

IV. SOCIO-ECONOMICS

Purpose

The purpose of this brief profile is to assess the potential for economic growth in the Town of Kirkland. The analysis presented here will be used as the informational framework for the master plan development. The first section profiles the population and housing stock of the community, while the second section examines the economic factors affecting Kirkland. Detailed data has been included as Appendix B.

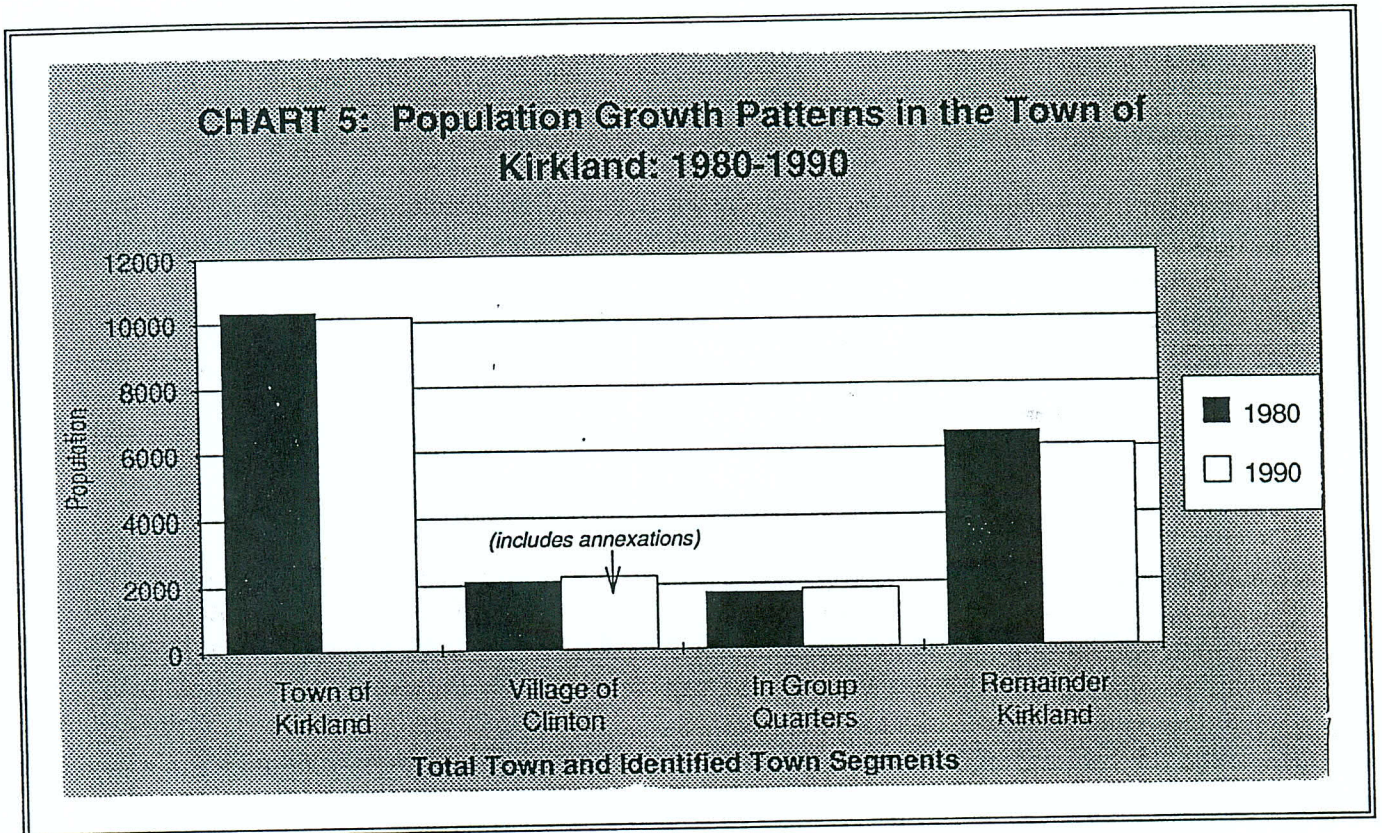
Demography

Population

Growth in the Town of Kirkland has been somewhat independent of the growth of Oneida County as a whole. From 1970 to 1980, Oneida County suffered a major contraction, with population declining by 7.2%. Over the same interval, the Town of Kirkland grew by 6.7%, to a 1980 population of 10,334. This can be explained by the outer-ring suburban growth that occurred in most of New York's metropolitan areas. These once-agricultural areas became more attractive for commuters looking to get away from urban and inner suburban areas.

From 1980 to 1990, however, the population of Kirkland contracted at a more rapid rate than that of the county, -1.8% as compared to -1%. The 1990 population was 10,153. Chart 5 shows the geographical components of population change within Kirkland. As noted, the Village of Clinton annexed 23 housing units in the decade, leading to a part of its growth but by no means all of it. The contraction of the town is most likely due to the aging of the population, causing a reduction in average household size, and the lack of desirable first home properties. In fact, average household size for Kirkland dropped from 2.83 persons per household to 2.54 persons per household, a decline of 11.4%. Oneida County dropped from 2.66 persons per household to 2.55, a drop of 4.3%.

Growth did occur in group quarters population, which is comprised mainly of Hamilton College and the Martin Luther Nursing Home complex, increasing 5.3%. Group quarters residents now make up 18% of the total town population, while the group quarters population is only 5.8% of Oneida County's total population.



