A. INTRODUCTION

Natural resources are important elements in defining the character and quality of life in a community. Natural resources can also be affected by development activities, for example, through the loss of critical conservation areas such as wetlands and wildlife habitat. Development can also lead to such adverse effects as the on- and off-site pollution of natural resources, including groundwater or soils, or erosion of steep slope/loose soils areas. Typical sources of pollution in the area include runoff from roads and other impervious surfaces containing salts, oils, and gasoline, toxic household wastes, and in limited instances, industrial wastes. Natural resources and features—including topography, soils, water, and native plants and animals—need to be identified so that planning for future growth ensures their protection. Development must be planned in a way that the Village of Attica maintains the water quality of Tonawanda Creek, keeps soils free from contamination, preserves the important groundwater recharge and flood mitigation functions of wetlands, and continues to provide a habitat for native wildlife.

B. GEOLOGY

Geology encompasses the bedrock geology of the region as well as the surficial geology, composed of soils and glacial deposits. Wyoming County is underlain by bedrock of the Devonian age. Attica is primarily underlain by bedrock that is composed of Angola and Rhinestreet shales from the West Falls Group, as well as Cashaqua and Middlesex Shales from the Sonyea Group. At the higher elevations in the northern portion of the County, including the Village of Attica, the formations increase in content of sandstone strata. In general, bedrock in this area of New York State is not a limiting factor for development.

The surficial geology of the Village is composed of various deposits including lacustrine silt and clay that was deposited in proglacial lakes, which potentially can create land instability. In addition, glacial till of variable textures (e.g., clay, silt-clay, boulderclay) may also cause instability on steep slopes. More recent deposits are generally confined to floodplains within valleys, and are composed of fine sand to gravel - in larger valleys the materials may be overlain by silt and be subject to frequent flooding.

TOPOGRAPHY

Wyoming County is in the Appalachian Uplands physiographic province and is moderately dissected by streams. Elevations of 1,000 feet are common in the valley floors in the northern portion of Wyoming County including the portion of the Village of Attica east of Route 98 and Tonawanda Creek. However, the portion of the Village that is west of Route 98 and the Creek rise somewhat steeply, up to elevations of 1,200 feet in some parts.

Wyoming County is part of the Erie-Ontario drainage basin. The western parts of the county - including the entire Village of Attica drains into Lake Erie, via the Cattaraugus, Buffalo, Cayuga, and Tonawanda Creeks.

SOILS

Soils are formed by the interaction of time, climate, plant materials, topography, and plant and animal life. The influence of each factor varies from place to place, but the combination of all five factors normally determines the kind of soil that develops in an area. The formation of soils is a continuing process, and it generally takes several thousand years for significant changes to occur under natural conditions. However, human intervention through clearing land or filling can cause noticeable changes in soil characteristics within a span of years.

The most common characteristics used in describing soils are depth, permeability, drainage, and available water capacity. Descriptions of depth such as deep and very deep refer to the distance from the ground surface to other soil types or rock which would restrict or change water movement. Depth is important to water- and nutrient-supply capacity, downward movement of water, and root penetration. The depth and kind of material have an important effect on how a soil behaves when used for roads and structures. Permeability is the ease at which water passes through a soil. Drainage classes reflect the hydraulic conductivity and water holding capacity of soils. In a high permeability well-drained soil, the water moves quickly and can act as a recharge for groundwater. In low permeability poorly drained soils, the water moves slowly and can cause flooding and increased runoff. Available water capacity is the amount of water that a soil can hold within the zone accessible to the roots of trees and vegetation. See Table 2.6-1 for a description of soil limitations.

Table 2.6-1
Soil and Slope Characteristics

Constraints	Characteristics	Concerns
Critical limitation	Slopes greater than 25 percent Soil less than six inches Soils very poorly drained	Erosion Septic Foundation failure
Severe limitation	Slopes 15 to 23 percent Soils less than 24 inches Soils poorly drained Low permeability Boulders and rocks	Erosion Septic
Moderate limitation	Slopes 8 to 15 percent Soils moderately well drained Soils greater than 24 inches	Erosion
Slight limitations Others	Slopes 0 to 8 percent Soils well drained Standing or intermittent water	No unusual concerns See Wetlands section

Source: Allee King Rosen & Fleming, Inc.

