1991
RINGWOOD
MASTER PLAN

malcolm kasler & associates, p.a.
COMMUNITY PLANNING & DEVELOPMENT CONSULTANTS · HACKENSACK, NJ

RINGWOOD BOROUGH MASTER PLAN

PREPARED FOR:

RINGWOOD PLANNING BOARD

FEBRUARY, 1991

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MASTER PLAN
PASSAIC COUNTY, NEW JERSEY

The original document was appropriately signed and sealed on February 25, 1991 in accordance with Chapter 41 of Title 13 of the State Board of Professional Planners.

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SUMMARY RECOMMENDATIONS

The 1990 Ringwood Master Plan is a comprehensive document covering a variety of land use, environmental, housing, traffic and community facilities issues. To assist the reader, the Plan contains a summary listing of the recommendations contained in the Plan. These summary recommendations are noted as follows:

1. The goals and objectives of the master plan have been expanded to include some of the following elements from the 1981 master plan .

   ... To encourage a desirable visual environment including ridgelines, natural vistas and natural areas;

   ... To prohibit the development of flag lots;

   ... To seek tax relief from the State of New Jersey given the fact that massive amounts of revenue are lost due to the acquisition of parklands and reservoirs in the Borough;

   ... To encourage senior citizen community housing construction;

   ... To protect areas of ground water recharge as well as the quality of all subsurface waters in Ringwood in recognition of the Borough's designation as a sole source aquifer community;

   ... To promote the recognition of hiking trails and their uses;

   ... To promote the improvement of existing transportation routes and the construction of new roads and bicycle trails in a safe and efficient manner;

   ... To promote and encourage the cross acceptance process in support of the State Development and Redevelopment Guide Plan particularly with reference to areas designated as Tier 5 and 7 for the Borough of Ringwood;

   ... To promote and maintain the housing stock in the Borough consistent with the substantive certification granted to Ringwood by the Council on Affordable Housing.

2. The 1990 Land Use Plan Element proposes five residential land use categories. These are noted as follows:

... Environmentally Sensitive Residential Land Use;
... Rural Residential Land Use;
... Low Density Residential Use;
... Moderate Density Residential Use;
... Medium Density Residential Use.

3. The Plan establishes, for the first time, the unique character and quality of the Stonetown portion of the Borough and designates substantial areas as environmental sensitive residential areas. No other portion of Ringwood is so designated.

   A number of sites within the southeastern portion of Ringwood, also containing considerable environmental limitations have been designated as rural residential areas reflective of the fragile environment in which they are located.

4. The Plan also recommends consideration be given to providing a centralized location for senior citizen housing when it is to be developed. The Plan also calls for the establishment of a blue ribbon committee, appointed by the Mayor and Council, to investigate the appropriate location for such a site and a method of funding the development of such housing.

5. The major shopping centers in the Borough - Fieldstone Plaza, Ringwood Plaza and Ringwood Commons are designated as community commercial land uses. The Plan recommends the deletion of the 39 acre tract of land south of the New Borough Parkway and the 20 acre area east of Countryside Lane for community commercial land uses given the environmental sensitivity of the site.

6. The Plan also recommends some modification for the general business area located north of the Monksville Reservoir. Expansion of commercial uses including neighborhood retail uses and commercial recreation uses are proposed for the area.

7. The north side of Margaret King Avenue has been zoned for office and research type uses for almost a decade. During this time period, no development has taken place. The Plan proposed to rezone the area for light industrial uses and to expand the light industrial uses to include office and research functions as well.

8. The category of recreation and open space is the most significant and dominant land use in the Borough of Ringwood. Almost 11,600 acres or 2/3 of the Borough is considered as recreation and open space. These include State, County and Borough parklands, reservoir and watershed lands, cluster open space and conservation lands.

   The Plan recommends that certain additional perimeter land be incorporated within the State and County parklands including the establishment of stream corridors along the primary brooks in the community and the establishment of trail corridors in the Borough. Overall,

the Ringwood Master Plan suggests that more than 12,000 acres or 69 percent of the Borough remain in a recreation or open space.

9. The Ringwood Master Plan recognizes the significance of the Wanaque Reservoir as an important source of potable water for the North Jersey area. It recommends that use of the reservoir and the watershed lands that currently exist be continued unless and until definitive standards are promulgated by the Department of Environmental Protection.

10. The Plan also recommends the establishment of several additional neighborhood recreational facilities on lands which are predominantly in public ownership.

    The 1990 Master Plan recognizes the significance of stream corridors and expands the concept to include the preservation of all principal streams in the community along privately owned lands.

    The 1990 Master Plan establishes open space stream corridors for Cupsaw Brook, High Mountain Brook, Meadow Brook, Burnt Meadow Brook, Blue Mine Brook, Mine Brook, Ringwood Creek, and the West Brook. A minimum of 50 and a maximum of 150 feet may be required to serve as the open space stream corridor following the edge of these water bodies.

11. Marked trails and unmarked trails have been identified and published by the New York-New Jersey Trail Conference. The 1989 Edition of North Jersey Trails, Trail Maps 12 and 22, identifies 18 marked and a number of unmarked trails in Ringwood.

    The following marked trails are identified in the Ringwood Master Plan.

ooo	Blue or Hewlett Butler	ooo	Hewitt - Butler
ooo	Bus Stop 22	ooo	Stonetown Circular
ooo	Cannonball	ooo	White
ooo	Cooper Union	ooo	Horse Pond Mountain
ooo	Crossover	ooo	Wyanokie Circular
ooo	Cupsaw Brook	ooo	Wyanokie Crest
ooo	Halifax	ooo	Mine
ooo	Hoeferlin	ooo	Macopin
ooo	Ringwood - Ramapo	ooo	Otter Hole

    These trails and identified viewpoints are recommended to be a part of the Ringwood Master Plan.

12. The Land Use Plan Element also includes a number of properties that are contained on the National, State and County historic sites registers. The Plan designates sites and potential historic properties in accordance with the Municipal Land Use Law.

13. In order to maintain the quality of life in Ringwood, the Master Plan

proposes the following :

- ooo The preservation of trees and other forms of vegetation be vigorously maintained;

- ooo Limitations be established in all zones concerning site disturbances in order to protect and control surface and subsurface conditions;

- ooo Mindful of the Borough's bucolic setting, the Plan recommends specific controls and regulations for radio towers, TV antennae, microwave towers and other similar structures.

14. The Housing Plan element finds the Borough of Ringwood has more than met its fair share housing obligation through several housing rehabilitation programs and is not required to provide additional housing for low and moderate income persons.

15. Various roads and streets in Ringwood have been classified as to their functional utility. Some rights-of-way and pavement widths are proposed to be reduced.

16. Proposals concerning modifications and/or improvements to various portions of the roadway network presented in the 1981 master plan have been modified by the new Plan. These changes are noted in the Traffic Plan element which begins on page 138.

17. The 1990 Master Plan also recognizes the need for walking and biking facilities in the Borough and recommends that all major and collector roadways be provided with such facilities whenever possible.

18. The analysis section of the master plan indicates three areas of particular need for municipal facilities. These include the police department, the administrative offices and Borough Hall functions and the Ringwood public library.

    In the case of the police station, there are serious inadequacies for present facilities. The present police station lacks any incarceration facilities and there is a lack of adequate space for their operations. Similarly, past studies have indicated major deficiencies in the Borough Hall complex.

    Similar problems exist with the present library since there is an insufficient amount of space in the present library. The analysis portion of the master plan suggests that there is an inadequate amount of space for reading and work areas, space for accommodating books and related library services. The need to upgrade the library facility was also recognized by the public in the Planning Board questionnaire.

The 1990 Master Plan recommends that the Borough evaluate several alternatives in view of these needs. Such an analysis might consider the consolidation of facilities in order to reduce operational costs wherever possible.

INTRODUCTION

Approximately two years ago Ringwood Borough entered into an agreement with Malcolm Kasler and Associates, P.A., its planning consultant, to provide technical assistance in updating its master plan. The comprehensive plan presented here represents the culmination of intensive study and evaluation by the Planning Board.

Community planning in Ringwood is an established principle tracing back many years. Borough records indicate that the Planning Board adopted master plans in the mid 1960's, 1973, and 1981. Recognizing the 1981 Master Plan had become outdated, the Planning Board has proposed some changes to upgrade this document plan to reflect present and future needs of the community.

Planning is viewed as a process of selecting the optimum solution to a set of alternatives. As a process, the Plan should be considered flexible to meet changing needs of that time. Carrying out the plan is accomplished in a number of ways including implementation of ordinances; decisions by various community boards and agencies, expenditure of funds for capital needs and most importantly by citizen's participation.

The Plan presented in this report is a significant development plan of which the Borough residents can justly be proud. It incorporates a number of significant contemporary planning features which are designed to protect and promote the character of Ringwood.

The master plan also recognizes the Municipal Land Use Law requirements including the Borough's relationship to adjoining communities, Passaic County and the State Development and Redevelopment Plan.

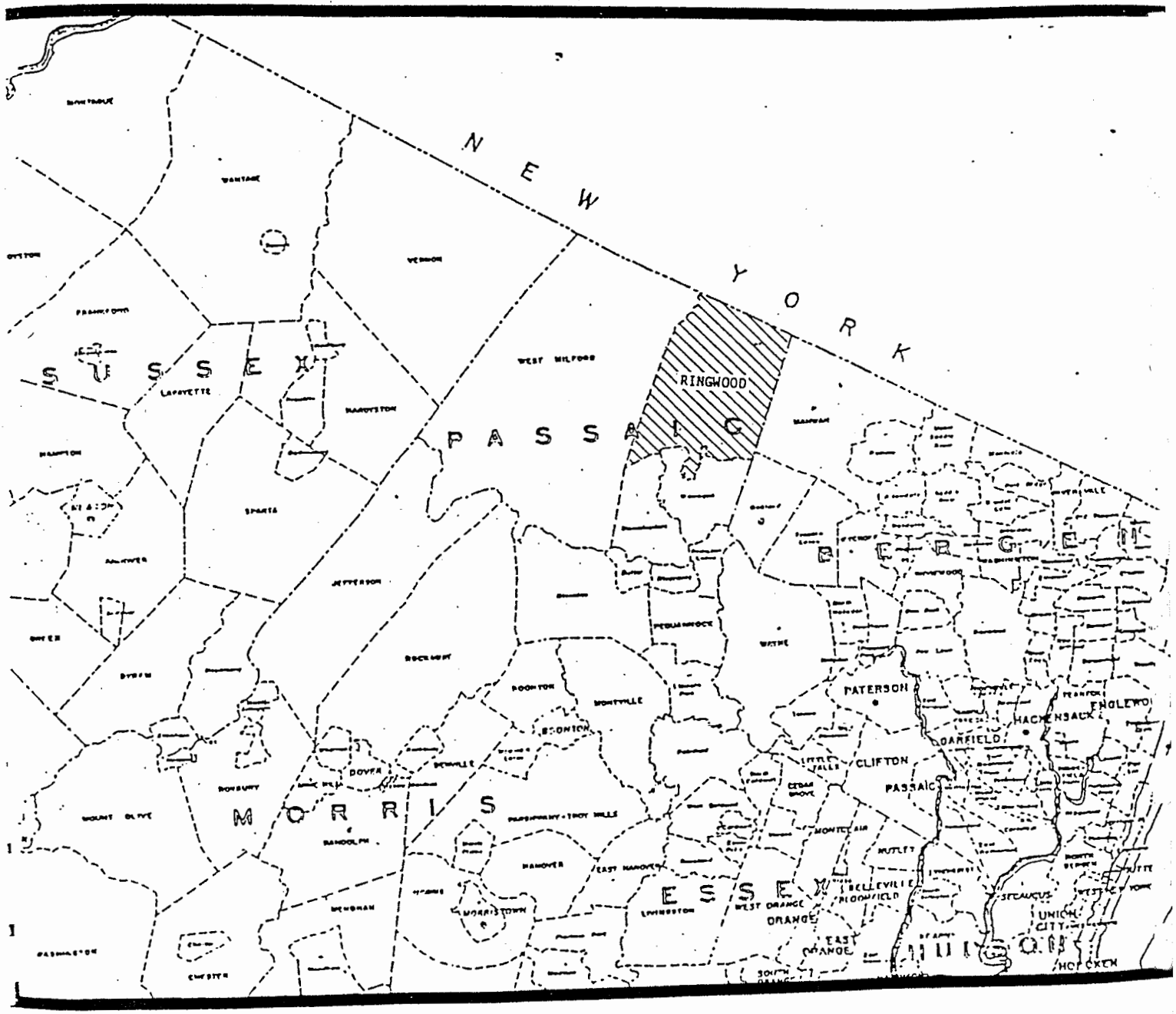
REGIONAL LOCATION

The Borough of Ringwood is located in the northeastern portion of Passaic County. The Borough adjoins five municipalities in New Jersey including Mahwah Township to the east and Oakland to the southeast, Wanaque and Bloomingdale to the south, and West Milford to the west. Additionally, Ringwood adjoins three municipalities located to the north in New York State, including Warwick, Tuxedo and Ramapo.

Access to Ringwood is provided from a limited number of State and County roads. This limited access is a function of the area's physical characteristics including mountainous terrain and expansive water areas. Greenwood Lake Turnpike (County Route 511) , Skyline Drive, Stonetown Road and Sloatsburg Road are the principal north-south roads in the Borough which link Ringwood with the regional highway system. West Brook Road and Margaret King Avenue provide east-west access in the municipality and to adjoining communities. The regional highway system serving the Borough includes Route 17 and the New York State Thruway to the north and New Jersey Routes 23, 202 and 208 to the south and east. Interstate 287 and the interchange of I-287 with Route 208 and Skyline Drive in Oakland is currently under construction. It is anticipated that completion of this roadway will have a major impact on surrounding municipalities.

Ringwood is considered a part of the Skylands region of New Jersey by the State Department of Community Affairs. The region includes portions of Mahwah, Oakland, Bloomingdale, Wanaque, West Milford, Vernon, Hardyston and Jefferson as well as Ringwood.

REGIONAL LOCATION



EXISTING LAND USE

The analysis of a municipality's present development pattern is one of the fundamental steps in formulating the master plan for the community. The analysis of existing land use identifies both the extent of development in the community as well as the amount and location of vacant land remaining in the municipality. This data, combined with an analysis of the environmental constraints, enables a determination of the appropriate development potential. This information is also useful in evaluating preservation alternatives for undeveloped property and formulating land use plan recommendations.

Ringwood's lot line base map was updated to facilitate the land use inventory. Field surveys and Borough tax records were utilized to make the appropriate land use determination. Eighteen categories of land were created to encompass Ringwoods entire area of 27.3 square miles. The resulting distribution of land use is shown in Table 1. A brief summary of existing land use in the Borough is provided in the following sections of the Master Plan report.

TABLE 1
EXISTING LAND USE
BOROUGH OF RINGWOOD
NEW JERSEY, 1989

LAND USE	ACRES	PERCENT OF TOTAL
Residential	2,432	13.9
Business	117	0.7
Commercial	(85)	(0.5)
Office	(7)	(*)
Commercial Recreation	(25)	(0.1)
Industry	135	0.8
Light Industrial	(39)	(0.2)
Gravel Mining	(96)	(0.6)
Utility	227	1.3
Quasi-Public	154	0.9
Streets	695	4.0
Borough Lands, Improved	110	0.6
SUB-TOTAL, IMPROVED LAND	3,870	22.1
Open Space, New Jersey	5,512	31.7
Passaic County	1,300	7.4
Open Space, Ringwood**	466	2.6
Open Space, Cluster	110	0.6
NJ Water Supply Commission	3,725	21.3
Watershed Lands	(1,808)	(10.3)
Water Supply	(1,917)	(11.0)
Conservation Lands	129	0.7
Other Water Bodies	461	2.6
SUB-TOTAL,OPEN SPACE LANDS	11,593	66.3
Agricultural Lands	19	0.1
Vacant Land	2,006	11.5
SUB-TOTAL, POTENTIALLY DEVELOPABLE LANDS	2,025	11.6
TOTAL	17,489	100.0

*Less than 0.1 percent.
** Includes Borough owned lands and cluster open space areas.

SOURCE : Borough of Ringwood Tax Records
Land Use Survey by Malcolm Kasler and Associates, P.A.

CALCULATIONS : Malcolm Kasler and Associates, P.A.

Residential

Ringwood is a predominantly residential community consisting of many fine single family homes.

Residential development is concentrated in three primary locations including the lake areas, Stonetown and Peter's Mine Road. Residential development occupies 2,432 acres and represents almost 14 percent of the Borough's total land area.

Residential development in the eastern portion of Ringwood includes development around the five lakes - Skyline Lake, Hidden Valley Lake, Lake Erskine, Upper Lake and Cupsaw Lake. These lakes are used for recreation by residents during the summer months. Dwellings in the lake areas are situated on parcels ranging from 5,000 to 10,000 square feet in area. The majority of these homes were originally seasonal residences which were later converted to year round dwellings.

Additional development has occurred in areas near the lakes including Ringwood Acres, Forsgate, Fieldstone, Kensington Woods, Bald Eagle and Painted Forest. These development have been constructed as one-acre residential subdivisions or are clustered at densities of 2 to the acre.

The Stonetown area is located in the western portion of the Borough. Residences in this area are situated on parcels ranging from one acre to more than four acres of land.

There is also a limited amount of residential development in the Peter's Mine Road area. Some of the dwellings in this area contain two-family units and were the recipients of an extensive rehabilitation program undertaken in the late 1970's and 1980's.

General Commercial and Office Uses

Approximately 92 acres, less than one percent of Ringwood's total land area is devoted to commercial and office use. Service and retail development is primarily concentrated along Skyline Drive and to a lesser extent along the Greenwood Lake Turnpike. Three shopping centers are located on Skyline Drive, namely Ringwood Plaza, Fieldstone Park and the recently constructed Ringwood Commons. These malls contain small shops which serve the basic needs of Borough residents. Another small commercial area is near West Milford at the intersection of Margaret King Avenue and Greenwood Lake Turnpike.

Office development in Ringwood is very limited and is not concentrated in any one particular area. The majority of offices in the Borough consist of small professional office buildings.

Industrial

Industrial land use occupies 39 acres in the Borough and is primarily located along Margaret King Avenue. Establishments such as Bakay Custom

Craftsman, Green Mountain Tree Experts and Broderick Excavating are located in this industrial area . The amount of industrial development in Ringwood has increased since 1981 but still accounts for less than one percent of the total land area.

Commercial Recreation

The Spring Lake Day Camp which is located on Conklintown Road near the Borough of Wanaque is the only commercial recreation complex in the Borough. The privately owned facility contains a swimming lake and recreational lands. The commercial recreation category encompasses 25 acres, representing considerably less than one percent of the Borough's total land area.

Gravel Mining

This land use category encompasses the Van Orden sand and gravel mining operation along West Brook Road. This is the only soil mining operation in Ringwood and occupies approximately 96 acres.

Utility

The utility category pertains to land owned by private utility companies including Public Service Electric and Gas Company. There are 227 acres of land in this category, representing approximately 1.0 percent of the Borough's total land area. Property in this category range from 1.4 acres to 207.6 acres.

Agricultural

Although there is a considerable amount of farm-qualified land in the Borough, the land use survey identified only 19 acres of land which appeared to be actively used for agricultural purposes. Among those classified as farmland are the Petzold farm on Burnt Meadow Road and a horse farm on West Brook Road.

Conservation

A total of 129 acres located in the southwest portion of the Borough is designated as conservation. These two sites are owned by the Weis Ecology Center and the New Jersey Conservation Foundation.

Quasi-Public

Quasi-public land uses encompass uses such as religious institutions and fraternal organizations. Quasi-public uses in Ringwood comprise 154 acres or less than one percent of the Borough's total land area.

Municipal

Municipal land use has been divided into two categories consisting of public facilities and other municipal holdings. All municipally owned land

in the Borough totals 356 acres or approximately 3 percent of Ringwood's total land area. The public facilities component includes land occupied by public schools, the municipal building, municipal utilities, fire stations, the ambulance corp, and library. Other municipal land holdings include wellfields, water tanks and some vacant land.

Water Bodies

Approximately 2,378 acres or 13.6 percent of Ringwood's total area is occupied by water bodies. The Monksville and Wanaque Reservoirs, located in the western portion of the Borough, occupy significant acreage. The remaining acreage encompasses lakes and ponds primarily situated in the eastern portion of the Borough.

Lands of the North Jersey District Water Supply Commission

Lands owned by the NJDWSC comprise 1,808 acres or 10.3 percent of all land in the Borough. These lands exist as watershed areas which are preserved for the protection of the reservoir in the central and southern area of Ringwood. Collectively, the Wanaque and Monksville Reservoirs and their watershed lands total approximately 3,725 acres or approximately 21 percent of all of Ringwood.

New Jersey State Open Space

State-owned open space consists of 5,512 acres or about 32 percent of all land in Ringwood. State parklands located in the Borough include portions of the Norvin Green State Forest, which extends into West Milford, Wanaque and Bloomingdale; Ringwood Manor; Skylands Manor; Ramapo Mountain State Forest and Long Pond Irons Works State Park.

Passaic County Open Space

Passaic County recently acquired lands known as "Sterling Forest", a 1,300 acre tract of land located in the northwest quadrant of the Borough. Although there is ongoing litigation concerning the value of the tract, the ownership of the land now rests with Passaic County.

The total land holdings of the State of New Jersey, Passaic County and the North Jersey District Water Supply Commission the Borough account for 60.4 percent of Ringwood.

Streets

Local and county roads comprise 695 acres or 4 percent of Ringwood's total land area. Skyline Drive traverses the Borough in a north-south direction and is the primary means of vehicular access. This roadway has a 120 foot wide right-of-way although it is unlikely that Skyline Drive will ever be widened to this width. The majority of streets in the Borough are rural in nature with narrow pavement widths.

Cluster Open Space

Ringwood has two residential cluster developments in the southeast section of the Borough. These open space areas total 110 acres and are retained in public ownership.

Vacant

Ringwood contains 2,006 acres of vacant land which represents 11.5 percent of the Borough's total land area. The current Master Plan categorized vacant land as all undeveloped properties privately owned which could be eligible for future development.

PHYSICAL FEATURES

An analysis of the natural and physical characteristics of the Borough of Ringwood is important in establishing policies to minimize soil erosion, flooding, ground water pollution and other adverse development impacts. Among the physical features to be examined are topographic conditions, soils, flood hazard and wetland areas.

Topography

Steep topographic conditions exist throughout the Borough and approximately 47 percent of the land area is classified as having slopes of 15 percent or greater. Land elevations range from 300 feet, which is the level of the Wanaque Reservoir to 1,180 feet in the southwest portion of the Borough. There are sections of extremely steep slopes along the ridgeline adjacent to Mahwah, where existing grades exceed 50 percent. The North Jersey Water District property west of the reservoir is also characterized by very steep slopes.

Soil Conditions

The U.S. Soil Conservation Service in conjunction with the New Jersey Department of Agriculture and Rutgers University have prepared a soil survey for a number of counties in New Jersey. The reports, issued in 1975 and 1976, provide a fairly specific basis for judging subsurface conditions without resorting to site specific investigation such as borings, and consequently enables preliminary conclusions to be drawn with respect to an area's ability to accommodate certain types of development. The soil survey data prepared by the Soil Conservation Service was mapped based upon aerial surveys, soils and engineering tests.

The soil data indicates there are 14 types of soil comprised of 23 separate soils classifications in Ringwood. These are identified as follows :

Ae	Alluvial land
Ca	Carlisle muck
Hp	Hibernia extremely stony loam, 3 to 15 percent slopes
Ms	Muck, shallow
NkC	Netcong extremely stony loam, 3 to 15 percent slopes
NkD	Netcong extremely stony loam, 15 to 25 percent slopes
OrC	Otisville sandy loam, 3 to 15 percent slopes
Pk	Parsippany silt loam, sandy loam substratum
Pt	Pits, sand and gravel
PvA	Pompton fine sandy loam, 0 to 5 percent slopes
Px	Preakness silt loam
RbA	Ridgebury extremely stony loam, 0 to 3 percent slopes
RbB	Ridgebury extremely stony loam, 3 to 8 percent slopes

RhB Riverhead sandy loam, 3 to 8 percent slopes
RhC Riverhead sandy loam, 8 to 15 percent slopes
RmB Rockaway very stony sand loam, 3 to 8 percent slopes
RmC Rockaway very stony sand loam, 8 to 15 percent slopes
RrC Rockaway extremely stony sand loam, 3 to 15 percent slopes
RrD Rockaway extremely stony sand loam, 15 to 25 percent slopes
RsC Rockaway-Rock outcrop complex, 3 to 15 percent slopes
RxE Rock outcrop-Rockaway complex, 15 to 35 percent slopes
UrB Urban land - Riverhead complex, gently sloping
Ux Urban land - Rockaway complex

These soil types are identified as follows:

Alluvial Land - This classification consists mostly of somewhat poorly drained soils on flood plains 3 to 8 feet above the normal stream level. These soils are flooded one or more times each year, generally for periods of 2 to 5 days. Slopes range from 0 to 3 percent.

The soil material and surface characteristics of Alluvial land vary within short distances. The top 12 inches of the profile is generally silt loam or fine sandy loam. The surface layer is several feet thick and is underlain by course sand and gravel. Most areas of this land type are wooded. This soil is classified as Ae.

Carlisle - This series consists of deep, very poorly drained muck. These nearly level soils are in depressions and in low areas bordering lakes, ponds and streams and are usually subject to annual flooding. These soils formed in the partly decayed remains of plant debris that have generally accumulated over a period of thousands of years.

Carlisle muck exists predominantly in wooded areas, occupied to a large extent by water tolerant species such as elm and red maple. Some areas have only small trees, shrubs and perennial weeds.

Drainage is needed if this soil is cultivated. Many areas are too small to drain economically. In most areas a drainage outlet is extremely costly to obtain. This soil is identified as Ca.

Hibernia - This soil series consists of extremely stony, somewhat poorly drained soils that have a fragipan in the lower part of the subsoil. These soils formed in glacial till derived largely from granitic gneiss and smaller amounts of conglomerate, sandstone and shale. Most areas are wooded while some contain idle fields, farmland and homesites. Large portions of this series are located in State forests, parks and privately owned reservoir watersheds. Trees in wooded areas are primarily upland oaks, red maple and beech.

Generally, the surface layer is approximately 5 inches thick and stones and boulders 1 to 5 feet in diameter are on the surface. Permeability is moderate to moderately rapid above the fragipan and slow in the fragipan and the seasonal perched water causes severe limitations for on-site septic filter fields. Boulders and the content of stones cause severe limitations for many urban uses. This soil is identified as HpC.

Muck - Shallow muck has an organic surface layer ranging from 16 to 50 inches in thickness and underlain by alluvium. The soil is nearly level and consists of decomposed herbaceous and woody plant residue and many woody fragments.

Areas of muck exist in a nearly natural condition and are mostly wooded. Muck is usually subject to flooding and is characterized by very poor drainage, ponded conditions and an unstable and compressible organic surface layer. This soil is identified as Ms.

Netcong - This soil classification consists of deep, well drained, extremely stony soils. These soils are located on the sides of valleys in the Highlands. The soil is formed in glacial till derived mainly from granitic gneiss and lesser amounts of conglomerate, sandstone and shale. Large tracts of this soil series are located in State forests, parks and watersheds above reservoirs.

Permeability is moderately rapid or moderate. Most areas of this soil are surrounded by rough and rocky land, making accessibility for development costly or economically prohibitive. These soils are identified as NkC and NkD.

Otisville - This series consists of excessively drained soils that have a sandy and gravelly subsoil and substratum. This soil formed in glacial outwash derived mainly from granitic gneiss and lesser amounts of conglomerate, sandstone and shale.

Permeability is moderately rapid in the surface layer and upper part of the subsoil in the substratum. The rapid permeability of the substratum is a potential pollution hazard if the soil is used for on-site filter fields. These soils are identified as OrC.

Parsippany - This classification includes deep, nearly level, poorly drained soils that have a moderately fine textured or fine textured subsoil underlain by coarser material. The soils are subject to annual flooding which have been formed in glacial lake sediment of silt and clay material and underlying material commonly of glacial outwash origin.

Permeability is show in the subsoil and moderately slow or moderate in the substratum. Annual flooding from slowly rising rivers and streams is common in some areas. Ponding is likely to occur during periods of high precipitation. This soil is identified as Pk.

Pits, Sand and Gravel - These consist of open excavations from which the soil and an underlying mixture of sand and gravel have been removed. A hazard of groundwater pollution exists in areas that are used for disposal of liquid or solid wastes. The low available water capacity limits the growth of plants. This soil classification is identified at Pt.

Pompton - These soils are characterized as deep, somewhat poorly drained, moderately coarse textured soils that have a loose gravelly and sandy substratum. These soils are nearly level and are usually located in toe slopes of valleys. These soils are subject to annual flooding and have been formed in the glacial outwash derived mainly from granitic gneiss and lesser amounts of conglomerate basalt, sandstone and shale.

Permeability is moderate or moderately rapid in the surface layer and subsoil and rapid in the substratum. Development limitations are primarily caused by the seasonal high water table and there is pollution potential for on-site septic fields. These soils are identified as PvA.

Preakness - This series consists of deep, nearly level, poorly drained, loamy soils that have a water table at the surface late in winter and early spring. These soils are low in the landscape and receive runoff from surrounding higher areas. These soils have been formed in granitic gneiss and lesser amounts of conglomerate, basalt, sandstone and shale. Most areas are wooded and contain red maple, pin oak, ash and white oak.

Permeability is moderate in the surface layer and moderately rapid in the subsoil and rapid in the substratum. This soil is identified as Px.

Ridgebury - These soils are characterized as deep, poorly drained, extremely stony soils that have a fragipan. These soils are found on toe slopes in the Highlands. These areas receive runoff from upslope areas. They were formed from granitic gneiss and lesser amounts of conglomerate, sandstone and shale. Most areas are wooded and exist in state parks and reservoir watersheds.

Permeability is moderate in the surface layer and subsoil, slow in the fragipan, and moderate below the fragipan. The primary

development limitations consist of seasonal high water table and stones. Many of these areas are surrounded by rough and rocky land making accessibility difficult. These soils are identified as RbA and RbB.

Riverhead - Deep, well drained, moderately coarse textured soils comprise this series. These soils are found in valleys adjacent to the Highlands. They were formed in glacial outwash material derived from granitic gneiss and lesser amounts of conglomerate, sandstone and shale.

Permeability is moderately rapid in the surface layer and subsoil and rapid in the substratum. This soil is a good source of sand and gravel, but on-site septic effluent disposal systems pose a potential pollution hazard. These soils are identified as RhB and RhC.

Rockaway - Conditions in this soil classification vary from gently sloping to very steep. These soils are on the side slopes in the Highlands and were formed in glacial till derived mainly from granitic gneiss and lesser amounts of conglomerate, sandstone and shale.

Permeability is moderate above the fragipan, moderately rapid below and slow in the fragipan. The slowly permeable fragipan and the perched water table limit the use of these soils for on-site septic filter fields. Stones and boulders are common and accessibility is frequently difficult due to surrounding terrain. These soils are identified as RmB, RmC, RrC, RrD, RsC and RxE.

Urban Land - Urban land consists of areas that have been developed for residential, commercial, or industrial use. During development these areas were leveled or cut and filled to such an extent that 40 to 80 percent of the original soil has been altered. These soils are identified as UrB and Ux.

The Soil Conservation Service has rated various soils with regard to its limitation on the construction and operation of septic tank absorption fields, the construction of roads and the ability to support homes both with and without basements. As stated in the Passaic County Soil Survey:

> "A rating of slight means that soil properties are generally favorable to the rated use or that limitations are minor and easily overcome."
>
> "A rating of moderate means that some soil properties are unfavorable but can be overcome by careful planning, design, and good management."

> "A rating of severe means that soil properties are so unfavorable and so difficult to correct or overcome that soil reclamation, special designs, or intensive maintenance are required. Some properties are so unfavorable for a particular use that overcoming the limitations is difficult, costly, and commonly not practical for the rated use. Many soils that have severe limitations can be improved at considerable cost, however, and used for building sites."

The three part classification system used by Soil Conservation Service has been combined to form a five-part rating system in this Plan. The five ratings are severe, moderate to severe, moderate, slight and indeterminate. Approximately 12,000 acres or 75 percent of the soil areas in the Borough have severe limitations for development. An additional 2,010 acres or 12.8 percent of the soils have moderate to severe limitations depending upon the incidence of stoniness. Taken together, approximately 89 percent of the soils in Ringwood have potentially severe limitations for development.

Approximately 679 acres of soils are classified as having moderate limitations for development. Theses include areas near Custer Drive, and portions of Stonetown Road in the vicinity of Colfax and White Roads. There is also an area in the northwestern corner of the Borough in the Sterling Forest tract with moderate development constraints. Other areas are found along Sloatsburg Road on lands owned by St. Francis Convent and west of Bear Mountain Road in the Cupsaw Lake Area. The remaining areas having moderate limitations are generally in the northeast quadrant of the Borough on State owned lands and on the North Jersey Water Supply District property bordering the reservoir. About 120 acres are classified as having slight limitations for development. Included are areas on the east and west sides of Furnace Dam Pond in the northern section of the Borough and selected smaller areas on lands within the jurisdiction of the North Jersey Water Supply District and proximate to the reservoir. Finally, the indeterminate classification applies to land where soil mining has occurred on land in the built-up areas of the lake communities.

Calculations concerning the amount of lands in the various soil categories are presented in Table 2 and the listing of the soil types are noted in Table 3.

TABLE 2
SOIL LIMITATIONS AREAS
BOROUGH OF RINGWOOD

Limitation for Development	Area in Acres	Percent of Total
Severe	11,882	75.8
Moderate-Severe	2,010	12.8
Moderate	679	4.3
Slight	120	0.8
Indeterminate	985	6.3
TOTAL	15,676	100.0

SOURCE : Passaic County - Soil Conservation Survey

CALCULATIONS : Malcolm Kasler and Associates, P.A.