There has not been a recent set of population projections done for the communities of Oneida County. The last projections were done in the mid-1980s and have been proven quite inaccurate by the 1990 census. These projections had Oneida County dropping to 246 thousand residents by 1990, but the 1990 census showed the county's population at 250 thousand.

Income

As indicated by per capita income estimates, the Town of Kirkland is relatively wealthier than Oneida County as a whole. Kirkland's 1987 per capita income was estimated to be \$12,558, while Oneida County's was \$10,338. Income has grown faster in the town than for the county as a whole, 80% compared to 68.2% respectively. Per capita wealth has also grown in real terms when adjusted for inflation, with Kirkland showing a 2.6% growth in real per capita income compared to a decline of 4.2% for the county. The Village of Clinton has shown the same sort of pattern.

Housing

The Town of Kirkland's housing stock has increased substantially in both the decade of the 70s and the decade of the 80s, 19.2% and 9.7%, respectively. The second increase is particularly interesting in light of the decline in population. Chart 6 shows the components of change in the housing stock. Note the considerable growth of units in buildings of ten or more units. Chart 7 compares the growth patterns of Kirkland with that of New Hartford as a reference.

CHART 6: Housing Unit Growth Patterns in the Town of Kirkland: 1980-1990

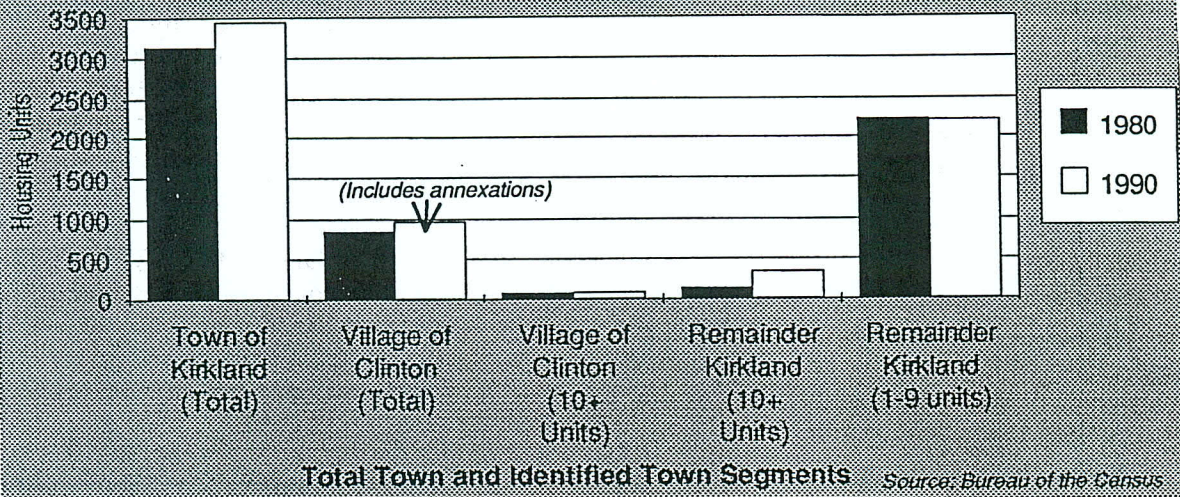
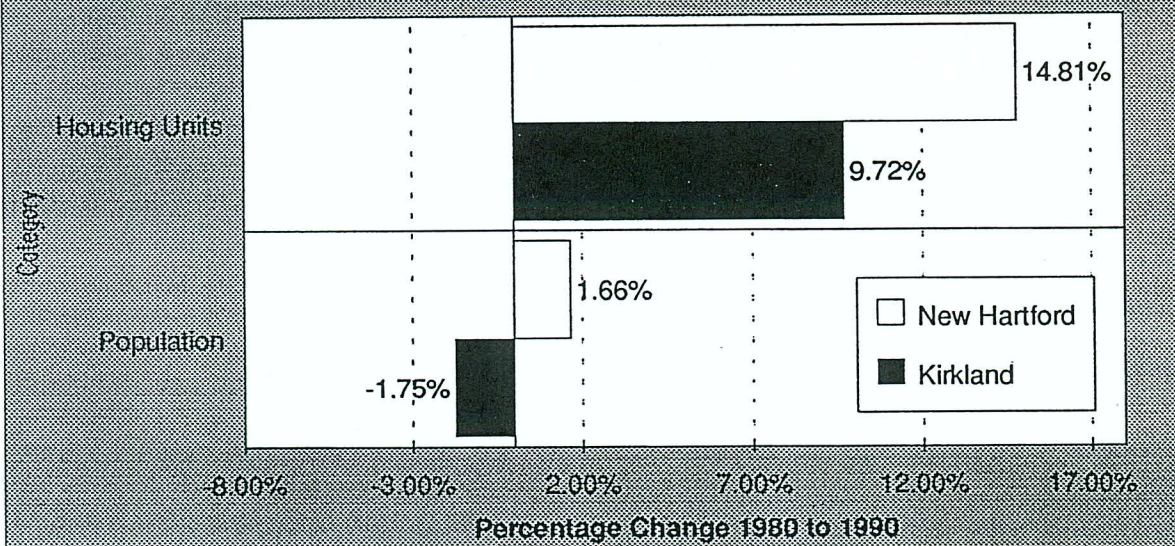


CHART 7: Change in Population and Housing Units for the Towns of Kirkland and New Hartford: 1980 to 1990



This increased housing stock has not been a result of speculative overbuilding, as indicated by an overall vacancy rate of 4.6% in 1990. For the last three censuses, Kirkland's vacancy rate has not exceeded 5%, which indicates "at-capacity" occupancy. (Due to natural turnover, there will always be a minimum occupancy rate, estimated to be 95%.)