Another important factor that affects the engineering properties of soils is slope. Steep slopes are generally those with slopes of 25 percent or more. Slope influences the retention and movement of water, transfer of heat, movement of soil material, rate and amount of runoff, potential for soil slippage and accelerated erosion, ease with which machinery can be used, soil-

water state, and other functions. Together, slope and soil characteristics affect development capacity. For example, severe limitations are associated with steep, rocky, and shallow depth to bedrock soils. These lands are generally unsuitable for development because of the high potential for structural failures and erosion and drainage problems. Moderate limitations involve shallow depth to bedrock on rolling land where soils are stony and permeability is slow, indicating limitations on septic development. The best slope and soil conditions to support density are soils that are deep to very deep and moderately well drained to well drained and slopes of 0 to 8 percent.

While soils conditions can be a constraint to development, depending on factors such as wetness, frost action, stones, etc., there are also many engineering/construction techniques to overcome these constraints.

Local Soil Characteristics

The primary soil association in the Village of Attica is Chenango-Howard-Castile. These soils are deep, somewhat excessively drained to moderately well-drained, very low-lime to medium-lime soils that have a medium-textured and moderately coarse textured and gravelly subsoil. These soils are found on outwash terraces (ordinarily flat or undulating areas, bordering a stream or waterbody) and fans (sediments that form a fan-like plain at the end of a stream valley). Chenango-Howard-Castile soils are level or gently sloping and are formed in valley trains and fans of gravelly or sandy glacial outwash (stratified sand or gravels produced by glaciers and carried, sorted, and deposited by water that originated mainly from the melting of glacial ice).

The well-drained to excessively drained, very low lime Chenango soils were formed in outwash derived mainly from sandstone and shale.

The well-drained to somewhat excessively well-drained, medium lime Howard soils formed in outwash that contains sufficient limestone, sandstone, and shale to provide a more fertile subsoil than Chenango and Castile soils.

The moderately well-drained, very low lime Castile soils formed in outwash derived mainly from sandstone and shale.

The drier the areas of this soil provide excellent home sites, good onsite water supply and sewage effluent disposal. In general, the soil in Attica is not a limiting factor to development except in the floodplain area as discussed below.

C. WATER RESOURCES

GROUNDWATER

Groundwater is a valuable source of drinking water. Groundwater is a moving stream that flows following the contours of the land. Most groundwater originates as rainwater which seeps downward through soils until it reaches the saturation zone from which wells and springs are fed. As described in Chapter 2.7, “Transportation and Infrastructure”, all Village residents are supplied with water by the Village of Attica Public Water District.

Groundwater aquifers are porous water-bearing geologic formations capable of yielding an appreciable supply of water. The geologic formations generally consist of unconsolidated deposits such as sand and gravel or bedrock, which in the Village consists of sandstone and

shale. Aquifers are similar to lake basins and river channels that contain surface water. The Village has two aquifers, an asset to the community as a potential municipal water source. A confined aquifer underlying an unconfined aquifer, which yields 5 to 500 gallons of water per minute (gpm), is associated with the Tonawanda Creek in the Village (an aquifer is considered confined if it occurs underground). In addition, there is a principal aquifer in the northern portion of the Village that extends from the Genesee County line in the Village to the north.. A principal aquifer is a potential source of public drinking water with yields greater than 10 gpm that are not presently being used intensively as a water source by a major municipal system.*

SURFACE WATER

There are a variety of surface water resources encompassed within the Village of Attica including Tonawanda Creek, its associated floodplain, and two wetlands.

Tonawanda Creek

All waterbodies and streams are assigned classifications for best uses and standards of quality and purity by NYSDEC's Water Pollution Control Board. Classifications are based on water quality at the time of sampling, as well as recommended best usage, which is determined by natural conditions and past, current, and desired uses of the water-bordering lands. Class A and AA are suitable for drinking water; Class B is suitable for primary contact recreation, such as swimming; Class C is suitable for fish propagation; and Class D is suitable for secondary contact recreation, such as boating. A Class D designation does not necessarily imply that the waters are polluted. These are waters that may not have been sampled or are extremely small or intermittent and, therefore, unsuitable for fish propagation.

