

Chapter II: Inventory and Analysis

The Town of Guilderland has many resources that should be utilized, enjoyed and protected to ensure their health and availability to future generations. For each of the topic areas that follow there is a description of the resource and discussion of that resource's opportunities and constraints relative to land use.

This section of the Plan also serves as the Generic Environmental Impact Statement (GEIS) discussion of the environmental setting in accordance with SEQR regulations (6 NYCRR 617.9 (b)(5)(ii)).

A. Historic and Cultural Resources

The Town of Guilderland was once the primary pathway to Schoharie, the path was known as The Old Schoharie Road. The first settlers arriving in the Guilderland area were of Dutch descent who migrated from Albany. These settlers leased lands along the Normans Kill from the Van Rensselaer's in about the year 1700. Circa 1740, German settlers established their homes at the foot of the Helderbergs. Palantine refugees from Germany settled in the region after a three-year journey from the Rhine Valley.

The Town of Guilderland was formed in 1803, and was named for the Province of Gelderland in Holland. In 1959 Guilderland adopted the coat of arms of the Province. It is the only town in the United States bearing the name of Guilderland.

Roads were constructed in the Town of Guilderland and in 1799 the Great Western Turnpike was constructed. This toll road brought increased prosperity and population to Guilderland. After the construction of the Turnpike, Guilderland became the recipient of many plank toll roads.

Early industry found the Town of Guilderland to be an excellent geographic location within Albany County. A glass works industry, founded about 1785, was one of the first businesses in the hamlet of Guilderland. Located in the area of Western Avenue, Foundry and Willow, the factory produced the prized commodity of window glass, snuff bottles, and pocket bottles. The site was laid out into streets and building lots where 56 houses were erected for the workers. The new business encouraged the establishment of a church and a schoolhouse. Later, around 1795, a hat factory and foundry were established in Guilderland in French's Hollow and flourished.

There are many historic sties, such as the Revolutionary Battle of the Normanskill as well as numerous structures listed on the National Register of Historic Places. They include:

- Albany Glassworks Site
- Altamont Historic District
- Apple Tavern
- Aumic House
- Chapel House
- Coppola House
- Crouse, Federick, House
- Crouse, Jacob, Inn
- Crouse, John and Henry, Farm Complex
- Freeman House
- Fuller's Tavern
- Gardner House
- Gillespie House
- Guilderland Cemetery Vault
- Hamilton Union Church Rectory
- Hamilton Union Presbyterian Church
- Helderberg Reformed Dutch Church
- Hilton, Adam, House
- Houck Farmhouse
- Knower House
- McNiven Farm Complex
- Mynderse-Frederick House
- Pangburn, Stephen, House
- Parker, Charles, House
- Prospect Hill Cemetery Building
- Rose Hill
- Schoolcraft, John, House
- Schoolhouse #6
- Sharp Brothers House
- Sharp Farmhouse
- St. Mark's Lutheran Church
- Van Patten Barn Complex
- Vanderpool Farm Complex
- Veeder Farmhouse #1
- Veeder Farmhouse #2

Long before the Dutch and Germans came to Guilderland, native peoples lived here, taking advantage of the fertile land, wealth of game, and numerous streams providing food, water, and travel corridors. Remnants of their activities can be found by archaeologists who specialize in prehistoric resources. These remnants or artifacts provide important information on the human prehistory.

Land in proximity to vital resources such as streams, lakes, ponds, high grounds, and cliffs are generally considered to have a high potential for producing

prehistoric cultural resources. Since the Town has so many of these resources within its boundaries, it is likely that prehistoric cultural resources are present.

Opportunities

Understanding the Town's linkages to the past can help build community identity and cohesiveness. Many communities take great pride in their past, which tends to emerge as community spirit, manifesting as celebrations, dedications, and community and government participation. The Town currently owns two of the previously listed historic buildings: the Mynderse-Frederick House built in 1802 and the Schoolcraft House built in 1840. The Schoolcraft House has been featured in national architectural magazines as an outstanding example of early gothic architecture and presents an opportunity for its use as a small cultural center.

Constraints

The State and federal governments have recognized the importance of historic and prehistoric cultural resources. To that end, they have enacted laws that require State and federal agencies to evaluate the potential presence and the impact on cultural resources for projects that they are directly undertaking, approving, permitting, or funding. Therefore, all projects that involve State and federal agencies should coordinate with the NYS Office of Parks, Recreation and Historic Preservation. Furthermore, any project requiring review pursuant to the State Environmental Quality Review Act, regardless of State or federal agency involvement, must consider the impact to cultural resources. The presence of these resources on a site does not necessarily preclude the project; however, costs are incurred to evaluate the resource, determine the impact, and provide a mitigative solution.

B. Population and Housing

B.1 Population

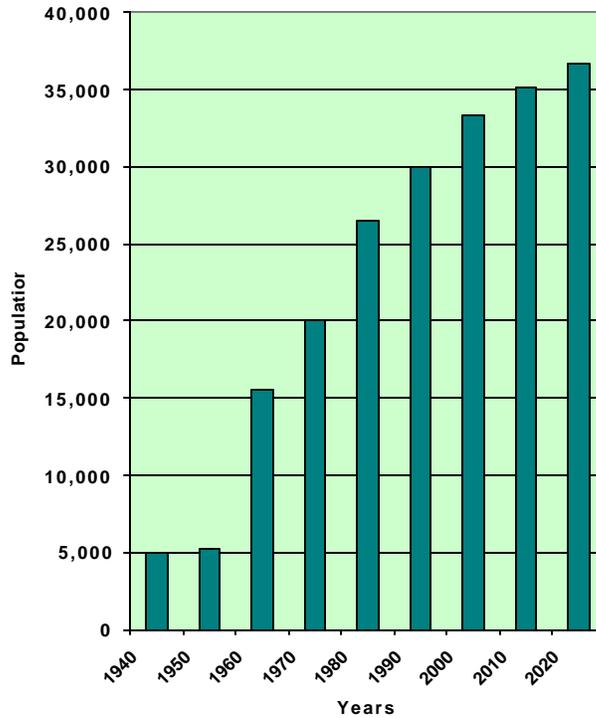
Following WWII, as the automobile became the primary means of transportation, construction of the Northway (I-87) and the Thruway (I-90) opened the Town of Guilderland and much of the Capital District to new development. The New York State (NYS) Thruway, the Northway, and U.S. Route 20 intersect in or adjacent to the Town of Guilderland.

The population of the Town of Guilderland has increased steadily, beginning in the 1950's. According to the 1990 census, the total population of the Town grew from 5,000 residents in 1940 to 30,011 residents in 1990. Historic and projected population trends for the Town are provided in Figure 1.

Based on information compiled by the Capital District Regional Planning Commission, the population of the Town of Guilderland will be 36,702 in the year 2020.

The Village of Altamont had 1,519 residents, or about 5% of the total town population, according to the 1990 census. This number is projected to be 1,775 in the year 2020.

FIGURE 1
Town of Guilderland Population 1940 - 2020*



Source:

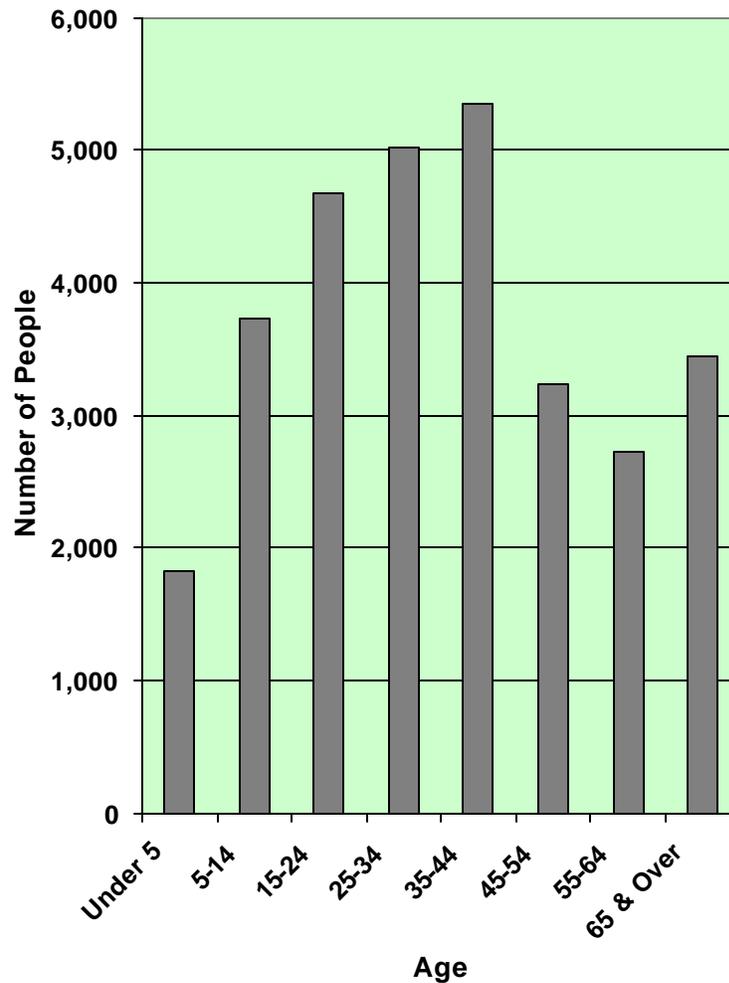
Based on information from Capital District Regional Planning Commission Revised 1998

There will be an updated projection in April 2000

**Including the Village of Altamont*

According to the 1990 U.S. Census, the age characteristics of the Town were as follows:

Figure 2
Age Characteristics for the Town of Guilderland



*Source: 1990 Census of Population and Housing
Summary Population and Housing Characteristics
Including the Village of Altamont

According to the 1990 Labor Force Census Data, there were 23,603 persons 16 years and over in the labor force in Guilderland, including Altamont. The median age within the Town is 35.7, slightly older than the County median age of 33.9. Due to the location of Guilderland, there is availability of well paying jobs within reasonable commuting distance. According to the 1990 Demographic Profile prepared by the U.S. Census Bureau, the average travel time to work for Town of Guilderland residents is 20 minutes.

Based on the 1990 census, 27,629 residents (95 percent of the total population) are white. The minority population includes Blacks (603 residents); American Indian, Eskimo or Aleut (28 residents); Asian or Pacific Islander (416 residents); and others. These figures do not include the Village of Altamont. In Altamont, almost 100% of the 1,511 residents are white. Only eight persons are of another race.

According to the 1990 U.S. Census, residents are generally considered well educated (see Table 1). In 1990, a significant group of people over 25 years of age, 39.3 percent, had attained a bachelor's degree or higher. This is an important factor in measuring the quality of the Town's labor force. In general, higher educational attainment should result in higher paying jobs, which should have a beneficial impact on the economic health of the Town.

Table 1
***Educational Attainment**
Town Of Guilderland

Level of Education	No. People	Percent of Total Population		
		Town of Guilderland	Albany County	NY State
High School Diploma	5,262	18	19	22
College				
Some College	2,930	10	9.7	13.7
Associates Degree	1,754	6.1	5.5	5
Bachelors Degree	4,188	14.6	10	9.8
Graduate/Professional Degree	3,594	12.5	8.5	6.6

Source: 1990 U.S. Census

**Excluding the Village of Altamont*

Opportunities

The Town of Guilderland's location and easy transportation access has and will continue to contribute significantly to population increases. The generally well educated population can contribute significantly to the economic base of the community and become active members in the vision for the future.

Constraints

Growth in the Town's population also results in a burden on the Town's infrastructure. In general, the tax revenues generated from residential development rarely offset the costs for capital improvements and maintenance. Therefore, high value non-residential development is required to provide a balanced tax base. However, some communities embrace their residential

character and are willing to pay the extra costs (increased taxes) to maintain this character.

B.2 Housing

Due to the population growth, pressure for construction of new housing has also been strong. The Town's housing stock is dominated by single family residences. According to the 1990 census, housing stock in the Town of Guilderland can be divided into categories, as provided in Table 2.

Table 2
***Distribution by Housing Type**

<i>Dwelling Type</i>	<i>Number of Units</i>
Single family, detached	7124
Single family, attached	744
2-4 units	451
5-9 units	1325
10-19 units	1104
20-49 units	414
mobile home/trailer/other	<u>306</u>
TOTAL	11,468

Source : 1990 Census

**Excluding the Village of Altamont*

Statistics from the Town of Guilderland Building Department indicate that 1,015 building permits for single family homes were issued from 1992 through 1998, with an average of 145 building permits annually. The total number of permits issued for both single family homes and multi-family dwellings from 1992 through 1998 were 1,141. During 1999 a total of 153 building permits were issued - 139 for single-family homes and 14 for multi-family dwellings.

The growth of the residential community in the Town occurred in three geographic areas:

- McKownville/Westmere Area – This was one of the first areas to develop in the Town due to its proximity to the City Albany and quick access via Route 20. The typical post-war housing can be found on interconnecting streets adjacent to banks, retail establishments and community services.
- Suburban Ring – Residential growth in Albany County spread outwardly from the urban center (City of Albany) during the early to mid 1970's in what is known as the suburban ring. Within the Town of Guilderland, new housing concentrated along the Route 155 and Route 146 corridors. These highway corridors bisect the ecologically sensitive area known as the Pine Bush.
- Rural – Within the rural areas of Guilderland many of the older homes were once associated with agricultural land uses. Recent residential construction

due to the lack of sewer and water are not typical of the subdivisions found along routes 155 and 146. Rather, they are located on single large lots with a permitted density of 2 acres per home. The actual density is much less due to the number of larger lots and agricultural activity. Homes dot the area. These homes are not connected to housing sub-divisions, no major roads or shopping areas. The homes in the rural isolated area are predominately older homes interspersed with newer homes.

Both the mean and median selling price of housing in the Town of Guilderland ranks among the highest in the Capital District. The median selling price is the value at which there are an equal number of homes selling at above and below that point. The mean is simply the average selling price. The median may be different than the mean because there may be some very low or very high priced homes which skew the average in one direction. According to the Capital Region MLS Sales, in 1991 the Town of Guilderland compared with the Capital District Selling Price as follows:

Table 3
Selling Price of Homes in Selected Capital District Areas

	1991 Mean Selling Price	1991 Median Selling Price
Town of Guilderland	\$150,426	\$132,250
City of Albany	\$109,349	\$103,000
Albany County	\$129,947	\$110,482
Schenectady County	\$113,740	\$92,876
Capital District	\$122,869	\$107,603

The Town Assessor has studied property values by neighborhood since 1983. The number of neighborhoods has grown from 21 in 1983 to 35 in 1998. According to the Assessor's records, newly constructed homes have a higher selling price than older homes, in general. Of the 21 original neighborhoods, most have at least doubled in average selling price from 1983 to 1998. The table below presents the raw data for these neighborhoods and does not take inflation into account. The total average represents neighborhood averages and not a true average for all the housing stock.

