2.720 Water and Sewer

Water Supply

Residents of the Town of Rochester rely primarily on individual private wells for their domestic water needs. According to the results of a community survey conducted in 1988 on important land use issues in the Town, 68% of the respondents indicated they use a drilled well for their water. A significant number of respondents, however, also indicated they use "dug wells" to get their water. Only 10% of the respondents indicated that their wells had gone dry. Most of the respondents (82%) believed that they tapped non-artesian wells although artesian wells do supply some residents with their water.

Additional data concerning private well-yields in Rochester is provided in the Ulster County Water Supply Study, recently released by the Ulster County Planning Department. Data from high yielding wells in the Town compiled in this study indicates that there are a higher number of wells in shallow unconsolidated bedrock than the number of deeper wells that have been drilled into consolidated bedrock. Section 2.930 - Hydrology provides more detailed information on well-yields and on the Town's groundwater resources.

The Kerhonkson Water District is the only municipal community water system providing service in the Town. It has an approved capacity of 378,000 gallons per day (gpd). The district's service area straddles the Rochester and Wawarsing town border and serves the hamlet of Kerhonkson. In order to protect its water supply source, the District has adopted wellhead and aquifer protection strategies, which were last updated in 1967. The District is municipally operated and primarily located within the Town of Wawarsing, so the Town of Rochester's influence over the district is quite limited.

According to the 1989 Ulster County Water Supply Study, approximately 6% of the Town's population (350 people) are currently served by private community water supply systems. Estimated current maximum water demands for these community water systems is 57,000 gallons per day.

One of the larger community water supply systems in the Town is the Granit Hotel system. This system has an approved capacity of 553,000 gpd. The water is chlorinated and the system has a storage capacity of 300,000 gallons. Another large privately-owned water supply system in Rochester is Park Estates.

Data concerning other small, private water supplies is summarized in the following table.

TABLE 12

1987 WATER DEMANDS FOR COMMUNITY WATER SYSTEMS IN ROCHESTER

COMPANY	AVERAGE DAY DEMAND (gpd)	MAXIMUM DAY DEMAND (gpd)	APPROVED CAPACITY (gpd)
Alkins Mobile Homes	3,120	6,240	6,240
Granit Estates Water Company	2,250	4,500	28,800
Joint Venture Water Company	1,500	3,000	86,400
Larson's Adult Mobile Home Park	2,400	4,800	4,800
Linden Hills Water Company	1,800	3,600	3,600
Route 209 Trailer Court	1,400	2,800	2,800
Sylvan Glade Water Company	10,000	20,000	20,000
Valley Garden Trailer Park	1,000	2,000	2,000
Zolota Osin Inc.	5,000	10,000	10,000
TOTALS	**28,470**	**56,940**	**164,640**

Source: Ulster County Water Supply Study, 1989

The privately owned water systems in the Town are characteristically small, generally serving one subdivision or institutional use, mobile home park or one resort or recreation area. Many of these sites are located along Route 209, a principal roadway through the Town.

As indicated in Table 12, the maximum demand per day of most private water systems approaches their approved capacity. These systems are small with little or no opportunity to serve additional customers. Exceptions to this are the Granit Estates Water Company and the Joint Venture Water Company.

A study is also presently being conducted of artesian aquifers in the Town. This study, which is sponsored by the Rondout Valley Land Conservancy, is anticipated to shed a better understanding of the artesian well system in Rochester and identify threats to the water quality of the system. The study is expected to be completed in the near future.

Sewer

Other than certain resorts that use their own treatment plants, Rochester residents and businesses use individual on-site wastewater treatment systems. There are no public sewer systems that serve Town residents although the Kerhonkson Sewer District, which serves the hamlet of Kerhonkson and outlying areas in the Town of Wawarsing, borders the Town.

Individual household sewage systems are required to meet Department of Health standards. The effluent from any sewage disposal system, however, contains nutrients and pollutants which may reach groundwater and is capable of traveling great distances including affecting nearby properties. In order to minimize the possible health hazard and pollution potential of wastewater discharge, the Ulster County Department of Health has published a table (see Table 13) of separation distances for different types of on-site sewage systems from wells, water bodies, dwellings and property lines.

These distances do not in any way guarantee freedom of groundwater from the effects of pollutants, but are limiting distances which should be used as a guide.

TABLE 13
SEPARATION DISTANCES FOR
INDIVIDUAL TREATMENT SYSTEMS

WASTE WATER SOURCES	ANY WELL OR SUCTION LINE	TO STREAM OR WATER COURSE	DWELLING	PROPERTY LINE
1. House Sewer	25 if cast iron	25	---	15
2. Septic Tank	50	50	10	15
3. Effluent Line to Distribution Box	100	50	10	15
4. Distribution Box	100	100	20	15
5. Absorption Field	100*	100	20	15
6. Seepage Pit	150*	100	20	15
7. Dry Well (Roof & Footing)	50	25	20	15
8. Fill System	100*	100	20	15
9. Evapotranspora-tion Absorption System	100*	50	20	15
10. Sanitary Privy Pit	100	50	20	15
11. Privy Water Tight Vault	50	50	20	15

* Sewage systems located upgrade in a general path of drainage to a well should be spaced 200 feet or more away.

Source: Ulster County Department of Health

The Granit Country Club operates the largest private wastewater treatment plant in the Town of Rochester. This facility has an approved average design flow capacity of 150,000 gallons per day. Currently, the plant receives flow from the hotel and 25 apartments on the hotel property. Phase I of the proposed Mountain View at the Granit townhouse development (73 two-bedroom units) could be added to this system without exceeding current flow restrictions in the plant's operating permit. No capacity is available to serve other properties.

According to the Ulster County Department of Health, there are no notable "problem areas" at the current time relating to wastewater treatment system failures in the Town.

2.730 Solid Waste

According to recent estimates the landfill will reach capacity in 6-8 years. No solid waste from other towns is accepted at the landfill and no solid waste is transported out of the town.

A recycling program is in effect and is reducing the volume of waste dumped at the landfill. Currently, the recycling center accepts newsprint, color-separated glass, high-density polyurethane and tin cans.

