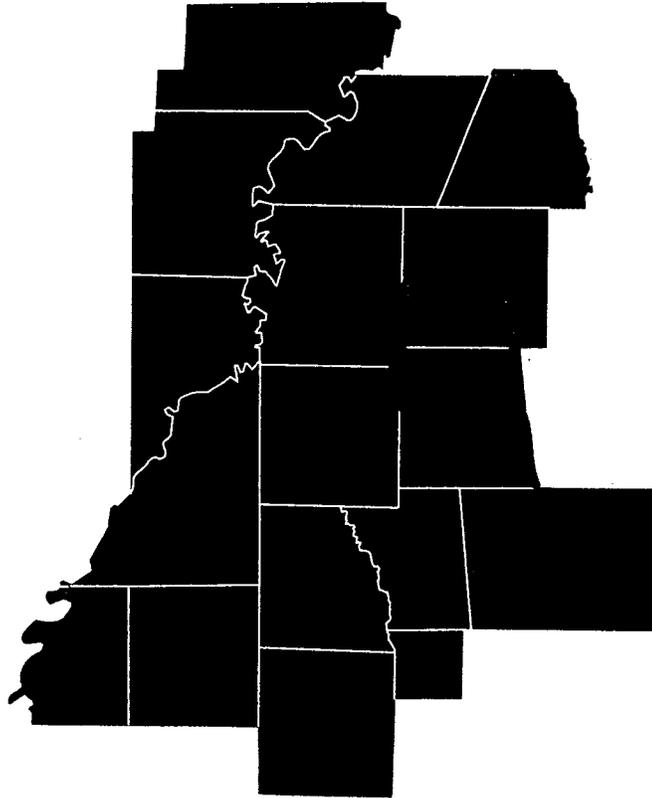
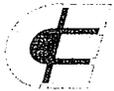


# LIVINGSTON COUNTY COMPREHENSIVE WATER SUPPLY STUDY



LIVINGSTON COUNTY  
NEW YORK



CLARK



ENGINEERS



& ASSOCIATES

DECEMBER 1991



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## **S.0 EXECUTIVE SUMMARY**

### **S.1 GENERAL**

Approximately 61 percent of all Livingston County residents receive their potable water through various municipal water systems or private multiple user systems (like Eagle Point). Over the past several years, population growth (especially in northern Livingston County) and a desire for economic development throughout the County, have created strains on existing systems to provide adequate quantities of potable water. In addition, increasingly stringent surface and groundwater quality requirements, (established by the federal Safe Drinking Water Act), will soon require many water purveyors in Livingston County to provide further raw water treatment in order to remain in conformance with the federal regulations. Therefore, to effectively respond to these increased quantity demands and the stricter water quality requirements many of the public and private water purveyors, especially those in northern Livingston County, will need to expand or upgrade their potable water systems.

Previously, municipalities or private purveyors addressed these water related issues of expansion and upgrading on an individual basis. The severe drought in 1988 and the significant cost of water quality treatment necessary to meet the federal regulations, however, have focused local attention on the overall water resources needs of Livingston County.

### **S.2 WATER RESOURCES NEEDS**

Data was collected from each Livingston County Village and Town regarding municipal raw water sources, raw water treatment, potable water distribution and usage, water system concerns, as well as, the availability and condition of sanitary sewerage systems. Data was also collected regarding County demographics including population, employment, and residential and non-residential development.

Based upon review of this data, population and development trends were formulated and the future water demands and needs for the various municipal potable water systems projected for the year 2020. County-wide, a public water demand of 6.8 MGD average day and 16.0 MGD maximum day was projected for the year 2020. These totals indicate that municipal water systems throughout Livingston County will need to provide or redistribute approximately 1.5 MGD of additional potable water on an average water usage day and approximately 3.6 MGD of additional potable water on a maximum usage day.

Several communities will not be able to meet these new demands under their current New York State Department of Conservation (NYSDEC) permitted water allocations. Communities such as the Town of Avon, and the Villages of Leicester and Dansville will not be able to meet the projected 2020 year average daily demand, while the Villages of Lima, and Livonia, and the Town of Livonia (including the Hamlet of Lakeville) will not be able to meet the projected maximum daily demand.

The inadequate individual allocations however, do not imply that there is an insufficient quantity of raw water within Livingston County to meet the overall County demands. Combining the total existing municipal surface water allocations of Conesus Lake, Silver Lake and Hemlock Lake of 6.9 MGD, 6.15 MGD and 29.5 MGD, respectively there is currently approximately 42.6 MGD of raw water available for potable water usage from these sources alone. Of this combined 42.6 MGD, municipal systems serving Livingston County residents have NYSDEC permitted allocations from Conesus, Silver and Hemlock of 6.9 MGD, 1.5 MGD and 0.73 MGD, respectively for a total allocation of 9.13 MGD. The remainder of the raw water volume or 33.5 MGD is allocated outside Livingston County. The major portion of this remaining volume or 28.8 MGD is allocated to the City of Rochester from Hemlock Lake.

It is clear then, that sufficient quantities of raw water within Livingston County are available to meet the County's overall demands, but that Livingston County allocations in various areas are insufficient to distribute the water to locations where it is needed. Therefore, to meet these demands, either individual

water allocations need to be increased or redistributed or complete new raw water sources need to be developed.

Providing sufficient potable water sources alone, however, may not completely meet the demands. Current infrastructure for many communities will require upgrading to transport the additional quantities to locations where it is needed. Communities such as the Villages of Avon, Geneseo, Leicester, Livonia, Mt. Morris and Nunda, as well as, the Towns of Leicester, Livonia, Mt. Morris and Nunda cannot meet all of their existing needs as a result of inadequate pipe sizes or inadequate storage capacities. Those communities which cannot meet their existing needs (due to inadequate line sizes or intake pump size) may also not have the capability to deliver the maximum allocations permitted to them. These inadequacies therefore inhibit the communities ability to transport permitted allocations, as well as, expand existing systems to provide potable water to new areas. These communities will need to upgrade their systems in order to withdraw and deliver the appropriate volume of potable water to meet their demands.

The inability to expand current systems also affects the County's ability to attract new non-residential growth. To date, potential developments in the Towns of Avon, Caledonia, Geneseo, Livonia (Lakeville), and North Dansville, have all been directly hindered by the unavailability of an adequate potable water supply.

Water quantity however, is not the only issue which impacts the residents of Livingston County. With the increasingly stringent surface and groundwater quality requirements established by the federal Safe Drinking Water Act, water quality will play an ever increasing role in water supply demands.

Since approximately 54 percent of Livingston County's total population is currently served by a municipal water system which obtains its water from a surface water source, the surface water regulations will impact water users significantly. The surface water regulations (to be enforced in 1992) will require that raw surface water be disinfected and filtered unless stringent water quality restrictions regarding total coliforms, fecal coliforms and turbidity levels are met.

As none of the surface raw water sources utilized by Livingston County communities (including Conesus, Silver and Hemlock Lakes, Mill Creek, Little Dansville Creek and Keshequa Creek) can meet the stringent requirements for turbidity, filtration at each of these sources will be required to allow their continued use as a raw water source. Currently, the Village of Mt. Morris, the Village of Nunda and the NYS Correctional Facilities in Groveland operate functioning filtration plants at Silver Lake, Little Dansville Creek, and Keshequa Creek, respectively. The City of Rochester will construct a filtration facility to protect their withdrawal from Hemlock Lake. All public water intakes from Conesus Lake and Mill Creek will require the construction of appropriate filtration facilities in order to continue to be used as raw water sources.

Although turbidity levels alone will require the use of filtration systems for public supply, recent water quality tests by the Livingston County Health Department have also indicated the presence of high levels of coliform and e-coli bacteria from Conesus Lake. This contamination is of prime concern to private intakes along this lake. While proper filtration facilities on public municipal/private multiple user intakes will protect those residents served by public systems, individual homeowners with private intakes from Conesus Lake will remain unprotected.

As discussed, turbidity and coliform levels pose severe water quality problems, but perhaps the most pressing surface water quality issue of the future may be the zebra mussel. Each of the surface water sources is susceptible. Since Conesus and Silver Lakes, however, are used as recreational lakes (boating), the likelihood of zebra mussel infestation for each of these lakes is high, if it does not already exist.

By forming massive colonies, the zebra mussels clog intake pipelines reducing intake capacity. As they die off, these mussels can be drawn into the pump suction contaminating the water supply and potentially damaging the pumps with their hard shells. In addition, the control of the zebra mussels with chlorine may create taste and odor problems for the treated water.

The magnitude of the potential zebra mussel problem impacts all public and private surface water intakes alike. In Livingston County, the most severe impact may be to those residents surrounding Conesus Lake which have individual surface water intakes. As the zebra mussel levels grow, each of these individual intakes will be susceptible to the problems listed above and will require some form of remedial action to control the mussel.

Not all water quality issues however, relate to surface water. Of Livingston County's total population approximately 44 percent is served by groundwater sources (34 percent by private individual wells, 8 percent by municipal well source systems and 2 percent by private multiple-user well source systems).

Groundwater contamination from volatile organic chemicals, namely trichloroethene (TCE) and/or 1,1,1, - trichloroethane (TCA) has been experienced in the past at the Village of Caledonia municipal well and currently at several individual wells in the northwest portion of the Town of Caledonia. Although recent tests of the Village's primary well source have shown TCE and TCA levels to be within acceptable standards, the Village has installed an air stripper (not yet operational) designed to protect the municipal water supply.

The full extent of the contamination in the Town, however, is still being investigated. It appears that the contamination in the Town (mainly TCE) is spreading as TCE moves with the groundwater flow. The possibility exists that this contamination flow in the Town will effect additional individual wells and may once again threaten the Village of Caledonia municipal well source with TCE.

Other groundwater quality concerns arise from the potential for contamination from untreated or partially treated sanitary sewage in areas where poor soils conditions and/or high densities of septic systems have resulted in inadequate or failing septic systems. According to the County Health Department, individual wells in the northeast portion of the Town of West Sparta, as well as, the municipal well source for the Hamlet of Springwater (Town of Springwater) and the Village of Caledonia are susceptible to this form of contamination. (No direct evidence specifically connecting inadequate or failing systems with groundwater

quality problems has been recorded in these areas.) According to the County Health Department however, evidence of gasoline contamination of individual wells in the Hamlet of Scottsburg (Town of Sparta) has been recorded.

Based upon the water needs addressed above, two basic water resource utilization goals have been identified for Livingston County:

1. To ensure that residents receive adequate quantities of good quality potable water that will meet the appropriate drinking water standards.
2. To promote economic development in the County by providing for the adequate and reliable supply of potable water to areas which have the potential for such growth.

With respect to these goals, several conclusions can be drawn from the data collected and developed for Livingston County.

- By 2020, municipal water systems in Livingston County will need to provide or redistribute a total of 6.8 MGD average daily potable water use. This is an additional 1.5 MGD of potable water on an average water usage day.
- The quality of raw water from all surface water sources utilized for potable water must be improved to be in conformance with the stricter federal safe drinking water standards slated to become effective in 1992.
- Municipal systems must be able to supply water to those areas where residential growth is anticipated. This will be most critical in the Village of Geneseo, and Towns of Caledonia, Groveland, Leicester and Livonia.

- Adequate water supplies to those areas anticipated to receive the largest non-residential growth need to be provided including: the Towns of Avon, Caledonia, Geneseo, Livonia (Lakeville) and North Dansville.

### S.3 RECOMMENDATIONS

The following facility recommendations are made to meet these goals and are shown on Figure S-1:

- Existing municipal water systems for the Villages of Avon, Geneseo, and Livonia and the Towns of Avon, Geneseo, Livonia and York should be interconnected.
- New public potable water service should be provided to the residents surrounding Conesus Lake currently utilizing private supplies. This system should connect into the existing Livonia (Lakeville) system and loop around the lake encompassing lake residents within the Towns of Conesus, Geneseo, Groveland and Livonia. (This system is henceforth referred to as the Conesus Lake perimeter.)
- Treated Hemlock Lake water should be provided to the seven interconnected systems, as well as, the Conesus Lake perimeter, subject to an agreement with the City of Rochester.
- The Village of Caledonia should investigate the use of the Monroe County Water Authority as a source of supply through the existing connection. Upgrades to this connection would be required.
- The Village and Town of Lima should continue to be supplied through the existing connection to the City of Rochester.
- The Village and Town of Leicester should continue to be supplied from Silver Lake via the existing connection to Mt. Morris. The

maximum day demand should be supplemented by connection to the Hemlock Lake source via a new transmission main to the Village of Geneseo.

- The Mt. Morris Demand Center including Hampton Corners in Groveland, should continue to be supplied from Silver Lake. The water intake and transmission system to the existing filtration plant, as well as, the transmission main to Hampton Corners should be upgraded.
- The existing municipal water systems located in the Villages of Nunda and Dansville, as well as the Town of Springwater, should continue to operate separately. A filtration plant should be developed for the Dansville system at Mill Creek to meet the more stringent federal safe drinking water standards. The permitted withdrawal allocation for Dansville will need to be increased to approximately 1.2 MGD average day.
- The two New York State correctional facilities at Sonyea in the Town of Groveland should remain a separate system utilizing Keshequa Creek, groundwater wells and their existing filtration plant. Other areas of Groveland including the Hamlet of Groveland Station Water Corporation should continue to operate separately with existing groundwater sources.
- The Town of Sparta (Hamlet of Scottsburg) and the northeastern portion of the Town of West Sparta should develop groundwater sources for municipal water supplies to serve areas experiencing water quality problems with individual wells.

Other general recommendations include:

- Watershed regulations for surface waters should be reviewed and updated. Comprehensive regulatory protections should be instituted for recharge zones and watersheds.

- Comprehensive regulatory protections should be instituted and enforced to protect groundwater recharge zones of all groundwater supply sources within the County.
- Adequate treated water storage capacity must be provided for all public potable water systems.
- Out of district users should be formally incorporated into existing water districts.
- All residential, commercial, institutional and industrial water users supplied by public or municipal systems should be metered.

#### **S.4 IMPLEMENTATION**

The implementation and management of an area wide plan for water supply and transmission will require that participating municipalities reach agreement on a mutually acceptable form of management. The management structure should take the lead in:

- implementing projects within service areas,
- allocating water and service within service areas,
- planning for future expansions of the system, and/or
- operating and maintaining the system.

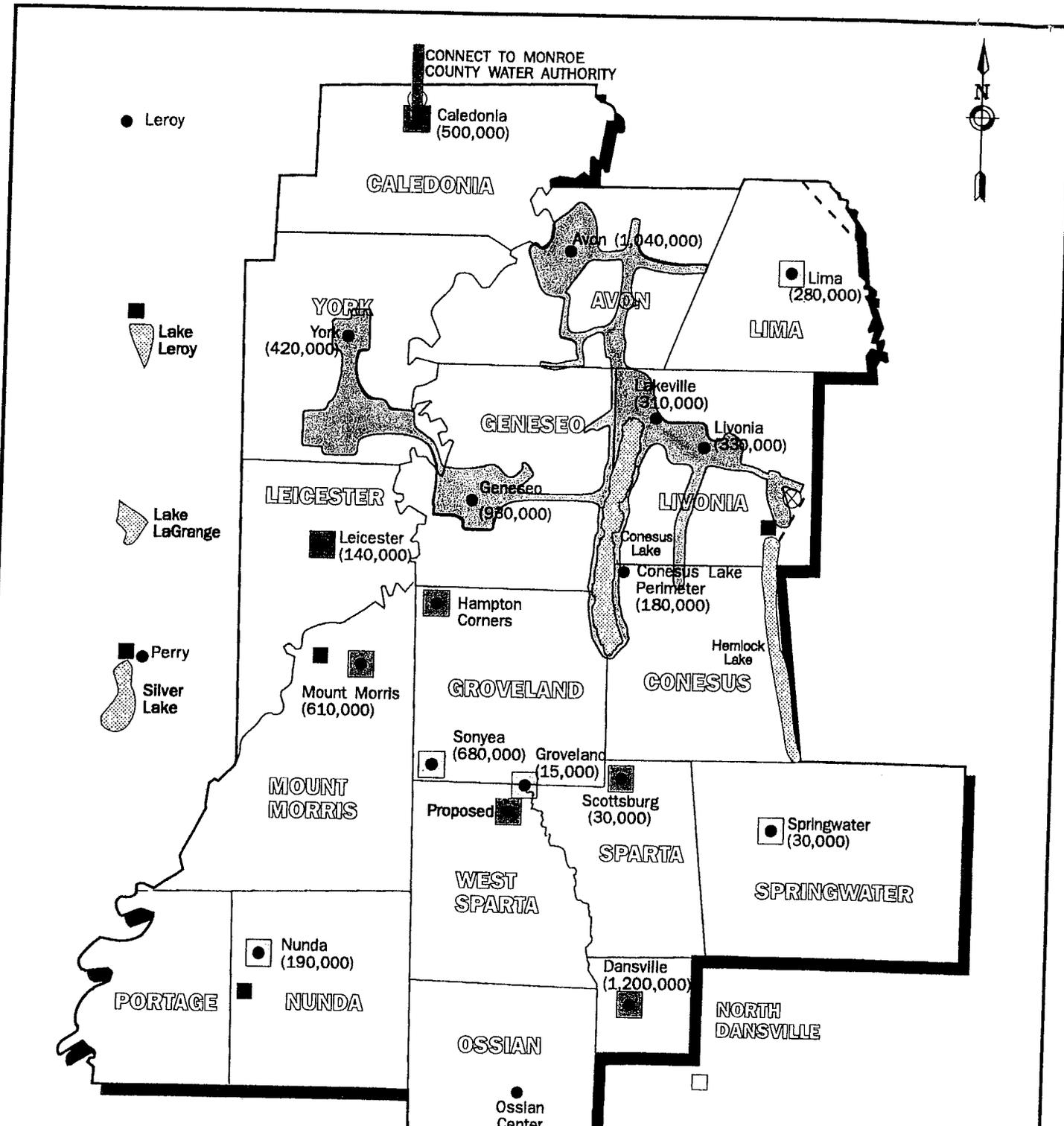
Based upon the recommendations above, the first phase of such a system should be initiated with the seven interconnected municipalities of the Villages of Avon, Geneseo, and Livonia, and the Towns of Avon, Geneseo, Livonia (including Hamlet of Lakeville) and York, as well as, the Conesus Lake perimeter area (lake residents in the Towns of Conesus, Geneseo, Groveland and Livonia). The boundaries of such a system should be carefully drawn to include existing service areas within these communities plus any logical extensions that reflect good planning and economic development corridors.

The implementation of such a system utilizing Hemlock and Silver Lakes to supply interconnected systems under Phase I could be as shown on Figure S-2. Phase I could be further divided into two project areas also as shown on Figure S-2. Project 1A would represent the seven interconnected municipalities and Project 1B the Conesus Lake perimeter.

The estimated project costs associated with Project 1A utilizing only a Hemlock water source or a combination of a Conesus/Hemlock water source are \$19,204,000 and \$22,420,000 respectively. The associated annual costs for each are \$2,859,000 and \$2,833,000 respectively. The estimated project and annual costs associated with Project 1B utilizing Hemlock Lake water source are \$12,350,000 and \$1,259,000, respectively.

The technical recommendations and goals of this study can be effectively implemented through one of three management structures. They are: an intermunicipal agreement; combined district; or public benefit corporation. The three alternatives offer varying levels of support for economic development. They also require different levels of commitment to the concept of shared resources as well as the relinquishment of authority that has most frequently been the domain of a single municipal unit.

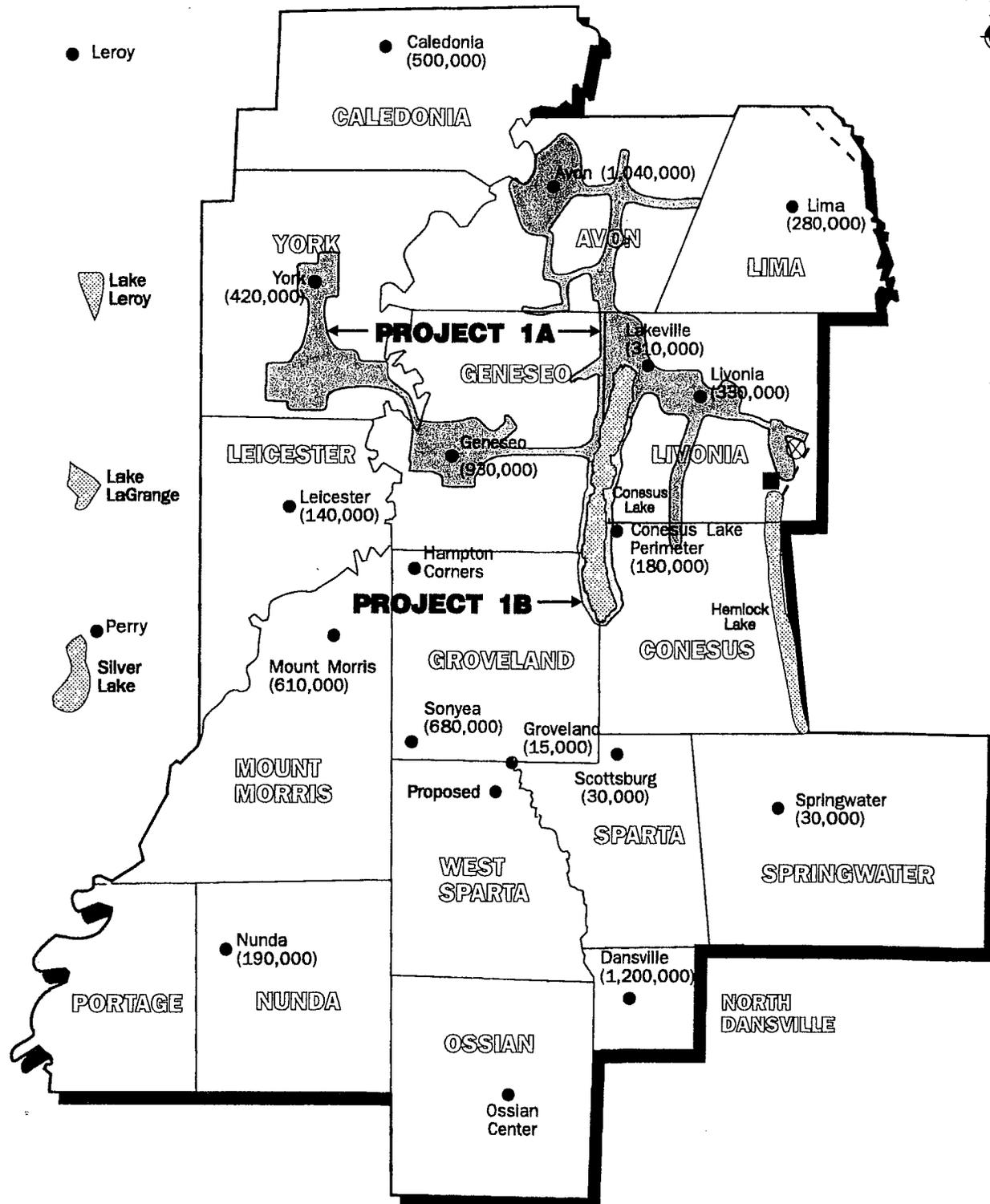
The municipalities should first move to resolve the preferred management structure for implementing the technical recommendations of this report. Once the composition and responsibilities of the selected alternative are defined, its governing body can move on to solidify its position on the technical findings and proceed with program implementation.



**LEGEND**

- Nunda (190,000) DEMAND CENTER W/ AVE. WATER USE (2020) GALLONS PER DAY
- ▨ PHASE I
- SURFACE SUPPLY IMPROVEMENTS
- NEW GROUNDWATER SUPPLY
- NEW SURFACE SUPPLY
- NO SUPPLY CHANGE
- ⊗ BOOSTER PUMP STATION
- FILTRATION PLANT (PROPOSED)
- FILTRATION PLANT (EXISTING)

<b>RECOMMENDED WATER SUPPLY IMPROVEMENTS</b>	
COMPREHENSIVE WATER SUPPLY STUDY LIVINGSTON COUNTY, NEW YORK	
<b>CLARK ENGINEERS &amp; ASSOCIATES</b> ROCHESTER, NEW YORK	<b>FIGURE S-1</b>



**LEGEND**

● Nunda (190,000) DEMAND CENTER W/ AVE. WATER USE (2020) GALLONS PER DAY

**PHASE I IMPLEMENTATION AREAS**

COMPREHENSIVE WATER SUPPLY STUDY  
LIVINGSTON COUNTY, NEW YORK

 CLARK ENGINEERS & ASSOCIATES  
ROCHESTER, NEW YORK

FIGURE S-2

## 1.0 INTRODUCTION

Over the past several years, many communities within Livingston County have experienced the need to expand their potable water systems to respond to growth and development, as well as, upgrade their systems to meet the increasingly stringent water quality requirements effective with the federal Safe Drinking Water Act. Previously, municipalities or private purveyors addressed these water supply issues of expansion and upgrading on an individual basis.

The drought in 1988 and the continued dry years thereafter, however, have made communities such as those served by Conesus Lake and Silver Lake realize that there may not be sufficient quantities of water to meet the competing needs for wildlife, downstream outflow, recreational use and municipal and private potable water withdrawal. In addition, the prohibitive costs associated with providing filtration or other treatments necessary to meet the more stringent surface and groundwater quality standards may make it impossible for existing individual potable water systems to provide such treatment cost effectively.

Therefore, the severe drought, the significant cost of water quality treatment, as well as, the desire to promote the residential and non-residential development necessary for a healthy economy have focused local attention on the overall water resources needs of Livingston County.

As a result, the Livingston County Board of Supervisors initiated a comprehensive study of the existing public water resources utilized in Livingston County to evaluate the potable water supply and distribution needs throughout the County. This Comprehensive Water Supply Study will review existing data to project future needs for public water supplies. Based upon these needs the study will make recommendations which address potable water quality, supply, and distribution, as well as, economic development within Livingston County as it relates to potable water issues.

## 2.0 OVERVIEW OF LIVINGSTON COUNTY DEMOGRAPHIC TRENDS

In order to define solutions to Livingston County's water supply needs it is important to understand County demographic trends.

### 2.1 POPULATION TRENDS

Table 2-1 lists the distribution of population by Towns and Villages in Livingston County. Population figures for the years 1960, 1970, 1980, and 1990 are from the U.S. Bureau of the Census. Based upon this data and projections of regional growth, population projections through the year 2020 have been provided.

The census data indicates that Livingston County added 5,366 residents between 1980 and 1990. These new residents increased the County's population by 9.4 percent. This is higher than the 5.5 percent growth rate from 1970 to 1980. The greatest concentration of new residents between 1980 and 1990 occurred in the Towns of Caledonia (333), Groveland (1,050), Leicester (392), and Livonia (866), as well as the Village of Geneseo (441). The student enrollment at the State University of New York at Geneseo has been stable and population gains represent non-student population. The population increase in the Town of Groveland is due largely to an increase in the institutional population. In 1980 there were 700 Groveland residents living in institutions. Between 1980 and 1990 the Craig Developmental Center was converted to the Groveland Correctional Facility. The Groveland Correctional Facility has a total of 1,500 inmates. Therefore, approximately 800 of the 1,050 additional residents in the Town of Groveland are living in institutions. In addition, the 750 bed New York State Livingston Correction Facility in Groveland began accepting inmates in early 1991. This facility is expected to account for a large percentage of the population increase in Groveland between 1990 and 2000. The population projection for Groveland may vary substantially from the projections depending on expansions at the correctional facility campus.

TABLE 2-1  
LIVINGSTON COUNTY POPULATION TRENDS

TOWN/VILLAGE *	1960	1970	1980	1990	2000	2010	2020	CHANGE 90-2020
AVON (T)	1,632	2,857	3,179	3,288	3,401	3,496	3,623	335
AVON (V)	2,772	3,260	3,006	2,995	2,960	2,940	2,914	(81)
CALEDONIA (T)	1,150	1,505	1,846	2,179	2,541	2,833	3,231	1,052
CALEDONIA (V)	1,917	2,327	2,188	2,262	2,329	2,388	2,469	207
CONESUS (T)	1,221	1,533	1,970	2,196	2,422	2,611	2,870	674
GENESEO (T)	1,053	1,564	1,927	1,991	2,047	2,097	2,166	175
GENESEO (V)	3,284	5,714	6,746	7,187	7,624	7,993	8,496	1,309
GROVELAND (T) **	3,373	3,004	2,140	3,190	4,110	5,040	5,200	2,010
LEICESTER (T)	1,027	1,431	1,426	1,818	2,239	2,580	3,046	1,228
LEICESTER (V)	365	368	462	405	400	400	400	(5)
LIMA (T)	1,350	1,759	1,834	2,022	2,214	2,374	2,592	570
LIMA (V)	1,366	1,686	2,025	2,165	2,292	2,404	2,557	392
LIVONIA (T)	2,580	4,026	4,504	5,370	5,984	6,540	7,162	1,792
LIVONIA (V)	946	1,278	1,238	1,434	1,629	1,793	2,017	583
MOUNT MORRIS (T)	1,317	1,162	1,439	1,531	1,630	1,710	1,820	289
MOUNT MORRIS (V)	3,250	3,417	3,039	3,102	3,165	3,218	3,290	188
NORTH DANSVILLE (T)	635	922	1,015	781	615	512	508	(273)
DANSVILLE (V)	5,460	5,436	4,979	5,002	4,985	4,988	4,992	(10)
NUNDA (T)	1,085	1,320	1,523	1,584	1,640	1,690	1,757	173
NUNDA (V)	1,224	1,254	1,169	1,347	1,535	1,688	1,898	551
OSSIAN (T)	489	551	667	797	930	1,040	1,190	393
PORTAGE (T)	733	731	771	893	1,017	1,120	1,261	368
SPARTA (T)	1,019	1,157	1,458	1,578	1,695	1,795	1,931	353
SPRINGWATER (T)	1,293	1,678	2,143	2,407	2,668	2,889	3,190	783
WEST SPARTA (T)	817	935	1,100	1,335	1,592	1,798	2,080	745
YORK (T)	2,695	3,166	3,212	3,513	3,809	4,059	4,401	888
TOTAL	44,053	54,041	57,006	62,372	67,473	71,996	77,061	14,689

NOTES

\* Town population excludes Village population

\*\* The Town of Groveland population changes are primarily related to changes in its institutional population, see text for descriptions

SOURCE: 1960, 1970, 1980, 1990 Final Census Bureau Counts; 2000, 2010, 2020 projections Clark Engineers and Associates, National Planning Data Corporation, New York State Department of Conservation.

Despite small numeric population increases, the Towns of Ossian, Portage, and West Sparta as well as the Villages of Livonia and Nunda increased their population by more than 15 percent between 1980 and 1990.

Between 1990 and 2020 Livingston County is expected to add approximately 14,700 residents, increasing from 62,372 in 1990 to 77,061 in 2020 (see Table 2-1). Such population growth will increase the overall County population by 24 percent. Of this increase, approximately 3,130 additional County residents are expected to live in the nine Villages. The remainder and majority of the residential growth, however, will occur in the Towns outside the Villages. The Towns of Caledonia, Groveland, Leicester, Livonia as well as the Village of Geneseo are likely to absorb the bulk of County population growth between 1990 and 2020.

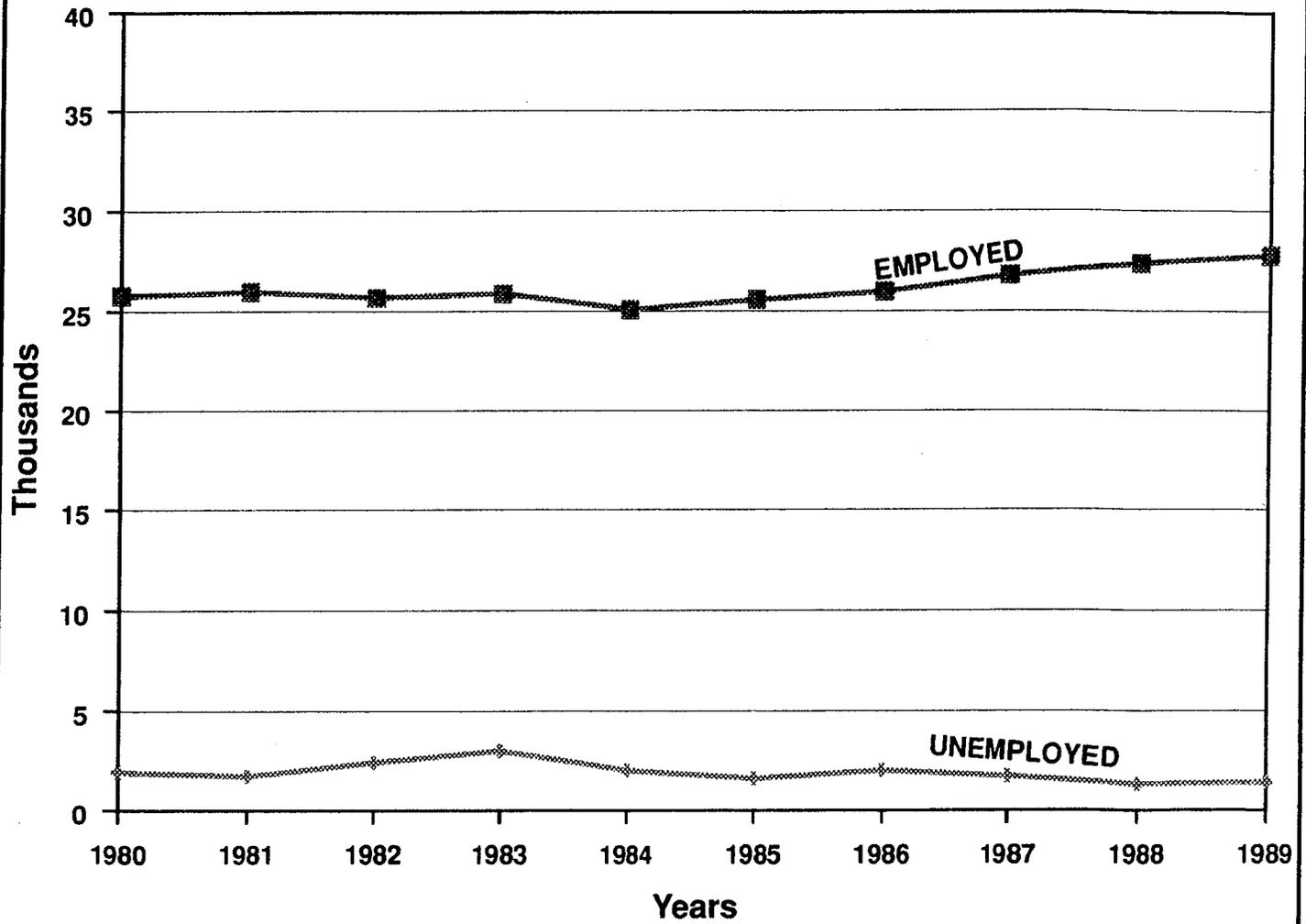
## **2.2 LABOR FORCE TRENDS**

Based upon information from the NYS Department of Labor, the Livingston County labor force increased 5.8 percent between 1980 and 1989. The unemployment rate has ranged from a high of 10.3 in 1983 to a low of 4.5 in 1988. Figure 2-1 illustrates changes in the number of employed and unemployed people in Livingston County from 1980 to 1989.

Livingston County has a stable manufacturing base. Table 2-2 lists major employers in Livingston County based on information supplied by the Livingston County Economic Development Department. The table shows that there are very few large firms. Therefore, it may be concluded that the local economy would be seriously impacted by plant closings or major workforce reductions at the firms listed.

In 1980, over 60 percent of Livingston County residents worked within the County. Approximately 12 percent worked in the City of Rochester. Livingston County companies also employ a significant number of workers from Monroe County and from neighboring rural counties including Steuben and Wyoming. Continued economic development is essential to provide jobs for the growing population.

### Livingston County Employment Trends



Source: New York State Department of Labor; Division of Research and Statistics.

#### LIVINGSTON COUNTY EMPLOYMENT TRENDS

COMPREHENSIVE WATER SUPPLY STUDY  
LIVINGSTON COUNTY, NEW YORK

 CLARK ENGINEERS & ASSOCIATES  
ROCHESTER, NEW YORK

FIGURE 2-1

**TABLE 2-2**  
**LIVINGSTON COUNTY MAJOR EMPLOYERS**

Name/Location	Product	Number of Employees
Groveland/Livingston Correctional Centers Sonyea, New York	Rehabilitation	1050-1150
Geneseo State College SUNY Geneseo Geneseo, New York	Education	815
Livingston County Offices	Government	800
Foster Wheeler Energy Corp. Dansville, New York	Steam Boilers	675
Kraft General Foods Corporation Avon, New York	Food Processing	400
Chloride Electro Networks Caledonia, New York	Electronics	400
Champion Products, Inc. Geneseo, New York	Knitwear Manufacturer	287
Akzo Salt, Inc. Retsof, New York	Wholesale Salt Dist. & Salt Mine	275
Specialized Printing Forms, Inc. Caledonia, New York	Business Form Printing	207
Industrial Ceramics Lima, New York	Porcelain Insulators	169
Atochem North America, Inc. Piffard, New York	Chemical Manufacturer	160
Mixing Equipment Co. Avon, New York	Mixing Equipment	120
Champion Products Livonia, New York	Knitwear Manufacturer	120
Comstock Michigan Fruit Co. Leicester, New York	Food Processing	45-300 (seasonal)
Lakeland Concrete Lima, New York	Precast Concrete Products	80
Jones Chemical Caledonia, New York	Chemical Manufacturer & Distributors	75

### **2.3 RESIDENTIAL DEVELOPMENT TRENDS**

Based on available building permit records, there were 2,204 new housing units authorized in the County between 1980 and 1990. Over the past decade residential development has averaged 200 units annually. The majority of units built were single family residences. There were also a large number of mobile homes and several apartment projects. Residential development was concentrated in Geneseo and Livonia. Table 2-3 lists the number of residential building permits issued in each municipality in Livingston County between 1980 and 1990.

One-third of these new units were located in Villages that are likely served by municipal water systems. A portion of the remaining two-thirds of homes are located in areas served by municipal water systems, however, a significant amount of residential growth is occurring in areas that are not currently supplied with public water.

The rate of residential construction in the County is likely to be similar over the next decade. Several of the Villages have reached full development. Therefore, most new residential development is likely to occur in the Towns outside of the incorporated Villages. The availability of water will be a factor in the location of future residential development.

### **2.4 NON-RESIDENTIAL DEVELOPMENT TRENDS**

Over the past ten years, commercial and industrial development projects have primarily been expansions of existing businesses. Such development has been concentrated in the Villages and other areas with access to major roads, railroads, and other necessary infrastructure. As vacant land in the Villages becomes limited, continued commercial and industrial development will be hampered by the lack of sanitary sewer and water infrastructure outside the Villages.

There are currently a number of planned development projects which require extensions to municipal water service areas. There are also areas where municipalities would like to attract development but the necessary infrastructure is not available. Based upon conversations with municipal and county officials,

TABLE 2--3  
RESIDENTIAL BUILDING PERMITS ISSUED 1980 TO 1990  
WITHIN LIVINGSTON COUNTY

TOWN/VILLAGE	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	TOTAL
AVON (T)	2	2	5	12	7	11	11	7	9	7	12	85
AVON (V)	0	33	2	4	26	0	4	6	12	9	NA	96
CALEDONIA (T)	6	7	9	5	15	25	29	16	12	12	NA	136
CALEDONIA (V)	S	S	3	6	S	12	10	7	34	2	35	109
CONESUS (T)	7	16	8	29	19	S	17	18	22	15	25	176
GENESEO (T)	2	8	6	16	6	10	9	18	18	12	9	114
GENESEO (V)	2	1	43	64	8	8	39	7	42	38	4	256
GROVELAND (T)	6	4	7	7	5	8	4	6	10	5	5	67
LEICESTER (T)	S	5	4	5	4	2	11	7	7	8	NA	53
LEICESTER (V)	0	0	0	0	0	0	0	0	0	0	NA	0
LIMA (T)	5	4	6	5	4	9	12	6	10	10	4	75
LIMA (V)	1	0	1	0	15	48	12	40	10	5	5	137
LIVONIA (T)	13	14	19	16	29	30	70	48	56	57	51	403
LIVONIA (V)	NA	NA	6	3	1	6	7	7	5	9	5	49
MOUNT MORRIS (T)	NA	NA	2	4	S	5	S	NA	4	14	15	44
MOUNT MORRIS (V)	NA	2	2	S	S	S	8	4	3	3	NA	22
NORTH DANSVILLE (T)	2	3	0	0	0	5	7	2	5	8	2	34
DANSVILLE (V)	1	3	0	32	S	S	S	NA	6	8	18	68
NUNDA (T)	NA	NA	NA	NA	NA	NA	4	NA	8	4	NA	16
NUNDA (V)	S	S	1	S	S	S	3	0	6	1	NA	11
OSSIAN (T)	6	1	8	4	2	3	2	7	6	2	6	47
PORTAGE (T)	NA	NA	NA	NA	NA	NA	S	NA	NA	NA	0	0
SPARTA (T)	NA	NA	NA	NA	NA	NA	16	8	10	5	10	49
SPRINGWATER (T)	NA	NA	NA	NA	NA	NA	S	NA	NA	NA	9	9
WEST SPARTA (T)	1	7	1	7	2	5	2	6	9	8	NA	48
YORK (T)	4	6	6	12	14	15	15	1	10	13	4	100
TOTAL	58	116	139	231	157	202	292	221	314	255	219	2,204

NOTES  
NA: data not available  
S: no annual report received

SOURCE: Municipal Building Inspectors

the following section reviews those areas where municipal water service may be desirable.

