

#### SYRACUSE-ONONDAGA COUNTY PLANNING AGENCY

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Karen B. Kitney

Contributing Staff:

Cathy Clark

Michael Cunningham

Don Jordan Douglas Morris Karen Novak Deborah Williams

Contributing Agencies:

Community Development Division Department of Drainage and Sanitation Department of Economic Development

Office of the Environment

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Office of Management and Budget

Metropolitan Water Board

Onondaga County Water Authority Department of Parks and Recreation

Department of Transportation

Additional Copies and Information:

Syracuse-Onondaga County Planning Agency

1100 Civic Center 421 Montgomery Street Syracuse, NY 13202

(315) 435-2611

E-Mail: onsocpa@emi.com



## COUNTY OF ONONDAGA OFFICE OF THE COUNTY EXECUTIVE

NICHOLAS J. PIRRO COUNTY EXECUTIVE

EDWARD KOCHIAN
DEPUTY COUNTY EXECUTIVE

MARTIN A. FARRELL EXECUTIVE COMMUNICATIONS DIRECTOR

JOHN H. MULROY CIVIC CENTER 421 MONTGOMERY STREET - 14TH FLOOR SYRACUSE, NEW YORK 13202-2995

> 315 - 435-3516 TELECOPIER: 315 - 435-8582

JAMES A. ALBANESE ADMINISTRATOR - PHYSICAL SERVICES

LYNN A. SHEPARD ADMINISTRATOR - HUMAN SERVICES

SUSAN J. TORMEY
RESEARCH & COMMUNICATIONS OFFICE

June, 1998

To the Citizens of Onondaga County:

The Syracuse Onondaga County Planning Agency and the Onondaga County Legislature have adopted the 2010 Development Guide for Onondaga County. Onondaga County's goals include a vibrant, growing economy, a high quality of life, and fiscal strength. Our strategies in response to change require cost-effective infrastructure, sustainable development practices, and stewardship of our environment.

Onondaga County's policies for investment and land use call for investment in existing communities, preservation of infrastructure and transportation assets, sustainable urban and suburban settlement patterns, and protection of the rural economy, agricultural land, and access to natural resources.

Implementation of this county wide plan will depend on investments and decisions over the next decade, by county departments and state agencies, the City of Syracuse, towns, villages, and private individuals and business. Working together, we can build a community that offers diversity and choice for residents and attracts investment and new jobs.

This plan refines and updates the Development Guide originally adopted by the Legislature in 1991, based on a review of trends and extensive public input. Onondaga County will continue to review and update the Development Guide every five years. I encourage the City of Syracuse and the towns and villages to endorse this policy plan. And I encourage each municipality to update plans, land use regulations, and capital programs so that the entire community can move ahead together into the 21st Century.

I look forward to working with all the public officials, residents, and businesses in Onondaga County to attract jobs and investment, protect our architectural heritage and natural environment, and build an attractive community for our children and grandchildren.

Sincerely,

Nicholas J. Pirre

# SYRACUSE-ONONDAGA COUNTY PLANNING AGENCY

1100 Civic Center, 421 Montgomery Street, Syracuse, NY 13202 (315) 435-2611, Fax (315) 435-2439 E-mail Address: onsocpa@emi.com

Roy A. Bernardi Mayor

Michael J. Cunningham
Director

Nicholas J. Pirro County Executive

## RESOLUTION OF THE SYRACUSE-ONONDAGA COUNTY PLANNING AGENCY ADOPTING THE ONONDAGA COUNTY 2010 DEVELOPMENT GUIDE

- WHEREAS, the Board of the Syracuse Onondaga County Planning Agency, has undertaken the review and update of the Onondaga County 2010 Development Guide, pursuant to the Charter of the County of Onondaga, Section 239 d of the General Municipal Law, and Resolution No. 160 1991 of the Onondaga County Legislature; and
- WHEREAS, the Framework for Growth provides current data and information on socioeconomic trends, residential subdivision and development, transportation, fiscal capacity, environmental considerations, and parks and protected open space and
- WHEREAS, the review of the data included in the Framework For Growth supports the continued relevance of the goals and policies of the 2010 Development Guide; and
- WHEREAS, the proposed revisions to the 2010 Development Guide respond to requests for a more graphic presentation of concepts; and
- WHEREAS, the revised 2010 Development Guide has been widely circulated to county and city departments, boards and agencies, county and municipal legislators, municipal planning boards, the New York State Department of Transportation, the Syracuse Metropolitan Transportation Council, public libraries, and to citizens and civic organizations upon request; and
- WHEREAS, the revised 2010 Development Guide was presented and discussed at meetings of the Onondaga County Planning Federation, municipalities and civic organizations and, in general, strong support was expressed for the goals, strategies, policies and recommendations; and

WHEREAS, Board finds that the revised 2010 Development Guide is a reasonable and fiscally sound approach to managing growth, prioritizing investments in infrastructure, and protecting environmental resources in Onondaga County through the year 2010;

NOW THEREFORE BE IT RESOLVED, that the Syracuse Onondaga County Planning Agency and its Constituent agencies the Onondaga County Planning Board and the Syracuse City Planning Commission on May 19, 1998 hereby adopt the updated 2010 Development Guide;

BE IT FURTHER RESOLVED, that the Syracuse Onondaga County Planning Agency recommends the updated 2010 Development Guide to the County Executive for implementation by county departments; and

BE IT FURTHER RESOLVED, that the Syracuse Onondaga County Planning Agency recommends the adoption of the 2010 Development Guide by the County Legislature.

Ruben P. Cowart, Chair

SOCPA Board and City Planning Commission

Royden S. Parratt, Chair

Onondaga County Planning Board

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## THE PHYSICAL AND ECONOMIC FRAMEWORK OF THE COUNTY PLAN

### 1997

This report focuses on the physical and economic setting within which the Onondaga County Development Guide functions including: demographic and economic factors which affect land development; land development trends; environmental considerations relating development and infrastructure to sensitive natural features; the fiscal capacity of the County to maintain and extend public facilities to meet community needs; and a detailed description of linear infrastructure which impacts the future growth and needs of our community. This document updates Report 1 of the 2010 Development Guide published in 1990.

### **COMMUNITY TRENDS**

Numerous changes have taken place in this community over the past several decades. Community Trends presents past trends and future projections for key components of community development that will influence the character of our community over the next fifteen years. This section forms a context within which environmental considerations, fiscal capacity and infrastructure can be reviewed and evaluated.

County population characteristics including age and geographic distribution and demographic trends are examined. Economic indices are evaluated for those sectors of the economy which are most vital to continued community growth. Housing data, subdivision activity, and housing trends are presented.

The trends of a community's population, economy and housing all influence land use and settlement patterns. County land use data is evaluated from many perspectives including urban, suburban and rural land development patterns, the general availability of developable lands for residential and commercial uses, and the relationships between land development and infrastructure, land use controls and public costs.

#### POPULATION CHARACTERISTICS

Analysis of a community's population characteristics is important because it indicates past growth patterns and suggests how the community will grow in the future. A look at various components of population growth, for example birth, death and migration rates, will suggest potential areas of community response to significant changes in population trends. Understanding future population change by age group can also help a community prepare to meet the needs of various subgroups in the general population.

#### GROWTH TRENDS

Demographic trends provide a picture of how Onondaga County has been changing and an indication of how it may develop in the future. As a result of the post World War II economic boom, the County's population grew until 1970; since 1970, the County's population has remained relatively stable. A significant redistribution of population has occurred within the County since 1960. The population of the City of Syracuse has declined while the population in the towns has increased.

#### Population

	Onondaga County	Syracuse	Towns
1930	291,606	209,326	82,280
1940	295,108	205,967	89,141
1950	341,719	220,583	121,136
1960	423,028	216,038	206,990
1970	472,835	197,297	275,538
1980	463,920	170,105	293,815
1990	468,973	163,860	305,113
2000 *	471,283		000,220
2010 *	476,615		

<sup>\*</sup> Projections Source: New York State Department of Economic Development, 1989.

#### Population Projections

A small but steady rise in the County's population from 1990 through 2010 is anticipated. There are three factors which affect population growth - births, deaths and migration. Births will continue to exceed deaths for the foreseeable future, leaving migration as the key determinant of whether the County's population will grow or not.

#### Migration

Net out-migration from Onondaga County was 35,000 in the 1970's, 25,000 in the 1980's and is estimated to be 20,500 for the first six years of the 1990's decade. If in-migration had equaled out-migration during the 1970's and 1980's, the County's population would have grown by 56,000 people rather than declining by 4,000.

The number of young adults (20-34), one of the age groups most likely to migrate, will decrease markedly (due to lower birth rates from 1965-75) by the year 2000 which could decrease the impact of out-migration on the County. This age group includes college students and persons entering the job market for the first time; these persons are very mobile in comparison to older or younger age groups.

Onondaga County
Age Group Projections

	1980	1990	2000	2010
0-4	30,973	35,006	31,030	28,414
5-19	116,954	96,605	99,017	91,017
20-34	121,205	121,160	96,895	96,246
35-44	49,462	69,087	74,948	61,207
45-64	94,478	86,275	101,678	128,003
65+	50,848	60,840	67,715	71,728
85+	4.971	6.485	10.257	14.757
Total	463,920	468,973	473.283	476.615

Projected Change by Age Group

	1990-2000		2000-2010	-\$-
0-4	-3,976	-11%	-2,616	- 8%
5-19	+2,412	+ 2%	-8,000	- 8%
20-34	-24,265	-20%	- 649	- 1%
35-44	+5,861	+ 8%	-13,741	-18%
45-64	+15,403	+18%	+26,325	+26%
65+	+6,875	+11%	+4,013	+ 6%
85+	+3,772	+58%	+4,500	+44%

Source: New York State Department of Economic Development and U.S. Census Bureau

Continued growth in the over 65 population will increase the need for housing, facilities and programs geared to this age group. Likewise, a rapid increase in the over 85 population will require additional programs and facilities for the more infirm individuals in this age group. The increase in the 45-64 age group will provide a large pool of relatively affluent conservative individuals who will affect the composition of the local economy, and the political and fiscal policies of the County.

#### GEOGRAPHIC DISTRIBUTION

Syracuse and Inner-Suburb Population Loss: From 1980 to 1990 the City of Syracuse's population decreased by 6,245 persons while the towns increased in population by 17,183. Four towns immediately adjacent to the City lost 5,534 persons: Salina, Camillus, Geddes and DeWitt. The population loss in these four towns occurred despite the fact that all four of these towns had an increase in the number of housing units in the 1980's. The population losses in the City and the inner-suburbs should continue during the 1990's because of decreased housing growth, ongoing declines in the number of persons in each household, and population movements to other

areas of the county or region. However, the decline in the City's population should not be as great as in the past.

Outer-Suburb Growth: Since 1980, 65% of the growth in the towns has occurred in the three northern towns of Clay, Cicero and Lysander and the eastern town of Manlius has accounted for another 13% of the growth. These four suburban towns grew during the 1970's and 1980's because of the availability of reasonably priced land serviced with public water and sewers and easily accessible to job sites. In the 1990's Cicero and Lysander will continue to have steady growth while Clay and Manlius will grow at reduced levels compared with past decades.

Rural Areas: Of the remaining towns, seven grew in population and four had declining populations in the 1980's. Population increases in these more rural towns occurred because people moved to these areas to take advantage of relatively cheap land available in a rural setting. During the 1990's, modest growth will continue in most of these towns except those most remote from the City.

POPULATION CHARACTERISTICS - FINDINGS

#### Size and Geographic Distribution

- 1. Modest population increases are forecast for Onondaga County with continuing, but slower, declines in Syracuse's population. The towns immediately surrounding the City and Villages will mirror the City with their own declining populations. The northern towns of Cicero, Clay and Lysander will continue to lead all towns in population growth, although the Town of Clay will grow at a significantly slower rate than during the 1980's. Manlius will also grow significantly less than it did in the 1980's. During the 1990's, the remaining suburban and rural towns will grow modestly or decline somewhat especially those towns most remote from the City.
- Since Onondaga County's population growth is highly dependent on migration rates, the community's ability to positively influence the factors that affect migration will determine future growth levels.

#### Age Distribution

- Modest increases in the population over 65 and a doubling of the population over 85 over the next 15 years will require specialized housing and services for these groups.
- 2. Increases in the 45-64 age group of nearly 50% over the next 15 years will affect housing demand and job formation and will provide a conservative influence in the fiscal plans of the County.

#### **COUNTY ECONOMY**

Understanding the strengths and weaknesses of a community's economy is critical when making policy decisions concerning future economic development. The sectors of the economy which have the greatest growth potential should receive the major focus of future development efforts. Understanding those sectors of the economy which are declining will help to highlight those areas where retraining efforts may be needed for affected workers.

#### LABOR MARKET AREA AND COMMUTING

County residents comprise 84% of all persons working in Onondaga County according to the 1990 census; the adjacent four counties provide 13% of the County's workers, with Oswego and Madison Counties providing 37% and 25% of all out of county workers respectively. While 41,003 nonresidents worked in Onondaga County in 1990, only 11,713 Onondaga County residents worked outside the County.

The 1990 net incommutation of 29,290 compares with a net incommutation of 17,735 workers in 1980. The increase in workers commuting to Onondaga County shows the County's role as a regional employment center. The large number of workers commuting into Onondaga County impacts on the County's transportation system and the need for County residents to maintain travel routes of noncontributing (in terms of county taxes) commuters from other counties.

#### SALARY STRUCTURE

Onondaga County has not kept pace with other New York counties in its wage structure. While Onondaga County is the 10th largest county in the state in terms of population, it ranked 34th in terms of the average annual change in the average wage per worker between 1980 and 1990. Onondaga County ranked 15th in terms of per capita personal income in 1990 and 28th in terms of the percentage change in per capita income between 1980 and 1990.

Downsizing and restructuring of industries and businesses have restrained wage increases nationwide and locally. National median household income stood at \$34,016 in 1995, up about 3% from 1994 income estimates; the 1995 increase marks the first income climb in 6 years. Incomes have still not reached their previous high in 1989. While no local median income estimates are available, the same forces operating nationally can be assumed to be restraining wages locally.

#### ECONOMY AND DEMOGRAPHICS

The interrelationships between the economy and demographics are complex. A strong local economy relative to other areas of the country can encourage population retention and growth. Likewise, population growth can stimulate certain sectors of the economy (retail, service and construction). Changes within a population can similarly affect the economy; an increase in persons of work force age can spur new housing and construction while increases in the elderly can strengthen the service sector of an economy.

The labor force includes those aged 16 and over who are working or looking for work. Over the past 20 years, the overall labor force in Onondaga County has increased (without a general population increase) due to rapid increase in the age groups ("baby boomers") constituting the labor force and to a rise in participation by women. The City of Syracuse's labor force has decreased because of overall population loss and the greater numbers of city residents unavailable for the labor force (such as retired workers, disabled persons, students, institutionalized persons).

Potential Labor Force, Persons 16 and Over

	Onondaga		
	County	Syracuse	Towns
1960	286,682	156,522	130,160
1970	324,020	145,676	178,344
1980	353,440	135,569	197,870
1990	365,470	130,128	235,342
2000	374,960 *	NA	NA
2010	390,865 *	NA	NA

\* NYS Department of Economic Development; 15 and over projection (16 and over unavailable).

The number of entry level workers has been decreasing since 1980, resulting in greater competition among businesses for these employees. The downward trend should end by the year 2000, but the projected increase in this age group will be modest through 2010.

	Onond	aga County
New	Labor	Force Entrant
	(15-24	Age Group)
	1980	92,956
:	1985	89,018
:	1990	73,576
:	1995	64,254
2	2000	64,447
2	2005	70,413
2	2010	70,709

Sources: NYS Department of Economic Development U.S. Bureau of Census

The participation of women in the labor force has increased steadily in all parts of Onondaga County, reflecting national trends. Men's participation rates have declined, but only in Syracuse has the actual number of men in the labor force decreased. This decrease in the number of men in the City's labor force could reflect a greater number of poor, elderly or disadvantaged males in the city.

Onondaga County Labor Force Growth

	1960	1970	1980	1990
Onondaga County				
Total	171,204	193,767	221,717	241,248
Male	113,602	118,288	124,861	127,891
Female	57,602	75,479	96,856	113,357
City of Syracuse				
Total	92,674	83,024	77,137	76,690
Male	58,244	47,352	40,955	39,185
Female	34,430	35,672	36,182	37,505
Towns		*		
Total	78,550	110,743	144,580	164,558
Male	55,378	70,936	83,906	•
Female	23,172	39,807	60,674	88,706 75,852

Source: U.S. Census Bureau

Onondaga County
Participation Rates \*

	1960	<u>1970</u>	1980	1990
Onondaga County				
Total	57.4	69.8	62.7	66.0
Male	79.5	77.5	75.2	74.4
Female	37.1	44.0	51.7	58.6
City of Syracuse				
Total	57.3	57.0	56.9	50.0
Male	77.0	71.2	66.5	59.0
Female	40.0	45.0	48.9	66.2 53.0
Towns				
Total	57.6	62.1	66.4	
Male	82.4	82.4	66.4	69.6
Female	33.6	43.2	80.1 53.5	78.3 61.6

<sup>\*</sup> Participation Rate: Percentage of population 16 and over who are in the labor force to total population 16 and over.

Source: U.S. Bureau of Census

The civilian labor force and number of employed peaked in 1990. The recession that occurred in 1991 and 1992 reduced the number of employed and the civilian labor force and by 1996 these two measures had not returned to 1990 levels. Unemployment has remained relatively low, although in 1996 it was still above 1990 levels.

Employment Status, Onondaga County Civilian Labor Force \*

	1980	1985	1990	1996
Civilian Labor Force**	216,200	230,700	244,000	234,100
Employed	201,900	218,800	235,600	224,500
Unemployed	14,300	11,900	8,400	9,600
Unemployment Rate	6.6%	5.1%	3.4%	4.1%

- \* U.S. Census statistics for 1980 and 1990 differ from NYS Department of Labor statistics because of the way the data is collected and the time frame represented. Numbers are rounded and may not sum to the total.
- \*\* Civilian Labor Force excludes members of the Armed Forces

Source: New York State Department of Labor.

#### INDUSTRY EMPLOYMENT TRENDS

Changes in the relative strengths of various sectors of the economy result in varying land use, transportation, utility and general infrastructure demands. Such changes also suggest strategies for strengthening the local economy so that economic development resources can be used to build on the stronger sectors of the local economy.

### Employment by Industry Onondaga County

	1980	1990	1996	Rank in 1990*
Durables	36,800	29,301	NA	5
Nondurables	11,926	12,196	NA	9
Total Manufacturing	48,726	41,497	35,747	9
Transportation & Public Utilities	11,968	15,823	13,775	8
Construction	7,102	12,804	8,652	9
Agriculture Services and Mining	727	1,331	NA	8
Wholesale Trade	15,726	16,808	15,472	8
Retail Trade	32,071	45,936	42,390	9
Services	41,341	64,121	69,199	10
Finance, Insurance & Real Estate	14,873	19,013	17,353	9
Government	34,684	37,420	40,993	9

\* Rank among NYS Counties in 1990; Onondaga County ranked 10th in terms of population in 1990.

Sources: NYS Department of Economic Development, NYS 1991-92 County Profiles, Table 14 (1980 and 1990 data).

NYS Department of Labor (data for first half 1996).

#### Service Sector

The service sector employed the most workers in 1990, displacing manufacturing. This dominance has continued through the 1990's. Of 114 occupations most in demand in the Syracuse Labor Area, over 60% are from the service sector including 30 professional and technical occupations, 23 clerical occupations and 17 other service occupations.

Nationally, the fastest growing occupations in the service sector through the year 2000 are expected to be in the computer and health fields. In Onondaga County, these fields are expected to grow because of Syracuse's role as both a regional hospital and health service center and its continuing strength in computer research (the Case Center For Science and Technology at Syracuse University). Other important service fields in Onondaga County are education (Syracuse University, SUNY ESF, LeMoyne College and Onondaga Community College), regional government services (Hutchings Psychiatric Hospital, SUNY Health Science Center, and various state and federal administrative offices), and cultural activities (museums, music and theater groups).

#### Manufacturing

Employment in manufacturing has declined from a high point in 1966 with the decline centered in the durables sector. In 1990, manufacturing was the third largest employer in Onondaga County, while by 1996 it had become the fourth largest. The decline of manufacturing in Onondaga County has been due to corporate restructuring, major changes in manufacturing processes, increased automation, foreign competition, and changing market requirements. Successful manufacturers have adjusted to these changes, often resulting in decreased employment while generating net productivity gains. Less successful manufacturers have closed, reduced in size, or been bought out by competitors.

The manufacturing sector is large and diversified in Onondaga County and it will remain a major employer during the next 15 years. Manufacturing and export services are important because the products sold outside the area return new money to the local economy and support local suppliers and related businesses.

#### Retail Trade

Retail trade has surpassed manufacturing as the second largest employer by industry. Retail growth in the 1980's was fueled by the construction of several new shopping malls and the expansion of existing malls as well as new smaller retail centers. In the 1990's, the retail sector has been impacted by the decline of several older malls, the consolidation and buyout of certain long-standing retail chains, the renovation and expansion of grocery chains at the expense of other stores, and the creation of discount strip centers in the area. As a result of these changes plus a steady turnover of stores in local malls and shopping districts and the lingering effects of the 1990 recession, retail trade employment by 1996 had decreased somewhat from the peak level in 1990.

<sup>&</sup>lt;sup>1</sup>NYS Department of Labor, "Labor Market Assessment, Occupational Supply and Demand, 1990"

Transportation and public utilities and wholesale trade grew through the 1980's, but both have declined somewhat in the 1990's. Transportation and wholesale trade have benefited from Onondaga County's central location in the state, its strong highway, rail and air links with other parts of the state and nation, and its position as a regional center. Transportation employment has been affected by consolidation in the trucking industry and cutbacks in the rail industry; public utilities have been impacted by competition and restructuring. Wholesale trade employment has been affected by restructuring and consolidation during the 1990's.

#### Construction

Construction employment increased during the 1980's due to numerous highway, retail and office projects. During the first seven years of the 1990's, construction employment has decreased because of weaknesses in new housing construction and the slow recovery of the area from the 1990-1991 recession. The long-term outlook for construction is hard to predict because of its dependence on the strength of the overall economy.

#### Finance and Government

Finance, insurance and real estate had been a growth sector during the 1980's due to the area's attractiveness as a location of back office operations for financial and insurance companies and due to the strong real estate market. The softening of the real estate market and the downsizing and consolidation of banks and other finance institutions has resulted in a decrease in employment in this sector in the 1990's. The government sector has seen fluctuating employment due to layoffs in certain levels of government which to date have been balanced by increases in educational and government operated health facilities.

#### Agriculture

Agriculture remains an important component of Onondaga County's economy, much more so than the small employment figures suggest. The number of farms is still significant (636 in 1992, down from 835 in 1982) and the acreage involved in farming (145,329 in 1992, down from 179,015 in 1982) represents 29% of the land area of the County. The market value of agricultural goods increased modestly from \$53,834,000 in 1987 to \$62,073,000 in 1992 and the average per farm market value of agricultural products increased from \$69,733 to \$97,597.

The outlook for the agricultural sector is continued decline in acreage and number of farms but ongoing significance in its impact on land use. The large amount of land used in agriculture and the importance of this land to local real estate taxes, to the quality of life of rural and suburban areas, and to the environment assures a continued important role for agriculture.

#### Tourism

The tourism industry is growing and its continued vitality is important to the Onondaga County economy due to the dollars generated from outside the community. Promotion of more regional attractions with events such as special theme festivals, the State Fair and the zoo is important to tourism. Sports attract outside visitors to the area, particularly Syracuse University football and basketball, the Crunch Hockey Team, the

Syracuse Sky Chiefs, and various special sporting events. The construction of the OnCenter, the renovation of the War Memorial, the construction of the new P & C Stadium and planned tourism improvements in the Inner Harbor area and along the Barge Canal will all contribute to the ongoing strength of this segment of the economy.

#### BUSINESS SIZE AND EMPLOYMENT GROWTH

Economic development strategies which focus on smaller sized businesses will reach the most important sources of new job creation. Only the smaller firms (1-99 employees) have experienced employment growth between 1990-1996. Larger firms have lost employment, due to firm closings, downsizing and mergers of firms. Successful small firms can grow into larger firms that will help compensate for the structural changes in the existing larger firms. Retaining and encouraging smaller firms to succeed and expand is a proven way to improve employment levels and economic property.

Number of Firms by Firm Size Onondaga County 1980-1996

Firm Size	1980	1990	<u> 1996</u>
1-9 Employees	6,884	7,893	8,624
10-99 Employees	2,534	3,016	3,081
100-499 Employees	237	296	260
500+ Employees	37	35	34
Total	9,692	11,240	11,999

Source: New York State Department of Labor

Number of Employees by Firm Size Onondaga County 1980-1996

Firm Size	1980	1990	1996
1-9 Employees	21,686	25,441	27,163
10-99 Employees	68,844	81,974	82,356
100-499 Employees	45,205	56,635	47,952
500+ Employees	55,699	53,057	45,532
Total	191,434	217,107	203,003

Source: New York State Department of Labor

#### ECONOMIC DEVELOPMENT POTENTIAL

#### Location Advantage

Onondaga County has locational advantages due to its proximity to regional and northeastern markets and transportation advantages including major north-south, east-west highways, I-81 and I-90, service by rail and canal, and the largest upstate airport. These factors favor distribution industries - trucking, air freight, warehousing, transhipment and wholesaling - as well as businesses that depend on access to other parts of the region, state and nation - such as the Anheuser-Busch Brewery, Carrier Corporation, and Bristol-Myers Squibb.

The County benefits from a relative proximity to major business and information centers such as New York City, Boston, Toronto and Montreal. Local research centers especially at Syracuse University provide assistance to local businesses and opportunities for advanced research; these centers include the Center for Molecular Electronics, Computer Applications and Software Engineering (CASE) Center, and the Northeast Parallel Architectures Center (NPAC). The Newhouse School of Public Communications at Syracuse University provides ties to major communications businesses while the Maxwell School of Citizenship and Public Affairs gives the County a national and international prominence.

#### Economic Strengths

Economic strengths of Onondaga County include a relatively low wage structure and cost of living, an educated and highly skilled work force, availability of suitable land for development, abundant water supplies and available financial assistance. There is an active economic development effort to promote the area. A strong service oriented business climate is consistent with national and state economic trends.

#### Export Industries

Export industries add dollars to the local economy through the exporting of products and services. In Onondaga County, export industries include the production of auto parts, electrical construction parts, pharmaceuticals, air conditioning equipment, specialty steel, medical instruments and beer. Because most local manufacturers export their products outside the County, it is important to retain these businesses for the continued health of the local economy.

Onondaga County is particularly strong in health and medicine, insurance and education. Regional strengths include finance and real estate. The average salary in these services is substantially higher than in the overall service industry. Such services belie the commonly held belief that a shift to service sector employment from manufacturing automatically means a lower wage base for an area. Many services are replacing manufacturing as export industries, with information, education or health service replacing tangible products.

#### COUNTY ECONOMY - FINDINGS

- 1. Economic growth is essential to decrease out-migration of population and preserve the vitality of the community.
- 2. Trends in restructuring and downsizing businesses, increased productivity through capital investments, and a switch away from manufacturing to a service and information economy, will continue to provide challenges for the local labor force to adapt to this changing environment.
- 3. Economic development efforts should be targeted at the attraction, retention and expansion of small and medium sized firms.
- 4. The County's economy for the next twenty years will increasingly rely upon the creation, formation, and marketing of ideas, knowledge, and information.
- 5. A diversified transportation system, a range of housing and lifestyle options, an excellent water supply and an educated labor force are positive development assets for Onondaga County.
- 6. The County's role as a regional distribution center will continue due to excellent interstate highway, air, and rail access.
- 7. Onondaga County's importance as a regional center of medicine, education, government, and cultural institutions will continue to enhance economic vitality.
- 8. Tourism as an economic growth generator can be greatly expanded with an increased emphasis on special events, promotion of existing tourist attractions such as the Burnet Park Zoo, creation of new tourism opportunities such as the Inner Harbor and Canalway improvements, and other innovative activities.
- 9. Manufacturing will be dependent on productivity gains, high value added products, and retention of existing firms; total employment in manufacturing will continue to lag behind retail and service sectors.
- 10. Training workers for a changing workplace and to meet the challenges of the 21st century is vital. Welfare reform with its emphasis on job training and placement has reinforced the need for ongoing training. The Applied Technology Center at Onondaga Community College is an example of the many training opportunities available in this community.

#### HOUSING

An understanding of the housing trends in the County is important because residential land use is the largest consumer of vacant land, the housing industry is a key employer in the community, and providing services to new housing is a major component of County infrastructure expansion and expense. The housing market responds to changes in the demographic characteristics of the community as well as to the overall health of the local economy. Anticipating change in either of these two factors is important in understanding future changes in the housing sector.

#### CURRENT HOUSING CONTEXT

#### Housing Market

The housing market area used in this report is Onondaga County including the City of Syracuse, the nineteen towns and fifteen villages. The market area does not function as a town or village based market, but comprises the entire County, offering a range of housing types, costs and settings.

The housing market is in constant flux due to individual buying decisions that cumulatively create market trends. Some trends stem from the size of the area's age groups: young adults or newly married couples buy starter homes; the advent of children creates demand for larger family homes; the "empty nest" years are accompanied by the desire and financial means for upscale dwellings; retirement leads to demand for low maintenance housing or congregate housing. Lifestyle housing decisions have geographic implications since starter homes are usually found in the city or older suburbs, family homes in the new suburbs, upscale housing on the urban fringe and in redeveloped sections of the City, and congregate housing in a variety of settings. In addition to lifestyle generated moves, individuals move because of job transfers, retirement and other personal events.

Individual housing decisions sometimes obscure the cohesiveness of the market. Likewise, the number of municipalities involved in approving new housing developments should not mask the community-wide need for a variety of housing in appropriate locations.

#### Household Size

Average persons per household has been decreasing since 1950 due to fewer children per family, more single person households, increases in the number of elderly and an increasing age at which people first marry. In the outer suburban towns, the rate of new housing construction has been sufficient to offset decreases in the persons per household, but in the Syracuse and inner suburban towns, this has not been the case. Syracuse's population loss has been accelerated by an actual loss of housing units; a slowing of this loss during the 1990's combined with a slower decline in the number of persons per household should reduce the rate of population decline in Syracuse.

### Persons Per Household\* Onondaga County

1950	3.51
1960	3.41
1970	3.25
1980	2.80
1990	2.64
2000	2.52 **
2010	2.45 **

\* Total population divided by number of occupied households \*\* SOCPA projection

#### Growth of Housing Stock

Growth of the housing stock (both single and multiple family units) has stimulated land use changes throughout the County since World War II. The number of year-round housing units - particularly single family units -in Onondaga County has increased markedly since 1960; multiple family units increased until 1980 and have remained stable since then. Syracuse has seen a decline in the number of single family units and multiple family units from 1980 to 1990. The primary growth in both single family and multiple family units has been in the area outside the city, the suburban towns.

Year-round Housing Units 1960-1990 \*

	Syr	acuse	<b>T</b>	'owns		tal unty
	Single Family	Multiple Family	Single Family	Multiple Family	Single Family	Multiple Family
1960	29,002	41,440	54,130	6,463	83,132	47,903
1970	26,637	45,099	65,149	15,132	91,786	60,231
1980	28,044	45,110	79,654	22,724	107,698	67,834
1990	27,991	43,511	95,060	24,316	123,051	67,827

\* Year-round housing units = occupied units plus vacant units available or intended for year-round use.

Source: U.S. Bureau of Census

Increases in occupied housing units have occurred almost exclusively in the Towns since 1950. The City of Syracuse has had actual decreases in the total number of occupied housing units. In the County as a whole, the rate of increase in the number of occupied housing units has dropped steadily for each of the four decades from 1950.

Change in Occupied Housing Units by Decade

	Total County	Syracuse	Towns
1950-59	+ 27,197	+ 4,626	22,571
1960-69	+ 21,232	- 159	21,391
1970-79	+ 20,355	- 710	21,065
1980-89	+ 12,221	- 2,016	14,237

Source: U.S. B

U.S. Bureau of Census

During the 1980's, single family dwellings dominated the County's housing market, with a peak issuance of single family building permits in 1986. Both multiple family and townhouse units (which are considered single family units for building permit recording purposes) increased in popularity through mid-decade, although multiple units permits declined substantially in 1988 and 1989. During the first seven years of the 1990's decade, multiple family units comprised 16% of all building permits (versus 19% during the 1980's decade) and 46% of the multiple family units have been for elderly housing.

Location of New Housing Units
Onondaga County
Residential Building and Demolition Permits
1980-89

	Total	Demolition	Net	% Permits		
	Permits	Permits	Permits	Non-tract **		
Camillus	1,000	2	998	14		
Cicero	1,909	6	1,903	10		
Clay	4,247	17	4,230	2		
DeWitt	560	32	528	9		
Elbridge	260	3	257	95		
Fabius	68	-	68	NA		
Geddes	493	4	489	1		
LaFayette	323	1	322	70		
Lysander	1,595	6	1,589	17		
Manlius	2,289	10	2,279	7		
Marcellus	254	6	248	77		
Onondaga	845	4	841	38		
Otisco *	110	-	110	110		
Pompey	494	-	494	72		
Salina	1,142	51	1,091	1		
Skaneateles	278	2	276	90		
Spafford	154	-	154	NA		
Tully	170	-	170	60		
Van Buren	948	5	943	40		
Syracuse	1.783	2,768	_985	_0		
Total County	18,922	2,917	16,005	713		

- \* No building permit information; permits estimated from 1980 and 1990 census data
- \*\* Non-tract: building permits issued along existing roads
- No demolitions reported or data not available

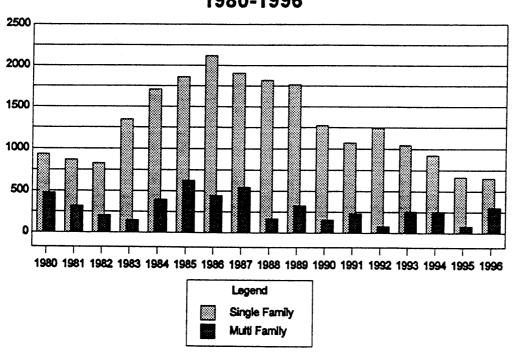
Source: Syracuse-Onondaga County Planning Agency and U.S. Bureau of Census

ONONDAGA COUNTY BUILDING PERMITS 1990-96

Onondaga County	Total Permits	Single-Family	Multiple- Family	Demolitions
1990	1,429	1,272	157	201
1991	1,302	1,072	230	173
1992	1,322	1,242	80	152
1993	1,302	1,045	257	185
1994	1,186	933	253	191
1995	743	664	79	261
1996	957	654	303	257
TOTAL	8,241	6,882	1,359	1,420

Source: Syracuse-Onondaga County Planning Agency

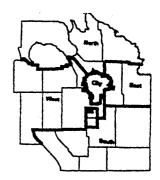
## ONONDAGA COUNTY BUILDING PERMITS 1980-1996



Source: Syracuse-Onondaga County Planning Agency

In terms of the geographic distribution of building permits, the northern towns account for over half of the building permits issued in both the 1980's and 1990's. The growth preference for the northern part of the County is due to the availability of easily developable land, good transportation access, and early installation of public water and wastewater facilities. The eastern and western parts of the County have been secondary growth areas, with the western part of the County outpacing the eastern in the 1990's. This change of growth direction is due in part to the declining availability of easily developable land in the eastern part of the County as well as to the expansion of water and sewer facilities in the western part of the County. The southern six towns have slightly increased their share of building permits but remain a relatively small part of the new housing market; this modest share is due to the general lack of public water and sewers, steeper terrain, and highway access limitations. The City of Syracuse continues to have more demolitions than new permits because of an older housing stock, insufficient investment in housing in certain sections of the City, and a lack of demand for new residential development in the City.

	Net	Building Permits 1980-89	by Section of 1990-96	f County
North		61%	58%	
East		18%	15%	
West		19%	25%	
South		8%	10\$	
City		-6%	-8%	



Source: Syracuse-Onondaga County Planning Agency

Age of Housing

The age of a community's housing affects the magnitude of the reinvestment needed to maintain its housing stock and can affect the stability of residential areas if that reinvestment is not made. The City of Syracuse contains 64% of all housing units in the county that were built before 1939; the three adjacent towns of DeWitt, Salina and Geddes have another 11% of this older housing stock. With the preponderance of older housing in the City and adjacent suburbs, housing problems and the need for major housing reinvestment will affect these areas most dramatically. Even areas of the county with housing generally younger than 55 years old will have pockets of older housing or newer housing which has not been maintained. Problems with an aging housing stock, as with aging infrastructure, eventually will impact all areas of the County. Developing strategies to cope with problems now can benefit all municipalities eventually.

	Year H	ousing Built		
	Onondaga County		Syracuse	
	# Units	Percent	# Units	Percent
1980-1990	22,636	11.9	2,667	3.7
1970-1979	29,045	15.2	6,390	9.0
1960-1969	30,864	16.2	7,246	10.1
1950-1959	32,669	17.1	9,503	13.3
1940-1949	16,326	8.5	7,575	10.6
1939 or earlier	59.338	31.1	38,121	53.3
•	190,878	100%	71,502	100%

Source: U.S. Bureau of Census, 1990

#### Housing Units with Household Income Below Poverty Level, 1989

	Onondaga County	City of Syracuse
Owner-occupied Units	3,765	1,471
Renter-occupied Units	15,533	12,466
Total Units	19,298	13,937

Source: U.S. Bureau of Census, 1990

#### Housing Costs

Prices of homes have not appreciated in the Syracuse area during the 1990's as they did in the 1980's; in fact, the median home price in the greater Syracuse area declined from \$85,000 to \$79,900 from 1993 to 1996. The end of continually rising housing values has changed the nature of housing as an investment and placed greater emphasis on maximizing the use of the existing housing supply.

#### Housing as a Tax Revenue Source

Not only is housing no longer a sure source of appreciatory wealth to the individual homeowner, housing for a community costs more to provide it services than is gained in tax revenues. A recent study by the American Farmland Trust of New York State communities confirms what other studies have found nationally - residential properties require more in services than they provide in tax revenue; the American Farmland Trust study shows that residential uses require \$1.23 of services for every tax dollar they generate. In comparison, commercial/industrial uses require only \$.27 of services for every tax dollar generated and farm/forest open land requires \$.29 in services for every tax dollar generated.

#### Subdivision of Land

During the 1980's, 12,852 new lots were created by the subdivision process; most of these lots were for residential purposes. The most active locations for subdivisions were in the northern suburbs, Clay, Cicero and Lysander (46% of all lots) and in the eastern suburbs, the Town of Manlius (18% of all lots).

In the first six years of the 1990's decade, 5,014 lots have been created, about 39% of the total in the 1980's decade; the 6,119 net residential building permits issued during the first six years of the 1990's represent about 38% of the total issued in the 1980's decade suggesting that developers do not create lots too far in advance of actual construction.

Distribution of new lots remains centered in the northern suburbs (50% of all new lots) during the first six years of the 1990's decade, although Cicero has become the largest lot-creating town instead of Clay. The western towns of Camillus and Onondaga have supplanted Manlius and DeWitt as the next largest lot creating area accounting for 19% of all lots compared to 15% for Manlius and DeWitt. Several of the southern towns are creating lots at a faster rate than during the 1980's but the number of lots being created in this area of the County is still relatively low.

The acreage involved in the subdivision of land during the first six years of the 1990's decade equals 78% of the total land subdivided during the 1980's. The average size of lot has increased from .86 acres to 1.76 acres although this is partially due to a greater percentage of very large lots being created in rural towns where public sewer and water are largely unavailable; for example, the Town of Fabius created 25 lots between 1990 and 1995 with an average size of 31.4 acres (some of these are agricultual parcels) whereas during the 1980-89 period Fabius had only 19 lots with an average size of 3.9 acres. However, the size of average lots has also risen in northern towns with public sewer and water; for example, the average size of lots created in the Town of Clay between 1980 and 1989 is .35 acres while between 1990 and 1995 it is .57 acres. This increasing lot size reflects increased use of zoning districts with larger minimum lot sizes and a perception by developers that new home buyers prefer larger lots.

