HINCKLEY

RESERVOIR STUDY

Prepared by:
The Herkimer-Oneida Counties Comprehensive
Planning Program

FIGURE 2

HINCKLEY RESERVOIR STUDY AREA

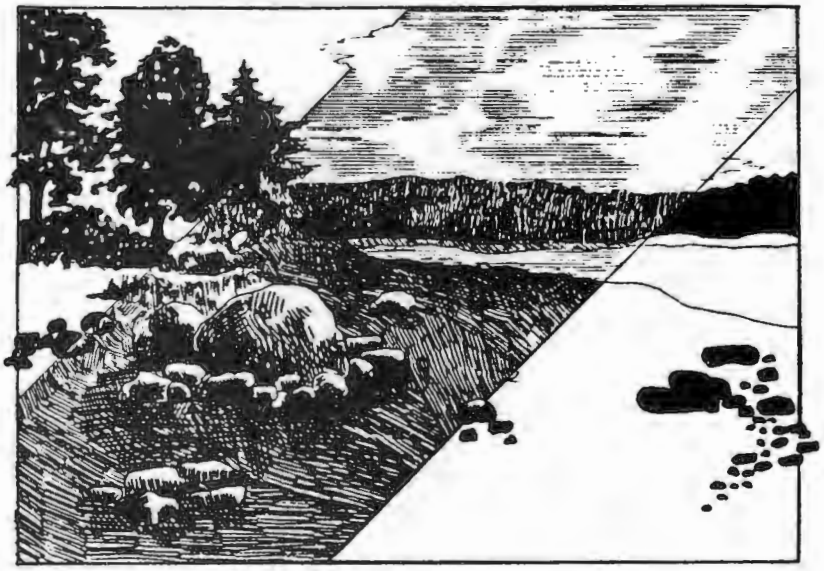
STUDY AREA

FIGURE 4

HINCKLEY RESERVOIR
STUDY AREA

**MEDIUM INTENSITY
SOIL SURVEY**

HINCKLEY



RESERVOIR STUDY

MAY, 1989

Prepared for: The Town of Russia
The Town of Ohio
The Town of Remsen

Prepared by: The Herkimer-Oneida Counties Comprehensive Planning Program
Oneida County Office Building
800 Park Avenue
Utica, New York 13501
Telephone: (315) 798-5710

Partial funding for this Study was provided by the Adirondack Park Agency through a Local Planning Assistance Grant.

Acknowledgments

Project Manager: John K. Trenner, Associate Planner

Principal Staff: Kevin Corcoran, Senior Planner
Eileen Markis, Word Processing
Tim Newman, Graphics

Contributing Staff: Rebecca Janowski
Ron Denato
George Kaminsky
Dave Corzilius

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I. Introduction

The Hinckley Reservoir Study was initiated in the fall of 1986 as a comprehensive planning project designed to develop a broad data base of the area surrounding Hinckley Reservoir designated as the "Study Area," define the major land use issues within the Study Area and to suggest regulatory measures and/or policies which could be used to address these issues.

This study was prepared by the Herkimer-Oneida Counties Comprehensive Planning Program (HOCCPP) for the Towns of Russia and Ohio in Herkimer County and Remsen in Oneida County. All three of these towns have shoreline on Hinckley Reservoir, with the largest portion of shoreline located in the Town of Russia. The Adirondack Park Agency (APA) has provided partial funding for this multi-year project through their Local Planning Assistance Program. Prior to beginning this project, the Towns of Russia, Ohio and Remsen passed resolutions in support of the study, and the Town of Russia has acted as the formal municipal sponsor for the purpose of administering the Local Planning Assistance Grant from the Adirondack Park Agency.

The Hinckley Reservoir Study is a multi-year study designed to be completed in three phases. Work on Phase I of the Study began in the fall of 1986, partially as a result of questions and issues which were raised while HOCCPP was providing technical planning assistance to the Town of Russia on updating their Land Use Regulations and drafting initial subdivision and sanitary regulations. These questions and issues involved the control of the reservoir and fluctuating water levels, recreational use of the reservoir and various land use issues. The land use issues included the impact of converting

seasonal camps to year round homes and the emerging pattern of development in the area.

The Study Area is situated in the southwest corner of the Adirondack Park approximately 25 miles north of the City of Utica (See Figure 1). The Study Area is rural in nature, and the existing development is predominantly low density residential, with several hamlets scattered throughout the Study Area. Hinckley Reservoir is the dominant feature of the Study Area, which has an abundance of high quality water resources.

The Study Area is divided into a primary and secondary area. The primary study area includes land surrounding Hinckley Reservoir and West Canada Creek and the boundary varies in its extension out from the reservoir and creek from approximately .5 miles to 2 miles. This boundary takes in a significant number of the land uses and activities which will have a direct impact on the reservoir. The purpose for the division of the Study Area was to allow for a more detailed review of land uses and activities surrounding Hinckley Reservoir and West Canada Creek. The entire Study Area covers significant portions of the Towns of Russia and Ohio in Herkimer County and Remsen in Oneida County (See Figure 2). Very small portions of the Towns of Trenton in Oneida County and Norway in Herkimer County are also located within the Study Area.

The primary factor considered in defining a study area for the Hinckley Reservoir Study was an early 1970's study by the Temporary State Commission on the Water Supply Needs of Southeastern New York which proposed the expansion of Hinckley Reservoir for the purpose of providing drinking water for downstate New York. This proposal involved raising the dam at Hinckley by 50 feet and

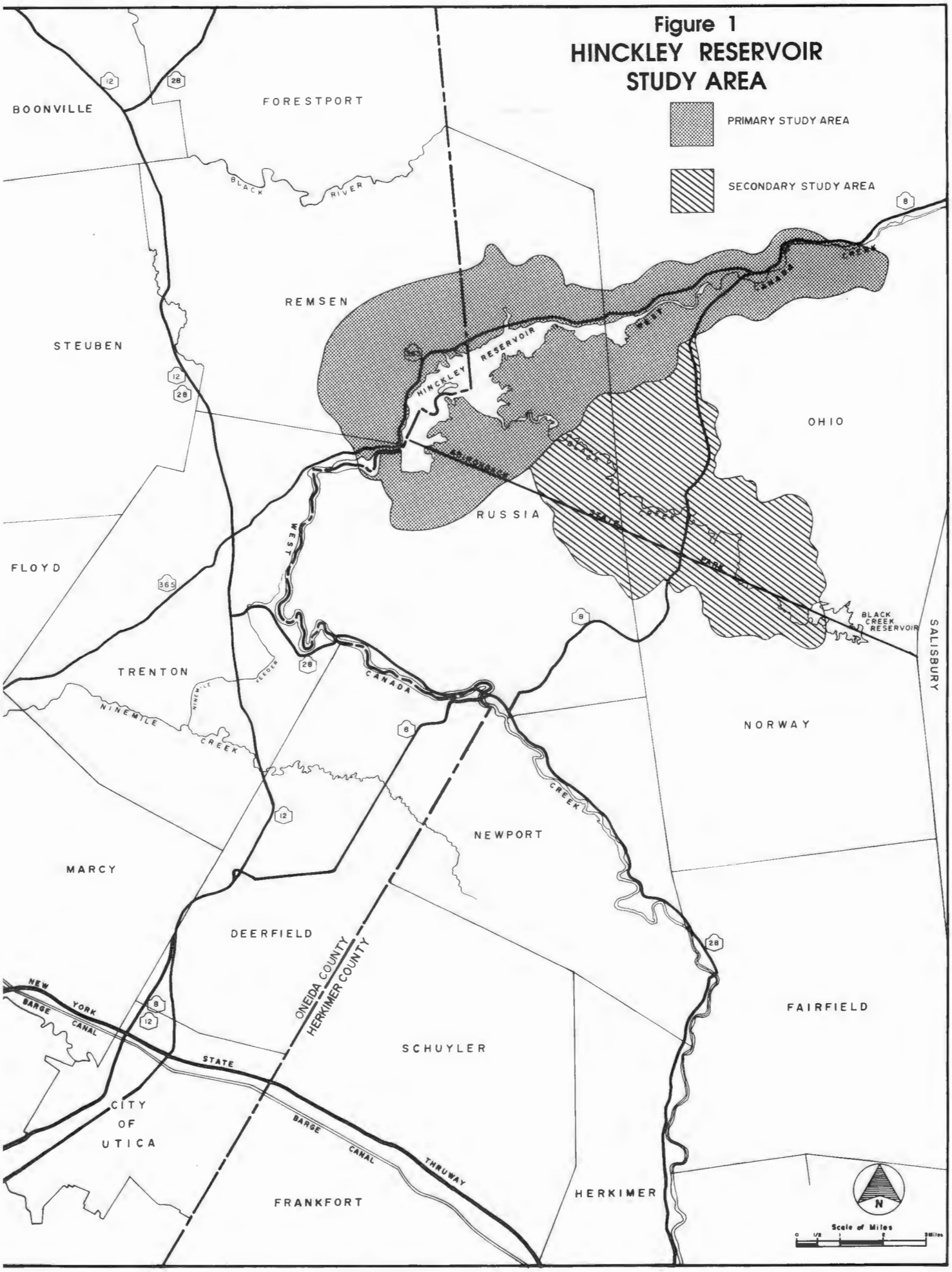
Figure 1
HINCKLEY RESERVOIR
STUDY AREA
PRIMARY STUDY AREA
SECONDARY STUDY AREA
BOONVILLE
FORESTPORT
BLACK RIVER
REMSEN
STEUBEN
HINCKLEY RESERVOIR
WEST CANADA CREEK
OHIO
ADIRONDACK
RUSSIA
WEST CANADA CREEK
FLOYD
365
TRENTON
NINEMILE CREEK
NINEMILE FEEDER
CANADA
BLACK CREEK RESERVOIR
SALISBURY
NORWAY
NEWPORT
MARCY
DEERFIELD
ONEIDA COUNTY
HERKIMER COUNTY
FAIRFIELD
NEW YORK BARGE CANAL
STATE
SCHUYLER
CITY OF UTICA
BARGE CANAL THRUWAY
FRANKFORT
HERKIMER
N
Scale of Miles

flooding over 10,000 acres of upstream land. This proposal was not implemented, but figured prominently in the geographic configuration of the Study Area boundary.

The area which comprises the Study Area includes that area which would have been flooded had the dam been raised, plus a minimum of 2000 feet outward in a horizontal manner. The Study Area boundary deviates from this description in certain places to follow a major road, or to take in a concentration of dwelling units or a body of water.

Due in part to its close proximity to the urbanized areas in Oneida and Herkimer Counties, and its rural character and recreational opportunities, the Study Area is facing increased development pressure. The information discussed in the following sections suggests that these development pressures will continue in the foreseeable future. The purpose of the Hinckley Reservoir Study is to supply the Study Area Towns with the information to be able to manage the future development so that the rural character and associated amenities are maintained.

The first phase of the Hinckley Reservoir Study consisted of gathering an extensive amount of data on the Study Area. Major work items included a parcel-by-parcel land use survey, a community information survey of all property owners in the Study Area, natural resources inventory and research involving the various uses and users of Hinckley Reservoir.

The second phase of the Study involved identifying the issues which emerged from the work completed in Phase I and making generic recommendations and

suggestions as to ways which the Study Area Towns could address these issues. A major research effort was also conducted during Phase II regarding the manner in which shoreline development issues are addressed in other parts of New York State, as well as other states throughout the country.

For example, the analysis of the Existing Land Use Map which was completed during Phase I of the Study revealed that there were many large parcels of undeveloped land along the shoreline of Hinckley Reservoir. This suggests that the potential exists for a significant amount of development to occur which could permanently alter the character of the shoreline. During Phase II work, generic recommendations were made as to the actions which the Study Area Towns could take to protect and enhance the character of the shoreline. One of these recommendations was to create a shoreline preservation district whereby new development within this district would be managed so as to minimize any potential negative impacts on the visual character of the shoreline and/ or on the reservoir itself.

During Phase III of the Hinckley Reservoir Study, HOCCPP will translate the generic recommendations made during Phase II into specific measures to address identified issues. In the example used above, where the potential for significant shoreline development around Hinckley Reservoir was identified, HOCCPP will develop the geographic boundaries which define the shoreline preservation district, as well as the textual provisions necessary to implement the shoreline preservation district in a local zoning law. While the Town of Russia is the only Town within the Study Area to have adopted local zoning regulations as of the date of publication of this report, the mechanics of the shoreline preservation district as a regulatory technique are easily

transferable if the Towns of Remsen and Ohio would adopt zoning regulations in the future.

The information contained in this report covers Phases I and II of the Hinckley Reservoir Study. Phase III of the Study is scheduled for completion by September, 1989.

II. The Uses and Users of Hinckley Reservoir

Hinckley Reservoir was constructed during the early 1900's by the State of New York Department of Public Works (now the Department of Transportation), with the reservoir becoming operable in the summer of 1915. The sole purpose for constructing Hinckley Reservoir over seventy years ago was to augment flows in the Barge Canal. Hinckley was one of two large storage reservoirs constructed by New York State to supplement water levels in the canal between Rome and Troy during the dry summer months. Delta Lake, just north of the City of Rome in Oneida County is the other storage reservoir constructed by New York State to supplement flows in the canal.

Hinckley Reservoir was built by constructing a dam across the West Canada Creek, approximately one-half mile upstream from the Hamlet of Hinckley, New York. The shoreline of Hinckley Reservoir extends into the Town of Russia and Ohio in Herkimer County, and Remsen in Oneida County (See Figure 2). The impoundment structure consists of two earthen embankments running north and south for approximately 3,300 feet from New York State Route 365 to South Side Road. These embankments flank a 400 foot long masonary spillway across the West Canada Creek. The West Canada Creek then flows south until it drains into the Mohawk River, just east of the Village of Herkimer. The Barge Canal Feeder is an artificial diversion channel located approximately five miles south of the Hinckley Reservoir dam, and can be used to divert discharges from Hinckley Reservoir to the Barge Canal. The Barge Canal Feeder flows into Nine Mile Creek near the Village of Trenton, and Nine Mile Creek then flows south into the Barge Canal midway between the cities of Rome and Utica. Discharges from Hinckley Reservoir to the West Canada Creek are established by the "rule

curve," which is a schedule based on the reservoir elevation and the time of year (See Figure 3).

The State of New York appropriated, in one form or another, a total of 4,800 acres for the Hinckley Reservoir project. At the crest elevation of 1,225 feet, approximately 58%, or 2,800 of the 4,800 acres are inundated by water. The amount of land required for the project was determined by the State of New York by appropriating the land which followed the contour of the ground approximately eight feet above the crest of the dam.[1]

The gross capacity of the reservoir at crest elevation is 79,100 acre feet, which results in an average reservoir depth of approximately 28 feet, and a maximum depth of the reservoir is 75 feet. There is approximately 7.5 miles of shoreline around Hinckley Reservoir, and based on an estimate by a staff engineer for the NYS Department of Public Works in 1958, 3 to 4 miles of this shoreline is comprised of sandy beaches. The watershed for Hinckley Reservoir covers approximately 374 square miles of mostly undeveloped land stretching into the foothills of the Adirondacks.

The New York State Department of Transportation (NYSDOT) owns Hinckley Reservoir and the approximately 2,000 acres of land surrounding the reservoir. These 2,000 acres represent the strip of land between the reservoir itself and the adjacent private or public land (See the Existing Land Use Map in the back

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[1] letter dated July 18, 1930 from C. D. Brownell, District Engineer - New York State Department of Public Works to R. D. Hayes, Commissioner of Canals - New York State Department of Public Works

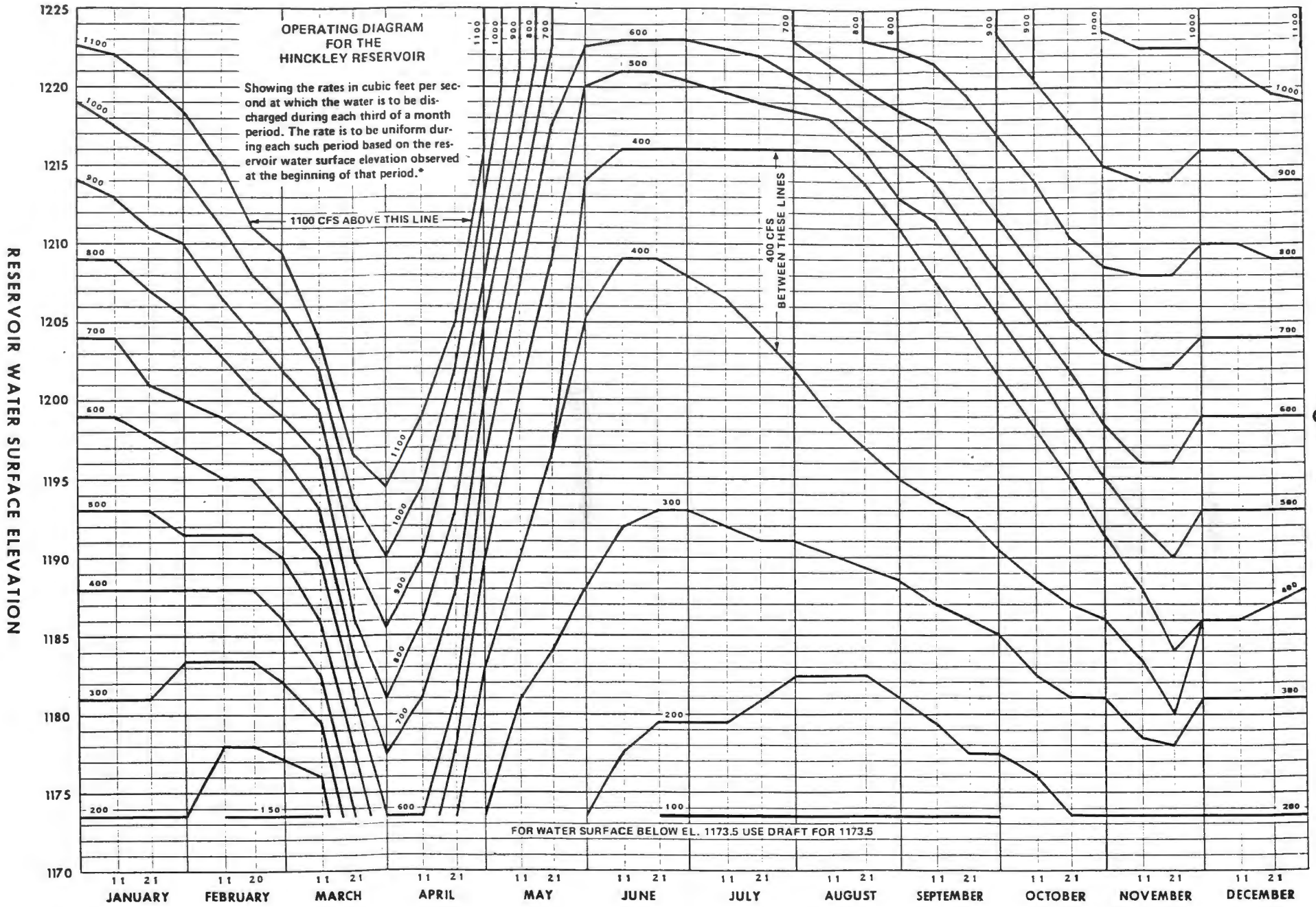

Figure 3

Source: New York Power Authority, Hinckley Hydroelectric Project; Application for License for Major Project, Existing Dam, December, 1981; Figure B-4.

POWER AUTHORITY OF THE STATE OF NEW YORK
HINCKLEY RESERVOIR
HYDROELECTRIC DEVELOPMENT
RESERVOIR OPERATING DIAGRAM

of this report). This strip of land is known as "canal land," and effectively precludes any private or public ownership of the shoreline except for the NYSDOT.In addition to supplementing the water level in the Barge Canal, Hinckley Reservoir serves as the sole source of drinking water for over 135,000 people in the greater Utica area. Discharges from the reservoir also generate power at three separate facilities, including one located within the Hinckley Dam.

Supplementing flows in the Barge Canal, municipal water supply source and power generation are the contractually established uses of Hinckley Reservoir. In addition, Hinckley Reservoir is a major recreational resource within the region and some flood control benefits are realized downstream by the operation of Hinckley Reservoir. However, recreation and flood control do not have any formal status in terms of how these uses relate to the operation of Hinckley Reservoir. These uses appear to be incidental, in contrast to the contractual uses mentioned above. The remainder of this section will discuss in more detail the uses of Hinckley Reservoir.

A. CONTRACTUAL USES OF HINCKLEY RESERVOIR

(1) USE: Supplementing Flows in the Barge Canal

USER: New York State Department of Transportation

The sole purpose for New York State in constructing, operating and owning Hinckley Reservoir is to be able to supplement water levels in the Barge Canal. Being able to ensure that the canal is a navigable waterway from June 1 to November 1 appears to be NYSDOT's only official concern in regard to Hinckley Reservoir nearly 75 years after it was constructed. To put it another way:

"The prime purpose of the dam is for low flow augmentation to the Barge Canal; thus, in periods of low flow the discharge releases are in strict accordance with the operating diagram. At times of high flow there is no need for augmentation and DOT's only requirement is to ensure that the reservoir is full by June 1 of each year. This target has been achieved every year since the dam was constructed."[2]

The NYSDOT does allow private property owners whose land abuts the canal land surrounding the reservoir to use that strip of land on a permit basis in order to either gain access to the reservoir or to simply use the shoreline for passive purposes. The permits are issued on a yearly basis, and the permit fee is based on the use to which the permit holder would like to put that strip of land between his/her property and the reservoir. The NYSDOT is revamping the existing permit fee schedule. In the past, a private property owner could obtain a beautification permit for $25.00. This beautification permit allows the landowner to cut the grass and do simple landscaping on the canal land. The fee to install a dock was $50.00. An important point to note here is that permanent structures are not allowed on the canal right-of-way and permits are revocable. Substantial grading, vegetation removal or any permanent alteration to the canal land is prohibited under this permit system.

Under the revised fee schedule which NYSDOT proposed in September, 1988, permit fees of $50.00 per year will be charged for canal land used in conjunction with adjoining residences or camps. This type of permit is

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[2] New York Power Authority, "Hinckley Reservoir Hydroelectric Development Feasibility Study," September 1980, page 16

restricted to upland owners and includes only that land between an upland residence and the canal waters, which in this instance is Hinckley Reservoir. This permit gives the holder the right of exclusive access across these canal lands to the canal waters. If the upland owner wishes to erect or maintain a dock or float within the canal waters there is an additional $50.00 fee. In addition, there are specific provisions within the proposed rules and regulations concerning applications for commercial permits (campgrounds, marinas, etc.).

(2) USE: Municipal Water Supply

USER: City of Utica Board of Water Supply

The Consolidated Water Company of Utica, New York (now the Utica Board of Water Supply) was taking water from the West Canada Creek at Hinckley, New York through a conduit pipe for the purpose of supplying water to the City of Utica and its immediate environs at the time the Hinckley Dam was proposed. The Water Company owned certain riparian lands, rights and privileges upon the West Canada Creek above and below the Hinckley Dam. This included certain easements and rights to take and divert water from West Canada Creek, below the dam at Hinckley. As a result of the construction of Hinckely Reservoir, the State of New York compensated the Water Company $68,388.04, "... for the taking or destruction of, or for the interference ... with any of its diversion rights or flowage rights as upper or lower riparian owners on West Canada Creek."[3]

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[3] Contract dated December 27, 1917 between the State of New York and the Consolidated Water Company of Utica, New York.

The Water Company and the State of New York also reached an agreement whereby the Water Company would withdraw water from Hinckley Reservoir through two 42-inch iron pipes laid into the dam itself. The Water Company also received the right to construct and maintain the necessary accessory structures and equipment in order to transmit water south to the Utica area. The Water Company also obtained an easement to withdraw a flow of 100 cubic feet per second (cfs), with a maximum 24 hour average of 75 cfs. In regards to the easement to withdraw water, the Water Company and New York State also had an agreement whereby the Water Company would maintain a specified amount of water stored in upstream reservoirs which could be released into Hinckley Reservoir depending upon the low flow rate of the West Canada Creek, and the amount of water diverted by the Water Company.

In the 1917 contract between the Water Company and New York State, the flow of 335 cfs was set as the "low flow" of West Canada Creek. Any water which the Water Company diverts from the reservoir once the creek reaches low flow, must be replenished from a storage reservoir. Black Creek Reservoir, also known as Gray Reservoir, is located in the southeast corner of the study area, and has been used as one such storage reservoir. Black Creek Reservoir lies within the Towns of Ohio and Norway, with the Adirondack Park boundary line running diagonally through the reservoir. Black Creek Reservoir has a capacity of 1.2 billion gallons.

In addition to this original provision covering low flow, the Water Company agreed to increase their storage as the amount of water they

divert per day from Hinckley Reservoir increases. The amount of required storage is shown below in Table 1.

Table 1

Contractual Storage Requirements of the Utica Board of Water Supply

Amount of Water Diverted from Hinckley Reservoir		Upstream Storage Required
cfs	Mgd	Million Gallons
25	16.2	2,000
35	22.6	2,800
45	29.1	3,600
55	35.5	4,400
65	41.9	5,200
75	48.5	6,000

Source: Herkimer-Oneida Counties Comprehensive Public Water Supply Study, New York State Department of Health, Nov. 1968, pg. 57

While the Water Company, which has since become the Utica Board of Water Supply, has contractual rights to divert 48.5 mgd for Hinckley Reservoir, the Board of Water Supply would, under the terms of the contract, have to maintain 6 billion gallons of storage before the maximum amount of 48.5 mgd could be diverted. At the present time, the Utica Board of Water Supply diverts approximately 20 mgd from the Hinckley Reservoir.

The Power Company also had a contractual right to a minimum established flow in the West Canada Creek prior to the construction of the Hinckley Dam. In 1905, the Water Company entered into an agreement with the Utica Gas and Electric Company (predecessor to the Niagara Mohawk Power Corporation) to ensure that an adequate flow would be maintained in the West Canada Creek for the purpose of operating the Power Company's hydroelectric plant at Trenton Falls. According to the contract entered into by the two parties, this agreement was necessary because the Water

Company was obtaining an additional supply of water from West Canada Creek above the Trenton Falls plant.

This agreement stated, in part, that any amount of water which the Water Company diverted which would infringe upon the minimum established flow which the Power Company was entitled, had to be replaced from a Water Company storage reservoir. Also, whenever the flow of water in the West Canada Creek is such that the power plant cannot be operated, the Water Company shall not divert any water from Hinckley Reservoir unless it is able to replenish an amount equal to which it diverted for water supply purposes. The agreement also stated that the quantity of water stored shall not be less than an aggregate of 500,000,000 gallons in any year, and that the water shall be released from "time to time" as required for power generation.[4] At the time this agreement was reached it also pertained to a proposed power plant on West Canada Creek by the Power Company at Prospect Falls, two miles downstream from the Hinckley Dam.

(3) USE: Power Generation

USER: Niagara Mohawk and the New York Power Authority

As noted, there was one hydroelectric plant operating on the West Canada Creek at Trenton Falls, and a second plant at Prospect Falls had apparently been proposed when the dam at Hinckley was constructed. At the present time, Niagara Mohawk Power Corporation operates both of the abovementioned hydroelectric plants. Hinckley Reservoir provides storage for the operation of the Prospect and Trenton Falls Generating Station,

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[4] Contract dated March 10, 1905 between the Consolidated Water Company of Utica, New York and the Utica Gas and Electric Company.

and discharges to these stations are controlled at the Hinckley Dam. Both the Prospect and Trenton Falls generating stations are operated in a manner similar to a "run of the river" operation, although these facilities are not run-of-the-river operations in the most strict sense. This term simply means that the plant is generating electricity in a continuous manner, paralleling the flow of water in the river.

The Prospect Station is located approximately 2.4 miles below the Hinckley Dam. Prospect Reservoir is located immediately downstream from the Hinckley Dam, and is used to store the water released from Hinckley reservoir in order to generate electricity at the Prospect Plant. Prospect Reservoir is also a productive fishery. Recent netting operations by the New York State Department of Environmental Conservation (NYSDEC) on Prospect Reservoir have yielded several 19-20 inch brown trout. While the reservoir is stocked annually, trout can successfully reproduce in this body of water. Niagara Mohawk built and maintains a fishing access site and boat launch on Prospect Reservoir which is open to public use.

The Trenton Falls hydroelectric plant is located approximately 4.4 miles downstream from the Hinckley Dam. There has been a minimum release of 160 cfs established from the Trenton Falls plant in order to maintain the high quality of the fishery resource of West Canada Creek downstream from this plant.

The "rule curve" upon which discharges from Hinckley Reservoir are based, was the result of an agreement between Niagara Mohawk's predecessor, the

Utica Gas and Electric Company and the State of New York. Discharges are based on the reservoir water surface elevation and the time of year (See Figure 3). The rule curve was drafted to satisfy both the Power Company's right to use the flow in the West Canada Creek for power generation, and the original purpose for constructing Hinckley Reservoir, which is to augment flows in the Barge Canal. According to informal conversations with the NYSDOT, any other benefits derived from the discharges based on the rule curve are incidental. Except in periods of extreme drought, discharges from Hinckley Reservoir are based strictly on this rule curve. While not stated in writing, both the NYSDOT and Niagara Mohawk have apparently agreed to relax the rule curve in extreme drought periods in order to ensure an adequate water supply for the City of Utica.

The New York Power Authority operates a 9MW hydroelectric plant at the Hinckley Dam. The Jarvis Generating Station came on line in 1986. This facility will follow the daily discharge schedule outlined in the rule curve. As part of their agreement with the NYSDOT to construct and operate the hydroelectric plant at the Hinckley Dam, NYPA has now assumed responsibility for the maintenance of the dam.

The Jarvis Generating Station at Hinckley Dam has apparently had little impact on the reservoir. If anything, this hydroelectric facility may have some positive impacts. It is expected that the operation of this plant will have a moderating effect on the seasonal fluctuation of Hinckley Reservoir due to a slight modification of the rule curve, and should also stabilize the water level in Prospect Reservoir. In order to receive their license to operate the Jarvis Generating Station, NYPA was

required to do certain repair work on Hinckley Dam, and also agreed to virtually reconstruct a boat launch on the northern shore of the reservoir, off of NYS Route 365 in the Town of Remsen. This one lane boat launch is one of two hard launches on the reservoir, and the vast majority of day use boaters launch at the NYPA facility.

The Prospect and Trenton Stations generate an estimated 207,000,000 KWH per year. The Jarvis Station is able to generate 25,000,000 KWH per year. Assuming that an average residential customer uses 7,000 KWH per year, these three hydroelectric facilities provide enough electricity for approximately 33,000 average residential customers per year.

To reiterate, the primary function of Hinckley Reservoir is to augment flows in the Barge Canal. This was the sole reason why the State of New York constructed the dam across the West Canada Creek at Hinckley, New York in 1915. There were, however, legitimate rights and easements held by other entities to divert water from the West Canada Creek and/or use the flow of water in the creek to generate power. These prior rights and easements lead to the contractual agreements pertaining to the use of water from Hinckley and the West Canada Creek between the NYSDOT, Consolidated Water Company of Utica and the Utica Gas and Electric Company. Several other smaller users of the West Canada Creek downstream from Hinckley also had established rights and easements, and their formal agreements apparently were with the Water Company to ensure that an adequate flow would be maintained for their use in the West Canada Creek.