In 1990, owner-occupied units exceeded renter-occupied units by a 3 to 2 margin, which exceeds the New York State ratio of 1 to 1. In 1970 the ratio was 2 to 1, indicating relatively more rental units have been built or converted over the 20 year period. The housing stock is made up of mainly single-family detached homes and three or more unit structures. One interesting trend is the major increase in mobile homes from 1970 to 1980, and the subsequent decline in the 1980 to 1990 period. From 1980 to 1990, a major increase occurred in the 10+ units per structure category.

The value of owner-occupied units in Kirkland far exceeds that of Oneida County, with a median of \$96,300, as compared to only \$72,600. The lower quartile for Kirkland is still above the median for Oneida County. Median contract rent is also higher, \$358 compared to \$297. The higher cost of housing can be partly explained by the quality of Kirkland's housing stock and the relative desirability of Kirkland due to the school system, the town's character, etc. (as indicated by the very low vacancy rate).

The median property value has appreciated 137% from 1980 to 1990 in Kirkland compared to 119% for Oneida County and 187% for the state as a whole. Median contract rent has increased 99%, 98%, and 103%, respectively, for Kirkland, Oneida County, and New York State.

For the first nine months of 1991, the selling price for existing houses in Kirkland has averaged \$107,000 compared to \$81,400 for the entire Utica-Rome Board of Realtors area, and \$91,977 in the Syracuse Board of Realtors area. In Oneida County, this is second only to New Hartford, which had an average of \$115,300 for the same period.

The implication of this analysis is that the homes in Kirkland may be less affordable to the Utica-Rome metropolitan area's young families and middle class than the rest of the region. Though custom construction will always be attracted to Kirkland, moderately-priced developments are more likely to shift towards communities like Marcy.

Economic Factors

The Economy

The economy of Oneida County, like much of the nation, has changed considerably over the last decade, moving from a manufacturing economy to a service economy. The manufacturing and government employment sectors have declined relative to the other sectors of the economy, as indicated in Chart 8, following. Given the fiscal situation of all levels of government, this trend is not likely to reverse in the near future. Looking at the region's largest employers, only three of the organizations who employ 1,000 or more are manufacturers. The two largest employers, Griffiss Air Force Base and General Electric, are subject to "peace dividend" defense budget cuts that could leave the economy at risk. Chart 9 shows the largest firms in the MSA and Kirkland's largest employers.

CHART 8: Structure of the Economy for Oneida County: 1980 and 1988

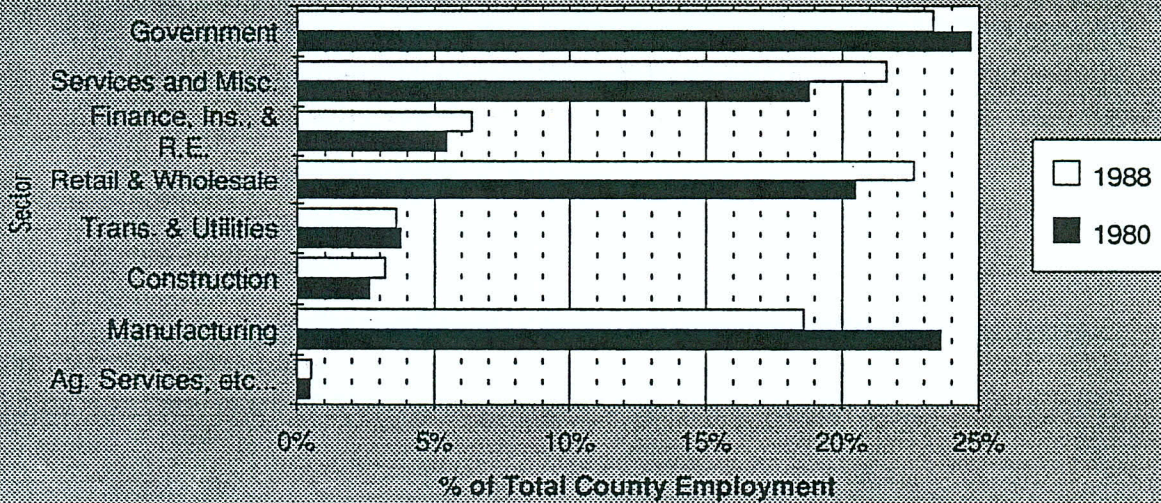


CHART 9: Largest Employers in the Utica MSA and the Town of Kirkland

Largest MSA* Firms		Largest Employers in Kirkland**	
Name	Number of Employees	Name	Number of Employees
Griffiss Air Force Base	8,087	Hamilton College	467
General Electric	3,000	The Martin Luther Nursing Home	450
Oneida Ltd. Silversmiths	1,900	Clinton Central School District	240
Remington Arms	1,500	Town of Kirkland	102
Metropolitan Life	1,300	Indium Corporation	50
Norstar Bank	1,275	(Metallurgy firm, employs 150 in MSA)	
St. Elizabeth Hospital	1,175		
St. Lukes Hospital	1,150		
New York Telephone	1,000		
Total	20,387		
% Total Non-Ag. Empl.	15.7%		

Source: Observer Dispatch, 4/2/90. % calculated by

Source: Compiled by The Saratoga Associates.