### Avon

The Town of Avon would like to see industrial development near the interchange of I-390 and Route 15. There is a Village of Avon water transmission line nearby, but the area is not part of the Town water district. The Town of Avon does not expect near term development along Routes 5 and 20 near the I-390 interchange.

The Village of Avon expects continued infill residential development. The Village has also designated an area on the north side of Route 5 near the Genesee River as appropriate for industrial development. These Village sites are served by the existing distribution network of the Village.

### Caledonia

In the Town of Caledonia, a developer has expressed interest in a mixed residential and non-residential development project west of Route 5 near the southeastern border of the Village. This area is not served by a municipal water system.

In the Village of Caledonia, development will be completed when a residential project now under construction is finished.

### Geneseo

There are several large proposed commercial developments (including a Walmart and Wegmans superstore) in the Town of Geneseo along NYS 20A near the eastern Village border. Extension of water service to this area requires the cooperation of the Village. The Town also expects continued residential development along Reservoir Road and along Conesus Lake. Town water districts do not exist in these areas. Existing residents which have public water in these areas are out-of-district users to the Village of Geneseo.

### Groveland

The Town of Groveland would like to see additional industrial development in the area near the Hampton Corners/I-390 interchange. Livingston County has proposed a fire station and highway maintenance complex in this area. The Town would also like to see continued development in the Hamlet of Sonyea. Expansion of the NYS Correctional Facilities would be served by the facilities water system. No municipal system exists for other areas.

### Leicester

The Town of Leicester expects residential development on Caledonia Road north of Cuylerville. This development is outside current water district areas.

### Lima

There is a proposed commercial development on the west side of Route 15A in the Town of Lima. There is a Village of Lima water transmission line nearby but this area is not in the Town of Lima water district.

### Livonia

There is an existing partially developed industrial zoned area north of Lakeville in the Town of Livonia which does not have water service. There are several planned residential developments in and around Lakeville and in the northeast quadrant of the Town. Much of the residential development in Livonia is taking place outside of the existing Town water service districts.

### Mt. Morris

The Village of Mt. Morris would like to see industrial development in the south end of the Village near Route 36 and the extension of a water line to promote residential development in the northeast quadrant. The County is applying to the New York State Economic Development Administration for funds to extend water and sewers to a planned industrial area along Route 36 in the Town of Mt. Morris.

### North Dansville

The proposed Dansville Industrial Park site to be located in the Towns of North Dansville and Sparta currently does not have municipal water available. In order to promote development, the County Industrial Development Agency plans to contract with the Village of Dansville to extend water and sewer infrastructure.

### Other Communities

The Village of Nunda and the Towns of Conesus, Nunda, Ossian, Portage, Springwater, West Sparta and York have no planned developments at this time.

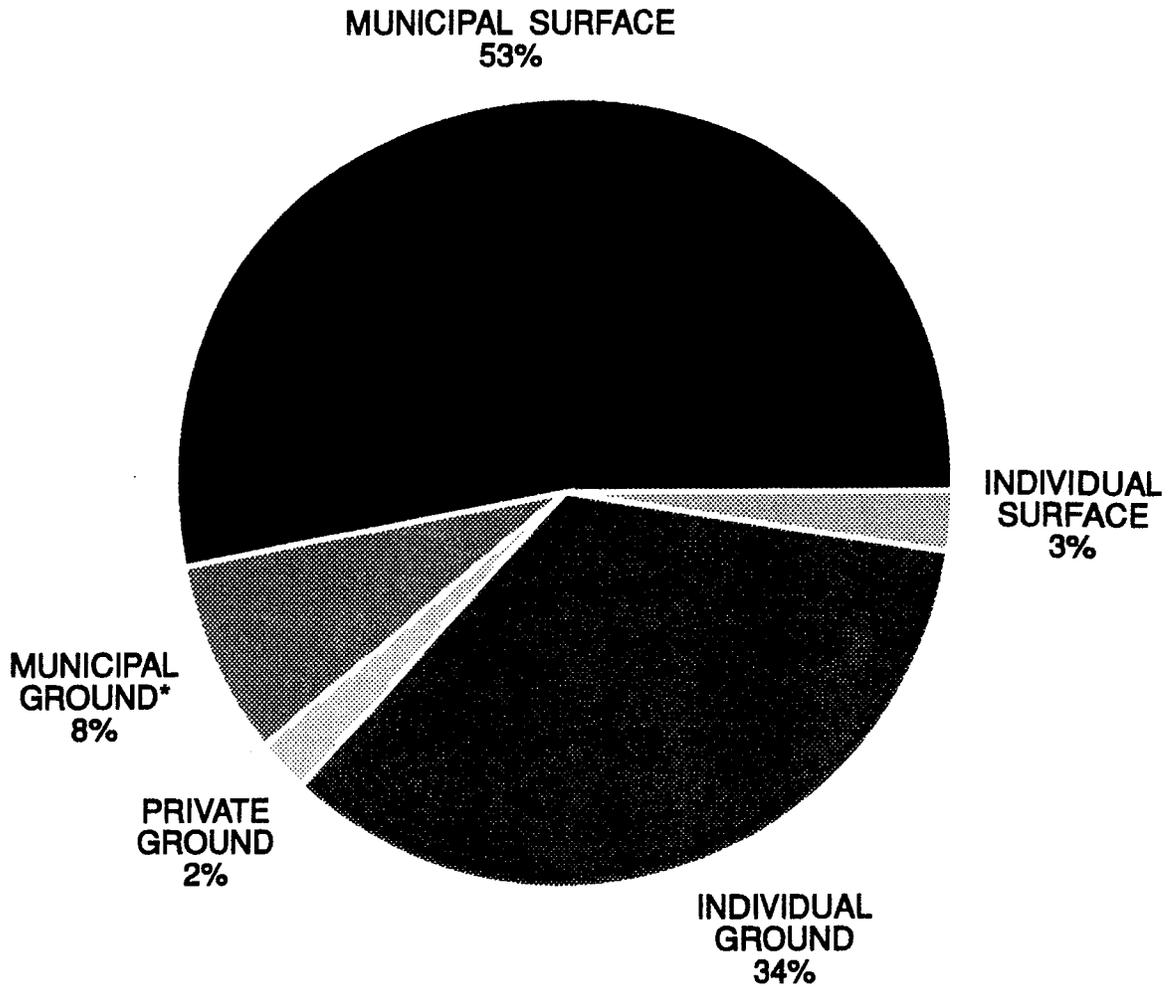
### 3.0 EXISTING WATER AND SEWER SYSTEMS

#### 3.1 OVERVIEW OF MUNICIPAL WATER AND SEWER SYSTEMS

Approximately 61 percent of Livingston County residents are served by a municipal water system or a large private multiple user system (such as Groveland Correctional Facility). Of this total, 87 percent of the water demand is met by utilizing surface water sources. The remaining 13 percent of public water demand is served by wells or springs. Those residents not served by a municipal water system are served either through private multiple user systems or private individual supplies. Of the 39 percent of residents not served by a municipal system or a large private multiple system, approximately 5 percent are served by private multiple user well systems, 7 percent are served via private individual lake intakes and 88 percent are served via private individual well systems. The distribution of water sources is shown in Figure 3-1. The service areas of the existing municipal water systems in Livingston County are shown on Figure 3-2. A summary inventory of the water system characteristics of each community is given in Table 3-1.

Table 3-2 provides information on water production costs for each of the existing municipal water systems. Water production costs range from a low of \$.65 per 1,000 gallons in the Village of Dansville to a high of \$5.88 per 1,000 gallons in the Town of Lima.

Approximately 40 percent of the residents of Livingston County are served by municipal sanitary sewer systems. The majority of residents are served by private septic systems. The areas served by public sanitary sewer systems are shown on Figure 3-3. Table 3-1 also provides summary information on municipal sanitary sewer systems.



\*Also includes large private multiple user systems.

**LIVINGSTON COUNTY WATER SOURCES**

COMPREHENSIVE WATER SUPPLY STUDY  
LIVINGSTON COUNTY, NEW YORK

**CLARK ENGINEERS & ASSOCIATES**  
ROCHESTER, NEW YORK

FIGURE 3-1

TABLE 3-1  
LIVINGSTON COUNTY  
EXISTING MUNICIPAL WATER AND SEWERAGE SYSTEMS

MUNICIPALITY	MUNICIPAL WATER SYSTEM	WATER SYSTEM SOURCE	NYSDEC WATER ALLOCATION (MGD)	AVERAGE WATER SYSTEM USAGE (MGD)	WATER STORAGE CAPACITY (MGD)	NO. OF WATER ACCOUNTS	SEWERAGE PLANT CAPACITY (MGD)	SEWERAGE PLANT % USED
Avon (T)	YES	CONESUS LAKE (V. OF AVON)	.24	.20	2 TANKS: .50	400	-	-
Avon (V)	YES	CONESUS LAKE	3.50	.77	2 TANKS: 2.0 .50	946	2.75	47
Caledonia (T)	NO	-	-	-	-	-	-	-
Caledonia (V)	YES	WELLS	-	.40	2 TANKS: .40 .125	882	-	-
Conesus (T)	NO	-	-	-	-	-	+	+
Geneseo (T)	NO *	CONESUS LAKE (V. OF GENESEO) (T. LIVONIA)	-	.113	-	200	+	+
Geneseo (V)	YES	CONESUS LAKE	3.00	.52	1 TANK: 3.0	1100	1.5	35
Groveland (T)	NO	-	-	-	-	-	-	-
Leicester (T)	YES	SILVER LAKE (V. OF LEICESTER)	-	.03	PLANNED .22	110	-	-
Leicester (V)	YES	SILVER LAKE (V. OF MT MORRIS)	.10	.08	1 TANK .20	181	-	-
Lima (T)	YES	HEMLOCK LAKE (CITY OF ROCHESTER) (V. OF LIMA)	.055	.011	-	61	-	-
Lima (V)	YES	HEMLOCK LAKE (CITY OF ROCHESTER) WELLS (BACKUP)	.28	.225	1 TANK: .50	568	.25	90
Livonia (T)	YES	HEMLOCK LAKE (V.T. OF LIVONIA)	.4 #	.09	-	1000	+	+
Hemlock (H)	YES	HEMLOCK LAKE (V.T. OF LIVONIA)	-	-	1 TANK: .15	200	+	+
Lakeville (H)	YES	CONESUS LAKE	.40	.16	1 TANK: .20	650	+	+
Livonia Center (H)	YES	HEMLOCK LAKE (V.T. OF LIVONIA)	-	-	-	70	+	+
South Livonia (H)	YES	HEMLOCK LAKE (V.T. OF LIVONIA)	-	-	-	80	+	+

TABLE 3-1 (Continued)

MUNICIPALITY	MUNICIPAL WATER SYSTEM	WATER SYSTEM SOURCE	NYSDEC WATER ALLOCATION (MGD)	AVERAGE WATER SYSTEM USAGE (MGD)	WATER STORAGE CAPACITY (MGD)	NO. OF WATER ACCOUNTS	SEWAGE PLANT CAPACITY (MGD)	SEWAGE PLANT % USED
Livonia (V)	YES	HEMLOCK LAKE (C. OF ROCHESTER)	.4 #	.14	1 TANK: .50	477	+	+
Mount Morris (T)	NO *	SILVER LAKE (V. OF MT MORRIS)	-	-	-	10	-	-
Mount Morris (V)	YES	SILVER LAKE	1.50	.578	RESERVOIR: 5.0 CLEARWELL: 1.0	1020	.864	60
North Dansville (T)	NO *	MILL CREEK, WELLS (V. OF DANSVILLE)	-	-	-	100	-	-
Dansville (V)	YES	MILL CREEK, WELLS	.50	1.10	1 SED. TANK: 3.0 2 TANKS: 2.0 2.0	1900	3.25	40
Nunda (T)	NO *	LITTLE DANSVILLE CRK (V. OF NUNDA)	-	-	-	40	-	-
Nunda (V)	YES	LITTLE DANSVILLE CRK	.38	.13	1 TANK: .50	523	.2	53
Ossian (T)	NO	-	-	-	-	-	-	-
Portage (T)	NO	-	-	-	-	-	-	-
Sparta (T)	NO	-	-	-	-	-	-	-
Springwater (T)	YES	WELLS	-	.02	1 TANK: .06	120	-	-
West Sparta (T)	NO	-	-	-	-	-	-	-
York (T)	YES	CONESUS LAKE (V. OF GENESEO)	-	.37	3 TANKS: .10 .75 .75	637	.12	na

# TOWN AND VILLAGE OF LIVONIA COMBINED PERMIT, EXCLUDES LAKEVILLE

\* NO TOWN WATER DISTRICT BUT PARTS OF TOWN SERVED BY VILLAGE AS OUT OF DISTRICT USER

+ CONESUS LAKE COUNTY SEWER DISTRICT SERVES ALL LAKEFRONT PROPERTIES IN THE TOWNS OF CONESUS, GENESEO, GROVELAND, LIVONIA, THE VILLAGE OF LIVONIA, AND LAKEVILLE. THE 1.3 MGD TREATMENT PLANT IS OPERATING AT 50 PERCENT OF CAPACITY

TABLE 3-2

LIVINGSTON COUNTY MUNICIPAL WATER SYSTEM COSTS  
1989/90 BUDGET YEAR

<u>Municipality</u>	<u>Annual Water Budget Appropriations</u>	<u>Volume of Water Produced (GPD)**</u>	<u>Water System Cost Per 1,000 Gallons</u>
Avon (T)	\$204,598	160,000	\$3.50
Avon (V)	\$603,996	1,100,000	\$1.50
Caledonia (T)	-	-	-
Caledonia (V)	\$144,901	400,000	\$0.99
Conesus (T)	-	-	-
North Dansville (T)	-	-	-
Dansville (V)	\$262,322	1,100,000	\$0.65
Geneseo (T)	-	-	-
Geneseo (V)	\$571,250	1,000,000	\$1.57
Groveland (T)	-	-	-
Leicester (T)	\$63,254	30,000	\$5.78
Leicester (V)	\$147,758	110,000	\$3.68
Lima (T)	\$23,620	11,000	\$5.88
Lima (V)	\$309,000	270,000	\$3.14
Livonia (T):	-	-	-
Hemlock (H)*	\$51,800	42,000	\$3.38
Lakeville (H)	\$163,750	160,000	\$2.80
Livonia Center (H)*	\$32,150	24,000	\$3.67
South Livonia (H)*	\$49,400	30,000	\$4.51
Livonia (V)*	\$111,687	240,000	\$1.27
Mount Morris (T)	-	-	-
Mount Morris (V)	\$450,000	700,000	\$1.76
Nunda (T)	-	-	-
Nunda (V)	\$111,453	130,000	\$2.35
Ossian (T)	-	-	-
Portage (T)	-	-	-
Sparta (T)	-	-	-
Springwater (T)	\$21,730	20,000	\$2.98
West Sparta (T)	-	-	-
York (T)	\$426,167	370,000	\$3.16
<b>Total</b>	<b>\$3,748,836</b>	<b>5,897,000</b>	

\*Based on independent system operation.

\*\*Water produced by each municipality includes water used by that municipality as well as water sold to other municipal systems.

Source: Municipal Offices; CEA

**TABLE 3-4**  
**EXISTING LIVINGSTON COUNTY PUBLIC WATER SYSTEMS**  
**SUMMARY OF SYSTEM INADEQUACIES**

MUNICIPALITY	SYSTEM INADEQUACIES						
	OUT-OF-DISTRICT USERS	LOW PRESSURE	INADEQUATE FIRE FLOWS	INADEQUATE STORAGE CAPACITY	INSUFFICIENT PIPE SIZE	DEAD END MAINS	TRANSMISSION MAIN INSUFFICIENT SIZE
AVON (V)	-	x	x		x		
AVON (T)	10						
CALEDONIA (V)	4						
CALEDONIA (T)	-						
CONESUS (T)	YES						
GENESE0 (V)	200		x		x		
GENESE0 (T)	5-6						
GROVELAND (T)	YES						x
LEICESTER (V)	36	x	x		x		x
LEICESTER (T)	6			x		x	x
LIMA (V)	YES						
LIMA (T)	-						
LIVONIA (V/T)	34	x	x	x	x	x	
LIVONIA (T)	YES						
LAKEVILLE DISTRICT							
MT. MORRIS (V)	YES						x
MT. MORRIS (T)	YES						x
DANSVILLE (V)	100+						
NORTH DANSVILLE (T)	YES						
NUNDA (V)	YES		x		x		x
NUNDA (T)	YES		x				x
OSSIAN (T)	-						
PORTAGE (T)	-						
SPARTA (T)	-						
SPRINGWATER (T)	-						
WEST SPARTA (T)	-						
YORK (T)	40				x		

NOTE: SOURCE: LIVINGSTON COUNTY COMPREHENSIVE WATER SUPPLY STUDY  
MUNICIPAL SURVEY MAY 1990 AND LIVINGSTON COUNTY HEALTH  
DEPARTMENT

### 3.2 VILLAGE OF AVON:

<u>Year</u>	<u>1990</u>
Population	2,995
Population served by the water system	3,100
Daily average usage (MGD)	0.77 (Not including the Town of Avon)

#### Water Source

The source of water supply for the Village of Avon water system is Conesus Lake. The Village of Avon is authorized by the NYSDEC (New York State Department of Environmental Conservation) to withdraw a maximum of 3.5 MGD (million gallons per day) from the Conesus Lake. Water treatment consists of chlorination and fluoridation. The intake structure is located in the vicinity of Pebble Beach at the north end of Conesus Lake. The system is served by a 20-inch intake line. The pump station consists of two pumps, as well as the chlorination/fluoridation facilities. The two pumps, which run alternately, are each rated for 2,500 GPM. (gallons per minute)

#### Water Distribution

The distribution system consists of a new 20-inch transmission line from the intake at Pebble Beach to the storage tank on Reservoir Road in the Town of Avon. The water is pumped from Conesus Lake to the storage tank and then flows by gravity to the Village distribution system.

Storage facilities within the system consist of two tanks. A 2.0 MG (million gallons) steel storage tank on Reservoir Road in the Town of Avon and a 0.5 MG glass-lined tank located on Route 256, in the Town of Geneseo.

A distribution pump station located on Clinton Street in the Village increases the water pressure for residents on the east side of the Village.

**VILLAGE OF AVON (Continued):**

Water Usage

The Village water system serves approximately 946 users, all of which are metered. Approximately 27 users are located in the Town of Avon and served as out-of-district users. General Foods Corporation, which is the only large non-residential water user in the Village, uses approximately 0.34 MGD. The Village has a contractual agreement with General Foods Corporation to supply a maximum volume of 2.1 MGD.

The water rates charged by the Village of Avon to its customers are as follows:

<u>Volume</u>	<u>Village District</u>	<u>Out-of-District</u>
0-500 cu.ft.	\$13.20	\$23.10
Greater than 500 cu.ft.	\$0.99/100 cu.ft.	\$1.72/100 cu.ft.

Water System Concerns

The Village of Avon currently faces a problem involving turbidity due to a lack of surface water filtration of the raw water. The NYS Department of Health has issued a consent order requiring the Village address this problem. The Village, as a result of the turbidity violations and discussions with the NYS Department of Health, has agreed to a compliance schedule where a water filtration plant serving the Village of Avon will be in place and operational by August 1994.

Turbidity test results are submitted monthly to the County Health Department. When the monthly average exceeds 1.5, the Livingston County Health Department issues a written notification of violation of the 1 Nephelometric Turbidity Unit (NTU) maximum turbidity standard. The Village must then send out written notifications to the public water users of the violation. According to the County Health Department, the Village of Avon turbidity levels range from 1.5 to 2.1 NTU (1991). Another inadequacy experienced by the Village is low pressure and insufficient fire flows in areas of the network which are supplied by 4-inch lines. These lines are currently being upgraded to larger diameter pipes.

**VILLAGE OF AVON (Continued):**

The Village is currently investigating the feasibility of a combined water treatment facility constructed and operated with the Village of Geneseo versus a stand-alone water treatment facility serving only the Village of Avon.

Sanitary Sewerage System

Approximately 90 percent of the Village of Avon is served by a public sanitary sewer system. The sewage treatment plant has a rated capacity of 2.75 MGD and is currently operating at 47 percent of capacity.

### 3.3 TOWN OF AVON

(Not including the Village of Avon)

<u>Year</u>	<u>1990</u>
Population	3,288
Population served by the water system	2,284 (Estimated)
Daily average usage (MGD)	0.20
Area (acres)	25,060

#### Water Source

The Town of Avon is supplied by the Village of Avon water system. Currently, the water is treated with chlorine by the Village of Avon before entering the Town system. The Town of Avon is allocated .24 MGD per a water supply permit issued by the NYSDEC.

#### Water Distribution

The Town of Avon water system consists of one Water District and approximately 10 out-of-district users. The District serves both the Hamlet of East Avon and the Hamlet of Littleville. Most out-of-district users are located along Triphammer Road and Polebridge Road. The Town Water District is connected to the Village system on Genesee Street/Lake Road as well as Sackett Road.

#### Water Usage

The Town water storage facilities include two storage tanks. A 0.5 MG tank on Avon Line Road and 0.1 MG tank in the Hamlet of East Avon.

The Town water system serves approximately 424 metered users. One of these meters measures the water supplied to a mobile home park consisting of approximately 400 trailers. There are no large non-residential users currently served by the Town water system.

**TOWN OF AVON (Continued):**

The water rate charged by the Village of Avon to the Town is as follows:

Volume

Greater than 0 gallons            \$1.32/1,000 gallons

The water rates charged by the Town of Avon to its customers are as follows:

Volume

0 - 8,000 gallons                \$20.00

Greater than 8,000 gallons      \$2.50/1,000 gallons

Water System Concerns

Since the Town of Avon water system is supplied by the Village, it is also affected by the problems caused by the lack of surface water filtration which were discussed in Section 3.2. Maintaining adequate chlorine residual throughout the Town's distribution system has also been a concern since the Town does not add chlorine in addition to that which is added by the Village. In order to correct this problem, chlorine injection equipment has recently been purchased and is scheduled for installation in the Town system in 1991.

Sanitary Sewerage Systems

The Town of Avon is not served by a public sanitary sewer system. There are some areas of the Town with failing or inadequate septic systems.

### 3.4 VILLAGE OF CALEDONIA:

<u>Year</u>	<u>1990</u>
Population	2,262
Population served by the water system	2,262 (Estimated)
Daily average usage (MGD)	0.40

#### Water Source

The source of the Village of Caledonia's water supply system consists of two wells. One well is used to supply daily demand; the other well is used for emergency purposes only. A third well, which historically served the Village system, has been abandoned. The well which is currently used for daily demand is equipped with a pump rated for 475 GPM. The well water is treated with chlorine and fluoride. A connection to the Monroe County Water Authority (MCWA) water system exists at the boundary of the Village and Monroe County. The installation of a pump station at this connection would be required in order to enable MCWA to serve the Village system.

#### Water Distribution

The water system serves the entire Village of Caledonia, as well as four residences which are located on the boundary of the Town and the Village. These users are considered out-of-district users.

The Village storage facilities include two steel storage tanks located within the Village, - a 0.125 MG tank located off NYS Route 5, as well as a 0.4 MG tank located on Graney Road, off NYS Route 36.

#### Water Usage

The Village water system serves approximately 800 metered users. The system serves two large non-residential users - Jones Chemical which uses approximately 0.1 MGD and Chloride Electro Networks which uses approximately 0.012 MGD.

### 3.5 TOWN OF CALEDONIA

(Not including the Village of Caledonia)

<u>Year</u>	<u>1990</u>
Population	2,179
Area (acres)	24,909

#### Water Source

The Town of Caledonia currently does not have a municipal water system. All water is supplied by individual private wells.

#### Water System Concerns

Due to the high sulfur content of the groundwater in the areas south of the Village, the Town is in the process of establishing a water district. The proposed water district will serve approximately 30 homes on Middle Road with water from the Village of Caledonia water system.

The contamination of several individual wells from TCE has been recorded in the northwest portion of the Town. The United States Environmental Protection Agency (USEPA) under its emergency fund has provided bottled water and carbon filters to affected residences. The NYSDEC will investigate the extent and impact of the contamination.

#### Sanitary Sewerage Systems

The Town of Caledonia is not served by a public sanitary sewer system.

### 3.6 TOWN OF CONESUS

<u>Year</u>	<u>1990</u>
Population	2,196
Area (acres)	20,392

#### Water Source

The Town of Conesus is not currently served by a municipal water supply system. Most residents obtain water through either private wells or individual intakes from Conesus Lake. Some residents along Route 15 north of Rowland Road obtain water from the Town of Livonia South Livonia Water District.

#### Sanitary Sewerage System

The Conesus Lake County Sewer District serves a number of residents located on Conesus Lake in the Town of Conesus.

### 3.7 VILLAGE OF GENESEO:

<u>Year</u>	<u>1990</u>
Population	7,187 (Including the College population of approximately 5,600 of which approximately 3,370 reside on campus)
Population served by the water system	7,187 (Estimated not including out-of-district users in the Town of Geneseo)
Daily average usage (MGD)	0.52 (Not including water supplied to the Town of Geneseo or the Town of York)

#### Water Source

The source of water for the Village of Geneseo water system is Conesus Lake. The Village of Geneseo has a NYSDEC permit to withdraw 3.0 MGD from Conesus Lake. Water treatment consists of microscreening prior to pump intake, chlorination, and fluoridation. The pump station at the Conesus Lake intake structure consists of three pumps which run alternately to feed a new 16-inch transmission main from Conesus Lake to the Village along Reservoir Road. Each pump has a rated capacity of 1.0 MGD.

#### Water Distribution

The distribution system consists of a new 3.0 MG above-ground, concrete storage reservoir located on Reservoir Road. The transmission main from the Conesus Lake feeds the reservoir which in turn feeds the Village system by gravity.

**VILLAGE OF GENESEO (Continued):**

Water Usage

The Village water system serves approximately 1,100 metered users. This includes all Village users as well as approximately 200 out-of-district users along Reservoir Road in the Town of Geneseo. The Village water system also supplies water to the Town of York water system. The State University of New York at Geneseo consumes 0.14 MGD for its residential and non-residential needs. Large non-residential users of the Village water system include the Livingston County Skilled Nursing Home located in the Town of Geneseo which uses approximately 0.007 MGD and Champion Products which uses approximately 0.002 MGD.

The water rates charged by the Village of Geneseo to its customers are as follows:

<u>Volume</u>	<u>Village District</u>	<u>Out-of-District</u>
0-1,000 cu.ft.	\$12.00	\$18.00
Greater than 1000 cu.ft.	\$1.20/100 cu.ft.	\$1.80/100 cu.ft.

Water System Concerns

As with the Village of Avon, the Village of Geneseo has also been issued notifications of violations of the maximum 1 NTU turbidity standard by the Livingston County Health Department. According to the Health Department, the last notification was issued in December 1990. The Village's average monthly turbidity ranges from 1.0 to 1.5 NTU.

The Village of Geneseo has completed a pilot filtration study and is currently investigating the design of a separate 2.0 MGD water filtration plant or a combined Avon/Geneseo filtration plant to be located near the water system intake at Conesus Lake. Other system inadequacies include a number of 4-inch lines which do not provide adequate fire flow, as well as cast iron distribution mains which require replacement.

**VILLAGE OF GENESEO (Continued):**

Sanitary Sewerage System

The Village of Geneseo is served by a municipal sanitary sewer system. The treatment plant has a rated capacity of 1.5 MGD. The sewer system provides treatment for the entire Village, as well as the private systems from the Days Inn and the County Infirmary located in the Town of Geneseo.

### 3.8 TOWN OF GENESEO:

(Not including the Village of Geneseo)

<u>Year</u>	<u>1990</u>
Population	1,991
Population served by the water system	700 (Estimated)
Daily average usage (MGD)	0.113 (Served by the Village of Geneseo and the Town of Livonia)

#### Water Source

As stated above, the Village of Geneseo system supplies water to 200 out-of-district users in the Town of Geneseo. A majority of these out-of-district users are located on Reservoir Road and obtain water from the transmission main from Conesus Lake. The Town has not formed a Water District for this area. There are also some out-of-district users along Route 20A that obtain water from the Town of Livonia Lakeville Water District. The remaining Town of Geneseo residents, including the majority of those residents along Conesus Lake, obtain water from private individual wells or surface water intakes from Conesus Lake.

#### Water Usage

The Village of Geneseo and the Town of Livonia are responsible for billing their respective out-of-district users located in the Town of Geneseo. Therefore, the Town does not have a rate structure.

#### Sanitary Sewerage Systems

The Conesus Lake County Sewer District serves all residents located on Conesus Lake in the Town of Geneseo.

### 3.9 TOWN OF GROVELAND

<u>Year</u>	<u>1990</u>
Population	3,190
Area (acres)	20,396

#### Water Source/Water Distribution

The Town of Groveland is not served by a municipal water system.

A private corporation, the Groveland Station Water Corporation, supplies water to approximately 100 homes which are located both in the Hamlet of Groveland and in a nearby portion of the Town of Sparta. The system produces approximately 0.015 MGD from a two well source. Storage capacity for the system includes two 0.05 MG tanks.

Several Town residents in the Hamlet of Hampton Corners are currently supplied with water from the Village of Mt. Morris water system via a 2-inch water line along Route 63 and East Groveland Road.

The NYS Correctional Facilities in the Hamlet of Sonyea have their own water supply system which relies on groundwater as well as surface water from Keshequa Creek. The well supply is equipped with two pumps, each rated for 300 GPM which run simultaneously to produce a maximum of between 500 and 600 GPM. Three pumps, each rated for 300 GPM, run alternately to withdraw water from Keshequa Creek. Currently, the system produces approximately 0.360 MGD. Three new wells have been drilled and rated at 200-300 GPM, 300 GPM, and 150 GPM. These new wells are intended to replace the Keshequa Creek source as well as provide for the additional demand which will result from the recent prison expansion. A permit to operate these wells is currently being processed. Storage capacity for this system is 1.4 MG. All water utilized whether groundwater or surface water is treated at the on-site filtration plant.

**TOWN OF GROVELAND (Continued):**

Water Concerns

The Town of Groveland recently completed a water study for Hampton Corners. The study recommends formation of a Town Water District in the area of Hampton Corners. The Water District would be supplied by the Village of Mt. Morris water system. The Hampton Corners Water District would also serve the proposed Livingston County Fire Station and Highway complex.

Sanitary Sewerage System

The Conesus Lake County Sewer District serves a number of users located in the Town of Groveland along Conesus Lake.

3.10 VILLAGE OF LEICESTER:

<u>Year</u>	<u>1990</u>
Population	405
Population served by the water system	645 (Estimated not including the Leicester-Cuylerville Water District)
Daily average usage (MGD)	0.08

Water Source

The Village of Leicester obtains its water supply from the Village of Mt. Morris water system. The water supplied by Mt. Morris originates at Silver Lake in Wyoming County. The Village of Leicester is allocated 0.1 MGD by the NYSDEC. The water is treated and chlorinated before entering the Village of Leicester water system. The Village of Leicester also chlorinates to obtain the desired residual.

Water Distribution

A pump station on NYS Route 36 at the Village of Mt. Morris boundary supplies water via a 6-inch transmission main to the Village of Leicester. The pump station consists of one pump, as well as the chlorination facilities.

The distribution system consists of one 0.2 MG storage tank located on Perry Road.

Water Usage

The Village water system serves approximately 290 metered users of which 96 are located in the Town and considered out-of-district users. Comstock Michagan Fruit Company is the only large non-residential user and uses approximately 0.04 MGD. An additional 36 lots which are located in the Town of Leicester, are to be annexed to the Village and consequently to the Village water system as they are developed.

**3.11 TOWN OF LEICESTER:**

(Not including the Village of Leicester)

<u>Year</u>	<u>1990</u>
Population	1,818
Population served by the water system	452
Daily average usage (MGD)	0.03
Area (acres)	19,606

Water Source

The Town of Leicester obtains its water from the Village of Leicester. The water is not treated by the Town.

Water Distribution

The Town water system is comprised of the Leicester-Cuylerville Water District as well as six out-of-district users. The district is connected to the Village system on Route 36 at the Village/Town boundary.

Currently, the Town does not have any storage facilities. A grant has been awarded to the Town for the construction of a 0.22 MG tank in the Hamlet of Cuylerville.

Water Usage

The Town system serves approximately 181 metered users. There are no large non-residential users served by the system.

The water rate charged by the Town of Leicester to its customers is as follows:

<u>Volume</u>	<u>Town District/Out-of-District</u>
Minimum Charge (4,000 gallons)	\$20.00
Greater than 4,000 gallons	\$2.30/1000 gallons

**TOWN OF LEICESTER (Continued):**

Water System Concerns

System inadequacies which affect the Town include the lack of storage capacity, a poorly looped system, and several old cast iron lines which were part of the originally installed system. Since the Town does not add additional chlorine to the water supplied to the district, attaining adequate chlorine residual has also been a problem. The Town of Leicester water system is also limited by the inadequacies of the Village of Mt. Morris transmission line from Silver Lake.

Sanitary Sewerage Systems

The Town of Leicester is not served by a public sanitary sewer system.

**3.12 VILLAGE OF LIMA:**

<u>Year</u>	<u>1990</u>
Population	2,165
Population served by the water system	2,193 (Estimated)
Daily average usage (MGD)	0.225 (Not including the Town of Lima)

Water Source

The Village of Lima water system is supplied by the City of Rochester via a connection on Route 15A at the Monroe County line. The water is obtained by the City from Hemlock Lake. The Village is allocated 0.28 MGD by a permit from the NYSDEC.

The City adds both chlorine and fluoride to the water as it is withdrawn from Hemlock Lake. The Village adds additional chlorine to the water at its point of connection to the City system, in order to maintain the desired residual. The City of Rochester is in the process of constructing a filtration plant on Hemlock Lake. The plant is expected to begin operation in 1992. The Village also has two back-up supply wells, each equipped with a pump rated for 375 GPM, which can be used for emergency purposes.

Water Distribution

The distribution system consists of a 12-inch transmission line which runs along NYS Route 15A to the Village system from the connection to the City of Rochester's transmission main. The water is pumped via a pump station at the County line to the Village's storage facilities and then flows by gravity to feed the Village's distribution network. The pump station contains two pumps, each rated for 370 GPM, which alternate in operation. The pumping system is currently being altered in order to enable both pumps to operate simultaneously.

The Village's storage facilities include one 0.5 MG tank which is located Ziegler Drive.

**VILLAGE OF LIMA (Continued):**

Water Usage

The Village system serves approximately 600 metered users. This includes the Village customers, several out-of-district users in the Town, and two major commercial users - Lakeland Concrete and Industrial Ceramics, which use approximately 0.003 MGD and 0.005 MGD, respectively.

The water rates charged by the City of Rochester to the Village of Lima are as follows:

<u>Volume</u>	<u>Rate</u>
0 - Maximum Volume	\$0.75/1,000 gallons

The water rates charged by the Village of Lima to its customers are as follows:

<u>Volume</u>	<u>Village District</u>	<u>Out-of-District</u>
0-10,000 gallons	\$40.00	\$50.00
Greater than 10,000 gals.	\$3.00/1000 gals.	\$3.70/1000 gals.

Sanitary Sewerage Systems

The Village of Lima is served by a public sanitary sewer system. The treatment plant has a rated capacity of 0.25 MGD. It is currently operating close to capacity.

### 3.13 TOWN OF LIMA:

(Not including the Village of Lima)

<u>Year</u>	<u>1990</u>
Population	2,022
Population served by the water system	150 (Estimated)
Daily average usage (MGD)	0.011 (Including Town of Lima Districts #1 & #2)
Area (acres)	19,775

#### Water Source

The Town of Lima has two separate Water Districts which each obtain water from the City of Rochester (which obtains water from Hemlock Lake). The Town Districts #1 and #2 have allocated permit volumes of 0.011 MGD and 0.044 MGD, respectively from the NYSDEC. District #1 also has an auxiliary supply connection to the Monroe County Water Authority facilities.

#### Water Distribution

District #1 is located in the northeast corner of the Town. It was established to provide water to an area which was previously served by private wells which had become contaminated. Water is taken from the City of Rochester upland supply via a connection to the City's 24-inch conduit #1.

District #2 is located along the Village of Lima's 12-inch transmission main from the City of Rochester supply which is described in the Village system narrative above.

The Town does not have any separate storage facilities at this time. Water District #2 shares the Village's 0.5 MG storage tank.

**TOWN OF LIMA (Continued):**

Water Usage

The Town currently serves approximately 61 metered users. Of this total, 32 are served in District #1 and 28 are served in District #2. There are no large non-residential users served by the water system at this time.

The water rates charged by the Town to its customers are as follows:

District #1:

<u>Volume</u>	<u>Rate</u>
0 - 16,000 gallons	\$50.00
16,000 - 20,000 gals.	\$3.25/1,000 gallons
Greater than 20,000 gals.	\$1.00/1,000 gallons

District #2:

<u>Volume</u>	<u>Rate</u>
0 - 10,000 gallons	\$45.00
Greater than 10,000 gals.	\$4.25/1,000 gallons

Sanitary Sewerage Systems

The Town of Lima is not served by a public sanitary sewer system, with the exception of a mobile home park located on NYS Route 20 which is served by the Village of Lima system.

### 3.14 VILLAGE AND TOWN OF LIVONIA:

The Village of Livonia and the Town of Livonia have recently entered into an agreement to share the use of the transmission system which serves the Village system and the Hamlet systems in South Livonia, Livonia Center and Hemlock.

#### VILLAGE OF LIVONIA:

<u>Year</u>	<u>1990</u>
Population	1,434
Population served by the water system	1,458 (Estimated)
Daily average usage (MGD)	0.14

#### TOWN OF LIVONIA:

<u>Year</u>	<u>1990</u>
Population	5,370
Population served by the water system	1,050 (Estimated including the Town Districts, but not including the Hamlet of Lakeville Water District)
Daily average usage (MGD)	0.09 (Including the Town Districts, but not including the Hamlet of Lakeville Water District)
Area (acres)	24,832

#### Water Source

The Village of Livonia obtains water, jointly with the Town of Livonia, from the City of Rochester transmission main from Hemlock Lake. The City of Rochester adds both chlorine and fluoride to the water as it is withdrawn from the lake. The Village of Livonia and the Town of Livonia have a combined a permit allocation of 0.4 MGD. If a supply connection is made between the Village/Town system and the Hamlet of Lakeville system, this permit allocation will be adjusted to 0.6 MGD (see Section 3.15).

## **VILLAGE AND TOWN OF LIVONIA (Continued):**

The Village and Town have the capacity to add more chlorine to the water supply, however it is not usually necessary in order to attain the desired residual. The City's filtration plant currently under construction at Hemlock Lake will filter the water which is supplied to the Village and Town of Livonia.

### Water Distribution

The Village/Town system consists of a 10-inch transmission line which runs along Big Tree Road to the Village and Town systems from the connection to the City of Rochester's transmission main. The water is pumped into the distribution system via a pump station at the City's transmission main to feed the Village as well as the Hamlets of Hemlock, Livonia Center, and South Livonia in the Town of Livonia. The pump station contains two pumps, each rated for 375 GPM, which alternate in operation.

Storage facilities include one 0.5 MG tank located on Shelley Road in the Town of Livonia. The Hemlock Water District also has a 0.15 MG storage tank which is located off Big Tree Road.

### Water Usage

The Village serves approximately 477 metered users. This includes all customers within the Village District and 11 out-of-district users. The Village does not serve any large non-residential users. The Town serves a total of approximately 425 metered users via the combined Village/Town system. Of this total, Hemlock serves 215 (including 23 out-of-district users), South Livonia serves 115, and Livonia Center serves 95.

The water rates charged by the City of Rochester are billed to the Town of Livonia and the Town then bills the Village based on the amount of water used by its customers. The City of Rochester charges the following water rates to the Town:

**VILLAGE AND TOWN OF LIVONIA (Continued):**

<u>Volume</u>	<u>Rate</u>
Greater than 0 gals.	\$0.52/1,000 gallons

The Town, in turn, bills the Village this \$0.52/1,000 gals. All other costs associated with the transmission system are shared by the Town and Village on a percentage of use basis. The water rates charged by the Village of Livonia to its customers are as follows:

<u>Volume</u>	<u>Village District</u>	<u>Out-of-District</u>
0 - 10,000 gals.	\$28.00	\$50.50
10,000 - 20,000 gals.	\$2.25/1,000 gals.	\$3.15/1,000 gals.
Greater than 20,000 gals.	\$1.90/1,000 gals.	\$2.75/1,000 gals.

The Town of Livonia charges the customers in each Water District based on the following rate structure:

<u>Volume</u>	<u>Rate</u>
Hemlock:	
0 - 10,000 gals.	\$26.70
Greater than 10,000 gals.	\$2.67/1,000 gals.
South Livonia:	
0 - 10,000 gals.	\$42.00
Greater than 10,000 gals.	\$4.20/1,000 gals.
Livonia Center:	
0 - 10,000 gals.	\$32.00
Greater than 10,000 gals.	\$3.20/1,000 gals.

Out of district users except those along Conesus Lake pay double rate or \$9.65/1,000 gallons.

**VILLAGE AND TOWN OF LIVONIA (Continued):**

Water System Concerns

Inadequacies exist in both the Village and Town water systems. The Village distribution system contains several 4-inch mains which are not able to provide adequate fire flow. The Town districts require more storage capacity as well as a more adequately looped system. There are also 15 houses on Shelley Road near the water tank that have problems with insufficient pressure.