Table 4
Selling Prices of Single Family Houses in Guilderland
In Older Neighborhoods

Neighborhoods	Average Selling Price		
	1983	1998	
1	37,000	90,500	
2	52,100	110,700	
3	62,800	107,000	
4	52,100	104,300	
5	117,100	226,700	
6	61,300	119,200	
7	55,200	97,400	
8	42,900	89,200	
9	83,100	167,000	
10	50,100	107,400	
11	47,800	144,200	
12	71,000	163,900	
13	71,600	131,800	
14	68,900	134,200	
15	51,000	98,700	
16	49,900	132,300	
17	51,500	123,500	
18	61,100	120,000	<i>estimated</i>
19	46,300	82,500	
20	48,400	110,300	
21	41,200	95,000	<i>estimated</i>
5.1 (renumbered 200,000 31)		453,100	
Total Average	64,655	136,768	
By Neighborhood			

Source: Guilderland Assessors Office, March 2000

Opportunities

Housing in the Town of Guilderland is valued significantly higher when compared to the Capital District. Property values within the Town have experienced a steady increase with most property owners receiving a rate of return at least commensurate with their investment. The Town has the opportunity to encourage construction of new housing in a variety of styles and values that will provide a full range of housing opportunities for existing and

new residents. Throughout the planning process the Town of Guilderland has the opportunity to work with developers to ensure a variety of well planned, high quality residential developments.

Constraints

Growth in residential development will continue to constrain the Town's resources. It will be important for the Town to implement a Growth Management strategy to ensure that the proper balance, both environmentally and economically, is achieved in accordance with the Town's goals and objectives.

C. Land Use and Zoning

The predominant land use in the Town of Guilderland is suburban residential. The most intensely developed areas within the Town occur along the Route 20, Route 155, and Route 146 corridors. This is illustrated on Figure 3, *Existing Land Use*.

The Route 20 corridor has been the primary conduit for both residential and commercial development in the Town. Strip commercial development has occurred along Route 20 while medium density residential subdivisions have been constructed immediately adjacent to the commercial development, off of collector roads. This is particularly evident in the McKnownville/Westmere area where homes developed first along Route 20 and then converted to office and commercial uses. The pattern of growth in these areas was influenced by good access and the availability of municipal sewer and water service, the majority of which is provided east of the CSX (Conrail) tracks. Municipal water and sewer is also provided west of the tracks along Route 146, serving Guilderland Center and the Guilderland High School .

The most intense concentration of commercial development occurs along Route 20, west of Fuller Road. This area includes a mix of commercial/retail development with the dominant land uses being Crossgates Mall and Stuyvesant Plaza. Less intense commercial development continues westward along Route 20 from Johnston Road to Route 146. The dominant commercial land uses in this area include the 20 Mall and Hannaford Plaza. Commercial strip development has also occurred north along the Route 155 and Route 146 corridors. Industrial development is concentrated in the Northeast Industrial Park located off of Depot Road, immediately southeast of Guilderland Center.

Agricultural lands are primarily located west of the Conrail tracks. Many of these parcels are within the Agricultural District. Further west are rural residential uses, both north and south of the Village of Altamont.

To illustrate land use within the Town, the Existing Land Use Map was prepared from Geographic Information System (GIS) data. Eleven land use categories were identified. They include:

- Rural Residential
- Single-Family Residential
- High Density Residential
- Commercial
- Industrial
- Public Service
- Community Services
- Agriculture
- Wild and Forest Land
- Vacant Land
- Recreation and Entertainment

Figure 4, *Zoning Map*, is provided to compare land use with the existing zoning.

Table 5 summarizes land use in the Town by land area.

**Table 5
 Existing Land Use**

Land Use	Acres	% of Total
Residential	12,416	32
Single-family	6,894	
High Density	240	
Rural Residential	5,282	
Commercial	627	2
Industrial	663	2
Public Services	1,749	5
Community Services	1,598	4
Agriculture	6,544	17
Rec. & Entertainment	1,759	5
Vacant	8,227	22
Wild & Forested Land	2,047	6
Roads	1,854	5
Total	37,484	100

As identified in Table 5, residential uses dominate the land use within the Town while agricultural uses are a close second. The following sections describe the land use categories in greater detail.

C.1 Residential

Land developed for residential use represents the largest active land use in the Town. Residential development patterns in the Town are typical of suburban sprawl. Route 20, I-90, Washington Avenue Extension and the NYS Thruway have provided excellent access to allow outward population migration from the more densely populated areas within the Capital District. The intensity of development in general has been a function of the availability of municipal sewer and water service. Rural residential development and farmland is located in the western half of the Town. Inactive agricultural land in the Town is under continual pressure for development of single-family housing.

Single-Family Residential – The predominant land use in the Town is single family residential in suburban or cluster subdivisions with lot sizes of one-half acre or less. The zoning designations R-40 thru R-7.5 represent the minimum lot size within that district. R-40 zoning requires a minimum lot size of 40,000 square feet while the R-7.5 district requires a minimum lot size of 7,500 square feet. Permitted uses within each of these zones are the same and primarily restricted to single family homes and public facilities such as schools and parks.

Multi-Family Residential – This category of land use includes multi-family residences consisting of 2 or more units per building. This would include townhouses, condominiums, and apartments; as well as mobile home parks. The majority of these uses are contained within the Multiple Residence (MR) zoning district and are located along Route 155 near the Route 20 intersection, as well as in the Westmere area west of the Northway (I-87). Mobile home courts, of which there are three, are located within various zoning districts. The Town has created a Mobile Dwellings (MD) District within the Zoning Law but no districts have been established to date. The majority of multi-family uses are located in the eastern portion of the Town.

Rural Residential – This residential use has been identified as single-family residential with acreage. Generally, this would include lots with greater than 2 acres of land, the majority of which is located in the Agricultural District (A) in the western half of the Town. The Agricultural District permits both agricultural and residential uses. The minimum lot size is 2 acres.

C.2 Agriculture

Agricultural Districts were created in 1971 to manage and protect farmland in New York State. A more detailed discussion of the extent and type of agriculture in the Town is provided in the Inventory & Analysis under the topic "Agricultural Resources."

Agricultural land use in the Town of Guilderland consists of approximately 6,598 acres. Much of this land is in active agriculture. Albany County Agricultural District No. 3 comprises a large portion of the agricultural lands within the western portion of the Town. However, parcels within the

Agricultural District also occur east of the CSX (Conrail) tracks along Route 20 in the vicinity of the Hunger Kill, along Route 20 at the Conrail tracks, on the north and south sides of Route 146 at the Conrail tracks, south of East Lydius Street adjacent to the Pine Bush, and in the southeast portion of the Town, straddling the Town of Guilderland/Town of New Scotland border.

C.3 Commercial

Commercial land use and other non-retail and professional uses are located primarily along Route 20 and the portions of Route 146 and Route 155 north of Route 20. Most of the retail development serves the local community with the exception of Crossgates Mall which has a regional market base. Stuyvesant Plaza, located east of Crossgates on Western Avenue (Rt 20) can also be considered a regional market since it has high quality specialty shops that attracts shoppers from all locations in the Capital Region.

Since 1970, all three corridors have experienced a significant transition in land use. Once primarily consisting of residential uses with minor neighborhood commercial components, the corridors are now dominated by strip commercial and office development. The growth in non-residential uses was influenced by good access and the availability of municipal sewer and water.

The conversion of residential structures on small lots to office/retail uses is evident along Route 20 in the McKnownville and Westmere areas. The rapid growth in commercial/office development has also resulted in significant constraints on traffic and pedestrian infrastructure within the Route 20, Route 146 and Route 155 corridors.

Zoning for business uses in the Town has been divided into three districts: Business Non-Retail Professional (BN-RP), Local Business (LB) and General Business (GB). The purpose of these districts is to separate business uses by type and density. The BN-RP district is essentially restricted to non-retail professional office uses such as medical offices, insurance offices, architects, engineers, etc. The two retail districts are separated by intensity of use. The LB district is meant to provide small neighborhood business such as convenience stores, bakeries and hardware stores. The GB district provides for large and small retail establishments.

C.4 Industrial

The Northeastern Industrial Park located south of Guilderland Center has the largest concentration of industrial development in the Town. The park contains approximately 2.5 million gross square feet (gsf) of industrial uses, primarily consisting of warehousing, distribution and pipe manufacturing. The park has room to develop another 2 million gsf. Industrially zoned land incorporates the industrial park as well as lands to the east and north. Permitted uses include manufacturing, assembly, warehousing, and related uses that do not emit odor, smoke, toxic or noxious fumes, radiation, gas, noise, vibration, or excessive light. Another area of industrial development occurs

along Railroad Avenue in the northeastern portion of the Town. This narrow strip of land is dominated by trucking and warehouse uses.

C.5 Public and Community Services

Public Service uses in the Town include electric and communications utilities (transmission lines, substations, cell towers) but not municipal utilities. These uses are considered community services and include municipal utilities (sewer and water), municipal facilities (other than recreation), fire and emergency service stations, police stations, schools and school district offices, and community centers. Both public service and community service facilities are permitted in most zoning districts and are located as needed to serve the public. Community services are discussed in greater detail in the "Community Services" section of this Inventory & Analysis. Figure 12 identifies the locations of many of the Town's community service facilities.

C.6 Recreation & Entertainment

Recreational opportunities in the Town include both public and private facilities. Town facilities include Fred Abele Park located east of I87, Nott Road Park, Tawasentha Town Park, Keenholts Park, Dr. Shaw Road Park, Fort Hunter Park, Volunteer Fireman's Park, Fusco Park, and the Guilderland Conservation Area. Other public lands include portions of the Pine Bush and Black Creek Marsh State Wildlife Management Area. There are five golf courses in the Town, all operated by private entities. Recreational uses are discussed in greater detail in the "Recreational Resources" section of this Inventory & Analysis. Figure 14 identifies the locations of the Town parks and golf courses.

C.7 Vacant Land and Natural Areas

The Existing Land Use Map identifies vacant (undeveloped) lands. Vacant lands include parcels that may have significant development constraints, such as wetlands, critical habitat, stream courses, and steep slopes; as well as inactive farmland, and developable properties. One of the goals of the Inventory & Analysis is not only to identify the environmentally sensitive areas that may warrant protection from development, but also to guide future growth to those areas that are more suitable for development.

Some of the Town's important open spaces, such as Tawasentha Park and Nott Road Park have been identified and essentially protected under the Open Space (OS) zoning district.

Opportunities

The existing land uses in the Town of Guilderland provide a wide variety of housing, employment, recreation, and shopping opportunities for residents in the Town as well as the Capital District. Crossgates Mall attracts regional shoppers due to its accessibility, size and variety of stores. Stuyvesant Plaza

provides boutique shopping, also attracting shoppers from the regional market. The approximately 2,000 acre Pine Bush Preserve (partially within the Town of Guilderland) provides an opportunity for people from all over the State to visit a highly unique ecosystem.

Locally, there are urban, suburban, and rural residential housing opportunities at a wide range of values. The McKnownville and Westmere areas provide a more urban environment characterized by older homes (post World War II) located in close proximity to shopping and major transportation corridors. As some of the first subdivisions developed in the Town, they have a long history of neighborhood cohesion. Guilderland Center also provides older homes in a neighborhood setting, although much less intensely developed than the McKnownville/Westmere area. Sewer and water service is provided in these areas.

Areas of more recent suburbanization (1970's to present) are located along the southern portions of Route 155, along Dr. Shaw Road and Veeder Road; and west of Route 155 and north of Route 20, along Route 146, East and West Lydius Street, and East and West Old State Road. Most of these areas have both municipal sewer and water service. The rural areas of the Town, primarily located west of the CSX (Conrail) tracks, provide opportunities for homes with large lots, as well as agriculture. Sewer and water is not available in this part of the Town. Those that live here generally do so to have more land and escape the urban and suburban environments. Although rural, residents in the western portion of the Town can still quickly get to commercial, recreational, cultural, and employment centers by the good road system. Agriculture is active in the Town, providing locally grown fruits and vegetables. Housing statistics are presented in the Population and Housing Section, page 10.

The Town parks, private golf courses, and State managed wildlife areas provide a variety of outdoor recreational opportunities for all Town residents. Tawasentha Town Park provides active and passive recreational opportunities, including an outdoor pool.

Constraints

Zoning is a growth management tool that is essential for communities with diverse land uses to prevent land use conflicts. The current zoning is based on past planning efforts that require review and update to meet current trends in planning and the economy. The Northeast Industrial Park is zoned for industrial uses, even though it lies in the Black Creek watershed. New industries should be screened for noxious impacts on the watershed.

Zoning is also a constraint on growth. It places restrictions and special requirements on development and uses within the established zoning districts. This does not always meet the needs of the project sponsor who is driven by the market place. Other constraints on development include the availability of water and sewer, accessibility to employment centers, and the desire to preserve agricultural lands and environmentally sensitive areas. Constraints on preservation efforts include market demands, available funding for preservation,

specific local legislation, and preservation programs. Agricultural lands, in particular, are most vulnerable to conversion to non-agricultural uses, especially residential.

D. Agricultural Resources

The agricultural industry is comprised of three elements: individual farms, agricultural support businesses, and agricultural manufacturing industries. Production of agricultural goods occur on farms and in the manufacturing industries that process and package farm products. Agribusinesses provide the necessary support structure and products for farms and manufacturing industries to operate.

Agriculture is still an important component of the Town of Guilderland's landscape and economy. Figure 5 identifies the agricultural properties within the Town. Much of the land is used for hay and beef cattle but there are numerous other uses such as vegetable farms; nurseries; a successful vineyard and wine-making operation; dairy farms; raising of other livestock such as hogs, sheep and horses; crop production (primarily corn) in support of beef and dairy operations; apple orchards; Christmas tree operations; a feed store; and farm equipment sales.

It is widely known in the Town that the majority of agriculture occurs in the western half of the Town. However, some agriculture still occurs east of the CSX (Conrail) tracks. These properties include dairy and beef operations, a hog farm, vegetable crops, hay production, greenhouses along Route 20 and farm stands along Route 146 north of Route 20.

