A
Natural Resource Inventory
for the Town of
EDEN, N.Y.

Prepared by
the
Eden Conservation Advisory Board

Assisted by
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and
Paul Rutledge, Ph.D Ecologist
and the
U.S. Department of Agriculture
Natural Resources Conservation Service

September, 1999
Updated June, 2012

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Acknowledgements

The Eden Conservation Advisory Board could not have completed this report without the help of a number of individuals. The project was initiated under the administration of former supervisor Suzanne Bisonette and continued by former supervisor John Tsakos and current supervisor Glenn Nellis. Financial support was provided from general revenues by the town council.

Overall guidance and direction for the project was provided by Eric Gillert, Principal Urban Planner formerly with URS-Greiner consultants. Rick has been involved in this project from day one and has provided considerable advice and support on an ongoing basis.

Members of the Eden Conservation Advisory Board contributed to volunteering their time and talents to this project. Many helped directly by authoring sections of the Natural Resources Inventory or by providing word processing services.

Agencies that provide important information include:

The New York State Department of Environmental Conservation
The Erie County Department of Environment and Planning
The Town of Amherst, New York (Planning Department)
The U.S. Department of Agriculture, Natural Resources Conservation Service
The Erie County Soil and Water Conservation District
The Western New York Land Conservancy

FOREWORD

Article 12-F of the New York State General Municipal Law provides the legal basis for local legislative bodies of any city, town or village to create a conservation advisory council whose primary function is "to advise in the development, management and protection of its natural resources." Another important function of the board is to keep an inventory and map of all open areas within the town to obtain information regarding the proper utilization of such open lands. These two mission statements provide the impetus for two separate but interrelated studies: the Natural Resource Inventory and the Open Space Index (under separate cover).

The Natural Resource Inventory (NRI) involves collecting information on and mapping of locally relevant physical resources such as: geology, geography, soils, surface and groundwater, land use and atmospheric conditions. The NRI has two basic purposes: (1) to serve as a local planning and project review tool and (2) to provide information for the Open Space Index. The NRI enables a conservation commission to act as an affective guardian over the local environment and to suggest alternative land uses.

The Open Space Index (OSI) consists of an Open Area Map which identifies open areas by current land use and an Open Area Inventory which describes and lists these open areas.

Some may question the need to concern ourselves with the conservation of open space at this time. The town of Eden Comprehensive Plan Study completed 1974 stated the following: "Eden remains essentially a rural community with large amounts of open space. However, since very little land (with the exception of roads) is in public ownership, most of the town is open to development based upon private decisions. Given the steady growth of the past, open

space could become scarce at least in the urban section." This same report recommended that "areas should be conserved because they have physical limitations to development (steep slopes, poor soil conditions) possess scenic, historic or aesthetic values or generally contribute to an orderly growth pattern for the community."[1]

An Open Space Index for Erie County, New York stated the following "Whether an area has a densely developed urban character or a natural rural character, the need for open space is important. In the city, open space values are primary social—the provision for recreation, aesthetic qualities, defining neighborhoods and communities, or placing a buffer or screen between conflicting land use areas. In rural areas, open space values have more economic implication—the protection of prime productive lands for agriculture, forest and mineral resources. Overall, the need for open space is fundamental to the survival of people and nature. Open space values increase with capabilities to retain floodwaters, provide wildlife habitat and reduce noxious gases, dust and noise in the atmosphere."[2]

THE PROCESS

Discussions concerning the need to complete a study of the natural resources and open areas in the town of Eden, N.Y. began early in 1995. Funds were appropriated in the 1996 fiscal budget from the general revenue to hire professional consultants to advise and complete the technical portion of the study.

The Eden Conservation Advisory Board subsequently retained the services of Eric Gillert, Principal Urban Planner with U.R.S Consultants and Paul Rutledge, Ph.D. Consulting Ecologist. It should be noted, however, that the members of the board contributed directly to both the planning and completion of this study. Mr. Gillert has operated in an advisory capacity from the planning stage to the completion of this project. Dr. Rutledge's role has been to author the Land Use/Land Cover Map and to provide technical support as well.

[1] Town of Eden Comprehensive Plan Study. Tryon and Schwarts & Associates Inc. 1974

[2] Technical Report Open Space Index Erie County, New York. Prepared by Ecoplans Inc. Saratoga Springs, New York, November 1974.

Members of the board contributed directly by authoring various section of the Natural Resources Inventory. Maps for this inventory were obtained from various sources including digitized maps completed by the USDA/AmeriCorps GIS & Conservation Technology Team; a 1990 Town of Eden Drainage Study produced by Earth Dimensions, Inc.; the U.S. Department of Housing and Urban Development Flood Insurance Rate Maps; and from digitized maps contained within the town's Geographic Information System.

The Eden Conservation Advisory Board has invited public participation in this study by sharing its meetings with various citizens and groups; by public announcements in the local newspaper; by meeting with community groups; by accepting invitations from private citizens to view their land and by formal presentations at town meetings. The board has also consulted previous studies carried out in this decade that clearly demonstrated that the majority of the citizens of Eden favor the preservation of open space as a way of maintaining both the quality of life we value and our current agricultural economic base. [3], [4]

SECTIONS 1-6: THE NATURAL RESOURCE INVENTORY

The sections that follow consist of a fairly extensive inventory of natural resources that exist in the Town of Eden, N.Y. The kinds of resources inventoried were selected from a guide published by the New York State Department of Environmental Conservation[5]; these include:

SECTION 1. GEOLOGY AND GEOGRAPHY
SECTION 2. HYDROLOGY
SECTION 3. SOILS
SECTION 4. LAND USE
SECTION 5. VEGETATION AND WILDLIFE
SECTION 6. ATMOSPHERIC CONDITIONS

[3] Town of Eden Recreation Needs Assessment. Prepared by the Saratoga Associates, 1990
[4] Draft Generic Environmental Impact Statement for Town of Eden, 2016 Land Use Plan Update. T.Z. Associates. March 1997
[5] Natural Resource Inventory. A Guide to the Process. New York State Department of Environmental Conservation, July 1975

SECTION 1: GEOGRAPHY AND GEOLOGY

1.1 The geographic setting

The Town of Eden is located about 15 miles south of the City of Buffalo, New York and about 15 miles east of Lake Erie. Eden is a rural/agricultural community, characterized by an abundance of open space and natural beauty. There are two distinct population centers, the Hamlet of Eden which is located along route 62 at the intersection of East Church and West Church Streets and East Eden, which is located along East Eden Road near the eastern border of the town. See Figure 1 Highways in Erie County, New York. A census held in 1990 indicated that the population of Eden was 7,416; a biennial census estimated a slight rise in 1996 to 7,697.

1.2 The geologic setting

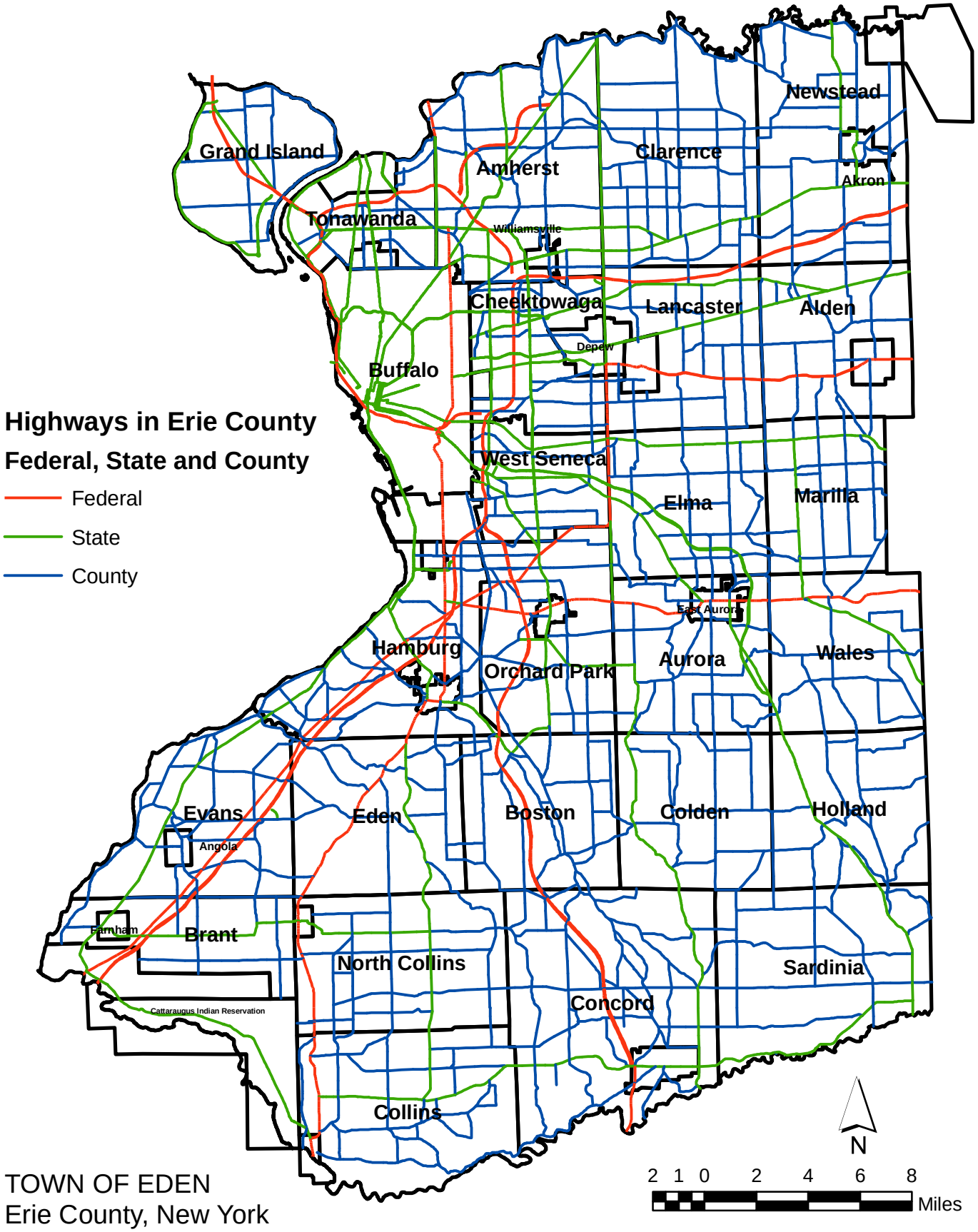
The Town of Eden can be divided into two primary physiographic provinces: the Lake Erie Lowlands and the Allegheny Plateau. The dividing line runs diagonally in almost a straight line from the southwest corner of the Town to the northeast corner. The Lowlands occupy the northwest half of the Town and the Allegheny Plateau occupies the southeast half. The Lake Erie Lowlands is characterized by low relief, in contrast to the moderate to steep relief of the Allegheny Plateau.

The development of the Lake Erie Lowlands was determined by two factors: the lowland bedrock types were somewhat less resistant to erosion than upland bedrock types and throughout geologic time, erosion was more severe over the lowlands area because of the location near Lake Erie. Conversely, the Allegheny Plateau has remained a highland because the bedrock types were more resistant to erosion and because the forces of erosion were less severe in this area. See Figure 2 Bedrock Geology.

The entire Town is underlain by sedimentary bedrock. The bedrock formed from sediments deposited in layers or strata in ancient seas which once covered the area approximately 400 million years ago. Over geologic time, the sediments solidified into three basic types of bedrock: limestone, sandstone and shale.

HIGHWAYS

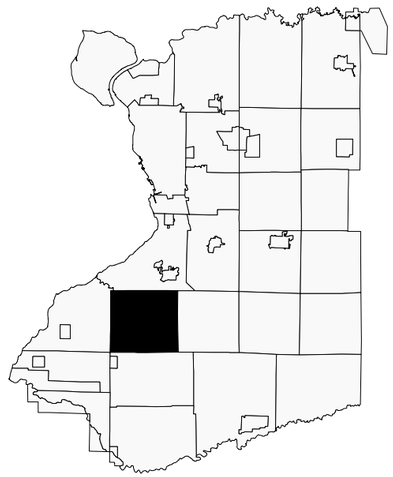
FIGURE 1



TOWN OF EDEN
Erie County, New York

Erie County Department of Environment and Planning

FIGURE 2



Town of Eden

Bedrock Geology

Streets

Bedrock Classification

- Angola & Rhinestreet Shales
- Cashaqua & Middlesex Shales
- Hanover Shale; Wiscoy Formation--sandstone, shale; Pipe Creek Shale.
- Machias Formation--shale, siltstone; Rushford Sandstone; Caneadea, Canisteo, & Hume Shales; Canaseraga Sandstone; South Wales & Dunkirk Shales

2000 0 2000 4000 Feet

WENDEL DUCHSCHERER ARCHITECTS & ENGINEERS

June 2000

Souce:
Digital Bedrock data provided by the USDA Natural Resources Conservation Service and Erie County Soil and Water Conservation District

Town of Hamburg

Town of Evans

Town of Boston

Town of North Collins

Hickox Road

New York State Thruway

Bauer Road

Eckhardt Road

Shadagee Road

North Boston Road

Sisson Highway

Townline Road

Derby Road

Gowanda State Road

Hardt Road

Eden-Evans Center Road

East Church Street

Schintzius Road

Jennings Road

East Eden Road

New Jerusalem Road

Paxon Road

Haag Road

Kulp Road

Sandrock Road

Yochum Road

Tice Road

Larkin Road

The basic bedrock type found in the Town of Eden is shale, with some interbedded siltstones and sandstones. Many calcareous concretions and nodules can be found in some of the shales. Concretions, often called "Turtle Stones" are common in the deeper shale beds. Gradually, as the ancient seas subsided, the crustal base of the area was gently uplifted and tilted to the southeast. The bedrock was then exposed to millions of years of erosion. Because of the southeast tilt or dip, any given bed will be found at a progressively deeper depth when going in that direction.

The geologic environment at the lands surface was more recently affected by the advance and retreat of the Wisconsonian Ice Sheet which at times covered the entire town. The Wisconsonian Ice Sheet deposited glacial material within the last 15,000 years. These materials included: till, a non-sorted mixture of clay, silt and sand deposited directly from the ice sheet and found on the Lake Erie Lowlands and Allegheny Plateau and lake deposits of bedded clay, silt and sand that settled out in the various positions of ancient Lake Erie. The action of the ice abrading the bedrock surface, the scouring effect created by the sediment laden meltwaters and the subsequent dumping of the eroded materials modified the surface land forms. Ridgetops were rounded off and lowland plains were covered by smooth layers of lake-laid sediment or an undulating surface of till. A good example of the scouring effect of meltwater is Kickbush Gulf, located in the southern part of the Town east of Jennings Road. The Kickbush Gulf channel continues its channel-like character downstream until just east of Larkin Road where it becomes a more familiar stream valley, which valley is now the central feature of Franklin Gulf Park.

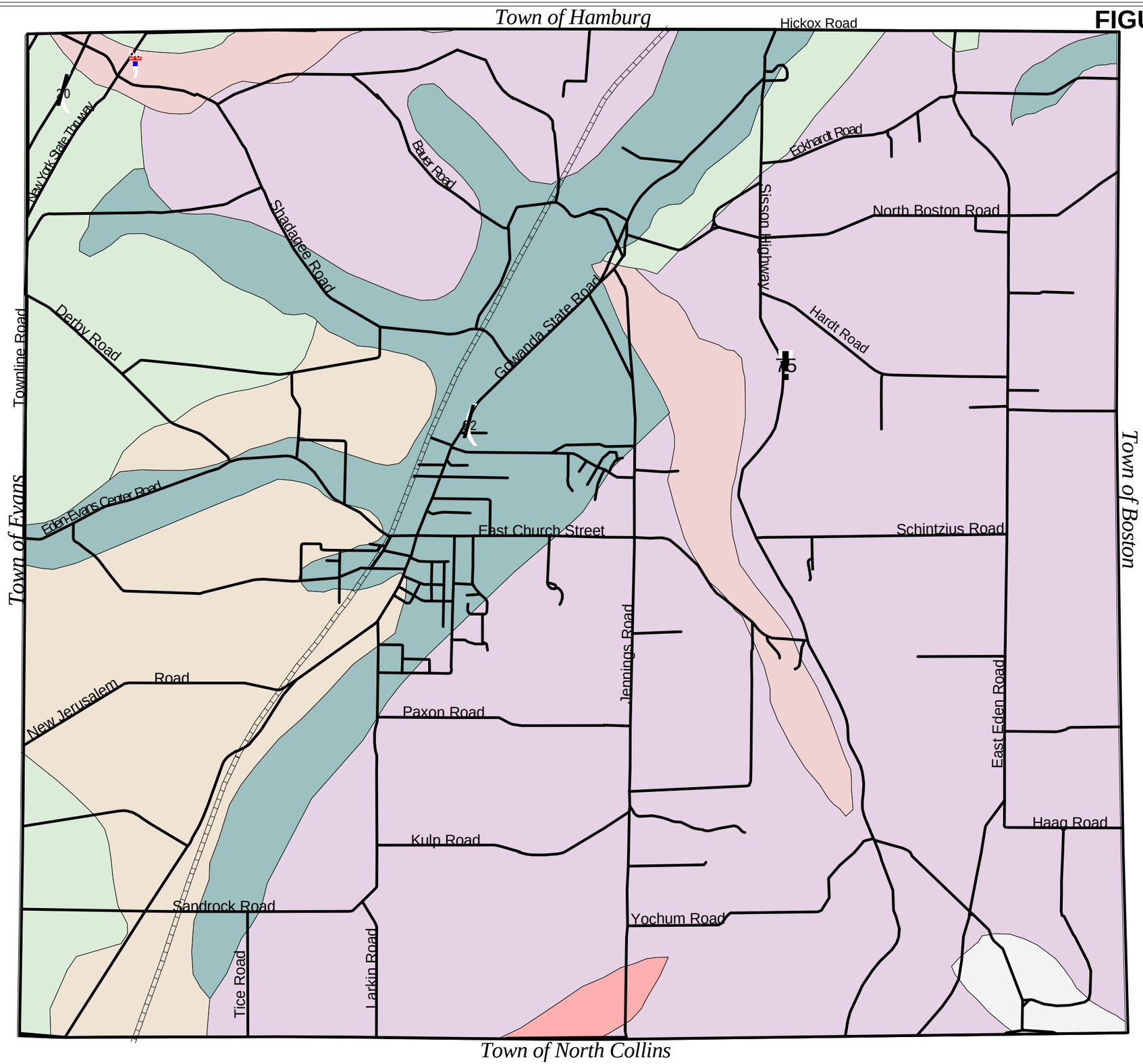
This channel drained a glacial lake created when retreating ice blocked the northern part of the valley occupied by the South Branch of Eighteen Mile Creek. This ice was part of the continental glacier which at one time covered most of New York State. A similar meltwater channel can be seen in the town of Boston at the head of Hampton Brook.