In Kirkland, only one of the five largest employers is a manufacturing firm. The rest are either service or government organizations. An informal count of on-going businesses shows that of the 197 businesses in Kirkland (including Clinton), 17% are agriculture, 24% are service, 28% are retail or wholesale. Only 1% are identified as manufacturing.

The Labor Force

The Utica-Rome Metropolitan Statistical Area (MSA) and Oneida County both have shown minimal labor force growth over the last decade. The MSA grew by only 2%, while Oneida County increased by less than 1%.

Unemployment trends show some seasonality in the regional labor market as compared to the state as a whole. Rates are higher in the winter but drop below the state average in the summer.

Kirkland's labor force, based on the 1980 census, is very service-sector oriented, with 45% of the resident labor force indicating employment with service industries. Only 3.3% worked in agricultural industries. One-third of workers considered themselves in managerial or professional occupations.

Kirkland can be considered a bedroom community for Utica, with just under 30% of the labor force working in the town, while 35% worked in Utica. The census also indicated very few residents worked in a county other than Herkimer or Oneida.

Agribusiness

Though the community character of Kirkland can best be described as pastoral, an estimate of the true importance of agriculture is necessary. Using land use as an indicator of economic importance, agriculture is relatively as important to Kirkland as it is to the county. Approximately 38% of town land is used for agriculture (TSA estimate), compared to 37.5% for Oneida County and 28% for New York State as a whole, based on 1990 New York State Department of Agriculture and Markets. However, using employment as a proxy, agriculture is much less important. As noted above, only 3.3% of the work force considered itself agricultural in 1980. This indicates that agriculture is very land intensive but not very labor intensive.

Testing the viability of agriculture in Kirkland must be done indirectly by assessing the viability of agriculture at the county level, and through the use of surveys to make directed assumptions about the viability of Kirkland's agricultural economy. To assess Oneida County's agricultural viability, both market trends and labor trends are considered.

Oneida County is one of the larger agricultural counties in New York State. The major agricultural commodities produced in Oneida County are dairy products and field crops. The Ad Hoc Committee's windshield survey of Kirkland indicated that this is also the case for the town.

Looking at dairy production, the data indicates that milk production has held steady since the early 1980s, fluctuating between 420 million pounds and 462 million pounds annually. The number of milk cows has declined, but this may be due to federal buy-out programs.

The primary field crops for Oneida County include corn, hay, and oats. Acres harvested for corn actually increased from 1985 to 1990. Acreage of hay harvested increased from 1985 to 1989 and then declined in 1990. Oats acreage fluctuated over the five year period, but showed a declining trend line. Overall, aggregate acreage for the four largest field crops increased from 1985 to 1990.

Agricultural employment from 1982 to 1987 (last two agricultural censuses) has declined in both farming and other agricultural employment. Farming workers have not declined nearly as much as the state as a whole, $-0.98\%/year$ compared to $-2.13\%/year$. For other agricultural workers, Oneida County declined faster than the state, $-2.64\%/year$ compared to $-2.39\%/year$.

The numbers indicate that farming is still a viable business in Oneida County, with acreage and milk production holding steady. It will be the change in consumption patterns that will have the major effect on the look of agribusiness in Oneida County into the next century.

Real Property

The Town of Kirkland's property tax base represents 4.38% of the Oneida County total full value, yet is only 4% of the County population. This is significant considering that the 4 of the 5 largest employers in the town are either exempt educational, religious, or government organizations. This can be attributed to the high value of housing that makes up the majority of the town's housing stock.

Even without an extensive commercial base, the total full value tax rate is only slightly above the Town of New Hartford's rate and below the City of Utica's rate. Kirkland also compares favorably to towns across New York State. The Village of Clinton's full value rate is slightly above the City of Utica's rate.

Unfortunately, as the federal and state governments continue to reduce their share of the cost of services, the county and town governments will have to absorb these costs. Without a tax base of larger commercial enterprises, Kirkland residents may feel an increased tax pinch down the road.

V. COMMUNITY FACILITIES AND UTILITIES⁶

Purpose

This section will take an overall look at the community facilities and utilities that are available in the Town of Kirkland. The goal here is not to provide an exhaustive list, but to determine if any major deficiencies or other problems exist. As the demand for these services increases, will the town be able to meet those needs? Are additional services warranted? How can the infrastructure (water and sewer plan) be used to guide town growth?

These are the kinds of questions the town will be addressing throughout the planning process. The answers to these questions will be an important consideration when developing the master plan. The type and amount of growth the town decides to promote can have a significant impact on services and, in turn, the services can impact type and amount of growth. The method of financing such services and their ability to support growth are critical considerations.

Water Service

The Town of Kirkland obtains its water from two different community water sources and individual private wells. The following is a general analysis of these sources.

There has also been some discussion of the potential development of a regional water supply system. A regional system would open up significant new opportunities for the Town of Kirkland, although additional information would be required to fully understand the impact of such a system on the region and the town.