B. INCIDENTAL USES OF HINCKLEY RESERVOIR

(1) USE: Recreation

In addition to the legally established uses of Hinckley Reservoir and the flow in the West Canada Creek downstream, there are a few important "incidental" uses of the reservoir. Hinckley Reservoir is located approximately 30 miles north of the greater Utica area and the Mohawk Valley, and serves as an important recreational resource in the region. However, data on the number of people who use Hinckley Reservoir for recreational purposes is quite limited. In terms of people who use the Hinckley Reservoir area on a transient or daily basis, two sources of hard data are available. The first comes from the attendance figures from the NYSDEC Day Use Area on the southern shore of the reservoir. This recreational facility, which opened in 1973, has a large sandy beach for swimming and sunbathing, basketball courts and picnic areas with grills. This Day Use Area has some open spaces for active recreation, but also has some secluded picnic spots (with tables and grills) which offer a quiet, peaceful setting. Attendance figures for the Day Use Area from 1984-1987 are shown below in Table 2.

Table 2

Hinckley Reservoir Day Use Area
Attendance Figures 1984-1987

	1984	1985	1986	1987
Attendance	16,548	20,086	21,574	26,569

Source: NYS Department of Environmental Conservation, 1988

Attendance figures are quite susceptible to the weather, which is probably

responsible for the relatively low turnout in 1986. In 1985, the level of the reservoir was drawn down significantly in connection with work on the Jarvis Generating Station. This low water level would have an adverse impact on the quality of swimming at Hinckley Reservoir, which is a primary reason people visit the Hinckley Day Use Area. The Day Use Area is the focus of Section VII of this report and is discussed in more detail in this section.

Another way of estimating the number of people who use the Reservoir for boating is the number of paid launches which occurred at the boat launch which the NYPA reconstructed on NYS Route 365. The number of paid launches,for the past three years, are shown in Table 3. A nominal launch fee has been charged to defray operating costs, and this record of paid launches is one of the few sources of data on the number of boaters on the Hinckley Reservoir.

Table 3

NYPA Boat Launch
Number of Paid Launches 1985-87

	1985	1986	1987
Paid Launches	538	514	800

Source: New York Power Authority, 1988

The same factors which affected attendance at the Hinckley Day Use Area, affected the number of boaters on the reservoir in 1985 and 1986. There was a substantial increase in launches from this site in 1987. Boat traffic on the reservoir during the weekends appeared to be quite heavy during the summer of 1987 and early in the summer of 1988, and it is reasonable to assume that most of this boat traffic originated at the NYPA

Boat Launch. This is because there are only two "hard launches" which are available for public use on the reservoir. There is at least one (and probably more) unpaved launches available for public use, but these launching areas do not have the hard surface nor space to maneuver a vehicle and boat trailer which the NYPA site has available. A drawback to the NYPA site is the lack of adequate parking. This lack of parking results in cars and trailers parking on both sides of Route 365 on the weekends, creating a potentially dangerous traffic situation. This shortage of adequate parking results from the lack of land between NYS Route 365 and Hinckley Reservoir on which to locate additional parking spaces.

The most frequent reason given for boating on Hinckley Reservoir is water-skiing, picnicking along the shore or simply spending the day on the water. As discussed in Section III(G), the reservoir does not have any productive game fisheries, and it follows that fishing was not a popular reason for launching a boat on Hinckley Reservoir.

As mentioned previously, private property owners with land abutting the canal lands (that piece of land between the reservoir and the private property) may obtain a permit from NYSDOT which allows them to use the canal land for access to the reservoir. Another measure of recreational usage of Hinckley Reservoir by residents of the area, is the number of use permits issued by the NYSDOT. Information on the number and location of permit holders was obtained from the Division of Canals at NYSDOT. This information allowed for the identification of where the particular permit

was located on the reservoir, and whether there was a dock and/or any additional structures on the land for which the permit had been granted.

According to this information, there were 61 permit holders on Hinckley Reservoir in 1987. Fifty-five of the 61 permit holders owned property in the Town of Russia in Herkimer County. Of the 61 permit holders, 19 had docks, 8 fireplaces, 4 with stairs down to the water, 2 had wells and there was one boathouse, shelter and camp located on canal land. There were two permits issued in conjunction with a commercial operation. There is a commercial campground and day-use area on the southern shore (Trail's End), which accommodates recreational-vehicles and tents on an overnight basis. Trail's End also has a large sandy beach and swimming area. There is another commercial operation on the northern shore of the reservoir in the Town of Remsen. This is a mobile home park, which according to the permit information, has 2 fireplaces and 40 picnic tables on canal land, and has a sandy beach area. This mobile home park was formerly a campground and day use area.

In terms of the geographic location of the permits, 20 are located on the northern shore of the reservoir, and 41 on the southern shore including Black Creek upstream to Grant. In general, these permits are clustered together, corresponding to the clustering of camps along the shoreline.

While the above discussion on permits is based on information obtained from NYSDOT in 1988, it should be placed in its proper context. NYSDOT recently hired a Permit Administrator to handle the permitting process. One thing that reportedly will be done which was not in the past, is a

visual survey of the canal lands to see which lands are actually being used. In the past, there was little enforcement when it came to obtaining a permit to use the canal lands. Therefore, the actual numbers of adjoining property owners using the shoreline (canal lands) is most likely significantly higher than what was documented.

When trying to get a feeling for the recreational usage of Hinckley Reservoir, the use of the informal beaches and boat launches along the shoreline should be considered. Field checking has identified several large sandy beaches located off of NYS Route 365 in the Town of Remsen. These beaches receive heavy use during the summer, particularly on the weekend. The beach located just opposite Cookingham Road also serves as a boat launch. Considering the lack of formal facilities on the reservoir and the ease of access to the shoreline which currently exists, the "informal" usage of the reservoir is an important issue and one which will become even more important in the future. This is because informal use of canal lands could, in effect, be significantly reduced or even eliminated if the uplands owners of private property exercised their right to obtain a use permit from NYSDOT. This permit gives the holder the exclusive right of access to the reservoir over the canal land.

(2) USE: Flood Control

The manner in which Hinckley Reservoir is operated does appear to provide some flood control benefits. There is no precise information available on the downstream flood control benefits the reservoir provides, but some general observations can be made. These benefits were articulated in a 1956 study of the Barge Canal System, where a recognition of the benefit

of the annual drawdown of Hinckley and Delta Reservoirs during the winter allowed for the retention of the spring runoff during April and May. The feasibility study prepared for the development of hydroelectric power at Hinckley Dam, stated that

> ... a rigorous analysis would probably show that the actual mode of operating being used provides some downstream flood control and power generation benefits by causing the dam to fill later in the year, thus reducing the length of time and the magnitude of uncontrolled discharge over the spillway ... Historic operation of the reservoir can be shown to alleviate spring flooding potentials and to greatly alleviate floods during short duration high intensity autumn rain falls.[5]

The operation of Hinckley Reservoir does provide downstream flood control benefits however "incidental" these benefits may be. As pointed out above, it would require an extensive analysis to determine more clearly the benefits which the reservoir does provide. A related point is that power generation benefits are also realized downstream during this time period as well as flood control benefits.

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[5] New York Power Authority, Hinckley Reservoir Hydroelectric Development Feasibility Study, September 1980, page 16.

III. Natural Resources Inventory

The natural resources inventory section of the Hinckely Reservoir Study brings together information in both a written and graphic format which is sufficient to give the reader a sense of the natural resources base within the Hinckley Reservoir Study Area. This section contains separate subsections on the following:

A) Soils;

B) Wetlands;

C) Lakes and Rivers;

D) Floodplains;

E) Topography;

F) Vegetation; and

G) Fishery Resources in the Study Area.

The value of the specific information as an aid in making both the day-to-day and long range development decisions which will affect the character of the Study Area and ultimately the quality of life within the Study Area is discussed in detail in each subsection. In general, this natural resources information can serve as an important tool when reviewing specific development proposals and when considering any course of action which will affect the physical development of the area. In addition, all of the information would be reviewed in order to effectively minimize any potential negative impacts to the Study Area environment.

For example, a planning board will now be able to use information on the soils and topography when reviewing a subdivision proposal within the Study Area, as

well as checking to see whether the proposal may impact a regulated wetland, floodplain and/or a classifed surface water resource.

A. SOILS

The importance of soil as it relates to land use can not be understated. Soil, the most basic resource, is often a prime determinant as to whether or not a particular land use is suitable for a specific site.

As part of the process to evaluate a geographic region's suitability for development, a soil survey should first be conducted. The soil survey which was conducted for this study by the Soil Conservation Service Office in Oneida County, yielded a very detailed picture of the types and location of soils which comprise the Study Area, and their location. In fact, 30 major soil types were identified, in which there are an additional 22 variations of these soil types; excluding burrow pits, gravel pits, and water (See Figure 4). These variations occur as a result of differing slopes within the Study Area.

Yet, as detailed as this map appears, it must be kept in mind that the survey which was conducted for this study was a medium intensity soil survey. In other words, although fairly accurate on a large scale, information compiled from a medium intensity soil survey may not be suitable for analysis of individual, relatively small sites. In particular, any land area that consists of less than 5 acres in size, which is being considered for a particular type of development, will require an on-site soils' investigation in order to determine the soil characteristics which are present, and any potential limitations for

development which these soil characteristics may pose.

The soils limitation ratings table located at the end of this section specifies the degree of limitations a soil type possesses for certain forms of development. For the purposes of this study, four types of development having different construction requirements, with the potential to impact the soil resources in a different manner, were examined. These four land use types include: 1) Dwellings with Basements; 2) Dwellings without Basements; 3) Small Commercial Buildings; and 4) Septic Tank Absorption Fields. Soils limitations maps were then prepared for all four of these land uses (See Figures 5 through 8). These soils limitations maps make a general delineation as to what portions of the Study Area are more suitable for development, based on a commonly used limitation ratings system.

When interpreting this limitation ratings system, a "slight" limitation rating means that the soil properties are generally favorable for that land use and limitations can be easily overcome at minimal or no costs. A "moderate" limitation rating identifies a problem which can be overcome or mitigated through modified design or special maintenance. A "severe" limitation rating means that soil properties are generally unfavorable and limited by a hazard or restriction which can only be corrected or modified through expensive measures such as soil reclamation, special design, intensive maintenance, or limited use. Although a severe rating does not automatically exclude particular land uses from a specific site, it does mean that expensive modifications, which safeguard both the structure being built and the environment, may have to be undertaken prior to site development.

FIGURE 5

HINCKLEY RESERVOIR
STUDY AREA

SOILS LIMITATIONS FOR DWELLINGS WITH BASEMENTS

FIGURE 6

HINCKLEY RESERVOIR
STUDY AREA

SOILS LIMITATIONS FOR DWELLINGS WITHOUT BASEMENTS

FIGURE 7

HINCKLEY RESERVOIR
STUDY AREA

SOILS LIMITATIONS FOR SMALL COMMERCIAL BUILDINGS

FIGURE 8

HINCKLEY RESERVOIR STUDY AREA

SOILS LIMITATIONS FOR SEPTIC TANK ABSORPTION FIELDS

For example, to construct a dwelling in a floodplain or near a wetland, the contractor will have to do certain extra work, possibly involving the foundation and/or the septic system, to ensure the structural integrity of the foundation and that the septic system functions properly. There may also be an additional permit required from a governmental agency. In the case of construction near a wetland for example, the regulating agency may require the builder to carry out certain measures, such as improving or altering the drainage characteristics near the construction site which will result in an improvement or enhancement of the wetland ecosystem. Both the extra construction costs associated with building on land with severe limitations, and the costs of any mitigation measures make construction on this particular type of land more expensive than building on land with slight or moderate limitations. This is what is meant when it is stated that a severe limitation rating does not automatically mean development cannot physically occur, but rather that development is usually more expensive.

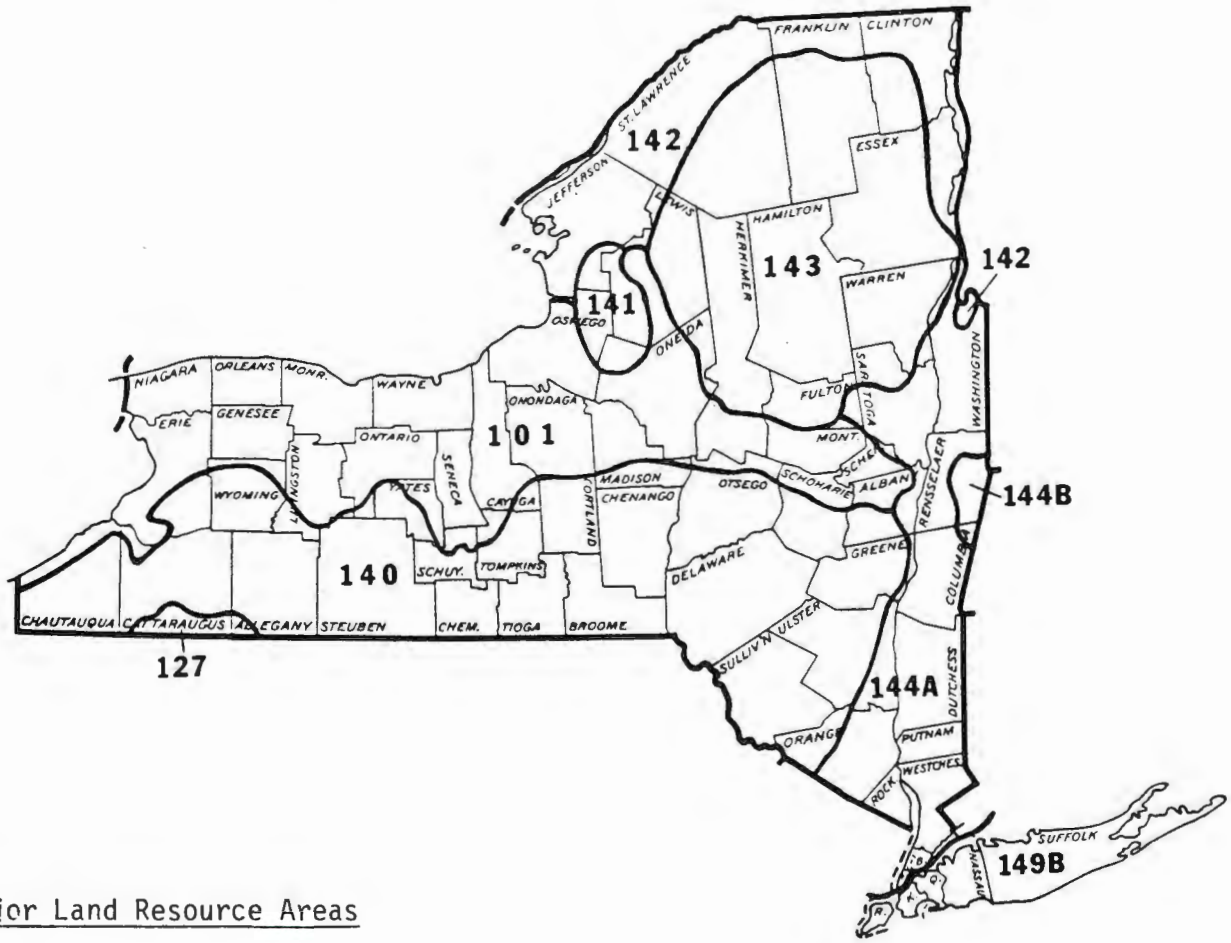
A brief look at the generalized Statewide map shows how the State is broken down into regions, based upon soils, as well as topography, geology, and other natural resources. The United States Department of Agriculture (USDA) has identified 9 major land resource areas within New York State as shown in Figure 9.

As can be seen from the map, the Hinckley Reservoir Study Area lies entirely within the Northeastern Mountains - Adirondacks land resource area (143). This general area, as stated in the USDA's publication entitled "New York Soils and Water: Conditions and Trends," is

characterized by "moderately steep to very steep mountains and foothills with broad, nearly level to sloping valleys. Soils are generally shallow. Erosion may be severe on steep slopes. Wetness can be a problem on poorly drained soils, on lower glacial fill slopes, and in depressions." (p. 3)

FIGURE 9

MAJOR LAND RESOURCE AREAS OF NEW YORK STATE



Major Land Resource Areas

101 Ontario Plain/Finger Lakes and Erie Fruit and Truck Area
127 Eastern Allegheny Plateau and Mountains
140 Glaciated Allegheny Plateau and Catskill Mountains
141 Tughill Plateau
142 St. Lawrence/Champlain Area
143 NORTHEASTERN MOUNTAINS - ADIRONDACKS
144A Eastern New York Upland - Southern Part
144B Eastern New York Upland - Northern Part
149B Long Island Coastal Lowland

SOURCE: New York's Soil and Water: Conditions and Trends, 1986, U.S.D.A.

However, when the more detailed soils limitations maps are examined for the Hinckley Reservoir Study Area, much of the Study Area is rated as suitable for most forms of development. As can be seen later in this section, the most notable exception to this is the severity of limitations for septic tank absorption fields.

(1) Dwellings with Basements - As shown on the soils limitations map (Figure 5), 31 of the 52 soil types within the Study Area possess severe limitations for the construction of dwellings with basements. Most of these soils are limited as a result of steep slopes or year-round wetness (due to a high groundwater table and/or poor drainage). Constructing dwellings with basements on severely limited soils requires expensive structural and/or site modifications due to the constant threat of flooded basements and/or structural water damage.

Despite the large number of soil types with severe limitations, the soils limitations map (Figure 5) reveals that the majority of the Study Area is suitable for dwellings with basements: "suitable" being defined as those soils with either a "slight" or "moderate" limitations rating. This demonstrates that even though 31 of the 52 soil types within the Study Area have severe limitations, the remaining 21 are more commonly found, and therefore, cover a greater geographical area.

When examining the soils limitations map closer, it can be seen that a substantial portion of the Study Area is only slightly limited for dwellings with basements. While soils with slight limitations can be found throughout most of the Study Area, the majority of these soils are

found within 1 or 2 miles south and southeast of the Reservoir. More importantly in regards to future land development, the majority of land adjacent to the Reservoir itself (both north and south) possesses soils with only slight limitations.

The area with the most unsuitable soils for the development of dwellings with basements lies in the southern portion of the Study Area, primarily in the Black Creek drainage basin. Although there are scattered pockets of suitable soils in this portion of the Study Area, most of this region is characterized by severely limited soils.

(2) Dwellings without Basements - Due to the fact that dwellings without basements can be established with relatively little "below ground level" construction, these dwellings will generally face fewer restrictions than dwellings with basements. The limitations for dwellings with basements are normally related to shallow bedrock and/or the presence of a seasonally high groundwater table. However, dwellings without basements are not directly impacted by these conditions. Within the Hinckley Reservoir Study Area, shallow bedrock is usually not a problem for dwellings constructed with or without basements. According to information contained in the soil survey for the Hinckley Reservoir Study, bedrock within the Study Area is generally deeper than 60 inches. Of course, there will be specific instances where the bedrock is closer to the surface than 60 inches, but in general, shallow bedrock will not present a problem for development within the Study Area. Considering this, soil wetness becomes the main soil property which determines if it is more advantageous to construct a dwelling without a basement, as opposed to a dwelling with a basement.

In terms of overall coverage, the soils limitations map for dwellings without basements (Figure 6) is very similar to the map for dwellings with basements. Once again most of the soils with only slight limitations are located within 1 to 2 miles south and southeast of the Reservoir. Additionally, the majority of land adjacent to the Reservoir itself possesses soils which are suitable for this land use type. This is a very important consideration.

The major difference between the limitations map for dwellings with basements and the limitations map for dwellings without basements is that many areas which are severely limited for dwellings with basements are only moderately limited for dwellings without basements. This is most noticeable in the southern portion of the Study Area in the Black Creek drainage basin.

Overall, it appears that approximately 70% of the total land area within the Study Area is rated as suitable for the construction of dwellings without basements. This compares to approximately 60% of the total land area rated as suitable for dwellings with basements. Once again, although the Black Creek drainage area possesses fewer restrictions for the development of dwellings without basements in comparison to dwellings with basements, this portion of the Study Area contains the largest concentration of unsuitable soils.

(3) Small Commercial Buildings - Small commercial structures face the same type of soil limitations as do dwellings. Wetness, poor soil strength, and especially slope can place severe limitations on commercial

development. To illustrate, 34 of the 52 soil types identified within the Study Area pose severe limitations on small commercial structures. However, once again we find that the remaining 18 soil types with either slight or moderate limitations are very common in terms of the amount of acreage covered within the Study Area. As a result, well over one-half of the Study Area is suitable for the development of small commercial buildings.

The soils limitations map for small commercial buildings (Figure 7) looks very similar to the limitations map for dwellings without basements. The most noticeable difference between the two is that many areas which have only slight limitations for dwellings without basements are moderately limited for small commercial buildings. Once again the most suitable soils are located within 1 to 2 miles south and southeast of the Reservoir.

Even though much of the Study Area is suitable for small commercial buildings, the region clearly is not a commercial center. In fact, there are less than 15 commercial uses in the study area now, and most of these are found along NYS Routes 365 and 8; the major transportation routes within the Study Area. It is unlikely that there will be a demand for any substantial or large scale commercial growth in the Study Area in the foreseeable future.

However, one can anticipate that there will be some limited commercial growth in the future. Also, it seems likely that new commercial development within the Study Area will probably occur along Route 8 or

Route 365. Referring to the limitations map, it can be seen that most of the land along Route 365 and Route 8 is suitable for small commercial development; with the exception of the southern portion of the Study Area along Route 8 and some large land areas along Route 365 in the Town of Remsen which are listed as possessing severe limitations for small commercial building development.

(4) Septic Tank Absorption Fields - The final, and perhaps the most important use of land in the Hinckley Reservoir Study Area that has been considered was septic tank absorption fields. The reason for placing a high level of importance on this use is that it can have a significant impact on the land and water resources. There are no public sewer systems anywhere within the Hinckley Reservoir Study Area. Therefore, all sewage, whether from individual residences, commercial structures or recreational uses must be disposed of on the site, and most often through the use of a septic tank-absorption field system. If the system is not installed properly in soils which can accommodate the amount of sewage generated, a number of problems can occur. Perhaps the most serious problem is the pollution of individual water supplies and ultimately the reservoir itself. Consequently, as growth continues, the soils are being forced to absorb, and hopefully treat, more and more sewage.

Nearly all of the residents of the Study Area obtain their water supply from an on-site well or nearby spring. If the soil on a particular site drains too rapidly, or if the water table is close to the surface of the ground, septic effluent can seep into the groundwater, thereby contaminating the water supply. The scenario where drainage from a group

of upland septic tanks-absorptions fields drain down to individual water supplies or open surface water is of particular concern.

A high water table could also result in sewage flowing above ground. This occurs when the water table rises, pushing the sewage effluent above ground with it. This effluent flowing in roadside ditches or out of a hillside will either enter surface water directly (flow into a stream) or percolate down through the soil at a low spot and potentially penetrate the groundwater. Sewage effluent which flows above ground is not uncommon in rural areas, and may cause significant damage to nearby water resources and create potential public health problems. Figure 10 shows those areas within the Study Area which have seasonal wetness.

Considering the health related issues surrounding sewage disposal, it is very important that septic tank absorption fields are constructed in soils that can adequately treat sewage, thereby minimizing potential health threats. Therefore, when examining the soils limitations map (Figure 8), a severe rating for septic systems should be taken very seriously. A moderate rating should also demand attention.

Once again, wetness and slope are major factors in determining the ability of a particular soil type to properly treat sewage effluent. Additionally, soils that percolate too quickly (i.e. permit sewage to rapidly infiltrate lower soil levels and the groundwater table before being purified) will often be rated as severe.

Unfortunately, nearly all of the soils within the Study Area are severely

FIGURE 10

HINCKLEY RESERVOIR STUDY AREA

DEPTH TO SEASONAL HIGH WATER TABLE

limited in terms of their ability to handle septic tank absorption fields. Forty-five (45) of the 52 soil types are rated as severe. Of the remaining 7 soil types, 5 possess moderate limitations. From these numbers and the soils limitations map it is apparent that in general, the soil types which comprise nearly the entire Study Area present problems for adequate sewage disposal. As mentioned previously, a site investigation is required to verify the soil characteristics on a particular parcel of land.

Unlike the other land uses examined, there are very few areas within the Study Area which possess soils that are suitable for septic tank absorption fields. A significant portion of the Town of Remsen is suitable for septic tank absorption fields, in addition to a handful of small "pockets" in the southern portion of the Study Area. However, these areas account for less than 10% of the entire study region. In other words, over 90% of the land within the Study Area possesses severe limitations for septic tank absorption fields.

Although there have been few documented problems associated with sewage disposal in the Hinckley Reservoir Study Area, the potential is there. Furthermore, at this time, development is sparse throughout the region with only a few concentrations of development within the Study Area. The low density of development within the Study Area is the most probable reason why there have been no documented major problems up to this point. However, as development continues, and individual septic tank absorption fields are installed and conversion of seasonal dwellings to year round use occurs (possibly not all of them appropriately designed to deal with

the soil limitations), the potential for sewage disposal related problems increases.

It is clear that much of the land in the Study Area has severe limitations for the placement and proper operation of a septic system and absorption field. However, much of this land is privately owned, and except in the most extreme circumstances, a private property owner has the inherent right, commensurate with the applicable government regulations, to build on their land. From a local government point of view there are two very different ways to deal with this scenario. The first way is to provide for the installation of alternative type systems where the soil characteristics are not suitable for the use of a standard septic tank system. Another method by which a local government can address this situation is to zone the land which has severe limitations for absorption fields at a very low density. This method provides for flexibility in terms of locating the system on a site and/or the design of the absorption field. The Town of Russia has taken the latter approach, zoning much of the land within the Town at a low density. In this way, the Town of Russia is dealing with the issue of land unsuitable for traditional septic systems.

A particular problem for the Hinckley Reservoir Study Area, as well as for any similar area, is when seasonal homes are converted to year round use. One of the problems when this happens is that sewage disposal systems for seasonal homes may not have been designed to accommodate year round use, nor to be used in less than ideal conditions, such as when the water table is high in the spring or when the ground is frozen in the winter. Thus, when the conversion to year round use occurs, the sewage system may fail

which endangers individual water supplies and may be harmful to the surrounding surface water and groundwater resources. This is one of several impacts associated with converting a seasonal home to year round use.

The soils limitations maps for dwellings with basements and dwellings without basements have been reviewed and discussed. In general, these maps indicated that most of the Hinckley Reservoir Study Area is suitable for the development of dwelling units. Furthermore, it appeared that land within 2 miles south and southeast of the Reservoir itself, in addition to significant amounts of land adjacent to the Reservoir on the north side, was best suited for development. While this is true, it is very important to note that these maps were prepared to assess the soils limitations for dwellings only. They do not take into account septic disposal systems. If the soils limitations for septic tank absorption fields had been considered together with the limitations for dwelling units, the impression would have been much different. It would have been seen that over 90% of the Study Area is unsuitable for dwellings with on-site septic disposal systems. Considering that the entire Study Area is without public sewer systems (i.e. property owners must dispose of sewage on their own site), it would be reasonable to assume that the overwhelming majority of soil types present in the Study Area have severe limitations for residential development, and in particular, the development of year-round residences. The reason for the emphasis on year-round dwellings is that these residents generate much more sewage on a year round basis than do occupants of seasonal dwellings.

One septic system installed in poor soils for use with a vacation home may not produce any noticeable problems. However, six or seven septic systems located near one another in poor soils for use with vacation homes could result in problems. If there is a problem with seasonal high groundwater, the effluent (untreated sewage) could rise to or near the surface and runoff into a nearby stream. This stream may be a productive trout stream, and/or it may enter Hinckley Reservoir.

On the other hand, the percolation rate of the effluent moving down throgh the soil may be so fast that the effluent does not receive adequate treatment as it moves down through the soil. In this instance, nearby wells can be polluted when the effluent reaches the groundwater. Because of this, attention should be given to the factors which precipitate the contamination of groundwater, as well as surface water.

The problems which arise when seasonal homes have a septic system placed in poor soils can be noticeable and can damage the nearby water resources. However, impairment is usually temporary. A more serious problem occurs if the seasonal homes are converted to year round use. When this conversion occurs, the septic systems in poor soils are now not only polluting the water resources on the weekends and a few weeks out of the year, but now the pollution is a year round occurrence and the water receiving the pollution does not have the recovery period it had during the seasonal use, nor does the absorption field have the recovery period it once had.

The discussion in this subsection has emphasized the importance which soil characteristics play in land use matters. It is imperative that local officials involved in development decisions consider the characteristics of the soil in order to avoid problems with erosion and pollution of surface and groundwater (including individual or group wells used for drinking water). This information should also be used to alert the potential developer to the types of problems inherent with a particular soil type. In particular, the cumulative impact of these development decisions must be considered by all those involved in the development process.