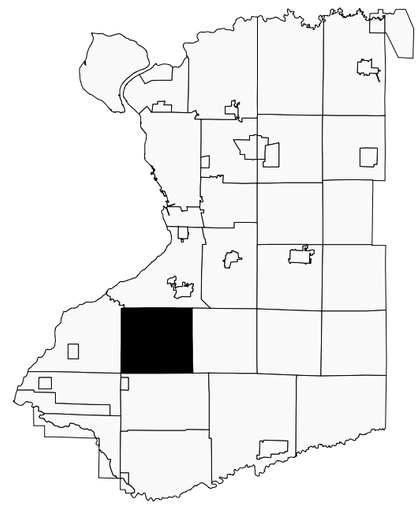
In addition to the effects on landform these recent ice age geologic events have other important influences on the natural environment in the Town of Eden today. The soils which have developed at the lands surface in the Town above the glacial materials reflect the nature of the subsurface environment. They are relatively young soils which developed after the retreat of the last ice sheet. Areas underlain by compact till or lake-laid silt and clay are typically not well drained which can make either agriculture or residential development problematic. In these areas, artificial drainage measures are sometimes necessary for successful agricultural use and adverse conditions often exist for subsurface sewage disposal.

Ancient Lake Erie covered a larger area than the present lake. The highest lake stand was known as Lake Whittlesey. The next highest was known as Lake Warren, followed by Lakes Grassmere, Lundy, Early Algonquin and probably Dana. The beach deposits shown on the Town Surfical geology map were deposited in Lake Whittlesey and Warren. See Figure 3 Surficial Geology. The soils formed on these beach deposits are generally well drained and are excellent for farming. The vegetable farms along Route 62 south of the Town of Hamburg are found on these beach deposits. The Whittlesey beach ridge is strong and well-formed and can be seen in the gravel pit located north of East Church Street about one half mile east of Route 62. The gravel consists of a shale cobble composed of small shale chips. The bedrock seen in the highwall of the pit appears to be the remnant of cliffs located along the shoreline of ancient Lake Whittlesey.

Although bedrock is covered with a veneer of glacial material throughout most of the Town, there are widespread areas, particularly in the Allegheny Plateau province where bedrock is near the surface. Depth to bedrock in a two-mile wide band coinciding with the first two miles of the Allegheny Plateau is generally less than 40 inches, with the exception of stream flood plains. Depth to bedrock in the northwest corner of the Town can also be very shallow (20 to 40 inches). Depth to bedrock can be obtained from the detailed soil maps. See Figure 4 Depth to Bedrock.

FIGURE 3





Town of Eden

Surficial Geology

Rail
Streets
Municipal Boundary
Geology Classification
Kame deposits
Lacustrine beach
Lacustrine sand
Lacustrine silt & clay
Recent deposits
Till
Till moraine

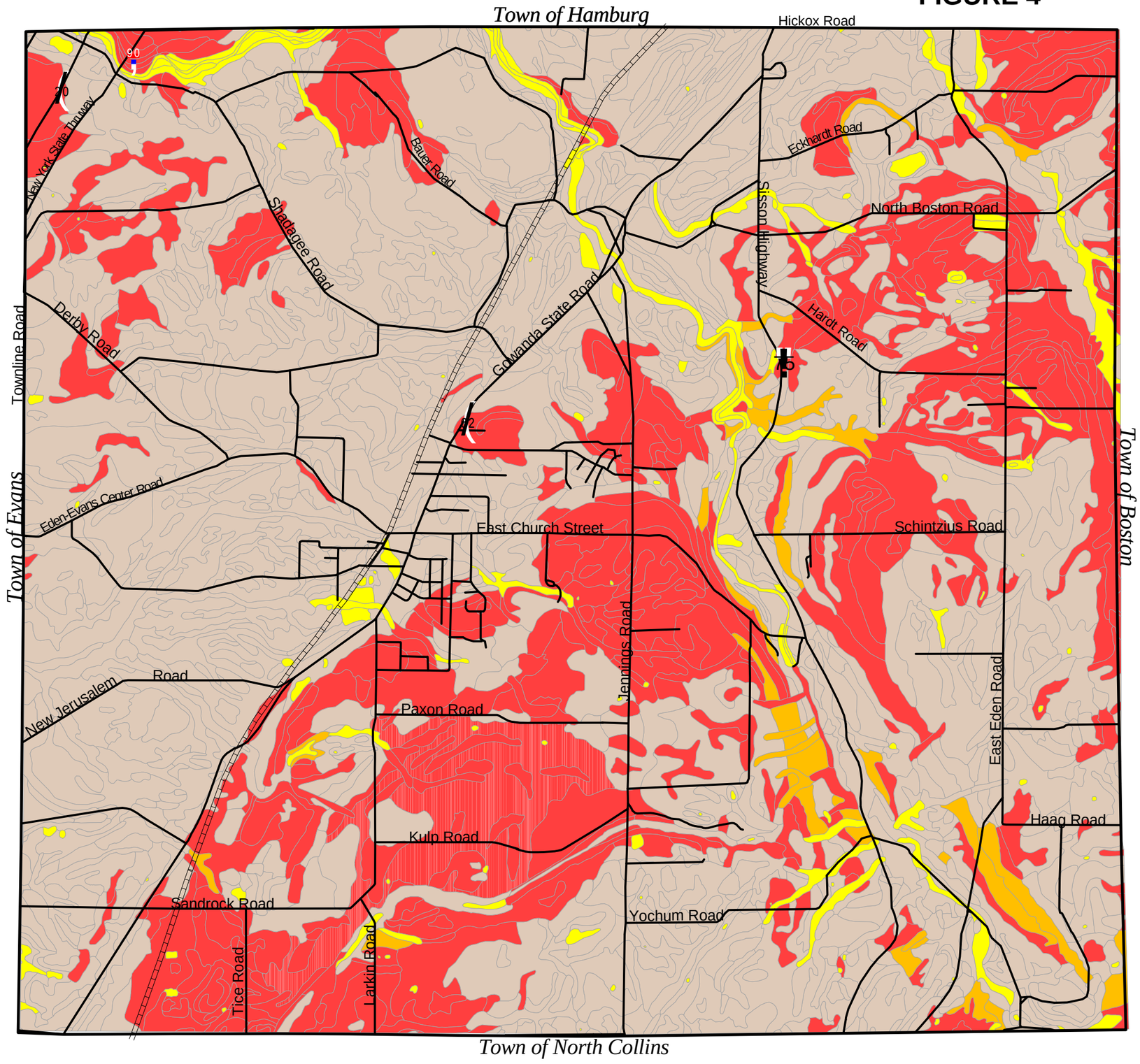
2000 0 2000 4000 Feet

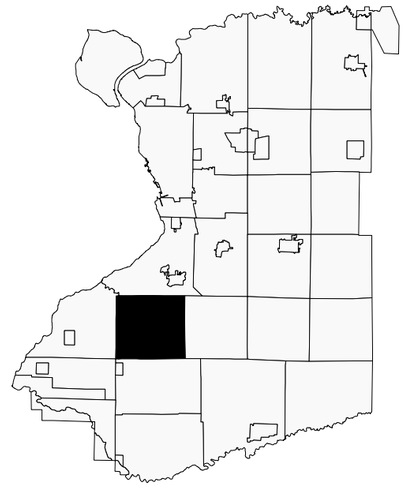
WENDEL DUCHSCHERER
ARCHITECTS & ENGINEERS

June 2000

Souce:
Digital Surficial Geology data provided by the USDA Natural Resources Conservation Service and Erie County Soil and Water Conservation District

FIGURE 4





Town of Eden

Depth to Bedrock

Rail
Municipal Boundary
Streets
Soil Depth in Inches
0 - 19
20 - 39
40 - 59
60+

2000 0 2000 4000 Feet

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Souce:
Digital Soil data provided by the USDA Natural Resources Conservation Service and Erie County Soil and Water Conservation District.

SECTION 2: HYDROLOGY

Water is the most vital of all natural resources. The availability of pure ground water will in part determine if a particular parcel of land is developed; while the presence or absence of surface water is also an important factor in development.

Several important factors help determine the quantity and quality of ground water and the presence or absence of surface water, some of these factors include: 1) soil type; 2) slope of the land; 3) amount of precipitation (in the form of rain and snow); 4) degree of residential development; 5) surface and bedrock geology and 6) vegetation.
Many of these factors will be discussed in this or in other sections of this report.

2.1 Surface Water Systems

The hydrologic system of Eden is composed of surface water and ground water systems. The network of surface water bodies has been described in a series of topographic maps completed by Earth Dimensions Inc. in 1990[6]. The largest surface water feature is Eighteen mile Creek, which flows from southeast to the northwest. Eighteen Mile Creek is described by Earth Dimensions as a system of well-defined natural drainways, some imbedded in shale. Most pass through agricultural land and woodland cover." A second major surface water feature is Hampton Brook, which flows north along the eastern border of the Towns of Eden and Boston and is described as a natural upland drainway with mostly steeper gradients and woodland cover. A third major surface water feature is Ryther (a.k.a. Rythus) Creek which runs east to west from the central portion of Eden to the border with the Town of Evans and is described as a drainway that has been improved for better drainage by recent construction activity." Other minor drainage systems include: a) Franklin Gulf, b) Big Sister Creek, c) Little Sister Creek, d) Pike Creek and e) tributaries 1 and 2 of Eighteen mile Creek which collectively drain the central portion of Eden to the northwest, west and southwest. The reader is directed to the reference cited for further information on drainage as well as on the topography of the land and the composition of soils within each drainage area.

[6] Town of Eden Drainage Study. Earth Dimensions, Inc. Elma, New York, October, 1990

2.2 Wetlands

Due to Eden's topography, geology, the level of precipitation and the specific soil types, it is not surprising that the majority of wetlands exist in the western part of the Town. The surface elevation in the extreme western border ranges from 785' above sea level in the south, to 733' above sea level in the north while in the central portion of the Town the elevation rises to some 1200' above sea level an increase of almost 500', resulting in significant runoff from east to west. The terrain in the area west of Route 62 is generally level or gently sloping with soils being deep and moderately deep, somewhat poorly drained, medium textured and moderately fine textured; underlain by alkaline shale bedrock; in short, an area very well suited to the formation of wetlands. A map of the federally regulated wetlands and the New York State Department of Environmental Conservation regulated wetlands is included. See Figure 5 Watersheds & Streams. The town is also crisscrossed by hundreds of small streams and dotted with many artificial ponds. There are no large lakes or rivers in the town of Eden. See Figure 6 Wetlands.

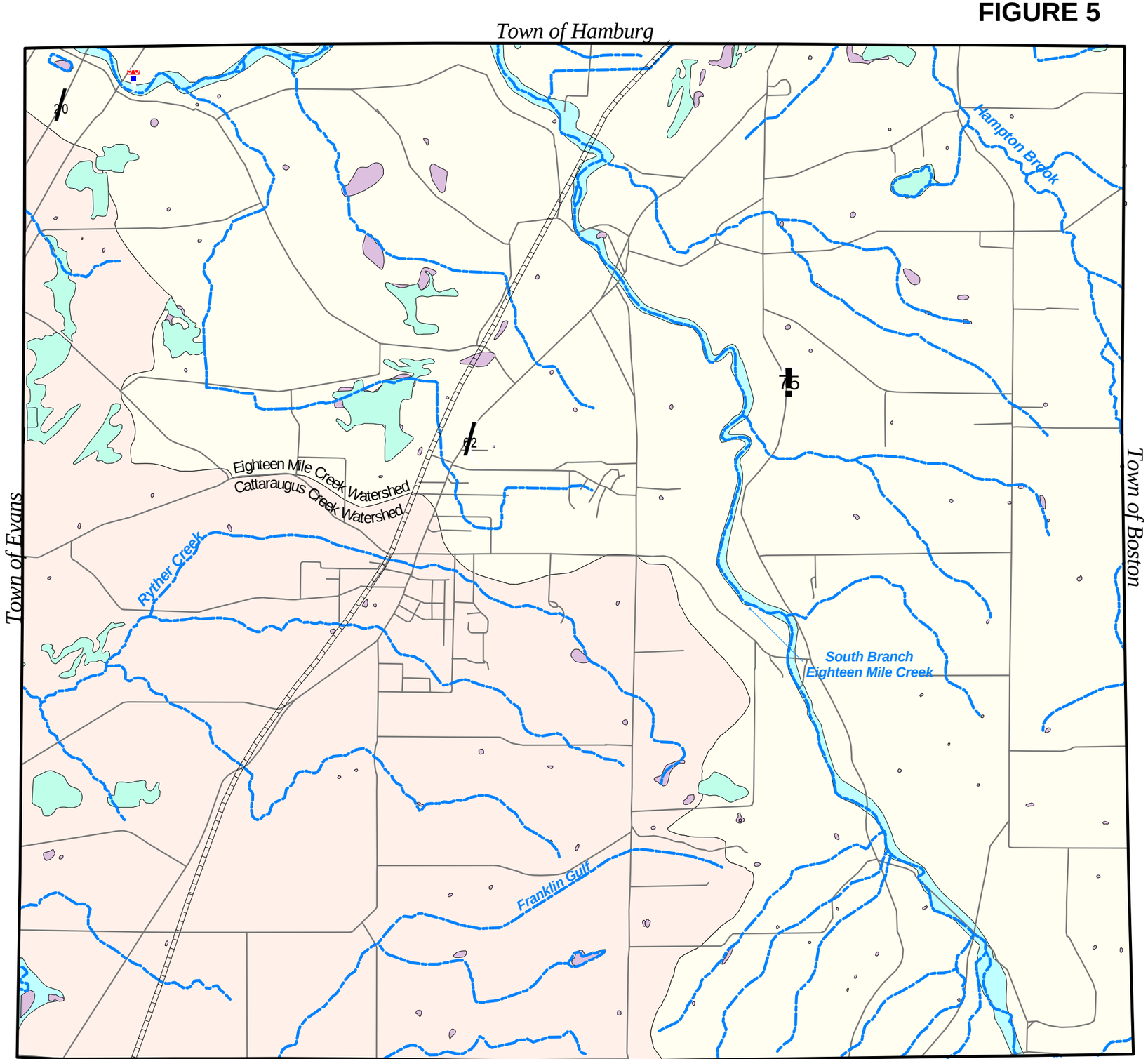
The value to wetlands has become increasing apparent as development has encroached upon or eliminated a sizable percentage of wetlands in New York State and other states across the nation. Wetlands perform many important ecological functions. They may act as reservoirs that temporarily store storm runoff to be gradually released thus preventing devastating flood damage. They often act as aquifers that recharge ground water systems and prevent loss of crops due to drought. They provide plants and animals with sustainable food and water supplies that adds to the biological diversity of life. They hold and neutralize pollutants such as PCB's.

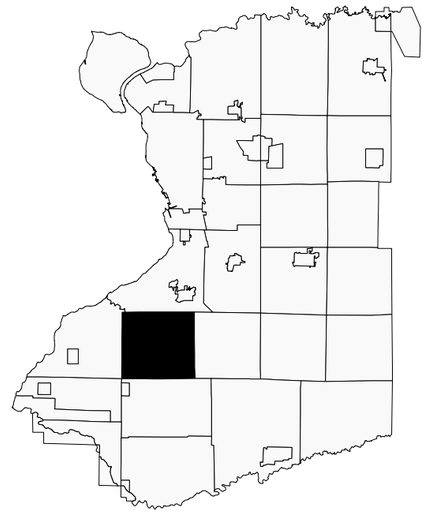
Despite governmental protection, wetlands continue to be destroyed at an alarming rate and because of their value should rank high on the list of land covers that should be preserved from development.