TABLE 3
LIMITATIONS OF SOILS FOR DEVELOPMENT

Soil Series & Map Symbols	Limitations of Soil for -			
	Foundations for Dwellings		Septic Tank Absorption Fields	Local Roads and Streets
	With Basements	Without Basements		
Alluvial land: Ae	Severe: Subject to frequent flooding; seasonal water table at depth of 1/2 to 3 1/2 feet.	Severe: subject to frequent flooding.	Severe: subject to frequent flooding; hazard of stream pollution.	Severe: subject to frequent flooding.
Carlisle: Ca	Severe: seasonal water table at surface; subject to frequent flooding; low bearing strength; severe subsidence.	Severe: seasonal water table at surface; subject to frequent flooding; low bearing strength; severe subsidence.	Severe: seasonal water table at surface; subject to frequent flooding; hazard of ground-water pollution.	Severe: seasonal water table at surface; subject to frequent flooding.
Hibernia: HpC	Severe: seasonal high perched water table at depth of 1/2 to 1 1/2 feet; extremely stony.	Severe: seasonal high perched water table at depth of 1/2 to 1 1/2 feet; extremely stony.	Severe: seasonal high perched water table at depth of 1/2 to 1 1/2 feet; hazard of ground-water pollution.	Severe: seasonal high water table at depth of 1/2 to 1 1/2 feet.
Muck, shallow: Ms	Severe: seasonal water table at surface; subject to frequent flooding; low bearing strength; severe subsidence.	Severe: seasonal water table at surface; subject to frequent flooding; low bearing strength; severe subsidence.	Severe: seasonal water table at surface; subject to frequent flooding.	Severe: seasonal water table at surface; subject to frequent flooding.
Netcong: NkC	Severe: extremely stony.	Severe: extremely stony.	Severe: extremely stony; hazard of ground-water pollution.	Moderate: strong slopes; extremely stony.
NkD	Severe: extremely stony; steep slopes.	Severe: extremely stony.	Severe: extremely stony; steep slopes.	Severe: extremely stony; steep slopes.
Otisville: OrC (3% - 8% slopes)	Slight.	Slight.	Slight: rapid permeability in subsoil and substratum; hazard of ground-water pollution.	Slight.
OrC (8% - 15% slopes)	Moderate: strong slopes.	Moderate: strong stopes.	Moderate: strong slopes; rapid permeability in subsoil and substratum; hazard of ground-water pollution.	Moderate: strong slopes.
Parsippany: Pk	Severe: subject to frequent flooding; seasonal high perched water table at depth of 0 to 1 foot.	Severe: subject to frequent flooding; seasonal high perched water table at depth of 0 to 1 foot.	Severe: subject to frequent flooding; seasonal high perched water table at depth of 0 to 1 foot; hazard of ground-water pollution.	Severe: subject to frequent flooding; seasonal high perched water table at depth of 0 to 1 foot.
Pits, sand and gravel: Pt	---------- To Variable To Be Rated ----------			
Pompton: PvA	Severe: seasonal high water table at depth of 1/2 to 1 1/2 feet.	Moderate: seasonal water table at depth of 1/2 to to 1 1/2 feet.	Severe: seasonal high water table at depth of 1/2 to 1 1/2 feet; hazard of ground-water pollution.	Severe: seasonal high water table at depth of 1/2 to 1 1/2 feet; high frost-action potential.

TABLE 3 (CONTINUED)

Soil Series & Map Symbols		Limitations of Soil for - Foundations for Dwellings: With Basements	Foundations for Dwellings: Without Basements	Septic Tank Absorption Fields	Local Roads and Streets
Preakness:	Px	Severe: seasonal high water table at depth of 0 to 1 foot.	Severe: seasonal high water table at depth of 0 to 1 foot.	Severe: seasonal high water table at depth of 0 to 1 foot; hazard of groundwater pollution.	Severe: seasonal high water table at depth of 0 to 1 foot.
Ridgebury:	RbA, RbB	Severe: seasonal high water table at depth of 0 to 1 foot; extremely stony.	Severe: seasonal high water table at depth of 0 to 1 foot; extremely stony.	Severe: seasonal high water table at depth of 0 to 1 foot; extremely stony.	Severe: seasonal high water table at depth of 0 to 1 foot; extremely stony.
Riverhead:	RhB	Slight	Slight	Slight: rapid permeability in subsoil; hazard of groundwater pollution.	Slight
	RhC	Moderate: strong slopes.	Moderate: strong slopes.	Moderate: strong slopes; rapid permeability in subsoil; hazard of groundwater pollution.	Moderate: strong slopes; hazard of erosion.
Rockaway:	RmB	Moderate: very stony; perched water table above fragipan for short periods.	Moderate: very stony.	Moderate: slow permeability; deep ditches needed in places, lateral seepage above fragipan; very stony.	Moderate: perched water table above fragipan; moderate frost-action potential.
	RmC	Moderate: very stony.	Moderate: very stony.	Moderate: slow permeability; deep ditches needed in places, lateral seepage above fragipan; very stony.	Moderate: perched water table above fragipan; moderate frost-action potential.
	RrC, RrD	Severe: extremely stony; steep slopes in RrD.	Severe: extremely stony; steep slopes in RrD.	Severe: extremely stony: RrD has steep slopes.	Moderate for RrC: perched water table above fragipan moderate frost-action potential; extremely stony. Severe for RrD: steep slopes.
Rock Outcrop,	RsC	Moderate where very stony. Severe where extremely stony.	Moderate where very stony. Severe where extremely stony.	Moderate where very stony; slow permeability; deep ditches needed. Severe where extremely stony.	Moderate: perched water table above fragipan; moderate frost-actio potential.
Rock Outcrop,	RxE	Severe: rock outcrops; very steep slopes.	Severe: rock outcrops; very steep slopes.	Severe: rock outcrops; very steep slopes.	Severe: rock outcrops; very steep slopes.
Urban Land -	UrB,Ux	---------- To Variable To Be Rated ----------			

Environmentally Critical Areas

The Critical Areas Map established in the 1981 Master Plan summarizes the limitations on land development due to a number of environmental factors. The map identifies flood hazard areas and steep slopes, poor soils, and reservoir watershed limits. Flood hazard areas are those determined by the U.S. Department of Housing and Urban Development and steep slopes are considered to be land surface gradients of 15 percent or greater as determined from U.S. Geological Survey topographic maps. It should be noted that the flood hazard areas shown on the map represent only a portion of the areas subject to flooding. As development applications are filed for vacant lands, additional areas subject to flooding may be determined.

The Critical Areas Map indicates that most of the Borough of Ringwood has limitations on land development due to the physical features of the land. The small areas which do not have such limitations are generally found in scattered locations. Portions of the Borough without restrictions include lands surrounding Furnace Dam Pond and Sloatsburg Road and lands northeast of Cupsaw Lake within Skylands Manor State Park. Other small areas include the northwestern corner of the lands of Sterling Forest and the North Jersey Water Supply District lands west of Sloatsburg Road and its intersection with Carltondale Road. Additional areas are found in the southern half of the Borough. However, these lands are generally developed.

Finally, it should be noted that due to certain limitations in source material, not all of the critical environmental features of the land have been mapped. For instance, the lands northeast of Cupsaw Lake are traversed by Cascade Brook which, although not within a designated flood hazard area, implies certain development constraints. Additionally, certain soils are not classified as having limitations for development due to the lack of sufficient information. Some of these areas have been soil mined and may present restrictions due to topography and soil erosion.

Wetland Areas

Since the adoption of the 1981 Ringwood Master Plan, the importance of fresh water wetlands has been recognized by both the Federal and State government. Several years ago, the Federal government undertook a nationwide survey of wetlands. Today, the National Wetlands Inventory, prepared by the United States Department of the Interior, Fish and Wildlife Service, provides the most comprehensive inventory of wetland areas for all municipalities in the State of New Jersey. The Wetlands Inventory notes that the data was prepared "primarily by stereoscopic analysis of high altitude aerial photographs ... and were identified on the photographs based upon vegetation, visible hydrology and geography in accordance with classification of wetlands and Deep-Water Habitats of the United States ..."

The Fish and Wildlife Service in the U.S. Department of the Interior has defined wetland areas as follows:

> "In general terms, wetlands are lands where saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities living in the soil and on its surface. The single feature that most wetlands share is soil or substrate that is at least periodically saturated with or covered by water. The water creates severe physiological problems for all plants and animals except those that are adapted for life in water or in saturated soil.
>
> "WETLANDS are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification wetlands must have one or more of the following three attributes : (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is nonsoil and is saturated with water at some time during the growing season of each year."

In general, there are 8 types of wetland soils in Ringwood. These are classified as follows:

L1OW	LACUSTRINE Limnetic Open Water
PEM	PALUSTRINE Emergent
PFO1	PALUSTRINE Forested Broad-leaved Deciduous
POW	PALUSTRINE Open Water
PSS1	PALUSTRINE Scrub/Shrub Broad-leaved Deciduous
R2OW	RIVERINE Lower Perennial Open Water
R3OW	RIVERINE Upper Perennial Open Water
U	Upland Areas (may include unclassified wetland areas)

The Lacustrine System includes areas situated in a topographic depression or a damned river channel and areas lacking trees, shrubs, persistent emergents, emergent mosses or lichens with greater than 30 percent area coverage. These areas generally have a total area exceeding 20 acres. Lacustrine waters may be tidal or non-tidal but ocean derived salinity is always less than 0.5 percent. The system contains permanently flooded lakes and reservoirs, intermittent lakes and tidal lakes with ocean derived salinity below 0.5 percent.

The Palustrine System is noted to include all nontidal wetlands dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, and all such wetlands that occur in tidal areas where salinity due to ocean-derived salts is below 0.5 percent. It was developed to group the vegetated wetlands traditionally called by such names as marsh, swamp, bog, fen and prairie.

It also includes the small, shallow, permanent or intermittent water bodies often called ponds. Palustrine wetlands may be situated shoreward of lakes, river channels, or estuaries, on river floodplains in isolated catchments, or on slopes. They may also occur as islands in lakes or rivers. The erosive forces of wind and water are of minor importance except during severe floods.

The Riverine System includes all wetlands and deepwater habitats contained within a channel except those dominated by trees and, shrubs, and those with water containing ocean derived salts in excess of 0.5 percent. Water is usually, but not always flowing in the Riverine System. The system is bounded on the landward side by upland, by the channel bank, or by wetland dominated by vegetation. The system terminates at the downstream end where the concentration of ocean derived salts of the water exceeds 0.5 percent during the period of annual average low flow, or where the channel leaves a lake.

Flood Hazard Areas

Water bodies in Ringwood cover approximately 3 square miles of area and present obvious limitations for development within their boundaries. The streams and brooks which flow to these water bodies also present additional limitations to development resulting from the potential of flooding.

Floods pose serious threats to life and property affecting not only abutting property owners, but down-stream neighbors as well. As development occurs in up-stream areas, lands in flood plains may be filled, thereby diminishing the capacity to store flood waters. This diminished capacity means that downstream areas may be subject to increased volumes of water causing additional flooding.

The areas subject to flooding are delineated on the FEMA maps prepared by the U.S. Department of Housing and Urban Development. The flood hazard map shows the limits of flooding for all of the major water bodies in Ringwood as well as the West Brook, Burnt Meadow Brook, the Wanaque River and portions of the Ringwood River, High Mountain Brook, and other water courses.

The limits of the flood hazard areas are based on the 100 year flood, which is defined as the storm of maximum intensity which would statistically be expected in any 100 year period. Its limits are generally determined using watershed areas, topography, the impact of physical improvements such as bridges and culverts and in some cases previously known flood levels. The determination of these flood hazard areas is mandated as part of a federal program to provide flood insurance to property owners in areas subject to flooding.

This data is also pertinent for planning purposes since it signals areas where development should be severely restricted both because of direct threats to property and life and because of potential degradation of the abutting water courses due to the introduction of pollutants.

It should be noted that the flood hazard map is not a comprehensive map. Certain streams and water bodies have not had their flood hazard areas determined. In these undetermined areas, development which is to occur may still be subject to certain restrictions due to flooding potential. As applications are filed, the determination of stream encroachment areas may be required introducing development constraints similar to those imposed in flood hazard areas.

The stream encroachment areas are certified by the New Jersey Department of Environmental Protection. In these areas, state regulations apply to land filling, placement of structures, and setbacks for private septic disposal systems.

Surface Water Classifications

In 1988, the New Jersey Department of Environmental Protection updated its surface water quality standards for various rivers, streams, lakes and ponds in New Jersey. Table 4 provides a compilation of the various separate classifications provided by the NJDEP.

The quality of water within Ringwood is very high. High Mountain Brook, Burnt Meadow Brook, Blue Mine Brook and the West Brook are designated as FW-2 Trout Production streams, the highest classification of surface water bodies outside of public land holdings. Additional brooks and streams including Cupsaw Brook, Ringwood Creek, the Wanaque River and the stream extending from Lake Rickonda and three bodies of water including the Wanaque Reservoir, Sheppard Lake and Brushwood Pond are classified as FW2 - Trout Maintenance bodies of water, the second highest water quality standard. All of the remaining streams, lakes and other bodies of water are designated FW2 Non-Trout bodies of water.

The very high quality of these waters is significant to the preservation of these waters as they relate to regional water supply needs.

The Borough recently petitioned the New York State Department of Environmental Conservation requestung that the Ringwood River/Ringwood Creek be upgraded to the classification of "AA Special". The request which was made in April of 1990 stated the following :

> "The Ringwood River/Ringwood Creek supplies approximately twenty percent of the water of the Wanaque Reservoir and feeds the cistern which is an important source of water for the local water system of the Borough.
>
> "The Ringwood River/Ringwood Creek is classified as a Category One stream by the State of New Jersey which means that no measurable degradation can occur.
>
> "It would be appreciated if the foregoing information can be taken into consideration as part of your review of the matter."

TABLE 4
SURFACE WATER QUALITY RATINGS
BOROUGH OF RINGWOOD

DESIGNATED WATER AREA	DESIGNATED WATER RATING
Bear Swamp Lake	FW2-NT(C1)
Blue Mine Brook	FW-2TP
Brushwood Pond	FW2-TM(C1)
Burnt Meadow Brook	FW2-TP(C1)
Cupsaw Brook - Source to Wanaque Reservoir	FW2-NT
Cupsaw Brook - Portion of Cupsaw Brook within boundaries of Ringwood State Park	FW2-NT(C1)
Duck Pond	FW2-NT(C1)
Glasmere Pond	FW2-NT(C1)
High Mountain Brook - Source to, but not including, Skyline Lake	FW2-TP(C1)
Lake Rickonda Outlet Stream (Monks) - That segment of the outlet stream from Lake Rickonda within Ringwood State Park	FW2-TM(C1)
Meadow Brook - Skyline Lake to Wanaque River	FW2-NT
Ringwood Creek - Entire length except as below	FW2-TM
Ringwood Creek - Creek within Ringwood State Park	FW2-TM(C1)
Ringwood Mill Pond	FW2-NT(C1)
Sheppard Lake	FW2-TM(C1)
Swan Pond	FW2-NT(C1)
Wanaque Reservoir	FW2-TM
Wanaque River (Monks)- Parkland Boundary to Reservoir	FW2-TM
West Brook	FW2-TP(C1) *
Weyble Pond	FW2-NT(C1)

* Designated as a Wild Trout Stream

SOURCE: Surface Water Quality Standards, New Jersey Department of Environmental Protection, New Jersey Register, 1988.

RINGWOOD'S POPULATION

In 1980, Ringwood's population stood at 12,625 persons. In 1988, the New Jersey Department of Labor estimated the municipality's population to be 13,511 persons.

Rate of Population Growth

Table 5 presents the rate of growth for Ringwood from 1940 through 1988. In 1940, prior to World War II, Ringwood's population stood at 977 persons. In 1950 to 1970, the community's population substantially expanded by 8,641 persons - a six fold increase in population - similar to the development patterns in other communities in New Jersey. From 1970 to 1980, the community's population increase totalled 2,232 persons or a rate of growth of 21.5 percent. The Borough's current estimated population is 7.0 percent higher than in 1980.

Age and Sex Characteristics

The U.S. Census indicates that in 1980, 49.3 percent of the population were females and 50.7 percent were male. In general, males outnumber females during the earlier years, ages 1 - 19, and generally from 20 years of age and older, women and men are about equal in number.

This data is presented in Table 6. The data also indicates the population distribution by age categories. The data indicates a decline in child-centered families and an increasing number of elderly persons and families. For example, pre-school aged children generally under the age of 5 years, total 7.6 percent of the population. Early school-age children, between the years of 5 to 9 years, total 9.0 percent of the community's population. Children aged 10 to 14 years, account for 11.2 percent of the overall population. Since the age group intervals are identical for the three categories, the lower percentage of children in the earlier years reflect the changing age structure in the community. Similarly, the number of older residents in the community has increased. In 1980, the number of persons 60 years and older totalled 911 persons or 7.2 percent of the population. In 1970, the number of persons 60 years and older totalled 746 persons.

Births and Deaths

The number of births and deaths in a community is one component in determining the natural increase or decrease in the overall size of the community. The number of births is also an important element in planning for community facilities and services, particularly the school system.

TABLE 5
RATE OF POPULATION GROWTH
BOROUGH OF RINGWOOD
1940 - 1988*

YEAR	POPULATION OF RINGWOOD	POPULATION CHANGE	PERCENT CHANGE
1940	977	---	---
1950	1,752	775	79.3
1960	4,182	2,430	138.7
1970	10,393	6,211	148.5
1980	12,625	2,232	21.5
1988*	13,511	886	7.0

*Estimated

SOURCE : U.S. Census of Population, 1980

ESTIMATE : New Jersey Department of Labor, 1989

TABLE 6
AGE AND SEX CHARACTERISTICS
BOROUGH OF RINGWOOD
1980

AGE GROUP	MALE	FEMALE	TOTAL	PERCENT OF TOTAL
Under 5	473	481	954	7.6
5 - 9	566	574	1,140	9.0
10 - 14	778	635	1,413	11.2
15 - 19	734	611	1,345	10.7
20 - 24	382	378	760	6.0
25 - 29	430	511	941	7.5
30 - 34	611	652	1,263	10.0
35 - 44	1,142	1,109	2,251	17.8
45 - 54	677	563	1,240	9.8
55 - 59	217	190	407	3.2
60 - 64	142	163	305	2.4
65 - 74	174	229	403	3.2
75+	76	127	203	1.6
TOTAL	6,402	6,223	12,625	100.0
MEDIAN AGE	28.1	29.2	28.7	

SOURCE : U.S. Census of Population

As noted in Table 7, the number of births in Ringwood fluctuated during the 1970 - 1986 period. The peak number of births took place in 1981 and 1970, when 212 and 211 resident births were recorded respectively. The lowest number of births took place in 1973 when 155 births were recorded. A total of 161 births occurred in 1986, the last year for which data is available. During the seventeen year period, the Borough averaged 177 births per year.

The data reveals that the fluctuation in number is consistent from the 1970's through the 1980's. However, due to the overall population increase since 1970, the number of births per 1,000 persons in 1970 was 20.3, whereas in 1980 it was 14.1. In 1986 this figure was 8.3 births per 1,000 persons. This is reflective of the drop in birth rates nationally during this period.

The number of resident deaths in Ringwood also fluctuated from year to year; ranging from a low of 43 in 1970 to 75 in 1984. During the seventeen year period, the Borough averaged 59 deaths annually.

Components of Population Change

Change in community population is directly related to two components : natural increase (or decrease) and net migration into or out of the community.

Natural Increases - The number of births and deaths in a community contributes to the fluctuation of total population size in a municipality. The birth and death statistics for Ringwood indicate that the Borough had a natural population increase of 2,057 persons between 1970 and 1986. Thus, without any migration, the Borough's population would have increased by 2,057 people over the 1970 population level.

Migration - Net migration indicates the number of people moving into or out of a given area. Between 1970 and 1986 the Borough experienced a population increase of 2,890 persons. The birth and death statistics reveal that there was a net natural increase of 2,067 residents during this period. This indicates that the Borough's population increase includes a net inmigration of 833 persons.

Household Size

Average household size is determined by the overall population in the community divided by the number of housing units in the municipality. The average which is computed represents a generalization of the family size characteristics of the community. Table 8 shows the average household size for the years 1960, 1970 and 1980.

TABLE 7
NUMBER OF BIRTHS AND DEATHS
BOROUGH OF RINGWOOD
1970 - 1986

YEAR	BIRTHS	DEATHS	CHANGE BIRTHS MINUS DEATHS
1970	211	43	168
1971	193	46	147
1972	166	48	118
1973	155	48	107
1974	164	51	113
1975	162	45	117
1976	163	63	100
1977	158	46	112
1978	185	65	120
1979	180	64	116
1980	178	53	125
1981	212	53	159
1982	171	58	113
1983	163	55	108
1984	175	75	100
1985	206	71	135
1986	161	62	99
TOTAL	3,003	946	2,057

SOURCE : State of New Jersey, Department of Health
New Jersey Health Statistics

TABLE 8
AVERAGE HOUSEHOLD SIZE
BOROUGH OF RINGWOOD
1960 - 1980

YEAR	POPULATION	NUMBER OF OCCUPIED DWELLING UNITS	HOUSEHOLD SIZE
1960	4,182	1,090	3.84
1970	10,393	3,112	3.34
1980	12,625	3,617	3.49

SOURCE : U.S. Census of Population and Housing

The size of households in Ringwood has fluctuated over the past three decades. The data reveals that the average number of persons per household was 3.84 in 1960. This figure declined by thirteen percent to 3.34 in 1970. This decline in household size is consistent with the experience of many other municipalities in the State during this period. However, the Borough experienced an increase in household size to 3.49 persons per household in 1980. This reversal is not generally consistent with statewide trends which showed a continual decline in household size. This local pattern may be reflective of the younger age of the Ringwood population as compared to the State as a whole.

Income Levels

Table 9 identifies household income as reported by the U.S. Census of Population for the 1979 year. The data indicates a small percentage of the community, approximately 8.5 percent of the total population, with incomes of less than $10,000. A comparable number of households, 8.8 percent of the Borough, had incomes between $10,000 and $15,000.

The largest segment of the community - almost 28 percent of the population had incomes ranging between $25,000 and $30,000. The median income of the Borough was $27,453, slightly higher than the median for the Bergen-Passaic PSMA region region in 1979.

As is the case with other housing and demographic data, information concerning household income is terribly out-of-date. When the 1990 Census is completed, this information should be updated.

TABLE 9
HOUSEHOLD INCOME
BOROUGH OF RINGWOOD
1979

INCOME CATEGORY	HOUSEHOLDS NUMBER	HOUSEHOLDS PERCENT
Less than $ 5,000	123	3.4
$ 5,000 - $ 7,499	64	1.8
$ 7,500 - $ 9,999	121	3.3
$10,000 - $ 14,999	318	8.8
$15,000 - $ 19,999	438	12.1
$20,000 - $ 24,999	485	13.4
$25,000 - $ 34,999	1,010	27.9
$35,000 - $ 49,999	780	21.6
$50,000 or More	279	7.7
TOTAL	3,618	100.0
MEDIAN	$27,453	
MEAN	$28,912	

SOURCE : U.S. Census of Population

RINGWOOD'S HOUSING ELEMENT

The number of housing units in Ringwood has increased considerably since 1940 when there were only 966 dwellings in the Borough. The U.S. Census indicates that there were a total of 3,866 dwelling units in Ringwood in 1980, representing a four fold increase over the forty year period.

The majority of housing units in the Borough were constructed during the 1960's and 1970's. As noted in Table 10, Ringwood's housing stock consisted of 1,614 dwelling units in 1960 and expanded to 2,843 residences by 1970 representing a 76 percent increase. Housing construction continued at a strong pace during the 1970's and by 1980 the amount of dwelling units in the Borough was 30 percent greater than the 1970 level.

Number of Housing Units

Of the 3,866 housing units in Ringwood in 1980, 143 or 3.7 percent of all housing units were considered seasonal units. The balance, 3,723 housing units, were determined to be year-round units. This data is presented in Table 11.

The 3,723 housing units contained a total of 106 vacant units at the time of the Census - a vacancy rate of 2.85 percent. The remaining occupied housing totalled 3,617 dwelling units. Of this number, 3,373 units or 81.3 percent were owner-occupied and 244 or 6.3 percent were renter-occupied.

From 1980 to 1989, a total of 296 residential building permits were issued by the community. Moreover, all of these permits were issued for one-family dwellings. During the same period, demolition permits for 9 dwelling units were issued. It is therefore estimated that there were a total of 4,010 year-round housing units in the Borough at the beginning of the 1990 calendar year.

Housing Age

Table 12 provides an analysis of the age of housing in Ringwood as reported in the 1980 Census. The data indicates that more than 72 percent of all housing in the community has been built since 1950. Almost one-third of all housing was constructed between 1960 and 1970 and more than 15 percent was constructed between 1950 and 1960. A relatively small amount of housing, constituting 13 percent of the housing, was built prior to 1940.

TABLE 10*
NUMBER OF HOUSING UNITS
BOROUGH OF RINGWOOD
1980

YEAR	NUMBER OF UNITS	CHANGE	
		NUMBER	PERCENT
1940	966	--	--
1950	968	2	0.2
1960	1,948	980	101.2
1970	3,112	1,164	59.8
1980	3,866	754	24.2

---

*It is recognized that this information should be updated when the 1990 Census data is made available.

SOURCE : U.S. Census of Housing

CALCULATIONS : Malcolm Kasler and Associates, P.A.

TABLE 11*
HOUSING CHARACTERISTICS
BOROUGH OF RINGWOOD
1980

1.	Total Housing Units	3,866
2.	Total Year-Round Housing Units	3,723
3.	Total Seasonal Housing Units	143
4.	Total Occupied Housing Units	3,617
	Owner-Occupied	(3,373)
	Renter-Occupied	(244)
5.	Total Year-Round Vacant Housing Units	106

---

*It is recognized that this information should be updated when the 1990 Census data is made available.

SOURCE : U.S. Census of Housing, 1980;
Table 29, Occupancy, Plumbing and Structural Characteristics;
General Housing Characteristics HC 80-1-A 32 NJ

TABLE 12*
YEAR STRUCTURE BUILT
BOROUGH OF RINGWOOD
1980

	NUMBER	PERCENT OF TOTAL
1975 - March 1980	431	11.5
1970 - 1974	464	12.4
1960 - 1969	1,229	32.9
1950 - 1959	579	15.5
1940 - 1949	539	14.4
1939 or Earlier	496	13.3
Year-Round Housing Units	3,738	100.0

*It is recognized that this information should be updated when the 1990 Census data is made available.

SOURCE : U.S. Census of Housing, 1980;
Table 86, Structural Characteristics for Places of 10,000 - 50,000;
Detailed Housing Characteristics HC 80-1-B32 NJ

The rate of construction during the 1980 - 1988 period has decreased somewhat from preceding periods of time. For example, the 289 building permits issued during the last 9 years, an average of 32 homes per year, is considerably less than the average of 89 homes per year built during the 1970's and the average of 123 homes built during the 1960's.

Housing Units by Structure

The Census indicates that the majority of all residences in Ringwood consist of one-family dwellings. There are a total of 3,566 detached single family residences in the Borough, representing 95 percent of the housing stock. A total of 126 units were reported by the Census as two-family dwellings and an additional 13 were indicated as containing more than 2 dwellings. This data is presented in Table 13.

Persons Per Household

The median household size in Ringwood has declined during the last decade. A total of 31.7 percent of all households in 1980 were composed of one and two persons. Three person households totalled almost 20 percent of all households in the community.

The majority of one and two-person households reside in owner-occupied dwellings. Approximately 90 percent of all such households occupy their own dwellings while 115 units are renter-occupied. Small households residing in rental housing account for more than 31 percent of all rental occupied housing.

The median owner occupied housing unit contains 3.48 persons compared to 2.64 persons for renter-occupied housing. This data is presented in Table 14.

Housing Condition

The Council on Affordable Housing has determined that Ringwood contained 66 units of deteriorating housing units occupied by persons of low or moderate income. Of that number, the Borough was granted certain credits. The result of these adjustments produced a housing need for lower income families of 47 housing units.

This information is considered out-of-date. When the 1990 Census of Housing is completed, this information should be updated.

Purchase and Rental Values

The 1980 Census of Housing described owner-occupied and renter-occupied housing values. Table 15 indicates the distribution of housing costs of owner-occupied units. The median value of such units was noted to be $75,000 in 1979. Similarly, as noted in Table 16, renter-occupied housing units are identified with a median rental value of $318 per month. This information is considered out-of-date. When the 1990 Census of housing is completed, this information should be updated.

TABLE 13*
UNITS IN STRUCTURE
BOROUGH OF RINGWOOD
1980

	NUMBER	PERCENT OF TOTAL
Mobile Home or Trailer	0	0.0
1 Family Detached	3,566	95.4
1 Family Attached	33	0.9
2 Family	126	3.4
More than 2 Family	13	0.3
TOTAL YEAR-ROUND HOUSING UNITS	3,738	100.0

*It is recognized that this information should be updated when the 1990 Census data is made available.

SOURCE : U.S. Census of Housing, 1980

TABLE 14*
OCCUPIED HOUSING UNITS, BY TENURE
BOROUGH OF RINGWOOD
1980

NUMBER OF PERSONS PER HOUSEHOLD	OWNER OCCUPIED	RENTER OCCUPIED	TOTAL	PERCENT
One Person	241	42	283	7.8
Two Persons	791	73	864	23.9
Three Persons	666	50	716	19.8
Four Persons	884	45	929	25.7
Five Persons	494	12	506	14.0
Six Persons	196	11	207	5.7
Seven Persons	63	3	66	1.8
Eight or More Persons	38	8	46	1.3
TOTAL	3,373	244	3,617	100.0
MEDIAN	3.48	2.64	3.42	

*It is recognized that this information should be updated when the 1990 Census data is made available.

SOURCE : U.S. Census of Population, 1980

TABLE 15*
SPECIFIED OWNER-OCCUPIED
NON-CONDOMINIUM HOUSING
UNITS BY VALUE
BOROUGH OF RINGWOOD
1980

VALUE	NUMBER
Less than $ 10,000	7
$ 10,000 - $ 14,999	8
$ 15,000 - $ 19,999	12
$ 20,000 - $ 24,999	29
$ 25,000 - $ 29,999	20
$ 30,000 - $ 34,999	46
$ 35,000 - $ 39,999	71
$ 40,000 - $ 49,999	191
$ 50,000 - $ 59,999	340
$ 60,000 - $ 79,999	1,100
$ 80,000 - $ 99,999	730
$ 100,000 - $ 149,999	515
$ 150,000 - $ 199,999	50
$ 200,000 or More	14
TOTAL	3,133
MEDIAN VALUE	$75,600

*It is recognized that this information should be updated when the 1990 Census data is made available.

SOURCE : U.S. Census of Housing, 1980
Table 31, Financial Characteristics for Places of 10,000 to 50,000;
General Housing Characteristics New Jersey HC 80-1-A-32 NJ

TABLE 16*
SPECIFIED RENTER -
OCCUPIED HOUSING UNITS
BOROUGH OF RINGWOOD
1980

	NUMBER
Less than $ 50	1
$ 50 to $ 59	17
$ 60 to $ 79	2
$ 80 to $ 99	1
$ 100 to $ 119	7
$ 120 to $ 149	4
$ 150 to $ 169	5
$ 170 to $ 199	9
$ 200 to $ 249	18
$ 250 to $ 299	23
$ 300 to $ 349	30
$ 350 to $ 399	16
$ 400 to $ 499	35
$ 500 or More	28
No Cash Rent	29
TOTAL	225
MEDIAN	$ 318

*It is recognized that this information should be updated when the 1990 Census data is made available.

SOURCE : U.S.Census of Housing, 1980;
Table 31, Financial Characteristics for Places of 10,000 to 50,000;
General Housing Characteristics of New Jersey HC 80-1-A32

Number of Units Affordable to Low and Moderate Income Households

The U.S. Census of Housing in 1980 established a median family income of $22,472 for the community's region. Based upon this standard, lower income housing would represent 80 percent or less of this number or $17,978. With the exception of adjustments for family size and using a rule of thumb of two times income for sales housing and one-quarter yearly income for rental housing would produce a housing cost level of $35,956 for sales housing and $375 per month for rental housing.

The 1980 Census reported that 3.9 percent of sales housing or 122 housing units complied with these limits. Additionally, 56 percent of rental housing or 125 housing units met the requirements for lower income housing in 1980.

The Council on Affordable Housing has established income limits for the purchase of low and moderate income housing based upon household size. The 1990 schedule for Passaic County is listed in Table 17.

Substandard Housing Units Capable of Being Rehabilitated

Substandard housing within the Borough of Ringwood that are capable of being rehabilitated and are income qualified has been estimated to total 66 units. The Borough of Ringwood has received certain grants from the State of New Jersey to rehabilitate some of its housing and to fulfill its Mount Laurel obligation under the provisions of Substantive Certification by the Council on Affordable Housing. To date, a total of 67 households have qualified for such rehabilitation efforts.

TABLE 17
COAH INCOME LIMITS FOR
PURCHASE OF LOW AND MODERATE INCOME HOUSING
PASSAIC COUNTY
1990

NUMBER OF PERSONS PER HOUSEHOLD	MAXIMUM INCOME LIMITS FOR HOUSEHOLDS OF LOW INCOME	MODERATE INCOME
1	$16,800	$26,800
2	$19,200	$30,720
3	$21,600	$34,560
4	$24,000	$38,400
5	$25,500	$40,800
6	$27,000	$43,200
7	$28,500	$45,600
8	$30,000	$48,000

SOURCE : Council on Affordable Housing
Adopting HUD Standards 3/19/90

Projection of Municipal Housing Stock

Projections of future housing in the community will be made based upon some but not necessarily limited to the following :

Number of Low and Moderate Income Housing Units Constructed

During the mid 1970's, the Borough of Ringwood, through the auspices of the Farmers Home Administration (FHA), was used by the How-To Corporation to construct 15 units of low cost single family housing. No additional low cost housing has been constructed in Ringwood since that time.

Number of Low and Moderate Income Housing Units Previously Rehabilitated

A total of 40 housing units of lower income households had been rehabilitated previously in the community, through the auspices of Federal and State governments and the Borough of Ringwood. The rehabilitation efforts of the community were begun in 1975 and continued through 1983.

The Council on Affordable Housing granted certification to the Borough of Ringwood in 1987. As part of that program, the Borough has received funds from the State of New Jersey to continue its rehabilitation program. To date, 67 households of lower income have received grants and loans to rehabilitate their residences.

Projection of Community's Housing Stock for the Next Six Years

During the period from 1980 to 1989, Ringwood has averaged slightly less than 30 housing units per year. Assuming a comparable level of housing units are constructed during the period of 1990 to 1996, a total of approximately 180 housing units will have been constructed by 1996. The rate of housing construction from 1980 to 1989 is presented in Table 18.