Agriculture was once the primary industry in the Town of Guilderland. The Town was known as the "breadbasket of the Revolution." Today, residential, commercial, office and industrial uses have displaced some of the agriculture. In general, the agricultural industry has experienced a variety of economic pressures that have had a significant impact on their ability to maintain operations. Since the late 1960's the smaller family owned and operated farms in the Town and throughout New York State have struggled to remain competitive with the larger commercial farm operations. In addition, children of farmers are seeking other professions for numerous reasons, none the least is economic.

Many of the agricultural properties that were once considered to be located in rural areas are now prime locations for residential development due to improved accessibility and extension of municipal sewer and water. These conditions have also influenced the value of farmland which has significantly increased and will continue to increase as prime developable land close to business and population centers becomes less available.

On a positive note, the number of farms and total acreage has remained stable in Albany County over the past 10 years; despite the fact that almost three

quarters of the dairy operations have been converted to other uses, such as hay and beef operations, out-competed by larger dairies (Albany County 1999).

D.1 Agricultural Districts

In recognition that market demands have had a significant influence on the loss of active agricultural lands to non agricultural uses, federal, State and local legislation has been enacted to provide a vehicle for maintaining operations as well as preserving non-active agricultural lands.

In 1971, Article 25AA of the Agriculture and Markets Law established Agricultural Districts and introduced taxation of farmland based on its production capability rather than its development potential. In 1992, the Agricultural Protection Act amended the Agricultural Districts Law by strengthening notice of intent requirements, right-to-farm protection, real estate transfer disclosures, and the creation of agricultural and farmland protection programs. This act established county agricultural and farmland protection boards that are responsible for the establishment or modification of agricultural districts, review of notices of intent, and development of county agricultural and farmland protection plans.

Agricultural Districts are created when an owner or owners of farmland submits a proposal to the county. The area proposed for district formation is reviewed based on the viability of active and non-active farmlands, the extent of non-agricultural uses and development patterns. Upon adoption by the county, the district must be certified by the Commissioner of Agriculture and Markets. Farmlands within an Agricultural District may receive an agricultural exemption, decreasing the tax burden.

D.2 Notice of Intent

Public actions (state or local) that affect lands within an Agricultural District must avoid or minimize adverse farm impacts. This is documented through the Notice of Intent. This document includes a Preliminary notice describing the project and its impacts and a Final notice that includes a detailed agricultural impact statement. The notice is reviewed by the Commissioner of Agriculture and Markets and may be reviewed by the County Agricultural and Farmland Protection Board.

D.3 Private Actions

Private applications for municipal review or approvals for projects located within or adjacent to agricultural land, within an Agricultural District, require the preparation of Agricultural Data Statements. The reviewing board is required to evaluate the project relative to potential agricultural impacts. The municipality must also notify farm owners within the Agricultural District and within 500 feet of the project site of the proposed project. Local regulations must be consistent with the Agricultural Districts Law.

Section 308 of the Agricultural Protection Act provides protection against private nuisance lawsuits. Upon a determination from the Commissioner of Agriculture and Markets that the agricultural activities in question are "sound agricultural practices," the activities cannot be determined a nuisance.

Section 310 of the Agricultural Protection Act requires that the sale or transfer of property in an Agricultural District include a statement that agricultural practices occur within the district which may result in noise, dust and odors, among other residuals of sound agricultural practices.

D.4 Agricultural Land Preservation

Land parcels within the Agricultural District in the Town of Guilderland are shown on Figure 5. Albany County, who oversees issues relating to the Agricultural District, is preparing an Agricultural and Farmland Protection Plan.

Some communities have implemented more permanent and effective measures to preserve agricultural lands through the purchase of development rights, transfer of development rights, conservation easements, agricultural zoning, sliding-scale zoning, and the establishment of growth boundaries. Through either the purchase or transfer of development rights, the farmer is paid for the development value of the land in turn for a permanent easement on the property that precludes development for other than agricultural use. Agricultural zoning precludes non-agricultural uses while sliding scale zoning rewards higher density development of small parcels and penalizes the development of large parcels. Ultimately, development pressure and the associated rise in land values are controlled by a growth boundary, beyond which non-agricultural uses are discouraged.

Opportunities

Although the farming industry in Guilderland is not what it once was prior to suburbanization and the advent of large commercial or corporate farms, the loss of farmland has stabilized over the past 10 years. Some of the dairy operations have converted to other uses to remain profitable. Vegetable and fruit farms serve the local residents. Large areas are used for hay to support beef, dairy, and horse operations. As long as the land remains, there will be opportunities for future farming in the Town. This will be supported by the County's Agricultural and Farmland Protection Plan and innovations in the business of farming such as efforts to increase the value of products before they leave the farm (referred to as "value-added" products), production of high value crops, and the incorporation of entertainment opportunities to attract people (e.g., petting zoos, tractor rides, festivals, etc.).

New York State still ranks first in the nation for the production of corn for silage, creamed corn, and low-fat cottage cheeses; and second in apple production. In addition, the State ranks within the top five states for the production of sweet and tart cherries, pears, grapes, cauliflower, celery,

strawberries, sweet corn, green peas and beans, milk and cheese (American Farmland Trust 1993).

The County Agricultural and Farmland Protection Board has received a grant from the NYS Department of Agriculture and Markets to prepare an Agricultural and Farmland Protection Plan for the County. The purpose of the Plan is to identify and coordinate all the various interrelated issues that impact farming and provide management tools that can be implemented by local governments. The plan will contain issues facing the agricultural community, a vision for the future, goals and objectives, a GIS based inventory and analysis, community participation, and agricultural development and protection strategies.

Constraints

Constraints on maintaining active agricultural operations are numerous and related to both social and economic issues including good management, market demands, and competition from large commercial farms. Competition from other occupations that are more financially rewarding will continue to impede efforts to attract young people into careers in farming.

Farming is also endangered by suburban sprawl. Farms along the urban fringe face development pressure and nuisance law suits from adjacent residential development. Land values are driven up which increase the tax burden on the farmer. Fortunately, this is less of a problem for the Town due to protections afforded by the Agricultural Districts Law. Yet, the monetary incentive to sell agricultural land for non-agricultural purposes can be very enticing; and for some, the answer to financial hardship and retirement.

E. Physiography & Topography

The Town of Guilderland is located in the north-central portion of Albany County. It is bounded by the Towns of Princetown, Duanesburg, and Rotterdam, to the north; the Town of Colonie and City of Albany to the east; the towns of Bethlehem and New Scotland to the South; and the Town of Knox to the West. Also located at the western boundary of the Town is the Village of Altamont.

The Town is almost entirely within the Hudson-Mohawk Lowlands Physiographic Province. The southwestern boundary of the Town is formed by the Helderberg escarpment, which also marks the boundary between the Hudson-Mohawk Lowlands and the Helderberg Mountains section of the Appalachian Uplands.

The Hudson-Mohawk Lowlands stretch north and east from the Helderberg escarpment to the Taconic Mountains on the east and the Adirondacks on the north. Elevations rise gently westward from approximately 200 feet at Albany to 300 to 400 feet in the western portion of the Town of Guilderland.

E.1 Helderberg Mountains

The Helderberg Mountains are actually a plateau with distinct cliffs marking the northern and eastern margins. These cliffs are comprised of massive limestone (Manlius and Coeymans). The greatest development of the escarpment occurs within and adjacent to the Town of Guilderland.

Millions of years ago, the entire State of New York was part of a shallow inland sea. Deposits from the erosion of the adjacent uplands now constitute the geologic formations that comprise the Helderberg and Catskill mountains. As these deposits were consolidated and uplifted, the sea receded and a coastal plain was formed. Erosion of the coastal plain led to the formation of the Helderberg escarpment. This escarpment moved southwest away from the Adirondacks and grew in height and is referred to as a cuesta or upland plain with a steep face toward the inner lowland and gentle slopes in the opposite direction. Elevations at the top of the escarpment range from 1,200 to 1,300 feet. The lowland formed by the erosion of the coastal plain today comprises the Hudson-Mohawk lowlands.

The Helderbergs were the site for some of the earliest studies of North American geology and the names given to formations are now known world wide. Some of the pioneer geologists include Louis Agassiz, Ferdinand Roemer, Sir William Logan, Amos Easton, James Hall, W.W. Mather, Sir Charles Lyell, Larnder Vanuxem, Ebenezer Emmons, and Charles S. Prosser (*source: New York, A Guide to the Empire State, Oxford University Press, 1940. P 445*). It is widely held that the Helderberg area is the birthplace of American paleontology.

Elevations above mean sea level in the Town of Guilderland increase significantly from east to west. In general, the topography can be described as flat to rolling but deeply cut by large stream systems that form steep ravines. With the exception of the steep ravines caused by erosion of the stream channels, the major topographic features are a result of the Wisconsinan Glaciation, the last to cover the area, moving southwesterly across Albany County. During its advance, it plowed materials left by previous glaciations and during its retreat, deposited glacial tills and stratified sediments. Most of the Town is deeply covered by these materials, as are the slopes of the escarpment. Very little material was deposited on the plateau.

The great divergence in topography created by the Helderberg escarpment and the rural landscape in the western portion of the Town results in a number of scenic areas. Guilderland could easily be called the "keeper of the Helderberg viewshed" since it constitutes the foreground of one of the most impressive views in the State, the view from Thacher State Park and other areas along the escarpment. This view is enjoyed by 250,000 tourists and other visitors to Thatcher Park each year. The western half of the Town of Guilderland reflects the historic landscape that earned the Town the name "bread basket of the Revolution." Farming continues in this portion of the Town, preserving the rural landscape. Significant changes in land use in the eastern portion of the

Town, as well as other developed areas of the Capital District, affect views; but at such a distance the effect is minimal and the views remain spectacular.

Views of the Helderberg escarpment from the Hudson-Mohawk plain, which comprises the majority of land within the Town of Guilderland, are equally as important and enjoyable. As a major east-west highway, U.S. Route 20 provides some exceptional views of the escarpment between the intersection of Route 397 (Dunnsville) and the Conrail tracks. Other areas with views of the escarpment include the Route 146 corridor between Guilderland Center and the Village of Altamont. Portions of Route 397 and Settles Hill Road, Lainhart Road, Route 156, Gardner Road, Indian Ladder Drive, County Route 202, and other local roads within the western portion of the Town. Many residents have views of the escarpment from their homes and it is an important component of the character of their community.

E.2 Steep Slopes

Soil survey mapping was used to identify steep slopes through an alphabetized classification system. Soil symbols appearing on the soil survey mapping are followed by a letter A-F that indicates a slope range. The letter "A" indicates slopes in the range of 0-3 percent. Soils labeled as "D" exceed 15 percent slope and were considered a potential site constraint for development. These slopes were mapped and are shown on Figure 6.

Opportunities

The steep ravines have provided the Town with the opportunity to develop a municipal water source. By damming the Normans Kill in the central portion of the Town, a sizeable reservoir was created, providing water to the Town and the City of Watervliet. With the exception of the western boundary of the Town and the ravines, topography does not present significant limitations to building. Projects designed in harmony with existing topography (limited grading) will result in potentially unique and attractive development while limiting impacts on the visual environment. Preserving areas of steep slopes will help preserve open space and water quality.

Views to and from the Helderberg Escarpment are magnificent and are very much a part of the character of the Town. The rural landscape as viewed from the escarpment and the massive cliffs as viewed from the plain are interrelated and equally important. These views are an important factor in the Town's reputation as a desirable place to live.

Constraints

The ravines and other steep slopes present significant constraints to development when it becomes necessary to cross them with new roads and utilities. Although technically feasible, such projects are costly and can result in significant environmental impacts. Development of steep slopes should be

avoided. To properly protect these areas however, the Town should establish a policy regarding slopes and development constraints associated with them. This will also benefit project sponsors through early understanding of site constraints.

Development of the western portion of the Town could begin to change the landscape to the extent that the historic pastoral landscape is replaced by the suburban landscape. Given the importance of views from the escarpment, consideration should be given to the impacts of development and mitigation that can be employed to preserve the view. Views of the escarpment have been impacted by the placement of towers. Some or all of these towers may be removed as technology progresses, however, in the short term, efforts are needed to limit new sites and fully utilize existing towers through co-location.

F. Water Resources

F.1 Groundwater and Surface Water

The Town of Guilderland uses groundwater for a portion of its drinking water supply. In recognition of the value of groundwater resources for existing and future water supply, the Town has initiated a wellhead protection study. Phase I of the study has been completed and is documented in *Town of Guilderland Albany County, New York Well Head Protection Plan Aquifer Study Phase I* (Laberger, April 21, 1999). This section of the Inventory & Analysis summarizes the report.

Groundwater resources within the Town are located within unconsolidated glacial material associated with buried pre-glacial valleys. Two types of aquifers are contained within this glacial material: confined and unconfined (surficial). Confined aquifers have an impeding layer of material that prevents contact between the groundwater in the aquifer and surface waters, except at recharge points. Surficial aquifers have direct contact with surface waters and may recharge or discharge through surface water features such as lakes, ponds and streams, or simply through the soil surface. Surficial aquifers within the Town have been identified as the Guilderland Kame Aquifer and the Pine Bush Aquifer.

The Guilderland Kame Aquifer is located north of Guilderland Center and southwest of the Watervliet Reservoir. This aquifer can yield up to 250 gallons per minute (gpm). However, the southeastern corner of the aquifer is overlain by the Town landfill. The Pine Bush aquifer is located in the northeastern portion of the Town and can yield up to 100 gpm but typical yields are in the range of 5 to 10 gpm.

Confined sand and gravel aquifers are located within the pre-glacial Mohawk and Ballston Channels. Recharge areas are located north of the Normans Kill. The aquifer presently supplying water to the Town is a confined sand and gravel formation located at depths ranging from 58 feet to 90 feet below the ground surface. The extent of the aquifer has been estimated at 3,000 feet in width (east-west) and 4,500 feet in length (north-south).

Recharge for the confined aquifer is primarily from the Pine Bush area, where the buried sands and gravel extend up the sides of the buried channels until they come in contact with the surficial sands within the Pine Bush. Some recharge may also come from the surficial sands in what is referred to as the Voorheesville Delta, located south of the Normans Kill.

The Helderberg Escarpment Planning Guide, April 29, 1999 points out that the limestone composition of most of the Heldebergs poses potential contamination problems for the Guilderland water supply. In limestone terrain riddled with caves, surface water is not filtered or purified by soil. Any contaminant above or near a cave will degrade the water that filters down into private wells and into the watersheds feeding the Watervliet Reservoir and the Altamont water district. Chemical contamination of the water is particularly dangerous, since the chemicals not only can enter the wells and watershed readily, they are absorbed by the limestone and thus can continue to contaminate for years. Intermunicipal cooperation is needed to establish zoning regulations to protect the limestone terrain from pollution from hazardous waste sites, junked car storage or crushing, landfills, salt piles, and failed septic tanks.