#### Subdivision Activity 1980-1995 \* Onondaga County

	1980-1989		1990-1995	
	Lots	Acres**	Lots	Acres**
Camillus	789	519	418	690
Cicero	1,530	572	1,048	435
Clay	2,924	1,028	760	433
DeWitt	493	426	310	345
Elbridge	130	231	80	212
Fabius	19	75	25	785
Geddes	180	60	98	40
LaFayette	156	987	82	350
Lysander	1,391	826	487	828
Manlius	2,338	1,503	446	766
Marcellus	95	455	113	566
Onondaga	993	1,933	553	1159
Otisco	16	38	* ***	
Pompey	291	1,010	194	1354
Salina	627	194	135	40
Skaneateles	89	213	81	467
Spafford	12	22	23	20
Tully	168	524	27	86
Van Buren	363	446	37	76
Sub-total Towns	12,728	11,061	4,917	8,652
Syracuse	124	4	97	5
Onondaga County	12,852	11,065	5,014	8,657

Represents subdivision lots on tract maps filed with the County Clerk; the chart does not include lots which were created by deed lot splits.

Source: Syracuse-Onondaga County Planning Agency

Total land area involved in the recorded subdivision; if a lot is subsequently subdivided, the acreage can be counted more than once.

#### Age Distribution and Market Segments

Housing demand within various segments of the market will be driven by changes in the size of various age groups. The starter home market will decrease as the number of people in the household formation age group (20 to 44) decreases between 1990 and 2010. Lack of buyers for starter homes will also impact other segments of the housing market, since the ability of homeowners to sell their starter homes for a profit fuels the "move-up" market. The starter home market will be further affected by the lower comparative wages earned by this generation of younger workers.

Specialized housing for the "empty nesters" and the elderly should grow significantly in the next 20 years. "Empty nesters", adults whose children no longer live at home, will be more interested in smaller, low maintenance housing, such as one level townhouses. The elderly will be interested in low maintenance housing as well as congregate and supportive housing which includes specialized services. The very oldest of the elderly (over 85) will need housing with on-site medical and intensive personal services.

Populations in Significant Housing Market Age Groups
Onondaga County

	Starter	Empty Nester	Seniors	Elderly
	20-44	45-65	65+	85+
1980	170,667	94,478	50,848	4,971
1990	190,247	86,275	60,840	6,485
2000	171,843	101,678	67,719	10,257
2010	157,453	128,003	71,728	14,757

Source: New York State Department of Economic Development

#### New Household Formation

Although the total demand for new housing is projected to increase during the next two decades, it will be at a decreasing rate from past years and various segments of the market will perform independently. Household forecasts for the next 20 years indicate a County net increase of 8,000 between the years 1990 and 2000 and an increase of 4,000 between the years 2000 and 2010. To accommodate this new household formation and to replace obsolete housing, an estimated 12,000 new residential units will be built during the 1990's decade¹; this amount of new development can still significantly affect the environment, existing and future infrastructure needs, and the community's ability to pay for infrastructure maintenance. The County should use a period of declining residential growth as an opportunity to plan for any increase in activity that could occur in either later decades or as the result of some unanticipated growth spurt.

<sup>&</sup>lt;sup>1</sup>Based on extrapolating building permits from the first six years of the 1990's decade. More new housing units are built in a decade than new households are formed. During the 1980's, the ratio was 65 new occupied households formed for every 100 building permits issued for new housing units.

A close relationship will continue between housing demand and employment levels. Employment in Onondaga County in 1996 remained 11,100 below the peak level of 1990 and total number of jobs is approximately 10,000 below 1990. Total area employment is a primary factor in population growth or loss and housing demand. The fact that during the first 6 years of the 1990's decade net out-migration is estimated to be 20,486 versus a net natural increase of 18,626 suggests that any increase in jobs which simply reduces net out-migration could have a significant impact on overall county growth. Likewise any increase in jobs affecting population growth will stimulate the housing market.

# Housing and Neighborhood Revitalization Programs

In the City of Syracuse, the Department of Community Development supports new housing construction activities through the Syracuse Housing Partnership. The Department uses Community Development Block Grant funds and State affordable housing funds. The Department uses the Syracuse Urban Renewal Agency Development fund to provide construction or permanent financing to Community Development Block Grant eligible housing which does not qualify for conventional market funding and has not been otherwise anticipated in the Community Development Plan. The Home Headquarters, a Division of Syracuse Housing Services, Inc., was created in 1996 and funded by the Department to link vacant and savable properties with home purchasers who will reside as owner-occupants.

Other neighborhood revitalization agencies or groups which focus on different neighborhoods in the City in terms of improving housing are the Syracuse Model Neighborhood Cooperation (southwest and southwide neighborhoods), Westside Inner City Association (near westside neighborhood), Northeast Hawley Development Association (near northeast neighborhood), and Housing Visions Unlimited, Inc. (greater East Genesee Street neighborhoods).

The Onondaga County Division of Community Development is also involved in neighborhood revitalization programs. Under HUD's Home Investment Partnership Program, the Division received block grant funds which are used for homeownership subsidies and housing rehabilitation. HUD Community Development Block Grant funds are used for housing and for general community improvements. Community capital improvements include playground upgrades, senior/community center improvements, sidewalk repairs, and general infrastructure upgrades; these all improve the general quality of life in County villages and neighborhoods. In terms of housing, funds are used to construct or rehabilitate houses and rental units; ramps and accessibility modifications are also provided for low income, handicapped residents.

The Division of Community Development has also been awarded grants from the NYS Affordable Housing Corporation to help partially fund the Division's Neighborhood Rehabilitation Program. New York State has also provided interest free loans for building and rehabilitating houses under the Division's Homeownership Program.

#### HOUSING - FINDINGS

- 1. Housing trends for the 1980's were smaller households in larger houses on larger lots in suburban or rural locations; in the 1990's these trends have continued although the pace of overall new housing construction has slowed considerably.
- 2. While the absolute number of housing units developed in the 1990's will be less than in the previous decade, the number will be sufficient to require substantial new infrastructure investments. Opportunities exist to minimize the investment in costly infrastructure while still providing a full range of housing options.
- 3. Job development and housing construction have the potential to reinforce each other in the 1990's, with each having the capability of affecting demand on County facilities.
- 4. The composition of the housing market will change as a reflection of changes in age group distributions. Low maintenance housing and elderly housing of various types will become more important in the County's housing market. New multiple-family dwellings will be predominantly for elderly housing. Large multi-story homes with much acreage to maintain in areas distant from services will become less desirable; one level houses/townhouses on low maintenance lots close to services will become more desirable.
- 5. The relative decline in the number of persons available to purchase starter homes will impact both construction of these types of units and the "move-up" market.
- 6. Housing costs in Onondaga County are relatively lower than other areas of the country, but residential land use still costs communities more in services than it generates in tax revenues.
- 7. Construction of new single family units, as measured by building permits, peaked in 1986 and has declined since. Multiple family units have fluctuated in terms of permits throughout the 1980's and 1990's, but overall, fewer multiple units are now being built than in the past two decades.
- 8. There are numerous programs in both the City and County for rehabilitating or constructing affordable housing. Likewise, there are programs for infrastructure and community improvements. These efforts combined with the expenditures of Village and Town governments, County government and private individuals can create incremental improvements in neighborhoods. Such improvements will benefit all residents of the County since a well maintained, attractive community with strong, liveable neighborhoods is a major economic development asset.

# LAND USE

Understanding land use trends helps communities to anticipate future demand for new land uses and begin planning to provide the infrastructure necessary for such uses. Communities can analyze their current mix of land uses for suggestions of uses they would like to encourage in the future and in what locations. Proper land use planning can lead to a healthy local economy, proper location of land uses, and a more efficient use of a community's physical resources.

LAND USE THROUGH 1996

Major Trends

Land development has followed a pattern of decentralization that has existed for the past several decades, leading to expansion in the suburban towns and a mixed pattern of stability, decline and redevelopment in the City of Syracuse.

The northern towns of Onondaga County have had the greatest growth since 1970 with the eastern and western towns having somewhat less; the southern towns have had relatively minor population growth. The variability has been due to differences in the availability of infrastructure, land development costs, town attitudes towards development, and environmental/physical impediments. The growth of the suburbs has bypassed certain areas, either because of landowner resistance or because development was easier or cheaper elsewhere. As a result, there is considerable vacant land in the inner suburban towns with easy access to all needed infrastructure for development.

In the City of Syracuse, loss of population has led to a modest decline in the housing stock; during the 1980's demolitions outpaced new building permits by nearly 1000 units and during the first seven years of the 1990's, demolitions exceeded new permits by 556 units. The overall decrease in the number of City households has been ongoing since 1960; yet some city neighborhoods have had great stability, while others have even grown through new construction or redevelopment.

Changes in other types of land use in the County have varied. Manufacturing has declined while institutional and government uses have increased. Retail uses have seen many changes in the relative strength of various malls and commercial strips and the stores within them. Office uses along with other service activities have increased, primarily in suburban locations; agriculture remains a large land use while employing fewer persons on fewer farms each decade. Syracuse is still the largest employment center and is expected to remain so for the next two decades.

Land Use in Syracuse In Syracuse, nearly 80% of all parcels are residential, and another 8% are vacant residential land. All other types of land involve 12% of all parcels. These other uses are public services including hospitals, colleges, and government offices; commercial uses including retail and service businesses as well as major office concentrations (Downtown, University Hill, and James Street); industrial uses including manufacturers and utilities. In the residential sector there has been an ongoing slow decline in total residential units although new residential construction (both single family and apartments) continues throughout the city. The public service sector has seen recent expansions

in medical facilities in the University Hill area and educational facilities at Syracuse University and LeMoyne College. Commercial trends have been mixed with new offices being built from former retail spaces in downtown, continued expansion in Armory Square, proposed new medical offices in the University Hill area, and high office vacancies in the James Street area.

Downtown is no longer a major regional retail center, although there are specialty areas such as Armory Square that do have thriving mixed use businesses; meanwhile cultural, government and office uses remain the core activities downtown. The economic future of downtown will hinge on the success of the On-Center and War Memorial, of the revitalized Hotel Syracuse, and of downtown's office buildings. The retailing center of the City is now the Carousel Center and planned improvements in the Inner Harbor area should bring even more activity to this area.

Manufacturing has suffered an overall decline but recent redevelopment of land for commercial parks along Erie Boulevard and in the Brighton Hill area have been successful. The Syracuse University Research Park at Skytop is intended to house high-technology firms that desire a University setting.

Land Use City of Syracuse (1989)

	Parcels	Percent
Residential	35,322	79.9
Vacant Residential	3,678	8.3
Public Service	492	1.1
Commercial	2,973	6.7
Industrial	301	.7
Vacant Commercial	1,367	3.1
Mining	0	0
Agriculture	3	0
Vacant Rural	2	0
Parks	93	2_
Total	44,231	100

Source: Syracuse-Onondaga County Planning Agency

Suburban Land Use Suburban land use within the County's Consolidated Sanitary District is dominated by residential use in terms of parcels (84%) and acreage (42%). Total vacant land comprises 10% of all parcels and 29% of all acreage; vacant residential land alone accounts for nearly 11,000 acres or enough land for 17,000 new residential parcels at the same overall density as existing residential development. The remaining 6% of the parcels are distributed among various uses with commercial being the largest of these minor land uses.

Residential, particularly single family units, will continue to be the dominant land use for the next two decades, but growing at a slower pace. The Syracuse-Onondaga County Planning Agency estimates that approximately 7,500 new households will be created between 1996 and 2010 and in terms of housing units that approximately 10,000 new units will be built during the same period; since there is land available for 17,000 new residential parcels in land classified as vacant residential, there is no shortage of land within the suburban area for residential purposes through 2010.

Commercial land use has expanded in the suburbs in terms of retail, office and service activities. In retailing, some existing malls have been expanded (Great Northern and Shoppingtown), while others have been changed back into strip centers (Northern Lights and Fairmount Fair), one is converting some retail space to office use (Fayetteville Mall) and one older mall is struggling for a new identity (Penn Can Mall). Office parks have been developed where there is good access to the interstate network. Service activities have expanded near retail development and along commercial highway strips. A recent trend is the movement of medical centers to suburban locations to be closer to their customer base.

Modest growth in certain industrial parks has been counterbalanced by the closing of several large manufacturing concerns. The trend in manufacturing is for continued modest decline due to restructuring and reorganization of manufacturing firms. Distribution, trucking and warehouse activities should continue to be attracted to this area because of its central location.

Agricultural land use will continue to decrease within the suburban area as land costs, real estate taxes, age of farmers and the economic difficulties of agriculture lead to conversion of agricultural land to other uses.

Onondaga County
1995 Suburban Land Use \*

Residential Vacant Residential Public Service Commercial Industrial Vacant Commercial Mining Agriculture Vacant Rural Parks Total	Number of Parcels 77,321 7,356 566 3,748 726 1,453 16 273 639 40	Percent of Total Parcels 83.9 8.0 .6 4.1 .8 1.6 0 .3 .7	Acres 49,003 10,941 4,425 12,175 4,951 8,372 723 9,360 15,013 1,199	Percent of Total Acres 42.2 9.4 3.8 10.5 4.3 7.2 .6 8.1 12.9 1.0
Total	92,138	100%	$\frac{1,199}{116,162}$	<u>1.0</u> 100%

<sup>\*</sup> Excludes the Onondaga Nation, major water bodies, highways and unclassifiable parcels.

Source: Syracuse-Onondaga County Planning Agency

Rural Land Use Rural land use outside the County's Consolidated Sanitary District is dominated by residential parcels and agricultural acreage. Vacant land accounts for 24% of all parcels and 20% of all acreage in the rural areas. All other uses are minor in terms of parcels and acreage.

Strip residential subdivisions occur along many roads in rural areas of the County. These strip subdivisions can lead to increased traffic friction and requests for lower speed limits, thereby decreasing the functional capacity of such roads. Strip subdivisions hinder the subsequent development of areas away from the road, by limiting access and creating a residential pattern that is not conducive to larger developments. Strip development can create demands for eventual extension of public water lines along roads and thereby encourage even more strip development.

# Onondaga County 1995 Rural Land Use \*

	Number of Parcels	Percent of Total Parcels	Acres	Percent of Total Parcels
Residential	21,225	58.9	82,849	23.5
Vacant Residential	6,302	17.5	20,998	6.0
Public Service	589	1.6	7,517	2.1
Commercial	865	2.4	7,337	2.1
Industrial	1,468	4.1	13,058	3.7
Vacant Commercial	419	1.2	2,636	.7
Mining	44	.1	4,231	1.2
Agriculture	2,901	8.0	143,462	40.8
Vacant Rural	1,935	5.4	47,808	13.6
Parks	273	8	22.119	_6.3
Total	36,021	100%	351,655	100%

<sup>\*</sup> Excludes the Onondaga Nation, major water bodies, highways and unclassifiable parcels.

Source: Syracuse-Onondaga County Planning Agency

Significance of the Sanitary District

The Onondaga County Consolidated Sanitary District (which includes the suburban areas and the City of Syracuse) contains 83% of all parcels in the County and 87% of all residential parcels; the availability of sewers, along with public water, is a necessity for dense residential development. The Sanitary District includes the majority of all commercial, industrial and public service parcels.

Land Use within the County Consolidated Sanitary District, 1989 \*

	Parcels in	n			
	District	Total Parcels	Percent		
Residential	109,919	126,614	87%		
Vacant Residential	12,637	17,118	74%		
Public Service	1,334	1,702	78%		
Commercial	6,518	7,117	92%		
Industrial	1,826	2,506	73%		
Vacant Commercial	2,613	2,828	92%		
Mining	24	64	37%		
Agriculture	331	3,147	10%		
Vacant Rural	823	2,674	31%		
Parks	257	474	_54%		
Total	136,282	164,244	83%		

<sup>\*</sup> Last year that data was available for all parcels.

Source: Syracuse-Onondaga County Planning Agency

#### Land Use Controls

All towns (except Otisco) and the City of Syracuse have both zoning and subdivision regulations to control development; similarly, all villages have zoning regulations and most have subdivision regulations. The primary control of land use is with the towns, villages and city; the County, in terms of zoning and subdivision activities, has only an advisory role.

Certain trends in zoning regulations will affect future land use in the County. Minimum lot sizes have been increased in a number of towns, with several rural towns requiring as much as two acres. The impact of these larger lot sizes is to increase the amount of land used for a given number of units, to further disperse new development (making the provision of certain services more expensive), and to reduce the number of access points along highways. Other trends are for larger minimum lots for multiple family and townhouse units which in some cases has made such developments impractical.

Subdivision controls have become more comprehensive throughout the County. Most municipalities now regulate small subdivisions as well as larger ones. Reviews often include a range of engineering, traffic and environmental analyses.

The thrust of these trends is to make the role of the towns, villages and city even more dominant in terms of future land use. Coordination of zoning and subdivision activities among the County's 35 municipalities is imperative, if land use regulations are to be used to achieve common community development goals.

# FUTURE LAND USE THROUGH 2010

The approach that towns, villages, the City, and the County take towards future community growth and infrastructure will affect future land use patterns. Municipal attitudes towards new development can be influenced by prior development or by a perceived rate or intensity of development. During the 1970's and 1980's towns and villages were generally favorable to new development often granting tax concessions or approving zoning and subdivision requests easily. Environmental consciousness, implementation of the SEQR process, increasing citizen involvement and the desire to avoid traffic congestion have created more caution about the impacts of development on a community. The desire to prevent urban problems from moving to suburban or rural areas has increased municipal scrutiny of new development proposals. This scrutiny has resulted in more involved zoning and subdivision reviews, less direct assistance to developers, and more restrictive and costly requirements imposed on new development.

The trend towards increased minimum lot sizes is one result of this cautious attitude; larger lot sizes decrease the total number of lots that can be developed in an area, increase the rate of land consumption, and can change the economic rewards of large scale development. More stringent suburban development controls may benefit the more established urban areas where redevelopment is actively supported.

#### **Environmental Factors**

Environmental factors play a strong role in the future location of development and in the design of a particular site plan. Shallow depth to bedrock, depth to seasonal high water table, slope, and soil limitations make development more difficult, particularly in the southern part of Onondaga County, because installing water and wastewater disposal systems becomes more expensive; for example, areas with shallow depth to bedrock are more expensive to construct individual septic systems and nearly prohibitively expensive for sewer lines or other public systems. Within a specific site, environmental constraints can affect the density and location of structures; for example a small wetland on a large parcel may require in clustering of development on the nonwetland portions of the site.

Increasing concern for environmental issues can encourage redevelopment of existing sites where environmental impacts are more easily controlled. Redevelopment is hindered if sites contain toxic residues from a prior use. Proposed state brownfields legislation would define the limits of liability of a new owner of such possibly contaminated sites. To the extent that redevelopment is encouraged by environmental issues, the chief beneficiaries will be Syracuse and the older suburban towns and villages.

#### Other Factors

Other factors that can affect the rate and location of development are largely outside the control of the local community, but must be monitored in order to allow appropriate response when necessary. These factors include interest rates (both mortgage and bonding rates), state and national policies affecting regional growth, long-term economic cycles, energy costs, taxation and fiscal policies of the state and federal governments, and international trends that affect the competitiveness of various sectors of the economy. Flexibility and intelligent leadership can mitigate the negative effects of these factors and allow the area to profit from favorable effects.

One factor that is within the control of municipalities is the impact that development has on major community facilities. A prime example is the Hancock International Airport. Residential development near the airport has caused problems for residents due to noise and to airport operators due to complaints. The airport has responded by instituting several noise abatement studies and by major expenditures on soundproofing nearby houses and on capital and operational improvements at the airport. Much of this expense could have been avoided if development compatible with the airport had occurred rather than residential development. The community needs to protect all of its major transportation and community facilities from improper development since these facilities serve vital economic development roles.

# Neo-Traditional Development

Private developers and public officials have been seeking alternatives to standard suburban subdivisions and the auto-centered blandness that can accompany such subdivisions in suburban or rural areas. One model is the older, compact village where needed shopping, social, recreational and cultural amenities are within walking distance of residential areas and where the focus is on a people friendly design rather than an auto friendly design. Neo-traditional developments can be stand-alone developments, can be enhancements of existing villages and hamlets, or can even be urban villages within traditional cities. To allow and encourage

such alternative patterns of development will require modifications to existing zoning ordinances which currently mandate subdivision sprawl and effectively outlaw village-like developments. Implementation of such alternative development patterns could offer a much different land use pattern in parts of the County by 2010.

## Infrastructure

Public Water and Sewers The availability of public sewers and water, in combination with zoning and subdivision regulations, affects the location and density of residential development; areas with either or both public utilities can be developed at higher densities. The location of residential neighborhoods will affect the location of retail and service uses. The expense of providing extensions of sewer or water lines and maintenance and upgrading of sewage treatment plants, water filtration plants and other infrastructure must be weighed against the desirability and cost of new development. Development within areas already served by water and sewer facilities is the most economical option for the community and maximizes the use of existing infrastructure.

Requests for extension of water and sewer facilities generally occur at the margins of existing development and in areas where developers have accumulated large land holdings. Extension requests should be evaluated based on whether the site is within or outside the Sanitary District boundary, on whether new trunk sewers are required (and who will pay for them), on the impact on other County facilities such as highways, on the impact on surrounding land uses, on the likelihood that development will occur on a sufficient scale to justify the investment in infrastructure, on environmental impacts, on considerations such as sewage treatment plant and highway capacity, and on the availability of other, lower cost and impact alternatives.

Highway System The interstate highway network within Onondaga County provides good access for future residential and commercial development. Future development will be attracted to interchange areas, especially such underdeveloped areas as Route 481 at Northern Boulevard or Thruway Exit 39. The State maintains major arterial highways through the area while the County has an extensive highway network. These roads provide good access throughout the community, but because of limited funding, major new expansion of the County's highway network is unlikely. Therefore to service future development, the functional capabilities of the existing network will have to be preserved through the proper design and location of development.

# Developable Land

Residential The availability of land suitable for residential use influences County development patterns. There is no shortage of such land within the County Sanitary District. Two town land use studies indicate, not only the availability of land, but the diverse locations in which it is located. In the Town of Onondaga, there is an 80-100 year supply of residential land at the town's current rate of development. In Lysander, a nearly 20 year supply of residential lots is available at current development levels. Significant supplies of vacant residential land are available in Manlius, Camillus, Cicero, Clay and Van Buren. Development and infill potential exists in Syracuse, DeWitt, Salina and Geddes.

Commercial and Industrial Land suitable for development for commercial and industrial use is available in numerous locations throughout the County, particularly in the City of Syracuse and in suburban areas. Two

maps showing <u>Potential Economic Growth Areas</u> are located at the end of this section. The potential growth areas shown on the County map consist of organized industrial parks, areas appropriate for development because of their location, zoning, or infrastructure, and sites formerly occupied with industries but now vacant. The <u>Potential Economic Growth Areas</u> map for the City of Syracuse highlights the City's Economic Development zone as well as highway corridors and generalized areas where economic growth can be accommodated on a variety of sites.

# Sustainable Residential Land Development

A primary goal of the 2010 Development Guide is to encourage residential development which can be built without incurring avoidable long-term environmental or fiscal costs to the community. Development is to be discouraged where lots are inadequate to sustain septic systems and/or wells for the expected life of the dwelling, or where the density of development cannot support eventual expansions of public sewers, or where known environmental problems will have to be remediated at a later date at community expense, or where any other unanticipated financial burden will be imposed on the community. Cooperation among county departments/agencies, local planning officials and developers will be needed to achieve sustainable residential development.

Strategies for achieving sustainable development will depend on the availability of land for development, the general environmental constraints and the specific site constraints of the land to be developed, and the cost and availability of public infrastructure. Strategies will also vary depending on whether the development is in an urban, suburban or rural part of the county.

<u>Urban</u> Urban areas in Onondaga County include the City of Syracuse, the fully developed portions of adjacent towns and the villages. For these urban areas, relatively little vacant land exists and most new development will occur as redevelopment of previously occupied or currently occupied sites.

- Since public sewers and water are available throughout most of the urban area, it is presumed that all new major residential sites will be serviced with such infrastructure.
- Environmental constraints and on-site physical problems must be addressed during SEQR reviews and/or site plan reviews so that long-term viability of sites can be maintained. Recently proposed "brownfields" legislation at the state level would limit the liability of developers of sites with potential, but unproven environmental hazards.
- Densities in urban sites must generally match surrounding densities when infill development occurs. Mismatches of density between old and new sites can seriously affect the long-term viability of the new site. For larger vacant sites, densities can be more variable since compatibility with surrounding land uses is less critical.
- Innovation of design can be a major benefit for infill redevelopment. Because of the higher residential densities, wider variety of housing styles, ages and types, and greater receptivity to multiple family developments, urban areas can be prime areas for innovative designs, many of which can emphasize sustainability, affordability and architectural variety. Designs incorporating new

urbanism concepts can be particularly appealing in the urban context.

- Maintenance and sustainability of established urban neighborhoods is partly a function of code enforcement, neighborhood stability of land use, and the state of the overall economy. A long-term strategy to maintain the viability of existing residential areas is needed in all urban areas.
- Villages offer urban densities in a variety of settings. Most villages have either public sewers and/or water (Fabius is the only exception) and through annexation or redevelopment could provide room for modest residential growth.

<u>Suburban</u> Residential development in suburban areas generally consists of converting raw land into new subdivisions; water and sewer infrastructure is usually available in the vicinity of the development but must be extended to new sites along with new district formation. Primary emphasis is on construction of new units and redevelopment is not a significant source of residential growth.

- The suburban towns, in cooperation with involved county agencies, should designate in their land use plans those areas where extensions of infrastructure will be permitted. Generally extensions should extend from existing facilities and infrastructure and not leapfrog into new areas and leave unserved areas in between existing and new development.
- Residential development should be encouraged on vacant parcels that are already serviced by public sewers and water, with secondary emphasis on the physical extension of utilities from existing serviced areas to adjacent vacant areas. The least desirable scenario for new residential development is leapfrogging into undeveloped areas nonadjacent and at a distance from existing development. Such development requires large investments in new utility lines and/or pump stations, water tanks or other major capital structures; the most cost-effective development pattern is to make maximum use of areas where infrastructure investment has already been made.
- Portions of suburban towns within the Consolidated Sanitary District presently contain nearly 26,000 acres of land listed on assessment roles as vacant residential or rural vacant land; this acreage could accommodate over 25 years of suburban residential development at the average rate of new single-family home construction during the first six years of the 1990's decade. Availability of land is not a concern in achieving sustainable development, rather the location, design and timing of this development are the primary issues.
- To promote sustainable development, public water and sewer services should be available for all new major subdivisions in suburban towns and residential growth in nonserviced areas should be minimal (primarily individual houses built on existing lots of a size capable of sustaining development until public sewers and water are available).
- In areas intended to be sewered, suburban towns should discourage too many individual houses outside of subdivisions since the residents of these "nontract" houses may oppose future extensions of utilities; also these "nontract" houses may create such a low

neighborhood housing density that expansion of utilities cannot be economically justified.

- Expansion of infrastructure into new areas of suburban towns should carefully balance demonstrated need to expand into new areas (i.e. proof that there is a shortage of land serviced with public infrastructure) with environmental protection of sensitive areas, total costs to the community, and optional types of and locations for development.
- Suburban towns should be aware of the actual costs involved in new residential development (for example, the cost of services required by new residential uses generally exceeds tax revenues generated by the new houses); these costs should be assessed fairly among developers, new residents and existing residents. The SEQR process is the preferable method to identify costs and resolve cost recovery issues before a development proceeds too far. Early resolution of these issues can save all parties time and money.
- If public water but not public sewers is immediately available to a proposed residential development in a suburban town, SEQR reviews should identify wastewater disposal options and costs; the goal should be to insure sustainability of wastewater treatment while allocating costs fairly to developers. Options include dry sewers with short term use of septic systems (which may require larger lots), community treatment plants, and community septic systems. Schedules for extensions of sewers and future financing methods should be considered before any interim wastewater disposal methods are allowed.
- Lot sizes must be commensurate with the goal of sustainability. For lots with public sewers and water, lot sizes of less than 1/2 acre are desirable in order to achieve sufficient density to keep costs reasonable for each homeowner. For lots with public water but no immediate access to sewers (dry sewers available), lot sizes of up to 30,000 sq. ft. or more may be necessary to accommodate sustainable septic systems; exact lot sizes can vary depending on soil conditions in the area and system design. For lots in suburban towns with no likely access to public water and sewers, lot sizes should be greater than one acre with lot size dependent on soils and the ability to locate a well, a septic system and an eventual replacement septic system on the lot.

Rural Rural areas are generally not serviced with public sewers and water (except for some rural villages) and residential development depends on private or community septic systems and wells or springs. The primary issue is to insure that any residential development in rural areas is sustainable, i.e. will not require costly remedial actions by government to solve private drinking water and wastewater disposal problems.

New residential lots should be large enough to sustain development for the life of a residential property. A lot should be large enough to support a well, an initial septic system and a replacement septic system. Septic systems have a finite life and septic fields can become clogged. Any new septic fields established on a property must avoid proximity to wells, property lines, structures and other obstructions. Soil composition helps determine the effectiveness, longevity and size of a septic field. In theory lot sizes should vary according to soils type, but in practice minimum lots of two

acres or more may be required to promote sustainability for groundwater wells and septic systems.

- Sustainability is also impacted by the overall density of development in rural areas. Overly dense development can lower groundwater levels (sometimes to the extent of requiring new or redrilled wells) or can cause pollution from failing septic systems which affect neighboring properties or water supplies. Typical rural ordinances specify an acre or more for minimum lot size in areas without public sewers and water. Municipalities need to be cognizant of the true densities that their minimum lot sizes allow and need to decide if that level of development is desirable or sustainable. Larger lot sizes may partially alleviate the problem but better design requirements and innovative subdivision layout can be vital to achieving real sustainability.
- Proper use of SEQR reviews can enhance a municipality's ability to achieve and insure sustainability of development. Part 2 of the Full Environmental Assessment Form requires the lead agency to seriously evaluate effects on land and water resources. Quickly checking off a "negative declaration" deprives the lead agency of an opportunity to evaluate sustainability of development and to negotiate remedial measures insuring such sustainability.
- Education of local officials through state and local planning federations, through state and national planning groups, and through local initiative can help raise awareness of sustainability issues. Rapid turnover of planning and zoning board members can result in a loss of understanding of how important sustainability is and how it can be achieved. Yearly training courses can educate new members and broaden the understanding of long-time members.
- Capital program planning affords all levels of government a chance to evaluate infrastructure extension costs and benefits. Costs of extensions of sewer and water facilities can be evaluated against need, impact on the environment, and other nonstructural options. Alleged improvements in sustainability can be evaluated for their true costs and all available options can be analyzed.

# Prime Residential Development Areas

Developable Residential Land Within the Sanitary District\* (in acres) 1995

	<b>Vacant Residential</b>	Vacant Rural
Camillus	259	80
Cicero	2,977	4,493
Clay	1,543	2,835
DeWitt	1,568	252
Geddes	470	11
Lysander	1,079	3,174
Manlius	763	987
Onondaga	1,795	1,826
Salina	277	12
Van Buren	539_	1,342
Total Acres	11,270	15,012

<sup>\*</sup> Excludes the City of Syracuse

Source: Syracuse-Onondaga County Planning Agency

The map of Major Residential Growth Potential on the following page indicates major areas within the County Sanitary District with potential for future residential development; it does not include subdivisions with vacant parcels unless the vacant parcels are grouped in large undeveloped sections. Each residential development area has advantages and disadvantages which will help determine the desirability of developing in a specific location. Conditions within each area may vary so that observations about drainage and subsurface conditions should not be considered as uniform for the whole area; each site needs to be examined in detail to determine local pecularities and problems. The following subjects are considered for each of the areas:

- 1. Water nearest source of public water
- 2. Sewers- nearest trunk. Capacity of the treatment plant serving the area
- 3. Roads capacity, access, bottlenecks (intersections)
- 4. Drainage general drainage situations andd flooding problems
- 5. Subsurface rock, clay, gravel, high water table or other problems
- 6. Shopping nearest shopping areas
- 7. Employment commuting destinations

Other factors to be considered are the quality and capacity of the school system, location of parks and recreations areas, and public services. The type, value and appearance of nearby existing developments may also influence the type of new development. Assessment practices and property tax rates can also influence decisions on where development will occur.

Data Related to the Major Residential Growth Potential Map.

## 1. <u>VAN BUREN/LYSANDER</u> (Adjacent to Rt. 690)

Water - OCWA with some public (Baldwinsville) and private wells. Sewers - public although some private. Potential to connect to Baldwinsville - Seneca Knoll Plant which has excess capacity. Road Access - good access to Rt. 690, Thruway and John Glenn Boulevard.

Drainage - adequate except marsh near Seneca River.

Subsurface - adequate except marsh near Seneca River.

Shopping - two local centers, Baldwinsville, Syracuse.

Employment - Baldwinsville, Radisson, Syracuse.

# 2. LYSANDER - Peninsula and Radisson

Water - OCWA and potential for expansion.

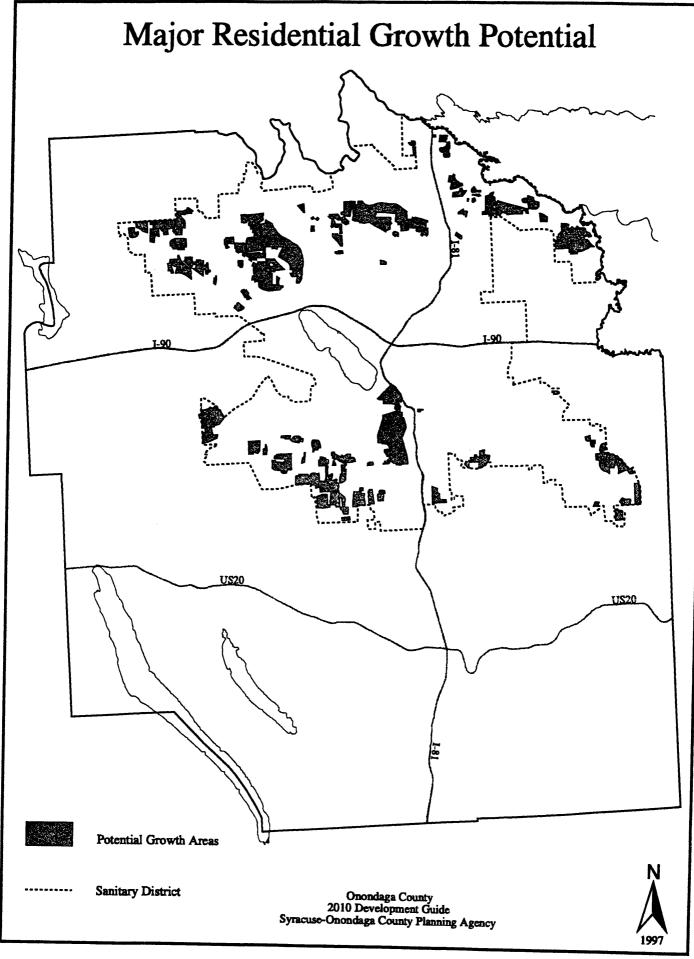
Sewers - potential to connect to Baldwinsville-Seneca Knolls Plant. Road Access - Rt. 370, Rt. 31 & River Road - Access & capacity are limited; bridges, intersections and Village of Liverpool create bottlenecks.

Drainage - adequate except along Seneca River.

Subsurface - adequate except along Seneca River.

Shopping - Baldwinsville, Rt. 57 and Great Northern Mall.

Employment - Radisson, Baldwinsville, Clay, Syracuse.



#### 3. CLAY - South of Route 31

Water - OCWA and potential for expansion.

Sewers - potential to upgrade Oak Orchard Plant.

Road Access - Rt. 31, access and capacity will be an increasing problem. Access to Rt. 481 is difficult at peak travel times.

Drainage - some problems.

Subsurface - some problems.

Shopping - Great Northern Mall area, Route 11/Penn Can Mall area of Cicero, Syracuse.

Employment - Clay, Salina, Dewitt, Syracuse.

# 4. CICERO - East of Rt. 81, West of Whiting Road

Water - OCWA and potential for expansion.

Sewers - potential to Brewerton Plant

Road Access - local two lane roads to Rt. 31 and Route 81

Drainage - some problems.

Subsurface - some problems.

Shopping - Rt. 11, Rt. 31, Penn Can Mall area

Employment - Syracuse, DeWitt, Salina, Clay, Cicero

# 5. <u>CICERO</u> - East of Whiting Road

Water - OCWA with potential expansions.

Sewers - Potential to Brewerton Plant; expansion will await growth to the west.

Road Access - Rt. 31 - access and capacity will be an increasing problem.

Drainage - some problems.

Subsurface - some problems.

Shopping - Rt. 31, Cicero, Bridgeport, Penn Can Mall area.

Employment - Syracuse, DeWitt, Madison County, Cicero

#### 6. MANLIUS

Water - OCWA with potential for expansion.

Sewers - potential expansion to Meadowbrook/Limestone Plant.

Roads - two lane roads.

Drainage - adequate, with some localized flooding problems.

Subsurface - adequate, some rock and some localized high water table

Shopping - Fayetteville and Shoppingtown Malls.

Employment - Syracuse, DeWitt, Manlius.

## 7. NOTTINGHAM ROAD

Water - OCWA.

Sewers - Meadowbrook/Limestone Plant

Road Access - two lane roads.

Drainage - steep slopes in places.

Subsurface - some rock and minimal top soil.

Shopping - Syracuse, Shoppingtown Mall.

Employment - Syracuse, DeWitt.

#### 8. ONONDAGA - East Seneca Turnpike

Water - OCWA.

Sewers - Metro Plant.

Road Access - two lane roads.

Drainage - adequate.

Subsurface - some rock.

Shopping - Syracuse, Shoppingtown Mall.

Employment - Syracuse, DeWitt.

# 9. ONONDAGA HILL - Howlett Hill Rtes. 173 and 175, Cleveland/Makyes

Water - OCWA and potential for expansion.

Sewers - potential expansion to upgraded Metro Plant.

Road Access - two lane roads, access and capacity will become an increasing problem.

Drainage - adequate.

Subsurface - adequate with some rock.

Shopping - Fairmount Fair, Camillus Mall, and Syracuse.

Employment - Syracuse, DeWitt, Onondaga.

## 10. <u>CAMILLUS</u> - Westhill

Water - OCWA.

Sewers - trunk sewer installed; laterals needed.

Road Access - local two lane roads to Rt. 5 bypass.

Drainage - adequate.

Subsurface - adequate.

Shopping - Genesee Street to Camillus Mall and Fairmount Fair.

Employment - Camillus, Syracuse, DeWitt

# 11. SYRACUSE - Franklin Square/Oil City

Water - available

Sewers - existing and newly relocated.

Roads - city streets existing and new.

Drainage - possible flooding.

Subsurface - piles may be necessary.

Shopping - Carousel Center and CBD.

Employment - Syracuse and surrounding towns.

## 12. SYRACUSE - Near South and West

Water - existing.

Sewers - existing.

Roads - city streets.

Drainage - adequate.

Subsurface - adequate.

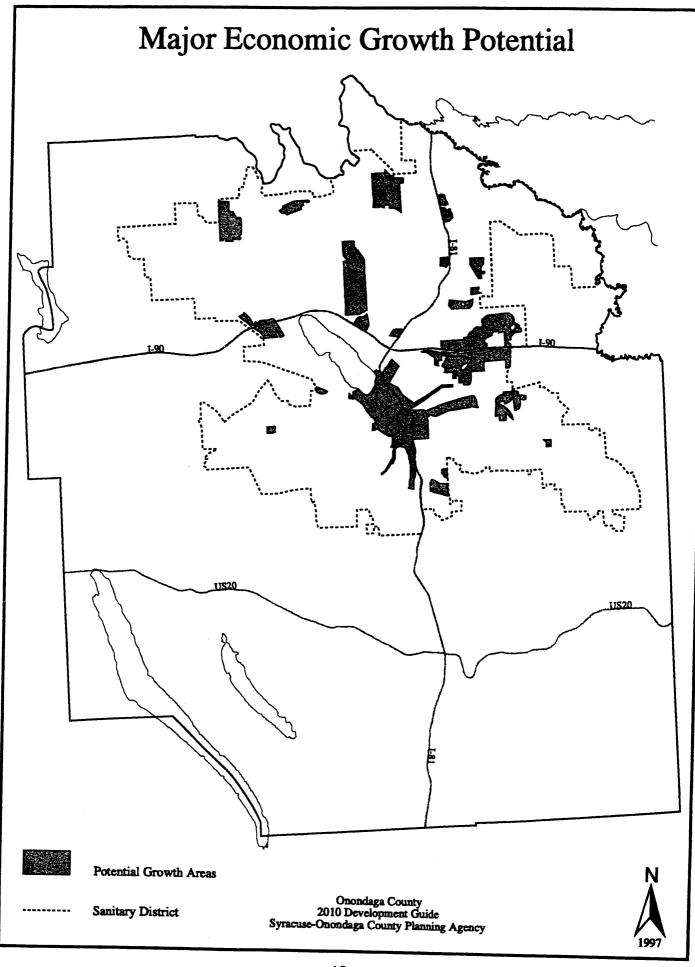
Shopping - Carousel Center, Western Lights and CBD.