Number of Subdivisions and/or Site Plan Approved for Residential Purposes During the Past Nine Years

Subdivision activity in the Borough during the last nine years is listed in Table 19 according to the Planning Board records.

Building Activity

As previously noted, the Borough of Ringwood has issued 296 building permits during the last 10 years or an average of slightly less than 30 dwellings per year.

TABLE 18
NUMBER OF BUILDING AND DEMOLITION PERMITS ISSUED
BOROUGH OF RINGWOOD
1980 - 1989

YEAR	NUMBER OF PERMITS ISSUED	
	BUILDING	DEMOLITION
1980	35	2
1981	13	1
1982	13	0
1983	36	0
1984	46	1
1985	59	1
1986	40	0
1987	24	0
1988	23	2
1989	7	2
TOTAL	296	9

SOURCE : New Jersey Department of Labor, Building Permits 1980-1989

TABLE 19
NUMBER OF SUBDIVISIONS APPROVED
BOROUGH OF RINGWOOD
1980 - 1989

YEAR	APPLICATION	NAME	BLOCK	LOT
1980	731/6	R & Y Co.	201	13
	732/1	H & B. Jansen	201	17A
	733/1	Adolph & Sonja Vieth	105	25
	734/1	S. & J. Young (Wyma)	871	31
	735/2	Michael & Bridget Curran	711	47
	736/2	Wallace & Czura & Daret, Inc.	508	2,2C,2H,2J,2K
	738/6	Kensington Wood, Section 2	752	30
1981	739/1	M. & C. Intindoli	101	16
	740/1	Ras & DeGaetano	875	13 & 14
	741/1	Bruno & Cantillo	108	12
	742/6	Micarm Land Corp.	214	12
		Bellaire Estates	201	22C
1982	743/2	Curran/Schlarman	912	6A
	744/1	Rohn	304	25 & 25A
	745/1	Hohn, Has	308	7
1983	746/1	Bonanno, Robert	221	2
	747/2 & 6	Hearle, John	201	36
	748	Jolowicz/Niemi	100	2 & 3
	749	Countryside Properties, Inc.	877	16
	1-750	Edward Wyma	712	5 & 6
	---	Borough of Ringwood	601	12 & 13
	1-751	May	933	22
1984	1-753	Kniewel	929	47
	6-754	Kensington Wood, Sec. III	759	39
	1-755	McGowan	865	14 & 15
	1-756	Grillo/Ganci	716	67 & 66
	1-757	Sumser	863	11 & 12
	1-758	Gastman/Dinse		
	1-759	Shudtz	929	15 & 17
	1-761	Hall/Sunday	108	9 & 10

TABLE 19 (continued)

YEAR	APPLICATION	NAME	BLOCK	LOT
1985	1-762	Ricker	222	11 & 14
	6-763	Curran/Schlarman	912	6
	---	Borough of Ringwood	800	2,4,5,& 6
	1-764	Iapelli/Schaedler	204	29 & 34
	6-765	Countryside Properties, Inc.	877	16
	1-766	Bellaire Estates (Irving Savings & Tara Builders)	214	12
	1-767	Pollio	214	10
	1-768	Nemeth/Nyhuis	739	45A & 48
	1-769	Thomas Alois	106	1
	1-771	Christina Williams	301	25
1986	2-794	Wallace & Czura Land Co.	877	16.05, 16.06 & 16.07
	6-795	Wallace & Czura Land Co.	877	16.05, 16.06 & 16.07
	1-796	Alberti/Arendas	700	2
	1-797	Hearle	301	3 & 4
	1-798	Wallace & Czura Land Co./	508	2
		Daret, Inc./Pitts	508	2L, 2M
	1-799	Schaefers	308	6
	1-800	Cella	842	77
	1-801	Eckstein	922	15
	1-802	Brosi/Halik	214.01	2
1987	1-803	LaFerriere Const. Co.	900	4
	2-805	Wallace & Czura Land Co.	877	16.08 & 16.09
	6-806	Wallace & Czura Land Co.	877	16.08 & 16.09
	2-807	Callo Construction Corp.	100	1
	1-808	Wright	201	15
	1-809	Ringwood Commons	800	1 & 4
	2-810	Wallace & Czura Land Co./ Pitts/Daret	508	2, 2.11, 2.12
	2-811	Irving Savings & Loan/Thomas Alois	201	31 & 41
	1-813	Kathleen Chervenak	222	8
	1-815	Claudio Ballester	107	3 & 4
	1-817	Larsen	834	6
1988	2-821	Countryside Prop.	508	2
	6-822	Countryside Prop.	508	2
	6-824	Pitts/Daret/Wallace & Czura	508	2, 2.11, 2.12
1989	6-833	A.C.M. Custom Homes Fountain Spring Est. Section 1	751	3, 7, 9
	2-834	Evans/Williams	301	11, 25.02
	1-835	Post/Blood	201	23
	1-836	Wogisch	400	8
	1-839	Carter	309	7, 8
	1-839	Weber/Stavridis	722	9 (Annexation o property to Lot 6

Source : Ringwood Borough Planning Board

Employment Characteristic Trends

An analysis of the existing and probable future employment characteristics of the community is provided as follows:

Historic Employment Trends

Table 20 provides employment data from 1972 to 1988. The number of jobs has increased modestly during this time period. In 1972, there were 403 covered employment jobs in the community. In 1988, the number of jobs totalled 1,485. During the 16 year period, the annual increase in the number of jobs averaged 68.

Employment in Ringwood is very low when compared with the region in which it is located. In 1988, Ringwood's jobs constituted 0.19 percent of its 3 county region in which it is located.

Employment Characteristics and Occupational Patterns of the Community's Residents

Tables 21 and 22 describe the employment characteristics and occupational patterns of Ringwood residents. Table 21 indicates that almost 2/3 of all jobs are concentrated in four fields - manufacturing, retail trade, transportation and communication and professional services.

Manufacturing accounts for 25 percent of all employment in the Borough, retail trade 15.3 percent, professional services 16.9 percent and transportation and communication 8.9 percent.

Table 22 identifies resident employment by occupation and noted almost 66 percent of the population concentrated in two categories - managerial and professional speciality and technical, sales and administrative support.

Number of Non-Residential Site Plans Approved Impacting Upon the Community

Data concerning site plans that have been approved for non-residential uses has been obtained from the Ringwood Planning Board and is presented in Table 23.

TABLE 20
COVERED EMPLOYMENT
BOROUGH OF RINGWOOD
1972 - 1988

YEAR	NUMBER OF JOBS
1972	403
1973	493
1974	401
1975	418
1976	484
1977	645
1978	810
1979	892
1980	970
1981	992
1982	1,152
1983	1,083
1984	1,569
1985	1,351
1986	1,394
1987	1,437
1988	1,485

SOURCE : State of New Jersey Department of Labor, Office of Demographic and Economic Analysis, New Jersey Covered Employment Trends (1972 - 1988): "Private Sector Covered Jobs, 3rd Quarter", by municipality.

TABLE 21
EMPLOYED PERSONS 16 AND OVER
BY INDUSTRY
BOROUGH OF RINGWOOD
1979

	NUMBER	PERCENT
Agriculture, Forestry, Fisheries, Mining	50	0.9
Construction	289	5.1
Manufacturing		
Nondurable Goods	634	11.2
Durable Goods	779	13.8
Transportation, Communication, Other Public Utilities	506	8.9
Wholesale Trade	401	7.1
Retail Trade	867	15.3
Finance, Insurance and Real Estate	404	7.1
Business and Repair Services	331	5.9
Private Households	34	0.6
Personal, Entertainment and Recreation Service	133	2.4
Professional and Related Services		
Health Services, Hospitals	314	5.5
Educational Services	437	7.7
Other Professional and Related Services	207	3.7
Public Administration	272	4.8
TOTAL	5,658	100.0

SOURCE : U.S. Census of Population, General Social and Economic Characteristics

TABLE 22
EMPLOYED PERSONS 16 AND OVER
BY OCCUPATION
BOROUGH OF RINGWOOD
1979

	NUMBER	PERCENT
Managerial and Professional Specialty		
Executive, Administrative, Managerial	936	16.5
Professional Specialty	915	16.2
Technical, Sales, Administrative Support		
Technicians and Related Support	197	3.5
Sales	661	11.7
Administrative Support Including Clerical	1,010	17.8
Service		
Private Household	34	0.6
Protective Service	98	1.7
Service, Except Protective and Household	412	7.3
Farming, Forestry, and Fishing	69	1.2
Precision Production, Craft, and Repair	638	11.3
Operators, Fabricators, and Laborers		
Machine Operators, Assemblers, Inspectors	352	6.2
Transportation and Material Moving	223	3.9
Handlers, Equipment Cleaners,Laborers	113	2.0
TOTAL	5,658	100.0

SOURCE : U.S. Census of Population, General Social and Economic Characteristics, N.J., 1980

TABLE 23
SITE PLAN APPROVALS
BOROUGH OF RINGWOOD
1980 - 1989

YEAR	APPLICATION NUMBER	NAME	BLOCK	LOT	DESCRIPTION OF PROPERTY (WHERE APPLICABLE)
1980	67	Edward Miceli	311	2, 2B, 2C	
	69	Bailey's Paving Center	739	45	
	70	Melvin Miller	311	8	
	71	John Leskowitz & Son	311	28	
	72	Daret, Amended	-	-	
1981	74	Logue	736	1	
	75	Storms	739	51	
	76	Dr. Maurice Maccario	739	49, part 48	
1982	77	Erskine Lakes Tennis Club	838	6	
	--	Borough of Ringwood Beattie Lane	748	82	
	78	Troy	508	2J	
1983	79	Countryside Properties	877	16	
	80	Pro-Mart Home Centers	800A	2	
1984	81	Gisele Inc.	508	2G	
	82	CH Forbes	749	12 - 14	Office and retail. 4,200 sq.ft.
1985	83	Community Church of Ringwood	900	2	
	84	Karlo Manufacturing Co.	601	12.02	Light, manufacturing and office. 6,000 sq.ft.
1986	85	Franciscan Sisters of Ringwood (Franciscan Friars)	902	1	
	86	Van Den Berg	739	55 & 5A	
	87	Gagliano Bros.	508	2.14	Office and Warehouse. (excavating business) 5,000 sq.ft.
	88	Concrete Specialty Block,Inc.	508	2.15	
	89	Quest Associates	311	6.02	Light manufacturing and office. 13,070 sq.ft.
	90	Urban National Bank	800A	4	
	91	Ringwood Commons	800	4	Office and Retail. 30,000 sq.ft.
	92	Mobile Oil Corp.	800	3A	2,745 sq.ft. - reconstruction.
	93	Deere & Co.	508	2	
	94	Env. Construction Co.	877	16.01	
	95	Broderick Landscaping	508	2D	Office and landscaping business. 1,920 sq.ft.
1987	96	Robert Bailey (Haskell Paving)	739	45	871 sq.ft. addition, office.
	97	Ringwood Care Center (Mediplex)	877	16.05 & 16.06	Nursing home. 64,000 sq.ft.
	98	Tallia Associates	508	2.15	Office and warehouse. 48,000 sq.ft.
	99	Grand Union (Expansion)	801	4C	5,000 sq.ft. addition
	100	Edward Katalinas (New Jersey Safety Equipment Company)	601	12.03	Office and warehouse. 15,600 sq.ft.
1988	101	PAD Associates	508	2.06	
	102	Michael Grella	800	6	
1989	111	Spring Lake Day Camp	751	13	
	112	RMB Miniature Bearings, Inc.	508	2.22	
	-	Ringwood Borough Sewerage Authority	754	1	
	113	Ringwood Associates, Ltd.	800.01	3	
	114	Wogisch	400	8	
	-	Ringwood Board of Education Peter Cooper School Treatment Plant	751	8	
	-	Ringwood Board of Education Robert Erskine School Treatment Plant	506	3	
	115	Weis Ecology Center	101	28	
			102	2	
			105	7	

SOURCE : Ringwood Borough Planning Board Records.

Other Regional or Community Factors Impacting Upon Municipal Employment

Three principal regional and community factors impact upon future municipal employment which include the following :

... The construction of Interstate Route 287 to the east of Ringwood in Oakland and Mahwah and to the south in Wanaque will tend to make Ringwood more accessible to the region.

... The lack of few collector and arterial streets continue to limit development due to the community's relative isolation despite the advent of I-287.

... The lack of sewers and the environmental constraints of the land will continue to restrict large-scale development in the community.

Probable Future Employment Characteristics

Ringwood's employment has increased at a rate of almost 70 jobs per year during the 1972 - 1987 year period. In 1984, the Department of Labor reported peak employment of 1,569 jobs.

In 1985, there was a drop of more than 200 jobs in the community. By 1987, employment had increased to a level of 1,437 jobs. Assuming continued development opportunities in the industrial and office sectors of the Borough, a modest rate of growth of perhaps 50 to 75 jobs per year might be anticipated. By the end of 1989, a total of 1,587 jobs in the Borough might be anticipated, and by 1996, a total of approximately 2,000 jobs would be projected.

RINGWOOD'S HISTORIC BACKGROUND

Ringwood has a long and rich historic background. Prior to the 20th Century, Ringwood was well known for its iron industry. In 1736 Cornelius Board, a Welshman who had come to America in 1730, explored the Wanaque valley looking for useful materials. Board purchased several tracts of land and began foundry operations. He settled initially at what is now Sterling Lake, N.Y. and in 1740 moved to the present Ringwood Manor area. He constructed his home at the junction of the Wanaque and Topomopock (Ringwood River) and created a forge at the head of Ringwood Creek.

In 1740 the Ogdens of Newark purchased land from Board and began the smelting of iron in a furnace on the Ringwood Manor grounds in 1742. They named the operation the "Ringwood Company".

In 1764, Peter Hasenclever was manager for a British Company that owned the iron mines at Ringwood. He was responsible for bringing many German people to Ringwood to work in the mines and forges. Most of these Germans settled in West Milford.

Robert Erskine, a Scotch engineer, arrived in Ringwood in 1771 as the new manager for the Company. During the American Revolution, Erskine was surveyor-general to the American Army. He also organized the first company of militia in the northern part of the state to protect the iron works. During the war, the Ringwood Iron Works supplied the army with iron hardware, ordnance and camp stoves. Robert Erskine, died in 1780 and tradition has it that George Washington attended the funeral.

Ringwood is situated midway on a direct route from Morristown to West Point and, therefore, was a convenient stopping place for General George Washington and other Revolutionary officers who used the route. Traditionally, the horses of the Revolutionary officers, including Washington, were shod at the old blacksmith shop which still stands, although rebuilt, on the grounds of Ringwood Manor State Park. In 1781, Washington was at Ringwood shortly after a mutiny occurred among the New Jersey troops at Pompton, and Washington dispatched General Robert Howe to quell it.

Washington's last visit to Ringwood was the most significant because it occurred on the day the Revolutionary War ended, that is to say, the day Congress officially decreed a cessation of hostilities, April 19, 1783. Washington was at Ringwood to meet the Secretary of War on important business.

In 1807, the Ringwood Ironworks property was purchased by Martin Ryerson. Martin Ryerson, followed by his sons, operated the Ringwood works for nearly fifty years. During the War of 1812, shot was supplied from the Ringwood Ironworks. It was during the latter part of the Ryerson regime that the furnace and forges which had been operated on the Manor grounds were dismantled.

In 1853, the New York industrialist Peter Cooper bought the property, 22,000 acres in total. Under the name of the Trenton Iron Company and with Abram S. Hewitt as manager, Peter Cooper expanded the iron mine facilities to include a general store, tavern, a church and housing for employees following the pattern of many "company towns". A number of iron company homes are still occupied in the Peter's Mine Road area which were recently rehabilitated. The original section of the Borough Hall (see #43) was formerly the P.R. George residence. Mr. George was superintendent of the Ringwood mines and ironworks for many years following the purchase of the property by Cooper.

Abram Hewitt was the last ironmaster connected with the Ringwood Iron Works and made Ringwood his legal residence between 1857 and 1874. Edward Hewitt (son of Abram Hewitt) moved in 1899 to "the little red house by the Ringwood Store." The house was located near the present Borough Hall. Later, Edward and his wife and Mrs. Abram Hewitt moved into the Boardville Farm and resided there until the property was condemned for the construction of the Wanaque Reservoir in 1925.

The New York and Greenwood Lake Railway was built in approximately 1879 and served to develop the territory mainly as an outlet to the Cannon and Peter Mines, which were the only remaining mines in use at that time. The railroad was also the primary source of transportation for residents to the markets and schools in neighboring towns. In 1896, the railroad was leased to the Erie Railroad Company for 999 years. With the shutdown of most of the mines, there was very little commercial traffic and the line was reclassified to one handling very light traffic. The early railroad lines entered the Borough two miles north of the Midvale Dam and ran parallel with the Wanaque River for a distance of 11.2 miles to its destination in Greenwood Lake.

Of the original line, 3.6 miles were in the path of the Wanaque Reservoir (constructed between 1920-1928) and were relocated. A 2 mile spur of the railroad left the main line (mid-way through the reservoir) and extended northerly along Ringwood Brook to the Village of Ringwood which is now in the area of the Borough Hall. About 1.5 miles of this branch was submerged and then relocated. The connection of about 2,000 feet to the mines of the Ringwood Company was also rebuilt.

Ringwood was incorporated as a Borough in 1918. A few farmlands spotted the valleys, and homesteads owned by families since the early 19th century still existed. Large white shingled homes and natural stone-fronted farm houses were scattered along the dirt roads, such as West Brook Road and the Burnt Meadow Road, which emerged from old indian paths.

By 1930, the Wanaque Reservoir was filled and communities to the south were drawing water. However, the construction of the reservoir necessitated the relocation of several county and local roads leaving the Stonetown area to the west of the reservoir somewhat isolated from the rest of the Borough.

The first real surge of residential growth occurred in the late 1920's and early 1930's with the sale of lakefront lots for vacation homes in the eastern portion of Ringwood. Over time, many of these lake properties were converted into year-round dwellings. Today the communities surrounding Cupsaw Lake, Lake Erskine, Upper Lake and Skyline Lakes continue as private lake communities with homeowner associations managing the lake facilities. A vast majority of the residents live in the lake communities.

Sites of Particular Historical Interest in Ringwood

Table 24 provides a summary of properties identified by the Ringwood Environmental Commission and a recent archaeological survey completed prior to the construction of the Monksville Reservoir to be of particular historical interest.

The table indicates a total of 56 individual buildings and sites. The sites include dwellings, cemeteries, school houses, churches, indian camp grounds and numerous remains of the iron industry. The table provides the historic name of the site, the tax block and lot number and their location.

Buildings and sites that have been accepted on the National Register of Historic Places are noted by the date of their acceptance. Similarly, buildings and sites that have been accepted by the New Jersey Register of Historic Places are identified by their acceptance date. There is also reference to those sources from which each site was identified.

To date, only one of the sites has received formal recognition by state and federal agencies. The Ringwood Manor House, circa 1815, was placed on the National Register of Historic Places on November 13, 1966 and has achieved the status of a National Historic Landmark. The site is located on State parkland and is also listed on the State Register of Historic Places. No other site in Ringwood has been recognized on either the Federal or State Registers of Historic Places.

Some of the sites have been inundated by the Wanaque and Monksville Reservoirs. For instance, the Boardville area in the northern part of the Wanaque Reservoir contained a church, a school and dwellings amid the farms in the valley. Such sites have been included in the inventory to provide a glimpse of the early pattern of development in the area.

TABLE 24
HISTORIC SITES
BOROUGH OF RINGWOOD

NAME	MAP NUMBER	BLOCK	LOT	LOCATION	NR	SR	REFERENCE
Iron Industry District	1			Peter's Mine Road			
Saw Mill Site	2*	310	1	North of Stonetown Road Bridge on Wanaque River			, G, H
Grist and Saw Mill Site	3	500	1	South of Stonetown Road Bridge on Wanaque River		11/5/84**	I
Cemetery	4	500	1	Adjacent to Stonetown Road near Wanaque River			W4
Windbeam Forge Site	5*	503	1	Adjacent to Westbrook Road near reservoir bridge			H
Freedom Furnace/Forge Site	6	500	1	Furnace Ave., adjacent to Midvale Dam			H, I, D
School House	7	738	7	Route 511, north of Westbrook Road			K, L
School House Site	8	100	1.05/1.06	South side of Magee Road			M, K
Forge Site, Forge Pond	9*	508	1	Sloatsburg Road			H, D
Board Mine	10	311	1	Intersection of Route 511 and Stonetown Road			J
Rhinesmith Farm Explorations	11	201	17	Between Burnt Meadow Road and Magee Road			J
School House	12	227	1	Magee and Stonetown Roads			K, N
Baptist Church Site	13	223	1, 2	Burnt Meadow and Magee Roads			O, P
Methodist Church Site	14	201	20	West Side Stonetown Road south of Windbeam Lane			O, I
School Site - Boardville	15*	500	1	Adjacent to Route 511 near Sloatsburg Road			Q, H, I
Dutch Reform Church Site - Boardville	16*	500	1	Adjacent to Route 511 near Sloatsburg Road			O, H, I
School House Site	17	600	2	Borough Garage Site			K, R
Colfax Forge Site	18*	503	1	Westbrook Road near Stonetown			V
School House Site	19	201	22	West side of Stonetown Road			K
Indian Camp Ground	20	748	-	South of Skyline Lake			U

TABLE 24 (CONTINUED)
HISTORIC SITES
BOROUGH OF RINGWOOD

NAME	MAP NUMBER	BLOCK	LOT	LOCATION	NR	SR	REFERENCE
Sloat Farm Explorations	21	801	5	Between James & Fieldstone Drives			J
Pellington Mine Lot	22	200	8	Adjacent to Westbrook Road			J
Roman Catholic Church Site	23	508	3	Margaret King Avenue, near current Borough garage			K
Church of the Good Shepherd	24	601	3	Margaret King Avenue			K
Chapel	25	1101	5	Shepherd Lake, Ringwood State Park			W3
Indian Camp Ground	26	201 100	22 16	Magee Road at Burnt Meadow Brook			
House Site - Capt. Joseph Board	27*	500	1	Adjacent to Route 511			W2
House	28	311	11	319 Margaret King Avenue			H, I
Carleton House	29	912	13	84 Carletondale Road			
Miller/Green House	30	1100	1A	Mt. Saint Francis Convent			T
Brown House	31	739	54	Ringwood Avenue			I
Site of Revolutionary War Beacon	32	900	5	Adjacent to Sloatsburg Road, Ringwood State Park			
Ricker-Pellington House	33	301	28	566 Stonetown Road			I
Duffy House	34	222	5	416 Stonetown Road			H, I
Colfax House	35	203	3	278 Stonetown Road			I
Sloat House	36	748	75	140 Conklintown Road at Canterbury Place			I
Whritenour House	37	100	15	145 Stonetown Road			H, I
Carrigan House	38	200	6	614 Westbrook Road			I
Stephens House	39	101	10	Westbrook Road			I
Rhinesmith House	40	200	1	11 Magee Road at Westbrook Road			I, H
School House	41	601	8.01	Green Camp, Ringwood State Park			K, R
Cemetery	42	601	10	Ringwood Manor			
Borough Hall (part)	43	601	4	60 Margaret King Avenue		1/12/78**	K, R
Red House	44	601	10	Ringwood Manor			
Ringwood Iron Furnace/Forge Site	45 (a-d)	601	10	Ringwood Manor			A, D

TABLE 24 (CONTINUED)
HISTORIC SITES
BOROUGH OF RINGWOOD

NAME	MAP NUMBER	BLOCK	LOT	LOCATION	NR	SR	REFERENCE
Ringwood Manor House	46	601	10	Ringwood State Park	11/13/66	8/16/79	D, S, T
Iron Mine Area	47	600-604		North of Margaret King Avenue,			A, D, X
Edward R. Hewitt House	48*	500	1	Adjacent to Route 511			T
Iron Truss Bridges	49	100		On Magee Road over West Brook			
		100		On Magee Road over Burnt Meadow Brook			
J.D. Prince House Site	50	1101	4	Shepherd Lake Area, Ringwood State Park			
Skylands Manor	51			Skylands section, Ringwood State Park			K
Vreeland Hotel	52	310	3	Route 511			
Railroad - R.R. Station Sites	53 (a-f)						
a. Abandoned Greenwood Lake R.R.	53a	300,500					
b. Monks Station Site	53b	500	1	South of Route 511, east of Stonetown Road			
c. Boardville Station Site	53c*	500	1	South of Route 511, west of old main line			
d. Ringwood Junction Site	53d*	500	1	West of junction of main line and spur to Ringwood Manor			
e. Erskine Station Site	53e*	500	1	Southwest of Route 511 & Sloatsburg Rd intersection			
f. Ringwood Depot/Store/Post Office Site	53f	601	8	Northwest of Borough Hall			
Winfield Farm Site	54	102	28	North side of Snake Den Road, Weis Ecology Center			
Indian Shelter	55	101	26	North Side of Snake Pen Road			
Indian Well	56	201	31, 41	South of Burnt Meadow Road			

* - Flooded site on property of the North Jersey District Water Supply Commission
** - State Historic Preservation Officers Opinion
NR - National Register
SR - State Register

SOURCE: Ringwood Environmental Commission
New Jersey & National Registers of Historic Places, N.J. DEP, Division of Parks and Forestry, 1984

TABLE 25
REFERENCES FOR HISTORIC SITES

A. Geological Survey of New Jersey, Map of Ringwood Iron Mines, Geo. H. Cook, State Geologist, 1864.

B. "The Ringwood Group of Mines in 1952" by Preston C. Hotz in Magnetite Deposits of the Sterling Lake N.Y. - Ringwood, N.J. Area. Map reprinted in the Vanishing Ironworks of the Ramapos.

C. State of New Jersey Department of Conservation and Development, Atlas Sheet No. 23, 1923 revision.

D. Vanishing Ironworks of the Ramapos by James M. Ranson, New Brunswick, N.J., 1965.

E. U.S. Department of the Interior, Geological Survey. Army Map Service 1954, Wanaque Atlas Sheet.

F. Defense Corp. Alan Wood Steel Co. Maps of Ringwood Iron Mines Job #8. Maps 1-10 located at North Jersey Highlands Historical Society, Ringwood Manor.

G. Survey of the lands of W.C. Monks dated 1890.

H. Passaic County map of 1861 published by G.H. Corey.

I. Pompton Township Map of 1878, Passaic County Atlas published by E.B. Hyde & Co.

J. Annual Reports of the State Geologist, 1863-1915.

K. Ringwood Golden Jubilee Book, 1968.

L. Deed P 32-84, Passaic County Court House.

M. Windbeam by M.M. Monks, New York, 1930.

N. Deed C27-11, Passaic County Court House.

O. History of Bergen and Passaic Counties by W. Woodford Clayton, Philadelphia, 1882.

P. Hiking Map No. 37, Wyanokie Plateau, Published by Walking News, N.Y.

Q. Gazatteer of the State of New Jersey, 1834.

R. Map of Ringwood Borough, 1923.

S. The Story of Ringwood Manor by Alan T. Cottrell, 1960 edition.

TABLE 25

(CONTINUED)

T. Ringwood Manor, the Home of the Hewitts by Edward R. Hewitt, Trenton, 1947.

U. Archeology Survey of the Proposed Wanaque Valley Sewage Authority Wastewater Facility, Herbert C. Kraft, 1976.

V. Report of the Commissioners Appointed by the Legislature of the State of New Jersey for the purpose of exploring the route of a canal to unite the River Delaware near Easton with the Passaic River near Newark, Morristown, 1823.

W. The North Jersey Highlander, published by N.J.H.H.S., Newfoundland, N.J.

1. Spring 1973 - Housing at Ringwood
2. Winter 1972 - The Adventure of Cornelius Board
3. Spring 1972 - Church of St. Luke
4. Spring 1979 - Monks Cemetery.

X. The Mines of Ringwood by Claire K. Tholl, 1970.

PUBLIC BUILDINGS, SCHOOLS AND RECREATION FACILITIES

Public School Facilities

The Borough of Ringwood operates a kindergarten through grade 8 public education system. The municipality is served by four schools, including three primary schools (K-5) and one middle school (6-8). Lakeland Regional High School, located in the Borough of Wanaque, serves students in grades 9 through 12. The following provides a summary description of each of the four educational facilities located in Ringwood. A further description of each school is provided in Table 26.

Peter Cooper School

The Peter Cooper school is an elementary school accommodating children in grades kindergarten through five. The school is located on a 10.68 acre site on the north side of Roger Court. The school site has access from Fountain Drive.

The building was initially constructed in 1967. The two-story building has a floor area of approximately 40,645 square feet and is designed to accommodate 458 pupils. A total of 378 students were enrolled in September of 1988. Utilizing a maximum of 22 pupils per class for kindergarten and 4 sessions result in a pupil to capacity ratio of 83 percent.

The recreation area is located on the north side of the site behind the school building and is developed with an extensive amount of playground equipment.

Robert Erskine School

The Robert Erskine School also serves grades kindergarten through five. The elementary school was first built in 1961 with one addition constructed in 1963. The school is located on a 7.11 acre site on the west side of Erskine Road. The twostory school has 31,750 square feet of floor space. Access to the site is from Erskine Road.

The area is developed with playground equipment and a little league ballfield.

The Robert Erskine School is designed to accommodate 323 pupils. In September of 1988, there was an enrollment of 248 students. The school is operating at a 77 percent capacity utilizing double sessions for kindergarten.

Eleanor G. Hewitt School

This elementary school serves children in kindergarten through grade 5. Built in 1937, it is the oldest school in Ringwood. One addition was constructed in 1954, and portable classrooms were added in 1970.

The Eleanor G. Hewitt School is located on a 20.2 acre site at the southeasterly corner of Sloatsburg Road and Carletondale Road. The three-story building and portable classrooms contain 38,510 square feet of floor area. Access to the site is from Sloatsburg Road.

The building is designed to accommodate 414 students. Its current enrollment is 314 pupil, for a pupil-to-capacity ratio of 76 percent where there the kindergarten is doubled.

The site is equipped with a variety of recreation facilities, including a softball field, soccer field and extensive playground equipment.

Martin J. Ryerson School

This is the newest school in the system. Constructed in 1972, the school serves grades six through eight. The school is located on a 16 acre site east of Valley Road.

The two-story building contains 87,300 square feet of space and has a capacity of 600 students. The school was operating at 78 percent of capacity for the 1988 school year. A total of 489 students were enrolled in September of 1988. Of the 489 students, 13 were pre-school aged children.

The recreation area is developed with 2 soccer/softball fields and 2 side-by-side basketball backboards on a macadam surface.

High School Students

The Ringwood School District does not operate a high school but sends students in grades 9 through 12 to the Lakeland Regional High School in the Borough of Wanaque. A total of 1,239 students from Ringwood and Wanaque are enrolled at the school.

Other Property Owned by the Board of Education

The Ringwood School District owns a 17 acre unimproved parcel of land located on the west side of Stonetown Road. The District does not have plans to develop this site in the immediate future.

Enrollment

Ringwood's student population has been steadily declining during the course of the past eleven year period. Since the 1978-1979 school term, student enrollments have declined by approximately 36 percent, from 2,221 pupils to 1,416 pupils. Table 27 entitled Enrollment By Grade, 1978-1988 identifies school enrollment figures for this period.

The statistical data indicated in this table demonstrates that the greatest proportional decline has occurred at the upper grade levels. Enrollment as of September, 1988 was 629 pupils for grades K-3, a decline of 25.7 percent from 1978 enrollments. Grades 4 through 5 underwent a similar decrease, registering a 36.9 percent decline. Grades 6, 7 and 8 declined 47 percent.

Projected Enrollment

Projections of student enrollments developed by the office of the Superintendent indicate that Ringwood's student population will fluctuate during the next five school years. These projections are consistent with Ringwood's relatively low birth rate during the past 10 years. Nevertheless, the projected student enrollments are below the capacity of each of the four public schools.

TABLE 26
SCHOOL CHARACTERISTICS
RINGWOOD BOROUGH

NAME OF SCHOOL	YEAR BUILT	ADDITIONS	GRADES SERVED	SCHOOL CAPACITY**	CURRENT ENROLLMENT*	ENROLLMENT TO CAPACITY RATIO	PLOT AREA (ACRES)
Peter Cooper	1967	-	K-5	503	378	.75	10.7
Robert Erskine	1961	1963	K-5	475	248	.52	7.1
Eleanor G. Hewitt	1937	1954, 1970	K-5	409	314	.77	20.2
Martin J. Ryerson	1972	1975	6-8	1,083	489(1)	.45	16.0

* September, 1988 Enrollment
** This represents the theoretical capacity of each school. The functional capacity of each school is likely to be less depending on classes assigned such as special education, art, music, etc.
(1) Includes 13 pre-school age children.

SOURCE: Ringwood Board of Education, Office of School Superintendent

TABLE 27
ENROLLMENT, BY GRADE, 1978 - 1988*
RINGWOOD BOROUGH

GRADE	1978-1979	1979-1980	1980-1981	1981-1982	1982-1983	1983-1984	1984-1985	1985-1986	1986-1987	1987-1988	1988-1989
K	159	168	166	161	142	154	166	169	162	162	136
1	205	162	164	171	156	130	156	166	174	155	161
2	246	224	151	170	154	154	142	173	154	171	159
3	237	242	210	149	167	157	161	145	175	150	173
4	257	234	219	213	144	170	164	171	143	166	151
5	236	251	228	220	208	142	174	169	169	144	160
6	265	233	249	218	207	196	143	167	166	152	134
7	260	254	233	235	211	205	191	142	162	169	138
8	291	258	248	211	226	208	197	194	135	158	159
Sp.Ed.	65	62	37	101	90	86	63	46	38	48	45
TOTAL	2,221	2,088	1,905	1,748	1,705	1,602	1,557	1,542	1,478	1,475	1,416

* Does not include pre-school aged children.

SOURCE: Ringwood Board of Education, Office of School Superintendent

Police Department

The Ringwood Police Department is located in part of a 19th Century three-story building at 60 Margaret King Avenue. The 60 x 60 foot building contains 5,200 square feet of floor space on three levels. The Police Department currently occupies 4,860 square feet on two levels and the basement.

