



Great Egg Harbor River

WILD & SCENIC RIVER STUDY

Final Eligibility and Classification Report



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I. INTRODUCTION

A. Background and Purpose

On October 30, 1986, Public Law 99-590 was signed into law, amending the National Wild and Scenic Rivers Act (Public Law 90-542). These amendments included a section calling for the study of the Great Egg Harbor River as a potential addition to the National Wild and Scenic Rivers System. The study directed the National Park Service to assess the eligibility and suitability of the entire Great Egg Harbor River for inclusion in the system and analyze alternatives for river conservation. The study legislation was sponsored by Congressman Hughes and Senators Bradley and Lautenberg. The National Park Service, Mid-Atlantic Regional Office, was identified as the lead agency for the study which was initiated in May 1987.

The purpose of this portion of the Great Egg Harbor Wild and Scenic River Study is to determine whether the Great Egg meets the eligibility criteria for inclusion in the National Wild and Scenic Rivers System and, if eligible, to suggest the appropriate classification for future management based upon the existing conditions of the river area should the river be placed in the National System.

This assessment makes no recommendation as to whether or not the river should be placed in the National Wild and Scenic Rivers System, but rather establishes its eligibility to do so if there should be state and local support to pursue designation. The National Park Service will abide by the decision of local governments and the river community as to whether or not to pursue designation.

B. National Wild and Scenic Rivers System

1. National Wild and Scenic Rivers Act

The Wild and Scenic Rivers Act (Public Law 90-542, as amended) established a framework whereby examples of the nation's outstanding rivers and streams could be permanently protected for the benefit and enjoyment of present and future generations. Congress declared that "the established national policy of dam, and other construction... needs to be complemented by a policy that would preserve other selected rivers or sections thereof in their free-flowing condition to protect the water quality of such rivers and to fulfill other vital national conservation purposes." These selected rivers would collectively form the National Wild and Scenic Rivers System.

Several rivers were designated immediately as part of the System. The Act also included provisions for adding rivers to the System and set minimum criteria for identifying potential National Wild, Scenic and Recreational Rivers.

a. Eligibility Requirements

The Wild and Scenic Rivers Act (P.L. 90-542 as amended) details the criteria to be used in identifying rivers eligible for inclusion in the National Wild and Scenic System. To be eligible for inclusion in the National Wild and Scenic Rivers System, a river or segment of river must:

- 1) Be free-flowing.
- 2) Be adjacent to or within related land areas that possess one or more outstandingly remarkable scenic, recreation, geologic, fish and wildlife, historic, cultural, or other similar values.
- 3) Be generally undeveloped (stream corridors may be developed for the full range of agricultural uses and can include small communities as well as dispersed or cluster residential housing) and/or be largely undeveloped (rivers or sections of rivers with shorelines or watersheds essentially primitive or largely undeveloped).

b. Classification

Section 2(b) of the Act also lists the criteria to be used in classifying eligible rivers or river segments as "wild, scenic or recreational" as a basis for future management. These classifications are based on the degree to which the river or river segments meet the above criteria:

- 1) Wild river areas--Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with shorelines or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
- 2) Scenic river areas--Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

3) Recreational river areas--Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

2. The Nationwide Rivers Inventory

In 1982 the National Park Service published the Nationwide Rivers Inventory. The Inventory was a systematic national inventory and evaluation of rivers and streams to identify rivers and river segments that may meet the minimum criteria for future study and potential inclusion in the National Wild and Scenic Rivers System.

Approximately 39 miles of the Great Egg Harbor River are listed on the inventory as potentially eligible for inclusion in the National Wild and Scenic Rivers System. The Great Egg was recognized for its outstandingly remarkable botanic, wildlife, and recreational resource values. Approximately 16.7 miles of two of its major tributaries, the Tuckahoe and Middle Rivers, are also listed.