City of Utica Water Department -- Water from the City of Utica is imported for the Hamlet of Clark Mills and Hamilton College. Water is also provided to residents along Route 12B west from the New Hartford town line to Robinson Road, including Homewood Drive and Toggletown Road.

While the existing water supply to these areas is sufficient, the Utica Water Department has not allocated any additional water for the Town of Kirkland. However, there are on-going discussions about the potential to regionalize Utica's water system. If this were to occur, Kirkland could potentially tie into this system.

Village of Clinton Water Supply -- The village provides water service to portions of the Town of Kirkland, as defined by the Central Water District. The village currently manages six wells

⁶Sources for water and sewer data included public works officials and engineering consultants for the Town of Kirkland, the Village of Clinton, and the City of Utica

which are located within town limits, and sells water services back to the town. Capacities are as follows:

Daily distribution:	.5 million gallons/day (mgd)
Design Capacity:	1.0 mgd
Peak Design Capacity:	1.5 mgd

Aquifer Potential -- U.S. Geological Survey data shows a rich aquifer potential within the Town of Kirkland. In the vicinity of Oriskany Creek, the inferred potential is expected to produce a yield greater than 100 gallons per minute when tapped by at least a 6-inch diameter well.

Sewer Service

The Town of Kirkland is serviced by three wastewater treatment plants, along with many individual residential septic systems. A synopsis of these services follows.

Clinton Treatment Plant -- This plant is located northwest of the village, in the Town of Kirkland. The plant services the Village of Clinton, Hamilton College, and the portions of Kirkland adjacent to the village.

The treatment plant was constructed and is owned by the Village of Clinton. The village is responsible for operation and maintenance. The Town of Kirkland and Hamilton College pay the village for the ability to connect to the service. An advisory board consisting of members from the village, town, and college, oversees the management of the system and collectively decides on expansion issues, capital improvements and other management decisions.

The area serviced within the town, excluding the college, is defined as the Clinton Sewer Service District. All residents within the district pay a base fee, whether or not they have a service connection. Those with service are assessed an additional fee. Capacities are as follows:

Average Design Flow:	2.5 mgd
Peak Design Flow:	6.0 mgd
Average Yearly Flow:	1.5 mgd (actual)
Peak Yearly Flow:	+6.0 mgd (due to wet weather flow)

Increases to peak flows are accountable primarily to wet weather springtime flow. Much of the existing sewer piping is the original clay pipe, which can allow significant amounts of groundwater infiltration. The Department of Environmental Conservation (NYSDEC) has cited the village in relation to this problem, but no restrictions have been imposed. The town is also aware that NYSDEC is considering upgrading the water quality classification of Oriskany Creek, which would require additional upgrading of the existing treatment system to meet those standards.

Complaints regarding odors at the plant have been reportedly lodged by adjacent residents. The plant was sited in an undeveloped area when built. Development of the area has gradually been moving residential neighborhoods closer to the plant. Prevailing winds are east to west.

Clark Mills Sewage Treatment Plant -- This plant is located in Clark Mills and services all of Clark Mills and customers along Route 5 and Bristol Road. The plant is owned and operated by the Town of Kirkland. Capacities are as follows:

Average Design Flow:	.2 mgd
Peak Design Flow:	.8 mgd
Average Yearly Flow:	.17 mgd (actual)
Peak Yearly Flow:	.5-.7 mgd (due to wet weather flow)

The Clark Mills plant services areas outside of the Town of Kirkland, since Clark Mills is located within three different townships.

Part County Sewer District -- This district consists of 15 municipalities, the largest of which is the City of Utica. Currently, the Town of Kirkland is not one of these 15 municipalities but New Hartford is. The Part County Sewer District owns and operates large interceptor mains which extend to the western portion of the Town of New Hartford, near Mud Creek. New Hartford owns and operates the individual street mains which connect into the interceptor mains. Two new developments, Cherrywood Meadows and Applewood Meadows (located partially within Kirkland) are serviced this way.

The sewage treatment plant for this district was expanded approximately five years ago. Capacities are as follows:

Average Design Flow:	48 mgd winter
	40 mgd summer
Average Yearly Flow:	35 mgd summer

In order to be serviced by this district, the Town of Kirkland must gain inclusion into Part County Sewer District, develop agreements with the Town of New Hartford to possibly utilize their sewer mains, and provide pumping stations, since the topography is generally uphill from Kirkland to New Hartford.

Finally, there is a significant disparity between the existing Clinton Sewer District and the Village of Clinton Central Water District. The only overlap between these two districts is in the center of the town, including the village. While the sewer district extends to the west, the water district extends to the east. This disparity of course does not make sense, particularly in terms of directing growth.

Transportation

The following traffic data was obtained from the NYS Department of Transportation (NYSDOT) during the fall of 1991. The analysis looks at the average annual daily traffic for key intersections throughout the town. The areas that have experienced the greatest traffic increase are the more rural areas, where the amount of traffic does not cause significant congestion problems.

It is also interesting to note that the amount of traffic entering the Village of Clinton from the south has increased significantly more than the amount of traffic leaving Clinton to the north. The village, therefore, must be the destination point for most of the traffic from the south (whether from the town or points beyond). One way to address this situation might be to encourage the development of neighborhood convenience centers in the southern portion of the town, e.g., so that people don't have to come to the village for milk.