The Town of Rochester is operating under two consent orders in regard to the operation of its landfill. The first, in accordance with New York State legislation, mandates the closing of the landfill in the next few years. Consequently, the Town landfill is undergoing the "closure process" which involves well testing to monitor possible landfill contamination. The second consent order concerns an excavated sand and gravel mining hole that is adjacent to the Town landfill. To satisfy the order to reclaim the mined area, the Town is exploring various alternatives, including a plan that would allow a New York City contractor to dump "non-toxic" demolition debris at the site.

2.800 LAND USE AND ZONING

2.810 Existing Land Use

The population density in the Town of Rochester in 1980 was 61 people per square mile. This reflects the Town's rural - residential nature and its low population. Most of the Town's residents live between the Catskill and Shawangunk Mountains. In these mountain areas, much of the land is in public ownership. While there are several hamlet areas of concentrated residential development, there are also many homes, both year-round and seasonal scattered in rural areas throughout the Town. Commercial activity, as will be discussed, is centered along Route 209.

The "Land Use Map" illustrates the extent and locations of various land uses in the Town. A general description of the primary land uses in Rochester follows.

Residential

Residential land use in the Town of Rochester may be generally described as decentralized along the existing road network with pockets of concentrated residential development located in the Town's hamlet areas. Smaller-sized lots, averaging approximately one acre are located primarily within and adjacent to hamlets. Larger lot sizes and significantly lower population densities are found outside of and between hamlets.

The principal hamlet areas where residential development is noticeably concentrated include: Accord, Alligerville, Mettacahonts, Tabasco, Cherrytown, Mombaccus, Pataukunk, and the residential area of Kerhonkson within the Town of Rochester. In addition, a significant number of residential properties are located in "pocket areas" along Route 209, particularly near Kerhonkson and just north of Airport Road.

The predominant residential uses include year-round and seasonal single-family homes, bungalow colonies, and mobile homes. There are over 1,000 seasonal dwelling units in the Town including bungalow colonies and seasonal living units for migrant laborers.

Seasonal bungalow colonies continue to provide an alternative for affordable summer residences for families seeking to escape the heat and congestion from more urbanized areas such as New York City, Long Island, and northern New Jersey. While at one time there were over 40 active bungalow colonies, today, by comparison, there are only approximately 10 active colonies.

Of the remaining operating bungalows, 2 are now under cooperative ownership where each family owns its own bungalow unit. Some of the existing bungalow colonies also now include year-round residences. The larger bungalow complexes still active in the Town include Makowsky's Bungalow Colony (74 units) and Four Greenfields Resort, Inc. (78 units).

A significant portion of the housing stock is supplied by mobile homes. In 1969, there were approximately 110 trailers in the Town; in 1980, as mentioned previously, there were roughly 400 mobile homes in Rochester. Most of the mobile homes are scattered either alone or in small clusters throughout the Town. There are 3 major trailer parks and several smaller mobile home parks in the Town. There is continued controversy related to the siting of trailers and their aesthetic impacts. However, mobile homes offer a viable alternative for affordable housing, particularly for first time homebuyers and senior citizens.

Comparison with 1969 Land Use Data

Table 14 provides a comparison of land use data for residential uses included in the Town's 1969 Development Plan with current land use information. A comparison of non-residential uses was not possible because of the general nature of the data from 1969 and because information is not available concerning the current number of home occupations in the Town.

The figures indicate that the Town of Rochester has experienced considerable residential growth since 1969. The number of single-family residences (including seasonal/migratory units) has more than doubled, while the number of trailers has increased nearly fourfold. As mentioned earlier, however, there has been a significant decrease in recent years of the number of active bungalow colonies - dropping from 44 colonies in 1969 to 11 active colonies at the present time.

TABLE 14

COMPARISON OF 1969 AND 1990 RESIDENTIAL LAND USE INFORMATION

	1969	1990
	NO. OF DWELLING UNITS	NO. OF DWELLING UNITS
Residential		
*Single Family Residence	1,194	2,582
Two Family Residence	6	11[1]
Multi-Family Residence	15	(not known)
Trailers	112	408

* Includes single-family units and seasonal/migratory units

[1] Figure represents two-family attached homes. Does not include homes with single interior apartment that is not visible from the outside.

Sources: Brown & Anthony City Planners, Matthew D. Rudikoff Associates, 1980 Census, Directory of Businesses and Services - Town of Rochester published by Friends of Historic Rochester.

Recent Land Use Developments

Recent subdivision development of five or more lots has been examined as a measure of residential growth occurring in the Town.

According to data from the Town Planning Board office, 38 subdivision applications of five or more lots have been submitted to the Planning Board for review since 1986. Collectively, these applications involved the proposed subdivision of 852 lots on approximately 3,820 acres of land.

In regard to the status of the above applications, 25 of the 38 applications have received final approval. This figure includes the 246 lots proposed in 1985 associated with the Mountainview at-the-Granit townhouse development. Planning Board approval of this project is currently being held up in court through an Article 78 legal challenge. Approval of this project would bring the total number of lots that have received final approval within the past five years to 661 affecting a total of roughly 2,730 acres. With the exception of the Mountainview at-the-Granit proposal, most of the subdivision approved have been for single-family detached homes.

In addition to the subdivisions of 5 lots or more that have been recently approved, ten (10) major subdivisions totalling 168 lots on roughly 780 acres are currently being reviewed by the Planning Board. Of these subdivisions, seven (7) have received preliminary approval.

While at the present time there is a relative slowdown in large-scale residential development taking place in the Town, up until recently Rochester experienced significant residential growth similar to what the Mid-Hudson and Catskill regions have experienced as a whole. As mentioned in a previous section, large subdivisions have recently been approved in the Cherrytown, Pataukunk and Kyserike sections of the Town.

Commercial

There are three basic types of commercial development in Rochester - highway commercial uses along Route 209, neighborhood/hamlet business uses, and home occupations.

By far the most concentrated area of commercial activity in the Town is along State Route 209 corridor, particularly just north of the Samsonville Road (CR 3) intersection and north of Accord in the area of the Whitfield Road and Lucas Turnpike (CR 1) intersections. Commercial uses along Route 209 are oriented principally toward tourists who use the highway to get to their points of destination. These establishments include convenience service stations/foodmarts, motels, automobile service and sales, restaurants, antique shops, real estate offices, etc.

There are several areas of neighborhood/hamlet mixed business uses as well in the Town. While the area of Kerhonkson in the Town of Rochester, Accord, and an area along Pataukunk Road near Route 209 are the main centers of this activity in the Town, several other areas have general stores. These rural neighborhood centers often consist of a mix of professional and retail uses and generally serve the local and/or regional population. Businesses and offices in these areas might include convenience stores, hair style shops, laundry services, professional real estate and attorney's offices, car repair shops/service stations, etc.