Sanitary Sewerage System

The Conesus Lake County Sewer District serves the Village of Livonia and lakefront properties in the Town of Livonia.

**3.15 TOWN OF LIVONIA [LAKEVILLE WATER DISTRICT]:**

<u>Year</u>	<u>1990</u>
Population	5,370
Population served by the water system	1,950 (Estimated of the Hamlet of Lakeville Water District only)
Daily average usage (MGD)	0.16 (The Hamlet of Lakeville Water District only)

Water Source

As stated in the Town and Village of Livonia system description, the Town of Livonia has three Water Districts which are served jointly with the Village water system. One additional District, the Lakeville Water District, is also within the Town of Livonia. The Lakeville Water District obtains water directly from Conesus Lake. The Town of Livonia (Lakeville Water District) has a permit from the NYSDEC to withdraw 0.4 MGD from Conesus Lake. The water from Conesus Lake is treated by chlorination only.

Water Distribution

The Lakeville Water District is served by a pump station at the intake structure located on Grayshores Road on the west side of Conesus Lake. The pump station consists of two pumps (one rated for 150 GPM and the second rated for 250 GPM), as well as the chlorination facilities.

The distribution system consists of a 0.2 MG storage tank located on Big Tree Road, which is fed by the transmission main from the lake, and in turn feeds the Lakeville system by gravity.

Water Usage

The Lakeville Water District serves approximately 650 metered users. The system serves one large non-residential customer, Sweeteners Plus, which uses approximately 0.012 MGD.

**TOWN OF LIVONIA [LAKEVILLE WATER DISTRICT] (Continued):**

The water rates charged to the customers of the Lakeville Water District are as follows:

<u>Volume</u>	<u>Rate</u>
0 - 10,000 gals.	\$15.00
Greater than 10,000 gals.	\$1.50/1,000 gallons

Water System Concerns

Since the Lakeville Water District utilizes Conesus Lake as its source, the new federal surface water regulations will affect it in a manner similar to that described for both the Avon and Geneseo water systems. The turbidity of its water source as compared to the new federal standards will necessitate filtration. Since the costs associated with the construction of a filtration plant to serve the Hamlet of Lakeville will be prohibitive, consideration is being given to alternative water sources. One possible source under consideration is Hemlock Lake via a connection to the Village/Town of Livonia water system. If this connection is completed, the City of Rochester (which supplies the Village/Town) has agreed to increase the Village/Town allocation from 0.4 MGD to 0.6 MGD. The City has also agreed to periodically increase this allocation according to actual local need within any limits imposed by the NYSDEC.

Sanitary Sewerage System

The Hamlet of Lakeville is served by the Conesus Lake County Sewer District.

### 3.16 VILLAGE OF MT. MORRIS:

<u>Year</u>	<u>1990</u>
Population	3,102
Population served by the water system	3,252 (Estimated including the Town of Mt. Morris)
Daily average usage (MGD)	0.578 (Including the Town of Mt. Morris)

#### Water Source

The source of water for the Village of Mt. Morris is Silver Lake in Wyoming County. The Village's permitted withdrawal from Silver Lake is 1.5 MGD.

The Village of Mt. Morris completed construction of a filtration plant in 1990. The plant is located on Sand Hill Road in the Town of Mt. Morris. The plant is designed for 1.5 MGD. Water treatment includes the injection of copper sulfate at the Silver Lake intake for algae control, pre and post chlorination at the filtration plant, and clarifiers and filters.

#### Water Distribution

A pump station located near the outlet on Silver Lake includes 2 pumps, which run alternately. The pumps feed a 5.0 MG raw water reservoir at the treatment plant. A new 1.0 MG underground tank clearwell was installed for storage of treated water. The system is fed by gravity from the storage clearwell to the Village's distribution system.

#### Water Usage

The Village of Mt. Morris water system serves the entire Village, out-of-district users in the Town of Mt. Morris, and also the Village of Leicester. There are approximately 1,030 metered users served by the Village system, which includes the out-of-district users in the Town of Mt. Morris.

**VILLAGE OF MT. MORRIS (Continued):**

Several large non-residential users are served by the Village system including the Livingston County Campus which uses approximately 0.032 MGD, the Village of Leicester is served via one meter at the system connection.

The water rates charged by the Village of Mt. Morris are as follows:

<u>Volume</u>	<u>Village District</u>	<u>Out-of-District</u>
0 - 3,000 gals.	\$25.00	\$25.00
Greater than 3,000 gals.	\$2.35/1,000 gals.	\$3.31/1,000 gals.
Industrial users	\$1.18/1,000 gals.	

Water System Concerns

The major deficiency in the Village of Mt. Morris system involves the transmission system from Silver Lake including intake, transmission main, and pumps. Due to both the size and condition of the equipment, the system has had difficulties supplying the necessary volume of water during dry weather conditions. The Village is currently implementing a program to upgrade the transmission system.

Sanitary Sewerage System

The entire Village of Mt. Morris is served by a sanitary sewer system. The treatment plant has a capacity of 0.864 MGD. The plant is currently operating at 60 percent of its capacity.

**3.17 TOWN OF MT. MORRIS:**

<u>Year</u>	<u>1990</u>
Population	1,531
Population served by the water system	150 (Estimated)
Daily average usage (MGD)	(Served by the Village system)
Area (acres)	29,055

Water Source

As indicated above, the Village of Mt. Morris supplies water to out-of-district users in the Town of Mt. Morris. Areas served in the Town include:

- Route 36 south of the Village which is served via a permissive use area with an allocation of 0.02 MGD.
- The LoVerdi-Tallman Road Water District located on Tallman Road west of the Village which is allocated a volume of 0.01 MGD.
- Craig Developmental Services Facility, (an intermediate care facility) located off Fiddler Road, which has an agreement for a volume of 0.009 MGD.

Other areas served within the Town include the Route I-390 rest area located on Route 408, ten residents located on Murray Street, the Livingston County Campus and a permissive use area established for UN Farms.

Water Distribution

The Town of Mt. Morris does not have any storage facilities.

Sanitary Sewerage Systems

Several areas in the Town of Mt. Morris are served by the Village of Mt. Morris sanitary sewer system. These areas include Craig Developmental Services Facility, the Livingston County Campus, and several residences on Fiddler Road.

### 3.18 VILLAGE OF DANSVILLE:

<u>Year</u>	<u>1990</u>
Population	5,002
Population served by the water system	5,502 (Estimated including the Town of North Dansville)
Daily average usage (MGD)	1.1 (Including the Town of North Dansville)

#### Water Source

There are two sources of water utilized by the Village of Dansville system. One includes an upland surface water impoundment on Mill Creek in Steuben County. The other consists of a two-well groundwater supply in the Town of Wayland, north of Perkinsville, also in Steuben County.

Mill Creek is used as the primary water supply. The Village of Dansville has riparian rights for Mill Creek water amounting to 0.5 MGD. The creek water is detained in a 3.0 MG reservoir which acts as a settling basin. The diverted flow is then aerated as it flows into two, 2.0 MG concrete reservoirs. The two wells are used as an additional supply. Each well is rated at 700 GPM. All the water which enters the distribution system is both chlorinated and fluoridated.

#### Water Usage

The Village of Dansville Water system serves the entire Village, as well as several out-of-district users in the Town of North Dansville. The system serves a total of approximately 2,000 metered users. Approximately 100 of these users are located in the Hamlet of Cumminsville in the Town of North Dansville. Other customers served in the Town include residences on Main Street both north and south of the Village, Greenmount Avenue south of the Village, and Hornell Road and Franklin Street in the Town. Foster-Wheeler, located in the Town, is a major industrial water customer. The company uses approximately 0.375 MGD.

**VILLAGE OF DANSVILLE (Continued):**

The water rates charged by the Village of Dansville to its customers are the following:

<u>Volume</u>	<u>Village District</u>	<u>Out-of-District</u>
0 - 3,000 gals.	\$25.00	\$25.00
Greater than 3,000 gals.	\$2.189/1,000 gals.	\$2.189/1,000 gals.
Commercial users (service line > 1 1/2")	\$1.18/1,000 gals.	

Sanitary Sewerage Systems

The entire Village of Dansville is served by a public sanitary sewer system. The treatment plant has a rated capacity of 3.25 MGD, and is currently operating at 40 percent of capacity. Foster-Wheeler is the only out-of-district user served by the Village sanitary sewer system.

**3.19 TOWN OF NORTH DANSVILLE:**

<u>Year</u>	<u>1990</u>
Population	781
Population served by the water system	500 (Estimated)
Daily average usage (MGD)	(Served by the Village of Dansville system)
Area (acres)	5,538

Water Source

As stated above, the Village of Dansville supplies water to out-of-district users in the Town of North Dansville within the Hamlet of Cumminsville, and along Main Street, Greenmount Avenue, Hornell Road, and Franklin Street. The Town has not formed any Water Districts which would include the areas served.

Water Usage

The proposed Dansville Industrial Park Site, located along Route 63 north of the Village, will require the extension of water service from the Village of Dansville. The engineer for the County Industrial Development Agency has estimated that the water usage under full development for this industrial park will be approximately 0.084 MGD.

Sanitary Sewerage System

The Town of North Dansville is not served by a public sanitary sewerage system.

### 3.20 VILLAGE OF NUNDA:

<u>Year</u>	<u>1990</u>
Population	1,347
Population served by the water system	1,447 (Estimated including the Town of Nunda)
Daily average usage (MGD)	0.13 (Including the Town of Nunda)

#### Water Source

The original source of water for the Village of Nunda was from four major spring developments known as the Upper Sager Spring, Lower Sager Spring, Augustus Spring and Bradley Spring. In 1962 the Village applied for the taking of an additional water source by the construction of a dam and impounding reservoir on Little Dansville Creek located south of the Village. A transmission main carries water from the impoundment to a water treatment facility located on Dalton Road in the Town of Nunda south of the Village.

The Bradley Springs located below the dam may be used periodically when the raw water in the reservoir is turbid. The three upper springs drain into Little Dansville Creek above the reservoir. The major water supply for the Village is Little Dansville Creek. For this reason, the Livingston County Health Department considers the source a surface supply. The Village of Nunda has a permit to withdraw 0.38 MGD from Little Dansville Creek.

Treatment consists of coagulation, clarification, filtration via two sand filters, and chlorination. The capacity of the water treatment plant is 0.36 MGD.

#### Water Distribution

There is a 0.5 MG storage tank located at the water treatment plant. A transmission line carries the treated water by gravity to the Village distribution system.

### 3.20 VILLAGE OF NUNDA (Continued):

#### Water Usage

The Village of Nunda serves approximately 538 metered users within the Village as well as 10 metered out-of-district users in the Town of Nunda. The Village also supplies the recently formed Town of Nunda District #1 which serves approximately 35 users. There are no large non-residential users served by the Village system.

The water rates charged by the Village of Nunda to its residents are as follows:

<u>Volume</u>	<u>Village District</u>	<u>Out-of-District</u>
0 - 5,000 gals.	\$18.00	\$30.00
Greater than 5,000 gals.	\$2.00/1,000 gals.	\$3.00/1,000 gals.

#### Water System Concerns

Several inadequacies exist in the Village water system. The Livingston County Health Department has advised the Village that the current system has inadequate chlorine detention time to be in conformance with the regulations which become effective in 1992. The County Health Department has also suggested to the Village that it consider requiring the modifications, currently underway at the filtration plant, be designed to provide the proper contact times to achieve adequate residual in accordance with these stricter regulations.

An additional transmission main from the water source is necessary in order to provide adequate flow to the system. The Village distribution network also includes small lines ranging from 1 inch to 4-inch in diameter, which require replacement with larger diameter pipes. These problems are currently being addressed through a Housing and Urban Development Small Cities Grant which was awarded to the Village and Town of Nunda as discussed in Section 3.21.

**VILLAGE OF NUNDA (Continued):**

Sanitary Sewerage Systems

The Village of Nunda is served by a public sanitary sewer system. The treatment plant is designed for 0.2 MGD and is currently operating at approximately 48 percent of capacity.

**3.21. TOWN OF NUNDA:**

(Not including the Village of Nunda)

<u>Year</u>	<u>1990</u>
Population	1,584
Population served by the water system	100 (Estimated)
Daily average usage (MGD)	(Served by the Village of Nunda system)
Area (acres)	23,032

Water Source

The Village of Nunda currently supplies approximately 35 metered water users in the Town of Nunda District #1. The Village also supplies approximately 10 metered out-of-district water users.

Water System Concern/Sanitary Sewerage System

The Town and Village of Nunda have received a Small Cities Grant from the U.S. Department of Housing and Urban Development to eliminate potential health and safety problems associated with the absence of public water and sanitary sewer facilities. The proposed improvements include water and sewer improvements as well as improvements to the water treatment plant. The water and sewer improvements include the creation of sewer and water districts in the Town of Nunda to be served by the Village system.

### 3.24 TOWN OF SPARTA:

<u>Year</u>	<u>1990</u>
Population	1,578
Area (acres)	17,236

#### Water Source

The Town of Sparta is not supplied by a municipal water system. The majority of residents obtain water from private individual wells. Several homes are served by the Hamlet of Groveland Station Water Corporation (a private supplier).

#### Water Usage

The proposed Dansville Industrial Park Site as described in Section 3.19 will be partially located in the Town of Sparta.

#### Water System Concerns

Several wells in the area of the Hamlet of Scottsburg have been contaminated with gasoline. Others have been contaminated as a result of septic system failures.

#### Sanitary Sewerage System

The Town is not served by a public sanitary sewerage system.

**TOWN OF SPRINGWATER (Continued):**

Sanitary Sewerage Systems

The Town is not served by a public sanitary sewer system. According to the County Health Department, several residential septic systems located in the Hamlet of Springwater, have failed causing septic tank effluent to discharge into a ditch which eventually drains into Hemlock Lake.

According to the supervisor, some preliminary work is being done on a possible small sanitary sewer district in the Hamlet area.

**TOWN OF YORK (Continued):**

The Village of Geneseo charges the Town of York the following for its water supply:

<u>Volume</u>	<u>Rate</u>
Greater than 0 gals.	\$1.60/1,000 gals.

The rate structure which the Town of York charges its customers is as follows:

<u>Volume</u>	<u>Rate</u>
Inside the Village District:	
0 - 6,000 gals.	\$15.30
600 - 20,000 gals.	\$2.55/1,000 gals.
20,001 - 50,000 gals.	\$2.54/1,000 gals.
50,001 - 250,000 gals.	\$2.51/1,000 gals.
250,001 - 1,000,000 gals.	\$2.49/1,000 gals.
1,000,001 - 2,000,000 gals.	\$2.48/1,000 gals.
2,000,001 - 3,000,000 gals.	\$2.46/1,000 gals.
3,000,001 - 4,000,000 gals.	\$2.44/1,000 gals.
4,000,001 - 5,000,000 gals.	\$2.41/1,000 gals.
Greater than 5,000,001 gals.	\$2.29/1,000 gals.
Out-of-District:	
0 - 10,000 gals.	\$43.30
Greater than 10,000 gals.	\$4.33/1,000 gals.

Water Concerns

Part of the distribution system has small diameter water lines which result in inadequate pressure and flow to meet fire flow requirements.

Sanitary Sewerage System

The Hamlet of Restof is served by a public sanitary sewer system. The treatment plant capacity is 0.12 MGD. Other Hamlets, including Piffard, York, Wadsworth, Linwood, and Fowlerville have experienced problems associated with inadequate septic systems.

## 4.0 WATER QUALITY ISSUES

### 4.1 WATER QUALITY OF EXISTING SOURCES

#### Treatment and Testing Standards

The enactment of the federal Safe Drinking Water Act (SDWA) in 1974 was the beginning of a new era for owners, managers, and operators of public water systems. As a result of the SDWA, much more is known about the quality of drinking water than ever before. Even with the SDWA Amendments of 1986 which established more stringent requirements on maximum contaminant levels (MCL's) and monitoring requirements for contaminants, there was still a great deal of public concern regarding unregulated organic contaminants.

As a result of these concerns (regarding unregulated contaminants), the federal government developed new, far more encompassing regulations for water quality. Two of the new federal regulations that went into effect on December 31, 1990 are the Surface Water Treatment Rule (SWTR) and the Total Coliforms Rule (TCR).

These federal regulations as written by the federal government or as modified by a state to be more stringent, must be adopted by each state. In New York State the federal version of the Total Coliform Rule was adopted on March 19, 1991. To date, however, New York State has not yet adopted a state Surface Water Treatment Rule. This lack of a state rule, does not circumvent the requirements of the federal rule, nor the federal compliance schedules. Until such time as New York State adopts a State Surface Water Treatment Rule, the New York State Health Department must enforce the federal Surface Water Treatment Rule as it was enacted on December 31, 1990 by the federal government.

The federal Surface Water Treatment Rule applies to all public water systems using as a source, surface water, or groundwater under the direct influence of surface water. (A public system has 15 or more service connections or regularly serves 25 people 60 or more days per year.) Simply stated, there are two parts to the Surface Water Treatment Rule: First, all surface water must be disinfected; and second, surface water must be filtered unless certain stringent

TABLE 3-3  
LIVINGSTON COUNTY MUNICIPALITIES  
EXISTING PUBLIC WATER USAGE

MUNICIPALITY	WATER SOURCE	SYSTEM ALSO SERVES	NYSDEC ALLOCATION (MGD)	AVERAGE DAILY WATER USAGE (MGD) 1990	POPULATION SERVED	LRG. INSTITUTIONAL COMMERCIAL, & INDUSTRIAL DAILY USAGE (MGD)	RESIDENTIAL USAGE PER CAPITA (GPD)
AVON (T)	CONESUS LAKE (AVON (V))	N/A	0.24 *	0.200	2,284	N/A	88
AVON (V)	CONESUS LAKE	AVON (T)	3.50 *	0.770	3,100	0.340	139
CALEDONIA (T)	CALEDONIA (V) (FUTURE DISTRICT)	N/A	N/A	N/A	N/A	N/A	N/A
CALEDONIA (V)	WELLS	N/A	UNKNOWN *	0.400	2,262	0.112	127
CONESUS (T)	-PRIVATE WELLS -INTAKES ON CONESUS -S. LIVONIA SERVES A FEW HOMES	N/A	N/A	N/A	N/A	N/A	N/A
GENESE0 (T)	CONESUS LAKE (GENESE0 (V))	N/A	N/A *	0.113	700	0.007	151
GENESE0 (V)	CONESUS LAKE	GENESE0 (T) YORK (T)	3.00 *	0.520	7,187	0.142 (SERVES 3,394 ON CAMPUS RESIDENTS)	100 (BASED ON 3,793 RESIDENTS)
GROVELAND (T)	-PRIVATE WELLS -PRIVATE SYSTEM SERVES APPROX. 100 HOMES -MT MORRIS(V) SERVES A FEW HOMES -GROVELAND CORRECTIONAL FACILITY SYSTEM	N/A	UNKNOWN *	0.360 (GROVELAND CORR. FACILITY)	INMATES: 1,500 STAFF: 750 (GROVELAND CORR. FACILITY)	0.360 (GROVELAND CORR. FACILITY)	N/A
LEICESTER (T)	SILVER LAKE (LEICESTER (V))	N/A	N/A *	0.030	452	N/A	66
LEICESTER (V)	SILVER LAKE (MT. MORRIS (V)) HEMLOCK LAKE	LEICESTER (T)	0.10 *	0.080	645	0.040	62
LIMA (T)	(CITY OF ROCHESTER - DISTRICT #1) (LIMA (V) - DISTRICT #2)	N/A	0.011 0.044 *	0.005 0.006	150	N/A	73
LIMA (V)	HEMLOCK LAKE (CITY OF ROCHESTER)	LIMA (T)	0.28 *	0.225	2,193	0.008	99

TABLE 3-3 (continued)

MUNICIPALITY	WATER SOURCE	SYSTEM ALSO SERVES	NYSDEC ALLOCATION (MGD)	AVERAGE DAILY WATER USAGE (MGD) 1990	POPULATION SERVED	LRG. INSTITUTIONAL COMMERCIAL, & INDUSTRIAL DAILY USAGE (MGD)	RESIDENTIAL USAGE PER CAPITA (GPD)
LIVONIA (T)	HEMLOCK LAKE (CITY OF ROCHESTER)	CONESUS (T): FEW HOMES SERVED BY S. LIVONIA WATER DISTRICT	0.40 *	0.090	1,050	N/A	86
LIVONIA (V)	VILLAGE & TOWN OF LIVONIA SHARE USE OF SYSTEM			0.140	1,458	N/A	96
LAKEVILLE (H)	CONESUS LAKE	SERVES A FEW HOMES IN GENESEO (T)	0.40 *	0.160	1,950	0.012	76
MOUNT MORRIS (T)	SILVER LAKE (MT. MORRIS (V))	N/A	N/A	(INCLUDED IN THE VILLAGE USAGE)	(INCLUDED IN THE VILLAGE)	0.053	(INCLUDED IN THE VILLAGE)
MOUNT MORRIS (V)	SILVER LAKE	MT MORRIS (T) LEICESTER (V)	1.50 *	0.578 (INCLUDES TOWN)	3,252 (INCLUDES TOWN)	0.032	152 (INCLUDES TOWN)
NORTH DANSVILLE (T)	-LITTLE MILL CREEK -WELLS (DANSVILLE (V))	N/A	N/A	(INCLUDED IN THE VILLAGE USAGE)	(INCLUDED IN THE VILLAGE)	N/A	(INCLUDED IN THE VILLAGE)
DANSVILLE (V)	-LITTLE MILL CREEK -WELLS	NORTH DANSVILLE (T)	0.50 * 0.55	1.100 (INCLUDES TOWN)	5,502 (INCLUDES TOWN)	0.392	129 (INCLUDES TOWN)
NUNDA (T)	LITTLE DANSVILLE CREEK (NUNDA (V))	N/A	(INCLUDED IN THE VILLAGE)	(INCLUDED IN THE VILLAGE USAGE)	(INCLUDED IN THE VILLAGE)	N/A	(INCLUDED IN THE VILLAGE)
NUNDA (V)	LITTLE DANSVILLE CREEK	NUNDA (T)	0.38 *	0.130 (INCLUDES TOWN)	1,447 (INCLUDES TOWN)	N/A	90 (INCLUDES TOWN)
SPARTA (T)	-PRIVATE WELLS -WELLS (PROPOSED SYSTEM)	N/A	N/A	N/A	N/A	N/A	N/A
SPRINGWATER (T) SPRINGWATER (H)	WELLS	N/A	0.2025 *	0.020	300	N/A	67
WEST SPARTA (T)	-PRIVATE WELLS -WELLS (PROPOSED SYSTEM)	N/A	N/A	N/A	N/A	N/A	N/A
YORK (T)	CONESUS LAKE (GENESEO (V))	N/A	0.75 *	0.370	1,908	0.156	112

\* TOTALS

10.0

5.3

NOTES: TOTAL MAXIMUM DAILY PUBLIC WATER USAGE IS ESTIMATED TO BE 12.4 MGD (1990)

water quality source requirements, disinfection, and site-specific conditions are met. Monitoring requirements differ for water systems depending on whether a particular water system must perform filtration, or not.

Those systems seeking an exemption to the filtration requirement must meet strict source quality criteria, disinfection requirements, and site-specific conditions by January 1992. The source quality criteria include maximum levels for coliform concentrations (before disinfection) and turbidity. Disinfection requirements include strict performance criteria and testing to demonstrate the system is meeting specified CT values. (CT values are defined as the product of residual disinfectant concentration (mg/l) and contact time (minutes) measured at peak hourly flow.) Site-specific conditions include active watershed control programs, no history of waterborne disease outbreaks and compliance with monthly maximum contaminant levels (MCLs) for total coliforms and total trihalomethanes and the anticipated disinfection by-products rule to go into effect in 1993.

Public water systems which can not meet these strict requirements will be required to filter their raw water sources. Even with filtration however, disinfection to meet specified CT values, as well as, disinfectant monitoring will be required. Systems which require filtering must meet performance criteria and monitoring requirements by June 1993. Compliance plans for these communities, detailing the treatment proposed to meet the filtration requirements and the timetable for implementation, such as dates for completion of bid documents, proposed bidding and start of construction, must be submitted to the New York State Health Department by March 1992.

The State adopted Total Coliform Rule also applies to all public water systems. Coliforms are one of a group of microbiological contaminants regulated as part of the SDWA Amendments of 1986. While total coliforms are usually not pathogenic, their presence in drinking water may indicate the potential presence of pathogens associated with waterborne disease outbreaks.

The Total Coliform Rule has created significant impacts on water suppliers because it requires considerably more monitoring by mandating two major changes to previously allowed testing procedures for total coliforms. The Total Coliform Rule requires testing for the presence or absence of total coliforms in a given sample; not an estimate of the specific density of coliforms. In addition, all samples testing positive for total coliforms must be followed by repeat sampling and tested further to determine whether fecal coliforms are present.

Each water system should develop a monitoring plan subject to approval by the State Health Department to meet the monitoring requirements. In addition, the Total Coliform Rule requires periodic sanitary surveys of certain size systems including detailed evaluations of the source, distribution and management/operation of the system.

#### Surface Water Quality

A number of water sources serve the residents of Livingston County, including both surface water and groundwater.

Conesus Lake currently serves municipal water systems in the Towns of Avon, Geneseo, Livonia (Lakeville), and York, the Villages of Avon and Geneseo, as well as approximately 1,000 individual water systems surrounding Conesus Lake in the Towns of Conesus, Geneseo, Groveland and Livonia. From a quantity standpoint, the NYSDEC has informally indicated that Conesus Lake, as a water source, is generally considered allocated beyond its optional volume. It is probable that water conservation measures will have to be implemented to preserve the watershed balance for the Lake. From a quality standpoint, none of the municipal water systems which use Conesus Lake as a source have filtration plants. Unfiltered water from Conesus Lake violates the allowable levels for turbidity and total coliform counts. The Villages of Geneseo and Avon are investigating the feasibility of a combined filtration plant to serve both communities. Filtration facilities will be required by the NYSDOH for any public system utilizing Conesus Lake (per the federal Safe Drinking Water Act and its amendments).

The Hemlock/Canadice Lake system serves municipal water systems in Lima (Town and Village) and Livonia (Town and Village). These systems purchase water from the City of Rochester at various connections to the City transmission main. The City of Rochester is currently constructing a filtration plant to meet the new federal drinking water standards. Completion of the City of Rochester filtration plant will provide both Lima and Livonia with adequate quantities of water which meet the new quality standards.

Silver Lake, in Wyoming County, is the source of supply for Mt. Morris (Village and Town) and Leicester (Village and Town). The water supplied to both municipal water systems is filtered via the new Village of Mt. Morris filtration plant.

Other surface water sources which supply municipal or public water systems in Livingston County include Little Dansville Creek for Nunda (Village and Town), Mill Creek for the Village of Dansville and the Town of North Dansville, and Keshequa Creek for the NYS Correctional Facilities at Sonyea (Town of Groveland).

#### Groundwater Quality

Groundwater sources throughout Livingston County supply or supplement: municipal water systems in the Village of Caledonia, Village of Dansville and the Hamlet of Springwater; a public system at the NYS Correctional Facilities in Sonyea and a private water corporation in the Town of Groveland; and, numerous private multiple user and individual private wells. With the exception of several localized areas, groundwater sources throughout Livingston County are generally of good quality. Specific problem areas are discussed in more detail in Chapter 6.0, Section 6.3.

#### **4.2 WATERSHED REGULATIONS**

Watershed regulations seek to control those factors which may have a negative impact on the quality of a water source. The regulation of the activities which can occur in a watershed may address such things as land use within the watershed, discharges into the water source, and activity on the water source.

The Hemlock/Canadice watershed is regulated by: "Watershed Rules and Regulations for the City of Rochester Water Supply", NYCRR, Title 10 Health, Volume B, Chapter III Public Water Supplies, Part 125.1. The regulations were adopted by NYSDOH in 1930. The City of Rochester Water Bureau has discussed the need to update these regulations, since a watershed management system may be adopted.

The Conesus Lake watershed is regulated by: "Rules and Regulations for the Protection from Contamination of the Public Water of the Village of Avon and Geneseo and the Lakeville Water District of the Town of Livonia, Livingston County, New York." It was enacted by the NYSDOH in 1961.

Silver Lake also has watershed regulations enacted by the NYSDOH.

#### **4.3 WELLHEAD PROTECTION PROGRAM**

The contamination of groundwater sources throughout the United States has become increasingly evident in recent years as the frequency of use of toxic chemicals rises. To protect these groundwater sources New York State developed a Wellhead Protection Program. The State's Wellhead Protection Program conforms to the federal Safe Drinking Water Act. This program was submitted to the United States Environmental Protection Agency in September 1990 for review. The New York State Wellhead Protection Program is not intended to replace the state's existing groundwater management program, but rather to extend the existing framework. The overall purpose of the New York State Wellhead Protection Program is to protect wellhead areas from contaminants which may have any adverse effects on the public health, as described in the federal Safe Drinking Water Act.

The proposed Wellhead Protection Program will be implemented by all levels of state and local government. At the state level, the NYSDEC will be responsible for implementing and coordinating the Wellhead Protection Program. The NYSDOH will be responsible for public water supply well data, contingency planning, new well planning, and watershed regulations. County governments will assume responsibility for implementing any county-level wellhead protection ordinances developed. Town, Village and City governments will be responsible for local land use control and any local wellhead protection ordinances developed.

The proposed NYS Wellhead Protection Program determines the geographic areas for which different levels of groundwater protection activities are to be instituted. Based upon geological characteristics, the NYSDEC proposes that aquifer boundaries (including recharge areas) delineate wellhead protection areas.

The Wellhead Protection Program also proposes that a groundwater protection plan be developed for new wells. The Public Water Supply Permit Program, which is administered by the NYSDEC, will guide the protection of new well supplies. The plan may include watershed regulations, as well as county and local ordinances.

Since groundwater is the source of drinking water for more than 30,000 residents of Livingston County as either public, private or individual sources, the impact of these pending regulations is significant from an administrative perspective. At the county level, both the Health and Planning Departments will need to take an active role in handling groundwater management activities. Local municipal Town and Village governments will need to regulate land use, as well as establish local ordinances. Both of these tools can be used to control the activities which may lead to the contamination of groundwater. While water purveyors, both public and private, do not hold regulatory authority, they still are responsible for complying with the water supply permit agreements, as well as, any newly developed watershed regulations.

The development of emergency or contingency plans, as required in the federal Safe Drinking Water Act, is the responsibility of the NYSDOH. The existing program in New York deals with all forms of water supply emergencies. Each public water supply system in New York State which has an annual gross operating revenue of greater than \$125,000 must develop and submit an emergency plan to the State. The NYSDOH provides the guidance necessary for each public water system to develop an emergency plan.

#### 4.4 NON-POINT SOURCE REGULATIONS

Non-point source pollution of water bodies is caused by diffuse contamination sources from which pollutants are carried via the atmosphere, runoff from land, or percolation through the soil. In the past water quality concerns have not centered around controlling non-point sources of pollution, but rather, pollution caused by point sources. New York State has been relatively successful in controlling these point sources, therefore, the focus for water quality control has been shifted to non-point source pollution. The Federal Water Quality Act of 1987 amended the Federal Clean Water Act and included Section 319 which placed increased emphasis on implementing non-point source control programs. This required the states to produce two documents:

1. A Non-Point Source Assessment
2. A Non-Point Source Management Program

New York State developed a Source Assessment Report in February, 1989. The Source Assessment Report identifies the existing waterbodies within the state which require intervention to control non-point sources of pollution, and describes the best process and programs for management and control of such non-point pollution sources. The Source Management Program was developed by New York in January of 1990. It includes a process for maintenance and enhancement of the list of state waters affected by non-point sources, management practices for reducing non-point source effects, programs to control non-point source pollution, watershed programs, an implementation schedule for the program, sources of funding which may be available and information regarding consistency with other governmental agencies. The Management Program is meant to go hand-in-hand with the Assessment Report. The Source Management Program provides planning and regulatory measures to be implemented at both the statewide and local (watershed-based) levels.

Within Livingston County, ten waterbodies have been identified as having water quality problems caused by non-point sources (excluding atmospheric deposition and contaminated sediment). The list of Livingston County waterbodies affected by this contamination includes the following:

<u>Waterbody</u>	<u>Non-Point Source Category</u>
Little Beards Creek	Agriculture-Row Crops
Conesus Lake	On-Site Wastewater Systems
Hemlock Lake	Flow Regulation/Modification
Lower Honeoye Creek	Streambank Erosion
Hemlock Outlet	Streambank Erosion
Middle Genesee River	Flow Regulation/Modifications
Bidwells Creek	Agriculture - Other
Oatka Creek Aquifer	Chemical Leaks/Spills
Upper Genesee River	Streambank Erosion
Canaseraga Creek	Streambank Erosion
Upper Cohocton River	Agriculture - Row Crops
Silver Lake (Wyoming County)	Agriculture - Row Crops

In order to protect the waterbodies in Livingston County from the contamination caused by non-point source pollution, the participation of a wide variety of businesses and individuals will be required. The involvement of local organizations is essential for successful implementation of the program. However, in order to prevent the fragmentation of the overall state wide management plan, the coordination of local efforts by the NYSDEC is required.

An important vehicle for regulating non-point source pollution on a local level is the development and enforcement of watershed regulations. These regulations can control land use, storage of specific substances, and discharges of waste disposal onto land or into waterbodies within the watershed boundary.

#### 4.5 ZEBRA MUSSELS

*Dreissena polymorpha*, more commonly referred to as the zebra mussel, is a small, striped freshwater mollusk which was introduced into the Great Lakes in 1986. The zebra mussels originated in the lakes of Eastern Europe and its introduction into North American waterways was a result of international shipping vessels emptying freshwater ballasts into the Great Lakes.

Since its introduction, this exotic species has reproduced prolifically (one mature female can produce 30,000 to 40,000 eggs per year) and now threatens not only the biological resources of the Great Lakes but also use of the regions' waterways for fishing, and recreation. Clogging pipelines by forming massive colonies, the zebra mussel has reduced intake capacities, obstructed valves, fouled water taste (by decaying flesh), damaged equipment (when abrasive shells are drawn into equipment) and generally disrupted the operations of many utility companies, industrial facilities, nuclear power plants, and water supply systems.

The zebra mussel is a bivalve mollusk generally found between a depth of 5 feet and 25 feet below the surface. They are attracted to water currents which produce a constant source of food (i.e., water intake structures). The mussels feed on algae and plankton by filtering water through their system. An adult mussel can typically filter one quart per day. The rate of filtration is dependent on the phytoplankton concentration and size, water temperatures and mussel body size.

Fertilized zebra mussel eggs are only 4 to 7 microns long. In two to three days they become planktonic larvae (veligers). For one to two weeks, veligers are capable of swimming. This swimming capability combined with their small size allows large numbers to be dispersed considerable distances from the parent colonies. Within three weeks of hatching, the mussels begin to attach to substrates. During the first year, young mussels may crawl along the substrate to locate a suitable location to attach. Once settled, the mussel starts to develop byssal fibers (the second strongest fiber known to man) and remains stationary for the rest of its life. Adult mussels are approximately 2 inches or smaller and have an average life span of 3.5 years.

As mentioned previously, dispersal takes place largely during the veliger stage when the organism can swim and be carried by water currents. Dispersal may also occur when adult mussels attach to floating objects, such as logs. Zebra mussels can also be transported by unwitting anglers and recreational boaters. Mussels, which are able to survive several days out of water, may attach to boat hulls and trailers where they can be transported from one lake to another. Also, the microscopic floating veliger may make their way into boat bilges, engine cooling systems, live wells, and bait buckets where they can either be dispersed within a water system or introduced into a new system.

In conclusion, the odds of this pest entering most every small lake in the region is very high. In North America, zebra mussels were first detected in Lake St. Claire on the Michigan-Ontario border in June 1988. Given the size of these mussels, they were estimated to be 2 years old. The mussels quickly spread within one month to Lake Erie, and in October of 1989 they were first sighted in Lake Ontario. Currently, all of Lake Erie, the entire north and south coastlines of Lake Ontario up into the St. Lawrence River, and the Erie Canal to Pittsford, New York is infested with zebra mussels. Charles R. O'Neill Jr., Extension Specialist, from New York Sea Grant Extension predicts that the entire Finger Lakes region, all tributaries flowing from it, the Mohawk River, and possibly as far east as the Hudson River will be completely infested with zebra mussels. Municipal water systems in Livingston County that rely on surface water sources must be prepared to prevent zebra mussels from disrupting their intake pipes and filtration plants.

Control of the Zebra Mussel can take three different forms: physical, chemical, and biological. Not much is known about control of these mussels, however chemical methods have proven the most effective. The addition of chlorine in concentrations of 0.2 - 1 ppm (parts per million) can effectively kill the zebra mussel. (Actual chlorine concentrations depend upon the time of year and size of the mussel.) Research is continuing with physical and biological methods to control the zebra mussel in an effort to find more environmentally sound and economical methods of control.

## 5.0 SUMMATION OF NEEDS

### 5.1 ANALYSIS OF CURRENT WATER SOURCES

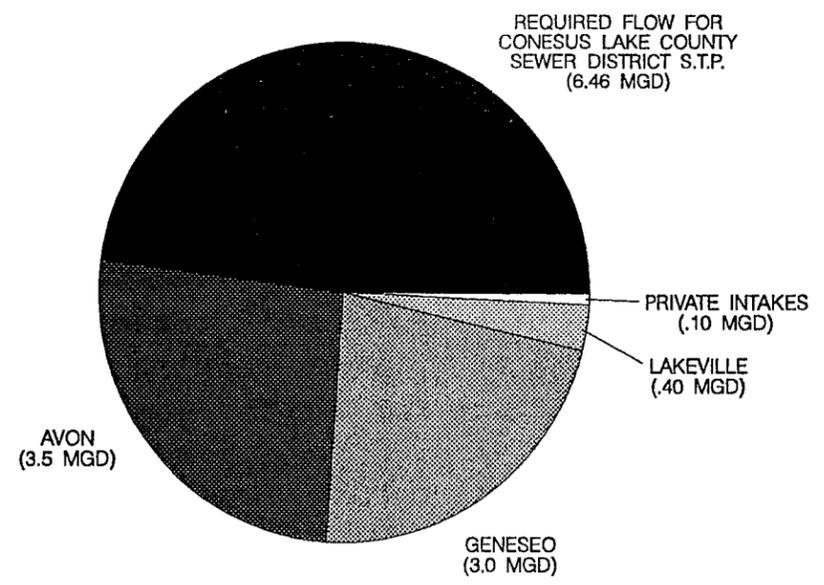
#### Current Water Usage

Approximately 54 percent or 33,300 of all Livingston County residents are served by a municipal water system utilizing a surface raw water source. Of these 33,300 residents, approximately 26,300 or 79 percent receive water withdrawn from the three main Livingston County sources: Conesus Lake, Hemlock Lake, and Silver Lake. Tables 5-1 through 5-5 summarize the current (1990) water usage from each of these major water sources (for municipal systems), as well as, the surface water sources of Little Dansville Creek and Mill Creek.

As shown on these tables, all municipal suppliers (with the exception of the Village of Dansville) are currently at or below their NYSDEC withdrawal allocations for their respective sources. It is clear that approximately 51 percent or 17,129 of the 33,300 Livingston County residents served by municipally supplied surface water, receive their potable water from a Conesus Lake source. This number does not, however, include those residents served by private intakes from this lake. It is estimated that an additional 2,450 residents may be served from Conesus Lake either via individual intakes or privately operated multiple user intakes such as the private system at Eagle Point.