Employment - Syracuse and surrounding towns.

The map of <u>Major Economic Growth Potential</u> on the following page indicates major areas within the County Sanitary District with potential for additional industrial/commercial (non-retail) development. The areas depicted consist of existing industrial parks with additional room for expansion, redevelopment areas such as the City of Syracuse's Economic Development Zone, and vacant areas. Public sewer and water are generally available and road access is usually good. Detailed information on these sites is available from the area's economic development agencies.

#### LAND USE - FINDINGS

- Residential development will continue to consume the most acreage in Onondaga County, even through the level of this development is considerably below previous decades. Abundant vacant land exists within the County Sanitary District to meet residential land demand during the next several decades. Additional land is available by redeveloping vacant or underutilized parcels in the City of Syracuse.
- 2. Sufficient land is available for future commercial and industrial expansion, particularly within the County Sanitary District.
- 3. Designating and marketing available economic development sites near interstate highway interchanges will be a prime element in the area's future economic success.
- 4. Agricultural activity predominates in areas not serviced with public sewer and water; agricultural land use within the Consolidated Sanitary District will be under the most pressure to be converted to other uses; however, agriculture throughout the County will continue its historic decline due to economic and demographic factors beyond the control of local government.
- 5. County infrastructure decisions will affect the locations of future land uses and will in turn be affected by decisions to allow development in areas without adequate existing infrastructure.
- 6. A variety of factors will affect land use growth in the future; the County's ability to influence or anticipate these factors will determine the ultimate cost of such growth to County government.
- 7. A stable County population and decreasing levels of household formation will not easily support a continued expansion of infrastructure. The availability of a multitude of sites and large acreages within areas of established infrastructure represents the lowest cost method of fostering economic growth without overwhelming present and future taxpayers with infrastructure debt obligations.
- 8. Villages offer a unique opportunity to have neighborhood scale development in areas generally serviced with public utilities. Villages exist in a wide variety of contents, including rural settings, and through annexation some villages have the ability to expand modestly to serve additional residential and commercial/industrial development.



# **ENVIRONMENTAL CONSIDERATIONS**

In 1975 the Onondaga County Environmental Management Council (EMC) prepared and published the <u>Onondaga County Environmental Plan</u>. This detailed plan described the condition of the County's land, water, air, fish and wildlife resources at that time, and presented a series of recommendations for their management. Much of what was presented in the 1975 Plan holds true today, and is still endorsed by the EMC.

Portions of the 1975 Plan focused on development issues and their impact on the environment. The information and recommendations in this section build on that foundation, and are intended to focus the attention of public officials on environmental considerations associated with development.

# RELATIONSHIP BETWEEN DEVELOPMENT AND THE ENVIRONMENT

All types of development inevitably degrade the natural environment to some extent. For example, clearing, grading and covering the land affects surface water drainage, and therefore flooding and groundwater recharge. Withdrawing groundwater for consumption affects groundwater hydrology. Discharging wastewater to the ground through septic systems can affect groundwater quality. Automobile traffic degrades air quality. This does not mean development is bad, or should not occur. It simply means decision-makers must recognize and understand the ramifications of the development decisions they make so that the resultant environmental impacts can be anticipated and then avoided or mitigated, to the extent practical.

One such understanding is that there are certain locations where environmental impacts can more easily be minimized, and others where they cannot. Certain physical features on the landscape, such as steep slopes, shallow soils and high watertables, present environments highly sensitive to changes brought on by development. Interestingly, these features also impose impediments to development because of the higher construction costs associated with overcoming the site limitations they present. Thin soils (shallow depth to bedrock) or soils that percolate very slowly or very quickly are ill-suited for handling septic system effluent. Locations with high water tables create design problems, and introduce a greater potential for groundwater contamination. The quality and quantity of water drawn from bedrock aquifers is unreliable and poses a major deterent to development to rural areas. Steep slopes present unstable conditions, are susceptible to erosion and can lead to off-site sedimentation damage.

# Historic Response to Environmental Limitations

Historic conflict between farmland and development arises from the fact that good farm land generally has few limitations for development. A comparison between the locations of mapped environmental limitations and existing development reveals that development has generally avoided those areas where environmental features are most severe. This is because of the additional costs and problems which such locations create, as well as the more stringent environmental regulations that have been put in place over the past 20 years.

There are some locations in the County where development has occurred in relatively poorly suited areas, either because the locations were highly accessible, the land more affordable, or because it was anticipated that the location would soon be serviced by public water and sewers. It was also found that lands only capable of accommodating low density development experienced problems because high density development was built upon them. That is, the capacity of the environment to tolerate the demand for well water and the environment's ability to absorb wastewater were exceeded.

Since 1950, the availability of large areas of land comprised of natural features well suited for development has been diminishing. Data for the County indicate a continuing dispersion from the urban center to suburban and rural towns. At the same time, housing prices have reached levels where the added building costs associated with overcoming environmental site limitations are less significant to the prospective homeowner. This combination of circumstances places more environmentally sensitive locations at greater risk of becoming developed in the years ahead.

Environmental Limitations at the County Level

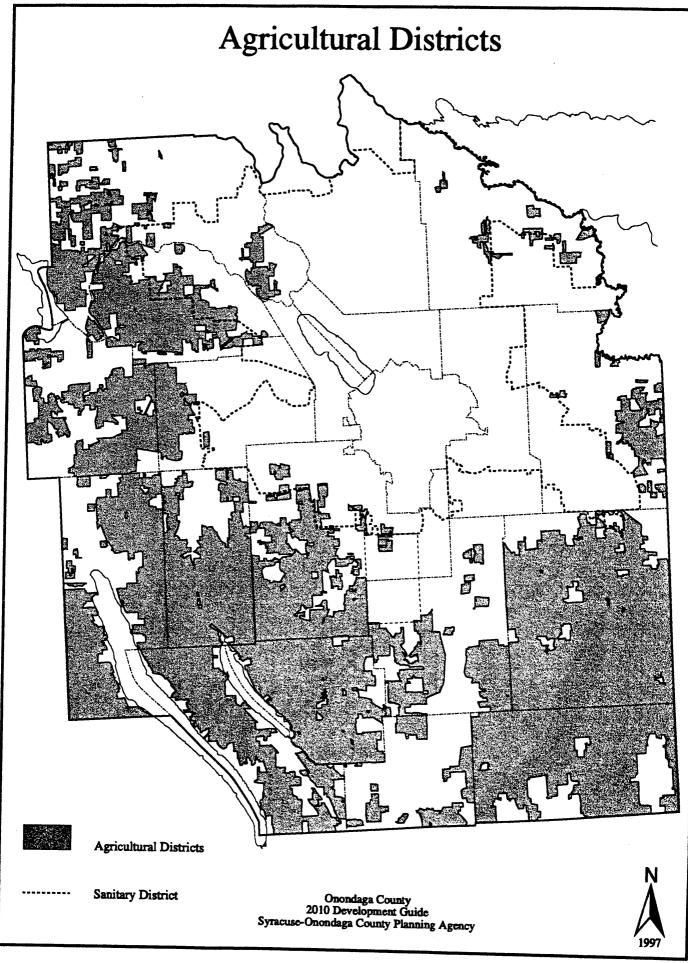
Critical natural areas and sensitive land features have been mapped at the County level to indicate the extent of environmental limitations that can affect areas not yet developed. The map of Environmental Constraints displays wetlands, floodplains, waterbodies, steep slopes (over 15%), and public land preserves (public management, reforestation and unique areas). Each of these features places limitations on development or increases the cost of development due to mitigation expenses. In the southern and western parts of the County, where the most vacant land exists, steep slopes on hillsides and floodplains/wetlands in the valleys are major constraints. In the northern part of the county, where much growth has occurred, wetlands, floodplains and public land preserves are major constraints.

A further constraint on development at the County level involves agricultural districts with their intent to help preserve viable farmland. Agricultural districts provide limited protection to farmers by reducing agricultural assessments, protecting farmers from certain local laws restricting farm operations, and making it more difficult to extend public utilities through an agricultural district. A recently completed Onondaga County Agricultural and Farmland Protection Plan endorses state and local efforts to reduce property tax burdens on farmers, encourages municipalities to use their land use regulatory powers to protect important existing farmland, and recommends treating agriculture as an economic development focus.

Other features that represent constraints on development are the locations of county and state parks and protected watersheds (see page 164 for a map of both). Protected watersheds for Skaneateles and Otisco Lakes involve special development requirements to preserve the quality of these drinking water sources. Aquifers which are used for public drinking water and areas near the municipal wellheads also require special development scrutiny.

Sensitive Environmental Areas and Site Limitations

Moving from a county-wide perspective to a specific site requires a different level of analysis in regard to environmental constraints. Some sites contain a combination of natural features that not only make them more difficult to develop, but are more dramatically affected when they





are developed. While the variety of natural features that should be taken into account when considering development impacts is extensive, the major factors appear to be soil type, depth to water table, depth to bedrock, and slope.

It is difficult to establish thresholds that everyone can agree upon for limitations imposed by the environment. This is largely due to engineering and construction technologies available today, and our ability to overcome limitations posed by the natural environment. Consequently, there are fewer places where development physically cannot occur from an engineering standpoint. Nonetheless, while developers are able to overcome many types of site limitations, the engineering innovations are expensive and the burdens on these sensitive environments can be significant.

# Criteria for Site Suitability

Soil suitability, especially in rural areas, should be evaluated from the standpoint of its ability to function as a septic system absorption field. This ability varies according to the soil's thickness, the rate at which the soil percolates, and the drainage characteristics of the soil. Depth to bedrock limitations vary depending upon the use consideration. under For houses with basements and private septic systems, a depth to bedrock of less than 11/2 feet can be considered severe (keeping in mind that depths of as much as  $3\frac{1}{2}$  to 4 feet impose what might be considered "moderate" limitations, and might require special designs). On the other hand. if installing sewer or lines, a depth to bedrock of less than 3½ or more can impose severe limitations. If the bedrock at a location "rippable", the severity of the limitation for pipelines is diminished, but its lack of suita-bility for septic system absorption fields is diminished. Depths to seasonal high water tables of as much as

# Environmental Limitations to Development

# Depth to Bedrock Limitations for Septic Absorption & Basements

Slight: > 3½' deep Moderate: 1½ - 3½' deep Severe: < 1½' deep

# Limitations for Water & Sewer Lines

Slight: > 5' deep Moderate: 3½ - 5' deep Severe: < 3½' deep

# Depth to Seasonal High Watertable Limitations for Septic Absorption

Slight: > 3' deep Moderate: 1 - 3' deep Severe: < 1' deep

# Slope

Limitations for Development

 Slight:
 < 8%</td>

 Moderate:
 8%
 - 18%

 Severe:
 > 18%

three feet can require some special design features, while a depth of less than one foot generally imposes severe limitations for on-site wastewater disposal. High watertable limitations for pipeline installation appear to be largely limited to the construction period, but do add to costs. Finally, the most significant design concern regarding slope, from a development standpoint, appears to be for roads. Slopes in excess of 18% must be considered severe. Slopes of 8% or more can create unstable

situations, increase construction costs, and can be viewed at least as a moderate limitation for development.

For specific sites, general soils data must be supplemented with detailed engineering and environmental studies so that the exact locations and extent of site limitations are known before final site plan and construction decisions are made. These detailed studies are particularly important for designing effective septic systems in areas without public sewers.

#### Utilization of Mineral Resources

The continued use of the County's natural mineral resources for development purposes is important to the long-term economic development and growth of our community. The major mineral resources available in Onondaga County are limestone, sand, gravel and salt. All but salt are needed to accommodate urban growth, and are used primarily for the construction of highways and buildings.

A major problem facing the local mineral extraction industry is its proximity to urban areas of the County. Unfortunately, mineral extraction and the development it serves are highly incompatible land uses. Over the past thirty years, many municipalities have passed ordinances to prohibit or restrict mineral extraction within their borders. While the State Department of Environmental Conservation has sole responsibility for regulating extraction operations, municipalities are able to effectively prohibit such operations through zoning, or to limit them with stringent setback, noise and blasting restrictions.

As a consequence of tight municipal control over extraction industries:

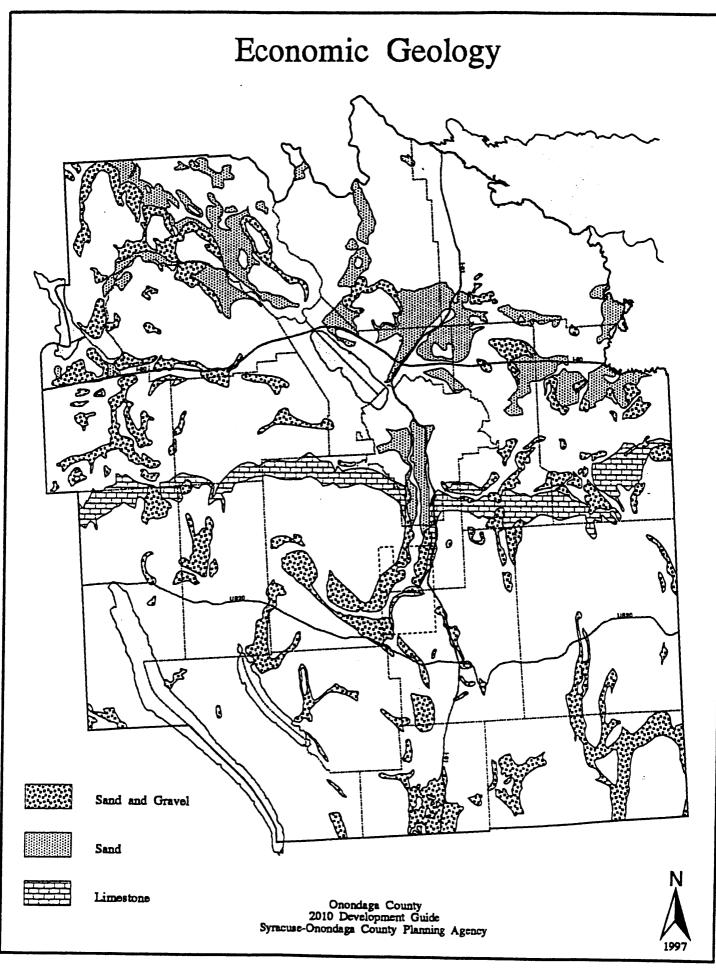
1) the mineral extraction industry is experiencing difficulty in obtaining new permits to excavate quality mineral deposits; and 2) the absence of a coordinated approach to the protection and management of lands containing important mineral resources places those lands at a greater risk of being developed for other purposes and rendering the mineral resources beneath them inaccessible.

#### MITIGATING DEVELOPMENT IMPACTS

The extent to which environmental problems caused by development can be minimized depends largely on two factors: 1) the natural ability of a site to tolerate the effects of development; and 2) the extent to which the development is designed to minimize adverse impacts. As the availability of environmentally suitable sites in the County diminishes, our ability to influence where development occurs and how it is designed becomes increasingly important.

# Infrastructure as a Mitigating Measure

Infrastructure, such as public water and sewers, can be used to mitigate the impact of development in less suitable environments. However, improperly planned infrastructure can have the opposite affect on the environment. Improperly planned infrastructure extensions can give rise to additional development that is unanticipated, uncoordinated, haphazardly distributed and more likely to bring with it heavy environmental impacts.



For example, extending public water to a relatively undeveloped area because of an inadequate groundwater supply for existing residents removes a major impediment to more extensive development. Further development of the area, now made possible by a reliable water supply, places greater demands on individual septic systems designed to handle smaller volumes of wastewater, and on soils that may not be able to absorb the added effluent. The result is an additional need for public sewers and increased treatment plant capacity. In this situation, the supposed easy solution to the environmental limitation imposed by inadequate water supply creates an additional environmental impact that requires further mitigation via the construction of public sewers.

Public water and sewer facilities do not necessarily provide an environmentally impact-free option. Water supply sources, both surface and groundwater, represent sensitive environments themselves. The amounts of water that can be taken without causing undesirable changes to the resource is limited in most cases. An exception to this is Onondaga County's water withdrawals from Lake Ontario. Further, the extension of public sewer lines to an area does not resolve an effluent problem unless there is sufficient treatment capacity at the end of the pipeline. Absent such capacity, the environmental problem has not been resolved, it has simply been transported to some new receiving environment. This applies not only to new sewer lines, but also to private and community septic systems which are serviced by County facilities. If the County is unable to service them, additional new community facilities do not represent a viable long-term solution.

Alternatives to placement of new infrastructure must be examined more seriously than they have in the past. If water quantity is a problem, drilling deeper wells in new locations may be a viable alternative. If quality is a problem, on-site treatment of water supplies may suffice. When either quantity or quality of water are issues in an area, development density controls to limit the number of people affected by such problems may be more cost effective than massive new infrastructure expansions. At the least, towns and villages should insist that potential new residents be made aware of water problems so that informed decisions can be made about moving to an area.

Viewed strictly from an environmental standpoint, therefore, the key factors that should be recognized, understood and addressed by decision-makers when considering development proposals include the significance of natural site limitations posed by sensitive environments and the positive or negative impact of infrastructure placement including alternatives to such placement.

## Geographic Perspective of Development Impacts

In addition to understanding how and why certain types of development decisions can force decision-makers into subsequent corrective actions, it is also important for decision-makers to consider and understand development impacts from a much broader geographic perspective than has traditionally occurred. Land use decisions typically occur within limited jurisdictions, such as towns or villages. The magnitude of the projects are such that reviews of environmental impacts are limited to the site and adjacent areas, and to the specific action being taken.

The consequences of this approach are two-fold: 1) land use and infrastructure decisions that might have little environmental impact in the municipality where the action takes place, can have rather significant

impacts in adjoining locations; and 2) there is no attempt to assess the cumulative impact(s) of many small scale projects or projects that, by themselves, seem to have a minimal impact on the environment, but collectively can be significant.

Stormwater drainage might be the best example of this phenomenon. It is difficult to find data that can be used to actually document the incidence and severity of drainage related flooding problems within Onondaga County. It is known, however, that development can increase both the rate and the total volume of storm runoff by concentrating runoff into narrow drainageways and by replacing permeable soil surfaces with pavement and roofing.

In some municipalities, it has been observed that localized flood damages outside of the 100-year flood plain can exceed flood damages within flood plains. This can occur when, over a period of time, new subdivisions are built in the upper elevations of an urban/suburban watershed, causing increased runoff to overflow the existing drainage systems in downstream communities. While almost all municipalities in Onondaga County have adopted ordinances to control development in identified flood plains, the flood protection criteria applicable to areas outside of the floodplain are either vague or in most cases, nonexistent.

# Water Quality Characteristics - Water Bearing Units and Surface Lake Supplies

Geologic Layer	Ca	Mg	K	Na	C1	S04	Dissolved Solids
Sand and Gravel	95.0	21.9	1.2	28.4	54.2	44.9	561.5
Glacial Till	86.5	19.5	0.8	11.6	31.7	31.0	482.1
Devonian Shale	58.8	13.7	0.9	58.4	57.4	26.9	500.8
Silurian-Devonian Carbonates	113.5	23.6	0.8	18.6	47.1	103.1	624.5
Post Vernon Evaporites	387.4	40.4	1.4	19.4	59.2	811.7	1625.6
Vernon Shale	391.8	32.4	11.1	51.1	117.3	828.9	1719.3
Surface Supplies							
Lake Ontario	36.0			12.0	21.0	14.0	310.0
Otisco Lake	42.0			11.0	16.0	21.0	
Skaneateles	38.0			4.5	9.0	14.0	160.0

An important policy element that is often overlooked in municipal flood protection ordinances is the need to address flooding and drainage problems on the basis of natural watershed boundaries. This basic element is often overlooked because watershed boundaries tend to overlap

municipal boundaries, and therefore require a level of cooperation and inter-municipal coordination which goes beyond normal practices. Further, in the absence of watershed-wide planning, there is no practical means of assessing the incremental impact each new development adds to the entire drainage picture, and no apparent justification for restricting runoff on an individual project basis or for paying the cost of planning and constructing flood control measures throughout a drainage basin.

#### REGULATORY AND DECISION-MAKING FRAMEWORK

The many environmental problems brought about by development during the 1950's and 1960's have given rise to an extensive regulatory framework. Today there are many tools available at all levels of decision-making to protect the environment. The manner and extent to which these regulatory and decision-making tools are used, however, varies widely from community to community. In order for decision-makers to make effective use of the regulatory framework in which development decisions are being made, they must recognize two key points. First, as vast and pervasive as environmental regulations appear to be today, they are sometimes inconsistent and cannot always be relied upon to protect the environment. Second, because of the segmented or disjointed nature of the regulatory and decision-making process, it is difficult to anticipate and address all of the environmental consequences of a given action at one time.

For instance, a decision to improve or construct a new road through an area will generally undergo an environmental review to ascertain what direct impacts such construction will have on the environment. It is likely that some level of development will be anticipated as a consequence of improved highway access, and obvious environmental issues will be noted. Probably to a lesser extent, the suitability of soils for on-site wastewater disposal (septic systems) throughout the highway corridor will be acknowledged. Rarely will the availability or quality of private or public water, or the availability of sewage treatment plant capacity available to the area be an issue when considering the environmental impacts of a road improvement project. Virtually never have downstream flooding impacts from increased stormwater runoff caused by increased development stimulated by improved highway access been considered at the time of project approval. Yet, all of these are very real, potential impacts as a consequence of a decision to improve a road.

Viewed this way, it is easy to see why decisions made on a given project can have far reaching impacts, and can eventually force decision-makers into subsequent actions to mitigate the environmental impacts resulting from earlier decisions. At present there is no procedure to ensure that all of the important environmental aspects of a proposed action, both short-term and long-term, will be considered prior to decision-making. This is due in part to a poor understanding of the ramifications of failing to take the environment into account. Often, however, it can be attributed to the disjointed environmental review process that has evolved, a process that frequently fails to invite involvement from all those affected by, or in possession of information pertinent to the action under consideration.

Passage of the State Environmental Quality Review Act (SEQR) was intended to overcome this problem by compelling decision-makers to examine the environmental consequences of their actions. In many respects, SEQR has contributed much to the protection of the environment, and can be an effective environmental review mechanism. Yet, it is clear that the SEQR process does not necessarily assure environmentally sound decision-making. Among the reasons for this are: 1) decision-making boards and agencies who

are less aware of environmental concerns sometimes conduct relatively superficial SEQR reviews; 2) some agencies that could or should contribute to a project review - because of the environmental information or perspectives only they possess - can be unintentionally left out of the process; or 3) there are circumstances where the SEQR process is simply inadequate, i.e. where indirect environmental impacts cannot be addressed because of limitations in the SEQR procedure.

At the local level, zoning and the County Sanitary Code appear to be the most significant controls in place to protect the environment. It is fair to say that both of these tools have been used effectively to prevent or mitigate development impacts on an individual case basis throughout Onondaga County. Today it is unlikely that municipal officials will approve high density development in areas with poor soils not served by sewers, and the County Health Department is making effective use of the authority granted under the County Sanitary Code to require appropriate designs for on-site wastewater treatment.

Decisions to extend infrastructure, however, are made in quite a different arena, and the players and rules for decision-making are less well defined. Who has authority to decide where to extend public water lines and sewer lines? On what basis are these decisions made? To what extent are water supply and wastewater treatment officials consulted when decisions are made about extending the service area of the other? How often are either set of officials involved in the decision to improve highway access to an unserviced area, and to what extent do municipal officials confer with these people in making development decisions?

Apart from SEQR, there has been no overall process or procedure to ensure that all relevant environmental considerations are taken into account before decisions are made. The coordinated review procedure implemented in the 2010 Plan has provided this framework for certain types of county decisions and this procedure is being expanded. Without comprehensive use of SEQR and coordinated reviews, it is possible for such decisions to be driven by localized, short-term needs, without regard to the broader, long-term environmental ramifications of the action.

# ENVIRONMENTAL CONSIDERATIONS - FINDINGS

# Relationship Between Development and the Environment

- All types of development degrade the natural environment to some extent.
- There are certain locations where environmental impacts from development can be more easily minimized, and others where they cannot.
- Certain environmental features represent obstacles that require special design or engineering, and add to the cost of development.
- 4. To a large extent, recent development in Onondaga County (past 20 years) has avoided the areas where sensitive or limiting environmental features are most severe.
- 5. Over time the availability of large areas of environmentally well-suited land with the County has been diminishing, and the more environmentally sensitive locations within the County are at greater risk of becoming developed in the years ahead.

- 6. The mapping of environmentally sensitive features at the town or village scale provides useful insights in understanding what areas are better able to withstand development impacts and accommodate growth in the town, and which areas may become environmental liabilities.
- 7. The mineral extraction industry is experiencing difficulty in obtaining new permits to excavate quality mineral deposits because municipalities are faced with land use conflicts resulting from the proximity of recent development to the quarries.
- 8. The absence of a coordinated approach to the protection and management of lands containing important mineral resources places those lands at greater risk of becoming developed, rendering the development resources beneath inaccessible.

## Mitigating Development Impacts

- As the availability of environmentally suitable areas diminishes, our ability to influence where development occurs and how it is designed becomes increasingly important.
- 2. Infrastructure, such as public water and sewers, can be used to mitigate the impact of development in less suitable environments.
- 3. Poorly planned infrastructure placement, which gives rise to unanticipated, uncoordinated, and haphazardly distributed development, can bring with it particularly heavy environmental impacts.

## Comprehensive Planning for the Environment

- Development decisions based on insufficient information can lead to unanticipated environmental problems, and can force decision-makers into taking subsequent actions to correct those problems.
- 2. Land use and infrastructure decisions that might have little environmental impact in the municipality where the action takes place can have rather significant impacts in adjoining municipalities.
- 3. There have been no attempts to assess the cumulative impacts of many small scale projects or projects that, in themselves, seem to have a minimal impact on the environment, but collectively can be significant. Therefore, there is no apparent justification for restricting development on an individual project basis.

# Regulatory and Decision-Making Framework Today

- 1. As vast and pervasive as environmental regulations appear to be today, they are sometimes inconsistent and cannot always be relied upon to guarantee protection to the environment.
- 2. Because of the segmented or disjointed nature of the regulatory and decisions-making process, it is difficult to anticipate and address all of the environmental consequences of a given action at one time.
- 3. The SEQR process does not necessarily assure environmentally sound decision-making because: 1) officials less sensitive to

environmental concerns can sometimes get by with a relatively superficial SEQR review; 2) some of the people that could or should contribute to a project review, because of the environmental information or perspectives only they possess can be unintentionally left out of the process; and 3) there are circumstances for which the SEQR process is insufficient.

- 4. At the local level, municipal zoning and the County Sanitary Code appear to be the most significant controls in place to protect the environment.
- 5. Currently, decisions to extend infrastructure are not arrived at by following an agreed upon procedure, nor are they based on any specific criteria.
- 6. There is a need to broaden the use of SEQR and coordinated reviews in order to bring together what until now has been viewed as disparate and/or irrelevant information and perspectives on development decisions.

# FINANCING INFRASTRUCTURE

Infrastructure systems are directly related to the economic well-being of Onondaga County. Public works construction, maintenance and operations constitute a significant portion of the local economy, and the extent and condition of these public works or infrastructure have an important bearing on the ability of local industry and business to improve their competitive position within their respective markets.

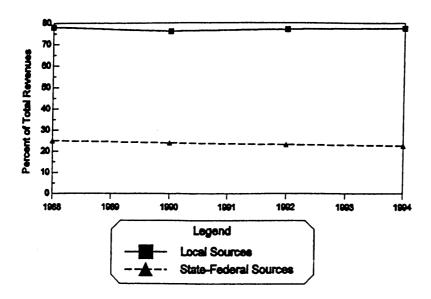
Constructing and maintaining public infrastructure for the economic wellbeing of our community has long been the responsibility of County and local government. Many factors now exist, however, which are causing a significant strain on the ability of local government and particularly Onondaga County government to continue a strong pace of infrastructure construction and maintenance. Our community shares in the economic and competitive problems of New York State relative to other parts of the country. In addition to this pressure, federal and state capital and maintenance dollars for infrastructure have dramatically decreased over the past ten years. In 1978, federal and state sources provided 40% of local government revenues statewide. In 1995, Onondaga County received only 26% of its revenues from federal and state sources. Concurrently, state and federal mandates, often with no funding to support them, are being forced onto local governments. In 1995, 47.2% of local county dollars was spent on mandated programs, 25.5% on public safety, 10.6% on debt service and 16.7% on all other spending. Clearly, local governments are challenged both to meet mandated requirements with reduced federal and state support and to meet local needs with fewer and fewer discretionary dollars.

County funding of social programs over the past two decades has also risen dramatically. Pressures to respond to human service needs are very strong in our community, and these are reflected in County budget appropriations. For example, from 1991 to 1995, local costs for Aid to Dependent Children (ADC) increased by 32% or \$3.9 million, while cases only increased by 12.1%. The impact of major changes in federal welfare legislation passed in 1996 is unknown, but likely to increase local welfare costs. The negative impact on physical services as a result of the above factors has been and will be felt heavily by many County physical service departments and agencies.

In addition to maintaining existing infrastructure systems, local governments are called upon to help finance new development. The true cost of new development, however, is considerably higher than that reflected in the higher price of new housing. New developments generally require extensions of water and sewer lines, new roads, and drainage facilities; the costs of these items are partially assessed to new owners, but substantial costs are subsidized by the community at large. These "start up" costs are only part of the real cost to the community, since such facilities must be maintained, upgraded and even replaced as they wear out or no longer meet state and federal environmental standards.

The decreasing overall population density of our community, a result of suburban sprawl, increases public costs for school busing, police, fire and ambulance coverage, and general government administration. Existing schools, churches and community facilities are under-utilized or even closed in some areas, while similar new facilities are built in other locations.

# LOCAL GOVERNMENT REVENUES IN NEW YORK



Source: Table No. 1-3, "Special Report on Municipal Affairs - FYF 1994", Office of the State Comptroller

# PRIMARY METHODS OF FUNDING INFRASTRUCTURE

In the absence of federal and state infrastructure development and maintenance dollars, there remain two primary methods with which to fund capital expansion and maintenance projects: pay-as-you-go financing, or borrowing. Although other public financing mechanisms are currently being proposed for local governments, such as private leasing, lease purchases and certificates of participation, these methods of financing are still variations of these two basic funding methods.

# Pay-As-You-Go Financing

Pay-as-you-go financing means refraining from borrowing to the maximum extent possible and using regular revenue resources (i.e. taxes or use based revenues) to fund expenses such as construction of maintenance. Pay-as-you-go financing has several advantages: reduced need to borrow capital dollars and thereby reduced interest costs; increased flexibility in use of current funds; improved County fiscal position by limiting debt burden; and reduced risk of overextending the County's current and future fiscal resources. It offers a prudent way to fund recurring infrastructure needs, such as sewer or highway maintenance programs, where project costs are relatively low and paying the costs associated with borrowing money is not warranted. Most local governments, however, cannot generate enough revenues from their current revenue sources to finance all the infrastructure needs that they have identified.

Specific sources for revenue to fund pay-as-you-go infrastructure projects include: property taxes (real property ad valorem taxes); special districts (unit charges, front foot charges, ad valorem taxes); special assessments (unit charges or ad valorem taxes); user fees; grants; and federal and state reimbursement for public expenditures.

An important example as to how the County utilizes "pay-as-you-go" is the financing of highway maintenance costs and minor reconstruction projects through the County's operating budget. Four categories of highway projects so funded are:

- Repaving Program. This ongoing program is designed to protect the County's investment in its highway system. Approximately 25 miles of highway are selected annually to be repaved.
- Traffic Systems Management. This ongoing program is designed to upgrade intersections to improve traffic flow and safety.
- Guiderail. This ongoing program upgrades existing guiderails and installs new guiderails to protect traffic from roadside hazards.
- Right-of-Way Acquisition. This ongoing program provides for the cost of obtaining the rights-of-way necessary before many County highway projects can begin.

In 1983 debt service for Highways comprised 35.8% of the total county-wide existing debt service. By 1989, that percentage rose to 43.9%, and was projected to reach 50.4% of total county-wide debt service by 1995 if current borrowing practices were followed. As part of the County's Debt Management Plan, a highway pay-as-you-go plan was instituted with the goal of reducing debt costs for highway maintenance while maintaining a strong commitment to highway infrastructure maintenance through a gradual shifting of finance from debt issuance to pay-as-you-go. The success of this effort has resulted in a reduction of debt service costs in highways the County highway program.

### Borrowing

Financing infrastructure improvements by borrowing needed capital dollars (i.e., debt) is often the best alternative for funding a proposed project which would be too large to pay out of current revenues or by other means. The primary advantages of borrowing are: the facilitation of construction and acquisitions; the ability to have future generations pay for a portion of project costs from which they will benefit; and having a predictable and stable payment schedule for major capital projects.

Although there are practical and constitutional limits on the amount of money that can be borrowed, debt financing is usually the only option for financing large capital improvements such as sewage treatment plants, water line extensions, and new highways. Sources for borrowing include: notes and bonds; lease/purchase agreements; and revolving loan funds.

Concentrating the County's financing dollars on existing infrastructure both maximizes their impact and contains the level of debt burden. Allowing infrastructure to expand needlessly would escalate debt burden.

### Bond Rating

In spite of fiscal pressures on government in general, Onondaga County has been able to maintain its fiscal credibility. While New York State has had its bond rating downgraded to A- by Standard and Poor and by Moody's, Onondaga County enjoys high quality Moody's, Standard and Poors, and Fitch credit ratings of Double A. Only two of the fifty counties rated by Moody's in New York State rated higher than Onondaga County. All three rating agencies cite Onondaga County's diverse economy and strong fiscal

management as factors attributing to this distinctive rating. The credit rating agencies, which use the most sophisticated and comprehensive approach to comparing the financial management of county governments nationwide, continue to find Onondaga County's spending and tax revenue patterns, efficiency of service delivery, and soundness of budgetary controls among the best in the state and nation. However, the State of New York's weak fiscal situation will not enhance the efforts of local governments to improve their credit status in the near future.

### Alternative Infrastructure Funding Sources

Exactions and impact fees have been advanced in other states as a means to require private developers to provide land, improve infrastructure, and/or pay cash to a local government in order to help offset the public costs associated with new growth. These increased public costs are usually as a result of requirements for extended sewer and highway systems, additional police and fire protection, and new public facilities, such as parks. Generally, this type of financing is most effective when an area is experiencing significant new population growth. Such exactions and impact fees are not legal in New York State and State enabling legislation has not been passed which would grant these powers to local governments under Municipal Home Rule Law. Voluntary and/or negotiated infrastructure funding between the public and private sectors will therefore become an important consideration in the foreseeable future if current and projected infrastructure needs are to be met.

#### CURRENT FISCAL CONDITION OF ONONDAGA COUNTY GOVERNMENT

The financial condition of Onondaga County is summarized below. The focus of the table is to relate debt to the tax base.

# Measures of Outstanding Debt, Onondaga County Government, 1996

General Obligation Debt Outstanding	\$251,748,000
Percent Retired within next 5 Years	50%
Percent Retired within next 10 Years	78%
Revenue Debt Outstanding	None
Debt Service as a Percentage of	
Operating Budget	5.41%
Credit Rating in the Financial Markets	Aa Moody's
	AA (Standard and Poor's)
Debt compared to Community Wealth	AA (Fitch)
Debt/Capita	\$583.45
Debt/Property Assessed	4
At Full Valuation	\$ 0.015

Source: Onondaga County Finance Department

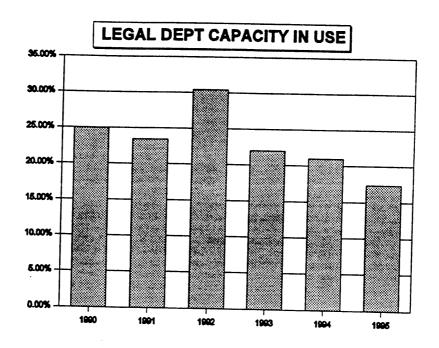
Current Legal Debt Capacity

Onondaga County's capacity to borrow money is constrained by legal and practical limits. The County's constitutional debt limit is calculated by a formula which derives the limit from a fixed percentage (7%) of the five year average of full real property valuation within the County. As of February, 1996, 17.51% of the County's capacity to borrow was exhausted, leaving \$897,988,119 legally available to borrow.

The County is allowed to exclude from this indebtedness amounts associated with the following items:

- Bonds and Bond Anticipation Notes for the conveyance, treatment, and disposal of sewage;
- Water District Bonds and Bond Anticipation Notes;
- Current year appropriation -- principal payments not otherwise excluded;
- Refunded bonds.

Certificates of Exclusion for \$82,953,468 in sewer and water debt were received from the State Comptroller, pursuant to Sections 124.10 and 136 of the Local Finance Law, respectively.



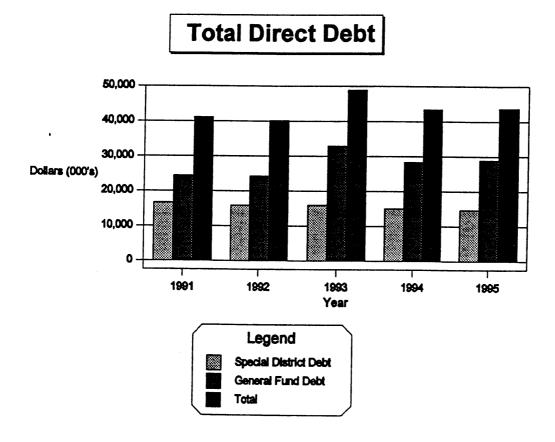
Source: Onondaga County Finance Department

### Affordability

The constitutional debt margin is not the best method by which to estimate fiscal condition. If the County borrowed all of the money that it legally could, the fiscal health of the County would be seriously jeopardized, possibly even risking default. Clearly, the practical limit for borrowing is considerably less than the legal limit. What the practical limit is for Onondaga County cannot be calculated, as it is a subjective judgement which must be balanced between community needs and fiscal prudence.

#### Debt Burden

The County's annual debt load has remained fairly stable over the last five years. In terms of a debt to property value ratio, the annual debt load has slowly, but steadily, declined.



Source: Onondaga County Finance Department

Debt in Relation to Real Property Tax Base (times 1,000)
Onondaga County Government

	1991	1992	1993	1994	1995
Debt					
Special District	\$ 16,681	\$ 15,863	\$ 15,984	\$ 15,074	\$ 14,694
General Obligation	24,454	24,240	32,918	28,371	28,968
Total	41,135	40,103	48,902	43,445	43,662

# Total County Real Property Tax Base (times 1,000)

1991 1992 1993 1994 1995

Property \$12,346,136 \$13,468,718 \$15,597,979 \$15,824,457 \$16,533,624

Tax Base

Ratio of Total County Government Debt to Tax Base (divide by 100)

Debt/Tax Base	1991	1992	1993	1994	1995
Special District	0.14	0.12	0.10	0.10	0.09
General Obligation	0.20	0.18	0.21	0.18	0.18
Total	0.33	0.30	0.31	0.27	0.26

Source: Onondaga County Finance Department

### Fiscal Condition Indicators

Several additional factors affect the financial condition of Onondaga County in addition to direct debt. They are population, property value, effective buying income, public assistance case load, revenues from all sources, and appropriations. The following table can be used to review certain relationships between a number of fiscal condition indicators.

# Fiscal Condition Indicators Onondaga County

Population <sup>1</sup>	<u>1990</u> 468,973	<u>1991</u> 472,452	<u>1992</u> 473,920	<u>1993</u> 474,793	<u>1994</u> 472,755	<u>1995</u> 469,818
Property Value <sup>2</sup> 10, (in \$1000's		2,346,136	13,468,718	15,597,979	15,824,457	16333,624
Effective \$ Buying <sup>3</sup> 6, Income		5, <sup>9</sup> 99,085	6,945,587	7,259,126	7,615,879	8,105,314
Public Assistance	55.84	66.22	72.43	75.76	78.39	73.40
Medicaid & Food Stamps	°180.47	215.61	243.76	288.9	324.75	336.52
Revenues <sup>6</sup> (in \$1000's County Gene	•	375,637	398,580	404,752	436,188	445,109
Revenues (in Special Fund		) <sup>7</sup> 48,774	50,949	49,972	51,846	55,524
Expenditures (in \$1000's County Gener	)	374,941	397,366	402,239	430,223	444,436
Expenditures (in \$1,000's Special Fund	B)°	47,322	47,862	46,900	51,726	52,656

Source: Division of Management and Budget.