Home occupations are also scattered throughout the Town and play an important role in the local economy. Common trade services such as plumbing, car repair, electric services, small landscaping businesses, etc. comprise most of the home occupation uses in the community.

In regard to community impacts, the highway commercial uses along Route 209 have the greatest potential adverse impact. Inasmuch as a significant percentage of the highway's use is for high-speed through-traffic, commercial establishments, by generating additional traffic, are posing increased highway congestion and safety problems along the corridor. Efforts to carefully regulate the development of such uses along Route 209, will be necessary to prevent major traffic safety problems in the years ahead.

Home business operations are important to the local economy. These activities may pose certain local impacts which also warrant attention. The chief potential impacts include potential local traffic problems, primarily off-street parking and increased traffic on Town roads, and incompatibility with adjacent uses. Home occupations should be developed in ways that minimize their off-site impacts.

The neighborhood/hamlet business areas have the least adverse community impacts of the commercial uses in the Town. While to some degree these impacts are similar with home occupations, they are generally less significant since they are clustered with similar uses where business uses are more common and anticipated.

Industrial

The Town of Rochester does not have any one major industrial employer in the Town. Rather, there are several smaller-scale industrial businesses within the community. The following list indicates several of the larger industrial operations in the Town, according to the recently published Town of Rochester Directory and Handbook, produced by the Friends of Historic Rochester:

Wholesale
V.B. Cross Lumber Co., Inc.
(Kyserike Road)

Schwab Lumber Co./Pepper Tree Furniture Co.
(Samsonville Road)

Van Demark Oil Co.
(Route 209 - Accord)

Agway
(Main Street - Accord)

Manufacturing
Accord Machine & Tool Co.
(Accord)

Accord Steel Rule & Dye Co.
(Main Street - Accord)

Kangaroo Enterprises
(Route 209 - Accord)

Rosencrantz Masonry
(Route 209 - Accord)

Peter King Co., Inc.
(Creek Road - Alligerville)

In addition to the industries noted above, there are many other craft-related businesses in the community.

Vacant Land

There is a significant amount of vacant land in the Town. This land use category includes meadows, fields and brush not in active agriculture, woodlands, and abandoned buildings such as bungalow colonies that have not been in use for a number of years. Referring to the Land Use Map, the more concentrated areas of vacant lands are located in the north-central, southwestern and far eastern sections of the Town. Additional areas of vacant lands exist between the principal roads in Rochester.

Public Lands

There are over 13,500 acres of publicly-owned lands in the Town of Rochester. At the local level, the Town owns a small 2-3 acre park adjacent to the Town Hall building.

The State of New York has extensive landholdings in the Town. A major concentrated area of State land is in the western part of the Town within the Catskill Park (an area within what is referred to as the Catskill Park "blue-line"). Within the Catskill Park in Rochester the State owns approximately 7,410 acres, all of which comprise part of the Catskill Forest Preserve. According to State law, these lands are to remain forever wild.

Another large area of State-owned land is in the western section of the Town along the Shawangunk Ridge. These public lands are owned by the Palisades Interstate Park Commission and total 6,043 acres in the Town. This area includes Lake Minnewaska State Park.

There is an additional 50 acres of State-owned land in the Town that isn't part of the two larger areas of public lands described above.

The Mohonk Preserve, Inc. also owns a significant amount of land which borders the Mohonk Mountain House property. While this land is not in public ownership (it is owned and managed by a not-for-profit citizens group), its spectacular grounds are open to the public through day-use permits.

Agricultural Land

Agriculture has played a central role in the Town of Rochester since 1680. Early farms were located in the fertile floodplains along the Rondout Creek as well as in places where feeder streams entered the Rondout. Stone walls found throughout the Town are remnants of these early farms. The bottom land along the creeks provided excellent soil for farming. These same areas along the creeks and streams are still used for agriculture today. Within the Town there are two large vegetable/fruit farms which grow a number of crops, particularly sweet corn, in addition to four to five smaller operations. There are two large dairy farms as well and approximately 5 to 7 smaller-scale dairy farms operating in the Town.

A wide variety of other agricultural-related operations exist within the Town. These farming industries include beekeeping, maple syrup production, nurseries, Christmas tree farms, horse farms, poultry farms, and farming supply and equipment businesses. Additionally, there is an organic farm that is between 70 and 100 acres in size which supplies restaurants throughout the region. Many of these agricultural pursuits are an important secondary source of income for Town residents.

Rochester also supports a modest forestry industry with a number of loggers working within the Town. There are two saw mills in the Town. Many of the lumber products are exported outside of the region.

Up until recently, New York State experienced a general decline in active farm production across the State. The acreage in farm production in Rochester, however, has recently remained stable. The general trend in the Town is that the well-established farms remain productive and frequently purchase or lease adjoining properties for farm expansion. Rochester has experienced less subdivision of its large farms for second homes than has occurred in other areas of the region. This may be attributed to the longevity and viability of the existing farms as well as the unsuitability of the floodplains in the Town for intensive residential and commercial development. The floodplains of the Rondout Creek, Stony Kill, and North Peters Kill Creek are among the waterways best suited for farming.

Active agricultural lands are limited primarily to along the floodplain areas of the Town's stream valleys. As the Land Use Map illustrates, significant agricultural lands are located along the Rondout Creek, Peters Kill, Rochester Creek, Mill Brook, and Mombaccus Creek.

Agricultural Districts are areas of land which are designated by a county or New York State in order to help maintain viable agriculture. Local landowners (with collective landholdings of at least 500 acres) petition the county and State for certification of an area as an agricultural district. Every eight years agricultural districts are reviewed for potential modification of the district boundaries.

Agricultural districts may contain non-farm uses but mainly consist of active agricultural activities. Farmers receive incentives for continued production and may qualify for tax assessments based on agricultural rather than market value.

The extent of agricultural districts within the Town can be seen on the "Agricultural District Map" for the Town. Portions of Ulster County Agricultural Districts #6, #12, and #14 are located within the Town of Rochester. The Agricultural District Map indicates the respective location of these districts.

Agricultural District #6 has 11 farms within the Town. This district is located in the western part of the Town and also includes farms in the Town of Wawarsing. Many of the farms are not the principal source of income for their owners. Some farms have become inactive after the farm operators retired.