TABLE 4

SELECTED LIMITATIONS RATINGS FOR SOILS WITHIN THE HINCKLEY RESERVOIR STUDY AREA

Soil Series	Limitations Ratings: Dwellings with Basements	Dwellings without Basements	Small Commercial Buildings	Septic Tank Absorption Fields
(1) Udorthents-Fluvent Complex	Varies - requires on-site analysis			
(9) Podunk Fine Sandy Loam, 0-3% slope	Severe	Severe	Severe	Severe
(13) Borosaprists - Fluvaquents Complex	Severe	Severe	Severe	Severe
(27A) Scio Variant Silt Loam, 0-3% slope	Severe	Moderate	Moderate	Severe
(27B) Scio Variant Silt Loam, 3-8% slope	Severe	Moderate	Moderate	Severe
(36B) Salmon Silt Loam 3-8% slope	Slight	Slight	Moderate	Moderate
(39B) Agawam Fine Sandy Loam, 3-8% slope	Slight	Slight	Moderate	Severe
(52BC) Adams-Colton Complex, Rolling 3-15% slope	Slight(0-8%) Moderate(8-15%)	Slight(0-8%) Moderate(8-15%) Severe(15+%)	Slight(0-3%) Moderate(3-8%)	Severe(all slopes)
(52DE) Adams-Colton Complex, Hilly 15-35% slope	Severe	Severe	Severe	Severe
(54A) Colton Gravelly Loamy Sand, 0-3% slope	Moderate	Moderate	Moderate	Severe

TABLE 4 (Con't)

Soil Series	Limitations Ratings: Dwellings with Basements	Dwellings without Basements	Small Commercial Buildings	Septic Tank Absorption Fields
(54B) Colton Gravelly Loamy Sand, 3-8% slope	Moderate	Moderate	Moderate	Severe
(54C) Colton Gravelly Loamy Sand, 8-15% slope	Moderate	Moderate	Severe	Severe
(54D) Colton Gravelly Loamy Sand, 15-25% slope	Severe	Severe	Severe	Severe
(54DE) Colton Gravelly Loamy Sand, 15-35% slope	Severe	Severe	Severe	Severe
(55A) Adams Loamy Sand, 0-3% slope	Slight	Slight	Slight	Severe
(55B) Adams Loamy Sand, 3-8% slope	Slight	Slight	Moderate	Severe
(55C) Adams Loamy Sand, 8-15% slope	Moderate	Moderate	Severe	Severe
(55D) Adams Loamy Sand, 15-25% slope	Severe	Severe	Severe	Severe
(55F) Adams Loamy Sand, 25-45% slope	Severe	Severe	Severe	Severe
(56B) Becket Bouldary Fine Sandy Loam, 3-8% slope	Slight	Slight	Moderate	Severe
(56C) Becket Bouldary Fine Sandy Loam, 8-15% slope	Moderate	Moderate	Severe	Severe

TABLE 4 (Con't)

Soil Series	Limitations Ratings: Dwellings with Basements	Dwellings without Basements	Small Commercial Buildings	Septic Tank Absorption Fields
(56D) Becket Bouldary Fine Sandy Loam, 15-25% slope	Severe	Severe	Severe	Severe
(57A) Croghan Loamy Sand, 0-3% slope	Severe	Moderate	Moderate	Severe
(57B) Croghan Loamy Sand, 3-8% slope	Severe	Moderate	Moderate	Severe
(60A) Lyme Bouldary Fine Sandy Loam, 0-3% slope	Severe	Severe	Severe	Severe
(60B) Lyme Bouldary Fine Sandy Loam, 3-8% slope	Severe	Severe	Severe	Severe
(66B) Skerry Stony Fine Sandy Loam, 3-8% slope	Severe	Moderate	Moderate	Severe
(66C) Skerry Stony Fine Sandy Loam, 8-15% slope	Severe	Moderate	Severe	Severe
(70) Canandaigua Fine Sandy Loam occupying level areas or depressions	Severe	Severe	Severe	Severe
(73) Lamson Very Fine Sandy Loam occupying level areas or depressions	Severe	Severe	Severe	Severe
(75) Lamson Fine Sandy Loam	Severe	Severe	Severe	Severe

TABLE 4 (Con't)

Soil Series	Limitations Ratings: Dwellings with Basements	Dwellings without Basements	Small Commercial Buildings	Septic Tank Absorption Fields
(79A) Roundabout Silt Loam, 0-3% slope	Severe	Severe	Severe	Severe
(94) Naumberg Loamy Fine Sand	Severe	Severe	Severe	Severe
(098) Dawson Muck	Severe	Severe	Severe	Severe
(99) Greenwood Muck	Severe	Severe	Severe	Severe
(119B) Stockbridge Variant Bouldary Loam, 3-8% slope	Slight	Slight	Moderate	Severe
(119C) Stockbridge Variant Bouldary Loam, 8-15% slope	Moderate	Moderate	Severe	Severe
(120C) Nellis and Stockbridge Variant Soils, Bouldary, 8-15% slope	Moderate	Moderate	Severe	Severe
(137B) Kendaia Variant and Massena Variant Soils, Bouldary, 0-8% slope	Severe	Severe	Severe	Severe
(150) Tughill Stony Sandy Loam, Mucky Material occupying level areas or depressions	Severe	Severe	Severe	Severe
(200A) Bice Stony Sandy Loam, 0-3% slope	Slight	Slight	Slight	Moderate

TABLE 4 (Con't)

Soil Series	Limitations Ratings: Dwellings with Basements	Dwellings without Basements	Small Commercial Buildings	Septic Tank Absorption Fields
(200B) Bice Stony Sandy Loam, 3-8% slope	Slight	Slight	Moderate	Moderate
(200C) Bice Stony Sandy Loam, 8-15% slope	Moderate	Moderate	Severe	Moderate
(202B) Copake Variant - Bice, Undulating	Slight	Slight	Moderate	Slight
(202C) Copake Variant - Bice, Rolling	Moderate	Moderate	Severe	Moderate
(202D) Copake Variant - Bice, Hilly	Severe	Severe	Severe	Severe
(202F) Copake Variant - Bice, Steep to Very Steep	Severe	Severe	Severe	Severe
(221B) Kalurah Silt Loam, 3-8% slope	Severe	Moderate	Moderate	Severe
(221C) Kalurah Silt Loam, 8-15% slope	Severe	Moderate	Severe	Severe
(223A) Malone Silt Loam, 0-3% slope	Severe	Severe	Severe	Severe
(223B) Malone Silt Loam, 3-8% slope	Severe	Severe	Severe	Severe

TABLE 4 (Con't)

Soil Series	Limitations Ratings: Dwellings with Basements	Dwellings without Basements	Small Commercial Buildings	Septic Tank Absorption Fields
(1462) Sun Variant, Very Bouldary	Severe	Severe	Severe	Severe
(B.P.) Burrow Pits				
(G.P.) Gravel Pits				
(W) Water				

SOURCE: USDA Soil Conservation Service, Oneida County (1988).

B. WETLANDS

Another important resource to be examined is wetlands. In the past, the value of freshwater wetlands were not fully recognized. As a result of widespread public misconceptions about the value of wetlands, they were frequently drained and developed for residential, commercial and industrial purposes.

Today, wetlands are recognized as valuable natural resources with numerous important functions. Among their many useful roles, wetlands modulate the flow of water, reduce flooding, minimize erosion and sedimentation, purify water, replenish groundwater supplies, and provide habitat for a diversity of flora and fauna. However, they are very complex and fragile ecosystems which can be set off balance when man encroaches.

There are many varieties of "wetlands" which are differentiated and defined by differences in water depth, subsurface soil type, predominant vegetation type, and so on. Commonly found wetlands include, among others, deciduous swamps, deep water marshes, bogs, coniferous swamps, wet meadows, shrub swamps, and emergent marshes. All of these wetland types play a role in the ecosystem, but some are more valuable than others. For example, this may be due to the presence of rare vegetation or to the wetlands usefulness as a natural flood control element.

For instance, within New York State, and in particular, the Adirondack Mountains region, bogs are generally viewed as more valuable than coniferous swamps because bogs harbor very specialized plants which can not survive elsewhere.

Some of the rare plants being referred to include the insectivorous sundew and pitcher plants, as well as rare varieties of the orchid family. In contrast, coniferous swamps are abundant and typically do not provide habitat for rare plantlife.

Wetlands are also very dynamic. Wetlands may be active seasonally, coming to life for only four or five months a year. Numerous plants and animals depend on a seasonal wetland's cyclical nature. Even the slightest interruption of a seasonal wetland's cycle can spell disaster for the many animal species which depend on the wetland for food, shelter, and breeding.

Within the Hinckley Reservoir Study Area, approximately 122 individual wetlands totalling approximately 3,500 acres have been identified (See Figure 11). These wetlands range in size from under 1 acre to over 100 acres. Although wetlands can be found throughout the entire Study Area, most are concentrated adjacent to existing water bodies. This is especially evident along the West Canada Creek, Black Creek, and the many streams and brooks which empty into the Black Creek. Wetlands located along rivers and streams are of particular importance because they modulate the flow of water in adjacent streams, thereby minimizing potential floods during high flow periods and storing water to supply base flow during low flow periods. Additionally, these wetlands remove sediment and impurities from rivers and streams, thereby making these water bodies more suitable for recreation, and in many instances, drinking water supply.

As mentioned previously, wetlands are now recognized as key components of

the ecosystem. This realization led to the creation of the New York State Freshwater Wetlands Act of 1975 which established policy for the protection of wetlands within our State. Depending on the wetland's location within New York State, however, the agency responsible for administering the regulations may be different. This is the case within the Study Area where both the Adirondack Park Agency (APA) and the New York State Department of Environmental Conservation (NYSDEC) have jurisdiction over wetlands. Those wetlands in the Study Area within the Adirondack Park are regulated by APA, while those outside of the park are regulated by DEC. As shown on Figure 11, regulation of approximately 80% of the wetland acreage within the Study Area falls under the jurisdiction of the APA.

These two agencies regulate wetlands essentially for the same reason; to protect wetlands and their environs from potentially harmful human activities. As stated in the Freshwater Wetlands Act, the primary purpose of creating this legislation was "to preserve, protect, and conserve freshwater wetlands and the benefits derived therefrom, to prevent the despoliation and destruction of freshwater wetlands and to regulate use and development of such wetlands to secure the natural benefits of freshwater wetlands, consistent with the general welfare and beneficial economic, social, and agricultural development of the State."

Although the APA and NYSDEC utilize slightly different wetland regulatory procedures, such as the size of the regulated wetlands (APA generally regulates wetlands that are one acre or more in size while outside the Adirondack Park, NYSDEC regulates wetlands that are 12.4 acres or more in

FIGURE 11

HINCKLEY RESERVOIR STUDY AREA

WETLANDS

size), both agencies base their regulations and project review criteria on the policies established in the Freshwater Wetlands Act. In short, these two agencies will evaluate a development proposal and determine if the benefits (economic, social, recreational, etc.) derived from the proposed project outweigh the losses to the wetland and its environs. If the benefits of the project outweigh the losses to the wetland, the project will usually be approved. In contrast, if the benefits of the project do not exceed the losses to the wetland, permit conditions will be imposed to mitigate the wetland losses. In the extreme cases where such mitigation is not possible, the project will be denied.

The review process for both agencies is often very complex and performed on a site specific basis. Many variables have to be examined when a specific development project is being proposed that will have an impact on a particular wetland. Furthermore, many of these variables are difficult to measure. For instance, if an apartment complex is being proposed in or adjacent to a wetland, how does one measure the "social benefits" of such a project? Similarly, how does one measure the "recreation loss" of the wetland habitat that is being destroyed?

The Freshwater Wetlands Act outlines criteria which allows NYSDEC and APA to answer these questions, particularly as they relate to the benefits or value of a particular wetland. Both agencies need to know this "value" if they are to adequately assess the costs and benefits of a development proposal. The Freshwater Wetlands Act established a wetland value classification system. According to this system, all wetlands are rated as either I, II, III, or IV depending on a number of variables. A wetland

w a rating of Class I is considered most valuable, while a wetland with a ting of Class IV is considered less valuable.

Fo example, a wetland with a classification rating of "I" may be es cially valuable for any of a number of reasons. This wetland may pr vide habitat for endangered or threatened plant or animal species. It ma also be a rather rare classic kettlehole bog. It may also be located adjacent to a reservoir or other body of water which is used primarily for drinking water supply or it may be quite large in size which would also warrant this designation. A class "IV" wetland, on the other hand, is least valuable because it generally has fewer critically important or unique features. Coniferous swamps are typically rated as Class "IV" wetlands because they are so common, and are less likely to harbor any unique plant or animal species. Their value might be in controlling floods or maintaining stream flow.

Once the wetland's value rating has been determined, NYSDEC and APA must evaluate the proposed project in relation to the individual wetland's value rating. APA and NYSDEC both use similar criteria in determining what is or is not permitted within the various classes of wetlands. APA, for example, uses the following guidelines:

Class I Wetlands - Only those activities will be permitted which will preserve the entire wetland and its associated values.

Class II Wetlands - Only those activities will be approved which have a minimal degradation on the wetland and its associated

values, are the only alternatives which reasonably can accomplish the applicant's objectives, or if the proposed activity provides an essential public benefit.

Class III Wetlands -Those activities will be approved that have a minimal effect on the wetland and its associated values, or if the proposed activity is the only reasonable alternative or, if considering the activity in light of its cost and the wetland values lost, it provides a benefit to the community.

Class IV Wetlands - A permit will be granted if the proposed activity is the only alternative which reasonably can accomplish the applicant's objective.

All regulated wetlands within the Adirondack Park are to be identified and mapped by the Adirondack Park Agency. Wetland value ratings which require much more information are not done routinely, but rather on a project specific basis. The Adirondack Park has not yet been mapped in its entirety, including the Hinckley Reservoir Study Area. Until the final wetland mapping has been completed, the Adirondack Park Agency uses aerial photography and/or field checks by its wetland experts for every project which requires a wetland permit. In other words, the total number of wetlands and wetland acreage shown on Figure 11 and in Table 5 which lie within the boundaries of the Adirondack Park are subject to change once the inventory phase and final mapping have been completed.

Of the 13 wetlands within the Study Area regulated by NYSDEC, 10 are rated as Class II, two are classified as Class III and one is Class IV. See Figure 11 for the location of these wetlands. While none of these wetlands possess qualities which constitute a value of I, the majority are rated as Class II. Table 5 gives the number of wetlands and wetland acreage for each class of wetland regulated by NYSDEC, and the approximate wetland acreage of the Study Area within the Adirondack Park.

Table 5

Hinckley Reservoir Study Area: Regulated Wetlands

1) Wetlands Outside of the Adirondack Park Regulated by NYSDEC:

Class	# of Wetlands	Total Acreage
I	0	0 acres
II	10	595
III	2	95
IV	1	16
	13	706 acres

2) Wetlands within the Adirondack Park Regulated by APA*:

# of Wetlands	Approximate Acreage
109	2,751 acres

3) Total Acreage: 3,457 acres*

* The number and the acreage of regulated wetlands in the Adirondack Park within the Study Area is approximate.

SOURCE: New York State Department of Environmental Conservation, 1987
Adirondack Park Agency, 1988

Once APA and NYSDEC have evaluated a proposed project based on the project's merits versus the wetland's value, the agency decides to approve, approve with modifications, or go to public hearing and then possibly disapprove the project. If approved, or approved with modifications, the agency administering the review process will grant a

permit to the applicant. A permit can only be granted for the specific project which was approved. Any major changes or additions to the project require another review and permit.

As indicated earlier, both agencies are concerned with development proposals which are to be constructed in, or adjacent to, a regulated wetland. When the phrase "adjacent to," is mentioned, it must be realized that APA and NYSDEC have slightly different policies in this matter. NYSDEC requires permits for specific projects which are located in a regulated wetland, or within 100 feet of the boundary of a regulated wetland. The APA, on the other hand, has more flexibility. They require a permit for projects which will directly or indirectly impact a regulated wetland, and are not constrained to only evaluating impacts which occur within 100 feet of the wetland.

It should also be pointed out that APA and NYSDEC have a very specific list defining which projects require a permit and which ones do not. Depending on which agency has jurisdiction, the lists will be somewhat different. However, both agencies attempt to regulate all activities or projects which have the potential to impact negatively upon a wetland. At the same time, however, many activities are exempt and do not require a permit. For example, both agencies do not require a permit for agricultural practices, the construction of hiking trails, boating, fishing, gathering firewood, scientific research, and many other harmless, and potentially even beneficial activities in wetlands.

It is evident that the APA and NYSDEC regulate wetlands in a very similar

fashion. Yet, there is one notable exception. The one major difference between the two agencies wetlands regulation system focuses on how large the wetland must be in order to be afforded protection. Specifically, NYSDEC only has jurisdiction over those wetlands which exceed 12.4 acres in size. APA, on the other hand, regulates wetlands as small as 1 acre, and even smaller if the wetland has "free interchange" with another body of water. In other words, if the wetland is located next to a river, stream, lake, or pond, regardless of size, APA feels that the wetland's role in the ecosystem is significant enough to warrant protection.

The regulations are by necessity lengthy and somewhat complex. This is because the natural ecosystem is very complex, and project proposals are often complex (i.e. involving sewage disposal, vegetative cutting, pesticides, solid waste, noise, etc.). Those wishing to obtain more specific information about wetland regulations should contact APA, or NYSDEC directly. It is of key importance, however, that the decision-makers and property owners within the Study Area understand that it possesses numerous wetlands which play a vital role in the region's ecosystem. These wetlands are directly protected by the APA and NYSDEC. Yet, these wetlands are still susceptible to the indirect negative impacts of development and this is where the municipalities within the Study Area can play a role in protecting these important natural resources.

It is important to remember that the complex wetland ecosystem can be set off balance by a very small change in the man-made environment. Proper land use planning can help ensure that wetlands and other natural ecosystems are acknowledged and recognized for their value, and that their

role will not be compromised at the expense of uncontrolled and haphazard development.

C. LAKES AND RIVERS

The Hinckley Reservoir Study Area is characterized by an abundance of rivers and streams. In addition, many small lakes and ponds dot the landscape. Together, these bodies of water serve as a source of drinking water, recreation, wildlife habitat, and energy production. These water bodies are also instrumental in giving the Study Area its rural character and scenic appearance.

The purpose of this section of the report is to identify the lakes and rivers which exist within the Study Area and to briefly examine how they rate in terms of the water quality classification system utilized by the NYSDSEC. For the purposes of this section, the term "lake" shall include "pond" and other standing bodies of water (excluding wetlands). The term "river" shall also include "stream," "creek," "brook," and so on.

This information can be used by municipalities within the Study Area to determine if certain land uses may have an impact upon their valuable water resources. This information also demonstrates the sheer abundance and high quality of the water resources within the Hinckley Reservoir Study Area. It should also be noted that the classified water resources listed in Tables 6 and 7 are protected under the N.Y.S. Environmental Conservation Law. A permit issued by the NYSDEC is required to change, modify or otherwise disturb the course, channel or bed and bank of any

stream or water body classified C(T) or higher by NYSDEC.

Utilizing NYSDEC's freshwater surface classification system, the lakes and rivers of the Study Area fall into one of five different classes, based on the quality of the water body using variables such as coliform, pH, total dissolved solids, and dissolved oxygen. All these variables are analyzed to determine what use the water body is most suitable for. The classification system is as follows (See Appendix A for more detailed specifications of this classification system):

Classification	Description
AA	The highest quality rating used in this classification system. Water in this category is suitable for all uses, up to and including drinking supply; providing natural impurities are removed through treatment prior to drinking. Other uses include fishing, swimming and boating except where prohibited by law.
A	Water with an "A" rating is also suitable for all uses, up to and including drinking supply. Water with an "A" rating requires a greater degree of treatment than "AA" water prior to drinking. Other uses include

Classification	Description
	fishing, swimming and boating except where prohibited by law.
B	Water bodies with a "B" rating can be utilized for primary contact recreation such as swimming and waterskiing, as well as other uses. However, water bodies with this rating are not suitable for drinking, eating or food processing purposes.
C	These waters are suitable for fishing, fish propagation, and primary and secondary contact recreation. However, other variables, such as the presence of a boat channel or high turbidity may limit Class "C" waters' suitability for recreational activities such as swimming.
D	The lowest quality rating of the five (5) classes examined. These waters may be suitable for fishing. They may also be adequate for recreation purposes, providing other factors do not limit suitability.

In addition to these five (5) classes (AA, A, B, C, and D), water bodies may also be classified with an additional "(T)" following the primary classification letter. Wherever a "(T)" is denoted, this means that this water body is suitable for trout habitat and fishing. Because trout generally require fast moving, oxygen rich water, one can assume that water bodies with a "(T)" classification will be of a relatively high quality.

As mentioned previously, the Hinckley Reservoir Study Area includes numerous streams and ponds; many of which are unnamed. The following two tables identify these water bodies and their classification according to NYSDEC's standards. These two tables do not identify every stream and pond within the Study Area. There are numerous other unnamed streams, ponds and tributaries not identified in these tables. However, the tables can be used to review the water classification of all the major water bodies within the Study Area. (See Figure 12 for the location and classification of lakes and ponds).

Table 6

Water Classification of Major Lakes and Ponds within the Hinckley Reservoir Study Area

Lake/Pond	Classification	Location/Comments
Hinckley Reservoir	AA(T)	Towns of Trenton, Remsen, Russia, and Ohio.
Unnamed	AA(T)	Town of Remsen - This pond is the source of Beaver Meadow Creek.
Lake Margarite	AA	Town of Russia - north of Hinckley Reservoir.
Lake Charlotte	AA	Town of Russia - north of Hinckley Reservoir.
Lake Gay	AA	Town of Russia - north of Hinckley Reservoir.
Unnamed	AA(T)	Town of Russia - This pond is the source of Kreskern Creek.
Unnamed	A(T)	Town of Russia - This pond is located near the source of, and on Wilt Brook.
Little Deer Lake	A	Town of Ohio - north of West Canada Creek.
Butler Lake	A(T)	Town of Ohio - South of West Canada Creek in the northeast corner of the Study Area.
Spectacle Lake	A	Town of Ohio - South of West Canada Creek in the northeast corner of the Study Area.
Atwood Lake	A	Town of Ohio - South of West Canada Creek in the northeast corner of the Study Area.
Unnamed	A(T)	Town of Ohio - Located on a tributary of Ash Creek, south of Dagenkolb Road.
Snyders Pond	A	Town of Ohio - On Fox Brook.
Black Creek (Gray) Reservoir	A	Towns of Ohio and Norway - Located in extreme southeast corner of this Study Area.

SOURCE: Herkimer-Oneida Counties Comprehensive Planning Program, 1988
New York State Department of Environmental Conservation, 1987

FIGURE 12

HINCKLEY RESERVOIR STUDY AREA

FRESHWATER CLASSIFICATIONS

Table 7

Water Classification of Major Rivers and Streams within the Hinckley Reservoir Study Area

River/Stream	Segment	Classification	Location/Comments
West Canada Creek	All	AA(T)	Towns of Trenton, Russia, and Ohio.
Black Creek	Hinckley Reservoir outlet to junction of Paul Brook.	AA	Towns of Russia and Ohio.
Black Creek	Junction of Paul Brook to Black Creek (Gray) Reservoir.	A	Towns of Ohio and Norway.
Beaver Meadow Creek	All	AA(T)	Town of Remsen.
Unnamed	All	AA(T)	Town of Remsen - Flows into Hinckley Reservoir approximately 1000 feet east of Ninety-Six Corners.
Unnamed	All	AA(T)	Town of Russia - Flows into Hinckley Reservoir just west of Kreskern Creek's outlet.
Kreskern Creek	All	AA(T)	Town of Russia - north of Hinckley Reservoir.
Remus Brook	All	A	Town of Russia - South of Hinckley Reservoir, running south of and parallel to Brady Beach Road.
Taynter Brook	All	AA(T)	Town of Russia - South of Hinckley Reservoir and southwest of Grant.
Buttermilk Brook	All	AA(T)	Town of Russia - South of Hinckley Reservoir and just west of Elm Flats.
Ash Brook	Junction of Black Creek to junction of unnamed tributary north of Ash Road.	A(T)	Town of Russia - South of Hinckley Reservoir, flows into Black Creek south of Ash Road.
Ash Brook	Junction of unnamed tributary north of Ash Road to beginning of brook.	A	See Above

TABLE 7 (Cont'd)

er/Stream	Segment	Classification	Location/Comments
t Brook	All	A(T)	Town of Russia - South of Hinckley Reservoir, flows into Black Creek approximately ½ mile east of Pardeeville Corners.
named	All	A(T)	Town of Russia - South of Hinckley Reservoir, flows into Black Creek approximately 1000 feet west of Shawangunk Road.
named	All	A	Town of Russia - South of Hinckley Reservoir, flows into Black Creek east of Shawangunk Road.
ll Brook	Main Branch	A(T)	Towns of Russia, Norway, and Ohio - South of Hinckley Reservoir, flows into Black Creek just south of Fisher Road.
ll Brook	Unnamed Tributaries	A	See Above
named	All	A	Town of Ohio - Flows southward into West Canada Creek with its source being Finches Pond.
named	All	A	Town of Ohio - Flows southward into West Canada Creek with its source being Little Deer Lake.
named	All	A	Town of Ohio - Flows southward into West Canada Creek about ½ mile west of intersection of Routes 365 and 8.
named	All	A(T)	Town of Ohio - Flows southward into West Canada Creek south of Route 8.
nes Creek	All	A(T)	Town of Ohio - Flows northward into West Canada Creek in extreme north-east portion of Study Area.
named	All	A(T)	Town of Ohio - Flows northward into West Canada Creek just east of where Route 8 traverses West Canada Creek.
named	All	A	Town of Ohio - Flows northward into West Canada Creek approximately ½ mile east of Fly Brook Road.

River/Stream	Segment	Classification	Location/Comments
Ash Creek	All	A(T)	Town of Ohio - Flows westward into Black Creek east of Shawangunk Road.
Fox Brook	All	A(T)	Town of Ohio - Flows into Black Creek north of Fisher Road.
Unnamed	All	A	Town of Ohio - Flows southward into Black Creek west of Reinhardt Road, with its source being the junction of Mounts Creek and Little York Stream.
North Branch of Black Creek and assorted tributaries.	-	A(T),A, C(T),D	Town of Ohio - Northwest of Black Creek (Gray) Reservoir. This creek has a number of tributaries with assorted classifications.
Unnamed	All	A(T)	Towns of Ohio and Norway - Located in southeast portion of Study Area. Stream flows in a southwest - northeast direction.

SOURCE: Herkimer-Oneida Counties Comprehensive Planning Program, 1988.
New York State Department of Environmental Conservation, 1987

It is obvious from the information displayed in the above two tables that nearly all of the rivers, streams, lakes, and ponds within the Hinckley Reservoir Study Area are of a high quality. With the exception of two very small segments of the north branch of Black Creek and its tributary system, all water bodies are classified as either AA(T), AA, A(T), or A. In other words, all are listed as being suitable for drinking supply and all other uses. In addition, most of the streams listed above support wild brook trout populations. Butler Lake, located in the Town of Ohio, is a unique lake trout resource. See Section III(G) for specific information on the fishery resources in the Study Area.

Furthermore, the most heavily used water bodies within the Study Area, namely Hinckley Reservoir, West Canada Creek, and Black Creek are all

rated as either AA(T) or AA. Communities within the Study Area are fortunate to possess high quality water resources and should accept some role in maintaining the water quality so that these highest use designations can be protected. This is a critical point which needs to be recognized by everyone (private citizens and public officials), especially those involved in development decisions.

At this point in time, residents of the Hinckley Reservoir Study Area are in the enviable position of being able to preserve the high quality of their water resources. In order to do this, however, the soils information, topography, wetland and floodplain information should be reviewed to determine whether a particular development (or the cumulative impacts of many developments - including single family dwellings) or policy decision may have a negative impact on the nearby streams, rivers or lakes.

D. FLOODPLAINS

Floodplains, like wetlands, steep slopes, and areas of poor soils, are generally unsuitable for most forms of development. Buildings constructed in floodplains may require relatively expensive modifications to the site and/or structure, and development in the floodplain can raise water levels downstream. In regards to floodplains specifically, there is always the potential that a river, stream, or other body of water will overflow its banks and inundate adjacent low-lying areas, with the potential result being significant amounts of property damage and/or even loss of life.

Considering the potential consequences of flooding, it is understandable why homeowners, developers, and financial institutions would want to know where the threat of a flood is greatest. Recognizing the need for floodplain delineation, the Federal Emergency Management Agency (FEMA) has compiled maps for most of the United States showing those areas susceptible to flooding. Areas within the boundaries of the 100-year floodplain are known as Special Flood Hazard Areas (SFHA). The SFHA's are subdivided into flood hazard zones depending upon the severity of flooding due to the 100-year flood and any requirement of mandatory flood insurance purchase. A number of factors were taken into account in determining flood hazard areas including, among other items, topography, precipitation data, and flooding history.

Local officials, land use planners, and any landowner contemplating construction near or in a floodplain are interested in knowing the location of potential flood areas for a number of reasons. The reasons for discouraging development in these areas includes the prevention of property loss, the protection of downstream properties from the greater flood levels which can result from development within the floodplain and also to minimize the potential of polluting the water during a flood.

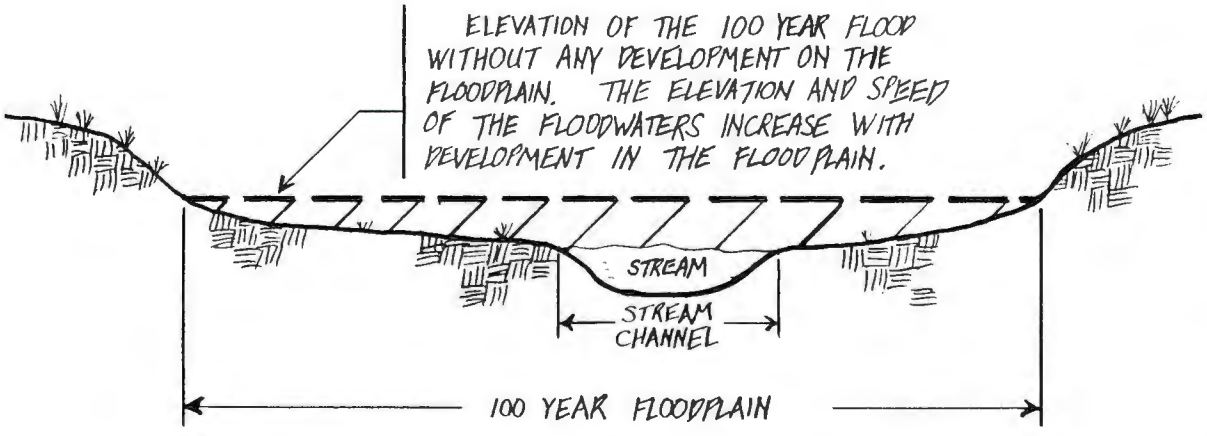
For the purposes of this study, land encompassed within the 100-year floodplain of a river, stream, or other body of water (as designated by FEMA), has been determined to be the area where the potential of a flood is significant enough to warrant attention on the part of local decision-makers and land use regulatory agencies. Additionally, regulations mandate that homes and buildings within the 100-year

floodplain are required to have flood insurance due to the potential of a flood.

The term "100-year floodplain," means simply that the probability of a flood occurring within the area designated on the official map as the 100-year floodplain in any given year is 1%. While this may not seem significant, it is possible to find that a 100-year flood can occur in the same area for two or three years in a row. Figure 13 is a profile of a floodplain which shows the relationship between the stream channel, topography of the surrounding land and the elevation of the 100-year flood.

FIGURE 13 :

FLOODPLAIN SCHEMATIC



SOURCE : HERKIMER-ONEIDA COUNTIES COMPREHENSIVE PLANNING PROGRAM, AUGUST , 1988.

In regards to the Hinckley Reservoir Study Area, Figure 14 illustrates the land areas which lie within the 100-year floodplain of a river, stream, or other body of water. As can be seen from the map, only a small percentage of the total land area of the Hinckley Reservoir Study Area actually falls within a 100-year floodplain. Yet, we can see that the floodplains are concentrated in three areas: 1) the Hinckley Reservoir shoreline in the Town of Remsen; 2) land adjacent to the West Canada Creek; and 3) land adjacent to the Black Creek in the Towns of Ohio and Norway. Also, Paul Brook - a tributary of the Black Creek- has a small amount of adjacent land within the 100-year floodplain.

At present, there are a limited number of structures located within these 100-year floodplain areas. If a flood were to occur in these regions, it is unlikely that the results would be disastrous, yet the potential is there for large amounts of property damage and/or loss of life. Although the communities which have floodplains within their jurisdiction cannot require the removal of existing structures, regulations are in effect which require that new development is constructed in such a manner as to minimize the potential loss which would result from a flood. These regulations are either administered at the local or state government level.

In regard to communities within the Study Area, the Town of Ohio has opted to have the Department of Environmental Conservation administer the floodplain regulations within their municipality, and the Town of Remsen administers floodplain regulations at the local level. At the time this report was published, the Town of Russia is officially out of the National

Flood Insurance Program because no portion of the Town is currently designated as a Special Flood Hazard Area by FEMA.

It is important to be aware that there are additional reasons for wanting to discourage development within 100-year floodplains, other than for minimizing the potential property damage. Simply put, floodplains can be very scenic; particularly along the West Canada Creek and Black Creek. Local residents and visitors to the area appreciate the natural beauty of these areas and development in the floodplain may detract from the beauty of the area. The fact that these scenic areas are located within the 100-year floodplain can permit a municipality to place more stringent controls on new development within these designations, as opposed to outside of the 100-year floodplain. As a result, a community can act to minimize potential flood damage, and at the same time, preserve a natural scenic area.