The NYSDOT data follows:

<u>LOCATION</u>	<u># OF TRIPS</u>	<u>% INCREASE</u>
Route 12B - at the New Hartford line	12,900	10% (1977-1988)
Route 12B - just north of the village	12,000	10% (1980-1990)
Route 12B - just south of Franklin Springs	5,400	45% (1980-1989)
Route 12B - just south of Dugway Road	5,650	35% (1982-1990)
Route 12 - just south of Chuckery Corners	3,550	21% (1981-1989)
Route 233 - just north of the college	2,900	34% (1983-1990)
Route 5 - Hamlet of Kirkland	12,800	26% (1979-1989)

As noted throughout the community participation process, the most significant traffic problems arise in the Village of Clinton. The Route 12B problem is exacerbated by a couple of very poor intersections located in the village. Since this route traverses the entire town, its impacts are felt

throughout the community. Truck usage of this route is perceived to be high due to the crushed stone extraction activities just south of Kirkland in the Town of Marshall.

Requiring trucks to utilize a different route, for example Route 233 to Route 5, would significantly improve the situation on Route 12B. Route 5 obviously has a much larger capacity for handling traffic, particularly trucks. However, Route 233 is hampered by several poorly designed/unsafe intersections. The poorest intersection on Route 233 is at the entrance to Hamilton College. A partial solution to this situation might be to develop another college entrance road.

Schools

The Town of Kirkland makes up 93% of the Clinton School District⁷. Portions of the Town of Kirkland fall within a couple of other districts, although 97% (of the assessed value of the town) is within the Clinton School District. The other districts Kirkland falls within include New Hartford, Waterville, Sauquoit Valley and Vernon-Verona-Sherrill CSD⁸. The only district the town significantly impacts, however, is Clinton.

The Clinton School District is composed of a 46-acre campus that houses all grade levels and recreational facilities. The 1991/1992 kindergarten through grade 12 enrollment is 1,670. The district recently added 10 rooms to the elementary school and a media center to the junior and senior high school⁹. The school district does not have a capacity problem at this time. They currently have enough excess capacity to accommodate "natural" growth.¹⁰

Town-related issues that the school district is concerned about include road safety and traffic issues as they relate to the school buses, and tax base issues in terms of school district support. Overall, the school district is pleased with town services and feels that there is good cooperation between the two groups.¹¹ Recreational needs will be discussed below.

Municipal Space

The town utilizes two separate facilities, the Town Garage and Lumbard Hall (which is shared with the village), for day-to-day municipal operations. The town has adequate space to meet their needs right now, although they do not have very much space to expand. If municipal

⁷ Malcolm Wentworth, Clinton School District Business Administrator, 10/22/91.

⁸ Overall Real Property Taxes, 1990 - Office of the State Comptroller.

⁹ Malcolm Wentworth, 10/22/91.

¹⁰ Dr. Torrance, Clinton School District Superintendent, 10/24/91.

¹¹ Ibid.

employees were added or if planning, zoning and codes inspection/enforcement employees were made full-time, the town would have to re-evaluate its building space capacity.

Recreational Facilities

The Town of Kirkland has one municipal park, located on Post Street just south of Franklin Springs. This facility has baseball/softball fields, picnic shelters, tennis courts, playgrounds and some open space. The park is generally developed, although there is some undeveloped property to the east.

For recreational activities, the town also utilizes the school district's facilities and playing fields. A private community group maintains the community pool, located on the school grounds. The town also maintains the skating arena, which the school and other groups utilize.

The recreational facilities in the Town of Kirkland are generally sufficient to meet the existing recreational demand. The master plan will provide some direction in terms of future needs resulting from growth and/or maintenance and upgrading requirements.

A need has been identified for bicycle and walking trails. The use of college lands for cross-country skiing has also been suggested. Others have inquired about the community use of the former college and village reservoirs and surrounding lands.

VI. ENVIRONMENTAL FEATURES

Areas of Concern

Sensitive environmental features should be an important component of any master planning process. Whether obvious or not, impacts to sensitive environmental resources often have significant adverse ramifications.

For example, it may seem that building on steep slopes is only the problem of the builder and/or homeowner in terms of excessive costs to ensure a stable structure. However, disturbing steep slopes can have far-reaching impacts on water resources. If proper erosion control measures are not implemented, sedimentation which increases when soils on steep slopes are disturbed, can adversely impact water resources in the vicinity of the site. Excessive sedimentation of water resources not only causes problems for aquatic life, but also impacts human use of these resources. Sedimentation can adversely impact aquatic habitats by choking out sunlight and/or oxygen, or transporting excessive nutrient loads to the system. In this manner, sedimentation can also adversely impact residents by damaging a community water supply or a significant fishery resource.

The above explanation just begins to touch on the significance of these issues. Other important environmental considerations include wetlands, streams, geology, soils, topography, significant wildlife habitats, air resources and environmental contamination (a Natural Features Map is available at the Town Hall for review, contact Town Planner).

Wetlands

Wetlands serve a variety of functions, including providing habitat for many wildlife species and plants, playing an important role in stormwater management and flood control, filtering pollutants, recharging groundwater, and offering open space and passive recreational opportunities. The national wetlands policy is "no net loss." This is critical since we have already destroyed so many of our wetlands. The functions of our remaining wetlands have become increasingly valuable due to this decline.