Agricultural District #12, in northeastern Rochester, also includes farms in Marbletown. There are 9 principal farms in the district in Rochester. The district consists mainly of dairy operations with some beef and field crops production included. There are also Christmas tree farming operations. The dairy operators are all well established family farms with stability and some growth to maintain competitiveness. This is a traditional agricultural area and farming is accepted as part of the economy and environment. Agriculture continues to be well accepted in this area of the Town.

Agricultural District #14 generally follows the Rondout Creek floodplain through the Towns of Marbletown, Rochester, and Wawarsing. Within the Town of Rochester, there are 13 principal farms. Vegetable and dairy farming are the backbone of this district. Dairying has been and is expected to be stable with some growth on individual farms. The good soils make vegetable growing a viable industry which has grown as a result of some land-ownership changes. The size of the vegetable growing operations has increased. Agriculture is and will likely continue to be the major industry within the district area.

A profile of each district (including lands both within and outside the Town of Rochester) are provided in the Table below.

TABLE 15

AGRICULTURAL DISTRICTS IN ROCHESTER

	AGRICULTURAL DISTRICT		
	6	12	14
Number of Acres in District	3,880	3,621	6,140
Number of Acres in Farms & Percent of District Area	2,538 (65%)	2,108 (58%)	3,870 (63%)
Number of Acres Cropped	1,900	1,645	2,150
Total Number of Acres Owned by Farmers	2,238	1,248	3,110
Total Number of Acres Rented by Farmers	300	860	760

The extent of the agricultural districts in the Town of Rochester and the wide variety of crops and livestock are indicative of the continued viability and importance of agriculture in Rochester.

In order to help maintain this important segment of the Town's economy, it is important that land use strategies and zoning designations be consistent with the agricultural uses in the Town's agricultural districts. Because an agricultural district designation provides a farmer with an incentive for continued production, Town support of agricultural districts within Rochester can help protect open space and farmland resources.

As a land trust, the Rondout Valley Land Conservancy is active in the community in preserving the farmland and natural resources in the Rondout Valley on a permanent basis through the acquisition of conservation easements. The Conservancy's activities in Rochester have thus far focused on protection of natural resources such as environmentally sensitive mountain areas, stream corridors, wetland areas, and lands surrounding Minnewaska State Park. The Conservancy has been successful in preserving farmland in adjoining communities and is working towards preserving agricultural lands as well in Rochester.

2.820 Existing Zoning Districts

General

Most of the Town of Rochester is zoned residential. The A Residence District alone comprises approximately 59 square miles and occupies approximately sixty-seven percent (67%) of the Town.

The Town of Rochester has been separated into the following zoning districts:

A	Residence District
R-1	Residence District
R-2	Residence District
B	Business District
F	Floodplain District
I	Industrial District

As the "Zoning Map" illustrates, and as mentioned above, the A Residence District occupies a large area, generally the more rural areas in the northwest and southeast sections of the Town. The R-1 Residence District is situated on both sides of the Rondout Creek but beyond the areas of more concentrated development. The R-2 Residence District, as illustrated, is situated in pockets where development is generally more concentrated. The Floodplain District is found in the flood-prone areas along the principal streams in the community. The Town's zoning regulations provide that Industrial Districts may be established as a "floating district" in the A, R-1 and B Districts as long as certain specified provisions are met. There are currently three floating Industrial Districts in the Town, although they are not shown on the Town's original Zoning Map.

Residential Districts

Although the Town's residential districts (A Residence District, R-1 Residence District, and R-2 Residence District) appear to conform with existing residential development patterns, there is in actuality very little distinction between these districts in the Town of Rochester's Zoning and Land Use Control Law adopted in 1983. All of the bulk density and dimensional requirements listed in the regulations for each district area are the same including the standard for the minimum lot size of one acre. In addition, most of the residential and general uses permitted by right in the districts are also similar. A few uses not permitted in the R-2 District, such as mobile home parks, resort hotels and camps, bungalow colonies, and fraternity-type houses, are however permitted in the A and R-1 Districts.

Commercial Districts

There is only one category for commercial uses in the Town, the B District. As previously mentioned, this district includes considerable highway frontage area along both sides of Route 209 in the Town. While only a few uses are permitted by right, such as single-family dwellings, mobile homes and certain agricultural uses, most additional uses are allowed upon receiving either a Special Use Permit or upon obtaining Site Plan approval. These uses include: two-family and multi-family dwellings, places of worship, professional offices, retail establishments, restaurants, gas stations, automobile repair shops, etc.

Industrial Districts

Rochester's Zoning and Land Use Control Law adopted in 1983 did not provide for any fixed (delineated) industrial zones in the Town. The regulations do permit, however, "floating" industrial districts to be created by Town Board approval. Uses permitted by Special Use Permit or Site Plan approval in the Industrial District include certain agricultural uses, professional offices, wholesale businesses, research laboratories, fuel storage facilities, extractive operations, etc. There are currently three (3) floating industrial zones in the Town.

Flood Hazard Areas

Flood hazard areas shown on the Zoning Map are located along the community's principal streams including the Rondout Creek, Rochester Creek, Mill Brook, and the Vernooy Kill. Nearly all of the uses allowed within this district area require either a Special Use Permit or Site Plan approval. The district's restrictive quality is reflected by the fact that only agricultural uses and certain accessory uses are permitted by right.

In addition to flood hazard areas delineated on the Zoning Map, Local Law #6 (Flood Damage Prevention) adopted by the Town in 1987 regulates land uses in all 100 and 500-year flood hazard areas mapped by the Federal Emergency Management Agency (FEMA) on flood insurance rate mps (FIRM). This local law does not necessarily apply to all of the flood hazard areas delineated on the Zoning Map; it is limited in its application to only those flood hazard areas mapped by FEMA on FIRM maps.

2.830 Zoning in Adjacent Communities

The adjacent zoning and land use in the communities bordering the Town of Rochester is described in Table 15 on the following page.