<sup>&</sup>lt;sup>1</sup>Source: Bureau of Census

<sup>&</sup>lt;sup>2</sup>Source: Onondaga County Department of Finance

<sup>&</sup>lt;sup>3</sup>Source: Sales & Marketing Management

Yearly expenditures in millions for Home Relief and Aid to Dependent Children (all levels of government)

Source: Onondaga County Department of Social Services

<sup>&</sup>lt;sup>5</sup>Gross yearly expenditures in millions for Medicaid and Food Stamps Source: Onondaga County Department of Social Services

Source: Onondaga County Comptroller's Office, Audited Statement

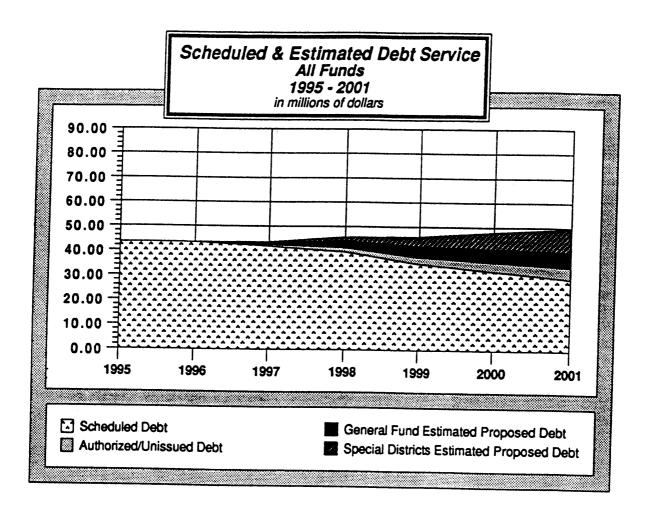
Water Fund and Drainage and Sanitation Fund combined Source: Division of Management and Budget.

<sup>\*</sup>Source: Onondaga County Comptroller's Office, Audited Statement

Water Fund and Drainage and Sanitation Fund combined

#### ANTICIPATED DEBT

Because bond payment schedules are not very flexible, the County can map scheduled debt well into the future. The structure of anticipated debt payments can be affected by many variables, therefore attempts to project anticipated debt beyond five years is not useful. The chart on this page projects Onondaga County government debt through the year 2001. The chart takes current 1996 County debt and projects scheduled and authorized debt with debt computations derived from the Onondaga County 1996-2001 Capital Improvements Plan.



Source: County Division of Management and Budget

### ONONDAGA COUNTY DEBT MANAGEMENT POLICIES

While all recurring maintenance and many infrastructure improvements should be funded through the operating budget, funding major improvements through debt is usually the best financial option. Since improvements of this scale involve borrowing millions of dollars, sound debt management is a key aspect of successfully managing growth.

Onondaga County has adopted policies which restrict the use of borrowing. For debt that has to be retired within five years and for capital improvements costing less than \$250,000, the debt management policy is to pay the capital cost using operating funds or current revenues. The saving to current taxpayers is between twenty and forty percent of the cost of the capital expenditure due to elimination of bonding costs and interest. Also, all vehicles, including heavy equipment, are funded through the operating budget.

#### CONCLUSION

The economic climate of the 21st century promises to bring more fiscal challenges than the 1980's and 1990's. Sources for federal and state aid for capital projects are becoming increasingly difficult to obtain. Our local economy is shifting from a manufacturing base to a service sector base. The population which supports the tax base is not expected to grow and it will become generally older. Yet infrastructure is a key component upon which to build a desirable economic future for Onondaga County.

To finance infrastructure in the future, it will be crucial to continue strict fiscal controls and adherence to the goal in this Plan to promote community growth without risking the County's financial health and resources. It will be neither practical nor appropriate to use one funding method exclusive of others. Prudent financial management will require a combination of funding sources. Reliance on one method would jeopardize the County's ability to respond to the future needs of its residents. All levels of government and the private sector will have to work together to develop and carry out financial policies that will assure government fiscal stability and at the same time encourage development which is consistent with broad community goals and development strategies.

# FINANCING INFRASTRUCTURE - FINDINGS

- The quality of water, sewer and road systems is directly related to the economic well-being of Onondaga County. Funding infrastructure development and maintenance is increasingly the responsibility of local governments.
- Unguided residential growth extends infrastructure systems and strains the economic resources of the County, weakening the impact of each dollar spent.
- There are two basic mechanisms for funding infrastructure: pay-as-you-go financing and borrowing. Pay-as-you-go financing is most appropriate for ongoing maintenance programs and for capital improvements when project costs do not warrant assuming the costs of borrowing money. Borrowing is most appropriate for large capital improvements with long-term benefits.
- The practical limit for borrowing money is much lower than the County's legal limit for borrowing money.
- The County's annual debt load has remained fairly stable over the last five years. In terms of a debt to property value ratio, the annual debt load has slowly, but steadily, decreased.
- Impact fees and exactions are not currently legal in New York State.
   Other ways of promoting public and private sector sharing of infrastructure costs should be pursued through voluntary actions and/or negotiations.
- Key indicators of the County's financial condition include: population, property value, effective buying income, direct debt, public assistance case load, revenues from all sources, and appropriations.

# **INFRASTRUCTURE**

Public water service, sanitary sewers and highways are prerequisites for development at urban and suburban densities. Maintenance of these systems is vital to the community's quality of life and its attractiveness for economic development.

Distinctions between urban, suburban and rural lifestyles and development densities are dependent upon different levels of service based on public infrastructure or on-site alternatives.

Public water is relatively inexpensive to extend, and more than other public services, leads to infrastructure extensions. Demand for sewers usually follows water when septic systems fail or higher residential density is proposed. Highways serve to link residential areas with employment centers, but before travel demand is sufficient to demonstrate the importance of particular roads, crucial traffic mobility potential may be lost due to incompatible land use patterns.

Existing suburban systems for water and sewer service were put in place following facility plans developed in the 1960's and 1970's. Changes in growth and land use patterns since that time and mandated higher standards make it essential to review existing facilities with respect to current and future needs. Drainage and flood control have never been addressed from a County-wide or a drainage basin perspective. As the value of public and private investments in potential flood plains increases, the community needs to review the need for area-wide drainage control.

Our linear infrastructure totals more than 3,000 miles for waterlines, sewers and roads. During the 1980's, 200 miles were added to each system. By supporting a more diffused community we have in effect abandoned the use of some capacity in Syracuse and its nearest suburbs. Although the community no longer uses all the capacity in these locations, it must be maintained. As the age of some systems approaches 100 years, the fiscal demands of maintenance and replacement become more costly.

Over the last decade, both state and federal government have transferred fiscal responsibility for infrastructure onto localities while mandating new and expensive standards. There is a need for coordination among all entities responsible for infrastructure to prioritize both new projects and maintenance projects within fiscal constraints and political willingness to fund infrastructure projects.

# PUBLIC WATER SUPPLY

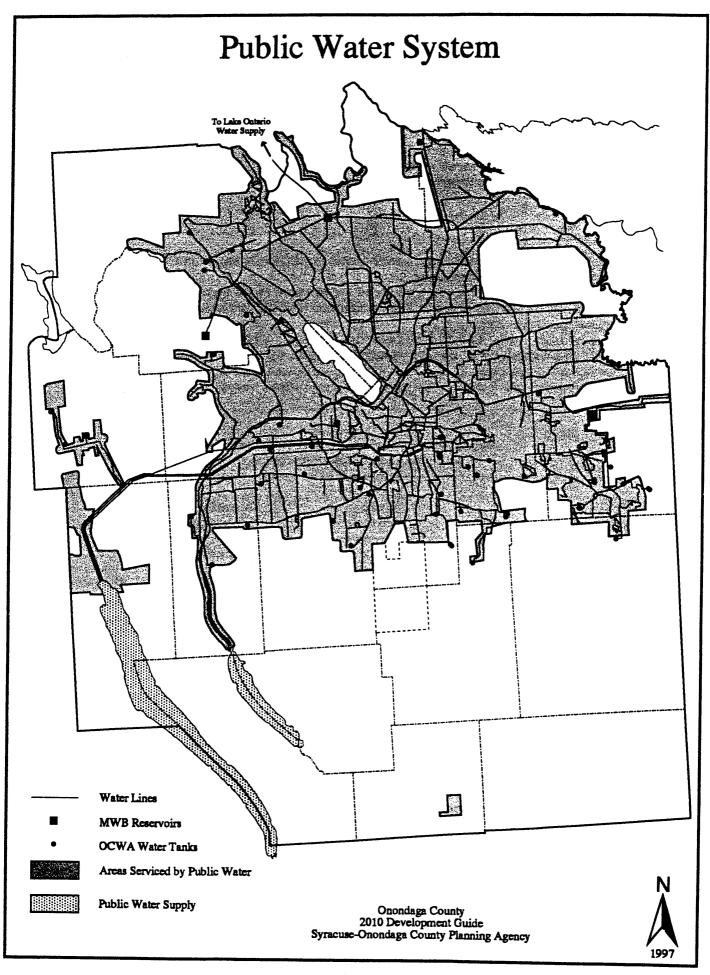
The availability of a good public water supply system is a major impetus to both residential and economic expansion. In many instances, it is arguably the infrastructure component most responsible for shaping population growth and dispersion patterns on a County and regional basis. This section describes the growth of the County public water supply system, its impact upon County population dispersion, future use of drinking water sources, distribution of water supplies, anticipated infrastructure needs and concerns, and water infrastructure financing.

#### WATER SUPPLY SOURCES

Three sources of drinking water are used by the three major County purveyors (Metropolitan Water Board (MWB), Onondaga County Water Authority (OCWA), and the City of Syracuse). The MWB is a wholesale distributor which obtains water from Lake Ontario. A daily average of nearly 26 million gallons is supplied. OCWA, which sells most of its water on a retail basis, utilizes its Otisco Lake supply (17 million gallons daily) as well as nearly all of the MWB Lake Ontario supplied water. The City of Syracuse withdraws an average of approximately 44 million gallons daily from Skaneateles Lake. The major County water supply sources are shown below.

Major County Drinking Water Purveyors
Information Summary

Purveyor	Status	Primary Water Source/Avg.Amt.	Primary Distribution	Available Revenue Base
Metropolitan Water Board (MWB)	Onondaga County Water District	Lake Ontario 25 mgd	Wholesale to OCWA and Syracuse	Sales, District Taxation, General Obligation Bonds
Onondaga County Water Authority (OCWA)	NYS Auth'ty	Otisco Lake 17 mgd Lake Ontario 25 mgd	Retail-OCWA Wholesale- Town Districts Madison, Oneida and Oswego Counties	Sales, Revenue Bonds
City of Syracuse	City Dept of (Water Div) Engineering	Skaneateles Lk. 44 mgd Lake Ontario (supplemental)	Retail-City Wholesale- Suburbs	Sales, City Tax Base, Bonding



### Water Supply Retailers

There are fourteen water supply retailers operating in Onondaga County. These include two major water purveyors (OCWA and the City of Syracuse) and four municipal supply systems with their own water sources: the Villages of Baldwinsville, East Syracuse, Marcellus, and Tully. Several towns obtain water on a wholesale basis from OCWA for retail sale to water districts; such districts are found in the towns of Camillus, Clay, DeWitt, and Van Buren. The villages of Jordan and Elbridge, as well as the Village and Town of Skaneateles retail Skaneateles Lake water through the City of Syracuse. OCWA continues to lease or purchase retail water systems in the County (the Lakeland Water District was leased to OCWA in 1996) and has the goal of becoming the primary retailer within the County.

### Onondaga County Water District

The Metropolitan Water Board's capital projects are financed by the Onondaga County Water District (OCWD) a special tax benefit district created to finance the Lake Ontario water supply facilities for Onondaga County. The district is divided into three zones of assessment for the basis of allocating the cost to construct the District's supply, transmission and distribution facilities. Zone assignment is based upon the derived benefit obtained by the respective areas of the County for construction of the various MWB water supply facilities. Zone 1, the entire District geographic area, pays the debt service on all MWB constructed facilities between Lake Ontario and the Terminal Reservoir in Clay. The assignment of the entire District to Zone 1 is derived from the fundamental concept that the entire District would derive benefit from the original development of the Lake Ontario water supply. The Zone 2 area pays for the Zone 1 facilities as well as for the Central Branch Pipeline and 40% of the Southern Branch cost. Zone 3 is responsible for facilities costs for Zone 1 and 2 as well as for the Eastern Branch, Western Branch, and 60% of the Southern Branch.

# Future Water Supply Sources

#### Lake Ontario

Water from Lake Ontario is being supplied to Onondaga County through treatment and transmission facilities which have a peak capacity of 48 mgd. A substantial quantity of additional water is available from Lake Ontario, but additional treatment and transmission facilities will be necessary. Onondaga County's reliance upon Lake Ontario to meet future drinking water needs will increase during the ensuing decades since the upland supply sources, Skaneateles and Otisco Lakes, are currently being used at or near their allowable safe yields.

### Skaneateles Lake

Skaneateles Lake is the major source of supply within the County by the City of Syracuse. A legal limit of 58 mgd for the maximum withdrawal of water from the lake for water supply purposes has been established. Except for chlorination and fluoridation, the Skaneateles water supply receives no treatment. City of Syracuse consumption may decrease due to continued population decreases and decreases in the intensive water use industrial base. In 1995, the City completed a Land Protection Plan for the Skaneateles Lake Watershed which addresses strategies to preserve the quality of Skaneateles Lake water and help the City avoid a costly filtration plant.

#### Otisco Lake

OCWA's present withdrawal from Otisco Lake is 17 mgd on an annual average basis. While past studies have indicated that Otisco Lake's safe yield exceeds this level (at least 25 mgd), it is unlikely that withdrawals will be increased above present levels in the foreseeable future. A water treatment plant in Marcellus was completed and put in service in 1986 to treat Otisco Lake water. If the County-wide service area continues to expand and consumption increases, Otisco Lake will supply a more localized geographic service area in the central and western portions of the County than at present.

### Groundwater

Groundwater, through private well sources, will likely remain the primary source of drinking water in southern Onondaga County; the exception is the Village of Tully municipal supply. The Village of Baldwinsville supply service area as well as the East Syracuse and Marcellus municipal supply areas will likely remain dependent upon groundwater source supplies despite close proximity or existing system connections to the County distribution system. Private well supplies are also expected to remain the primary drinking water supply source for the extreme northwestern and western sections of the County.

Availability of water from wells is generally poor in the southern and northern portions of the County with the exception of some surficial sources in stream valleys. Quality of groundwater is problematic throughout the County. Surficial waters can have salt or sulfur contamination, hardness problems or taste problems; bedrock water can have hardness, sulfur and taste problems.

The following chart compares water quality in water bearing subsurface units to surface water supplies. In all cases the quality of surface water supplies exceeds that of various groundwater units indicating the water quality problems of groundwater. In southern areas of the County where surficial and bedrock water supplies are limited, locating a well that provides a 5 gallon per minute yield (required by many banks) is a costly and uncertain proposition on a one or two acre lot. Even if a well yields acceptable quantity and quality of water, water availability may be affected by subsequent wells drilled by new residents or by periodic drought conditions. Short-term solutions to insufficient water may involve trucking water to houses or drilling new, deeper wells. water problems occur throughout a neighborhood, demands for costly public solutions (extensions of water lines) occur. Towns in rural areas with known groundwater supply problems should reduce allowable densities to compensate for poor groundwater supplies and warn prospective residents of the uncertainties and inconvenience of living with well water; for example, many new residents in the country do not realize that power outages mean not only no electricity but no water since pumps cannot work.

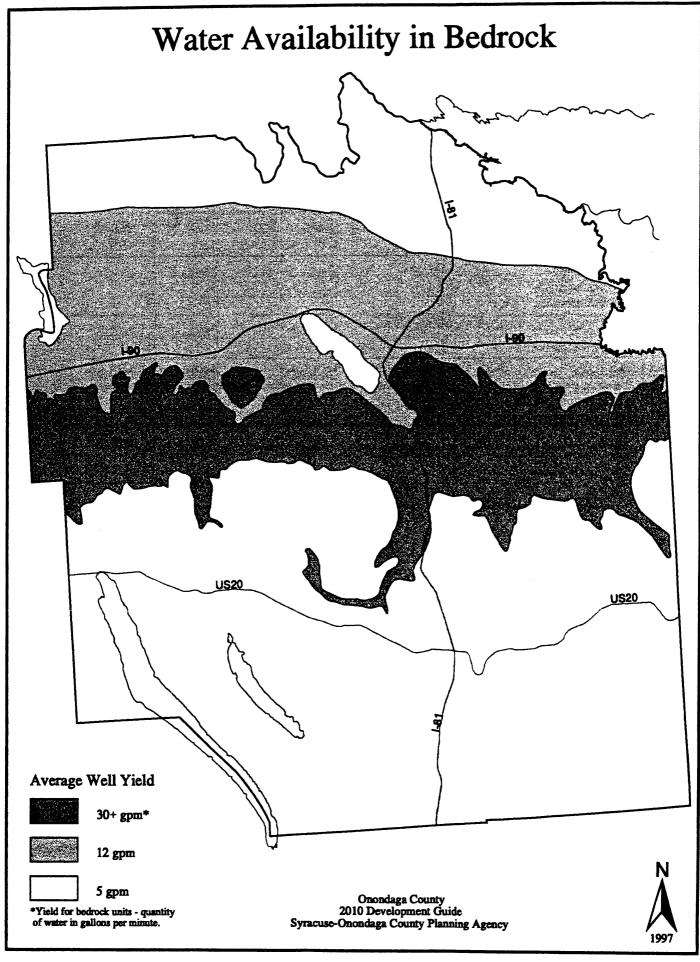
# Water Quality Characteristics - Water Bearing Units and Surface Lake Supplies

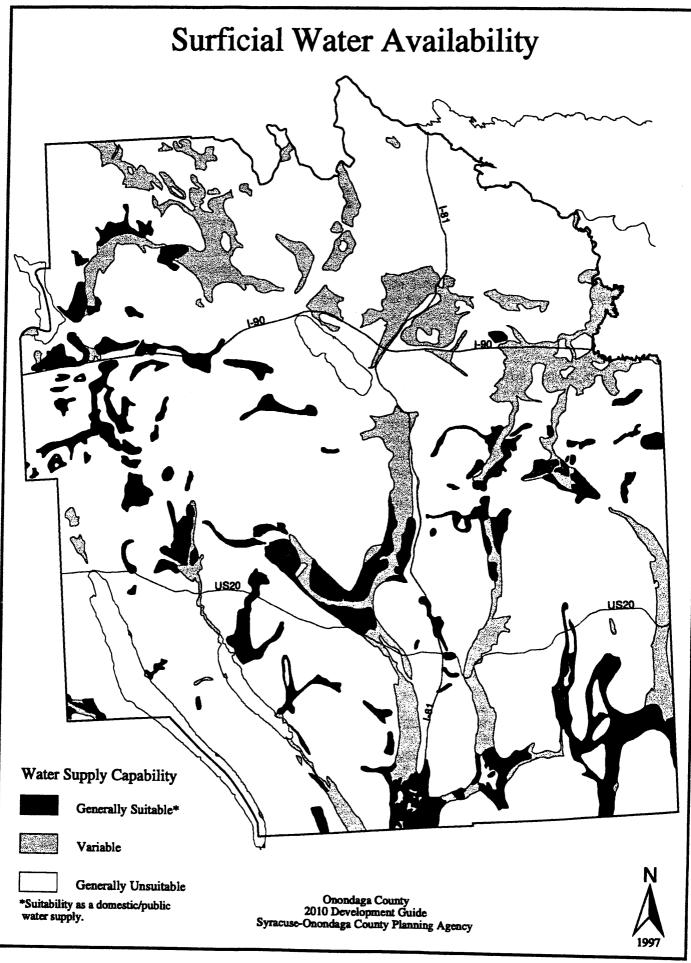
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Geologic Layer	Ca	Мg	K	Na	C1	S04	Dissolved Solids
Sand and Gravel	95.0	21.9	1.2	28.4	54.2	44.9	561.5
Glacial Till	86.5	19.5	0.8	11.6	31.7	31.0	482.1
Devonian Shale	58.8	13.7	0.9	58.4	57.4	26.9	500.8
Silurian- Devonian Carbonates	113.5	23.6	0.8	18.6	47.1	103.1	624.5
Post Vernon Evaporites	387.4	40.4	1.4	19.4	59.2	811.7	1625.6
Vernon Shale	391.8	32.4	11.1	51.1	117.3	828.9	1719.3
Surface Supplies							
Lake Ontario	36.0			12.0	21.0	14.0	310.0
Otisco Lake	42.0			11.0	16.0	21.0	
Skaneateles	38.0			4.5	9.0	14.0	160.0

# WATER SUPPLY SYSTEM PLANNING

The decade of the 1960's is an important time reference in discussing both population and water supply in Onondaga County. The decade was characterized by significant County population growth, with a large manufacturing industrial base having a high water-consumptive use. However, even in the 1950's it became very apparent that the County would not be capable of meeting future water demands with only Skaneateles Lake and Otisco Lake supplies. This resulted in the development of the Lake Ontario water supply source which became available for County use in 1967.

The Onondaga County Comprehensive Water Supply Study was completed in 1968 with the intent to provide the necessary information to develop a public drinking water supply "Master Plan" to meet existing and projected water needs in the ensuing 50 years (until the year 2020). While not a true Master Plan, the Comprehensive Water Supply Study has served as a "blueprint" for a number of drinking water supply issues and for facilities construction.





Predicted facilities needs were based upon a continuation of the population growth pattern of the early 1960's. By 1995 the Comprehensive Study projected a County population of 682,000 with an average daily water consumption of 155 million gallons daily (mgd). Instead, the County population has remained virtually unchanged since 1970 and current average daily water consumption is approximately 92 mgd. This means that capital facilities needs were planned for almost 212,000 more residents than exist today, and nearly 63 mgd of excess average water supply.

Despite a static population, average water demand has increased approximately 30% from 71 mgd in 1966, to 85 mgd in 1974, to the present 92 mgd. This translates into a nearly 1% annual increase in water consumption over the nearly thirty year period. The increase during this period is due in part to a steady increase in the number of households, a general increase in water consumptive use for suburban households compared to city household usage, and the construction of two breweries. The average daily consumption will not continue to increase at past levels due to fewer new households being formed, water saving toilets and other devices being installed in new homes, and the reduction in breweries from two to one.

In 1991, OCWA completed an "Onondaga County Comprehensive Water Supply Study Update" to update the original 1968 study. The 1991 study revised the projected County population in 2020 from 788,700 in the 1968 report to 491,644; the total population served by the water system in 2020 (including neighboring counties) is projected to be 595,494. Water consumption for all of Onondaga is projected to rise from 91.97 mgd in 1990 to 102.4 mgd in 2020, which is substantially lower than the 1968 estimate of 221 mgd for the year 2020. Total OCWA system demand including neighboring counties is projected to be 117.58 mgd in the year 2020.

Facilities and Service Area for 1990: Predicted and Actual

Differences between predicted and actual facility needs for 1990¹ are not as pronounced as would be expected considering the very optimistic population and consumption predictions made in the 1968 Comprehensive Water Supply Study. This reflects the population dispersion pattern that has evolved in the County. With respect to the size of the service area, public water is not available as far west or south as was predicted in the Comprehensive Study.

Significant departures from the Comprehensive Study's proposed 1990 facilities include several major Lake Ontario transmission lines that have not been constructed due to a lack of demand. Examples are a line parallel to the Clear Water Pipeline from the Oswego Treatment Plant to the Terminal Reservoir in Clay and the "Eastern Loop" to circumvent the existing Eastern Pipeline. However, a similar sized area in eastern Onondaga County is presently supplied with public water, but through smaller distribution system lines and facilities. Major facilities that have been constructed as recommended in the Comprehensive Study include the Western Branch Pipeline and Western Reservoir.

<sup>&</sup>lt;sup>1</sup>The 1968 Comprehensive Water Supply Study projected facilities and costs for two target years, 1990 and 2020; no intermediate year projections are available.

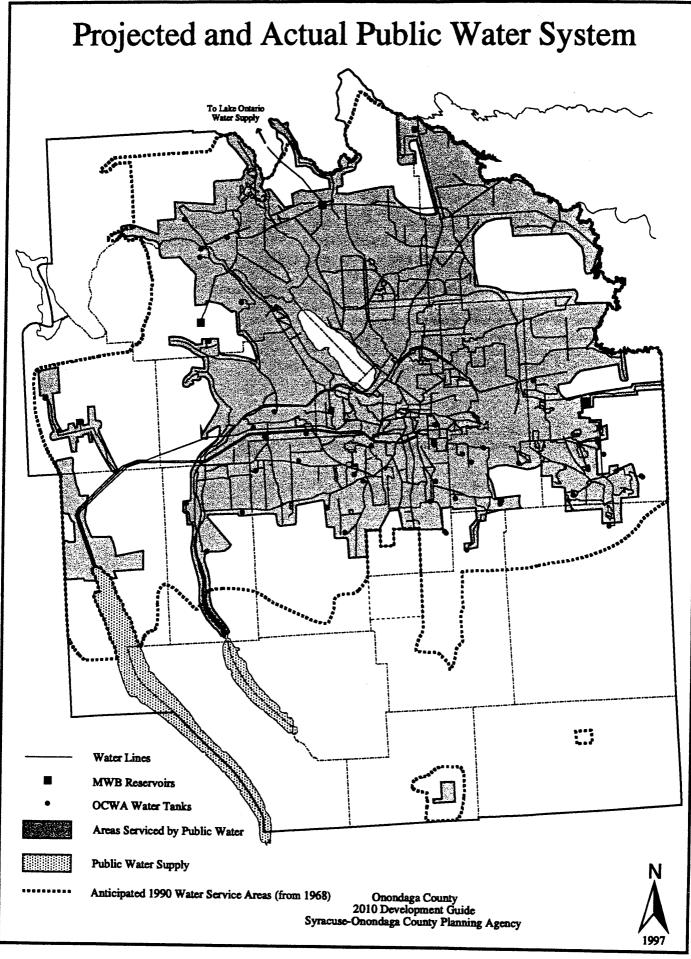
If current population dispersion patterns continue and/or population growth increases substantially, the geographic boundaries of the County public water supply service area will continue to expand. However, over the next twenty-five years, future facility needs will likely be confined to smaller service supply mains within the present boundaries of the County OCWA service area. The larger transmission facilities projects will be restricted almost exclusively to transporting Lake Ontario water.

One project that may be needed is the Burt Point improvements which consist of a lake intake structure, a raw water pumping station and approximately 2.2 miles of 78" diameter pipeline to connect these facilities to the existing water treatment plant. This project will not proceed if negotiations with the City of Oswego for the continued use of its Lake Ontario intake are successful. The estimated cost of this project is \$45 million dollars (1996 dollars).

The 1991 Comprehensive Water Supply Update suggests a series of major distribution projects which will be needed to keep pace with development, especially in the northeast quadrant of the County. Most of the projects included in the 2020 construction program fall into the category of combined supply and minor distribution facilities. The projects proposed for major OCWA construction are listed below.

#### Southwest

Parallels to Authority Transmission Onondaga Hill and Split Rock Ononda		1,620,000
Central North		
Clay - Central North Syracuse Brewerton Area	\$	230,000 2,870,000 3,040,000
Northeast		
Cicero - Northeast Sullivan - North Lenox - North	\$	670,000 5,790,000 2,480,000
Southeast		
Chittenango and Canastota Salt Springs - Academy Hill Coye Road	\$	2,220,000 1,260,000 420,000
	TOTAL S	25,570,000



#### SYSTEM EXPANSION ISSUES

Southward expansion of the County public water supply service area is hampered by several environmentally related factors that curtail the economic viability of providing these areas with public water. The general increase in elevation in a southward direction, irregular topography, and near surface bedrock substrate conditions have financial implications. Slightly less severe limitations exist in the extreme western portions of the County. While population dispersion will continue, the County public water supply service area is not expected to expand significantly southward. Additional large scale transmission line construction in the Lafayette area will be minimal due to the existing capacity of the present supply facilities (Southern Branch Pipeline).

There are several other ramifications associated with southern expansion of the public water supply service area. Since the Southern Branch Pipeline is currently supplied with Skaneateles Lake water, residential expansion would increase use of Skaneateles Lake water as well as further expand the area served by this source. Any public supply system expansion in the Elbridge, Jordan, and Skaneateles areas would also likely use or want to use Skaneateles Lake due to water usage rights granted under Decision 609. Expanded use of Skaneateles Lake water has already occurred in the Town of Camillus and expansions of public water have been proposed in the Town of Elbridge.

### Water Supply Revenue/Funding Base

Because of the low cost at which it has been supplied, drinking water has traditionally been a revenue producing operation for villages, town districts, and other municipal entities throughout the region. In most cases, retail costs have not reflected the true cost of supplying water. but only the cost to treat and transport water. Consequently, when costly infrastructure repairs have been needed, smaller public drinking water supply systems have been sold or leased to a larger purveyor more capable of investing needed capital for system improvements. Such a trend has occurred in Onondaga County since the late 1960's as a number of municipal and town district systems are now operated by OCWA, primarily under leasing agreements.

Different methods of financing infrastructure improvements/expansions exist for the County public water supply system. The MWB obtains revenue through the wholesaling of Lake Ontario water and through the Onondaga County Water District assessments. As a County entity, the MWB can also raise capital through the municipal bonding market. Although OCWA may borrow capital through revenue bonds, most of its revenue is derived from revenue from retail water sales which means that system expansion decisions are made primarily on the basis of projected revenues. However, it is the general policy of both the MWB and OCWA Administrative Boards to provide drinking water where it is feasible to do so.

Project financing responsibilities are determined, at least in part, by the role that each purveyor plays in supplying water. Virtually all of the County's future large scale transmission projects will revolve around transmission of Lake Ontario water. These projects will be completed by the MWB. OCWA has primary responsibility for distribution system improvements and expansions.

Water Supply Infrastructure Expansion

### Impact: Other Infrastructure

Public water is generally preferred by perspective buyers due to uncertainties over quantity and quality (poor taste, hardness, offensive odors) of private supply sources. Quantity concerns are particularly important in light of increasing household water use that may exceed residential well yield capabilities. Individual households and/or developments on private water supplies often desire connection to a public system.

Water consumption is generally higher where a public supply source is available. In areas where public water is available without public sewers, the probability of private waste disposal systems (septic systems) overloading and malfunctioning increases. As a result, resident demand for sewer installation increases.

Introduction of public water in a rural area will lead to more development and change the character of an area from rural to suburban/urban. The changes brought by public water create a new landscape and residents who originally moved to rural areas to escape the suburban/urban lifestyle will feel pressured to move into remaining rural areas. The cycle of outward movement continues and the very act of moving to rural areas and requiring suburban/urban services destroys the rural character that people originally sought. Meanwhile, expensive infrastructure built to serve former rural areas (now suburban/urban areas) remains underutilized and an expensive burden on all residents of the county.

Areas being developed where public water will not be available in the foreseeable future can also accelerate population dispersion. Large minimum lot sizes, while intended to protect private drinking water supplies, result in larger tracts of land being developed and make the installation of future infrastructure components less cost effective.

The availability of water along roads can increase strip development along these roads and lead to a proliferation of driveways. An excess of driveways can decrease the ability of highways to carry traffic efficiently and require corrective improvements to the road system which would not have been necessary if development had not been induced in the area by the availability of public water.

### Public Supply Sources and Areas Served

To maximize the most efficient use of water supply sources and infrastructure, service areas should be supplied with drinking water from the supply source nearest that service area. Presently, several factors influence supply source distribution with the most significant being the location of the supply sources in relation to the population centers supplied. For example, Skaneateles Lake, located in the extreme southwestern portion of the County, is used almost exclusively to supply the City of Syracuse. However, Skaneateles Lake water is supplied through the Southern Branch Pipeline to areas in the Town of Dewitt and a small portion of Lafayette. Otisco Lake, located just eastward of Skaneateles Lake, is used by the OCWA to supply water needs in the southwestern quadrant of the County public supply service area (i.e., Marcellus,

Onondaga, Camillus, Geddes), but also in some northern and eastern suburbs. The Lake Ontario supply is provided primarily to the northern and eastern portions of the public supply service area.

Cost and demand are two other factors influencing supply source distribution. On a cost production basis, Skaneateles Lake and Otisco Lake drinking water are less expensive due to the costs of pumping Lake Ontario water "uphill" from the Lake Ontario's lower elevation. Further reducing the cost to produce Skaneateles Lake drinking water is that it is not presently filtered. The use of the cheaper water supply sources is maximized by the retail purveyors. Increased use of the supplemental Lake Ontario water occurs during high demand periods, such as droughts, and the chief users are the City of Syracuse and OCWA.

### Additional Sources

While the development of abandoned and unexploited groundwater supplies and alternative surface supplies are severely limited in quantity (available yields), quality, and site development constraints, these sources should be protected in the event of future need. Areas around existing wells and reservoirs that provide water to villages and other users should be protected through density controls, buffer zones, restrictions on certain types of activities, imposition of special requirements for certain uses, or purchase of land.

### PUBLIC WATER SUPPLY - FINDINGS

### Future Water Supply Sources

- Lake Ontario, Skaneateles Lake and Otisco Lake will remain the primary sources of drinking water supply for the County system because they collectively meet future projected consumptive demands, are of good quality and have an extensive infrastructure system in place.
- The potential for conflict between water supply use and alternative lake uses for Skaneateles Lake and Otisco Lake has increased due to increased recreational use and lake resident interest.
- Otisco Lake and Skaneateles Lake have limits on the amount of water that can be drawn from them; any increase in demand above these limits will have to be supplied from Lake Ontario.
- Onondaga County's use of Lake Ontario water will continue to increase and account for roughly one-half of the County's total consumption by the year 2020.
- The southern and extreme northwestern portions of the County will likely remain dependent upon groundwater (primarily private wells) as a drinking water supply source for the foreseeable future.
- Southward expansion of public water service is hampered by increased costs associated with construction, pumping, and the facilities investment needed to supply a limited population in a large geographic area.

• Groundwater has quantitative and qualitative problems when used as a drinking water supply in many parts of the county; restrictions on development densities and a better understanding of the potential problems by new homeowners would reduce the need to provide public water to such areas at a later time.

### Water Distribution System

- Centralization of drinking water supply services has occurred in the past two decades as municipal supply sources and town water district retail systems have been absorbed by OCWA. The availability of Lake Ontario water to replace several municipal well supplies and the financial benefits of leasing retail town district systems to OCWA may continue this trend.
- Despite the presence of fourteen water supply retailers in the County, water rates throughout the County are relatively uniform with municipal systems having both the lowest and highest costs.
- The municipal supply systems and retail town water districts in the County will continue to operate independently as long as they do not lose money.
- A major capital expenditure for The City of Syracuse would be the required construction of a filtration plant for treatment of Skaneateles Lake drinking water. Location of such a facility would have an impact upon future treatment facility needs and expenditures for the towns of Skaneateles and Elbridge. The City has completed a Land Protection Plan for the Skaneateles Lake Watershed which addresses strategies to preserve the quality of Skaneateles Lake water and avoid the need for a filtration plant.

### Planning for Facilities

- The 1995 population and water consumption projections made for Onondaga County in the 1968 Comprehensive Water Supply Study are significantly larger (nearly 212,000 persons; 63 mgd average water demand) than 1995 figures.
- Population dispersion and an increase in the number of households due to smaller household unit size explain why the present day public water supply service area is similar in size to that predicted for 1990 in the 1968 Comprehensive Water Supply Study despite that Study's overestimation of 1990 County population by nearly 50%.
- The 1991 update of the Comprehensive Water Supply Study has substantially reduced growth and water consumption projections for Onondaga County for the year 2020. The 1991 study needs to be updated to better reflect the latest population projections available to the County and other changes in water supply data.
- The County's population has not grown since 1970, but water consumption during the past two decades has increased annually at a rate of nearly 1%.

- Water consumption will increase at a much slower rate (about .3% per year) through 2020 for Onondaga County due to lower household formation rates, water conservation fixtures in homes and decreased industrial water demand.
- The 1968 Comprehensive Water Supply Study has provided a viable engineering "blueprint" for water supply system facilities needs over the past two decades. Several major transmission lines thought to be needed by 1990 have not been built due to lack of demand. Smaller sized lines (service distribution) have been constructed in place of larger transmission lines.
- Future infrastructure needs will be restricted primarily to existing service area system improvements with a need for a few large scale transmission facilities concerned with Lake Ontario water transport.

### Water System Expansion

- The financial ability as well as the need to expand the public water supply infrastructure for a static or slow growing population base is an important County government concern for future decades.
- The Onondaga County Water District financing structure based upon apportionment of capital costs (Zone financing) has worked well since the creation of the District.
- Expanding the public water supply system service area can impact other components of the County's linear infrastructure including wastewater disposal and treatment as well as transportation needs. All impacts of requested water supply system expansion and alternatives should be examined before expansions are approved.
- As a State created authority, OCWA has operational flexibility to improve and expand facilities that are not normally possible through a municipal government agency. Without the ability to raise revenue through taxation and having limited borrowing ability, service improvements and expansions must be based primarily on revenue/cost projections much like a private sector enterprise.
- The MWB, through the Onondaga County Water District, can raise revenue through taxation and has access through the County to raise capital through the municipal bond market. This provides a capability to finance large scale transmission projects that would be difficult or impossible through sales revenue alone.

### Cooperation and Communication

Except in the case of connections to OCWA facilities, municipal and town district service area expansion decisions are made solely by the respective water retailer. Such an approach hinders County-wide planning and coordination of public water supply system expansion.

### Conservation of Water

• Water conservation can influence the amount of wastewater which must be treated.

- New water saving fixtures such as toilets and shower heads can reduce water consumption in new and existing homes by a significant amount.
- The age of the water pipes in the city and older suburbs will require ongoing infrastructure investment to limit leaks and repair major breaks.

### Protection of Municipal Wells and Reservoirs

• Municipalities should protect the areas around municipal wells and reservoirs to prevent contamination of drinking water supplies.

# WASTEWATER TREATMENT

#### IMPORTANCE FOR DEVELOPMENT

Collection and treatment of wastewater is essential not only for the protection of public health and the improvement of water quality but also for development at suburban and urban residential densities. Limitations in the quantity and quality of ground water and the generally poor suitability of soils in Onondaga County for on-site wastewater treatment systems require that all urban and suburban development have public services. Residential development at or beyond the urban fringe that depends on private wells, and sometimes on public water supplies, is of concern because of the very high cost of installing infrastructure, particularly sewers and highway capacity, retroactively.

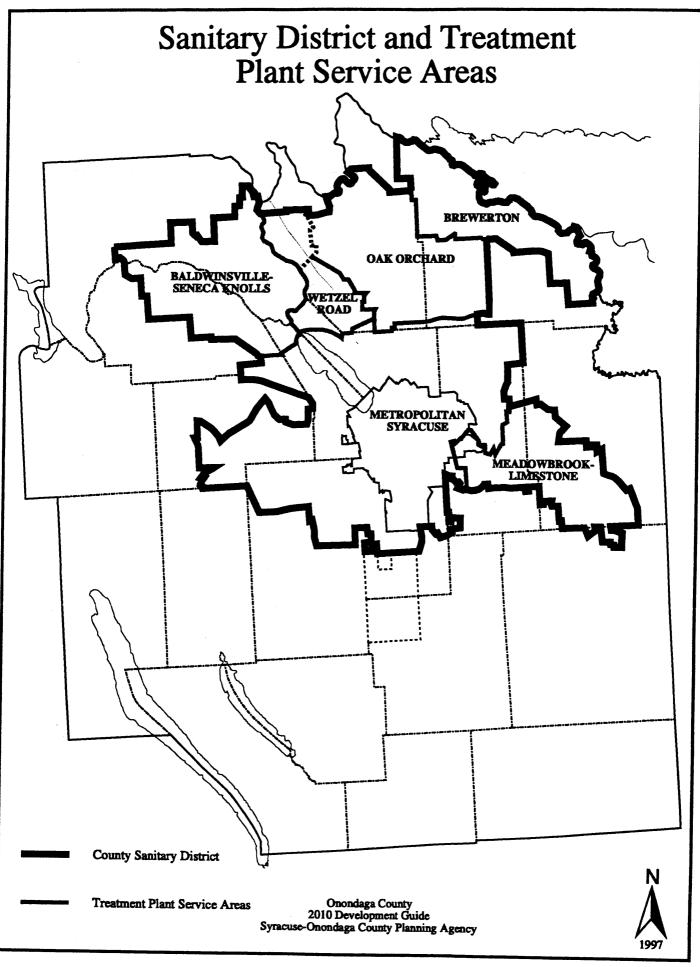
The County Department of Drainage and Sanitation provides public wastewater services for urban and suburban areas within the Sanitary District. The villages of Jordan, Marcellus, Skaneateles, Tully, and Minoa have independent public wastewater systems. Residents of rural areas depend upon on-site wastewater systems.