The following sections of the Great Egg Harbor River are listed on the Nationwide Rivers Inventory:

<u>Name</u>	<u>Segment Description</u>	<u>Miles</u>
Great Egg Harbor River	Great Egg Harbor Bay to south of Mays Landing	10
Tuckahoe River	Great Egg Harbor Bay to Tuckahoe	9.5
Middle River	Great Egg Harbor Bay to north of Corbin City	7.2
Great Egg Harbor River	Weymouth to Atlantic City Expressway	24
Great Egg Harbor River	New Brooklyn Lake backwater to the Pennsylvania-Reading Railroad crossing	5.5
total		<u>56.2</u>

C. Study Process

The Great Egg Harbor River and its tributaries were examined to determine if they were eligible for inclusion in the National Wild and Scenic Rivers System. Information gathered during the Nationwide Rivers Inventory, as well as site visits, research of published sources, aerial photographic analysis and interviews with local and regional experts on the resource values of the Great Egg Harbor River were used to prepare this evaluation. The Wild and Scenic Rivers Act (P.L. 90-542 as amended) and the Final Revised Guidelines for Eligibility, Classification, and Management of River Areas (Federal Register, Tuesday, September 7, 1982, pp. 39454 to 39461) describe the criteria and process for determining the eligibility and classification of river areas.

The federal legislation that authorized a study of the Great Egg Harbor River (P.L. 99-590, October, 1986) called for a review of the "entire Great Egg Harbor River". The Great Egg Harbor River Task Force, a group of area citizens formed to assist the study effort, requested that this study include a review of the tributaries to the river. The municipalities of Buena Vista, Egg Harbor Township, City of Estell Manor, Hamilton Township and Weymouth Township passed resolutions endorsing a review of the river tributaries as part of the study process.

The eligible segments of Great Egg Harbor and its tributaries were determined using the following three-step process:

1. The Great Egg Harbor River and its tributaries were examined to determine if they were free-flowing. For the mainstem of the Great Egg, impounded segments (Lake Lenape and New Brooklyn Lake) were disqualified, but other segments separated by impoundments were considered potentially eligible as long as they were free-flowing. For the tributaries, only free-flowing segments that were directly connected to the mainstem of the Great Egg were considered potentially eligible. Impounded sites were identified using USGS topographic maps and aerial photos and were verified by field checks.

2. Those segments of the Great Egg Harbor River and its tributaries which were free-flowing were next analyzed to determine the level of development in the river corridor in accordance with Section 4(d) of the Wild and

Scenic Rivers Act. The river corridor was considered to be the area one quarter-mile from the banks of the river. Using a system developed for the Nationwide Rivers Inventory, a Development Point Index value was calculated mile-by-mile and then averaged for the free-flowing segments of the Great Egg and its tributaries. Segments with an average Index value of more than 100 points were disqualified. Certain types of land uses or development in the river corridor (e.g. major sand and gravel operations, parallel four-lane expressways, large parallel powerline transmission rights-of way, factories or industrial sites) could also automatically disqualify a river segment. USGS topographic maps and aerial photos of the river were used to determine levels of development and were verified through field checks.

3. Each river segment and tributary of the Great Egg passing the second set of criteria was then evaluated to determine if any "outstandingly remarkable" resources values existed. An outstandingly remarkable resource value is defined as being of either national or multi-state significance. A river segment or tributary was declared eligible if just one significant resource value could be documented. Federal, State, and local agencies, the Pinelands Commission, private conservation organizations, local universities and colleges, and individual resource experts were contacted to provide any literature, information or maps relating to the Great Egg Harbor River and its resources.

River segments meeting all three of the above criteria were considered eligible for potential inclusion in the National Wild and Scenic Rivers System. The decision of whether or not to recommend to Congress that the eligible segments be included into the System will be entirely up to local governments and a task force made of up of municipal representatives, local interests and participating state agencies.

II. FINDINGS

A. National Wild and Scenic River Eligibility

1. THE GREAT EGG HARBOR RIVER AND 16 OF ITS TRIBUTARIES QUALIFY FOR INCLUSION IN THE NATIONAL WILD AND SCENIC RIVER SYSTEM.

A resource assessment indicates that 39.5 miles of the mainstem of the Great Egg Harbor River are eligible for inclusion in the National Wild and Scenic Rivers System. The areas which are eligible are:

<u>Stream Name</u>	<u>Segment Description</u>	<u>Miles</u>
Great Egg Harbor River	Mouth of Patcong Creek to mouth of Perch Cove Run	10
Great Egg Harbor River	Mouth of Perch Cove Run to the Mill Street Bridge	5.5
Great Egg Harbor River	Mouth of Mare Run to the Atlantic City Expressway	21
Great Egg Harbor River	Williamstown-New Freedom Road to the Pennsylvania Railroad right-of-way.	3