The NYS Department of Environmental Conservation (NYSDEC) regulates two wetlands in the Town of Kirkland. The largest of these wetlands is located along Route 5B/Limberlost Road in the northeastern portion of the town. A small portion of this wetland lies in the town of New Hartford. The other state-regulated wetland lies in the southern portion of the town along western side of Oriskany Creek.

Both of the state-regulated wetlands in Kirkland have been designated as Class II by the NYSDEC (I-IV = highest to lowest). Class II wetlands provide many important wetland benefits, and disturbance is generally not allowed. "A permit shall be issued only if it is determined that

the proposed activity satisfies a pressing economic or social need that clearly outweighs the loss of or detriment to the benefits of the Class II wetland."¹² The large size of both of these wetlands and their relationship to significant water courses, Mud Creek and Oriskany Creek respectively, are among the factors contributing to the importance of these wetlands.

The NYSDEC generally regulates wetlands that are larger than 12.4 acres. Other wetlands, down to one acre in size, are currently regulated by the U.S. Army Corps of Engineers. The Corps, the U.S. Fish and Wildlife Service, the USDA Soil Conservation Service, and the U.S. Environmental Protection Agency all play a role in this process, which requires a permit for placement of dredge or fill materials in any "water of the United States," including wetlands.

The Fish and Wildlife Service has prepared a National Wetland Inventory (NWI) map for the Town of Kirkland. The parameters the federal agencies utilize to delineate wetlands include hydric soils, wetland vegetation and specific hydrologic conditions. All three parameters must be present, while the state considers only the vegetation parameter.

It is very important that the town address the wetlands issue, so that development doesn't destroy the remaining wetland resources. This can be done by ensuring that existing regulations, state and federal, are adhered to.

Water Resources

There are no major water bodies in the Town of Kirkland, although there are numerous water courses. Many of the streams in Kirkland provide excellent fishing opportunities within the region and for residents of the town. Water courses also provide recreational opportunities, whether active or passive. Historically, the streams in Kirkland have provided a basis for development. The old mills and other industrial uses were among the reasons many of the early settlers came to the area. As a result, the development corridor in Kirkland not only follows the major highways, but also the major water courses.

In particular, Oriskany Creek has played a vital role in the development of the community. Most of the manufacturing uses originally associated with Oriskany Creek are no longer in operation, and today the creek has quite a different character. Uses which dominant the creek's corridor today are not water intensive uses. Today's most important uses revolve around passive recreational uses, particularly fishing opportunities.

Oriskany Creek has also historically been a source of flooding problems in the Town of Kirkland. A flood control project is currently being undertaken by the USDA Soil Conservation Service to address this problem in the Hamlet of Kirkland and upstream. Development has limited the capacity of the floodplain and sedimentation has decreased the capacity of the creek to handle excessive volumes. The flood control project will involve removing an old dike and approximately 7 feet of silt from the bed of Oriskany Creek.

¹² 6NYCRR, Part 664 (Freshwater Wetlands Maps and Classification Regulations).

Development in floodplains and floodways is regulated by the National Flood Insurance Program. The Federal Emergency Management Agency has designated flood hazard areas not only along Oriskany Creek, but also St. Mary's Brook, White Creek and Turkey Creek¹³. The importance of respecting floodplains, particularly in terms of planning and development, is emphasized by the above problems.

Most of the Town of Kirkland drains into the Oriskany Creek, although part of the eastern portion of the town drains into the Sauquoit Creek in the Town of New Hartford. The eastern area drains through Mud Creek and Glen Creek into Sauquoit Creek.

There are numerous unnamed, intermittent and perennial stream corridors throughout Kirkland. Some of these streams are protected from disturbance by NYSDEC (through the permitting process), but many are not. The streams that are protected include, but are not limited to, Oriskany Creek, St. Mary's Brook, Sherman Brook, White Creek, Turkey Creek, Kirkland Glen, Diehl Creek, Eley Brook, Cemetery Brook, Mud Creek and Glen Creek. Many unnamed tributaries of these streams are also protected.

The town may wish to consider additional protective measures for water resources. Careless disturbance can have significant impacts downstream, particularly in terms of fisheries resources, flooding and water quality. Protection of stream corridors can provide additional water quality protection and floodplain protection and at the same time open-up significant passive recreational opportunities.

There are also a number of small reservoirs in the town that were originally utilized as water supplies for Hamilton College and the Village of Clinton. These reservoirs have not been used for many years. Some direction will be provided in terms of the future potential of these ponds.

Terrestrial Ecology

Probably the most significant habitat changes that have occurred over recent years in the Town of Kirkland have been a result of the slowly diminishing agricultural market. In particular, many areas that were at one time farmed for crops, hayed or in dairy pasture have now reverted or are in the process of reverting to forestland. In terms of terrestrial ecology, this is not necessarily good or bad. It just means that the certain types of wildlife will probably increase in numbers and others will decrease. For example there may be an increase in the deer population, while certain open country bird species and other wildlife that require open fields and meadows will likely decline.

¹³ Federal Emergency Management Agency, Flood Insurance Study - Town of Kirkland New York, 10/3/84.