Most public wastewater facilities were built with a federal and state subsidy of 87 percent; that subsidy program has been replaced by a revolving loan fund. Planning for extensions of public wastewater systems must consider projected need for additional urban land, should be coordinated with planning for extension of public water service, and must be related to the ability of the community to maintain and replace existing systems even as it funds extensions. Consideration should be given to the fiscal and environmental impact of serving an increasing urbanized area for a County population which has not grown since 1970.

### Major Concerns

Land development concerns related to wastewater treatment differ in urban and rural areas. In the urban area, there is some excess treatment capacity in most treatment plant service areas. Major improvements must be made to the Metropolitan Syracuse Treatment Plant and the combined sewer system in Syracuse to address water quality issues in Onondaga Lake, in accord with the Municipal Compliance Plan. Treatment capacity issues exist at the Oak Orchard and Wetzel Road Plants; and there are plans to replace two small community systems-Harbor Heights and Greenfield Villagewith pump stations directing flow to larger facilities. Very large capital investments will be required to maintain the existing physical plant, replace worn out components, enlarge treatment capacity, and enhance treatment processes to meet increasing state and federal water quality standards.

Policy issues for the public wastewater system include: the degree to which new development can be directed to treatment plant service areas with excess capacity in lieu of building additional capacity in other areas and the identification of the most effective means of funding system improvements because of the elimination of federal and state grant programs.



In rural areas which are not expected to have public sewers, sustainable development practices are essential; for areas which are developed before public services have been extended, an interim wastewater treatment strategy is needed. Policy issues in rural areas include the need for an infrastructure extension plan wherein public water and sewer services are expanded in a coordinated and cost effective manner, standards are developed for rural residential development density, treatment capacity is created to expand villages as centers for rural growth, and standards are developed for community and on-site treatment plant design, installation, operation and funding.

In Onondaga County, generally poor soil suitability for individual household or on-site wastewater treatment systems makes lot size an important concern for the long-term sustainability. The 25 year projected life of a septic system requires eventual relocation of the leach field which may necessitate extra land area per lot, depending on site specific soil conditions, well locations, proximity to streams or wetlands, and site slope and terrain characteristics. However, overly large lots use up rural land at an excessive rate, consuming agriculture soils and natural resources, contribute directly to sprawl, and increase the cost of public infrastructure and other public services. Even very low density rural development may eventually outstrip the availability of ground water in many locations in Onondaga County.

# PUBLIC WASTEWATER TREATMENT SYSTEM

### Umbrella Organization

The Onondaga County Department of Drainage and Sanitation functions as an umbrella organization with responsibilities for the wastewater treatment system in the County. The department 1) administers the Onondaga County Sanitary District which provides transportation and treatment of wastewater for the urbanized area of the County; 2) has contract responsibilities for maintenance of lateral sewers in approximately 500 town and village special districts; 3) operates and maintains over 100 pump stations and 10 treatment plants; and 4) disposes of septage and sludge from private septic systems and community treatment plants.

The County Executive and the Legislature determine policy and departmental operating budgets, capital expenditures, trunk extensions and funding as well as district boundary extensions.

### Regulation

The wastewater treatment operation is highly regulated by state and federal governments, directly through wastewater discharge permits and indirectly through the County Health Department which administers the NYS Sanitary Code and the Onondaga County Sanitary Code. Discharge permits not only specify limitations for particular pollutants which may be discharged in treatment plant effluent, but also govern the administration of industrial pretreatment programs, control of groundwater and stormwater inflow and infiltration into the sewer system, treatment and management of biosolids, and control and mitigation of combined storm and sanitary sewer overflows. Both health and environmental values govern limitations expressed in discharge permits which are specific to each treatment plant. State and federal legislative policy, stream classification, and assimilative capacity of receiving waters all factor into permit limitations.

Onondaga County wastewater plants are subject to the most stringent limitations for ammonia and phosphorus in New York State because of location in the Great Lakes Basin and the Three Rivers drainage system. Discharge permits are subject to a five year renewal. Future effluent limitations are unknown but escalating, exceeding capability of original treatment plan designs; this will require plant modifications, added processes or new facilities.

### Municipal Compliance Plan

Onondaga County's Municipal Compliance Plan (MCP) relative to wastewater and water quality in Onondaga Lake is an unsettled issue which is expected to have major cost implications once it is approved by the County Legislature, the U.S. Environmental Protection Agency, and New York State Department of Environmental Conservation and the Federal Courts. proposed MCP will include mitigation of combined sewer overflows (CSO) in the Harbor Brook, Onondaga Creek, and Ley Creek drainage basins and changes to the treatment facilities and processes at the Metropolitan Syracuse Wastewater Treatment Plant. This plant provides about 70 percent of the designed treatment capacity of the Sanitary District, serving most of Syracuse, as well as the towns of Geddes, Camillus, Onondaga, DeWitt, and small areas in Cicero and Clay. The CSO improvements in Syracuse may involve new transmission sewers, eight regional treatment facilities, and separation of storm and sanitary sewers in sixteen sewer drainage areas along Onondaga Creek. The projected costs account for about half of the capital expenditures required to address rehabilitation and replacement needs of the District.

The proposed MCP represents a major investment in infrastructure in several Syracuse neighborhoods; it also represents the potential to leverage other investments to improve public spaces and attract private reinvestment in some of the communities oldest neighborhoods. map of sanitary district

### ONONDAGA COUNTY SANITARY DISTRICT

In 1978, consolidation of more than twenty sanitary districts, (an Environmental Protection Agency prerequisite for federal funds) into a single budgetary and administrative unit eliminated administrative complexity and cost inequities.

All system customers pay a user fee based on a residential unit or a commercial unit of 146,000 gallons. Prior to consolidation, property owners and system customers paid fees based on an ad valorem real property tax, a benefit charge, or a combination of the two depending on which district provided service. Spreading costs systemwide allowed service extensions to expensive and difficult-to-serve areas such as Oneida Lake shore properties, thereby protecting the water quality of Oneida Lake.

### District Boundary

The sanitary district boundary represents a legal obligation and a moral promise to accept wastewater flow from a given area. The Department of Drainage and Sanitation should be involved very early in project reviews by municipalities to ensure the County's ability to meet these obligations.

Within the sanitary district, sewer service is a matter of right upon formation of a town sewer district, given hydraulic and treatment capacity and the proximity of trunk sewers. The Health Department may require sewer connections to solve ground water contamination problems. Towns may require financial participation in a town district whether or not a property is hooked up to the system.

Sewer service to areas outside the district is subject to legislative approval. District expansion and determination of financing for trunk sewer extensions has been determined on a case by case basis. Current policy is to consider expansion for economic growth (permanent jobs), if there is no suitable land available within the existing service area. Given the abundance of vacant, developable land within the sanitary district, there is no current economic or land use justification for extending the sanitary district for residential development.

The district boundary should be reviewed from a planning perspective. The County Sanitary District includes the previous special districts, whether or not service existed at the time consolidation, as well as expansions since 1978. There is only limited logic to the boundary in terms of topography, sewer service, current development patterns, and agricultural districts. Yet the Division of Environmental Health must use the boundary as a planning factor in review of development proposals while administering the State Sanitary Code. Location in or near the district may require installation of dry sewers in addition to on-site septic systems.

If the district were adjusted to reflect the areas of most probable future service and to exclude areas which will not be served in the foreseeable future, public understanding of service patterns and appropriate residential development densities would improve and municipal land use planners would understand the limits and appropriate densities for development within their jurisdictions. Service areas could be planned in relation to need for community-wide additional urban land. Extension of sewer service would then be based on treatment capacity, trunk sewer capacity and topography, the cost of improving highway capacity, and the natural resource value of the proposed areas.

### Growth Since Consolidation

In the period since consolidation (1979-1996), the number of billable units (which includes industrial and residential users) increased by 19,000 (12 percent). Wastewater flow through treatment plants varies substantially with annual precipitation. The number of households has increased, despite a stable population, due to declining household size; average household flow is decreasing as mandated low flow fixtures replace older style plumbing.

### Consolidated System Growth, Sanitary District 1979-1989

	1979	1989	1996
Budget	\$16,842,996	\$37,320,656	\$49,185,546
Unit Tax Revenue	\$10,425,354	\$28,654,156	\$40,131,150
Other Revenue	\$6,417,647	\$8,666,500	\$9,054,396
Units	156,367	172,111	175,431
Unit Charge	\$66.79	\$167.80	\$228.30
Flow (mgd)	76.57	94.76	86.40
Employees	261	321	352

Although households have increased in every treatment plant service area, the share of district households in the Metro Plant service area has declined from 80 percent to 67 percent of the District total. Variation in inflow and infiltration from precipitation as well as changes in industrial use may account for a portion of the changes in flow at individual treatment plants.

# Growth of the Consolidated District Households & Sewage Average Daily Flow by Treatment Plant Service Area

Service Area	1971	1980	1989	1996
Consolidated District				
Households Treatment Plant Flow (mgd)	120,607 76.57	146,266 85.41	160,944 94.53	NA 94.76
Metro Plant Households Treatment Flow (mgd)	97,646 68.51	106,356 70.17	108,335 75.93	NA 74.92
Oak Orchard Households Treatment Flow (mgd)	6,851 1.34	13,525 3.30	18,149 4.39	NA 5.91
Baldwinsville/Seneca Knolls Households Treatment Flow (mgd)	3,170 .56	5,441 3.54	7,983 4.54	NA 4.03
Meadowbrook Limestone Households Treatment Flow (mgd)	5,733 3.86	10,947 4.05	13,966 4.38	NA 4.86
Wetzel Road Households Treatment Flow (mgd)	4,740 2.3	6,39 <b>4</b> 3.10	8,286 3.65	NA 2.85
Brewerton Households Treatment Flow (mgd)	2,000 NA	3,939 1.25	4,225 1.51	NA 1.96
Harbor Heights*	NA	NA	NA	NA .11
Greenfield Village*	NA	NA	NA	NA .07

Note: Household estimates by SOCPA, based on U.S. Census data; the 1990 Census is the most current source of household data.

<sup>\*</sup> Scheduled to be replace by pump stations.

Growth and change within the area covered by the district between 1970 and 1996 points to several trends.

- The number of households and billable units increased, despite a decline in County population;
- Between 1971 and 1989, there was more than a 100 percent increase in households in every service area except Metropolitan Syracuse and Wetzel Road, which had increases of 11% and 75% respectively.
- Combined storm and sanitary sewers in Syracuse are more than fifty years old, and prior to 1980 functioned poorly, delivering only minimum dry weather flows to Metro Plant. Beginning in the late 1970's the combined sewer system was rehabilitated and now delivers significant wet weather flow to metro plant. Continued improvement in Syracuse systems is likely to contribute to the pollutant loading at Metro Plant while industrial pretreatment programs serve to reduce pollutant loadings.
- Implementation of the Municipal Compliance Plan will decrease CSO problems.
- Inflow and infiltration of groundwater and stormwater adds to the costs of treatment and decreases potential capacity at most treatment plants.
- Growth in the system averaged 100 miles of sewers per decade through 1990. Since 1990, growth of sewers has ranged from twelve miles to two miles in any given year.

### TREATMENT CAPACITY, GROWTH, AND DEVELOPMENT COSTS

Analysis of current plant loadings and treatment efficiency indicates which areas of the County can absorb additional growth without increasing capital costs for wastewater treatment facilities. The marginal costs of residential development will vary by treatment plant service area.

There are large differences in average sewage flow per household between treatment plants due to storm water infiltration and inflow, the city's combined storm and sanitary sewer system, and unique industrial plant loadings in each service area. Average household flow is expected to continue decreasing with increased use of low flow plumbing fixtures. It should be possible to project treatment plant loadings based on residential growth and to determine the point at which capital investments will be required to provide sufficient capacity, address maintenance and rehabilitation requirements, and meet discharge permit requirements at each treatment plant.

### Existing Capital Plant

The Department of Drainage and Sanitation is responsible for wastewater collection, transportation and treatment for the County sanitary district including Syracuse and all or part of eleven suburban towns (Camillus, Cicero, Clay, DeWitt, Geddes, Lysander, Manlius, Onondaga, Pompey, Salina and Van Buren). The County is responsible for maintenance of 3,000 miles of sewers (6 inches to 10 feet diameter, including approximately 70 miles of trunk and intercepter sewers in Syracuse) and 112 pump stations.

The city, through ad valorem taxes, and the towns through sewer district taxes, are responsible for funding installation and maintenance of lateral and local trunk sewers. The County maintains town and village lateral sewers under contract with 300 special districts; the City of Syracuse maintains its own lateral sewers.

### Wastewater Treatment System Capital Plant

	Onondaga County Ownership	Total System
Treatment Plants	8	9
Pump Stations	48	112
Sewers	600 miles	3000 miles
Buildings	53	53

The capital plant serving the district includes nine wastewater treatment plants which process raw sewage through advanced treatment. Two treatment plants (Harbor Heights and Greenfield Village) are small package plants built to serve particular developments; both are scheduled for replacement by pump stations. The Jamesville Penitentiary Wastewater Treatment Plant is owned by the Jamesville Penitentiary but operated by and maintained by the Department of Drainage and Sanitation. While the County-wide system operates at 70% of design capacity, individual plants function with varying efficiency and flows at varying proportions of capacity. Four plants are operating at or above effective treatment capacity.

#### WASTEWATER COLLECTION AND TRANSPORTATION

The wastewater collection system in Onondaga County includes more than 3,000 miles of trunk and interceptor sewers and 112 pump stations. Onondaga County owns over 600 miles of trunk and interceptor sewers (pipes up to ten feet in diameter) and 48 pump stations, used to collect and transport effluent to treatment plants. County owned facilities represent about 20 percent of the sewers and 43 percent of the pump stations in a system which serves Syracuse, eleven towns, and eight villages. Onondaga County maintains most of the local collection system under contracts with 300 municipal districts, with the exception of Syracuse which maintains it own local sewers. There are also five systems owned and operated independently by the villages of Tully, Minoa, Jordan, Skaneateles and Marcellus.

Service Area STP	Design Flow MGD	Design Flow as t of County Capac- ity	Flow as t of Effec- tive Capac- ity	Capital Needs	Impact on Land Development
Metro Greenfield Village (1959, 1979)	0.1	71%	100% +	Consent Order: Expand or supplemental plant; remedy combined sewer overflow	Large tracts of open land in service area (Onondaga); Requests for large district expansion & new trunks (Camillus)
Oak Orchard	10	8.8%	100%	Redesign & reconstruct, in part	Large growth area (Clay) - Caughdenoy Road & Gaskin Road (flow division area)
Baldwinsville Seneca Knolls 'Harbor Heights	.15	8.1%	100% +	Replace with pump station & sewer to STP.	Growth area- Lysander & Van Buren; may be desirable to reduce district boundary.
Meadowbrook - Limestone	7	6.2%	63%	Maintenance	Growth area; expect requests to expand Consolidated District (Manlius, Pompey, Dewitt).
Wetzel Road (1970)	3.7	3.3%	100% +	Consent order: Redesign & Replacement	Industrial growth potential
Brewerton (1974)	3	2.6%	50%	Maintenance	Some growth - much vacant land in district; agricultural district could inhibit trunk extension.
Total	112.95	100%			

Substantial growth of the system occurred during the 1980's when 64 pump stations and 100 miles of sewers were installed. Large lot frontages in newer suburbs are partly responsible for this rate of growth. Since 1990, annual growth has ranged from twelve and a half miles in 1993 to just over two miles in 1995, with an annual average of eight miles of new sewers and roads; this period was one of dramatic decline in residential construction.

With district consolidation in 1978, the County became responsible for 70 miles of combined storm and sanitary trunk and interceptor sewers in the City of Syracuse. These sewers are the oldest in the County system, some are over 95 years old, and will require ongoing maintenance and replacement. Sewer pipes have a 50 year design life and pump stations have a 20 year design life. Thus the sewers in Syracuse as well as those in the oldest suburbs are near or past design life.

# Wastewater Treatment System Capital Investment Needs

The County's regular maintenance and inspection program provides for cleaning and grouting of pipes. Major repair and replacement of sewers and pump stations are scheduled in the capital programs. The County's 1997-2002 Capital Improvement Plan (CIP) includes improvements to pump stations and trunk sewers; however, replacement must also be reactive to failure. Trunk sewer modifications, repair and/or replacement will affect 400 miles of the sewer trunk network and 66 combined sewer overflows.

The city's combined storm and sanitary sewers were designed to handle dry weather flow but cannot adequately carry storm runoff in periods of wet weather. This results in overflows at multiple points into Onondaga Creek and Harbor Brook, and thus the discharge of raw sewage directly into Onondaga Lake. Combined Sewer Overflow (CSO) improvements and remediation are part of the County's Municipal Compliance Program (MCP) and involve full-scale and pilot scale CSO technology demonstrations. The MCP will also entail installation of new trunk sewers along Onondaga Creek in Syracuse and separation of storm and sanitary in descrete sewer drainage areas. See Appendix No.1, for maps and a list of proposed MCP projects.

The wastewater treatment system represents the largest share of projected infrastructure needs in Onondaga County, totaling more than \$172 million, in addition to the Municipal Compliance Plan (MCP) and other projects which must be undertaken beyond the six year CIP time horizon. These projects, submitted as part of the 1997 Capital Program requests include replacement, repair and new construction of trunk sewers, replacement of or improvements to three wastewater treatment plants, replacement and upgrading of thirteen pump stations, improvements to some department buildings and some initial funds for Onondaga Lake reclamation. Most treatment plant projects stem from the need to meet federal standards which have become more stringent since plant design and construction. The capital program contains no funding for preventive maintenance which is financed in the operating budget.

Improvement of the water quality of Onondaga Creek, Onondaga Lake, the Oneida River and Seneca River is the major objective of the most costly projects: Metropolitan Syracuse, Wetzel Road and Oak Orchard treatment plant improvements, abatement projects for combined sewer overflows in Syracuse, and wastewater transportation improvements. The high costs of these projects combined with ongoing maintenance needs suggest the need for careful planning and location of future residential growth to minimize the use of the existing system.

# Wastewater System Capital Needs

# 1997 - 2002

Treatment Plants		Estimated Cost
Metro Plant Phase I and II		\$10,497,000
Metropolitan Plant Odor Control		7,716,000
Transportation System		47,011,000
Wetzel Road Sewage Treatment Pla	nt	52,037,000
Ley Creek Site Improvements		5,790,000
Drainage and Sanitation Laborato	ry	3,658,000
Oak Orchard Sewage Treatment Pla	nt	19,346,000
Onondaga Lake Reclamation		30,953,000
Computer Control/Information Sys	tem	8,900,000
Manlius Trunk Sewer Relocation		205,000
Fu	nd Total	\$186,113,000

### Revenue Base

Operating, maintenance, capital needs, and debt service for the sanitary district are financed through a unit charge (per housing unit or nonresidential equivalent), a user fee which must be approved annually by the executive and legislative branches of County government. This charge is currently \$216 per household and affects only those units which receive sewer service.

# Capital and Operating Budgets

Major capital expenditures are funded through general obligation bonds, against the full faith and credit of the County. Debt service for wastewater treatment projects is exempt from the County's constitutional debt limit, although credit markets exert limits on the County's ability to incur debt at levels well below the Constitutional limit. The Sanitary District has no capital reserve or sinking fund to meet prospective capital needs.

Capital items and maintenance projects costing less than \$100,000 are funded through the operating budget. The lack of contingency budgeting for emergencies and pressure to keep the unit charge as low as possible combine to threaten the effectiveness of this source of maintenance funding. Deferred maintenance is a problem at all treatment plants, due to competing County priorities. Presenting sanitary district user fees as a utility bill, separate from general County tax bills, would eliminate this negative impact on infrastructure funding. An increase in the unit charge of \$10 could raise over \$1,726,000 annually for capital expenses and maintenance.

## PLANNING FOR WASTEWATER TREATMENT

# Policy Alternatives for New Trunk Sewers

Alternative approaches for funding new trunk sewers include spreading the costs of all trunk sewers district wide, splitting the costs between the district and the town or developer, or requiring the developer to pay the entire costs for extensions. Each alternative presents different implications for control of County debt and development patterns. Spreading costs district—wide involves the widest possible constituency in the decision process but removes incentives for avoiding for inappropriate, expensive, risky, or premature development.

Requiring a town or developer to fund sewer projects, places the burden for inappropriate development on the closest decision-makers, but weakens the possibility of County-wide influence on suburban development patterns. Increasing developer costs may encourage development outside the district on community septic systems creating other long-term financial impacts for property owners, towns and the County.

Neither approach provides an explicit check on over-extension of infrastructure, given a stable population. Cost sharing between the district and towns or developers may be an alternative if financial and administrative arrangements and land development timing issues can be resolved. In any case the County needs agreement on a policy favoring development in areas where trunk sewers are available or near at hand to

prevent the over-extension of infrastructure. Failure to implement such a redevelopment policy will leave an aging system with a continually weakening tax base to finance maintenance and replacement. The burden of supporting a growing infrastructure will eventually outstrip the political and practical ability to raise necessary revenue.

# Comprehensive Sewerage Study

The Comprehensive Sewerage Study for Onondaga County, completed in 1968 by Camp, Dresser, & McKee, laid the groundwork for modernization of wastewater treatment facilities. Based on population trends of the late 1960's, and noting degradation of surface water quality due to inadequate sewage treatment in rapidly urbanizing areas, the study endorsed the County's efforts to centralize facilities in order to upgrade the degree and efficiency of sewage treatment.

In 1968, there were 29 municipal and private sewage systems serving 80% of the County's 473,000 people. Over 80% of the wastewater received only primary treatment. The comprehensive study recommended boundaries for five major service areas which were expected to have major growth by 2010. Another six service areas, some with projects in progress, were identified as having long-term needs. Projects were recommended for construction by 1970, 1990 and 2020. Recommendations for eliminating pollution from Syracuse's combined storm and sanitary sewer system were evaluated.

Original plans for a wastewater treatment system in Onondaga County were formulated at the height of population growth and projections of extensive growth of the system, particularly west of Syracuse were made. Service area limits on a natural drainage basis were outlined for Clay, Lysander, Van Buren, western Camillus, Elbridge, northern Marcellus and Skaneateles, as well as southern DeWitt and northern LaFayette.

### Need for Plan Update

The study did not anticipate the cessation of population growth which began in the early 1970's and continues through 1997, nor did it anticipate creation of the Onondaga County Sanitary District in 1978 or major treatment plant construction in the 1970's and early 1980's. Development patterns have favored northern and eastern suburbs but despite growth in household numbers, population has remained stable in size. There is a need to update the Comprehensive Sewerage Study based on development trends, new treatment plant capacities and effluent standards, and new knowledge and technology for private septic systems. Soils information and groundwater protection standards should be a part of this update as should County growth policies.

The Health Department's use of the Comprehensive Plan to determine the necessity for dry sewers in the subdivision approval process makes Plan update important for those building inside and outside of the consolidated sanitary district. Proximity to Sanitary District boundary and existing trunk sewers are among the factors used by the health department in the determination of the need for dry sewers. Sewer installation subsequent to original development is cost prohibitive; therefore, current policy is to require dry sewers at the time of development in anticipation of future service connections.

The community needs to delineate those areas which will be sewered within the next 20 to 30 years and rural areas which will not have sewers so that towns can require appropriate development patterns. Coordination of

public water service areas and sewer service areas, as a matter of policy, should also be pursued. A policy of directing development to areas with excess sewer and treatment capacity should be incorporated in an updated plan.

# WASTEWATER TREATMENT IN RURAL AREAS

# Health Department Responsibility

Provision for wastewater treatment in both urban and rural areas is regulated by the County Health Department, Bureau of Public Health Engineering. The department has a major role in determining which areas will become part of the public sewer system or smaller community systems, which areas will have on-site wastewater treatment systems, and which areas on the urban fringe may install interim on-site systems with dry sewers, pending connection to a community wastewater system.

Health Department regulation of wastewater treatment systems is governed by the County Sanitary Code, the State Sanitary Code, and the Environmental Conservation Law by delegation from the Department of Environmental Conservation. The New York State Realty Subdivision Law requires health department review of all subdivisions of five or more lots, whether the lot creation occurs at one time or over a number of years.

Health Department approval includes the design and installation of wastewater treatment systems as well as the location of septic systems and leach fields on each residential lot in relation to wells, lot lines, soil percolation, topography and direction of groundwater flow.

# Plan Approval Process

In the process of reviewing subdivision wastewater disposal plans, the Health Department seeks to answer two questions: Is a community wastewater system required? If so, is an interim on-site system allowable pending the availability of a community system?

A community wastewater treatment system is required by state regulations at a threshold of 50 residential building lots, and by County regulations and policy at 25 lots, whether or not the lots are in a single project, if area development density is sufficient. Community systems may be required 1) if the subdivision is located in an existing sewer district or a sewer planning area and has access to trunk sewers and 2) where soil and site conditions are not suitable for subsurface wastewater disposal, in the opinion of the County Health Commissioner.

# Dry Sewers

Where a community waste water system is required, an interim on-site septic system may be permitted, if soils are suitable, with concurrent installation of dry sewers. Dry sewers, not immediately hooked up to a public sewer system, are required concurrently with development because subsequent installation of sewers is cost prohibitive, at more than \$10,000 per lot, without financing charges. Costs can be even higher in areas with shallow depth to bedrock, seasonably high water table, and road

cuts. Home owners are usually unable to assume this cost burden because it was not factored into their anticipated costs of owning a house for twenty to twenty five years, at the time of purchase.

At the time of development, dry sewers cost about \$6,000 in addition to \$3-4000 for a septic system. Adequate initial investments by the developer, prevent the demand for public expenditures upon failure of onsite systems.

Subdivisions designed with sewers or dry sewers, generally have narrower lots than those designed for permanent on-site waste water systems. Active sewers eliminate the need to separate septic systems from lot lines and other features; narrower lots reduce front-foot costs for water lines, sewers, and roads. However, narrower lots decrease options to address septic system failure should a failure precede connection to the public sewer system. Complex long-range infrastructure planning is required by towns, developers, and the County to assure timely access to trunk sewers for areas developed with dry sewers. A better approach would be to guide new development to areas with infrastructure in place and to redevelop obsolete areas with excess infrastructure capacity.

# Community Wastewater Treatment Systems

A community wastewater treatment system serves more than one lot; the system may be publicly or privately owned. A community system can be designed for subsurface discharge or discharge into a receiving body of water, depending on local conditions.

The Onondaga County Sanitary District provides a public community wastewater system for the urbanized area. Small independent community treatment plants may be appropriate for locations within the Sanitary District which are remote from trunk sewers; and in rural locations where cluster development is designed to preserve open space. In either case, Health Department standards govern design and installation of community systems, with input from the Department of Drainage and Sanitation to ensure access for purposes of maintenance. The municipal engineer is responsible for inspection of the installation.

Such systems, with adequate design and maintenance, approach a 20-25 year life. Common leach field soils must be replaced much sooner if the system is not properly maintained; these costs will be borne by the homeowners.

Issues concerning private or independent community systems stem from the need for provision for long term financing and maintenance. General Municipal Law does not mandate public ownership and if a town refuses to create a sewer district, it may be asked to approve a system built by a developer and owned by a transportation corporation. Transportation corporations are subject to default and have not always proven to be reliable for operation and maintenance or for long-term financial support of community systems. The town becomes the owner of the system if a transportation corporation fails.

County policy regarding independent community treatment plants should seek long-term viability of the plants and protection of the County from eventual responsibility for such facilities. Recommended policies

include municipal ownership, through sewer districts, with a capital reserve fund for replacement and long-term programs for operation and maintenance.

### ON-SITE WASTEWATER TREATMENT SYSTEMS

In rural areas, on-site treatment of wastewater with septic tanks and leach fields depends on soil suitability for septage disposal as well as system engineering to protect groundwater and surface water quality.

In general, soils throughout Onondaga County have moderate to severe restrictions for on-site septage disposal. Restrictive soil conditions are most severe in the upland and valley areas in the southern towns and include: poor drainage - too little or too fast based on slope; poor absorption capability - too fast on sand and gravel aquifers or too slow as on glacial till and shallow depth to bedrock, seasonably high water tables, and wetlands or flood plains.

The Onondaga County Department of Health has developed a system of coding soils based on field experience and the Soil Survey of Onondaga County. The five soil categories—slight or moderate limitations, generally not suitable, totally unsuitable, bedrock limitations—are intended as a tool for early decision making in the land development process. Appendix 2 contains a map of the Town of Marcellus showing the distribution of soil's suitability for wastewater disposal. Marcellus is reasonably typical of the variety and distribution of soils in the southern part of the County.

Soils Suitability for Wastewater Disposal

CODE	LIMITATIONS	SUITABILITY FOR SEWAGE DISPOSAL
Green	Slight or moderate	Suitable, few limitations as to location or design
Yellow	Slow permeability, well or moderately well drained (seasonable water below 24" or between 12" and 24"  Slope greater than 15%, erodible soil	Suitable only in areas where percolation is satisfactory, may require drainage improvements or shallow installation.  May require design modifications.
	Shallow soils over bedrock	Suitability dependent on soil depth and percolation.
Orange	Very slow permeability, somewhat drained (seasonal water 6"-12")	Generally not suitable for conventional systems.
Red	Very poorly drained	Totally unsuitable.

A percolation test to check soil absorption potential is only one of many design tools in the analysis. An engineering evaluation which analyzes the predominant soils, slopes, drainage, water courses, wetlands and other

characteristics of the site is recommended for lots greater than five acres since percolation tests alone are not sufficient to design wastewater disposal systems.

Residents in Onondaga County's southern towns are generally dependent on a fractured bedrock ground water system. A malfunctioning septic system can lead to rapid contamination of ground water where there are shallow soils over rock fractures. However, poor water quality due to mineral concentrations has been a more frequent problem than bacterial contamination.

The Health Department does not routinely monitor septic system performance but responds to complaints. Documentation of poor quality or contaminated ground water leads to the requirement for public water prior to subdivision approval.

Onondaga County Water Authority and Syracuse Water District do monitor septic system performances around Otisco and Skaneateles Lakes which are public drinking water sources. Conversion of camps to year round homes along the Finger Lakes, has led to failure of previously adequate septic systems.

# Septic Systems and Residential Density

Installation of on-site wastewater treatment systems requires adequate lot size and frontage to permit protection of groundwater wells, and for eventual relocation of the system and the leach field when soils capacity becomes exhausted. Lot size requirements vary with topography, soils, drainage and dependence on public or well water.

In Onondaga County, most residential parcels with on-site wells, approved by the Health Department average more than one and one-half acres. Public water service areas with on-site wastewater systems may realistically require lots which are larger than the mandated 20,000 square feet due to soil conditions.

# Minimum Lot Sizes to Accommodate Septic Systems

Regulatory Code	Minimum Lot Size	Comments
New York State	20,000 sq. ft.	Difficult without sand or gravel soils.
Onondaga County	20,000 sq. ft. with public water	May be too small to permit leach field relocation, depending on soil classification.
	40,000 sq. ft. without public water	May be too small to permit leach field relocation, without public water, depending on soil description.

The most effective way to ensure proper lot size in rural areas would be to vary minimum lot size according to soil type. In practice, zoning ordinances have relied on an average minimum lot size that is too large for the best soils and marginal for poorer soils. The current recommended minimum lot size requirements is 1 acre and up for areas on septic systems Larger lots may be required depending on soil with private wells. conditions and groundwater availability. New York State is relatively weak in regulation of septic systems. States which are highly dependent on private septic systems and wells have found that large lots are necessary to protect groundwater quality and provide long-term potential for leach field relocation. However, excessive lot size and frontage requirements can directly affect both installation and long-range maintenance costs for sewers, water lines and local roads. Excessive lot sizes can cause a pattern of rural development that is wasteful of land, that produces inefficient settlement patterns, and that creates lots that will be unsustainable as rural populations age and people no longer wish to mow and maintain large acreage.

Local zoning requirements for residential density can be used to overcome weak state regulations and mitigate Health Department concerns for groundwater protection. Such coordination can reinforce County plans for sewer service by defining urban and rural areas in terms of the level of service, land subdivision patterns and residential density. For instance, in Tully two acre lots are required in the Tioughnioga aquifer while in Pompey and Onondaga glacial till soils have led to the adoption of two acre zoning for non-sewered areas.

There are other issues involving lot sizes: one acre is the minimum lot size for septic systems; one acre is also the maximum practical lot size for public sewers. It is difficult to assign lot size requirements for the areas which are within a sewer service drainage basin and within a mile of trunk sewers. A building lot which is too small will create a demand for premature extension of sewers; a lot which is too large will effectively prohibit the economic extension of sewers at any time.

The prevalence of poor soils for septage absorption suggests the eventual need for public sewers where public water is installed. In some locations, there is concern that on-site septic systems which have functioned adequately with private wells may fail with household conversion to a public water supply. Household water usage has increased as labor saving devices using water have become more common. However, in new houses, water usage is dropping because of mandated water-saving toilets, restricted flow shower heads and other water saving devices; water usage in new houses is down from 400 gallons per day to 250-300 gallons. Water usage seems to be higher for households with public water service than those dependent on well water, which is limited and uncertain in dry seasons thus encouraging conservation.

There is a need for education of homeowners who depend on septic systems about the need for system maintenance including periodic pumping. System failure can result in well water contamination and expensive relocation of the leach fields.

# Public Cost Implications

Public sewers represent the seemingly simplest but assuredly highest cost solution to residential wastewater disposal. Adequate lot size can forestall the demand for sewers in areas developed in advance of sewers. Larger lots are more expensive for home buyers but the trade-off is potential groundwater contamination or very expensive septic system designs. Cluster development presents an alternative to large lots in rural areas, if residential clusters are served by community wastewater treatment plants, funded through town sewer districts.

### SUBDIVISION PROCESS

New York State, Onondaga County, and most towns have requirements that relate to the subdivision of land for sale and development, in order to ensure that lots created for residential use conform to standards for protection of public health and welfare. A lack of uniform compliance with subdivision procedures, particularly for small subdivisions or very large lot subdivisions may be detrimental to purchasers of lots if public health issues are not part of the decision-making process.

State and County Realty Subdivision Laws require that all subdivisions of five or more parcels be approved by the County Health Department and filed with the County Clerk prior to sale or rental of any parcel. In many towns, subdivisions regulations require such approval and filing of all subdivisions of two or more lots. Other towns only require filing of larger subdivisions, and exempt lots of more than 5 or 10 acres.

Before accepting a map for filing, the Onondaga County Clerk requires endorsement by the Health Department, as a signature on an original plat Health Department consent indicates that the plat map has been reviewed and that water and sewage plans have been approved or that review is not necessary in particular cases. For plats creating only one or two new lots, Health Department consent can include a note to reference water and sewer plan approval on separate documents. This allows review of small subdivisions to ensure adequate potential for water and sewage systems, but does not require land owners to present water and sewage plans as part of the subdivision plat. For subdivisions which include more than two building lots, it is recommended that a plan be prefaced to include all the appropriate sewage disposal and water supply design Such plans will be reviewed by the Health Department in accordance with the same procedure that applies to those larger projects of five lots or more which are legally defined subdivisions under State and County regulations. Parcels greater than 5 acres should be subject to an engineering evaluation unless the lots are designated on the filed subdivision map as "remaining lands" or "not a residential building lot". An engineering evaluation analyses soils, slopes, drainage, water courses, wetlands and other characteristics of the site to provide assurance that a septic system can be located somewhere on the lot if a residential dwelling is ever constructed.

This entire process ensures that adequate consideration for water supply and waste water treatment is part of the decision process prior to municipal and County approval of plated lots. The purpose of subdivision approval is to preclude the creation of substandard or unsuitable lots which eventually lead to requests for variances or result in financial hardship to purchasers.

Concern arises when municipalities fail to require filing and Health Department review of small subdivisions, often with the intent of saving money for the property owner. It appears that most towns now regularly require that all subdivisions be filed, although some towns do exempt lots over a certain size or subdivisions under five lots from the process.

Failure to involve the Health Department in the subdivision process prior to municipal approval may save the applicant money in the short-term, but does not ensure protection of public health and may cost the community and future purchasers in the long-term. Standardization of this aspect of subdivision procedures would provide all buyers with public health protection, regardless of location.

# PLANNING ISSUES FOR WASTEWATER TREATMENT

Planning issues of major consequence for both municipalities and Onondaga County stem from the Health Department's regulatory function.

- Planning premises and maps upon which the Health Department bases decisions should be readily available to the public, municipalities, developers, planners and Onondaga County Water Authority.
- The planning areas from the 1968 Comprehensive Sewer Study are almost 30 years old, predating the consolidated district. The planning areas and the comprehensive sewer study need to be updated to reflect changes in sewage treatment capability, soils data, and development patterns. Likewise the Sanitary District boundary needs to be examined for possible revisions to better reflect current and desired future growth patterns.
- Delineation and mapping of areas which will benefit from trunk sewer extension, require dry sewers, or remain permanently dependent on septic systems would enable municipalities to adjust their residential densities through zoning, with the goal of ground water protection and maximum infrastructure efficiency.
- The extension of public water to most areas in the consolidated district and some areas beyond the district can create the expectation and need for sewers in the long-term.
- Future trunk sewer extensions should be prioritized and mapped to help define the geographical extent of requirements for onsite wastewater systems, dry sewers, and related land use controls. The intended timing of trunk sewer extensions

should be published to assist developers and municipal planners.

- The Health Department review procedures focus on regulatory control and permit approval, on a site by site basis. The department has had less support for area wide planning and control of impacts. For instance, a series of individual septic systems in the watershed of Otisco or Skaneateles Lake might meet all requirements, while the cumulative impact of the entire watershed development could be negative for public water supply sources.
- A 'bottom line' issue involves the distribution of public and private costs of development beyond the sanitary district. Private investment in adequate size lots for septic systems will forestall the need for public investment in emergency sewer extensions. Planning and review of all subdivisions may prevent the need for excessive private expenditures to retrofit a neighborhood with sewers and/or water. Adequate provisions for rural wastewater disposal, however, may offset the initial cost advantage of locating beyond the public sewer system.

### PLANNING PRINCIPLES FOR WASTEWATER TREATMENT

The options for wastewater treatment are related to development density and patterns, topography and soils, technology and community standards.

- Sewer systems should be designed to follow natural drainage patterns to minimize the need for pump stations.
- New service, when justified, should be extended on a rational basis, related to trunk sewer proximity. The Department of Drainage and Sanitation and a County infrastructure review team should be involved with the municipalities and developer in any preliminary discussions of potential new service.
- Municipalities should coordinate lot density and frontage requirements with County sewer service plans. Clear distinctions between acreage requirements for urban and rural service areas should be made.
- Extension of public water lines should be evaluated on the assumption that public sewer service will be required eventually and should be planned concurrently.
- Community wastewater treatment systems for cluster developments eliminate need for large lots, thereby preserving open space.
- Community wastewater treatment systems which are funded and operated through municipal sewer districts are appropriate, particularly for cluster developments in rural settings.

- Community systems can create difficulties when they are designed as temporary solutions, assuming extension of sewers within 5 to 10 years. Poorly designed temporary systems can present operating and maintenance problems.
- County standards for location, design, installation, operation and maintenance of community wastewater systems should be developed and implemented through the Health Department and the Department of Drainage and Sanitation.
- Privately owned and operated community wastewater treatment systems which serve individual subdivisions should be set up to insure their long-term viability and to protect the County and municipalities from any eventual financial liability in regard to these facilities.

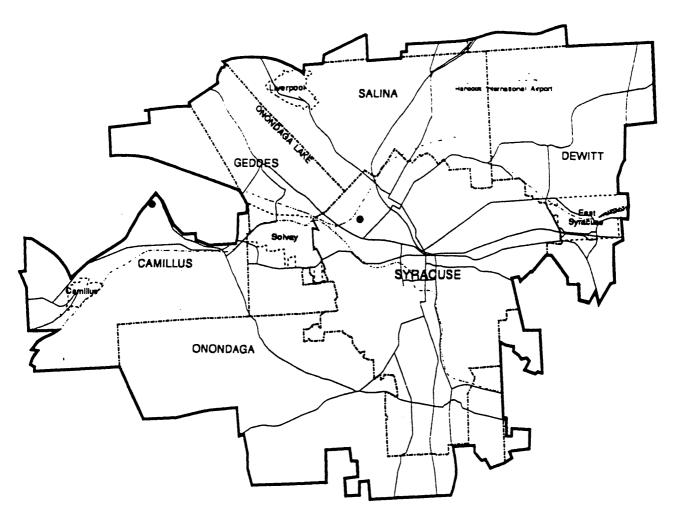
### SERVICE AREAS AND WASTEWATER TREATMENT CAPACITY

### Wastewater Treatment Process

The wastewater treatment process involves the operation and maintenance of six large wastewater treatment plants to produce high quality effluent which is in compliance with New York State Department of Environmental Conservation discharge permits. The capacity of these wastewater treatment plants and the need for future capital expenditures is related to the size of the area each plant services and the pattern of development within each service area. Two package plants - Greenfield Village and Harbor Heights - have been scheduled for replacement by pump stations.