In addition, 89.5 miles of tributaries to the Great Egg have been found to be eligible for the National Wild and Scenic Rivers System. These areas include:

<u>Stream Name</u>	<u>Segment Description</u>	<u>Miles</u>
Squankum Branch	Confluence with Great Egg Harbor River to Malaga Road	4.5
Big Bridge Branch	Confluence with Great Egg Harbor River to headwaters	2.2
Penny Pot Stream	Confluence with Great Egg Harbor River to 14th Street	4.1
Deep Run	Confluence with Great Egg Harbor River to Pancoast Mill Road	5.4

Mare Run	Confluence with Great Egg Harbor River to Weymouth Avenue	3.0
Babcock Creek	Confluence with Great Egg Harbor River to headwaters	7.5
Gravelly Run	Confluence with Great Egg Harbor River to Pennsylvania Railroad Right-of-Way	2.7
Miry Run	Confluence with Great Egg Harbor River to Asbury Road	1.7
South River	Confluence with Great Egg Harbor River to Main Avenue	13.5
Stephen Creek	Confluence with Great Egg Harbor River to New Jersey Route 50	2.3
Gibson Creek	Confluence with Great Egg Harbor River to First Avenue	5.6
English Creek	Confluence with Great Egg Harbor River to Zion Rd.	3.5
Lakes Creek	Confluence with Great Egg Harbor River to Route 559	2.8
Middle River	Confluence with Great Egg Harbor River to Atlantic County Impoundment	5.6
Patcong Creek	Confluence with Great Egg Harbor River to Garden State Parkway	2.8
Tuckahoe River (lower segment)	Confluence with Great Egg Harbor River to Route 50 Bridge	9.0
Tuckahoe River (upper segment)	Route 50 Bridge to Route 49 Bridge	7.3
Cedar Swamp Creek	Confluence with Tuckahoe River to headwaters	6.0

B. River Values of the Great Egg Harbor River

The following paragraphs briefly summarize the outstandingly remarkable values of the Great Egg Harbor River and its tributaries.

Regional Setting: The Great Egg Harbor River lies within and is representative of rivers in the unique New Jersey Pinelands ecosystem. The Pinelands National Reserve, which encompasses this area, is recognized as a nationally significant resource because of its unique geology and ecology. The Pinelands National Reserve is also internationally recognized as a unit of the South Atlantic Coastal Plain Biosphere Reserve under the United Nation's Man and the Biosphere Program.

Physiographic/Geologic: The Cohansey and Kirkwood sand formations, underlying the Pinelands and the Great Egg, is the largest freshwater aquifer in the Mid-Atlantic region, and supports the unusual Pinelands hydrology and ecology.

Surface Hydrology: The Great Egg Harbor River is one of two major river systems in the Pinelands National Reserve, draining about 20 percent of the area's 1.1 million acres.

Vegetation: The lower Great Egg Harbor River and its tributaries contain large expanses of ecologically significant tidal marshlands and hardwood swamp. The middle and upper Great Egg Harbor River and their tributaries contain significant areas of hardwood swamp. Both areas have sites with rare plants or plant communities recognized by Federal and State agencies and the Pinelands Commission.

Fisheries: Lower areas of the Great Egg Harbor River and its tributaries serve as critical nursery habitat and spawning grounds for anadromous fish, as well as resident estuarine and transient marine fish. The lower Great Egg is also one of only four areas in the State of New Jersey where commercially important quantities of seed oyster still exist.

Wildlife: Lower Great Egg Harbor and its tributaries provide breeding habitat for the Peregrine Falcon, as well as habitat for the Southern Bald Eagle, both Federally endangered species. Hardwood swamps and wetlands adjacent to the lower, middle and upper Great Egg and their tributaries provide habitat for rare and endangered species recognized by the New Jersey Department of Environmental Protection and the Pinelands Commission.

Recreation: The Great Egg Harbor River is the longest canoeable river in the New Jersey Pinelands. The area provides excellent recreational opportunities in close proximity to the major urban areas of Philadelphia, Trenton, Camden, and Wilmington. The lower Great Egg Harbor River provides excellent recreational opportunities for boating, fishing and hunting.