The structure contains administrative and record storage space. The facility also includes an equipment room for the tactical team and armor, a photo lab, a vehicle equipment storage area, a traffic sign/equipment room and areas for storage of evidence. According to the Chief of Police, the building does not adequately serve the present needs of the department and municipality. The Chief estimates a minimum of 6,000 square feet is needed. The building, for example, lacks any incarceration facilities; prisoners must be transported to the County Jail which is remote to the municipal complex. The Borough leases a two-story frame building off-site but contiguous to the present municipal complex from the State of New Jersey.

Administrative Offices

Ringwood Borough's administrative offices are located at 60 Margaret King Avenue which consists of a three-story structure with a floor area of 5,200 square feet and a 3,600 square foot contemporary one-story section which was added to the west side of the building in 1978. In addition to this complex, the Borough also utilizes a house trailer and a small storage building at the rear of the site.

The newer addition of the municipal building houses the offices of the Tax Collector, Borough Clerk, the Council Chamber (an open central space with no physical separation from the entrance) and the Borough Manager.

The older portion of the building houses the Department of Health, Tax Assessor, a small court room, the Building Inspector and the Police Department. A recent structural and remodeling study, prepared by Richard A. Alaimo Engineering Associates, indicates that limited structural damage has occurred as a result of using this building as an office building. The study concludes by recommending that the Borough consider moving ahead toward the construction of a new Borough Hall Complex.

A feasibility study prepared in 1984 recommended the construction of a one-story building(s) with 18,430 square feet of floor area to house Borough administrative offices, a Council Chamber

and the Police Department. The Borough of Ringwood purchased the 43.7 acre parcel on Skyline Drive.

Library

The Ringwood Public Library is located on the south side of Carletondale Road, east of Cupsaw Drive. Established in March of 1960 by the Library Association of Ringwood, Inc., the library is a member of both the Bergen-Passaic Regional Library Cooperative and the Passaic County Library System, which includes most municipalities in Bergen and Passaic counties. These municipalities share a reciprocal agreement whereby residents registered in one participating library may utilize the services of any other library in the system.

Table 28 which follows, shows criteria for determining library space needs. These criteria are applicable to libraries serving a population ranging in size from 10,000 to 25,000 people.

The standards indicate that Ringwood's 1988 estimated population should have access to a local library with approximately 9,458 square feet of floor area to accommodate an existing book collection of 31,827 volumes. This is based upon a 1988 population of 13,511 persons and 10,100 square feet would be required based upon a 1996 population of 14,426 persons. The accompanying space needs include administrative offices and work areas, reader seating areas, etc.

The major deficiencies of the existing building revolve around the inadequate amount of space to accommodate the existing book collection as well as lack of floor space for the necessary ancillary library functions. For example, the facility lacks adequate reading and work areas for residents, and does not contain a meeting room to accommodate various library functions which attract sizeable groups of people. Seating capacity is also limited; there are presently fifteen reader seats available to users of this facility, although the standards indicate many more should be available to serve the present needs.

Fire Department

Ringwood Borough's fire protection services are provided by volunteer fire fighters. These volunteers are members of one of three fire stations which are distributed throughout the Borough.

All local firefighters are trained at either the Bergen County Police and Fire Academy in Mahwah or the New Jersey Firemen's Training Center in Wayne. In addition to the mandatory training received at these centers, Ringwood's fire department holds weekly drills to enable its volunteers to maintain their fire fighting skills. The firefighters are required to attend a

TABLE 28
GUIDELINES FOR DETERMINING
MINIMUM SPACE REQUIREMENTS FOR LIBRARIES

	STANDARD 10-25,000 POPULATION SERVED	RINGWOOD EXISTING POPULATION 13,282*
SHELVING SPACE		
Size of Book Collection (vol.)	20,000 plus 2 per capita for population over 10,000	27,022
Linear Feet of Shelving	2,500. Add 1 square foot of shelving for every 8 volumes over 20,000	3,978**
Amount of Floor Space (sq.ft.)	2,000. Add 1 square foot for every 10 volumes over 20,000	3,183**
READER SPACE (SQ.FT./SEATS)	Minimum 1,200 for 40 seats. Add 4 seats/ 1,000 over 10,000 population served, at 30 square feet/reader space.	1,620/79
STAFF WORK SPACE (SQ.FT.)	1,000. Add 150 square feet for each full-time staff member over 7.	1,000
ESTIMATED ADDITIONAL SPACE (SQ.FT.)	1,800	1,800
RECOMMENDED FLOOR AREA (SQ.FT.)	7,000 sq.ft. or 0.7 sq.ft. per capita; whichever is greater	7,603 (Calculated) 9,458(per capita)

* Estimate of Population by N.J. Department of Labor, Division of Planning and Research, 1987
** Based on existing book collection of 31,827 volumes.

SOURCE: American Library Association, Guidelines Toward Achieving the Goals of Public Library Service

specified number of mandatory fire drills per year in order to retain their active status within the department.

During the past year, the fire department responded to approximately 219 calls. These calls are dispatched through police headquarters. The volunteers are summoned directly through an instant alarm system which consists of a radio in the firefighter's home. A back-up general alarm is also utilized.

The fire department is party to a reciprocal agreement with surrounding municipalities whereby they will assist neighboring fire companies if assistance is needed, and vice versa. In addition, Ringwood has a similar agreement with the Town of Tuxedo located in Orange County, New York.

Erskine Lakes Fire Station

The Erskine Lakes station is located on a 4 acre parcel of the west side of Mohawk Trail, north of Overlook Terrace. A total of approximately 25 active volunteers are associated with this stationhouse, of which approximately 5-10 respond to a fire call during the day and 20 respond to calls during the evening.

The stationhouse is a two-story structure. The second floor is utilized as a meeting hall for firefighters as well as storage for fire engines. The building is in a good condition.

The fire-fighting facilities includes two 1,500 gallon pumpers with 500 gallon tanks, as well as one heavy rescue vehicle with a hurst tool and boat. The station serves the Erskine and Cupsaw Lake areas as well as Upper Ringwood. The station is not restricted to a single fire protection district and generally will respond to all fire calls in Ringwood.

Skyline Lake Fire Station

This fire station is located on the south side of Edgewood Road, east of Sylvan Lane and is located on a 0.37 acre parcel. The station serves the Skyline Lake area but is not restricted to a single fire protection district and generally will respond to all fire calls in Ringwood.

The station house consists of a one-story building. The building contains three bays which are designed to accommodate a "back-in" system. A portion of the lower hall is used as a meeting hall for firefighters. Three pieces of fire-fighting equipment are stored at this location. The existing equipment includes two 1,500 gallon pumpers with 500 gallon tanks and one light rescue truck with a 250 gallon pump and 250 gallon tank.

Stonetown Fire Station

The Stonetown station is located on a 0.4 acre site on the west side of Stonetown Road south of Magee Road in the southwest portion of the Borough. The site is developed with a two-story building. This structure includes two bays with back to back storage of vehicles.

Four fire trucks are stored at this location. These include two 750 gallon pumpers, with a 1,000 gallon tank and another with a 500 gallon tank, a 1,000 gallon pumper with a 2,500 gallon tank and a 400 gallon mini-pumper with a 250 gallon tank. A portion of the level where trucks are stored is utilized for meeting space. The basement is utilized for storage and a portion thereof is leased to the Ringwood Cooperative Nursery School, Inc. The 1,000 gallon pumper truck is 16 years old and will need to be replaced with a new truck.

The fire protection area covered by this station includes that portion of Ringwood south of the Monksville Reservoir and west of the Wanaque Reservoir. The station also covers parts of the Boroughs of Wanaque and Bloomingdale and generally will respond to all fire calls in Ringwood.

There are 18 active volunteers associated with this firehouse. Of that total, 6 generally respond to a fire call during the day while normally all volunteers respond to a fire call during the evening hours.

Fire Department Standards

Nationally accepted standards concerning fire stations deal with fire station locations, their service area coverage, and the coordination of facilities with respect to the type of land use to be protected.

Locational standards recommend that a "high value" area (defined as an area composed predominantly of commercial, industrial and apartment uses) be served by an engine company within a one mile radius. Areas composed predominantly of medium density single and two-family dwellings should be served by an engine company within a 1.5 mile radius and a ladder company within a three mile radius. Low density residential areas response time may be increased up to two miles for engine companies.

Nearly all of the developed portions of Ringwood fall within the recommended service area for engine companies. The only developed portions of the municipality which do not fall within the recommended service area of an engine company are those dwellings on the north side of Cupsaw Lake and Lake Riconda and those

properties along Margaret King Avenue and Peter's Mine Road in Upper Ringwood.

Ambulance Corps

Ringwood's emergency medical services are provided by volunteer first aiders who are assigned to the one ambulance corps within the Borough.

In addition to the mandatory state requirements, Ringwood's Ambulance Corps holds classes to enable their volunteers to maintain higher levels of skill demanded of the first aiders. The ambulance corps personnel are required to attend a certain percentage of all functions of the corps to maintain their active status.

In 1988, the ambulance corps responded to a total of 942 calls for an average of 78 calls per month. Calls are dispatched through police headquarters. The ambulance personnel are summoned directly through an instant, alarm system consisting of a plectron (radio) in the volunteers homes.

The ambulance corps is located on a 0.93 acre parcel of land situated on the south side of Alta Vista Drive. A total of 40 active members currently serve the community.

Public Works Department

The Ringwood Department of Public Works occupies a site located on the northerly side of Margaret King Avenue, west of Peter's Mine Road. The 7.67 acre property contains a two one-story buildings which are designed to serve as a storage facility for the department's equipment. The buildings' storage areas accommodate a variety of trucks and snow plows. Additional equipment is stored outdoors on the site.

The department performs numerous maintenance functions for the municipality, including street repair, ice and snow removal and park and recreation area maintenance.

It is also responsible for the operations of the Borough water system. An additional building and salt storage area are needed to accommodate the sanders and provide contained, weatherproof storage of road salt. A more centralized location is also needed in order to improve response time during emergencies and to eliminate excessive travel time for normal functions of the Department of Public Works in the eastern and southern portions of the Borough.

Recreation

The Ringwood recreation program is conducted under the aegis of the Borough Recreation Commission, a seven member body appointed by the Mayor. The Commission and a full-time Recreation Director and assistant who are responsible for administering the recreation sites owned and maintained by the Borough.

Recreation Complex

This facility is located behind the municipal complex adjacent to Margaret King Avenue. The complex is developed with 4 tennis courts, one practice field, one football/soccer field, one softball field, a bocci court and a playground.

Jenkins Field

This facility is located on a 2.8 acre site south of Skyline Lake Drive. The site is developed with one little league field, one basketball court and a playground with swings and a jump set.

Stonetown Field

This field is situated on a 17 acre site owned by the Ringwood Board of Education. The facility is located on the west side of Stonetown Road and contains one softball and one soccer field.

Margaret King Avenue Field

This facility is located on a 12 acre site on the north side of Margaret King Avenue. The site is developed with two baseball fields.

Painted Forest Park

This facility occupies approximately 3 acres of the 10.9 acre open space area on the east side of Poplar Drive near Conklintown Road. The site is developed with playground equipment including facilities for handicapped children.

Public School Recreation Facilities

A portion of each of the four public school sites are also developed for recreation use. Generally, these recreation areas contain play equipment, ballfields and court games.

County and State Recreation Facilities

The State of New Jersey maintains substantial recreation and open space lands in Ringwood. These facilities include Ringwood Manor, Skylands Manor

State Park, Ramapo Mountain State Forest, Long Pond Iron Works State Park and a portion of the Norvin Green State Forest, which is also located in the Township of West Milford and the Boroughs of Bloomingdale and Wanaque. The Ramapo Mountain State Forest, which is located in both Passaic and Bergen Counties, is located along the southerly border of the Borough.

Passaic County recently acquired certain lands from Sterling Forest as part of the County park system. The 1,300 acre tract, located in the northwestern portion of the Borough, provides an almost continuous park-land system across the northern portion of Ringwood.

These regional facilities account for 6,812 acres of recreation/open space lands located within the municipality's boundary and account for almost 39 percent of Ringwood's total land area.

Table 29, entitled Existing Recreation Facilities, identifies all the recreation facilities in Ringwood by location, size, ownership and type of facility.

Classification System for Recreation Facilities

The recommended standards of the National Recreation and Park Association (NRPA) indicate that at least ten acres of recreation land be provided for each 1,000 people in a community. This standard has become an accepted rule to determine the recreation needs of a municipality. The NRPA recommends a standard of six acres per 1,000 population be provided by a County, State or other regional authority.

Utilizing an estimated population of 13,511 persons, according to the NRPA standards, a minimum of 135 acres of recreation space should be provided in Ringwood, of which 81 acres should be provided at the municipal level. Ringwood has 56.8 acres of recreation land which are provided at the municipal level, not including facilities at the four school sites.

The distribution of recreational acreage by functional category is more difficult to establish than total acreage needs. As a general rule, it is appropriate that every resident have reasonable access to a variety of recreational uses. The type of facilities most commonly provided may be divided into the following four categories :

1. Playlots. This is an active recreation facility for school-age children. This facility generally ranges in size from one-quarter to one-half acre, with a one acre site considered a maximum size for each recreation use. A playlot generally includes miscellaneous play equipment for toddlers, benches and shaded areas. In low density areas, this facility has a limited demand and may be combined with recreational facilities for older children, if properly separated from the toddler area.

2. Neighborhood Playground. These are larger facilities than

originally were intended for school-age children but now are usually designed to include older children and adults. The sites should average three to six acres in size to ensure both sufficient buffer landscaping around the perimeter and a separation of on-site activities. These facilities are generally developed with ballfields, basketball and tennis courts and a children's playground; often a small shelter is included. Neighborhood playgrounds should be provided at a ratio of about 1.25 acres per 1,000 population, and each facility should be designed to serve a population of 4,000 to 5,000 people.

3. Neighborhood Parks. Neighborhood parks are passive facilities for all age groups. They are designed for walking and sitting as opposed to active games and sports. The main features of this type of facility include walkways, benches and landscaping. Such features are often provided in combination with a playground.

   The site size standards for neighborhood parks are comparable to those of the neighborhood playground. There should be about one acre of parkland space per 1,000 population, ranging in size from one to five acres.

4. Community Playfields an Parks. These facilities, which provide both active and passive recreation features, are considerable larger than the neighborhood-type facility. Ideally, they should be provided at a ratio of 1.25 acres per 1,000 population, serving from 12,000 to 20,000 people living in a one mile radius. They are designed for field sports requiring large open areas and should therefore contain from twelve to twenty acres of land. Such a facility should also include an indoor recreation center to accommodate a comprehensive active and passive recreation program.

   Provision should also be made for a larger comprehensive recreation facility designed to include areas maintained in their natural state, potentially including hiking and riding trails, shelters and special features such as gardens, a bird sanctuary or a zoo. Such a facility generally encompasses an area of one hundred acres and is designed at a ratio of 2.5 acres per 1,000 population, where the local population can support same.

Based upon the review of existing facilities and recommended standards it is noted that :

... The low density residential character of the western portion of the Borough minimizes the need for playlot facilities geared to pre-school age children;

... There is a "mathematical" need for approximately 24 acres of active municipal recreation space in Ringwood. If public school recreation facilities are included, this need will be significantly reduced;

... Based upon NRPA standards, there is a need for at least one indoor recreation center, which would facilitate an active and passive recreation program for all ages.

TABLE 29
EXISTING RECREATION FACILITIES
RINGWOOD BOROUGH

OWNERSHIP/FACILITY	LOCATION	SIZE (ACRES)	EQUIPMENT/FACILITIES
RINGWOOD BOROUGH			
Recreation Complex	Margaret King Avenue	22.0	Ballfields, tennis, bocci, playground
Jenkins Field	Skyline Lake Drive	2.8	Little league field, basketbal, playground
Stonetown Field	Stonetown Road	17.0	Softball and soccer fields
Margaret King Avenue	Margaret King Avenue & Sloatsburg Rd.	12.0	Baseball fields
Painted Forest Park	Poplar Drive	3.0	Playground
	Sub-Total	56.8	
RINGWOOD BORAD OF EDUCATION			
Peter Cooper School	Roger Court	NA	Playground
Robert Erskine School	Erskine Road	NA	Playground, little league field
Eleanor G. Hewitt School	Sloatsburg & Carletondale Rd.	NA	Softball and soccer fields, playground
Martin J. Ryerson School	East of Valley Road	NA	Soccer/softball fields, basketball
PASSAIC COUNTY			
Sterling Forest Lands	Northwestern Ringwood	1,300.0	Open Space
STATE OF NEW JERSEY			
Ringwood & Skylands Manor	Northern Ringwood	3,134.0	Picnicking, hiking, boating, fishing and hunting
Other State Open Space	Northwestern & Southeastern Ringwood	2,378.0	Open space, hiking
	Sub-Total	5,512.0	
	TOTAL	6,868.8	

NA - Not Available

SOURCE: Ringwood Borough Recreation Department, Ringwood Board of Education, Ringwood Borough Tax Maps, State Department of Environmental Protection

TABLE 30
GENERAL STANDARDS FOR LOCAL RECREATION FACILITIES

TYPE	FACILITY SIZE (ACRES)	ACRES PER 1,000	POPULATION SERVED	SERVICE AREA RADIUS	AGE GROUPS SERVED	FACILITIES USUALLY INCLUDED
Playlot	Smallest permitted lot size to 1 acre	---- No Standard -----		1 or more blocks	Preschool age	Swings, see-saws, slides, sand boxes, miscellaneous play equipment, benches, trees, landscaping.
Neighborhood Playground	3 to 6	1.25	4,000-5,000	1/2 mile	5 to 15	Playlot equipment, apparatus for older children, basketball courts, other game areas, special facilities such as ballfields, wading pool, shelter house, landscaping.
Neighborhood Park	1 to 5	1	3,000-4,000	1/2 mile	all ages	Grass, shrubbery, trees, walks, benches, table game area, miscellaneous ornamentation, sometimes play equipment.
Community Playfields and Parks	15 to 25	1.25	12,000-20,000	1 mile	all ages	Ballfields with stands and lights, swimming pool, picnic area, play equipment, indoor recreation center, landscaping, parking.
Large Recreation Parks	100 or more	2.5	40,000 or more	up to 30 minute driving time	all ages	Areas in natural state, water recreation areas, hiking and horseback trails, roads, parking, shelters, comfort stations, may include special features such as zoo, bird sanctuary, botanical garden, nature museum, arboretum, golf course, beach.
Specialized Parks	----------No Standard----------				all ages	Museums, historical areas, triangle memorials, road dividers, etc.
TOTAL		6.0				

SOURCE: National Recreation and Park Association

TRAFFIC AND CIRCULATION ANALYSIS

Regional Transportation System

The major highways near the Borough of Ringwood with an east-west orientation include Route 23, Route 208 and the New York State Thruway. Route 17 and Route 202 serve as the major north-south routes. Interstate-287 will provide access to Ringwood through interchanges with Skyline Drive in Oakland Borough and Ringwood Avenue in the Borough of Wanaque.

Ringwood contains four streets which are part of the County roadway system, including Ringwood Avenue/Greenwood Lake Turnpike, Skyline Drive, Sloatsburg Road and Margaret King Avenue. The Ringwood Avenue/Greenwood Lake Turnpike corridor is the most heavily travelled local street system in the Borough. This County roadway has a north-south orientation and connects the northeast portion of Passaic County with Route 23. Skyline Drive connects Greenwood Lake Turnpike with Route 208 in Oakland. Sloatsburg Road links Greenwood Lake Turnpike to Eagle Valley Road in Tuxdeo, New York which then connects to Route 17. Margaret King Avenue connects points in Upper Ringwood with Greenwood Lake Turnpike and Sloatsburg Road.

Other main through roads in Ringwood include Stonetown Road and Westbrook Road. Stonetown Road links the western portion of Greenwood Lake Turnpike with Westbrook Road and is the only north-south road serving the western part of the Borough. Westbrook Road connects the southern area of Ringwood with West Milford and is the only east-west road crossing the Wanaque Reservoir in the southern portion of the Borough.

Street Classification System

Ringwood's 1973 master plan provided a roadway classification system based upon the physical and functional roles of various streets and roadways in the community.

The 1973 master plan prepared by Boorman and Dorram, Inc. provided a five-tier system consisting of arterial roads, major roads, collector roads, local roads and marginal service roads.

The 1973 Plan indicated the following rating system :

> "Arterial Roads -- are regional highways which link the community to the larger metropolitan centers. Ringwood does not have such a road today ... The minimum recommended right of way is 120 feet."
>
> "Major Roads -- are thoroughfares linking Ringwood to surrounding communities. These roads are generally county roads at present. It is proposed -- in terms of this 20 year long-range master plan -- that the requirements for these roads become four lane, median divided, limited access highways with minimum right of way width ranging from 100 feet to 120 feet."
>
> "Collector Roads -- are thoroughfares which as their name implies collect traffic from local roads and serve as feeder roads to major roads to which they usually connect. Collector roads should have a right of way of 60 or 80 feet.
>
> In places where collector roads serve low density, large lot residential areas where lot frontages are 150 feet or wider, or where reverse frontage is to be provided and no sidewalks are contemplated, a 60 foot right of way with a 48 foot pavement width or a 40 foot pavement width with a 20 foot planted median strip will suffice. However, in areas where sidewalks leading to schools, churches, shopping, etc. are required, or where industrial traffic is to be accommodated, an 80 foot right of way is recommended."
>
> "Local Roads -- local roads are the streets serving the individual homes in a neighborhood. It is recommended that :
>
> * The present 50 foot right of way requirement remain unchanged.
> * Required pavement width be increased to 24 feet.

* Maximum grade be 15%.

"Marginal Service Roads -- are common drives that are designed to serve no more than four or five homes and that for reasons of topography or street layout are unlikely to be ever extended. Marginal Service roads will be required to provide an adequate turn-around area of minimum 7,500 square feet if circular or 3,500 square feet if rectangular in layout -- subject to Planning Board approval -- to prevent the backing out of vehicles into the public right of way. The recommended right of way width is 30 feet, pavement width 20 feet."

As noted in Table 31 major roadways in 1973 included Ringwood Avenue-Greenwood Lake Turnpike, Skyline Drive, Sloatsburg Road, Margaret King Avenue and Westbrook Road.

In 1973, twelve existing roads and three future roads were noted as collector roadways.

Traffic Volumes

The amount of traffic utilizing roadways in Ringwood has increased through the years as new development has taken place, both within the community as well as the region. Traffic engineers typically present this data in several ways. One method presents the maximum amount of traffic passing a given point on a roadway, which is usually expressed as peak hour traffic. Another method is to present the total amount of traffic passing through an area during a 24 hour period. An adjusted 24-hour traffic count is also termed the average annual daily traffic volume or AADT.

Typically, although not always, the peak-hour traffic volumes represent a percentage of the total 24-hour or AADT count - on an order of magnitude of 9 to 12 percent.

Table 32 indicates adjusted average annual daily traffic volumes along four different county roads in Ringwood. The data indicates Ringwood Avenue-Greenwood Lake Turnpike to be the most extensively travelled roadway in Ringwood.

Turning Movements

The traffic engineering report prepared for the Ringwood Planning Board by John E. Christ, P.E. in July of 1983 included turning movements of specific intersections in the Borough. This data, based upon traffic counts during the A.M. hours provides additional insight as to certain traffic patterns and directional traffic flows that have been established in Ringwood. A total of 26 such turning movement studies were undertaken in 1983. The major intersections included :

1. Skyline Drive at Conklintown Road

TABLE 31
COMPARATIVE ANALYSIS
RINGWOOD BOROUGH ROADWAY CLASSIFICATION
1973 - 1990 MASTER PLAN STUDIES

	MASTER PLAN ROADWAY CLASSIFICATION	
	1973	1990*
MAJOR ROAD		
Ringwood Avenue-Greenwood Lake Turnpike	X	X
Skyline Drive	X	X
Sloatsburg Road	X	X
Margaret King Avenue	X	X
Westbrook Road	X	X
COLLECTOR		
High Mountain Road	X	X
Stonetown Road	X	X
Burnt Meadow Road	X	X
Skyline Lakes Drive	X	X
Conklintown Road	X	X
Erskine Road	X	X
Lakeview Avenue	X	X
Mohawk Trail	X	X
Skylands Road	X	X
Carletondale Road	X	X
Cupsaw Drive	X	X
Beech Road	X	X
Fieldstone Drive	-	X
James Drive	-	X
Cupsaw Avenue	-	X

SOURCE : Planning Memorandum No. 15, Thoroughfare Plan, Boorman and Dorram, Inc., amended February 6, 1967. (Part of Circulation Plan Element of 1973 Ringwood Master Plan)

*Ringwood 1990 Subdivision Ordinance.

TABLE 32
TRAFFIC VOLUMES ON
VARIOUS ROADS IN RINGWOOD
1987*

STREET	BETWEEN	AVERAGE DAILY TRAFFIC VOLUME (VEHICLES)
Ringwood Avenue-Greenwood Lake Tpk. (Route 511)	Fern Place & Westbrook Road	12,987
	Westbrook Road & Skyline Drive	8,828
	Skyline Drive & Skylands Road	13,632
	Skylands Road & Sloatsburg Road	8,737
	Sloatsburg Rd. & Stonetown Road	5,903
	Stonetown Rd. & Margaret King Ave.	6,150
	Margaret King Ave. & Beech Road	1,910
Sloatsburg Road	Route 511 & Carletondale Road	1,883
	Carletondale Rd. & Margaret King Ave.	4,368
	Margaret King Ave. & State Line	6,258
Skyline Drive	Route 511 & Fieldstone Drive	13,460
	Fieldstone Dr. & Conklintown Road	11,452
Margaret King Ave.	Route 511 & Sloatsburg Road	4,639

* Based on projections of counts in early 1980's adjusted yearly by 3.77 percent. Adjustment of 3.77 percent is based on the yearly percent change between 1980 - 1984 of A.A.D.T. prepared by New Jersey Department of Transportation.

SOURCE : Passaic County Traffic Engineering Department

2. Skyline Drive at Chershire Lane
3. Skyline Drive at Fieldstone Drive
4. Skyline Drive at Erskine Road
5. Greenwood Lake Turnpike at Skyline Drive
6. Greenwood Lake Turnpike at Skylands Drive
7. Greenwood Lake Turnpike at Sloatsburg Road
8. Greenwood Lake Turnpike at Stonetown Road
9. Greenwood Lake Turnpike at Margaret King Avenue
10. Greenwood Lake Turnpike at West Brook Road
11. West Brook Road at Stonetown Road
12. Conklintown Road at Canterbury Road
13. Sloatsburg Road at Carletondale Road
14. Sloatsburg Road at Margaret King Avenue

Detail data concerning the specific turning movements at these intersections is presented in the appendix of the master plan. The traffic report concluded that additional major development would exceed the capacity of the roadway system.

Travel Patterns of Ringwood Residents

The United States Census of Population provides statistical data concerning work patterns for Borough residents. Although the data reported in 1980 is somewhat outdated, it does reflect a primary orientation to the work place outside of Passaic County.

As noted in Table 33, a total of 48.6 percent of all Ringwood resident's reported their work place to be outside of Passaic County. Presumably, the majority of these residents were employed in nearby Bergen, Morris and Essex counties. A total of 41.3 percent of Ringwood's residents also reported their place or work inside Passaic County. The data also indicates that an additional 10.1 percent of workers were employed outside of New Jersey, presumably in Rockland County, or New York City.

Table 34 reflects the average travel time to work. More than forty percent of the work force indicated a travel time to work of less than 30 minutes. Another 43 percent of the resident population indicated a travel time between 30 minutes to one hour, while 16.5 percent of the work force indicated a travel time of one hour or greater,

Table 35 represents the transportation mode by which Ringwood's working residents reach their place of work. Ringwood is served by bus service to other areas of Passaic County and New York City. The data indicates that working residents of the Borough primarily utilize their own automobiles as a means to reach their place of work. A total of 73 percent of residents travel alone in private automobiles. Not surprisingly, less than 5 percent of residents who work, utilize public transportation to travel to where they work. In comparison, 67 percent of Passaic County working residents utilize their own automobiles. In addition, a greater percentage of County residents walked or utilized public transportation to reach their place of work than did Ringwood's working residents.

TABLE 33*
RINGWOOD BOROUGH RESIDENTS
PLACE OF WORK
1980

	NUMBER	PERCENT
Work in Ringwood	786	14.7
Worked in Passaic County, Outside of Ringwood	1,417	26.6
Worked in New Jersey, Outside of Passaic County	2,593	48.6
Worked Outside of New Jersey	538	10.1
TOTAL	5,334	100.0

*It is recognized that this information should be updated when the 1990 Census data is made available.

SOURCE : U.S. Census of Population, 1980

TABLE 34*
RINGWOOD RESIDENTS
TRAVEL TIME TO WORK**
1980

TIME PERIOD TRAVELING TO WORK	NUMBER	PERCENT
Less than 5 minutes	24	0.4
5 - 9 minutes	360	6.5
10 - 14 minutes	437	7.9
15 - 19 minutes	347	6.2
20 - 29 minutes	1,069	19.2
30 - 44 minutes	1,632	29.4
45 - 59 minutes	769	13.8
60 or More	919	16.5
TOTAL	5,557	100.0

MEAN TRAVEL TIME - 35.1 minutes

**Workers 16 years and over, not working at home.

*It is recognized that this information should be updated when the 1990 Census data is made available.

SOURCE : U.S. Census of Population, 1980

TABLE 35*
MODE OF TRANSPORTATION TO PLACE OR WORK
RINGWOOD AND PASSAIC COUNTY
1980

MODE OF TRANSPORTATION	RINGWOOD	PASSAIC COUNTY
Car (alone) :		
Number	4,079	129,936
Percent	73.3	67.0
Car Pool :		
Number	1,043	36,127
Percent	18.7	18.6
Public Transportation :		
Number	240	12,460
Percent	4.3	6.4
Walked :		
Number	89	12,034
Percent	1.6	6.2
Other Means :		
Number	41	1,375
Percent	0.7	0.7
Worked at Home :		
Number	73	1,893
Percent	1.3	1.0
TOTAL	5,565	193,825

*It is recognized that this information should be updated when the 1990 Census data is made available.

SOURCE : U.S. Census of Population, General Social and Economic Characteristics, 1980

Table 36 reports the number of miles of State, County and municipal streets in the Borough. The existing right-of-way widths of arterial and collector streets in Ringwood are listed in Table 37. The data indicates that a number of collector streets do not meet the recommended right-of-way widths for this type of roadway.

TABLE 36
ROADWAY MILEAGE
BOROUGH OF RINGWOOD

State Highways	0.00
County Roads	14.82
Municipal Streets	132.00
TOTAL	146.82

SOURCE : Ringwood Tax Assessor's Office
Ringwood Department of Public Works

Vehicular Accidents in Ringwood

During the full year of 1986, there were 322 accidents that occurred in the Borough of Ringwood. Of this total, 219 accidents resulted in property damage, 102 accidents resulted in injuries and 1 accident involved a fatality. One pedacyclist was killed on the Greenwood Lake Turnpike between Skyline Drive and Redner Lane (a dirt road) on July 21, 1986. Data on vehicular accidents is provided by the New Jersey Department of Transportation, Accident Record Bureau.

Table 38 enumerates those intersections in Ringwood where accidents occurred in 1986. The most severe individual location for traffic accidents in 1986 was the intersection of Skyline Drive and Erskine Road, where 10 accidents involving 11 injuries took place. The intersection of Greenwood Lake Turnpike and Skylands Road is the second most troublesome intersection, being the site of 7 accidents involving 2 injuries in 1986.

Table 39 enumerates the number of accidents occurring between intersections in 1986. In general, high accident rates are experienced along the most heavily travelled local streets, notably, Greenwood Lake Turnpike-Ringwood Avenue, Skyline Drive, Sloatsburg Road, Margaret King Avenue, Skyline Lakes Drive, Stonetown Road and Westbrook Road.