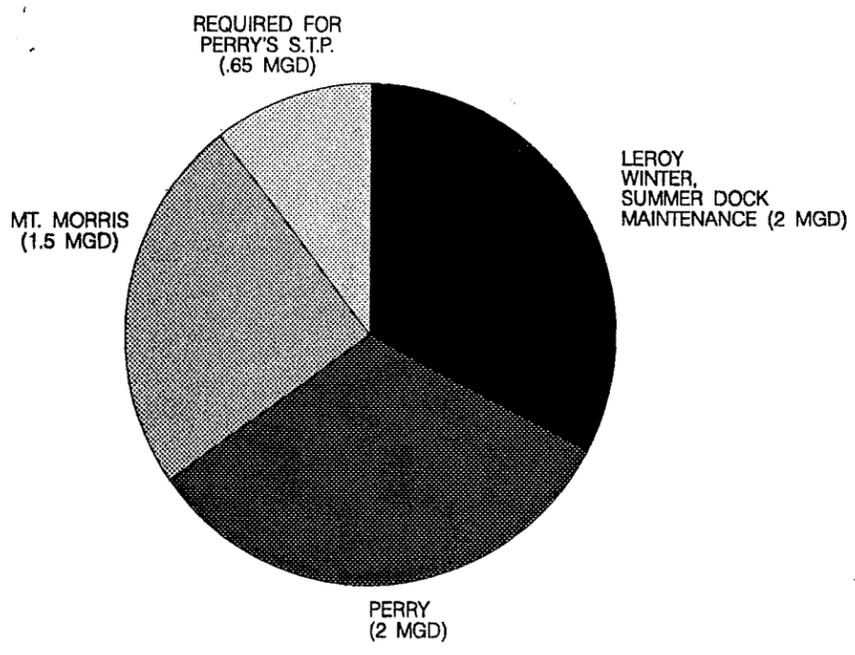
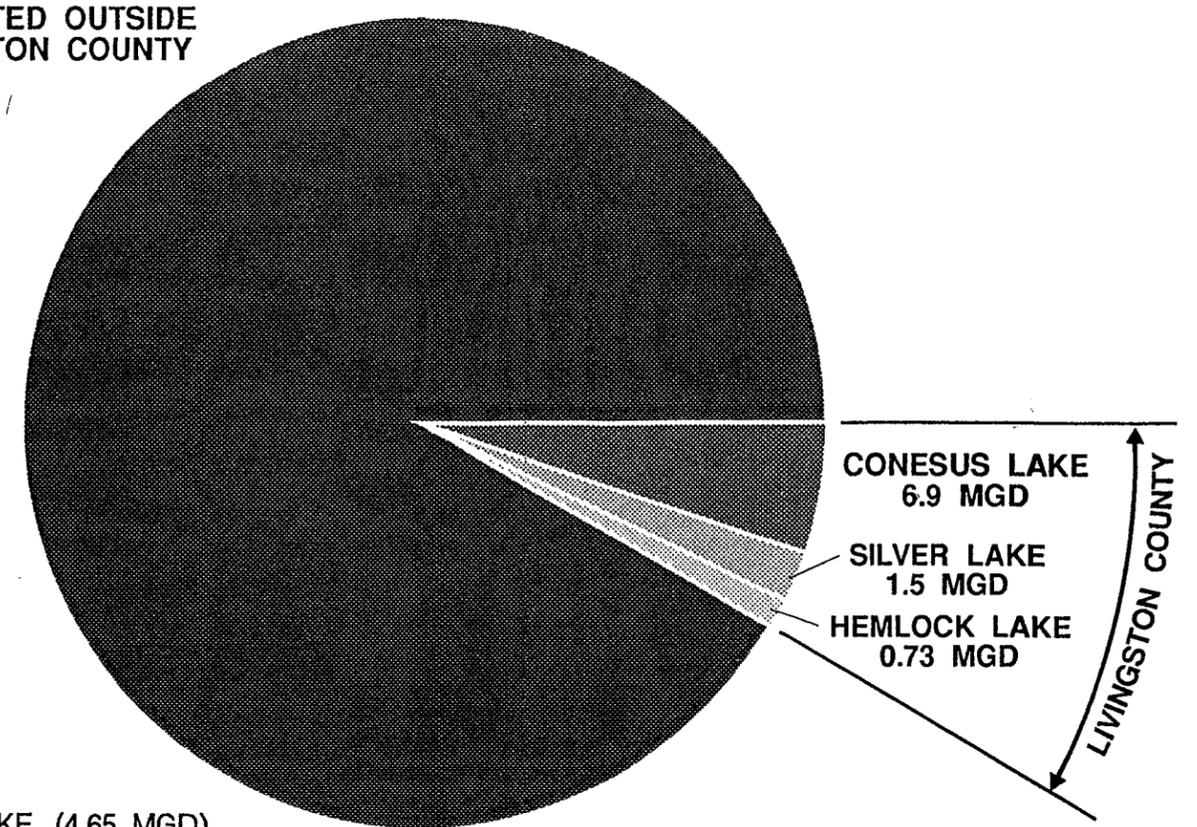
#### Current Water Source Quality

Table 5-6 summarizes the water quality problems and water quality regulations which impact the various water sources. As discussed in Chapter 3.0, turbidity and total coliform problems plague the Village of Avon, the Village of Geneseo, and the Hamlet of Lakeville. These systems, as well as the municipal systems which purchase water from them, obtain their water from Conesus Lake. Conesus Lake cannot meet the current surface water standards for drinking water without filtration treatment. No filtration plants currently exist at this water source.



**CONESUS LAKE**  
 TOTAL ALLOCATION = 13.46 MGD  
 ALLOCATION FOR LIVINGSTON CO. MUNICIPAL WATER SYSTEMS = 6.9 MGD

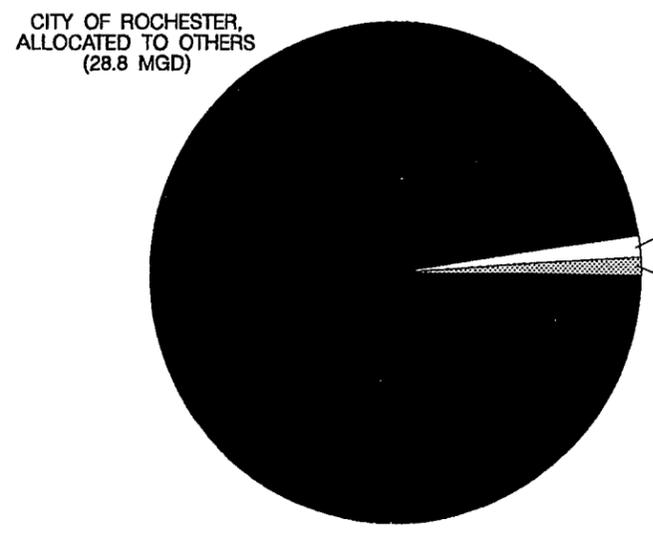
33.45 MGD\*  
 ALLOCATED OUTSIDE LIVINGSTON COUNTY



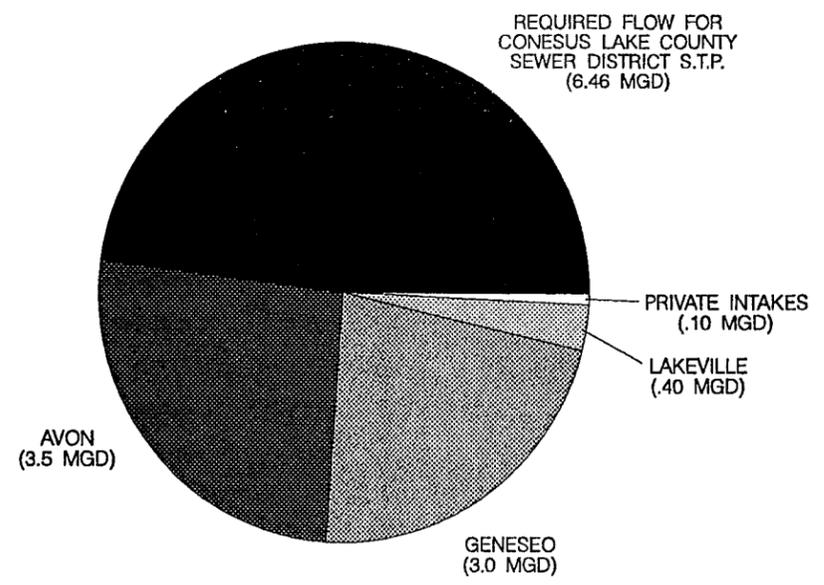
**SILVER LAKE**  
 TOTAL ALLOCATION = 6.15 MGD  
 ALLOCATION FOR LIVINGSTON CO. MUNICIPAL WATER SYSTEMS = 1.5 MGD

\*SILVER LAKE, (4.65 MGD)  
 HEMLOCK LAKE, (28.8 MGD)

**COMBINED MUNICIPAL SURFACE WATER ALLOCATIONS FOR CONESUS, HEMLOCK & SILVER LAKES**

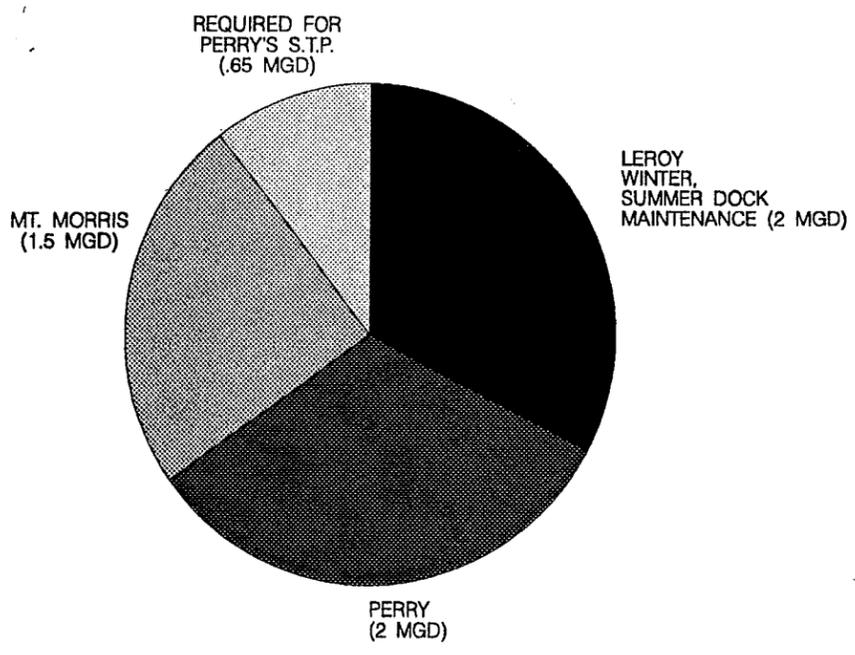
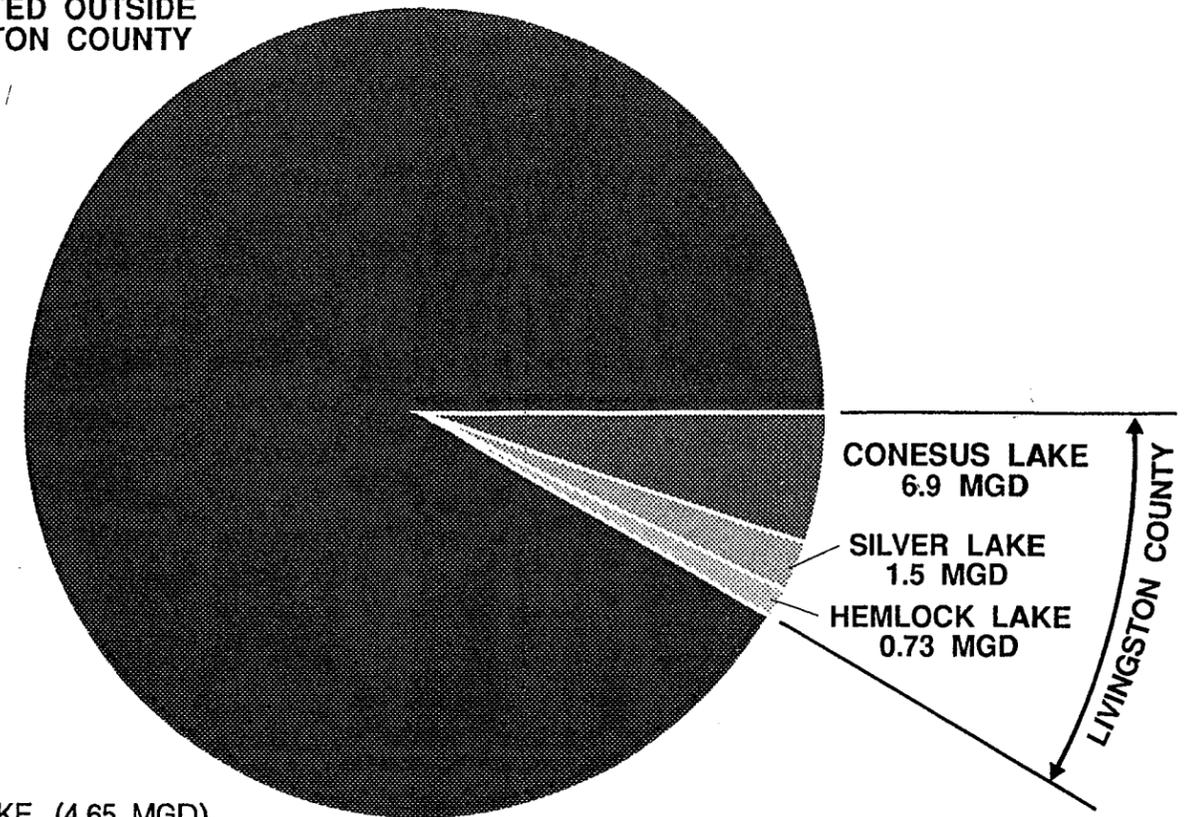


**HEMLOCK LAKE**  
 TOTAL ALLOCATION = 29.53 MGD  
 ALLOCATION FOR LIVINGSTON CO. MUNICIPAL WATER SYSTEMS = .73 MGD



**CONESUS LAKE**  
 TOTAL ALLOCATION = 13.46 MGD  
 ALLOCATION FOR LIVINGSTON CO. MUNICIPAL WATER SYSTEMS = 6.9 MGD

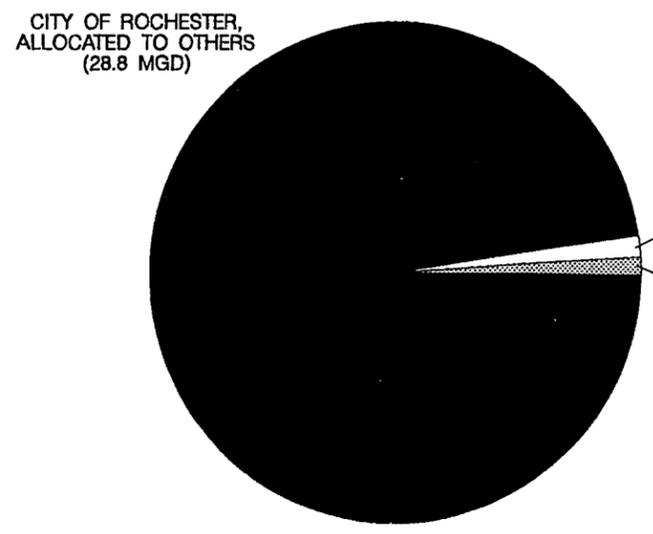
33.45 MGD\*  
 ALLOCATED OUTSIDE LIVINGSTON COUNTY



**SILVER LAKE**  
 TOTAL ALLOCATION = 6.15 MGD  
 ALLOCATION FOR LIVINGSTON CO. MUNICIPAL WATER SYSTEMS = 1.5 MGD

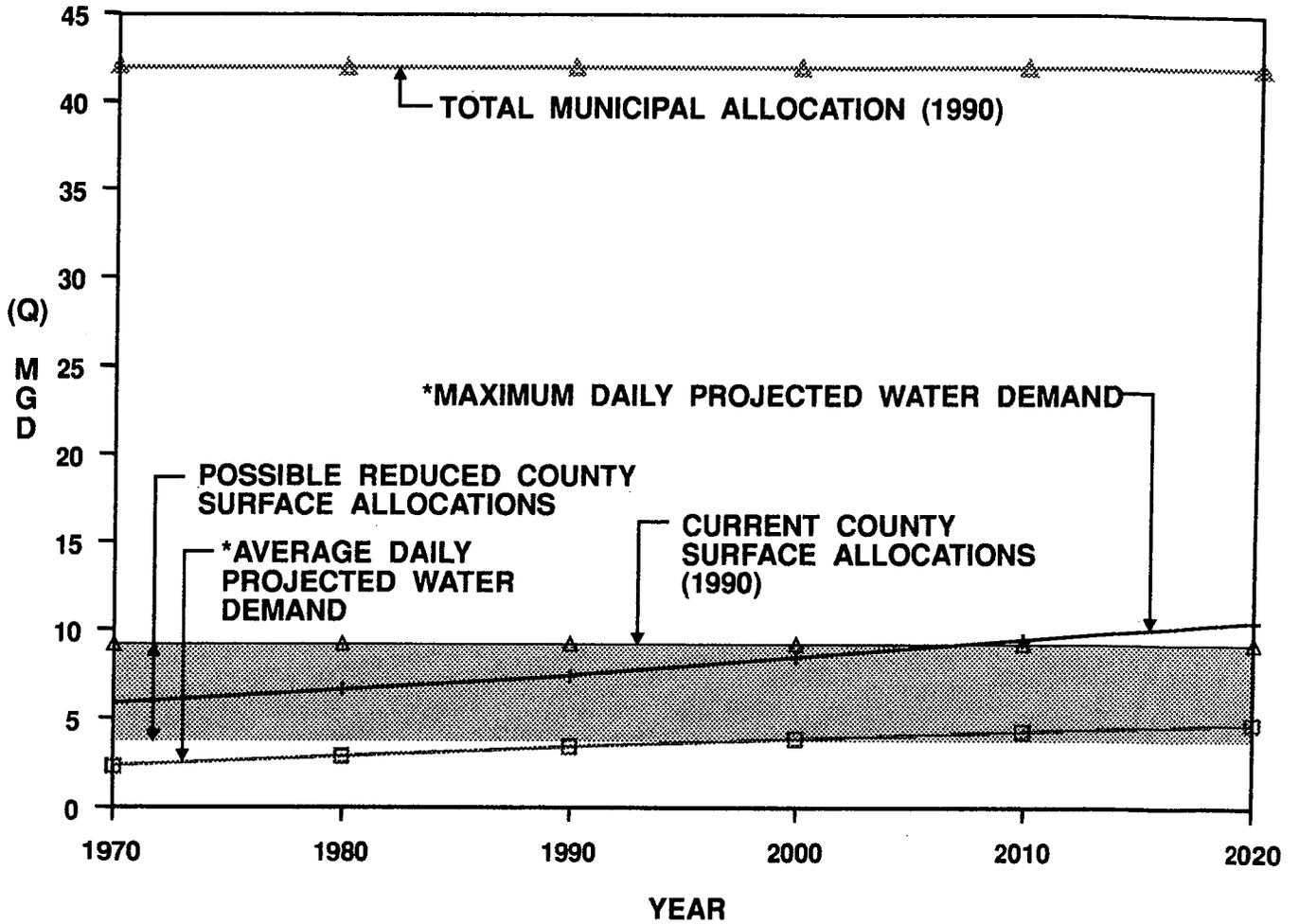
\*SILVER LAKE, (4.65 MGD)  
 HEMLOCK LAKE, (28.8 MGD)

**COMBINED MUNICIPAL SURFACE WATER ALLOCATIONS FOR CONESUS, HEMLOCK & SILVER LAKES**



**HEMLOCK LAKE**  
 TOTAL ALLOCATION = 29.53 MGD  
 ALLOCATION FOR LIVINGSTON CO. MUNICIPAL WATER SYSTEMS = .73 MGD

## LIVINGSTON COUNTY LAKE SUPPLIES (CONESUS, HEMLOCK/CANADICE & SILVER LAKES)



\*WATER DEMAND FOR MUNICIPAL SYSTEMS UTILIZING CONESUS, HEMLOCK & SILVER LAKES ONLY.

### LIVINGSTON COUNTY LAKE SUPPLIES

COMPREHENSIVE WATER SUPPLY STUDY  
LIVINGSTON COUNTY, NEW YORK

**CLARK ENGINEERS & ASSOCIATES**  
ROCHESTER, NEW YORK

FIGURE 5-2

TABLE 5-1

EXISTING CONESUS LAKE MUNICIPAL WATER USAGE (1990)<sup>(1)</sup>

Municipal Supplier	NYSDEC Allocation (MGD)	Municipal Agreement (MGD)	Municipal Users	Average Daily Water Usage (MGD)	Population Served
Avon(V)	3.5	0.24	Avon(V) Avon(T)	0.77 <u>0.20</u>	3,100 2,284
			Subtotal	0.97	
Geneseo(V)	3.0		Geneseo(V) Geneseo(T) York(T)	0.52 0.113 <u>0.37</u>	7,187 700 1,908
			Subtotal	1.003	
Livonia(T) Lakeville District	<u>0.4</u>		Lakeville(H)	<u>0.16</u> <sup>(2)</sup>	1,950
			Subtotal	<u>0.16</u>	
Total	6.9			2.133 (say 2.1)	17,129

(1) Does not include private individual residential intakes along Conesus Lake nor private multiple users.  
 Population estimated at 2,450 residents.  
 (2) Includes out-of-district users in Town of Geneseo.

TABLE 5-2

EXISTING SILVER LAKE MUNICIPAL WATER USAGE (1990)<sup>(1)</sup>

Municipal Supplier	NYSDEC Allocation (MGD)	Municipal Agreement (MGD)	Municipal Users	Average Daily Water Usage (MGD)	Population Served
Mt. Morris	1.5		Leicester(T) Leicester(V) Mt. Morris(T) Mt. Morris(V)	0.03 0.08 Include in Mt. Morris(V) 0.578 <sup>(3)</sup>	452 645 150 3,102
Total	<u>1.5</u>	0.10 <sup>(2)</sup>		<u>0.688</u>	<u>4,349</u>

(say 0.7)

(1) Livingston County usage only.  
 (2) Route 36 south permissive use areas, 0.02 mgd; LoVerdi-Tallman Road Water District, 0.010 mgd; Craig Developmental Services Facility, 0.009 mgd; other areas in Town do not have allocations.  
 (3) Include Town of Groveland, Hamlet of Hampton Corners.

TABLE 5-3

EXISTING HEMLOCK LAKE MUNICIPAL WATER USAGE (1990)<sup>(1)</sup>

Municipal Supplier	NYSDEC Allocation (MGD)	Municipal Agreement (MGD)	Municipal Users	Average Daily Water Usage (MGD)	Population Served
City of Rochester	(2)	0.055 0.28	Lima(T) Lima(V)	0.011 0.225	150 2,193
		0.4	Livonia(T) <sup>(3)</sup> Livonia(V)	0.09 <u>0.14</u>	1,050 <u>1,458</u>
Total				0.466  (say 0.5)	4,851

(1)

(2)

(3)

Livingston County usage only.

City of Rochester NYSDEC allocation is 37 mgd average per day over a one year period with a 48 mgd maximum daily withdrawal for Hemlock/Canadice combined. The City of Rochester usage from Hemlock Lake is approximately 29.5 mgd.

Includes the water districts serving Hemlock, Livonia Center and South Livonia. Some out-of-district users within the Town of Conesus also included.

TABLE 5-4  
 EXISTING MILL CREEK MUNICIPAL WATER USAGE (1990)<sup>(1)</sup>

Municipal Supplier	Riparian Rights (MGD)	Municipal Agreement (MGD)	Municipal Users	Average Daily Water Usage (MGD)	Population Served
Dansville(V)	0.5		Dansville(V) North Dansville(T)	1.1 <sup>(2)</sup> Included in Village	5,002 500
Total	0.5			1.1	5,502

(1) Livingston County usage only.

(2) Village of Dansville is supplemented by groundwater from two wells to provide the necessary combined water usage.

TABLE 5-5

EXISTING LITTLE DANSVILLE CREEK MUNICIPAL WATER USAGE (1990)<sup>(1)</sup>

Municipal Supplier	NYSDEC Allocation (MGD)	Municipal Agreement (MGD)	Municipal Users	Average Daily Water Usage (MGD)	Population Served
Nunda(V)	0.38		Nunda(V) Nunda(T)	0.13 Included in Village	1,347 100
Total	0.38			0.13	1,447

(1) Livingston County usage only.

**TABLE 5-6**  
**EXISTING LIVINGSTON COUNTY PUBLIC WATER SYSTEMS**  
**SUMMARY OF WATER QUALITY ISSUES**

MUNICIPALITY	WATER QUALITY PROBLEMS							WATER QUALITY REGULATIONS				
	PRIMARY PUBLIC SOURCE SURFACE GROUND (S)	TURBIDITY AND/OR TOTAL COLIFORM	CHLORINE RESIDUAL	VOLATILE ORGANIC CHEMICAL	HIGH SULFUR CONTENT	GASOLINE CONTAMINATION	FAILING OR INADEQUATE SEPTIC SYSTEMS	ZEBRA MUSSEL POTENTIAL	SURFACE WATER REGULATIONS	WATER SHED REGULATIONS	NON-POINT SOURCE REGULATIONS	WELL-HEAD PROTECTION
AVON (V)	S	x					x	x	x	x		
AVON (T)	S	x	x				x	x	x	x		
CALEDONIA (V)	G			x							x	
CALEDONIA (T)	G				x						x	
CONESUS (T)	S						Z	Z	Z	Z		
GENESE0 (V)	S	x					x	x	x	x		
GENESE0 (T)	S	x					x	x	x	x		
GROVELAND (T)	S/G	x					x	x	x		x	
LEICESTER (V)	S						x	x	x			
LEICESTER (T)	S		x				x	x	x			
LIMA (V)	S						x	x	x	x		
LIMA (T)	S						x	x	x	x		
LIVONIA (V/T)	S						x	x	x	x		
LIVONIA (T) [LAKEVILLE DISTRICT]	S	x					x	x	x	x		
MT. MORRIS (V)	S						x	x	x			
MT. MORRIS (T)	S						x	x	x			
DANSVILLE (V)	S						x	x	x		x	
NORTH DANSVILLE (T)	S						x	x	x		x	
NUNDA (V)	S		x				x	x	x			
NUNDA (T)	S		x				x	x	x			
OSSIAN (1)	N/A											
PORTAGE (T)	N/A											
SPARTA (T)	G				x	x					x	
SPRINGWATER (T)	G					x					x	
WEST SPARTA (T)	N/A					x						
YORK (T)	S	x					x	x	x	x		

NOTE: SOURCE: LIVINGSTON COUNTY COMPREHENSIVE WATER SUPPLY STUDY MUNICIPAL SURVEY, MAY 1990, AND LIVINGSTON COUNTY HEALTH DEPARTMENT

Z = OUT-OF-DISTRICT USERS EFFECTED

In addition, several bodies of water within Livingston County have been identified as having water quality problems caused by non-point sources (see Chapter 4.0). Conesus Lake and Hemlock Lake are included on this list. Silver Lake, located in Wyoming County, is also included. The Livingston County Health Department has reported that failing or inadequate septic systems within the Hamlet of Springwater allow septic tank effluent to discharge into a drainage ditch which eventually empties into Hemlock Lake.

Groundwater contamination has been experienced within the Village and Town of Caledonia, as well as the Town of Sparta. Potential groundwater contamination may also have occurred in other communities where failing or inadequate septic systems have been experienced.

These water quality problems must be addressed to meet the current water quality regulations as discussed in Chapter 4.0.

## **5.2 ANALYSIS OF FUTURE WATER NEEDS**

### Projected Water Demand

Based upon the population and development trends outlined in Chapter 2.0, as well as the data collected regarding the municipal water systems outlined in Chapter 3.0, the future water demands for average daily and maximum daily potable water usage for the various municipal water systems have been projected. Table 5-7 summarizes these additional water demands for these municipalities. Tables 5-8 through 5-12 summarize the impact of these projected water demands upon the individual surface water sources.

The water usages shown in Table 5-7 indicate that generally, the average daily additional water demand for each community can be met under the current NYSDEC allocations. Exceptions to this include the Town of Avon, and the Villages of Leicester and Dansville. When the maximum daily water demands are considered, however, several other communities including the Villages of Lima and Livonia, as well as the Town of Livonia including the Hamlet of Lakeville would not be able to provide the needed additional potable water under current allocations.

TABLE 5-7  
LIVINGSTON COUNTY MUNICIPALITIES  
PROJECTED PUBLIC WATER USAGE

MUNICIPALITY	NYSDEC ALLOCATION FOR 1990 (MGD)	AVERAGE DAILY WATER USAGE FOR 1990 (MGD)	POPULATION INCREASE BY 2020 (TOTAL/SERVED)	INCREASE IN RESIDENTIAL WATER USAGE BY 2020 (MGD)	INCREASE IN NON-RESIDENTIAL WATER USAGE BY 2020 (MGD)	UNUSED SOURCE CAPACITY (1990): ALLOCATED - USAGE (MGD)	ADDITIONAL WATER USAGE 2020 (MGD) (AVERAGE DAILY)	ADDITIONAL MAXIMUM WATER USAGE 2020 (MGD) (MAXIMUM DAILY)
AVON (T)	0.24	0.200	335/235	0.024	0.038	0.040	0.062	0.138
AVON (V)	3.50	0.770	-81/0	N/A	0.006	2.530	0.068 *	0.152
CALEDONIA (T)	N/A	0.009 (PROPOSED)	1,052/631	0.063	0.016	N/A	0.088 (INCLUDES (T))	0.221
CALEDONIA (V)	N/A	0.400	207/207	0.021	N/A	N/A	0.109 *	0.267
CONESUS (T)	N/A	N/A	674/0	(CONESUS LK PER.)	N/A	N/A	0.035 *	0.066
GENESE0 (T)	N/A	0.113	175/61	0.109 (INCL CONELK PER)	0.100	N/A	0.209	0.252
GENESE0 (V)	3.00	0.320	1,309/1,309	0.131	N/A	2.000	0.389 * (INCL. T-GEN. T-YORK)	0.868
GROVELAND (T)	N/A	0.360	2,010/2,010	0.028	0.322	N/A	0.350 *	0.841
LEICESTER (T)	N/A	0.030	1228/304	0.030	N/A	N/A	0.030	0.069
LEICESTER (V)	0.10	0.080	-5/0	N/A	N/A	-0.010	0.030 (INCL. TOWN)	0.069
LIMA (T)	DIST. #1: 0.011 DIST. #2: 0.044	0.005 0.006	570/42	0.002 0.002	N/A	0.044	0.002 0.002	0.006 0.006
LIMA (V)	0.280	0.225	392/392	0.039	N/A	0.055	0.041 *	0.091 (INCL. DIST. #2)

TABLE 5-7 (continued)

MUNICIPALITY	NYSDEC ALLOCATION (MGD) 1990	AVERAGE DAILY WATER USAGE (MGD) 1990	POPULATION INCREASE BY 2020 (TOTAL/SERVED)	INCREASE IN RESIDENTIAL WATER DEMAND (MGD) BY 2020	INCREASE IN NON-RESIDENTIAL WATER DEMAND (MGD) BY 2020	UNUSED SOURCE CAPACITY (1990): ALLOCATED - USAGE (MGD)	ADDITIONAL AVERAGE DAILY WATER DEMAND 2020 (MGD)	ADDITIONAL MAXIMUM WATER USAGE 2020 (MGD) (MAXIMUM DAY)
LIVONIA (T)	0.40	0.090	1,792/550	0.104	N/A	0.170	0.104 *	0.260
LIVONIA (V)	(INCLUDING TOWN & VILLAGE)	0.140	583/583	(INCL CONELK PER) NOT INCL. LAKEVILLE	N/A	(INCLUDING TOWN & VILLAGE)	0.058 *	0.151
LAKEVILLE (H)	0.40	0.160	1,792/650	0.065	0.081	0.240	0.146 *	0.380
MOUNT MORRIS (T)	N/A	(INCLUDED IN THE VILLAGE USAGE)	289/29	INCL. LAKEVILLE	0.010	N/A	0.013	0.030
MOUNT MORRIS (V)	1.50	0.578	188/188	0.019	N/A	0.812	0.062 *	0.142
NORTH DANSVILLE (T)	N/A	(INCLUDED IN THE VILLAGE USAGE)	-273/0	N/A	0.084	(INCL. (T)-MT.M., (V)-LEICESTER)	(INCL. (T)-MT.M., (V)-LEICESTER)	0.184
DANSVILLE (V)	0.500 0.550	1.100	-10/0	N/A	N/A	-0.050	0.084 *	0.184
NUNDA (T)	(INCLUDED IN THE VILLAGE)	(INCLUDED IN THE VILLAGE USAGE)	173/11	0.001	N/A	N/A	0.001	0.003
NUNDA (V)	0.380	0.130	551/551	0.055	N/A	0.250	0.056 *	0.155
SPARTA (T)	N/A	(INCLUDES TOWN)	353/250	0.025	N/A	N/A	(INCL. TOWN)	0.075
SPRINGWATER (F)	0.2025	0.020	797/99	0.010	N/A	0.183	0.010 *	0.030
SPRINGWATER (H)	N/A	N/A	745/7	UNKNOWN	N/A	N/A	0.000 *	0.000
YORK (T)	0.750	0.370	905/491	0.049	N/A	0.380	0.049	0.108
							1.536	3.595

5.3

\* ADDITIONAL WATER DEMAND TO BE SERVED:

1.5

NOTES: TOTAL AVERAGE DAILY PUBLIC WATER USAGE IS PROJECTED TO BE 6.8 MGD (2020)  
TOTAL MAXIMUM DAILY PUBLIC WATER USAGE IS PROJECTED TO BE 16.0 MGD (2020)

TABLE 5-8  
PROJECTED CONESUS LAKE MUNICIPAL WATER USAGE

Municipal Supplier	NYSDEC Allocation (MGD)	Municipal Users	Average Daily Water Usage (MGD) (1990)	Projected Additional Demand (2020)	Projected Total Average (MGD) (2020)
Avon(V)	3.5	Avon(V) Avon(T)	0.77 <u>0.20</u> 0.97	0.006 <u>0.062</u> 0.068	0.776 <u>0.262</u> 1.038
Geneseo(V)	3.0	Geneseo(V) Geneseo(T) York(T)	0.52 0.113 0.37 1.003	0.131 0.161 <u>0.049</u> 0.341	0.651 0.274 <u>0.419</u> 1.344
Livonia(T) Lakeville District	0.4	Lakeville(H)	0.16 <sup>(2)</sup>	0.146	0.306
Conesus Lake Perimeter (Undetermined)	—	Geneseo (T) Livonia (T) Conesus (T) Groveland (T)	<u>0</u>	<u>0.18</u>	<u>0.18</u>
Total	6.9			0.735	2.868 (say 2.9)

(1) Does not include private individual residential intakes along Conesus Lake nor private multiple users. Population estimated at 2,450 residents.  
(2) Includes out-of-district users in Town of Geneseo.

TABLE 5-9

PROJECTED SILVER LAKE MUNICIPAL WATER USAGE<sup>(1)</sup>

Municipal Supplier	NYSDEC Allocation (MGD)	Municipal Users	Average Daily Water Usage (MGD) (1990)	Projected Additional Water Demand (2020)	Projected Total Average (MGD) (2020)
Mt. Morris	1.5	Leicester(T) Leicester(V) Mt. Morris(T) Mt. Morris(V)	0.03 0.08 Included in Mt. Morris(V) <u>0.578<sup>(2)</sup></u> 0.688	0.03 --- Included in Mt. Morris(V) <u>0.032</u> 0.062	0.06 0.08 --- <u>0.61</u> 0.75
					(say 0.75)

(1) Livingston County usage only.

(2) Include Town of Groveland, Hamlet of Hampton Corners.

TABLE 5-10

PROJECTED HEMLOCK LAKE MUNICIPAL WATER USAGE<sup>(1)</sup>

Municipal Supplier	NYSDEC Allocation (MGD)	Municipal Users	Average Daily Water Usage (MGD) (1990)	Projected Additional Water Demand (2020)	Projected Total Average (MGD) (2020)
City of Rochester	(2)	Lima(T)	0.011	0.002	0.013
		Lima(V)	0.225	0.041	0.266
		Livonia(T) <sup>(3)</sup>	0.09	0.035	0.125
		Livonia(V)	<u>0.14</u>	<u>0.058</u>	<u>0.198</u>
			0.466	0.136	0.602
					(say 0.6)

(1) Livingston County usage only.

(2) City of Rochester NYSDEC allocation is 37 mgd average per day over a one year period with a 48 mgd maximum daily withdrawal. The City of Rochester usage is 29.5 mgd.

(3) Includes the water districts serving Hemlock, Livonia Center and South Livonia. Some out-of-district users within the Town of Conesus also included.

TABLE 5-11

PROJECTED MILL CREEK MUNICIPAL WATER USAGE<sup>(1)</sup>

Municipal Supplier	Riparian Rights (MGD)	Municipal Users	Average Daily Water Usage (MGD) (1990)	Projected Additional Water Demand (2020)	Projected Total Average (MGD) (2020)
Dansville(V)	0.5	Dansville(V) North Dansville(T)	1.1 <sup>(2)</sup> Included in Dansville(V)	0.084 Included in Dansville(V)	1.184  (say 1.2)

(1) Livingston County usage only.

(2) Village of Dansville is supplemented by groundwater from two wells to provide the necessary combined water usage.

TABLE 5-12

PROJECTED LITTLE DANSVILLE CREEK MUNICIPAL WATER USAGE<sup>(1)</sup>

Municipal Supplier	NYSDEC Allocation (MGD)	Municipal Users	Average Daily Water Usage (MGD) (1990)	Projected Additional Water Demand (2020)	Projected Total Average (MGD) (2020)
Nunda(V)	0.38	Nunda(V) Nunda(T)	0.13 Included in Nunda(V)	0.056 Included in Nunda(V)	0.186  (say 0.19)

(1) Livingston County usage only.

The inadequate allocations, however, do not imply that there is an insufficient quantity of water to meet the demands on an overall county-wide basis. Instead, it indicates that either intermunicipal agreements must be negotiated to supply water where it is needed or that new water sources must be developed to meet the demands.

The renegotiation of the water supply allocations will ultimately involve the NYSDEC. In informal conversations, the NYSDEC has indicated that Conesus, Hemlock, and Silver Lakes are already allocated beyond the optimal withdrawal volume. Therefore, to protect the integrity of the lakes and the watershed balance, the NYSDEC would like to see lower overall allocation limits. The volume of this lower allocation is unknown at this time. The current surface allocations for municipalities utilizing Conesus, Hemlock and Silver Lakes is 9.13 MGD and is shown on Figures 5-1 and 5-2.

The current water system infrastructure for individual communities may need to be upgraded in order to provide additional capacity where it is needed. The municipal systems within Livingston County currently vary in their capability to supply the maximum allocations as set by the NYSDEC. Due to system inadequacies (see Table 3-4) many systems may have problems supplying existing demands. Those which can meet existing demands may not have the capability (due to inadequate line size or intake pump size, for example) to deliver the maximum allocations. These communities will need to upgrade their systems in order to withdraw their maximum allocations at such time as demand warrants. The upgrading of these individual systems will need to be addressed at the local level.

#### Future Water Quality Issues

Table 5-6 lists the regulations which impact the various sources. Since at least 54 percent of Livingston County's residents are served by a municipal water system utilizing raw water from a surface water source, regulations such as the surface water treatment rule, total coliform rule, watershed regulations, and non-point source regulations as discussed in Chapter 4.0, will impact water users significantly.

The surface water regulations require that raw surface water be disinfected and filtered unless stringent water quality restrictions regarding total coliform, fecal coliform and turbidity levels are met. As none of the surface raw water sources utilized by Livingston County communities can meet the stringent requirements for turbidity, filtration at each of these sources will be required to allow their continued use as a raw water source.

To protect the water quality of the raw water source, the development and enforcement of comprehensive watershed regulations by local level organizations is recommended. Regulations which control land use within a watershed boundary; discharges onto land or into water within the watershed boundary; discharges into the water source; and, activity on the water source will be necessary. Enforcement of these regulations will be even more critical.

The largest surface water quality issue of the future however, may very well be the zebra mussel. Zebra mussels are expected to infiltrate the Finger Lakes region water sources (see Chapter 4.0). By forming massive colonies, the zebra mussel clogs intake pipelines reducing the intake capacity. As they die off, these mussels can be drawn into the pump suction where their hard shells can physically damage the pumps. In addition, the control of zebra mussels with chlorine may create taste and odor problems for the treated water.

Although surface water regulations affect the majority of Livingston County municipal water users, groundwater regulations will also require substantial administrative control of groundwater sources. Local municipalities will need to regulate land use, and county officials will need to take an active role in handling groundwater management activities. Water suppliers, both public and private will be required to be responsible for complying with water supply permit agreements, as well as the development of watershed regulations.

### 5.3 CONCLUSIONS

The goals for the municipal water resources in Livingston County fall into two general categories:

1. Ensure that residents receive adequate quantities of good quality potable water that meets the appropriate drinking water standards.
2. Promote economic development in the County by providing for the distribution of potable water to areas which have the potential for such economic growth.

With respect to these goals, several conclusions can be drawn from the data provided.

1. By 2020, municipal water systems in Livingston County will need to provide or redistribute approximately 1.5 MGD of additional potable water on an average day. Nearly three-quarters of this water will result from population increases and commercial/industrial development in the Towns of Caledonia, Groveland, Geneseo, Livonia (including Lakeville), as well as the Village of Geneseo. The combined additional average day demand on Conesus, Hemlock, and Silver Lake will be 0.93 MGD. The additional average day demand for Mill Creek, Little Dansville Creek and Keshequa Creek will be 0.084, 0.056 and 0.322, respectively. The increase in groundwater demand will be approximately 0.1 MGD.
2. The quality of potable water from Conesus Lake and Hemlock Lake must be improved to be in conformance with the stricter surface water quality standards to become effective in 1992. Currently, approximately 22,000 residents in Livingston County consume potable drinking water from these lakes.

3. Municipal water systems must be able to supply water to those areas where residential growth is anticipated. This will be most critical in the Village of Geneseo, and the Towns of Caledonia, Groveland, Leicester and Livonia.
4. Adequate water supplies to those areas anticipated to receive the largest non-residential growth (such as commercial or industrial) need to be provided including: the Towns of Avon, Geneseo, Livonia (Lakeville), and North Dansville. To date, potential developments which have been proposed for several areas in the County, including the above listed municipalities, have been directly hindered by the unavailability of an adequate water supply.

In many cases, the factor limiting the quantity of water available and the ability to extend municipal water systems is the capacity of the various Village water supply systems. All of the Village supply systems will most likely require upgrading of their facilities in order to serve a large demand increase within the Town it also serves.

In addition to providing filtration of raw surface water, water intake and transmission facilities must also be upgraded. It may not be cost effective for individual municipal water systems to address these quantity and quality limitations independently. There are also local deficiencies such as undersized distribution lines and inadequately looped pipe networks. These individual system inadequacies will need to be addressed at the local level.

## 6.0 POTABLE WATER RESOURCES

### 6.1 GENERAL

The needs of Livingston County as presented in Chapter 5.0 indicate that by the year 2020 municipal water systems (as well as the Sonyea correctional facilities) will need to provide or redistribute an additional 1.5 million gallons of potable water per day (average) for a total usage of 6.8 MGD.