The following material summarizes treatment capacity, capital needs and service area growth trends for the treatment plant service areas: Metropolitan Syracuse, Oak Orchard, Baldwinsville-Seneca Knolls, Meadowbrook Limestone, Wetzel Road, and Brewerton. Wastewater systems are owned by the Villages of Jordan, Marcellus, Minoa, Skaneateles, and Tully are not reviewed but do provide infrastructure for limited growth centers in rural areas of the County.

# METROPOLITAN SYRACUSE SERVICE AREA (METRO)



### Metropolitan Syracuse Service Area

The service area for Metro Plant is consistent with a natural drainage basin, permitting gravity flow, and eliminating the need for pump stations. Metro Plant provides 71% of the County's total sewage treatment capacity, serving Syracuse, Salina, northern DeWitt, Geddes, southeastern Camillus, northeastern Onondaga, and small areas in southern Cicero and Clay.

Despite loss of population and households in Syracuse, suburban growth added about 11,000 households and an estimated 15,000 people to the service area over the last two decades. Syracuse, Salina, Geddes and DeWitt are largely built up but substantial opportunities exist for residential and commercial redevelopment.

Bristol-Meyers Squibb has begun a pretreatment of its wastewater which is expected to reduce conventional pollutants to typical domestic sewage concentrations; this will translate into a reduction in the Metro influent loading of approximately 25%.

Trunk sewers have been extended to the West Hill portion of Camillus during the early 1990's and this area is available for development. The town also encourages development in the area around Van Buren Road. Town sewer capacity will limit development potential is some locations although there are numerous locations to accommodate anticipated growth.

In the Town of Onondaga, where there are large tracts of vacant land within the Sanitary District, development has averaged 88 units a year since 1980. The Onondaga Hill area is relatively remote from the interstate highway system, which may affect its growth potential. Townwide, there is a backlogged approval of approximately 700 residential lots within the sanitary district so that a number of years growth can be easily accommodated in approved subdivisions.

Metro Plant's treatment capacity is expected to increase by about 5 mgd due to improvements outlined in the Municipal Compliance Plan and decreased loadings due to industrial pretreatment.

# Metropolitan Syracuse Wastewater Treatment Plant (Metro Plant)

Constructed 1959/1979

Importance 70.7% of County Sewage treatment capacity

Design flow 80 million gallons per day (mgd)

Average daily flow 74.9 mgd (1996)

Percent capacity 94% capacity

Removal of major

pollutants

92%

1996 permit compliance 8,271 tests, 38 violations

Condition Good to Poor

Other facilities

Laboratory
Regional Sludge Dewatering Facility

Sewer Maintenance Facility

Planned investment An odor control project to be completed in 1997

will enclose wastewater at odor intensive locations, capture of air above the wastewater, and treat malodorous compounds prior to emission to the atmosphere. Improvements will benefit surrounding areas particularly Lakefront

developments.

Service area Syracuse, northern DeWitt, Salina, Geddes,

central and eastern Camillus, northern Onondaga,

southern Cicero and Clay

The proposed Municipal Compliance Plan outlines major improvements to Metro Plant and the combined sewer system in Syracuse; these improvements will increase the quality of effluent discharged from the system. The Combined Sewer Overflow improvements will result in major investments along Onondaga Creek, Harbor Brook, and Ley Creek including regional

treatment facilities, new transmission sewers, and sewer separation in some drainage basins.

# Greenfield Village Wastewater Treatment Plant

Constructed 1968

Importance .075% of County treatment capacity.

Design flow 100,000 gallons per day

Average daily flow 72,000 gallons per day. (1996)

Percent capacity 72%

1996 Permit compliance 1054 tests analyzed, 44 violations

Removal of major pollutants 95%

Condition Aging facility

Planned investment Replacement with a pump station by 1998

Service area Neighborhood, Camillus

This plant is programmed for replacement by a pump station by 1998 which will direct effluent to the Metro Plant.

# OAK ORCHARD SERVICE AREA

### Oak Orchard Service Area

A trunk sewer and force main (3,500 feet) along Caughdenoy Road was completed in 1988, opening up substantial acreage to suburban development south of Route 31. Although approximately half of this plant's service area is north of Route 31, Route 31 represents the current northern limit of suburban development according to Town of Clay policy. The town's plans call for development of usable parcels south of Route 31 prior to extension of town sewer districts to the north. The service area also includes part of Woodard Industrial Park north of Buckley Road, where substantial developable acreage exists.

Oak Orchard Wastewater Treatment Plant currently receives effluent from the Wetzel Road Service Area due to capacity limitations at the Wetzel Road Plant. Should the Gaskin Road pump station diversion of flow from Wetzel Road service area become permanent, large amounts of vacant land north of Route 31 will also be added to this service area. Currently, proposals for residential and commercial development north of Route 31 are being evaluated by the Town of Clay. Lack of town sewer districts is the primary impediment to premature extension of growth.

Major decisions on treatment plant improvements for both Oak Orchard and Wetzel Road facilities will determine the potential in this growth area. Wastewater flow from both plants currently exceeds plant ability to consistently comply with discharge permits.

# Oak Orchard Wastewater Treatment Plant

1980 Constructed

8.8% of County treatment capacity Importance

10 mgd Design flow

5.9 mgd (1996) Average daily flow

59% of design capacity Percent capacity 100% of effective capacity

Removal of major pollutants 99%

1996 permit compliance 3,248 tests, 16 violations

Extensive modification of treatment process Condition

is required to bring plant to 10 mgd

capacity.

\$3.3 million for process modification, Planned investment

solids stabilization, odor control

Service area

Town of Clay north of Route 481 and Gaskin Road area; Town of Cicero - south of Route

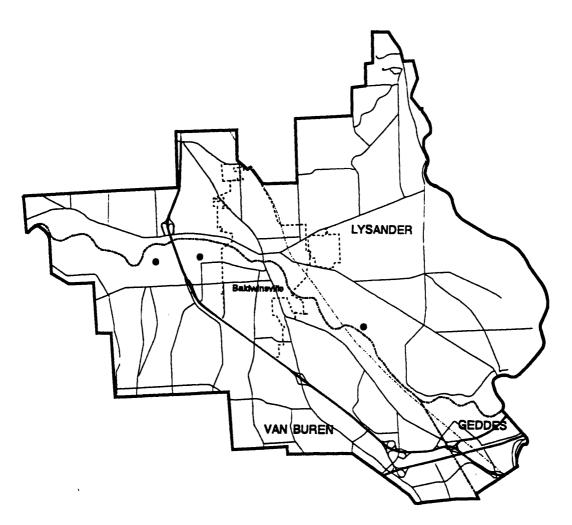
Comprehensive Plant Evaluation, Blasland, Bock and Lee, June, 1990 Recent studies

The Oak Orchard Wastewater Treatment Plant has encountered operational problems which require use of chemicals and modification of the design process. Potential operation at design capacity is questionable; current flows at 50% of design capacity represent 100% of effective treatment capacity to achieve permit compliance. Removal of major pollutants is marginally effective, and permit compliance is achieved through chemical additions which are very expensive.

Flow diversion to the Oak Orchard Plant from the Wetzel Road service area through the Gaskin Road pump station (5.3 mgd capacity) was initiated in January, 1990. This flow diversion is reversible, pending capital investment decisions for both the Wetzel Road and Oak Orchard treatment plants.

Two ongoing experimental trials are being conducted to improve plant operations. A nitrification trial was conducted in 1995 and in 1996 which successfully demonstrated that the nitrification process could be "jump-started" at the beginning of the nitrification season thereby bringing the plant effluent into compliance with seasonal ammonia limits. A polymer trial is being conducted to determine the most cost effective way to replace an existing dry polymer system at the plant.

# BALDWINSVILLE-SENECA KNOLLS SERVICE AREA



### Baldwinsville-Seneca Knolls Service Area

Large portions of Lysander and Van Buren are included in the Baldwinsville-Seneca Knolls service area, but significant areas are not served by trunk sewers.

In Lysander, sewers extend west just beyond Baldwinsville. The distance from existing trunk sewers makes extension of service west of Route 690 difficult. The Health Department anticipates that a larger area outside of Baldwinsville will eventually be sewered. The expansion of public water along River Road to West Phoenix and west on Lamson Road suggests the eventual demand for public sewers there.

Trunk sewers do not serve much of Lysander's southeastern peninsula; there are no sewers south of Barbara Lane on Route 370. NYS Agricultural District No. 4 along Route 370 complicates the projection of demand for trunk sewers in this area. This has led to the installations of dry sewers along with septic tanks in two subdivisions and to three community treatment plants in other subdivisions. The community treatment plants create a potential long-term problem for the Department of Drainage and Sanitation, due to the lack of sufficient manpower to service these facilities.

In Van Buren the eastern third of the town is in the consolidated sanitary district; sewer service exists east of Route 690. West of Route 690 the Harbor Heights subdivision is served by a 31 year old treatment plant which operates at 72% of capacity. The proposal to replace this plant with a pump station directing flows to the Baldwinsville Seneca Knolls Plant could facilitate development west of Route 690. Design of pump station capacity and interceptor sewers should be related to Van Buren Land Use Plan.

Land surrounding Thruway Exit 39 and Route 690 is a prime economic development area. Plans to extend sewers to this area have been discussed with the town but are not finalized.

A thorough evaluation of the consolidated district boundary and publication of proposed timing of trunk sewer extensions would facilitate integration of land planning, land use controls and infrastructure planning in Lysander and Van Buren.

# Baldwinsville-Seneca Knolls Wastewater Treatment Plant

Constructed 1981

Importance 7.9% of County treatment capacity

Design flow 9.0 mgd

Average daily flow 4.0 mgd (1996)

Percent capacity 44% Removal of major pollutants 97%

1996 permit compliance 3,152 tests - 5 violations

Condition Good

Planned investment Regular maintenance

### Baldwinsville-Seneca Knolls Wastewater Treatment Plant

The Baldwinsville Seneca Knolls Wastewater Treatment Plant operates very effectively, receiving less than half of design flow. Possible diversion of flows from the overloaded Wetzel Road plant service area via the Sawmill Creek pump station have been considered. Based on current growth rates, the Baldwinsville-Seneca Knolls Wastewater Treatment Plant's capacity should be adequate through 2010.

# Harbour Heights Wastewater Treatment Plant

1966 Constructed

.13% of County treatment capacity Importance

150,000 gallons per day Design flow

108,000 gallons per day (1996) Average daily flow

72% Percent capacity 85% Removal of major pollutants

1996 permit compliance 1,054 tests, 10 violations

Overloaded, needs to be replaced due to age Condition

\$4.673 million for replacement with a pump station and Route 31 interceptor sewer, Planned investment

pending town cooperation

Harbor Heights in Van Buren; further hook-Service area

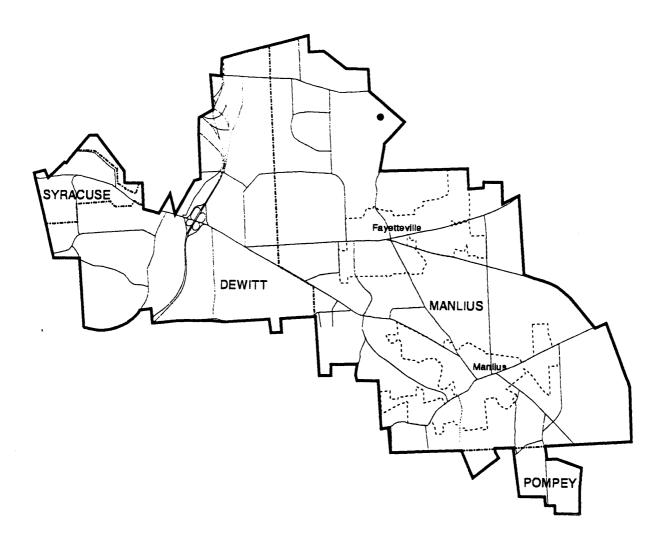
ups would jeopardize the performance of

this plant.

### Harbour Heights Wastewater Treatment Plant

Harbour Heights Wastewater Treatment Plant was constructed to serve a single residential subdivision; but is now owned and operated by Onondaga County. The plant is 31 years old and overloaded on a daily basis at 133% of design capacity. Plans call for replacement with a pump station and Route 31 interceptor sewer to the Baldwinsville-Seneca Knolls Treatment Plant. Discussions between Onondaga County and the Town of Van Buren are underway to resolve the issue.

# MEADOWBROOK LIMESTONE SERVICE AREA



# Meadowbrook Limestone Service Area

Residential growth in Manlius was strong in the 1980's but has declined somewhat in the 1990's. Some residences in the area are still served by septic systems, although most have public water. Further extensions of public water and sewer service beyond the current Sanitary District boundary in southern DeWitt and Manlius are being considered. Plans for sewer and water should consider the limited highway capacity between the Village of Manlius and employment centers in and around Syracuse.

The Village of Minoa retains ownership of its wastewater treatment plant and made major improvements in the 1990's. Growth in the village has been minimal although there are proposals for modest development on the south side of the Village.

# Meadowbrook-Limestone Wastewater Treatment Plant

Constructed 1972

Importance 5.8% of County treatment capacity.

Design flow 6.5 mgd permit limit.

Average daily flow 4.9 mgd (1996)

Percent capacity 70% Removal of major pollutants 94%

1996 permit compliance 3,248 tests, 10 violations

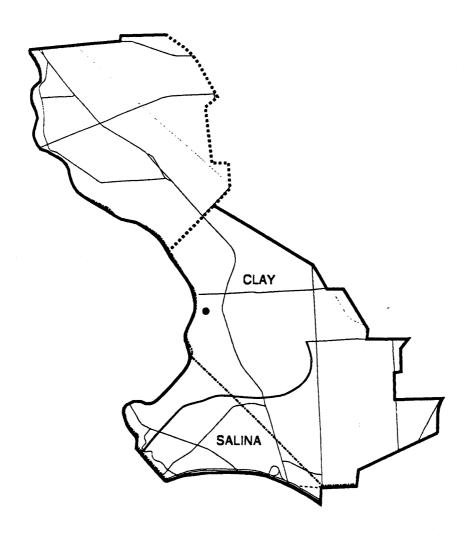
Condition Good; equipment is aging

Eastern Syracuse, DeWitt, northeastern Pompey (small area) Service area Manlius,

# Meadowbrook Limestone Wastewater Treatment Plant

The Meadowbrook-Limestone Wastewater Treatment Plant operates at almost 70% of design capacity. Capital improvements for sludge dewatering, and miscellaneous improvements have recently been completed. This plant is 25 years old and preventive maintenance will be increasingly important.

# WETZEL ROAD SERVICE AREA



# Wetzel Road Service Area

The Wetzel Road service area includes western Clay from Verplank Road south to the Thruway in northwestern Salina. The area is undeveloped between Verplank Road and Route 31, except for large scale retail uses along Route 31. Most of the area south of Route 31 is either in residential use or in the process of being developed. Woodard Industrial Park along the eastern side of the service area includes both manufacturing and wholesale uses as well as a number of large developable parcels. Due to limitations in treatment plant capacity, waste water from Gaskin Road north is directed to the Oak Orchard Treatment Plant.

### Wetzel Road Wastewater Treatment Plant

Constructed 1970

Importance 3.1% of County's treatment capacity.

Design flow 3.5 mgd

Average daily flow 2.8 mgd (1996)

Percent capacity. 80% Removal of major pollutants

1996 permit compliance 2,138 tests, 8 violations

Condition Poor; effective capacity needs to be

upgraded to 7.0 mgd.

Capital projects

Plant replacement.
Interim measures to reduce violations: construction of chemical storage and feed buildings; cleaning and repair of two anaerobic digesters; installation of a new

influent screen rake.

Service area Route 57 corridor and Woodard

Industrial Park south of Buckley Road.

Alternate projects

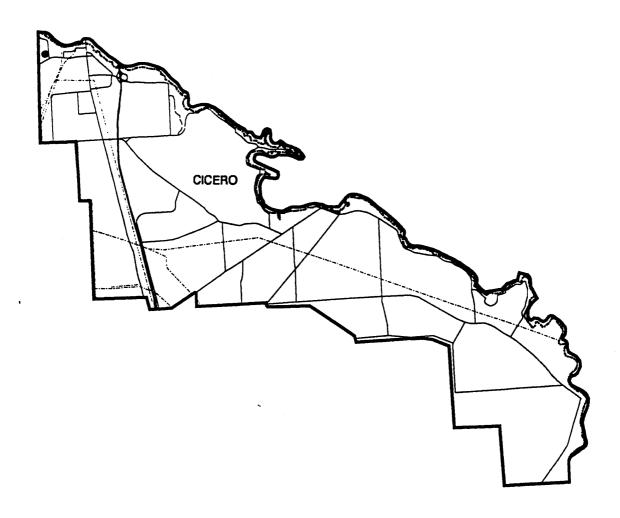
Permanent diversion of flow to the Oak Orchard Plant from Gaskin Road area; potential diversion to Baldwinsville-Seneca Knolls via Sawmill Creek pump station.

# Wetzel Road Wastewater Treatment Plant

The Wetzel Road Plant was placed under consent order in 1988 due to violations of discharge permits. A number of interim steps have been taken to reduce violations, including diversion of Gaskin Road area flow to the Oak Orchard Plant. Once new effluent limits have been established by NYSDEC, a comprehensive facility evaluation can be scheduled.

Location of this plant in a flood plain restricts potential for expansion (although some treatment processes can be accommodated on this site) and raises the issues of continued diversion to Oak Orchard Plant and possible future diversions to the Baldwinsville Seneca Knolls Plant.

# BREWERTON SERVICE AREA



# Brewerton Service Area

The Brewerton Wastewater Treatment Plant serves the northern part of the Town of Cicero, particularly along Oneida Lake shore. The primary motivation for construction of this facility was improvement in water quality for Oneida Lake. Residential growth is occurring northeast of the hamlet of Cicero; commercial proposals are also being considered. Industrial growth along Pardee Road and Route 81 is currently served by the Oak Orchard treatment plant, despite its location within the Brewerton service area.

Service has been extended to the Town of Hastings in Oswego County, where customers pay the unit charges plus a 25% surcharge for a maximum of 50,000 gpd capacity. Requests for service extension east along the Oneida Lake shore into Madison County have been refused by the Onondaga County Legislature.

# Brewerton Wastewater Treatment Plant

Constructed 1974

Importance 2.7% of County's capacity

Design flow 3.0 mgd

Average daily flow 2.0 mgd (1995)

Percent capacity 67%
Removal of major pollutants 88%

1996 permit compliance 2,190 tests, 6 violations

Condition Good

Planned investments Regular maintenance/minor modifications

Capital projects Mechanical sludge thickening, odor control

Service area Cicero-Oneida Lake shore, south to Route 31

# Brewerton Plant Operations

Unless nitrogen removal is required, capacity at the Brewerton treatment plant will accommodate growth through 2010. Capital project proposals include sludge thickening facilities to reduce the volume of sludge trucked to the Metro Plant and odor control improvements.

### RECOMMENDATIONS

# Sanitary District

A County-wide policy is needed on extension of the service area in the Onondaga County Sanitary District. This policy should be based on a review of the existing district's boundary, its function, the need to prioritize sewer extensions, realistic growth assumptions for the county and areas within the county, and environmental impacts of such extensions.

### Trunk Sewers

- A policy on funding of trunk sewer extensions needs to be developed and implemented.
- A mechanism is needed to ensure orderly extension of trunk sewers especially in relation to county and municipal development plans and needs.

# Coordination of County, Town and Developers

• The Department of Drainage and Sanitation needs to be involved in the earliest discussions of new development and redevelopment proposals for water service, sewer service and major private construction of subdivisions.

# Coordinated Development Reviews

• The Coordinated Development Reviews of major public and private development proposals should be continued to achieve a unified County policy response.

# Updated Comprehensive Sewer Plan

- The Department of Drainage and Sanitation should undertake an updated Comprehensive Sewerage Plan to:
  - -coordinate facility investment with growth trends
  - -to fund maintenance and replacement needs
  - -to upgrade aging treatment plants
  - -to guide capital planning.

# Limitations on Sewage Treatment Capacity

- Only three treatment plants Baldwinsville-Seneca Knolls, Meadowbrook-Limestone and Brewerton - have effective capacity to accommodate additional development.
- Wetzel Road treatment plant and Metro Plant are under DEC consent order for upgrading capacity and meeting more stringent effluent limits.
- Final decisions on the Municipal Compliance Plan are expected to increase treatment capacity at Metro Plant by 5 mgd., assuring the continued ability to support residential and economic growth within the service area.

# Coordination of Land Use Plans and Sewer Investment Plans

 Coordination of municipal land use plans and zoning with sewer service plans is essential to achieving control of development patterns and optimizing timing of development and public infrastructure investments.

# Geographic Information system

When fully developed, the County's geographic information system will permit those with responsibility for sewer system planning and facilities maintenance to coordinate information, to use information in other County data bases, to maintain upto-date map files.

# DRAINAGE AND FLOODING

Flooding of various magnitudes is a recurring event in the major stream basins of Onondaga County. Both flood location and magnitude interact to create conditions ranging from nuisance situations to major property damage. Since 1950 suburban development has expanded in Onondaga County and the amount of flood damage has increased substantially. Documentation of the County's growing flood problems is provided in a series of Flood Plain Information reports prepared for various stream basins by the Buffalo District, U.S. Army Corps of Engineers, in the 1970's.

A major reason for these increases in flooding has to do with the sequence in which development occurs. Urban development usually begins at the lower elevations along valley floors. These areas offer the least hindrance to construction. Much of the City of Syracuse and most of the villages in Onondaga County were built on lowland sites, or were developed adjacent to streams in order to take advantage of cheap water power and water transportation. When development expands into the higher elevations, the resulting increased runoff can overload the capacity of the original drainage systems located downstream.

Eventually, steps must be taken to correct these problems, like the Syracuse flood control project developed by the Corps of Engineers in 1950. At that time the Corps undertook a massive flood control project for the City of Syracuse, constructing the Onondaga Creek Flood Control Dam on the Onondaga Nation Territory, and channelizing most of Onondaga Creek within the City limits.

### FLOOD DAMAGE POTENTIAL

### Flood Studies

Major flood events are relatively rare and are measured as 100 year, 50 year and 10 year events indicating decreasing severity. A review of recent flood history is relevant to understand the impact of these periodic events. In 1972, Tropical Storm Agnes caused widespread flooding along the shores of Onondaga Lake and in the flood plains located along the Seneca-Oneida River Barge Canal System, including the south shore of Oneida Lake. A report on flood damages caused by Tropical Storm Agnes within the Oswego River system was published by the Corps of Engineers in August 1973.

In the eastern suburbs of Onondaga County, <u>Flood Plain Information</u> reports were prepared for Butternut Creek in DeWitt and Manlius, for Ley Creek in Salina and DeWitt, for Limestone Creek in Manlius, and for Chittenango Creek near Bridgeport. In the western suburbs, <u>Flood Plain Information</u> reports are available for Ninemile Creek in the Towns of Marcellus, Camillus and Geddes.

Additional studies have been conducted by Onondaga County's Department of Drainage and Sanitation for several urban and suburban streams in and adjacent to the City of Syracuse. These include the Meadowbrook basin in Syracuse and the Town of DeWitt, the Beartrap-Ley Creek basin in Syracuse and the Towns of Salina and DeWitt, the Harbor Brook basin in Syracuse and the Town of Geddes, the Bloody Brook basin in the Town of Salina and Clay, and for Cold Brook in Syracuse and the Town of Onondaga.

While many people are aware of flooding and have noticed that it is becoming an increasing problem, it is difficult to find hard data regarding the incidence and severity of drainage and flooding problems within the County. The worst period of flooding in recent history occurred during the years 1972 to 1976, when the Syracuse area annual rainfall exceeded 50 inches for five years in a row, compared to the normal annual average rainfall of 35-36 inches. Most of the all-time records for peak discharges in area streams and maximum flood elevations in area lakes were established during this five-year period, which began with the arrival of Tropical Storm Agnes in June of 1972.

The report on flood damages caused by Tropical Storm Agnes, compiled by the U.S. Army Corps of Engineers, Buffalo District, in 1973, estimated that total agricultural damages in Onondaga County amounted to \$1.7 million, while property damage to residential and commercial properties amounted to \$900,000, or a total of \$2.6 million in damages. These flood damage estimates applied to the Seneca-Oneida River systems and to flood damages along the shores of Oneida, Onondaga, Otisco and Skaneateles Lakes. They did not, however, document flood damages caused by upland streams, such as Limestone and Ninemile Creeks, nor on local drainage problems which caused widespread flooding throughout Onondaga County.

According to disaster relief requests submitted to the Onondaga County Office of Emergency Preparedness, the following communities suffered the greatest dollar damages due to flooding in 1972: the Towns of Clay, Manlius, Pompey, and Cicero, and the Villages of North Syracuse, Minoa, East Syracuse, and Baldwinsville. Disaster relief assistance was also provided to Onondaga County's Department of Drainage and Sanitation and the Department of Transportation to repair flood damages incurred by County roads, culverts and sewer collection systems. Several road sections and sewer trunk lines were washed out by the flood waters.

In comparison to the \$2.6 million in flood damages attributed to Tropical Storm Agnes, the Corps estimated that during the 1960's and early 1970's the average annual flood damages amounted to \$280,000 in residential losses, and less than \$10,000 in agricultural damages for the Seneca-Oneida River system.

Most of the communities which were seriously flooded in 1972 were flooded again during the severe rainstorm of July 3, 1974. This time, however, Syracuse was hardest hit, when approximately 1,000 residents were temporarily evacuated from the city's south side until the flood waters subsided. The 1974 storm flooded neighborhoods adjacent to Harbor Brook, Onondaga Creek, West Seneca Turnpike, Cold Brook and Meadowbrook.

While some of the flooding caused by the 1974 storm occurred within known flood hazard areas such as Harbor Brook, where 200 residents had to be evacuated, there were also considerable flood damages outside the boundaries of identified flood plains. The Harbor Brook flooding resulted in creation of a special district for portions of the City of Syracuse and the Town of Geddes, and the construction of a flood detention basin adjacent to Velasko Road.

Flood damages along the Hudson Street neighborhood of Onondaga Creek were attributed by the City Engineer to a combination of the creek overflowing its banks and the inability of the City's storm sewer system to discharge the approximately four inches of rainfall which deluged the area. Residents had to be evacuated from an area covering approximately 15 city blocks in the vicinity of Onondaga Park and Kirk Park, some of which were clearly outside the 100-year flood boundaries.

Similar flooding problems have occurred in the Villages of Solvay and North Syracuse, even though the Federal Emergency Management Agency (FEMA) flood hazard maps indicate that these villages do not have identified flood plains within their boundaries. Localized flood damages that occur outside the 100-year flood plain can at times exceed flood damages that occur within identified flood plains. This results when new subdivisions in the upper region of an urban/suburban watershed increase both the rate and the total volume of stormwater runoff from areas which previously absorbed or detained the flows; the incresed flows can then exceed the capacity of the existing drainage system in downstream communities.

### Recent Flood Events

During 1993 and 1994 heavy spring rainfalls caused localized flooding which was particularly severe along the Seneca and Oneida Rivers and along Onondaga and Oneida Lakes. Onondaga Lake Park had to be closed for a time during 1993 in order to clean up debris from flooding and the International Rowing Association competition was cancelled because of cleanup operations. Oneida Lake was hit by 2 floods of 100 year flood magnitude during the years 1993 and 1994 and with much damage to camps, homes and businesses along the shoreline.

Onondaga County has moved to respond to this recent flooding by shifting the mission of the Onondaga County Disaster Preparedness Office from civil defense to natural disaster response, including storm and flood damage. Emphasis is on preparations (sand bags, equipment and supplies) at the municipal and county level prior to flood disasters. The County Executive has also appointed a Citizens Flood Advisory Committee to provide advice directly to county officials concerning steps needed to reduce flood damage along major waterways. The NYS Canal Corporation manages the NYS Barge Canal System which drains the 5000 square mile Eastern Oswego River Basin including Onondaga County. Structures which affect drainage and regulation of the system include dams and locks and hydroelectric facilities within the canal and dams on feeder lakes and reservoirs.

# Stormwater Risk to County Facilities

Stormwater damage is obviously not limited to personal property alone. Onondaga County and local governments have large investments in capital facilities, such as roads and sewer facilities, that are vulnerable to flood damage. Frequent wet weather events have exacerbated water quality problems in the County's urban areas, particularly in the older sections of Syracuse where sanitary and storm sewers are combined. When the combined storm and sanitary runoff exceeds sewer capacity, untreated sewage passes directly into Onondaga Creek, Harbor Brook, and other tributaries of Onondaga Lake. The County is working to solve the combined sewer overflow problem as part of its plans to improve the quality of Onondaga Lake. Water quality degradation is also a problem in some older suburban wastewater systems where flooding has periodically overloaded their sewer system capacities.

### Wetland Conversion

The conversion of wetlands to urban land is a likely cause of increased stormwater problems in several areas of Onondaga County, although most of the wetland conversions occurred prior to passage of New York State's Freshwater Wetlands Act in 1975. Wetlands serve as natural flood detention basins, and they also act as either recharge or discharge systems for both surface and ground waters.

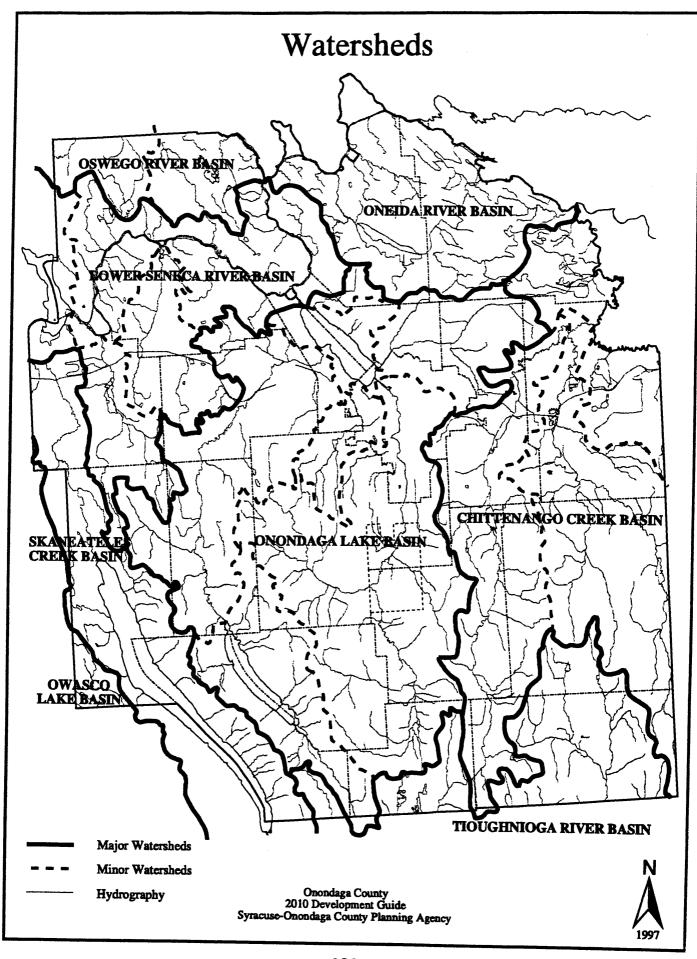
Concerns over the cumulative loss of freshwater wetlands were expressed by the Onondaga County Environmental Management Council in a 1985 publication entitled Wetland Permit Review Policies. State and federal regulations continue to protect wetlands, especially the national "no net loss" policy in regard to wetland areas. The Environmental Management Council has taken a strong position against development or filling of those wetlands which are also located within 100-year flood plains. Examples include the wetland systems associated with Limestone Creek, Butternut Creek, Mud Creek, Chittenango Creek, and the Seneca River, among others.

### Lack of Flood Control Planning

A common problem is the lack of long-range municipal plans for controlling and reducing flood damages. An exception and good example of a comprehensive local stormwater management plan in Onondaga County is the Volmer Creek Master Plan prepared for the Town of Cicero in 1988. This management plan notes that overland runoff is increased as open land is converted from woods and meadows to residential development. As a general rule, residential developments double the amount of stormwater runoff and triple the peak discharge rate. This increase in runoff, if not planned for, is what causes the damage in downstream areas.

The <u>Volmer Creek Master Plan</u> addresses stormwater problems within this 2½ square mile watershed by describing the basin's hydrologic characteristics, proposing a stormwater management plan that evaluates both present and future development scenarios, and proposing a financing plan that will allocate certain capital costs for engineering, land acquisition and construction in advance of the anticipated development. The plan proposes to recover some of these capital costs by collecting drainage fees from new construction as development proceeds within the Volmer Creek drainage basin. This plan is unique in that the entire basin is within a single town, and the study was a town initiative.

One advantage of the basin-wide planning approach is that a municipality can reduce maintenance costs and improve the efficiency of drainage detention basins by providing for fewer but larger basins. Such storm drainage facilities, including detention basins, require regular maintenance to ensure that they will continue to work as well as when first installed. Improper maintenance practices or lack of maintenance can result in damage from relatively insignificant storms.



While the technical means for reducing flood damages are available, effective stormwater management is hampered by the municipal boundaries. Town boundaries impose legal and jurisdictional constraints on the ability of a municipality to control development and to provide for the installation of suitable stormwater drainage facilities throughout drainage basins which cross municipal boundaries. Unless a watershed is located entirely within one town or city, the municipality has relatively little control over development upstream that will contribute to flood problems in the downstream community.

# Drainage Facility Funding

Since 1976, several municipalities have undertaken drainage improvement projects with the assistance of federal funding through the Onondaga County Department of Community Development. These are federal cost-sharing monies obtained through the U.S. Department of Housing and Urban Development (HUD).

Funding for specific flood control projects may also be available on a cost-sharing basis for local municipalities through section 205 of the 1948 Flood Control Act, which is administered by the U.S. Army Corps of Engineers. The Villages of Manlius and Fayetteville had considered projects in the early 1990's under this program but both projects are on hold. The Village of Manlius has undertaken some minor stream improvements on its own such as riprapping, removing shoals and stream bank treatment.

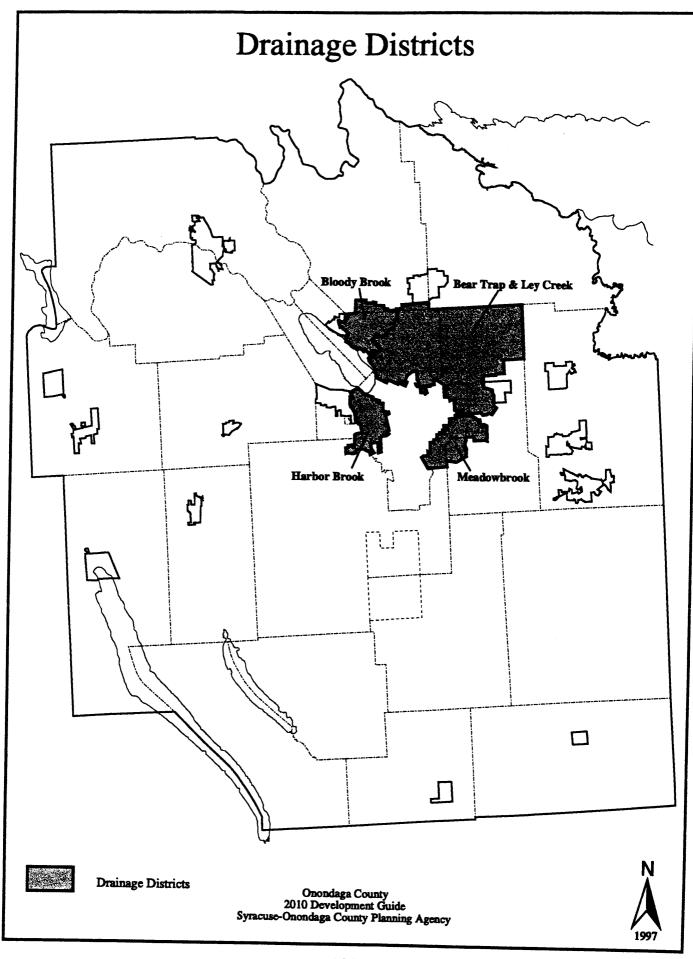
# EXISTING DRAINAGE DISTRICTS

Recurrent drainage problems in and adjacent to Syracuse led to the creation of four special districts for drainage during the mid-1960's and 1970's administered by the Onondaga County Department of Drainage and Sanitation.

These districts were established for the Beartrap Creek-Ley Creek basin north and east of Syracuse, the Bloody Brook basin adjacent to Liverpool, the Meadowbrook basin on the City's southeast side, and the Harbor Brook basin on the west side, adjacent to Geddes. All of these areas had recurrent flood problems which were solved to a considerable extent by the construction of improvements such as flood retention basins and improvements to creek channels and stormwater collection systems.

The four special districts were created not as part of a comprehensive flood management effort, but came in direct response to several chronic seasonal flooding problems. Three of these special districts apply only to a portion of the affected stream basin, and current flood protection activities are limited primarily to maintenance of the district drainage facilities.

Those flood problems which occur outside the four drainage districts are generally referred to town and County highway departments for remediation. These departments are limited in their capacity to bring about drainage improvements, except in those few situations where a flood problem can be solved by replacing an undersized culvert or drainage channel with a larger one.



The County Legislature considered establishment of a County-wide drainage district in the mid-1970's to expand existing drainage improvements throughout the County. A consulting engineer firm was directed to investigate recurrent drainage problem areas in Onondaga County (see attached map). However, concerns over the cost and legal ramifications County responsibility for all drainage problems prevented implementation. The Onondaga County Department of Drainage and Sanitation has encountered legal roadblocks in previous years when it attempted to expand financing of drainage district improvements to encompass the entire contributing stream basin. A case in point is the Harbor Brook drainage basin, a watershed encompassing nearly 9,000 acres in the City of Syracuse and the Towns of Geddes and Onondaga. In 1981, Onondaga County constructed the Harbor Brook flood detention facility in order to provide flood protection to properties on either side of Velasko Road within the Town of Geddes and the City of Syracuse. Although, approximately half of the Harbor Brook watershed is located in the Town of Onondaga in an area undergoing residential development, New York State courts ruled that Onondaga County could not assess upstream residents for the cost of providing needed flood protection facilities downstream.

The current legal interpretation requires that only flooded properties contribute to district costs, and excludes any form of assessment on properties outside the district but within the drainage basin. Onondaga County appealed the court decision, but received a negative ruling. This case points out the inherent difficulties faced by both local and County governments when they attempt to solve flooding problems which transcend municipal boundaries.

# PREVENTION OF WATER QUALITY DEGRADATION

The federal Clean Water Act amendments of 1987 require greater emphasis on water quality issues associated with stormwater management. In New York State, all storm water discharges associated with industrial activity from a point source and from certain construction activities must be authorized through the administration of the State Pollutant Discharge Elimination System ("SPDES") program. The program requires that a storm water pollution prevention plan be developed by the operator of each facility or for construction activity at each site covered by the SPDES permit. Discharges permitted under this act must maintain water quality and not contribute to a violation of water quality standards.

Nonpoint source pollution is the contamination of lakes and streams caused by surface runoff from land surfaces, farmlands and urban/suburban development. Flood events can cause increased runoff, in both urban and rural areas and lead to the degradation of the quality of receiving waters. In urban areas, runoff may pick up debris, oils, pet wastes and contaminate receiving waters. In rural areas, runoff can carry agricultural fertilizers, manure, and fermented silage into receiving waters which can lead to excessive nutrient loads, fish kills and bacterial contamination.

New York State's Management Program intends to use a watershed planning process that addresses nonpoint source problems and makes recommendations for the control of each nonpoint source category. It will be up to each municipality to determine how best to incorporate nonpoint source controls with municipal stormwater management plans and policies. Communities may eventually be required to monitor the water quality of stormwater discharges.

National Flood Insurance Program

Between 1973 and 1975, nearly all of the municipalities in Onondaga County decided to join the National Flood Insurance Program (NFIP) administered by the Federal Insurance Administration, and subsequently incorporated under the Federal Emergency Management Agency (FEMA). This program enables municipalities to offer federally-subsidized flood insurance to residents, provided that the communities adopted comprehensive flood protection ordinances which regulated new construction in identified flood hazard areas.