TABLE 16

ADJACENT COMMUNITY ZONING

Town	Zoning/Land Use Description of Area Bordering Rochester
Denning	No Zoning
Marbletown	A-1 Residence - Agricultural, 1 dwelling unit per acre (west of County Road) A-4 Residence - Agricultural, 1 dwelling unit epr 4 acres (between County Road 1 and New Paltz Town Line)
New Paltz	A-3 Agriculture - Agricultural, 1 dwelling unit per 5.25 acres
Gardiner	ARR-200 - Agricultural/recreational/residential uses, 1 dwelling unit per 4.6 acres
Wawarsing	R/R-40 - Residential/resort, 1 dwelling unit per 40,000 square feet (south of Kerhonkson) R/S-20 - Residential/suburban, 1 dwelling unit per 20,000 square feet (between Foordmore Road and Kerhonkson and north ofRoute 209) R/V-5 - Residential/village, 1 dwelling unit per 20,000 square feet (Kerhonkson, along Route 209) I/L - Light Industry (along Canal Street in Kerhonkson) B/R - Business/Retail (Route 209 in Kerhonkson)
Olive	Conservation Residential - 1 dwelling unit per 10 acres (south of Haver Road) Exurban Residential - 1 dwelling unit per acre Rural Residential -1 dwelling unit per 3 acres (north of Sadler Road)

2.840 Regional Development Factors

Rochester's growth and development appears to be strongly influenced by regional development factors both within and outside of the Town.

Within the Town, a significant percentage of the Town's labor force is dependent upon the economic well-being of the area's major hotel resort complexes. As previously mentioned in Section 2.420, Employment Profile, approximately 48% of Rochester's labor force in 1980 was employed in the technical/sales and service occupational groups which the resort industry helps to support.

Residential growth in Rochester is also tied to major employers and employment centers located outside of the Town. Referring again to the Employment Profile Section, in 1980 the average driving time to commute to work was approximately 30 minutes, which is roughly the time to travel from Rochester to Kingston. It was also found that only approximately 20% of the Town's labor force traveled less than 15 minutes to work which would include employers in and around Rochester. It is therefore evident that a majority of Rochester's occupational force reside in the Town and work elsewhere for employers such as IBM, hospitals, Imperial Schrade, Metropolitan Life Insurance, the Eastern New York Correctional Facility at Napanoch, the State University of New Paltz, etc. in Kingston and the Villages of New Paltz and Ellenville. Depending upon whether the region's principal industries either expand or reduce their base of operations in the future, this could result in a subsequent increase or decrease in development activity respectively in the Town.

At the same time, it is also possible that new major regional development proposals such as the Town Center shopping plaza in Stone Ridge, could noticeably influence development patterns in Rochester as well.

2.900 ENVIRONMENT

2.910 Topography and Slope

The Town of Rochester has very diverse topography. The land form varies from the rugged slopes of the Shawangunk Mountains in the eastern portion of the Town and the Catskill Mountains in the western portion of the Town to the flat lands along the Rondout creek. Between these mountainous areas and the Rondout Creek is rolling land, some of which has very steep slopes.

The Rondout Creek flows in a south to north direction through the Town. East of the Rondout creek the land rises rapidly toward the Shawangunk Mountains. Very few level areas can be found in the portion of the Town east of the Rondout Creek. West of the Rondout Creek the land is more rolling until the Catskill Mountains are reached. Between the Catskill Mountains and the Rondout Creek are relatively level areas as well as areas of steep slopes.

The dominant physical characteristics of the Town are the rugged slopes of the Shawangunk Mountains and the Catskill Mountains. The Shawangunk Mountains rise to a height of over 2,100 feet above mean sea level in the southeastern portion of the Town and the Catskill Mountains rise to a height of over 2,600 feet in the northwestern portion of the Town just north and west of Big Rosy Bone Knob. This latter height is the highest elevation in the Town. The lowest elevation is approximately 200 feet located along the Rondout Creek near the Town of Rochester and Town of Marbletown boundary.

Several of the highest points in Rochester include:

- 2,630 feet - north and west of Big Rosy Bone Knob
- 2,220 feet - Big Rosy Bone Knob
- 2.140 feet - Castle Point
- 1,972 feet - Pope Hill

The "Slope Analysis Map" illustrates the different degrees of slope of the Town's landscape. Although a significant amount of the Town's surface area has only 0-15% slopes, very little of the Town is noticeably flat. As mentioned above, most of the flat areas in the Town are found along the Rondout Creek's floodplain and areas to the west of the river valley.

Major portions of the Shawangunk Mountains in the east and the Catskill Mountains in the west have slopes of over 15% and 30%. In addition, there are several areas within the foothills between the Rondout Creek and the Catskill Mountains with slopes of over 15%.

The identification of steep-sloped areas is important in regard to future planning in the Town. Areas with extensive slopes of over 15% may be unsuitable for residential development on small lot sizes because of the potential for problems with drainage and on-site sewage disposal. Slopes of over 30% pose even greater limitations for development and may also indicate environmentally sensitive and scenic viewshed areas.

2.920 Soils & Geology

Geology

The Town of Rochester lies partly within two major physiographic provinces; the Catskill Mountains in the western section of the Town are part of the Appalachian Plateau Province while the Rondout Valley and the Shawangunk Mountains in the central and eastern sections of the Town are part of the Valley and Ridge Province.

The Catskill Mountain area consists entirely of Devonian age sedimentary rocks, primarily sandstones, siltstones and shales which have a slight inclination to the west. The present-day Catskill Mountains are actually a dissected plateau where uplift and subsequent erosion have resulted in the formation of narrow steep-walled valleys and peaks. The foothills that lie between the larger mountains and the Rondout Valley also appear to have the same geologic origins as the Catskill Mountains.

The Rondout Valley area contains folded and faulted shales, sandstones and limestones of Silurian and Devonian age and are important for their commercial value as sand and gravel operations. A large gravel bank is located at the corner of Boodle Hole Road and Mettacahonts Road. Another important source of gravel and general fill is found at Rochester Center Road. Other potential sources for aggregate are concentrated in the area immediately west of the Rondout Creek.

The Shawangunk Mountains are formed of folded and faulted beds of Silurian quartz pebble conglomerate. Acting as a cap rock, this formation lies upon the thin bedded and easily eroded Ordovician shales of the Wallkill Valley. Covered with only a thin layer of soil and nearly impermeable, with the exception of fractured areas, the conglomerate contributes to the high runoff rates found along the Shawangunk Ridge. It also acts as a confining bed which produces many of the artesian wells found on the mountain flanks.