Surface water quality in the Village is very high, and meets the highest water quality standard set forth by NYSDEC. The portion of Tonawanda Creek that runs through Attica is rated Class A and, as such, is suitable for drinking. In addition, the Creek's many tributaries in and around the Village are also Class A.*

Tonawanda Creek originates in the Town of Java and runs in a northerly direction through the Village, eventually flowing to the east and into the Niagara River at the boundary of the Cities of North Tonawanda and Tonawanda. The Creek offers some limited fishing opportunities in the Village. Though the Creek is a trout stocked stream from the hamlet of Varysburg in the Town of Sheldon upstream, the water is too warm by the time it gets to Attica to consider trout stocking as an option. Also, the width and flow of the Creek in the Village are too small for it to be considered a warm water fishery, although an occasional smallmouth or rock bass are encountered. Still, there is a richness and diversity in the species that is indicative of a healthy ecosystem, as testified by its state stream classification of "A". Several species of fish are common inhabitants of Tonawanda Creek and its tributaries within the Village of Attica including hog suckers, white suckers, stoneroller minnows, creek chubs, blacknose daces, longnose daces, fantail darters, johnny darters, common shiners, bluntnose minnows, rock bass, smallmouth bass, blue gills, green sunfish and mottled sculpin.

FLOOD ZONES

Under the National Flood Insurance Program (NFIP), the Federal Emergency Management Agency (FEMA) is required to develop flood risk data to use in both insurance rating and

*New York State Department of Environmental Conservation, Region 8, 2002

floodplain management necessary to purchase federally-backed flood insurance. The data are developed through Flood Insurance Studies for individual municipalities. Special flood hazard areas are subject to inundation by the 100-year flood, which is a flood having a 1 percent or greater probability of being equaled or exceeded during any given year. The 100-year flood is the national standard on which the floodplain management and insurance requirements of the NFIP are used.

The current Flood Insurance Rate Map (FIRM) is from 1986 and is in the process of being revised. According to the 1986 FIRM, there are two floodplains in the Village of Attica, with the larger of the two located along Tonawanda Creek, predominantly on the eastern side of the Creek. A smaller floodplain straddles the eastern border of the Village (see Figure 2.6-1 "Natural Resources").

In 1998, the Village suffered a major flood which resulted in two deaths. Approximately 70 basements were flooded and residents were evacuated for several hours from parts of Prospect, Washington, Water, North and Exchange Streets during the flood.[*] In addition, floodwaters were three feet deep on Prospect Street and the Main Street Bridge was overrun, causing the street to be closed for several hours.

Tonawanda Creek and its associated floodplain crosses Prospect Street at the Wyoming/Genesee County line. Recent commercial development has occurred on Prospect Street, in Genesee County, as it approaches Route 98. The surface of this commercial area does not allow for adequate drainage since it is almost completely impermeable, with little or no landscaping and consisting primarily of buildings and paved parking area. It is highly likely that this development has added substantially to the already dangerous flood situation in the Village.

Flood Plain Regulations

Flood plain regulations are included in the Village Code to protect the community against potential flood damage. These regulations apply to those areas encompassed in the flood hazard zones delineated on the current FIRM. The Village Board is the administrator of the local flood law and is in charge of reviewing development applications in flood hazard zones. The law sets forth what information is required for developments in flood zones. In addition, special construction standards are described for floodproofing and mitigation of flood damage. No development is allowed in designated floodways unless a technical analysis demonstrates such encroachments would not increase flood levels during the occurrence of the 100-year flood. Variance and appeal procedures are also described in this section of the Village Code for those seeking concessions to the code and those aggrieved by flood-zone related Village Board decisions.

Special Flood Hazard Evaluation Report

The U.S. Army Corps of Engineers conducted a Special Flood Hazard Evaluation Report, for the portion of Tonawanda Creek in the Village, that was completed in March 2000. The study will assist local officials to develop floodplain management strategies including appropriate land use controls for the floodplain area. In addition, the study will provide important information toward the update of the current FIRM.