Cultural Resources: The corridors of the lower Great Egg Harbor River and its tributaries contain a number of historically significant sites which were important in the early maritime industry in Southern New Jersey. Sites which were important to the development of the bog iron industry occur on the Great Egg Harbor River and its tributaries. A number of sites in the area are recognized by Federal and State historic preservation agencies.

C. Proposed Classifications

Three eligible segments meet the criteria to be classified as scenic; the remaining eligible segments meet the criteria to be classified as recreational. The classifications of a segment as either wild, scenic or recreational refers to the degree to which the segments meet the criteria mentioned beforehand (see pg. 2).

1. Lower Great Egg Harbor River #1
(Mouth of Patcong Creek to the mouth
of Perch Cove Run) SCENIC CLASSIFICATION
10 miles
2. Tuckahoe River (Confluence with Great
Egg Harbor River to the Rt. 50 Bridge) SCENIC CLASSIFICATION
9 miles
3. Middle River (Confluence with Great
Egg Harbor River to the Atlantic
County Impoundments) SCENIC CLASSIFICATION
5.6 miles
4. All other eligible segments of the
Great Egg Harbor River and its
tributaries RECREATIONAL CLASSIFICATION
104.4 miles

D. River Attributes

The Great Egg Harbor River and its tributaries possess river attributes which are consistent with the "Classification Criteria for Wild, Scenic and Recreational River Areas" described in the Final Revised Guidelines for Eligibility, Classification and Management of River Areas (see Appendix A). Specifically, the classified segments of the Great Egg Harbor River and its tributaries are free of impoundments, generally undeveloped, accessible in places by road, and possess water quality which meets federal and state standards or for which a water quality improvement plan exists or is being developed in compliance with applicable state or federal laws.

III. DESCRIPTION OF THE GREAT EGG HARBOR RIVER AREA

A. Regional Setting

The mainstem of the Great Egg Harbor River begins just west of the Borough of Berlin in Camden County. From there the river flows in a southeasterly direction for approximately 56 miles through a largely rural and undeveloped area of southern New Jersey to Great Egg Harbor Bay and into the Atlantic Ocean (see map on pg.13).

The river takes its name from the Great Egg Harbor, which was originally named by the Dutch when they settled southern New Jersey. When they arrived, the Dutch noted an abundance of nesting shorebirds and named the area "Great Egg." The area is characterized by a moderate northern climate and has flat or gently rolling terrain that varies in elevation from sea level in the coastal areas to 150 feet above sea level in the headwaters. The Great Egg Harbor River is situated near the major metropolitan areas of Camden, Philadelphia, Trenton, and Wilmington, and is within easy reach of the Garden State Parkway, the New Jersey Turnpike and New York City. In the past, forestry, shipping and shipbuilding, iron and glass production, and commercial fishing were the mainstays of the area's economy. Today, agriculture, residential development, tourism, and recreation have become an increasingly important part of the region's economic base.

The Great Egg Harbor River is one of two major river systems in the Pinelands National Reserve, the other being the Mullica River. The National Parks and Recreation Act of 1978 (Public Law 95-625) established the Pinelands as the nation's first national reserve. The Pinelands National Reserve was created due to "the national significance of this resource," and because it provides "significant ecological, natural, cultural, recreational ... benefits."

Almost all of the Great Egg Harbor River watershed lies within the Pinelands National Reserve. Much of the watershed, with the notable exception of the coastal areas, lies within the Protection Area of the state designated New Jersey Pinelands Area. The coastal areas fall within the jurisdiction of the New Jersey Coastal Management Program.