Another reason why development should be discouraged within the floodplain is that anything not anchored down during a flood, may end up in the water or in the floodplain. Gasoline, paint, pesticides and similar materials are commonly stored outside of a residence in a storage shed or garage. If the garage or storage shed is located in the 100 year floodplain, there is the potential for serious pollution to the body of water if the gasoline, oil, paint, etc. is spilled into the floodwaters. This can be a serious problem since the area designated as the 100-year floodplain may be located over important aquifers. This occurs upstream of Hinckley on the West Canada Creek and along the upper portion of Black Creek. Other debris, such as junk machinery or building materials may not be toxic to

FIGURE 14

HINCKLEY RESERVOIR STUDY AREA

SLOPE AND FLOODPLAIN

the water, but can end up being an eyesore or causing the flow of water to be blocked if the debris gets stuck beneath a bridge or in a culvert.

The recognition of the aesthetic quality of the 100-year floodplain is not the primary focus of this section. The main point is that the 100-year floodplain is a dynamic entity which warrants respect and consideration. Wherever possible, the 100-year floodplain should be free from unnecessary development. When this is not possible, development should occur in such a manner as to recognize the potential consequences of development within the floodplain, both in terms of property damage and damage to the environment.

E. TOPOGRAPHY

The vertical change in elevation, when measured across a horizontal distance and expressed as a percentage, gives the slope of the land. The percent of slope on a parcel of land has an important bearing on the type of land use which may readily be established on that particular parcel. Simply put, the steeper a particular parcel of land is, the fewer options are available for its use and the more costly it will be to develop. In addition, development on steep slopes may result in property damage and increased erosion, as well as a potential visual blight on the landscape.

As seen on the slope map (Figure 14), slopes within the Hinckley Reservoir Study Area have been grouped into four general categories; 0-3%, 3-8%, 8-15%, and 15+%. Each of these slope categories can be generally interpreted to determine its suitability for development. It is important

to keep in mind, however, that the slope map provided is a large-scale general map. Specific site design requires a more detailed analysis of on-site slope characteristics.

The following is a brief discussion of the impacts and limitations which the topography in general, and the four slope categories in particular may have on the use of a piece of land. A sense of the steepness of these categories can be seen in Figure 15.

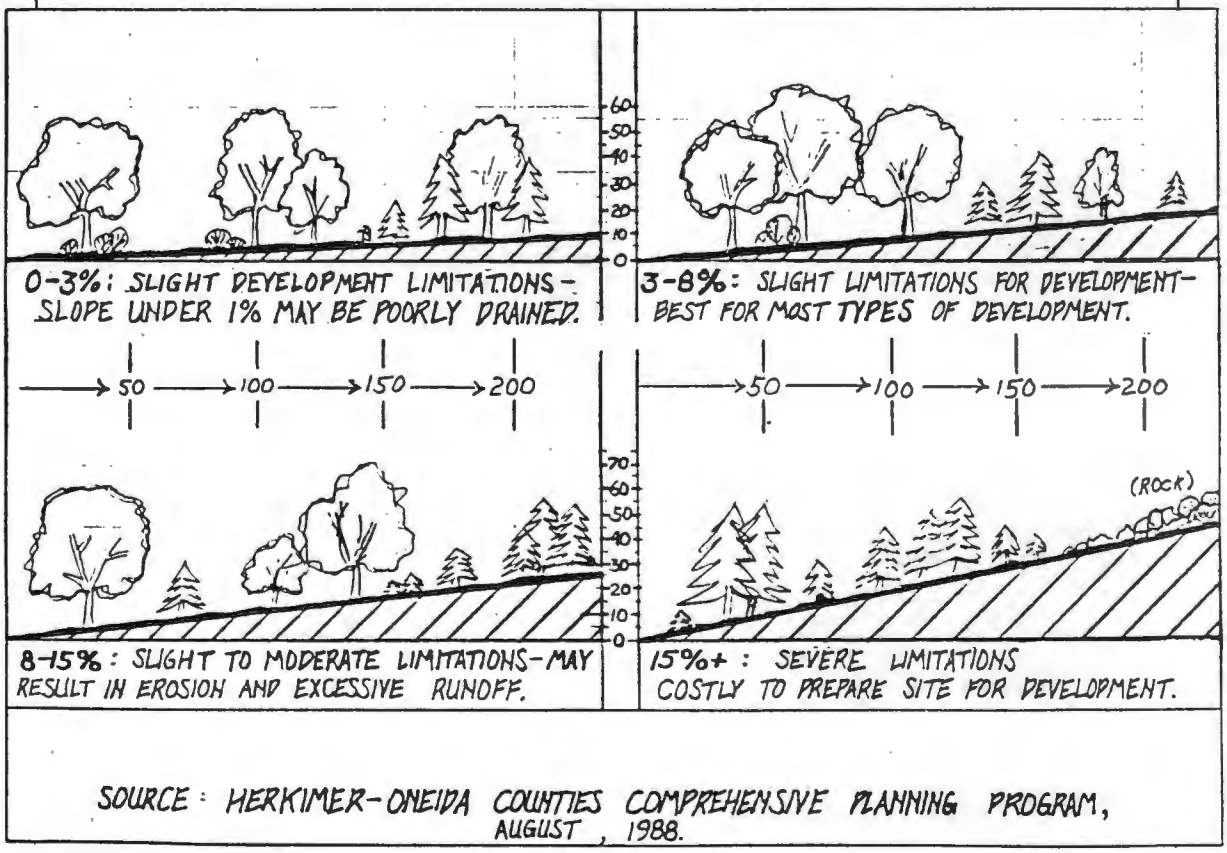
(1) 0-3% slope - Land within this slope category is very flat with relatively few limitations on development due to the slope. However, slopes under 1% frequently present a significant problem for development, in that the soils are often poorly drained. On slopes under 1%, flooding and ponding is a real threat to development. Construction on these slopes will usually require grading and filling to ensure adequate on-site drainage.

(2) 3-8% slope - Land within the 3-8% slope category is usually considered best for most types of development. This degree of slope presents few problems to construction activity.

(3) 8-15% slope - In general, land within this slope category presents only slight to moderate limitations for development. However, as the slope approaches 15%, problems may arise in regards to road and driveway construction, installation of sewage disposal systems, soil erosion, and excessive stormwater runoff. Yet, through proper site design, most of these problems can be overcome, or at least minimized.

(4) 15+% slope - Land within this slope category exhibits moderate to severe limitations for development. Obviously, as slope increases, the degree of limitation will also increase. Slopes in this category are very susceptible to soil erosion, particularly if vegetation is removed. Additionally, proper installation of roads, driveways, sewage disposal systems, and buildings requires expensive on-site alterations. The high cost of proper site design, as well as the environmental problems associated with construction on steep slopes will usually discourage potential land buyers and developers from constructing on slopes exceeding 15%, except in areas where undeveloped land is very scarce.

FIGURE 15: SLOPE CATEGORIES



SOURCE: HERKIMER-ONEIDA COUNTIES COMPREHENSIVE PLANNING PROGRAM, AUGUST, 1988.

Prior to discussing the specific topography of the Hinckley Reservoir Study Area, it is important to emphasize that other information must be examined in conjunction with slope in order to properly assess specific design limitations. For example, soil type and vegetation interact with slope to determine the adequacy of a site for development. Once again it should be stressed that specific site design requires not only a more detailed analysis of on-site slope, other items such as soil type and vegetation also need to be assessed.

In looking at the slope map for the Study Area (Figure 14), we see that there is a considerable amount of land within all four designated slope categories. Yet, overall, it appears as if approximately one-half of the total land area falls within the 0-3% slope category. These flat areas can be found throughout the entire Study Area. However, most of the land within the 0-3% category lies to the south of the Reservoir within the Black Creek drainage basin. In addition to the area south of the reservoir, relatively flat land is concentrated in the area to the south of where West Canada Creek flows into the eastern end of the Hinckley Reservoir.

While these relatively flat areas south of the Reservoir are suitable for development based on the slope, these areas may have other limitations. Figure 24 shows that one or more general development constraints may be present in this area, involving either floodplains, wetlands or a seasonal high water table. This clearly illustrates that the entire range of environmental constraints and opportunities must be evaluated when considering the suitability of any piece of land for a particular land use.

The steepest slopes (15+%) tend to be located all along the northern portion of the Study Area. Specifically, there is a relatively large amount of steep land within a mile (both north and south) of the West Canada Creek. Additionally, there is a high concentration of steep slopes northwest of the reservoir, primarily in the Town of Remsen. Much of the remaining land within this area falls into the 8-15% slope category.

In addition to these two large concentrations of steep slopes, there are numerous other patches of land within the 8-15% and 15+% slope categories throughout the entire Study Area. Many of these are concentrated along streams and brooks such as Wilt Brook, Ash Brook, Remus Brook, Fox Brook, and the north branch of the Black Creek.

Overall, the vast majority of the Study Area consists of slopes of less than 15%. Perhaps more importantly, with the exception of the extreme western portion of the Reservoir, most of the undeveloped lakefront property along Hinckley Reservoir consists of gently to moderately sloping land. This factor is an important land use consideration and should be recognized as such.

F. VEGETATION

The natural vegetative cover of an area serves a number of important functions. The Hinckley Reservoir Study Area is dominated by forests and woodlands; the vegetation serves the important function of diminishing erosion and sedimentation. This is of considerable relevance to the Hinckley Reservoir area in that during times of heavy and/or prolonged

rains when erosion is typically most likely to occur, the vegetation helps to control erosion and the amount of sediment which can runoff into the reservoir and its tributaries. Hinckley Reservoir is the sole source of drinking water for over 135,000 people in the greater Utica area, and it is important that the reservoir not be inundated by excessive sedimentation.

Additionally, man-made reservoirs such as Hinckley are particularly susceptible to sedimentation because there is very little opportunity for built-up sediment to travel downstream beyond the dam. As a result, sediment will continue to build up in the reservoir. A man-made reservoir's useful life span can be sharply reduced as a result of excessive sedimentation. Fortunately for the Hinckley Reservoir, its watershed possesses an abundance of vegetation, thereby minimizing erosion and sedimentation.

In addition to controlling sedimentation and erosion, vegetation serves as wildlife habitat for numerous animals. Some of the more interesting and important animals of New York State such as the white-tailed deer, black bear, fisher, marten and beaver can be found in areas where there are substantial amounts of unbroken forest.

The Study Area, being located in a transition zone between the Mohawk Valley and the Adirondack Mountains, also possesses a diversity of vegetation. While mature forests are quite common in the region, significant amounts of vegetation can be found in all levels of succession. Wetland vegetation also provides habitat for a diversity of

plantlife. A diversity of vegetation accounts for a diversity of wildlife. Therefore, numerous bird and mammal species can be found throughout the Study Area.

Vegetation and forestland are also valuable for recreation, clean air, and aesthetic reasons. For example, trees provide shade along streams, which acts to keep water temperature down and the dissolved oxygen up. This is very important in terms of providing suitable habitat for some species of fish. These benefits are often taken for granted until one is exposed to a treeless, or relatively vegetation-free environment.

Interestingly, the type of vegetation present in any given area can provide a clue as to the type of soil which is present, and therefore, can alert a potential developer or landowner of possible soil problems such as wetness, high groundwater table level, and shallow depth to bedrock. For instance, in this portion of New York State, the presence of red maples, balsams, and alders will typically indicate wet soils. Furthermore, soils with a shallow depth to bedrock will often be inhabited by birch or aspen.

Although the Hinckley Reservoir Study did not include an extensive survey of existing vegetation, it was possible to identify the predominant tree species within the Study Area, as well as the general location of these species. This was done by tapping the knowledge of forestry managers with NYSDEC, in addition to making visual inspections of tree types while conducting other fieldwork. Perhaps more importantly, knowing the topography and elevations of the Study Area, one can use standardized reference material to generalize on the type of vegetation which can be

expected to be found. In other words, specific tree species will be found within certain ranges of elevation in this region of New York State. This knowledge allows for generalizations to be made. It is important to keep in mind, however, that this section of the report is not meant to be utilized for the identification of individual tree species within specific areas. On-site surveys should be utilized for this purpose.

Within the Hinckley Reservoir Study Area, areas of poor drainage, including wetlands and floodplains, will generally be characterized by spruce-fir type species. Balsam fir, red spruce, and hemlock are the major components of this type with red maple, white spruce, and alders also being commonly found. Alders, in particular, tend to grow along stream banks in relatively dense stands. There are numerous wetlands and poorly drained areas, including floodplains, throughout the entire Study Area. Therefore, the tree species mentioned above are quite common.

As drainage improves, hardwood species can be found in increasing numbers, along with varieties of spruce-fir. Sugar maples, American beech, yellow birch, white ash, and black cherry can now be found in stands along with balsam fir, hemlock, white pine, and red maple. The diversity of tree species in these areas supports a wider diversity of wildlife than the poorly drained areas. The northern hardwood/spruce-fir type habitats will be found in those portions of the Study Area located outside of the floodplains, wetlands and other poorly drained regions.

The third kind of forest covertype to be found within the Hinckley study area is the northern hardwood type. These tree species can be found on

better drained, more fertile moderate slopes. The major component of the northern hardwood type are the sugar maple, American beech, and yellow birch. White pine, red spruce, and hemlock may also be present in smaller numbers. These areas are very common in the Adirondacks and can be found in the Study Area in the higher elevation areas. Specifically, these forest cover types can be found north and northeast of the Reservoir, approaching the foothills of the Adirondacks. There are also numerous areas above 1,000 feet of elevation which provide a home to northern hardwoods. They can be found in the Town of Remsen to the northwest of the Reservoir, as well as in the Town of Russia south of the Reservoir, and west of the Black Creek.

To summarize, the Hinckley Reservoir Study Area is located in a transition zone between the Mohawk River valley and the Adirondack Mountains, and the variation in soil type, topography, and elevation accounts for a wide diversity of tree species. Because of this, one will encounter a diversity of vegetation and wildlife as one travels throughout the region.

G. FISHERY RESOURCES IN THE HINCKLEY RESERVOIR STUDY AREA

Based upon the written information which is available on the fishery at Hinckley Reservoir, which consists primarily of studies by the NYSDEC, as well as local general knowledge of the situation, the quality of Hinckley Reservoir as a fishing resource is poor. A study prepared in 1935 implied that Hinckley Reservoir did not have a reputation as a productive fishery since its creation approximately 20 years earlier. This study also documented that fish in Hinckley Reservoir were stunted in terms of

growth, resulting from a lack of food organisms for fish. It was stated in this study that, "... snails, aquatic insects and shore inhabiting crustacea are practically absent" from Hinckley Reservoir.

Recent studies by NYSDEC which have focused on Hinckley Reservoir as a fishery have discussed some of the specific factors which impact this body of water. There are three physical parameters present which are not conducive to a productive fishery.[6] The first factor is the unstable substrate, or bottom material. A 1969 scuba examination of the substrate revealed that the bottom material of Hinckley Reservoir was comprised of 80% sand, 15% small gravel with the remaining 5% suitable for fish habitat. With approximately 95% of the bottom material made up of sand and gravel (which is very unstable) and because the reservoir is so shallow, the bottom material is subject to constant shifting around by the wave action. This shifting of the bottom material makes it very difficult for fish habitat to become established in the reservoir. In addition to providing an inadequate base for aquatic plants, sand and gravel provides little cover and protection from predators.

A second factor which has a negative impact on the fishery at Hinckley Reservoir is the fluctuation of the reservoir water levels. Water entering Hinckley Reservoir from the West Canada Creek, Black Creek or any other tributary is subject to rapid turnover. A "flushing" effect occurs as water enters the reservoir, flows towards the dam and is either

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[6] John J. Hasse (NYSDEC) "Hinckley Reservoir Survey" (1976) and "Hinckley Reservoir Fish Hab (tm) Project Report" (1979).

discharged into Prospect Reservoir or is diverted for water supply purposes. Retention time of the water in the reservoir is dependent upon the time of the year and the current water level in the reservoir, but at any rate the short retention time is an identifiable factor impacting the potential fishery at Hinckley Reservoir. The flushing effect impacts the fishery in that the nutrients do not have a chance to build up and fertilize the base of the food chain. Fish are at the top of the food chain. In between are insects, frogs, crabs, etc. Each successive level of the food chain depends on the lower levels. If the base of the chain is impaired, or not available, the entire food chain is impaired. This has historically been the situation at Hinckley Reservoir.

Given that the discharges from the reservoir have been previously determined for each 10 day period throughout the year, the critical factor in terms of the water level in the reservoir is the amount of precipitation which falls in the watershed. To give an idea of the extremes the water levels, from 1966 to 1984 the annual high and low water elevations had an average difference of 38.9 feet.

A third factor which has a negative impact on the fishing at Hinckley Reservoir is the chemically poor water of the watershed, resulting in part from acid precipitation. A 1976 study which covered the Hinckley Reservoir area found an increasing frequency of pH readings with values less than 6. For reference, a pH value of 7 is considered neutral. A pH reading less than 7 is acidic and a value greater than 7 is alkaline. the 374 square mile watershed for Hinckley Reservoir is located in the southwestern Adirondacks, which is the portion of the Adirondacks most

affected by acid rain. To be more specific, it was stated in the March-April 1983 edition of The Conservationist, that "...the hardest hit areas are northern Herkimer County and southwestern Hamilton County." The drainage areas which feed Hinckley Reservoir are located in northern Herkimer County and southwestern Hamilton County. Poor alkalinity (extremely soft water) is another closely related problem to acidity. Water with low alkaline values is clean chemically (great for swimming and other contact recreation) but has a negative impact on the fishery.

The three factors just discussed, the unstable bottom material of the reservoir, fluctuating water levels and the chemically poor water of the watershed, all have a negative impact on the fishery at Hinckley Reservoir. The acid rain and other climatic and physiographic factors which contribute to the chemically poor water quality are not likely to change in the near future.

The dominant reason for the condition of the fishery at Hinckley Reservoir is the fluctuation in water levels. A recent study which discussed the fishery at Hinckley Reservoir speculated that a new rule curve (the rule curve controls discharges from the reservoir) which was adopted due to the establishment of hydropower generation at Hinckley Dam may reduce the drastic fluctuations of the water level. This in turn could have a positive impact on Hinckley Reservoir as a natural resource within the region, and particularly on the fishery resources. A review of the impact which the new rule curve has had on the fishery resource is needed at this time.

While the physical parameters affecting Hinckley Reservoir are not conducive to a productive fishery, this is not to say that there are no fish in Hinckley Reservoir, or that there have not been attempts to manage the reservoir for fishing. A 1976 survey of Hinckley Reservoir conducted by NYSDEC mentioned that some brown trout and brook trout are caught in the spring near tributaries but fishing for trout is generally poor. The only other game fish caught in moderate numbers is the chain pickerel. This survey went on to state that the most commonly caught species are bullhead and yellow perch. As part of this study, HOCCPP staff did interview several people at the NYPA boat launch on the north shore of Hinckley Reservoir in August of 1986 who were launching a boat in the reservoir in order to go fishing. Bass, perch, trout, panfish and bullheads were mentioned by the people being interviewed as species which they had taken in the past from Hinckley Reservoir.

Past attempts at stocking a predator species in Hinckley Reservoir have all failed. Brown trout, brook trout, rainbow trout, lake trout and Atlantic salmon have all been stocked. In 1972 and 1973, 400 tagged adult walleyes were added per year, with only 12 adult fish having been accounted for by 1976. Walleye fry were added to the reservoir in 1974 and 1975, but trawling and gill netting in 1975 and trapnetting in 1976 did not yield any fish from the fry planting. The poor zooplankton crop in Hinckley Reservoir (which was noted in an earlier study) would not be conducive to fry survival. In addition, the lack of cover would allow already established species to prey on stocked fish.

While Hinckley Reservoir is the focus of this discussion, there are at

there are several large parcels of land in individual ownership classified as single family year-round dwelling units on the map, with the entire parcel shown in yellow. This indicates that there is one single family year-round dwelling unit on a single parcel. When field checking revealed that there was more than one principal structure on a single parcel, a dashed line was added to indicate the presence of an additional unit. An example of this is on South Side Road, just below the intersection of Lane and MacArthur Roads.

The information in Table 8 reveals that single family residences represent the most common "type" of development within the Study Area. When we combine the total number of single family year-round homes with the total number of single family seasonal homes, these two land use types account for nearly 40% of all the parcels within the Study Area, and approximately 70% of all the developed parcels within the region. Additionally, when mobile homes and rural residences* are taken into account, nearly 90% of all the developed parcels have some sort of dwelling unit located on them. These numbers confirm that where development has occurred in the Study Area, it has been predominantly residential.

When we examine the data in Table 8 even closer, we see that seasonal residential units are almost as common as year-round units. To illustrate, when the total number of single family seasonal residences and mobile home seasonal residences are combined, we find that there are 428 parcels being used for seasonal home purposes. This compares to 467 total parcels being utilized for year-round residential purposes. These 467 parcels include the parcels

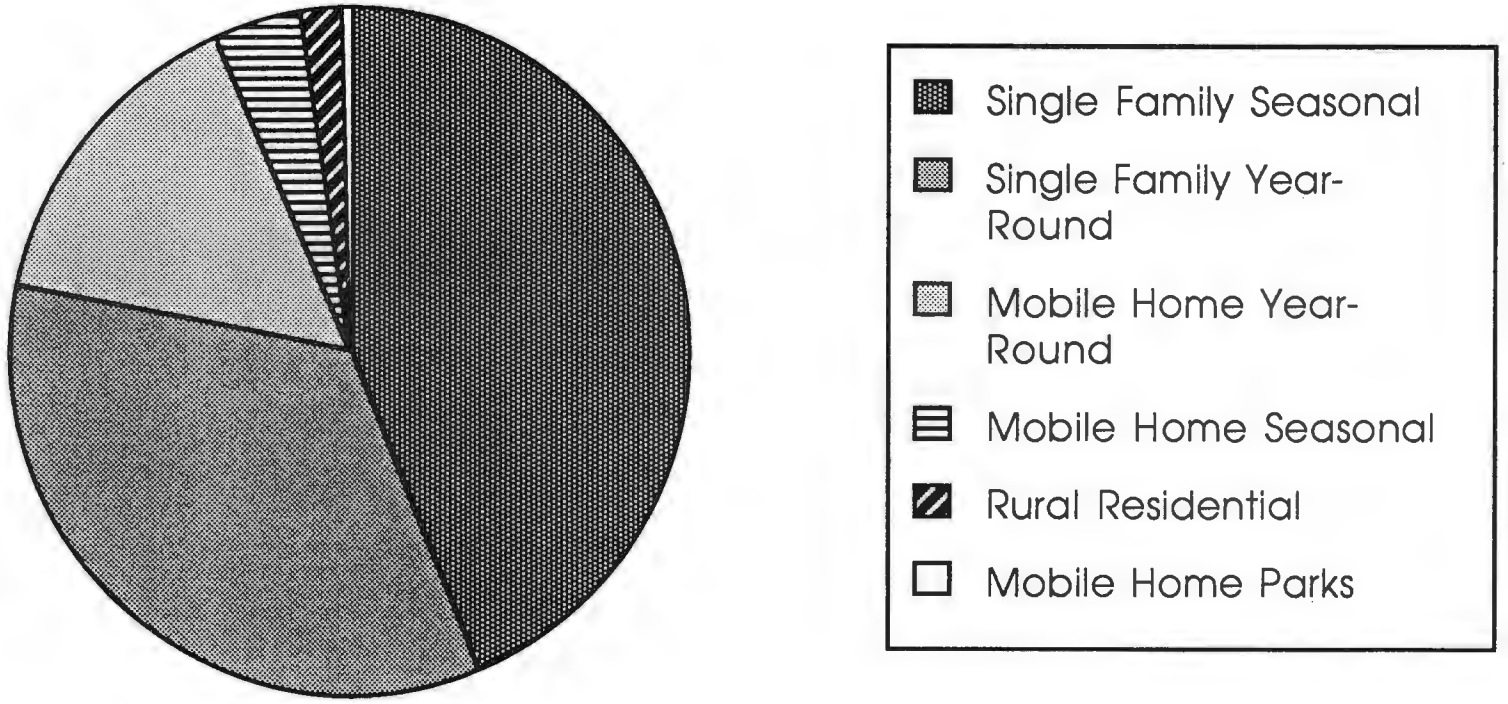
* For the purpose of this study, rural residence indicates the presence of a year round residence with ten or more acres of land.

classified as rural residential in addition to single family year-round and mobile home year-round parcels. In short, 47.8% of all the parcels being used for residential purposes have seasonal residential units located on them. So, not only is development within the Hinckley region primarily residential, nearly one-half of all the residential units are occupied on a seasonal, or part-time basis. Figure 18 depicts graphically the different types of residential land uses within the primary Study Area.

Overall, the Hinckley Reservoir area is sparsely developed. As Table 8 illustrates, 731 of the 1,777 parcels within the Study Area are either vacant or classified as inactive agriculture. This accounts for over 41% of the total number of parcels. There are also 55 parcels of private wild and forestland, and 40 NYS Forest Preserve parcels within the Study Area. These parcels, for all practical purposes are undeveloped, and contribute significantly to the rural nature of the Hinckley Reservoir Study Area. Table 9 provides an even better illustration of the rural character of the Study Area. Every land use type is characterized by an average lot size of at least 1¼ acres. In fact, the overall average lot size of all parcels within the Study Area is 9.91 acres. This points out that even where development has occurred, it has taken place on relatively large lots.

In terms of overall acreage, of the 17,603 acres of land within the primary Study Area, over 5,000 acres are currently vacant or classified as inactive agriculture. In addition to this, over 5,600 acres are classified as either public or private forestland. If we add in the 1,184 acres of agricultural land and 670 acres of recreational land, one can understand why the Hinckley Reservoir Study Area takes on such a rural and undeveloped character. Even

Figure 18
Percentage of Residential Parcels Located within the Primary Study Area



Source: HOCCPP,1987

where development has occurred the lot sizes are relatively large; thereby reinforcing the rural image.

When looking at the land use classification maps, there does not appear to be any visible patterns of development in terms of segregation of land uses. At first glance, the mixture of land uses appears to have developed in a somewhat haphazard manner. The result is that there are some land uses located next to each other which may result in conflicts. For instance, although there are relatively few commercial uses within the Study Area, nearly all of them are located adjacent to one or more residential uses. However, this mixture of land uses (commercial next to residential) is common to many rural areas and is certainly not unique to the Hinckley Reservoir Study Area. Fortunately, the potential conflict between a commercial land use and a residence may be somewhat lessened in a rural area if lot sizes are large.

At the time this report was published, the Town of Russia is the only Study Area Town which has local land use regulations in place. The Towns of Ohio and Remsen exercise very little, if any, control over development. As mentioned above, the rural character of the Study Area may reduce the potential for significant land use conflicts. However, the rural character of the Hinckley Reservoir Study Area is not a static characteristic. By this, it should be understood that development of land within the Study Area is an ongoing process and that the potential exists for a level of development to occur which would permanently alter the rural character of the area. If this were to occur, land use conflicts which once seemed minor due to the rural and undeveloped nature of the area could escalate to the point where the quality of life begins to deteriorate, and the area loses some of the very qualities which made it so

attractive in the first place. Another important point to be made here is that it is very difficult to resolve existing problems through land use regulations.

At the present time, the Study Area is primarily characterized by low density residential development, most of the conflicts and complaints among residents have originated from conflicting residential uses; and in particular, mobile homes being located adjacent to site-built single family homes. This information was gleaned directly from the community information survey discussed in Section VI. The results of the community information survey seem to indicate that mobile homes are the prime target of criticism among property owners.

In fact, the problem may not be exclusively with the mobile home itself, but rather with its location close to the road and side property lines. A related point is that many mobile homes in the Study Area have a transient look to them. This comes from locating the mobile home close to the road and the property lines, and also from the absence of skirting, a defined driveway, etc. A well maintained mobile home which is located on a lot that is as large as a lot for a site built single family home and is set back the same distance from the road may not be considered a problem.

Examining Table 8 and the Existing Land Use Maps a bit closer, a few patterns emerge. For example, single family seasonal homes tend to be concentrated in proximity to the Hinckley Reservoir, and to a lesser degree, the West Canada Creek and Black Creek. Obviously there are numerous seasonal homes located away from these water bodies yet, of the 393 single family seasonal homes within the study area, 245 are located within 1,000 feet of the Reservoir, West

Canada Creek, or Black Creek. Of these 245 seasonal homes, 110 are located either adjacent to the Reservoir or the two Creeks, or adjacent to the New York State Department of Transportation owned property which surrounds the Reservoir.

It is no coincidence that seasonal homes tend to be located near the Hinckley Reservoir, West Canada Creek, or Black Creek. The community information survey undertaken for this study revealed that seasonal residents favor water-based activities as their primary choice of recreation. Fishing, swimming, and boating are three activities which are very popular among seasonal residents. Being located near a body of water which can support these activities is certainly desirable among seasonal residents.

For these very same reasons there are numerous single family year-round homes located within 1,000 feet of these water resources. As Table 10 reveals, 167 permanent single family dwellings can be found in this area. If year-round mobile homes are added, this figure rises to 244 year-round dwellings.

Overall, the total number of residential units (excluding mobile homes within mobile home parks) located within 1,000 feet of the Hinckley Reservoir, West Canada Creek and Black Creek is 516. This represents approximately 58% of all the residences located within the entire Study Area. These figures confirm that property owners prefer to locate their residence along a body of water. Figure 17 graphically depicts the breakdown of residential types within 1,000 feet of Hinckley Reservoir, West Canada Creek and Black Creek.

The Existing Land Use Map shows that with few exceptions, the canal land which

comprises the shoreline of Hinckley Reservoir is surrounded by privately owned land. This lack of publicly owned land around the reservoir may emerge as an important issue in the future if the majority of private property owners abutting the canal land exercise their option to obtain a permit from NYS Department of Transportation giving them exclusive use of the canal land (shoreline) between their property and the high water mark of the reservoir. If this were to happen, free public access to the shoreline could be limited to the few publicly owned parcels which abut the canal land. This would be in sharp contrast to the existing situation, where informal access to much of the shoreline of Hinckley Reservoir is available to the public. This issue is discussed in more detail in Section IX.

One final piece of information portrayed in Table 10 shows that of the 982 parcels located within 1,000 feet of the Hinckley Reservoir, West Canada Creek, and Black Creek, 373 or 37% are currently vacant or inactive agriculture. Additionally, there are 33 parcels currently classified as private wild and forestland which could also be developed. Many of these are substantially large parcels which could be subdivided and developed for residential purposes. The potential for increased development in proximity to these three water resources should be a matter of concern to those municipalities within the Study Area. Poorly planned development of these vacant parcels could specifically result in sewage disposal problems, increased erosion and siltation and a reduction in undeveloped shoreline. In a general sense, the unplanned development of these vacant parcels could have a negative impact on the rural character of the Study Area. New development of these parcels should be carefully planned and subject to local review so as to minimize potential environmental and aesthetic impacts on these water resources.

In looking at the entire Study Area, commercial development does follow the usual pattern of being located along major transportation routes. In order to be as visible and accessible as possible, commercial ventures, particularly retail businesses, will tend to locate along major transportation corridors. Therefore, it follows that the majority of commercial uses within the Study Area are located along either Route 365 or Route 8; the two heaviest travelled roads within the region. Although there are relatively few commercial uses within the area, the ones that are present have attempted to maximize visibility and accessibility through their location along the major roads.

Incidentally, and as Table 10 confirms, 13 of the 15 commercial ventures are located within 1,000 feet of the Reservoir, West Canada Creek and Black Creek. This is due to the fact that all of Route 365, and a substantial portion of Route 8 are located within 1,000 feet of these water resources.