Soils

According to the USDA Soil Survey of Ulster County, there are seventy-two soil types found in the Town of Rochester (see Appendix A). However, since a detailed soils map is not being prepared as part of the Town's master plan, the soils analysis will be based on Soil Associations versus individual Soil Series mapping units.

In the central portion of the Town, along both sides of the Rondout Creek and Route 209, the soils are part of the Hoosic-Schoharie-Chenango Association. These moderately to excessively well-drained soils, with slopes mainly between 3-15%, tend to be found on benches and terraces along valley bottoms. While these areas are most suitable for orchards and cropland, some areas have good potential for community development.

Soils of the Bath-Nassau Association are found in the Whitfield/Liebhart/Tabasco area of Rochester. The soils of this association typically occur in areas with knolls, ridges and low hills of irregular relief. Level areas may be suitable for homesite construction, although steep slopes, variable depth to bedrock, and slow water permeability pose problems for larger-scale types of community development.

Soils that are part of the Arnot-Oquaga-Lakawana Association underlie the areas of Riggsville and Palentown. These soils are found in mountainous areas and are likely to be very bouldery. Their slopes are commonly over 35%. This association is most suitable for woodland and provides excellent habitat for wildlife. Shallowness to bedrock, steep slopes, rock outcrops and slow permeability pose limitations for most community development.

In the extreme western portion of the Town, in the area north of and including Yagerville, the soils are part of the Willsboro-Wintsboro-Swartswood Association. These moderately well-drained and well-drained soils are generally found along the broad hills, ridges and valley sides on the plateau adjacent to the Catskill Mountains. These areas are very bouldery and have slopes mainly between 3-8%. This association is most suitable for woodland and has several limitations for community development.

The soils in the southwestern area of the Town along the Shawangunk Ridge are part of the Lordstown-Arnot-Mardin Association. With slopes mainly between 3 to 15%, these soils are commonly found on hilltops, hillsides, and ridges. This association is also most suitable for woodland and wildlife habitat. Shallow depth to bedrock, rock outcrops, etc. are limiting factors for major community development.

All of the soils found in Rochester have been formed of glacial tills of variable thickness overlying bedrock. Bedrock is likely to be found at a range of 10-40 inches below the surface. In many of the soils within these associations a dense fragipan may exist between 14 and 36 inches underground, which severely limits water permeability.

The "Surficial Soils Map" illustrates the different types of surficial geology found in the Town and notes the depth to bedrock. The map separates the surficial geology in Rochester into three categories: Bedrock; Clays, Silts, Till and Proglacial Lake Deposits; and Sand and Gravel Deposits.

Bedrock: These soils consist of exposed bedrock or bedrock generally within 3 ft. of the surface. Large areas of shallow bedrock exist along the Shawangunk Ridge, the Catskill Mountains, along an extensive section of Queens Highway, and along Berm Road between Accord and Kerhonkson. Other smaller areas exist throughout the Town. These areas would greatly limit the ability to construct septic systems and roads would be costly due to the likelihood of blasting.

Clays, Silts, Till and Proglacial Lake Deposits: These soils consist predominately of "till" which has a variable texturing of clay, silt-clay, and bouldery clay. This category comprises more than 50% of the Town of Rochester. The construction of septic systems in this category is suitable where the soils are drained well and the slopes are less than 10%.

Sand and Gravel Deposits: These soils consist of sands and gravels and are generally well drained with mild to flat slopes. The larger portions of this category are along Samsonville Road, south of Rochester Center Road to Krum Road, and along a portion of Queens Highway. Many sand and gravel mines currently operate within this area. These soils are preferred for septic disposal and road construction. However, some of this category is adjacent to or coincides with floodplain areas which would prohibit any construction.

Soils on steep slopes (slopes greater than 30% grade), ridge crests and along floodplains of the Town also present difficulties in siting wells, septic systems and driveways on individual properties. Roads and buildings sited in these areas are not only more expensive to build and maintain, but also create considerable problems of soil erosion, slope destabilization and stream sediment loading. Steep slopes, ridge crests and floodplains are also commonly areas of local or regional visual/recreational importance. Therefore, construction in these areas may create both environmental and aesthetic impacts.

Any development on soils with steep slopes, along ridge crests and along floodplains requires special precautions in order to prevent soil loss and unnecessary sediment loading of stream courses and other water bodies. The Town should consider appropriate soils management regulations in these areas.

2.930 Hydrology

Groundwater

Although Town residents rely primarily on groundwater for their domestic and commercial needs, little is actually known of this important community resource.

Existing groundwater information is based primarily upon well data. Appendices B-1 and B-2 are tables that show data from selected high yielding wells drilled into unconsolidated rock and into bedrock. This information is taken from the Ulster County Water Supply Study, 1989 from well logs filed at the Ulster County Department of Health prior to June 1988. There are three times the number of high yielding wells (27) in the unconsolidated rock as the number of wells from bedrock (9). The data provided from these high yielding wells shows that while the bedrock wells result in higher yields than the yields from the unconsolidated wells, 72 gpm versus 47 gpm, the average depth of the wells, however, is noticeably shallower for unconsolidated wells. With an average well depth of only 47 feet, the protection of shallow wells in unconsolidated bedrock should be viewed as an important community planning issue.

The Ulster County Water Supply Study, published by Stearns & Wheeler, contains a map of the principal unconsolidated aquifers in Ulster County. It appears that the most extensive underground aquifers in the Town of Rochester occur within and adjacent to the floodplains of Rochester's primary streams including along Rondout Creek, Peters Kill, Rochester Creek, Mettacahonts Creek, Mombaccus Creek, Stony Kill, and Mill Brook. This is confirmed by the locations of existing private community water systems that utilize groundwater.

According to the Ulster County Water Supply Study, an abundance of groundwater appears to exist in Rochester generally underlying the more settled areas. As part of an effort to better understand the Rondout Valley, the Rondout Valley Land Conservancy is sponsoring a study that will hopefully shed more light on the area's groundwater resources. The results of this study are expected to be published within the year.

As Rochester continues to grow, and the use of the community's groundwater resource expands, it will become increasingly important to prevent aquifers, and their associated recharge areas, from being contaminated.

Surface Water

All of the surface water in the Town of Rochester drains from the Catskill and Shawangunk Mountains into numerous tributary streams of the Rondout Creek. Most of the creeks in Rochester join the Rondout Creek within the Town, with few exceptions. The Rondout Creek joins the Wallkill River in Rosendale and then proceeds to the Hudson River at Kingston.