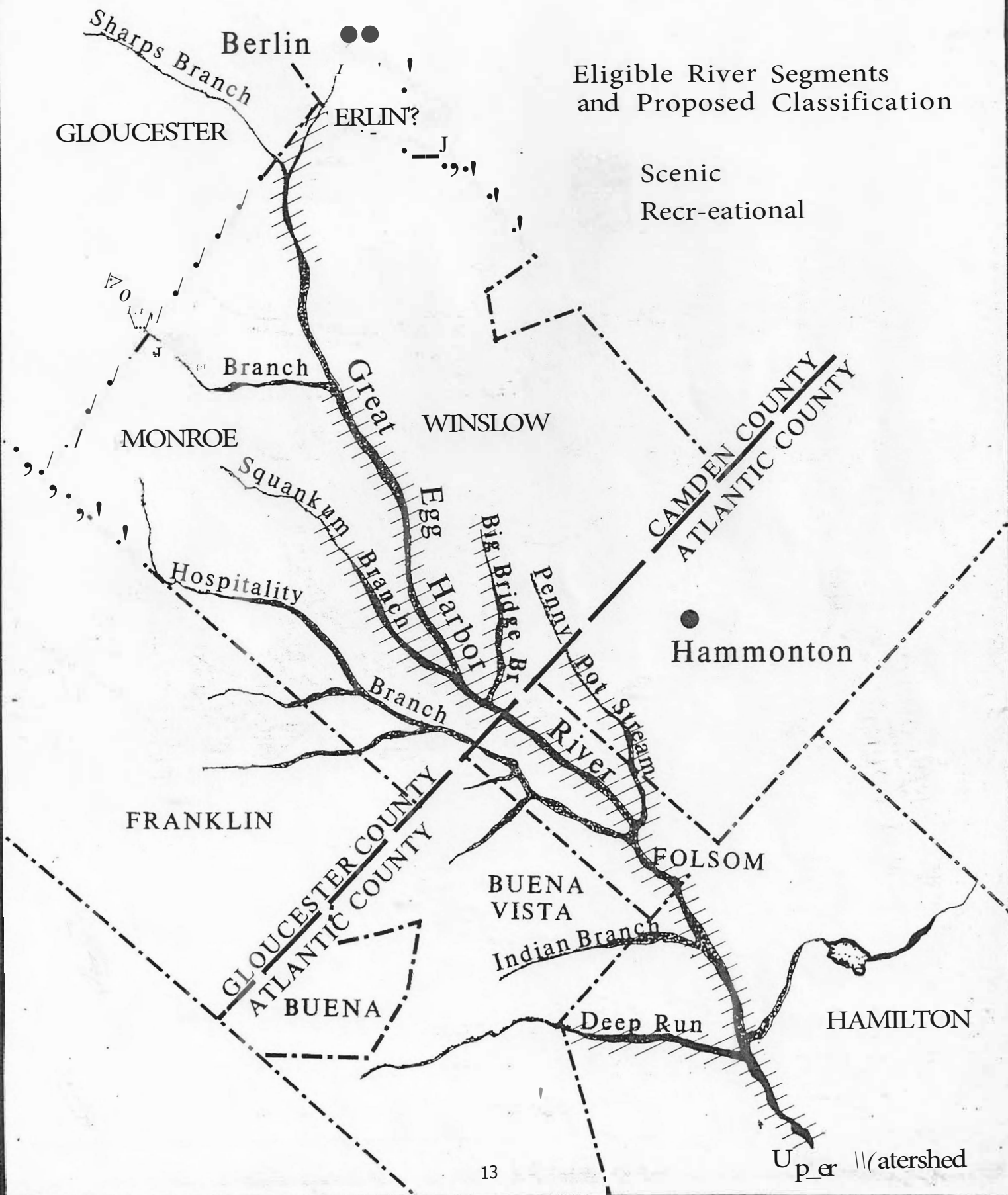
A small segment of the upper Great Egg Harbor River headwaters area (west of the river between the Atlantic City Expressway and just south of Berlin Borough) lies outside of the boundaries of both the federal and state Pinelands Areas, but has been identified in the Pinelands Comprehensive Management Plan as an Adjacent Area of Importance. The CMP recognizes the importance of the headwaters area in maintaining the Great Egg Harbor River's water quality. The CMP recommends adoption of state and local regulations of land use and establishment of ground and surface water quality standards to protect water quality and scenic attributes.