One can also recognize a pattern among agricultural lands. Although there are only 9 agricultural parcels within the Study Area, they are clustered together in the northwest portion of the Study Area (see Map Section A). Additionally, Table 9 illustrates that of all the land uses which were categorized, agricultural land uses, by far, have the largest average lot size (131.6 acres), although these farms are smaller than the average farm in the two counties. While the boundaries of an operating farm may not always follow lot lines, the 1982 Census of Agriculture indicates that the average farm size in Herkimer County is 244 acres and 224 acres in Oneida County.

This may be of importance in regards to future development within the Hinckley Reservoir Study Area. Specifically, as the nature of small-scale farming

changes, and the farmer continues to be faced with decreasing profits, one option available to the farmer is to subdivide some or all of his/her land and sell off parcels to prospective home builders. As Table 9 shows, nearly 1,200 acres of land is currently classified as agricultural.

Just under 3,000 acres of the Study Area is currently classified as public forestland. Public forestland parcels are also clustered, with the largest concentration being located south of the Reservoir in an area bounded on the west by Hinckley Road, on the east by Roberts Road, and on the south by Black Creek Road (Map Section A). There are also a few large parcels located north of Route 365 primarily in the Town of Ohio (Map Section B). These Forest Preserve parcels provide the obvious benefit of being open to the public, with the qualifier that the terrain may be very steep and there may be a lack of footpaths, or trails over which to travel. Perhaps the most important benefit to the residents of the Study Area is that these parcels of Forest Preserve lands remain in their natural state.

On the other hand, the 2,661 acres of private forestland within the Study Area could theoretically be developed, or the timber harvested. Most of this land is either unused, or is being utilized for logging purposes, and as of yet, has not been developed. In looking at the land use classification maps, we see that all but one of the private forestland parcels are located on Map Section B. Numerous large parcels averaging over 57 acres are located throughout the entire portion of the Hinckley Reservoir Study Area. A substantial amount of river frontage along the West Canada Creek is currently classified as private forestland. Undeveloped riverfront land represents a prime location for development; particularly seasonal home development. This is a very important

consideration in terms of the future of the West Canada Creek Corridor, because development within the corridor could impact the water quality of the creek and permanently impair the natural qualities of the shoreline and surrounding area.

The last land use category considered is the vacant/inactive agriculture category. As mentioned earlier, roughly 41% of all the parcels within the study area are classified as vacant or inactive agriculture. This accounts for nearly 1/3 of the total acreage of the Primary Study Area. Once again, there does not appear to be any visible pattern as illustrated on the land use maps. In short, vacant/inactive agriculture parcels vary considerably in size, and are located throughout the entire Study Area. Additionally, many of these parcels are landlocked with no direct access available. The point which was made regarding the potential for development of active agricultural parcels also applies in this situation. The large parcels classified as vacant/inactive agriculture could be attractive for development purposes, particularly where these parcels are large enough to sustain substantial subdivision activity and are near Hinckley Reservoir or some other water body.

In summary, the data which has been gathered in regards to existing land use within the Hinckley Reservoir Study Area confirms that the area is primarily rural, with most development being residential in nature. Interestingly, nearly half of all residential development is seasonal. Yet, many seasonal homes are now being converted to year-round homes, thereby placing greater demands on water supply, sewage disposal, the transportation network, and other services.

The attractiveness of the region could result in increased development pressure. This is occurring (and has occurred) in many areas of the Adirondacks, and it is reasonable to assume that once the threshold of development is approached in other areas of the Adirondacks, this development pressure could be shifted to occur on a more intense level than what is now occurring within the Hinckley Reservoir Study Area.

V. Population and Housing Trends

It is important in a study such as this to review certain population and housing characteristics of the area. Through such studies changes in population, number of housing units and housing unit types can be identified. It is important that these changes, or trends, be identified and discussed because of the potential impacts these changes may have on the Hinckley Reservoir Study Area.

Unless otherwise indicated, the statistics drawn upon in this section of the report are from the 1970 and 1980 U.S. Census of Population and Housing. The only pertinent information available at the Study Area level is the 1980 population, and seasonal and year round housing unit counts. Therefore, the majority of the information in this section is at the town level. It should be made clear at this point that the statistics in this section were examined to detect various population and housing trends, and not to make definitive statements regarding what is happening demographically in the Towns of Russia, Ohio and Remsen. In addition, only those demographic variables which can be used to make an inference regarding land use trends in the Hinckley Reservoir Study Area will be reviewed in detail.

Table 11 shows that nearly all of the year round population and housing units in the Town of Ohio are within the Hinckley Reservoir Study Area. Only that portion of the year round population living in the NYS Route 8 corridor between Wilmurt and the Hamilton County line is not within the Study Area. Nearly 38% of all of Russia's seasonal units are located within the Study Area, with the remainder of the seasonal units in Russia located either north of, or just south of the Study Area. The Town of Remsen's statistics indicate that just

under half of the Town's year round population and housing units, and just over half of the seasonal units are located within the Study Area.

TABLE 11

POPULATION, YEAR ROUND AND SEASONAL HOUSING UNIT COMPARISON, 1980: STUDY AREA VS. TOWN TOTALS

		Remsen	Ohio	Russia	Total
Population -	Study Area	491	748	525	1,764
	Town Total	1,027	788	1,599	3,414
Study Area as %	of Town Total	47.8%	94.9%	32.8%	51.7%
Year Round Housing Units -	Study Area	179	277	206	662
	Town Total	371	290	578	1,239
Study Area as %	of Town Total	48.2%	100%	35.6%	53.4%
Seasonal Use Housing Units -	Study Area	49	290	124	463
	Town Total	93	302	328	723
Study Area as %	of Town Total	52.7%	96.0%	37.8%	64.0%

NOTE: Town totals exclude Village totals

SOURCE: 1980 U.S. Census of Population

The net migration which occurred in each of the Study Area towns, and in Oneida and Herkimer Counties, is a revealing statistic. Net migration measures the number of people who actually moved into, or out of a specific area within a certain time period. This measure is arrived at using the following formula:

1) Resident Births - Resident Deaths = Natural Increase
2) Population Increase - Natural Increase = NET MIGRATION

The population increase of a town measures both the natural increase which occurred in the town (births-deaths), and the number of people who moved into the town during a particular time period. As can be seen above, the formula

for net migration simply extracts the natural increase which occurred in an area during a certain time period, from the overall population increase. In this way, net migration becomes a measure of the attractiveness of an area by identifying the number of people who moved into the area during that time period.

As Table 12 shows, each of the Towns within the Study Area experienced in-migration for the period 1970-79 and 1980-86, with the Town of Ohio experiencing a net population increase of 434 people from 1970-86. This is quite substantial, considering that in 1970 the Town of Ohio had a total population of 468 people. The Town of Russia gained 278 in-migrants, and Remsen 149 during the same time period. This substantial net population increase (people migrating, or moving into an area) in the Study Area Towns is in direct contrast to the out-migration experienced in both Oneida and Herkimer Counties. See Appendix B for the complete migration formula and relevant data.

TABLE 12

STUDY AREA TOWNS, ONEIDA AND
HERKIMER COUNTIES: MIGRATION, 1970-86

Area	Net Migration/Population Change 1970-79	1980-86*
Russia	209	69
Ohio	277	157
Remsen	84	65
Study Area Towns	+570	+291
Herkimer County	-2,924	-1,028
Oneida County	-7,906	-12,096

* The population increase used to determine net migration is an estimate, making the migration figures an estimate also.

SOURCE: NYS Department of Health, Office of Biostatistics, 1970-86.
1970 and 1980 U.S. Census of Population and Housing

Table 12 establishes that from 1970 to 1986 the Towns of Russia, Ohio and Remsen experienced a net population increase (an in-migration of people) while Oneida and Herkimer Counties had a net population decrease (out-migration). Table 13 shows the overall population increase in three Study Area Towns from 1970 to 1980.

TABLE 13

STUDY AREA TOWNS: POPULATION INCREASE, 1970-80

Town*	1970	1980	Increase	% Change
Russia	1,272	1,599	327	25.7%
Ohio	468	788	320	68.4
Remsen	792	1,027	235	29.7

* NOTE: Town figures do not include villages

SOURCE: 1970 U.S. Census of Population
1980 U.S. Census of Population

Comparing Tables 12 and 13, it can be easily seen that the majority of the overall population increase from 1970 to 1980 in both Russia (209/327 = 64%) and Ohio (277/320 = 87%) was the result of new people moving into these Towns. Approximately 38% of the population increase in Remsen from 1970-80 was the result of new people moving into the Town.

Some of the factors which attract people to a certain area include job opportunities, lower land/housing costs and the physical amenities of the Study Area are apparent; and in general, land and housing costs are lower in the Study Area than in the urban and suburban areas of Oneida and Herkimer Counties. Considering that recent economic activity and expansion by government agencies in Oneida and Herkimer Counties will create jobs for existing residents and attract people into the area, it is reasonable to assume

that the Study Area Towns will continue to see their year round population increase.

These new residents may increase tax revenues and have other positive impacts on the community. However, an influx of new people and families can have an impact on the school system, roads and bridges and also on the natural resources of an area. The impact on the natural resources occurs because new wells are being drilled, more septic systems are being installed, and seasonal roads become year round, giving some isolated sections of the backcountry the look of suburbia as more and more land is cleared.

Table 14 shows the change in the number of housing units in the Study Area Towns, breaking this overall figure down to single family, rental and seasonal dwelling units. There was a substantial increase in the number of total housing units in Ohio and Russia, with a particular increase in the number of seasonal units in both Towns. The increase in the number of single family and owner occupied units is linked to the increase in the number of year round residents moving into the Towns. The increase in the number of seasonal units in Ohio and Russia may have a significant impact on the Towns in the future because of the trend towards converting seasonal dwelling units to year round use. As pointed out in Section IV, one-third of the local respondents to the community information survey who had a year round dwelling on their property had converted it from seasonal use. The issues associated with converting a seasonal unit to year round use are discussed in more detail in Section IX.

The statistics for the Town of Remsen strongly suggest that a considerable amount of conversion from seasonal to year round use occurred in the Town from

TABLE 14

STUDY AREA TOWNS: SELECTED HOUSING CHARACTERISTICS, 1970-1980

	Remsen			Ohio			Russia		
	1970	1980	%Change	1970	1980	%Change	1970	1980	%Change
Total Housing Units	472	464	-1.7%	320	592	85.0%	443	906	104.5%
Single Family Owner Occupied	200	283	41.5%	137	228	66.4%	323	448	38.7%
Renter Occupied	27	54	100.0%	13	41	215.4%	66	95	43.9%
Seasonal Units	223	93	-58.3%	135	302	123.7%	26	328	NA
-as a percentage ..... of total units	(47.2%)	(20.0%)		(42.2%)	(51.0%)		(5.9%)	(36.2%)	
Year Round Mobile Home/Trailer Units	23	57	148.0%	25	53	112.0%	55	95	72.7%
-as a percentage ..... of total units	(4.9%)	(12.3%)		(7.8%)	(8.9%)		(12.4%)	(10.5%)	

SOURCE: 1970 U.S. Census of Population
1980 U.S. Census of Population

NOTE: Town totals exclude village totals

1970 to 1980. Overall, there was a decrease of 8 in the total number of housing units in Remsen. There was also a decrease of 130 seasonal units in the Town. However, there was an increase of 83 single family owner occupied and 27 rental units. It has to be assumed that some portion of the increase in year round units could be attributed to the decrease in seasonal units.

The Towns within the Study Area had a lower percentage of their total housing units listed as renter occupied and single family owner occupied units in comparison to Herkimer and Oneida Counties. This is due to the higher percentage of seasonal housing units located within the Study Area Towns and the general tendency for rural areas to have a lower proportion of rental housing units than urban/suburban areas.

The number of year round mobile homes increased in all three Study Area Towns from 1970 to 1980. However, the ratio of year round mobile homes to the total number of housing units declined in the Town of Russia and only increased slightly in the Town of Ohio from 1970 to 1980. This is an indication that the new residents moving into Russia and Ohio are not any more likely to live in a mobile home than the current residents. The ratio of year round mobile homes to the total number of housing units did increase in the Town of Remsen from approximately 5 to 12 percent during the same time period.

The discussion above shows that the Towns of Russia, Ohio and Remsen are experiencing an in-migration of new residents, and that Ohio and Russia are experiencing an increase in the total number of housing units, particularly seasonal units. The implication for the Hinckley Reservoir Study Area from this information is, that while, on the whole, the Towns are attracting new

residents, the Study Area may be the target of a relatively large number of new residents (and housing units). Combine the physical amenities of the area (rural character, outdoor recreational opportunities, etc.), lower land costs, the abundance of vacant land and a good transportation network which puts the Study Area within a reasonable commute of major employment centers, and the attractiveness of the Hinckley Reservoir Study Area becomes clear.

VI. Community Information Survey Results: Summary Results and Analysis

The following summary provides an abbreviated version of the complete report on the Community Information Survey done for the Hinckley Reservoir Study. A more detailed textual analysis is available from HOCCPP at the address listed in the beginning of this report. This summary focuses on the most important and notable points which came out of the community information survey. In an effort to highlight key points, this summary was divided into major subject areas such as residential development, recreation, place of employment, and so on. This written summary is followed by a statistical tabulation of the survey results.

Please note that where applicable, the question number has been provided in parenthesis following each major point. This allows the reader to see the specific survey question and corresponding responses which are the basis for this summary.

A. SURVEY RESPONSE RATES

- The survey response rates for both local and non-local property owners were excellent. The high response rate (25.5% overall) indicates that property owners within the study area have a genuine interest in the various land use, housing, environmental, and recreational issues which have an effect on their property and livelihood.

- Local property owners are those who live and own property within the boundaries of the Hinckley Reservoir Study Area. The study area

employment. This is not surprising in that Oneida County, and especially Utica, is a major employment center for this region of New York State. Furthermore, Routes 8 and 12, and to a smaller degree Route 365, make for a relatively "easy" commute to Utica and Oneida County from the Study Area. (questions 7 and 8)

- In a related matter, most local property owners commute between 15 and 30 miles to work one-way. This supports the fact that most people are employed in Utica, or nearby communities in Oneida County. However, a substantial percentage of locals (18.3%) commute even farther (over 30 miles one-way to work). This suggests that residents of the Study Area are willing to commute a long distance in order to enjoy the amenities of living in the Hinckley area. (question 9)

F. WATER SUPPLY AND SEWAGE DISPOSAL

- Water supply shortages, particularly during the summer months are not uncommon to Hinckley residents. Although not proven, many blame their water shortages on the lowering and constantly fluctuating water level in the Hinckley Reservoir. (question 10)

- Approximately 5% of survey respondents have had, at one time or another, problems within the Study Area with their septic disposal system. Commonly mentioned problems were "sewage flowing above ground" or "bad odors." (question 12)

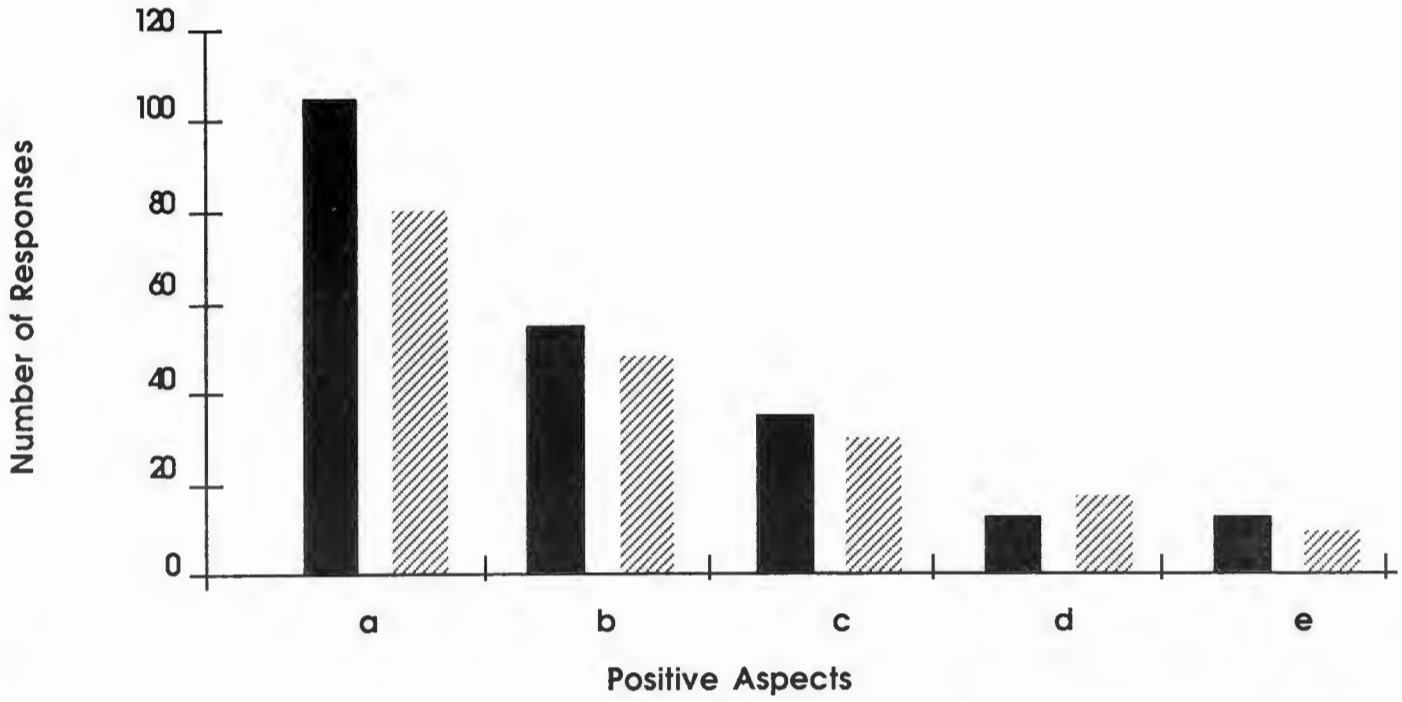
This figure does not seem to indicate a widespread sewage disposal problem at this time. Yet, it is the opinion of this office that the potential exists for groundwater contamination and related environmental problems from inadequate sewage disposal. This concern focuses on two facts. First, soils within the Study Area are generally poor for sewage disposal systems. Secondly, new year-round home development and the conversion of seasonal homes to permanent homes has meant that more septic tanks and leach field systems have been installed. Additionally, sewage disposal systems originally designed for limited seasonal use are now being utilized on a year-round basis, therefore, these systems may become overtaxed. In short, the potential for environmental degradation is increasing as the total number of units increase, and the trend towards the conversion of seasonal homes to year-round use continues.

G. QUALITY OF LIFE

- As shown in Figure 20, both local and non-local property owners agree with what constitutes the amenities of living in the Study Area. "Rural", "private", "quiet", "scenic", and "beautiful" were commonly used adjectives describing the positive aspects of living in, or owning property in, the Study Area. The recreational opportunities present in the region are also attractive to most property owners. (questions 2 and 13)

Community Information Survey: Positive Aspects of The Study Area

Question 13:
What do you think are some of the positive aspects of living in, or owning property in, the Hinckley Reservoir Study Area?



Source: HOCCPP, 1987

- In regards to scenery, locals and non-locals alike found the roadside scenery along Routes 365 and 8 to be pleasant. The scenery along Route 8 rated somewhat higher than the scenery along Route 365. Three of the more commonly mentioned scenic items included the Hinckley Dam area, High Falls/Ohio Gorge, and West Canada Creek. (questions 18a, 18b, 19a, 19b, and 19c)

- Property owners were given the opportunity to discuss some of the drawbacks of living in, or owning property in, the Hinckley Reservoir Study Area. Figure 21 graphically portrays what some of the drawbacks are of living in, or owning property in, the Study Area. These included unsightly homes/trailers/yards, high crime/poor law enforcement, black flies and mosquitoes, high taxes, and long distances to work and stores. (question 14)

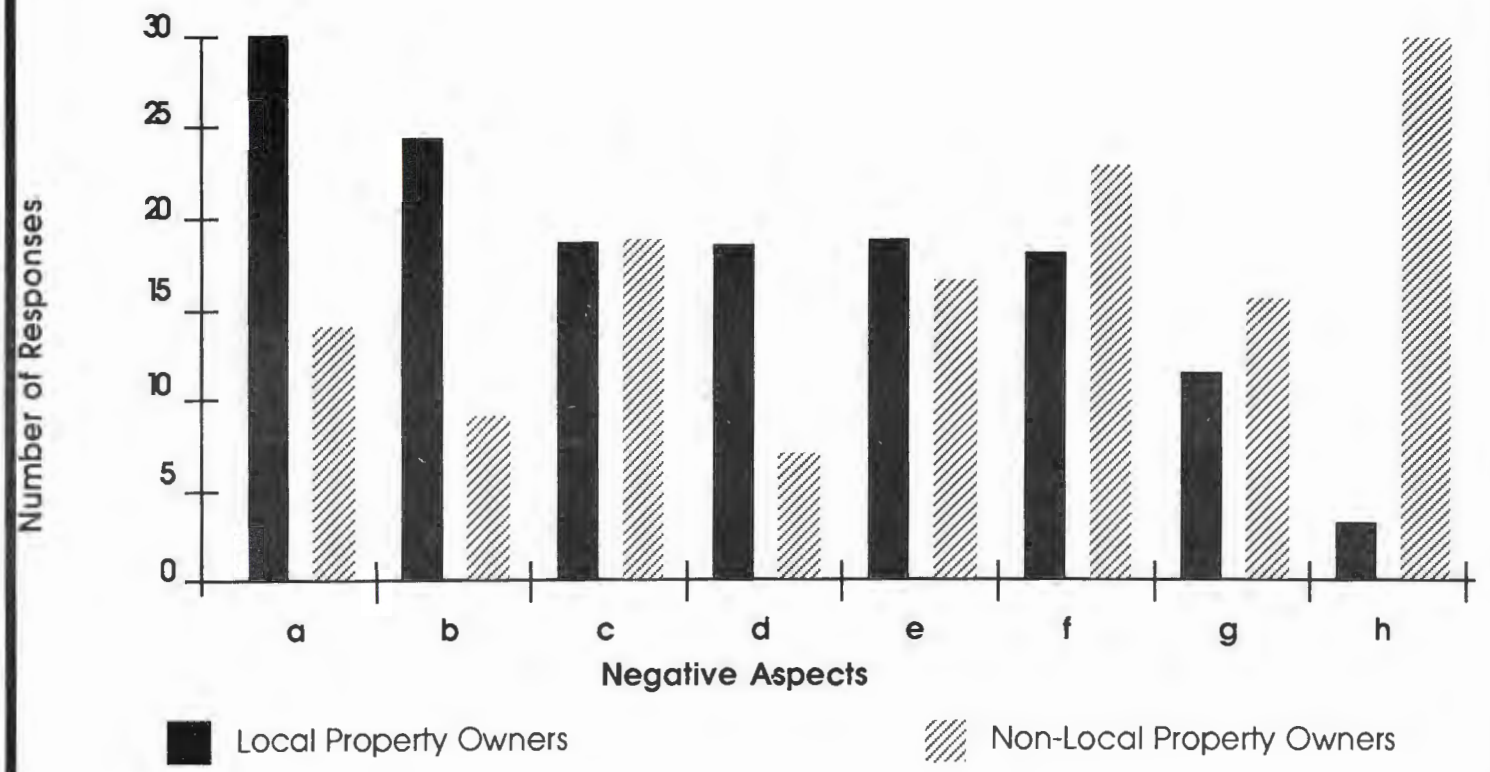
- Interestingly, both locals and non-locals were generally in agreement with each other in regards to these negative aspects. However, the most common complaint among non-local (seasonal) property owners was the fluctuating water level in the Reservoir. Contrastingly, this was very rarely mentioned by the local property owners. (question 14)

  It seems that the apparent reason for the non-locals being more concerned is that they tend to focus their seasonal activities on the Hinckley Reservoir (i.e. fishing, swimming, boating, water skiing, etc.). They depend more on the Reservoir for recreational purposes because this is frequently their purpose of owning a seasonal home in the region.

Community Information Survey: Negative Aspects of the Study Area

Question 14:

What do you think are some of the negative aspects of living in, or owning property in, the Hinckley Reservoir Area?



a) Unsightly homes/trailers/junk cars
b) Long distances to work and stores
c) Black flies and mosquitoes
d) Lack of zoning and land use controls
e) High Taxes
f) High Crime
g) Poorly maintained roads
h) Fluctuating Reservoir water level

Source: HOCCPP, 1987

COMMUNITY INFORMATION SURVEY: STATISTICAL RESULTS

The following information is a tabular summary of the survey results for both the local and non-local respondents, as well as the combined responses of these two groups. It is important to note that the data given does not represent all of the results of the questions on the survey form in that some questions and portions of questions asked for write-in responses which could not be summarized in tabular form.

Question 1 - WHICH OF THE FOLLLOWING BEST APPLIES TO YOU?

	Local Responses #(%)	Non-Local Responses #(%)	Total #(%)
I am a long time resident (more than five years) of the reservoir area.	150(85.2%)	98(59.8%)	248(72.9%)
I have recently (within the past five years) established a permanent or seasonal residence within the Hinckley Reservoir area.	20(11.4%)	22(13.4%)	42(12.4%)
I do not have either a seasonal or permanent residence in the reservoir area.	6(3.4%)	44(26.8%)	50(14.7%)
Total Responses	176	164	340

Question 2 - WHAT ARE THE THREE THINGS THAT YOU LIKE MOST ABOUT THIS AREA?

	Local Responses #(%)	Non-Local Responses #(%)	Total #(%)
Physical beauty of area	153(30.6%)	149(31.6%)	302(31.1%)
Rural atmosphere	132(26.4%)	113(23.9%)	245(25.2%)
Recreational opportunities present in this area	66(13.2%)	83(17.6%)	149(15.3%)
Low crime	59(11.8%)	25(5.3%)	84(8.6%)
Low taxes	32(6.4%)	42(8.9%)	74(7.6%)
Low cost of land/housing	22(4.4%)	20(4.2%)	42(4.3%)
Lack of local development regulations	19(3.8%)	16(3.4%)	35(3.6%)
Other	17(3.4%)	24(5.1%)	41(4.3%)
Total Responses	500	472	972

Question 3a - IF THERE IS A RESIDENTIAL STRUCTURE ON YOUR PROPERTY, WHICH OF THE FOLLOWING BEST DESCRIBES IT?

	Local Responses #(%)	Non-Local Responses #(%)	Total #(%)
Single-family dwelling (site built)	139(80.8%)	92(78.0%)	231(79.7%)
Single-family dwelling (mobile home)	25(14.5%)	25(21.2%)	50(17.2%)
Two-family dwelling	6(3.5%)	1(0.8%)	7(2.4%)
Multiple-family dwelling (3 or more units)	2(1.2%)	0(0%)	2(0.7%)
Total Responses	172	118	290

Question 3b - WHICH OF THE FOLLOWING IS THE RESIDENTIAL STRUCTURE ON YOUR PROPERTY USED FOR?

	Local Responses #(%)	Non-local Responses #(%)	Total #(%)
Year round home	166(96.5%)	20(16.9%)	186(64.1%)
Seasonal/summer home	2(1.2%)	93(78.8%)	95(32.8%)
Year round/rental combination	3(1.7%)	2(1.7%)	5(1.8%)
Year round rental home	1(0.6%)	2(1.7%)	3(1.0%)
Seasonal rental home	0(0%)	1(0.9%)	1(0.3%)
Total Responses	172	118	290

Question 4 - IF THERE IS A YEAR-ROUND RESIDENTIAL STRUCTURE ON YOUR PROPERTY, WAS IT EVER USED BY YOU OR OTHERS AS A SEASONAL OR SUMMER HOME?

	Local Responses #(%)	Non-Local Responses #(%)	Total #(%)
YES	53(31.2%)	30(40.0%)	83(33.9%)
NO	117(68.8%)	45(60.0%)	162(66.1%)
Total Responses	170	75	245

Question 5 - IN GENERAL, HOW WOULD YOU RATE THE VARIETY OF COMMERCIAL GOODS AND SERVICES AVAILABLE IN THE HINCKLEY RESERVOIR AREA?

	Local Responses #(%)	Non-Local Responses #(%)	Total #(%)
Good	30(17.2%)	22(14.2%)	52(15.8%)
Average	65(37.4%)	72(46.5%)	137(41.6%)
Poor	79(45.4%)	61(39.3%)	140(42.6%)
Total Responses	174	155	329

Question 6 - PLEASE RATE THE FOLLOWING TYPES OF SERVICES AND FACILITIES FOUND IN HINCKLEY RESERVOIR STUDY AREA AS GOOD, AVERAGE, OR POOR. ALSO INDICATE HOW IMPORTANT THESE SERVICES AND FACILITIES ARE (OR WOULD BE IF MADE AVAILABLE) TO YOU AND YOUR FAMILY.

Local Responses

Quality of Service

	Good #(%)	Average #(%)	Poor #(%)	Total Responses
Summer Recreation Facilities	67(40.9%)	69(42.0%)	28(17.1%)	164
Winter Recreation Facilities	51(31.7%)	60(37.3%)	50(31.0%)	161
Water-Based Recreation Opportunities	62(38.5%)	61(37.9%)	38(23.6%)	161
Indoor Recreation/ Entertainment Facilities	11(8.1%)	19(14.0%)	106(77.9%)	136

Level of Importance

	Very Important #(%)	Somewhat Important #(%)	Not Important #(%)	Total Responses
Summer Recreation Facilities	67(43.8%)	53(34.6%)	33(21.6%)	153
Winter Recreation Facilities	52(34.9%)	60(40.3%)	37(24.8%)	149
Water-Based Recreation Opportunities	71(46.7%)	54(35.5%)	27(17.8%)	152
Indoor Recreation/ Entertainment Facilities	38(30.6%)	46(37.1%)	40(32.3%)	124

Question 6 (continued)

Non-Local Responses

Quality of Service

	Good #(%)	Average #(%)	Poor #(%)	Total Responses
Summer Recreation Facilities	51(35.9%)	62(43.7%)	29(20.4%)	142
Winter Recreation Facilities	33(25.0%)	55(41.7%)	44(33.3%)	132
Water-Based Recreation Opportunities	48(35.3%)	56(41.2%)	32(23.5%)	136
Indoor Recreation/ Entertainment Facilities	2(1.9%)	24(23.1%)	78(75.0%)	104

Level of Importance

	Very Important #(%)	Somewhat Important #(%)	Not Important #(%)	Total Responses
Summer Recreation Facilities	69(49.3%)	54(38.6%)	17(12.1%)	140
Winter Recreation Facilities	38(27.7%)	59(43.1%)	40(29.2%)	137
Water-Based Recreation Opportunities	65(48.1%)	54(40.0%)	16(11.9%)	135
Indoor Recreation/ Entertainment Facilities	24(22.6%)	43(40.6%)	39(36.8%)	106

Combined Local and Non-Local Responses

Quality of Service

	Good #(%)	Average #(%)	Poor #(%)	Total Responses
Summer Recreation Facilities	118(38.6%)	131(42.8%)	57(18.6%)	306
Winter Recreation Facilities	84(28.7%)	115(39.2%)	94(32.1%)	293
Water-Based Recreation Opportunities	110(37.0%)	117(39.4%)	70(23.6%)	297
Indoor Recreation/ Entertainment Facilities	13(5.4%)	43(17.9%)	184(76.7%)	240

Question 6 (continued)

	Level of Importance			
	Very Important #(%)	Somewhat Important #(%)	Not Important #(%)	Total Responses
Summer Recreation Facilities	136(46.4%)	107(36.5%)	50(17.1%)	293
Winter Recreation Facilities	90(31.5%)	119(41.6%)	77(26.9%)	286
Water-Based Recreation Opportunities	136(47.4%)	108(37.6%)	43(15.0%)	287
Indoor Recreation/ Entertainment Facilities	62(27.0%)	89(38.7%)	79(34.3%)	230

NOTE: The following three questions (7, 8, and 9) were asked of permanent year-round residents only (local residents).