TABLE 37
ROADWAY RIGHT-OF-WAY WIDTHS
BOROUGH OF RINGWOOD, NEW JERSEY

ROADWAY	RIGHT-OF-WAY WIDTH (FEET)
ARTERIAL	
Ringwood Avenue-Greenwood Lake Turnpike	41-60
Skyline Drive	120
Sloatsburg Road	60
Margaret King Avenue	60-66
COLLECTOR	
High Mountain Road	40
Stonetown Road	50-65
Burnt Meadow Road	50
Skyline Lakes Drive	40-50
Conklintown Road	50
Erskine Road	42
Lakeview Avenue	33-50
Mohawk Trail	40-50
Skylands Road	50
Carletondale Road	50
Cupsaw Drive	40
Beech Road	33
Fieldstone Drive	60
James Drive	60
Cupsaw Avenue	50

SOURCE : Ringwood Borough Tax Records

TRAFFIC ACCIDENTS AT INTERSECTIONS
RINGWOOD, N. J.
1986

Location	Accidents	Injuries	Deaths
Beech and High Moutain Rd.	1	0	-
Birch Rd. and High Moutain Rd.	2	0	-
Brookside ave. and Short Pl.	1	0	-
Cannon Mine Rd. and Peter Mine Rd.	1	1	-
Canterbury Rd. and Skyline Dr.	1	0	-
Carletondale Rd. and Cedar	1	0	-
Carletondale Rd. and Cupsaw Dr.	2	2	-
Conklintown Rd. and Fountain Dr.	1	0	-
Conklintown Rd. and Poplar Dr.	1	0	-
Cupsaw Ave. and East Point Pl.	1	0	-
Cupsaw Ave. and Kendall Dr.	1	1	-
Cupsaw Ave. and Skylands Rd.	1	1	-
Erskine Rd. and Lakeview Ave.	1	0	-
Glen Rd. and Stelton Rd.	1	0	-
Greenwood Lake Turnpike and Beech Rd.	1	1	-
Greenwood Lake Turnpike and Margaret King Ave.	2	0	-
Greenwood Lake Turnpike and Skylands Rd.	7	2	-
Greenwood Lake Turnpike and Skyline Dr.	6	5	-
Greenwood Lake Turnpike and Skyline Lakes	1	2	-
Greenwood Lake Turnpike and Sloatsburg Rd.	2	1	-
Greenwood Lake Turnpike and Stonetown Rd.	1	0	-
Greenwood Lake Turnpike and West Brook Rd.	2	4	-
Lakeview Ave. and Mohawk Terr.	2	0	-
Lenape Rd. and Seneca Dr.	1	0	-
Margaret King Ave. and Boro Parkway	2	0	-
Skyline Dr. and Alta Vista Dr.	3	2	-
Skyline Dr. and Cheshire Lane	6	2	-
Skyline Dr. and Conklintown Rd.	6	2	-
Skyline Dr. and Erskine Rd.	10	11	-
Skyline Dr. and Fieldstone Dr.	6	4	-
Skyline Dr. and Hight Moutain Rd.	1	0	-
Skyline Dr. and James Dr.	4	3	-
Skyline Dr. and Oakwood Dr.	2	0	-
Sloathsburg Rd. and Mararet King Ave.	3	0	-

TABLE 38 (CONT)

Location	Accidents	Injuries	Deaths
Sloatsburg Rd. and Farm Rd.	1	0	-
Stonewall Ct. and Brooksyde Ave	2	1	-
Tulip Ave. and West Brooksyde Ave.	1	1	-
	88	46	

TABLE 39
TRAFFIC ACCIDENTS BETWEEN INTERSECTIONS
RINGWOOD, N. J.
1986

LOCATION	ACCIDENTS*	INJURIES
County Road		
Greenwood Lake Tpk - Beattie Lane & Skyline Lakes Dr.	2	0
Greenwood Lake Tpk - Skyline Lakes & Westbrook Road	1	0
Greenwood Lake Tpk - Redner Lane & Skyline Drive	16	5
Greenwood Lake Tpk - Skyline Dr & Skylands Road	2	5
Greenwood Lake Tpk - Sloatsburg Rd & Skylands Road	4	2
Greenwood Lake Tpk - Sloatsburg Rd. & Stonetown Road	14	10
Greenwood Lake Tpk - Margaret King Ave & Beech Road	11	4
Greenwood Lake Tpk - Margaret King Ave & Corp. Line	2	0
Greenwood Lake Tpk - Redner Lane & Westbrook Rd	2	0
Greenwood Lake Tpk - Margaret King Ave & Stonetown Road	2	1
Skyline Drive - Alta Vista Dr. & Erskine Road	8	3
Skyline Drive - Alta Vista Dr. & Fieldstone Drive	2	0
Skyline Drive - Beech Ct. & Oakwood Drive	1	0
Skyline Drive - Conklintown Road & Corp. Line	6	2
Skyline Drive - Edward Dr. & High Mountain Road	2	2
Skyline Drive - Fieldstone Drive & Oakwood Drive	8	6
Skyline Drive - Greenwood Lake Tpk & Erskine Road	1	0
Sloatsburg Road - Convent Road & Corp. Line	8	3
Sloatsburg Road - Convent Road & Farm Road	2	0
Sloatsburg Road - Convnet Road & Long Meadow	1	1
Sloatsburg Road - Farm Road & Morris Road	2	2
Sloatsburg Road - Greenwood Lake Tpk & Carletondale Road	4	1
Margaret King Ave - Boro Parkway & Farm Road	3	3
Margaret King Ave - Boro Parkway & Peter's Mine Road	1	0
Margaret King Ave - Daret Drive & Petzold Avenue	1	0
Margaret King Ave - Milligan Drive & Petzold Avenue	1	0
Margaret King Ave - Greenwood Lake Tpk & Daret Drive	2	2
Margaret King Ave - Greenwood Lake Tpk & Petzold Ave	1	0
SUBTOTAL	110	52
Municipal Road		
Alta Vista Drive - Buena Vista Drive & Forsgate Drive	2	0
Alta Vista Drive - Skyline Drive & Forsgate Drive	1	0
Bear Mountain Rd - Cupsaw Avenue & Valley Road	1	0
Bear Mountain Rd - Valley Road & Dead End	1	0
Bellot Road - Forge & Laurel Place	1	0
Bellot Road - Laurel Place & Upper Lakeview Avenue	1	0
Buena Vista Drive - Alta Vista Drive & Forsgate Drive	1	0
Buena Vista Drive - Alta Vista Drive & Hilltop Road	1	0
Canterbury Road - Conklinton Road & Skyline Lakes Drive	3	0

TABLE 39 (continued)
TRAFFIC ACCIDENTS BETWEEN INTERSECTIONS
RINGWOOD, N. J.
1986

LOCATION	ACCIDENTS*	INJURIES
Carletondale Road - Hickory Road & Kendall Drive	1	2
Carletondale Road - Sloatsburg Road & Kendall Drive	1	0
Catherine Court - Dolores Drive & Marcia Road	1	0
Catherine Court - Dolores Drive & Jayne Terrace	1	0
Cedar Road - Aspen Road & Kendall Drive	1	0
Conklintown Road - Channing Drive & Poplar Drive	6	3
Conklintown Road - Cannon Mine Road & Wilson	1	1
Conklintown Road - Canterbury Road & Manning Road	1	0
Conklintown Road - Fountain Drive & Greenwood Lake Tpk	1	1
Conklintown Road - Lenape Road & Poplar Drive	2	2
Conklintown Road - Manning Road & Wilson	1	0
Cupsaw Avenue - Black Rock Terr & Mohawk Trail	1	0
Cupsaw Avenue - Charles & Cupsaw Drive	1	0
Cupsaw Drive - Duffy Road & Windeam Ave	1	1
Cupsaw Drive - East Point & Old Road	1	0
Cupsaw Drive - East Point & Windbeam Ave	2	1
Cupsaw Drive - The Loop & The Loop	1	1
Edgewood Road - Skyline Lake Drive & Sylvan Lane	1	3
Edward Drive - Cliffside Drive & Dewey Drive	1	0
Erskine Road - Lakeview Ave & Maple Road	1	0
Erskine Road - Skyline Drive & Voorhis Place	3	0
Fieldstone Drive - Old Forge Road & Stonetown Road	1	1
High Mountain Road - Beech Ct & Birch Road	1	0
High Mountain Road - Birch Road & Skyline Lakes Drive	1	0
Hope Place - Maple Road & Voorhis Place	1	0
Judith Ann Drive - Joseph Lane & Kent Road	1	1
Kendall Drive - Catherine Ct & Cedar Road	1	0
Kendall Drive - Cupsaw Drive & Kraft Place	1	0
Lakeview Avenue - Main Beach Rd & Old Forge Road	1	0
Lakeview Road - Birch Road & Dead End	1	0
Lakeview Ave - Erskine Road and Mohawk Trail	1	0
Lakeview Ave - Mohawk Trail & Upper Lakeview Ave	4	1
Lakeview Ave - Ramapo Place & Short Place	1	0
Lakeview Ave - Laurel Place & Upper Lakeview Ave	1	0
Magee Road - Stonetown Road & Wood Terr.	1	0
Magee Road - Burnt Meadow Road & Wood Terr.	1	0
Milligan Drive - Margaret King Ave & Van Dunk Lane	1	2
Overlook Terrace - Mohawk Tr. & Pine Place	1	1
Poplar Drive - Conklintown Road & Olive Lane	1	0
Skylands Road - Greenwood Lake Tpk & Cupsaw Ave	5	1
Skyline Lakes Drive - Canterbury Road & High Mountain Rd	4	2
Skyline Lakes Drive - Edgewood Road & Edgewood Road	4	0

TABLE 39 (continued)
TRAFFIC ACCIDENTS BETWEEN INTERSECTIONS
RINGWOOD, N. J.
1986

LOCATION	ACCIDENTS*	INJURIES
Skyline Lakes Drive - Greenwood Lake Tpk. & Terrance Lane	2	1
Skyline Lakes Drive - Old Oakwood & Smokey Ridge Rd.	1	1
Skyline Lakes Drive (East) - Cantebury Rd & High Mountain Rd	3	0
Skyline Lakes Drive (West) - Mtn. Glen Rd & Smokey Ridge Rd.	2	1
Stonetown Road - Daims & Ricker Drive	1	0
Stonetown Road - Lake Riconda & Harrison Lake Road	1	0
Stonetown Road - Magee Road & Pina Ct.	1	1
Stonetown Road - Mary & Westbrook Road	2	2
Stonetown Road - Pima Ct. & Westbrook Road	2	1
Stonetown Road - Greenwood Lake Tpk & Riverview Drive	2	1
Upper Lakeview Avenue - Laurel Pl. & Valley Road	1	0
Van Dunk Lane - Cannon Mine Road & Jacob Hill	1	1
Wanaque Terrace - Cupsaw Ave & Valley Road	1	0
Westbrook Road - Greenwood Lake Tpk & Stonetown Road	8	6
Westbrook Road - Magee Road & Shady Lane	1	0
Westbrook Road - Magee Road & Tulip Ave	1	0
Westbrook Road - Shady Lane & Snake Den Road	1	0
Westbrook Road - Shady Lane & Stonetown Road	1	1
Westbrook Road - Tulip Ave & Corp. Line	5	3
Windbeam Ave - Cupsaw Drive & Kraft Place	1	0
SUBTOTAL	114	43
GRAND TOTAL	224	95

* Accidents reported to the State Division of Motor Vehicles during 1986.

SOURCE: New Jersey Department of Transportation, Accident Record Bureau, Detail of Motor Vehicle Accidents for 1986.

Interstate I-287

Interstate I-287 is a roadway which was initiated almost three decades ago in the late 1950's as a part of the national interstate highway defense program. Currently, the New Jersey Department of Transportation is in the process of constructing the roadway between Montville and Mahwah.

Proposed Development

The completion of Interstate 287 in the northern New Jersey counties of Morris, Passaic, and Bergen as well as Rockland County in New York will complete the last gap remaining in the 897 mile circumferential route serving the New York City metropolitan area including northeastern New Jersey. The section of roadway that has not been completed totals approximately 21 miles and extends from the present terminus at Route 202 in Montville Township, Morris County, to the New York State Thruway (I-87) in Suffern, New York.

The highway will consist of three lanes in each direction (six lanes total) separated by a variable width median from Route 202 in Montville to Colonial Road in Franklin Lakes. From Colonial Road north to an interchange with the New York State Thruway, the highway will consist of two lanes in each direction separated by a variable width median. Access to the road will be fully controlled so that vehicles will be able to enter or exit only at interchange areas.

The circumferential route of I-287 begins as Route 440 in Staten Island, New York, crossing the Raritan Bay into New Jersey via the Outerbridge Crossing. It then travels westward to a junction with the New Jersey Turnpike (I-95). The I-287 designation begins at the New Jersey Turnpike in Edison, New Jersey. The route proceeds first west, then north, and then east, merging with I-87 near the New York State Line continuing to its terminus at I-95 in Port Chester, New York. In addition to the interchanges with I-95, the completed I-287 will also have a number of completed connections with major highways in New Jersey and New York.

In Oakland, in the vicinity of Ringwood, the route continues along the base of the Ramapo Mountains to an interchange with Skyline Drive and Route 208, just west of the Ramapo River. Crossing the river, the proposed highway combines with existing Route 208 and turns east. The combined route passes through the middle of Oakland, forming an interchange with Route 202 (Ramapo Valley Road). It then continues into Franklin Lakes and separates at a second interchange with Route 208.

The Route then turn north again and becomes, for the remainder of the distance, a four-lane highway. It crosses the New York, Susquehanna and Western Railroad at Franklin Avenue. The route remains generally parallel, west of Pulis Avenue, as it crosses Phelps Road before entering Mahwah.

In Mahwah, the alignment follows the irregular eastern boundary of the Campgaw Mountain Reservation traversing the park in several locations, crossing the end of Vail and Fike Roads. It then crosses Campgaw Road just north of the Bergen County Police and Fire Training Academy and enters County-owned lands between the Campgaw Reservation and Darlington County Park.

Leaving the Campgaw Reservation area, the alignment passes over Darlington Avenue and extends east of Ramapo College before turning north. It then crosses the Ramapo River, where it parallels and merges with Route 17 to an interchange with Interstate Route 87 (New York State Thruway).

The traffic engineering report prepared by John Christ stated the following :

> "The travel patterns of those living in the study area (Ringwood) should not be affected greatly by I-287. There would be considerable extra travel distance in using I-287 instead of Skyline Drive southbound from the central area of Ringwood. The benefit of I-287 would be the fact that the traffic from the south which now uses Conklintown Road to reach Skyline Drive would use I-287 instead... Note that traffic from the Ringwood area could use either Skyline Drive to the bottom of the grade in Oakland to reach I-287, or travel south on Ringwood Avenue to reach I-287. Neither route can tolerate additional traffic without increasing delays." (parenthesis added)

According to transportation officials from Passaic County, a possible interchange in Wanaque would have a potential impact on traffic flows within Ringwood.

It is noted that the Wanaque interchange will not be completed at the same time as the principal portion of the I-287 roadway. The interim affects of not having the Wanaque interchange for some period of time after Interstate 287 is open to traffic, relative to its impact on circulation in Ringwood is discussed in further detail in the Traffic Plan.

As this time, motorists will be able to use I-287 prior to any interchange being available in the Borough of Wanaque.

Regional Transportation Improvements

The feasibility of a Ringwood Avenue bypass road is also being studied by Passaic County. Such a bypass road could entail a new alignment between Westbrook Road and Skyline Drive in Ringwood. The bypass road, if approved and constructed, would extend from Ringwood in the north to Pompton Lakes in the south. County transportation officials anticipate that the study for the bypass road will be completed in 1990 or 1991. Another transportation study that could affect the Borough of Ringwood has recently been undertaken by Passaic, Bergen, Morris and Sussex Counties. The study will examine transit alternatives within the N.J. Transit rail corridor, including the use of current freight lines for passenger service.

UTILITY SERVICES

Water Supply

Water supply in Ringwood is partially supplied by subsurface groundwater suppliers and partially supplied by surface water. A total of at least six wells have a reported capability of 1,600 gallons per minute but a reliable capacity of only 600 gallons per minute or 860,000 gallons per day.

The firm of Richard A. Alaimo Associates was retained by the Borough of Ringwood to update its water supply plan. The following represents excerpts from a report evaluating the potable water system of the Borough.

The distribution system consists of pipes ranging in size from 2 to 16 inches in diameter. There are six storage facilities in operation, ranging in size from 50,000 gallons to 900,000 gallons with a collective total storage volume of 2.06 million gallons.

Water supply facilities in Ringwood are divided into two segments - centralized water supply facilities and individual well facilities. The centralized facilities are municipally maintained and consist of two systems - the Skyline system and the Windbeam system. The Borough water system currently services approximately 1,725 dwellings and a small number of commercial users in the Skyline Lake, Cupsaw Lake and Erskine Lake areas. The Borough system was extended in 1986 and 1988 to service Upper Ringwood and the industrial area along Margaret King Avenue.

Well Fields

Well No.9 is situated on the south side of Beattie Lane. This well is the Borough's largest groundwater supply source. This well is situated on the south side of Skyline Lake Drive south of Skyline Lake.

The water from this well is pumped by the Skyline Pump House and boosted by the Poplar Drive Booster into the Skyline Lake System. The Beattie Well has a pumping capacity of 200 gallons per minute or approximately 0.29 million gallons per day.

Windbeam Wells

Well Numbers 3 and 6 are situated on the east and west side of Skyline Drive near Erskine Road. Both of these wells supply water to the Windbeam

water system. Together, these two wells have a reliable pumping capacity of 150 gallons per minute.

Well No. 2, located on the east side of Valley Road, has a pumping capacity of 56 gallon per minute. The Windbeam wells have a combined reliable capacity of 200 gallons per minute.

Brookside System

The design capacity of this system is 350 gallons per minute but was only operated at 200 gallons per minute when on-line. However, this system was not on-line in 1987. The system has a rerated reliable capacity of zero gallons per minute. Thus, it has not been considered as a water supply source in the report prepared by Alaimo Associates.

Upper Ringwood Area System

The Upper Ringwood area water source provides 42 gallons per minute but has a rerated reliable capacity of zero gallons per minute.

This water is supplied by a cistern on the south side of Margaret King Avenue on North Jersey District Water Supply Commission land opposite the Borough Hall. The cistern is limited to withdrawing 75,000 gallons of surface water per day. The North Jersey District Water Supply Commission has recently agreed to the proposed installation on NJWSC land of a 60 foot to 100 foot well by Ringwood Borough to be operated between May 1st and September 1st at up to 30 gallons per minute. At this rate, the well would be located adjacent to the existing cistern, which would be removed from service upon placing the well in service.

Surface Water

In addition to the Upper Ringwood area cistern, the 16 inch water main connection to the Passaic Valley Water Commission system in the Skyline pumping station provides additional reliable capacity-based upon the existing booster pumps - of 300 gpm or 0.43 mgd. An emergency booster pumping facility which was installed last year to augment the Booster Pump House provides an additional 400 gpm or 580,000 gallons per day.

In summary, the total current reliable capacity of the Borough's water supply system is approximately 1,300 gallons per minute or 1.9 million gallons per day. This supply adequately meets the current estimated water demand of 1.43 million gallons per day. However, the emergency Skyline booster pump (0.58 mgd) is not rated as "reliable" in long-term planning. Thus, additional source(s) of water must be identified and made available for water supply in the long-term. The study by Richard A. Alaimo Associates concludes that new supply facilities must be added to the existing facilities to increase the reliable capacity from 1.3 mgd to either 1.72 mgd or 2.92 mdg. The latter figure (2.92 mgd) represents normal growth to 1998 plus a possible planned program to service existing nonserviced residential uses totalling approximately 1,500 residents.

The estimated demand of 1.72 mgd is based on the assumption that demand in the system for water during peak consumption days will increase at approximately 2 percent per year until such time, approximately 1992, that future extensions to the water distribution system could be made to service 1,500 residences that are contiguous to the system but do not now have public water. The estimated demand of 2.92 mgd is based on the assumption that, of the present 1,566 non-serviced residential homes, 1,500 units would be connected to the system at the rate of 300 units per year for five years commencing in the year 1992.

Thus, if the system is permitted to grow at 2 percent per year, the peak daily demand in 1998 will be 1.72 million gallons per day. If the existing 1,500 nonserviced units are provided water service by the extension of water mains, the peak daily demand will increase to 2.92 million gallons per day.

In order to meet the estimated demand by 1998 of 1.72 mgd, a new supply of 0.42 mgd must be created. To satisfy 1998 demands from normal growth and inclusion of existing nonserviced residential users, a new supply of 1.62 mgd must be established.

Water Supply Distribution Facilities

The present distribution system includes an undetermined amount of pipe ranging in size from 2 inches to 16 inches in diameter. Distribution system performance is judged upon its ability to :

... meet peak demands at a minimum required pressure;
... provide adequate fire flows;
... supply the projected needs of new developments.

A six-inch (6") diameter water main is considered to be the smallest sized water main that will afford reasonable customer and fire service. All water mains in the Skyline Lakes area meet or exceed this standards. The Borough's distribution system includes approximately 10.5 miles of four-inch (4") diameter mains. The 14.5 miles or 77,000 feet of undersized water mains are located entirely within the Cupsaw and Erskine Lake communities.

The Borough water system was extended in 1986 and 1988 to service the Upper Ringwood and the industrial areas along Margaret King Avenue. The purpose of extending the system to the industrial area was to promote and service industrial and commercial development. This was accomplished through the installation of a 12" main along Margaret King Avenue and a portion of Peter's Mine Road.

It has been determined that the system does not adequately provide for the distribution of water to meet peak daily demands. Distribution problems have resulted in service interruptions or poor service pressures.

A number of water main extensions and interconnections have been recommended by the Borough's consulting engineer and are listed below in their order of priority.

... The first recommendation is the extension of a 12 inch water main from the Skyline tank to Chershire Lane. This extension has not been made due to a potential housing development in this area.

... The second recommendation improvement is the installation of a 12 inch water main in Cheshire Lane as an extension to the existing main to Copper Hill Park (Road) for approximately 1,800 lineal feet.

... The third recommendation is the installation of a 8 inch water main on Conklintown Road from Poplar Drive to Skyline Drive for approximately 2,400 lineal feet.

... The fourth priority is the installation of the balance of the 8 inch water main in Countryside Lane. The developer of this area has installed approximately 2,000 lineal feet of 8 inch water main. The balance of work remaining amounts to 800 lineal feet.

... The fifth recommended improvement is the installation of a 10 inch water main along the west side of Lake Erskine from Northgate Park to Choctaw Trail.

... The sixth priority addresses a localized pressure problem due to insufficient main sizes in the Cupsaw Lake Area. It has been recommended that new water mains be installed in Cupsaw Drive (East and West) to basically provide a 12,000 foot loop around the entire lake.

In addition to the strengthening of the basic distribution network, much of the existing street service lines are old and antiquated. In general, it has been suggested that the two-inch and three-inch mains be upgraded to six-inch mains, and the four-inch mains should be upgraded to six-inch and eight-inch diameter water mains. In addition to being undersized, some of the mains are shallow, susceptible to freezing and are not in service year round.

Present Water Storage Facilities

Ringwood is presently served by five storage tanks - the Skyline, Copper Hill, Club Road (2) and Upper Ringwood area tanks.

Skyline Tank

The Skyline Tank is located on the west side of Skyline Drive adjacent to the Ramapo Mountain State Forest. The 62 foot high tank is supplied water from the Beattie Lane Well, Skyline Well and the Passaic Valley Water Commission 16 inch main. The tank is filled by the Skyline booster pump house and Poplar Drive booster station. The tank has a capacity of 900,000 gallons.

Copper Hill Tank

The Copper Hill tank is located on the north side of Copper Hill Park (Road). The tank has a height of 125 feet and has capacity of storing 125,000 gallons of water.

Club Road Tanks

The Club Road tanks are situated to the west of Upper Lakeview Avenue. The twin tanks are 24 feet high and have a capacity of 240,000 gallons each.

Upper Ringwood Area Tank

The Upper Ringwood area tank is located at the end of Van Dunk Lane, west of Peter's Mine Road. The tank has a height of 24 feet and is capable of retaining 500,000 gallons of water. A proposed plan would replace the cistern with a new production well capable of supplying up to 300 gallons per minute or 420,000 gallons per day.

The five existing water storage tanks have a combined capacity of 2,005,000 gallons. The Potable Water System Report and Evaluation, prepared by Richard Alaimo Engineering Associates, concluded that there currently exists sufficient storage to meet normal design and operating requirements for the Borough's water system. Thus, long range planning for future storage will only be required if the distribution system is extended to serve the 1,500 dwellings that are contiguous to the system but do not now have public water. If this plan is approved and undertaken, a new one million (1,000,000) gallon tank will be needed by 1995.

Ground Water Resources

The Department of the Interior, United States Geological Survey in a publication entitled "Water Resources Investigations in New Jersey 1977" indicates the availability of ground water in the New Jersey Highlands, of which Ringwood is a part. The Highlands region consists of strongly consolidated rocks - the granites, gneisses, and quartzitic sandstones - which are relatively dense. Between the rock grains there is little space for water retention, although small amounts of water does percolate down through fractures.

The most productive Highland wells generally are in the deep glacial drift on the lower slopes and valley bottoms. The water in the drift arrives there more as runoff from the slopes than as springs issuing from bedrock.

Sustained ground water yield can be defined as that quantity of water which can be withdrawn from an aquifer without causing a long-term decline in the water table or in ground water storage. Thus, withdrawls should not exceed recharge over the long term; otherwise, the groundwater will be mined and base flow to the stream will be affected.

Several estimates of sustained groundwater yield for unweathered Precambrian bedrock in northern New Jersey for both dry year and average year conditions are indicated in Table 40. Differences in the yield estimates can be attributed, in part, to natural or physical variations, including such factors as the degree of rock fracturing within a drainage basin, the extent of glacial scour and deposition and the period of record used by the analyst.

As shown in Table 40, the estimated dry year yields range from 120,000 to 200,000 gallons per day per square mile. The average year yields range from 160,000 to 590,000 gallons per day per square mile.

Sole Source Aquifer

In October of 1987, the United States Department of Environmental Protection declared that the entire Borough of Ringwood in conjunction with portions of West Milford, Jefferson, Rockaway, Vernon, Hardyston, and Pompton Lakes as well as all of Bloomingdale, Wanaque, Butler and Riverdale and portions of the Townships of Warwick and Tuxedo and the entire Village of Greenwood Lake are located within the sole source aquifer of the Wanaque and Pequannock River drainage basins.

A copy of the 11 page EPA determination is provided in the Appendix of the Plan. A copy of the designated region for the sole source aquifer that was included in the petition prepared by the Passaic River Coalition is also enclosed herein.

Septic Systems

The bulk of Ringwood's population depends on septic tanks and leaching fields for wastewater disposal. The effluent flows into an underground field which facilitates percolation of the wastewater through the soil. Soils which have low infiltration rates (such as clay) will not be able to accept the effluent fast enough so that surface ponding may result. Conversely, soils with high infiltration rates (such as sand and gravels) may not allow enough time for the effluent to percolate through the soil. Phosphates from septic system leachate can enter lakes and streams if the disposal fields are too close to the receiving watercourses.

The United States Soil Conservation Service soils series and maps indicate that the vast majority of Ringwood is underlain by soils with severe limitations for septic tank absorption fields.

TABLE 40
ESTIMATED GROUND WATER YIELDS FOR
UNWEATHERED PRECAMBRIAN FORMATIONS IN
NORTHERN NEW JERSEY

DRAINAGE BASIN OR AREA	ESTIMATED YIELD (1,000 GPD/MI.^{2})	
	DRY YEAR	AVERAGE YEAR
Bear Swamp Brook Bergen County	120	160
Northern New Jersey	120 - 170	200 - 250
West Brook Passaic County	180	590
Blue Mine Brook Passaic County	200	490

SOURCE : Robert M. Hordon, PhD, report to Ringwood Planning Board in the matter of Countryside Estates v. Borough of Ringwood

Robert M. Hordon, PhD writes :

> "Nitrates are highly soluble and represent a major potential contaminant in ground water systems. Only a portion of the nitrates present in septic effluent is (removed) by the soil medium, the remainder easily enters the groundwater where it can become part of the water supply source for the domestic and municipal wells. Contravention of drinking water standards for nitrates is a distinct possibility if septic system density becomes too great."

Sewage Treatment Facilities

With only minor exceptions, residential, commercial and industrial uses in the Borough employ on-site disposal systems involving septic tanks and leaching fields. The exceptions to these on-site disposal systems include:

... Two plants operated by the Board of Education serving the Robert Erskine School on Erskine Road and the Peter Cooper School on Fountain Drive.

... The James Street Plant serving 108 homes in the High Point Homes development, located at the intersection of Skyline and James Drives.

... A private plant situated to the rear of the Ringwood Plaza Shopping Center serving the shopping center as well as the volunteer ambulance corps building, an adjoining gas station and 14 neighboring homes.

... A small plant owned by the State of New Jersey near Morris Road serving Shepard Lake and Skylands Manor.

The design capacity, population served and the wastewater flows for each of the treatment plants are listed in Table 41. The data indicates that all of the plants are operating below their individual design capacities. The quality of soil conditions in Ringwood to accept septic tank effluent over a period of time has proven to be limited. This is particularly true in the lake communities in the eastern portion of the Borough where there has been a history of some septic tank failures. These failures have an impact upon the public health and water quality of the lake areas. In response to these problems, the Ringwood Borough Sewage Authority (RBSA) was created in 1969. Ringwood is in the jurisdiction of the Wanaque Valley Regional Sewerage Authority (WVRSA) as the 201 Regional Planning Agency. The RBSA is the agency responsible for local control of the wastewater requirements and planning within the Borough.

TABLE 41
CAPACITY AND DEMAND
SEWAGE TREATMENT FACILITIES
BOROUGH OF RINGWOOD

FACILITIES	POPULATION SERVED	WASTEWATER FLOWS (MGD)	DESIGN CAPACITY (MGD)
Peter Cooper School Plant	335	.006	.010
High Point Homes Plant	360	.0346/.036[1]	.036
Ringwood Plaza Plant	45	.014/.012[1]	.012
Robert Erskine Plant	440	.0053	.010
Ringwood State Park	*	**	.050

[1] Projected flows by the year 2000.

* Population served varies depending upon number of park visitors.

** Flows are too small for range of meter.

SOURCE : Wastewater Management Plan, Borough of Ringwood, 1988

Proposed Improvements

The final Facility Plan for Ringwood, prepared by Roy F. Weston, Inc., for the Ringwood Borough Sewage Authority in August 1983, recommended two alternatives for serving Ringwood which were defined as : a) Limited sewering; or b) Extended sewering. The limited alternative would serve those residences on both sides of the lakefront roads adjacent to the four lakes : Cupsaw, Upper and Lower Erskine, and Skyline. In addition, those homes already served by sewers would remain served for a total service area of 917 out of the study area's 3,253 dwellings.

The Extended alternative includes the Limited area plus those parts of the study area around the lakes where lot constraints, soil limitations and density restricted long term use of individual on-site septic systems. About 1,900 out of the 3,253 homes would be served.

Although the Facility Plan recommended the Extended service area with alternative collection, septic effluent sewers (STEP) regional treatment, it questions the potential implementation of the alternative based on available funding and the priority list portion of the project and continues to state "... elimination of septic system discharges would probably not have a significant effect in mitigating lake euthrophication..."

At this time, neither the Limited or Extended alternatives have been adopted by the Ringwood Borough Sewerage Authority.

The 1988 Wastewater Management Plan prepared by the RBSA sets forth the reasons for not adopting either of the two alternatives for sewering Ringwood.

The Management Plan, dated May, 1988, states that the Borough has not implemented any of the sewer alternatives recommended in the 1983 Wastewater Facility Plan "... due to the excessive costs which would be imposed on the residents of Ringwood that would be served, the lack of funding available, the low cost-benefit ratio, and more recently the effect Regional sewer infrastructure has on land use and development."

The Borough of Ringwood, however, has implemented the remaining four recommendations in the Plan through the adoption of Borough ordinances and the establishment of a co-permitee and monitoring program of NJPDES permits by the RBSA. Those four recommendations are as follows:

... Existing on-site systems need to be better managed;

... New system installations, as well as repair systems, should be subject to rigid design standards to ensure effective system performance;

... A closer linkage between land use planning and

wastewater facilities planning in the Borough is necessary.

... The lakes and their tributary streams should be considered "sensitive areas" and efforts should be made to protect these resources from any risk of contamination from septic systems and other sources of contamination.

Planned Improvements

Recently, the Ringwood Borough Sewerage Authority made a decision to upgrade the High Point Treatment Plant to a level 4 treatment.

Neither the Limited or Extended service areas recommended in the 1983 Facility Plan, however, serve vacant lands in the Borough. The 1988 Wastewater Management Plan which has been approved by the NJDEP, Division of Water Resources, allows the Borough to proceed with development and, if required for future development in the Borough, construction of additional wastewater treatment facilities with subsurface disposal.

The RBSA has determined that it is unlikely that a Borough-wide collector system will be constructed in Ringwood in the future to utilize the Regional Treatment Facility in Wanaque.

With the decision not to consider interconnection with the WVRSA system, the following activities were included in the 1988 Wastewater Management Plan :

A. Upgrade each of the following treatment plants as required to meet Level 4 treatment standards :

B. Provide for either on-site wastewater treatment followed by subsurface disposal, or individual septic disposal systems for areas remaining to be developed within the Borough of Ringwood. Development and associated wastewater disposal methods shall be in accordance with all State, Regional, and Local regulations.

C. Construct a new 2,600 gallon per day subsurface disposal system for the Franciscan Friars Ringwood Retirement Facility.

The Ringwood Plaza treatment facility is presently being upgraded, and the High Point Homes treatment plant is to be upgraded. Neither of the public school treatment facilities have been upgraded.

A new subsurface disposal system for the Franciscan Friars Retirement Facility was completed in December, 1988. However, this system needs to be upgraded to meet current standards.

Drainage Facilities

In October of 1969, a comprehensive storm water drainage study for Ringwood was completed by Pandullo, Chrisbacher, Price Associates, consulting engineers. The study delineated major drainage areas for the entire Borough. The report also described the existing drainage facilities and the minor drainage basins in the developed areas around Skyline, Erskine and Cupsaw Lakes and along Stonetown Road in the western section of the Borough. In addition, the study determined the adequacy of existing drainage facilities and where deficient, recommended improvements such as larger diameter pipes, etc. No additional studies have been undertaken since 1969, and a more up-to-date study appears to be warranted.

Improvement of drainage facilities are scheduled for Craft Place, Kendal Drive, Hillside and Old Roads, Stetson and Hillside Roads, and Le Boun Boulevard and Stonetown Road. These and other improvements would benefit from a comprehensive reexamination of existing facilities.

Solid Waste Facilities

Solid waste disposal in Ringwood is accomplished by contract with a private service which collects and disposes of solid waste at authorized sites.

Roadside collection in the Borough is twice a week and according to 1988 records amounts to 6,914 tons per year or 2.8 pounds per capita per day.

In addition, a composting site for vegetative waste is located at the rear of the DPW site on Peter's Mine Road.

The Borough also operates a Recycling Center. A private service collects glass, aluminum, tin and newspaper at the curbside of individual homes in the Borough and deposits it at the Recycling Center. The Borough then brings it to a private company in West Paterson.

STATE DEVELOPMENT AND REDEVELOPMENT PLAN

The State of New Jersey released its preliminary State Development and Redevelopment Plan (SDRP) in January 1989. The preliminary document, if left unchanged, would alter the State's planning classification for Ringwood from a pure conservation category to a variety of open space, limited growth and growth area categories. It is noted that this proposed policy represents a departure from the State policy expressed in both the 1980 State Development Guide Plan (SDGP) and the initial 1987 Policy Map issued by the State Planning Commission, wherein the entire municipality was designated in a conservation category in recognition of the area's unique physical character. The SDGP conservation classification was upheld in litigation when the Borough's conservation status was challenged in the matter of Countryside Estates v. Borough of Ringwood.

The preliminary SDRP modified the 1980 SDGP classification by delineating a system of tiers, of which tiers 1-4 represent growth areas and tiers 5-7 are non-growth or limited growth areas. The Plan also includes park and water classifications.

An analysis of the SDRP detailed maps reveal that the Plan recommended four tiers (#3, #4, #5 and #7) for the Borough. Additionally, portions of the Borough were noted in the park and water categories.

The tier #3 designation encompassed a relatively small area in the southerly portion of the Borough at the Wanaque border, directly to the east of the Wanaque Reservoir. It also encompasses residential development in the vicinity of Skyline Lake and a small number of isolated vacant lots.

The tier #4 designation encompassed the easterly portion of the Borough which extends from the Borough's southerly boundary to Skylands Manor State Park. This area includes the lake communities as well as some vacant lands.

The tier #5 designation encompasses portions of the "Sterling Forest" tract. The entire 1,300 acre tract located in Ringwood has been acquired by Passaic County for parkland purposes.