The study indicates that changes have occurred in the floodplain and the current FIRM needs to be updated based on new data provided by the study. The new study indicates that there are

[*]Buffalo News, July 9, 1998

higher flood elevations in the Prospect Road vicinity as compared to those documented in the 1986 FIRM. The study reflects changes in hydrology and hydraulics due to a more detailed analysis, including new procedures and additional flow data. In particular, the Prospect Road vicinity was more accurately modeled and flows from Tannery Brook were accounted for in the recent study.

The study also describes general flood plain management strategies including reducing the susceptibility to flood damage and disruption, such as land use regulations, development policies, floodproofing, and disaster planning; modifying the floods themselves, including the construction of dams, dikes, levees, and channel alterations; and reducing the adverse impacts of floods on the individual and community, which include information dissemination and education, transfer of individual loss to the community, and purchase of federally subsidized flood insurance.

Currently, Genesee and Wyoming Counties are developing a Joint flood Mitigation Plan that will identify specific strategies for the area.

POTENTIAL SOURCES OF POLLUTION

Point Surfaces

Surface water and groundwater are subject to contamination from specific point sources and non-point sources of pollution. A point source is defined as a discharge from a discrete identifiable location, such as a pipe. Point sources of water pollution are controlled by the government through permitting programs, such as the National Pollutant Discharge and Elimination System (NPDES) and its state counterpart, the SPDES.

Non-Point Surfaces

Non-point source pollution originates from diffuse sources and enters water at non-specific locations through precipitation, runoff, and shallow subsurface flow. Sediment from erosion, pesticides, fertilizers, oil, grease, and de-icing salts from roadways; septic systems; animal waste; dumped motor oil and household chemicals; storm water runoff; and discharges from boats and marinas are examples of non-point source pollution. Polluted water bodies can be easily identified by offensive odors, an abundance of aquatic vegetation, and fish kills.

Sediments released into waterbodies through erosion threatens both plant and animal life by reducing the amount of light and by smothering. They can also decrease the capacity of reservoirs. Sedimentation is a particular problem near construction sites. Nutrients, such as phosphates and nitrates from wastewater and fertilizers, promote the growth of algae, which crowds out other aquatic plants preferred by wildlife. Decaying sewage and aquatic plants use up oxygen, depriving fish and other animals of oxygen. The accelerated decay causes lakes to fill in much more rapidly than they would under natural conditions and results in an unpleasant odor. Another water contaminant, salt, enters waterbodies through the runoff of salts used to treat icy roadways in winter. High concentrations of salt make a waterbody unsuitable to be an emergency water supply. Pathogens, disease-producing contaminants such as bacteria, viruses, and parasites, enter waterbodies from septic systems and animal manure from farms. None of these sources are prevalent in Attica.

Village of Attica Wastewater Treatment Plant

According to the NYSDEC, the only facility in the Village that has water pollution permits is the Village wastewater treatment plant on Prospect Street. The wastewater treatment plant has been in violation of its SPDES permits due to excessive flows during storm events. Currently, the NYSDEC has a consent order for the Village to make repairs to its sewage collection system to correct infill and infiltration (i.e., groundwater leakage into the system) problems which are described in Chapter 2.7 "Transportation and Infrastructure." If this remedial work is not adequate to put the plant within compliance flow levels, then added capacity will be required for the plant. Although the plant generally does a good job of treating the water, in addition to the flow infractions, there have also been infrequent occurrences of pollutant violations. However, according to the NYSDEC, these pollutant issues should be corrected as a result of the flow problem being resolved (NYSDEC, July 2002).

Former Westinghouse Plant

The former Westinghouse foundry, at 40 Favor Street in the Village, has gone through an extensive environmental cleanup, including the removal of drums and transformers. The cleanup has been funded by the United States Environmental Protection Agency (USEPA) and NYSDEC. The site is currently owned by Wyoming County Industrial Development Agency (WCIDA). To date, a number of monitoring wells have been dug on the approximately 37 acre site to evaluate groundwater contamination in order to confirm that the cleanup that has taken place is sufficient. In addition, the Village is working with the WCIDA to fund the demolition of buildings that will make the site ready for future development.