Question 7 - IN WHAT COUNTY DO YOU WORK?

Oneida	88(63.8%)
Herkimer	43(31.2%)
Other	7(5.0%)
Total Responses	138

Question 8 - PLEASE INDICATE WHAT TOWN, VILLAGE, OR CITY YOU WORK IN.

Utica	52(38.2%)
Rome	4(2.9%)
Herkimer	9(6.6%)
Ilion	4(2.9%)
Other	67(49.4%)
Total Responses	136

Question 9 - HOW FAR DO YOU DRIVE TO WORK ONE WAY?

0-5 miles	15(11.5%)
5-15 miles	19(14.5%)
15-30 miles	73(55.7%)
over 30 miles	24(18.3%)
Total Responses	131

Question 10 - HAVE YOU EVER HAD PROBLEMS WITH YOUR HOUSEHOLD WATER SUPPLY? IF YES, INDICATE HOW OFTEN.

	Local Responses #(%)	Non-Local Responses #(%)	Total #(%)
YES	35(20.3%)	13(11.3%)	48(16.7%)
NO	137(79.7%)	102(88.7%)	239(83.3%)
Total Responses	172	115	287

If yes, how often?

	Local Responses #(%)	Non-Local Responses #(%)	Total #(%)
Once a year	17(48.6%)	6(46.2%)	23(47.9%)
2-5 times a year	10(28.6%)	2(15.4%)	12(25.0%)
More than 5 times a year	8(22.8%)	5(38.4%)	13(27.1%)
Total Responses	35	13	48

Question 11 - WHICH OF THE FOLLOWING BEST DESCRIBES YOUR TYPE OF SEWAGE DISPOSAL SYSTEM?

	Local Responses #(%)	Non-Local Responses #(%)	Total #(%)
Septic Tank & Leach Field	158(90.8%)	85(66.9%)	243(80.7%)
Pit Privy	4(2.3%)	29(22.8%)	33(11.0%)
Cesspool	4(2.3%)	5(3.9%)	9(3.0%)
Direct Discharge Pipe	4(2.3%)	3(2.5%)	7(2.3%)
Other	4(2.3%)	5(3.9%)	9(3.0%)
Total Responses	174	127	301

Question 12 - DOES SEWAGE FROM YOUR OWN OR YOUR NEIGHBOR'S HOUSEHOLD SEWAGE DISPOSAL SYSTEM EVER CAUSE PROBLEMS, SUCH AS FLOWING ABOVE GROUND OR GIVING OFF A BAD ODOR? IF YES, INDICATE HOW OFTEN.

	Local Responses #(%)	Non-Local Responses #(%)	Total #(%)
YES	12(6.9%)	2(1.6%)	14(4.7%)
NO	163(93.1%)	124(98.4%)	287(95.3%)
Total Responses	175	126	301

If yes, how often?

	Local Responses #(%)	Non-Local Responses #(%)	Total #(%)
Once a year	3(25.0%)	1(50.0%)	4(28.6%)
2-5 times a year	2(16.7%)	1(50.0%)	3(21.4%)
More than 5 times a year	7(58.3%)	0(0%)	7(50.0%)
Total Responses	12	2	14

Question 13 - WHAT DO YOU THINK ARE SOME OF THE POSITIVE ASPECTS OF LIVING IN, OR OWNING PROPERTY IN, THE HINCKLEY RESERVOIR AREA?

	Local Responses #(%)	Non-Local Responses #(%)	Total #(%)
Privacy/Quietness/ Country-Setting	101(67.3%)	78(57.8%)	179(62.8%)
Beauty/Scenery/Wildlife	56(37.3%)	50(37.0%)	106(37.2%)
Recreational Opportunities	35(23.3%)	33(24.4%)	68(23.9%)
Proximity to Utica/Rome/Valley	12(8.0%)	17(12.6%)	29(10.2%)
Low/Reasonable Taxes	12(8.0%)	7(5.2%)	19(6.7%)
Total Responses*	216	185	401

NOTE: In that most respondents indicated more than one "positive aspect," the percentages, when totaled, exceed 100%. The individual percentages represent the percentage of people who indicated that one specific "positive aspect."

* Additionally, there were many other "positive aspects" mentioned, but they were seldom mentioned by more than three people. Therefore, the total figures include only those five "positive aspects" which are listed above.

Question 14 - WHAT DO YOU THINK ARE SOME OF THE NEGATIVE ASPECTS OF LIVING IN, OR OWNING PROPERTY IN, THE HINCKLEY RESERVOIR AREA?

	Local Responses #(%)	Non-Local Responses #(%)	Total #(%)
Unsightly trailers/homes/yards	29(19.3%)	13(10.2%)	42(15.1%)
High crime/poor law enforcement	17(11.3%)	21(16.4%)	38(13.7%)
Black flies/mosquitoes	18(12.0%)	18(14.1%)	36(13.0%)
High taxes	18(12.0%)	15(11.7%)	33(11.9%)
Fluctuating reservoir water level	3(2.0%)	29(22.7%)	32(11.5%)
Long distance to work/stores/ gas stations	23(15.3%)	8(6.3%)	31(11.2%)
Poorly maintained roads	10(6.7%)	15(11.7%)	25(9.0%)
Lack of zoning & land use controls	18(12.0%)	6(4.7%)	24(8.6%)
Total Responses *	136	125	261

NOTE: In that most respondents indicated more than one "negative aspect," the percentages, when totaled, exceed 100%. The individual percentages represent the percentage of people who indicated that one specific "negative aspect."

* Additionally, there were other "negative aspects" mentioned, but they were seldom mentioned by more than three people. Therefore, the total figures include only those eight "negative aspects" which are listed above.

Question 15 - WHAT RECREATIONAL ACTIVITIES DO YOU PARTICIPATE IN, IN THE HINCKLEY RESERVOIR AREA?

	Local Responses			Non-Local Responses		
	How often each season?			How often each season?		
	once	2-5	over 5	once	2-5	over 5
Swimming	4	28	92	10	32	60
Fishing	5	23	82	9	37	48
Hunting	7	7	69	7	15	31
Hiking	2	15	58	9	15	40
Canoeing	6	25	47	5	20	19
Cross-Country Skiing	3	14	47	7	16	12
Snowmobiling	11	14	39	7	9	19
Power Boating	6	11	29	5	16	38
Water Skiing	5	5	20	2	8	27
Sailing	4	7	17	4	6	15
Total Responses	53	149	500	65	174	309

Question 16 - DO YOU FEEL THE QUANTITY AND QUALITY OF THE RECREATIONAL OPPORTUNITIES IN THE HINCKLEY AREA ARE SATISFACTORY?

	Local Responses #(%)	Non-Local Responses #(%)	Total #(%)
YES	99(58.9%)	85(58.6%)	184(58.8%)
NO	69(41.1%)	60(41.4%)	129(41.2%)
Total Responses	168	145	313

Question 17 - SHOULD EFFORTS BE UNDERTAKEN (AT EITHER THE LOCAL OR STATE GOVERNMENT LEVEL, OR BY PRIVATE DEVELOPERS) TO DEVELOP MORE INTENSIVE RECREATIONAL USE OF THE RESERVOIR AREA? (CAMPSITES, CROSS-COUNTRY SKI TRAILS, BOAT RENTALS, ETC.)

	Local Responses #(%)	Non-Local Responses #(%)	Total #(%)
YES	104(63.0%)	81(55.5%)	185(59.5%)
NO	61(37.0%)	65(44.5%)	126(40.5%)
Total Responses	165	146	311

Question 18a - HOW WOULD YOU RATE THE SCENERY ALONG ROUTE 365 FROM THE HINCKLEY DAM TO ITS INTERSECTION WITH ROUTE 8?

	Local Responses #(%)	Non-Local Responses #(%)	Total #(%)
Outstanding	44(25.9%)	49(32.0%)	93(28.8%)
Average	81(47.6%)	86(56.2%)	167(51.7%)
Below Average	45(26.5%)	18(11.8%)	63(19.5%)
Total Responses	170	153	323

Question 18b - HOW WOULD YOU RATE THE SCENERY ALONG ROUTE 8 FROM THE TOWN OF OHIO MUNICIPAL BOUNDARY TO WILMURT?

	Local Responses #(%)	Non-Local Responses #(%)	Total #(%)
Outstanding	58(35.2%)	48(35.6%)	106(35.3%)
Average	83(50.3%)	79(58.5%)	162(54.0%)
Below Average	24(14.5%)	8(5.9%)	32(10.7%)
Total Responses	165	135	300

Question 19a - WHAT WOULD YOU CONSIDER TO BE SOME OF THE MORE OUTSTANDING SCENIC VIEWS IN THE HINCKLEY RESERVOIR AREA?

	Local Responses	Non-Local Responses	Total
Hinckley Dam area	35	34	69
All along Route 365	20	12	32
High Falls/Ohio Gorge	10	3	13
All over/entire area	4	7	11

NOTE: The above four "outstanding scenic views" represent the most frequently mentioned areas. In that this question did not provide the respondents with any particular "outstanding scenic view" to place a check mark next to, there were numerous responses - many of which were seldomly mentioned by more than two individuals and, therefore, were not categorized. This is the reason why percentages and column totals were not given.

Question 19b - WHAT WOULD YOU CONSIDER TO BE SOME OF THE MORE ATTRACTIVE UNIQUE NATURAL AREAS IN THE HINCKLEY RESERVOIR AREA?

	Local Responses	Non-Local Responses	Total
West Canada Creek	10	14	24
High Falls/Ohio Gorge	16	4	20
Black Creek	4	8	12

NOTE: The above three "unique natural areas" represent the most frequently mentioned sites. In that this question did not provide the respondents with any particular "unique natural areas" to place a check mark next to, there were numerous responses - many of which were seldomly mentioned by more than two individuals and, therefore, were not categorized. This is the reason why percentages and column totals were not given.

Question 19c - PLEASE IDENTIFY ANY "OTHER ATTRACTIVE AND UNIQUE ASPECTS" OF THE HINCKLEY RESERVOIR AREA.

NOTE: No summary table is provided for this question due to the diversity and uniqueness among responses. See Appendix C for information on this question.

VII. Survey of Hinckley Reservoir Day Use Area Users

HOCCPP staff conducted personal interview surveys at the Hinckley Reservoir Day Use Area on three separate occasions in August, 1986. The surveys were conducted in order to get an idea of why individuals or groups visited this Day Use Area, where the users live and how often they visited the area. The Hinckley Reservoir Day Use Area is operated by the New York State Department of Environmental Conservation (DEC), and is the only publicly operated recreation area either on the reservoir or within the study area. As such, it is one of the few sources of information on recreational usage of Hinckley Reservoir.

The Hinckley Reservoir Day Use Area is located on the southern shore of Hinckley Reservoir, off of Stormy Hill Road in the Town of Russia. This 40 acre recreation area has a large sandy beach, basketball courts, volleyball and badminton areas as well as some large open spaces which could accommodate field sports. The picnic areas are scattered throughout the site in a variety of settings, ranging from relatively open sites to picnic spots which are relatively secluded. The Hinckley facility was originally designed in a manner similar to most of the other DEC operated recreational areas in the Adirondack region, and that is with provision made for overnight camping as well as day use facilities. Individual camping spots were cleared in a wooded area somewhat removed from the beach area, and these small cleared areas are now utilized as individual picnic sites.

These personal interview surveys were conducted on three separate weekend days in August when the weather was suitable for a picnic. Because these were face to face interviews the surveys were kept as simple as possible and were

designed to be answered in only a few minutes. One hundred and seven respondents (most respondents were actually a group of people using one picnic spot or occupying a spot on the beach) were interviewed. This survey was not designed to be a scientifically valid survey, so that we could say, for example, with a 90% degree of confidence that 40% of the users of the Day Use Area come from Utica. A survey of this type would have required that a HOCCPP staff person conduct surveys nearly every weekend day and holiday. This would have been prohibitively expensive as well as a potential intrusion on the users of the facility. It was more important to get an idea of why people used the Day Use Area and to find out whether they utilized the Hinckley Reservoir area for other recreational pursuits. A questionnaire and summary of the tabulated responses is located at the end of this section.

As might be expected, most people (58/107 or 54%) who were interviewed at the Hinckley Day Use Area as part of this survey were from the Greater Utica area. Approximately 1/3 of the respondents indicated that it was their first visit to the Day Use Area during that season, while over 50% indicated that they use the Day Use Area between two and ten times per season. Ten percent of those interviewed indicated that they use the facility nearly every weekend and sometimes during the week, and this group are probably considered "regulars" at the facility.

Question 6 inquired as to which other Day Use Areas in the Central New York region the respondents used. The most frequent answer was "none" given by 46% of those respondents interviewed. Thirty-five percent indicated that they used the Delta Lake facility and 17% indicated they used the Verona Beach facility. Delta Lake State Park is located just north of the City of Rome and Verona

Beach State Park is located in the far western section of Oneida County on the shore of Oneida Lake. Delta Lake and Verona Beach are operated by the New York State Office of Parks and Recreation and are the only two recreation areas similar to the Hinckley Day Use Area in either Herkimer or Oneida Counties, south of the Old Forge Area.

Questions 4 and 7 dealt with the reservoir area in general. Question 4 asked whether the respondents visited the Hinckley Reservoir area in the fall, winter or spring for any purpose other than to work or visit a relative. Thirty-seven, or 35%, indicated that they have, with viewing the fall foliage the most frequent reason given for visiting the area.

Question 7 asked if the respondents would use a public campground, cross-country skiing trail, private rental cabin, playground, hiking trails, concession stand and/or boat rentals in the Hinckley Reservoir Study Area. The strongest opinion was the percentage of people (83%) who said they would not use a snowmobile trail if one were located in the area. Approximately 69% of those interviewed said they would use a public campground if it were located in the reservoir area, and 71% said they would use hiking trails in the area. The responses were evenly split when people were asked whether they would use private rental cabins, cross-country skiing trails or playgrounds. A high percentage of respondents also indicated that they would use a concession stand and boat rentals. Overnight camping and hiking trails are things which could be established within the boundaries of the Day Use Area (Hinckley was designed originally for camping) and hiking trails could extend into the adjoining Forest Preserve land. A concession stand and boat rentals could be integrated into the current Hinckley Reservoir Day Use Area. Rentals of small boats and

canoes on Hinckley Reservoir may be somewhat of a problem, since the reservoir itself is a fairly large body of water and the water can become quite rough with the wind and power boats. There is a commercial establishment on Black Creek at the Hamlet of Grant which does rent canoes, and Black Creek is more suitable for canoeing (particularly for the novice canoest) than is Hinckley Reservoir.

Questions 5 and 8 were open-ended questions and provided some interesting information. Question 5 allowed HOCCPP staff to get a pretty good idea of what people like about the Hinckley Reservoir Day Use Area. The most frequent answer given when people were asked "Why did you choose to visit the Hinckley Reservoir Day Use Area?" was that it was close and convenient to home. Thirty-five of the 107 people/groups surveyed gave this answer. Nearly the same number of respondents indicated that this was their first time visiting the Day Use Area for the season. There could be some correlation between first time visitors and the convenience factor, particularly since the surveys were taken on days when the weather was right for a picnic and swimming.

The similarity of answers given to this open ended question allowed for the identification of a few outstanding features of the Day Use Area. Many respondents indicated that they visited the Day Use Area because of the nice beach and swimming area, the facility was not crowded and other users seemed family oriented. The point about the beach, the uncrowded atmosphere and family orientation is important because over a dozen respondents specifically mentioned other Day Use Areas where the users were primarily younger and not so family oriented. One thing to keep in mind is that the Hinckley facility is spacious enough to accommodate a large crowd, without appearing "crowded."

Question 8 asked the respondent whether they had any additional comments concerning the Day Use Area, or any other recreational facility on Hinckley Reservoir. Twelve respondents commented that a camping area and concession stand were needed. Eleven people made the general comment that they were pleased with the Day Use Area and nine specifically mentioned the clean grounds and water as an attractive feature.

There was a relaxed atmosphere at the Day Use Area, due probably to the spaciousness of the facility which prevented a "crowded" feeling. One need not rely on the information obtained from this survey to recognize the advantages of this facility. The range of settings is one of the positive features. For example, if you wanted to picnic in the woods with some degree of privacy, you could drive your car up to one of the picnic areas originally designed as a campsite. On the other hand, picnic sites both out in the sun and with some tree cover were available adjacent to the beach.

The general conclusions which can be drawn from this survey are that a significant number of people use the Hinckley Reservoir Day Use Area because it is spacious and uncrowded, it has a nice beach and swimming area and because of a perceived family orientation. Individuals or groups who use the facility for these reasons are probably repeat users, who have used other Day Use Areas and find Hinckley more to their liking.

SURVEY OF HINCKLEY RESERVOIR DAY USE AREA PATRONS - SURVEY TABULATIONS

1. How often do you use this facility each season? _____ times

*First Time	38
*Two - Six Times	51
*Seven - Ten Times	7
*Over Ten Times	11
Total	107

2. Do you use the Day Use Area primarily during the months of:

0 June 0 July 42 August 41 All Summer 24 July & August

3. What town/village/city did you come from?_____

*39 (or 36.5%) of those interviewed came from Utica
* 9 (or 8.4%) of those interviewed came from New Hartford
* It is worth noting that several people were from Rome, and one family was from the Town of Verona.

4. Have you ever visited the Reservoir area in the fall, winter or spring for any purpose other than to work or to visit a relative? 37 yes 70 no

Purpose of visit:					
Fishing	6	Boating	2	Hiking	4
Skiing	2	Hunting	6	Snowmobile	2
Sightseeing	19	Own Camp	2	Picnic	1

5. Why did you choose to visit the Hinckley Reservoir Day Use Area?

The most numerous responses were:

Nice beach and swimming area	28
Clean area and water	20
Close and convenient to home	35
Not crowded	26
Family oriented	18
Enjoy picnics	29

6. What other DEC public recreation areas do you use?

The most numerous responses were:

Delta Lake	37
Verona Beach	18
Glimmerglass	6
Pixley Falls	6
None	49

7. If the following were available in the Hinckley Reservoir Area would you use a:

	Yes	No
Public overnight campground	73	33
Snowmobile trail	18	88
Cross-Country skiing trail	53	53
Private rental cabin	53	53
Playground	49	49
Hiking trails	74	30
Concession stand*	12	3
Boat rental*	12	2

* These two questions were not part of the original survey, and were only asked of a small number of people.

8. Do you have any additional comments concerning this facility in particular, or any of the other outdoor recreational facilities present in the Hinckley Reservoir area?

The most numerous comments were:

1)	Need a camping area	12
2)	Need a concession stand	12
3)	Generally pleased with area/facility	11
4)	Clean area and water	9
5)	Need additional sporting opportunities and equipment rentals	6

VIII. Land Use Management of Shorelines : A Summary of How Other Areas and Communities Have Addressed Shoreline Development and Preservation Issues

The Hinckley Reservoir serves a number of important functions. In addition to supplementing water levels in the New York State Barge Canal, it supplies drinking water to over 135,000 people in the greater Utica area, provides hydroelectric power, and serves as an important source of recreation within Herkimer and Oneida Counties. Communities within the Hinckley Reservoir Study Area realize, perhaps more so than anyone else, that the Reservoir is a very important resource within their midst. Because of this, one of the major focuses of the Hinckley Reservoir Study was to assess how existing and future shoreline development could affect the Reservoir and its adjacent land area. Furthermore, it was felt that communities throughout New York State and the nation which already have lakeshore management programs in place could provide some insight as to how future development along the shores of the Hinckley Reservoir could be better managed.

The information presented in this section of the report provides a summary of the research paper of the same title which will be published as a separate report by the Herkimer-Oneida Counties Comprehensive Planning Program (HOCCPP) as part of the Hinckley Reservoir Study. The purpose of this summary is to highlight the key points and major findings of the research paper. A limited number of copies of the research paper are available from HOCCPP at the address shown on page I of this document.

The research paper and this summary focus on how other communities have addressed lakeshore development and the problems associated with this land use issue. Staff at HOCCPP gathered this information by sending out letters to

over 90 planning agencies and private consulting firms throughout the United States. Although the research was not completelyexhaustive, the information presented is a good representation of comprehensive approaches to lakeshore management.

Both the research paper and this summary make a distinction between lakeshore management practices outside of New York State, and those within New York State. Furthermore, within New York State, a geographical distinction was also made between those communities located outside of the Adirondack Park, and those within.

The information and communities examined in this summary provide only an example of what HOCCPP found to be the most comprehensive programs which were analyzed in the research paper. For more examples and more detailed information, the reader should consult the research paper.

A. LAKESHORE MANAGEMENT PRACTICES OUTSIDE OF NEW YORK STATE

Early in the research process it became apparent that outside of New York, the States of Minnesota and Wisconsin have set the standard for lakeshore management nationwide. What follows is a brief examination of these two state's programs and a sampling of their land use policies and regulations.

1) Minnesota

The State of Minnesota mandates that counties must adopt zoning in unincorporated areas within 1,000 feet of a lake or pond in excess of 25

acres.[7] Specific land use regulations are assigned depending on the "classification" of the lake or pond. The State of Minnesota has classified all lakes and ponds in excess of 25 acres into one of the following three categories:

- Natural Environment
- Recreational Development
- General Development

The existing level of development determines how a lake or pond is classified according to these three categories. Very specific criteria are used to determine which category is appropriate. In general, natural environment lakes are the most primitive and undeveloped while general development lakes are already heavily developed.

Tables 15 and 16 highlight some of the mandated lakeshore land use regulations in Minnesota which could be considered when formulating the means by which to preserve and protect the shoreline of Hinckley Reservoir.

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7 Minnesota Department of Natural Resources - Division of Waters, "Shoreline Management: Shoreland Management Classification System for Public Waters - Supplementary Report No. 1 (2nd ed.)" (1/76): p. 5., and Minnesota Department of Natural Resources, "Draft Revision to Shoreland Management Regulations of the Department of Natural Resources" (4/87); pp.21-22

Table 15

State of Minnesota Lakeshore Land Use Regulations:
Zoning Districts and Uses

KEY: P - Permitted Use
C - Conditional Use
N - Prohibited Use

	Natural Environment Lakes	Recreational Development Lakes	General Development Lakes
Special Protection District			
Uses: Forest Management	P	P	P
Sensitive Resource Management	P	P	P
Agricultural: cropland & pasture	P	P	P
Agricultural Feedlots	C	C	C
Parks & Historic Sites	C	C	C
Extractive Use	C	C	C
New Roads	C	C	C
Single Residential District			
Uses: Single Family (seasonal & year round)	P	P	P
Semi-public & religious	C	C	C
Parks & Historic Sites	C	C	C
New Roads	C	C	C
Extractive Use	C	C	C
Planned Unit Development District			
Uses: Residential Planned Unit Developments	C	C	C
Single Family	P	P	P
Surface Water Oriented Commercial	C	C	C
Commercial Planned Unit Development	N	C	C
Semi-public & religious	C	C	C
Parks & Historic Sites	C	C	C
New Roads	C	C	C
Water Oriented Commercial District			
Uses: Surface Water Oriented Commercial	N	P	P
Commercial Planned Unit Development	N	C	C
Public, semi-public & religious	N	C	C
New Roads	C	C	C
General Use District			
Uses: Commercial	N	P	P
Commercial Planned Unit Development	N	C	C
Industrial	N	C	C
Public, semi-public & religious	N	P	P
Extractive	C	C	C
New Roads	C	C	C

OURCE: "Draft Revisions to Shoreland Management Regulations of the Department of Natural Resources," Minnesota Department of Natural Resources (April, 1987).

Table 16

State of Minnesota Lakeshore Land Use Regulations:
Lot Dimensions and Setback Requirements for Residential Uses

	Natural Environment Lakes	Recreational Development Lakes	General Development Lakes
Minimum Lot Size			
w/o public sewer	80,000 sq. ft.	40,000 sq. ft.	20,000 sq. ft.
w/ public sewer	40,000 sq. ft.	20,000 sq. ft.	15,000 sq. ft.
Minimum Lot Width at Waterfront and Building Setback Line			
w/o public sewer	200 ft.	150 ft.	100 ft.
w/ public sewer	125 ft.	75 ft.	75 ft.
Minimum Building Setback from High Water Mark			
w/o public sewer	200 ft.	100 ft.	75 ft.
w/ public sewer	150 ft.	75 ft.	50 ft.
Minimum Setback for On-Site Sewage Treatment Systems from Highwater Mark	150 ft.	75 ft.	50 ft.

SOURCE: "Draft Revisions to Shoreland Management Regulations of the Department of Natural Resources," Minnesota Department of Natural Resources (April, 1987).

In addition to the regulations outlined in the previous tables, the State of Minnesota's Lakeshore Management Program also includes a number of miscellaneous regulations. Some of the more notable regulations include the following:

- Private wells shall be placed in areas not subject to flooding and upslope from any source of contamination.

- Within shore impact zones (land located between the ordinary highwater mark and a line parallel to it at a setback of 50% of the

structure setback), as much vegetation as practicable is to remain in order to screen structures, vehicles, and other facilities as viewed from the water.

- No structures (except boathouses, piers, and docks) shall be placed at an elevation such that the lowest floor, including a basement, is less than three (3) feet above the highest known water level.

(2) Wisconsin

Like Minnesota, the State of Wisconsin mandates that all counties adopt land use regulations in unincorporated areas lying within 1,000 feet of lakes and ponds. However, unlike Minnesota, there is no minimal lake/pond size required for the adoption of land use regulations. Lakes and ponds of all sizes are required to be protected through land use regulations in Wisconsin.[8]

The State of Wisconsin requires, at a minimum, that the following must be regulated within shoreline zoning districts:

- The Subdivision of Land
- Installation of Sewage Disposal and Water Supply Systems
- Lot Sizes

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8 Pamela Burnett and LuAnne Hansen - State of Wisconsin Department of Natural Resources, "Floodplain/Shoreland Management: A guide for local zoning officials - water regulations and zoning" (2.82); p.1, and "Ozaukee County, Wisconsin - Zoning Ordinance - Chapter VII" (11/79); p. 7-10.

- Building Setbacks
- Tree Cutting
- Drainage Alterations
- Development Activity in or Adjacent to Wetlands

Table 17 shows a few examples of land use regulations in effect within 1,000 feet of all lakes and ponds in the State of Wisconsin:

Table 17

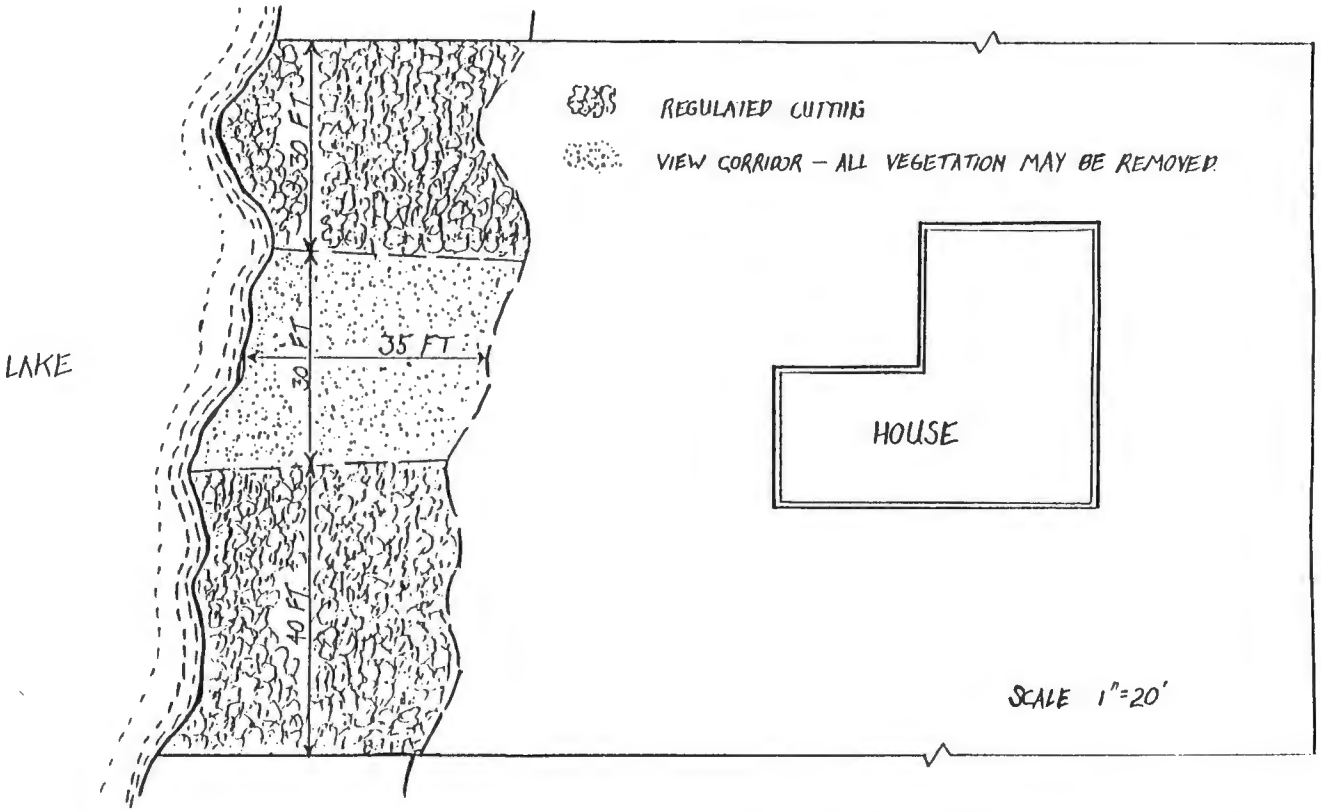
State of Wisconsin Lakeshore Land Use Regulations:
Lot Dimensions and Setback Requirements for Residential Uses

Minimum Lot Size	
w/o public sewer	20,000 sq. ft.
w/ public sewer	10,000 sq. ft.
Minimum Lot Width	
w/o public sewer	100 ft.
w/ public sewer	65 ft.
Minimum Building Setback from Highwater Mark	75 ft.

SOURCE: "Floodplain/Shoreland Management: A Guide for Local Zoning Officials," Wisconsin Department of Natural Resources; Pamela Burnett and LuAnne Hanson (February, 1982).

FIGURE 22:

WISCONSIN SHORELINE VEGETATIVE CUTTING REGULATIONS



SOURCE: "FLOODPLAIN/SHORELAND MANAGEMENT: A GUIDE FOR LOCAL ZONING OFFICIALS," FEB., 1982.

As illustrated in Figure 22, the cutting and removal of trees and shrubbery is regulated within a 35 foot "buffer strip" from the highwater mark as follows:

- No more than 30% of the length of this strip shall be clear cut to the depth of the strip.

- Provided that further cutting of this 30% shall not create a clear cut opening in this strip greater than 30 feet for every 100 feet.

- In the remaining 70% length of this strip, cutting shall leave sufficient cover to screen cars, dwellings, accessory structures (except boathouses) as seen from the water, to preserve natural beauty and to control erosion.