2.3 Floodplains

Floodplains and flood hazard areas are another important aspect of the hydrological system. Information on flood hazard areas contained in this report were taken from U. S. Department

FIGURE 5





Town of Eden

Watersheds

Rail
Municipal Boundary
Streams
State Wetlands
Mapped Federal Wetlands
Floodplains
Watersheds
Cattaraugus Creek Watershed
Eighteenmile Creek Watershed

2000 0 2000 4000 Feet

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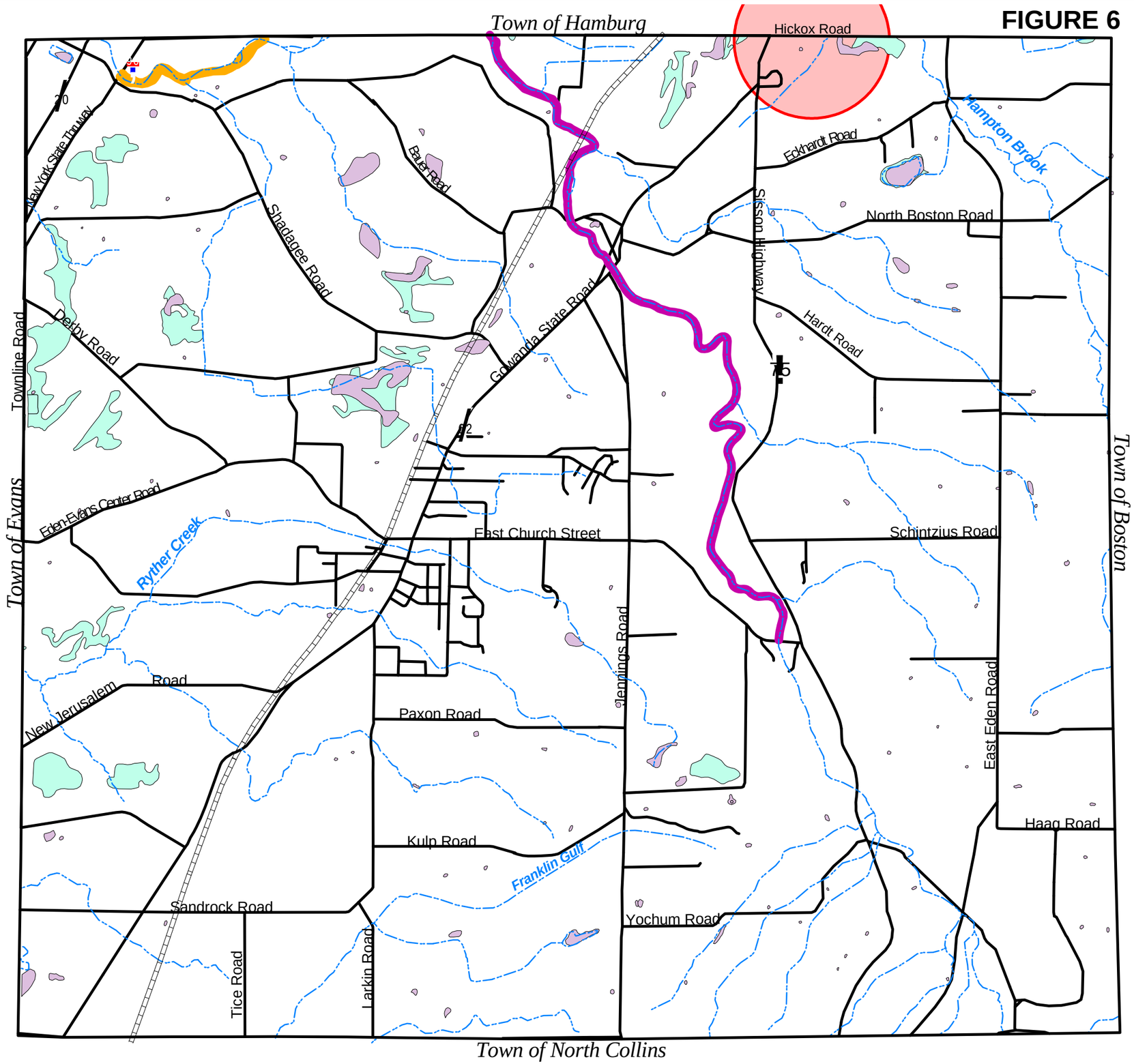
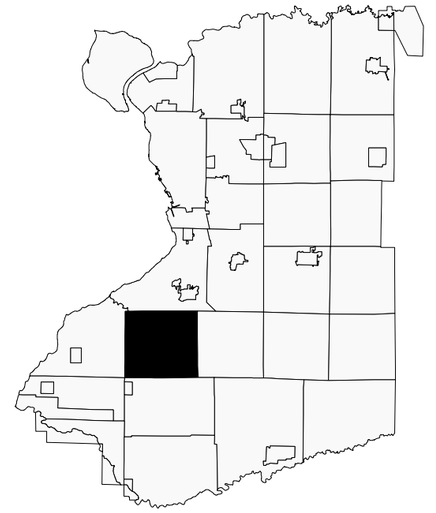
Souce:
*Digital Watershed Boundaries obtained from the Erie County Water Authority current to 199_*
Digital Floodplain data provided by the Federal Emergency Management Agency National Flood Insurance Program, Sept. 1996.
Digital State Wetland information provided by the NYSDEC.
Digital Federal Wetland information provided by the National Wetlands Inventory.

FIGURE 6



MAP 12



Town of Eden

Wetlands and Wildlife

Major Streams & Creeks
Significant Habitat Areas
Salmon & Trout
Walleye, Salmon, & Bass
Mapped Federal Wetlands
State Wetlands
Heron Rookery

2000 0 2000 4000 Feet

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Souce:
Digital Significant Habitat Areas and Hydrology obtained from the Erie County Water Authority.
Digital State Wetland information provided by NYSDEC.
Digital Federal Wetland information provided by the National Wetlands Inventory.

of Housing and Urban Development flood insurance rate maps.[7] Zone A is described as areas of 100-year flood. (N.B. this means there is a 1 in 100 chance of flooding in any year; not that floods only occur on average every 100 years). The areas described as Zone A exist primarily within the riparian boundaries of the South Branch of Eighteen Mile Creek. Another Zone A area exists within the Big Sister Creek watershed in the extreme southwestern part of the town of Eden. See Figure 7 Floodplains. The only other flood designation in Eden is Zone C; which is described as an area of "minimal flooding". Many of the areas designated as subject to "minimal flooding" are adjacent to the 100-year floodplain.

Since the early 1800's the people who initially populated the town of Eden have been drawn to build near streams like the Eighteen Mile Creek. Early maps show many homes and businesses located in or near flood prone areas. Even today one can find residences within the 100-year floodplain. Current zoning laws preclude development within 30 feet of creeks and streams both for the protection of the property and of the waterway.

2.4 Ground Water Systems

Information presented on the ground water resources of Eden were taken from a report entitled Erie-Niagara Basin Ground-Water Resources, which was completed in 1968 by the United States Department of the Interior in cooperation with the New York State Conservation Department, Division of Water Resources.[8]

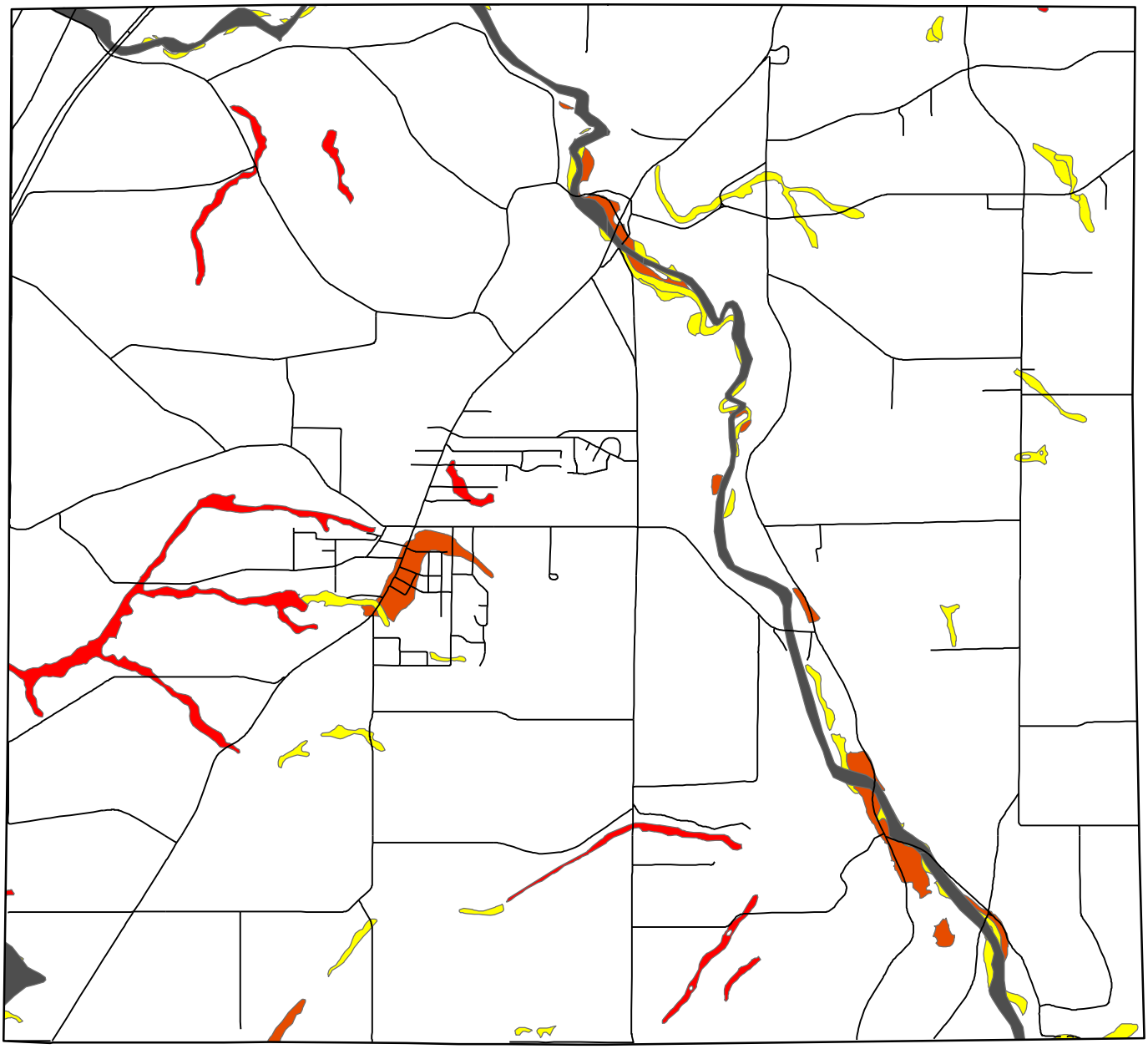
2.5 Water Quantity

Included in the report referenced above, Plate 3 describes the surfical deposits in the Town of Eden as follows: Outwash – Deposits of Interbedded sand and gravel deposits laid down by glacial streams. They were the last deposits to be formed in a particular valley. As a result most deposits are thin and overlie lake deposits. They have a high permeability but will yield large supplies (of water) only where thick. These deposits generally occur along route 62 and in the Agricultural Preservation Overlay district; isolated deposits also occur along route 75

[7] FIRM Flood Insurance Rate Map. U.S. Department of Housing and Urban Development. August, 1979
[8] La Sala, Jr. A.M. Ground Water Resources of the Erie-Niagara Basin. United States Department of the Interior Geologic Survey, plates 3 and 5, New York, 1968

FLOODPLAINS

FIGURE 7



Legend

FEMA Q3 Floodplain Data

Floodplain, 1%
Annual Probability (100 yr.)

Flood Prone Soils

Frequent Flooding

Occasional Flooding

Rare Flooding

Data Description; Floodplain data represented here are from a combination of Federal Emergency Management Agency (FEMA) Q3 floodplain data Flood Insurance Rate Maps (FIRMs) published by FEMA in digital format in 1996 and flood prone soil map attributes from the "compon.dbf" table jointed to the preliminary digitized soil survey for the Town of Eden. Digitized data were compiled by Earth Dimensions, Inc. under a Rural New York Grant to the Town of Eden. Soil map digitizing by the USDA NRCS "Earth Team" and USDA AmeriCorps "GIS and Conservation Technology Team."

FEMA "Q3" Flood Data 1996
"Soil Survey of Erie County, New York," 1986
Federal Emergency Management Agency
USDA Natural Resouce Conservation Service

Miles
0 0.5

N

and to the west of route 62. Alluvium – Deposits of present day streams composed of silt, sand and gravel, where extensive. A minor water-bearing unit. These deposits occur primarily along Eighteen Mile Creek from Clarksburg to Eden Valley. Lake Deposits – InterbeddeŘ clay, silt and fine sand deposited in glacial lakes. Sandy parts of the deposits may yield small supplies, but otherwise the unit is not water yielding. Occur mostly west of route 62 to the border with Evans and Hamburg. Till – Nonsorted rock material deposited from glacial ice, generally forming a thin mantle over the bedrock. Has a low permeability and will yield only small supplies (sufficient for a household) from large diameter wells. Occurs primarily east of Route 62 to and beyond the border with the Towns of Boston, North Collins and Hamburg.

It is estimated about 50% of all precipitation seeps into the groundwater system; while 40% is evaporated or used by vegetation and transpired and 10% is runoff. The quantity of ground water in storage in the Erie-Niagara basin is estimated to be about 2 billion gallons per square mile. Ground water levels are sustained as precipitation infiltrates the ground and percolates to the zone of saturation; a process called recharge. The usefulness of groundwater storage is in providing supplies during periods of deficient precipitation. Highly variable climatic conditions combine with basic geologic and hydrologic characteristics to help determine the quantity of ground-water in a particular area. The geographical location of Eden (east of Lake Erie and within the southern Appalachian uplands) combines to produce an average annual precipitation level of 42 inches. March delivers the most intense rate of precipitation; however, "the historic record shows that storms delivering the greatest total precipitation usually occur in July, August and October".[9]

According to a U.S. Geological Survey Water Resources Report by Todd S. Miller[10] major aquifer areas within the Town of Eden encompass a corridor along U.S. Route 62. A profound difference between the Lake Erie Lowlands and the Allegheny Plateau is in the occurrence of groundwater. The ancient beaches of the Lake Erie Lowlands contain sand and gravel deposits

[9] Harding, W.E. and Gilbert, B.K. Surface Water in the Erie-Niagara Basin, State of New York Conservation Department, Water Resources Commission, Basin Planning Report, ENB-2, 1968

[10] Miller, T.S. Potential Yields of Wells in Unconsolidated Acquifers in Upstate New York – Niagara Sheet, 1988, U.S. Geological Survey Water Resources Investigations Report 88-4076

Which have a high-yield potential for water supply. Water wells drilled on vegetable farms between Eden and Hamburg are high capacity screen gravel wells with yield rates of 300 to 600 gallons/minute. These wells are generally 100 feet deep or less. They are used for irrigation in times of dryness. Water wells drilled in Lake-laid sand deposits can also have high yields. A well drilled on New Jerusalem road in 1936 was the only source of public water for the Town of Eden for 25 years. In contrast, water wells drilled in the shale bedrock or till of the Allegheny Plateau typically have yields of 4 to 5 gallons/minute. Water wells drilled in till or lake-laid silt or clay in the Lake Erie Lowlands will also have low yields.

2.6 Water Quality

The quality of groundwater in the Town of Eden is described in Plate 5 of the report entitled Ground Water Resources of the Erie-Niagara Basin cited above. Generally the water is low in sulfate, chloride and hardness (as CaCO3).[11] The presence of iron in solution in many household wells has prompted the use of water softeners and iron removing systems on the part of some Eden residents: although others find the quality of water acceptable without treatment. Ground water pollution in the Erie-Niagara basin is caused primarily by sewage released from septic tanks at numerous private dwellings. Sewage carries microorganisms which may cause disease. Sewage pollution in groundwater is detected by counts of coliform bacteria from human waste products. The presence of polluted ground water can only be verified by scientific testing conducted by a responsible agency such as the County Health Department. Agricultural chemical fertilizers and insecticides are also possible sources of groundwater pollution.

Two types of terrain have a high potential for pollution; (1) bedrock thinly veneered with glacial deposits and (2) sand and gravel deposits in valleys. Where bedrock is overlain by Surfical deposits less than 15 feet thick, sewage from septic tanks will be little reduced in concentration before reaching the water-bearing zones in the rock. This presents a danger to groundwater supplies obtained from any of the rocks in such areas.[12]

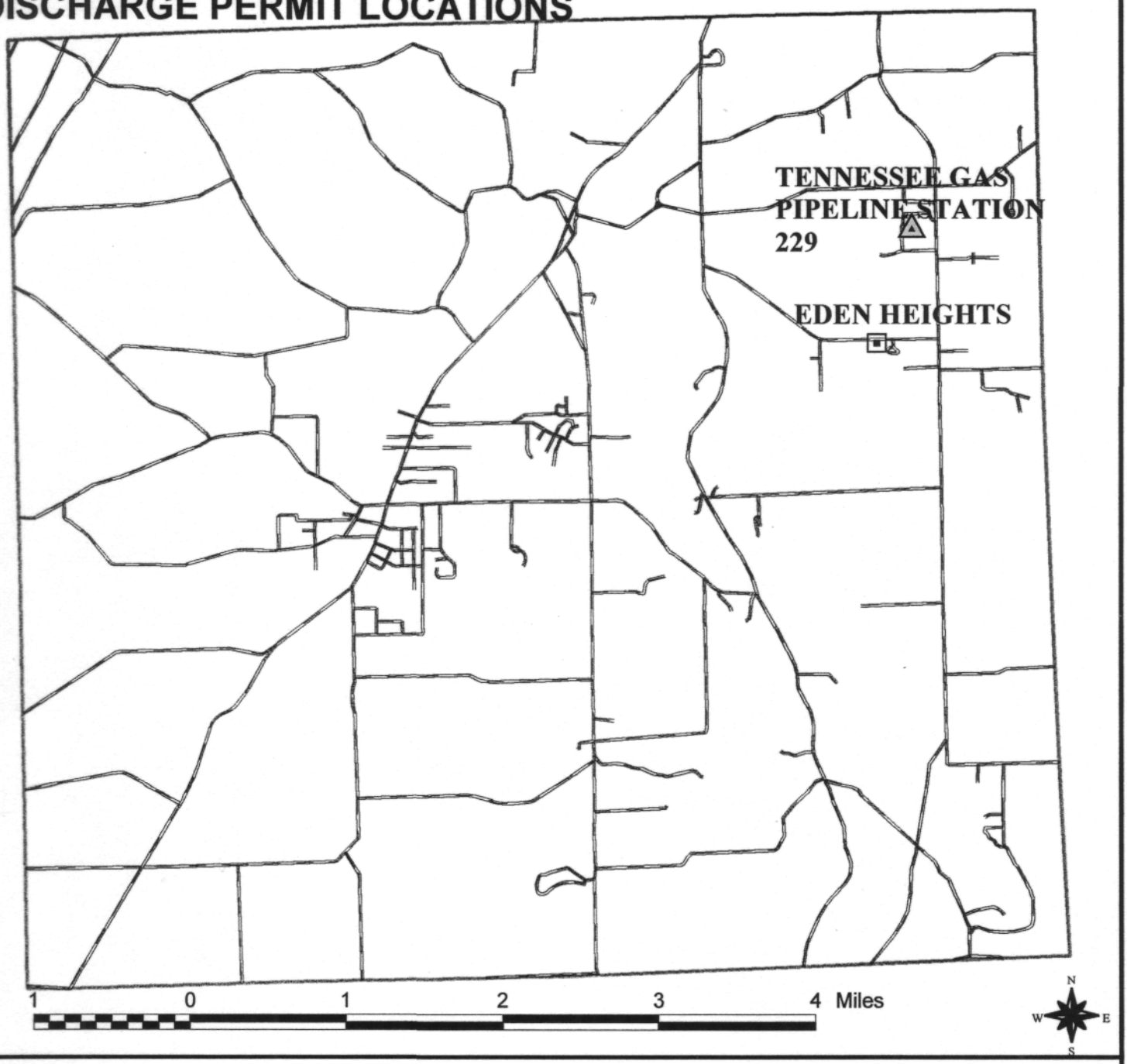
[11] La Sala, Jr. A.M. Ground Water Resources of the Erie-Niagara Basin, United States Department of the Interior Geologic Survey, 1968.
[12] La Sala, Jr. A.M. Ground Water Resources of the Erie-Niagara Basin, United States Department of the Interior Geologic Survey, 1968.