The town is considered to be part of the Mohawk-Hudson Forest Region. This region originally consisted predominantly of northern hardwoods. Small patches of hemlocks are generally found in ravines. Swamps and bedrock outcroppings are dominated by white pine and northern white cedar, and oaks dominate areas underlain with shale.¹⁴

NYSDEC has documented one area of the town as a significant habitat. An area in the vicinity of Oriskany Creek and Dugway Road, just south of Farmers Mills, has been documented as an "irreplaceable" wildflower site. This small site has been noted as containing the greatest variety of wildflowers in any one place in central NYS¹⁵.

The wildflower site is a southern exposure hill and the flowers are growing on leaf mold, over deep beds of red shale. There are about 100 species of spring wildflowers including Wake Robin, Large-Flowered Trillium, Bellwort, Trout Lily, Jack-in-the-Pulpit, Dutchman's Britches, Bleeding Heart, Hepatica, Spring Beauty, Bloodroot, Coltsfoot, Downy Yellow Violet, Dog Violet, Northern English Violet, Solomon's Seal, Bishop's Cap, Waterleaf, Hawkweed, Broad-leafed sedge, Cut-leafed toothwort and Wild Ginger.¹⁶

Root Glen on the campus of Hamilton College is a maintained wildflower garden. The uniqueness of a place such as Root Glen renders it significant.

Geology, Soils and Topography

Soils and geology are important planning considerations, particularly in terms of alternative land uses. The history of agriculture in the town is living proof that the soils are very productive. When thinking about new development and where that development should occur, it is also very important to take soils into consideration.

Many areas of the town do not have central water supply and sewer services. In those areas, the potential for soils to be utilized as leach fields for septic systems and the potential for bedrock or glacial till to produce groundwater, will have a significant impact on the type and amount of development that should be permitted. Soils and geology can also have direct impact on construction techniques.

The role of the master plan is not to specifically address these issues but to point out overall problems that the town is likely to encounter and to provide some direction on a policy level. Today, technology can overcome many of these limitations. It is, however, important for the town to ensure that these resources are not abused, overused or contaminated.

¹⁴ Oneida County Environmental Management Council, Oneida County Environment - An Assessment and Plan, 1977.

¹⁵ Dr. Dorrisse Howe - Oneida County field botany authority, 5/8/78.

¹⁶ Ibid.

The geology of the Town of Kirkland today is a result of millions of years of geologic action, including repeated rising and falling of huge water bodies and land masses and the Ice Age. About 10,000 years ago, glaciers obstructed by certain land features were diverted into existing lowlands, making them even wider and deeper. At the same time, the ice was depositing sediments.¹⁷ Glacial activity has significantly impacted development trends in the Mohawk Valley.

The topography of the town is a result of these geologic activities. The town is bisected by the Oriskany Creek Valley. Other east/west flowing streams, tributaries of Oriskany Creek, form gorges of various sizes throughout the town. Hillsides rise from either side of the stream valley, at more significant grades in some areas than others. The combination of these factors creates a feeling of gently rolling countryside with expansive views from the hilltops.

It has been inferred that due to the existence of 20 to 40 feet of saturated outwash sand and gravel interbedded with silt and clay along the Oriskany Creek valley, a significant unconfined aquifer is present.¹⁸ The Village of Clinton currently has wells that utilize this groundwater system.

A general analysis of the bedrock throughout Oneida County delineates five different formations in the Town of Kirkland. Starting in the northern portion of the town, shale and siltstone dominate. South of that and including the Village of Clinton, are sandstone, shale and hematite. There is a vein of dolomite running generally from east to west through the town. The majority of the southern and western portions of the town are composed of slate formations, and the southwesternmost corner is underlain with limestone.¹⁹

A study of the surficial geology of Oneida County has delineated the predominant soil parent material in the Town of Kirkland as a lodgement till. This compact material consists of unstratified boulders, gravel, sand, silt and clay, with a poor to low permeability.²⁰ This material is predominant in the upland areas, in the western and eastern portions of the town. The low permeability has significant development ramifications in terms of the utilization of septic systems.

The Oriskany Creek valley, which bisects the town north to south is dominated by a very different type of soil parent material. The valley consists of an undifferentiated, stratified sand

¹⁷ Oneida County Environmental Management Council, Oneida County Environment - An Assessment and Plan, 1977.

¹⁸ USGS and NYSDEC, "Availability of Ground Water From Unconsolidated Deposits in the Mohawk River Basin, New York," 1990.

¹⁹ Ibid.

²⁰ B. Lint, "Hydrogeology of Oneida County, New York - Surficial Geology," 1982.

and gravel that has a moderate to high permeability.²¹ This is an important development consideration, particularly in terms of the Oriskany Creek aquifer and the public water supply recharge zone.

A number of the major stream corridors, including Oriskany Creek and many of its tributaries, have been delineated as alluvium. The alluvium consists of stratified silt, sand and gravel, which has a moderate to high permeability. A number of the stream corridors have also been noted as being composed of undifferentiated bedrock outcrops. The large wetland in the northeastern portion of the town has been delineated as peat and bog wetlands²².

The soils throughout most of the town present severe limitations to development, particularly where infrastructure is unavailable and the development of septic systems is required. If enough area is not allocated for septic development or special engineering techniques are not utilized, the development of septic systems within these soils could result in a significant community health hazard. The Oriskany Creek corridor is the only area in town where soils are generally considered suitable for septic system development. This corridor, however, has an additional limitation due to the presence of a large aquifer, which provides the community water supply.

²¹ Ibid.

²² Ibid.