Numerous surface water features are located within the Town. The dominant features are the Normans Kill, the Bozen Kill, the Hunger Kill, the Kaikout Kill, the Krum Kill, Black Creek, Blockhouse Creek, and the Watervliet Reservoir. Surface water features, including many of the known subtributaries of the major streams, are identified on Figure 7.

Surface water features in New York are designated with a water quality classification for the purposes of regulating discharges into these water bodies in accordance with the State Pollutant Discharge Elimination System (SPDES). These classifications refer to the suitability of a given water feature (lake, pond, river, stream) for human use. The higher the classification (A) the better the water quality and the more suitable for human use. For example, Class A water suitable for "primary contact" (swimming) and for a water supply.

Classifications include water supply designations (AA-S, A-S, AA) and normal designations ranging from A (suitable for most uses) to D (unsuitable for primary contact). Each water quality classification carries with it a set of discharge limitations designed to protect or improve the water quality. A "T" modifier is used for those streams that have a breeding trout population. Effluent limitations on the demand for oxygen are more stringent, since high oxygen content is essential for trout survival. In addition, the ecology and geomorphology of streams with a classification of C(T) or higher are protected/regulated pursuant to Article 15 of the NYS Environmental Conservation Law and its implementing regulations (6 NYCRR 608).

Regulated streams are identified on Figure 7. The Watervliet Reservoir and the portion of the Normans Kill north of the reservoir are Class A waters. The portion of the Krum Kill from Route 20 to its source within the Crossgates Mall property is also designated Class A. The Normans Kill is designated Class B from the reservoir outlet to the Town boundary. Other regulated streams and ponds include the Hunger Kill and some of its tributaries [Class C, Standard

C(T)], Blockhouse Creek [Class C, Standard C(T)] and the portion of the Krum Kill from Route 20 south to the southeast corner of the Town [Class C, Standard C(T)] [6 NYCRR 863 (1983) and 6 NYCRR 863 (revised 1991)].

In addition to State and local regulations, the U.S. Army Corps of Engineers (Corps) regulates all waters of the U.S. Therefore, all the streams, ponds, and lakes fall under federal jurisdiction. The extent of regulatory involvement depends on the position of the water body in the watershed (above or below headwaters or isolated) and its navigability. Section 404 of the Clean Water Act regulates the discharge of dredged or fill materials into all waters of the U.S. Section 401 of the Clean Water Act (federal program granted to the State) regulates the quality of the discharge regulated under Section 404.

Opportunities

Surface water resources provide excellent opportunities for recreation/open space and provide essential wildlife habitat. Streams provide wildlife corridors that allow movement from habitat to habitat without conflicting with the built human environment.

The Watervliet Reservoir is an important water supply resource and an essential component of current and future development within the Town. At present, groundwater resources provide an important supplemental source of water to manage peak demand. Further investigations of groundwater resources may reveal additional suitable municipal sources.

Constraints

The protection and regulation of surface and ground water resources often result in constraints on development and time-consuming permit processes. For example, a road crossing over the Normans Kill would require authorization from the Corps of Engineers and the NYS Department of Environmental Conservation. This Inventory contains as complete as possible a listing of sensitive areas and related maps which developers should consult before planning their projects. Project sponsors should take advantage of this information to design around protected resources or properly plan for the cost and time associated with regulatory actions.

Land use is of great concern relative to the protection of surface and groundwater resources as municipal water sources. Certain types of developments pose high risks to water quality. Uses that are permitted in specific zones, but potentially carry adverse impacts should be carefully monitored on a case by case basis to insure that the environment is protected. The location of the Northeast Industrial Park in the Black Creek Watershed is a good example. Likewise, the proximity of Route 20 and Route 158 to the Watervliet Reservoir raise concerns over accidents and spills that could directly enter the Town's primary water supply. Safeguards should be explored to ensure such a catastrophe never occurs.

F.2 Floodplains & Storm Drainage

Drainage channels in the east and northeast portions of the Town include the Krum Kill, Hunger Kill, Kaikout Kill, and Blackhouse Creek. These streams flow southward toward the Normans Kill. The Normans Kill is the primary drainage course that divides the Town in half, flowing southeasterly. In the south-central and southwestern portions of the Town, streams beginning in the Helderbergs flow north east into Black Creek, then north to the Bozen Kill. The Bozen Kill and its tributaries drain the northwestern portion of the Town, flowing east to the confluence with the Watervliet Reservoir.

Although much of today's topography is a result of the last glaciation, thousands of years of erosion has also changed the landscape, creating steep ravines and floodplains associated with streams. Drainage is a function of the topography and soils. Flat areas in the central portion of the Town result in poor drainage conditions, promoting the development of wetland characteristics. Similar conditions in the developed eastern portion of the Town have resulted in local flooding. Stuyvesant Plaza is one area that experiences flooding during large storm events.

Floodplain areas, as defined by the Federal Emergency Management Agency (FEMA) and illustrated on the Flood Insurance Rate Maps (FIRM), are associated with the major drainage courses in the Town. Floodplain boundaries are identified on Figure 8.

Opportunities

Floodplains provide natural storage and flood flow attenuation functions that protect adjacent lands and communities, both upstream and downstream, from flood damage. Floodplains also provide the necessary room for a stream to meander: the natural dynamic shifting of a stream.

Constraints

Development without the use of appropriate stormwater management practices may disturb natural drainage conditions, including peak flow, to the extent that flooding and associated property damage/loss could occur. Development in the 100-year floodplain should be avoided to the greatest extent possible. These areas should be less desirable for development, since most of the larger floodplain areas within the Town contain wetland or are in public use as parkland.

G. Ecology

The ecology of the Town of Guilderland has been significantly influenced by the built environment, agriculture, and other human interactions. Although a larger percentage of the Town has undergone development or agricultural activity,

there remains large areas of undeveloped land, some of which is constrained for development by wetlands and steep slopes. The largest areas of undeveloped land are located along the Helderberg escarpment and Watervliet reservoir, and within the Pine Bush and Settles Hill areas. Significant undeveloped land also occurs along the major stream corridors, linking each of the larger undeveloped areas.

Abandoned or fallow agricultural fields are undergoing secondary succession, the process by which nature reclaims the land to eventually return to a mature forest or other dominant community that existed prior to disturbance. The result is the return of wildlife habitat that changes as the vegetative communities change. Nature also adapts to human occupation. Some species (plant and animal) prefer these disturbed conditions. However, the very same species that benefit from human occupation are often deemed a nuisance by their hosts.

This discussion of ecology is divided into vegetation, wildlife, and wetlands. The latter is included as a separate subject based on its general acceptance as an important ecological component, its ability to be identified, classified, and delineated, and the regulatory framework that fosters its protection. Also discussed as a separate topic is the Albany Pine Bush Preserve. This ecosystem is unique to New York State and contains many significant fire-dependent vegetative communities, as well as wetlands and the endangered Karner blue butterfly.

G.1 Vegetation

Vegetative communities within the Town can be generally divided into forested, meadow, scrub/shrub, wetland, agriculture, and landscaped. The Pine Bush is a unique component of the natural landscape that contains rare natural communities.

Forested portions of the town are dominated by northern hardwoods, primarily beech-maple-oak forests. However, these communities differ from place to place depending on the successional stage of the community

Meadows and scrub/shrub communities are associated with fallow farm fields and abandoned farmland. These vegetative communities provide a variety of wildlife habitats. Agriculture limits the availability of land for nesting and denning, with the exception of fallow fields, but agriculture does provide a food source for many animals.

Wetland areas provide a variety of vegetative communities, often in a small area. The frequency and duration of flooding/soil saturation dictates the type of vegetative community that will occur. As topography/drainage conditions change, so do the communities. Frequently or permanently flooded areas will support emergent wetland vegetation, such as cattail, bulrush, buttonbush, and pondweed. Adjacent to this area and perhaps slightly upslope, less water tolerant wetland species (hydrophytes) can survive, such as speckled alder, silky dogwood, and a variety of sedges, rushes and wetland grasses. If shrubs

dominate, this would be a scrub-shrub community. The next community upslope (better drainage) might be a forest community consisting of red maple, green ash, and American elm. This community can tolerate flooding for a shorter period of time.

Many wetland communities, such as that described above, occur within the Town. Wetlands are discussed in greater detail, further in this section.

G.2 Pine Bush Preserve

A portion of the Albany Pine Bush Preserve is located in the northeastern portion of the Town. The Pine Bush is a pitch pine-scrub oak community that is adapted to the dry conditions (glacial sand deposits) and periodic fires that occur in this area. The ecosystem once occupied a 40 square mile area (25,600 acres) between Albany and Schenectady. For years it was considered a "wasteland" and generally avoided, but large areas have recently succumbed to development pressures. Today, there are less than 5,000 acres of the Pine Bush left. In an effort to preserve the ecosystem, NYSDEC purchased 450 acres in 1973. Additional land was acquired by the City of Albany, the NYS Office of Parks, Recreation and Historic Preservation (NYSOPRHP), the Towns of Colonie and Guilderland, and The Nature Conservancy (Environmental Design & Research, P.C. 1993). The Pine Bush Preserve is currently recognized for its ecological, educational and recreational value for the entire Capital Region.

Communities within the Albany Pine Bush have been mapped and described by several different sources. Communities within the Preserve area were mapped by the New York Natural Heritage Program, prior to preparation of the 1993 Preserve Management Plan (Schneider et al., 1991). Communities were mapped again during preparation of the 1996 Implementation Guidelines within the proposed Pine Bush Protection Area (APBPC Tech. Comm., 1996). Land within the Pine Bush was characterized as pitch pine-scrub oak barrens, pine barrens vernal ponds, appalachian oak-pine forest, northern hardwood forest, red maple hardwood swamp, shallow emergent marsh, successional northern hardwoods, and successional southern hardwoods.

During the mid 1980s, a series of development proposals in the Albany Pine Bush, including the proposed expansion of the Albany Landfill, led to the preparation of several environmental impact statements and associated studies. The seminal study by Givnish, et al. (1988) dictated that a minimum of 2,000 fire-manageable acres must be protected and managed to assure the long-term survival of the Albany Pine Bush ecosystem and the endangered Karner blue butterfly (Givnish et al., 1988). Protection of this minimum area became a condition of permit approval for the landfill expansion.

In December of 1988 the New York State Legislature established the Albany Pine Bush Preserve Commission. The legislation described the Albany Pine Bush as a "...landscape of rare and endangered natural communities and species...especially valuable as an open space resource and, if properly managed, as a passive recreational area and educational laboratory" and declared it to be in

the public interest to "...protect and manage the Albany Pine Bush... for purposes of its protection and controlled and appropriate recreation and education purposes". Since establishment of the Commission, approximately 2,700 acres of public and private land have been protected and dedicated to the Preserve.

The NYS Legislature established that the Commission, prepare a Management Plan.

The Management Plan was prepared in 1993 and updated in 2001. The plan identifies several problems facing the Pine Bush ecosystem due to development and the exclusion of natural fire. Fire has been significantly suppressed which has allowed the invasion of more aggressive plant species. This has led to a shrinking of the Karner blue butterfly habitat, which requires open areas and the blue lupine to survive.

In 1996, the "Albany Pine Bush Preserve: Protection and Project Review Implementation Guidelines and Final Environmental Impact Statement" were prepared, a supplement to the Management Plan. The guidelines established four goals for the Pine Bush:

1. Protect pitch pine-scrub oak barrens - Acquire remaining property to achieve 2,000 acres of pitch pine-scrub oak barrens that can be managed by fire. Currently, there is approximately 2,220 acres in public domain. Of this total, 590 acres cannot or should not be managed as pitch pine-scrub oak barrens. Of the 1,630 acres of fire manageable land, approximately 1,020 acres support existing pitch pine-scrub oak barrens, while the remainder (610 acres) will require extensive restoration. Approximately 370 acres of existing and restorable pitch pine-scrub oak barrens should be obtained and protected to achieve the 2,000 acre goal.
2. Protect linkages - These include lands that do not necessarily contain significant habitat but provide connection between significant areas. This is particularly important for Karner blue butterfly habitat to allow linkage between existing and potential habitat.
3. Protect buffers - These areas help to prevent significant impact, such as water pollution, to significant environmental areas from encroaching development. They also provided the necessary separation between fire management areas and development to prevent inadvertent smoke or fire damage.
4. Protect Significant Environmental and Historic Resources - These areas include Karner blue butterfly habitat, wetlands and streams, historic and archaeological sites.

Based on previous recommendations for the acquisition of land, the 1996 Guidelines provide a "Vision for the Albany Pine Bush Preserve." Properties were evaluated and rated based on their ability to meet the Pine Bush goals. Existing and restorable pitch pine-scrub oak barrens, linkages, and Karner blue

butterfly habitat received the highest score based on rarity and importance. The term Primary Protection Area, used in the Management Plan is replaced with Full Protection Areas and Open Space. These areas received the highest scores during site evaluation and generally incorporate significant environmental areas, including existing and restorable pitch pine-scrub oak barrens, wetlands, and important linkages. Partial Protection Areas are identified as lands that may have some significant resources that are important to the Preserve but probably should not be protected in their entirety.

If full protection goals are met, approximately 4,520 acres of land could be included as preserve lands or otherwise protected through easements, dedications, or other voluntary preservation. Of this total, approximately 2,390 acres of existing and restorable pitch pine-scrub oak barrens are recommended for full protection, preservation and management, including fire management.

An inventory of rare plants, animals and ecological communities in the Albany Pine Bush was prepared by the NYSDEC Natural Heritage Program for the Albany Pine Bush Commission in 1991. The Albany Pine Bush area contains a variety of vegetative communities, some of which occur due to human intervention and fire suppression. Wetlands, northern hardwood forest and pine barrens are all present and discussed in further detail, as follows.

Pitch pine-scrub oak barrens - This area is located primarily within the Albany Pine Bush Preserve. This is a shrub-savanna community comprised of pitch pine (*Pinus rigida*), ranging in cover from 20 to 60 percent; a tall shrub layer dominated by oaks (*Quercus ilicifolia* and *Q. prinoides*), black huckleberry (*Gaylussacia baccata*), and blueberries (*Vaccinium anustifolium*, *V. pallidum*), forming dense thickets covering 60 to 80 percent of the community. Small patches of grassland occur within the thickets and generally include big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*), and Indian grass (*Sorghastrum nutans*). Other vegetation that can be found in this community include: bush-clovers (*Lespedeza capitata*, *L. hirta*), goat's-rue (*Tephrosia virginiana*), and wild lupine (*Lupinus perennis*). Several rare plant species are found in this vegetative community including Yellow Giant-Hyssop, Side-Oats Grama, Schweinitz's Flatsedge, Bayard's Malaxis, and Virginia False Gromwell.

