town should explore efforts to plan beyond its boundaries, particularly the eastern and western Town lines. Not only is spin-off development likely as a result of improvements made to Finger Lakes Mall and the opening of the Bass Pro Shops, but the primary corridor study area's proximity to the City of Auburn also plays a unique roll in the success of a future commercial and industrial environment within the Town.

Obviously, the western edge of Town and the Village of Cayuga has a natural border – Cayuga Lake. Communities are turning back to their waterfronts, reclaiming land, repairing damage inflicted from past uses, and bringing people to the edge to live, work, and play. Waterfronts today are starting to be rediscovered and are embracing the Town's along their banks. Towns are starting to realize that a healthy waterfront can be

an incredible asset and boost quality of life, especially in an urban village environment. Waterfront development along with parks and open space can protect and even improve the health of lakes if designed and implemented well.

The Town of Aurelius is presented with a unique opportunity to think about a vision for how healthy community waterfront developments should look and function within the fiber of the entire Town. By incorporating ecological and economic goals, the Town could start to benefit in many ways from its unique edge characteristics. It should be considered as part of the Phase II Comprehensive Plan as to how to integrate processes that normally drive waterfront developments and revitalization efforts in the community.

Strategic regional land use planning will also help Aurelius concentrate efforts on preserving an appropriate amount of open space, developing the most viable areas with compatible land uses and accommodating these areas with strategic and cohesive transportation plans and other services.

Establishing inter-municipal relationship with the county and adjacent towns will help regulate development along the Town's boundaries at the regional scale. With concentrated efforts from neighboring Towns and the County, official can work in concert to maximize any future economic development opportunities within the region.

5.11 Consideration of Environmental Constraints and Agriculture

The consideration of environmental constraints in land use planning efforts is commonly the first step in the planning process pertaining to any type of new development. Identification of areas where vital natural resources and environmental constraints exist can lead to more responsible development plans and locations. Even within a particular project site, some areas may be more suitable for development while others should be left as permanent open space.

New developments that are mindful of environmental features and designed to fit within the natural landscape prove to be more feasible. In the short run, implementation of infrastructure can be less costly when there are minimal major environmental constraints to overcome that require special engineering. In any case, complying with existing environmental features can yield opportunities to create a setting that is appealing to residents, functional, and sensitive to the Town's natural environments. An appealing environment should have a natural effect on economic development as quality of life issues are major economic development enticements.

5.12 Managing Commercial and Industrial Development

The development and growth of a community's commercial and industrial economy is influenced by several factors. Among these factors are:

- regional location,
- characteristics of the community population
- existing commercial and industrial development patterns,
- availability of adequate sites, and
- the existing transportation system

While analyzing various criteria when making decisions regarding future facility locations, communities must consider a number of things, including:

- the type of development that it wants to attract in light of community goals,
- how much land should be planned to accommodate future population,
- where such development should be located, and,
- the development's physical qualities.

Upon determining the character of the desired developments, the community must develop a means for carrying them forth. This section discusses various tools that communities can use in managing commercial and industrial development.

5.13 Manage Areas of Potential Strip Development

As stated earlier in this report, strip development areas are linear patterns of development, primarily commercial, found along major highways and rural arterial roads. Communities are encouraged to conduct a corridor analysis when considering a vision for future development within these areas. The Phase I Corridor Plan of this project is in the process of accomplishing this through various vision planning meetings and workshops. Such an analysis will include a look at the function the Route 5 and 20, Clark Street Road corridor serves, the relationships between it and adjacent land uses, the needs of the area residents for services, and the needs of the motorized and non-motorized public.

Below are some common considerations for making land use decisions that would benefit the entire community and its stakeholders:

- Cluster businesses into shopping districts near major intersections with adequate parking and traditional town planning design principles.
- Develop more intensive uses – mix of commercial, retail, office and higher density residential – to increase the potential for any transit services.
- Revise local zoning ordinances to allow a mix of uses in older, multiple-story commercial buildings. This could be a relevant for the adaptive reuse of any dilapidated buildings within the older Village core.
- Provide adequate off-street parking (i.e., parking between buildings or creating larger lot depths behind buildings).
- Provide for rear access drives linked to parking areas to get turning movements off the main arterial and provide a safe place to travel.