Both States also encourage the clustering of residential development within shoreline zoning districts. The State of Minnesota outlines a detailed clustering management scheme in their provisions while Wisconsin is much less formal. Both states, however, recognize that the clustering of development ensures better protection of the lake and its environs, while at the same time minimizing expenses to the developer.

B. LAKESHORE MANAGEMENT PRACTICES WITHIN NEW YORK STATE

As mentioned previously, this portion of the summary examines lakeshore management programs based on whether the community/regulatory agency is located within the Adirondack Park, or outside of the Park. Research for this issue revealed that the Adirondack Park Agency and those communities located within the Adirondack Park afford much greater protection to lakeshores than those communities outside of the Park. In fact, the Adirondack Park Agency's regulations, in many respects, parallel Minnesota's and Wisconsin's.

It seems that lakeshore regulations outside of the Adirondack Park are

either non-existent, or non-restrictive. In fact, many communities tend to encourage dense shoreline development through very small minimum lot width requirements. For example, one Town near the Catskill Park which has an abundance of small to medium size water bodies, requires only that waterfront lots have a minimum lot width of 50 feet.

The regulation of lakes which are used for drinking water supply purposes, however, are offered greater protection. Section 11 of the New York State Public Health Law permits public water supply agencies (not municipalities) who have authority over a water source to adopt stringent regulations to protect the water source from contamination. This "protection" is usually assured through regulations regarding sewage disposal, chemical dumping, pesticide application, etc. What follows is the most comprehensive set of regulations concerning the protection of a public water supply source which HOCCPP received in response to the original survey letter. These regulations are administered by the Onondaga County Water Authority.

1) Onondaga County Water Quality Management: The Regulation of Skaneateles and Otisco Lakes(9)

The following highlights some of the regulations which apply to these two lakes and their watersheds:

- Cemeteries: No internment of a human body shall be made within a 250 foot linear distance of the lake or watercourse.

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9 Onondaga County Water Quality Management Agency, "Rules and Regulations for the Protection from Contamination of the Public Water Supply of the Onondaga County Water Authority: Skaneateles and Otisco Lake Watershed Rules and Regulations."

- Chloride Salt: No chloride salt shall be stored within a 500 foot linear distance of the lake or watercourse except in weather-proof buildings or watertight vessels.

- Herbicides, Pesticides, and Toxic Chemical: No herbicides, pesticides, or toxic chemical shall be discharged, applied, or allowed to enter the lake or watercourse unless a permit to do so has been obtained from the appropriate State agency having jurisdiction.

- Human Excreta and Sewage:

  (a) No human excreta shall be deposited or allowed to escape into any lake or watercourse on the watershed.

  (b) No human excreta shall be buried in soil on the watershed unless deposited in trenches or pits at a distance of not less than 250 feet from the lake or watercourse and covered with not less than one foot of soil in such a manner as to effectively prevent its being washed into the lake or watercourse by rain or melting snow.

  (c) No portion of a seepage unit (tile field, seepage pit, or equivalent) of a subsurface sewage disposal system shall be constructed, placed, or rebuilt with 500 feet of the lake or watercourse.

- Subsurface Disposal:

  (a) Where rapid percolation is indicated such as in rock fissures, the use of subsurface disposal systems may be rejected.

(b) The maximum interval for a complete inspection of sewage disposal facilities serving year-round residences shall not exceed three years.

- Recreation:

(a) No bathing, swimming, or fishing shall be allowed within 500 feet of any water supply intake.

(b) No boating shall be allowed in or upon waters of the lake within 500 feet of any water supply intake.

(c) Boats which contain heads, marine toilets, or other facilities which would permit the discharge of sewage, human excreta or sewage effluents must be rendered inoperable prior to use of the boat on the lake or its tributaries.

These regulations, and all regulations regarding the protection of drinking water sources, are in place for health reasons only. Any other benefits which occur as a result of these regulations (i.e. preservation of shorelines, more enjoyable recreation outings, etc.), are only incidental.

In regards to the Hinckley Reservoir, which supplies drinking water to the Utica metropolitan area, the agency with jurisdiction is the Utica Board of Water Supply. They have also adopted regulations similar to those shown above, but there is very little, if any, enforcement of these regulations. The Utica Board of Water Supply has indicated that the current level of recreational use of Hinckley Reservoir and the surrounding land use pattern has no measurable effect on the quality of

the drinking water taken from Hinckley Reservoir. However, if an impact is detected, regulations are in place to address the problem.

2) Shoreline Regulations within the Adirondack Park

Within the Adirondack Park, the situation is much different. The Adirondack Park Agency (APA) has the authority over land use and development on both private and public lands within the six million acre Adirondack Park.[10] Local governments, however, retain the right to adopt local land use regulations, and many localities have recently developed additional regulations which supplement the regulations in the Adirondack Park Agency Act.

The APA's regulations are selective by land use area and type of project, and include provisions for shoreline protection along all lakes and ponds for all development. Table 18 highlights some of the more significant regulations which pertain to new development, with an emphasis on shoreline protection regulations.

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10 State of New York Adirondack Park Agency, "A Citizen's Guide to Adirondack Park Agency Land Use Regulations" (1/80): p.1 and p.3, and State of New York Adirondack Park Agency, "Adirondack Park Agency Act - Executive Law, Article 27" (1973) p.31.

Table 18

Adirondack Park Agency Land Use Regulations

	LAND USE AREAS					
	Hamlet	Moderate Intensity Use	Low Intensity Use	Rural Use	Resource Mgmt.	Industrial Use
Buildings per sq. mi. (Minimum Lot Size in Acres)*	No limit (-)	500 (1.3)	200 (3.2)	75 (8.5)	15 (42.7)	No limit -
Minimum Lot Width (Feet)	-	100	125	150	200	none
Minimum Building Setback from the mean high water mark (Feet)	50	50	75	75	100	none
Minimum Septic System** Setback from the mean high water mark (Feet)	100	100	100	100	100	100

* The APA Act does not specify minimum lot size, nor does it include any strict prohibition of uses.
** applies to leaching device.

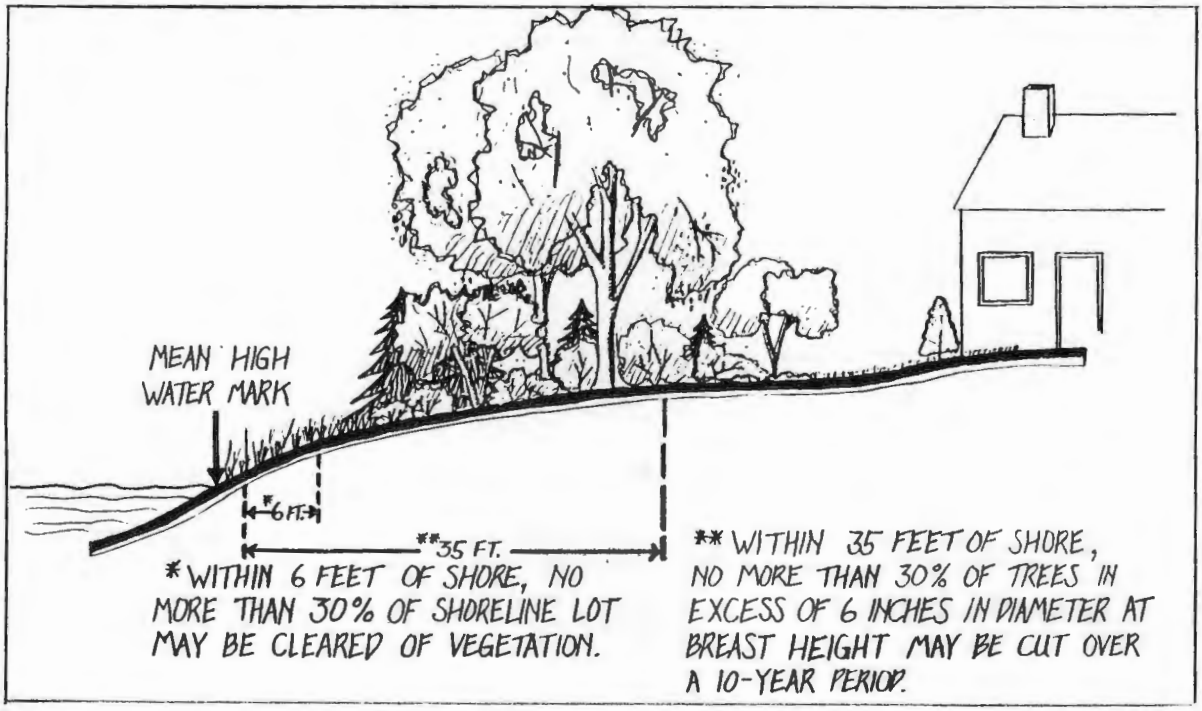
SOURCE: "A Citizen's Guide to Adirondack Park Agency Land Use Regulations," Adirondack Park Agency (January, 1980).

The following standards apply to the removal of vegetation on shoreline lots within the Adirondack Park. See Figure 23 for a graphic representation of the first two standards listed below.

- Within 35 feet of the mean high water mark (m.h.w.m.), not more than 30% of the trees over 6 inches in diameter at breast height may be cut during any 10 year period.
- Within 6 feet of m.h.w.m., up to 30% of the shorefront may be clear of vegetation on any lot.

- Diseased vegetation, and rotten or damaged trees or other vegetation presenting safety or health hazards may always be removed.

FIGURE 23 :
ADIRONDACK PARK AGENCY SHORELINE
VEGETATIVE CUTTING REGULATIONS



SOURCE: "A CITIZEN'S GUIDE TO ADIRONDACK PARK AGENCY LAND USE REGULATIONS," JANUARY, 1980.

The Adirondack Park Agency Act also contains regulations governing contractual access to shorelines. The term "contractual access" applies to a situation where access to a body of water is guaranteed to property owners whose parcel of land does not have shoreline frontage on that particular body of water. Table 19 highlights the standards which are applicable to arrangements of contractual access:

Table 19

Minimum Shoreline Frontage for Deeded or Contractual Access From Back Lots

	APA ACT LAND USE AREAS					
Number of Lots	Hamlet	Moderate Intensity Use	Low Intensity Use	Rural Use	Resource Mgmt.	Industrial Use
5-20	100 ft.	100	100	100	100	100
21-100	100 Feet Plus 3 Feet for each Lot Exceeding 21					
101-150	340 Feet Plus 2 Feet for each Lot Exceeding 100					
over 150	440 Feet Plus 1 Foot for each Lot Exceeding 150					

SOURCE: Executive Law, Article 27 - Ardirondack Park Agency Act (1973).

One other very important element of the APA's shoreline protection regulations addresses the clustering of development. As an alternative to requiring minimum lot width along shorelines, and in an attempt to encourage the clustering of buildings so as to maintain as much undeveloped shoreline as possible, shoreline development may be clustered as shown in Table 20 below:

Table 20

Adirondack Park Agency Shoreline Clustering Provisions

Land Use Classification	Principal Buildings Per Linear Mile of Shoreline
Hamlet	106
Moderate Intensity Use	53
Low Intensity Use	42
Rural Use	36
Resource Management	26
Industrial Use	-

SOURCE: Executive Law Article 27 - Adirondack Park Agency Act (1973).

Although not mandatory, clustering is an excellent method of preserving the shoreline of lakes and ponds. In doing so, large areas along shorelines can remain undisturbed, thereby preserving the aesthetic quality of the lake, and minimizing pollution to the water resource. Clustering is also advantageous to the developer in that it requires much less money for the installation of roads, utilities, and other infrastructure.

In brief, the APA Act asserts less review authority over development located in the more intensive zones (e.g. Hamlet, Moderate Intensity); the threshold of APA review (when a permit is required) for reviewing subdivisions of shorelines in Moderate Intensity zones for example is at 15 or more lots unless any lot is 25,000 square feet (.6 acres) or less. Thus, a 14 lot shoreline subdivision in the Moderate Intensity zones could require only 14 x .6 acres or 8.4 acres and not require a permit from the APA.

3) Lakeshore Regulations of the Town of Lake George - The Town of Lake George is just one of the many municipalities in the Adirondack Park which has a considerable amount of shoreline within its jurisdiction. The Town encompasses approximately 10 miles of shoreline along Lake George; a lake which has been facing serious environmental problems in recent years due to recreational overuse and overdevelopment of its shoreline.

Those municipalities within the Adirondack Park which elect to assume jurisdiction over certain "Regional Projects" are mandated by the APA to adopt regulations which at least meet the minimum standards set by the APA Act. The Town of Lake George has adopted their own regulations (which

have been approved by the APA), and which in some instances are more restrictive than the APA's.[11] The Town's lakeshore regulations are an example of where they have exceeded APA's minimum standards.

While the Town of Lake George has adopted shoreline regulations which address minimum lot size, minimum lot width, minimum building setback from the mean high water mark, minimum septic disposal system setback from the mean high water mark, vegetation cutting and removal, and clustering of development, they also have established criteria and regulations for the following:

- Erosion Control
- Landscaping
- Parking and Loading
- Lighting Installation
- Sign Construction and Installation
- Docks, Wharves, and Moorings
- Grading and Filling
- Dredging

The Town of Lake George's lakeshore regulations are very comprehensive, however, they were adopted after the problems associated with shoreline overdevelopment occurred. Nonetheless, these regulations can certainly provide a model for those communities who currently possess significant amounts of unbroken shoreline worthy of protection.

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(11) "Town of Lake George Zoning Ordinance" (11/87): pp. 38-46.

C. DEVELOPING SHORELINE MANAGEMENT STRATEGIES

This Section outlines some very basic strategies which could be used to form the foundation of a comprehensive shoreline management program. While the Town of Russia currently has some of these strategies in place, their regulations could be modified or expanded in order to improve the management of development along the shoreline of Hinckley Reservoir. Furthermore, these strategies could be used by the Towns of Remsen and Ohio if these Towns ever adopt local zoning and/or subdivision regulations. Shoreline development in the Town of Ohio is subject to the APA'a regulations. Shoreline development in the Town of Remsen - particularly along Hinckley Reservoir - is not subject to any specific regulations.

After examining the regulations mandated by Wisconsin, Minnesota, the Adirondack Park Agency, and other regions or states with "progressive" lakeshore management programs, it is interesting to note that the strategies are relatively simple. In fact, most attack this issue with very traditional, yet affective zoning techniques. This proves that complex problems do not necessarily have to be addressed through equally complex strategies. Simplistic programs are also appealing in that they are easier to administer and enforce than the more complicated programs.

In order for shoreline management programs to be effective, however, its creator(s) must acknowledge that this issue is multi-faceted. In other words, a program which only calls for restrictive shoreline setbacks will not necessarily discourage the problems that the community is trying to avoid. The most effective programs, even though they employ rather basic

strategies, attack potential problems from many fronts. What follows is a brief examination of those elements which, at a minimum, should be included as part of a comprehensive shoreline land use management program.

1) Regulating Land Uses - Keeping in mind that lakefronts are typically sensitive to development, either as a result of rapidly percolating soils, a high groundwater table, or an eroding shoreline, determining what types of land uses should be permitted within a lakefront zoning district is very important. In a rural area, a community does not want intense development schemes such as large commercial ventures or multi-family complexes. The best approach is to keep it simple. Allow only those uses which are least likely to impact on the shoreline and water body (low-density single-family development), or those uses which depend on a waterfront location (marinas, beaches).

Always remember that it is the water resource and the shoreline which is the beneficiary of this shoreline management effort. In other words, a restaurant specializing in seafood does not require a shoreline location to operate a profitable business. Similarly, while a motel with lakeside vistas by virtue of its location on the shoreline is pleasant to the transient guest, its negative impacts usually outweigh the benefits.

2) Minimum Lot Size Requirements - Mandating a specific minimum lot size is the most basic strategy of any zoning ordinance. If a community would like to establish specific shoreline zoning districts as part of their program, determining an acceptable minimum lot size will be one of the first items to address. This includes the requirement of minimum lot widths as well.

This zoning tool is the most effective method of controlling density. By requiring a relatively large minimum lot size (2+ acres), in addition to a comparably restrictive minimum lot width (200+ feet), a municipality can ensure that views to and from the lake will not be sacrificed due to wall-to-wall residential development.

3) Building Setbacks - A very basic zoning tool. The further that development is set back from the water, the better. This holds true from both an aesthetic and environmental point-of-view.

4) Tree Cutting/Vegetation Removal - Wherever possible, strategies should be incorporated within the zoning ordinance to preserve as much shoreline vegetation as practicable. Trees and shrubbery "soften" development by providing a visual buffer. More importantly, vegetation reduces stormwater runoff, soil erosion, and sedimentation build-up. (See Figures 22 and 23 for examples of tree cutting/vegetation removal regulations)

5) Sanitary Regulations - In addition to requiring setbacks for buildings, it is also very important to require that on-site sewage disposal systems be located at some distance from the water. This can be accomplished through individual sanitary regulations which require more stringent standards than those of the New York State Health Department's, or through inclusion within the text of the zoning ordinance itself.

Once again, rapidly percolating soils or high groundwater levels are the norm around lakes. If sewage is disposed of too close to the lake, the

soil may not have the ability to effectively treat sewage before it reaches the lake or the groundwater. A setback of a least 100 feet is the minimum in New York State and the Town of Russia sanitary regulations require 200 feet.

Furthermore, requiring a yearly inspection of individual sewage disposal systems will ensure that problems can be identified in their early stages.

Inspection should also be required whenever a seasonal home is converted to year-round use. Many seasonal homes' sewage disposal systems are simply not capable of adequately treating the amount of sewage generated from year-round use.

The same kind of regulations can also be applied to individual water supply systems and wells.

6) Subdivision Regulations - Whereas zoning regulates the density of development and the types of uses which are allowed, subdivision regulations establish requirements for streets, utilities, site design, and procedures for dedicating land for open space and other public purposes. The dedication of open space, and specifically clustering, can be a particularly useful tool for shoreline preservation.

Section 281 of Town Law allows town legislative bodies to authorize their planning boards to permit and at times require the clustering of new residential development when reviewing subdivision proposals. The important point here is that clustering provisions can be used effectively

to maintain large sections of unbroken shoreline. Simply put, new development can be clustered in a small area, thereby maintaining substantial amounts of open space along the shoreline which might otherwise have been developed in a "traditional" subdivision. Some communities, regions, and even states encourage clustering, including the Adirondack Park Agency, and this strategy has significant potential for shoreline preservation and management.

This is just a sampling of how some very basic strategies can be used to effectively combat unsightly and environmentally destructive shoreline development. It is by no means exhaustive. For a more detailed examination of this topic, consult the research paper which was published separate from this Study.

D. CONCLUSION

The examples provided here and in the research paper are meant to be just that - examples. They provide a look at several comprehensive approaches to shoreline management. The municipalities within the Hinckley Reservoir Study Area can benefit from this research project by drawing upon the experience of other communities approaches to shoreline management, in formulating shoreline management practices for Hinckley Reservoir.

It would be a mistake for communities within the Hinckley Reservoir Study Area to conclude that they have little need for regulations concerning lakeshore development, simply because Hinckley Reservoir has not experienced a level of development similar to Lake George or Oneida Lake,

for example. What should be understood is that the communities around Hinckley Reservoir are now in a position at this point in time to control shoreline development so that the environmental and aesthetic damage caused by unregulated shoreline development does not occur.

IX. Issues and Recommendations

The first phase of the Hinckley Reservoir Study consisted of gathering and analyzing a variety of information on the Study Area. This information has been discussed in detail in Sections II through VII of this report. A number of different issues facing the Hinckley Reservoir Study Area emerged as a result of the work completed during the first phase of this study. For example, it has become evident upon reviewing the Existing Land Use Map that there are many large undeveloped parcels of land which are in close proximity to the shoreline of Hinckley Reservoir and West Canada Creek.

The importance of this issue is that as development pressures increase in the Study Area, these large undeveloped parcels may become very attractive for residential subdivisions. In addition, many of these large undeveloped parcels have a substantial amount of shoreline frontage. The significance of this situation is that the Towns within the Study Area have the ability, using local laws such as zoning and subdivision regulations, to affect the type and intensity of development which can occur on these large parcels, and in particular, along the shoreline. There are certain steps the Towns can take if they want to preserve the natural character of shorelines within the Study Area, and to ensure that new subdivision proposals are designed so as to be an asset to the community.

The term "issue" as used in this section of the report should not be construed as a negative term. Rather, an issue is more likely to involve an opportunity to take an action which will protect and enhance some positive aspect of the Study Area rather than simply reacting to an existing or emerging problem. As will be discussed in more detail later on in this section, there are several

other important issues facing the Study Area, which actually constitute opportunities for the Towns to protect and enhance the rural character and unique natural features of the Hinckley Reservoir Study Area. The opportunity to address various land use issues in a positive manner before problems arise is one of the most important benefits to be gained from this study.

This point may be better understood using the shoreline of Hinckley Reservoir as an example. The relatively undeveloped state of the shoreline provides both the active and passive user with more attractive surroundings in which to boat, swim or simply sit on the beach and take in the scenery. The shoreline of the reservoir and West Canada Creek are two of the more attractive features of the Study Area. The Towns within the Study Area are in a position to recognize and appreciate the value of the shoreline of Hinckley Reservoir and the West Canada Creek and take certain measures to see that the development which is likely to occur on or near the shoreline takes place in a manner which will have a minimal impact upon the shoreline

It is important here to realize that many communities in the Adirondacks, as well as communities in other states throughout the country, have taken regulatory measures to protect the shoreline only after the damage has been done to the shoreline. Once the trees are cleared, houses/camps built next to the shoreline, the natural qualities of the shoreline which made the reservoir so attractive in the first place, are lost.

The information which was developed and analyzed during the first phase of the study did point out some existing problem areas, such as the soils limitations discussed in Section III(A). It is encouraging, however, to note that there do

not appear to be any existing land use problems which pose an imminent threat to the quality of life in the Study Area.

The complete set of issues has been loosely categorized as either development issues, or recreation/public use issues. The purpose of this section of the report is to define the issues facing the Study Area, suggest a recommendation, or policy statement to address each particular issue, as well as a method to implement the recommendations.

A. DEVELOPMENT ISSUES

The issues which are discussed in this subsection pertain to the physical development of the Study Area.

The impact which development has on the Study Area is of critical importance, and will determine the future character of the area. From the point of view of local government involvement, little can be done to address land use problems as they currently exist. One of the few avenues open to resolve existing land use conflicts is through the legal system. However, resolving land use conflicts in the courts is expensive and time-consuming. Instead, the focus now should be on how and where future development will occur and attempting to minimize the impact upon the character of the area.

The results of the community information survey clearly show that it is the rural/natural setting of the Study Area which is so appealing to residents and visitors alike. In addition, the survey results indicated

that residents and visitors recognize the value and the vulnerability of the area in terms of potential threats to the rural character and recreational opportunities present. Specifically, the results of question 14 of the community information survey revealed that many individuals are finding that uncontrolled and/or unsightly development has jeopardized the beauty of the area.

There should be little doubt that the potential exists for a significant amount of development to occur within the Hinckley Reservoir Study Area. Numerous large parcels of undeveloped land, coupled with a partial lack of land use regulations in certain portions of the Study Area and the close proximity of urban areas leaves the Study Area vulnerable to potentially harmful development.

Development within the Study Area could have a negative impact on the area in a few different ways. For example, soils within the Study Area are very poor in terms of their ability to adequately treat sewage. As more development occurs, more septic tanks and absorption field systems will need to be installed. As a result, soils within the Study Area will be forced to treat more sewage. This in turn could result in a greater potential for environmental problems such as groundwater contamination.

A closely related problem which could result from a significant increase in development, has to do with water supply. Currently there is no public water supply anywhere within the Hinckley Reservoir Study Area. Residents and commercial property owners all depend on wells or an outside source of water for their water supply. It is not hard to imagine the damage which

can be done to the nearby water resources (wells and surface water) if several residental dwellings are constructed on small lots and the soil is not adequate to handle the sewage disposal systems.

In an attempt to delineate those areas which are sensitive to development due to environmental factors, a map showing the location of general development constraints within the Study Area has been developed. Figure 24 is a composite map showing those areas where one or more development constraints are located. These constraints include the presence of a regulated wetland, 100 year floodplain, seasonal high water table within 2½ feet of the surface and slopes greater than fifteen percent. The problems related to development in these areas have been discussed in detail in Section III. However, as a general statement, it is worth reiterating that development which occurs where these constraints are present could have a negative impact on the Study Area, such as altering important wildlife habitats or polluting the water resources.

New development also places a burden on the local municipality's highway department. With new development, the need arises for improved roads, roadside drainage, snow removal, and general maintenance. A situation which can place a significant burden on the Study Area Towns is when an individual decides to build a permanent home on a seasonal road, or convert a seasonal home to a permanent dwelling. When this occurs what once was a low maintenance seasonal road now requires year-round maintenance and upgrading, which can be a substantial financial burden on the Town.

Development which occurs in an appropriate location and is subject to adequate controls can be an asset to a community. Residential development can increase the tax base and provide needed housing in an area. Commercial development has the added benefit of creating/retaining jobs. However, for both residential and commercial development to be an asset to the community it must be well planned so as to minimize the potential for any negative impacts to the community. Considering the importance of the rural character and natural resources of the Hinckley Reservoir Study Area, it is imperative that future development in the Study Area be controlled at the local level in order to preserve the character of the area.

The following set of issues are distinct from the recreation/public use issues in that the municipalities within the Study Area do have some direct control over these physical development issues through the use of local land use regulations. The recommendations set forth in this section to address the development issues can best be implemented through local zoning and subdivision regulations. At the time this report was published, the Town of Russia was the only Town within the Study Area to have adopted zoning and subdivision regulations. The Town of Russia has also adopted local sanitary regulations. The Town of Remsen Planning Board, with assistance from HOCCPP staff, is in the process of developing a comprehensive plan for the Town. The logical extension of this process is the development of a draft zoning law for consideration by the Town Board of Remsen. The Town of Ohio has not adopted a zoning law or subdivision regulations, and there is not an active planning program in the Town of Ohio.

FIGURE 24

HINCKLEY RESERVOIR
STUDY AREA

GENERAL DEVELOPMENT CONSTRAINTS

However, the regulatory techniques developed specifically to address the development issues within the Study Area are easily transferable, and could be used by any three of the Study Area Towns in their zoning and subdivision regulations. The difference is that the Town of Russia would have to amend their zoning law to use the implementation measures suggested, and the Towns of Remsen and Ohio would have to incorporate the implementation measures into their initial zoning law, if these two towns ever adopt a zoning law.

(1) ISSUE: The overall potential for increasing development occurring in the Study Area and throughout the Towns of Russia, Ohio and Remsen. A number of different factors, all of which have been discussed previously in this report, suggest that the potential exists for a significant increase in development within the Study Area. These factors include:

(a) the amount of in-migration which occurred in the Study Area Towns from 1970-86;

(b) the increase in housing units from 1970-80 which should continue in the foreseeable future;

(c) the strong real estate market in the Adirondacks, including the second home market and the trend towards the speculation on and eventual subdivision of large parcels of undeveloped land. This is an important point due to the substantial amount of vacant/undeveloped land with the Study Area;

(d) the attractive physical amenities of the area (rural character, outdoor recreation opportunities, etc.);

(e) the increase in land costs in communities immediately adjacent to the Cities of Utica and Rome; and

(f) ease of commuting to employment centers in both Herkimer and Oneida Counties.

Increasing development is inevitable within the Hinckley Reservoir Study Area, just as it is inevitable throughout the entire Adirondack Park. The challenge to the municipalities will be to control and manage - through land use regulations - the development which occurs, so that the development is a benefit and not a burden to the Towns. In order to do this, particular attention should be given to where development occurs and the potential impacts upon the natural resources of the area.

Recommendation: Avoid development in areas which are considered generally unsuitable for development due to the presence of one or more environmental constraints. The idea here is to attract the development which is likely to occur to the more suitable areas within the Study Area, in order to preserve water quality, recreational opportunities and the attractive rural setting which still exists today. In general, the "more suitable areas" are areas free from the development constraints as shown in Figure 24.

Implementation: One relatively straight forward way in which to implement this recommendation would be to set a higher minimum lot size on land where development constraints exist, as opposed to a lower minimum lot size on land where these constraints do not exist. This approach would involve evaluating and adjusting the existing densities on the zoning map, based upon the presence of development constraints. Obviously, this

approach would involve identifying areas large enough to warrant a rezoning and large enough to have a potential impact on development trends in the Study Area.

The assumption upon which this recommendation is based is that with all other factors being equal, development will more likely occur on the land where a higher density of development is permitted. This approach is an attempt to influence development to occur on land which is more suitable for development, without compromising the rural character of the Study Area.

(2) ISSUE: The large undeveloped parcels of land which can, at the present time, be subdivided without any local control over the quality of the subdivision. This is particularly true on or near the shoreline of Hinckley Reservoir and the West Canada Creek.

As noted previously, another specific area of concern is the large number of vacant parcels and large parcels which contain only one or two structures. These large undeveloped parcels of land are logical targets for subdivision. The act of subdividing a large parcel of land with the intent to construct dwellings on the resulting parcels is a normal development process. However, when a municipality regulates the creation of a subdivision, the interests of the municipality are met, the potential negative impacts on the environment are minimized and the end result is a subdivision which can be an asset to the community and also allows the developer to realize a profit from the subdivision.

Recommendation: Subdivision regulations should be adopted and implemented in the three Study Area Towns. A key component of these regulations in all three towns should be the provisions which specifically deal with cluster development and the application of this concept to shoreline development. Maintaining the rural character and open space of the Study Area was a primary concern voiced in the community information survey, and the use of "clustering" is a unique regulatory tool which allows local officials to preserve the natural character of the land, while still accommodating residential development. The clustering provision which can be included in local subdivision regulations in New York State, does not permit a change in the overall density of development on a parcel of land to be subdivided, but rather it allows the development to occur on that portion of the site where it will have less of an impact on the natural features and scenic qualities of the site. In essence, clustering provides for development on smaller lots, in exchange for preserving a portion of the site as permanent open space.

Subdivision regulations are a particularly important tool for the Study Area Towns to consider. While zoning regulations control the density of development within a municipality, subdivision regulations can be used to control the quality of development, in terms of residential subdivisions, within the municipality.

Implementation: The implementation method here is for the Study Area Towns to adopt subdivision regulations. In all cases, particular emphasis should be placed on the designation of "cluster zones" and the rules and regulations covering the use of clustering. These rules and regulations

address where clustering may occur; site-specific design criteria, such as the housing types allowed and the percentage of open space required and some method for determining the potential capacity for "regular" development on the parcel of land being considered for clustering.

(3) ISSUE: The potential for increased shoreline development, due to the abundance of vacant and undeveloped land. For the most part, Hinckley Reservoir has a very attractive shoreline (particularly the southern shoreline), relatively free from residential and commercial development, boat houses and individual docks. The undeveloped nature of the shoreline is due in part to the strip of New York State owned canal land which is located in between the upland property (private and public) and the reservoir. Regulations governing use of the NYS owned canal land prevents permanent structures from being placed directly on the shoreline. While the canal land can provide partial protection from some types of unwarranted shoreline development, the broader visual and environmental impacts of shoreline development cannot be prevented or mitigated by this relatively narrow strip of land.