Included (see Figure 8 Hazardous Waste Sites) is a map of the NYSDEC Hazardous Waste Sites (1991) in the Town of Eden. The Tennessee Gas Pipeline Station 229 is identified as a class 2 hazard, i.e. a significant threat to public health which requires action. Tennessee Gas Discovered that PCB's were escaping from a containment lake on its site and polluting nearby stream and groundwater systems to the northwest of their pumping station. The company is in the second phase of remediation that has been deemed acceptable by local homeowners and the New York State DEC. For additional information contact the Town Clerks office.

Also included (see Figure 9 Solid Waste Disposal Sites) is a map and index which identifies and describes the location of solid waste disposal sites in the Town of Eden. The types of wastes include construction and demolition materials, garbage and municipal wastes. One site on Townline Road contains all three types of solid wastes and is the former municipal dump. The site has been delisted as of April, 1991. None of the other sites have DEC classification codes indicating that these sites do not pose a significant threat of pollution to the ground water system.

HAZARDOUS WASTE & POLLUTION DISCHARGE PERMIT LOCATIONS

FIGURE 8



LEGEND

- Hazardous Waste Sites, NYS DEC, 1995
- SPDES Permit Locations, NYSDEC, 1995

Data Description: Hazardous waste site locations and permitted pollution discharge locations based on 1995 data provided by the New York State Department of Environmental Conservation Region 9 Office, 270 Michigan Avenue, Buffalo, New York. Data compiled and processed by USDA AmeriCorps "GIS and Conservation Technology Team."

USDA Prepared by USDA Natural Resources Conservation Service and Erie County Soil and Water Conservation District

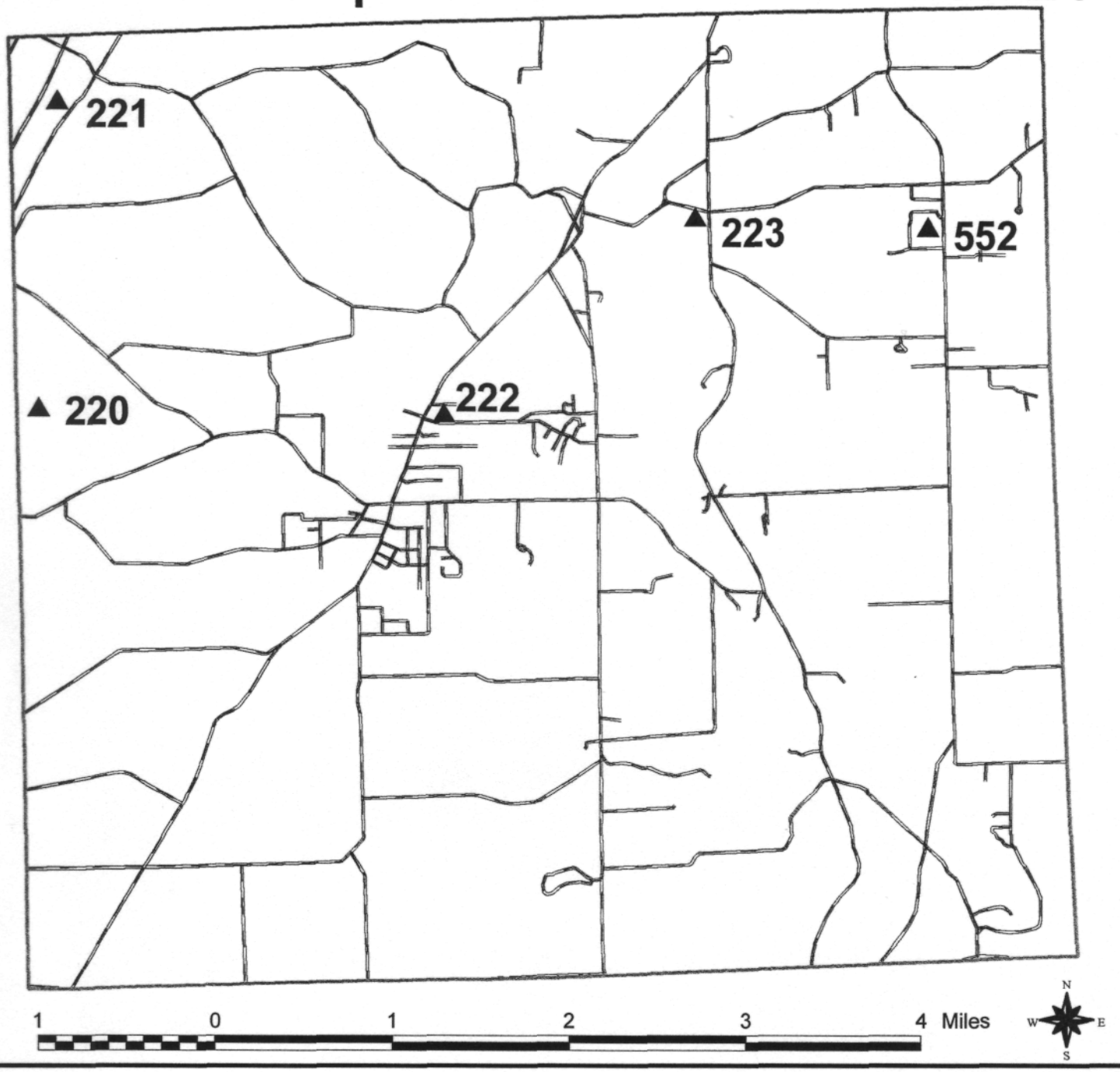
TOWN OF EDEN
Erie County, New York

Hazardous Waste Sites and SPDES Permit Locations, 1995

NYS Department of Environmental Conservation

Solid Waste Disposal Sites

FIGURE 9



LEGEND

▲ Solid Waste Disposal Sites

Data Description: Solid waste disposal sites based on map produced and maintained by the Erie Co. Department of Environment and Planning. Point locations digitized for the Town of Eden by USDA "Earth Team" Volunteer, Fred Tornow.

Refer to the Section 2.6 for additional information.

USDA Prepared by USDA Natural Resources Conservation Service and Erie County Soil and Water Conservation District

TOWN OF EDEN
Erie County, New York

Solid Waste Disposal Sites, 1994

ERIE CO. DEPARTMENT OF ENVIRONMENT AND PLANNING

SECTION 3: SOILS

Soil is defined as a 3 dimensional object occurring at the earth's surface which is the product of weathering and other processes such as climate, topography, plant and animal life and time on parent material.[13] Parent material is the unconsolidated earthy mass from which soils formed or are forming. Glacial till is an extensive source of parent material in the Town of Eden; smaller sources of parent material were derived from lake sediments (glaciolacustine) and glacial outwash (glaciofluvial) deposits.

Climate, particularly temperature, precipitation and frost action, determines the kind of weathering process that occur and the translocation of weathered material. Climate also affects the kind of vegetation and rate of growth and leaching of soils. The humid continental climate found in the Town of Eden is marked by extreme seasonal changes in temperature which tends to favor the development of moderately weathered leached soils.

Topography refers to the slope of the land surface; the lay of the land; and the slope and position of parent material in relation to the water table's influence on the formation of soils. The Town of Eden is divided into two physiographic provinces; the eastern part is in the Allegheny Plateau province and the western part is in the Erie-Ontario Plain province. In the Allegheny Plateau the topography consists of steep valleys, wide ridge tops and flat-topped hills which occur between the drainageways. The Erie-Ontario Plain has little significant relief and typifies the topography of an abandoned lakebed. Most soils are the product of glaciation which dates back about 10 thousand years to the last ice age.

Living organisms such as plants, animals, bacterial and fungi and the passage of time are other factors that affect the composition of soils in the Town of Eden.

More extensive information on the climate, topography, plants and animals of Eden is presented in other sections of this report, and in the Soil Survey of Erie County, New York.

[13] Soil Survey of Erie County, New York. U.S. Department of Agriculture Soils Conservation Service. Donald W. Owens, Willie L. Pittman, John P. Wulforst and Willis E. Hanna, 1978

In this section we will present information of several types of soils of importance to planners; these include prime farmland, hydric soils and steep sloped soils.

3.1 Prime Soils

"Prime" farmland, as defined by the USDA is the land that is best suited to producing food, feed, forage, fiber and oilseed crops. It has the soil quality, growing season and moisture supply needed to economically produce a sustained high yield of crops when it is treated and managed according to acceptable farming methods. Prime farmland produces the highest yields with minimal input of energy and economic resources and farming it results in the least damage to the environment."[14]

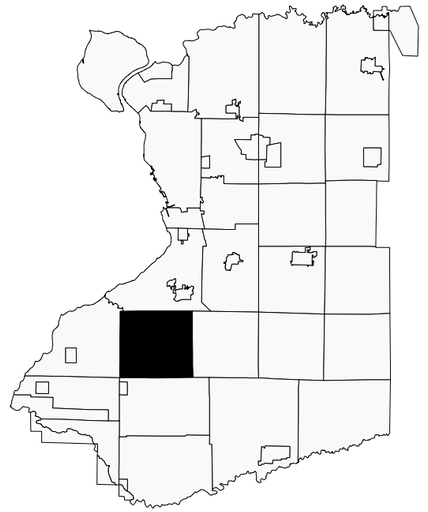
The soil groups included below appear on the May 1993 list of prime and important farmland soils of New York State (appendix A). Also see Figure 10 Prime Farmland Soils.

AmA-Alton, fine, gravelly loam, 0 to 3 percent slope. Deep, well drained to excessively drained. Percolation rate is moderately rapid through the subsoil and very rapid in the substratum. Surface layer is very friable. Medium textured or moderately course textured surface layer and subsoil and a course textured substratum. Occurs in gravelly and sandy glacial outwash deposits. Good Source of gravel. Erosion potential and frost action potential is low. Good agriculture potential. Fine, gravelly loam soil used to grow vegetables, specialty crops and irrigated crops. Timber production is good. Potential for urban development; however, pollution of the water table is a hazard by septic systems due to permeable substratum. Moderate frost action potential.

PhB-Phelps, gravelly loam, 3 to 8 percent slope. Moderately well drained. Seasonal water table is in the lower part of the subsoil for brief periods in early spring. Percolation rate is moderate in the subsoil and rapid or very rapid in the substratum. High content of sand and gravel. Erosion can be a hazard in intensively cultivated areas. Good agriculture potential. Soil is generally dry and permeable and good bearing strength.

[14] Soil Survey of Erie County, New York. U.S. Department of Agriculture Soils Conservation Service. Donald W. Owens, Willie L. Pittman, John P. Wulforst and Willis E. Hanna, 1978

FIGURE 10



Town of Eden

Prime Farmland Soils

Rail
Streets
Municipal Boundary
Soil Classification
Soils of Statewide Importance
Not Prime or Important
Prime Farmland Soils
Prime Farmland Soils where Drained

2000 0 2000 4000 Feet

WENDEL DUCHSCHERER
ARCHITECTS & ENGINEERS

June 2000

Souce:
Digital Soil data provided by the USDA Natural Resources Conservation Service and Erie County Soil and Water Conservation District.

Town of Hamburg
Town of Evans
Town of Boston
Town of North Collins
Townline Road
New York State Thruway
Shadagee Road
Bauer Road
Derby Road
Golvanda State Road
Hickox Road
Eckhardt Road
Sisson Highway
North Boston Road
Hardt Road
Eden-Evans Center Road
East Church Street
Schintzius Road
New Jerusalem Road
Paxon Road
Jennings Road
East Eden Road
Haag Road
Kulp Road
Sandrock Road
Yochum Road
Tice Road
Larkin Road
20
90
75
62

Suited to cultivated crops as well as pasture and hay. Good. Potential for wood crops. Limitation for most urban uses. Dwellings with basements are difficult to keep dry. High frost action potential.

B1A-Blasdell, shaly silt loam, 0 to 3 percent slope. Soil is deep and well drained. Percolation rate is moderately rapid in the subsoil and substratum. Medium textured very friable soil. Acid shally glacial outwash with high content of shale fragments (15 to 35% of surface layer). Erosion potential is low. Gently sloping or sloping soils on valley terraces and beach ridges. Suitable for farming and urban uses. Most acreage is cultivated (crops and hay). Depth of perched seasonal water table is usually more than 6 feet. Possibility of ground water pollution from septic systems. Moderate frost action potential.

FbA-Farnham, shaly silt loam, 0 to 3 percent slope. Soil is moderately well drained with moderately rapid percolation rate. Soil texture is medium with large content of shale fragments. Erosion potential low; nearly level or gently sloping soils on terraces and fans in the valleys and on the beach ridge on the lowland plain. Moderately suited to cultivated crops. Parts of the outwash fan are susceptible to occasional flooding. Water table rises to within a foot or two of the surface during winter and spring. Basements are difficult to keep dry because of seasonal high water table. High frost action potential.

The Alton; Phelps; Blasdell and Farnham are deep soils formed in glaciofluvial deposits. These soils groups occur primarily along route 62 north of the hamlet of Eden.

3.2 Hydrologic Soils.

Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soils bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.[15]

[15] Soil Survey of Erie County, New York. U.S. Department of Agriculture Soil Conservation Service. Donald W. Owens, Willie L. Pittman, John P. Wulforst and Willis E. Hanna, 1978

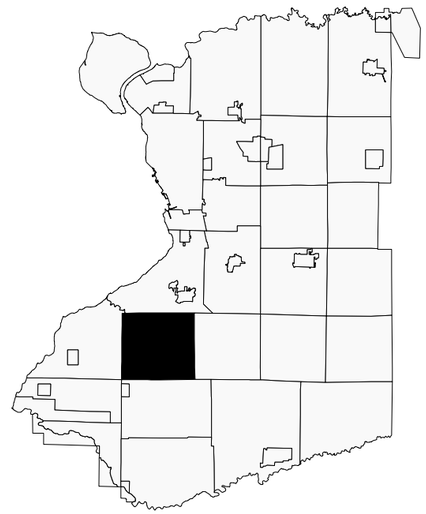
Soils presented below were included on a list of Erie County Soils With Potential For Hydric Inclusions March 1996 (appendix B). Also see Figure 11 Hydric Soils-those wettest soils likely to meet Federally regulated wetland definitions.

CoA-Churchville silt loam 0 to 3 percent slope. Deep and somewhat poorly drained. Has a perched seasonal high water table in the upper subsoil from December through May and may be susceptible to ponding in some areas. Permeability is slow or very slow in the subsoils and substratum. The available water capacity is moderate to high and runoff is slow. Surface layer of dark grayish brown silt loam about 9 inches thick. Formed in a thin mantle of clayey lake sediments underlain by glacial till. Danger of frost leaving is high. Soil is moderately suited to farming. Most of the acreage is in pasture, hay, woodland or idle. Seasonal wetness, slow or very slow permeability, a clayey subsoil and danger of frost heaving are serious limitations for many urban uses.

RfA-Remson silty clay loam 0 to 3 percent slope. Deep somewhat poorly drained. Permeability is very slow in the subsoil and substratum. Surface layer of dark grayish brown silty clay loam about 7 inches thick. Formed in glacial till deposits that have a high clay content. Shale fragments can make up as much as 10 percent of the surface layer and subsoil. Hazard of erosion and seedling mortality are generally not a problem. Moderate frost action potential. Due to seasonal wetness and clayey texture, Remson soil is only moderately suited for cultivated crops. The perched seasonally high water table, clayey texture, poor soil compaction and very slow permeability are serious limitations for most urban uses. Basements are difficult to keep dry. Large deposits of Churchville-Remson soils occur on the lake plain west of route 62.

DdA-Derb silt loam 3 to 8 percent slope. Deep, somewhat poorly drained soils formed in silty glacial till deposits. Moderate to moderately slow permeability in the subsoil and slow in the substratum. Dark grayish brown silty loam about 6 inches thick. Shale fragments make up 10 percent or less of the surface layer of subsoil. Erosion is not a hazard but frost action potential is high. Seasonal wetness limits the suitability of this soil for farming and urban uses. Where bedrock is close to depth of 40 inches excavation is difficult. Small deposits of Derb soils occur east of the intersection of Jennings and Paxon roads and between Jennings and Larkin roads in the southern part of the Town of Eden.

FIGURE 11



Town of Eden

Hydric Soils

Rail
Municipal Boundary
Streets
Soil Classification
Hydric Soil
Not Hydric
Potential For Hydric Inclusions
Water

The Soil Conservation Service defines "Hydric Soil" as a "soil that is saturated, flooded, or impounded long enough during the growing season to develop anaerobic conditions in the upper part."- US Fish & Wildlife Fact Sheet 8/94

2000 0 2000 4000 Feet

WENDEL DUCHSCHERER
ARCHITECTS & ENGINEERS

June 2000

Souce:
Digital Soil data provided by the USDA Natural Resources Conservation Service and Erie County Soil and Water Conservation District.

Town of Hamburg
Town of Evans
Town of Boston
Town of North Collins
Hickox Road
New York State Thruway
Bauer Road
Shadagee Road
Eckhardt Road
North Boston Road
Sisson Highway
Hardt Road
Townline Road
Derby Road
Gowanda State Road
Eden-Evans Center Road
East Church Street
Schintzius Road
Jennings Road
East Eden Road
New Jerusalem Road
Paxon Road
Haag Road
Kulp Road
Sandrock Road
Yochum Road
Tice Road
Larkin Road

VoA-Volusia silt loam 0 to 3 percent slope. Deep, somewhat poorly drained soil formed in glacial till deposits. Permeability is moderate above the fragipan and slow to very slow in the fragipan and substratum. Surface layer is very dark, grayish brown silt loam about 9 inches thick. Subsoils is a fragipan of molted olive brown channery loam. Flat channery fragments make up 5 to 15 percent of the surface layer. Runoff is medium to slow. High risk of frost damage is a problem for maintaining roads, parking lots and structures without basements. Limited suitability for farming and urban uses due to seasonal wetness. Some areas of this soil are excellent for dugout ponds. Serious limitations for urban uses due to seasonal wetness.

ErA-Erie channery silt loam, 0 to 3 percent slope. Deep, somewhat poorly drained soils formed in glacial till deposits. There is a dense fragipan in the lower part of the subsoil. May receive runoff from adjacent soils. Has a perched seasonal high water table above the dense fragipan in the winter and spring. Permeability is moderate above the fragipan and slow to very slow in the fragipan. Channery fragments make up 15 to 35 percent of the surface layer. Best suited to hay and pasture crops. Seasonal wetness and slow to very slow permeability limit urban uses. Good sites for ponds and wildlife marshes. Large deposits of the Valousia-Erie soils are found in the southeastern part of the Town of Eden.