- Implement inexpensive but visible physical changes that will enhance the appearance of the area – scheduled cleanup, lighting, landscaping, façade and site improvements.
- Encourage pedestrian activity by providing street furniture, lighting and walkways within any commercial district.
- Establish uniform signage for both businesses and neighborhood identity through an overlay district.

While some existing strip development areas are wholly within a community, many of them, particularly of major arterials within a region, traverse several communities. Therefore, particularly in the case of Aurelius, the City of Auburn, and the Cayuga County, inter-municipal cooperation and coordination can be of critical importance in taking action to prevent strip development from occurring along the Route 5 and 20, Clark Street Road corridor.

5.14 Pattern Community Appearance with Design Guidelines and Standards

Communities often develop design guidelines and standards to influence not only visual character, but also functionality. Design standards are mandatory – defined by a town's zoning ordinance as the minimum requirements for development. Many communities have set standards by regulating signs, landscaping, and buffering between uses. Design guidelines, which can be used in tandem with design standards, are advisory (i.e., not by law), but are strong recommendations for design of development.

There are several benefits to design guidelines that provide commercial, industrial, and other property owners with an illustration for how to develop their property in a manner consistent with a community's goals. Design guidelines can:

- improve the quality of physical changes,
- protect that value of investment,
- protect existing architectural character,
- act as a base for objective decision-making,
- increase public awareness of architectural quality, and,
- prevent incompatible new construction.

Design guidelines have the added benefit of being flexible in their application, which allows for tradeoffs based on the uniqueness of the given situation. Design guidelines can be used in a number of different settings, including downtown areas, historical preservation districts, and along corridors. For communities such as Aurelius that are concerned with the impact of sprawling big-box developments (i.e., over 25,000 square feet), here are some design guidelines that have typically been used successfully:

- Stay away from long blank walls that discourage pedestrian movement, instead, break up building facades with recesses.
- Place arcades, display windows, awnings, or some other feature to ground-floor facades in order to add visual interest to the structure.
- Make stores accessible to pedestrians and bicyclists by creating several entrances to reduce walking distance from cars where stores border to or more public streets.

- Locate no more than half of the stores parking between the stores front façade and the abutting street.
- Link stores to possible transit stops, street crossings, and building entrances with landscaped sidewalks

5.15 Additional Considerations for Industrial Development

Because of the intensity of development and the nuisances associated with industrial uses, siting of industrial development needs to be carefully considered. Heavy industrial uses should be confined to well defined geographic areas within the community to avoid conflicts with adjacent residential or commercial areas. Some additional considerations when planning for industrial development include:

- provide sufficient infrastructure to support industrial uses
- encourage industrial uses to locate in special districts or industrial parks
- provide existing industrial with room to grow and expand,
- prohibit residential uses from encroaching on existing and planned industrial areas,

Currently, industry is very sparse in the Town of Aurelius. One of the first steps in attempting to build on existing industry is to define the type of industry and business the Town would like to accommodate, especially if industrial uses will be developed in a mixed-use district. How industrial development will impact adjacent land uses as well the local transportation network will also need to be taken into serious consideration when planning for future economic development. The development of the Phase I Corridor Study and the Phase II Comprehensive Plan for the Town of Aurelius is a very important step in identifying these issues.

6.0 Conclusion

The Inventory portion of the Route 5 and 20, Clark Street Road Corridor Study and the Aurelius Community Comprehensive Plan provides the basis for making land use and planning decisions for the benefit of future populations. The utilization of a Geographic Information System for preparing base maps for the project is designed to provide for the proper analysis of existing conditions and environmental constraints to support sound land use policy throughout the Town and Village. It is also prepared as a Natural Resource Inventory for the community to accompany the Environmental Assessment Form as a basis for determining the net environmental impact of the alternatives considered during the planning process. This inventory may be referred to when making land use decisions during future updates and revisions to the Goals, Objectives and Strategies outlined in Volume I of the Plan and the Route 5 and 20 / Clark Street Road Corridor Study.