The potential does exist for significant new development near the shoreline of Hinckley Reservoir. The large vacant and undeveloped parcels adjacent to the shoreline are attractive for development, and the market tendency is to subdivide these shoreline parcels into as many lots as possible. When the shoreline area is intensely developed, problems relating to water quality, recreational overuse and the permanent altering of the natural character of the shoreline can occur. The challenge here is to strike a balance between a land owners right to develop his

property, and the potential negative impacts which can affect the Study Area as a whole when development occurs in such a manner as to permanently alter the natural character of the shoreline.

As mentioned previously, shoreline development along Hinckley Reservoir warrants very close attention. This is due in part to the use of Hinckley Reservoir as the sole source of drinking water for over 135,000 people in the Greater Utica area, and also because the undeveloped nature of the shoreline, from an aesthetic point of view, is one of the most positive features of the Study Area. It is worth reiterating the point that if the shoreline is developed in an unplanned manner with little regard for environmental and aesthetic concerns, the natural character of the reservoir can be permanently lost.

(a) Recommendation: Develop land use regulations to protect the shoreline. Specifically, this could include the delineation of a shoreline preservation district around Hinckley Reservoir and portions of the West Canada and Black Creeks, similar to the type of overlay districts many municipalities use to protect and conserve floodplains and wetlands. An example of this shoreline preservation district is shown in Figure 25. Making most, or even all uses within this overlay district subject to site plan review by the local Planning Board prior to initiating the project would provide a mechanism to lessen the potential impact of development along the shoreline. Making a land use subject to site plan review simply means that while the use is permitted in the underlying zoning district, the Planning Board will closely review the plans for any land use to ensure that the proposed use will not result in any negative impacts to the shoreline which could have been avoided.

FIGURE 25

HINCKLEY RESERVOIR STUDY AREA

PROPOSED SHORELINE PRESERVATION DISTRICT

In addition, the dimensional requirements regarding shoreline frontage, building setbacks, building height and minimum lot size should all be scrutinized to determine their adequacy in minimizing potential impacts to the shoreline area.

Implementation: Amend Russia's land use regulations to incorporate this shoreline overlay district into their existing zoning regulations. This regulatory technique is easily adaptable, and the Towns of Remsen and Ohio would have no problem in incorporating it into any zoning regulations they may adopt in the future.

(b) Recommendation: Review the rules and regulations concerning the removal of vegetation along the shoreline. The Town of Russia currently addresses this in their Land Use Regulations, similar to the Adirondack Park Agency's shoreline restrictions. These regulations appear to be very thorough and complete, yet these regulations seem to be very difficult to enforce. This recommendation would specifically involve amending these regulations so as to make their administration less difficult, while achieving the intended results. Once these provisions are drafted, the administration and enforcement techniques would be transferable to both the Towns of Remsen and Ohio.

(c) Recommendation: Develop rules and regulations addressing sediment and erosion control for shoreline development.

Implementation: Incorporate the abovementioned rules and recommendations concerning the removal of vegetation and sediment and erosion control

along the shoreline, and the provisions concerning sediment and erosion control into the site plan review procedures of the local land use regulations.

(4) ISSUE: The conversion of seasonal camps to year round homes. This occurs to varying degrees in many areas of the Adirondacks and elsewhere, as people choose to make their permanent residence at what once was a seasonal camp. They may have either retired or chosen to commute to their job. Due to the proximity of the Study Area to the cities of Rome, Utica and the Valley communities in Herkimer County, the Hinckley Reservoir Area is a convenient place for someone to reside and be able to enjoy the amenities of the area, and still be within an easy commute to a job in Utica, Herkimer, etc. Approximately one-third of the respondents to the community information survey indicated that their year-round home within the Study Area had at one time been used as a seasonal camp.

In regard to the Hinckley Reservoir Study Area, a couple of problems could occur when a seasonal unit is converted to year round use. First, there could be a problem with using an individual sewage disposal system on a year round basis, when use was previously limited to seasonal use. While even a seasonal camp built after 1984 within the Study Area should have had its plans for sewage disposal reviewed and approved under the New York State Uniform Fire Prevention and Building Code, many camps and even year round dwellings constructed prior to this time were not required to have their sewage disposal plans reviewed and approved by any agency with the expertise to do so. This could have led to the installation of a system in poor soils or a system which does not have the proper capacity, but

which functioned adequately on a seasonal basis. A problem could arise for both the property owner and the general public in terms of polluting the nearby water resources when a conversion occurs and the sewage disposal system is inadequate.

The second major problem involves the added expense to the town if the road on which the conversion occurred was not previously maintained on a year round basis. In a case such as this, the increased cost to the Town's highway department for highway maintenance and/or improvement will frequently be greater than the revenue generated from the new resident's property tax. In other words, the municipality may lose money as new year-round residences are established on seasonal roads, or on roads which previously required little maintenance.

Recommendation: Draft regulations which could be inserted into zoning laws to insure that whenever a conversion occurs, the sewage disposal system is adequate for year round use and does not interfere with any water supply, and the potential to pollute either a groundwater or surface water resource is minimal.

Implementation: Amend the Town of Russia's Land Use Regulations to incorporate provisions dealing with the conversion of seasonal dwellings to year round use. These provisions would be transferable and suitable for insertion into any zoning law the Towns of Remsen or Ohio may consider adopting in the future.

(5) ISSUE: The desire on the part of residents in the area for more commercial/retail establishments in the area versus the desire to maintain the rural character of the area. A question was asked on the community information survey regarding the variety of commercial goods and services available in the Hinckley Reservoir area. Over 45% of the local respondents, and 39% of the nonlocal respondents indicated that they felt the variety of commercial goods and services was poor. Only 17% of the local respondents and 14% of the nonlocal respondents felt that the variety was good.

Comments on this question stated that convenience type services were lacking in the area. While some respondents indicated a desire for more commercial development in the Hinckley Reservoir area, many of these same respondents specifically commented that they did not want significantly more commercial development "...for fear of having Hinckley turn into another Lake George or Sylvan Beach."

Recommendation: On the surface, the level of commercial services in the area appears to be adequate for the density of population served in the Study Area. There are several commercial establishments located in and adjacent to the Study Area. These establishments are concentrated in the Hamlet of Hinckley, at the junction of NYS Routes 8 and 365 and along NYS Route 365 in the Town of Remsen. These establishments are convenience type stores, restaurants/bars and a small grocery. There is also a boat store on Route 365 in the Town of Remsen, and a private campground with a small grocery on the southern shore of Hinckley Reservoir.

In addition, there is also enough vacant land currently zoned for commercial uses in a few hamlets in the Town of Russia to accommodate commercial expansion if market forces call for additional services.

Based upon the above information, it is recommended that no new areas in the Study Area portion of the Town of Russia be designated as an area where commercial development should be encouraged.

Similarly, it is recommend that no areas within the Study Area in the Town of Remsen be designated as commercial on their comprehensive plan. This is due to the close proximity to commercial services in the Town of Trenton, the presence of several small commercial establishments in Remsen and also because of the physical constraints present along NYS Route 365 (which is the only logical location for commercial uses in the Town of Remsen portion of the Study Area).

It is also recommended that the Study Area Towns incorporate the planned development process into any existing or future zoning laws as a mechanism to evaluate commercial development proposals on an individual case-by-case basis.

Implementation: The implementation measures associated with this recommendation involve amending the Town of Russia's existing zoning law to include the planned development process as an option for development in the Town. The Town of Remsen can partially implement this particular recommendation when their comprehensive plan is adopted, and the Towns of Remsen and Ohio can incorporate the planned development process into any future zoning law they may adopt.

B. RECREATION/PUBLIC USE ISSUES

The issues discussed in this section relate primarily to the ability of the general public to actually use Hinckley Reservoir, West Canada Creek and to simply enjoy the natural amenities of the area. Most of these issues discussed below do not involve regulatory measures which can be taken by the municipalities within the Study Area, as was the case with the development issues.

The Study Area Towns, if they so choose, will play a less direct role in addressing the recreation/public use issues. While there are a few ways which the Towns can become directly involved in these issues, limited financial resources and the simple lack of control over other government agencies involved in these issues precludes substantial direct involvement. There is, however, an important role the Study Area Towns can play and that is to raise the level of public awareness of these issues and to publicly support the recommendations and implementation measures discussed herein.

(1) ISSUE: Guaranteed formal public access in the future to Hinckley Reservoir, West Canada Creek and other scenic and natural areas located throughout the Study Area. As used here, the term formal public access pertains to the legal rights of the public to traverse property in order to utilize the reservoir or the creek. Informal public access refers to the ability to cross essentially any land (public or private) which is not posted in order to use the reservoir or creek.

At the present time, access to Hinckley Reservoir or to West Canada Creek does not appear to be a significant problem. There are numerous informal beaches along the northern shore of the reservoir, a few informal boat launch areas and other land which is not posted which can be crossed to gain access to the reservoir. There are also several publicly owned formal access points along the shoreline of the reservoir, including the NYSDEC Fishing Access Site, NYSDEC Day Use Area and adjoining Forest Preserve lands and the New York Power Authority operated boat launch off NYS Route 365 in Remsen. Formal public access to the West Canada Creek is available over several Forest Preserve parcels in the Town of Ohio. The location of these parcels can be seen on the Existing Land Use Map in the back of this report. Access to West Canada Creek over these parcels, however, is limited primarily to bushwhacking.

In spite of the adequate amount of access at the present time, the potential does exist to significantly limit public access to Hinckley Reservoir and West Canada Creek to the publicly owned facilities and lands, and the few commercial facilities which provide access. This is due to the permit system in place which gives the property owner, whose land abuts the canal land, exclusive rights to use this canal land. Keep in mind that the canal land is that strip of land (actually the shoreline) between the high water mark of the reservoir and the adjacent parcel of land. The canal lands are shown on the Existing Land Use Maps in the back of this report.

One of the primary issues here is that the potential to seal off access arises because the permit which is obtained from NYSDOT runs from property

line to property line along the shoreline frontage. The potential of diminished access to the water resources is directly related to the potential for increasing residential development in the area, which was discussed previously in this section. As the Study Area becomes more populated and developed, the owners of private land abutting the canal land will probably obtain a permit which entitles that private property owner or whole subdivision to exclusive use of the canal land (shoreline) abutting their property. At the present, much of the shoreline of Hinckley Reservoir is accessible on an informal basis by the public, only because the majority of private property owners have not obtained a permit to use the canal land.

(a) Recommendation: It is recommended that action be taken to guarantee that adequate future access is available to Hinckley Reservoir, West Canada Creek, or any other water resource where it is feasible to establish public access. This guarantee of future access can only happen through outright acquisition of land or purchase of easements of key lands adjacent to the shoreline. Acquisition could be accomplished by New York State (utilizing funds from the 1986 Environmental Quality Bond Act), the Towns or a private conservation group. From a practical point of view, New York State has the most resources available for land acquisition and would by far be the most likely of the three groups mentioned above to accomplish this task. The Towns within the Study Area have very limited financial resources; however, it may be possible for the Towns to work out innovative arrangements with local landowners which did not involve large sums of money. Private conservation groups do become involved in land acquisition, and this is one option which should be examined.

The NYSDOT is not involved at this time in providing formal public access to the shoreline of Hinckley Reservoir, although NYSDOT does not prohibit use of the shoreline (canal land) when the upland property owner has not obtained a permit to use the shoreline or NYSDOT has not posted the shoreline for some specific reason. Because a significant portion of the canal land surrounding Hinckley Reservoir extends from the high water mark to a public road, perhaps NYSDOT may be able to take some action to at least insure that informal public access remains at those areas where the canal land extends upland to a public road.

(b) Recommendation: Acquisition by NYSDEC of some of the privately owned parcels within the West Canada Creek Corridor which includes the area known as the Ohio Gorge and Wilmurt Waterfalls. This is a very scenic area which is currently undeveloped. This is a recommendation which requires immediate attention due to the attractiveness of this area to private developers. The seriousness of this situation is evident in the acquisition of the Butler Lake property in the Town of Ohio by a private concern for subdivision purposes. Development of the Butler Lake property could significantly restrict access to the West Canada Creek shoreline adjacent to the Wilmurt Waterfalls, and is perhaps a dramatic example of how access to a unique area which had existed for years can suddenly be eliminated.

Implementation: To begin the implementation process associated with this recommendation, the Towns would need to evaluate each method for acquiring land or easements. For example, if it is decided that the most likely method of ensuring future access to Hinckley Reservoir, West Canada Creek

and Black Creek is by New York State acquiring land or easements using funds from the 1986 Bond Act, specific areas will need to be nominated by the Towns for acquisition by NYSDEC.

Funds from the 1986 Bond Act could also be used directly by the Towns to provide access to the shoreline. This can be done by establishing a municipal park on land adjacent to the shoreline. This park could be very small in scope, and its main feature could be a parking lot and some picnic tables, but nonetheless, it could provide valuable access to the shoreline.

(2) Issue: Formal public recreation facilities on Hinckley Reservoir. At the present time, formal public recreation sites include the Fishing Access Site on Route 365, the NYSDEC Day Use Area and the NYPA Boat Launch. However, the initial plans for development of State owned land adjacent to the Day Use Area called for a campground. Portions of the campground apparently were developed, complete with water lines and restrooms. This area is very attractive and is currently used for picnics. There is ample state owned land adjacent to the Day Use Area to develop a campground, and roads were roughed out in this area for the campground. The initial plans for developing a campground, plus the existing facilities already in place, would make development of a campground at Hinckley Reservoir a logical step to accommodate the growing recreational demand.

In addition, nearly 6% of all the permits issued for overnight camping in the Adirondack and Catskill Park in 1983 were issued to residents of Herkimer and Oneida Counties. Only three other counties in the State had

a higher number of permits issued to their residents than did Oneida County in 1983. This suggests that there is a strong demand for a NYSDEC operated Forest Preserve campground on the part of residents of Oneida and Herkimer County. A NYSDEC campground at Hinckley could produce the added benefit of taking some of the pressure off of existing Forest Preserve campgrounds during July and August when use is at its highest.

It is recognized that a private campground does exist on the southern shore of the Hinckley Reservoir, and that this private campground and beach does provide a valuable service within the Study Area. However, NYSDEC operated campgrounds are laid out differently and may attract a different portion of the camping public. At any rate, the above statistics on permits issued in the Adirondack and Catskill Parks, and the results of the surveys conducted as part of this Study indicate a publicly operated campground would receive substantial use.

The reservoir is also sorely in need of additional boat launching ramps to alleviate the severe congestion and traffic hazards which occur at the NYPA boat launch, due to the existence of only one lane for launching combined with inadequate parking. Again, land is available at the NYSDEC Day Use Area to accommodate a paved boat launch and apparently one was planned for this area when the site was initially developed. The provision of another launching site is a pressing problem due to the traffic problems caused when cars and boat trailers park along Route 365. At the time this report was published, the NYSDEC and NYPA had attempted to reach an agreement whereby the two agencies would cooperate on the establishment of a hard (paved) boat launch near the existing NYSDEC Day

Use Area. An agreement had not been reached at the time this report was published.

The island in Hinckley Reservoir represents another possibility for establishing an additional formal public recreational facility. Use of this 20± acre island in Hinckley Reservoir (which is part of the canal land and owned by NYSDOT) has been on an informal basis up to the summer of 1988, when NYSDOT officials requested that the Oneida County Sheriff's Department remove boaters who were using the island for camping or picnicking. The island had apparently become very littered with debris left by picnickers and campers. Some means could be formulated, similar to the regulations enacted at Lake George, to control access to the island. There is a very nice sandy beach surrounding the island and the island itself is very attractive. Regulating its' use may prevent overuse of the resource, and could cut down on litter at the site. Regulations controlling use of the island would no doubt be unpopular with the public, but the alternative is for NYSDOT to continue to prohibit use of the island.

Recommendation: Development of formal public recreation facilities which would include a NYSDEC operated campground and a paved (or hard) boat launch. The island in Hinckley Reservoir had been a very popular spot and the possibility of resuming regulated use of this island should be investigated.

Implementation: Towns should adopt resolutions supporting these recommendations, and work with appropriate state officials to achieve their implementation. Since these facilities will serve the Herkimer and

Oneida region, the Counties may also elect to support this recommendation, and lend their support to the Towns.

(3) Issue: The fluctuation of the water level in Hinckley Reservoir. The water level in Hinckley Reservoir has fluctuated an average of 39 feet per year recently. The impact this fluctuation can have on the recreational use of the reservoir is obvious. The severe impact which the fluctuation has on the reservoir as a fishery has been discussed in Section III(G).

Hinckley Reservoir is a major recreational resource within Herkimer and Oneida Counties. This is evident by the increase in boat traffic on the reservoir, the increasing attendance figures at the NYSDEC Day Use Area and the heavy use of the informal beaches which surround the reservoir. Recreation, however, has no formal status in terms of the operation of Hinckley Reservoir, and it is this status which may deserve reconsideration in light of the existing conditions.

The "rule-curve" (which is the schedule agreed upon by New York State and Niagara Mohawk which governs discharges from Hinckley Reservoir based on the date and reservoir elevation) was developed in the 1920's. During this time period Hinckley Reservoir was utilized as a repository for logs which had been floated down the West Canada Creek on their way to the pulp mill in the Hamlet of Hinckley. The reservoir was used for this purpose until the demise of the pulp mill around World War II. Using the reservoir as a storage pool for logs would have obviously diminished the reservoir's attractiveness or usefulness as a recreational resource and is one example of the change in conditions at Hinckley Reservoir since the rule-curve was developed.

Research has also shown that at least up to the late 1950's, there was a concern on the part of the Utica Board of Water Supply as to the impact which recreational use of Hinckley Reservoir, particularly swimming, would have on the water supply for the Greater Utica area. At the present time, the level of recreational use of Hinckley Reservoir appears to have no impact on the water supply for the Utica area and the filtration plant which is planned for the Utica water system may significantly limit the potential for recreational use to have any impact on the municipal water supply.

The changing circumstances, and the rise in recreational use would seem to warrant a closer look at the role which recreation has in the overall operation of Hinckley Reservoir.

Recommendation: A re-examination of the discharge schedule ("rule-curve"), to determine whether the operation of the reservoir could be altered so as to accommodate recreation as one of the principal uses of Hinckley Reservoir. This study fully recognizes that supplementing flows in the Barge Canal, municipal water supply and power generation are the contractually established uses of Hinckley Reservoir. However, considering the changing circumstances noted above, it would be of significant value to the region to at least examine whether it would be technically feasible and legally possible to adjust the day-to-day operation of Hinckley Reservoir to some degree so as to better accommodate recreation in the operation of the reservoir.

Implementation: The implementation of this recommendation would be to examine the manner in which the reservoir is operated to determine if the

severe fluctuation in water levels could be reduced. This would presumably require participation by those parties which are contractually tied to the day-to-day operation of the reservoir. It is recognized that a preliminary determination would be necessary to see whether technical or legal constraints exist which would preclude altering the discharge schedule. If this is the case, obviously a detailed study of the situation is not warranted.

If the fluctuation in water levels could be reduced somewhat, Hinckley Reservoir's value in the region as an environmental and recreational resource would increase significantly.

C. LOCAL INVOLVEMENT SUMMARY

There is an obvious difference in the level of involvement between the set of development issues and the recreation issues. The Study Area Towns do have a significant amount of control in regard to how the development issues are addressed. The control comes in adopting and implementing the different types of land use regulations designed to address the specific issue.

For example, if the Towns make the policy decision that they should preserve the natural characteristics of the shorelines within their municipal boundaries, a shoreline overlay district is one method they could use to implement this policy. The shoreline overlay district then becomes one regulatory tool, contained within the local zoning regulations, which the Towns have at their disposal to implement their

policy decision to preserve the natural characteristics of the shoreline. There are constraints imposed upon a municipality in the exercise of their power to regulate land uses. Nonetheless, land use regulation is primarily a local activity in New York State and it is for this reason that it is up to the Study Area Towns to decide to what extent they wish to address the development issues.

The involvement of the Towns in the implementation measures associated with the recreation issues is quite different than the involvement in the development issues. With a few exceptions, the Towns would primarily be involved in the implementation measures associated with the recreation issues by acting as an advocate for a particular course of action. This level of involvement by the Towns, and even the Counties, is important for a couple of reasons. First, the issues, recommendations/policy statements and corresponding implementation measures would now be publicly raised and open for debate. The Towns in effect would be calling attention to the issue and requesting that the appropriate parties address the issues. Secondly, the act of "lobbying" or making a position known to those at the appropriate levels of government, is a traditional method of having issues such as the ones raised herein addressed.

X. Conclusion

The information contained in this report comprises Phases I and II of the Hinckley Reservoir Study. Standing alone, this information is valuable to the Study Area Towns in several ways. First, this information provides the Towns with an extensive data base on the Hinckley Reservoir Study Area. This could prove invaluable to local officials when undertaking future planning studies, in conducting development reviews within the Study Area and by simply highlighting the natural resources and amenities present within the Study Area. Sometimes these valuable resources and amenities are taken for granted, and their protection and enhancement does not become a priority unless they are threatened.

One specific instance where this data base would have been helpful to both regional and local officials, as well as residents of the Study Area is when the proposal was made in the early 1970's to raise the height of Hinckley Dam by fifty feet in order to provide drinking water downstate by flooding over 10,000 acres of land upstream of the West Canada Creek and Black Creek. The lack of this type of information on Hinckley Reservoir which had been developed at the local level, was one of the initial reasons for proposing this study. There are countless many other ways in which the information contained in this report can be used by private citizens and public officials.

However, the primary purpose of the Hinckley Reservoir Study was to provide the Study Area Towns with an effective means by which they could manage development within the Study Area, so as to protect the rural character and natural resources. Several factors previously discussed, such as past increases in population, the amenities of the area and the close proximity to urban areas in

Oneida and Herkimer Counties, suggest that the current development trends are likely to continue, and possibly escalate.

A unique aspect of this study, is that it was not prepared as a reaction to an existing or imminent land use problem, although some potential problem areas were highlighted. As noted above, the information reviewed in this report indicates that the current trends of low density residential development and the conversion of seasonal camps to year round units will probably continue. While commercial development has not been occurring on a regular basis within the Study Area, this situation may change as residential development continues to occur and provide a market for commercial services. Another phenomenon which is occurring in the Study Area, primarily in the Town of Ohio, is the subdivision of large backcountry parcels of land. The specific long term impacts which this particular trend could have on the Town of Ohio is unclear, although it will obviously encourage low density seasonal development in previously undeveloped backcountry areas.

What is more clear, however, is that the cumulative effect of continuous low density residential development, along with the recent trend toward large lot subdivisions, could have a substantial impact on the Study Area, and particularly on the shoreline of Hinckley Reservoir. Therefore, the challenge to the local officials is to control the development which is going to occur, so that the overall impact on the rural character and natural features of the Study Area are minimal.

How can this be accomplished? As a start, this study points out opportunities available to the Study Area Towns to take action so that the issues, as well as

potential problem areas, which have been identified do not become major land use problems. The courses of action which have been outlined are for the most part a proactive response to the issues discussed in Section IX of this report.

In regard to the development issues, these opportunities take the form of some straightforward, as well as innovative regulatory techniques which can be incorporated into local zoning or subdivision regulations. The recommendations suggested to address the recreational/public use issues are focused on the Study Area Towns (and in some instances the Counties) actively supporting the resolution of a particular issue, although they do not have the direct control over these implementation measures as they do with the development issues.

There is nothing complex or complicated about either the recreation/public use or the development issues, the recommendations suggested to address the issues or the associated implementation measures. For example, the act of identifying as an issue the increased potential for development along the shoreline, discussing the effects which development could have on the shoreline and the reservoir, and making the recommendation to create a shoreline preservation district was the result of a comprehensive, yet routine planning process. The residents and local officials in the Study Area surely are aware that most portions of the Hinckley Reservoir shoreline are aesthetically attractive and that a number of sandy beaches (which are available for public use on either a formal or informal basis) offer some very nice picnicking and swimming areas. Most people who use Hinckley Reservoir are also aware that the shoreline of Hinckley Reservoir is pristine when compared to other lakes in the Adirondacks where the shoreline is comprised primarily of private property and is heavily developed.

The contribution which this Study makes in regard to this particular situation is to highlight the positive features of the shoreline, make clear that the development situation along the shoreline is not static and that the potential does exist for development to occur which could permanently alter the natural character of the shoreline. Finally, different techniques for the Study Area Towns to use in controlling development along the shoreline have been suggested. Phase III of this Study will pick up where the general recommendations and implementation measures leave off, by developing the specific measures which the Study Area Towns can use in shoreline management.

The reference that the development situation along the shoreline is not static and that the potential exists for significant change, is an important point which holds true for the remainder of the Study Area. It is important for the local officials and residents of the Study Area Towns to realize that the cumulative effects of the development which is presently occurring and likely to continue within the Study Area, may have a substantial and permanent impact on their community. The opportunities exist for the Study Area Towns to control the development, so as to minimize any potential negative impacts and to ensure that this development will be an asset to the community. The preceding discussion on the Hinckley Reservoir shoreline was one example of the ways in which the Study Area Towns could adopt local land use regulations which are specifically designed to preserve and enhance the character of the Study Area.

Development within the Study Area is going to occur regardless of any local or state land use regulations. Therefore, it is worth reiterating that the

challenge to local officials is to control that development, so that the overall impacts on the rural character and natural features of the Study Area are minimal.

APPENDIX A

Freshwater Classification System

The following items and specifications shall be the standards applicable to all New York fresh waters which are assigned the classification of AA, A, B, C or D, in addition to the specific standards which are found in this section under the heading of each such classification.

Quality Standards for Fresh Surface Waters

Items	Specifications
1. Turbidity.	No increase except from natural sources that will cause a substantial visible contrast to natural conditions. In cases of naturally turbid waters, the contrast will be due to increased turbidity.
2. Color.	None from man-made sources that will be detrimental to anticipated best usage of waters.
3. Suspended, colloidal or settleable solids.	None from sewage, industrial wastes or other wastes which will cause deposition or be deleterious for any best usage determined for the specific waters which are assigned to each class.
4. Oil and floating substances.	No residue attributable to sewage, industrial wastes or other wastes nor visible oil film nor globules of grease.
5. Taste and odor-producing substances, toxic wastes and deleterious substances.	None in amounts that will be injurious to fishlife or which in any manner shall adversely affect the flavor, color or odor thereof, or impair the water for any best usage as determined for the specific water which are assigned to each class.
6. Thermal discharges.	(See Part 704 of this Title)

CLASS "AA"

Best usage of waters: Source of water supply for drinking, culinary or food processing purposes and any other usages.

Conditions related to best usage of waters: The waters, if subjected to approved disinfection treatment, with additional treatment if necessary to remove naturally present impurities, will meet New York State Department of Health drinking water standards and will be considered safe and satisfactory for drinking water purposes.

Quality Standards for Class "AA" Waters

Items	Specifications
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 50 from a minimum of five examinations and provided that not more than 20 percent of the samples shall exceed a coliform value of 240 for 100 ml of sample.
2. pH	Shall be between 6.5 and 8.5.
3. Total dissolved solids.	Shall be kept as low as practicable to maintain the best usage of waters, but in no case shall it exceed 500 milligrams per liter.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

CLASS "A"

Best usage of waters: Source of water supply for drinking, culinary or food processing purposes and any other usages.

Conditions related to best usage of waters: The waters, if subjected to approved treatment equal to coagulation, sedimentation, filtration and disinfection, with additional treatment if necessary to reduce naturally present impurities, will meet New York State Department of Health drinking water standards and will be considered safe and satisfactory for drinking water purposes.

Quality Standards for Class "A" Waters

Items	Specifications
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 5,000 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 20,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations.
2. pH	Shall be between 6.5 and 8.5.
3. Total dissolved solids.	Shall be kept as low as practicable to maintain the best usage of waters, but in no case shall it exceed 500 milligrams per liter.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

CLASS "B"

Best usage of waters: Primary contact recreation and any other uses except as a source of water supply for drinking, culinary or food processing purposes.

Quality Standards for Class "B" Waters

Items	Specifications
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations, and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.
2. pH	Shall be between 6.5 and 8.5.
3. Total dissolved solids.	None at concentrations which will be detrimental to the growth and propagation of aquatic life. Waters having present levels less than 500 milligrams per liter shall be kept below this limit.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

CLASS "C"

Best usage of waters: The waters are suitable for fishing and fish propagation. The water quality shall be suitable for primary and secondary contact recreation even though other factors such as the presence of a boat channel or high turbidity may limit the use for that purpose.

Quality Standards for Class "C" Waters

Items	Specifications
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations, and provided that not more than 20 percent of the sample shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.
2. pH	Shall be between 6.5 and 8.5.
3. Total dissolved solids.	None at concentrations which will be detrimental to the growth and propagation of aquatic life. Waters having present levels less than 500 milligrams per liter shall be kept below this limit.
4. Dissolved oxygen.	For cold waters suitable for trout spawning, the DO concentration shall not be less than 7.0 mg/l from other than natural conditions. For trout waters, the minimum daily average shall not be less than 6.0 mg/l. At no time shall the DO concentration be less than 5.0 mg/l. For non-trout waters, the minimum daily average shall not be less than 5.0 mg/l. At no time shall the DO concentration be less than 4.0 mg/l.

CLASS "D"

Best usage of waters: The waters are suitable for fishing. The water quality shall be suitable for primary and secondary contact recreation even though other factors may limit the use for that purpose. Due to such natural conditions as intermittency of flow, water conditions not conducive to propagation of game fishery or stream bed conditions, the waters will not support fish propagation.

Conditions related to best usage of waters: The waters must be suitable for fish survival.

Quality Standards for Class "D" Waters

Items	Specifications
1. Coliform.	The monthly median coliform value for 100 ml of sample shall not exceed 2,400 from a minimum of five examinations and provided that not more than 20 percent of the samples shall exceed a coliform value of 5,000 for 100 ml of sample and the monthly geometric mean fecal coliform value for 100 ml of sample shall not exceed 200 from a minimum of five examinations. This standard shall be met during all periods when disinfection is practiced.
2. pH	Shall be between 6.0 and 9.5.
3. Dissolved oxygen.	Shall not be less than 3 milligrams per liter at any time.

Source: New York State Department of Environmental Conservation (4/88)

APPENDIX B
Hinckley Reservoir Study Area Towns: Fertility, Mortality and Migration, 1970-86.

1970-1979

Towns	Resident Births	− Resident Deaths	= Natural Increase	Population Increase	− Natural Increase	= Net Migration
Russia	214	96	118	327	118	209
Ohio	105	62	43	320	43	277
Remsen	239	88	151	235	151	84
Study Area Towns	558	246	312	882	312	570
Herkimer Co.	9,586	7,581	2,005	-919	2,005	-2,924
Oneida Co.	37,714	26,016	11,698	-19,604	11,698	-7,906

1980-1986

Towns	Resident Births	− Resident Deaths	= Natural Increase	Population Increase	− Natural Increase	= Net Migration
Russia	168	91	77	146	77	69
Ohio	80	49	31	188	31	157
Remsen	199	71	128	193	128	65
Study Area Towns	447	211	236	527	236	291
Herkimer Co.	6,321	5,087	1,234	206	1,234	-1,028
Oneida Co.	25,516	18,376	7,140	-4,956	7,140	-12,096

* Population Increase from 1980-86 is an estimate. Actual population increase for Towns from 1980-86 may vary considerably due to the method of estimation used by the U.S. Census Bureau.

SOURCE: 1970 and 1980 Census of Population
NYS Department of Health, Office of Biostatistics, 1970-86

HINCKLEY RESERVOIR STUDY AREA

EXISTING LAND USE-SECTIONS A & B