WETLANDS

Wetlands are transition areas between uplands and aquatic environments. Freshwater wetlands are a valuable natural resource for the Village. The important functions of wetlands include flood mitigation, groundwater recharge (the movement of surface water down through the soil to the underlying groundwater system or aquifer), wildlife habitat, biospheric stability (the biosphere is the thin layer of air, water, and soil that encircles the globe and supports all life), erosion control, pollution filtration, open space, and areas for recreation and education.

Wetlands are protected by State and Federal laws, which require any person wishing to conduct an activity in a wetland or regulated adjacent area to obtain a permit from the issuing authority.

Wetlands are categorized as lacustrine (lakes), palustrine (marshes, swamps, and bogs), or riverine (rivers and streams). Where the water table is near or at the surface of the land or where the land is covered with shallow water, there is a predominance of wetland vegetation, and the substrate is predominantly saturated wetland hydric soils. Characteristic soils, vegetation, and hydrology distinguish wetlands from upland areas.

Soils that are poorly and very poorly drained are considered to be hydric (wetland) soils. These are divided into three types: alluvial, organic, and upland wetlands. Alluvial soils are deposited by stream sedimentation and flooded on a regular basis. The soils are wet by virtue of their low-lying positions along streams. Organic soils are created by decayed plant material, usually found in wetlands that were former lakes and ponds, which have become filled as a result of eutrophication, the excessive growth of vegetation as a result of nutrient overloading, and succession, the change in plant communities over time. Upland wetlands are soils subject to flooding and ponding because of their low-lying position in the landscape. In general, the soils

are nearly level (0 to 2 percent slopes), very deep, poorly drained, and have a high water capacity.

Wetland plants, or hydrophytes, have morphological and physiological adaptions that enable them to survive inundation and/or saturated soil conditions. In New York State, a wetland is specifically identified by the presence of hydrophitic vegetation. The method used by the Federal government is based on the presence of hydrophytes, hydrology, and hydric soils.

Wetlands in the Village of Attica

There are two NYSDEC regulated wetlands in the Village. The first is a Class II wetland that straddles the northern portion of the eastern boundary of the Village, stretching from the Norfolk Southern railroad tracks to the north, to just north of Main Street (Route 238) to the south. According to the NYSDEC Freshwater Wetlands Permit Requirements Regulations, Class II wetlands provide wetland benefits, the loss of which is acceptable only in very limited circumstances. A permit may be issued by the NYSDEC only if it is determined that the proposed activity satisfies an economic or social need that clearly outweighs the loss of or detriment to the benefits of the Class II wetland. The second is a Class III wetland that lies in the southeastern portion of the Village, just east of the old railroad right-of-way. Class III wetlands supply wetland benefits, the loss of which is acceptable only after the exercise of caution and discernment. A permit may be issued by the NYSDEC only if it is determined that the proposed activity satisfies an economic or social need that outweighs the loss of or detriment to the benefits of the Class III wetland. There are no Class I wetlands - the highest designation made by NYSDEC. The characteristics of New York State Class II and Class III wetlands are outlined in Table 2.6-2.

Table 2.6-2
New York State Wetland Classification Characteristics

Class II Wetlands	A wetland is classified as Class II if it possesses any of the following characteristics:
Covertype	it is an emergent marsh in which purple loosestrife and/or reed (phragmites) constitutes less than two-thirds of the covertype
Ecological Association	it contains two or more wetland structural groups it is contiguous to a tidal wetland it is associated with permanent open water outside the wetland it is adjacent or contiguous to streams classified C(t) or higher under Article 15 of the Environmental Conservation Law
Special features	it is traditional migration habitat of an endangered or threatened animal species it is resident habitat of an animal species vulnerable in the state it contains a plant species vulnerable in the state it supports an animal species in abundance or diversity unusual for the county in which it is found it has demonstrable archaeological or paleontological significance as a wetland it contains, is part of, owes its existence to, or is ecologically associated with, an unusual geological feature which is an excellent representation of its type
Class III Wetlands	A wetland is classified as Class III if it possesses any of the following characteristics:
Covertypes	it is an emergent marsh in which purple loosestrife and/or reed (phragmites) constitutes two-thirds or more of the covertype; it is a deciduous swamp it is a shrub swamp it consists of floating and/or submergent vegetation it consists of wetland open water
Ecological associations	it contains an island with an area or height above the wetland adequate to provide one or more of the benefits described in section
Special features	it has a total alkalinity of at least 50 parts per million it is adjacent to fertile upland it is resident habitat of an animal species vulnerable in the major region of the state in which it is found, or it is traditional migration habitat of an animal species vulnerable in the state or in the major region of the state in which it is found it contains a plant species vulnerable in the major region of the state in which it is found
Hydrological and pollution control features	it is part of a surface water system with permanent open water and it receives significant pollution of a type amenable to amelioration by wetlands
Distribution and location	it is visible from an interstate highway, a parkway, a designated scenic highway, or a passenger railroad and serves a valuable aesthetic or open space function it is one of the three largest wetlands of the same covertype within a town it is in a town in which wetland acreage is less than one percent of the total acreage it is on publicly owned land that is open to the public