The major waterways in the western two-thirds of the Town originate on the slopes of the Catskills. Streams in this area flow generally north to south. The primary streams in the western portion are the Mombaccus Creek, Mill Brook, Rochester Creek, North Peter's Kill, and Vernooy Kill. In the eastern third of the Town, the streams flow from the southwest to the northeast. The Stony Kill, Sanders Kill, and Peter's Kill are the primary streams in this region. All three originate on the slopes of the Shawangunk Mountains.

Other significant surface water bodies in the Town are Lake Minnewaska and Mohonk Lake. Mohonk Lake is only partially located in the Town.

All of the streams in the Town have a stream classification from NYSDEC which indicates what the best use of each waterway is. In order to protect the best use or class of water, the NYSDEC applies water quality standards to these classifications.

Fresh water streams in New York State are classified by letter according to their present quality, and the "best" permitted use for water of that quality:

A - public drinking water source
B - bathing
C - fish propagation and fishing
D - secondary contact recreation and fishing

The location and stream classification of surface waters within the Town are indicated on the Wetlands and Stream Classification Map for the Town of Rochester prepared by BCM Engineering.

As the Wetlands and Streams Classification Map indicates, most of the creeks in Rochester are classified as "A" streams, indicating they are drinkable. Many of the smaller tributaries to these waterways, the Stony Kill and the Sander's Kill have been classified as Class "AA", meaning they have a higher, cleaner rating than the Class "A" streams. In the more developed areas near the Rondout Creek, a few small tributaries are classified as Class "C".

The Rondout Creek, the principal waterway in the Town, has been classified as a Class B waterway by NYSDEC. The Peter's Kill has been classified as "B" stream, suitable for contact sports like swimming.

Typical of Ulster County, more than half of the streams in the Town are suitable habitat for trout or have been designated as trout spawning streams. The areas suitable for trout are noted on the map.

Floodplains

Flood Insurance Rate Maps (FIRMs) were prepared by the Federal Emergency Management Agency (FEMA) in consultation with the Town in 1983. Both 100-year and 500-year flood hazard areas indicate the extent of floodzone areas in the Town on these maps. The areas studied in the greatest detail include Accord and Mill Hook. Areas subject to flooding are shown on the Flood Hazard Area Map.

The Town passed Local Law #6 for Flood Damage Prevention in 1987. This law, which is required by FEMA in order for flood insurance to be available in the Town, establishes development standards for all new construction within the flood hazard areas.

The Rondout Creek has the most extensive floodplain in Rochester. A large swath of land subject to flood hazards stretches along the Rondout from about one mile northeast of Kerhonkson to approximately one mile northeast of Saint Josen.

Other waterbodies which are bordered by flood-prone areas include the Mombaccus Creek, Mill Brook, Vernooy Kill, Mettacahonts Creek, and Rochester Creek. Much of Accord is located within the floodplain. Most roads are outside the floodplain except for Route 209. The current Rochester Zoning Ordinance includes a Floodplain Zoning District which designates uses permitted in this district. The FEMA-designated flood hazard areas generally correspond with the Floodplain Zoning District with the following exceptions:

DESIGNATED BY FEMA, NOT IN FLOODPLAIN ZONING DISTRICT	LOCATED IN FLOODPLAIN ZONING DISTRICT, NOT DESIGNATED BY FEMA
Mettacahonts Creek	North of land Road - area of Great Swamp
From Olive Line paralleling DeWitt Road/Queens Highway to confluence with Rochester Creek at Sahler Mill Road	Areas east of where Lucas Turnpike forks off Route 209
Area west of Land Road	Along Stream from Lucas Turnpike south to confluence with Rondout Creek
West of Whitfield Road	
Between Whitfield Road along North Peters Kill	

The FEMA regulations for building standards apply only to those areas designated on the FIRM maps. The land use restrictions in the Town's zoning regulations that control the specific types of uses in flood prone areas apply specifically to the Floodplain Zoning District. There are also many areas of the Town, as mentioned where the FIRM maps overlap with the Floodplain Zoning District. In these areas, both Local Law #6 and the zoning standards apply. The potential for confusion over the jurisdiction of these two sets of regulations in different locations could be decreased by expanding the Floodplain Zoning District to include all areas regulated by Local Law #6 which applies to all flood hazard areas mapped on the FIRM maps.

Wetlands

Wetlands are a valuable and productive natural resource, they provide for: (1) flood, erosion and storm control, (2) fish and wildlife habitat, (3) food chain nutrient sources, (4) recreation, (5) educational and scientific research, and (6) open space and aesthetic appreciation.

Wetlands are regulated both by the Federal and State governments. At the State level, the NYSDEC regulates freshwater wetlands that are at least 12.4 acres or larger in size. State regulations restrict most types of development that directly affect any wetland or that is within a 100 foot buffer zone surrounding regulated wetlands.

Federal laws regulate the discharge of dredged or fill material into wetlands. Consistent with a natural policy of no net loss of wetlands, any fill of wetlands in excess of one acre requires a permit from the United States Army Corps of Engineers.

There are many small wetland areas in the Town of Rochester. In addition, there are twenty-eight (28) wetlands of over 12.4 acres that are regulated by the NYSDEC. Most of these wetlands are situated along or near streams and are scattered throughout the lower elevations of the Town as illustrated by the "Wetlands and Stream Classification Map." The Vly Swamp, located in the north-central section of Town, is the most extensive wetland in the area, also extending into the Towns of Olive and Marbletown.

Table 17 on the following page lists the NYSDEC designated wetlands in Rochester along with their general location and acreage. The list indicates the wetlands identified on the Wetlands and Classification Map.

2.940 Vegetation and Wildlife

Vegetation

The vegetative communities found in Rochester vary greatly due to the various environmental conditions that exist in the Town. Upland areas of the Town of Rochester are comprised of predominantly second growth mixed hardwood forest. The Shawangunk Mountains in the eastern portion of the Town are dominated by chestnut oak, northern red, white, and black oak in drier upland sites, while ravines and lowland areas with impeded drainage generally are dominated by hemlocks, red maple and sugar maple.

In the western portion of the Town in the Catskill Mountains, a mix of conifer (hemlocks, spruce and fir) and hardwood stands in varying proportions occur at the higher elevations. Transitional areas between lowland and upland slopes consist primarily of American beech and yellow birch.