Pitch pine-oak forest - This is a mixed forest type that includes pitch pine mixed with white oak (*Q. alba*), red oak (*Q. rubra*) chestnut oak (*Q. prinus*), and quaking aspen (*Populus tremuloides*). The shrub layer is composed of scattered clumps of scrub oak (*Q. ilicifolia*) and a continuous cover of low heath shrubs such as blueberries and black huckleberry. The herbaceous layer is sparse and includes bracken fern (*Pteridium aquilinum*), wintergreen (*Gaultheria procumbens*), and Pennsylvania sedge (*Carex pensylvanica*). Several rare plant species are found in this vegetative community including Yellow Giant-Hyssop, Side-Oats Grama, Schweinitz's Flatsedge, Bayard's Malaxis, and Virginia False Gromwell.

Pine barrens vernal pond - Vernal ponds are seasonally fluctuating wetlands that occur in low areas and between dunes. Herbaceous vegetation generally dominates but are mixed with low shrubs in some locations. Dominant

species include uptight sedge (*Carex stricta*), woolgrass (*Scirpus cyperinus*), blunt spikerush (*Eleocharis obtusa* var. *obtusa*), and broad-leaf meadow-sweet (*Spiraea latifolia*); with three-way sedge (*Dulichium arundinaceum*), cinnamon fern (*Osmunda cinnamomea*), black chokeberry (*Aronia melanocarpa*), and moss (*Sphagnum* sp.). Stunted trees may be present on hummocks in the wetland. Characteristic species include: red maple (*Acer rubrum*), gray birch (*Betula populifolia*), pitch pine, and quaking aspen (*Populus tremuloides*). State listed rare species include red-root flatsedge (*Cyperus erythrorhizos*) and capitate spikerush (*Eleocharis caribaea*). There are no known rare vegetative species in this community.

Pine-northern hardwood forest - This is a mixed forest type that occurs primarily in ravines and as patches in areas that have not burned recently. Dominant trees include white pine (*Pinus strobus*) mixed with yellow birch (*Betula alleghaniensis*) and big-tooth aspen (*Populus grandidentata*). Characteristic shrubs include blueberries, dogwood (*Cornus amomum*, *C. foemina*) and witch hazel (*Hamamelis virginiana*). Dominant herbaceous vegetation include: woodfern (*Dryopteris intermedia*) and thorough-wort (*Eupatorium rugosum*). There is one State listed endangered plant species within this community type: bog bluegrass (*Poa paludigena*). This species is also a category 2 candidate for federal listing. Those species listed in category 2 are considered appropriate for listing as threatened or endangered but more data is needed.

Appalachian oak-pine forest - This community is a mixture of pines and oaks, including: pitch pine, white oak and black oak, located primarily in ravines in association with pine-northern hardwood forest, generally on south- and west-facing slopes. Sugar maple (*Acer saccharum*) and red maple are also present. Dominant shrubs include black huckleberry and lowbush blueberry. The ground layer is sparse. There are no known rare vegetative species in this community.

Red maple-hardwood swamp - This is a forested wetland community type that occurs in poorly drained depressions. Red maple often dominates the tree canopy. Other associated species include gray birch, eastern cottonwood (*Populus deltoides*), northern red oak, and American elm (*Ulmus americana*). The shrub layer is generally dense. Characteristic shrubs include: winterberry, red osier dogwood (*Cornus sericea*), arrowwood (*Viburnum recognitum*), and highbush blueberry (*Vaccinium corymbosum*). The herbaceous layer is dominated by melic manna grass (*Glyceria melicaria*), spotted touch-me-not (*Impatiens capensis*), and royal fern (*Osmunda regalis*). There are no known rare vegetative species in this community.

Shallow emergent marsh - This wetland community occurs in organic and inorganic soils that are permanently saturated and seasonally flooded. These wetlands are generally very small within the study area and are associated with streams. Dominant species include: cattail (*Typha latifolia*), skunk cabbage (*Symplocarpus foetidus*), and uptight sedge. There are no known rare vegetative species in this community.

Successional hardwoods - This is a successional community on sites that were cleared or disturbed. Within the Pine Bush, this community occurs in patches throughout the dunes where fires have been suppressed. Dominant

northern hardwoods include big-tooth aspen (*Populus grandidentata*) and quaking aspen. Black huckleberry and lowbush blueberry are the dominant shrubs. Successional southern hardwoods are more common in the Pine Bush. This community is dominated by black locust (*Robinia pseudoacacia*). Both the shrub and ground layers may include species characteristic of old fields or of site conditions prior to the disturbance. There are no known rare vegetative species in this community.

Unpaved road/path - This community includes sparse vegetation along unpaved roads and paths. Tree species include honey locust (*Gleditsia triacanthos*), fire cherry (*Prunus pensylvanica*), red maple, white oak, and black locust. Many species of herbaceous plants occur in these disturbed areas, including three State listed rare species of flatsedge: *Cyperus houghtonii*, *C. odoratus*, and *C. schweinitzii*.

Sand mine - This is another disturbed community. Big-tooth aspen, quaking aspen, boxelder (*Acer negundo*), hawthorn (*Crataegus sp.*), black locust, and seedlings of pitch pine and black cherry (*Prunus serotina*) occur in these areas. Characteristic shrubs include: scrub oaks, sumac (*Rhus glabra*), northern dewberry (*Rubus flagellaris*), and river-bank grape (*Vitis riparia*). There several species of sedge and grasses, including the State listed rare flatsedge (*Cyperus schweinitzii*).

Protection for rare species identified above depends on their federal and state status. Federally listed plants are protected from import, export, and interstate commerce or sale. The New York State Protected Plant Law (1974) protects listed plants from collection or destruction without prior consent from the landowner. Currently, there is no comprehensive legislation for the protection of significant ecological communities such as the Pine Bush.

G.3 Wildlife

The diversity of vegetation and ecological communities results in a healthy diversity of wildlife.

New York State and the Audubon Society list Black Creek marsh and the Helderberg Escarpment, as two of the state's most important bird areas requiring long-term conservation. The Department of Environmental Conservation has established Black Creek Marsh as a 360-acre wildlife management area in its Natural Heritage Program. There are several hundred more acres of wetland in the Black Creek Marsh that have yet to be identified.

Rare and endangered species within the Town are discussed under their associated community type, as follows:

Pitch pine-scrub oak barrens and Pitch pine-oak forest - Rare species of amphibians and reptiles include the following State listed special concern species the eastern spadefoot (*Scaphiopus holbrookii*), the spotted turtle (*Clemmys guttata*), the jefferson salamander (*Ambystoma jeffersonianum*) and the eastern hognose snake (*Heterodon platyrhinos*). State listed bird species of special concern include sharp-shinned hawk, (*Accipiter striatus*), cooper's hawk, (*Accipiter cooperii*), red-

shouldered hawk (Buteo lineatus), golden-winged warbler (Vermivora chrysoptera), and yellow-breasted chat (Icteria virens).

Several rare and endangered moths and butterflies utilize the Pine Bush. The Karner blue butterfly (*Lycaeides melissa samuelis*) is a federally listed endangered species. Rare species include: bird-dropping moth (*Cerma cora*), a noctuid moth (*Chaetagnathae cerata*, *Zanclagnathae martha*, *Apharetra purpurea*, and *Chytonix sensilis*), a geometrid moth (*Itame* sp.1), dusted skipper (*Atrytonopsis hianna*), and Edwards' hairstreak (*Satyrium edwardsii*).

The Karner blue butterfly and Persius duskywing (*Erynnis persius*) are State listed endangered species which require the wild lupine plant to survive. Wild lupine is the butterfly larvae's sole food source. Elimination of this habitat has severely reduced Karner blue butterfly populations. Several locations of Karner blue butterfly habitat have been identified by the State. One of the objectives of the Pine Bush Management Plan is to preserve these locations and create linkages to other unutilized concentrations of wild lupine in cooperation with State and Federal guidelines. The frosted elfin (*Incisalia irus*) is a state listed threatened species and also requires lupine in the Pine Bush.

The Henry's elfin (*Incisalia henrici*), inland barrens buckmoth (*Hemileuca maia* ssp.3) and mottled duskywing are State listed special concern species that occur within the Pine Bush. The Albarufan dagger moth (*Acronicta albarufa*) is globally rare and is a candidate for federal listing pending collection of additional information. A specimen of this species was taken in 1983. The Karner blue butterfly also occurs within the Pine Bush and in other dry, sandy areas, but its habitat is limited to areas containing wild lupine.

Pine barrens vernal pond - Vernal ponds provide essential breeding habitat for rare species of amphibians and reptiles including the following state listed special concern species: the eastern spadefoot (*Scaphiopus holbrookii*), the spotted turtle (*Clemmys guttata*), and the Jefferson salamander (*Ambystoma jeffersonianum*). Although birds and mammals use the vernal ponds for food and water, they are not dependent on this community type for survival. However, there are a number of amphibians that do depend on this community type. They include the American toad, Fowler's toad (*Bufo woodhousii*), spring peeper (*Hyla crucifera*), and wood frog (*Rana sylvatica*). These and other amphibians constitute the diet of the State listed special concern species, the eastern hognose snake (*Heterodon platyrhinos*).

Red maple-hardwood swamp - The State listed special concern species, Jefferson salamander and spotted turtle are found in this habitat. A noctuid moth (*Macrochilo bivittata*) is known to occur in wetlands but little is known of its foodplant or its biology.

G.4 Wetlands

Wetlands are defined differently by different regulatory agencies, environmental groups, and the scientific community. Most agree, however, that wetlands are

areas of land that experience flooding or soil saturation during some portion of the growing season (around mid-April to mid-November). The presence of other parameters and how they are identified varies widely. For the purposes of comprehensive town planning, discussion is limited to the primary agencies that regulate wetlands in New York State. They include the NYS Department of Environmental Conservation (NYSDEC) and the U.S. Army Corps of Engineers (Corps).

The State defines wetlands based primarily on vegetation typically adapted to wet conditions (hydrophytes). Some species can be excellent indicators of wetlands since they seldom grow in any other condition. These species are referred to as obligate wetland plants and include such species as cattail, skunk-cabbage, and a variety of sedges, rushes and grasses, to name only a few.

The State also requires a minimum size of 5 hectare (12.4 acres) to be mapped and regulated. State regulated wetlands are classified based on variations in cover type, ecological associations, special features, hydrological and pollution control features, and distribution and location (6 NYCRR 664.5). The highest classification is I and is afforded the highest level of protection; the lowest classification is IV. A 100 foot buffer zone is extended upland from the wetland boundary to protect the wetland from encroaching development and related impacts. Any work occurring within the wetland or its buffer zone requires a permit from NYSDEC pursuant to Article 24 of the Environmental Conservation Law.

Several State regulated wetlands occur within the Town and are identified on Figure 9, *State Wetlands*.

By virtue of their administrative role in implementing and enforcing Section 404 of the Clean Water Act and Section 10 of the 1899 Rivers and Harbors Act, the Corps has jurisdiction over all water of the U.S., including wetlands. For most of the Town, Corps jurisdiction is limited to the discharge of dredged or fill material into federal wetlands and other waters described under *Water Resources*.

Federally regulated wetlands are defined by the Corps as:

Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include swamps, marshes, bogs, and similar areas (33CFR 328.3).

Federal jurisdiction is determined by the identification of three criteria: vegetation adapted to wet conditions (hydrophytes), flooding (hydrology), and hydric soils. Field investigation is the only reliable method of identifying these three criteria or parameters. However, this level of detail is neither necessary nor feasible for comprehensive town planning. The use of available data/mapping is sufficient to identify potential federal wetlands. Further investigation would be necessary for site specific projects. Available mapping includes the NYSDEC Freshwater Wetlands Maps and the Albany County Soil Survey.

The Albany County Soil Survey was used to identify hydric soils in the Town. Hydric soils primarily include poorly drained soils. Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as "...a soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part" (Soil Conservation Service 1989). Anaerobic conditions (without oxygen) reduces metals in the soil (iron, manganese) such that the color of the soil becomes gray or black.

From an ecological perspective, the presence of hydric soils is one of the best indicators of the presence of federal wetland. If the soil is hydric then the hydrology is present during the growing season. Furthermore, the anaerobic conditions associated with hydric soils will preclude vegetation that is not adapted to wet conditions. For planning purposes, therefore, soils mapping provides an indication of the potential presence of federal wetland. It is not accurate for parcel based mapping (site specific) and it does not address the other two parameters of a federal wetland. Only field inspection by a qualified wetland biologist can define wetland boundaries.

Figure 10 identifies potential federal wetlands based on hydric soil mapping. It is important to note that federal jurisdiction extends to State regulated wetlands, providing these wetlands exhibit the required three wetland criteria.

Opportunities

The ecology of the Town provides numerous opportunities for recreation and the preservation of visual quality and rural character. Forested areas and wetlands provide opportunities for trail development and nature facilities. Ecological communities provide many functions that protect other resources. For example, trees and other vegetation filter the air and provide noise abatement and visual buffers. Diverse wildlife reduces populations of nuisance animals, such as rats and mice, and minimize the occurrence of disease. Many species of birds, bats, amphibians and insects keep harmful insects in check. Wetland communities filter pollutants from water and provide habitat, among many other functions and values.

Constraints

The presence of wetlands and other important habitat on a given piece of property can conflict with development plans. Sometimes the extent of important habitat is so great as to preclude development on a given parcel. However, many times these resources can be preserved and protected through innovative site design. The concept of designing with nature is widely accepted practice and very desirable to potential new homeowners. Currently, wetlands are regulated by the NYSDEC and the Corps.

H. Community Services

H.1 Education

The Guilderland Central School District was established in 1953 and included: a junior and senior high school. Today, public education in the Town of Guilderland is provided by five elementary schools, a middle school, and one high school. There are two private grammar schools located within the Town, they are Christ The King School and St. Madeline Sophie School.

The Guilderland Central School District does not encompass the entire Town. Figure 11, *Community Facilities*, illustrates the school district boundaries. A small percentage of students who live in the Town of Guilderland attend Voorheesville Central Schools, Schalmont Central Schools or Mohonasen Central Schools. None of these school districts have school facilities located in the Town of Guilderland.