The majority of the Borough was recommended to be included in the environmentally sensitive tier #7 category and in parkland and water. The Plan notes that tier #7 includes "watersheds of pristine waters, trout streams, and drinking water supply reservoirs, recharge areas for potable water aquifers; ... coastal and freshwater wetlands; prime forested areas; ..." and other significant environmental features.

A key component of the SDRP is the cross-acceptance process, which is a process of comparison of planning policies among governmental levels with the purpose of attaining compatibility between local, county and State plans. This process was initiated in January, 1989 and has been concluded with the negiotation stage beginning shortly.

Representatives of the Borough of Ringwood have met with Passaic County officials to : (1) identify inconsistencies and incompatibilities between Ringwood's master plan and the SDRP , (2) identify any errors in mapping of tier boundaries according to criteria set forth in the Plan and, (3) to recommend revisions to tier boundaries. The Borough has recommended eliminating the tiers 3 and 4 designations for the lake communities and replacing them with a tier 5 designation. This recommendation is based upon the fact that Ringwood has no public sewers nor does it plan to provide public sewers in the foreseeable future. The Borough also recommended eliminating the tier 5 designation for part of the "Sterling Forest" tract and creating a tier 5 area for the industrial area along Margaret King Avenue and the Peter's Mine Road area.

Passaic County has now adopted its report for each community that has been submitted to the State Planning Commission. The County has prepared a map identified as tier technical change maps which are in general agreement with the recommendations made by the Borough of Ringwood.

The negotiation process between Ringwood, Passaic County and the State Planning Commission is currently underway.

SUMMARY FINDINGS AND CONCLUSIONS

Land Use

Ringwood Borough, containing 27.3 square miles, is the second largest community in Passaic County and one of the largest communities in the northeastern portion of New Jersey.

Two-thirds of Ringwood's area consists of water supply lands and other bodies of water and open space areas that are dedicated to conservation and recreation uses. In addition, slightly more than 22 percent of the community today is devoted to man-made improvements - homes, business, industry, streets, community facilities, etc.

One of the most significant factors in the future of the Borough is the relatively small amount of land today that is potentially developable. These lands consist of slightly more than 2,000 acres or 11.6 percent of the total area of Ringwood.

The amount of potentially developable land in the Borough has changed dramatically during the last ten years. In 1980, the Ringwood master plan noted a total of 5,090 acres of land that was potentially developable, or 29.1 percent of the Borough. Today the amount of land potentially developable has decreased by more than 3,000 acres. This reduction in potentially developable land is due in part to the acquisition of the lands of Sterling Forest, the expansion of the North Jersey Water Supply Commission Monksville project, the acquisition of other open space by the State of New Jersey and development taking place within the community.

Much of the remaining undeveloped lands in Ringwood consists of environmentally sensitive lands. Given constraints of steep slopes, wetlands, flood plains, limited groundwater resources, rocky soils and soils with limitations for septic tanks, the development of the remaining lands in Ringwood must be carefully planned. Additionally, the provision of community services and the impact of development upon the character of the community must also be considered.

Environmental Quality of Land

Almost all of Ringwood's remaining developable lands are considered environmentally sensitive. The Critical Areas Map indicates that most of Ringwood has considerable development limitations due to environmental constraints.

Steep topographic conditions exist throughout the Borough, and approximately 47 percent of the total land area is classified as having slopes of 15 percent or greater. There are sections of extremely steep slopes along the ridgeline of the Ramapo Mountains adjacent to Mahwah, where grades exceed 50 percent.

Approximately 12,000 acres or three quarters of the land in the community have severe limitations for development. An additional 13 percent of the soils have moderate to severe limitations depending upon the incidence of stoniness. Another 679 acres are classified as having moderate limitations for development, and only 120 acres are classified as having slight limitations.

The Skylands Region represents one of the last almost pure ecological areas within Northeastern New Jersey. Ringwood and some of its sister communities - including Mahwah, Oakland, Wanaque, Bloomingdale and West Milford - serve as the guardian of the rich natural resources that constitute this region. The overall region is the source of numerous FW-2 trout streams, wetland areas, steep sloping lands and undisturbed forests. One of the principal directions that Ringwood's Master Plan should be directed to is the conservation and preservation of these areas, wherever possible.

This is consistent with the proposed State Development and Redevelopment Plan, which, in its preliminary report, recommends classification of most of Ringwood as "environmentally sensitive." These areas are described in the preliminary Plan as follows:

> "Environmentally Sensitive Areas include valued ecosystems and wildlife habitats that have remained relatively undeveloped or rural in character. These areas include watersheds of pristine waters, trout streams, and drinking water supply reservoirs; recharge areas for potable water aquifers; habitats of endangered or threatened plant or animal species; coastal and freshwater wetlands; prime forested areas; scenic natural landscapes; and other significant topographical, geological or ecological features that are significant to New Jerseyans."
>
> "Environmentally Sensitive Areas are easily disturbed by development. The effects of such disturbance may be significant and irreversible. To supplement statewide strategies for the protection of our natural and cultural resources, public facilities and services should be appropriately scaled to maintain the integrity and function of environmentally sensitive features.
>
> "Environmentally Sensitive Areas under the Plan will remain in relatively low-density developed uses, low-intensity recreational uses, or undeveloped. This land pattern will provide large contiguous land areas

for the protection of sensitive natural resources and wildlife."

Population

Ringwood's population historically has grown at a rapid rate. In 1950 Ringwood's population totalled 1,752 persons. During the next thirty years, the Borough's population increased to a total of 12,625 persons. The 1988 population estimated by the State of New Jersey totals 13,511 persons.

Data from the 1980 U.S. Census indicates a decline in child-centered families and an increasing number of elderly persons. The implications of these population characteristics will have a direct impact upon the Borough's school system, recreation facilities and municipal services in general.

Ringwood's Housing

Ringwood's housing stock primarily consists of single-family residences. The quality of housing in the community is considered excellent although some rehabilitation needs have been identified. Through various municipal, State and Federal programs, the housing in Ringwood has been substantially upgraded.

The rate of housing development has decreased somewhat during the 1980's. From 1970 to 1979 Ringwood issued a total of 890 building permits. Between 1980 and 1988 a total of only 289 building permits have been issued.

In accordance with newly established statutes, Ringwood's master plan must include a housing element and fair share housing plan. Since Ringwood adopted a housing element and fair share housing plan as part of its application before the Council on Affordable Housing (COAH) , an update and supplement is included in Ringwood's 1990 Master Plan.

Ringwood has been classified as a conservation community in its entirety in the State Development Guide Plan of New Jersey. Its conservation status was upheld by Judge Stephen Skillman in the matter of Countryside Estates v. Borough of Ringwood.

In 1986 the Council on Affordable Housing was established. The agency published its statewide housing allocation indicating Ringwood's obligation to be 47 housing units, with no regional housing obligation.

The Borough of Ringwood has received certain grants from the State of New Jersey to rehabilitate some of its housing and to fulfill its Mount Laurel obligation. To date, a total of 33 households have qualified for such rehabilitation efforts.

The Council on Affordable Housing granted Substantive Certification to the Borough of Ringwood on May 20, 1987. The Borough was one of the first

eleven communities in the State of New Jersey to receive such certification.

Historic Sites

Ringwood's rich historic background traces back to the early and middle eighteenth century. The Ringwood Environmental Commission has researched and provided an extensive list of historic buildings and sites in the community.

A total of 56 sites are noted as part of the listings of historic sites. Preservation of these and other sites which may be eligible for historic designation should be considered for incorporation in the Borough zoning ordinance or the Borough official map.

Public School Facilities

The Borough of Ringwood school system currently maintains three primary schools serving grades K-5 and one middle school serving grades 6 - 8. Lakeland Regional High School, located in the Borough of Wanaque, serves Ringwood students in grades 9 through 12.

The school system, similar to many other suburban communities, is operating at less than capacity. At the present time, the four Ringwood schools maintain a 80 percent ratio of its theoretical occupancy of 1,795 children. The functional capacity of each school is likely to be less depending on classes assigned such as special education classes that are restricted by law, and rooms required for art, music, remedial reading, shop, home economics, etc.

Any increased residential development will have an impact upon the school system. New housing units projected to be constructed during the period from 1990 to 1996 may increase present enrollments by 5 to 10 percent. Due to the uncertainty of the numbers of children to be generated by single-family housing, it will be important to continue to monitor new developments as related to the various community services.

Recreation Facilities

In 1989, Ringwood contained 7,278 acres of municipal, County and State parklands - totalling 11.4 square miles of land and water - or more than 41 percent of Ringwood's entire land area.

Despite the vast acreage of recreational lands in the community, there is a need for some additional municipal recreational facilities in the Borough. The need for additional recreational facilities will be further underscored in the coming years with the additional projected population.

Library Facilities

The Ringwood Public Library has served the Borough well in the past. The small building contains 31,827 books and an additional amount of

periodicals, newspapers, audio cassettes and files. There is a limited amount of seating available.

The major problems currently facing the library is its inadequate size to accommodate the Borough's current population. With additional population projected, this facility likely will require a building with approximately 10,000 to 12,000 square feet of floor area.

Fire-Fighting and Ambulance Service Facilities

Ringwood's fire protection services are provided through three volunteer fire stations distributed throughout most portions of the community. The major areas that do not have immediate service include Upper Ringwood and the Margaret King Avenue area and land on the north side of Cupsaw Lake and Lake Riconda. The need for additional fire fighting services or ambulance facilities is not warranted at this time.

Police Department Facility Needs

The Ringwood Police Department is located in part of a 19th century three-story building containing 5,200 square feet of floor space. The Police Department occupies 4,860 square feet on two levels and the basement.

The Police Department estimates a minimum of 6,000 square feet is needed. The Borough leases a two-story frame building off-site but contiguous to the present facility to serve as an interim police station. The Burdell House, which is owned by the State of New Jersey, would be impractical to be utilized as a police station due to structural and space requirements.

Public Works Department Needs

The Ringwood Department of Public Works is located on a 7.7 acre site containing two one-story buildings which serve as a storage facility for the department's equipment.

Administrative Office Needs

The last municipal function in need of additional space and land is Ringwood's municipal building and related administrative services provided in its one annex facility.

The municipal complex is not well located to the more developed portions of the Borough and the present facilities are deficient in a number of critical areas. There appears to be a lack of adequate parking to serve employees and visitors. There is a critical shortage of operational space, storage facilities, meeting space, etc.

Traffic and Circulation

The amount of traffic utilizing roadways in Ringwood has increased as new development has taken place from regional and local development. Based on

average annual daily traffic volumes (AADT) between 1980 - 1984, the New Jersey Department of Transportation determined that traffic along Ringwood's roadways increased at a rate of 3.7 percent per annum.

A compendium of estimated traffic volumes in 1987 in various sections of Ringwood has been provided.

In Oakland, in the vicinity of Ringwood, construction of the approved route of Interstate-287 has started along the base of the Ramapo Mountains to an interchange with Skyline Drive and Route 208, just west of the Ramapo River. The 1983 traffic engineering report, prepared by John Christ, indicated that travel patterns for Ringwood residents would not be greatly affected by I-287.

The future traffic and circulation plan should be directed toward the following :

-- The maintenance of the quality of residential streets free of through traffic wherever possible;

-- The improvement of high-trafficked intersections, both present or in the future, through the installation of traffic lights or other intersection improvements;

-- The improvement and upgrading of sub-standard roads and streets;

-- Additional access to Interstate I-287 in Wanaque.

Water Supply

Water supply services in Ringwood are provided by the Borough of Ringwood through a series of subsurface wells and a distribution system that covers the lake communities, Upper Ringwood and the industrial areas along Margaret King Avenue. In addition, more than 1/3 of the water supply is provided by a connection to the Passaic Valley Water Commission system. The engineering firm of Richard A. Alaimo Associates updated its water supply and distribution facilities plan.

The engineers have recommended that additional source(s) of water must be identified and made available for water supply in the long-term. The engineering study concludes that new supply facilities must be added to accommodate normal growth to the year 1998 plus a possible planned program to service existing non-serviced residential uses totalling approximately 1,500 dwelling units.

The engineers have determined that the system does not adequately provide for the distribution of water to meet peak daily demands. Thus, a number of water main extensions and interconnections have been recommended by the engineers.

Recommendations also call for upgrading small diameter water mains including 2, 3 and 4 inch diameter service lines and replacing them with 6 and 8 inch diameter pipes.

The engineers concluded that long range planning for future storage will only be required if the distribution system is extended to serve the 1,500 residences that currently do not have public water.

Sanitary Sewer Facilities

With only minor exceptions, residential, commercial and industrial uses in the Borough employ on-site disposal systems involving septic tanks and leaching fields.

The 1988 Wastewater Management Plan prepared by the Ringwood Borough Sewer Authority does not call for extending any sewers in the Borough. The reasons for this decision are due to the excessive costs that would be required, the lack of available funding, the low cost benefit ratio and the effect regional sewer infrastructure would have on land use and development.

Drainage Facilities

The collection, storage, and distribution of drainage facilities is one that is fundamental and not typically thought of as a utility function. A comprehensive drainage study for Ringwood was prepared in 1969. The study delineated major and minor drainage basins and described the then existing drainage facilities. However, no additional studies have been undertaken since 1969.

The Borough of Ringwood has retained Richard Alaimo Associates to prepare an ordinance that would provide for the creation of a stormwater management plan. However, the Borough has not authorized the firm to prepare such a plan. Due to the continuous impact of drainage within the community, the potential development within Stonetown and other areas of Ringwood and the potential environmental consequences to the area, one of the major considerations emanating from the master plan study should be a Stormwater Management Plan for the entire Borough.

Sole Source Aquifer

In October of 1987, the United States Department of Environmental Protection, in conjunction with a number of other communities, had declared that the entire Borough of Ringwood is located within the sole source aquifer of the Wanaque and Pequannock River drainage basins.

In instances where there is a determination that a project may contaminate the aquifer through its recharge zone, so as to create a significant hazard to public health, the establishment of the sole source aquifer can eliminate any commitment for Federal financial assistance.

The restriction concerning the sole source aquifer designation states that the EPA will rely, to the maximum extent possible, on any existing or future State of local controls to protect the ground water quality of the aquifer system.

Ground Water Yields

Robert Hordon, PhD, identified the fact that ground water yields for wells is very limited in the Highlands region of the State. "Dry Year" yields of 120,000 to 200,000 gallons per day per square mile is not uncommon in this portion of the State which is equivalent to a range of 187 to 312 gallons per day per acre. Insofar as water consumption per average family is approximately 300 gallons per day, and recognizing that water yields vary from one location to the next, results in the fact that large lot zoning is absolutely necessary in those portions of the Borough that are not served by centralized water facilities.

State Development and Redevelopment Plan

The preliminary State Development Plan promulgated by the New Jersey State Planning Commission designated certain portions of Ringwood in growth "tiers" as if Ringwood were served by sanitary sewer facilities. It also designated certain areas in the community in an erroneous manner.

The "cross acceptance" process resulted in discussion with the Passaic County Planning Board concerning these matters. Recently, the County Planning Board adopted its proposed modifications for the SDRP. These amendments, in many instances, reflected the changes which the Borough of Ringwood requested.

RINGWOOD'S GOALS AND OBJECTIVES

The goals and objectives serving the Ringwood Master Plan are indicated as follows:

1. To recognize and protect environmentally sensitive lands, streams and lakes.

2. To encourage a desirable visual environment including ridgelines, natural vistas and natural areas.

3. To ensure the compatible development of different land uses with a view of lessening the cost of development and encouraging the efficient expenditure of public funds.

4. To encourage the best possible design for new developments, to prohibit the development of flag lots and and to protect established neighborhoods and utilities.

5. To seek tax relief from the State of New Jersey given the fact that massive amounts of revenue are lost due to the acquisition of parklands and reservoirs in the Borough.

6. To promote the continued maintenance and rehabilitation of the Borough's housing stock, support facilities and utilities.

7. To encourage senior citizen community housing construction.

8. To recognize and protect the watershed lands and the drainage basin of the reservoir lands in the Borough as an important regional source of potable water.

9. To protect areas of ground water recharge as well as the quality of all subsurface waters in Ringwood in recognition of the Borough's designation as a sole source aquifer community.

10. To support the creation of recreation facilities in the Skylands Region as a sound method of helping preserve environmentally sensitive lands.

11. To encourage the development of new private and public recreation facilities in appropriate locations serving the different residential neighborhoods in the community.

12. To promote the recognition and preservation of historic sites, hiking trails and their uses.

13. To provide for the appropriate expansion of commercial uses to serve the shopping, professional and personal service needs for residents and visitors alike.

14. To provide for the limited expansion of industrial land uses to support local employment and to broaden the local tax base.

15. To provide suitable areas for the location and expansion of service businesses.

16. To promote the improvement of existing transportation routes and the construction of new roads and bicycle trails in a safe and efficient manner.

17. To promote the efficient utilization of governmental, recreational, educational and other community facilities in appropriate locations complementing and anticipating limited residential growth in the Borough.

18. To promote and encourage the cross acceptance process in support of the State Development and Redevelopment Guide Plan particularly with reference to areas designated as Tier 5 and 7 for the Borough of Ringwood.

19. To promote and maintain the housing stock in the Borough consistent with the substantive certification granted to Ringwood by the Council on Affordable Housing.

LAND USE PLAN ELEMENT

The Ringwood Planning Board last adopted its master plan on March 26, 1981. The 1990 Master Plan, in updating the earlier master plan, has reached the following conclusions :

This Master Plan for the Borough of Ringwood is a statement of the objectives, policies and specific recommendations of the Ringwood Planning Board , which has been prepared in accordance with the provisions and requirements of the New Jersey Municipal Land Use Law, NJSA 40:55D-1 et seq.

It is the intent of the Ringwood Master Plan to guide future use of land in the Borough in a manner which will best protect the public health and safety and promote the general welfare. It provides specific recommendations to guide future public and private development, to provide necessary and feasible public facilities to properly serve this development and to provide a system of streets and roads needed for circulation within the Borough.

The Borough of Ringwood is a residential community with business development limited to that necessary to serve the daily needs and convenience of local residents. The Borough continues to provide more open space - more than two-thirds its land area, than any other community in northern New Jersey. Past development has occurred in a manner which has conserved the natural land form and wooded areas of the Borough.

A development plan was first prepared for the Borough during the 1960's which has subsequently been updated in 1973 and 1981. These plans set forth the policies of creating and maintaining a low density residential atmosphere in Ringwood. The detailed studies preparatory to this updated Master Plan have shown the benefits of these policies and the desirability of continuing this philosophy of development in the Borough. Application of these principles and philosophies in the past have created in Ringwood a community which is almost unique in New Jersey. Its quiet streets and well-maintained residences represent the center of an environmentally sensitive area in the heart of todays' densely developed northern New Jersey suburbs.

The following sections of the Master Plan will provide an analysis of each of the land use categories and recommendations proposed in the 1990 Master Plan.

RESIDENTIAL LAND USE

The 1981 Master Plan recommended three residential categories of development. These were identified as low and moderate density and special development residential use.

The 1990 Land Use Plan, recognizing the need for greater detail and differentiation, proposes five residential classifications. These residential patterns are based upon land use densities, housing affordability and environmental characteristics. The five categories are further detailed in the following portions of the Plan.

The Planning Board has proposed ordinances and policies which serve as models and establish guideline criteria for development and use of these lands.

Environmentally Sensitive Residential Land Use

The New Jersey State Development and Redevelopment Plan identifies the entire westerly portion of Ringwood as a Tier 7 category. Tier 7 which is defined as "Environmentally Sensitive Areas" is identified as follows:

> "Environmentally Sensitive Areas include valued ecosystems and wildlife habitats that have remained relatively undeveloped or rural in character. Thee areas include watersheds or pristine waters, trout streams, and drinking water supply reservoirs; recharge areas for potable water aquifers; habitats of endangered or threatened plant or animal species; coastal and freshwater wetlands; prime forested areas; scenic natural landscapes; and other significant topographical, geological or ecological features that are significant to New Jerseyans."

The intent of environmentally sensitive areas are noted as follows:

> "Environmentally Sensitive Areas are easily disturbed by development. The effects of such disturbance may be significant and irreversible. To supplement Statewide Strategies for the protection of our natural and cultural resources, public facilities and services should be appropriately scaled to maintain the integrity and function of environmentally sensitive features.
>
> Environmentally Sensitive Areas under the Plan will remain in relatively low-density developed uses, low-intensity recreational uses, or undeveloped. This land pattern will provide large contiguous land areas for the protection of sensitive natural resources and wildlife..."

The delineation of environmentally sensitive areas are described as follows:

> Environmentally Sensitive Areas are relatively undeveloped areas with residential population densities averaging less than 1,000 persons per square mile. They are not included in an existing or planned public sewer service area, with the exception of areas with

limited capacity, existing and planned. In addition to these general characteristics, these areas also exhibit one or more of the following features:

1) trout production waters and trout maintenance waters designated by the New Jersey Department of Environmental Protection and their watersheds;

2) pristine non-tidal waters designated Category I by the New Jersey Department of Environmental Protection and their watersheds upstream of the lowest Category I stream segment;

3) watersheds of existing or planned potable water supply reservoir;

4) habitats of population of endangered or threatened plant or animal species, as determined by the New Jersey Department of Environmental Protection;

5) identifiable recharge areas for potable water aquifers related to wellfields and wellhead protection for community water systems;

6) coastal wetlands, as delineated by the New Jersey Department of Environmental Protection;

7) contiguous fresh water wetlands systems, defined as a zone of biological diversity primarily supported by wetlands.

8) significant natural features such as critical slope areas, ridge lines, gorges and ravines, unique geological features, unique ecosystems, or areas designated in the Register of Natural Areas of the New Jersey Department of Environmental Protection;

9) prime forested areas, including mature stands of native species, when in combination with one or more other environmentally sensitive features pursuant to these criteria; or

10) natural landscapes of exceptional scenic value, when in combination with one or more other environmentally sensitive features pursuant to these criteria.

Ringwood's land use plan element is in agreement with the Tier 7 classification for the portion of the Borough located south of the Monksville Reservoir and west of the Wanaque Reservoir. Except for those areas that have been previously zoned for one-acre single-family residential, the balance of the Stonetown section of Ringwood is recommended for a very low density residential classification.

Several years ago, the Borough of Ringwood's development status as a "Conservation Community" was challenged in Court. The case of Countryside Estates v. Borough of Ringwood was decided favorably to the Borough of Ringwood by the Honorable Stephen Skillman, J.S.C. In sustaining the Borough's conservation status, one of the significant proofs offered by the borough was a report prepared by Robert Hordon, PhD., a Rutgers University Professor.

The nitrate dilution model discussed in the report prepared by Robert Hordon, PhD., of Rutgers University, was introduced into evidence by the Borough and was one of the significant proofs considered by Judge Skillman in reaching his decision favorable to the Borough. The nitrate dilution model recognizes the relationship between reasonable development and soil types.

The study produced recommended minimum lot size standards predicated upon a pollutant concentration limit for nitrates in drinking water at 10mg/l . The following table was included in the 1983 Hordon report as follows:

RECOMMENDED DEVELOPMENT DENSITIES IN RINGWOOD
WITHOUT PUBLIC WATER AND SEWER

SOIL TYPE	DEVELOPMENT DENSITY (ACRES/DWELLING UNIT)
Hibernia	2.7
Netcong	3.5
Otisville	3.9
Parsippany	2.3
Pompton	2.7
Preakness	2.3
Ridgebury	2.3
Riverhead	3.5
Rockaway	3.1

It should be noted that the State Development and Redevelopment Plan (SDRP) now recommends that areas designated as Tier 7 maintain a nitrate concentration of 3 mg/l.

While the nitrate dilution model recognizes the relationship between reasonable development and soil types, other environmental constraints which must be considered include : steep slopes, flood hazard areas, wetlands, pristine watershed lands, reservoir watersheds, exceptional scenic landscapes and ridge lines, and the lack of central water supply and centralized sanitary sewer facilities coupled with the designation that all of Ringwood as a sole source aquifer.

Density of development for this land should conform to the proposed ordinances and policies which establish guideline criteria for the development and use of these lands. Development and use of Environmentally Sensitive Residential Land should be consistent with limited growth criteria.

Rural Residential Land Use

Rural residential land use consists of certain lands that also have considerable environmental constraints, or the same type of environmental constraints as those areas designated as environmentally sensitive residential land. The principle distinction between rural residential and environmentally sensitive land is the fact that rural residential land may be served by a public water supply.

Examples of this land use include certain lands east of Skyline Lake and north of Conklintown Road, an area between Skyline Lake and the Greenwood Lake Turnpike and an area between the Kensington Wood development and the State Parklands on Skyline Drive and adjacent to Cheshire Lane. Other tracts of land proposed for this classification include the twenty-two (22) acre tract between Laurel Place and State Parklands and a 9.8 acre tract of land south of the Borough owned property with access from Alta Vista Drive.

Density of development for this land should conform to the proposed ordinances and policies mentioned above which establish guideline criteria for the development and use of these lands. Development and use of Rural Residential Lands should be consistent with limited growth criteria of tier 5 and tier 7.

Low Density Residential Use

Low density residential use is equivalent to a density of one dwelling unit per acre. Areas currently zoned R-40 include the James and Edward Drive and Cheshire Lane neighborhoods. One-acre residential densities are also applicable to the two residential cluster developments in the Borough and the 20 acre area located to the east of Countryside Lane.

In the westerly section of the Borough, portions of the Stonetown area have been zoned and developed for many years with one-acre zoning. No change in this classification is recommended.

Moderate Density Residential Land Use

Moderate density residential use is classified as housing consisting of two (2) dwelling units per acre equivalent to the R-20 zone district designation. These areas are predominantly developed and consist of established neighborhoods in the Cupsaw Lake, Upper Lake, Lake Erskine and Skyline Lake areas. No new changes are proposed for areas designated for moderate density residential use.

The Master Plan is not supportive of infilling of small areas unless it is consistent with all zoning regulations established within the zoning code and other development codes. The Plan does not support overdevelopment which can result in environmental degradation of an area.

Medium Density Residential Land Use

The Upper Ringwood Area, or the Peter's Mine Road Area, is designated as medium density residential land use. This area was designated "special residential development" in the 1981 Master Plan. The 1981 Plan noted the following :

> "This classification acknowledges the unique history of development in the mine area, the extensive efforts toward housing rehabilitation... This classification is intended to permit additional residential development with one-acre minimum lots along with substantial areas of open space. Both one and two-family dwellings are recommended for this special residential development area."

The 1990 Master Plan has redesignated the area for medium density residential use. Some adjustments are recommended in the zoning ordinance in order to more accurately reflect the actual development conditions in the area.

The major recommendation for this land use category is to change the concept of one-acre zoning to reflect the fact that many of these homes have been developed on much smaller lot sizes and a number of buildings extend to the side property lines. Zero lot line zoning might be appropriate for the area.

In addition, any new development in the area should be contingent upon extensive subsurface exploration. Although the location of some pits and mine shafts are documented, other land disturbance areas may not be known. As noted in the 1981 Master Plan, "These land disturbances could pose a threat to new development because of the dangers of subsidence. Hence, adequate investigations are a necessary prerequisite to new development in the area ..." The concept of site specific investigation for any additional development in the area is continued in the 1990 Master Plan.

Senior Citizen Housing

The Ringwood Borough questionnaire indicated a need or a desire for senior citizen housing in the community. A similar request has been made by the Ringwood Senior Citizens organization. A review of the demographic conditions in the community also are supportive of this need. Accordingly, the 1990 Master Plan recommends that consideration be given to providing a centralized location where such housing might be developed. Consideration should also be given to seeking financial assistance from the State and Federal governments wherever possible.

The Master Plan supports the concept of implementing this proposal and therefore recommends the establishment of a blue ribbon committee, appointed by the Mayor and Council, to investigate an appropriate site and appropriate methodology for funding.

COMMERCIAL LAND USE

Four categories of commercial uses are recommended in the Land Use Plan. These categories are community commercial, community shopping, neighborhood and business commercial, and general business.

Community Commercial Land Use

The 1981 community commercial land use category included the shopping center area along Skyline Drive as well as commercial uses along the Greenwood Lake Turnpike. The 1990 Master Plan, in recognition of the predominant function that the Skyline Drive business community plays concerning the entire community, has designated this area exclusively for community commercial land use.

The major shopping centers, the Fieldstone Plaza, the Ringwood Plaza, and Ringwood Commons as well as a number of adjacent commercial uses along Skyline Drive, comprise the community commercial land use category. Changes recommended for community commercial land use include the deletion of the acquired 39 acre tract of land located south of the New Borough Parkway from community commercial use to public use and a change from commercial use to low density residential use of the 20 acre area east of Countryside Lane. This latter recommendation is predicated upon a number of significant environmental constraints noted in the area including steep sloping lands, wetlands and the designation of the High Mountain Brook as an FW-2 Trout Production Stream.

The master plan also recommends that a study should also be undertaken to determine if lands located to the south and west of Pearlmart are capable of development.

General Shopping

The southerly portion of the Greenwood Lake Turnpike, near the Borough of Wanaque represents a linear commercial area that has been developed commercially over the years, providing a variety of retail and service uses. No change is recommended concerning this commercial category.

General Business Uses

General business uses are located in the area of Margaret King Avenue and the Greenwood Lake Turnpike. The area was originally designed to permit uses such as contractors, landscapers, building supply services which were not oriented to conventional retail uses. Since 1981, this area has been reduced somewhat due to the construction of the Monksville Reservoir and the acquisition of certain lands for recreational purposes.

Due to the more isolated nature of the Stonetown portion of Ringwood and the loss of the 1,300 acre Sterling Forest property, which was identified as a potential planned unit development in earlier plans, the addition of certain types of retail uses, to serve the neighborhood retail needs of this portion of the Borough's residences, would be desirable. In addition, consideration should also be given to certain commercial recreation uses near the Monksville Reservoir.

Neighborhood Business and Commercial Uses

There were two small neighborhood business and commercial uses designated in the Cupsaw and Erskine Lake areas. The 1990 Plan recommends that these two small commercial areas be continued.

Light Industrial Uses

The Margaret King Avenue corridor extending from Peter's Mine Road westward to the area designated as general business use is proposed for light industrial uses. The area serves as a source of employment for a number of Ringwood residents. Light industrial use is recommended along both sides of Margaret King Avenue.

The 1990 Master Plan recommends the elimination of the OR-200 Zone, which is to be replaced with the light industrial category. During the past eight years when the OR-200 Zone was in place, there have been no applications for development in that classification. The OR-200 Zone was originally intended to serve as a transitional use between the Sterling Forest tract of land and the light industrial category. Since Sterling Forest will not be developed with residential uses, the transitional nature of the Office and Research Zone is no longer required. The Plan therefore suggests that office and research type uses be incorporated in the light industrially designated areas.

The 1990 Plan strongly supports the utilization of the Margaret King Avenue corridor for light industrial use subject to the environmental controls and regulations of the Federal, State and municipal governmental agencies. The Plan recognizes that certain portions of this corridor area are environmentally sensitive and supports the protection and preservation of these areas.

Consideration should also be given to certain commercial recreation type uses particularly in the area of the Monksville Reservoir. Facilities

such as hotels, restaurants and conference centers would be appropriate uses within this portion of the Borough.

RECREATION AND OPEN SPACE

The category of recreation and open space is the most significant and dominant land use in the Borough of Ringwood. At the present time, almost 11,600 acres or 66.3 percent of the total community is considered as recreation and open space. These include State, County and Borough parklands, reservoir and watershed lands, cluster open space and conservation lands.

The land use plan, in addition to these factors, also includes recommendations for certain additional perimeter lands to be incorporated within State and County parklands, the establishment of stream corridors along the primary streams and brooks in the community, the establishment of trail corridors in the Borough and the recognition of certain wetland areas in Ringwood. Overall, the Ringwood Master Plan suggests that more than 12,000 acres, or 69 percent of the Borough remain in a recreation or open space category.

The Ringwood Master Plan does not provide detailed site specific recommendations for recreation and open space. In the future, if such detail is desired, the Borough should consider developing a recreation plan element as part of the master plan.

State and County Parklands

Since the 1981 Master Plan was adopted, State and County parkland holdings have increased to 6,812 acres, or 39.1 percent of all land in Ringwood. A total of four areas along the Ringwood-Mahwah border, which are totally surrounded by State parklands, are recommended to be acquired for State Parkland purposes. The four tracts of land total 265 acres cannot be reasonably provided service by Ringwood, if private development were to take place on these sites.

A fifth tract of land, totalling approximately 169 acres located to the east of the County's Sterling Forest lands and west of Ringwood Manor is also almost totally surrounded by governmentally owned parklands. The acquisition of this site for parkland purposes would establish a continuous green belt of open space across Ringwood's entire northerly portion of the community.

The five areas were previously identified in the 1981 Master Plan for State Parkland "Conservation" purposes.

Reservoir and Watershed Lands

The continued utilization of the Wanaque Reservoir and its upland watershed area and the development of the Monksville Reservoir has increased the amount of land devoted to surface water supply in Ringwood to 3,725 acres, or 21.3 percent of Ringwood's total municipal area. Combined with

State and County parkland, 60.4 percent of Ringwood is occupied by these uses. Except in limited areas abutting the Monksville Reservoir, where additional watershed buffers are proposed, no additional expansion of reservoir or watershed lands are proposed in the master plan.

In accordance with the recent study prepared by the New Jersey Department of Environmental Protection entitled "Evaluation and Recommendations Concerning Buffer Zones Around Public Water Supply Reservoirs", dated December, 1989, the Ringwood Master Plan adopts the State's proposed recommendations for a three-zone buffer system as follows:

-- A minimum 300 foot wide vegetative buffer zone is established which would consist of an undisturbed, vegetated 'band' of land surrounding the reservoir. The vegetated zone would constitute a 'protective zone' providing both the pollution control and activity displacement functions served by the vegetative buffer.

-- A second 'special management' buffer would be created from the edge of the 'protective buffer' upland as would be necessary to achieve its intended function of providing regulation of land use activities occurring upslope to implement special regulation of activities that would produce nonpoint source pollution which could be carried through the protective zone and into the water supply reservoir via overland, channelized or piped flow.

-- The third portion of the three-zone buffer would consist of the watershed outside the first and second zones which would consist of the "best management practice (BMP)" zone where standard nonpoint source pollution control measures would be implemented.