HrA-Hornell silt loam 0 to 3 percent slope. Moderately deep and somewhat poorly drained soils formed in acid glacial till. Permeability is slow or very slow in the subsoil and substratum. Surface layer is darkish brown silt loam about 7 inches thick. High clay content. Soft shale bedrock is at a depth of 20 to 40 inches. Frost action potential is high. Has limited suitability for farming and most urban uses. Seasonal wetness, depth to bedrock, slow or very slow permeability and clayey subsoil texture limit most urban uses.

OrA-Orpark silty clay loam 0 to 3 percent slope. Moderately deep soils somewhat poorly drained. Formed in acid glacial till deposits. Permeability is moderate in the surface layer and slow or moderately slow in the subsoil. Surface layer of dark grayish brown silty clay loam about 13 inches thick. Soft bedrock at a depth of 20 to 40 inches. Shale fragments are usually less than 10 percent throughout the soil. Not suited to cultivated crops unless drained. Better suited to hay and pasture crops. Timber production is fair. Moderate depth to bedrock and seasonal wetness limit most urban uses. High frost action potential may affect highways, sewers and pipelines, buildings with basements and septic tank absorption fields. The Hornell and Orpark soils form a nearly continuous area along the east side of route 62.

Mh-Minoa very fine sandy loam. Deep and somewhat poorly drained soil located in broad flat areas that were deltas or beaches of glacial lakes. Permeability is moderate in the surface layer and subsoil and moderate or moderately rapid in the substratum. Surface layer is very dark grayish brown very fine sandy loam about 9 inches thick. Gravel and stone free soils is easy to till at the proper moisture level. Erosion is not a problem on the nearly level soil, except where ditch banks are unprotected. Frost action potential is high. Suited to agriculture crops if properly drained. Current land use is varied and includes residential development, farming, woodland and idle areas.

Cv-Cosad loamy fine sand. Nearly level, deep and somewhat poorly drained soil. Formed in sandy lake-laid sediments underlain by clayey deposits. Permeability is rapid in the sandy surface layer and slow or very slow in the clayey lower part of the subsoil and substratum. Surface layer is very friable, very dark grayish brown loamy fine soil 9 inches thick. General free of rock fragments. Moderate frost action potential. Moderately suited to farming if adequately drained. Poorly suited to most urban uses.

NfA-Niagara silt loam 0 to 3 percent slope. Nearly level, silty, deep and somewhat poorly drained soil. Permeability is moderately slow in the subsoil and substratum. Surface layer is dark brown silt loam about 11 inches thick. Usually no gravel and stones. Erosion is not a problem. Frost action potential is high. Because this soil has a high silt content, frost may damage roads and dwelling without basements. Not well suited for agriculture unless drained. Used for various purposes including residential and commercial development, farming and woodland.

RgA-Rhinebeck silt loam 0 to 3 percent slope. Nearly level, deep and somewhat poorly drained soil. Occurs on the lowland lake plain and in a few valleys. Permeability and runoff is slow. Surface layer of dark grayish brown silt loam about 9 inches thick. Usually no gravel in the soil. High frost action potential. This soil tends to shrink and swell and the possibility of frost-heave is high. Moderately suited to farming. Most land in pasture or woodland. Poorly suited to many urban uses. The Minoa, Cosad, Niagara and Rhinebeck soils occur primarily on the lake plain west of route 62.

3.3 Steep Slope Soils

ScD-Schuyler silt loam 15 to 25 percent slope. Moderately steep, moderately well drained soil formed in glacial till deposits on valley sides and hillsides. Permeability is moderate in the surface layer. Surface layer of very dark grayish brown silt loam about 6 inches thick. Erosion potential is high. High frost action potential. Because of seasonal wetness and erodibility this soil is poorly suited to most farm and urban uses. Most acreage is wooded and used for wildlife habitat.

MdD-Mardin channery silt loam 15 to 25 percent slope. Moderately steep, deep, moderately well drained soil formed in loamy glacial till on hillsides and the sides of ridges and valleys on the upland plateau. Permeability is moderate in the upper subsoil and slow or very slow in the fragipan and substratum. Surface layer of dark grayish brown silt loam 8 inches thick. Small stones range from 15 to 35 percent in the surface layer. Very serious erosion potential. Moderate frost action potential. Has limitations for both farm and urban uses. Main limitations for urban uses are seasonal high water table, slow or very slow permeability in the fragipan, small stones and moderate slope. Small elongated deposits of the Schuyler-Valois-Mardin soil groups occur in the southeastern portion of the Town of Eden along route 75 in the upland plateau.

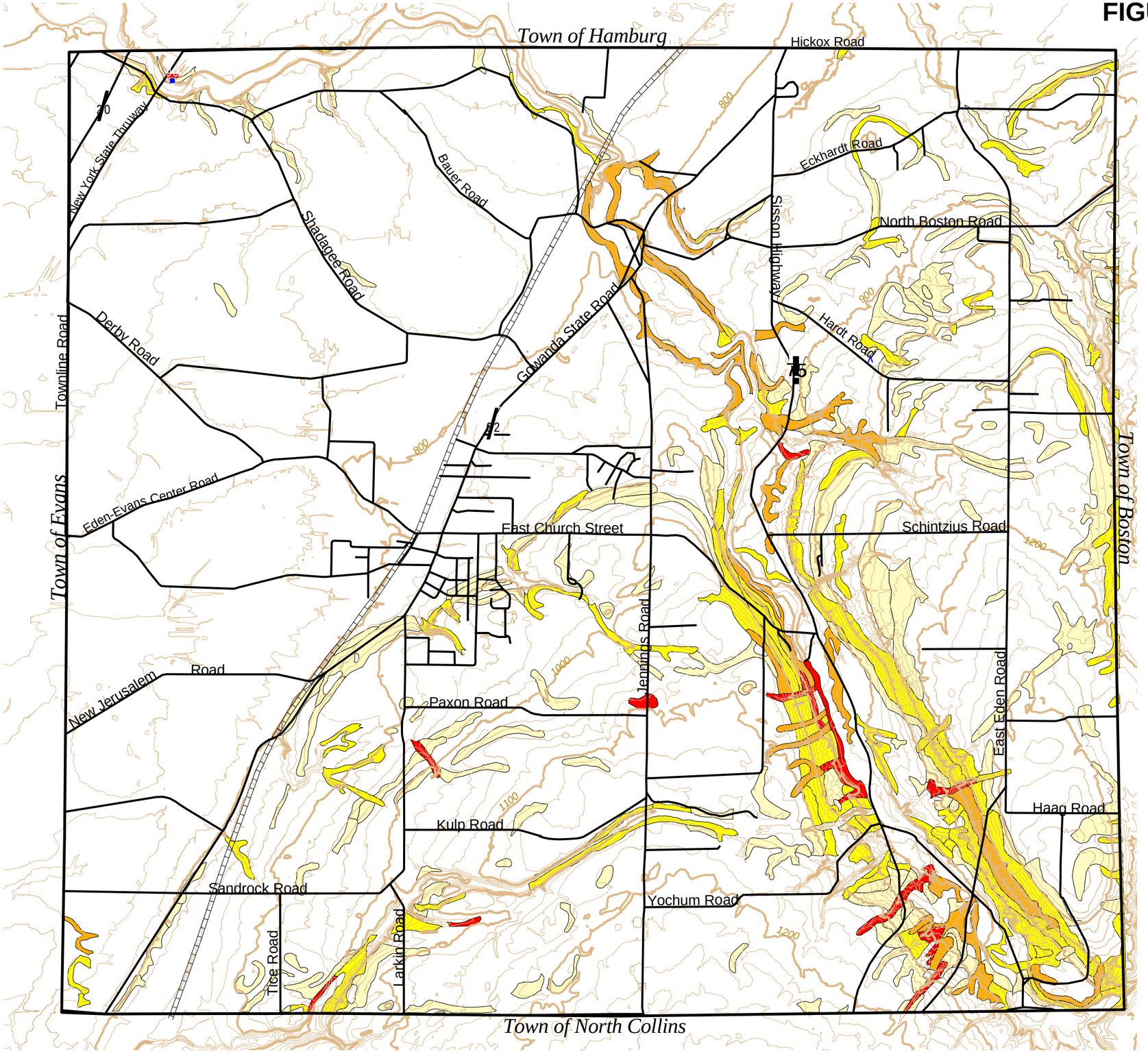
MaD-Manlius moderately steep 15 to 25 percent slope. Moderately deep and well drained to excessively well drained. Soils formed in glacial till deposits derived from shale bedrock. Permeability is moderate. Surface layer of dark grayish brown shaly slit loam about 8 inches thick. Shale fragments make up 15 to 35 percent of the surface layer. Erosion is a hazard in disturbed areas and runoff is rapid. Moderate frost action potential. Very limited suitability for farming and poorly suited to most urban uses. Most acreage is in woodland or idle. Occurs on hillsides, upper valley sides and sides of dissected gullies on the fringe of the upland plateau along route 75 in the eastern part of the Town of Eden.

MbF-Manlius very steep 35 to 50 percent slope. Very steep, well to excessively drained soils formed in glacial till deposits derived from shale bedrock. Permeability is moderate. Surface layer of dark grayish brown very shaly silt loam about 4 inches thick. Shale fragments make up 35 to 40 percent of the surface layer. Very serious erosion hazard due to very steep slopes . Moderate frost action potential. Soil is not suited for farm and urban uses. Most of this soil is

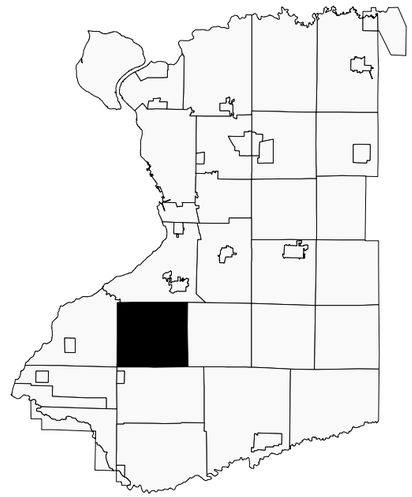
best left in native plant cover. Occurs on hillsides and sides of valleys on the fringe of the upland plateau west of route 75 in the northern part of the Town of Eden.

HvE-Hudson steep 25 to 40 percent slope. Steep soil moderately well drained. Formed in glacial lake sediment. Permeability is moderate or moderately slow in the surface layer and subsurface layer and slow in the subsoil and substratum. Brown silty clay loam about 6 inches thick. High content of clay and silt. In many places the soil has a stepped appearance because the soil tends to slump and slide. Runoff is very rapid. Moderate frost action potential. Poorly suited to farming or urban uses. Most acreage is woodland or idle. Occurs on the sides of dissected areas, ridges and valleys east of route 75 in the New Oregon area. Most areas are best suited to natural plat cover. See Figure 12 Steep Sloped Soils.

FIGURE 12



MAP 11



Town of Eden

Steep Slopes

Rail
Municipal Boundary
Streets
Soil Slope
15%
25%
35%
40%
50%

Contour lines at 20 foot intervals

2000 0 2000 4000 Feet

WENDEL DUCHSCHERER
ARCHITECTS & ENGINEERS

June 2000

Souce:
Digital Steep Slope data provided by the Erie County Department of Environment and Planning.
Digital Contour and Street Centerline data obtained from the Erie County Water Authority.

SECTION 4: LAND USE

4.1 Residential Zoning

All zoned areas of the Town of Eden permit residential housing; however, the majority of residents live in the Hamlet Residential (HR) area. The population of the Town of Eden as of 1990 was 7,416 which represented an increase of only 1% as compared to the 1980 census figures. By comparison the population of Erie County decreased by 4.62% during the same period: this was primarily due to the loss of manufacturing jobs in Western New York. The town had its greatest population growth in the years between 1950 and 1970 with an increase of over 4000 residents; again these figures reflect the opportunity for good paying factory employment during this period. Census data indicates that in the HR area the majority of housing was built prior to 1959; while in the rest of the town the majority of housing was built between 1940 and 1980.

4.2 Commercial and Industrial Zoning

The Town of Eden (see Figure 13 Zoning and Roads) is divided into the following commercial and industrial zones:

- Office Business (OB) is the zone within the hamlet where business offices are permitted within a primary residence, e.g. doctors or lawyers offices. This zone exists within the center of the hamlet along route 62.

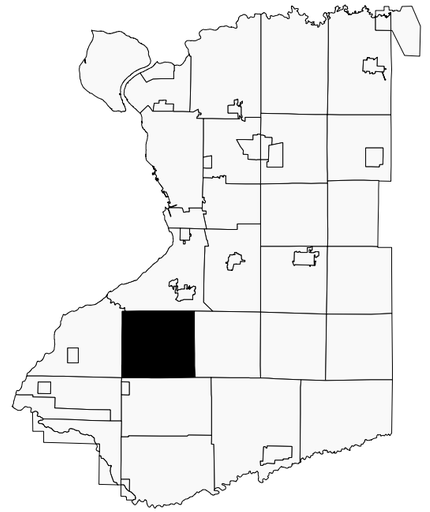
- Local Business (LB) are areas zoned to permit small retail business such as auto repair shops in primarily rural areas. Two such areas are designated (LB): one on route 62 near the southwestern border with the Town of North Collins and at the intersection of East Eden and Keller road in East Eden.

- General Business (GB) are areas within the hamlet where the majority of the towns small retail business exist; such business include: restaurants, a bank and hardware store, etc.

- General Industrial (GI) are zoned areas where light industrial companies are located; there are two areas so designated: One off Derby road on the Eden/Evans town border and one on route 62 south of Church Street.

- Planned Industrial (PI) zones are areas where the town would permit future industrial development; a single area is so designated and is located in the northwestern part of the town along route 20 and the New York State Thruway.

FIGURE 13



Town of Eden

Existing Zoning

Rail
Streets
Municipal Boundary

Zoning
- Agricultural
- Conservation
- General Industrial
- Planned Industrial
- General Business
- Local Business
- Office Business
- Rural Residential
- Hamlet Residential
- Suburban Residential
- Suburban Residential, Restricted Use

2000 0 2000 4000 Feet

WENDEL DUCHSCHERER
ARCHITECTS & ENGINEERS

June 2000

Souce:
Digital Zone Classification data provided by the Town of Eden Conservation Advisory Board.

Town of Hamburg
Town of Evans
Town of Boston
Town of North Collins
Hickox Road
New York State Thruway
Bauer Road
Shadagee Road
Townline Road
Derby Road
Eckhardt Road
Sisson Highway
North Boston Road
Hardt Road
Gowanda State Road
Eden-Evans Center Road
East Church Street
Schintzius Road
Jennings Road
East Eden Road
New Jerusalem Road
Paxon Road
Kulp Road
Haag Road
Sandrock Road
Yochum Road
Tice Road
Larkin Road
20
90
75
62

4.3 Institutions

Emergency services:

Fire: Firefighting services are provided by two volunteer fire companies with a total membership of 120 individuals. The Eden Fire Company is located on East Church street at the Town Hall complex and the East Eden Fire Company is located on East Eden road in East Eden.

Emergency medical: Emergency medical services are supplied by a volunteer ambulance and rescue squad at an advanced life support level. The total membership of this unit is present 55. This unit is located on East Church road at the Town Hall complex.

Police. Police protection services are provided by four full time officers and six part time officers. Services are available 24 hours a day, 7 days a week. Dispatch and offices are located in the Eden Town Hall.

Educational. Educational services consist of a public school system comprised of the Grover L. Priess (Grades K-2); the Eden Elementary (Grades 3-6) and the Eden Jr./Sr. High Schools (Grades 7-12). Total enrollment as of April 1998 was 1785. All the public schools are located in close proximity on Schoolview drive. There is also a Catholic elementary school (Grades K-6) provided by the Immaculate Conception Church located on Route 62 south of the hamlet.

Libraries: A town library which is part of the Erie County library system is located on East Church Street within the hamlet of Eden.

Churches: Presently there are seven churches within the town of Eden: five Are located within the hamlet; one in the East Eden area and one in the northeast part of town at the intersection of route 75 and North Boston road.

Cemeteries: There are five cemeteries in the town of Eden; however, only two are active, they are: Eden Evergreen Cemetery on East Church street in the hamlet of Eden and St. Mary's Cemetery on East Eden road in East Eden.

4.4 Utilities and Solid Waste

Sanitary Sewer: There are two sewer districts provided by Erie County within the Town of Eden. Erie County Sewer District No 2 services primarily the hamlet area; while Erie County Sewer District No. 3 services the East Eden area. Private septic systems provide sewage disposal outside of the two Erie County Sewer districts.

Water Service: Water is provided by the Erie County Water Authority within a district that includes the hamlet and extends to include parts of East Eden and west toward the Town of Evans. Private Wells provide water for those who reside outside the water district.

Solid Waste: Solid waste disposal is contracted out to BFI and transported to the American ReFuel Waste to Energy Plant in Niagara Falls. A town dump located on Town Line Road on the border with the Town of Evans is no longer in use. There are no other active solid waste facilities in the Town of Eden.

4.5 Recreational

The Town of Eden owns approximately 33.4 acres of recreational land, including the soon to be developed Gorcica Field in East Eden, N. Y. The town maintains approximately 87 acres of neighborhood recreational facilities in the form of ball fields and playgrounds. The combined Legion Field and Eden High School facilities come closest to community park status.

Use of privately owned facilities is contingent upon permission of various affiliated organizations.

The currently developed recreational facilities in Town are:

Town Owned	Acres
Swarts Field	6.9
Minekime Field	2.0
Flower Field	4.0
Town Pool	1.0
Gorcica Field (recently purchased	19.5
Total	33.4

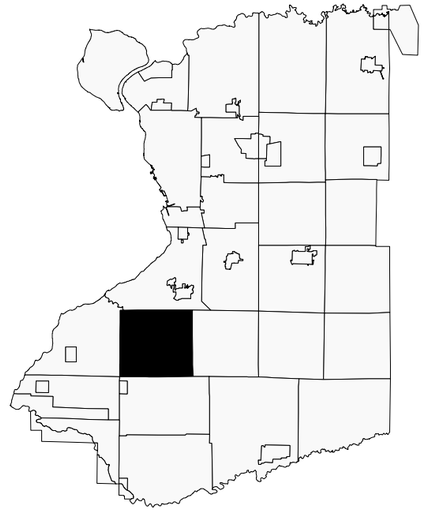
Town use permitted	
Eden Sr. High School facilities	40.0
Legion Field	7.5
Immaculate Conception Church field	4.0
St. Mary's Church field	2.5
Total	87.4

Franklin Gulf Park is a 649 acre woodland preserve owned by Erie County N.Y. Two hundred and fifty acres lie within the Town of Eden and the remainder in the Town of North Collins, N.Y. This undeveloped park is available for limited use by all Erie County residents, but lacks recreational facilities of any kind.