Students who reside in the Voorheesville Central School District attend the Voorheesville Elementary School (grades K-6) and the Clayton A. Bouton Jr.-Sr. High School. In September of 1999 there were 649 elementary school students and 671 Jr.-Sr. High School Students enrolled in these schools. The Voorheesville School District is in the process of developing a building plan to accommodate its student population. The district hopes to be ready to present the plan to the public in time for a vote in the spring of the year 2000.

Students within the Schalmont School District attend Pine Grove Elementary School for grades K-1, and Jefferson Elementary School for grades 2-5. Approximately 200 students residing in the Town of Guilderland attend Schalmont Schools. The total September 1999 enrollment in Pine Grove Elementary School was 200 students. The enrollment in Jefferson Elementary School was 500 students. These schools are at capacity. Plans for expanding school facilities were rejected by voters during the most recent budget vote.

Students from Guilderland who attend Mohonasen Schools attend Bradt Elementary School in grades K-2 and Pinewood Elementary School in grades 3-5. There are 747 students attending Bradt Elementary School and 782 students attending Pinewood Elementary School. The district is in the process of implementing its building plan. Additional space has been, or will be added to all buildings in this district.

The largest elementary school in the Town of Guilderland (Guilderland Central School District) is the Westmere Elementary School, located in the most densely populated area in the Town. The Westmere School has a 1999 school year enrollment of 651 students, an increase of 45 students since 1995. A small percentage (approximately 5%) of these students are from the Town of Bethlehem. The middle school which draws students from all of the elementary schools grew by 22 students since 1995.

The smallest elementary school is the Altamont Elementary School, located in a primarily rural area, this school lost 38 students since 1995. A small percentage of students from the Town of Knox attend the Altamont School. The Lynnwood Elementary School lost 4 students since 1995. These were the only two schools in the Guilderland School District which experienced a decreased enrollment with a combined total of -27 students; the enrollment at other schools in the District grew significantly. Although the Pinebush school indicated a total growth of +23 students, they anticipate that this number will increase rapidly over the next few years. Demographics indicate that several new families with young children (not school age) have moved to the Pine Bush area.

Enrollment of the grammar and middle schools has grown by 170 students since 1995. The Guilderland School District anticipates an increase of 36 students for the upcoming fall 1999 school year. There appears to be sufficient capacity in the school to accommodate growth. Additional capacity was added to the high school to address the increasing enrollment. At the present time (fall 1999), the high school completed an expansion program adding 20+ classrooms, a new cafeteria, new library, updated science labs, and expanded the gym which now boasts as being the largest gym in New York State. The expansion and renovation project was supported by a \$24 million bond issue.

Each of the elementary schools reported that they are capable of handling additional population. Each of these schools rent out a minimum of 3 classrooms for special programs within the community.

Table 6
Guilderland Central School District Enrollment Update

School	1995 Enrollment	1998 Enrollment	1999	Diff. 1995-1999
Altamont Elementary	423	400	385	-38
Guilderland Element.	541	570	629	+88
Lynnwood Elementary	442	438	450	+8
Pine Bush Elementary	483	503	506	+23
Westmere Elementary	606	627	651	+45
Farnsworth Middle School	1264	1364	1396	+22
Guilderland High Sch.	Unavailable	Unavailable	1702	

Note: Although Guilderland Elementary School has a +88 student population, 30 students are special education students under the B.O.C.E.S. program.

Table 7
Private School Enrollment Update

School	1999 Enrollment
Christ The King	195
St. Madeline Sophie	150

Note: Christ The King School and St. Madeline Sophie Elementary have reported increased enrollment over the past five years, neither school have enrollment numbers for the 1995 school year.

The annual report card indicated 5,648 children in Guilderland attend public elementary, junior and senior high schools within the Town. Table 6 provides a comparison of enrollment at each school between 1995 and 1999. The school district profile demonstrates a very favorable report card for the school and their demographics.

According to the School District Profile from March 1999, only 1% of the total school population had limited English proficiency; the New York State percentage is 7.7%. Only 3.9% of the total school population is eligible for the state free lunch program; statewide 38% of school age children are eligible for this program.

Most of the school districts within the Town are undergoing demographic studies to determine future needs. A contributing factor to additional space requirements is the increasing role of the computers in education. New residential developments in the Town, most likely will result in a significant impact on the School District.

H.2 Police Services

The Town of Guilderland Police Department currently has a 48 member police force consisting of 31 sworn police officers, 11 telecommunicators, 3 office personnel, and 3 animal control officers. In addition to the Guilderland Police Department, the New York State Police, Albany County Sheriff, and SUNY Police Department all operate within the Town. By agreement with these agencies, the closest car, regardless of agency, will respond to an emergency 911 call. A written agreement exists with the New York State Police to serve as back-up for the town. It was reported that the Town has not experienced any violent crimes and most police issues are property crimes.

At present, staffing and equipment are not at the level anticipated by the Chief of Police. Deficiencies are determined through workshops with the department to discuss call volume, age of equipment and related issues. From these workshops, needs are translated into budget requests.

H.3 Fire Protection Services

Fire protection and suppression in the Town is provided by volunteer firefighters. The Village of Altamont and seven fire districts (Elmwood Park, Fort Hunter, Guilderland, Guilderland Center, McKownville, Pine Grove and Westmere) have the legal responsibility for this activity. In addition, the Town contracts with two other fire districts to protect small areas within the Town that are not covered by fire district boundaries.

A fire district is a municipal government under State law. There are five commissioners elected by the registered voters residing within the geographic boundaries of each of the fire districts. Each district is required to adopt an annual budget subject to the Town laws. The tax rate is established based on the budget and the value of the property in the district. The tax revenue provides funds for firefighting, fire apparatus, equipment, insurance, physical examinations, service awards, and construction and maintenance of the fire station.

The actual firefighting is accomplished by individuals who are members of the fire department or company, which generally has the same name as the district or village. Mutual aid agreements are in place which establish cooperation between fire fighting organizations to provide assistance to each other when required. Fire fighter availability is dependent on the day of week, time of day, type of call, weather, and family commitments. In many cases there are automatic day time or target hazard mutual aid agreements in effect to insure adequate number of personnel. Additionally, mutual aid is requested immediately when it is determined that the initial response is inadequate for the call.

The fire chiefs from each of the fire districts and the Village of Altamont were contacted to identify their current conditions (volunteers, facilities, equipment) and deficiencies/issues. The most important issue is the recruitment and

retention of the volunteer fire fighters. Albany County, the fire districts, and the department/companies sponsor a continual drive to recruit new members. A service awards program has been authorized by State lawmakers to encourage the retention of fire fighters. Other issues include the following:

- Controlling a fire is more easily achieved when buildings have complete sprinkler systems.
- Access should be a primary consideration for new development to facilitate movement of equipment around buildings and sufficient highway/road access.
- Providing adequate water supply.
- Due to issues of daytime fire fighter availability, high occupancy uses should be carefully designed and reviewed. The location of high occupancy uses is also important especially as it relates to the availability of municipal water service.

Volunteer fire departments serve the Town's fire fighting needs. The Town has been divided into nine fire districts. The fire districts and their stations are shown on Figure 11 and include: McKownville Fire Department, Guilderland F.P. 1, Guilderland F.P. 2, Westmere Fire Department, Guilderland Fire Department, Guilderland Center, Fort Hunter, Pine Grove, and Altamont. The fire chiefs from each of the fire districts were contacted to identify their current conditions (volunteers, facilities, equipment) and deficiencies/issues.

The Guilderland Center Fire District has approximately 38 active volunteer members. Through their recruitment program, the District has been able to keep a sufficient number of active members to meet the needs of their service area. Their equipment is maintained to meet all current federal and State requirements as well as to meet the changing needs of the industrial park and the residential neighborhoods. Mutual aid is received from the neighboring fire departments that include: Altamont, Fort Hunter, Guilderland, Pine Grove, Westmere, Voorheesville, and New Salem.

The Guilderland Fire Department is located at 2303 Western Avenue and is part of the Albany County Mutual Aid Plan which establishes cooperation between fire departments and districts to provide assistance to neighboring districts when required. The seven other fire districts within the Town provide back-up service to the Guilderland Fire Department. At present, the Fire Department has 30 active firefighters. Their availability is dependent on the day of the week, time of day, type of call, weather, and family commitments. Mutual aid is requested immediately upon a determination that the response from the Fire Department will be inadequate for the call.

H.4 Emergency Medical Services

Emergency medical services (EMS) are provided by the Guilderland EMS, Western Turnpike Rescue Squad, and the Altamont Rescue Squad. The Town has an EMS Coordinator who oversees the operations of the three squads.

Through contact with the EMS Coordinator, considerable information was provided regarding the current status of EMS in the Town.

The Western Turnpike Rescue Squad serves an area of the Town bounded by the Albany city line to the east, Route 158 to the west, the Normans Kill to the south and the towns of Colonie and Rotterdam to the north. There are two stations within this service area, one located at 1853 Western Avenue (Westmere area) and the second at 3686 Carman Road in the Fort Hunter area. The Western Turnpike Rescue Squad provides basic life support through their volunteer ambulance service. Staffing is generally sufficient during the evening hours. During the day, staffing is adequate to support one ambulance. No crews are available for approximately 20 percent of the daytime hours. The Western Turnpike Rescue Squad responds to approximately 2,300 emergencies annually.

Based on contact with the Western Turnpike Rescue Squad, new facilities are needed. They are currently pursuing a capital facilities improvement campaign that would result in the replacement of Route 20 station and renovations to the Carman Road station.

The Altamont Rescue Squad serves an area south of the Normans Kill, that includes Guilderland Center and the Village of Altamont, west to the Schoharie County line, north to the Town of Knox, and east to the Village of Voorheesville. They have one station located north of the Village on Route 146 and provide basic life support. This rescue squad also depends on volunteers and has a much larger problem providing crews during daytime hours. No crews are available for approximately 45-55 percent of the daytime hours. Daytime call volumes dictate that two ambulances should be available. Each call takes approximately 1.5 hours and a second call is received within one hour of the first call approximately 61 percent of the time.

The Guilderland EMS provides advanced life support and serves the entire Town. Their offices and garage are located at Town Hall. Staff include paid full time and part time paramedics, employed by the Town. Staffing is adequate to respond to the volume of calls, approximately 3,000 annually.

Several other agencies can be called upon for back-up as needed. They include: Voorheesville Ambulance, Rotterdam (White Eagle) Ambulance, Colonie EMS, and Five Quad (SUNY) Ambulance.

With the exception of the Guilderland EMS, staffing is a problem during the daytime hours. Each station should be staffed 24 hours a day. Equipment used by each station is adequate and up to date. Response times are based on the national standard of 8 minutes. Since Guilderland EMS serves the entire Town from one facility, certain areas of the Town cannot be reached in 8 minutes. Providing another staff position would help to address the response time issue and to handle the increased volume of calls expected over the next 10 years. Another consideration would be to construct a more centrally located station, perhaps in the Tawasentha Park area.

Concern has been raised by the Guilderland EMS over the sufficiency of space within Town Hall to support EMS operations. To address this issue, Guilderland EMS has proposed a new facility that could be shared with Senior Services. As stated previously, this facility would have to be centrally located. Guilderland EMS would like the facility to include office space, a "day room" for crews and space for conducting EMT classes of approximately 30 students and other community service classes, a garage large enough to house 3-4 vehicles and an ambulance, and parking space.

Likewise, the Western Turnpike Rescue Squad Station 1 on Western Avenue was built in the 1960's and no longer provides sufficient space to meet OSHA requirements. They are considering the purchase of adjacent lands to expand and, as an alternative, property for a new station. They also anticipate the need for a sub-station on Route 155 or in the Veeder Road/Dr. Shaw Road area as the southeastern portion of Guilderland develops.

Opportunities

In general, the school districts in the Town have been able to accommodate growth through expansion of existing facilities. The school report card indicates that the students enrolled in the Guilderland School District are above the New York State minimum level for General Education standards. They have expanded facilities in the Science and Technology laboratories, and have provided updated computer equipment to keep pace with new learning tools. It is a progressive school system, which supports programs to provide appropriate educational opportunities. The other school districts in the Town are also preparing for the future. They face similar concerns as the Guilderland District and are providing additional space to accommodate new students.

Police, fire and emergency services are generally adequate to serve the community and planning by the respective departments/district is underway to address current deficiencies and future growth.

Constraints

Educational needs are continually changing. As a result, facility space requirements per student is increasing. The potential for future overcrowding exists at the elementary schools located near high population growth. Also, changes in school curriculums and space requirements for new technology and State-mandated remedial programs will continue to impose new constraints on school facilities. Schools within the Schalmont School District that are attended by Guilderland children are currently at capacity. Although expansion plans are in place, they have not been approved. Future growth within the district needs to be addressed to insure the highest quality of education is provided.

The availability of volunteers to serve in the fire departments or emergency medical squads may have a significant impact on the ability of these services to meet the needs of a growing community. Volunteers are hard to come by and those who do volunteer are often unavailable during the day. This is a national

issue and is forcing communities to plan for paid fire fighting and emergency service positions.

Access to structures has become an issue for emergency services. Open space requirements, small parking lots, and construction on steep slopes all create problems with reaching structures with ladder equipment.

I. Transportation System

The transportation system within the Town is closely linked to the development patterns of the Capital District. Historically, the cities of Albany, Schenectady, and Troy were the major employment centers. With the growth of suburban towns such as Guilderland, the alignment of the transportation systems was influenced by accessibility to the employment hubs. While Route 20 was once the only route into downtown Albany, other roads such as the NYS Thruway, Wolf Road and Washington Avenue Extension, have been developed that have significantly changed traffic patterns. This has led to development along other routes such as route 155 and 146.

The transportation network within the Town accommodates through traffic from adjoining municipalities, connects neighborhoods within the Town, provides corridors for utilities, and has a significant influence on where development will occur. Supporting the transportation system in the Town are the Capital District Transportation Authority (CDTA) bus routes and freight rail provided by CSX (formerly Conrail).

The local road system in the Town is well established. It is one of the few towns in the State to have two major interstate highways within its borders – I-90 and I-87, hence the slogan “Crossgates of the Capital Region.” The major east-west road in the Town is U.S. Route 20, a federal highway. State routes 146, 155 and 158 comprise the major north-south routes. State roads include Routes 146 155, 156, 158, and 397. County roads within the Town include Routes 201, 202, 203, 204, 208, 253, 60 and 99.

Roads within the Town can be classified as principal arterials, minor arterials, collectors, and local roads. The primary function of principal arterials is mobility. They serve longer trips of statewide or interstate nature with little land access. Within the Town of Guilderland, the NYS Thruway and the Northway (I-87) are classified as principal arterials.