The lower valley areas throughout the Town support hardwoods and hemlock communities, dominated by trees adapted to wetter, cooler conditions. Mountain laurel and other heath shrubs are common understory species occurring in both upland and lowland areas of the Town.

Riparian vegetation along the Rondout Creek consists of red maple, sugar maple, box elder, eastern cottonwood and willow. Many herbaceous weedy plants occur in the understory due to the fluctuating water levels and human disturbance. Waterways like the Peters Kill and Sander Kill are narrower and more shaded waterways, cutting through steep ravines and generally lined with hemlocks. Mountain laurel usually dominates the otherwise sparse understory. Other tree species along these streams include sweet birch, white ash, and species of maple.

TABLE 17

NEW YORK STATE REGULATED WETLANDS IN THE TOWN OF ROCHESTER

NYSDEC WETLAND	GENERAL LOCATION
GA-17	Eastern edge of town below Minnewaska; straddles southern Rochester and Gardiner
KR-1	East of Samsonville Road
KR-2	West of Samsonville Road, north of Schroon Hill Road
KR-3	North of Queens Highway, west of DeWitt Road
KR-4	West of Schwabie Turnpike
KR-5	Southwest of intersection of Schroon Hill Road and Schwabie Turnpike
KR-6	Southern end of Vly Swamp, straddles Olive, Marbletown and Rochester
KR-7	Between Ridgeview Road and Schwabie Turnpike near intersection with Upper Cherrytown Road
KR-8	Along Mombaccus Creek east of Upper Cherrytown Road
KR-9	West of Sundown Road
KR-10	East of Queens Highway, west of Hill Road
KR-11	East of CR 3, west of Boice Mill Road
KR-12	East of Krum Road, north of Decter Drive
KR-13	West of Route 209 near Pataukunk
KR-14	North of Granite Road, west of CR 27
R-1	South of Balsam Swamp
R-3	West of Vernooy Kill
R-4	East of Ridge Road
R-5	Straddles Rochester and Wawarsing
R-26	Between Balsam Swamp and Holly Road along Denning border
R-27	Straddles Rochester and Wawarsing border
M-8	East of Vly Swamp along Marbletown border
M-14	Between Whitfield Road and Mill Road
M-19	East of Kripple Bush Road, west of Route 209
M-21	East of Upper Whitfield Road
M-22	East of Upper Whitfield Road, northwest of Mill Road
M-23	North of Alligerville Road, west of West Brook Road, straddles Marbletown border
M-24	Between West Brook, Alligerville Road, and Lucas Turnpike (CR 1)

Source: Wetlands and Stream Classification Map, Town of Rochester

Wildlife

The large mountainous and heavily forested areas of the Town provide ample habitat for many wildlife species. A sample list of resident animals include:

- woodchucks
- white tail deer
- black bear
- fox
- raccoons, squirrels and chipmunks
- opossum
- rabbits
- porcupine
- coyote
- skunks
- otter
- bobcat
- mice, voles and shrews

Numerous avian species such as songbirds, hawks and owls, ducks, herons, turkey and vultures also occupy woodland and wetland/creek habitats. Wetland areas throughout the Town also provide excellent habitat.

Five "deer wintering areas" where white-tail deer seasonally congregate have been identified by the NYSDEC. The general location of these areas is as follows:

- Wawarsing - Kerhonkson (west of Pataukunk)
- Mettacahonts Creek (above Rock Mountain Road at elevations from 1300 to 2700 feet)
- Riggsville (west of Viapoli Road near Cherrytown Road)
- Peterskill Creek North (east of St. Josen, west of Rock Hill Road)
- Stonykill Creek (vicinity of St. Josen and the Sanders Kill)

If development occurs in a deer wintering area, the resulting displacement may lead to increased roadway fatalities and may disturb established patterns of deer movement and winter concentration.

Endangered and Threatened Species

Certain species of plants and animals have been designated as threatened or endangered in New York State. Species listed as endangered by the State are in danger of extinction throughout all or most of their ranges throughout the State. In the case of plants, plants with limited geographic ranges, occurring in fewer than six locations, or with less than 1,000 individual plants in existence are classified as endangered. Threatened species are those that are likely to become endangered in the foreseeable future. Also designated by New York are animal species of special concern which may become threatened. Protected wildlife species that are likely to occur in the Town and the type of habitat in which they can be found are indicated in the table below.

TABLE 18

ENDANGERED, THREATENED, AND SPECIAL CONCERN SPECIES OF WILDLIFE LIKELY TO OCCUR IN THE TOWN OF ROCHESTER

SPECIES	HABITAT
Northern Cricket Frog	In swamps and marshy wet areas, in vicinity of Mohonk Preserve
Osprey	Lakes of Minnewaska State Park
Bald Eagle	Along Rondout Creek
Eastern Woodrat	Slopes of Shawangunk Ridge
Mole Salamander Spotted Salamander Jefferson Salamander Blue-Spotted Salamander	Intermittent Woodland Ponds
Grassland Sparrows Henslow's Sparrows Grasshopper Sparrow Vesper Sparrow	Older, overgrown field
Least Bittern	Cattail wetland
Red-shouldered hawk	Large trees near fields or wooded wetlands
Indiana Bat	Ice caves on Shawangunk Ridge
Spotted Turtle (s.c.)	Ponds and wetlands
Bog Turtles	Wetlands and bogs

Table 19 below indicates protected species that may potentially occur in Rochester.

TABLE 19

PROTECTED SPECIES OF PLANTS LIKELY TO OCCUR IN THE TOWN OF ROCHESTER

SPECIES	HABITAT
Broom Crowberry	Shawangunk ridge
Woolly lip fern	Dry, rocky sites, such as ledges and cliffs
Northern monk's hood	Cold streambeds, mostly banks, gravelly areas, rich woods, partial clearing
Three-sided rush	Rocky ledges of higher elevations
Globeflower	Wet meadows and swamp forests, transition zones between forest and wet clearing

Source: Rare Plants of New York

NYSDEC records confirm the existence of protected animal and plant species within the Town. Precise locations are not revealed to prevent collection of species. A significant vegetative community also exists within the eastern area of the Town near Lake Minnewaska. The Shawangunk Ridge, the only extensive high-altitude pitch pine barrens in the world, contains several rare and endangered plant species.

To preserve State protected species within the Town, the Town may wish to further study these species and identify ways to ensure their protection.