This 6.8 MGD of potable water must also be in conformance with either the new surface water quality regulations or the groundwater regulations, whichever applies, when they become effective.

To determine how the quantity and quality issues can be addressed, an understanding of the available water sources is required.

### 6.2 SURFACE WATER SOURCES

#### 6.2.1 Conesus Lake

##### Existing System:

Conesus Lake located in the north central portion of Livingston County is currently used as a source of potable water for the municipal water systems within the Towns of Avon, Geneseo, Livonia (Lakeville), and York; and the Villages of Avon and Geneseo. Privately owned multiple user water systems such as Eagle Point, as well as approximately 1,000 private individual homeowners along the lake shore perimeter (not served by a municipal system), also utilize the lake as a potable water source. In addition to a potable water supply, the lake is used for a variety of other purposes including recreation (boating, swimming), flood control, fish spawning, and downstream release requirements for the Conesus Lake County sewage treatment facility located on the Conesus Lake Outlet.

### Quantity of Potable Water

The maximum daily withdrawal allocations from Conesus Lake for municipal water systems currently permitted by the NYSDEC is 6.9 MGD. This includes the Villages of Avon at 3.5 MGD, the Village of Geneseo at 3.0 MGD, and the Town of Livonia (Hamlet of Lakeville) at 0.4 MGD. In addition, the NYSDEC also requires that a minimum release of 10 CFS (6.5 MGD) shall be maintained in the outlet for dilution flow of the sewage treatment plant effluent discharge. Together these two flow requirements result in a required maximum day yield for the lake reservoir of 13.4 MGD. These combined water demands measured against the safe yield of Conesus Lake together define the effective capacity of the lake as a source for future potable water demand.

The safe yield of Conesus Lake was evaluated in 1970 Teetor-Dobbins in a comprehensive water study prepared for Livingston County. This study reported the safe yield of Conesus Lake as 12.0 MGD, which is 1.4 MGD less than the combined flow requirements for maximum water demands (6.9 maximum potable water and 6.5 STP discharge) as discussed above. Since however, the 13.4 MGD is based upon the maximum potable water demand (which is substantially higher than the average day demand and which does not occur continuously for twelve months of the year), further evaluation of the actual inflow vs. outflow dynamics of the lake is required.

In 1981, the U.S. Army Corps of Engineers, Buffalo District, published an environmental study for a flood control project entitled "Stage III Detailed Project Report and Environmental Impact Statement - Conesus Lake, New York." This study calculated the daily net inflows for Conesus Lake for a forty year interval from October, 1940 to December, 1979.

These net inflows were utilized to create annual dependable yields in a report entitled "Genesee Sub-State Region Water Resources Management Study Report" prepared in 1987 by Weston Managers Designers/Consultants in association with Larsen Engineers for the Bureau of Water Resources, Division of Water, NYSDEC and the Bureau of Public Water Supply Protection, Division of Environmental Protection, New York State Department of Health.

The average annual combined dependable yield for the lake was determined to be 10.7 MGD (20-year recurrence interval) and 7.6 MGD (40-year recurrence interval) or a 20-year average annual water supply yield of 4.2 MGD (10.7 MGD minus the 6.5 MGD required for the wastewater plant discharge). While a detailed study is needed to definitely compare the average annual dependable yield of 4.2 MGD and maximum allowable water demand of 6.9 MGD, a preliminary evaluation indicates they are comparable as described below:

Average Daily Demand:

Oct. to June: 3.3 MGD x 275 days = 908 MG

July to Sept.: 6.8 MGD x 90 days = 612 MG

1,520 MG/365 days = 4.16 MGD (say) 4.2 MGD

The above does not consider:

- The storage ability or inability of the lake reservoir.
- Potential for extended or higher "off season" demand.
- That the above 20-year dependable yield (calculated in the "Genesee Sub-State Regional Water Resources Management Study Report") was based upon the Conesus Lake outlet structure being constructed 2 inches higher than it was (thus reducing lake storage capacity).

Water Regulations

Currently, the municipal and private multiple user water suppliers utilizing Conesus Lake for drinking water provide only disinfection treatment (no filtration). Under the new federal surface water quality regulations which become effective in January, 1992, the turbidity levels of Conesus Lake will require these water suppliers to provide filtration. Individual intakes for residents along the lake shore are not at this time regulated by the surface water quality turbidity regulations.

A concern, however, to both the municipal/private multiple user suppliers and the individual homeowners is the potential for zebra mussel contamination. Since Conesus Lake is used as a recreational lake (boating), the likelihood of zebra mussel infestation is high if it does not exist already. The zebra mussels form massive colonies, which if not eliminated or controlled will reduce water intake capacities. These mussels can be drawn into the pump suction as they die off potentially damaging the pumps and contaminating the water supply. In addition, the control of the zebra mussels with chlorine may create taste and odor problems for the treated water.

Possible treatment of the raw water can be accomplished at several locations:

1. Each municipality (Avon, Geneseo, and Livonia [Lakeville]) could construct their own treatment facility.
2. A single, consolidated 7.0 MGD treatment plant sized to serve the combined water demand of the three communities could be constructed.
3. The City of Rochester's treatment plant at Hemlock Lake (estimated completion date January, 1992) could be used (as currently being constructed or enlarged) to treat Conesus Lake water via a transmission main from Conesus Lake to the Hemlock facility and paralleling the existing Hemlock Lake transmission main serving the Town and Village of Livonia to deliver the treated water back to the existing Conesus Lake municipalities. While possible to construct, the costs of transmission treatment and/or purchase of City of Rochester water treatment capacity is likely to exceed the cost of a consolidated Conesus Lake Treatment plant (option #2 above).

Multiple user private systems such as Eagle Point will be required to connect to municipal systems or construct individual "package" systems to assure compliance with the federal surface water regulations.

Individual water intakes on Conesus Lake are not directly governed by the surface water turbidity regulations. However, recent water quality tests of Conesus Lake

by the Livingston County Health Department indicate the presence of high levels of coliform and e-coli bacteria. These individual intakes will also be impacted by zebra mussel infiltration. By providing a lake shore public water system, residents would be assured of a reliable water supply system meeting applicable water quality standards.

### 6.2.2 Hemlock Lake

#### Existing System

The City of Rochester utilizes the combined Hemlock and Canidice Lakes for potable water (along with water purchased from the Monroe County Water Authority within Monroe County). The entire Hemlock shoreline to a minimum of 200 feet from the shore is owned by the City of Rochester. The average annual allowable daily demand from Hemlock and Canidice Lakes is 37 MGD with a maximum daily demand of 48 MGD. Based upon conversations with the Upland Water Supply Department of the City of Rochester, it is estimated that the withdrawal from Hemlock Lake alone is approximately 29.5 MG.

#### Quantity of Potable Water

The City of Rochester uses its full permitted withdrawals on a regular basis. The Town and Village of Livonia have agreements to purchase water 0.4 MGD (maximum day) from the City of Rochester Hemlock/Canidice system and to increase the above to 0.6 MG when the Lakeville Water District is operationally connected to the Hemlock Lake supply system. This agreement also provides for a further increase (for growth in the Town and Village of Livonia) to 1.0 MGD (including Lakeville).

In addition, the Town and Village of Lima have two agreements for 0.055 and 0.28 MG average daily demand respectively.

## Water Regulations

As discussed in Section 6.2.1, the water from the City of Rochester Upland Supply will be filtered via a new treatment facility on Hemlock Lake due for completion in 1992. The plant's rated capacity is 48 MGD but could likely be revised upwards by 20 percent (to 58± MGD) with minor modifications.

A current issue of concern regarding protection of Hemlock Lake water involves failing septic systems in the Hamlet of Springwater as described in Section 3.25. Zebra mussels currently pose a lesser threat to the users of potable water from Hemlock Lake than that discussed for Conesus Lake, as Hemlock Lake is closely controlled by the City of Rochester through boat access restrictions.

### 6.2.3 Silver Lake

#### Existing System

Silver Lake, located in Wyoming County, is currently used as a source of potable water by the Villages of LeRoy, Perry (both in Wyoming County), and Mt. Morris in Livingston County. A small number of Wyoming County residents along the lake shore have private individual intakes in the lake. The lake (like Conesus Lake) is also used for recreation activities. A downstream release requirement exists for the Perry wastewater treatment facility located on the Silver Lake Outlet.

#### Quantity of Potable Water

The total combined maximum daily allocated withdrawals from Silver Lake for municipal water systems permitted by the NYSDEC are 5.5 MGD. This is comprised of the Village of LeRoy at 2.0 MGD (for the months of September through May), the Village of Perry at 2.0 MGD (year round), and the Village of Mt. Morris at 1.5 MGD (year round). The dependable maximum safe yield of Silver Lake has been estimated to be 5.0 MGD. ("Genesee Sub-State Region Water Resources Management Study Report" prepared 1987 by Weston Managers et al. See reference p. 6-2.)

Due to the apparent current over-allocation of Silver Lake (0.5 MGD in excess of its estimated dependable yield), further increases in Mt. Morris' allocation are not likely to occur. For this reason, any increases beyond a maximum day of 1.5 MG in the water demands required for Mt. Morris and the Leicester/Cuylerville system will most likely have to be obtained from other sources.

#### Water Regulations

The Village of Mt. Morris recently completed construction of a filtration facility for its Silver Lake source. The facility is rated for its maximum day withdrawal allocation of 1.5 MGD. This facility will provide potable water in accordance with the federal surface water quality regulations.

#### **6.2.4 Mill Creek**

##### Existing System

Mill Creek, located in Steuben County, is a spring-fed water body. An impoundment on this creek is the source of supply for the Village of Dansville's water system.

##### Quantity of Potable Water

The daily withdrawal allocation from Mill Creek for Dansville's municipal water system as currently permitted by the NYSDEC is 0.5 MGD average day. This allocation should be increased to more accurately reflect both current water usage as well as projected water demand increases in the future. The actual capacity of the impoundment on Mill Creek is unknown although current usage demands can be met.

##### Water Regulations

The Village of Dansville does not currently have a filtration facility. The system's supply source will require additional treatment to provide potable water in accordance with the federal surface water quality regulations.

### 6.3 GROUNDWATER

#### Existing System

Approximately 27,600 people in Livingston County currently drink groundwater from public water supply systems, private multiple user systems, or individual wells. The quantity of potential potable groundwater production in the county is approximately 66.7 MGD (re: Teeter-Dobbins, Livingston County Comprehensive Public Water Supply Study, 1970). Currently, the average daily consumption of groundwater in Livingston County is 2.8 MGD. Approximately 13 percent of this groundwater is utilized at the Correctional Facilities in Sonyea (Town of Groveland).

#### Water Regulation:

Although the quantity of groundwater in Livingston County appears adequate, quality is a problem in some areas. The Village of Caledonia has experienced contamination problems in the past involving 1,1,1,- trichloroethane (TCA) and trichloroethene (TCE), volatile organics, which have threatened the municipal well source. Although recent water quality tests have shown the levels of TCA and TCE to be within acceptable standards, the Village will install an air-stripper in response to this problem.

Contamination of individual wells has occurred in isolated areas of the Town of Caledonia, and the Hamlet of Scottsburg (Town of Sparta). In Scottsburg evidence of gasoline contamination has been recorded by the County Health Department. The Town of Sparta is in the process of investigating the formation of a water district to serve the affected areas utilizing individual wells with a public groundwater well source. In the Town of Caledonia several private individual wells have shown to be contaminated with TCE. This contamination is thought to be a result of a railroad car spill which occurred approximately 20 years ago in the Town of LeRoy (Wyoming County) west of Caledonia. While the full extent of contamination is still being investigated, it appears the contamination is spreading as TCE moves with the groundwater flow. The possibility exists that the

Village of Caledonia municipal well source may be threatened with contamination from TCE once again.

In several localized areas of the County, another water quality concern arises where poor soil conditions and/or high densities of septic systems have resulted in inadequate or failing septic systems. Municipal water systems in the Village of Caledonia and the Town of Springwater (Hamlet of Springwater), neither of which are served by a municipal sanitary sewer system, are susceptible to this form of contamination. The Livingston County Health Department has expressed concern that each of these communities, as a result of the poor soils conditions and high densities of septic systems, faces the potential for the contamination of the municipal well supply from untreated or partially treated effluent.

Individual wells in the northeast portion of the Town of West Sparta have also experienced poor water quality (high mineral content) and inadequate quantities, according to Town personnel. The number of septic system failures in this area have also been increasing and are generally a result of poor soils conditions causing improper leaching. According to the Livingston County Health Department, the growth of the area combined with the poor soils conditions for septic systems increases the potential for contamination of groundwater sources by partially treated effluent.

## 7.0 WATER RESOURCE UTILIZATION ALTERNATIVES

### 7.1 GENERAL

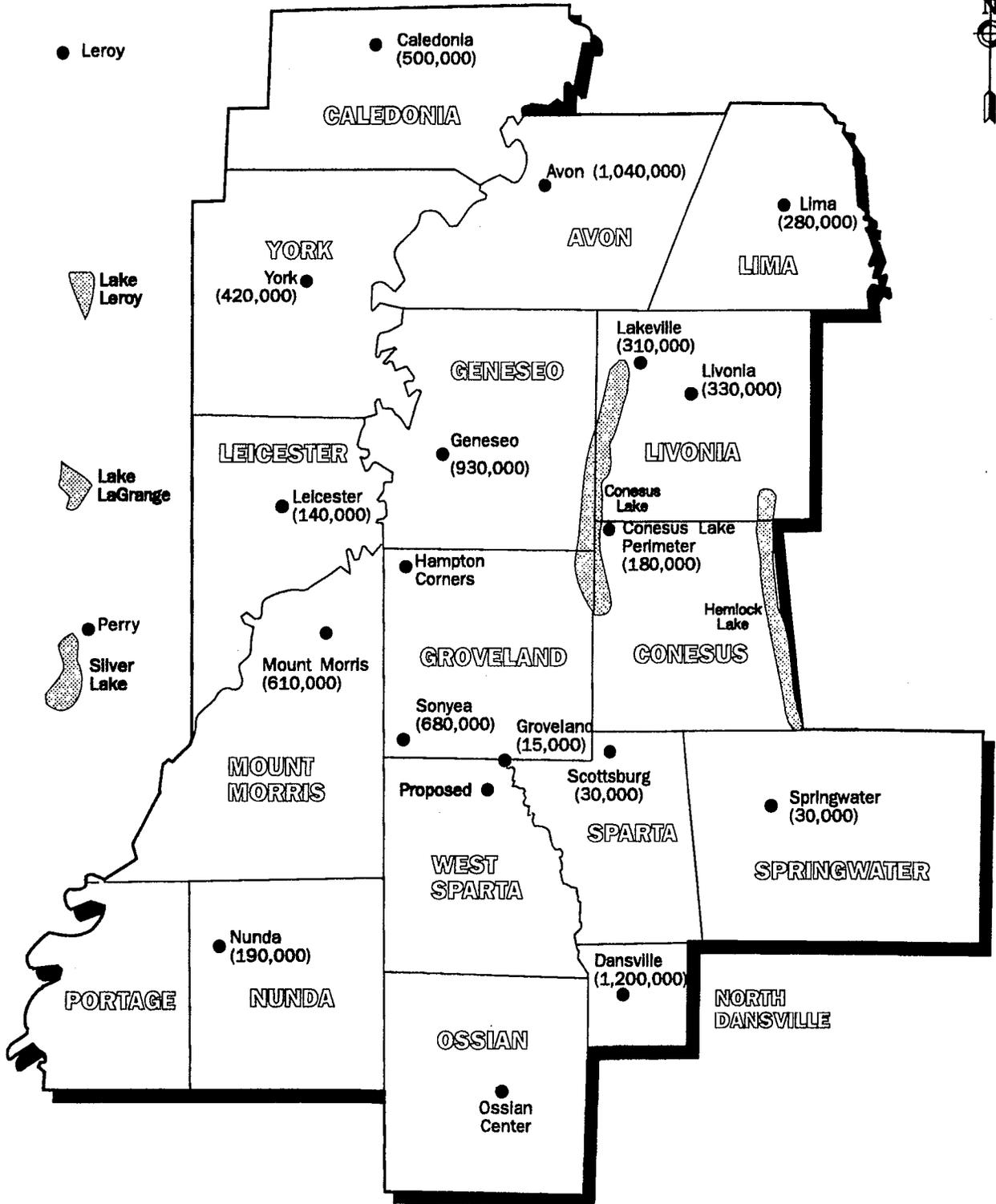
As indicated in Chapter 5.0, Summation of Needs, there are enough water resources within or currently available to Livingston County to meet the projected demands, although, there is a need for redistribution of an additional 1.5 MGD of potable water average day and filtration of approximately 4.6 MGD of potable water average day. Further, two basic goals were identified:

1. Ensure that residents receive adequate quantities of good quality potable water that meets the appropriate drinking water standards, and,
2. Promote economic development in the County by providing for the adequate and reliable supply of potable water to areas which have the potential for such economic growth.

The above 1.5 MGD is based upon projected population and projected commercial/industrial increases as outlined in Chapter 2.0 and tabulated in Chapter 5.0 (Table 5-7) of this report. These increases will require that the County as a whole must provide a total of 6.8 MGD average daily water usage for those residents served by municipal or large institutional systems in the year 2020.

Based on the above goals and treatment/redistribution needs, several alternatives have been developed to maximize the effective use of available water resources. To distribute the 6.8 MGD of potable water required, a transmission system (common to all alternatives, although implemented in different phases) has been developed to transmit water to "demand centers" from the alternative sources of treated water (Conesus, Hemlock and/or Silver Lakes). These centers are shown on Figure 7-1 and listed below:

<u>"Demand Center"</u>	<u>Service Area</u>
Avon	Village and Town of Avon
Caledonia	Village and Town of Caledonia
Conesus Lake Perimeter	Perimeter surrounding Conesus Lake (not including Lakeville Water District). Includes residents in the Towns of Conesus, Geneseo, Groveland and Livonia
Dansville	Village of Dansville and Town North Dansville (including proposed industrial park located in within the Town of North Dansville and Town of Sparta)
Geneseo	Village and Town of Geneseo
Groveland	Hamlet of Groveland Station Water Corporation
Leicester	Village and Town of Leicester
Lima	Village and Town of Lima
Livonia	Village and Town of Livonia exclusive of Lakeville District
Livonia (Lakeville)	Town of Livonia, Lakeville Water District
Mt. Morris	Village and Town of Mt. Morris and the Hampton Corners area in the Town of Groveland
Nunda	Village and Town of Nunda
Scottsburg	Hamlet of Scottsburg in the Town of Sparta
Sonyea	All correctional facilities at Sonyea in the Town of Groveland
West Sparta	Northeastern portion of the Town of West Sparta
Springwater	Hamlet of Springwater in the Town of Springwater
York	Town of York



**LEGEND**

● Nunda (190,000) DEMAND CENTER W/ AVE. WATER USE (2020) GALLONS PER DAY

**DEMAND CENTERS  
RESOURCE UTILIZATION STRATEGY**

COMPREHENSIVE WATER SUPPLY STUDY  
LIVINGSTON COUNTY, NEW YORK

 **CLARK ENGINEERS & ASSOCIATES**  
ROCHESTER, NEW YORK

FIGURE 7-1

Capital and operation/maintenance costs for the proposed alternatives are based upon preliminary reviews (not detailed evaluations) of the adequacy of existing systems and major transmission mains. The need for upgrading or construction of new transmission mains (not distribution lines), filtration facilities, storage capacities, and booster pump stations were also considered.

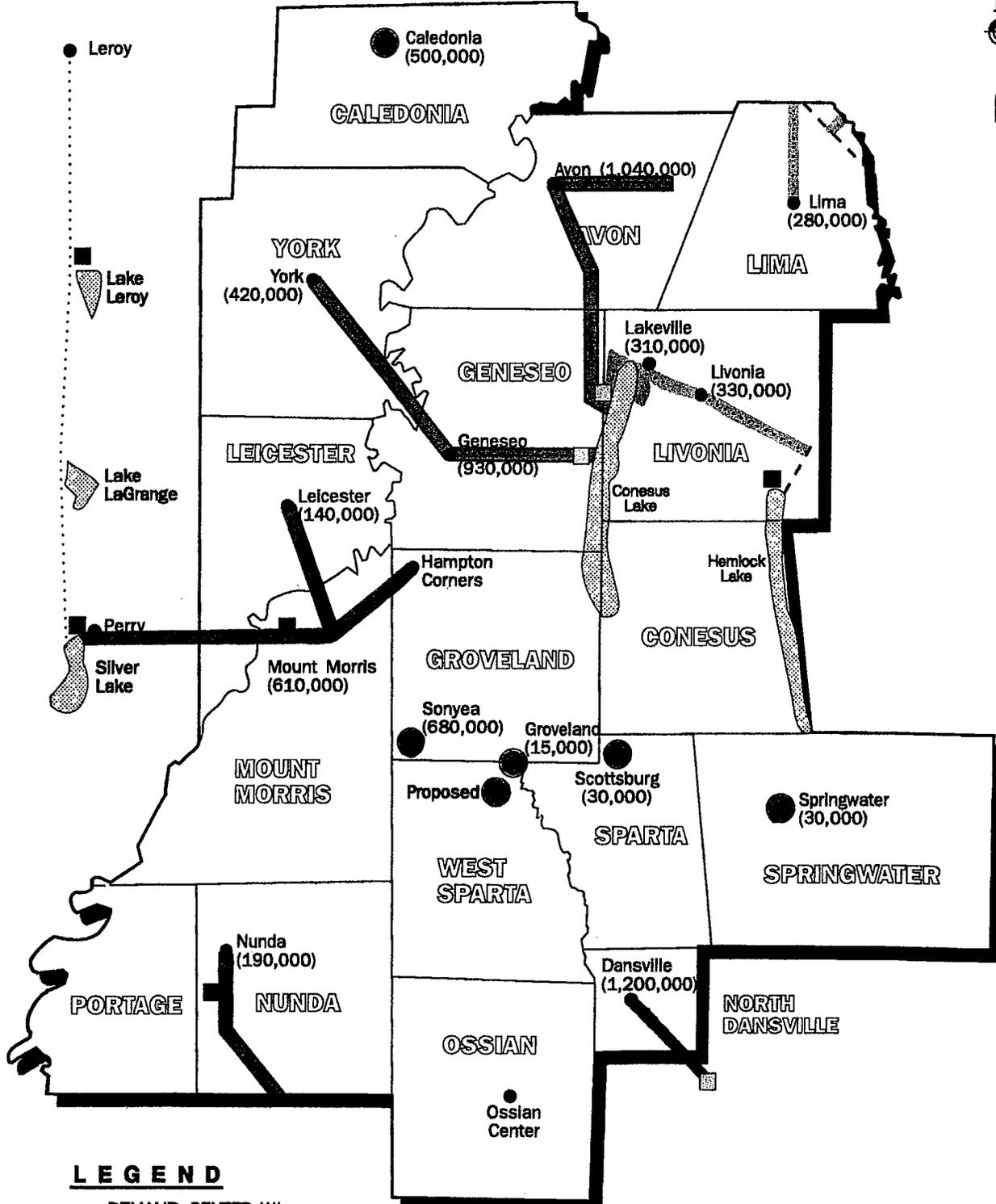
All of the alternatives provide the capacity to meet the two basic goals. Adequate infrastructure alone, however, will not assure distribution of water to areas with the greatest need or potential growth. Administrative mechanisms will need to be reviewed, and modified if necessary, to facilitate the distribution of water throughout Livingston County. Various management systems are discussed in detail in Chapter 9.0 of this report.

## **7.2 EXISTING WATER SYSTEMS MAINTAINED**

For comparative purposes, an alternative was developed which assumes that the existing municipal and private water systems in Livingston County maintain their present facilities and management structures for the year 2020. Figure 7-2 shows the assumed system configuration of this alternative.

The following summary details the systems under this alternative for each demand center:

- Avon Demand Center would be served by a separate treatment facility at Conesus Lake. The treatment facility would be sized for 3.5 MGD to utilize Avon's maximum day allocation from Conesus Lake. Based on preliminary review, it was determined that the existing 20" transmission main has the capacity to meet the year 2020 demand for the Avon Demand Center and therefore would not require upgrading.
- Caledonia Demand Center would be served by the existing municipal groundwater source.
- Conesus Lake Perimeter Demand Center would continue to be served by individual lake intakes, private wells, or private multiple user systems.



**LEGEND**

- Nunda (190,000) DEMAND CENTER W/ AVE. WATER USE (2020) GALLONS PER DAY
- GROUNDWATER SOURCE (MULTIPLE USER SYSTEMS)
- ..... TRANSMISSION MAIN (EXISTING)
- CONESUS LAKE SOURCE
- HEMLOCK LAKE SOURCE
- SILVER LAKE SOURCE
- MILL CREEK SOURCE
- ⊗ BOOSTER PUMP STATION
- FILTRATION PLANT (PROPOSED)
- FILTRATION PLANT (EXISTING)

<b>EXISTING WATER SYSTEM MAINTAINED RESOURCE UTILIZATION STRATEGY</b>	
COMPREHENSIVE WATER SUPPLY STUDY LIVINGSTON COUNTY, NEW YORK	
<b>CLARK ENGINEERS &amp; ASSOCIATES</b> ROCHESTER, NEW YORK	<b>FIGURE 7-2</b>

- Dansville Demand Center would be served by the proposed separate water treatment facility at Mill Creek.
- Geneseo Demand Center would be served by a separate treatment facility at Conesus Lake. The treatment facility would be sized for 3.0 MGD to utilize Geneseo's maximum day allocation from Conesus Lake. The growth in Geneseo, as well as any system which is served by Geneseo, would be limited by this maximum day allocation from Conesus Lake.
- Groveland Demand Center would continue to be served by the Hamlet of Groveland Station Water Corporation.
- Leicester Demand Center would be served by the separate treatment facility at Silver Lake via the existing connection to the Village of Mt. Morris. Since on maximum usage days, Mt. Morris is currently operating near its maximum day allocation from Silver Lake, no increase above the volume of water currently supplied to Leicester would be available. Since no increase in demand can be supplied, Leicester would need to locate another water source, place a moratorium on development and/or implement water conservation measures.
- Lima Demand Center would be served by the City of Rochester treatment facility at Hemlock Lake via the existing connection to the City of Rochester transmission main.
- Livonia Demand Center would be served by the City of Rochester treatment facility at Hemlock Lake via an upgraded connection to the City of Rochester transmission main.
- Livonia (Lakeville) Demand Center would be required to construct a treatment facility at Conesus Lake if this raw surface water source were continued to be utilized. Since this alternative would not be economically feasible, it is assumed that Lakeville would abandon

the Conesus Lake source and utilize the Hemlock Lake source via the existing Town of Livonia agreement with the City of Rochester. An upgrade of the Livonia (Lakeville) transmission system would be required to supply the 2020 day demand.

- Mt. Morris Demand Center would continue to be served by the separate treatment plant at Silver Lake via an upgraded transmission main. Since the maximum day allocation from Silver Lake for Mt. Morris is not anticipated to be increased, no future increase in water demand can be supplemented by the Mt. Morris system unless another water source is located. This would limit growth potential in both Mt. Morris and any area which the system serves, including Hampton Corners in the Town of Groveland. Mt. Morris would need to locate another water source, place a moratorium on development and/or implement water conservation measures.
- Nunda Demand Center would continue to be served by its spring-fed impoundment of Little Dansville Creek. The existing separate filtration plant would be maintained.
- Scottsburg Demand Center would be served by a new municipal groundwater source to handle the area with contaminated private wells.
- Sonyea Demand Center would continue as a separate system utilizing Keshequa Creek, existing groundwater sources and the existing filtration plant. New groundwater sources would be utilized as expansion requires.
- Springwater Demand Center would be served by the existing municipal groundwater source.
- West Sparta Demand Center would be served by a new municipal groundwater source to handle the area with contaminated private wells.

- York Demand Center would be served by the Geneseo treatment facility at Conesus Lake. The growth potential in York would be limited due to Geneseo's maximum allocation from Conesus Lake. The transmission main from Geneseo to the York system would require an upgrade in order to supply the 2020 demand.

If the municipal water systems within Livingston County continue on their present course of development an obvious problem which cannot be addressed by maintaining the existing systems is the issue of water resource redistribution. Each community is limited by the water resources currently allocated to it. Given the existing water system organization, many communities would be unable to meet their 2020 projected demands.

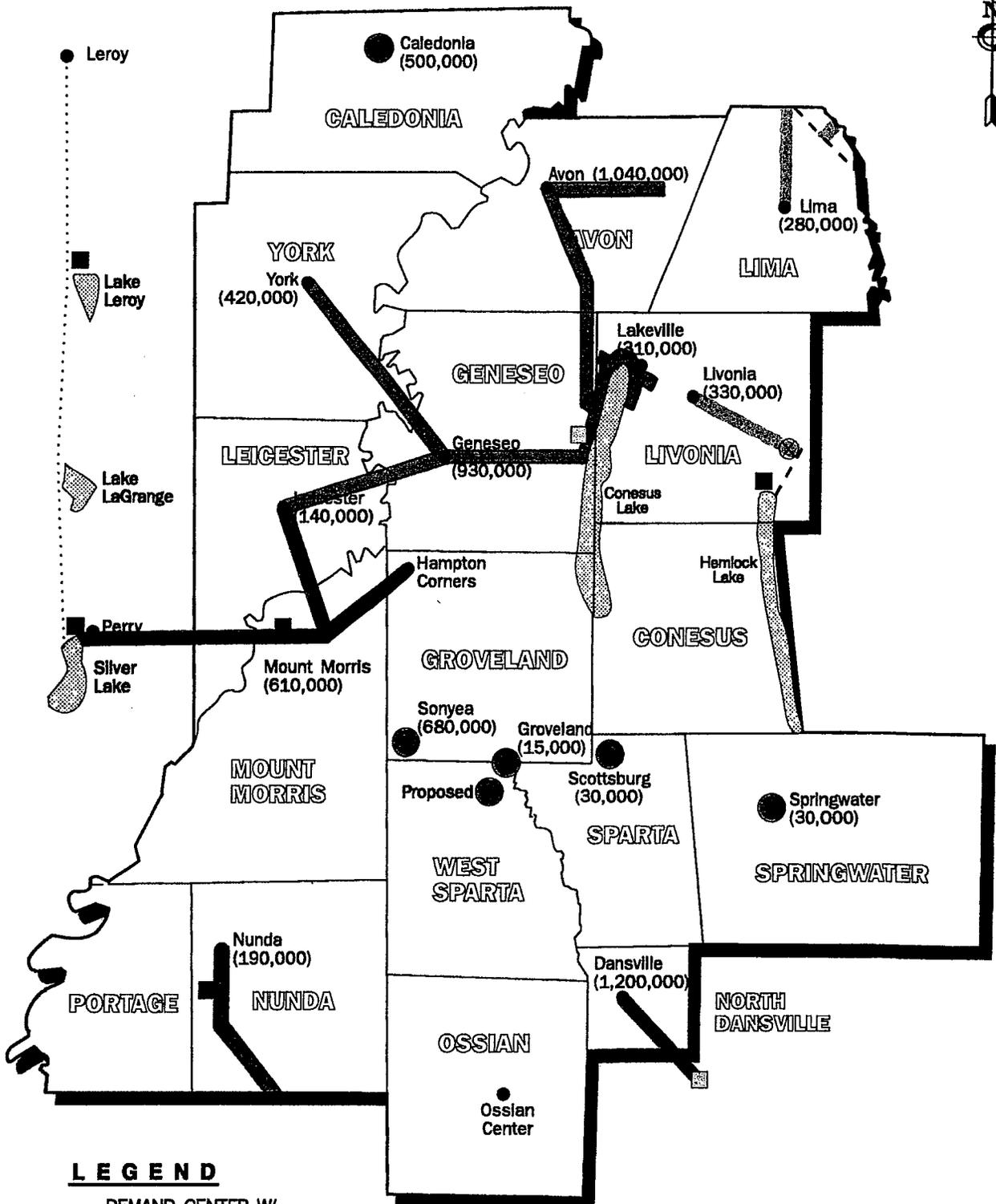
### 7.3 ALTERNATIVE A

#### Description

Alternative A shown on Figure 7-3 represents a "base-case" scenario for Livingston County. All communities currently serviced will continue to utilize the same water source in the year 2020. Some transmission systems will require upgrading to provide sufficient capacity. Areas in Scottsburg and West Sparta will be developed as new service areas.

Treatment of all surface water sources will be required. The existing facility at Mt. Morris will treat Silver Lake water and the City of Rochester facility (to be completed January, 1992) will treat Hemlock Lake water. A new 6.9 MGD Conesus Lake treatment facility and a 3.0 MGD Mill Creek treatment facility are required. The existing facilities at Nunda and Sonyea will treat Little Dansville Creek and Keshequa Creek.

The Conesus Lake treatment plant's location is assumed to be on the west shore of Conesus Lake between the existing intakes of Geneseo, Avon, and Livonia (Lakeville).



**LEGEND**

- Nunda (190,000)
- DEMAND CENTER W/ AVE. WATER USE (2020) GALLONS PER DAY
- GROUNDWATER SOURCE (MULTIPLE USER SYSTEMS)
- ..... TRANSMISSION MAIN (EXISTING)
- ▬ CONESUS LAKE SOURCE
- ▬ HEMLOCK LAKE SOURCE
- ▬ SILVER LAKE SOURCE
- ▬ MILL CREEK SOURCE
- ⊗ BOOSTER PUMP STATION
- ▣ FILTRATION PLANT (PROPOSED)
- FILTRATION PLANT (EXISTING)

**ALTERNATIVE A  
RESOURCE UTILIZATION STRATEGY**

COMPREHENSIVE WATER SUPPLY STUDY  
LIVINGSTON COUNTY, NEW YORK

**CLARK ENGINEERS & ASSOCIATES**  
ROCHESTER, NEW YORK

The following summary details the proposed systems under this alternative for each demand center:

- Avon Demand Center will be served by the Conesus Lake consolidated treatment facility via the existing transmission main. Preliminary review of this 20-inch main indicates it has sufficient capacity to meet the year 2020 demand. However, concern has been raised that low pressure exists in the area necessary for the extension to serve the I-390/Route 15 interchange. Detailed review of this main would be required to determine necessary improvements.
- Caledonia Demand Center will be served by the existing municipal well source.
- Conesus Lake Perimeter Demand Center would continue to be served by individual lake intakes, private wells, or private multiple user systems.
- Dansville Demand Center will be served by the proposed separate water treatment facility at Mill Creek.
- Geneseo Demand Center will be served by the Conesus Lake consolidated treatment facility via its existing transmission main.
- Groveland Demand Center will continue to be served by the Hamlet of Groveland Station Water Corporation.
- Leicester Demand Center will be served by the separate filtration plant at Silver Lake via the existing connection to the Village of Mt. Morris. The maximum day demand will be supplemented by a new connection to the Village of Geneseo and the consolidated treatment facility.

- Lima Demand Center will be served by the City of Rochester filtration facility at Hemlock Lake via the existing connection to the City of Rochester transmission main.
- Livonia Demand Center will be served by the City of Rochester filtration facility at Hemlock Lake via an upgraded connection to the City of Rochester.
- Livonia (Lakeville) Demand Center will be served by the Conesus Lake consolidated treatment facility via an upgraded transmission main.
- Mt. Morris Demand Center will continue to be served by the separate filtration plant at Silver Lake via an upgraded transmission main. Hampton Corners area in the Town of Groveland will be served by the Village of Mt. Morris via an upgraded transmission main.
- Nunda Demand Center will continue to be served by its spring-fed impoundment of Little Dansville Creek. The existing separate filtration plant will be maintained.
- Scottsburg Demand Center will be served by a new municipal groundwater source to handle the area with contaminated private wells.
- Sonyea Demand Center will continue as a separate system utilizing Keshequa Creek, existing groundwater sources and the existing filtration plant. New groundwater sources will be utilized as expansion requires.
- Springwater Demand Center will continue to be served by the existing municipal groundwater source.

- West Sparta Demand Center will be served by a new municipal groundwater source to handle the area with contaminated private wells.
- York Demand Center will be served by the Conesus Lake consolidated treatment facility from the Village of Geneseo system via the existing transmission main.

In order to serve the systems in the year 2020 as outlined above, several operational changes will be required:

- The permitted withdrawal allocation for the Dansville Demand Center from Mill Creek must be updated and increased from 0.5 MGD to 1.2 MGD for an average day demand. This will provide for the current usage of 1.1 MGD plus an additional projected demand of 0.084 MGD.
- The agreement between the City of Rochester and the Town/Village of Livonia (exclusive of Lakeville) must be updated to allow for an increase in the supply of water from 0.4 to 1.0 MGD for a maximum day demand.
- The Mt. Morris Demand Center is projected to have a maximum day demand in 2020 of 1.7 MGD which is 0.2 over the current allocation from Silver Lake of 1.5 MGD. As stated in Section 6.2.3 it is unlikely an allocation increase would be feasible, therefore, an additional source of supply for this Demand Center will be required. Under this alternative, it is proposed that a new transmission main will be constructed from the Village of Geneseo to the Hamlet of Cuylerville to supplement the system with an additional supply of 0.2 MGD from Conesus Lake. Under this alternative there is sufficient capacity from Conesus Lake to accommodate this volume.

An additional operational issue requiring investigation involves the contractual agreement between the Village of Avon and General Foods Corporation. A cornerstone for this alternative provides for the distribution of potable water

to municipal systems based upon actual projected demands. The Village of Avon however, has a contractual agreement to supply a maximum volume of 2.1 MGD of potable water to General Foods although the facility presently uses only 0.034 MGD average day. This requirement to provide 2.1 MGD has not been included in the demand projections for Avon. Since this agreement involves a substantial volume of water, the intentions of General Foods Corporation involving their required water demands must be investigated. If possible, the contract should be renegotiated to correspond more closely to actual needs. In the future should General Foods' water needs change substantially, alternative sources such as connections to the City of Rochester could be initiated.

#### Anticipated Economic Development

This alternative will benefit several areas with development potential. Hampton Corners in the Town of Groveland near the I-390 interchange will be served by a new transmission main sized for sufficient capacity to encourage development. The additional water supplied to the Mt. Morris system from Conesus Lake will provide the required expansion capacity without the need to upgrade the existing filtration facility. The construction of a separate filtration facility at Mill Creek will provide the Dansville area and the proposed industrial park sufficient potable water to meet the projected demand.

All municipal systems which currently rely on Conesus Lake for supply (Avon, Geneseo, York, and Livonia [Lakeville]) will also benefit from this alternative. The proposed consolidated filtration facility at Conesus Lake will provide potable water to these systems meeting the new federal surface water quality standards. This alternative would be able to supply adequate quantities of potable water to accommodate the projected growth in areas such as the proposed Water District Extension #2 to the Town of Livonia (Lakeville) water system, as well as, the Town of Geneseo commercial development along Route 20A. Sufficient capacity for development at the I-390 interchange at Avon will also be available.

### Estimated Costs

The combined estimated project and annual costs associated with Alternative A are \$27,800,000 and \$4,220,000 respectively, and are detailed in Tables 7-1 and 7-2.

#### **Alternative A-1**

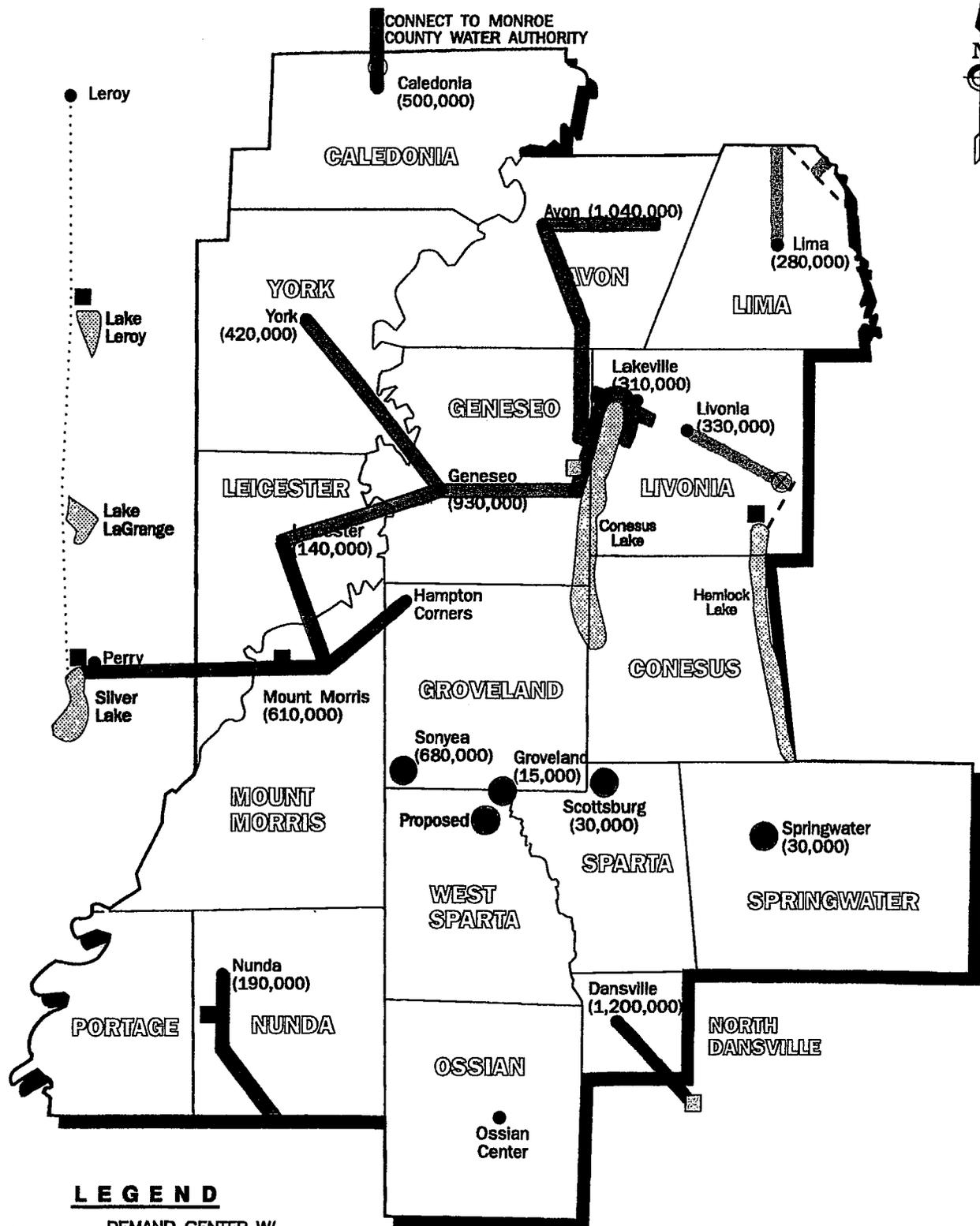
This alternative shown on Figure 7-4 is similar to Alternative A except that Caledonia is served by the Monroe County Water Authority (MCWA) and the existing groundwater source is abandoned. The existing connection to the MCWA system at the north Village limits will require upgrading with the installation of a booster pump station, as well as, larger transmission mains within the MCWA system in order to provide an adequate volume of water.