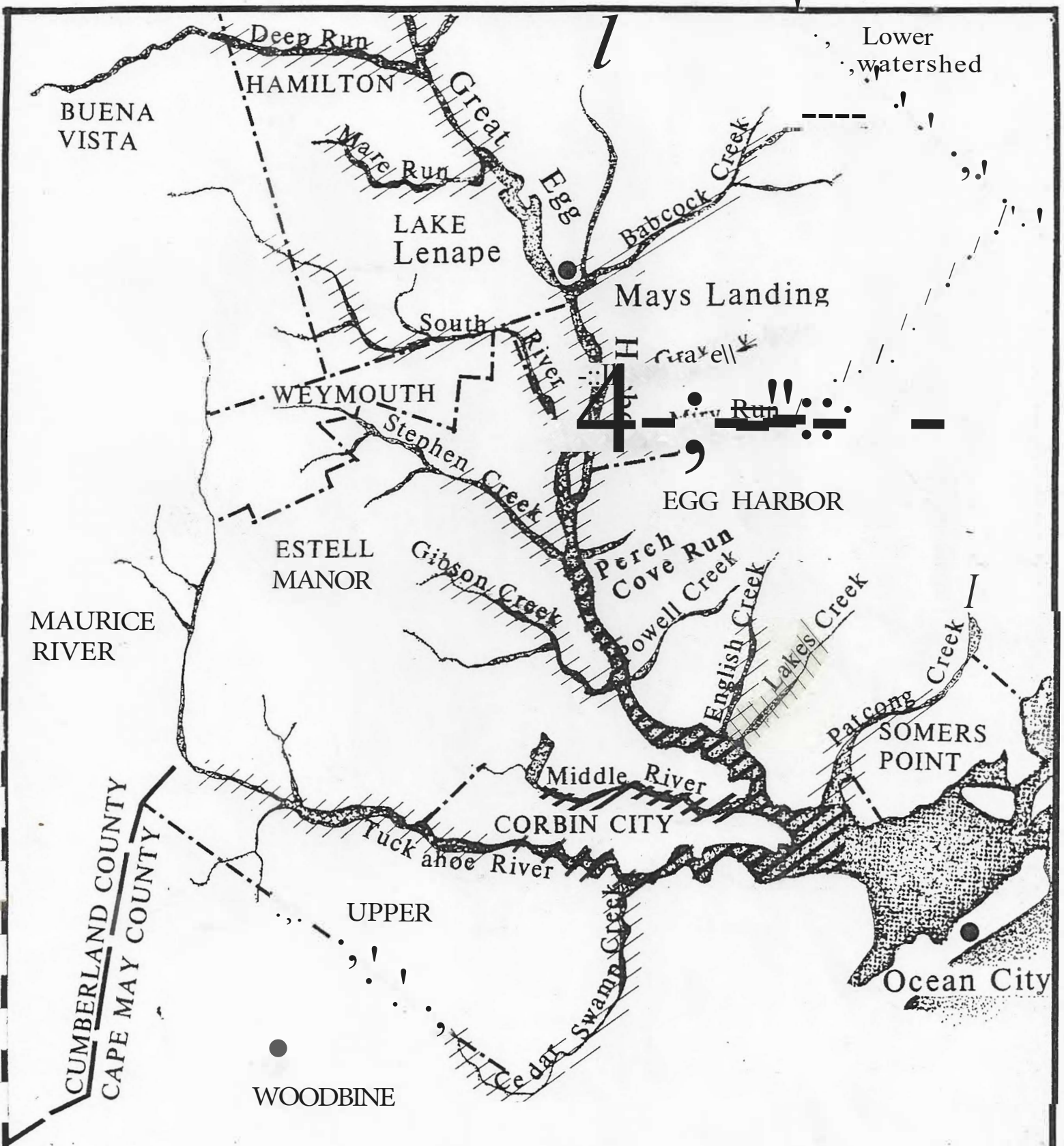
Those coastal areas outside of the Great Egg Harbor River not lying within the state Pinelands Area, and thus not subject to the jurisdiction of the Pinelands Commission, fall within the jurisdiction of the New Jersey Coastal Management Program. This program, administered by the Division of Coastal Resources, New Jersey Department of Environmental Protection (NJDEP), administers the Coastal Area Facility Review Act of 1973 (CAFRA). The CAFRA directs the NJDEP to review and make any necessary revisions to environmental designs and development plans in coastal areas to effectuate the purposes of the state and federal Pinelands acts.

The Pinelands National Reserve has also achieved recognition as an internationally important area. In 1983, the Reserve was accepted as a unit within the South Atlantic Coastal Plain Biosphere Reserve, under the Man and the Biosphere (MAB) Program authorized by the United Nations Educational, Scientific and Cultural Organization (UNESCO). The Pinelands is part of a worldwide system of biosphere reserves established in 1971 to "conserve the diversity and integrity of biotic communities ... within natural ecosystems" and "to provide areas for ecological and environmental research ... education, and training." To be accepted into the system of biosphere reserves, an area must have "unique features" that are "sufficiently outstanding on a world scale for their international importance to be beyond dispute."