Source: New York State Department of Conservation; Division of Fish, Wildlife and Marine Resources; Compilation of Codes, Rules and Regulations of the State of New York (NYCRR); Part 664, Freshwater Wetlands Maps and Classification

D. CLIMATE AND AIR RESOURCES

CLIMATE

The climate in Wyoming County is described as humid-continental, being governed primarily by air masses and weather systems developing within the North American continent. In addition, the atmospheric moisture from the Atlantic Ocean and Gulf of Mexico flows into the region, causing humidity.

The summers are moderately warm with daily high temperatures in July averaging 78 degrees Fahrenheit, while winters are relatively long and cold with average lows in January of only 12 degrees. Annual precipitation along the eastern and northern edges of the County, including the Village, are between 34 and 36 inches. Snow fall is heavy in Wyoming County, due particularly to "lake effect" precipitation, with annual accumulation of about 70 inches in the northern portion of the County. Snow coverage is maintained generally from early December to the middle of March each year.

AIR QUALITY

The air quality of Western New York, including the Village of Attica, is good and is generally within attainment levels for all criteria pollutants except for ozone, as identified in the 1999 New York State Air Quality Report, Ambient Air Monitoring System (NYSDEC Division of Air Resources, 2002).

E. VEGETATION

RARE AND SIGNIFICANT VEGETATION

The presence of rare or significant vegetation has not been identified in the Village of Attica by the NYSDEC. However, the NYSDEC data relate only to known occurrences of rare or significant vegetation based on data assembled in its files. A comprehensive survey for plant occurrences in the Village has not been conducted by the NYSDEC.

STREET TREES

No comprehensive inventory of trees on the Village of Attica rights-of-way has been completed to date. Street tree inventories typically identify the number of trees by species, size, condition, and location.

F. WILDLIFE

The management of terrestrial and aquatic habitats for vegetation and wildlife is necessary to provide mitigation from the direct adverse impacts of development. As wildlife populations increase and habitat areas decrease, wildlife management becomes increasingly difficult and of the utmost importance.

The NYSDEC practices wildlife management throughout the state. NYSDEC regulates the various hunting seasons, stocks waterbodies with fish, and monitors fish populations.

Stream corridors, woodlots, wetlands, and adjacent lands provide habitat for a large number of wildlife species. Birds, insects, reptiles, amphibians, fish, and mammals are included in the wildlife community. The wetlands located in the Village are a particularly important habitat. The

forests and wetlands have two distinct bird communities: permanent residents and seasonal visitors. Pheasants, Belted Kingfishers, Eagles, Wild Turkey, and Trumpeter Swans are among the bird species found in Attica. Mammals found in and around the Village range in size from tiny rodents to larger animals including black bears and white-tailed deer. River otters have been seen in Tonawanda Creek. Most species are nocturnal and are thus rarely observed.

New York State defines endangered animals as native species in imminent danger of extirpation or extinction in New York or any species listed as endangered by the U.S. Department of the Interior. Unprotected species, according to the State may be taken at any time without a limit, although a license to take may be required. The presence of rare or endangered wildlife has not been identified in the Village of Attica by the NYSDEC. However, the NYSDEC data relate only to known occurrences of rare animals or significant wildlife habitats based on data assembled in its files. A comprehensive survey for animal occurrences in the Village has not been conducted by the NYSDEC.