The combined estimated project and annual costs associated with Alternative A-1 are \$30,800,000 and \$4,710,000 respectively, and are detailed in Tables 7-1 and 7-2.

#### **Alternative A-2**

This alternative shown on Figure 7-5 is a variation of Alternative A with Caledonia served by Conesus Lake via the Village of Avon system. This alternative will require the installation of a transmission main along Route 5, from the Village of Avon to the Village of Caledonia. A booster pump station will also be required. To serve the Village of Caledonia from Conesus Lake, Livonia (Lakeville) will need to be served from the Hemlock Lake source.

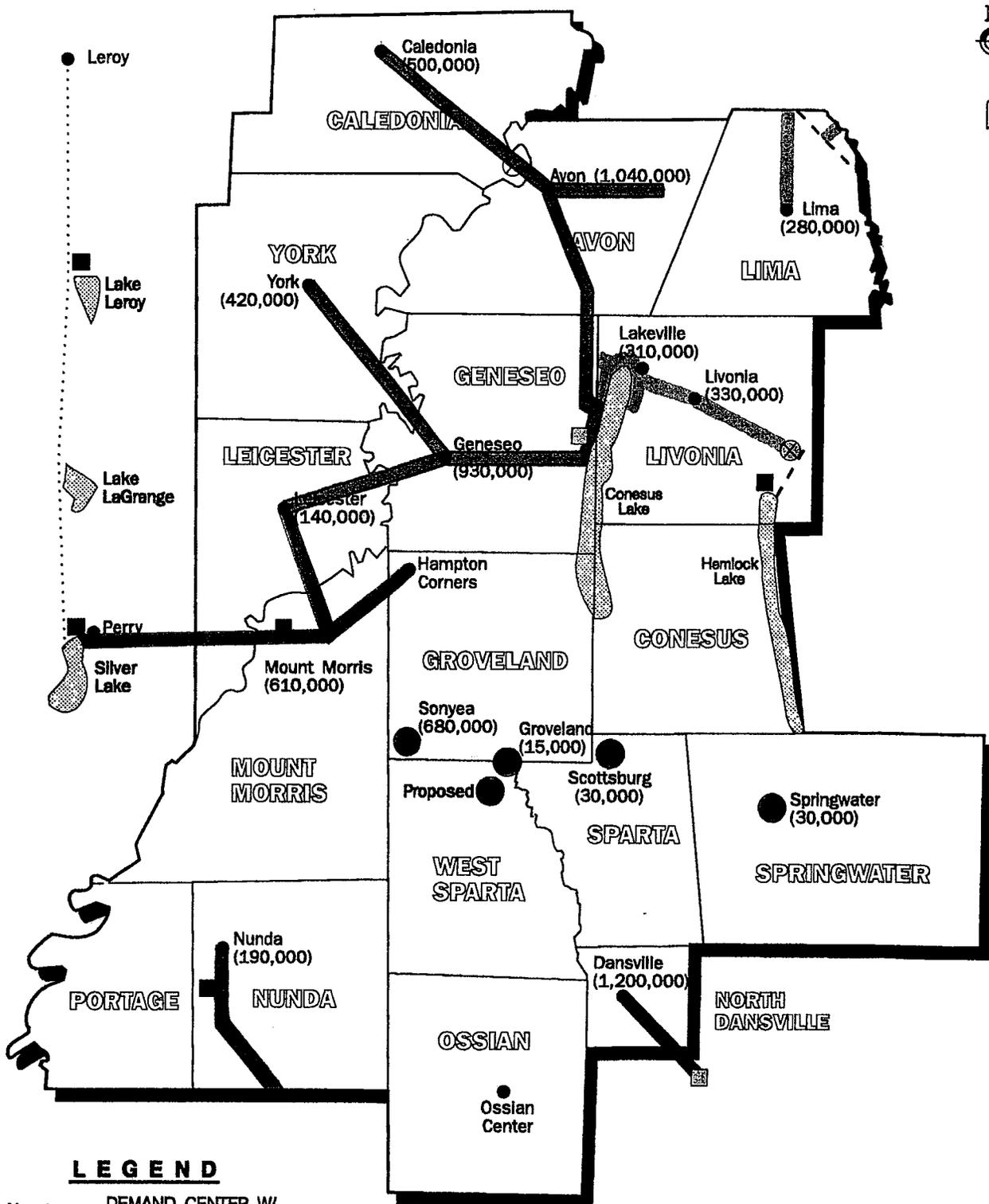
The combined estimated project and annual costs associated with Alternative A-2 are \$32,300,000 and \$4,860,000 respectively, and are detailed in Tables 7-1 and 7-2.



**LEGEND**

- Nunda (190,000) DEMAND CENTER W/ AVE. WATER USE (2020) GALLONS PER DAY
- GROUNDWATER SOURCE (MULTIPLE USER SYSTEMS)
- ..... TRANSMISSION MAIN (EXISTING)
- ▬ CONESUS LAKE SOURCE
- ▬ HEMLOCK LAKE SOURCE
- ▬ SILVER LAKE SOURCE
- ▬ MILL CREEK SOURCE
- ⊗ BOOSTER PUMP STATION
- ▣ FILTRATION PLANT (PROPOSED)
- FILTRATION PLANT (EXISTING)

<b>ALTERNATIVE A1 RESOURCE UTILIZATION STRATEGY</b>	
COMPREHENSIVE WATER SUPPLY STUDY LIVINGSTON COUNTY, NEW YORK	
<b>CLARK ENGINEERS &amp; ASSOCIATES</b> ROCHESTER, NEW YORK	<b>FIGURE 7-4</b>



**LEGEND**

- Nunda (190,000) DEMAND CENTER W/ AVE. WATER USE (2020) GALLONS PER DAY
- GROUNDWATER SOURCE (MULTIPLE USER SYSTEMS)
- ..... TRANSMISSION MAIN (EXISTING)
- CONESUS LAKE SOURCE
- ..... HEMLOCK LAKE SOURCE
- SILVER LAKE SOURCE
- MILL CREEK SOURCE
- ⊗ BOOSTER PUMP STATION
- ▣ FILTRATION PLANT (PROPOSED)
- FILTRATION PLANT (EXISTING)

<b>ALTERNATIVE A2</b>	
<b>RESOURCE UTILIZATION STRATEGY</b>	
COMPREHENSIVE WATER SUPPLY STUDY LIVINGSTON COUNTY, NEW YORK	
<b>CLARK ENGINEERS &amp; ASSOCIATES</b> ROCHESTER, NEW YORK	<b>FIGURE 7-5</b>

### **Alternative A-3**

Alternative A-3 shown on Figure 7-6 is a variation of Alternative A with municipal water provided to residents around Conesus Lake, as well as service to Caledonia via MCWA as in Alternative A-1. A transmission main will be installed which will connect to the existing Livonia (Lakeville) system in order to provide a complete "loop" around the lake. The existing Livonia (Lakeville) system will require upgrading with the installation of a larger transmission main. The same infrastructure will be required as outlined in Alternative A-1 in order to serve Caledonia via MCWA.

The combined estimated project and annual costs associated with Alternative A-3 are \$43,200,000 and \$6,000,000 respectively, and are detailed in Tables 7-1 and 7-2.

## **7.4 ALTERNATIVE B**

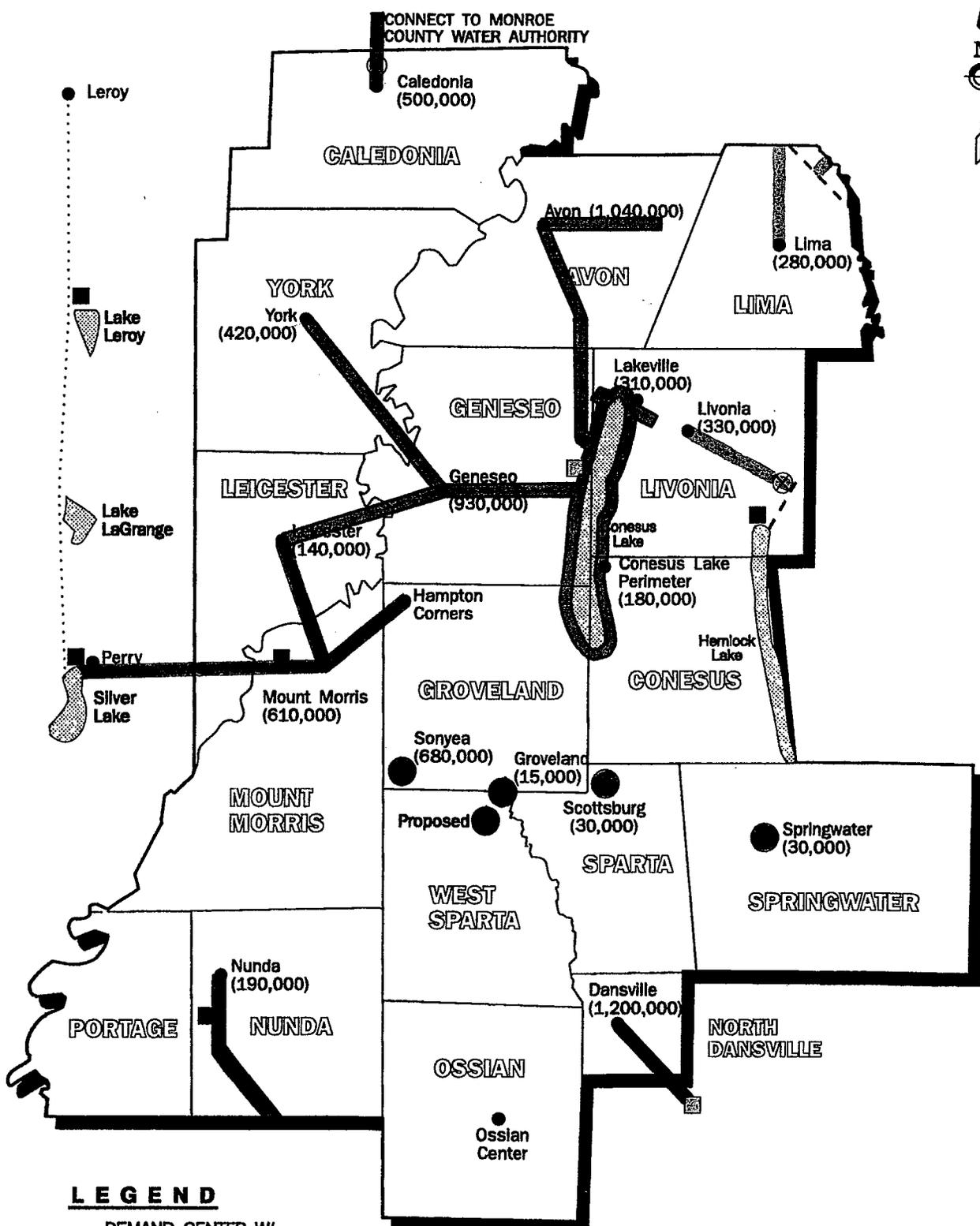
### Description

Alternative B shown on Figure 7-7 does not have a Conesus Lake treatment plant but rather assumes sufficient water can be purchased from the City of Rochester Hemlock Lake treatment plant to provide potable water to systems which would have been served by Conesus Lake.

Treatment facilities for surface water will include: the existing filtration plant at Mt. Morris for Silver Lake, Nunda for Little Dansville Creek and Sonyea for Keshequa Creek; the new City of Rochester filtration plant at Hemlock Lake; and, a proposed treatment plant at Mill Creek to feed the Dansville system.

The following summary details the proposed systems under this alternative:

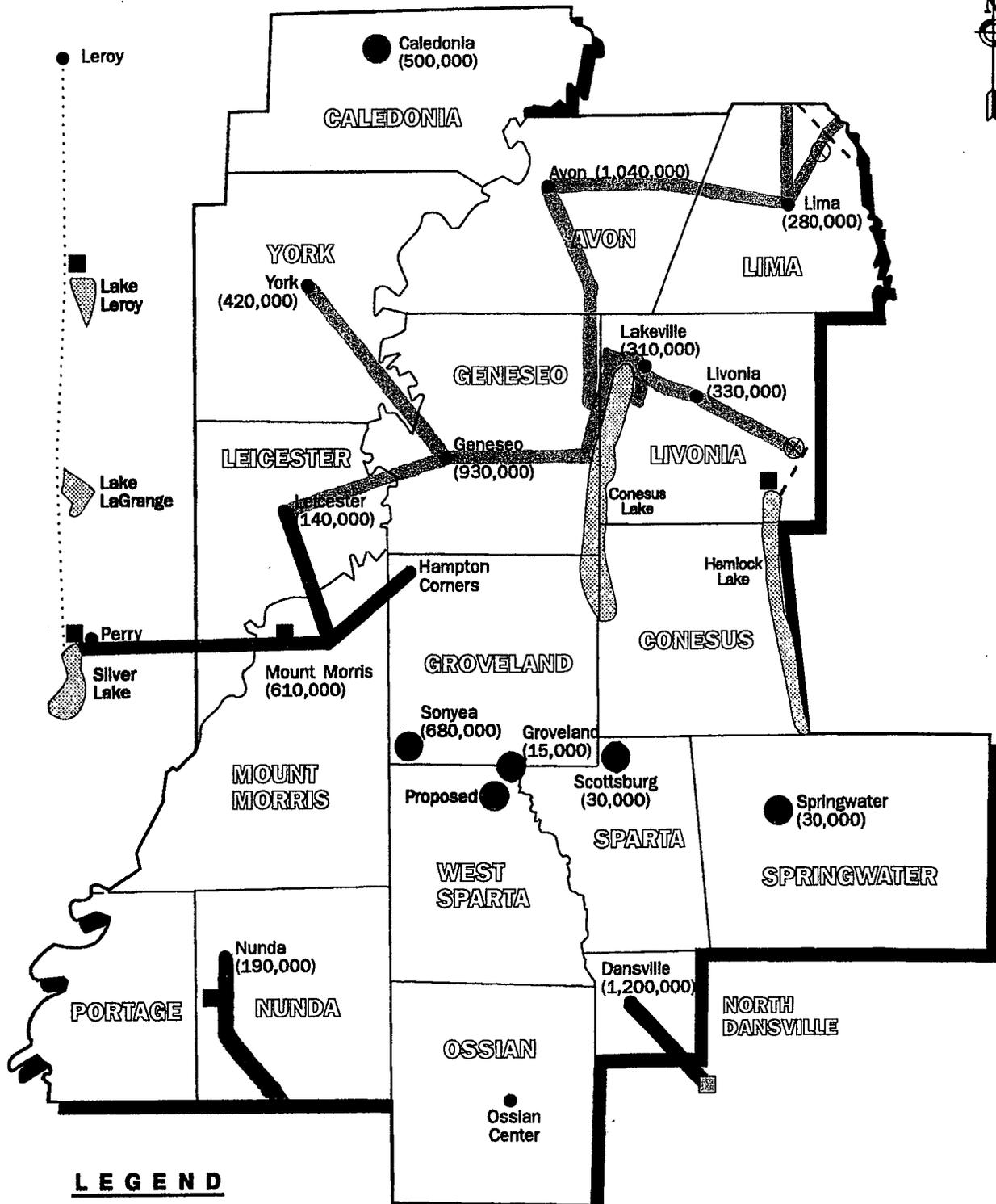
- The Avon, Geneseo, and Livonia (Lakeville) Demand Centers will be "looped" to the City of Rochester system via a series of connections and new transmission mains which utilize Hemlock Lake as its source. The existing Town/Village of Livonia transmission main will be



**LEGEND**

- Nunda (190,000) DEMAND CENTER W/ AVE. WATER USE (2020) GALLONS PER DAY
- GROUNDWATER SOURCE (MULTIPLE USER SYSTEMS)
- ..... TRANSMISSION MAIN (EXISTING)
- ▬ CONESUS LAKE SOURCE
- ▬ HEMLOCK LAKE SOURCE
- ▬ SILVER LAKE SOURCE
- ▬ MILL CREEK SOURCE
- ⊗ BOOSTER PUMP STATION
- ▣ FILTRATION PLANT (PROPOSED)
- FILTRATION PLANT (EXISTING)

<b>ALTERNATIVE A3</b>	
<b>RESOURCE UTILIZATION STRATEGY</b>	
COMPREHENSIVE WATER SUPPLY STUDY LIVINGSTON COUNTY, NEW YORK	
<b>CLARK ENGINEERS &amp; ASSOCIATES</b> ROCHESTER, NEW YORK	<b>FIGURE 7-6</b>



**LEGEND**

- Nunda (190,000)
- DEMAND CENTER W/ AVE. WATER USE (2020) GALLONS PER DAY
- GROUNDWATER SOURCE (MULTIPLE USER SYSTEMS)
- ..... TRANSMISSION MAIN (EXISTING)
- ▬ CONESUS LAKE SOURCE
- ▬ HEMLOCK LAKE SOURCE
- ▬ SILVER LAKE SOURCE
- ▬ MILL CREEK SOURCE
- ⊗ BOOSTER PUMP STATION
- ⊠ FILTRATION PLANT (PROPOSED)
- FILTRATION PLANT (EXISTING)

**ALTERNATIVE B  
RESOURCE UTILIZATION STRATEGY**

COMPREHENSIVE WATER SUPPLY STUDY  
LIVINGSTON COUNTY, NEW YORK

**CLARK ENGINEERS & ASSOCIATES**  
ROCHESTER, NEW YORK

**FIGURE 7-7**

connected to the Town of Livonia (Lakeville) by upgrading the existing connection at the Village's west border. Geneseo and Avon will be connected to Livonia (Lakeville) by an additional transmission main along the northwest side of Conesus Lake which will interconnect these three systems via the existing mains. In order to complete the "loop," the Avon system will be connected to the Lima Town District #1 as shown in Figure 7-7.

- Caledonia Demand Center will be served by the existing municipal well source.
- Conesus Lake Perimeter Demand Center will continue to be served by individual lake intakes, private wells, or private multiple user system.
- Dansville Demand Center will be served by the proposed separate water treatment facility at Mill Creek.
- Groveland Demand Center will continue to be served by the Hamlet of Groveland Station Water Corporation.
- Leicester Demand Center will be served by the City of Rochester filtration plant at Hemlock Lake from the Village of Geneseo via an upgraded transmission main.
- Lima Demand Center will be served by the City of Rochester filtration facility at Hemlock Lake via an upgraded connection to the City of Rochester transmission main.
- Livonia Demand Center will be served by the City of Rochester filtration facility of Hemlock Lake via an upgraded connection to the City of Rochester transmission main.

- Mt. Morris Demand Center will continue to be served by the separate filtration plant at Silver Lake via an upgraded transmission main. Hampton Corners area in the Town of Groveland will be served by the Village of Mt. Morris via an upgraded transmission main.
- Nunda Demand Center will continue to be served by its spring-fed impoundment of Little Dansville Creek. The existing separate filtration plant will be maintained.
- Scottsburg Demand Center will be served by a new municipal groundwater source to handle the area with contaminated private wells.
- Sonyea Demand Center will continue as an separate system utilizing Keshequa Creek, existing groundwater sources and the existing filtration plant. New groundwater sources will be utilized as expansion requires.
- Springwater Demand Center will continue to be served by the existing municipal groundwater source.
- West Sparta Demand Center will be served by a new municipal groundwater source to handle the area with contaminated private wells.
- York Demand Center will be served by the City of Rochester filtration facility at Hemlock Lake by an upgraded transmission main from the Village of Geneseo.

In order to serve the systems in the year 2020 as outlined above, the following operational changes will be required. As with Alternative A, the permitted withdrawal allocation for the Dansville Demand Center from Mill Creek must be increased. An agreement between the City of Rochester and the systems of Avon, Geneseo, York, Livonia, Lima, and Leicester must be created to allow for a total supply of 8.0 MGD for a maximum day demand from Hemlock Lake. This allocation

may need to be increased depending upon the resolution of the General Foods contractual agreement with the Village of Avon. Further, since the City of Rochester demand is at or near its permitted maximum allocation from Hemlock Lake, the City would have to come to an agreement with the MCWA to make up the maximum 8.0 MGD retailed in Livingston County.

#### Anticipated Economic Development

As a result of the provisions of this alternative, several areas with development potential will benefit. The areas of Avon, Mt. Morris, Lakeville, Geneseo, Hampton Corners in the Town of Groveland, and the Town of North Dansville will enjoy the same advantages as under Alternative A.

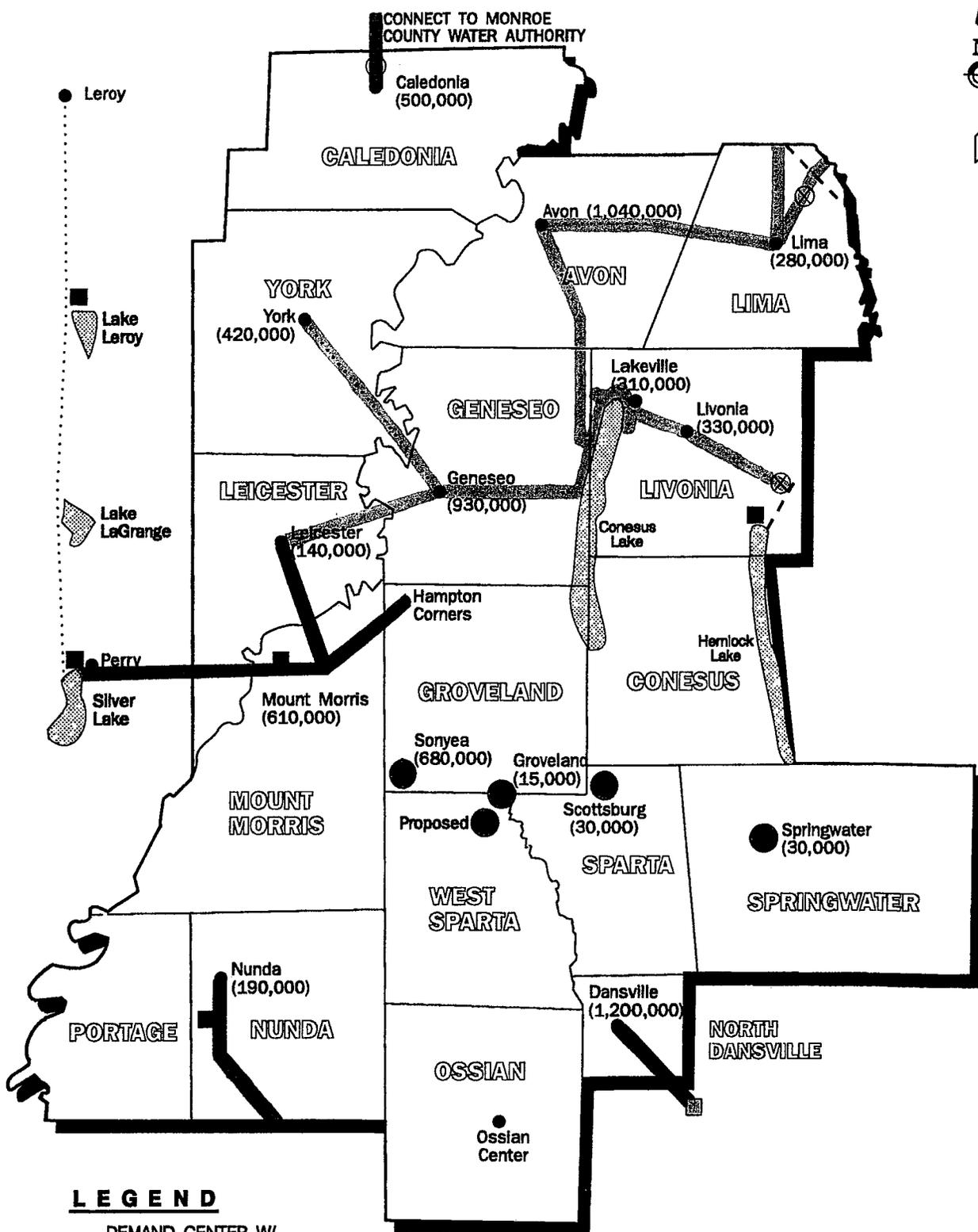
#### Estimated Costs

The combined estimated project and annual costs associated with Alternative B are \$21,900,000 and \$3,900,000 respectively, and are detailed in Tables 7-1 and 7-2.

#### **Alternative B-1**

This alternative shown on Figure 7-8 is a variation of Alternative B described above with Caledonia served by surface water via the MCWA as described in Alternative A-1.

The combined estimated project and annual costs associated with Alternative B-1 are \$24,900,000 and \$4,370,000 respectively, and are detailed in Tables 7-1 and 7-2.



**LEGEND**

- Nunda (190,000) DEMAND CENTER W/ AVE. WATER USE (2020) GALLONS PER DAY
- GROUNDWATER SOURCE (MULTIPLE USER SYSTEMS)
- ..... TRANSMISSION MAIN (EXISTING)
- ▨ CONESUS LAKE SOURCE
- ▨ HEMLOCK LAKE SOURCE
- ▨ SILVER LAKE SOURCE
- ▨ MILL CREEK SOURCE
- ⊗ BOOSTER PUMP STATION
- ▨ FILTRATION PLANT (PROPOSED)
- FILTRATION PLANT (EXISTING)

**ALTERNATIVE B1  
RESOURCE UTILIZATION STRATEGY**

COMPREHENSIVE WATER SUPPLY STUDY  
LIVINGSTON COUNTY, NEW YORK

**CLARK ENGINEERS & ASSOCIATES**  
ROCHESTER, NEW YORK

### **Alternative B-2**

This alternative shown in Figure 7-9 is a variation of Alternative B-1 except that the Caledonia system will be served by Hemlock Lake via the Village of Avon system instead of MCWA. This alternative will require the same improvements as Alternative A-2 including a transmission main along Route 5 from the Village of Avon and a booster pump station.

An agreement with the City of Rochester must be developed to allow for a total supply of 9.3 MGD (maximum day) from Hemlock Lake.

The combined estimated project and annual costs associated with Alternative B-2 are \$26,600,000 and \$4,560,000 respectively, and are detailed in Tables 7-1 and 7-2.

### **Alternative B-3**

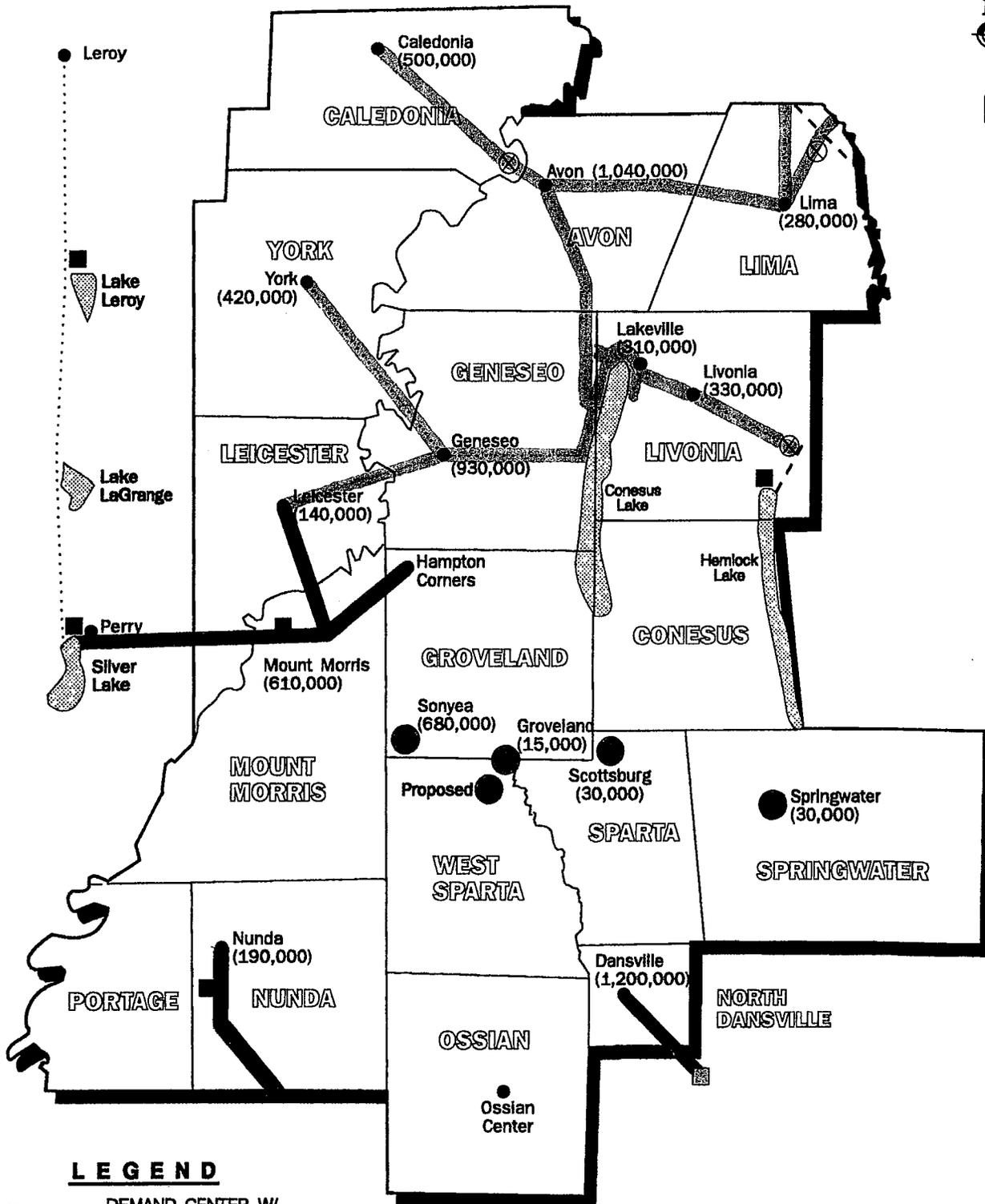
This alternative shown on Figure 7-10 is the same as Alternative B-1 (Caledonia serviced by the MCWA) with the addition of a public water system to service the residents around the entire perimeter of Conesus Lake. The improvements for this system would be the same as those described in Alternative A-3 except that the water source will be Hemlock Lake instead of Conesus Lake.

An agreement with the City of Rochester must be developed to allow for a total supply of 8.5 MGD (maximum day) from Hemlock Lake.

The combined estimated project and annual costs associated with Alternative B-3 are \$37,200,000 and \$5,636,000 respectively, and are detailed in Tables 7-1 and 7-2.

### **Alternative B-4**

This alternative shown on Figure 7-11 provides water to the Caledonia area from Hemlock Lake via the Village of Avon system (as proposed in Alternative B-2).



**LEGEND**

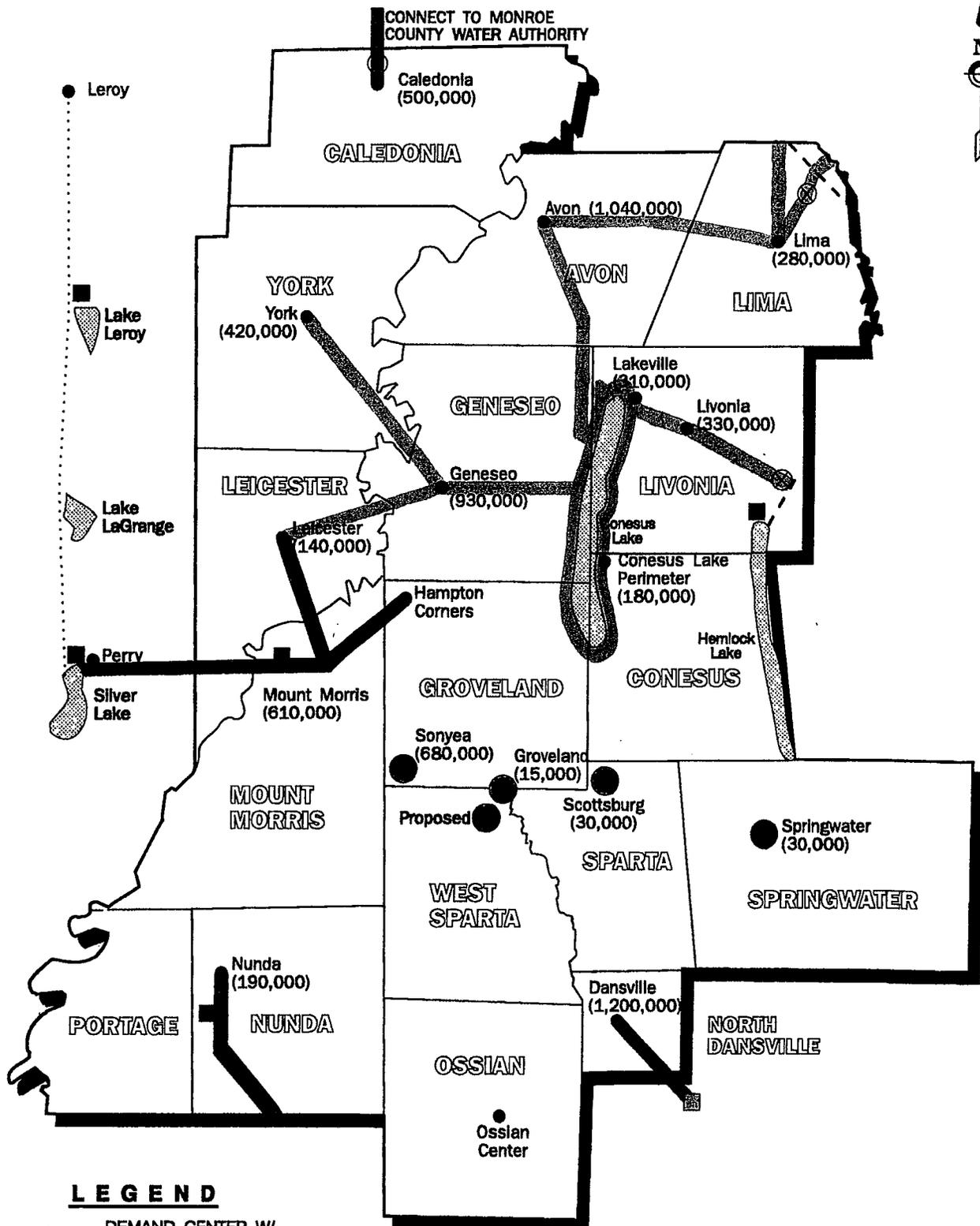
- Nunda (190,000) DEMAND CENTER W/ AVE. WATER USE (2020) GALLONS PER DAY
- GROUNDWATER SOURCE (MULTIPLE USER SYSTEMS)
- ..... TRANSMISSION MAIN (EXISTING)
- ▬ CONESUS LAKE SOURCE
- ▬ HEMLOCK LAKE SOURCE
- ▬ SILVER LAKE SOURCE
- ▬ MILL CREEK SOURCE
- ⊗ BOOSTER PUMP STATION
- ▣ FILTRATION PLANT (PROPOSED)
- FILTRATION PLANT (EXISTING)

**ALTERNATIVE B2  
RESOURCE UTILIZATION STRATEGY**

COMPREHENSIVE WATER SUPPLY STUDY  
LIVINGSTON COUNTY, NEW YORK

 **CLARK ENGINEERS & ASSOCIATES**  
ROCHESTER, NEW YORK

**FIGURE 7-9**



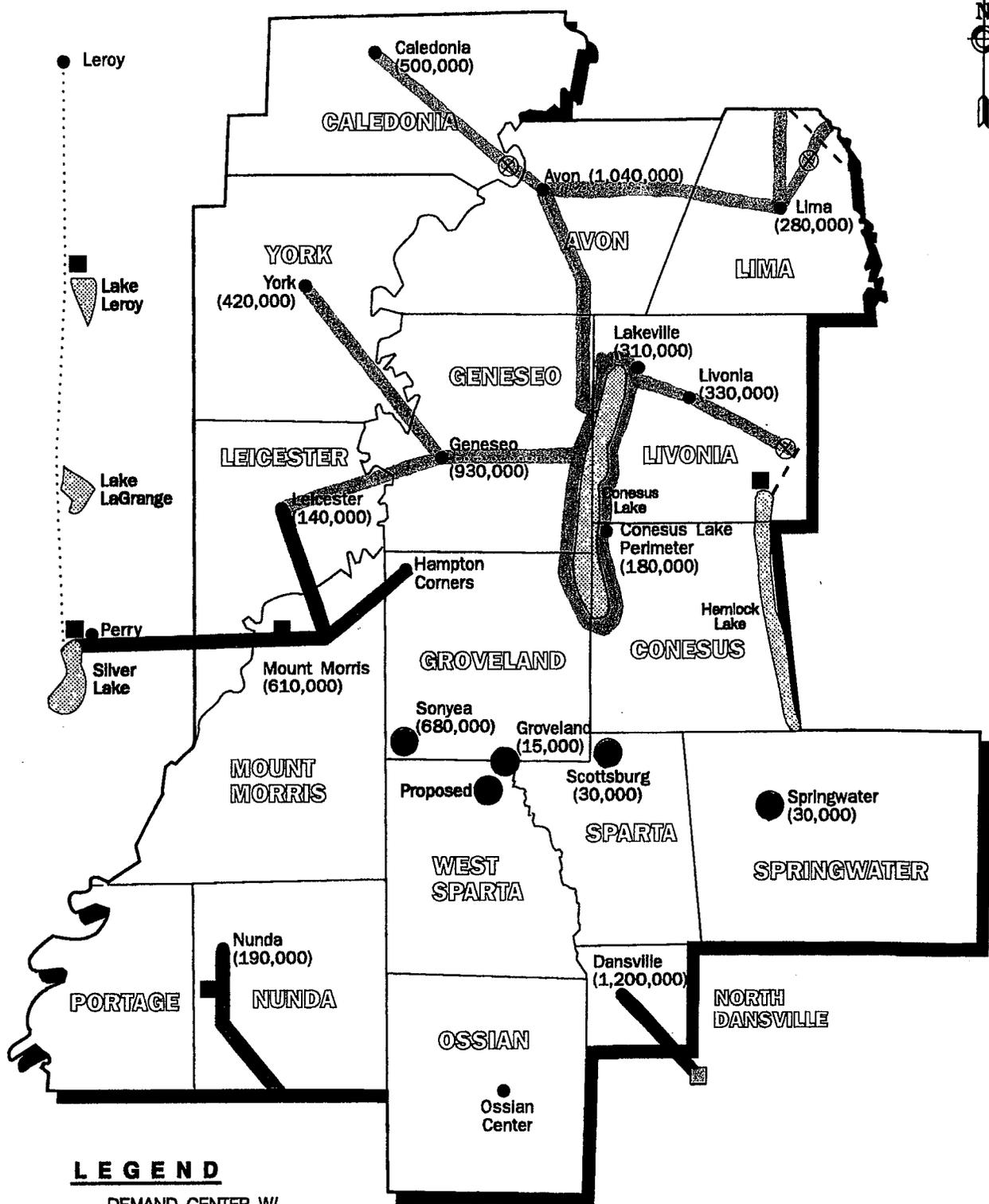
**LEGEND**

- Nunda (190,000) DEMAND CENTER W/ AVE. WATER USE (2020) GALLONS PER DAY
- GROUNDWATER SOURCE (MULTIPLE USER SYSTEMS)
- ..... TRANSMISSION MAIN (EXISTING)
- ..... CONESUS LAKE SOURCE
- ▨ HEMLOCK LAKE SOURCE
- ▨ SILVER LAKE SOURCE
- ▨ MILL CREEK SOURCE
- ⊗ BOOSTER PUMP STATION
- ▣ FILTRATION PLANT (PROPOSED)
- FILTRATION PLANT (EXISTING)

**ALTERNATIVE B3  
RESOURCE UTILIZATION STRATEGY**

COMPREHENSIVE WATER SUPPLY STUDY  
LIVINGSTON COUNTY, NEW YORK

**CLARK ENGINEERS & ASSOCIATES**  
ROCHESTER, NEW YORK



**LEGEND**

- Nunda (190,000) DEMAND CENTER W/ AVE. WATER USE (2020) GALLONS PER DAY
- GROUNDWATER SOURCE (MULTIPLE USER SYSTEMS)
- ..... TRANSMISSION MAIN (EXISTING)
- CONESUS LAKE SOURCE
- HEMLOCK LAKE SOURCE
- SILVER LAKE SOURCE
- MILL CREEK SOURCE
- ⊗ BOOSTER PUMP STATION
- ▣ FILTRATION PLANT (PROPOSED)
- FILTRATION PLANT (EXISTING)

**ALTERNATIVE B4  
RESOURCE UTILIZATION STRATEGY**

COMPREHENSIVE WATER SUPPLY STUDY  
LIVINGSTON COUNTY, NEW YORK

**CLARK ENGINEERS & ASSOCIATES**  
ROCHESTER, NEW YORK

An agreement with the City of Rochester must be developed to allow for a total supply of 9.8 MGD (maximum day) from Hemlock Lake.