Mobility is still an important function of minor arterials but they also have a land access component. Typically, these roads facilitate travel between towns and villages and other major attractions. Minor arterials within the Town of Guilderland include State Routes 20, 146, 155, 156, 158, and 397; as well as some of the County routes including: 201, 203, 208, and 253.

Collector roads provide a balance between land access and mobility. Collectors provide linkages between arterials and between major land uses such as

residential, commercial and industrial areas. Collector roads within the Town include both county and local roads. County route collectors include: 202, 204, 60 and 99. Local collectors include: Fuller Station Road, Lydius and E. Lydius, Old State Road, Lone Pine Road, Wormer Road, Church Road, Gardner Road, Settles Hill Road, Becker Road, Grant Hill Road, Nott Road, Doctor Shaw/Veeder Road, Fuller Road, Rapp Road and Kings Road.

The remaining roads in the Town are classified as local roads. The primary function of local roads is to provide access to various land uses. They serve short trips and typically do not carry large volumes of traffic.

The existing road network in the Town of Guilderland is illustrated on Figure 12. The traffic volumes for segments of the State routes were taken from the 1997 Highway Sufficiency Ratings manual (NYS Department of Transportation). These volumes were graphically translated into segment band widths that are directly proportional to the volumes. The wider the band, the higher the traffic volume. Figure 12 clearly illustrates that the section of Route 20 between New Karner Road (Route 155) and the City line has the highest volume of traffic. Volumes drop off dramatically west of Route 20.

The ability of a roadway segment to accommodate increasing traffic volumes is limited by its design capacity. A volume/capacity ratio of 1 or higher generally indicates that the roadway segment is at or near capacity levels and will no longer operate at a Level of Service E or better. Based on the 1997 NYS Highway Sufficiency Ratings manual a few road segments are at or approaching functional capacity. These areas are identified on Figure 12.

Identifying the source of traffic that impacts Route 20, Route 155 and Route 146, as well as other local roads, is an important step in determining what measures are needed to reduce traffic congestion and how much control the Town will have over the implementation of these measures. As shown on Figure 12, much of the traffic along Route 20 is occurring in the Crossgates/Westmere area. There are a number of businesses and offices in this area, as well as medium density residential neighborhoods. From Route 155 to Route 146, the traffic declines to a level commensurate with the road capacity. This is attributed to less development, dictated by less intensive competing uses such as Prospect Hill Cemetery, Guilderland Elementary School, and the Western Turnpike Golf Course. West of the Route 20/146 overlap traffic volumes drop off significantly.

The westward decline in traffic along Route 20 indicates that much of the traffic is generated by the intense development in the eastern portion of the Town. Route 20 is affected by pass through traffic generated to the north from Route 146. Some of this traffic is heading for major destinations within the Town (e.g., Crossgates Mall) while the rest is passing through to the City of Albany.

Congestion along Route 146 south of Route 20 is related to the industrial park and the high school. Some of the traffic along Route 155 is pass through traffic from both the north and the south. Growth outside the Town boundary will continue to have an impact on State and local roads in the Town. Four growth

areas have been identified. They include: the Route 85, Blessing Road and Krum Kill Road area within the Town of Bethlehem; the Route 155, County Route 203 and Krum Kill Road area in the Town of New Scotland; the Route 20 area just across the border in the Town of Princetown; and the Kings Road area in the Town of Colonie.

Development in Princetown will have a direct impact on Route 20, resulting in greater traffic than currently experienced in the western portion of the Town of Guilderland. Development in the Kings Road area will impact Old State Road, having direct impact on residential areas. Route 155 and County Route 203 will experience additional traffic due to development in New Scotland. Likewise, County Route 204 will bring traffic from new development along the Route 85 corridor. Out-of-town traffic from New Scotland and Bethlehem along the County routes will be further confounded by the anticipated development of the southeastern portion of the Town of Guilderland. Sewer and water can be easily extended to this area, resulting in the potential for a significant number of new single family homes.

In 1995, The Capital District Transportation Committee (CDTC) produced a time delay analysis for all major roads (collector streets or higher) in the Capital District. (CDTC: The Metropolitan Congestion Management System, 1995) For the year 2000, four corridors were identified as having "Critical Congestion" which is defined as a corridor having more than 60 excess aggregate person-hours of delay in the PM peak hour. These corridors are New Karner Road/Vly Road, I-87, Washington Avenue/Fuller Road and US 20. By omission, Johnston Road, a minor arterial, and School House Road, a county collector, are not listed as being critically congested.

Projections to the year 2015 indicate that the intersections of Route 20 and Rt. 146, Rt. 155, Johnston Road, I-87 and Fuller Road will have excess delays even if improvements are made according to the Transportation Improvement Program (TIP). The intersection of Rt. 146 and Lydius, will also have excess delays. These intersections are noted on Figure 13.

The transportation improvements identified for the Town of Guilderland in the NYSDOT Transportation Improvement Program (TIP) list include the following:

- NY 397 Bridge over Bozen Kill
- Karner Road Bridge over Thruway
- Old State Road Bridge over Thruway
- New Karner Rd. (NY 155 US 20 NY 5) multi-county 3 mile improvement
- NY 155 from NY85A to NY20 multi-county improvement

Congestion conditions for local streets are not readily available. In order to make an analysis, the ratio of traffic volume to street capacity would have to be done for every local street in Guilderland. A Local Street Congestion Study could be undertaken by the Town as the next step in determining local conditions.

One set of data on local traffic patterns was gathered by the Census Bureau - a work trip count, 1990. An analysis based on Census data shows that more workers commute from Guilderland to other destinations than outside workers coming into Guilderland. The table below presents a synopsis of the table 1990 Census - Workers in the Capital District. Of all Guilderland workers, 10,759 commute to other areas, while 1,890 stay in Guilderland. Conversely 7,314 workers from outside areas commute to Guilderland. The average occupancy of the commuter car is 1.07 for Guilderland (1.08 coming in and 1.06 going out.)

Table 8
Work Trips by Origin & Destination

Origins	Destination		TOTAL
	Guilderland	All other areas Capital Region	
Guilderland	1,890	10,759	12,649
All other Capital Region incl. Albany Co, Rensselaer Co., Schenectady Co., Saratoga Co.	7,314	332,190	339,504
TOTAL	9,204	342,949	352,153

Although most people utilize private automobiles to reach their destinations, there is bus service in and around the Guilderland area. The Capital District Transportation Authority (CDTA) provides regional bus service with local stops in the Town of Guilderland. The County routes include three fixed route lines with service limited to major shopping areas and along Route 20. The CDTA shuttle buses provide service to Crossgates Mall and the 20 Mall. Service is also provided to the Northeastern Industrial Park.

The 1990 Census shows that 428 journey-to-work bus trips are taken to Guilderland each day, while 354 trips are taken by Guilderland residents going elsewhere in the Capital Region to work. Only 25 work trips originate and end inside Guilderland.

Based on communication with the CDTA, the use of bus service is hindered by the lack of contiguous sidewalks along Route 20. As new development occurs, portions of sidewalks are being constructed and may one day provide pedestrians with a safe haven along Route 20. However, the current situation requires people to walk along busy streets to get to designated bus stops. Pedestrian linkages between residential areas, local shopping, and bus stops should increase the use of public transportation and help to decrease traffic congestion. The CDTA has also unveiled plans to provide bike racks on buses. This will enable people in suburban areas to ride their bikes to bus stops, particularly when stops are limited.

There is no direct link to passenger rail service in the Town. The high speed rail line (Amtrak) runs on the east side of the Hudson River between New York City and Albany and west to Buffalo or Montreal. The closest Amtrak stops to Guilderland residents are located in Schenectady and Rensselaer counties. The CDTA bus service provides transportation to rail service in and around the region.

Albany International Airport is located in close proximity to the Town of Guilderland and limited public transportation links the community to the airport.

Opportunities

Access is a key element for future development. Fortunately, the Town has very good access through its road network consisting of State, County and local roads. Direct access from the Northway and the Thruway promotes intrastate, interstate, and international connections that are crucial for many types of businesses.

Constraints

Several segments of the State road network have been identified as at or near functional capacity. The result is a poor level of service that can frustrate drivers, increase the chance of accidents, and create noise and air quality impacts on the adjacent residential neighborhoods. A transportation corridor management plan needs to be implemented to ensure safe and efficient travel and protect the quality of life.

Significant increases in development may result in the need to improve the capacity of existing roads as well as construct new roads. This necessity can conflict with other important goals such as the protection of open space and agricultural land preservation. These types of "improvements" often effect the quality of life of an area through decreased traffic safety, increased runoff, decreased water quality, decreased air quality, and increased noise. They can also have a significant effect on the aesthetics of an area. A more recent example of the impact of traffic on residential areas is occurring along Route 146 in Guilderland Center. Traffic associated with the industrial park and the high school has decreased the ability of neighbors to interact by hindering pedestrian access and creating pedestrian safety concerns, either real or perceived.

The Town has no control over development occurring outside its boundaries. Four developing areas have been identified that will likely result in increased traffic within the Town. In order to overcome these traffic concerns, the Town will need to work closely with regional planning agencies, such as the Capital District Transportation Committee, the NYS Department of Transportation, and the adjacent municipalities.

J. Utilities

J.1 Water Supply

Water supply in the Town of Guilderland is provided by the Town from the following sources (Figure 13): the Watervliet Reservoir via the Water Treatment Plant located in the Northeast Industrial Park, three municipal wells located off of Nott Road and Route 155, and emergency interconnects with the City of Albany and the Town of Bethlehem. A permanent Albany Interconnect, located at Gipp Road, will be on line in 2000. By contract with the City of Albany, this interconnect will provide 2 million gallons per day (mgd) of treated water to the Town of Guilderland. The Emergency Albany Interconnect will remain but will only be used as back-up, when needed, to supplement the other sources.

The Watervliet Reservoir serves both the City of Watervliet and the Town of Guilderland. Its capacity is approximately 1.8 billion gallons (Van Buskirk Associates 1984) and has a safe yield of 12 mgd. By contract with the City of Watervliet, the Town of Guilderland may take up to 4 mgd and up to 5 mgd for peak demand.

The Town wells have a combined yield of approximately 2.0 mgd peak production and serve only the Town. By permit with the NYSDEC, the total average draw from the wells is 0.5 mgd. Each of the wells are treated on-site. Wells 1 and 2 are located near the intersection of Route 155 and Nott Road. In 1998, Well #1 had an average daily production of 7,100 gallons per day (gpd) and a peak production of approximately 0.8 mgd. Due to high iron concentrations, this well is used sparingly. Well #2 had an average daily production of approximately 94,500 gpd and a peak production of 0.5 mgd. Well #3 is located south of wells 1 and 2, off of Route 155. In 1998, this well had an average daily production of 0.2 mgd and a peak production of approximately 0.8 mgd. The wells serve as supplements to the other water sources during periods of peak demand due to water quality issues and some problems blending different water sources (surface water with groundwater).

The Emergency Albany Interconnect is currently used by the Town. Based on contract with the City of Albany, approximately 1.0 mgd is available to the Town. Average daily production is approximately 0.4 mgd. The Bethlehem Emergency Interconnect is not used on a regular basis but is available and will continue to be available for emergency use.

J.2 Water Treatment

Water from the Watervliet Reservoir is conveyed to the Water Treatment Plant via a 16-inch raw water line. The capacity of the pump station at the reservoir is 6 mgd, however, the 16-inch water line can only convey 4.5 mgd. The Water Treatment Plant is capable of producing 5.0 mgd but is restricted to 4.5 mgd by the capacity of the raw water line.

Water from the 3 wells is treated with chlorine at each well site. The Town is also responsible for the chlorination and fluorination of water from the City of Albany at the new permanent Albany interconnect.

J.3 Distribution

The availability of water to meet current peak demand and future development is limited by the treatment capacity of the Water Treatment Plant and storage capacity within the water distribution system. Water systems are typically designed to meet peak demand. In Guilderland, peak demand occurs around the third week in July, in conjunction with the typical hot and dry conditions of mid-summer. Based on approximately 27,000 people within the existing Guilderland Water District, the peak demand is estimated to be 6.5 mgd. In 1998, the peak demand based on the Guilderland Water District Production Records was 6.03 mgd, with an average daily demand of 3.43 mgd. In 1999, the peak demand exceeded 7 mgd. The current available peak production from all of the water sources is about 7.5 mgd. This would meet the current demand except for limitations imposed by the distribution system and a lack of storage. If it were not for restrictions on the use of sprinklers, the demand would exceed the ability to distribute the water.

Efforts are underway to address the distribution problem and to provide additional source water. Figure 13 shows the existing water lines, planned improvements, water tanks, water sources, and the emergency interconnects with Albany and the Town of Bethlehem. Guilderland is currently implementing their water system improvement plan. Phase 1 of this plan involved the location and design of the permanent Albany interconnect and Phase 2 involved the expansion of the water treatment plant. Phase 3 involves improvements to the storage and distribution system, which will result in looped distribution systems and a greater storage. These improvements are identified on Figure 13.

Water line improvements along Depot Road up to the railroad tracks are under construction. The remaining portion of this loop (Phase 3) along Depot Road, Grant Hill Road, Relyea Road and Wormer Road are in the design phase. This loop will include a 2.0 mgd storage tank on Relyea Road. Other improvements in the design phase include a parallel water line along Route 146 and Vosburgh Road, between the Water Treatment Plant and the Normans Kill; and a parallel raw water line from the Watervliet Reservoir to the Water Treatment Plant. Provision of the second raw water line will convey enough water to allow the Water Treatment Plant to operate at full capacity (5 mgd).

The permanent Albany Interconnect (2.0 mgd) will increase the available peak production to 9.0 mgd. This additional capacity coupled with an improved water distribution system will enable the Town to meet current peak demand and the forecasted demand of 8.0 mgd projected to the year 2015, a 19 percent increase.

Since the planning horizon for this Comprehensive Plan is 20 years, water use should be projected out to 2020. This was accomplished by applying the same growth rate (approximately 1.3 percent per year) used for the 2015 projection

over the next 5 years. This resulted in an additional 0.52 mgd by 2020, exceeding the capacity of the water system and requiring further improvements. Table 9 provides a summary comparison of water supply and current peak demand (1999) and that projected to 2020.