The Department of Environmental Protection Report summarized its position concerning public protection through multiple-zone buffers. It states :

> "... the level of protection that multi-zone buffers would provide to water supply reservoirs or tributaries depends upon the width, character and management practices associated with each buffer zone and the type and density of development practices associated with each buffer zone and the type and density of development disturbances already existing within the watershed.
>
> "The Department also recommends that the Legislature promulgate enabling legislation that would require the adoption of regulations establishing appropriate and effective buffer zones for all watersheds associated with water supply reservoirs, tributaries, and intakes. The Department also recommends that the overriding goal of this regulatory program be to ensure that existing water quality in water supply reservoirs, tributaries, and intake waters is maintained or enhanced. This goal is critical to the long-term protection of surface waters.

"Further, the Department strongly recommends that until such time that a multi-zone buffer regulatory program is in effect for watersheds associated with water supply reservoirs, tributaries, and intakes, that no lands currently held for the protection of these water supplies be conveyed unless it can be demonstrated that the intended use of the property would not result in measurable, calculable or predictable degradation of the existing water quality of the water supply reservoir, tributary, or intake waters."

The report further identifies the need for additional protection to the water of surface reservoirs as follows:

"Additional Considerations

"In determining that buffer zones around water supply reservoirs are effective in providing a measure of protection for water supply reservoirs, the Department has found that even the multi-zone buffer approach may be of limited effectiveness in protecting surface water supplies if applied around reservoirs alone. As discussed earlier, a vegetated "protective" zone can provide significant protection against sediments and pollutants introduced to the reservoir through overland flow. An additional zone or zones requiring nonpoint source BMPs will increase the effectiveness of the protective zones and are critical to the long-term protection of the surface water supplies.

"However, these buffer zones will provide little protection against pollutants being carried directly into the reservoir through feeder streams and tributaries. Most water supply reservoirs receive runoff from tributaries. As stated previously, the same pollutants entering water supply reservoirs through overland flow (i.e.: sediments and dissolved pollutants) also enter streams and tributaries that feed into the reservoir, carrying with them a load of sediments and pollutants. However, tributaries exhibit significantly less ability than vegetative buffers in removing these contaminants through infiltration, settling out, etc. Since tributaries that supply reservoirs with water extend through the water supply watersheds, the area draining into these tributaries is substantially greater than the area immediately draining into the reservoirs themselves. Thus, the total amount of nonpoint source pollutants entering these tributaries (through both overland flow and stormwater discharges) has the potential to greatly exceed the amount of nonpoint source pollutants entering the reservoirs directly. In order to provide an additional measure of protection of the existing water quality in water supply reservoirs, it may be necessary to extend protective zones upstream of reservoirs and around feeder streams and tributaries.

"In considering the application of buffer zones around feeder streams and tributaries, special consideration must be given to

streams containing water supply intakes. Just as nonpoint source pollutants may be carried into reservoirs by feeder streams, so may those pollutants be transferred to the water supply through the intakes located on such streams. Water supply intakes are particularly sensitive to land use activities that may generate nonpoint source pollution, and when such activities occur within close proximity to these intakes, contamination can quickly pass from the raw water into potable water supplied. Thus, it may be necessary to apply the multi-zone buffer concept to watersheds associated with water supply intakes.

"Another advantage of applying the multi-zone buffer concept around and upstream of the reservoirs is the secondary benefit of additional protection that would be provided to the natural and recreational resources located within the water supply watersheds. Many of these lands and waters provide valuable and (often time unique) flora, fauna, and fish habitat. These lands and waters are also used extensively for a variety of recreation purposes including hiking, fishing, and boating. Conservation of these open spaces will help to preserve drinking water quality, protect wildlife habitat, and may provide opportunity for satisfying some of the recreation needs of New Jersey's citizens."

The Ringwood Master Plan recognizes the significance of the Wanaque Reservoir as an important source of potable water for the North Jersey area. It recommends that use of the reservoir and the watershed lands that currently exist be continued unless and until definitive standards are promulgated by the Department of Environmental Protection as recommended in their report.

Cluster Open Space

The 1981 Master Plan identifies the fact that a total of 99 acres of open space were created as a result of cluster subdivisions. The concept of cluster subdivision was discontinued by the Borough in the late 1970's. Therefore, no additional open space areas have been created as a part of a cluster subdivision during the decade of 1980's.

No additional cluster open space is contemplated in the 1990 Master Plan.

Conservation Lands

A total of 129 acres of land are owned by the Weis Ecology Center and the New Jersey Conservation Foundation as conservation lands. The 1990 Master Plan continues to recommend these areas be designated as conservation lands.

Borough Parklands

Ringwood currently maintains a total of five park and recreation sites.

These include the recreation complex north of the Borough Hall, Jenkins Field situated south of Skyline Lake, Stonetown Field located south of Magee Road, Bald Eagle Park located on Poplar Drive south of Hemlock Place, and the Margaret King fields located on Sloatsburg Road.

There has been a need expressed by the Ringwood Recreation Commission for additional lands for active recreation use including an area for handicapped persons including a total of 10 acres of level land at a centralized location for additional playground and ballfield areas.

The Community Facilities Plan also recommends the establishment of several additional neighborhood recreational facilities on lands which are predominantly in public ownership.

Stream Corridors

The 1981 Master Plan established a concept of stream corridors. The document stated :

> "Although not formally indicated on the Land Use Plan, consideration should be given to the establishment of 'linear parks' following the streams in the Stonetown section of the Borough. Further study of this proposal is recommended"

The 1990 Master Plan, not only recognizes the significance of this recommendation, as applied to Stonetown, but does, in fact, expand the concept to include all principal streams in the community along privately owned lands.

The 1990 Master Plan establishes open space stream corridors for Cupsaw Brook, High Mountain Brook, Meadow Brook, Burnt Meadow Brook, Blue Mine Brook, Mine Brook, Ringwood Creek, and the West Brook. A minimum of 50 and a maximum of 150 feet may be required to serve as the open space stream corridor following the edge of these water bodies.

Wetland Areas

Wetland areas are now recognized as significant environmental features that, by law, must be preserved.

Several years ago, the Federal government undertook a nationwide survey of wetlands. Today, the National Wetlands Inventory, prepared by the United States Department of the Interior, Fish and Wildlife Service, provides the most comprehensive inventory of wetland areas for all municipalities in the State of new Jersey. The Wetlands Inventory notes that the data was prepared "primarily by stereoscopic analysis of high altitude aerial photographs ... and were identified on the photographs based upon vegetation, visible hydrology and geography in accordance with classification of wetlands and Deep-Water Habitats of the United States..." Since these maps are not site specific, they must be used as a guide to the potential of wetland areas on site.

In recognition of the significance of wetland areas, they have been included in the land use plan element for private properties, to serve as an early warning that certain portions of the Borough may be impacted by wetlands. When development is proposed in a specific areas which contains these mapped areas, the Ringwood Master Plan recommends that the subject property be field verified by qualified wetland experts.

Borough Land Uses

Public land uses include public schools, Borough owned lands and water department lands. Recreation lands are discussed under recreation and open spaces. Fire stations and library facilities are also included in the discussion of Borough lands, although it is recognized these facilities are semi-public in nature.

The land use plan identifies the four public schools in the community. Population projections suggest that additional expansion in the schools is not warranted at this time. The schools include :

... The Eleanor Hewitt School on Sloatsburg Road
... The Robert Erskine School on Erskine Road
... The Peter Cooper School on Roger Court, and
... The Martin Ryerson School on Valley Road

The Master Plan also designates the present Borough Hall, the Ringwood library, the 3 fire companies, the ambulance corps and the various well sites and water storage tanks. The plan also designates the Knollwood Drive tract of land south of Skyline Drive as a possible future site of a new Borough Hall, library and police headquarters, if and when the Borough determines the need to develop the property.

Additional discussion concerning community facilities in the Borough is provided in the Community Facilities Plan portion of this report.

Flood Hazard Areas

Certain flood hazard areas have been established by the Federal Government through the auspices of the Federal Emergency Management Agency (FEMA) which is shown on the Land Use Plan.

The flood hazard designation is not intended as a separate land use category but rather as an overlay signalling severe restrictions on development which are inherent in these flood hazard areas.

Lakes and Ponds

In addition to the Wanaque and Monksville Reservoirs in Ringwood, there are more than 460 acres of other lakes and ponds in Ringwood. These facilities provide water for recreational and other needs which require constant protection and promotion to safeguard their fragile environmental qualities. The 1990 Master Plan supports these objectives to the fullest.

Buffer Areas

Certain buffer areas are included on the Land Use Plan to protect areas of less intensive land uses from the adverse effects of higher intensity development and, in certain cases, to restrict accessibility. Buffer areas are recommended along the commercial areas of Skyline Drive east of the existing shopping centers. Buffer use restrictions are recommended for the 66 acre vacant parcel at the southeastern end of Skyline Drive. Access to this parcel is recommended to be from Coventry Way.

Two buffer strips are also recommended in the Upper Ringwood Area to separate the residential use in the medium density areas from industrial land uses. Certain buffer areas are also recommended in the Monksville area to protect and preserve the environmental quality of the reservoirs.

Trails

Marked trails and unmarked trails have been identified and published by the New York-New Jersey Trail Conference. The 1989 Edition of North Jersey Trails, Trail Maps 12 and 22, identifies 18 marked and a number of unmarked trails in Ringwood.

The following marked trails are identified in the Ringwood Master Plan.

1. Blue or Hewlett Butler
2. Bus Stop 22
3. Cannonball
4. Cooper Union
5. Crossover
6. Cupsaw Brook
7. Halifax
8. Hoeferlin
9. Ringwood - Ramapo
10. Hewitt - Butler
11. Stonetown Circular
12. White
13. Horse Pond Mountain
14. Wyanokie Circular
15. Wyanokie Crest
16. Mine
17. Macopin
18. Otter Hole

These trails and identified viewpoints are incorporated and made a part of the Ringwood Master Plan.

If any property designated with an existing trail in the Master Plan is to be developed, the Planning Board will consult with the New York-New Jersey Trail Conference with the hope of preserving or relocating the subject trails.

The New York-New Jersey Trail Conference can be contacted at the following address and phone number G.O.P. Box 2250, New York, New York 10116 - (212) 685-9699.

HISTORIC SITES

The Land Use Plan Element also includes a number of properties that are contained on the National, State and County historic sites registers. The Plan designates sites and potential historic properties in accordance with

the Municipal Land Use Law, under Section NJS 40:55D-28b(10) which permits:

> "(10) A historic preservation plan element (a) indicating the location, significance, proposed utilization and means for preservation of historic sites and historic districts, and (b) identifying the standards used to assess worthiness for historic sites or districts designation; ..."

Environmental and Aesthetic Considerations

Ringwood's goals and objectives are directed to a number of environmental and aesthetic concerns. In support of the desire to maintain the quality of life in Ringwood, the Master Plan proposes the following :

... The preservation of trees and other forms of vegetation be vigorously maintained. The limits of clearing and the method of identifying same should be clearly spelled out in the zoning ordinance and development regulations in the community.

... The physical disturbance of sites also requires regulation and control to protect the quality of surface and subsurface conditions. At the present time, some of the zoning districts regulate the amount of disturbance on the site and others do not. The Master Plan recommends that all zone districts contain rules and regulations affecting site disturbance.

... The Master Plan is also mindful of the beautiful physical environment of the Borough and its bucolic setting. The Plan recommends that specific regulations be established concerning radio towers, microwave towers and dishes, TV antennae and other similar structures in order to protect the health, safety and general welfare of the Borough.

FAIR SHARE HOUSING PLAN

The Council on Affordable Housing (COAH) indicated that Ringwood's pre-credited housing need is 47 low and moderate income housing units. This has been determined as follows:

			HOUSING UNITS
1.	Indigenous Housing Need		66
2.	Reallocated Present Housing Need		--
	TOTAL PRESENT NEED		66
3.	Prospective Housing Need		--
4.	Total Housing Need		66
5.	Adjustments		
	Demolitions	(1)	
	Filtering	(-4)	
	Conversions	(-3)	
	Rehabilitation	(-13)	-19
6.	Ringwood's Pre-Credited Housing Need		47

In the Fall of 1986, Ringwood Borough made application to the Council on Affordable Housing. The Ringwood Housing Element and Fair Share Housing Plan was amended in early 1987. The Fair Share Plan noted the following :

> "Ringwood's fair share housing plan proposes to satisfy its obligation to create a realistic opportunity to meet its fair share of low and moderate income housing needs and the affirmative measures the Borough has undertaken and proposes to undertake to achieve its fair share of low and moderate income housing.
>
> "The Plan contained herein provides for rehabilitation efforts by the Borough to comply with its Mount Laurel obligation.
>
> "The Borough seeks credit for rehabilitation efforts for two different programs in Ringwood. The first program relates to the Upper Ringwood area begun in the mid-1970's and extended through 1983. A total of 45 units were rehabilitated during this time period and 15 units of new lower income housing were developed, without the threat of litigation or certification, but rather because the effort was the proper and reasonable action for the community to take. Since the rehabilitation

efforts extended from 1975 to 1983, this application seeks credit for the 45 units of rehabilitated housing credited to have been completed and finally inspected in September of 1983.

"The Borough also seeks credit for 32 units of rehabilitated housing for the Cupsaw/Eskine Rehabilitation Program recently approved by the Department of Community Affairs. As a result of the grant of $277,000, the Borough is required to meet all of the requirements of the Department of Community Affairs concerning low and moderate income housing.

"The Borough of Ringwood therefore seeks substantial certification from the Council on Affordable Housing having met its housing obligation as a non-growth area community."

On May 20, 1987, the Borough of Ringwood received substantive certification from COAH and was "a recipient of one of the eleven initial substantive certifications granted by COAH..."

Under COAH regulations substantive certification is defined as

"'Substantive certification' means a determination by the Council approving a municipality's housing element and fair share plan in accordance with the provisions of the Act and the rules and criteria as set forth herein. A grant of substantive certification shall be valid for a period of six years in accordance with the terms and conditions contained therein."

The Fair Share Housing Plan therefore takes note of the fact that a reapplication to the Council on Affordable Housing will be required sometime in 1993. As a practical matter, a preliminary evaluation of the necessary requirements should be undertaken in 1992.

It is significant to note that the State Development and Redevelopment Plan (SDRP) presently under review by the State Planning Commission, will play an important role in determining Ringwood's future housing obligation. Communities that are located within growth areas-designated as Tier 1-4, will have some regional housing obligation. In 1986, Judge Skillman determined that Ringwood was not a growth community and, in fact, only had an obligation to meet its indigenous housing need.

The Borough of Ringwood must maintain constant vigilance to unsure that its standing as a community of Tier 5 and Tier 7 is not compromised in support of its environmentally sensitive designation and lack of adequate infrastructure.

TRAFFIC AND CIRCULATION

Ringwood's traffic and circulation plan is designed to improve the street system in the community in order :

- ooo to improve traffic safety conditions;
- ooo to improve circulation resulting from increased traffic;
- ooo to protect residential neighborhoods from adverse affects of traffic and noise where such matters are not necessary;
- ooo to establish a functional classification system in Ringwood for various street and roadway systems; and
- ooo to provide a roadway network in the community which serves the residents needs as well as the needs of tourism.

Street Classification System

The 1973 Master Plan for Ringwood indicated a rating system for roads along with recommended right-of-way widths which tend to reflect the expansionist policies of the early 70's by planning for ever increasing roadway widths to handle increasing volumes of traffic. However, the Borough of Ringwood has taken great pains to avoid intense development by limiting the installation of sewers, limiting the installation of municipal water systems, and instituting zoning for low density housing, in an effort to protect the rural atmosphere of the community. It therefore is contradictory to plan for wider roadway rights-of-way to handle increased traffic which will most certainly not result from the development occurring within the Borough. While it is true that traffic will increase because of development in surrounding communities, the planning and construction of wider roads throughout the Borough of Ringwood is wasteful and will only serve as an incentive which will draw additional traffic from outside the community. Therefore, the Ringwood Master recommends that the roadway rights-of-way not be as wide as those proposed in the 1973 Master Plan.

In addition to reducing roadway rights-of-way throughout most of the Borough of Ringwood, there are also physical restrictions to widening a majority of the streets within the Borough. Many of the rights-of-way that presently exist are more than adequate. Therefore, there is no purpose to increasing the width of existing rights-of-way. There have also been instances where the Borough has sought additional roadway width and Passaic County has refused to accept the additional rights-of-way.

Ringwood's roadway network has been classified according to their present day function. "Functional" classification is the process in which streets and roadways are grouped into classes of systems, according to the character of service they are intended to provide. This classification system is divided into four categories including arterial streets, major roadways, collector streets, and local streets.

Recommended Standards for Roads in Ringwood

Recommended standards to street rights-of-way and pavement widths, as recommended by the Borough Engineer is presented in the following table.

PLAN CLASSIFICATION	DESIGNATED STREETS
1. Arterial	---
2. Major	Greenwood Lake Turnpike (Ringwood Ave.) Margaret King Avenue Skyline Drive Sloatsburg Road Westbrook Road
3. Collector	Burnt Meadow Road Carletondale Road Conklintown Road Cupsaw Drive Erskine Road High Mountain Road Lakeview Avenue Mohawk Trail Skylands Road Skyline Lakes Drive Stonetown Road
4. Local Streets	All streets and roadways not classified as arterial roadways or collector streets.

TABLE 42
RECOMMENDED STANDARDS
FOR ROADWAYS IN RINGWOOD

STREET CLASSIFICATION	PRESENT R.O.W. (FEET)	RECOMMENDATION (IN FEET) RIGHT-OF-WAY	PAVEMENT WIDTH
Major Roads			
Greenwood Lake Turnpike-Ringwood Avenue	41.25-50	100	48
Margaret King Avenue	60-66	60	36
Skyline Drive	120	120	48
Sloatsburg Road	60	100	48
Westbrook Road	50-75	60	36
Collector Roads	Varies	50	30
Local Roads	Varies	50	24

R.O.W. = Right-of-Way

Source : Ringwood Borough Engineer

Interstate 287

Interstate Route 287 is presently scheduled to be open to traffic in 1994.

Since the interchange in Wanaque will not be completed when I-287 is first opened, it is highly probable that more motorists will utilize Skyline Drive for access to the interstate roadway once the highway is open to traffic.

During the construction of the interchange between Skyline Drive and I-287, it is anticipated that traffic movements at the intersection will be unfavorable. However, once the interchange is completed, the traffic should flow onto I-287 with considerable improvement and the interchange should be able to accommodate the additional traffic volumes which the Skyline Drive corridor can supply to it.

Other Traffic Improvements

Based upon the scheduled completion of I-287, without an operational interchange in Wanaque, the assumption is that the Ringwood Avenue corridor will be improved by Passaic County; the following recommendations are proposed in order to facilitate a smooth and efficient traffic flow in a cost-effective manner.

1. Phase One

    A. Proposed intersection improvements and channelization should be implemented at the intersections of Skyline Drive and Conklintown Road, Countryside Lane, Fieldstone Drive, Erskine Road, and the Greenwood Lake Turnpike. In addition , the intersection of Margaret King Avenue with Sloatsburg Road and Greenwood Lake Turnpike should also be implemented.

    B. If Countryside Lane is extended as proposed to an intersection with Fieldstone Drive (at a point just north of the Grand Union building), then Countryside Lane should be designated as a one-way street from Skyline Drive to Fieldstone Drive.

    C. A traffic signal should be installed at the intersection of Sloatsburg Road and Margaret King Avenue and at the intersection of Margaret King Avenue and Greenwood Lake Turnpike.

2. Phase Two

    A. A traffic signal should be installed at the intersections of Skyline Drive with Fieldstone Drive and Erskine Road.

B. If no interchange to I-287 is available in Wanaque, a traffic signal will probably be needed at the intersection of Conklintown Road and Skyline Drive.

Phase One improvements would be proposed for implementation in the next five (5) years. Phase Two improvements would be proposed for construction in the next five to ten years. These recommended improvements will facilitate traffic flow along the Margaret King Avenue corridor while at the same time relieving the police department from directing traffic during the peak rush hours. These improvements will also facilitate the traffic flow through the commercial center of the Borough of Ringwood along Skyline Drive. The Skyline Drive corridor will experience an increase in traffic with the opening of I-287 and the intersection improvements along Skyline Drive, along with proposed traffic signals, will be essential in order to keep traffic moving while permitting safe access to the commercial establishments along that route.

According to the Ringwood Avenue Corridor Study conducted for Passaic County, there should be no need to widen Greenwood Lake Turnpike between West Brook Road and Skyline Drive unless a regional shopping center is constructed in the Borough of Wanaque. It should be noted that the improvement of Greenwood Lake Turnpike between West Brook Road and Skyline Drive is the responsibility of Passaic County.

Proposed New Streets

The 1981 Land Use Plan element that was adopted by the Planning Board indicated a total of nine new streets or street extensions at that time. Those were noted as follows:

-- the relocation of a portion of Stonetown Road and Greenwood Lake Turnpike as a part of the Monksville Reservoir;

-- two proposed streets from Margaret King Avenue into the lands of Sterling Forest;

-- the extension of Kozy Court across High Mountain Brook;

-- the extension of a roadway from Fieldstone Drive into Block 877 Lot 16;

-- the continuation of Knollwood Drive southward to Alta Vista Drive;

-- another roadway connecting Alta Vista Drive with Skyline Drive;

-- the continuation of Fountain Drive to Serpentine Road and a new road joining this roadway extension to Conklintown Road.

The 1990 Ringwood Master Plan recommends the following concerning proposed new streets:

1. Portions of Stonetown Road and Greenwood Lake Turnpike have been relocated as a part of the construction of the Monksville Reservoir. Since the roadway changes have been accomplished, the earlier recommendations are no longer applicable.

2. The lands of Sterling Forest have been acquired by Passaic County for park and open space purposes. Since the overall utilization of the site has not been determined as yet, the Master Plan recommends that the two proposed street locations in the 1981 Plan be deleted until definitive plans for the parksite is determined.

3. High Mountain Brook has been classified as a FW-2 trout production stream and adjacent areas have been identified as wetlands and flood hazard areas. The extension of Kozy Court is believed to be unlikely. This street extension should therefore be deleted from the 1981 Plan.

4. The extension of a roadway from Fieldstone Drive to Block 877 Lot 16 is still considered a desirable method of gaining access to this site as well as to provide direct linkage from the housing proposed in the area. The recommended roadway extension continues in the 1990 Plan.

5. The extension of Knollwood Drive to Alta Vista Drive is recommended to be deleted from the 1990 Plan since the proposed use of the site has not been determined by the Governing Body.

6. The proposed roadway joining Alta Vista Drive with Skyline Drive should also be eliminated since the area has been determined to be an extensive wetland area.

7. The recommendation for the extension of Fountain Drive and Serpentine Road remains as valid today as it did in 1981 and is proposed to be continued.

The 1990 Master Plan also recognizes the need for walking and biking facilities in the Borough and recommends that all major and collector roadways be provided with such facilities whenever possible.

COMMUNITY FACILITIES PLAN

The Community Facilities Plan portion of the Ringwood Master Plan addresses the needs of the Borough for the next six years, particularly for school facilities, parks and recreation facilities and municipal buildings and service facilities.

At the present time, it is anticipated that Ringwood maintains an occupied housing stock totalling approximately 3,940 housing units. Assuming an average household size similar to that registered in 1980, that is 3.49 persons per household, will produce a population of 13,751 persons - or an increase of 1,126 people since the last Census in 1980. Based upon a comparable rate of growth for the next six years, would produce a Borough population of 14,426 persons by 1996.

Public School Facilities

The enrollment in Ringwood's public school system has declined during the decade of the 1980's. During the 1980-1981 school year, enrollment totalled 1,905 students. During the 1988-1989 school year, enrollment totalled 1,416 students.

While the State Board of Education standards for utilization of classroom space has changed during this period of time and capacity levels have changed despite the reduction in school enrollments, the school system still maintains some capacity as identified elsewhere in the master plan.

The continued moderate rate of growth in Ringwood during the next six years is not expected to require any physical expansion of school buildings or sites in Ringwood.

Parks, Recreation and Open Space

Despite the fact that Ringwood contains almost 11,600 acres of parks and open space, little of this land is available for active recreational use for Boroughwide needs.

The Recreation Director of the Borough indicates that a "level area of approximately 10 acres" is needed by the recreation commission for active recreation pursuits.

The public opinion survey of the residents of the community produced a very high indication of the need for more neighborhood playground and park areas. A need is also indicated either for a municipal recreation building or a "Y" type building to serve the various needs of the Borough.

Accordingly, the Ringwood Master Plan recommends that the following sites be considered for neighborhood park and playground purposes:

- A municipally owned 4.7 acre site, located on Carletondale Road and its intersection with Hickory Road;
- A 2.5 acre site located on High Mountain Road between Birch Road and Palm Terrace;
- A two or three acre portion of Fountain Spring Lake, if this tract of land is ever developed;
- A three-four acre portion of the undeveloped lands of the Ryerson School;
- A two to three acre parcel of land generally in the central portion of Stonetown.

The Plan also recommends that if the Borough develops the municipally owned property along Knollwood Drive, that such plans might also include

recreational facilities to be developed in conjunction with the Borough Recreation Commission.

Public Buildings and Facilities

The analysis section of the master plan indicates three areas of particular need for municipal facilities. These include the police department, the administrative offices and Borough Hall functions and the Ringwood public library.

In the case of the police station, there are serious inadequacies for present facilities. The present police station lacks any incarceration facilities and there is a lack of adequate space for their operations. Similarly, past studies have indicated major deficiencies in the Borough Hall complex.

Similar problems exist with the present library since there is an insufficient amount of space in the present library. The analysis portion of the master plan suggests that there is an inadequate amount of space for reading and work areas, space for accommodating books and related library services. The need to upgrade the library facility was also recognized by the public in the Planning Board questionnaire.

The 1990 Master Plan recommends that the Borough evaluate several alternatives in view of these needs. Such an analysis might consider the consolidation of facilities in order to reduce operational costs wherever possible.

●●● Appendix

TABLE A-1
TURNING MOVEMENT VOLUMES
AT VARIOUS INTERSECTIONS
BOROUGH OF RINGWOOD
(CONTINUED)

INTERSECTION	MOVEMENT	GROUND COUNT
Skyline Dr. & Conklintown Road	NB-left	30
	NB-thru	180
	SB-thru	1,100
	SB-right	30
	EB-left	40
	EB-right	150
Skyline Dr. & Cheshire Lane	NB-thru	215
	NB-right	5
	SB-left	5
	SB-thru	1,120
	WB-left	10
	WB-right	10
Skyline Dr. & Fieldstone Drive	NB-left	30
	NB-thru	200
	NB-right	5
	SB-left	10
	SB-thru	600
	SB-right	20
	EB-left	20
	EB-thru	5
	EB-right	60
	WB-left	55
	WB-thru	10
	WB-right	30
Skyline Drive & Erskine Road	SB-left	200
	SB-right	100
	EB-left	50
	EB-thru	480
	WB-thru	230
	WB-right	50
Greenwood Lake Tpk. & Skyline Dr.	NB-thru	150
	NB-right	130
	SB-left	400
	SB-thru	250
	WB-left	150
	WB-right	180

TABLE A-1
TURNING MOVEMENT VOLUMES
AT VARIOUS INTERSECTIONS
BOROUGH OF RINGWOOD
(CONTINUED)

INTERSECTION	MOVEMENT	GROUND COUNT
Greenwood Lake Tpk. & Skylands Rd.	NB-thru	310
	NB-right	65
	SB-left	20
	SB-thru	450
	WB-left	220
	WB-right	5
Greenwood Lake Tpk. & Sloatsburg Road	SB-left	35
	SB-right	5
	EB-left	50
	EB-thru	400
	WB-thru	100
	WB-right	200
Greenwood Lake Tpk. & Stonetown Rd.	NB-left	5
	NB-thru	80
	SB-thru	310
	SB-right	15
	EB-left	40
	EB-right	40
Greenwood Lake Tpk. & Margaret King Avenue	NB-thru	85
	NB-right	45
	SB-left	450
	SB-thru	325
	WB-left	10
	WB-right	55
Greenwood Lake Tpk. & West Brook Road	NB-left	10
	NB-thru	300
	SB-thru	400
	SB-right	10
	EB-left	90
	EB-right	120
West Brook Rd. & Stonetown Rd.	SB-left	40
	SB-right	5
	EB-left	5
	EB-thru	120
	WB-thru	35
	WB-right	10

TABLE A-1
TURNING MOVEMENT VOLUMES
AT VARIOUS INTERSECTIONS
BOROUGH OF RINGWOOD
(CONTINUED)

INTERSECTION	MOVEMENT	GROUND COUNT
Conklintown Rd. & Canterbury Rd.	SB-left	50
	SB-right	115
	EB-left	20
	EB-thru	100
	WB-thru	150
	WB-right	20
Sloatsburg Rd. & Carletondale Rd.	NB-thru	200
	NB-right	5
	SB-left	40
	SB-thru	30
	WB-left	5
	WB-right	155
Sloatsburg Rd. & Margaret King Avenue	NB-left	35
	NB-thru	350
	SB-thru	20
	SB-right	40
	EB-left	460
	EB-right	45

SOURCE : Traffic Engineering Report Covering Nine Potential Building Sites in the Borough of Ringwood, Passaic County, New Jersey, John E. Christ, P.E., 1983

The following is a report, in its entirety, from the Environmental Protection Agency.

ENVIRONMENTAL PROTECTION AGENCY

Highlands Aquifer System in Passaic, Morris and Sussex Counties, New Jersey, and Orange County New York; Sole Source Aquifer Final Determination

AGENCY : U.S. Environmental Protection Agency

ACTION : Notice

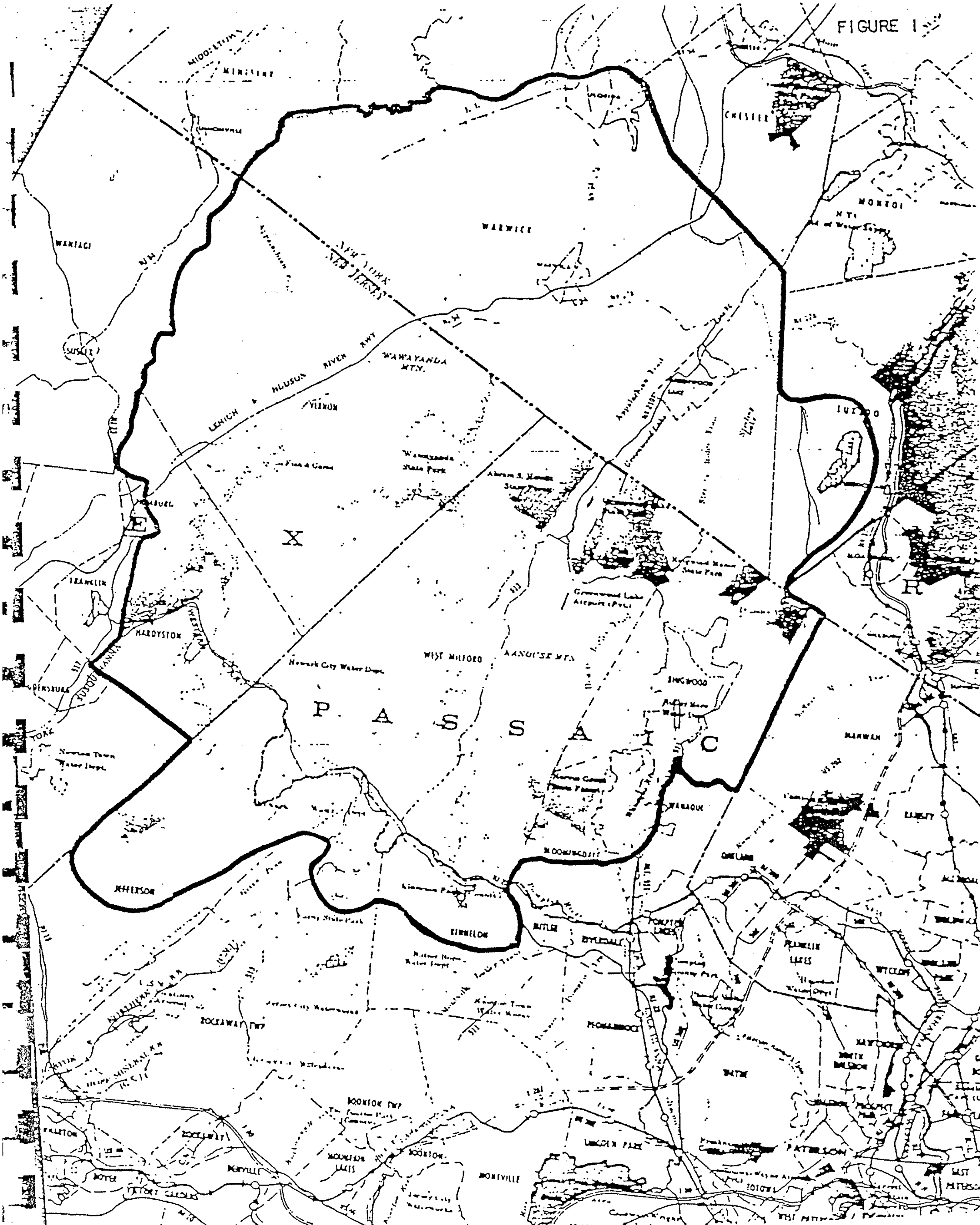
SUMMARY : Notice is hereby given that, pursuant to Section 1424(e) of the Safe Drinking Water Act, the Regional Administrator of the U.S. Environmental Protection Agency (EPA) Region II has determined that the Highlands Aquifer System, underlying portions of Passaic, Morris and Sussex Counties, New Jersey and Orange County, New York, is the sole or principal source of drinking water for portions of the Townships of West Milford, Jefferson, Rockaway, Vernon, and Hardyston, and a portion of the Borough of Pompton Lakes, the entire Boroughs of Bloomingdale, Ringwood, Wanaque, Butler and Riverdale, New Jersey; and portions of the Townships of Warwick and Tuxedo, and the entire Village of Greenwood Lake, New York. This aquifer, if contaminated, would create a significant hazard to public health. As a result of this action, all Federal financially assisted projects constructed in the designated Highlands Aquifer Areas will be subject to EPA review to ensure that these projects are designed and constructed such that they do not create a significant hazard to public health.

DATES : This determination shall be promulgated for purposes of judicial review at 1:00 P.M. Eastern Daylight time on [two weeks after the date of publication in the FEDERAL REGISTER].