The combined estimated project and annual costs associated with Alternative B-4 are \$38,900,000 and \$5,836,000 respectively, and are detailed in Tables 7-1 and 7-2.

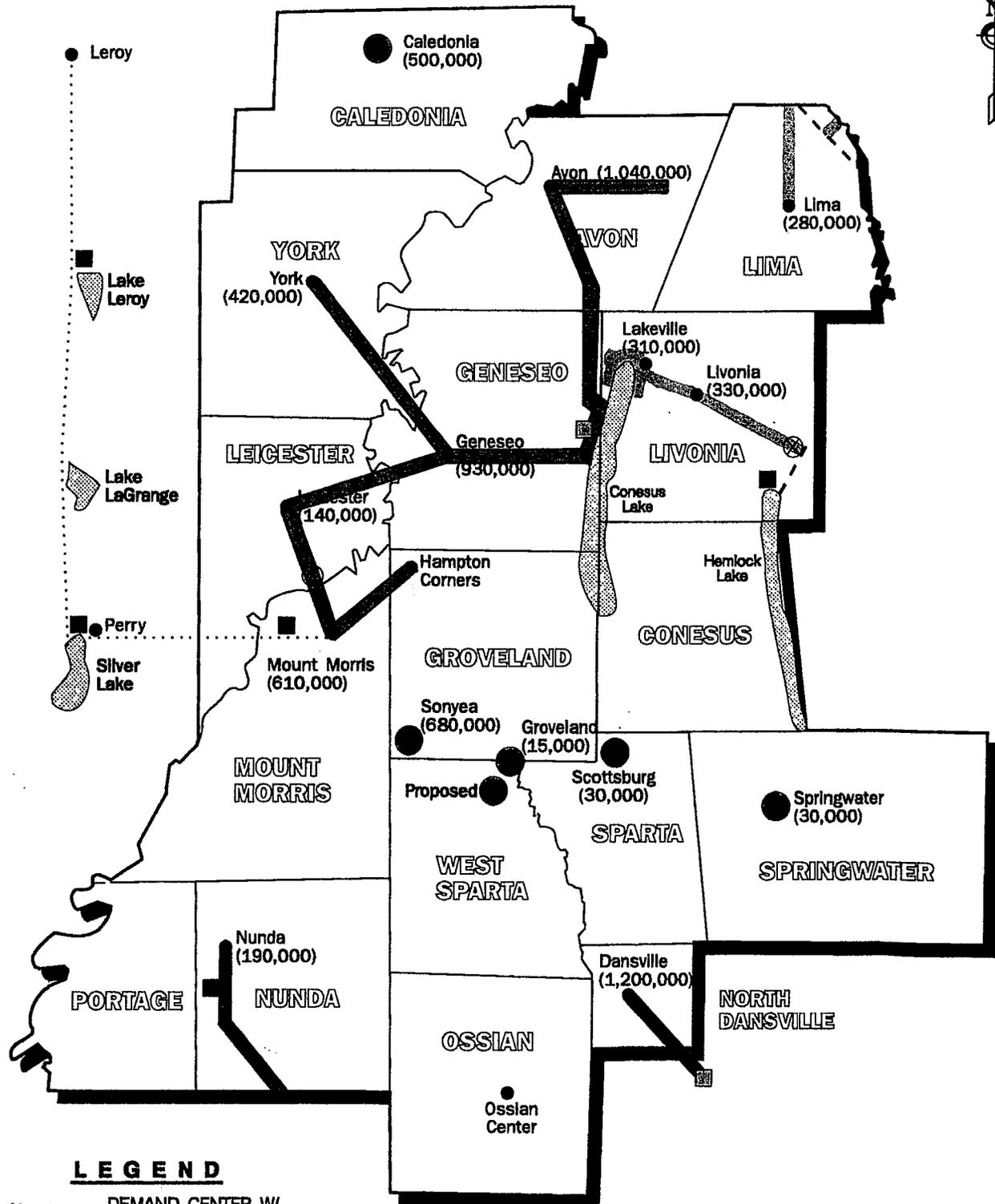
## 7.5 ALTERNATIVE C

### Description

Alternative C shown on Figure 7-12 is based on the elimination of Silver Lake (in Wyoming County) as a source of potable water. Although the complete elimination of Silver Lake as an available reservoir is unlikely, it was evaluated in the remote case that Wyoming County raised the issue of superior rights and Livingston County could no longer use Silver Lake. If this occurred it is proposed that Mt. Morris and Leicester/Cuylerville municipal systems will use Conesus Lake as a water source.

The filtration requirements for this alternative are the same as for Alternative A, with the exception that the existing Mt. Morris filtration plant would be abandoned. The following summary details the proposed systems under this alternative:

- Avon Demand Center will be served by the Conesus Lake consolidated treatment facility via the existing transmission main.
- Caledonia Demand Center will be served by the existing municipal well source.
- Conesus Lake Perimeter Demand Center will continue to be served by individual lake intakes, private wells or private multiple user systems.



**LEGEND**

- Nunda (190,000) DEMAND CENTER W/ AVE. WATER USE (2020) GALLONS PER DAY
- GROUNDWATER SOURCE (MULTIPLE USER SYSTEMS)
- ..... TRANSMISSION MAIN (EXISTING)
- ▬ CONESUS LAKE SOURCE
- ▬ HEMLOCK LAKE SOURCE
- ▬ SILVER LAKE SOURCE
- ▬ MILL CREEK SOURCE
- ⊗ BOOSTER PUMP STATION
- ▣ FILTRATION PLANT (PROPOSED)
- FILTRATION PLANT (EXISTING)

<b>ALTERNATIVE C</b>	
<b>RESOURCE UTILIZATION STRATEGY</b>	
COMPREHENSIVE WATER SUPPLY STUDY LIVINGSTON COUNTY, NEW YORK	
<b>CLARK ENGINEERS &amp; ASSOCIATES</b> ROCHESTER, NEW YORK	<b>FIGURE 7-12</b>

- Dansville Demand Center will be served by the proposed separate water treatment facility at Mill Creek.
- Geneseo Demand Center will be served by the Conesus Lake consolidated treatment facility via an upgraded transmission main.
- Groveland Demand Center will continue to be served by the Hamlet of Groveland Station Water Corporation.
- Leicester Demand Center will be served by the Conesus Lake consolidated treatment facility from the Village of Geneseo via an upgraded transmission main which is capable of supplying both Mt. Morris and Leicester/Cuylerville.
- Lima Demand Center will be served by the City of Rochester filtration facility at Hemlock Lake via the existing connections to the City of Rochester transmission main.
- Livonia Demand Center will be served by City of Rochester filtration facility at Hemlock Lake via an upgraded connection to the City of Rochester transmission main.
- Livonia (Lakeville) Demand Center will be served by the City of Rochester filtration facility at Hemlock Lake via the Livonia system connection to the City of Rochester transmission main.
- Mt. Morris Demand Center will be served by Conesus Lake consolidated treatment facility via the Leicester system which is served by the Geneseo system. The Hampton Corners area in the Town of Groveland will be served by the Village of Mt. Morris via an upgraded transmission main.
- Nunda Demand Center will continue to be served by its spring-fed impoundment of Little Dansville Creek. The existing separate filtration plant will be maintained.

- Scottsburg Demand Center will be served by a new municipal groundwater source to handle the area with contaminated private wells.
- Sonyea Demand Center will continue as an separate system utilizing Keshequa Creek, existing groundwater sources and the existing filtration plant. New groundwater sources will be utilized as expansion requires.
- Springwater Demand Center will continue to be served by the existing municipal groundwater source.
- West Sparta Demand Center will be served by a new municipal groundwater source to handle the area with contaminated private wells.
- York Demand Center will be served by the Conesus Lake consolidated treatment facility from the Village of Geneseo system via the existing transmission.

#### Anticipated Economic Development

This alternative presents similar advantages for development potential which are available with Alternatives A and B. The areas of Avon, Mt. Morris, Livonia (Lakeville), Geneseo, Hampton Corners in the Town of Groveland, and the Town of North Dansville will enjoy these advantages.

#### Estimated Costs

The combined estimated project and annual costs associated with Alternative C are \$28,100,000 and \$4,260,000 respectively, and are detailed in Tables 7-1 and 7-2.

### **Alternative C-1**

This alternative shown on Figure 7-13 is a variation of Alternative C described above with Caledonia system served by the MCWA.

The combined estimated project and annual costs associated with Alternative C-1 are \$31,000,000 and \$4,760,000 respectively, and are detailed in Tables 7-1 and 7-2.

### **Alternative C-2**

The addition of the Mt. Morris and Leicester Demand Centers to the Conesus Lake supply precludes the possible connection of the Caledonia Demand Center as discussed in Alternatives A-2 and B-2.

### **Alternative C-3**

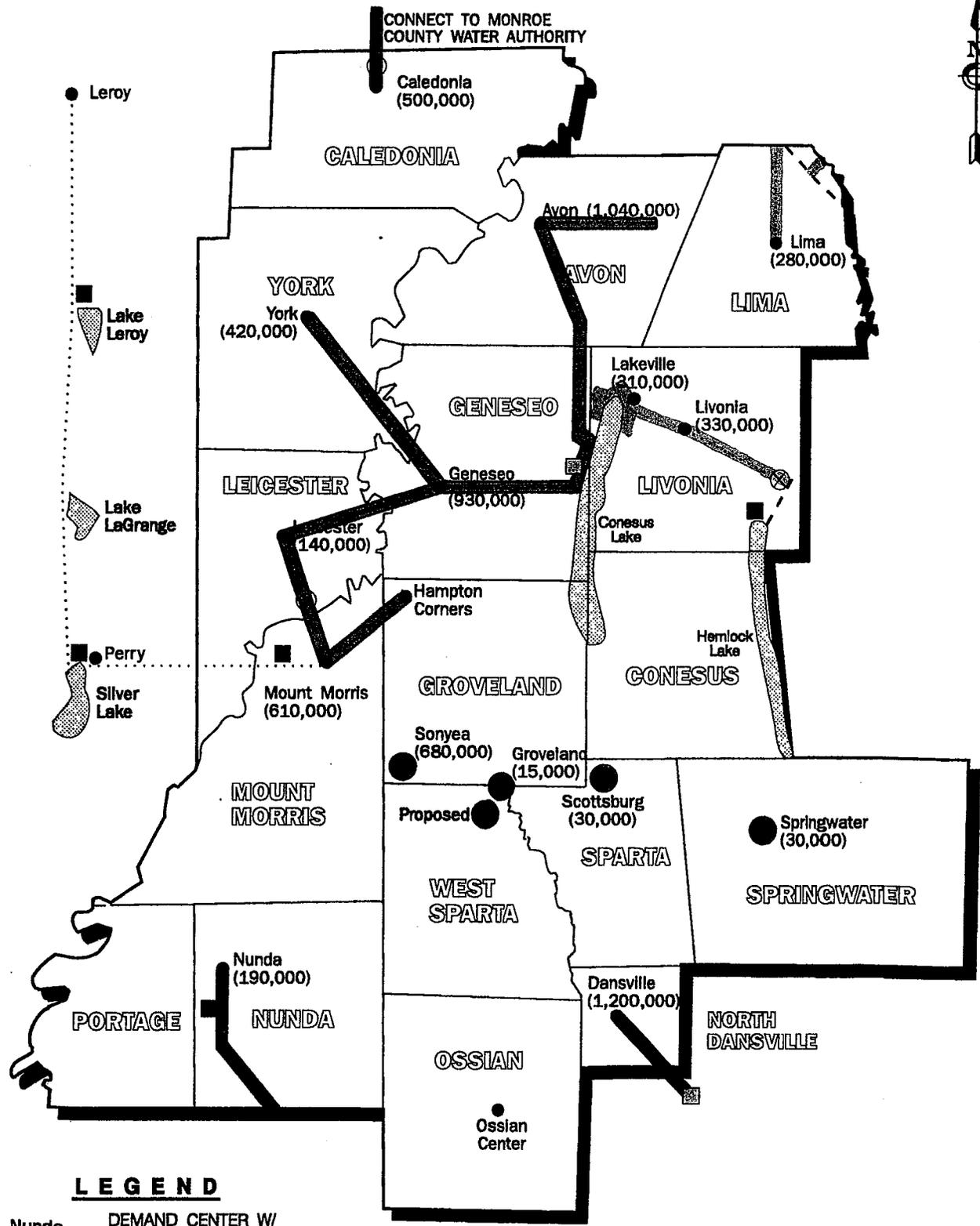
Alternative C-3 shown on Figure 7-14 is the same as Alternative C except public water is provided to residents around Conesus Lake and Caledonia is served by MCWA. The requirements for this system will be the same as those described in Alternative A-3.

The combined estimated project and annual costs associated with Alternative C-3 are \$43,300,000 and \$6,020,000 respectively, and are detailed in Tables 7-1 and 7-2.

## **7.6 ALTERNATIVE D**

### Description

Alternative D shown on Figure 7-15 is based on the elimination of Conesus Lake and Silver Lake as sources of potable water. In this alternative, it is proposed that all municipal systems currently using water from Conesus and Silver Lakes will be serviced with treated water from Hemlock Lake as a water source. In



**LEGEND**

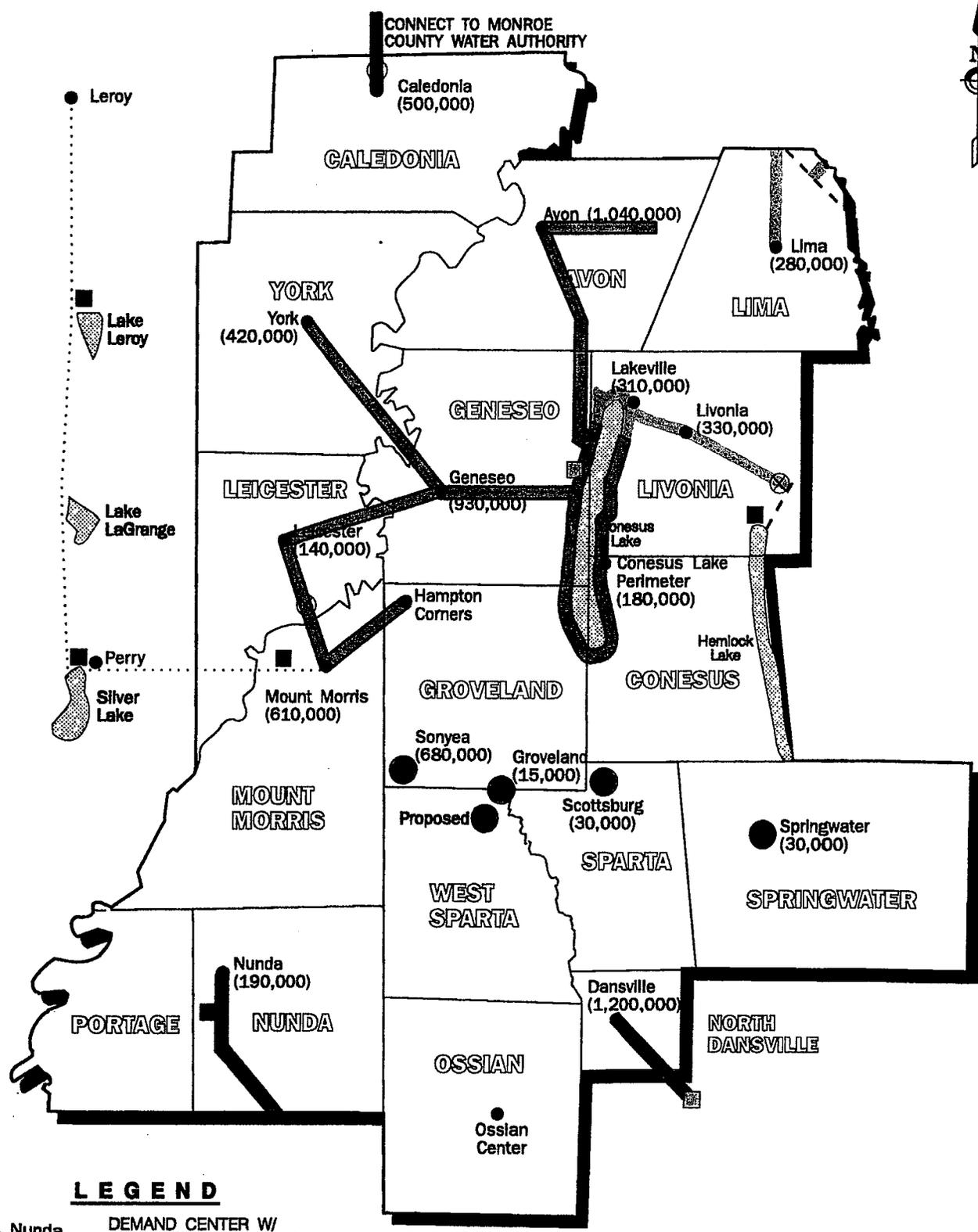
- Nunda (190,000) DEMAND CENTER W/ AVE. WATER USE (2020) GALLONS PER DAY
- GROUNDWATER SOURCE (MULTIPLE USER SYSTEMS)
- ..... TRANSMISSION MAIN (EXISTING)
- ▬ CONESUS LAKE SOURCE
- ▬ HEMLOCK LAKE SOURCE
- ▬ SILVER LAKE SOURCE
- ▬ MILL CREEK SOURCE
- ⊗ BOOSTER PUMP STATION
- ▣ FILTRATION PLANT (PROPOSED)
- FILTRATION PLANT (EXISTING)

**ALTERNATIVE C1  
RESOURCE UTILIZATION STRATEGY**

COMPREHENSIVE WATER SUPPLY STUDY  
LIVINGSTON COUNTY, NEW YORK

**CLARK ENGINEERS & ASSOCIATES**  
ROCHESTER, NEW YORK

**FIGURE 7-13**



**LEGEND**

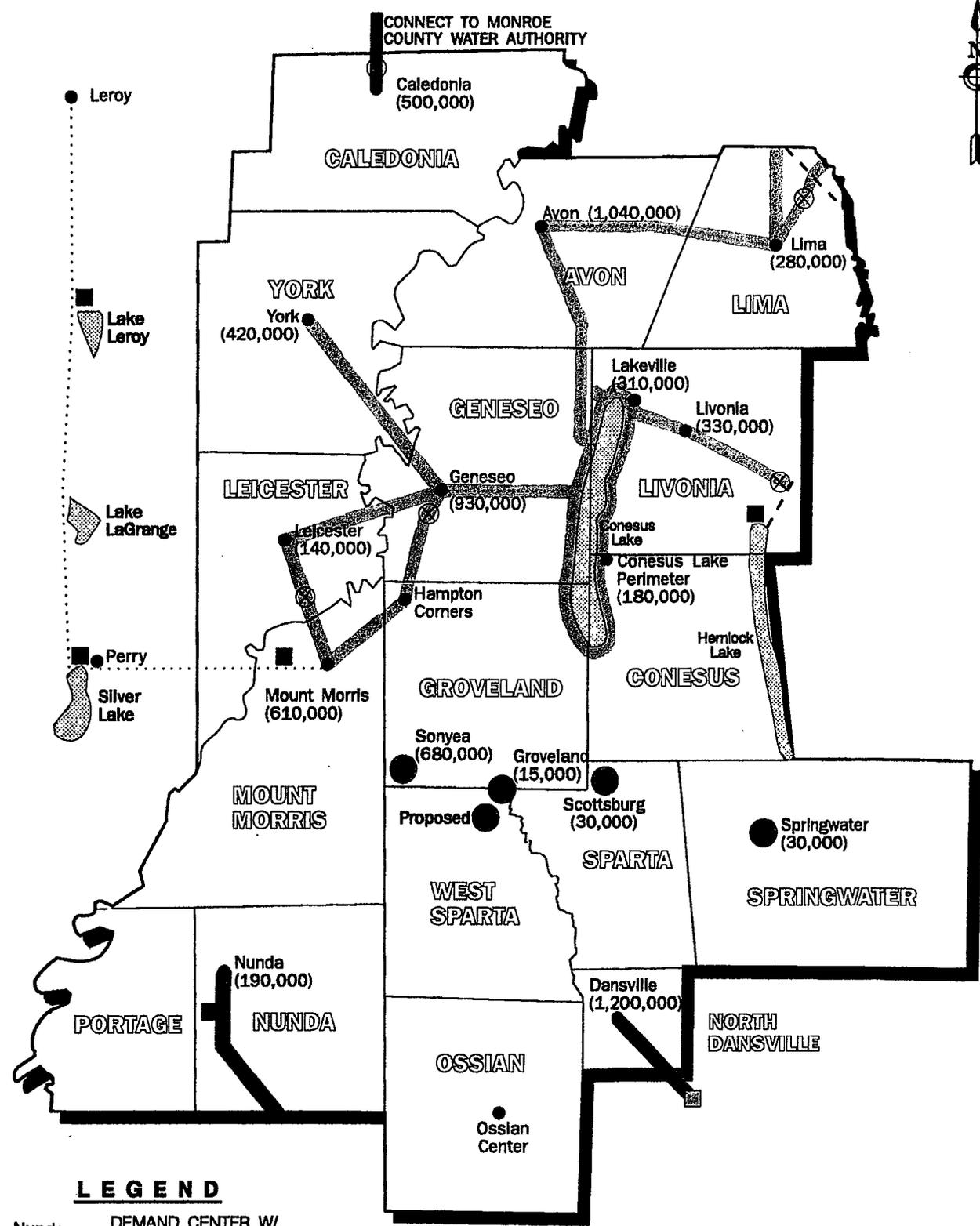
- Nunda (190,000) DEMAND CENTER W/ AVE. WATER USE (2020) GALLONS PER DAY
- GROUNDWATER SOURCE (MULTIPLE USER SYSTEMS)
- ..... TRANSMISSION MAIN (EXISTING)
- CONESUS LAKE SOURCE
- HEMLOCK LAKE SOURCE
- SILVER LAKE SOURCE
- MILL CREEK SOURCE
- ⊗ BOOSTER PUMP STATION
- FILTRATION PLANT (PROPOSED)
- FILTRATION PLANT (EXISTING)

**ALTERNATIVE C3  
RESOURCE UTILIZATION STRATEGY**

COMPREHENSIVE WATER SUPPLY STUDY  
LIVINGSTON COUNTY, NEW YORK

**CLARK ENGINEERS & ASSOCIATES**  
ROCHESTER, NEW YORK

**FIGURE 7-14**



**LEGEND**

- Nunda (190,000) DEMAND CENTER W/ AVE. WATER USE (2020) GALLONS PER DAY
- GROUNDWATER SOURCE (MULTIPLE USER SYSTEMS)
- ..... TRANSMISSION MAIN (EXISTING)
- CONESUS LAKE SOURCE
- HEMLOCK LAKE SOURCE
- SILVER LAKE SOURCE
- MILL CREEK SOURCE
- ⊗ BOOSTER PUMP STATION
- FILTRATION PLANT (PROPOSED)
- FILTRATION PLANT (EXISTING)

<b>ALTERNATIVE D RESOURCE UTILIZATION STRATEGY</b>	
COMPREHENSIVE WATER SUPPLY STUDY LIVINGSTON COUNTY, NEW YORK	
<b>CLARK ENGINEERS &amp; ASSOCIATES</b> ROCHESTER, NEW YORK	<b>FIGURE 7-15</b>

addition, public water will be provided to residents around Conesus Lake and Caledonia will be served by MCWA.

Treatment facilities for surface water will include: the new City of Rochester filtration plant at Hemlock Lake; the existing filtration plants at Nunda for Little Dansville Creek, and Sonyea for Keshequa Creek; and, a proposed treatment plant at Mill Creek to feed the Dansville system. The existing Mt. Morris filtration would be abandoned.

The following summary details the proposed systems under this alternative:

- The Avon, Geneseo, Livonia, and Livonia (Lakeville) Demand Centers will be "looped" to the City of Rochester system as described in Alternative B and as shown on Figure 7-15.
- Caledonia Demand Center will be served by surface water via the MCWA as described in Alternative A-1.
- Conesus Lake Perimeter Demand Center will be served by the City of Rochester filtration plant at Hemlock Lake via new transmission main connected to Livonia (Lakeville), Geneseo and Avon Demand Centers.
- Dansville Demand Center will be served by the proposed separate water treatment facility at Mill Creek.
- Groveland Demand Center will continue to be served by the Hamlet of Groveland Station Water Corporation.
- Leicester Demand Center will be served by the City of Rochester filtration plant at Hemlock Lake from the Village of Geneseo via an upgraded transmission main.
- Lima Demand Center will be served by the City of Rochester filtration facility at Hemlock Lake via an upgraded connection to the City of Rochester transmission main.

- Mt. Morris Demand Center will be served by the City of Rochester filtration facility at Hemlock Lake via two routes. The existing transmission main to the Leicester system (which in turn will be connected to the Geneseo system) will be maintained. In addition, a new transmission main along Route 63 through Hampton Corners in the Town of Groveland from Geneseo will be provided. The transmission main from Hampton Corners to Mt. Morris will be upgraded.
- Nunda Demand Center will continue to be served by its spring-fed impoundment of Little Dansville Creek. The existing separate filtration plant will be maintained.
- Scottsburg Demand Center will be served by a new municipal groundwater source to handle the area with contaminated private wells.
- Sonyea Demand Center will continue as a separate system utilizing Keshequa Creek, existing groundwater sources and the existing filtration plant. New groundwater sources will be utilized as expansion requires.
- Springwater Demand Center will continue to be served by the existing municipal groundwater source.
- West Sparta Demand Center will be served by a new municipal groundwater source to handle the area with contaminated private wells.
- York Demand Center will be served by the City of Rochester filtration facility at Hemlock Lake by an upgraded transmission main from the Village of Geneseo.

In order to serve the systems in the year 2020 as outlined above, the following operational changes will be required. As with Alternative A, the permitted withdrawal allocation for the Dansville Demand Center from Mill Creek must be

increased. An agreement between the City of Rochester and the systems of Avon, Geneseo, York, Livonia, Lima, Leicester and Mt. Morris must be developed to allow for a total maximum day demand of 10.0 MGD from Hemlock Lake. This allocation may need to be increased depending upon the resolution of the General Foods contractual agreement requirement. As in Alternative B, the City of Rochester would have to come to an agreement with the MCWA to make up the 10.0 MGD retained in Livingston County.

#### Anticipated Economic Development

This alternative presents similar advantages for development potential which are available with Alternatives A, B and C. The areas of Avon, Mt. Morris, Livonia (Lakeville), Geneseo, Hampton Corners in the Town of Groveland, and the Town of North Dansville will enjoy these advantages.

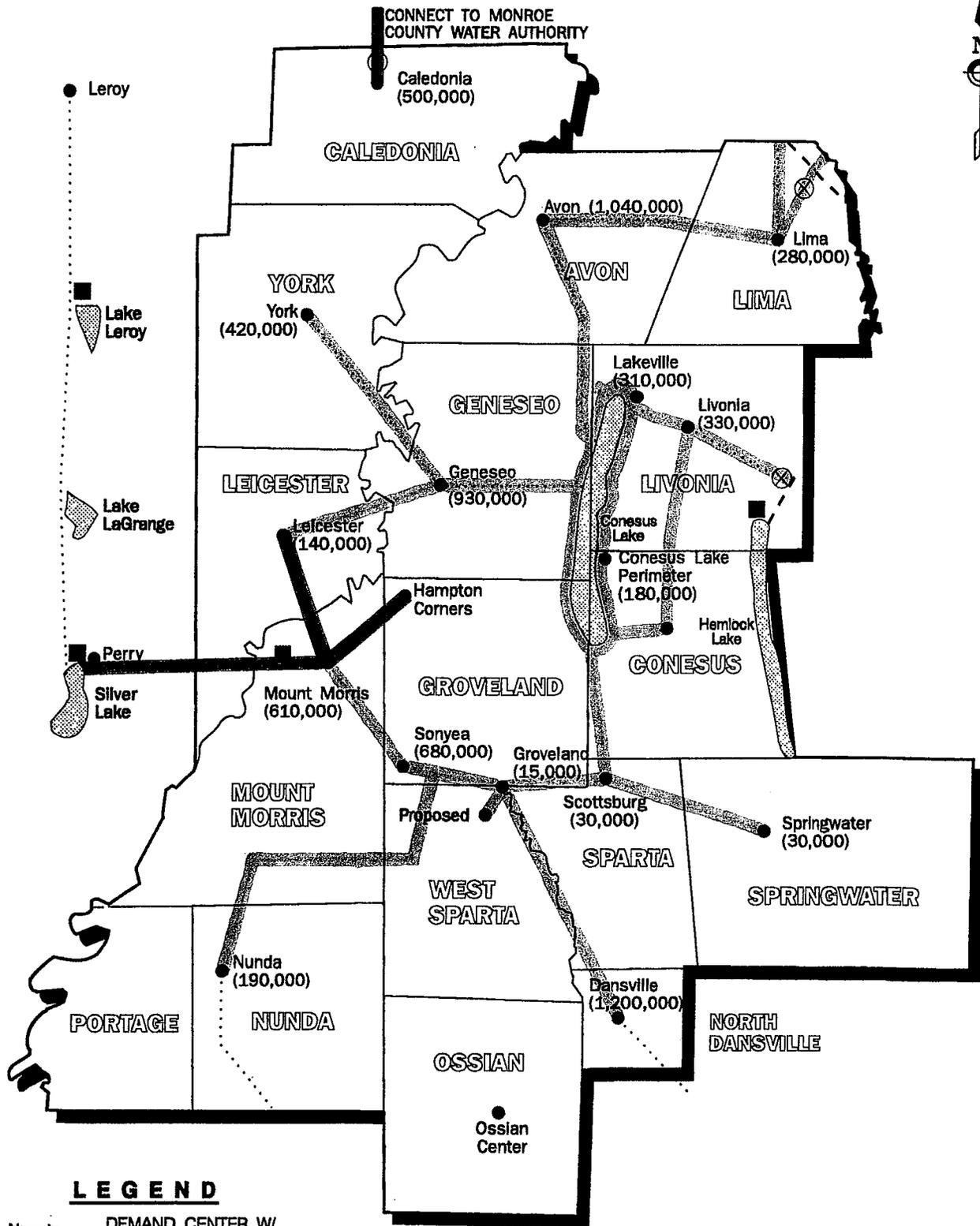
#### Estimated Costs

The combined estimated project and annual costs associated with Alternative D are \$40,700,000 and \$5,950,000 respectively, and are detailed in Tables 7-1 and 7-2.

### **7.7 ALTERNATIVE E**

#### Description

Alternate E shown on Figure 7-16 is the addition of the southern portion of the County to the proposed distribution alternatives previously described. Under this alternative, treated water will be provided to the demand centers in the Towns of Conesus, Groveland, Springwater, Sparta, West Sparta, North Dansville, Mt. Morris and Nunda. This alternate can be added to the basic systems described in Alternatives B, C, and D. It cannot be implemented with Alternative A because sufficient quantities of water would not be available from Conesus Lake to supply the proposed service area. The source of water for this alternative would primarily be Hemlock Lake. For improved hydraulic considerations, this portion of the system would be looped with the Silver Lake Supply through a connection in Mt. Morris.



**LEGEND**

- Nunda (190,000) DEMAND CENTER W/ AVE. WATER USE (2020) GALLONS PER DAY
- GROUNDWATER SOURCE (MULTIPLE USER SYSTEMS)
- ..... TRANSMISSION MAIN (EXISTING)
- CONESUS LAKE SOURCE
- HEMLOCK LAKE SOURCE
- SILVER LAKE SOURCE
- MILL CREEK SOURCE
- ⊗ BOOSTER PUMP STATION
- ▣ FILTRATION PLANT (PROPOSED)
- FILTRATION PLANT (EXISTING)

**ALTERNATIVE E  
RESOURCE UTILIZATION STRATEGY**

COMPREHENSIVE WATER SUPPLY STUDY  
LIVINGSTON COUNTY, NEW YORK

**CLARK ENGINEERS & ASSOCIATES**  
ROCHESTER, NEW YORK

**FIGURE 7-16**

Except for the Village of Mt. Morris, this Alternative would result in the abandonment of existing ground and surface water supplies in the Towns (and included Villages) listed above. These supplies could be maintained as emergency backups sources of supply.

The following summary details the proposed system under this alternative for each demand center in the Southern Area:

- Dansville Demand Center would be served by the proposed new transmission main. The Mill Creek treatment facility (if completed) could be abandoned or maintained as an emergency source of supply.
- Groveland Demand Center would be served by the proposed new transmission main. The Hamlet of Groveland Station Water Corporation could act as the retail supplier of water from the Hemlock supply, the existing groundwater source could be abandoned or maintained as an emergency source of supply.
- Nunda Demand Center would be served by the proposed new transmission main. The existing spring-fed impoundment and filtration plant could be abandoned or maintained as an emergency source of supply.
- Scottsburg Demand Center would be served by the proposed new transmission main. Private wells currently being used would be abandoned.
- Sonyea Demand Center would be served by the proposed new transmission main. The existing filtration plant and surface and groundwater sources could be abandoned or maintained as an emergency source of supply.
- West Sparta Demand Center would be served by the proposed new transmission main. Private wells currently being used would be abandoned.

- Portions of the Town of Conesus, including the hamlet would be served by the proposed new transmission main. Private wells currently being used would be abandoned.
- Portions of the Town of Springwater, including the hamlet would be served by the proposed new transmission main. Private wells currently being used would be abandoned.

The implementation of the Southern Area Alternative would be additive to Alternatives B, C, and D. It would require the construction of new distribution systems in several locations where individual private wells are the existing source of supply. In addition, to take maximum advantage of the system, many existing distribution systems should be expanded and improved.

#### Anticipated Economic Development

This alternative greatly increases the economic development potential of the Southern Area, especially in those locations with existing sanitary sewer systems. In areas without those systems economic development will continue to be hampered until additional investments are made in new sanitary sewer facilities.

#### Estimated Costs

The combined estimated project and annual costs associated with Alternative E are \$77,900,000 and \$10,485,000 respectively, and are detailed in Tables 7-1 and 7-2.

**TABLE 7-1  
ESTIMATED CONSTRUCTION COSTS**

**ALTERNATIVE A: CONESUS, HEMLOCK AND SILVER LAKES \***

Item	Alternative A	Alternative A1	Alternative A2	Alternative A3
<b>Estimated Construction Costs:</b>				
Transmission Main	\$8,500,000	\$10,100,000	\$11,100,000	\$17,000,000
Storage Tanks	\$400,000	\$400,000	\$400,000	\$1,100,000
Booster Pump Stations	\$200,000	\$400,000	\$400,000	\$400,000
Filtration Facility (Conesus)	\$8,000,000	\$8,000,000	\$8,000,000	\$8,000,000
<b>Subtotal</b>	<b>\$17,100,000</b>	<b>\$18,900,000</b>	<b>\$19,900,000</b>	<b>\$26,500,000</b>

**ALTERNATIVE B: HEMLOCK AND SILVER LAKES \***

Item	Alternative B	Alternative B1	Alternative B2	Alternative B3	Alternative B4
<b>Estimated Construction Costs:</b>					
Transmission Main	\$12,700,000	\$14,300,000	\$15,300,000	\$21,200,000	\$22,200,000
Storage Tanks	\$400,000	\$400,000	\$400,000	\$1,100,000	\$1,100,000
Booster Pump Stations	\$400,000	\$600,000	\$600,000	\$600,000	\$600,000
<b>Subtotal</b>	<b>\$13,500,000</b>	<b>\$15,300,000</b>	<b>\$16,300,000</b>	<b>\$22,900,000</b>	<b>\$23,900,000</b>

**ALTERNATIVE C: CONESUS AND HEMLOCK LAKES \***

Item	Alternative C	Alternative C1	Alternative C2	Alternative C3
<b>Estimated Construction Costs:</b>				
Transmission Main	\$7,700,000	\$9,300,000	NOT APPLICABLE	\$16,300,000
Storage Tanks	\$1,100,000	\$1,100,000		\$1,700,000
Booster Pump Stations	\$400,000	\$600,000		\$600,000
Filtration Facility (Conesus)	\$8,000,000	\$8,000,000		\$8,000,000
<b>Subtotal</b>	<b>\$17,200,000</b>	<b>\$19,000,000</b>		<b>\$26,600,000</b>

**ALTERNATIVE D: HEMLOCK LAKE \***

Item	Alternative D
<b>Estimated Construction Costs:</b>	
Transmission Main	\$22,900,000
Storage Tanks	\$1,100,000
Booster Pump Stations	\$1,000,000
<b>Subtotal</b>	<b>\$25,000,000</b>

**ALTERNATIVE E: SOUTHERN AREA ALTERNATIVE**

Item	Alternative E
<b>Estimated Construction Costs:</b>	
Transmission Main	\$41,200,000
Storage Tanks	\$5,100,000
Booster Pump Stations	\$1,600,000
<b>Subtotal</b>	<b>\$47,900,000</b>

\* - Does not include costs for construction or upgrade of facilities in Groveland, North Dansville (Dansville), Sparta (Scottsburg), Springwater, Sonyea, and West Sparta.

TABLE 7-2  
ESTIMATED ANNUAL COSTS

ALT A: CONESUS, HEMLOCK AND SILVER LAKES	ALT. A	ALT. A-1	ALT. A-2	ALT. A-3
<b>CAPITAL COST</b>				
Construction Cost	\$17,100,000	\$18,900,000	\$19,900,000	\$26,500,000
Contingencies (25%)	\$4,300,000	\$4,700,000	\$5,000,000	\$6,700,000
Engineering (15%)	\$3,200,000	\$3,600,000	\$3,700,000	\$5,000,000
Administrative (15%)	\$3,200,000	\$3,600,000	\$3,700,000	\$5,000,000
Subtotal	\$27,800,000	\$30,800,000	\$32,300,000	\$43,200,000
<b>ANNUAL COST</b>				
Debt Service 30 Year Life at 7%	\$2,690,000	\$2,970,000	\$3,130,000	\$4,200,000
Operation and Maintenance *	\$1,340,000	\$1,390,000	\$1,440,000	\$1,450,000
Purchase of Treated Water **	\$190,000	\$350,000	\$290,000	\$350,000
TOTAL ANNUAL COST	\$4,220,000	\$4,710,000	\$4,860,000	\$6,000,000
Population Served	31,100	34,200	34,200	36,650
ANNUAL COST PER CAPITA	\$136	\$138	\$142	\$164

ALT C: CONESUS, AND HEMLOCK LAKES	ALT. C	ALT. C-1	ALT. C-2	ALT. C-3
<b>CAPITAL COST</b>				
Construction Cost	\$17,200,000	\$19,000,000	NOT APPLICABLE	\$26,600,000
Contingencies (25%)	\$4,300,000	\$4,800,000		\$6,700,000
Engineering (15%)	\$3,300,000	\$3,600,000		\$5,000,000
Administrative (15%)	\$3,300,000	\$3,600,000		\$5,000,000
Subtotal	\$28,100,000	\$31,000,000		\$43,300,000
<b>ANNUAL COST</b>				
Debt Service 30 Year Life at 7%	\$2,710,000	\$3,000,000		\$4,200,000
Operation and Maintenance *	\$1,260,000	\$1,310,000		\$1,370,000
Purchase of Treated Water **	\$290,000	\$450,000		\$450,000
TOTAL ANNUAL COST	\$4,260,000	\$4,760,000		\$6,020,000
Population Served	31,100	34,200		36,650
ANNUAL COST PER CAPITA	\$137	\$139		\$164

ALT B: HEMLOCK AND SILVER LAKES	ALT. B	ALT. B-1	ALT. B-2	ALT. B-3	ALT. B-4
<b>CAPITAL COST</b>					
Construction Cost	\$13,500,000	\$15,300,000	\$16,300,000	\$22,900,000	\$23,900,000
Contingencies (25%)	\$3,400,000	\$3,800,000	\$4,100,000	\$5,700,000	\$6,000,000
Engineering (15%)	\$2,500,000	\$2,900,000	\$3,100,000	\$4,300,000	\$4,500,000
Administrative (15%)	\$2,500,000	\$2,900,000	\$3,100,000	\$4,300,000	\$4,500,000
Subtotal	\$21,900,000	\$24,900,000	\$26,600,000	\$37,200,000	\$38,900,000
<b>ANNUAL COST</b>					
Debt Service 30 Year Life at 7%	\$2,150,000	\$2,410,000	\$2,600,000	\$3,600,000	\$3,800,000
Operation and Maintenance *	\$650,000	\$700,000	\$700,000	\$720,000	\$720,000
Purchase of Treated Water **	\$1,100,000	\$1,260,000	\$1,260,000	\$1,316,000	\$1,316,000
TOTAL ANNUAL COST	\$3,900,000	\$4,370,000	\$4,560,000	\$5,636,000	\$5,836,000
Population Served	31,100	34,200	34,200	36,650	36,650
ANNUAL COST PER CAPITA	\$125	\$128	\$133	\$154	\$159

ALT D: HEMLOCK LAKE	ALT. D	ALT. E
<b>CAPITAL COST</b>		
Construction Cost	\$25,000,000	\$47,900,000
Contingencies (25%)	\$6,300,000	\$12,000,000
Engineering (15%)	\$4,700,000	\$9,000,000
Administrative (15%)	\$4,700,000	\$9,000,000
Subtotal	\$40,700,000	\$77,900,000
<b>ANNUAL COST</b>		
Debt Service 30 Year Life at 7%	\$3,950,000	\$7,550,000
Operation and Maintenance *	\$520,000	\$950,000
Purchase of Treated Water **	\$1,480,000	\$1,985,000
TOTAL ANNUAL COST	\$5,950,000	\$10,485,000
Population Served	36,650	48,550
ANNUAL COST PER CAPITA	\$162	\$216

\* Costs for Operation and Maintenance were based upon the volume of surface water supplied at \$0.70/1000 gallons for treatment, and \$0.30/1000 gallons for transmission system upkeep.