Once a municipality joins the NFIP, all residents have the option to purchase subsidized flood insurance regardless of their location (in or out of identified 100-year flood zones) within the community. Federal law requires purchase of flood insurance when new construction occurs in the flood plain, or whenever a property transaction takes place involving federally guaranteed loans or mortgages in flood hazard areas.

National Flood Insurance Program has developed a new Community Rating System (NFIP/CRS) which allows municipalities to offer lower flood insurance rates if the municipality agrees to implement various designated measures for controlling flood damages. The more measures that they adopt, the lower the insurance rates based on a CRS point scale.

The federal law requires communities to determine the number of structures located within the 100-year flood plain, and makes it possible to obtain records of the number of flood insurance policies sold in any municipality. These flood insurance records are maintained by the Bureau of Flood Protection in the New York State Department of Environmental Conservation, which publishes a periodic summary of flood data entitled "Status of National Flood Insurance Program", including data for Onondaga County municipalities.

#### Flood Data

The flood insurance data provides a record of total flood insurance policies sold, the value of these policies, the number of claims since 1978 and the dollars paid in claims since 1978. A summary of flood insurance data for the towns and villages in Onondaga County is provided in the following table.

Status of Flood Policies Sold in Onondaga County
June 1993

		Total	Total Dollars
Community	Total	, \$ Value	Paid Since
Name	Policies	(1,000's)	1978
Towns			
Camillus	24	1,499	900
Cicero	169	10,892	326,754
Clay	80	5,003	66,596
DeWitt	34	6,541	293,932
Elbridge	11	550	2,444
Fabius	2	75	0
Geddes	5	609	6,556
LaFayette	10	726	0
Lysander	51	2,826	138,308
Manlius	123	6,458	112,860
Marcellus	10	463	8,178
Onondaga	55	3,007	159,225
Otisco	11	904	1,229
Pompey	8	472	31,155
Salina	10	1,002	2,972
Skaneateles	11	997	0
Spafford	2	104	0
Syracuse	89	2,247	37
Tully	8	655	0
Van Buren	40	2,088	73,385
Villages			
Baldwinsville	42	1,819	83,156
Camillus	14	516	7,648
East Syracuse	13	1,367	4,160
Fayetteville	77	3,870	161,814
Jordan	21	1,123	13,717
Liverpool	8	792	5,504
Manlius	48	3,549	21,312
Marcellus	7	401	13,117
Minoa	68	3,280	0
Skaneateles	5	919	497
Solvay	0	0	5,883
Tully	5	206	0

The communities with the highest dollar value of flood insurance policies in effect in June 1993 include the towns of Cicero, Clay, DeWitt, Manlius, the City of Syracuse, the Village of Fayetteville, Village of Manlius and Village of Minoa.

#### Flood Risks

- Localized drainage and flooding problems occur in nearly all of the municipalities in Onondaga County. Localized flood damages that occur outside the 100-year flood plain can exceed total flood damages within identified flood plains for some municipalities.
- County government has major investments in capital facilities such as roads and sewer facilities that are susceptible to flooding. Increased private investment as well as capital investment by the County - particularly sewage treatment facilities - is vulnerable to flood damage.
- Based on the dollar value of flood insurance policies in effect in 1993, the Onondaga County communities at highest risk for flood damages include the villages of Fayetteville, Manlius and Minoa, plus the towns of DeWitt, Cicero, Manlius, Clay and the City of Syracuse.

### County Drainage Districts

- Onondaga County has established four drainage districts in urban and suburban areas within and adjacent to the City of Syracuse. Large capital investments have significantly reduced recurrence of flooding within those districts.
- Previous studies of proposals for expanding County-administered drainage districts should be reviewed with consideration of public and private investment at risk.
- At the present time, County drainage districts cannot legally charge residents outside the district but living within the stream or watershed basin for the costs of providing flood protection within a designated district.

#### Flood Insurance

• Nearly all of the municipalities in Onondaga County participate in the National Flood Insurance Program administered by the Federal Emergency Management Agency (FEMA). Federally subsidized flood insurance is available to all of the residents in Onondaga County except in the Village of Fabius, which has not been designated as a flood-prone community.

# Constraints on Drainage Basin Management

While the technical means for reducing flood damages are available to Onondaga County municipalities, effective stormwater management is hampered by legal and jurisdictional constraints. No mechanism exists to guide drainage planning across municipal boundaries in developing areas.

### Water Quality Impact of Floods

- Flood events can exacerbate water quality problems in streams and lakes, particularly in urban areas such as in the City of Syracuse where sanitary and storm sewers are combined rather than separated.
- Flood events can also increase the runoff of agricultural fertilizers, manure and fermented silage, which can lead to excessive nutrient loads, fish kills and bacterial contamination in receiving streams.

### Municipal Responsibility

- Municipal regulation of land development includes the responsibility to undertake appropriate stormwater planning and require adequate facilities for stormwater management.
- Intermunicipal cooperation on drainage basin plans is encouraged by state legislation and should be pursued by municipalities.
- Preservation of wetlands particularly within the 100 year flood plain is encouraged to provide flood storage capacity; such preservation combined with careful consideration of flood plain land use will decrease unanticipated investments in areas likely to be exposed to flood damage.
- Parks and natural areas for passive recreation are appropriate wetland and flood plain uses.

# **TRANSPORTATION**

Transportation systems in Onondaga County are diverse; they provide linkages between activity centers and define the locations of those centers by providing access to them. Transportation facilities are essential to attract, retain, and expand centers of economic activity.

Today's global economy dictates the need to maintain adequate regional, interstate, and international links. International and interstate transportation seems well addressed in the Syracuse area with interstate highways going to all four points of the compass, carrying regular intercity bus service in all four directions; the Conrail mainline and the Hancock International Airport permit access to major international transfer points.

The movement of people and goods using the highway system is basic to a community's economic activity and essential to many aspects of modern life. Movement of goods includes the transport of both raw and finished materials to and from manufacturers and markets. Movement of people for economic purposes includes employees, service providers and customers. Beyond economic activity, the movement of people for recreation, school and a whole range of social interactions is a basic characteristic of current lifestyles.

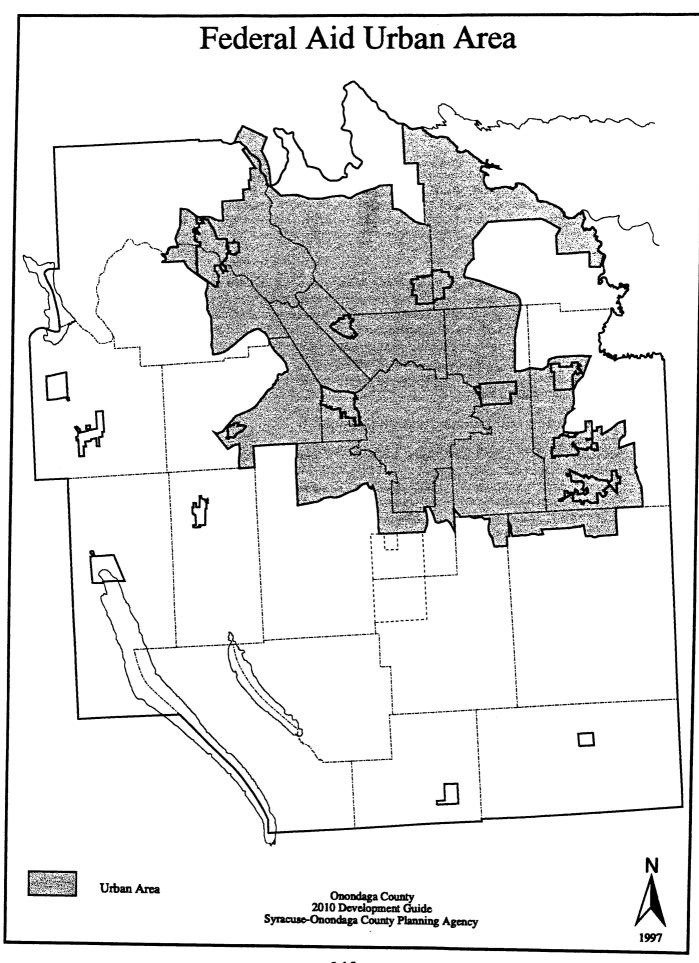
This section is divided into two parts:

DEMOGRAPHICS AND TRAVEL DEMAND focuses on changing population characteristics and travel habits; HIGHWAYS addresses the relationships among road function, jurisdiction, regulation of land abutting roads, highway maintenance and construction needs, and demand for highway capacity increases. Primary emphasis is on Onondaga County's highways within the community's highway network. However, many transportation issues are so interwoven that much of the discussion will be relevant and applicable to the state and municipal levels as well.

Onondaga County's roads provide service to both urban and rural areas. Transportation issues for each area differ only by magnitude. The following map depicts the boundary between the urban and rural areas of Onondaga County and was prepared in 1990 by the U.S. Department of Transportation to help establish transportation funding priorities. Urban and rural destinations cut across levels of governmental jurisdiction and highway function. This boundary adds geographic perspective to the complex of highway issues confronting the community.

# DEMOGRAPHICS AND TRAVEL DEMAND

Since 1970 the County population has declined by 1%, while total vehicle miles travelled has increased an estimated 30%. Highway usage and travel demand on the highway network are shaped by land use patterns and by demographic characteristics such as aging, decrease in household size and geographic dispersion.



# Travel Demand Factors Onondaga County

	1960	<u> 1970</u>	1980	1990
Population	423,028	472,835	463,920	468,973
Households	124,090	145,322	165,677	177,973
Motor Vehicle Registrations	167,389	239,481	297,753	349,918
Registrations Per Household	1.3	1.6	1.8	2.0
# Households with				
0 vehicles	22,825	24,260	23,842	24,303
1 vehicle	78,455	76,884	70,242	64,066
2 vehicles	20,437	38,122	53,713	66,945
3+ vehicles	2,368	6,056	17,880	22,584

Source: Syracuse-Onondaga County Planning Agency

Changes in traffic volume, gasoline sales, employment and other factors were correlated by NYS Department of Transportation to provide an estimate of the travel demand within the state. Onondaga County is comparable in travel patterns to the rest of the central New York area, where despite annual fluctuations of traffic, there has been a steady growth in traffic of 2-3% per year since 1970.

# Motor Vehicle Availability

Motor vehicle registrations in Onondaga County have increased by 46% since 1970. In 1970, 44,178 households (30% of the total) had two or more vehicles available. By 1990, two or more car households increased to 89,529, or 50% of the total. During the same period, the number of households with only one vehicle declined and households with no vehicle remained the same.

# Demographics

Many factors explain the increase in auto availability and highway travel. Aging of the baby boomers has increased the number and proportion of adults in the population. Dual income households are increasingly common. Women in the labor force in Onondaga County have increased from 57,600 in 1960 to 113,400 in 1990; in 1990 women comprised 47% of the workforce. The number of work related trips per household has increased due to these employment and related lifestyle changes.

# Land Use and Density

Land use patterns shaped by housing market and zoning interact with demographic trends to contribute to highway travel demand. Decreasing housing density due to suburban growth of almost exclusively single family construction on large lots, has resulted in significant growth of the urban area. The typical residential lot has increased over time from 4,000 square feet to 20,000 to 1 acre or more. Many Syracuse neighborhoods have 4,000 square foot residential lots - standards generally acceptable for the first half of this century. During the 1930's suburban development began to extend into towns where the minimum lot size became 5,000 to 10,000 square feet. In the 1960's and 1970's, the lot size increased to 10,000 - 20,000 square feet. Average lots in

the 1980's and 1990's tend to be at least 20,000 square feet and some towns require a minimum lot size of two acres or more.

Trends in residential lot size are motivated by market demand, environmental constraints and community character. Yet this pattern requires increasing amounts of land, inhibits the effectiveness of mass transit, diminishes pedestrian options and fosters a greater reliance upon the automobile.

### Retail and Employment Center Dispersion

Employment, shopping and cultural services are no longer concentrated exclusively in downtown Syracuse. Both work and non-work trip patterns reflect increasing travel between suburban sites; for example, in 1990 44% of all work trips were to the City of Syracuse while 51% were to suburban town destinations (the remainder were to out of county locations). Traffic flow and congestion are becoming more widespread as residents go to employment sites located in suburban office or industrial parks and to suburban shopping centers.

#### Mass Transit Trends

One way to reduce congestion and thereby reduce the need for highway capacity expansion is to reduce the number of vehicles using the road. This can be accomplished by increasing the number of persons per vehicle on the road through carpooling, ridesharing, and transit. These alternatives also provide mobility for the young, the handicapped, the elderly and the poor for whom private automobiles are not an option.

The viability of transit is related to population density. The population density of Syracuse in 1950 was nearly 9000 people per square mile and transit was heavily utilized and successful. By 1970 population density in the city had fallen 11 percent and commercial urban transit had fallen on hard times. In 1990, the city's population density is approximately 6500 people per square mile, and bus service survives only with heavy public subsidies.

The most densely developed towns such as the older suburbs of Geddes and Salina, have population densities below 2600 people per square mile; this density is 40% of the density in Syracuse and less than a third of what the city had when transit was a commercial success. The northern and eastern suburban towns have overall population densities of 1200 people per square mile or less, although some portions of southern Clay and western Dewitt, may achieve densities similar to Salina and Geddes. At two residential units per acre (20,000 sq. ft. minimum lots), the maximum achievable density is 2500 persons per square mile. With continued scattered development and the tendency towards even larger lots, achieving a density capable of supporting transit is unlikely.

Bus ridership has seen a nearly continuous drop over the last thirty years due to increased auto ownership and decreasing development densities. Mass transit depends upon high density development to yield large numbers of people traveling to the same areas in order to fill buses and make transit financially practical. Low density development disperses travel over a much larger area, makes the formation of groups with common travel patterns more difficult, and increases travel times.

#### Centro Passenger Counts

1980-81 15,177,617 1990-91 13,071,633 1995-96 10,555,590

Source: Syracuse Metropolitan Transportation Council

Certainly there is still a role for bus service in serving commuter trips to the high density employment centers such as downtown Syracuse and University Hill. In Syracuse where densities remain comparatively high general mobility can be provided by bus service. In suburban areas where mass transit can provide little in the form of general mobility, the individual automobile will remain the preferred method of travel.

### Other Transportation Modes

Provisions for pedestrians and bicyclists, have been widely overlooked in prevailing design of the suburban environment. However, the 1990 Census reports that more people walk to work in Onondaga County than use public transportation, which suggests that provisions for pedestrians should not be overlooked. Many roads in suburban Onondaga County are without sidewalks which discourages walking due to safety concerns. Bicycling, while affected by serious weather limitations, is a popular recreation activity and to a lesser degree a transportation alternative. The lack of local collectors and connections between subdivisions often forces cyclists onto main thoroughfares.

The central New York region is generally well served by regional bus operators, passenger rail, and airports. However, the central passenger rail and bus terminal facilities in the Syracuse area are substandard. The passenger rail station is located in an eastern suburb with poor connecting transportation services. The current downtown bus terminal is inefficient and in need of replacement. The new Transportation Center adjacent to the Regional Market and the P & C Stadium should answer many of these deficiencies.

### **HIGHWAYS**

The predominate choice of travel mode for residents of Onondaga County is the automobile. In view of this fact and Onondaga County's ownership and maintenance of some 800 miles of highways, this section will focus on the highways with particular attention to County responsibilities for roads.

Jurisdiction and Functional Class

#### Jurisdiction

There are approximately 2,927 miles of public roadway in Onondaga County. This network is managed by New York State, Onondaga County and 35 local governments. The State owns approximately 16% or  $455\pm$  miles, including interstates and other major regional routes. Onondaga County owns about  $806\pm$  miles or 27% of the total system including secondary arterials, collectors, and local roads. The remaining 57% of the system includes

1,660 miles of roads and streets managed by the City of Syracuse, the towns, and villages.

Jurisdiction of Roads Within Onondaga County

<u>Location</u> Towns	Mileage 2,295	<pre>% Local 49%</pre>	<pre>% County 34%</pre>	<u>% State</u> 17%	Total	
Villages City of	218	78%	8%	14%	100%	
Syracuse	414	94%	0%	6%	100%	
Total	2,927	57%	27%	16%	100%	

Source: Syracuse-Onondaga County Planning Agency

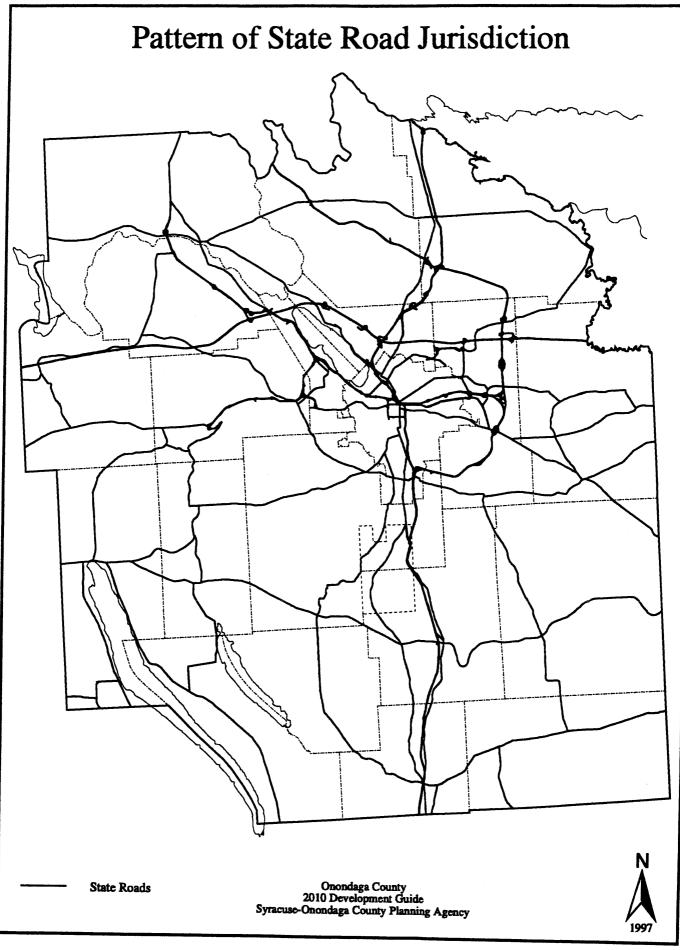
The percentage of municipal roads is generally highest within the urban area. County owned roads are found in the towns and villages but not in Syracuse and evolved from a farm to market system of roads established in the 19th century. The County road system does not exhibit a predominate pattern. The State roads are distributed throughout the County and connect the City to villages, hamlets, and other regions of the State.

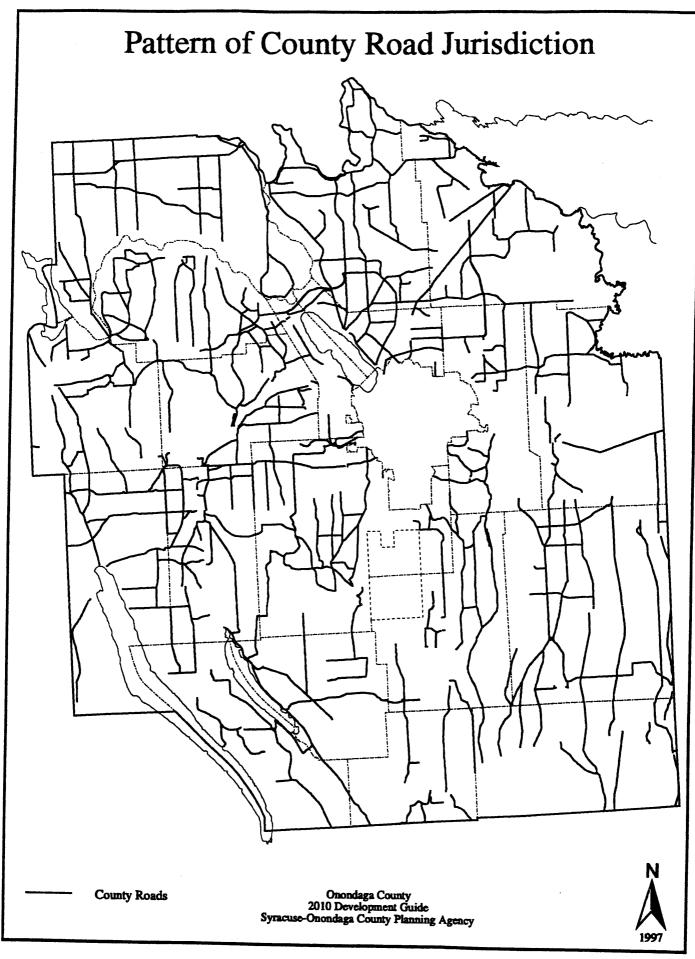
APPROXIMATE CENTERLINE MILEAGE 1960-1990

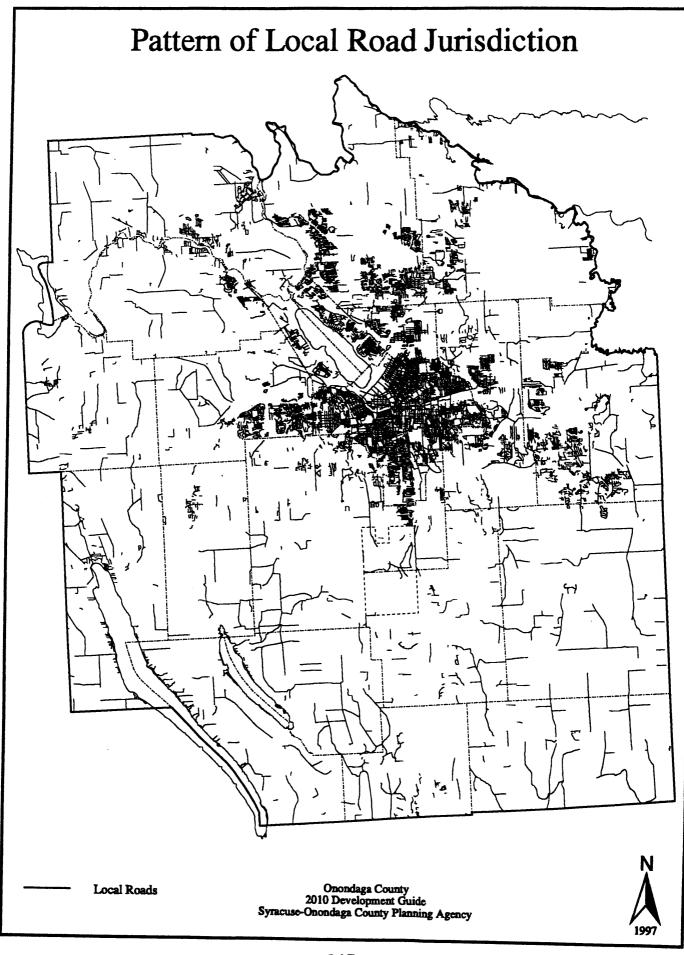
Jurisdiction	<u> 1960</u>	1970	<u>1980</u>	1990
City of Syracuse	385	385	388	388
Villages	155	155	160	170
Towns	805	930	1,008	1,108
County	785	805	803	806
State	380	390_	455	<u>455</u>
Total	2,510	2,665	2,814	2,927

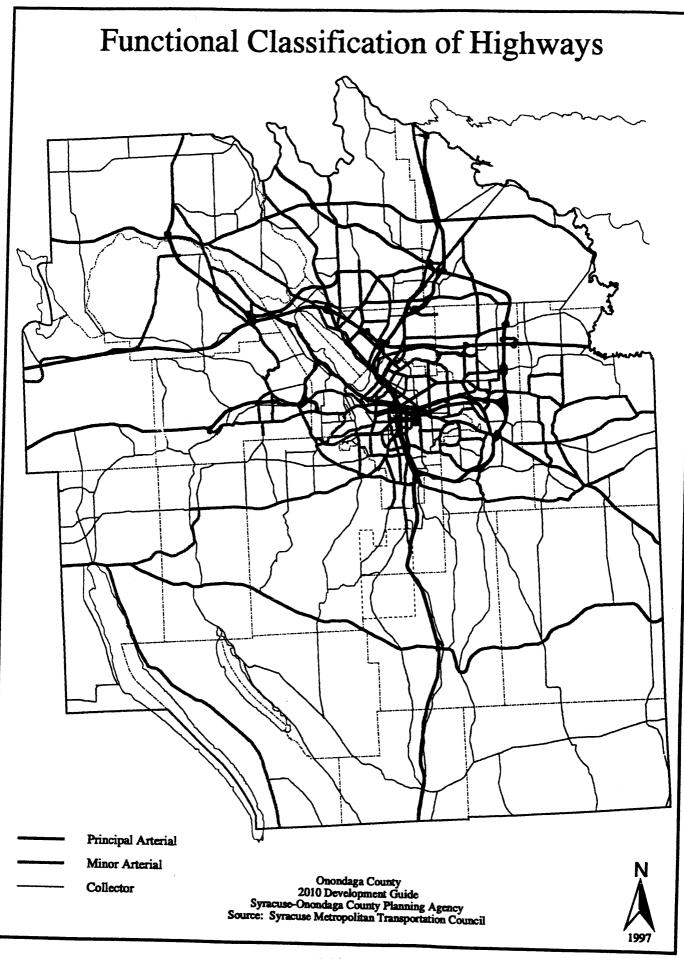
Source: Syracuse-Onondaga County Planning Agency

The highway network in Onondaga County has grown by approximately 400 miles since 1960. Growth was focused in two areas - the interstate and high speed arterials owned by New York State and approximately 300 miles of town roads built primarily for residential property access. The combined City, village and County road systems have grown by less than 3%.









#### Functional Classification

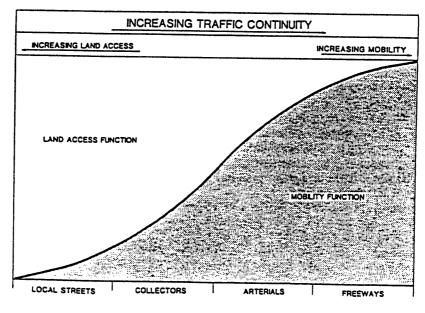
Functional classification of highways consists of three types of roads - arterials, collectors and local streets - based on traffic mobility and property access characteristics. All roads perform both traffic mobility and property access functions, in varying proportions. Traffic mobility is the ability to carry high volume traffic at high speeds; access is the ability to enter and leave the road in order to reach abutting land. The systematic differentiation of these two highway purposes is accomplished by classifying highway as arterials, collectors and local streets.

Arterials provide for continuity of travel promoting relatively long trips into and through an area. Connections are provided to centers of activity such as business, shopping and residential districts; access to land is clearly secondary to high volume movement of vehicles.

Collectors receive and distribute traffic between arterials and the local road system. Volumes, trip lengths and speed are generally lower than arterials and access to abutting lands may equal through movement of vehicles in importance.

Local roads promote access to abutting lands and place secondary importance on traffic flow. Trip lengths, speed and traffic volumes are usually low reflecting proximity to a collector or a destination.

The following chart demonstrates how mobility and access exist in varying proportions on different classes of highway. At the extremes, freeways are designed to carry high speed, high volume traffic and permit no land access; local streets carry low volume, low speed traffic and have driveways every 50-100 feet, and frequent intersections. Arterials and collector roads should balance both medium volumes and speeds with relatively frequent land access; a heavy reliance on traffic controls-stop signs and traffic signals — is often required to maintain the balance between access and mobility for arterials and collectors.



HIGHWAY FUNCTION CHART

The share of traffic volume carried on a class of roads is usually inverse to the percentage of mileage in that class.

Expected Travel Activity by Functional Class

Class	% of Total Travel	% of Total Mileage
Arterials	40-65%	15-20%
Collectors	5-10%	10-15%
Local Roads	10-30%	35-60%

Source: Syracuse Metropolitan Transportation Council

# Relationship between Functional Class and Jurisdiction

Ideally the level of government covering a broadest geographic area should be responsible for those highways which serve regional travel needs and carry traffic between localities. Local government should be primarily responsible for local streets. Currently there is little direct relationship between the function of many County roads and County jurisdiction, due mostly to historic precedent. The following chart summarizes the distribution of roads within Onondaga County by functional class and jurisdiction.

Onondaga County
Estimated Mileage By Functional Class
1988

			-URBAN AREA			RURAL ARI	EA
Juris- diction	Freeways	Arterial	Collector	Local	Art	Collect	Local
State	90	109	19		115	116	6
County		145	82		139	225	215
Local			30	1184			450
Total	90	254	131	1184	254	341	671

Source: Syracuse-Onondaga County Planning Agency

The share or percentage of roads with a given function that each level of government maintains in Onondaga County indicates the relative highway role of that level of government. New York State manages the high volume, high mobility routes, while local municipalities own low mobility, high access roads. Onondaga County and Syracuse have jurisdiction of most roads between the ends of the spectrum, encompassing a greater variety of functions than either the state or municipal government.

Distribution of Road Mileage by Jurisdiction by Functional Class 1988

		UR	BAN		RUR	AL	-
Jurisdiction	Freeway	Arterial	Collector	Local	Art	Collect	Local
NYS (16% of total)	100%	43%	14%	0	45%	35%	18
Onondaga County (27% of total)	0	57%	63%	0	55%	65%	32%
Local Government (57% of total)	0	0%	23%	100%	0	0	67%
Total	100%	100%	100%	100%	100%	100%	100%

Source: Syracuse-Onondaga County Planning Agency

Based upon the expected levels of travel for each functional class, Onondaga County and New York State roads accommodate most of the travel activity within the County. Over half of the arterials and 65% of all collectors are County roads.

Analysis of the distribution of roads by function within each jurisdiction, shows that most state roads are arterials, most municipal roads are local, and that County roads serve both functions.

Distribution of Road Function Within Jurisdictions
Onondaga County

	State	County	Municipal
Mileage	455	806	1666
Arterial	72%	36%	0%
Collector	25%	38%	2%
Local	3%	26%	98%
Total	100%	100%	100%

Source: Syracuse-Onondaga County Planning Agency

County highway regulatory policies and funding programs must reflect the diversity of characteristics of County roads. County highway responsibility includes nearly 400 miles of roads which have been identified as candidates for takover by municipal governments, as these roads principally serve to provide access to abutting land and provide little County-wide traffic mobility. County funds which are expended on the maintenance of these roads are funds which are not available to maintain commuter roads and arterials which do provide county wide traffic service.

Development along County roads is subject to local land use controls which may be incompatible with characteristics of regional traffic. Without careful coordination of land use and site design with highway function, a locally approved land use pattern may destroy the highway's capacity for high volume traffic mobility. Conversely, growing traffic volumes can destroy neighborhood desirability over the long term.

Opportunities to build new roads to serve growing County-wide travel demand are severely restricted by the lack of funds from all sources and by lack of land for new highway right-of-way within the urban area. Therefore preservation of the traffic mobility function on existing collectors and arterials is extremely important. Onondaga County exercises control over limited aspects of County roads; the County controls access, drainage, and activity within the right-of-way in order to protect safety, pavement and drainage systems. Control of land use, site design, adjacent site drainage and speed limits lies with municipalities and New York State.

Intermunicipal cooperation will be needed to achieve highway corridor planning and protection. In reviewing and approving new local roads, municipalities will need to consider impacts on the overall highway system. A properly designed local road system can reduce the number of purely local trips that need to use arterial or collector roads. An enhanced system of local collectors, in both subdivisions and office and industrial parks, will help prevent overloading County collectors and arterials with local traffic, will provide pedestrians and cyclists with safe options, and will help limit the need for numerous signalized access points between the local and arterial systems.

Local streets should be designed to provide optimal intersections with collector and arterial roads to permit safe, signalized access where necessary. Reverse front developments, where lots front on local streets and provide no direct access to major roads, should be encouraged in order to minimize points of interruption of traffic on major roads. Extra lot depth and building setback along major highways can serve as a buffer space between traffic and adjacent land use, as well as provide space for future road widening without excessive relocation and condemnation costs.

State and County Departments of Transportation in conjunction with municipalities should agree upon a functional classification system of roads in each municipality. This classification system should be used to define funding priorities, access policies, and land use patterns and regulations for various types of roads. The cooperative efforts of the Departments of Transportation in granting access permits and the municipalities in controlling land use should be used to preserve the functional capabilities of primary roads.

Local control over development can also be used to protect and enhance road right-of-way. Many County roads are either 3 rods (49 feet) or 4 rods (66 feet) in width depending on the date of original construction. Current design guidelines call for a minimum right-of-way of 80 feet for two lane roads and 125 feet for four lane roads in order to provide for shoulders and drainage systems. Donations of right-of-way at the time of development along major roads should be encouraged by towns. In addition, developers should be required to install curbs, covered drainage and

sidewalks along major roads in appropriate suburban locations to enhance safety.

Preserving the Existing Capital Investment in County Highways

In 1996, Onondaga County will invest approximately \$34,000,000 in its highway system. This investment provides for the range of activities needed to maintain, operate and improve County roads.

### Onondaga County Road Maintenance Budget, 1996

Administration and Engineering Services/Overhead	\$ 2.7
Road Maintenance Equipment	5.3
Snow Removal	6.7
Maintenance; Labor and Materials	4.3
Major Improvements; Labor and Materials	5.4
Debt Service	9.6
	\$34.0
	(million)

Source: Onondaga County Department of Transportation

Maintenance and major improvement programs directly address the physical condition and operating capacity of County roads and together with road maintenance equipment and engineering account for approximately 60% of the highway budget. Until 1989, general obligation bonds provided the primary funding for these two programs; secondary sources included federal or state aid. In an effort to improve fiscal management and reduce debt service, the County now strives to reduce bonding and attempts to increase funding of maintenance activities in the annual operating budget.

# **Highway Improvements**

Highway improvement projects are organized into seven programs:

- Repaving Program. This ongoing program is designed to protect the County's investment in its highway system. Approximately 32 miles of highway are selected annually to be repaved with hot and cold mix asphalt concrete.
- Traffic Systems Management. This ongoing program is designed to upgrade intersections to improve traffic flow and safety.
- Guiderail. This ongoing program upgrades existing guiderails and installs new guiderails to protect traffic from roadside hazards.
- Right-of-Way Acquisition. This ongoing program provides for the cost of obtaining the rights-of-way necessary before many County highway projects can begin.
- Maintenance Reconstruction. This program is used when deterioration has not passed routine maintenance, and leads to reconstruction of the road subbase and pavement (about 5 miles per year) and to improved drainage facilities.

- Capital Construction. This program for major, high volume roads involves redesign and possible new alignment to address capacity, accident and maintenance cost issues.
- Bridges. This program is intended to preserve the 210 bridges in the County system and to reduce or eliminate the need for bridge closings; construction is scheduled as a result of an ongoing inspection program.

#### Maintenance

The emphasis of the maintenance program includes asphalt repaying of high volume roads and oil and stone resurfacing upon the low volume roads. There are approximately 465± miles of asphalt roads and 340± miles of oil and stone roads within the County system. The cost to repaye one mile of a two lane asphalt road is approximately \$100,000, and the cost to treat one mile of an oil and stone road is \$10,000. The useful life of these surfaces is 8-12 years for asphalt and 3-5 years for oil and stone. The surface integrity will vary with traffic, drainage, soil and weather conditions.

Maintenance efforts address the top layer of the road and are essential for protecting the underlying road base. The top layer of the road seals the pavement and sheds water to roadside drainage systems. If water penetrates to the base, it will eventually weaken and buckle thus necessitating reconstruction. The top layer, as the riding surface of the road, affects vehicle traction and fuel mileage, as well as riding comfort.

Centerline Miles Budgeted for Pavement Maintenance 1980 - 1995

Year	Oil & Stone	Repaying
1980	78.9	32.4
1981	65.6	30.8
1982	102.3	30.1
1983	94.4	28.8
1984	84.3	28.9
1985	122.2	28.1
1986	82.5	30.0
1987	73.6	30.0
1988	121.4	30.0
1989	106.0	20.3
1990	96.5	29.5
1991	128.2	16.3
1992	39.1	9.9
1993	56.7	11.6
1994	61.6	14.5
1995	57.5	26.5

Source: Onondaga County Department of Transportation

The annual variation in maintenance mileage, is affected by the road width (number of lanes) and pavement thickness (high volume roads and truck routes require greater pavement thickness).

#### Highway Reconstruction

Highway reconstruction is done to remove safety hazards, expand capacity and to replace the base course on roads which have deteriorated beyond normal maintenance. Reconstruction is accomplished through four program areas: major construction, minor construction, bridges, and traffic systems management.

Major and minor construction involves the substantial or complete rebuilding of a road. Drainage systems, road base and surface pavement are replaced. Major construction, budgeted as Capital Highway Construction is directed toward high volume urban roads, was funded in 1995 at approximately \$1,200,000/centerline mile. Major construction based on redesign may involve adding of traffic lanes and lane widening, removal of hills and curves, and expansion of right-of-way. Minor construction, budgeted as maintenance reconstruction, generally occurs on rural oil and stone roads and costs approximately \$600,000/centerline mile. Existing road grade, alignment and width is followed whenever possible.

Centerline Mileage Authorized for Reconstruction 1980 - 1996

	Minor	Major
1980	5.4	1.2
1981	4.9	2.4
1982	2.7	6.6
1983	5.7	1.7
1984	4.4	2.9
1985	5.3	2.9
1986	4.6	3.7
1987	4.5	5.2
1988	4.2	3.8
1989	2.7	3.3
1990	5.3	7.1
1991	2.3	2.5
1992	3.5	5.1
1993	0	8.5
1994	0	5.8
1995	0	7.5
1996	1.6	4.6

Onondaga County Department of Transportation

Reconstruction projects usually become necessary when highway safety, capacity and structural conditions cannot be addressed by maintenance or traffic system management (signalization, signage or striping). Common causes for reconstruction are chronic capacity problems, the characteristics of traffic such as heavy truck traffic on an inadequate road base, or age and alignment of the road surface and base.

The Bridge Program maintains 210 bridges (over 20 feet in length) on County roads. Bi-annual inspections for structural integrity by NYS Department of Transportation or consultant engineers are conducted on all bridges. Approximately 6-9 bridges need replacement or repair annually. The cost of the bridge program is variable due to structure complexity,

span length and occasional joint ownership. The County is currently engaging in the replacement or repair of approximately 5 bridges each year.

Traffic systems management serves to improve intersection capacity and safety. Improvements include lane widening, addition of turning lanes, and the provision of traffic signals; annual costs vary.

#### Maintenance Priorities

Onondaga County uses several methods to formulate maintenance construction priorities. In addition to field inspection, testing, and traffic data, a computerized pavement inventory and evaluation system, or "Pavement Management System", has been developed. Maintained by a consultant to annually monitor pavement conditions, the system yields several measures of pavement condition, summarized as the Pavement Quality Index (PQI) which ranges from 0 (poor) to 10 (excellent).

All County roads are monitored through this program. The program is divided into high volume and low volume sections. Roads included in the high volume group are urban roads with asphalt pavement. Roads in the low volume group serve rural areas and have an oil and stone pavement. Excluded from this program are 15 miles of urban road which are known to need reconstruction rather than maintenance and 27 miles of road programmed for reconstruction and rehabilitation.

The computer model indicates that pavement conditions (PQI) of the high volume highways improved to a PQI of 8.4 through 1989 when paving levels were at 30 miles per year and then declined to a PQI of 7.3 in 1994 which parallels a decline in the annual paving rate from 1989 to 1994. An annual paving rate of 40 miles per year is needed to maintain the system at an acceptable level.

## Future Capital Investment for Highways

Capital investments for highways to be funded with general obligation bonds include rehabilitation or reconstruction projects, on 26.25 miles of road and replacement of one bridge over Conrail tracks. The total cost of these projects together with other capital projects (right-of-way acquisition, rehabilitation of Jamesville facility and so forth) is \$68,169,000, in 1996 dollars. Although some projects can be postponed for a few years, long-term failure to complete these projects will result in problems, including decreased riding comfort, safety problems and further deterioration of existing investment.

## Highway Capital Investment Needs

Old Route 57 Widening	1.7 mi.	recon.	\$1,900,000
Morgan Road	1.3 mi.	recon.	\$2,000,000
Buckley & Bear Intersection		recon.	\$3,107,000
Apulia Road	1.59 mi.	recon.	\$1,410,000
Canton Street Bridge		replacement	\$4,000,000

Individual highway projects are at various stages of development. The schedule is as follows:

Orville-Jamesville Road - scheduled in 1997, this project begins at East Genesee Street and runs 1.57 miles southerly to Nottingham Road. The project will rehabilitate pavement, shoulders and drainage to improve safety and reduce maintenance costs. \$2.4M

Molloy Road - scheduled in 1997, this project in the Town of Salina will improve safety, drainage and shoulders along 1.15 miles of Molloy Road from U.S. Route 11 east to 1,400 feet west of Town Line Road. \$2.1M

Taft Settlement Road - Part II - schedule in 1998, the project begins 1,500 feet west of Northern Boulevard and extends 1.0 mile east to 1,000 feet +/- west of Fly Road. The improvement of the Northern Boulevard intersection will be included in this project. \$1.7M

Baldwinsville-State Fair Syracuse (State Fair Boulevard) - scheduled in 1998, the project will provide safety, drainage and pavement improvements on State Fair Boulevard from Nine Mile Creek to 2.28 miles north to Lakeside Drive. \$3.2M

Old Route 57 Repaying - schedule in 1998, this project will perform repaying and safety improvements on Old Route 57 from Seventh Street north 2.3 miles to Blackberry Road using federal/state/county funds.