**Table 9
 Current and Projected Water Supply and Demand**

	Water Sources			Total
	Reservoir & Treatment Plant	*Wells	City of Albany	
Current Peak Supply	4.5 mgd	2.0 mgd	1.0 mgd	7.5 mgd
Supply After Planned Improvements	5.0 mgd	2.0 mgd	2.0 mgd	9.0 mgd
1999 Peak Demand				7.0 mgd
2020 Forecasted Demand				8.5 mgd

**Wells used sparingly due to water quality issues, therefore, actual current and future reliable supply is less than that shown.*

It is also anticipated that pressure will continue from potential out-of-district users to be served by the Town. The potential to serve these users would depend on the ability to collect sufficient revenues to offset capital and operational costs.

Each request for water service beyond that which the system can supply after the current planned improvements are implemented should be evaluated for economic feasibility. The planned improvements are designed to meet current peak demand and that anticipated from future development within the water district to the year 2015. Limited capital improvement funds have been established to address the cost of these improvements to reduce the potential for significant rate increases. Development outside of the water district, either within or outside of the Town, that desires water service must meet the economic feasibility test to avoid the need for in-district users to pay for new water system improvements.

J.4 Wastewater

Areas served by sanitary sewers are shown on Figure 14. In the far eastern corner of the Town, a network of sanitary sewers conveys wastewater through both City of Albany sewers and District sewers to be treated at the Albany County Sewer District Wastewater Treatment plant located in Menands. The remaining sewer areas in the eastern portion of the Town convey flows to the Nott Road wastewater treatment plant. The Guilderland Center wastewater treatment plant serves the Northeastern Industrial Park and Guilderland Center.

By contract with Albany County, the Town can convey up to 1.1 mgd to the Albany County Sewer District via the East Dillenbeck pump station. The

current flow (1999) is approximately 0.9 mgd. The Nott Road facility has a design capacity of 2.6 mgd and is currently averaging inflows of approximately 1.9 mgd. The design capacity of the Guilderland Center facility is 0.38 mgd and currently receives 0.15 mgd.

Based on the above information, it would appear that there is excess capacity of approximately 0.7 mgd at the Nott Road facility, 0.23 mgd at the Guilderland Center facility, and 0.3 mgd in the Albany County system. However, each system is experiencing infiltration and inflow (I & I) problems. Infiltration results from cracked pipes in older systems that allow water in the ground to enter the system. Inflow results from direct input of stormwater to the system from the direct connection of gutter and basement drains to the sanitary sewer. Therefore, when accounting for I & I, only the Albany County and Guilderland Center systems currently provide some excess capacity.

Heavy rainfall and the I & I problems associated with the conveyance system for the Nott Road facility resulted in a violation of the wastewater discharge permit in 1998. This prompted a consent order from the NYS Department of Environmental Conservation (NYSDEC) to investigate and address the issue. The Town is implementing an I & I reduction program for the major trunk lines to gain lost capacity as a short-term solution. As part of the consent order, the NYSDEC has requested that future expansion of the facility be addressed.

Despite the potential available treatment capacity of 0.7 mgd, I & I problems continue to diminish this excess capacity.

J.5 Other Utilities

Contact was made with utility companies such as Niagara Mohawk, Bell Atlantic and the various cellular companies. In general, the Town is well served by gas, electric, telephone, and fiber optics. Cellular service is generally good along major routes in the Town. Bell Atlantic and CellurlarOne indicate that they have complete digital coverage in the Town. Sprint, Omnipoint and Nextel have less coverage.

Opportunities

Sewer and water service are two very significant factors in the ability of a community to grow. Based on planned improvements to the water distribution and storage system and the establishment of the Permanent Albany Interconnect, the Town should be capable of meeting current (6.5 mgd) and future (8.0 mgd) peak demand up to the year 2015. However, the ability to expand the distribution system beyond what is currently planned will require an expansion of water supply. A significant amount of water is available from the Watervliet Reservoir but would require expansion of the water treatment plant. A wellhead protection plan is underway in the Town that will identify and protect potential future groundwater sources. This is discussed in greater detail in this section under the topic "Water Resources." The full extent of

groundwater resources that could be used to reduce the Town's dependency on other municipalities is being investigated.

The ability to expand sewer service in the Town is highly limited at present. Addressing I & I issues will gain some lost capacity but, ultimately, expansion of the Nott Road wastewater treatment plant will be necessary. The Guilderland Center facility appears to be capable of handling growth within the sewer district. If expansion of the Guilderland Center service district is considered, expansion of the wastewater treatment plant may be necessary. Capacity also exists within the Albany County sewer district. Sufficient capacity appears to be available to serve the remaining vacant lands within the portion of the Albany County Sewer District located in the eastern portion of the Town.

A goal of providing sewer and water to the entire Town may be unreasonable and undesirable. In addition to the cost of the distribution and collection systems, including pump stations and storage tanks necessary to overcome the higher elevations in the western portion of the Town, the preservation of agricultural lands and other open space are equally important goals that tend to conflict with the provision of utilities.

Other utilities appear to be available or capable of expansion to service new development. Fiber optic and cellular services have also become important factors in attracting new business.

Constraints

Expansion of the water treatment and wastewater treatment plants, the exploration of well sites, and the provision of distribution and collection systems are expensive capital improvements. Therefore, the ability to expand sewer and water service will be a function of the Town finances and the willingness of the community to pay for these services. An alternative to the typical capital improvement program and financing is to conduct a State Environmental Quality Review (SEQR) Generic Environmental Impact Statement (GEIS) for the portion of the Town determined to be acceptable for future growth. By identifying future impacts to sewer and water services, as well as roads and other environmental resources, through the SEQR process, the Town can identify and require "mitigation fees" for future development. This results in less impact on the tax base and a more equitable means of paying for improvements.

The presence of poorly drained hydric soils throughout the Town limit the location of septic tanks and wells. See Figure 10, *Hydric Soils Map*, for the location and extent of poorly drained hydric soils that are an indication of the presence of federal wetlands. If septic systems are inadvertently placed in these soils, system failure is a likely result if not properly designed and maintained.

The presence of an Agricultural District in the Town is an opportunity for the agricultural community but a potential constraint on the development community since provision of municipal sewer and water in a Agricultural

District promotes development which ultimately results in the loss of agricultural land. This would be contrary to the Agricultural Preservation Act.

K. Recreational Resources

The Town has numerous recreational resources that are available for public and private use. Recreation is typically divided into active and passive. Active recreation includes organized play areas such as ball fields, playgrounds, and indoor facilities. Passive recreation includes all those activities that do not require organized grounds or facilities. Examples of passive recreation include hiking, biking, fishing, bird watching, and picnics.

Figure 15 shows the location of each of the Town parks. Both active and passive recreational opportunity is provided at Tawasentha Park. This is the largest Town-owned park, offering field sports, tennis, a swimming pool, a performing arts center, and passive uses. The Town owns eight other parks: Nott Road Park, Keenholts Park, Fred Abele Park, Dr. Shaw Road Park, Fort Hunter Park, Volunteer Fireman's Park, Fusco Park, and the Guilderland Conservation Area. Table 10 shows the facilities and size of some of these parks.

The Albany Pine Bush Preserve offers additional opportunities for passive recreation. The preserve contains hiking trails through a unique ecosystem. Other State lands include the Black Creek Marsh State Wildlife Management Area and a portion of Thatcher State Park.

Six privately operated golf courses are located in the Town. Hiawatha Trails is located on Route 155, south of Route 20. The Albany Country Club is located in the southern portion of the Town along Wormer Road. Western Turnpike Golf Course is located south of the intersection of Route 20 and Route 146. Pinehaven Country Club is located on Siver Road. Frenchs Hollow Fairways is located south of the Watervliet reservoir on the north side of Hurst Road. Finally, Orchard Creek Golf Course is located on Dunnsville Road near the Village of Altamont.

Table 10
Town of Guilderland Parks Inventory

Name of Park	Acreage	Facilities
Tawasentha	192	Babe Ruth baseball field Swimming pool, Baby pool Guilderland Performing Arts Center 4 Tennis courts 1 Basketball court Walking trails Aboretum 2 Pavilions Playground Volley ball court Fishing access Informal ball fields/open spaces Picnic sites Bathroom facility Maintenance facility Community gardens Rock climbing wall Winter recreation area
Keenholts	54	4 Youth softball fields 7 Youth baseball fields 2 Tee ball fields 1 Future Babe Ruth field
Fort Hunter	5	1 Youth baseball field Playground
Abele	7	1 Softball field Playground
Volunteer Firefighters Memorial Park	8	Playground 1 Soccer field 1 Softball field
Nott Road	36	5 Adult softball fields 4 Soccer fields Lighting on 1 soccer & 1 softball field
Fusco	28	Open Space
Dr. Shaw Road	20	Open Space

Opportunities

The Town of Guilderland is blessed with many opportunities for recreational activity. The Town parks, State lands, golf courses, and other open space provide both active and passive recreation. As future development occurs, opportunities exist for the creation of neighborhood parks and trails. Utility and transportation corridors provide opportunities for the development of trails linking recreational resources with developed areas.

Constraints

The primary constraint to park/trail development is the cost. This cost includes purchase of land, development of facilities, insurance, and loss of tax revenue from the affected parcel.

The development of a parcel or trail with recreational facilities is subject to the same environmental constraints as other types of development.

L. Economics

The relatively high level of education within the Town is reflected in the relatively high household income levels. The 1989 median household income for Guilderland was \$42,419 as compared to \$33,358 for Albany County and \$32,965 for New York State. Of all households in the Town of Guilderland, 60.4% have an income between \$25,000 and \$74,999, as compared to 52% for Albany County and 48% for New York State. A breakdown of 1990 income levels are provided in Table 11.

Table 11
Household Income Levels

Income Levels	Guilderland	Percent of total	Albany Co.	Percent of total	NY State	Percent of total
\$0-14,999	1,105	9.69%	23,510	20.28%	1,526,285	23.01%
15,000-24,999	1,304	11.44%	19,051	16.44%	999,183	15.06%
25,000-34,999	1,908	16.75%	18,084	15.60%	950,695	14.33%
35,000-49,000	2,475	21.73%	22,820	19.69%	1,145,247	17.26%
50,000-74,999	2,500	21.95%	20,024	17.28%	1,108,921	16.71%
75,000-99,999	1,172	10.29%	7,062	6.09%	454,648	6.85%
100,000-149,000	658	5.78%	3,725	3.21%	285,138	4.30%
150,000+	270	2.37%	1,625	1.40%	164,317	2.48%
No of households	11,392	100.00%	115,901	100%	6,634,434	100.00%

Source: 1989:1990 Income & Poverty Status Tables, US Census

Table 11 shows a comparison of payroll statistics for Guilderland and Albany County. These represent the North American Industry Classification System (NAICS) industries as defined by the Census bureau as the taxable portion of the Services Sectors. The 1997 Economic Census uses the NAICS as a more flexible system for classifying individual business locations, replacing the Standard Industrial Classification System that began 60 years ago.

Jobs in health care and social assistance account for 30% of the total annual NAICS payroll for Guilderland as compared to 14% for the State. The 102 health care and social assistance establishments listed in the Table are probably located on Western Avenue in the corridor closest to Albany. These businesses should be encouraged to stay in the area and continue to provide jobs in health care services. The health care industry is growing and likely to play an even more important part in the general economy in Guilderland as well as nationally. The next two tables present jobs that Guilderland generates in the town itself and jobs that Guilderland residents hold. The table presented below shows projections for employment generated by businesses in the Town of Guilderland. The Village of Altamont generates 259 of these jobs. People who live outside the Town of Guilderland may also hold some of these jobs. Wholesale and retail trade are the biggest sectors, followed by services, and public administration.

Table 12
Employment Projections by Place of Work

Industry	1990	2000	2010	2020
Agricultural, Forestry, Fisheries, & Mining	104	117	128	131
Construction	598	736	743	716
Manufacturing	272	225	202	178
Transportation, Comm & Public Utilities	165	152	156	161
Wholesale & Retail Trade	3,998	4,907	5,052	5,037
Finance, Insurance & Real Estate	1,208	1,535	1,595	1,535
Services	2,605	2,924	3,094	2,965
Public Administration	1,931	1,914	1,922	1,921
Total	10,881	12,510	12,892	12,644

Source: Capital District Regional Planning Commission: 1998

In addition to retail and commerce, the Town of Guilderland continues to support agriculture. Farms in general are businesses. The value of agricultural products in the Town are estimated at \$25 million. A study of economic multipliers by the New York State Department and Cornell University revealed that dollar-for-dollar agricultural income has a larger impact on the economy than non-agricultural industries. This is primarily due to the fact that the

agricultural industry expends more money locally than other industries. From a fiscal perspective, farms have far less impact on community services (e.g., schools, emergency services, recreation, etc.) than residential uses, therefore having less impact on local expenses.

The Table below shows 1990 employment figures for Guilderland residents. These figures show the number of Guilderland residents employed in the various industries, which may or may not be located in the Town of Guilderland. Of the total number of jobs, residents in Altamont hold 796 of them.

Table 13
1990 Employment by Industry & Place of Residence

Agriculture, Forestry, Fisheries, & Mining	156
Construction	850
Manufacturing	1,181
Transportation, Communications & Public Utilities	879
Wholesale Trade	567
Retail Trade	2,411
Finance, Insurance & Real Estate	1,469
Services	6,291
Public Administration	2,360
TOTAL	16,164

Source: Capital District Regional Planning Commission: 1998

It can be inferred from comparing this table to the last one that some Guilderland residents leave the Town to work elsewhere, especially in the Services Sector which employs 6,291 of Guilderland's residents. Guilderland itself generates only 2,605 jobs in the Service Sector. This analysis for commuter out-migration is supported by the 1990 Census commuter trip counts which show more workers leaving Guilderland to work than coming in – 10, 759 leaving for work elsewhere, 7,759 coming in from other areas, and 1,890 commuting within Guilderland (see the Transportation Section for complete figures).

Guilderland generates wholesale and retail jobs that are partially filled by non-Guilderland residents, since only 2,978 wholesale and retail jobs region-wide are held by residents of Guilderland compared to the 3,998 wholesale and retail jobs that are generated by Guilderland businesses.

Opportunities

The Town has potential for economic development on several fronts. However, the most significant may be good access and the potential for sewer and water service, particularly in the eastern portion of the Town. Finally, the Town's agricultural industry can be preserved and marketed. Assistance to farmers and potential farmers in the form of education, loans and flexible zoning may

encourage new generations to consider farming as a career. With a healthy economic base, new businesses are encouraged to locate in the Town. This is supported by County-wide marketing efforts.

Constraints

Unplanned and poor quality development that consumes important community resources will damage the long range economic health of the Town. The attributes that make Guilderland a desirable place to live and work may result in an increase in development pressure on open spaces and important environmental areas (e.g., Pine Bush). Thus the establishment of a land use plan and development guidelines and regulations is critical to the Town's future.