4.6 Agriculture

Eden is primarily a rural town consisting of 25,480 acres, of which 16,280 acres or 63.9% are currently zoned as agricultural. The actual number of acres currently under production is more difficult to estimate. The results of survey completed in 1997 by the Erie County Planning Division (appendix A) showed 6,870 acres in the Eden Valley Agricultural district which is totally within the political boundaries of the Town of Eden. See Figure 14 Agricultural Districts. The Eden-Boston Agricultural district extends into Hamburg, Orchard Park and Boston with about 50% of the district's 8,932 acres or approximately 4,500 acres within the Town of Eden.

FIGURE 14



Town of Eden

Agricultural Districts

Major Streams & Creeks
Streets
Agricultural District
- Eden Valley
- Eden - Boston
- Eden - Langford
- Farms on these properties identified by community leaders as land having an agricultural use, or properties that are assessed with agricultural exemption

2000 0 2000 4000 Feet

WENDEL DUCHSCHERER
ARCHITECTS & ENGINEERS

August 2000

Source:
Digital Agricultral District data provided by the Erie County Department of Environment and Planning and additional data provided by Wendel Duchscherer

The Eden-Langford district has approximately 4,000 acres within the Town of Eden. Taking these figures as a gross estimate it appears that approximately 15,000 acres currently within the three agricultural districts lie within the Town of Eden.

The kinds of active agricultural operations reported in this survey (appendix A) included dairy and related crops; cash crops (including grains & vegetables); livestock (non-dairy) horticulture specialties, poultry and vineyards. Farms within the Eden Valley Agricultural district reported a preponderance of cash crop operations; while dairy and related crops were the majority operations in the Eden-Boston district and the Eden-Langford district. Of the 77 farm operations that responded to the survey 28 were involved growing dairy and related crops and 28 were involved in growing cash crops. For more information on the size of the farm operations; amount of agricultural investment etc. the reader is referred to Appendix A.

The agriculture district program was created in 1973 and provides farmers with a reduction in property taxes in return for a promise not to convert farmland to non-farm use during the agreement period. These agreements are reviewed every eight years.

4.7 Historical sites

The following information was taken from An Informal History of Eden by Doris Anderson, Volume 1, 1946.

There are a number of historical sites in the town including a section of Eighteen Mile Creek, South Branch, which was designated as a District for Historic Preservation by the New York State Historic Trust, Office of Parks and Recreation in 1974. This area designated the Eden Mills District is the site of Clark's, Kromer's and Croop's Mills. Clark's Mill was a grist mill built by Simeon Clark in 1821; in 1930 it became the Clarksburg Country Club and is still in use at 9755 Clarksburg Road. Kromer's Mill, located on Old Mill Run Road was built about 1816 by Asa Warren and was purchased by Alexander Kromer in 1848; the site is in ruin. Croop's Mill, located on Bley Road near the bridge over Route 62 is still intact and efforts have been made to preserve the structure.

The Asa Warren House is located at 8639 South Main Street and was built by Asa Warren in 1815. It is believed to have been a stop on the "Underground Railroad" which was created by abolitionists who hid black slaves escaping from the South to Canada. This structure is owned and maintained by the Eden Historical Society.

The Godfrey Metz House located at 2753 West Church Street was built by its namesake in 1835 and is currently a private residence. Mr. Metz started a cooperage at the age of 16 and went on to become a prominent businessman, founding a hotel on North Main Street which today is used to house small businesses. He also built recreational facilities including a park and racetrack. A small historic marker is located on the front of the dwelling.

The Schweikhardt House (circa 1870) located on the corner of Hardt Road and Route 75 was the site of a brewery. Beer was stored in caves beneath the barn across the street from the house. The Schweikhardt House is currently a private residence.

Historic Markers have been erected in several locations around the town including:

- The north end of the Route 62 bridge in Eden Valley. Placed for Deacon Samuel Tubbs who moved his family from Buffalo to Willink (as Eden was known at that time) in 1811. Deacon Tubbs may have been the first non-Indian settler in the town.

- Hills Corners located on the corner of East Church Street and Route 62. John Hill settled here in 1811; at this time Eden was known as Hill's Corners. The town was named Eden in 1822.

- Eden Chamber Park located on the corner of West Church Street and Route 62 marks the location of a general store erected in1816. The building burned down in the 1970's and is presently the site of a "pocket park" maintained by the Eden Chamber of Commerce.

4.8 Unique Natural Areas

The Town of Eden is blessed with an abundance of unique natural areas consisting primarily of Natural Terrestrial Forested Land and Palustrine (Open & Forested Wetlands). The forested land occurs primarily along the creek and stream corridors within the Allegany Upland Plateau. In addition, there are two Erie County owned undeveloped parks partially located within the Town. Franklin Gulf Park is a 649 area plot of undeveloped woodland preserve.

Approximately 250 acres are located in the Town of Eden and the rest in the Town of North Collins. It is located in the southern portion of the Town. Eighteen Mile Creek Park is the other county owned undeveloped park located in the northern part of the Town along the border with the Town of Hamburg.

The Open and Forested Wetlands occur primarily within the Lake Erie Lowland Plain west of Route 62. State and Federal designated wetland sites are located in this area. This unique area acts as a catchment area for runoff from the steep areas directly east of route 62; thus performing important ecological functions such as flood control, removal of pollutants, ground water recharge and so on.

4.9 Scenic Vistas

The term "scenic vistas" used in this section refers to a long view of natural scenery. Scenic vistas in the Town of Eden may be found in several land use areas; Agricultural land may afford the motorist or pedestrian a view of cropland from the roadside. These views are particularly evident while traveling along Route 62 between the Hamlet of Eden and the Town of Hamburg. Similar views of farmland are available along Route 75 and from portions of Jennings Road, Shadagee Road, Bauer and Belknap Roads and East Eden Road. It should be noted, however, that unobstructed "windshield" views are gradually disappearing as residential development grows along frontage, while farmers continue to farm backland. The Land use/Land cover Map (Figure 19) clearly illustrates this point, particularly along East Eden Road in East Eden.

Steep sloped land provides awe inspiring views of natural areas, particularly along Eighteen Mile Creek. Members of this committee toured several private and public areas along Eighteen Mile Creek during the completion of this study. We hiked along the rim and down into the gorge some 80 feet below to view rapids, waterfalls and huge trees. Similar views are to be found along other deeply cut streams such as the streams that dissect areas of Franklin Gulf Park located in the southwest portion of the Town.

4.10 Political boundaries

The Town of Eden is bounded by the Town of Hamburg on the north, the Town of Boston on the east; the Town of North Collins on the south and the Town of Evans on the west.

SECTION 5: VEGETATION AND WILDLIFE

5.1 Ecological Communities and Vegetation Associations

An ecological community is an assemblage of living organisms interacting with one another and functioning as a unit within a habitat. Ecological communities often occur repeatedly within the landscape. Eden contains a diversity of ecological communities characteristic of the region.

Since the formation of the landscape and the development of the biota, the cultural activities of the aboriginal peoples and the pioneer settlers set into motion the cultural transformation of the land cover characteristics. Historically, Native Americans cleared large areas of northern hardwood forests in order to use the bark and wood for fuel, building material, canoes and for utensils including bowls and spoons. The forest was cleared by hacking, burning and by girdling trees and leaving them to die. The extensive areas of cleared land were used for settlements, to lure wildlife such as deer for hunting and to plant maize, beans and squash. In 1802 the Western New York area began to be more intensely settled by pioneers, who, like the Native Americans, cleared the land for agriculture, homesteads and for the generation of merchantable products.

5.2 Vegetation Associations by Present Land Use

The Town of Eden Land Use & Land Cover Map (LU/LC Map) (See Sections 4 & 7) illustrates the present day land use/land cover characteristics of Eden. Land use is a culturally successive process that will continue to gradually change and transform the land cover characteristics of Eden over time. The Land Use and Land Cover Classification System (Classification System) accompanying the LU/LC Map categorizes the land use/land cover characteristics within Eden into seven “main classification” categories.

These categories are as follows:

*Urban & Built-up Land
*Agricultural Land
*Natural Terrestrial -Open
*Natural Terrestrial -Forested
*Aquatic
*Palustrine
*Barren Land

Each of these main classification categories contains several land use/land cover "sub-classification" categories. Each sub-classification category defines the individual land use/land cover types included under each main classification category. The LU/LC Map and Classification System present valuable information about the occurrence and distribution of the various land uses and the prevailing vegetative cover type communities within the Town of Eden.

The following sections provide supplementary descriptions of the main classification categories and the sub-categories. This text follows the main classification categories and is organized using the classification system presented in the New York State Department of Environmental Conservation publication Ecological Communities of New York State.[16] The following general information is intended to supplement the Inventory Map and the Classification System. For a detailed description of each vegetative/ecological community, please refer to the individual ecological descriptions provided in Reschke.

SYSTEM: TERRESTRIAL

5.2.1 Sub-System: Terrestrial Cultural

Main Classification: Urban & Built –up Land

Urban & Built-up Land refers to those areas of Eden that consist of varying types of nonagricultural, man-made structural development (i.e., homes and commercial buildings) roads and other infrastructure, including utilities and commercial pipelines. According to the LU/LCMap, Urban & Built-up Land occurs most frequently within the center of Eden, Along Route 62 and in association with the network of transportation corridors throughout the Town. Vegetation typically associated with these areas is maintained and consists of native and nonnative grasses and forbs and varying densities of shrubs, woody vines and trees associated with maintained lawns, roadway corridors, pathways and waste places. Ornamental species are

[16] Reschke, C. Ecological Communities of New York State. New York State Department of Environmental Conservation, Natural Heritage Program, Latham, 1990

common and occur in flower and herb gardens, other landscaped areas or as escaped individuals or colonies.

Main Classification: Agricultural Land

The Lu/LC Map shows Agricultural Land as one of the primary land uses and land cover types in Eden. According to the Inventory Map, the larger continuous tracts of agricultural land are most abundant within the north and eastern areas of Eden, with relatively abundant, but smaller tracts of agricultural land occurring elsewhere throughout the community.

An extensive area of agricultural land is currently utilized for growing row crops including corn, peppers, eggplant, potatoes, tomatoes, cabbage and squash. Field crops consist mostly of hayfields which are comprised of a mixture of species such as alfalfa, timothy, oats, orchard grass and red and white clover. Other open agricultural land is used as pastureland for dairy herds and other grazing animals.

There are numerous isolated nurseries, orchards, groves and vineyards scattered throughout Eden. Pine and spruce plantations also occur and are mostly associated with seasonal Christmas Tree operations. Over the years, Eden has expanded agricultural activities related to the production of wholesale greenhouse crops consisting mostly of seasonal ornamental annual and perennial flowers and garden vegetable plants.

Main Classification: Natural Terrestrial – Forested

Coniferous pine, spruce and fir plantations occur throughout Eden in isolated stands or in association with residential areas. These tree groupings are not part of the plantations established for seasonal Christmas tree operations, but are plantations established for such reasons as aesthetics, wildlife habitat and erosion protection. Because this land cover type is a man-established community, it is considered by Reschke to be best classified as a Terrestrial Cultural system. Typical plantation trees include white pine, red pine, scotch pine, norway spruce, red spruce and douglas fir.

Main Classification: Barren Land

Barren Land is listed in the Classification System to consist of gravel and sand mines, bedrock quarries and mixture of other culturally related land features. Barren land is also associated with topsoil stripping activities.

Active or recently mined or stripped areas do not possess defined vegetative communities and therefore are best described as Barren Land. Some barren land areas have been idle for a period of time and are in the process of re-vegetating. Re-vegetating barren land is considered to be Transitional Areas. Plants occurring in the Transitional Areas are typically "pioneer" herbaceous and woody plants adapted to exposed subsoil conditions with low nutrient availability and moisture. Such colonizing grass species include panic grass, switch grass, broom sedge, Canada blue grass, old witch grass, poverty grass, foxtail, indian grass, barnyard brass and low speargrass. Typical forbs include "weedy" species such as common clotbur, dandelion, chicory, filed oxeye-daisy, knapweed, burdock, mayweed, common ragwort, common mugwort and Queen Anne's lace.

5.2.2 Sub-System: Open Uplands

Main Classification: Natural Terrestrial –Open

Open/Herbaceous upland vegetative communities refer to vegetated areas that lack a preponderance of woody vegetation including shrubs, woody vines and tree species. This land cover type occurs throughout Eden in settings where land has been cleared and is in a successional state; or in specific landscape settings where soil, moisture and other environmental and physical factors favor the adaptation and continuance of herbaceous plants over woody species.

Within Eden, open successional communities of herbaceous vegetation can be found to consist of non-agricultural (unmaintained) fields, which are scattered throughout the Town. Other areas include plant growth among the cobbles and rocks of Eden's many lakes and ponds. The unconsolidated, alluvial materials of the creeks and streams, including Eighteen mile Creek and

the South Branch of Eighteen mile Creek support distinct assemblages of vegetation adapted to loose sandy and rocky substrates. Japanese knotweed is an example of a prolific, invasive, non-native plant species that occur in abundance along the banks and on sand and gravel bars of Eighteen mile Creek.

The prominent cliffs, bedrock slopes and outcrops in Eden also support open herbaceous communities of vegetation adapted to these conditions. Mosses, ferns and fern allies are typically found in these locations.

Open/Woody upland plant land cover consists of varying densities of woody vegetation occurring on slopes and cliffs, bedrock outcrops and areas of shallow well drained soils. Within Eden, this land cover classification can be found to occur on hills and slopes with barren shallow soils overlying calcareous and non-calcareous bedrock, on bedrock outcrops and on slopes of the steep bedrock cliffs such as the shale cliffs associated with Eighteen mile Creek.

5.2.3 Sub-System: Forested Uplands

Main Classification: Natural Terrestrial – Forested

Other than Agricultural Land, the next most abundant land cover type in Eden is forest land. The LU/LC Map includes large continuous areas of this vegetative cover type occurring within the southern and central areas of Eden. Forested corridors are also located in association with Eden's creeks and streams including Eighteen mile Creek, the South Branch of Eighteen mile Creek, Hampton Brook and Ryther Creek and along ridges and areas of steeper topography that are not well suited to agricultural use. Discontinuous areas of forest land also occur throughout Eden along smaller streams, as inclusions within agricultural and residential areas and as borders among and along other built-up land.

Forest land can consist of early, mid and late successional woodland and mature climax forest. The species associations and size of trees and the density of the understory growth typically define the stages of forest land succession. The species of trees within a forest community is primarily determined by micro climate, soil conditions, landscape setting, sunlight and moisture. These, and other less detectable factors, influence the adaptation of one species over another.

Forest land in Eden is comprised mostly of deciduous early mid and late successional woodland and mature climax forests. Successional woodland is characterized by the occurrence of varying densities of shrubs and by small to mid-sized trees. Successional woodland is a dynamic cover type community which occurs on formerly maintained and cleared land in the process of reverting back to a stable climax woodland state. In Eden, tree species occurring in this cover type typically include pioneer and sub-climax species such as Eastern cottonwood, quaking aspen, green and white ash and red maple. Characteristic understory shrubs include viburnum, dogwood, buckthorn, honeysuckle, raspberry and blackberry.

Mature climax forest communities are typically characterized by association of relatively large climax forest tree species and few, if any, shrubs endemic to shady mature woodland conditions. Climax forests can consist of several tree specie associations determined by the aforementioned environmental factors. In Eden, mature climax forest land typically contains tree species such as red oak, bur oak, white oak, shagbark, and bitternut hickory and American beech, Eastern hophornbeam, sugar maple, red maple, American basswood and yellow poplar. Some forest land in Eden consists of a mixture of coniferous and deciduous tree species which includes the above listed species with the addition of Eastern hemlock and white pine.

SYSTEM: RIVERINE

5.2.4 Sub-System: Riverine Cultural

Main Classification: Aquatic

This land cover classification refers to the vegetative communities associated with man-made ditches and artificial streams. These features occur throughout Eden and are associated with agriculture, roadways, residential and commercial development and a multitude of other less prominent drainage uses. Vegetation associated with these areas is usually maintained and consists of typical wet meadow, emergent and aquatic species including sedges, rushes, grasses and forbs including cattails, common reed and purple loosestrife.

5.2.5 Sub-System: Natural Streams

Main Classification: Aquatic

This Classification System lists six (6) sub-classifications describing the range of naturally occurring surface water systems within the Town of Eden. The sub-classifications are primarily based on the size and gradient of the system, erosive features, the velocity of stream flows and the nature of the substrate.

Eighteen mile Creek, the South Branch of Eighteen mile Creek, Hampton Brook and Ryther Creek are examples of Rocky Headwater and Midreach Streams. These water bodies convey seasonal low flows and storm event high flows through low to mid gradient creek channels with riffles, pools, runs and intermittent waterfalls. These systems are primarily laterally erosive, with areas of significant alluvial deposition of sand, gravel and shale. These streams and those like them, also include some Backwater Sloughs. Little or no vascular plants occur within the channels of these types of streams. Associated vegetation is characteristic of the Riverside Sand/Gravel Bar and Cobble Shore sub-classification descriptions. Riparian corridors exist along portions of these streams. Ostrich fern is found in these areas in association with other more common riparian and flood plain species. Woody plants such as sycamore, Eastern cottonwood, black walnut, green ash, black willow, Virginia creeper, poison ivy and wild grape are also endemic to the riparian zone.

Eden contains numerous high and low gradient alluvial, flash flow perennial and ephemeral tributaries. These tributaries possess both bedrock and alluvial substrate and are best classified by Reschke as Intermittent Streams. These streams have well defined relatively narrow channels that course through many vegetative communities in the landscape. Vegetation is typically limited to upland banks and side slopes and consists of upland herbaceous plants and woody species. Marsh Headwater Wetlands possess slow flow rates, course through relatively low gradient landscapes and are characteristically associated with marshes, seeps and other depressional headwater wetlands. These features support the variable growth of typical hummock, emergent and aquatic wetland plants adapted to these conditions. Outside of the channels the stream may be bordered by a mosaic of cover types depending on location, which may include riparian and wetland plant species in flood prone areas.