Brickyard Road - scheduled in 1999, this project will rehabilitate pavement, shoulders and drainage on Brickyard Road from Warners Road northeasterly 2.97 miles to Van Buren Road enhancing safety and protecting the County's investment. \$3.4M

Warners Road - scheduled in 1999, this project begins at the N.Y.S. Thruway Bridge and proceeds 0.45 miles east to Canton Street. The project will rehabilitate pavement, shoulders and drainage to improve safety and reduce maintenance costs. \$0.6M

Bellevue Avenue - this project, scheduled in 1999, will rebuild Bellevue Avenue from the City line to Onondaga Blvd., a distance of 0.34 miles. \$0.5M

<u>Syracuse-Cedarvale Road (Grand Avenue)</u> - scheduled for 2000, the project begins at Route 173 (Onondaga Road) and proceeds 1.15 miles to 1,000 feet east of Fay Road. \$2.9M

Nottingham Road - this project, scheduled in 2000, will begin at Peck Hill Road and proceed northerly 2.22 miles to Colvin Street. \$2.1M

<u>Soule Road</u> - scheduled for 2001, this project will rehabilitate and provide safety improvements and capacity improvements on Soule Road from 1,300 feet east of Old Route 57, 1.4 miles north. \$2.4M

<u>Hinsdale Road</u> - this project scheduled in 2001 will begin at N.Y.S. Route 695 and proceed northerly 0.5 miles to Warners Road. \$1.4M

Bennetts Corners Road - this project scheduled in 2001 will begin at N.Y.S. Route 695 and proceed northerly 0.75 to Warners Road.

Baldwinsville-Phoenix-Little Utica Road (Lamson) - scheduled in 2002, the project begins at N.Y.S. Route 48 and extends easterly 2.53 miles to the relocated Oswego River Bridge in Phoenix. The project will improve drainage and shoulders, and the pavement will be rehabilitated. \$3.0M

Hopkins Road - scheduled in 2002, this project will reconstruct 1.15 miles of Hopkins Road, from Electronics Parkway east to Buckley Road. Shoulders and drainage will be improved and pavement will be rehabilitated. \$2.5M

### PRESERVING HIGHWAY CAPACITY

Highway Capacity Issues

Where traffic volume exceeds highway design capacity, particularly at intersections, capacity can be increased by reconstruction to improve the design of the intersection, by adding turning or through lanes and by improvements to signalization. In developed areas adding new capacity is problematic because of costly residential and business relocation and right-of-way needs, and a growing sense that major highways and residential land uses are incompatible neighbors.

A shortage of revenue to fund new capacity highway projects is a major constraint. Funding from federal, state, and local sources for new highway capacity is extremely limited and is expected to remain so throughout the remainder of the 1990's. Federal highway funding for County roads is relatively unavailable and limited County mileage is eligible for assistance.

The Syracuse Metropolitan Transportation Council, in its 2020 Long Range Transportation Plan (1995), identifies six routes where, in terms of percentage increases, traffic is projected to grow most between the present and 2020:

- Route 57 (20%-75%)
- Route 31 (50%-100%)
- Route 5/Route 92 area (50%-100%).
- West Genesee Street/Route 5 (10%-70%)
- Seneca Turnpike (20%-60%)
- Interstate 81 (30%-80%)

These routes may have future capacity problem sections or may have intersections that become significant problems. Special efforts will be needed to carefully plan land use, site design, and location of access driveways along these routes so that this increase in traffic does not necessitate unnecessary expenditures of funds to remedy future capacity problems.

In other areas, there is sufficient potential on major roads to accommodate growth. The Camillus Bypass, Route 690 northwest of the State Fairgrounds, and Route 481 north of Route 690 have significant available capacity. Access to each of these roads is constrained, however, by collector roads. In Syracuse a number of arterials have capacity for potential growth.

#### Congestion Countermeasures

Countermeasures for congestion can be broken down into two types: reducing traffic volumes or structural responses to the increased volumes. Reduction in vehicle travel can be brought about by increasing the number of occupants per vehicle through ridesharing and transit. Absent a substantial and easily identified benefit to individuals, this approach, is difficult. Congestion is not yet severe enough in Onondaga County to make this a viable approach in the next decade. Other communities have found that achieving and maintaining such vehicle reductions requires a continual and aggressive marketing campaign and a range of services which provide competition for the single occupant private automobile.

Other countermeasures that assist in reducing traffic volumes and congestion involve actions to guide development patterns. The ability to expand capacity can be protected 1) through land use controls which protect roads from incompatible adjacent uses and through set back and other development controls which will minimize problems when capacity expansion is required; 2) and through identification and preservation of transportation corridors for the future.

As noted previously, the fiscal reality of capacity expansion is that it is extremely expensive and that there is currently almost no funding for such expansion at federal, state, and local levels. Vital transportation corridors should be protected to prevent any decrease in the operating efficiency of these roads and to minimize the need for remedial actions if levels of service significantly decrease in these corridors. Syracuse Metropolitan Transportation Council (SMTC) is implementing a Congestion Management System (CSM) for the Syracuse area. SMTC is using traffic analysis and forecast techniques to respond to congestion problems by making the most efficient use of existing transportation facilities. SMTC is also looking at intelligent-vehicle highway systems (IVHS) technologies to help enhance the carrying capacity of the highway network. IVHS technologies will be used for enhancing services such as traffic control, in-route driver information, pre-trip information, traveler services information, in route transit information and incident management.

#### Highway Usage

- Auto dependency is related to low density suburban residential and employment patterns.
- Mass transit does not have significant potential for reducing highway congestion.
- Increased highway use will impact County collector and arterial roads, especially increasing travel between suburban locations.
- Provisions for pedestrian and bike travel need to be incorporated in new highway and subdivision construction when feasible.

#### Highway Jurisdiction and Functional Class

- Functional classification systems should be used as a basis for funding priorities, policies, and program initiatives.
- Municipalities should analyze their road networks within their communities and adopt land use policies and regulations which will protect the functional capabilities of all arterial and collector roads.
- State and County Departments of Transportation should use functional classification systems to define priorities and access policies for various types of roads; municipalities and the DOTs should cooperate in implementing these access policies to preserve the functional capabilities of primary roads.
- Highway jurisdiction is not consistent with highway function in the county and efforts to reduce these inconsistencies should continue between municipalities and state and county DOT's.
- Intermunicipal cooperation is essential to coordinate land use decisions with highway function and right-of-way protection. Land use controls and land use decisions should emphasize highway protection for arterials and collectors.

### Highway Investment

- Efforts to implement a comprehensive Congestion Management System for the Syracuse area should continue and use of innovative technologies such as IVHS should be encouraged.
- Highway pavement maintenance is essential to avoid unnecessary reconstruction costs in the long-term.
- Protection and enhancement of highway right-of-way is vital for future capacity and design improvements. Municipalities should work with County and State DOT's to protect and

- enhance right-of-ways through their control of land use and zoning/subdivision regulations.
- Authority over County roads is divided among the County, NYSDOT and municipalities; intermunicipal cooperation is essential for maximum protection of County highways.
- Funds to construct new roads or for major capital improvements of existing roads are limited and there is little likelihood of building new capacity to compensate for poor land use planning or improper development patterns. Protection of existing capacity should be a primary emphasis of all municipalities and the focus of highway funding programs in the future.

# PARKS AND OTHER FACILITIES

Over the next two decades there will be competing priorities for capital funds in Onondaga County. Roads, water and sewer facilities are necessary to support development in new areas. Other County facilities support administrative, criminal justice, social, educational, and recreational and tourism programs.

Efficient use of existing investment in roads, water and sewer facilities will minimize the need for additional investment in this infrastructure and leave more resources to support other community goals such as providing a broad range of recreation opportunities to County residents.

### PARKS AND RECREATION

### County Park Facilities

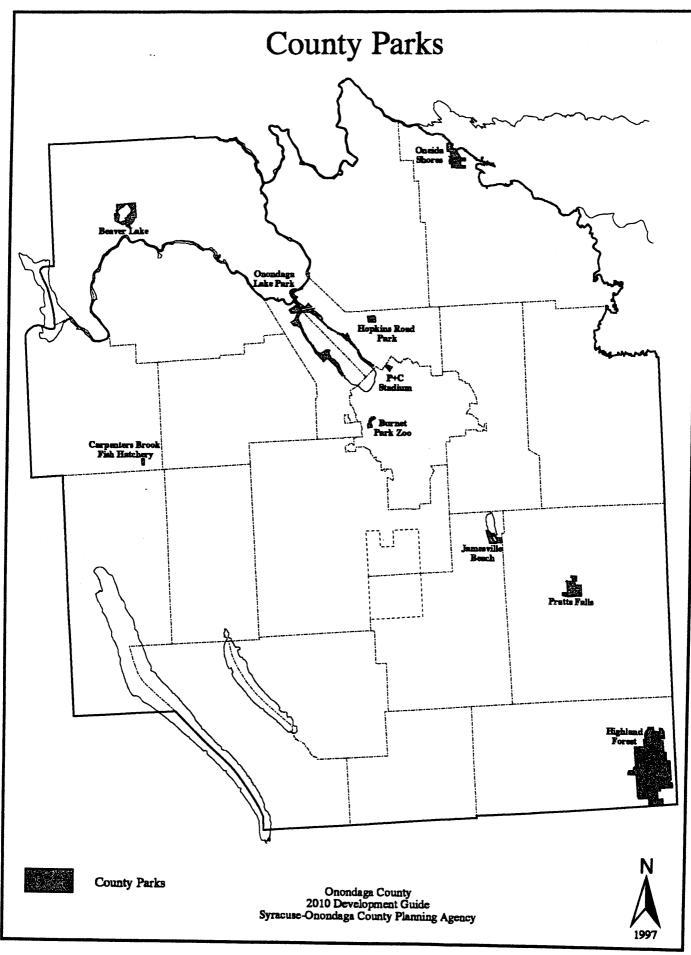
The County Department of Parks and Recreation has eleven facilities that it administers with a total of 6,253 acres, 65 miles of roads, 55 miles of trails and 87 buildings. County Parks includes a zoo, a stadium, museums, beaches, picnic facilities, conference centers, ball fields, two cemeteries, a fish hatchery, unique natural areas and open space as well as administrative and maintenance facilities.

### Mission of Department of Parks and Recreation

The mission of the Department of Parks and Recreation is to provide safe and enjoyable recreation opportunities for all County residents and visitors and to be responsible stewards of the County's valuable natural, historic and cultural resources. In pursuing that mission, County Parks employs the guidelines adopted by Legislative action in 1978, of the County-wide Parks and Recreation Coordinating Council (PARCC) which delineates the proper roles and responsibilities of each unit of government within Onondaga County with respect to providing recreational services.

The Department has defined four major themes or strategic purposes that define its role in the community.

- Open Space the Department is an advocate for the care and preservation of the County's natural environment - its parks, open space and natural areas.
- Recreation the Department has a commitment to bring quality and varied opportunities for leisure time enjoyment to the community.
- Education the Department has a commitment to provide educational opportunities for people to become aware and learn about the natural world/environment and our community's past.
- Infrastructure the Department is responsible to take proper care of its facilities and parks.



Park usage and overall attendance has fluctuated during the 1990's in response to weather problems (Onondaga Lake Park was closed during the spring of 1993 because of heavy flooding), the restricted use of one park (Jamesville Beach), the removal of one park from the system (Marcellus Park), and the effects of the slow economic recovery from the recession of 1991-92. The usage of one facility should increase in 1997 when the P & C Stadium opens as a 11,100 seat multi-purpose facility. Onondaga Lake Park continues as the premier facility in the County Parks System because of its location, size, and numerous special events at the park.

Parks Department Facilities											
Park	Area in Acres	Acres Mowed	Acres of Parking Lot	Miles Roads	Miles Trails	No. of Bldgs					
Beaver Lake	651	60	20	6	15	2					
Burnet Park Zoo	40	10	10	1	1	8					
Carpenters Brook	20	8	1	0.5		6					
Cemeteries	52	14	0.5	0.5		2					
Highland Forest	2759	70	6	29	21	29					
Hopkins Road	60	40	4	0.5		2					
Jamesville Beach	252	100	10	3.5	2	4					
MacArthur Stadium	32	-	20	0.5		6					
Oneida Shores	340	250	25	4		9					
Onondaga Lake Park	1040	900	41	12	3	14					
Pratts Falls	306	80	5	4	7	5					
Spafford Forest	701	20 -		3	6						
Total	6253	1552	142.6	64.5	55	87					

1995 Park Attendance (in thousands)

Park	1990	1991	1992	1993	1994	1995
Beaver Lake	209	217	223	196	215	208
Burnet Park Zoo	410	465	408	368	340	398
Carpenter's Brook	38	47	59	53	47	38
Highland Forest	90	88	91	110	110	84
Hopkins Road Park *	114	132	125	120	125	115
Jamesville Beach	110	93	83	39	58	100
MacArthur Stadium	261	307	227	265	368	300
Oneida Shores	177	169	134	142	121	131
Onondaga Lake Park	1014	1271	1104	1003	1178	1321
- Ste. Marie *** - Salt Museum **	Closed	53	67	52	58	64
Pratts Falls	72	74	62	70	65	63
TOTAL	2495	2916	2633	2366	2627	2822

- \* Open April through October only.
- \*\* Open May through October only.
- \*\*\* Closed for development of New Ste. Marie Adventure
- \*\*\*\* Marcellus Park was owned by the County until 199\_ (not counted in attendance totals)

All other parks open year-round.

Changes in age groups within the population will continue to affect recreational trends and preferences. Traditionally the Parks Department has attempted to anticipate and respond to these demographically related trends. Increases in the adult population may lead to increased demand for certain types of facilities; for example, a lecture series at the Zoo was well attended in 1995. Recreation Programs for the elderly will become more important over the long-term as the population ages. Use of bicycling, skating, walking, and running trails around Onondaga Lake has soared due to adult interest in fitness activities. However, youth programs continue to be popular with 3,588 bus trips carrying 41,028 school children to New York State certified circulum experiences at County Parks in 1995. Sold out summer camps in 1995 at Burnet Park Zoo, Beaver Lake and Sainte Marie are further evidence of the continued vitality of youth programs.

While demographic data indicates that the population is getting older, this has not yet been a factor affecting attendance and participation in Parks programs and facilities. Programs are broadbased in appeal to all age brackets. Another factor is that older users appear to use services differently than previous generations. Older people feel and act younger and are involved in activities that traditionally were ascribed only to younger people - ie: jogging, hiking, canoeing and cross-country skiing. The Parks Department believes that its varied program and facility offerings will be the best approach to meet the variety of future needs.

Residential dispersion in the County has affected County Parks beyond changing usage patterns. Residential growth is beginning to encroach on the open space around Beaver Lake Nature Center, and the Department has acquired additional land to protect the integrity of the park. Up to 275 acres of additional land has been identified in a plan as potential acquisition areas for the center. Acquisition of land at Oneida Shores may be necessary to protect the shoreline and to permit expansion of boat launching facilities. Discussions are underway to purchase 104 acres of land at Carpenter's Brook to protect water resources necessary to the fish rearing process. At Jamesville Beach 129 acres of land has been acquired for additional parking and other uses.

Paying for ongoing programs and maintenance is always a problem. Innovative techniques such as private sponsorship of some programs or activities, privatization of some services, "Friends" groups and other fund raising partnerships, and changes in fee structures have been necessary. Some new techniques may require changes in legislation to be effective. Preventive maintenance must be an ongoing budget item with a planted long-term program.

The Department of Parks and Recreation is affected by the recreation activities of towns, villages and the City. While the County Parks Department tries not to duplicate local efforts, there is no ongoing formal system of coordination between all of the municipalities involved in recreation activities; this can lead to duplication of efforts or gaps in needed services.

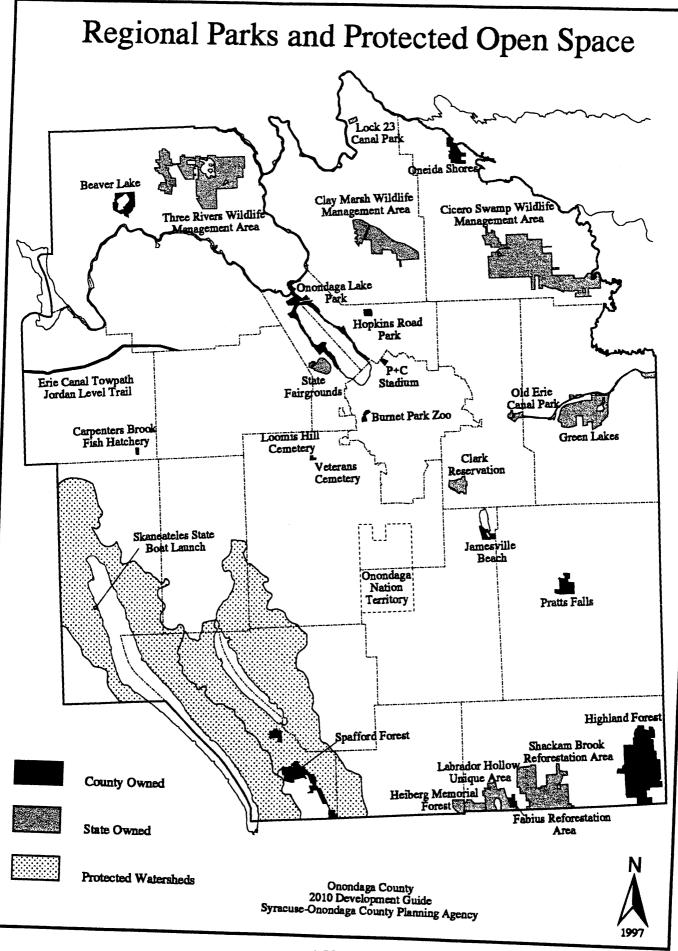
### Future Parks Plans

The Parks and Recreation Department has a number of capital projects in progress or contemplated through 2010. The completion of these projects will depend on available funds, long-term recreation needs and trends, and a determination of priorities. One of the difficulties in making long-term decisions is that the department does not have a long-range plan to establish a context for making decisions. Such a plan could also recommend the County's role vis-a-vis other municipalities in recreation activities. Any such needs and trends analysis would have to reflect a dynamic, flexible and ever-changing framework of priorities.

Park projects included in the 1996-2001 Capital Improvement Plan include Beaver Lake Land Acquisition, Oneida Shores expansion of dock and boat launch facilities, Onondaga Lake Trail completion, and Zoo expansion and development. Among authorized projects, the improvements to the Onondaga Lake Park Marina awaits grant-in aid assistance for the work to advance.

# State and County Open Space

Beyond the eleven Parks facilities managed by the Parks Department, the County owns additional land that functions as passive open space, but is not actively managed as the Parks facilities are. New York State also has parks and passive open space facilities in Onondaga County. All such major facilities are shown on the accompanying map; the County has an abundance of passive and active recreation areas for its residents. In addition, towns and villages, as well as some private groups, maintain parks or protected open spaces available for public use. Open space can act as a natural buffer to development and provide natural vistas and recreational assets for County residents.



## PARKS - FINDINGS

- The dispersion of the County's population affects various Parks Department facilities in terms of usage, capital needs and future land acquisition requirements.
- Changes in the size of various age groups in the County's population may require new programs and facilities; needs will be especially great for the adult and elderly age groups.
- Preventive maintenance of Parks Department is an ongoing requirement in order to reduce the need for replacement or reconstruction of facilities.
- Coordination between the County and municipal recreation programs is relatively weak at present.
- There is a need for long-range parks planning to guide the Department of Parks and Recreation in determining capital program priorities and new funding sources.

## **FACILITIES MANAGEMENT**

The County Department of Facilities Management was created in 1988 and is responsible for the construction, demolition, modification, operation, maintenance supervision, space and property utilization, repair, custodial care and capital project planning of County property, buildings and other related facilities. The Department is responsible for operating and maintaining buildings totaling over 1.2 million square feet, and the production and distribution of steam and chilled water to the major County buildings in Downtown Syracuse. Although the focus of Facilities Management activities is on the County buildings in Downtown Syracuse under its jurisdiction, its departmental responsibilities for building management extends to Onondaga Hill, to Amboy in the Town of Camillus, and to the former Penitentiary in the Town of DeWitt.

The chart below illustrates the facilities and major functions for which the department is responsible:

Facility Water	Location	Building <u>Management</u>	DH&C Steam	DH&C Chilled
Civic Center	Syracuse	x	x	x
County Office Bldg.	Syracuse	X	X	X
Court House	Syracuse	X	X	X
Public Safety Bldg.	Syracuse	X	x	x
Justice Center	Syracuse	X	X	x
North Prkg. Gar.	Syracuse	x	x	X
Everson Museum	Syracuse		X	x
OnCenter	Syracuse		X	X
War Memorial	Syracuse		x	X
DH&C Plant	Syracuse	x	X	
Everson Garage	Syracuse	X	•	X
Everson Plaza	Syracuse	X		
Sheriff's Bldg.	Syracuse	X		
ОНА	Syracuse	x		
Canal Museum	Syracuse	x		
Fire Control	Onon. Hill	X		
H-1,H-3 & Pwrhse	Onon. Hill	X		
H-2	Onon. Hill	(abandoned)		
Former Pen.	DeWitt	(abandoned)		
Amboy Garage	Camillus	( abandoned)		

Beyond its administrative responsibilities, the Department, by interdepartmental agreement with the approval or direction of the County Executive, provides support services to other County departments and units. These services range from the provision of maintenance assistance to the planning and construction oversight of new or modified facilities.

Current vs. Future Role

The creation of the Facilities Management Department was intended to broaden its role beyond the limited focus of the former Department of Buildings & Grounds; the new department was to be more than the custodian of downtown County property. The Administrative Code revision of 1988 provided the department with the authorization to play a key role in the management of all County facilities including coordination of a property

management data base involving all County departments with property management responsibilities, management of buildings and property beyond the facilities now on its roster, and capital project planning and County property, buildings and facilities. This last role has not been fully realized, but has led to more involvement by the department in the planning and decision making process for certain capital projects.

Since its creation in 1988, the department has been intimately involved in the Court Capital Plan, the design and development of the Emergency Communications 911 Building, the Laboratory Consolidation Project, the Corrections Department Storage Building at Jamesville, the Civic Center Stairwell versus Sprinkler issue, the improvement of County Fuel Facilities, the Variable Speed Drive Project, the Surplus Property Disposal Project, the Asbestos Abatement Project, the Computer Aided Design (CAD) Project, plus has written, presented and implemented "A Facilities Management Plan for Onondaga County Government".

The department has been fully involved in construction project contract administration for a number of significant projects, including the Civic Center Facade Improvement Project, the Expansion of the District Heating & Cooling Plant, the Justice Center Project, the Courthouse Stairwell project, the North Area Maintenance Facility Improvements, a number of Fuel Facility Improvements and fuel spill remediation projects, and a variety of major modifications to the floor layouts of County units in the Civic Center and County Office Building.

The department manages the Wellhead Natural Gas Program for Facilities Management and Van Duyn Hospital, and provides an increasing amount of technical and trades support to other County departments. The department is currently coordinating the County's multi-department participation in the New York State Power Authority's High Efficiency Lighting Program, an energy cost avoidance project that involves planning and implementing the installation of energy efficient equipment and lighting in County buildings.

The future role of the department in its expanding multi-departmental management and support activity is only limited by staffing and funding. The department's future role in capital project planning is also limited by staffing and funding, and by the current structure and prescribed participants of the capital projects planning and approval process.

## FACILITIES MANAGEMENT - FINDINGS

- The Department of Facilities Management is responsible for a variety of large and small scale building management operations, a major steam and chilled water production and district distribution facility, plus a number of other projects, programs, data base development, planning activities and studies focused on, but not limited to, County facilities located in downtown Syracuse.
- The Department is steadily moving toward a broader role in the responsibilities envisioned in the County Administrative Code revision of 1988, as evidenced by the scope and breadth of assignments undertaken by the Department since 1988.
- The potential role of Facilities Management in capital program planning and formulation has not been realized or codified by further revision of the Administrative Code. Consideration might be given to having the Commissioner of Facilities Management be a member of the capital program review committee.
- Consideration might be given by the Legislature to establish a standing committee to deal with infrastructure and facilities planning and management, initially exclusive of those departments now under the jurisdiction of the Public Works Committee and Transportation Committee.

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## APPENDIX I

	PROPOSED MCP PROJECTS	
E NUVBER	PROJECT A STATE	N. MARION
1	Hiawatha Regional Treatment Facility	С
2	Newell Regional Treatment Facility	В
3	Harbor Brook Equiflow	С
4	Erie Boulevard Storage System	A
5	Kirkpatrick Street Pump Station; Onondaga Creek Trash Trap	A
6	Teall Brook Floatables Control Facility	D
7	Harbor Brook Floatables Control Facility	С
8	Clinton Regional Treatment Facility	A
9	Midland Regional Treatment Facility	В
10	Franklin Floatables Control Facility	A
11	Maltbie Street Floatables	A
15-30	Midland CSO Transmission Pipeline	В
32-39	Clinton CSO Transmission Pipeline	A
022, 024, 037, 057-059	Sewer Separation Drainage Basins	A
038, 040, 045, 046a, 046b, 048, 050, 051, 053, 054	Sewer Separation Drainage Basins	В

# MAP A

Syracuse Onondaga County Planning Agency Approximate Map Scale - 1:16,000

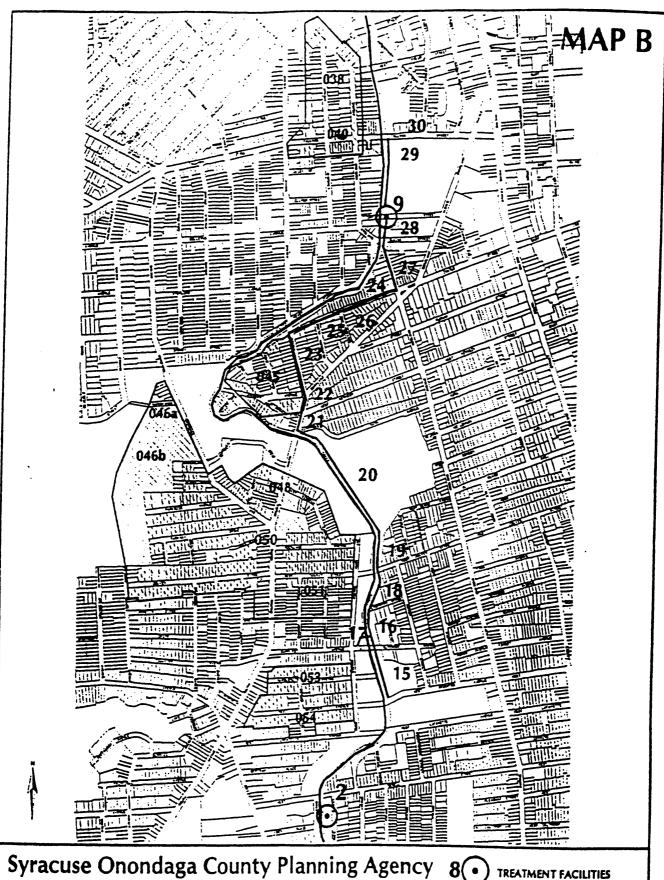
TREATMENT FACILITIES

CSO DRAINAGE AREA

ONONDAGA CREEK

TRANSMISSION SEWER

City of Syracuse Department of Public Works, Mapping & Surveying Division - December, 1995



**Syracuse Onondaga County Planning Agency Approximate Map Scale - 1:12000 (1 inch = 1000 feet)** 

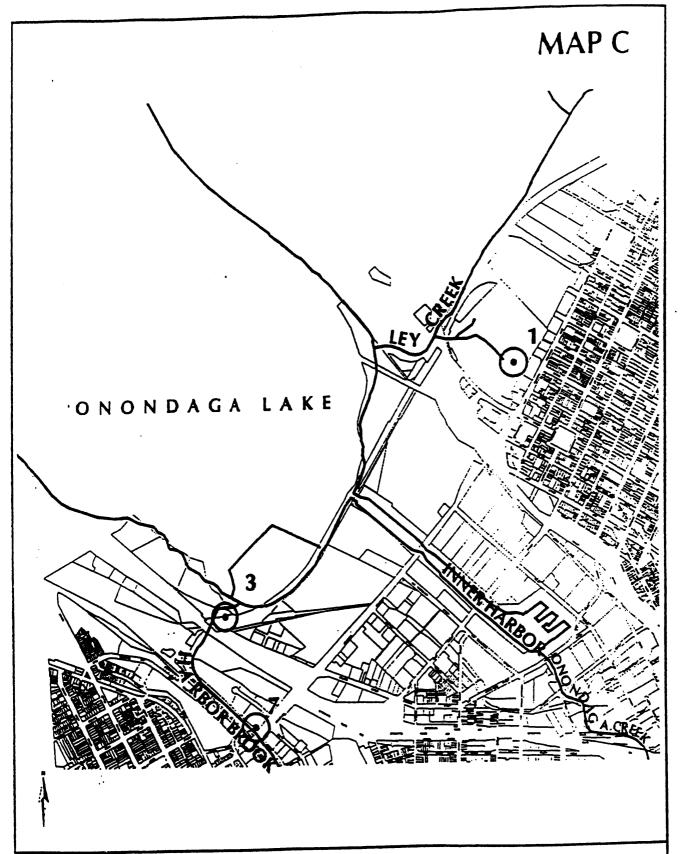
TREATMENT FACILITIES

COO CSO DRAINAGE AREA

ONONDAGA CREEK

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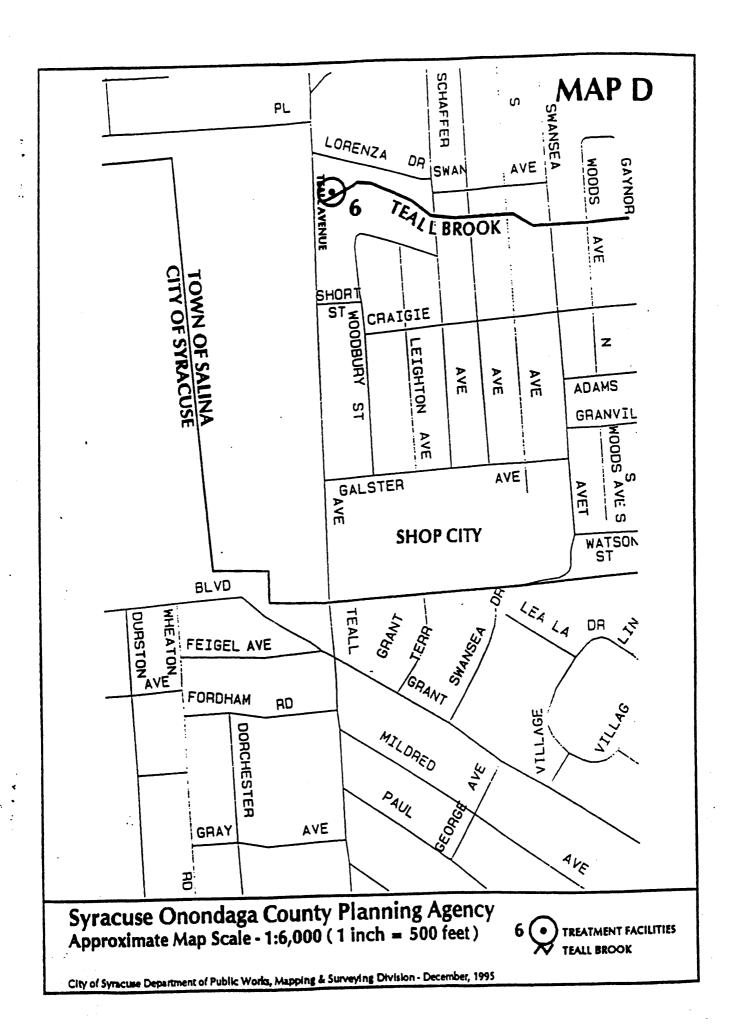
Syracuse Onondaga County Planning Agency Approximate Map Scale - 1:20000

TREATMENT FACILITIES

CREEKS / LAKE SHORE

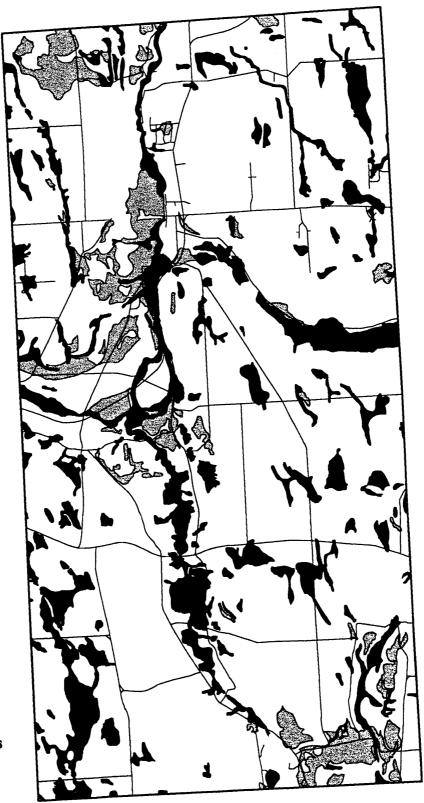
TRANSMISSION SEWER

City of Syracuse Department of Public Works, Mapping & Surveying Division - December, 1995



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# Soil Suitability for On Site Wastewater Systems



Town of Marcellus



Suitable



Subject to Design or Location Modification



Unsuitable

Onondaga County
2010 Development Guide
Syracuse-Onondaga County Planning Agency



# SITE REQUIREMENTS FOR DESIGN OF INDIVIDUAL WASTEWATER TREATMENT SYSTEMS TABLE 3A

METHOD OF SUBSURFACE TREATMENT	DEPTH OF PERCOLATION TEST HOLE FOR SYSTEM DERIGN	MINIMUM DEPTH OF IN SITU USABLE SOIL IFEEN	MINIMUM SEPARATION BETWEEN TRENCH BOTTOM AND GROUNDWATER, SOIL	PERCOLATION RATE OF SITE USABLE SOIL	ALLOWABLE SLOPE OF
	(INCHES)	PERCOLATION RATE OF 1 - 60 MIN/IN UNLESS OTHERWISE STATED)	MOTTLING, BEDROCK, OR IMPERMEABLE STRATA (FEET)	(MIN/INCH)	OFFICENTI
CONVENTIONAL SYSTEMS					
ABSORPTION FIELD SYSTEM	24 - 30	*	2	1.60	0 - 16
GRAVELLESS ABSORPTION SYSTEM	24 - 30	7	2	1.46	81.0
DEEP ABSORPTION TRENCHES	AT TRENCH DEPTH	*	2	1 - 60	9 - 0
SHALLOW ABSORPTION TRENCHES	AT 111	2	2	1.60	0 - 15
CUT AND FILL SYSTEM	ONE FOOT INTO IN SITU USABLE SOIL (2)	6	2	1.60	0 - 16
ABSORPTION BED SYSTEM	24 - 30	*	2	1.30	• • •
SEEPAGE PITS	PIT DEPTH AND HALF OF PIT DEPTH OB AT EACH USABLE SOIL LAYER	3 FEET BELOW BOTTOM OF PIT	3 FEET BELOW BOTTOM OF PIT	1.60	0 . 16
ALTERNATIVE SYSTEMS					
RAISED SYSTEM	12	-	2 FEET IF DOSING DEVICE USED	1 . 60	0 · 15
MOUND	12	-	2 FEET TO GROUNDWATER	1.120	0 · 12
INTERMITTENT SAND		0	2		0 . 18
DOWNSTREAM MOUND	6 AND 12	0.5	2.6 FEET TO GROUNDWATER	1 - 120 AT 6" UNLIMITED AT 12"	0 . 12
A PERCOLATION TEST MUS	A PERCOLATION TEST MUST BE CONDUCTED AT THE DEPTH OF	F THE BOTTOM OF THE PROPERTY	Tree IO BEOROCK		

CONDUCTED AT THE DEPTH OF THE BOTTOM OF THE PROPOSED TRENCHES. IF THE TRENCH BOTTOMS WILL BE BETWEEN GRADE AND SIX INCHES DEEP, CONDUCT THE TEST AT SIX INCH DEPTH.

A PERCOLATION TEST MUST ALSO BE CONDUCTED 24 - 30 INCHES BELOW GRADE IN STABILIZED SOIL (IN SITU OR FILL). THE SLOWER OF THE TWO PERCOLATION RATES SHALL BE USED FOR DESIGN OF THE SYSTEM.
IF NO DOSING DEVICE IS USED, A MINIMUM OF THREE FEET OF USABLE SOIL MUST BE PRESENT BENEATH THE BOTTOM OF THE TRENCHES (REQUIRES LOCAL HEALTH DEPARTMENT INSPECTION AND CERTIFICATION

THERE MUST BE AT LEAST TWO FEET OF <u>NATURALLY</u> OCCURRING SOIL ABOVE BEDROCK.

3 6 3

## APPENDIX 4

## CONSIDERATIONS ON RURAL WATER EXTENSIONS

When public water eliminates water shortages and replaces poor quality water there is an immediate surge in water usage; septic systems which functioned adequately in limited water situations can become overwhelmed and fail. Substantial vacant land is required to replace the failed septic fields and houses on small lots may not have room to upgrade septic systems. As a result, the introduction of public water can cause unanticipated demands for public wastewater disposal systems.

Highways are also impacted by the introduction of either public water or sewers. Again, water is usually the first service introduced in an area and new water lines encourage new residential and commercial development. Residential densities in areas with water lines can be higher resulting in increased traffic, more friction points along major roads (due to increased driveways and side streets) and a deterioration in the functional capabilities of highways. As traffic increases and level of service decreases, commuters and residents along the highway demand solutions (often conflicting); solutions inevitably require capital improvements to roads which would not be necessary if growth had not occurred before the highway system was ready for it.

## WATER NEEDS VS. COSTS

Appeals for water service to areas suffering from poor quality water, insufficient water or contaminated wells are difficult for municipalities to ignore. Residents will argue that they are entitled to water because they have been paying water taxes for Zone I (the lowest rate, county wide) and have earned the right to water. Zone I covers the entire Onondaga County except Spafford and Skaneateles; taxes contribute to debt service for Metropolitan Water Board facilities between Lake Ontario and the Terminal Reservoir in Clay.

Zone 1 rates are based on the concept that the entire County benefits from the Lake Ontario water supply. Zone 1 residents receive benefits if they have jobs in businesses/factories/offices served with public water, or if they have attended sports events, cultural events, recreational events or other activities in facilities with public water. Except for hermits, all County residents have received direct or indirect benefits. Water taxes in Zone I have historically been very small. For example, in 1996 at the rate of .42 cents per thousand in LaFayette, the annual tax was less than \$3 on a \$100,000 house; in 1997 there is no Zone 1 charge for anyone in the County.

Residents who desire public water in unserved areas will argue that they are willing to pay for the entire cost of such service. This, of course, is not possible since the indirect costs of failed septic systems, possible environmental pollution, increased highway traffic, and underutilization of capital assets elsewhere in the county cannot be legally or practically assessed to a new water district.

## COMMUNITY

The County can be considered to be a collection of interconnected communities. Infrastructure investments have been made in certain areas and recouping the investment in this infrastructure is prudent before investing in competing infrastructure elsewhere. An analogy is that a business having built a new factory would not begin construction on a similar factory a few miles away until the original factory had at least paid back the investment made in the building and machinery. Allowing communities within the County to duplicate over and over the same infrastructure without using the infrastructure that is available and unused is a very wasteful enterprise and a sure way of increasing tax burdens, further eroding the competitive position of the County, and making the County a less desirable place to live.

## **EXCEPTIONS**

If lot sizes and densities are appropriate and houses are sited where groundwater is of proven quality and quantity, fewer situations requiring emergency public water extensions should occur in the future. Unfortunately, most situations where water extensions are requested arise from older development which was never subject to any scrutiny in regard to sustainability. These problems will have to be dealt with on a case by case basis but with a strong acknowledgment that cumulative increases in capital debt can undermine the economic and fiscal future of the County.