\*\* Costs for the Purchase of treated water were based upon the volume of treated water supplied at \$0.85/1000 gal.

\*\*\* Includes Southern Area transmission mains.

## 8.0 GENERAL RECOMMENDATIONS

### 8.1 INTRODUCTION

Livingston County has identified two basic water resource utilization goals for the County:

1. To ensure that residents receive adequate quantities of good quality potable water that will meet the appropriate drinking water standards.
2. To promote economic development in the County by providing for the adequate and reliable supply of potable water to areas which have the potential for such economic growth.

The following recommendations are made to meet these goals:

- Existing water systems for the Villages of Avon, Geneseo, and Livonia and the Towns of Avon, Geneseo, Livonia and York should be interconnected.
- New public potable water service should be provided to the residents surrounding Conesus Lake currently utilizing private supplies. This system should connect into the existing Livonia (Lakeville) system and loop around the lake encompassing lake residents within the Towns of Conesus, Geneseo, Groveland, and Livonia. (This system is henceforth referred to as the Conesus Lake perimeter.)
- Treated Hemlock Lake water should be provided to these interconnected systems (including the Conesus Lake perimeter), subject to an agreement with the City of Rochester.
- The Village and Town of Caledonia should investigate the use of the Monroe County Water Authority as a source of supply through the existing connection. Upgrades to this connection would be required.

- The Village and Town of Lima should continue to be supplied through the existing connection to the City of Rochester.
- The Village and Town of Leicester should continue to be supplied from Silver Lake via the existing connection to Mt. Morris. The maximum day demand should be supplemented by a new connection to the Village of Geneseo supply from Hemlock Lake.
- The Mt. Morris Demand Center including Hampton Corners in Groveland, should continue to be supplied from Silver Lake. The water intake and transmission system to the existing filtration plant, as well as, the transmission main to Hampton Corners should be upgraded.
- The existing municipal water systems located in the Village of Nunda and Dansville, as well as the Town of Springwater, should continue to operate separately with required upgrading of existing systems. A filtration plant should be developed for the Dansville system at Mill Creek.
- The two New York State correctional facilities at Sonyea in the Town of Groveland should remain a separate system utilizing Keshequa Creek, groundwater sources and the existing filtration plant. Other areas of Groveland including the Hamlet of Groveland Station Water Corporation should continue to operate separately with existing groundwater sources.
- The Town of Sparta (Hamlet of Scottsburg) and the northeastern portion of the Town of West Sparta should develop groundwater sources for municipal water supply systems to serve areas experiencing water quality problems with individual wells.

Other general recommendations include:

- Watershed regulations for surface waters should be reviewed and updated. Comprehensive regulatory protections should be instituted for recharge zones and watersheds.
- Comprehensive regulatory protections should be instituted and enforced to protect groundwater recharge zones of all groundwater supply sources within the County.
- Adequate treated water storage capacity must be provided for all public potable water systems.
- Out of district users should be formally incorporated into existing water districts.
- All residential, commercial, institutional and industrial water users supplied by municipal or public systems should be metered.

## 8.2 WATER QUALITY

### Surface Water Source

The federal surface water regulations which become effective in 1992 will impact each of the surface water sources currently utilized by Livingston County water purveyors that provide potable public or multiple private water services.

In order for these surface water sources (Conesus, Hemlock, and Silver Lakes as well as, Mill, Little Dansville, and Keshequa Creeks) to continue to be utilized as potable water resources, water treatment facilities must be utilized to meet the stricter regulations. The need for water treatment facilities impacts the above surface sources as follows:

- new treatment facilities would need to be constructed for the continued use of Conesus Lake and Mill Creek as raw water sources. If Conesus Lake raw water is used, one consolidated treatment facility should be constructed and operated to supply treated water.
- The existing Mt. Morris transmission system from Silver Lake to the existing filtration plant would need to be upgraded to provide maximum day allocation capacities.
- The proposed City of Rochester treatment facility at Hemlock Lake has been designed to meet the stricter regulations. Completion of this facility and proper operation would assure good quality potable water to systems utilizing treated water from this plant.
- Based on current treatment capabilities it appears the existing filtration system at Sonyea for Keshequa Creek would be adequate to meet the stricter regulations.
- Modifications underway at the existing Village of Nunda filtration plant for Little Dansville Creek would allow the plant to meet the stricter regulations. (Additional modifications to provide sufficient chlorine residual may be required.)

While the individual intakes around the perimeter of Conesus Lake will not be directly governed by the federal regulations, there are several benefits that would be provided to lake residents were they to be a part of a treated water supply system. A public system serving these residents would enhance fire protection capabilities and more importantly provide assured safe drinking water. In addition, the anticipated spread of zebra mussels could force the elimination of private intakes. All lakefront residents could be served either by treated water from a consolidated treatment facility at Conesus Lake or the purchase of treated water from the proposed City of Rochester Hemlock Lake facility via existing or proposed transmissions mains.

Watershed regulations should also be reviewed and updated. Comprehensive regulatory protections should be instituted for recharge zones and watersheds. These protections should be coordinated among village and town jurisdictions for all water supply sources within the County and the Silver Lake watershed.

Finally, adequate treated water storage capacity must be provided for all public systems. Several municipal systems require additional storage capacity to meet even their current system demands. These include the Towns of Livonia and Leicester. Projected future demand for 2020 would require additional storage facilities which would be dependent upon future system configurations and system interconnections.

#### Groundwater Sources

Well source contamination is a major concern for groundwater source systems, either private or municipal. Comprehensive regulatory protections should be instituted and enforced to protect the groundwater recharge zones of all groundwater supply sources in the County. These regulations should be coordinated among all political jurisdictions.

The Town of Springwater (Hamlet of Springwater) has experienced problems with failing and inadequate septic systems. The Village of Caledonia, while it does not generally have failing septic systems, does have extremely permeable soils and high densities of individual septic systems. This combination enhances the potential for partially treated effluent to reach the groundwater table.

Although no contamination of the groundwater source from untreated or partially treated effluent has been documented for either municipality, the potential for such contamination of the groundwater source exists. Therefore, it is recommended that, while costly, each community should invest in a municipal sanitary sewer system.

In addition, the existence of volatile organic compounds, namely trichloroethene (TCE) have been detected in the Town of Caledonia's groundwater. Several private individual wells have been affected. The NYSDEC will conduct a study to

determine the extent and impact of the groundwater contamination in the area. In the meantime under emergency conditions, the United States Environmental Protection Agency (EPA) is providing carbon filters for those affected wells.

### 8.3 WATER QUANTITY

The total quantity of water available for use by Livingston County is adequate based upon projections for demand, both average and maximum day, for the year 2020. However this volume must be redistributed to meet the requirements of each particular "demand center."

As shown in Chapter 7.0, Alternative E, due to the generally small population concentrations of the southern communities and the extensive lengths of transmission mains required to interconnect these communities with the three main surface supplies (Conesus, Hemlock, or Silver Lake) it is not cost effective to construct these connections at this time. Therefore, it is recommended that these communities continue to operate their own systems but any new transmission mains related to the Conesus Lake or Hemlock Lake supplies should be sized so as not to preclude future extensions to some or all of these southern communities should costs become more affordable in the future.

If all surface water sources currently utilized by Livingston County residents were to remain active, several withdrawal allocation permits and water supply agreements would have to be modified to meet the projected water demands of the County for the year 2020.

- The permitted withdrawal volume for the Dansville Demand Center from Mill Creek would increase from the existing 0.5 MGD permitted volume to approximately 1.2 MGD average day.
- The Mt. Morris Demand Center would require an allocation increase from 1.5 MGD maximum day to 1.7 MGD. However, as stated in Chapter 6.0, Section 6.2.3, an increase in the Silver Lake allocation is not considered feasible due to the apparent over-allocation of the Lake in excess of the estimated dependable yield.

Therefore, a secondary supply would be required to supplement future demand increases. This supply should be provided via a new transmission main from Geneseo to Leicester which would be supplied from a consolidated treatment facility at Conesus Lake or the purchase of treated Hemlock Lake water from the City of Rochester (subject to a City of Rochester agreement).

- The combined Town/Village of Livonia system would require an increase in the current 0.4 MGD maximum day volume specified in the water supply agreement with the City of Rochester to a total supply of 1.0 MGD maximum day.

In an effort to utilize actual anticipated water demand for the year 2020 it was assumed in Chapter 7.0 that the contractual agreement between the Village of Avon and the General Foods Corporation (to provide a maximum volume of 2.1 MGD of water to General Foods) can be renegotiated. The Village of Avon should continue to provide adequate water for General Foods, however, the maximum allocation should be adjusted so that unneeded volumes of water are not committed where they will not be used. If this is not possible, an additional allocation from Hemlock Lake or a new groundwater source should be provided to meet this demand.

#### **8.4 SPECIFIC FACILITY RECOMMENDATIONS**

Based upon the recommendations for water quality and quantity, the resource utilization alternatives and the county-wide needs, the following specific facility recommendations are made.

The existing municipal water systems located in the Villages of Nunda and Dansville, as well as the Town of Springwater, should continue to operate separately. A filtration plant should be developed for the Dansville system at Mill Creek to meet the more stringent federal safe drinking water regulations to become effective in 1992.

The two New York State correctional facilities at Sonyea (Town of Groveland) should also remain as a separate system utilizing Keshequa Creek, groundwater sources and the existing filtration system. Any future increases in demand for these correctional facilities would be provided by expansion of existing sources. Other areas of Groveland including the Hamlet of Groveland Station Water Corporation should continue to operate separately with existing groundwater sources.

The Towns of Sparta and West Sparta are both experiencing problems with water quality from private individual wells. The Town of Sparta should develop groundwater sources for a municipal water system to serve the Hamlet of Scottsburg. The northeastern portion of the Town of West Sparta is also in need of a municipal water system to serve area residents. The source would most likely be a separate groundwater source.

The Village of Mt. Morris should continue to operate the existing treatment facility at Silver Lake and provide service to the communities of Hampton Corners, and Village and Town of Leicester. The existing transmission systems should be upgraded. A connection to the Village of Geneseo to supplement water to meet water demands should be investigated. The Village and Town of Lima should maintain their existing water supply connections with the City of Rochester.

The Village of Caledonia has experienced groundwater quality problems as outlined in Chapter 6.0. It is recommended that this system abandon its well source. According to the "Genesee Region Water Resources Management Strategy" published in 1989 by the NYSDEC and the NHYDOH, Lake Ontario has an abundant supply of water which should be utilized whenever technically and economically feasible. In addition, Monroe County Water Authority (MCWA) was cited in this report as having excess capacity available. There is an existing connection between the Village of Caledonia and the MCWA. This connection is not currently adequate to provide the primary supply for the Village, therefore a new connection would be required.

A new public water distribution system should be established for the perimeter of Conesus Lake. Purchase of treated water from Hemlock Lake (subject to an agreement with the City of Rochester) should be provided to supply the system. The costs to implement a Conesus Lake perimeter service area alone are shown on Table 8-3 Project 1B.

To provide for the redistribution of sufficient supplies of potable water (within the remaining northern communities) which also utilize as much of the existing infrastructure as possible, the transmission mains for the Villages of Avon, Geneseo, Livonia, and the Towns of Avon, Geneseo, Livonia, (including Hamlet of Lakeville) and York should be interconnected.

The source of potable water for these interconnected communities would be either Conesus Lake including the construction of a consolidated water treatment facility or the purchase of treated Hemlock Lake water from the City of Rochester (subject to agreement with the City).

The annual costs per capita for the initial implementation of either the Hemlock Lake or Conesus/Hemlock Lake source systems for the seven communities is considered identical at \$123 and \$122 respectively. Refer to Table 8-3 Project 1A for detailed information.

Since the needs of these seven communities can be met from either water source alternative and the initial costs are relatively the same (future costs are lower using Hemlock vs. Conesus, but neither initial nor future costs are dramatically different for either alternative) the long term development goals of the County and the quality of the raw water source should be considered when determining which alternative is most appropriate.

The Villages of Geneseo and Avon have currently developed a study to explore the feasibility of a joint water treatment facility on Conesus Lake to be built under an intermunicipal agreement between the two Villages. The study compares the benefits of a joint facility to the alternative of two separate facilities, each built by the respective Villages. This study does not consider the possibility of obtaining treated water from a Hemlock Lake supply.

The Geneseo/Avon study recommends that a combined system should be constructed. A combined plant offers significant savings in operation and maintenance costs and serves to reduce the financial impact of any future improvements that may be mandated by changes in existing or anticipated state or federal water regulations.

Future County needs may include providing potable water service from the main surface water sources to the southern communities and supplementing existing supplies for the communities of Mt. Morris, Leicester, Lima, and Caledonia. Therefore, the initial phase of a county-wide system, implemented in stages, should not preclude any of the anticipated future expansions.

Hemlock Lake is the only source that has the necessary resource capacity to singularly meet the possible demand (subject to an intermunicipal agreement with the City of Rochester). It has the potential to service the southern communities, provide adequate water supply for unexpected new demands and meet the presented demands of all communities within the County.

In addition, the Hemlock Lake water source is a better quality raw water source than either Conesus or Silver Lake as a result of present day watershed regulations. The utilization of Hemlock Lake water would also provide an additional benefit to Conesus Lake. The Conesus Lake water which is currently used for potable supply would then be available for dilution of the wastewater treatment plant outflow at the discharge of the lake, potentially improving the water characteristics downstream of the wastewater facility.

The purchase of treated Hemlock Lake water, subject to agreement with the City of Rochester, should be initially pursued for the seven northern communities recommended to be interconnected. In addition, a plan for a future regional resources allocation (additional water supply) should be developed for all communities within Livingston County.

To provide treated water from Hemlock Lake a transmission main would be constructed from the Livonia pump station to Lakeville (to handle the increased flow). A transmission main would also be constructed from the Village of Avon to the Village of Geneseo to complete the connection between the existing transmission mains.

## 8.5 IMPLEMENTATION

The implementation and management of an area wide plan for water supply and transmission will require that participating municipalities reach agreement on a mutually acceptable form of management. This management structure should take the lead in:

- implementing projects within service areas,
- allocating water and service within service areas,
- planning for future expansions of system, and/or
- operating and maintaining the system.

Based upon the specific recommendations in Section 8.4 the first phase of such a system should be initiated with the seven interconnected municipalities of the Villages of Avon, Geneseo, and Livonia, and the Towns of Avon, Geneseo, Livonia (including Hamlet of Lakeville) and York as well as the addition of new service to the Conesus Lake perimeter (including portions of the Towns of Conesus, Geneseo, Groveland and Livonia). This system would be as described in Alternative B-3, Chapter 7.0, Section 7.4. The boundaries of such a system should be carefully drawn to include existing service areas within these communities plus any logical extensions that reflect good planning and economic development corridors.

The implementation of such a system utilizing Hemlock and Silver Lakes to supply the seven interconnected municipalities and the Conesus Lake perimeter is shown on Figure 8-1. The initial project 1A would include the construction of transmission mains in the Towns of Livonia and Geneseo to complete the interconnection of existing transmission mains. The management agreement/system would allow for the purchase of the existing major infrastructure including

transmission mains, storage tanks, and pumping facilities from the various communities. The implementation of a Conesus Lake perimeter system could be completed separately (Project 1B) or added to Project 1A.

Implementation of a first phase of Alternative B-3 would provide the infrastructure necessary to allow the future addition of new service areas to the system. The addition of a supplemental source of supply to the Leicester/Mt Morris system and the connection of Lima and Avon would complete the implementation of Alternative B-3. The future implementation of the Southern area system, (Alternative E) would then be possible from both a quantity and distribution perspective.

The operation and maintenance of these constructed and purchased facilities would then be under the jurisdiction of the management structure developed by the participating communities. The purchasing of treated water (subject to City of Rochester negotiations) would be similarly controlled. The management structure should also have among its responsibilities the provision of assistance to currently non-participating communities. Assistance could include such services as centralized purchasing and laboratory services, long range planning and operational back-up.

The estimated project costs (including purchase of appropriate existing municipal transmission and storage facilities) associated with a Project 1A for the seven municipalities discussed, utilizing only a Hemlock Lake water source or a combination of a Conesus/Hemlock Lake water source are \$19,204,000 and \$22,420,000 respectively. The associated annual costs for each of these alternatives are \$2,859,000 and \$2,833,000 respectively. All estimated costs are detailed in Tables 8-2 and 8-3.

The estimated project costs associated with Project 1B only for the Conesus Lake perimeter utilizing Hemlock Lake water source is \$12,350,000. The associated annual cost is \$1,259,000. All costs are detailed in Tables 8-2 and 8-3.

The annual per capita cost developed for these project phases are for relative comparison only. The actual user fees or rates charged will vary depending upon the method of cost assessment (i.e., number of units, actual water usage, lake frontage, etc.). In addition, the revenues generated from the purchase of the existing transmission mains and major facilities may be used by the respective communities to reduce their water rate, or in a manner which the respective governing body of the community deems appropriate.

If the ability to purchase additional quantities of treated water from the City of Rochester (Hemlock Lake) proved not to be feasible, a treatment facility would then be needed at Conesus Lake.

TABLE 8-1  
COMPARISON OF ALTERNATIVES

	Alternative A Series (Hemlock, Conesus & Silver Lakes)	Alternative B Series (Hemlock & Silver Lakes)	Alternative C Series (Hemlock & Conesus Lakes)	Alternative D (Hemlock Lake)	Alternative E (Hemlock & Silver Lakes) Includes Southern Area
<b><u>WATER QUALITY</u></b>					
Surface Water w/Treatment	Can meet all regulations	Can meet all regulations	Can meet all regulations	Can meet all regulations	Can meet all regulations
Raw Water Quality	Hemlock Lake, excellent Conesus & Silver, fair	Hemlock Lake, excellent Silver, fair	Hemlock Lake, excellent Conesus, fair	Hemlock Lake, excellent	Hemlock Lake, excellent Silver, fair
Ground Water	Can meet all regulations	Can meet all regulations	Can meet all regulations	Can meet all regulations	Can meet all regulations
<b><u>WATER QUANTITY</u></b>					
Surface Water	Adequate	Adequate	Adequate	Adequate	Adequate
Groundwater	Adequate	Adequate	Adequate	Adequate	Adequate
<b><u>ECONOMIC DEVELOPMENT</u></b>					
Provide adequate facilities to supply 2020 development where projected	Yes	Yes	Yes	Yes	Yes
Provide adequate facilities & resources to supply same industrial/commercial growth but in different locations	Difficult due to allocation & safe yield limits on Conesus & Silver Lakes	Good as most surface supply is from Hemlock Lake	Difficult due to allocation & safe yield limits on Conesus Lake	Good as all surface supply is from Hemlock Lake	Good as most surface supply is from Hemlock Lake
<b><u>POSSIBILITY FOR INCREASED STREAM FLOW IN CONESUS LAKE OUTLET</u></b>	No	Yes	No	Yes	Yes
<b><u>COST</u></b>					
Capital Cost (Avg.)	\$34,000,000	\$30,000,000	\$34,000,000	\$41,000,000	\$78,000,000
Total Annual Cost (Avg.)	\$ 5,000,000	\$ 4,900,000	\$ 5,000,000	\$ 6,000,000	\$10,500,000
Population Served (Avg.)	34,100±	34,600±	34,000±	36,700±	48,600±
Per Capita Cost (Avg.)	\$145*	\$140*	\$147*	\$162	\$216

\*Exclusive of southern area transmission mains. Add approximately \$65 per capita cost to Alternate B Series, C Series and D to include transmission mains and appurtenances for southern area. Alternative A Series does not have capacity for southern area expansion.

TABLE 8-2

ESTIMATED CONSTRUCTION COSTS FOR PHASE I

	<u>Project 1A Hemlock Lake</u>	<u>Project 1A Conesus/ Hemlock Lake</u>	<u>Project 1B Hemlock Lake</u>
Transmission Mains	\$3,920,000	\$1,120,000	\$6,950,000
Storage Facilities	1,210,000	1,210,000 <sup>(1)</sup>	650,000
Booster Pump Station	220,000	---	---
Filtration Plant (Conesus)	---	5,000,000 <sup>(2)</sup>	---
	<hr/>	<hr/>	<hr/>
	\$5,350,000	\$7,330,000	\$7,600,000

- (1) Includes cost for the Town of Avon, Hamlet of Lakeville and Town of Livonia new storage tanks for treated water.
- (2) 4.0 MGD plant with future expansion capability to 6.5 MGD.

TABLE 8-3

## ESTIMATED ANNUAL COSTS PHASE I IMPLEMENTATION

<u>Capital Cost</u>	<u>Project 1A Hemlock Lake</u>	<u>Project 1A Conesus/Hemlock Lakes</u>	<u>Project 1B Hemlock Lake</u>
Construction Cost	\$ 5,350,000	\$ 7,330,000	\$ 7,600,000
Contingencies (25%)	1,338,000	1,832,000	1,900,000
Engineering (15%)	1,003,000	1,374,000	1,425,000
Administrative (15%)	1,003,000	1,374,000	1,425,000
Purchase of Existing Facilities	10,510,000	10,510,000	---
<b>Subtotal</b>	<b>\$19,204,000</b>	<b>\$22,420,000</b>	<b>\$12,350,000</b>
 <u>Annual Cost</u>			
Debt Service (30 yr at 7%)	\$ 1,857,000	\$ 2,168,000	\$1,194,000
O & M	285,000	582,000	20,000
Purchase of Treated Water <sup>(1)</sup>	717,000	83,000	45,000
<b>Total Annual Cost</b>	<b>\$ 2,859,000</b>	<b>\$ 2,833,000</b>	<b>\$1,259,000</b>
Population Served	23,300	23,300	2,450
Annual Cost Per Capita	\$123(*)	\$122(*)	\$514

(\*) Does not include cost reductions for existing facilities purchased.

(1) Costs for purchase of water based upon the volume of treated water supplied at \$0.52/1,000 gal for the initial volume and \$0.80 for remainder.

## 9.0 WATER SUPPLY SYSTEM MANAGEMENT STRUCTURES

### 9.1 INTRODUCTION

Previous sections of this report outline present and future water supply needs in Livingston County and discuss alternatives for construction of facilities to meet these needs. This chapter summarizes the management structures currently in use and the management alternatives available to facilitate economic development and initiate construction and operation of the facilities necessary for expanded water service.

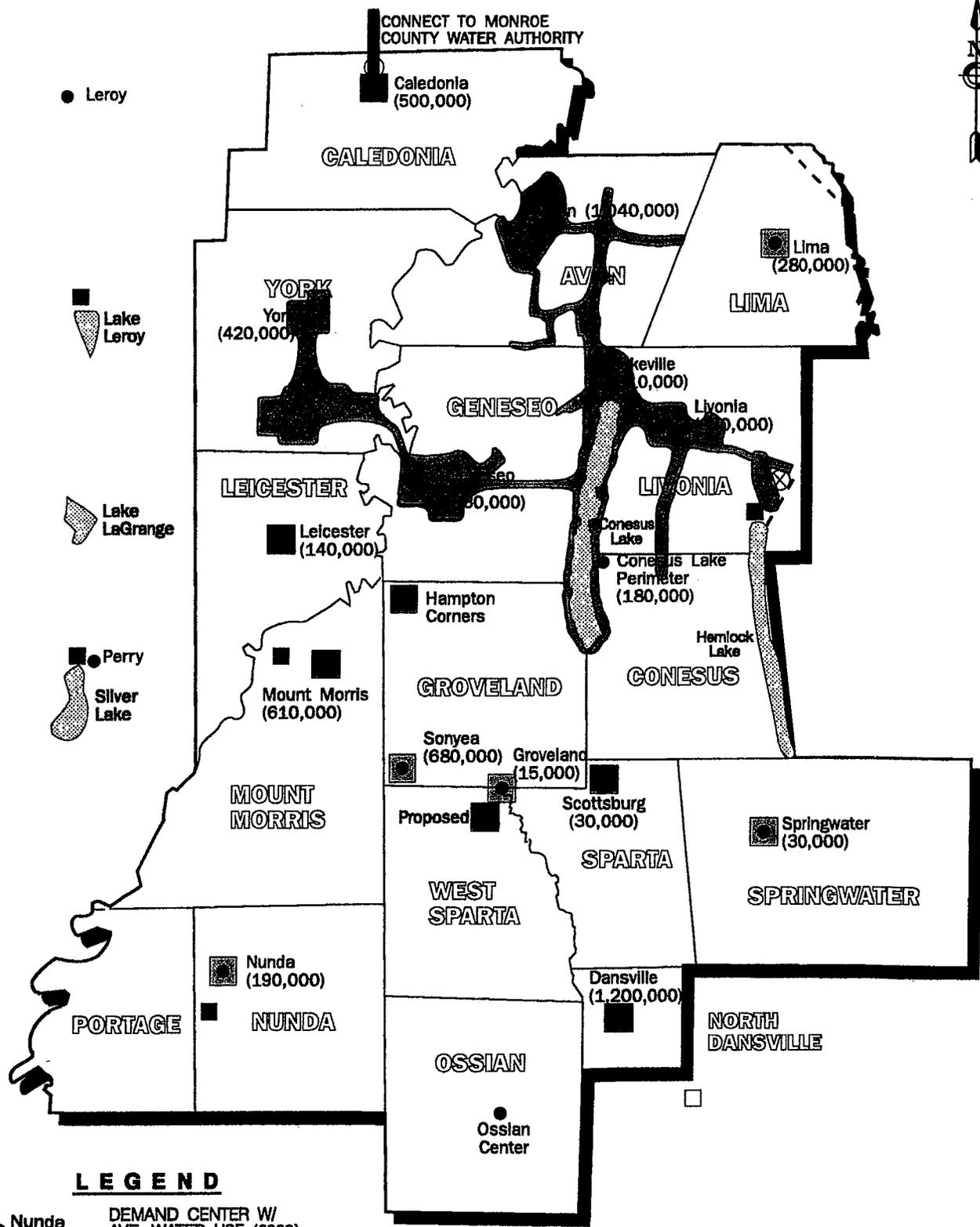
### 9.2 ALTERNATIVE MANAGEMENT STRUCTURES

#### 9.2.1 Existing Systems

The current management structures that are used to provide water in Livingston County include: incorporated villages; town water districts; permissive use areas; out-of-district users and numerous intermunicipal water supply agreements. Water district extensions and improvements require review and approval by NYSDEC, Livingston County Department of Health, and the NYS Controller. Municipalities are unlikely to obtain the approvals necessary for system improvements or expansion if they have permissive use areas or out-of-district users.

#### Villages

Each of the nine Villages in Livingston County provide water service within their Village borders. The Villages of Avon, Caledonia, Geneseo, Mt. Morris, Dansville and Nunda operate water supply systems and control their water sources. These Village water systems are directly responsible for water quality, including meeting new federal water quality standards. Such systems have the freedom to extend water supply to new users within the Village boundaries, and to supply water to Town water districts within the volume limits of their water supply permits. The Villages of Leicester, Lima, and Livonia rely on the purchase of



**LEGEND**

- Nunda (190,000) DEMAND CENTER W/ AVE. WATER USE (2020) GALLONS PER DAY
- PHASE I SURFACE SUPPLY IMPROVEMENTS
- NEW GROUNDWATER SUPPLY
- NEW SURFACE SUPPLY
- NO SUPPLY CHANGE
- ⊗ BOOSTER PUMP STATION
- FILTRATION PLANT (PROPOSED)
- FILTRATION PLANT (EXISTING)

<b>RECOMMENDED WATER SUPPLY IMPROVEMENTS</b>	
COMPREHENSIVE WATER SUPPLY STUDY LIVINGSTON COUNTY, NEW YORK	
<b>CLARK ENGINEERS &amp; ASSOCIATES</b> ROCHESTER, NEW YORK	<b>FIGURE 8-1</b>

water from other suppliers. In these cases, the supplier is responsible for initial treatment and filtration. Depending upon the system and the terms of the supply agreement, these Villages may have to provide additional treatment.

Within the limits of their current allocations, the Village water supply management structures can readily provide potable water to accommodate residential, commercial or industrial development projects that are either within their boundaries (by systems extensions) or adjacent to their boundaries (by intermunicipal agreements to retail water). This ability to provide expanded water services, should the Village be willing to do so, can yield economic benefits for the Village and the County as a whole. The Village management structure alone, however, is not in a position to singularly provide potable water to areas which are non-contiguous to Village boundaries and which are considered appropriate for economic development.

### Towns

The administrative mechanism for water supply in the Towns varies more widely. Generally, residents and businesses in the Towns of Caledonia, Conesus, Geneseo, Mt. Morris, North Dansville, Ossian, Portage, Sparta, and West Sparta rely on private individual or private multiple user water supply systems with some residents or businesses being serviced by municipal systems as out-of-district users or a permissive service area.

The Town of Springwater operates its own water district in the hamlet area and controls its own water supply source. The Town of Livonia's Lakeville Water District operates its own water supply system and controls its own water supply source. Town of Groveland residents generally rely on private individual or private multiple user water supply systems, but the NYS correctional facilities at Sonyea operates its own public multiple user system for the institutions.

Each of the remaining six Towns have some users supplied with water from another water system. The Towns of Avon, Leicester, Lima, Livonia, Nunda and York have water districts which contract to purchase water from others. These Town water districts may also contract for some or all water system operations. In most

cases, these water districts are adjacent to Village boundaries and purchase water from Village water systems.

Extension of a water service area or extension of a water main requires review by NYSDEC and the Livingston County Health Department. In the past, out-of-district users were connected to a water supply system without such reviews. Some of these water mains pre-date such review requirements and many of the water mains were privately installed. There is no assurance that these mains meet current acceptable standards for pressure or fire flows.

Permissive service areas were one means used to formalize existing out-of-district users. However, NYSDEC has found that such arrangements frequently do not adequately assign responsibility for repair and maintenance of the distribution lines over the long term. The greatest drawback of the permissive service areas may be the inability to tax users for necessary repairs. Although permissive service areas are still allowable, the NYSDEC, Livingston County Health Department, and NYS Department of Audit and Control would prefer to have all municipal water users in a water district. The three agencies are currently working to eliminate all out-of-district users. If additional permissive water service areas or out-of-district users are authorized, NYSDEC is likely to require that the water supplier commit to maintaining all facilities.

Economic development within the Towns is not readily supported by the Town water district structure. The extension of water district boundaries requires significant governmental review and is a slow and time consuming process. Municipally financed improvements are difficult to put in place for undeveloped properties due to the high cost and small numbers of users. The use of permissive service areas and/or supply to out-of-district users is discouraged by state regulatory agencies and does not provide a stable base for economic growth.

While permissive service areas or supply to out-of-district users may provide the supplier community with control of the water supply, these methods can prove inadequate in some instances for the water users to ensure proper maintenance of facilities or a long-term water supply. They are also not designed to promote

economic development. Water districts rely on user charges, property taxes, or a combination of both for revenue. These revenue sources require that water supply improvements be undertaken to serve specific future billable users.

Incorporated Village and Town water districts can assess on an ad valorem or benefit basis. They can also collect user charges. The cost of extension or improvements in a water district must be charged to those property owners that benefit. Establishment, extension, or improvements in a water district are subject to review by the NYS Controller through the Department of Audit and Control to be sure they are in the public interest and do not impose undue financial burden on property owners. The public interest standard requires that all regulations relating to the formation of a district have been met, that all properties which benefit from the district are included in the district and all properties included in the district benefit from the district. The benefit may be current or future. It should also be noted that any Town water district improvements are subject to the overall Town debt limit of seven percent.

### **9.2.2 Preferred Alternatives**

There are three management alternatives that can effectively implement the goals and technical recommendations set forth in this report. They are: an inter-municipal agreement; a combined water district; or a public benefit corporation. These alternatives offer varying levels of support for economic development. The choice of a management structure is fundamentally a political decision. Issues to consider include:

- Commitment of participating municipalities to jointly address water supply goals;
- Delegation of authority for system development and operations to an intermunicipal water supply body;
- Revenue sources for system improvements and the distribution of system costs.

### **9.2.2.1 Intermunicipal Agreements**

Individual municipalities could expand the use of intermunicipal agreements to meet future water supply needs. Intermunicipal agreements can specify joint responsibility for future system expansions to serve users in both the supplier and non-supplier water service areas. They can also provide for the cooperative operation and maintenance of area-wide water systems. To be effective, the participating municipalities must reach an understanding on:

- the commitment of water supplies to other municipalities;
- water supply service areas;
- length of term of the agreement, and
- operating committee structure and responsibilities.

If properly drafted, the intermunicipal agreement can provide the advantages of the combined district that is described below. Its primary disadvantage is that, once expansion beyond the initial service area becomes necessary, the cumbersome process for system extension comes into play.

### **9.2.2.2 Combined Water District**

A water district which encompasses either the entire County or the defined service area could be established. Such an area-wide water district (all or partial) must be approved by a public referendum among property owners proposed for inclusion in the district service area. Like a Town district, the establishment, extension, or improvement of a district is subject to approval by the NYS Controller to assure that the district is in the public interest and does not pose an undue financial burden on owners of real property in the district. Formation of a water district does not require special state legislation.

The water district would raise revenues from property tax assessments and user charges. Like a Town water district, an area district can assess property taxes on an ad valorem basis or a benefit basis. With an ad valorem assessment, each property is assessed by the district according to its assessment for real estate taxes. The area water district may also assign zones to benefit within an ad

valorem district. In a district with water assessments based solely on a benefit basis, a separate assessment roll is required. A benefit assessment can factor in an unlimited number of property characteristics such as frontage, number of bedrooms or bathrooms, building size, or lot development potential.

Economic development opportunities within the defined area can be readily supported by the water district. The district can easily include large areas of undeveloped land and provide a mechanism for supporting the financing of needed improvements on a much larger base than would be possible with the existing management structures in Livingston County.

The water district would be accountable to a governing committee much the same way that a Town water district is accountable to its municipal legislative branch. The Board of Supervisors or the Supervisors of the participating municipalities would appoint the water district board of directors and would approve water district recommendations regarding budgets and rate increases.

The Onondaga County Water District is offered as an example of how a district would operate. Its experience is applicable to either a county-wide or sub-county district. The District was formed in 1962 to build a water treatment plant on Lake Ontario and a transmission system to bring the water to Onondaga County. Onondaga County already had a water authority but felt property taxes were the most equitable way to finance the capital improvements necessary to bring Lake Ontario water to Onondaga County. The district service area includes all but two Towns in Onondaga County and collects property taxes based on ad valorem assessment and three benefit zones. There is a charge associated with each benefit zone. The entire district benefits from the economic development potential of having Lake Ontario water available and pays for the expense of the treatment plant, the transmission line to Onondaga County and the main reservoir. The northern ten Towns and the City of Syracuse benefit from the central district system as well as the economic development potential and pay for zone 1 and zone 2 benefits. The Onondaga County Water District has also installed secondary transmission lines to serve the ten northern Towns. These Towns pay the benefit assessments for all three zones. The Onondaga County Water District only supplies

water on a wholesale basis. The district sells water to the Onondaga County Water Authority and to the City of Syracuse.

Livingston County currently has experience with a district concept through the Conesus Lake County Sewer District which serves residents in the Towns of Conesus, Geneseo, Livonia, and Groveland, with property on Conesus Lake, the Town of Livonia Lakeville residents and the Village of Livonia.

### **9.2.2.3 Public Benefit Corporation**

Creation or expansion of a public benefit corporation such as a water authority requires passage of enabling legislation in the NYS legislature. The initial creation of an authority and subsequent expansions of the service area require approval of the local legislative body.

An authority can fund capital improvement projects through issuance of authority bonds or notes or short term borrowing. Authorities have no taxing powers and must rely on user charges to provide revenue to cover the full cost of water production including capital improvements, debt service, operation and maintenance. The NYS Controller does not review improvements proposed by authorities.

Creation of a County water authority will begin a process of transferring responsibility for some or all of the existing water distribution and treatment from the Towns and Villages to an independent agency. A County authority operates more independently of municipal or County government than a County water district. The Board of Supervisors appoints the board of the authority which then has independent budgeting and bonding authority.

Economic development opportunities within the County can be readily supported by a County water authority. A County authority can easily include large areas of undeveloped land and provide a mechanism for supporting the financing of needed improvements on a much larger base than would be possible with the existing management structures in Livingston County.

Wayne County offers an example of an operating Water Authority. The Wayne County Water Authority service area includes the entire County. Its enabling legislation, passed in 1987, prohibits the Authority from selling water in an area served by municipal water or taking over municipal facilities unless the municipality consents.

To date, the Authority has been most successful undertaking water supply projects in the rural northeastern part of Wayne County. The Authority secured grants and bonding to finance a five mile transmission line to provide water to a proposed NYS Correctional Facilities in the Town of Butler. This project also involved upgrading the Village of Wolcott water supply system to provide additional water. The Authority has been less successful at providing a comprehensive plan to meet future water needs in the eastern portion of the County. Discussions continue with these Towns and the Monroe County Water Authority regarding joint solutions to future water supply needs. In the meantime, the eastern Towns continue to rely on incorporated Villages, Town water districts, and intermunicipal agreements to fund facility improvements.

Water authorities in Monroe, Onondaga, and Erie counties were established to take over systems operated by the privately operated New York Water Services Corporation. At the time the authorities were established, these private systems were in need of repairs unlikely to be made under private ownership. Since the facilities were privately owned, they could be purchased by the authority without a referendum. New York State Town Law requires a referendum before the sale of property or facilities owned by a Town improvement district and a permissive referendum to lease such property.

Since its inception the Onondaga County Water Authority has expanded its service area numerous times. Current policy allows the Authority to expand to serve areas outside the County if the area will agree to become part of the County water district.

The Onondaga County Water Authority has also lent money to municipalities to create retail distribution networks which use the Authority as a wholesale supplier of water. The municipality then levies property taxes to repay the loan

to the authority. This effectively circumvents the Authority's limit on levying property taxes. Erie County is testing use of such an arrangement to allow an authority to lend a municipality money to build a wholesale water supply facility intended for lease back to the authority.

## ACTION AGENDA

The technical recommendations of this report should be accepted, with or without modification, by the Board of Supervisors. The Board can then convene representatives of the County and the Towns and Villages most affected by these recommendations so that a consensus can be reached on the preferred management structure.

The involved municipalities and/or the County Board of Supervisors should take the necessary steps to form the recommended entity. Once formed, the management structure can pursue the technical recommendations and address such other issues as negotiations for the purchase of water from the City of Rochester, manpower needs, project timetables, capital and operating budgets, and financing plans including sources of funds and the valuation of acquired facilities and the method of payback.

The priority activities are the interconnection of the seven northern end of the County and the provision of water to residences that surround Conesus Lake. Cost estimates for both activities have been provided. From a technical standpoint the next step would be to complete a preliminary design report and environmental impact statement for planned activities, followed by a detailed design study, preparation of bid documents, contractor selection process, and project construction.

## IMPLEMENTATION PROGRAM

1.    **ACTIVITY:**            **Acceptance/Modification of Technical Recommendations**  
      **LEAD AGENCY:**        County Board of Supervisors  
      **TIMETABLE:**         Two Months
2.    **ACTIVITY:**            **Consensus on the Preferred Management Structure;  
                                  Definition of Roles and Responsibilities**  
      **LEAD AGENCY:**        Affected Municipalities and County Representatives  
      **TIMETABLE:**         Three months
3.    **ACTIVITY:**            **Negotiations with City of Rochester**  
      **LEAD AGENCY:**        Management Structure  
      **TIMETABLE:**         Six months
4.    **ACTIVITY:**            **Administrative Matters: Financing, Manpower, etc.**  
      **LEAD AGENCY:**        Management Structure  
      **TIMETABLE:**         Three months
5.    **ACTIVITY:**            **Preliminary Design Report/Project Phasing**  
      **LEAD AGENCY:**        Management Structure/Consulting Engineer  
      **TIMETABLE:**         Six months
6.    **ACTIVITY:**            **Permitting and Approval Processes Including State  
                                  Environmental Quality Review**  
      **LEAD AGENCY:**        Management Structure  
      **TIMETABLE:**         Six months
7.    **ACTIVITY:**            **Detailed Design Report/Contract Documents**  
      **LEAD AGENCY:**        Consulting Engineer  
      **TIMETABLE:**         Six months
8.    **ACTIVITY:**            **Project Bidding/Construction**  
      **LEAD AGENCY:**        Management Structure  
      **TIMETABLE:**         Variable

Some time estimates run concurrently, e.g., Items 2, 3, 4 and 5.