SYSTEM: PALUSTRINE

5.2.6 Sub-System: Open Mineral Soil Wetlands
5.2.7 Sub-System: Open Peatlands

Main Classification: Palustrine

According to Reschke, palustrine open mineral soil wetlands consist of seasonal and permanently flooded and/or seasonally saturated, non-tidal, freshwater systems consisting of no more that 50 percent canopy cover and underlain by mineral soils, bedrock and/or well decomposed organic soils. In Eden, the more common wetlands of this type consist of deep and shallow emergent marshes, wet meadows and shrub swamps supporting many vegetative associations. Most of the wetlands in the region are mineral soil wetlands which contain characteristic grasses and forbs, including emergent and wet meadow species such as cattail, bureed, bulrush, true rush and sedge. Woody species typically include silky and red-osier dogwoods, arrow-wood, willows, American elm, green ash and red and silver maple.

The principal difference between Open Peatlands and Open Mineral Soil Wetlands is primarily the nature of the hydrology and the composition and characteristics of the substrate. Peat consists of coarse woody or fibrous woody organic material, marl and/or organic muck. Plant species associated with Open Peatland systems outlined in the Classification System often contain the same types of plants found in Open Mineral Soil Wetlands. However, other plant species such as skunk cabbage, cinnamon fern, royal fern, wild iris and sphagnum mosses are found in and adapted to the specific conditions of peatland wetland systems.

5.2.8 Sub-System: Forested Mineral Soil Wetlands
5.2.9 Sub-System: Forested Peatlands

Main Classification: Palustrine

Unlike the open palustrine wetland classifications, forested wetlands, according to Reschke, consist of seasonal and permanent wetlands with at least a 50 percent tree canopy cover. These wetlands possess the same substrate conditions and range of hydrologic characteristics as open mineral soil wetlands, but support several forest community types defined by tree species composition. In Eden, characteristic tree associations include American elm, green ash, sycamore, red and silver maple and white and bur oak.

Forested peatland wetlands are underlain by the same peat substrate as the open peatland wetlands, but consist of at least 50 percent tree canopy cover of tree species adapted to these wetland conditions. These wetlands contain forest communities characterized by species associations as outlined in Reschke.

The location of most wetlands in the Town of Eden is not widely known. However, some wetlands are known and have been characterized on the Inventory Map. In Eden, the wetland located along the south side of Shadagee Road adjacent to the railroad tracks and March Road is a well know example of a mosaic of open and forested palustrine wetlands. This wetland also exemplifies an unintentional Impounded Marsh/Swamp resulting from the effects of the railroad grade constructed many years ago. The railroad grade, over time, has artificially influenced the water levels and the character of the plant cover and vegetative associations within this mosaic wetland system.

5.3 Wildlife

The multiplicity of upland and wetland habitats in Eden supports a corresponding diversity of wildlife. Associated with these ecological communities is a diversity of transient and resident fauna, including terrestrial mammals, birds, reptiles, amphibians and fish. The following is a list of some of the more common terrestrial occurring mammals in Eden:

bats	raccoon
beaver	black squirrel
eastern chipmunk	lemming
mink	moles
mice	muskrat
opossum	Eastern cottontail rabbit
Eastern gray squirrel	rats
red fox	skunk
vole	weasel
white-tail deer	woodchuck

The abundance and species diversity of bird populations, like terrestrial mammal populations, is correlated to, among other factors, the abundance and continuity of suitable breeding, nesting and feeding habitat. Fortunately, Eden maintains continuous areas of habitat for a multitude of songbirds, game birds and birds of prey.

The mature coniferous and deciduous woodlands contain species including rose and white breasted nuthatch, rose breasted grosbeak, dark eyed junco, cardinal, blue jay, downy, woodpecker, tufted titmouse, northern parula, chickadee and other songbird species. Open fields and successional woodlands contain species including warblers, sparrows, swallows, killdeer, purple finch, mourning dove, crow, American robin, raven and gray catbird. Hawks, owls and other birds of prey can be found nesting in the overstory and tree cavities of mature forest trees and feeding in the fields and woodlands.

Near wetlands and marshy areas, birds including red-winged blackbird, marsh wren, sedge wren, swamp sparrow, great blue heron, common snipe and American woodcock can be found. The belted kingfisher, blue heron, bank sparrow and Eastern phoebe are examples of birds that are commonly found along rivers and streams.

Common upland game birds in Eden include: turkey, ring-neck pheasant, grouse and woodcock. Waterfowl includes mallard duck, wood duck, American black duck and Canada goose.

Within the riffles and pools of Eighteen mile Creek, common carp, yellow perch, sucker, smallmouth bass and rock bass occur in relative abundance. Lake trout and rainbow trout also occur, but in limited numbers. Minnows and shiners are found throughout Eden not only in the larger creeks, but in the smaller perennial streams and ponds. Largemouth bass, bullhead and pan fish such as bluegill and sunfish are common in stocked ponds.

Eden's uplands, wetlands, lakes and streams support a diversity of reptiles and amphibians endemic to the area. A diversity of snakes, salamanders, newts, as well as northern leopard frog, green frog, spring pepper, bullfrog, wood frog, pickerel frog, toads, snapping turtle, spotted turtle and painted turtle are likely to be found in these areas.

SECTION 6: ATMOSPHERIC CONDITIONS

6.1 Climate

The climate of Erie County, New York (which includes the Town of Eden) is characterized by cold snowy winters and moderately warm summers. Winter temperatures average 26 degrees Fahrenheit and summer temperatures average 69 degrees Fahrenheit. Snow may begin in late Fall with lake effect squalls produced by cold air picking up moisture from an unfrozen Lake Erie. A single lake effect snowstorm can produce 2 to 3 feet of snow before the lake freezes.[17] The Town of Eden is situated directly in the path of these lake effect snow storms and total yearly accumulations may exceed 200 inches in higher elevations.

Cool Lake Erie waters delay the date of the last killing frost in spring to 5/5 (Figure 15) and in Fall these same lake waters extend the date of first killing frost to 10/15 (Figure 16). Altitude, as well as relative distance from Lake Erie, affects the growing season (average number of days between last frost in spring to first frost in fall) which varies from 180 days near the shoreline to 120 days in the Appalachian upland province. The Town of Eden, because of its geography, is affected both by Lake Erie and the Appalachian upland province.[18]

Western New York is characterized by a humid continental climate which produces average annual precipitation ranging from 32 inches in the northern part of Erie County to an annual average of 42 inches in the southern Appalachian uplands (Figure 17). The increase in precipitation is attributable to the increasing altitude levels. Average annual runoff is 20 inches except for the extreme southwestern part of Erie County (figure 18). March produces the most intense overall rate of precipitation; however, storms producing the greatest total precipitation usually occur in July, August and October.[19] In late August 1994 a severe thunderstorm dropped 3 to 4 inches of rain in under an hour on the border between Eden and Boston, N. Y. Debris carried by runoff plugged drainage culverts, flooding nearby basements and yards. The storm washed away a 14 foot section of Hickman Road when a rush of water punched out an 8 foot diameter culvert and swept it 40 feet down stream.[20]

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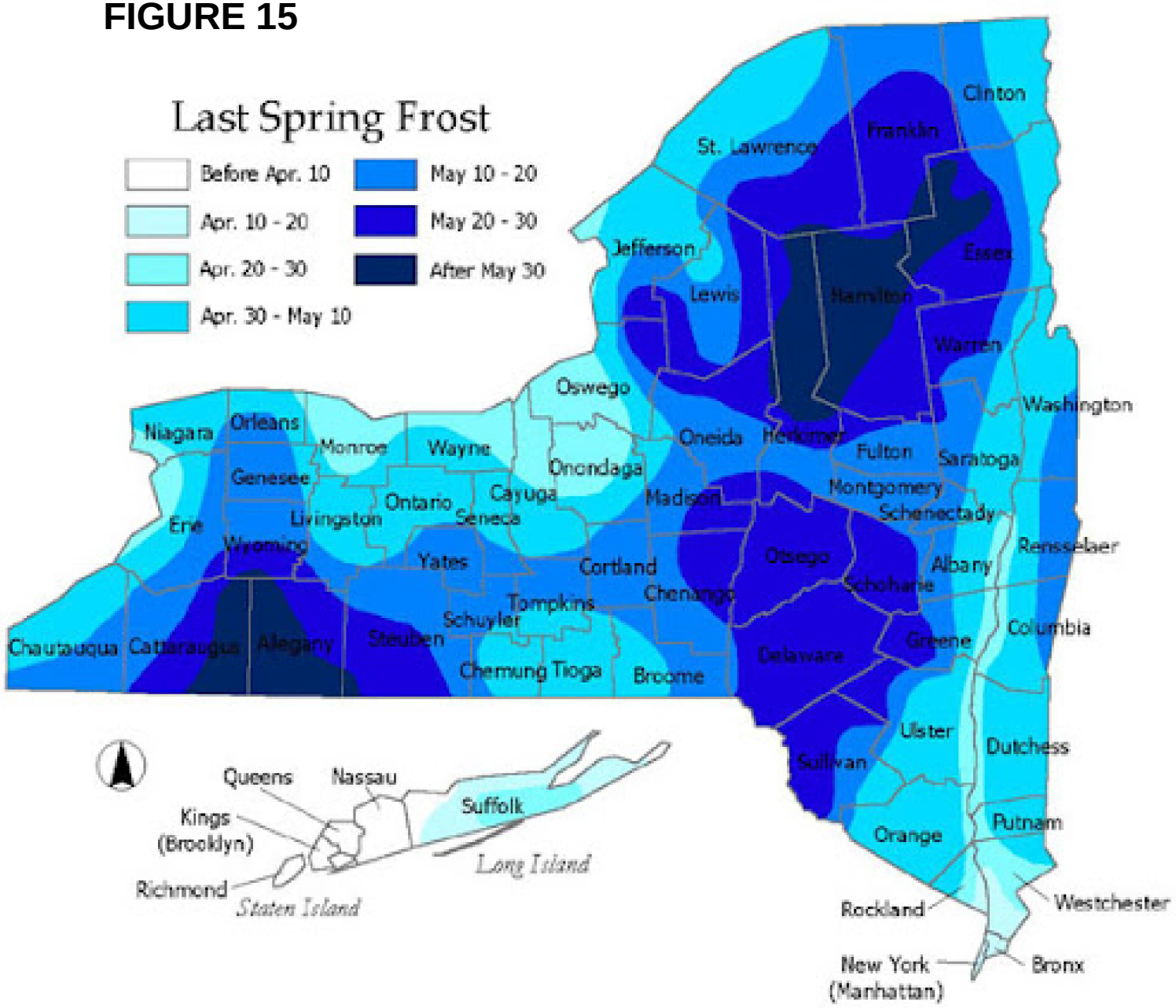
[17] Soil Survey of Erie County, New York. U.S. Department of Agriculture Soils Conservation Service. Donald W. Owens, Willie L. Pittman, John P. Wulforst and Willis E. Hanna, 1978.

[18] Harding, W.E. and Gilbert, B.K. Surface Water in the Erie-Niagara Basin. State of New York Conservation Department, Water Resources Commission, Basin Planning Report, ENB-2, 1968.

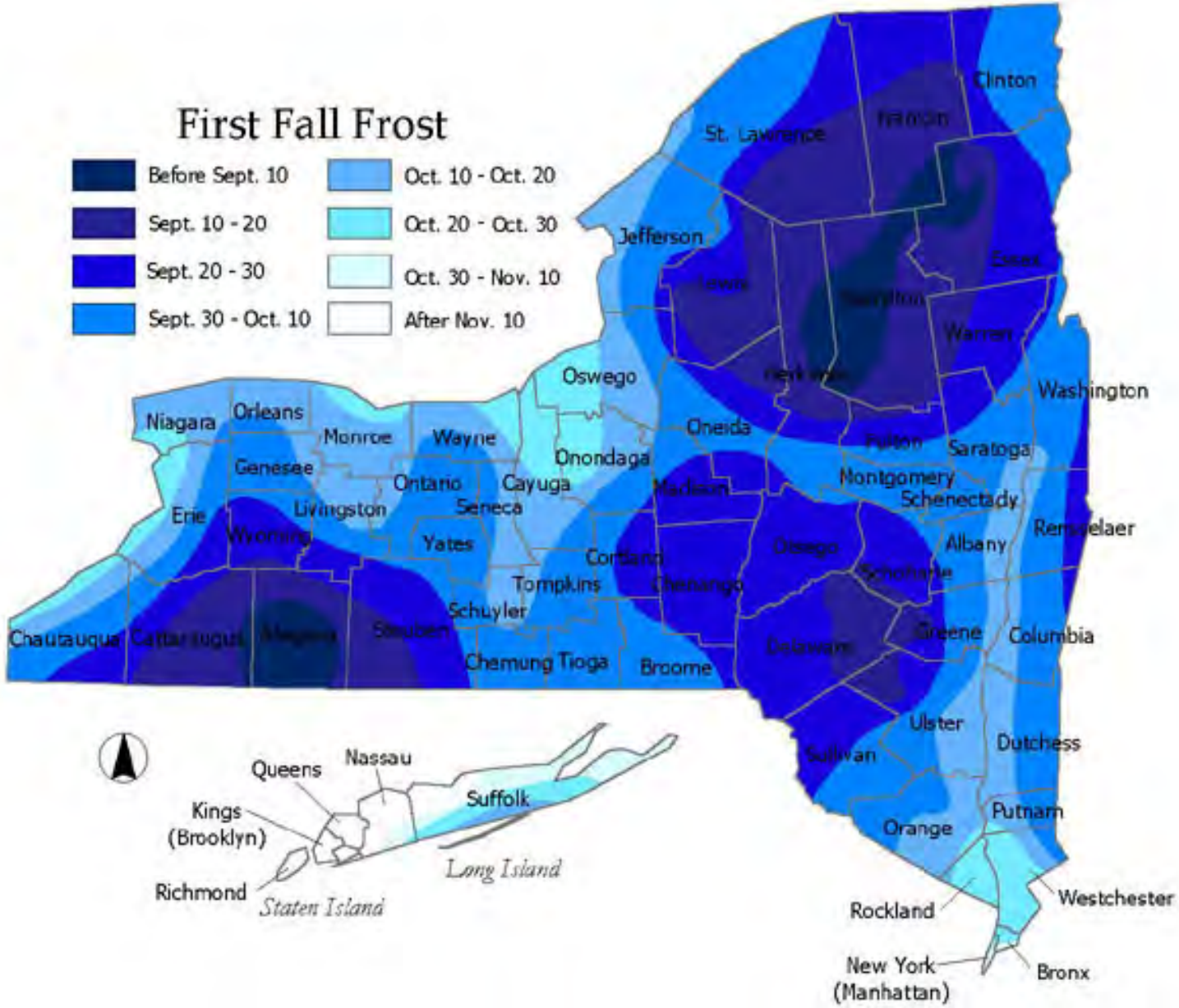
[19] Ibid.

[20] The Sun and Erie County Independent, Hamburg, N.Y. Thursday, September 1, 1994