ADDRESSES : The data on which these findings are based are available to the public and may be inspected during normal business hours at the U.S. Environmental Protection Agency, Office of Ground Water Management, Room 805, 26 Federal Plaza, New York, New York 10278.

FOR FURTHER INFORMATION CONTACT : John S. Malleck, Chief, Office of Ground Water Management, Room 805, Environmental Protection Agency, Region II at (212) 264-5635.

FIGURE 1


WARWICK
CHESTER
MONROE
WANTAGE
VERNON
WAWAYANDA MTN.
LEHIGH & HUDSON RIVER RWY
TUXEDO
FRANKLIN
HARDYSTON
WEST MILFORD
P A S S A I C
X
Newark City Water Dept.
WANAQUE
OAKLAND
JEFFERSON
KINNELON
BUTLER
ROCKAWAY TWP
BOONTON TWP
BOONTON
MONTVILLE
DOVER
ROCKAWAY
MOUNTAIN LAKES
LINCOLN PARK
PATERSON
WAYNE
FRANKLIN LAKES
MAHWAH

SUPPLEMENTARY INFORMATION :

I. Background

Section 1424(e) of the Safe Drinking Water Act (42 U.S.C., 300 f, 300h-3(e), P.L. 93-523) states :

> (e) If the Administrator determines on his own initiative or petition, that an area has an aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health, he shall publish a notice of that determination in the FEDERAL REGISTER. After the publication of any notice, no commitment for Federal financial assistance (through a grant, contract, loan guarantee, or otherwise) may be entered into for any project which the Administrator determines may contaminate such aquifer through a recharge zone so as to create a significant hazard to public health, but a commitment for Federal financial assistance may, if authorized under another provision of law, be entered into to plan or design the project to assure that it will not so contaminate the aquifer.

On March 9, 1987, the Administrator duly delegated to the Regional Administrator the authority to determine, under Section 1424(e) of the Safe Drinking Water Act, 42 U.S.C. 300h-3(e), that an area has an aquifer which is the sole or principal source of drinking water for the area and which, if contaminated, would create a significant hazard to public health.

On March 14, 1985, EPA received a petition from Mr. Charles Slawinski, Mayor of the Township of West Milford and Dr. Ella F. Filippone, Executive Administrator of the Passaic River Coalition, which asked EPA to designate the Highlands Aquifer System as a sole or principal source aquifer. A public hearing was conducted on December 9, 1986 and the public was permitted to submit written comments on the petition request until January 9, 1987.

The petition submitted to EPA encompassed the Pochuck, Wanaque and Pequannock River drainage basins. However, based on EPA's review of the hydrogeologic information, the Pochuck River drainage basin has been deleted from the final sole source designation area. A major basin divide exists between the Pochuck River which runs west and north, and the Pequannock and Wanaque Rivers which run south and

east. This basin divide, in conjunction with the lack of evidence to support a statement to the contrary, lead EPA to conclude that the Pochuck River drainage basin is not part of the same aquifer system as the Wanaque and Pequannock. Available information indicates that the Pochuck could meet Sole Source Aquifer criteria; however, more information is needed.

II. Basis for Determination

Among the factors to be considered by the Agency in connection with the designation of a sole source aquifer area under Section 1424 (e) are : (1) whether the Highlands Aquifer System is the area's sole or principal source of drinking water and (2) whether contamination of the aquifer would create a significant hazard to public health. On the basis of technical information available to this Agency, the following are the findings, which are the basis for the determination noted above :

1. The Highlands Aquifer System as defined by the EPA currently serves as the "Sole or Principal Source" of drinking water for approximately 89,121 persons in the service area, representing 85 percent of the population.

2. There is no existing or potential alternative drinking water source or combination of sources capable of replacing the Highlands Aquifer System should it become contaminated.

3. The Highlands Aquifer System consists of Quaternary glacial drift, Paleozoic sedimentary formations, and Pre-cambrian permeable soil characteristics. This aquifer system is susceptible to contamination through its recharge zone from a number of sources, including, but not limited to, chemical spills, highway and urban area runoff, septic systems, leaking storage tanks (above and underground), and landfill leachate. Since ground water contamination can be difficult or sometimes impossible to remediate and since the aforementioned communities rely on the Highlands Aquifer System for drinking water purposes, contamination of the aquifer would pose a significant hazard to public health.

III. Description of the Highlands Aquifer System of Passaic, Morris and Sussex Counties, New Jersey, and Orange County, New York Area, its Recharge Zone and Streamflow Source Zone

The Highlands Aquifer System is composed of permeable glacial drift overlying permeable sedimentary and fractured igneous and metamorphic formations.

For the purpose of this designation, the Highlands Aquifer System is considered to include the entirety of the Wanaque and Pequannock River basins in New Jersey and New York. The aquifer system covers approximately 195 square miles and includes portions of the Townships of West Milford, Jefferson, Rockaway, Vernon and Hardyston, and portions of the Borough of Pompton Lakes, the entire Boroughs of Bloomindale, Ringwood, Wanaque, Butler and Riverdale, New Jersey; portions of the Townships of Warwick and Tuxedo, and the entire Village of Greenwood Lake, New York.

Because the Wanaque and Pequannock River basins are covered with permeable sediments, the recharge zone, where water percolates directly to the aquifer, includes the entire aerial extent of the Highlands Aquifer Area. Since no streams flow into the Wanaque and Pequannock River basins, there is no streamflow source zone for the aquifer.

The boundary of both the designated area and aquifer service area are the boundaries of the Wanaque and Pequannock River basins. Thus, the designated area in which Federal financially assisted projects will be subject to review is the Wanaque and Pequannock River basins which include portions of Passaic, Morris and Sussex Counties , New Jersey and Orange County, New York.

IV. Information Utilized in Determination

The information utilized in this determination includes the petition, written and verbal comments submitted by the public, various technical publications and verbal communication with various departments in the affected municipalities. The above data are available to the public and may be inspected during normal business hours at the U.S. Environmental protection Agency, Region II, Office of Ground Water Management, Room 805, 26 Federal Plaza , New York, New York 10278.

V. Project Review

EPA Region II is working with the Federal agencies that may provide financial assistance to projects in the area of concern. Interagency procedures and Memoranda of Understanding have been developed through which EPA will be notified of proposed commitments by Federal agencies for projects which could potentially contaminate the Highlands Aquifer System, upon which portions of the Townships of West Milford, Jefferson, Rockaway, Vernon, Hardyston, and a

portion of the Borough of Pompton Lakes, the entire Boroughs of Bloomingdale, Ringwood, Wanaque, Butler and Riverdale, New Jersey; portions of the Townships of Warwick and Tuxedo, and the entire Village of Greenwood Lake, New York are dependent for their sole or principal source water supply. EPA will evaluate such projects and, where necessary, conduct an in-depth review, including soliciting public comments where appropriate.

In many cases, these Federally assisted projects may also be analyzed in an "Environmental Impact Statement "(EIS) under the National Environmental Policy Act (NEPA), 42 U.S.C. Sec. 4332(2)(C). All EIS, as well as any other proposed Federal actions affecting an EPA program or responsibility, are required by Federal law (under the "NEPA/309" process) to be reviewed and commented upon by the EPA Administrator (42 U.S.C. Sec/7609 requires EPA to conduct this review). The "309" in a "NEPA/309" derives from the original source of this general requirement, Section 309 of the Clean Air Act.

Therefore, in order to streamline EPA's review of the possible environmental impacts on designated aquifers, when an action is analyzed in an EIS, the two reviews will be consolidated and both authorities will be cited. The EPA review (under the Safe Drinking Water Act) of Federally-assisted projects potentially affecting sole or principal source aquifers will be included in the EPA review (under the "NEPA/309" process) of any EIS accompanying the same Federally-assisted project. The letter transmitting EPA's comments on the final EIS to the lead agency will be the vehicle for informing the lead agency of the EPA's actions under Section 1424(e).

Should the Regional Administrator determine that a project may contaminate the aquifer through its recharge zone so as to create a significant hazard to public health, no commitment for Federal financial assistance may be entered. However, a commitment for Federal financial assistance may, if authorized under another provision of law, be entered into to plan or design the project to assure that it will not so contaminate the aquifer.

The U.S. Environmental Protection Agency will rely to the maximum extent possible on any existing or future State and local control mechanisms in protecting the ground water quality of the Highlands Aquifer System. EPA review of any Federal financially assisted project will be coordinated with the State and local agencies and their comments will be given full consideration. The Federal review process will attempt to complement and support State and local ground water protection mechanisms.

VI. Summary and Discussion of Public Comments

The majority of verbal and written comments received on the petition were in favor of designating the Highlands Aquifer System as a sole or principal source aquifer. A public hearing was held on December 9, 1986. The New Jersey Department of Environmental protection (NJDEP) presented the only statement in opposition to the designation at the hearing. The only letter received in opposition was from the New York State Department of Environmental Conservation (NYSDEC).

The NJDEP questioned the boundaries of the aquifer. They also urged EPA to act on New Jersey's statewide petition in lieu of designating the Highlands Aquifer System which is only a small portion of the State.

The boundaries for the Highlands Aquifer System are based on a USGS report (Carswell and Rooney, 1976), which states that the aquifer boundaries in this area follow the surface water divides. It is EPA's general policy to act on petitions in the order in which they are submitted. The statewide petition is currently being revised; therefore, EPA is not in a position to make a determination on it.

NYSDEC contends that the Highlands Aquifer System is not of national or statewide significance for public water supply. They believe sole source designation of this area would require the diversion of limited program funds away from "primary public water supply aquifers" which have been targeted in the New York Upstate Ground Water Management Program as priority management areas.

NYSDEC did not give their definition of "national or statewide significance". The sole source aquifer program criteria requires that the aquifer be needed to supply 50 percent or more of the drinking water in the aquifer service area. The Region has found that the Highlands Aquifer System meets this criteria, and, therefore, it is of national and statewide significance. This criteria differs from that of NYSDEC's primary public water supply aquifer program, and it does not require consideration of individual state priorities basins.

NYSDEC also questioned the petitions population statistics for people in the New York Area served by ground water. None of the areas in which NYSDEC questioned is included in the designated area.

VII. Economic and Regulatory Impact

Pursuant to the provisions of the Regulatory Flexibility Act (RFA), 5. U.S.C. 605(b), I hereby certify that the attached rule will not have a significant impact on a substantial number of small entities. For the purposes of this Certification, the "small entity" shall have the same meaning as given in Section 601 of the RFA. This action is only applicable to portions of Passaic, Morris, and Sussex Counties, New Jersey, and Orange County, New York. The only affected entities will be those area-based businesses, organizations or governmental jurisdictions that request Federal financial assistance for projects which have the potential for contaminating the aquifer so as to create a significant hazard to public health. EPA does not expect to be reviewing small isolated commitments of financial assistance on an individual basis, because their potential for contaminating the aquifer is remote. Accordingly, the number of affected small entities will be minimal. However, if the Region anticipates that a cumulative impact on the aquifer will occur, small isolated commitments will be reviewed.

For those small entities which are subject to review, the impact from today's action will not be significant. Most projects subject to this review will be preceded by a ground water impact assessment required pursuant to other Federal laws, such as the National Environmental Policy Act (NEPA) as amended 42 U.S.C.4321, et. seq. Integration of those related review procedures will allow EPA and other Federal agencies to avoid delay or duplication of effort in approving financial assistance, thus minimizing any adverse effect on those small entities which are affected. Finally, today's action does not prevent grants of Federal financial assistance which may be available to any affected small entity in order to pay for the redesign of the project to assure protection of the aquifer.

Under Executive Order 12291, EPA must judge whether a regulation is "major" and therefore subject to the requirement of a Regulatory Impact Analysis. This regulation is not major because it will not have an annual affect of $100 million or more on the economy, will not cause any major increase in costs or prices and will not have significant adverse effects on competition, employment, investment, productivity, innovation, or the ability of United States enterprises to complete in domestic or expert markets. Today's action only affects the Highlands Aquifer System which underlines portions of Passaic, Morris, and Sussex Counties, New Jersey, and a portion of Orange County, New York.

It provides an additional review of ground water protection measures, incorporating state and local measures whenever possible, for only those projects which request Federal financial assistance.

Dated : September 25, 1987

Signed
Christopher J. Daggett
Regional Administrator

RINGWOOD MASTER PLAN SURVEY

Dear Ringwood Resident:

Ringwood is in the process of updating its Master Plan which acts as the guide to the Mayor, Council and Planning Board in the determination of the future development strategies for Ringwood.

To assist the Planning Board and Council, we would appreciate your input on the attached survey. The results of this survey and the details of the Master Plan will be discussed at area public meetings prior to the final determination of the Master Plan.

Please complete the survey, fold, staple, and mail it to Borough Hall. In addition, you can bring it to the Borough Hall or to the Ringwood Library. Please note that only surveys received by October 27, 1989 will be included in the results.

Thank you in advance for your input and cooperation.

Anthony D. Zajkowski
Chairman, Planning Board

Ernest J. Schwesinger
Mayor

1. WHAT AREA OF RINGWOOD DO YOU RESIDE IN? PLEASE INDICATE EITHER THE LAKE COMMUNITIES NAME OR YOUR SECTIONS COMMON NAME.

_____

Street name _____

2. PLEASE INDICATE HOW MANY PEOPLE ARE IN YOUR HOUSEHOLD AND THEIR AGE GROUP
   A. No. of persons over 18 years _____
   B. Your age is _____
   No. of children in the age group below
   C. 0 - 5 _____
   D. 6 - 13 _____
   E. 14 - 18 _____

3. DO YOU OWN YOUR OWN HOME? YES ____ NO ____

4. HOW LONG HAVE YOU .....

	0 - 3	4 - 9	10 - 15	16+ years.
A. Been a homeowner?	_____	_____	_____	_____
B. Lived in Ringwood?	_____	_____	_____	_____
C. Lived in your current home?	_____	_____	_____	_____

5. WHAT IS THE SIZE OF THE PROPERTY YOU LIVE ON?
   A. Less than 1/8 acre
   B. 1/8 to 1/2 acre
   C. 1/2 to 1 acre
   D. 1 to 2 acres
   E. More than 2 acres

WE WOULD LIKE TO ASK YOU THE FOLLOWING GENERAL QUESTIONS.

PLEASE INDICATE YOUR RESPONSE BY CIRCLING THE APPROPRIATE ANSWER OR FILLING IN THE BLANKS PROVIDED.

6. IF YOUR HOUSE IS CONNECTED TO A SEPTIC, HOW OLD IS THE SYSTEM? _____ YEARS.

7. IF YOU OBTAIN WATER FROM YOUR OWN WELL, HAS YOUR WELL EVER GONE DRY?

YES ___ NO ___ If yes, how often? _____

8. DO YOU LIVE ON A PAVED OR UNPAVED ROAD?
   A. PAVED
   B. UNPAVED

9. IF YOU WORK OUT OF TOWN, HOW MUCH TIME DO YOU SPEND COMMUTING? (Total time per DAY)

   A. less than ½ hour
   B. ½ to 1 hour
   C. 1 to 1½ hours
   D. 1½ or more

WE WOULD LIKE TO ASK YOU SOME QUESTIONS ABOUT POLICIES FOR RINGWOOD.

PLEASE INDICATE HOW STRONGLY YOU AGREE OR DISAGREE WITH THE FOLLOWING STATEMENTS ABOUT RINGWOOD.

Statements	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
10. I am satisfied with the way Ringwood is developing.	1	2	3	4	5
11. Ringwood should encourage the construction of additional detached single family houses.	1	2	3	4	5
12. Ringwood should encourage the construction of Townhouses.	1	2	3	4	5
13. Ringwood should encourage the construction of single family clustered housing.	1	2	3	4	5
14. Ringwood should permit the construction of two family houses.	1	2	3	4	5

PLEASE INDICATE HOW STRONGLY YOU AGREE OR DISAGREE WITH THE FOLLOWING STATEMENTS.

Statements	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
15. Ringwood should encourage new commercial development.	1	2	3	4	5
16. Ringwood should encourage new industrial development.	1	2	3	4	5
17. Ringwood should encourage recreation related development.	1	2	3	4	5
18. Ringwood should fight for state tax relief to offset the growing lost revenues as more land is acquired for parks and/or reservoirs.	1	2	3	4	5
19. Ringwood should purchase additional land for local recreation development to be located throughout the town, even if an increase in taxes is needed to provide the funding.	1	2	3	4	5
20. As the main roads of Ringwood are repaved, provision should be made for the inclusion of a 3 - 5 ft wide shoulder, that can be used as a safe area for pedestrians and/or bicycling.	1	2	3	4	5
21. Ringwood should undertake a road acquisition and upgrading program of all unpaved roads.	1	2	3	4	5
22. Ringwood should support the creation of a privately funded YMCA in town, that would provide community wide programs for the entire family.	1	2	3	4	5
23. Ringwood needs to build a new municipal complex.	1	2	3	4	5
24. Ringwood needs to build a new library.	1	2	3	4	5
25. Ringwood is doing all that it can to preserve and protect the towns environment.	1	2	3	4	5

26. HOW DO YOU RATE THE FOLLOWING COMMUNITY SERVICES/FACILITIES:

	Excellent	Good	Fair	Poor	Awful
A. Schools	1	2	3	4	5
B. Police Protection	1	2	3	4	5
C. Fire Protection	1	2	3	4	5
D. Ambulance/EMS Service	1	2	3	4	5
E. Snow Removal	1	2	3	4	5
F. Road Maintenance	1	2	3	4	5
G. Recycling	1	2	3	4	5
H. Municipal Building	1	2	3	4	5
I. Library	1	2	3	4	5
J. Town Parks	1	2	3	4	5
K. Town Recreational Facilities	1	2	3	4	5
L. Recreational Programs	1	2	3	4	5

27. HOW DO PEOPLE IN YOUR HOUSEHOLD USE THE OPEN SPACE IN RINGWOOD AND THE REGION?

	In Ringwood	Other Regions
A. Fishing	_____	_____
B. Boating	_____	_____
C. Hunting	_____	_____
D. Gathering firewood	_____	_____
E. Hiking	_____	_____
F. Horseback riding	_____	_____
G. Motorcycling	_____	_____
H. Swimming	_____	_____
I. Snowmobiling	_____	_____
J. Cross-country skiing	_____	_____
K. Other _____	_____	_____

28. PLEASE INDICATE THE TYPES OF NEW OR ADDITIONAL RECREATION/LEISURE FACILITIES YOU WOULD LIKE TO SEE IN RINGWOOD.

A. More Tennis Courts _____
B. Indoor Tennis Courts _____
C. Spa Facility _____
D. Indoor Community Pool _____
E. Outdoor Community Pool _____
F. More Football Fields _____
G. More Soccer Fields _____
H. More Baseball Fields _____
I. Basketball Courts _____
J. Hiking Trails _____
K. Bicycling Paths _____
L. Local playground for children _____
M. Other: _____

29. IF YOU ARE PLANNING TO <u>MOVE OUT OF RINGWOOD</u> WITHIN THE NEXT <u>TWO YEARS</u>, WHAT WILL BE THE <u>MOST IMPORTANT REASON</u> FOR IT?

A. Too long of a commutation time
B. To find a larger residence
C. To obtain a higher quality residence
D. Because of overdevelopment in my section of town
E. To find senior citizen housing
F. Because of a job transfer
G. Change in family situation (e.g.,marriage, divorce, retired)
H. Because of dissatisfaction with present community
I. To find better schools
J. To find lower taxes
K. To be near family

30. LOOKING AHEAD TO THE NEXT FIVE OR TEN YEARS, WHAT GROWTH RATE WOULD YOU PREFER TO SEE AS THE TOWN OF RINGWOOD DEVELOPS?
(Circle the rate you would prefer)

No Growth Slower Growth Same Rate of Growth Faster Rate

Comments: _____

31. WHAT IF ANY EFFECT DO YOU FEEL THE COMPLETION OF INTERSTATE 287 WILL HAVE ON YOUR LIFE-STYLE.?
Comments: _____

32. WHAT ARE THE LARGEST PROBLEMS YOU PERCEIVE IN THE BOROUGH?
Comments: _____

33. WHAT ARE THE GREATEST STRENGTHS OF THE BOROUGH?
Comments: _____

34. WHAT WOULD YOU RECOMMEND AS A GENERAL IMPROVEMENT FOR THE BOROUGH?
Comments: _____

35. ANY ADDITIONAL COMMENTS THAT YOU HAVE ON ANY SUBJECT THAT MAY AFFECT RINGWOOD.
Comments: _____

PLEASE
PLACE
STAMP
HERE

PLANNING BOARD
BOROUGH OF RINGWOOD
RINGWOOD, NEW JERSEY 07456

IMPORTANT MASTER PLAN SURVEY!
PLEASE COMPLETE AND RETURN
BY OCTOBER 27, 1989
THANK YOU.

MAYOR AND COUNCIL
BOROUGH OF RINGWOOD
RINGWOOD, NEW JERSEY 07456

BULK RATE
U.S. POSTAGE
RINGWOOD, N.J.
PERMIT NO. 5

POSTAL CUSTOMER LOCAL

Feb. 12, 1990

TO: Planning Board - Master Plan

FROM: Robert Diaz
Stonetown Association For Action

RE: 1989 Survey data analysis

I have received the data entry from Commercial Data Processing. This information as received is enclosed on a 5 ¼ floppy diskette. The information has been loaded onto an IBM MainFrame computer and is available for statistical evaluation using SAS programming.

I also am enclosing a bill for services rendered from Commercial Data, Mr. Kevin Mc Grath was most helpful in completing this effort for us.

Some minor editing has been done by me on the data to prepare it for use a copy of this information will be provided after the completion of its analysis.

I have completed some evaluation of the information. This report is preliminary and may be expected to change due to errors in my typing etc.

Ques. (1) location information and survey numbering.

The 1153 survey returned were separated into the following areas of town based on information from question 1 & 2.

SECTION NUMBER	SECTION NAME	RETURNS
1	Cupsaw Lake	358
2	Skyline Lakes	261
3	Stonetown	185
4	Erskine Lakes	158
5	Forsgate	42
6	Bald Eagle	45
7	Ringwood Acres	53
8	Painted Forest	22
9	Kensington Woods	16
10	Upper Ringwood	13
		1153

Ques.2 Asked about household age groups.

A. No. of persons over 18 years _____

87 responded 1 732 responded 2 190 responded 3
72 responded 4 24 responded 5 6 responded 6

B. Your age is _____

No. of children in the age group below

C. 0 - 5 215 said 1 - 77 said 2 -10 said 3
D. 6 - 13 192 said 1 - 109 said 2 - 12 said 3
5 said 4 - 1 said 5
E. 14- 18 164 said 1 - 3 4 said 2 - 3 said 3
1 said 4

Ques. (3) Do you own your own home?

(1121) 97.9% responded YES (24) 2.1% responded NO.

Ques. (4) This question had three parts:

HOW LONG HAVE YOU	0 - 3	4 - 9	10 - 15	16+ years.
A. Been a homeowner?	_140_	_225_	_242_	_514_
B. Lived in Ringwood?	_220_	_269_	_217_	_416_
C. Lived in your current home?	_277_	_286_	_214_	_342_

Ques.(5) Asked about property size.

WHAT IS THE ACREAGE SIZE OF THE PROPERTY YOU LIVE ON?
1122 responded

A.	Less than 1/8 acre	84 (7.5%)
B.	1/8 to 1/2 acre	442 (39.4%)
C.	1/2 to 1 acre	375 (33.4%)
D.	1 to 2 acres	171 (15.2%)
E.	more than 2 acres	50 (4.2%)

Ques.(6) Asked if you had septic or sewers?

984 (85.3%) responded that they had a septic.
438 were <10 yrs - 291 were 10 - 20 yrs 202 were 20 - 30 yrs

Ques.(7) Asked about water sources.

not reported on yet

Ques.(8) Asked about roads.

DO YOU LIVE ON A PAVED OR UNPAVED ROAD?

A.	PAVED	1112 (96.9%)
B.	UNPAVED	36 (3.1%)

Ques.(9) Asked about travel time to work.

IF YOU WORK OUT OF TOWN, HOW MUCH TIME DO YOU SPEND COMMUTING?
(Total time per DAY)

A.	less than ½ hour	81 (8.2%)
B.	½ to 1 hour	300 (30.3%)
C.	1 to 1½ hours	270 (27.2%)
D.	1½ or more	340 (34.3%)

Ques.(10 - 25) Asked for a response to the following:

Statements	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
10.I am satisfied with the way Ringwood is developing.	1118 responded				
	21	261	262	370	204
	1.9%	23.3%	23.4%	33.1%	18.2%
11.Ringwood should encourage the construction of additional detached single family houses.	1126 responded				
	129	334	188	260	215
	11.5%	29.7%	16.7%	23.1%	19.1%
12.Ringwood should encourage the construction of Townhouses.	1139 responded				
	36	110	91	283	619
	3.2%	9.7%	8.0%	24.0%	54.0%
13.Ringwood should encourage the construction of single family clustered housing.	1128 responded				
	40	126	116	324	522
	3.5%	11.2%	10.3%	28.7%	46.3%
14.Ringwood should permit the construction of two family houses.	1138 responded				
	39	125	124	290	560
	3.4%	11.0%	10.9%	25.5%	29.2%
15.Ringwood should encourage new commercial development.	1137 responded				
	441	419	80	90	107
	38.8%	36.9%	7.0%	7.9%	9.4%
16.Ringwood should encourage new industrial development.	1135 responded				
	418	351	78	116	172
	36.8%	30.9%	6.9	10.2%	15.2%
17.Ringwood should encourage recreation related development.	1135 responded				
	327	370	221	119	98
	28.8%	32.6%	19.5%	10.5%	8.6%
18.Ringwood should fight for state tax relief to offset the growing lost revenues as more land is acquired for parks and/or reservoirs.	1145 responded				
	859	236	26	14	10
	75.0%	20.6%	2.3%	1.2%	0.9%
19.Ringwood should purchase additional land for local recreation development to be located throughout the town, even if an increase in taxes is needed to provide the funding.	1145 responded				
	72	131	164	353	425
	6.3%	11.4%	14.3%	30.8%	37.1%

continued from page 3

Statements	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
20.As the main roads of Ringwood are repaved, provision should be made for the inclusion of a 3 - 5 ft wide shoulder, that can be used as a safe area for pedestrians and/or bicycling.	1144 responded 351 30.7%	412 36.0%	167 14.6%	124 10.8%	90 7.9%
21.Ringwood should undertake a road acquisition and upgrading program of all unpaved roads.	1133 responded 111 9.8%	263 23.2%	399 35.2%	226 19.9%	134 11.8%
22.Ringwood should support the creation of a privately funded YMCA in town, that would provide community wide programs for the entire family.	1142 responded 347 30.4%	397 34.8%	211 18.5%	93 8.2%	93 8.2%
23.Ringwood needs to build a new municipal complex.	1142 responded 106 9.3%	198 17.3%	253 22.2%	292 25.6%	293 25.7%
24.Ringwood needs to build a new library.	1142 responded 272 23.8%	273 23.9%	196 17.2%	202 17.7%	199 17.4%
25.Ringwood is doing all that it can to preserve and protect the towns environment.	1139 responded 57 5.0%	286 25.1%	386 33.9%	266 23.4%	144 12.6%

Ques.(26) Asked about community services and facilities.

The responses are given in percentages below.

26. HOW DO YOU RATE THE FOLLOWING COMMUNITY SERVICES/FACILITIES:

	Excellent	Good	Fair	Poor	Awful
A. Schools	1006 responded				
	167	575	221	34	9
	16.6%	57.2%	22.0%	3.4%	0.9%
B. Police Protection	1100 responded				
	263	670	139	23	5
	23.9%	60.9%	12.6%	2.1%	0.5%
C. Fire Protection	1086 responded				
	330	622	116	18	0
	30.4%	57.3%	10.7%	1.7%	
D. Ambulance/EMS Service	1085 responded				
	441	539	89	15	1
	40.6%	49.7%	8.2%	1.4%	0.1%
E. Snow Removal	1110 responded				
	142	521	311	89	47
	12.8%	46.9%	28.0%	8.0%	4.2%
F. Road Maintenance	1114 responded				
	41	416	414	183	60
	3.7%	37.3%	37.2%	16.4%	5.4%
G. Recycling	1112 responded				
	124	539	318	92	39
	11.2%	48.5%	28.6%	8.3%	3.5%
H. Municipal Building	1076 responded				
	47	442	414	113	60
	4.4%	41.1%	38.5%	10.5%	5.6%
I. Library	89	455	311	171	61
	8.2%	41.9%	28.6%	15.7%	5.6%
J. Town Parks	1079 responded				
	170	567	241	73	28
	15.8%	52.5%	22.3%	6.8%	2.6%
K. Town Recreational Facilities	1086 responded				
	126	512	312	105	31
	11.6%	47.1%	28.7%	9.7%	2.9%
L. Recreational Programs	1059 responded				
	138	507	315	74	25
	13.0%	47.9%	29.7%	7.0%	2.4%

Ques.(27) Asked what recreational activities and done?

The numbers of positive indications for each of the following are listed below. No percent are given.

27. HOW DO PEOPLE IN YOUR HOUSEHOLD USE THE OPEN SPACE IN RINGWOOD AND THE REGION?

		In Ringwood	Other Regions
A.	Fishing		
B.	Boating		
C.	Hunting	not reported on	
D.	Gathering firewood	at this time	
E.	Hiking		
F.	Horseback riding		
G.	Motorcycling		
H.	Swimming		
I.	Snowmobiling		
J.	Cross-country skiing		
K.	Other		

Ques.(28) Asked for other types of that would liked to be seen in town.

28. PLEASE INDICATE THE TYPES OF NEW OR ADDITIONAL RECREATION/LEISURE FACILITIES YOU WOULD LIKE TO SEE IN RINGWOOD.

A.	More Tennis Courts	164
B.	Indoor Tennis Courts	155
C.	Spa Facility	245
D.	Indoor Community Pool	332
E.	Outdoor Community Pool	232
F.	More Football Fields	35
G.	More Soccer Fields	78
H.	More baseball Fields	101
I.	Basketball Courts	165
J.	Hiking Trails	307
K.	Bicycling Paths	524
L.	Local childs playgrounds	412
M.	Other: _____	

In response to M other types of recreational activities they would like to see the followin responses were recorded and grouped into areas as best as could be described:

Walking	6
Windsurfing	1
Target Shooting	1
Basketball	1
Biking	4
Jogging Paths	8
YMCA/Community Ctr.	35
HandBall Courts	1
Golf	11

Ques.(29) Asked about reasons for moving if planned.

29. IF YOU ARE PLANNING TO MOVE OUT OF RINGWOOD WITHIN THE NEXT TWO YEARS, WHAT WILL BE THE MOST IMPORTANT REASON FOR IT?

846 responses were recorded.

215	25.4%	A. To long of a commutation time
34	4.0%	B. To fine a larger residence
33	3.9%	C. To obtain a higher quality residence
44	5.2%	D. Because of overdevelopment in my section of town
23	2.7%	E. To find senior citizen housing
41	4.8%	F. Because of a job transfer
37	4.4%	G. Change in family situation (e.g.,marriage, divorce, retired)
39	4.6%	H. Because of dissatisfaction with present community
26	3.1%	I. To find better schools
349	41.3	J. To find lower taxes
5	0.6%	K. To be near family

367 second reasons were recorded:

1	0.3%	A. To long of a commutation time
10	2.7%	B. To fine a larger residence
15	4.1%	C. To obtain a higher quality residence
17	4.6%	D. Because of overdevelopment in my section of town
7	1.9%	E. To find senior citizen housing
22	6.0%	F. Because of a job transfer
29	7.9%	G. Change in family situation (e.g.,marriage, divorce, retired)
41	11.2%	H. Because of dissatisfaction with present community
21	5.7%	I. To find better schools
195	53.1%	J. To find lower taxes
9	2.5%	K. To be near family

141 third reasons were recorded :

0	0.0%	A. To long of a commutation time
0	0.0%	B. To fine a larger residence
3	2.1%	C. To obtain a higher quality residence
5	3.5%	D. Because of overdevelopment in my section of town
1	0.7%	E. To find senior citizen housing
4	2.8%	F. Because of a job transfer
5	3.5%	G. Change in family situation (e.g.,marriage, divorce, retired)
12	8.5%	H. Because of dissatisfaction with present community
8	5.7%	I. To find better schools
92	65.2%	J. To find lower taxes
11	7.8%	K. To be near family

Ques.(30) Asked about future growth.

30. LOOKING AHEAD TO THE NEXT FIVE OR TEN YEARS, WHAT GROWTH RATE WOULD YOU PREFER TO SEE AS THE TOWN OF RINGWOOD DEVELOPS?

1033 responses were recorded.

No Growth	Slower Growth	Same Rate of Growth	Faster Rate
188	439	288	118
18.2%	42.5%	27.9%	11.4%

Ques.(31 - 35) Asked for verbal input, three comments were generally recorded from the verbal. Further analyses should be done in these areas..

31. WHAT IF ANY EFFECT DO YOU FEEL THE COMPLETION OF INTERSTATE 287 WILL HAVE ON LIFE-STYLE.?
Comments: 888 responses were recorded: 155 felt no effect would occur, 55 less traffic would be seen, 248 more traffic, 332 improve traffic, 27 increase house value, 25 accelerate development, 17 improve skyline dr.
Results of first comment.....

32. WHAT ARE THE LARGEST PROBLEMS YOU PERCEIVE IN THE BOROUGH?
Comments: 996 responses were recorded: 178 mentioned traffic, 545 felt taxes were a problem, 90 reflected areas of town services, 70 mentioned development.

Results of first comment.....

33. WHAT ARE THE GREATEST STRENGTHS OF THE BOROUGH?
Comments: 863 responses were recorded: 623 felt the beauty of the area was our greatest strength, 162 mentioned people, volunteers, schools, and recreation.
Results of first comment.....

34. WHAT WOULD YOU RECOMMEND AS A GENERAL IMPROVEMENT FOR THE BOROUGH?
Comments: 714 responses were recorded: 180 thought taxes needed improvement, 105 felt that areas of town service could be improved. 64 want business to move here, 105 mentioned town services, and generally things like improve town services, boro hall, library, shopping centers, traffic etc.
Results of first comment.....

35. ANY ADDITIONAL COMMENTS THAT YOU HAVE ON ANY SUBJECT THAT MAY EFFECT RINGWOOD.
Comments: 449 additional comments were recorded: 141 referred to taxes, 57 to town services, 23 to area beauty, 17 to recreation, 18 to improve skyline dr 12 to expand use of sewers, etc.