AVERAGE DATES OF LAST SPRING KILLING FROST
FIGURE 15

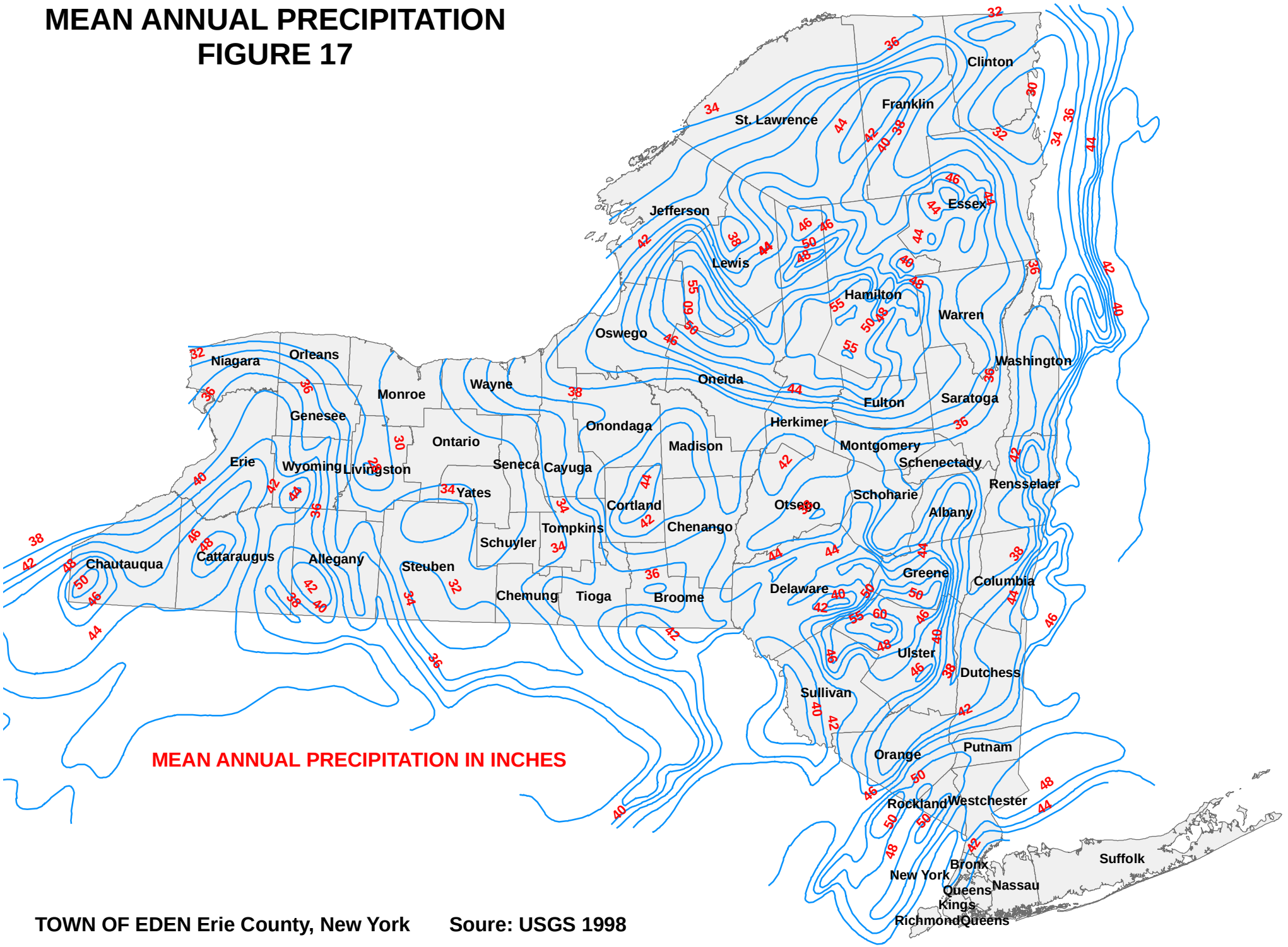


AVERAGE DATES OF FIRST FALL KILLING FROST
FIGURE 16



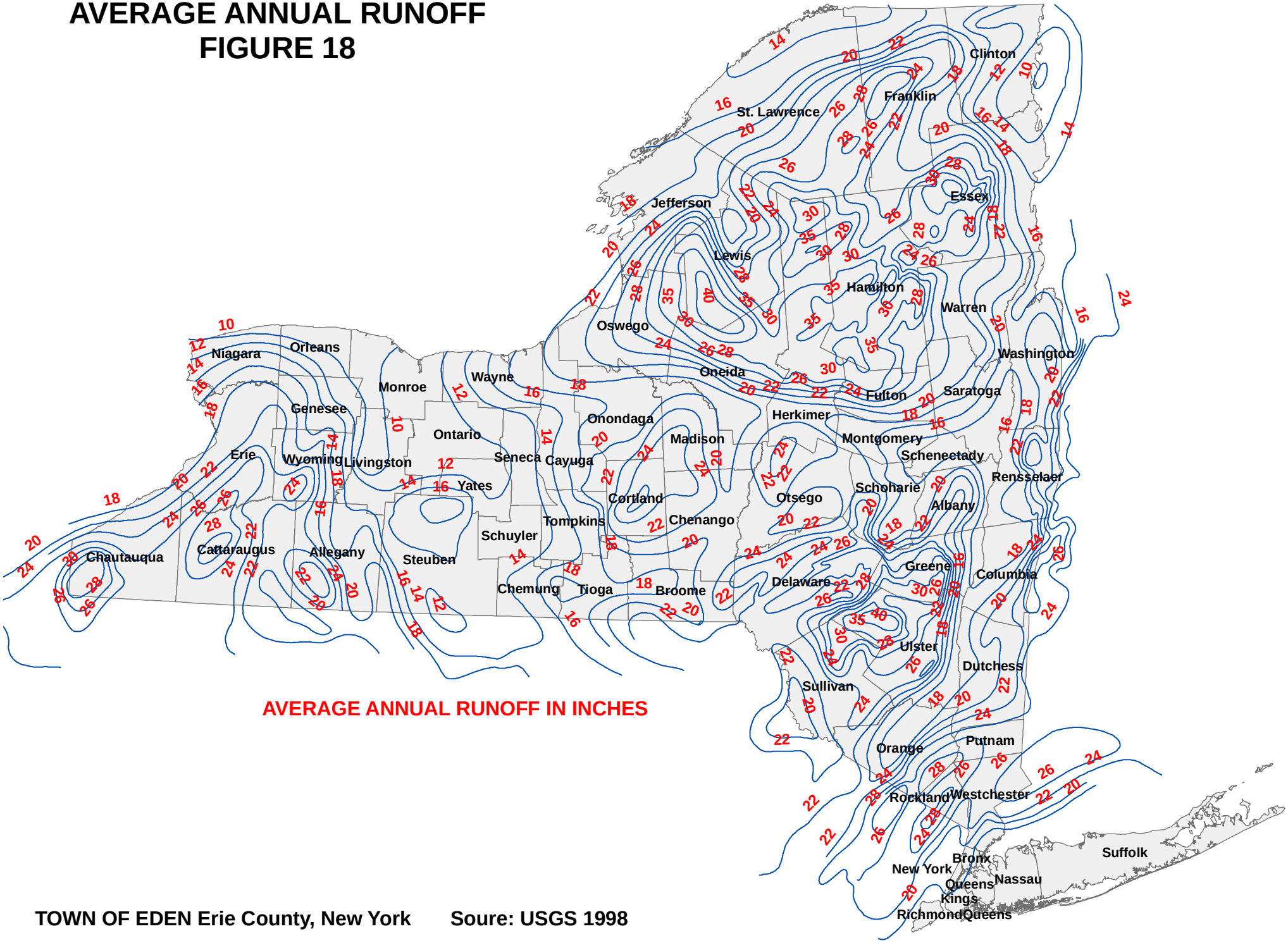
TOWN OF EDEN Erie County, New York **Source: Cornell University 1998**

MEAN ANNUAL PRECIPITATION
FIGURE 17



TOWN OF EDEN Erie County, New York **Soure: USGS 1998**

AVERAGE ANNUAL RUNOFF
FIGURE 18



AVERAGE ANNUAL RUNOFF IN INCHES

TOWN OF EDEN Erie County, New York Soure: USGS 1998

Relative humidity is highest at night, averages 80 percent at dawn and 60 percent in midafternoon. The sun shines 30 percent of the time in the winter and 65 percent of the time in the summer. The prevailing wind is from the southwest with average wind speeds highest (14 miles per hour) in Winter.[21]

6.2 Air Quality

The New York State Department of Environmental Conservation Bureau of Air Quality Surveillance, Division of Air resources monitors air quality throughout New York State. The Town of Eden is located in Region 9 which covers the counties of Erie, Niagara, Cattaraugus, Chautauqua, Wyoming and Allegany. There are numerous monitoring sites located within 20 miles of Eden. The nearest monitoring sites are in Lackawanna, N.Y.

NYSDEC publishes the results of air quality monitoring in an Annual Air Quality Report. Information includes data summaries of all air pollutants for which Ambient Air Quality Standards have been established. These include (SO2) Sulfur Dioxide, (CO) Carbon Monoxide; (NX) Nitrogen Dioxide; (OZ) Ozone; (TSP) Total Suspended Particulates; (PM_{10}) Inhalable Particulates and (LD) Lead.

The 1994 Annual New York State Air Quality Report Executive Summary[22] indicates that Region 9 was "in attainment" for all pollutants. A geographic area that meets or does better than the primary standard (protects health) is called an attainment area by the U.S. Environmental Protection Agency. More recently this criteria has taken into account that one area may be in attainment, but be the cause of other areas in nonattainment; for example Ozone may be created in one metropolitan area due to heavy traffic but collect as smog in a rural mountainous area. The most current New York State Quality Report for 1996[23] simply presents the data on air quality without designating specific regions as in or not in attainment. The information contained in this report continues to show that Region 9 meets health standards for the air pollutants mentioned above.

[21] Soil Survey of Erie County, New York. U.S. Department of Agriculture Soils Conservation Service. Donald W. Owens, Willie L. Pittman, John P. Wulforst and Willis E. Hanna, 1978

[22] New York State Department of Environmental Conservation. Division of Air Resources, 1994 Annual New York State Air Quality Report Executive Summary, November 1995.

[23] Department of Environmental Conservation. Division of Air Resources. New York State Air Quality Report Ambient Air monitoring System. 1996 DAR. 97-1

Air pollution from the burning of fossil fuels is the major cause of acid rain. Two primary chemical pollutants that create acid rain are sulfur dioxide (SO2) and nitrogen oxides (NOx). Acid rain is formed when sulfur dioxide and nitrogen oxides react with water, oxygen and oxidants in cloud formations. A mild solution of sulfuric acid and nitric acid is created which falls to earth in the form of precipitation; this is called acid rain. About half of the acidity that falls back to earth is not caused by acid rain but by acidic particles and gases. These wind-blown particles are deposited on buildings, cars, homes and trees causing damage to personal property. Acid deposition is defined as a combination of acid rain plus dry deposited acid. A major cause of acid rain formation is coal-fired electric utilities and other sources that burn fossil fuels that emit sulfur dioxide and nitrogen oxides.[24]

Indications are that there has been a significant decrease in sulfate and hydrogen ion concentrations in precipitation in the eastern United States in 1995 – particularly along the Ohio River Valley and in the Mid-Atlantic States, according to a report prepared for the U.S. Geological Survey. These positive results were attributed to implementation of Phase 1 of the Clean Air Act Amendments of 1990. The Eastern U.S. was selected because rainfall is the most acidic in the nation.[25]

[24] http://www.epa.gov/acidrain/effects/diagram.html
[25] http://www.epa.gov/acidrain/effects/usgspr.html

APPENDIX A

MAY 1993 New York State Agricultural Soil Groups 1-4*

Publication Symbol	Soil Name	NYS Agricultural Soil Group
AlA	Allard silt loam, 0-3%	1b
AlB	Allard silt loam, 3-8%	2b
AmA	Alton fine gravellyloam, 0-3%	3b
AmB	Alton fine gravelly loam, 3-8%	3b
AnB	Alton gravelly loam, silky sustratum, 3-8%	3b
ArB	Akrport very fine sandy loam, 3-8%	3b
BlA	Blasdell shaly silt loam, 0-3%	2b
BlB	Blasdell shaly silt loam, 3-8%	3b
CeA	Castile gravelly loam, 0-3%	2b
CeB	Castile gravelly loam, 3-8%	2b
CfB	Cayuga silt loam, 3-8%	3b
CgB	Cazenovia silt loam, 3-8%	3a
CkA	Chenango gravelly loam, 0-3%	2b
CkB	Chenango gravelly loam, 3-8%	2b
ClA	Chenango channery silt loam, fan, 0-3%	2b
ClB	Chenango channery silt loam, fan, 3-8%	2b
CrA	Claverack loamy fine sand, 0-3%	3b
CrB	Claverack loamy fine sand, 3-8%	3b
CsA	Collamer silt loam, 0-3%	2b
CsB	Collamer silt loam, 3-8%	3b
CtB	Collamer silt loam, till substratum, 3-8%	3b
CuB	Colonie loamy fine sand, 3-8%	4b
Cv	Cosad loamy fine sand	4b
DaB	Danley silt loam, 3-8%	3b
ElA	Elnora loamy fine sand, 0-3%	4b
ElB	Elnora loamy fine sand, 3-8%	4b
FbA	Farnham shaly silt loam, 0-3%	3
FbB	Fornham shaly silt loam, 3-8%	3b
FcA	Farnham shaly silt loam, fan, 0-3%	3b
FcB	Farnham shaly silt loam, fan, 3-8%	3b
GaA	Galen very fine sandy loam, 0-3%	2b
GaB	Galen very fine sandy loam, 3-8%	3b
GbB	Galen very fine sandy loam, till substratum, 3-8%	3b
Hn	Haplaquolls, ponded	1b
HoA	Honeoye loam, 0-3%	1a
HoB	Honeoye loam, 3-8%	2a
HuB	Hudson silt loam, 3-8%	3b
LfB	Langford channery silt loam, 3-8%	3b
LmA	Lima loam, 0-3%	2a
LmB	Lima loam, 3-8%	3a
MaA	Manlius shaly silt loam, 0-3%	4b
MaB	Manlius shaly silt loam, 3-8%	4b
McB	Mardin silt loam, 3-8%	4b
MdB	Mardin channery silt loam, 3-8%	4b
MfA	Marilla shaly silt loam, 0-3%	3b

MfB	Marilla shaly silt loam, 3-8%	4b
Mg	Middlebury silt loam	2b
NfA	Niagara silt loam, 0-3%	4b
NfB	Niagara sil loam, 3-8%	4b
Ng	Niagara silt loam, fan	4b
Nh	Niagara silt loam, till substratum	4b
PbA	Palmyra gravelly loam, 0-3%	1a
PbB	Palmyra gravelly loam, 3-8%	2a
PhA	Phelps gravelly loam, 0-3%	2b
PhB	Phelps gravelly loam, 3-8%	2b
SaA	Schoharie silt loam, 0-3%	3b
SaB	Schoharie silt loam, 3-8%	3b
Sd	Scio silt loam	2b
Sw	Swormville clay loam	4b
Te	Teel silt loam	2b/5b
To	Tioga silt loam	1b
VaB	Valois gravelly silt loam, 3-8%	2b
VbA	Varysburg gravelly loam, 0-3%	2b
VbB	Varysburg gravelly loam, 3-8%	3b
WaA	Wassaic silt loam, 0-3%	3a
WaB	Wassaic silt loam, 3-8%	3a
WeB	Williamson silt loam, 3-8%	4b

* "New York State prime and important farmland soils"

a – high lime soils
b – low lime soils

All programs and services of the Soil Conservation Service are offered on a nondiscriminatory basis without regard to race, color, national origin, religion, sex, age, marital status or handicap.

March 1996

APPENDIX B

Quick Reference

Erie County Soils with Potential for Hydric Inclusions
Based on March 1989 NYS listing

The following somewhat poorly drained soils and land forms have the greatest likelihood of having Hydric inclusions.

Map Symbol	Series and Subgroup
AoA&B	Angola silt loam, 0-3%, 3 to 8%
ApA&B	Appleton silt loam, 0-3%, 3 to 8%
BrA&B	Brockport silty clay loam, 0-3%, 3 to 8%
CoA&B	Churchville silty loam, 0-3%, 3 to 8%
Cv	Cosad loamy fine sand
DbA,B&C	Darien silt loam, 0-3%, 3 to 8%, 8 to 15%
DcB	Darien silt loam, 3 to 8%
DdA,B,&C	Derb silt loam, 0-3%, 3 to 8%, 8 to 15%
ErA,B,&C	Erie channery silt loam, 0-3%, 3 to 8%, 8 to 15%
HrA&B	Hornell silt loam, 0-3%, 3 to 8%
HsC	Hornell clay silt loam, 8 to 15%
Ke	Kendaia silt loam
Mh	Minoa very fine sandy loam
Ne	Newstead loam
NfA&B	Niagara silt loam, 0-3%, 3 to 8%
Ng	Niagara silt loam, fan phase
Nh	Niagara sil loam, till substratum
Od	Odessa silt loam
Oe	Odessa-Lakemont *silt loam
OrA,B,&C	Orpark silty clay loam, 0-3%, 3 to 8%, 8 to 15%
OvA&B	Ovid silt loam, 0-3%, 3 to 8%
RaA&B	Raynham silt loam, 0-3%, 3 to 8%
Re	Red Hook silt loam
RfA,B,&C	Remsen silty clay loam, 0-3%, 3 to 8%, 8 to 15%
RgA&B	Rhinebeck silt loam, 0-3%, 3 to 8%
RhC3	Rhinebeck silty loam, 8 to 15%, eroded
RkA&B	Rhineback gravelly loam, 0-3%, 3 to 8%
RmA&B	Rhinebeck silty clay loam, 0-3%, 3 to 8%
Sw	Swormville clay loam
Te	Teel silt loam
Ue	Udorthents, smoothed
Uf	Urban land - Canandaigua complex
Uo	Urban land - Cosad complex
Us	Urban land - Niagara complex
Ut	Urban land - Odessa complex
Uv	Urban land - Swormville complex
Uw	Urban land - Teel complex
VoA&B	Volusia silt loam, 0-3%, 3 to 8%
VpA&B	Volusia channery silt loam, 0-3%, 3 to 8%

*Lakemont inclusions are HYDRIC

March 1996

Quick Reference

Hydric Soils of Erie County, New York
Based on March 1989 NYS listing

Map Symbol	Series and Subgroup
Be*	Beaches
Ca	Canadice silt loam
Cb	Canadice silt loam, shaly substratum
Cc	Canandaigua silt loam
Cd	Canandaigua mucky silt loam
Ch	Cheektowaga fine sandy loam
Cn	Chippewa silt loam
Ed	Edwards muck
Fu*	Fluvaquents & Udifluvents, freq. flooded
Ge	Getzville silt loam
Ha	Halsey silt loam
Hn	Haplaquolls, ponded
In	Ilion silt loam
La	Lakemont silt loam
Lb	Lakemont mucky silt loam
Lc	Lamson very fine sandy loam
Ld	Lamson mucky very fine sandy loam
Ly	Lyons silt loam
Lz	Lyons mucky silt loam
Pa	Palms muck
Pc	Patchin silt loam
Pt*	Pits, borrow
Pu*	Pits, gravel
Qu*	Quarries
Wd	Wayland silt loam

* These map units are not always “hydric”. Site investigations are necessary to confirm whether or not hydric conditions are present.

For additional information, contact the Erie County Soil & Water Conservation District and USDA Natural Resources Conservation Service Field Office located at 50 Commerce Way, East Aurora, New York 14052 (phone 716-652-8480, fax 716-652-8506, email *nrcsea@localnet.com*).

Note: This list contains no changes from December 1990 list except for agency name, fax/email listings, and revised USDA nondiscrimination clause.

APPENDIX C

FACT SHEET
EDEN AGRICULTURAL DISTRICTS
8-YEAR REVIEW
For 1997

	Eden Valley	Eden-Boston	Eden Langford	Total 3 Districts
Acres in Districts Existing	6,870	8,932	11,763	27,565
No. Active Agricultural Operations by Principal Enterprises (includes rented lands)				
Dairy and Related Crops	6	10	12	28
Cash Crops(includes grains & vegetables)	13	8	7	28
Livestock (non-dairy)	2	1	2	5
Horticulture Specialties	4	3	0	7
Poultry	0	0	1	1
Vineyards	1	0	7	7
Total	26	22	29	76
No. Operations According to Annual Gross Farm Sales*				
Below $10,000	2	3	1	6
$10,000 to $39,999	5	5	3	13
$40,000 to $99,999	3	1	0	4
$100,000 to $199,999	4	1	2	7
$200,000 to $499,999	2	6	1	9
Over $500,000	5	1	1	7
No. Operations According to Total Agricultural Investments over Past Years*				
Below $10,000	5	7	1	13
$10,000 to $49,999	7	5	3	15
$50,000 to $99,999	2	5	0	7
$100,000 to $199,999	4	1	2	7
Over $200,000	3	2	2	7

	Eden Valley	Eden-Boston	Eden Langford	Total 3 Districts
Crops Harvested (Acres)				
Corn	850	1,200	1,175	3,225
Wheat	50	5	-	55
Oats	120	170	32	322
Barley, Rye	-	5	-	5
Vegetables	775	320	65	1,160
Hay	1,300	1,800	2,700	5,800
No. Greenhouse Operations	6	3	-	9
(Sq.Feet)	185,000	81,000	-	266,000
Grapes	7	-	180	187
Apples	-	-	8	8
Nursery	180	13	-	193
Livestock				
Milk Cows	975	1,710	1,610	4,295
Heifers and Calves	650	755	980	2,385
Beef Cattle	-	70	110	180
Poultry	-	-	60,000	60,000
Hogs	1,250	-	-	1,250
Sheep	65	-	-	65
Horses	39	-	-	69

* As reported on survey sheets; do not add up to the No. of active agricultural operations

SOURCE: 1997 Data taken from productivity sheets completed by agricultural interests.
ERIE COUNTY PLANNING DIVISION 4/97