GREAT EGG HARBOR RIVER

CONGRESSIONAL WILD AND SCENIC RIVER STUDY





GREAT EGG HARBOR RIVER
FIELD AND SCENIC RIVER STUDY
 Eligible River Segments and Proposed Classification

Scenic Recreational

B. Physiography and Geology

Using a system developed by N.M. Fenneman in his 1938 publication, entitled Physiography of the Eastern and Western United States, the United States can be divided into 34 natural regions called physiographic provinces. Each of these provinces can be described by physical characteristics that largely result from its geological structure. Several of these provinces are subdivided into sections.

The Great Egg Harbor River area lies within the physiographic section entitled the Embayed section of the Atlantic Coastal Plain. Currently no rivers from this physiographic section are represented in the National Wild and Scenic Rivers System. There are 150 stream segments from this physiographic section currently included in the Nationwide Rivers Inventory.

The geology of the New Jersey Pinelands is characterized by rolling terrain with sandy, draughty soils. The area has not been glaciated and has no bedrock near the surface, nor steep slopes or mountains. The region is underlain by a series of unconsolidated layers of sand, clays and marls in the shape of a wedge. Those layers, in turn, rest atop bedrock which dips gently to the southeast and extends seaward into the submerged Atlantic Continental Shelf. (Pinelands CMP)

During the Tertiary Age the sea covered the Atlantic Coastal Plain several times. After depositing the geologic formation known as the Cohansey Sand, the sea receded and the present topography began to form approximately 10,000 years ago. Overlying the Tertiary deposits are those laid down by glaciation during periods of Pleistocene (Wisconsin). The Cape May formation deposited during this time extends from sea level to 30-50 feet and is considered to be of marine origin, (Pinelands CMP)

Vast quantities of groundwater are stored in the extensive sand aquifers of the Cohansey and Kirkwood formations beneath the surface of the Pinelands. This area contains the largest freshwater aquifer in the Mid-Atlantic region. This reservoir of groundwater supports 89 percent of the flow in Pinelands streams and rivers, discharging primarily through swamps and wetlands. It is replenished solely by precipitation, of which

forty-four percent of the annual rainfall percolates through the sandy soil surface. The aquifers creating this groundwater resource thus play a crucial role in the hydrology and ecology of the Great Egg Harbor River and the New Jersey Pinelands.

C. Surface Hydrology

The Great Egg Harbor River Basin drains approximately 304 square miles, or approximately 20 percent of the Pineland's 1.1 million acres. The Great Egg Harbor River and its tributaries are representative of Pinelands rivers, which are generally closely spaced and somewhat parallel to each other as they flow to bays along the Atlantic Ocean or south to the Delaware Bay. Below Mays Landing the river is also representative of coastal streams in this physiographic section.

Streams of the Pinelands and the coast are typically slow moving and shallow due to the flat topography. The characteristic brown or "tea-colored" appearance of the river water results from the abundance of an organic iron complex, derived from the oxidation of iron ions dissolved in groundwater and mixed with decomposing plant byproducts at the surface. About 45 percent of the flow results from the outcropping of the Cohansey Aquifer. Due to the porous soils, the potential for contamination of the Cohansey Aquifer is great. The extensive interchange between the Great Egg Harbor River and the aquifer means that groundwater contamination could adversely affect the river.

Table 1 shows streamflow data for the Great Egg Harbor River and its tributaries.

Twenty-five man-made lakes are located in the Great Egg Harbor river basin. Impoundments on the mainstem of the Great Egg Harbor River are located at Mays Landing (forming Lake Lenape) in Atlantic County and at New Brooklyn in Camden County (forming New Brooklyn Lake). A series of breached small dams exist on the Tuckahoe River above Head of River which are maintained by the New Jersey Division of Fish, Game and Wildlife as wildlife impoundments. Hospitality Branch and its tributaries, Little Mill Creek, Big Ditch, Watering Race Branch, and Dry Run all exhibit alterations due to dams or impoundments. These alterations have significantly affected

Table 1

Streamflow Data - Great Egg Harbor River and Its Tributaries

USGS Gauging Station	Drainage Area (Sq. mi.)	Average Discharge (cfs)	7-day,10-year Low Flow (cfs)
Great Egg Harbor River at Berlin	1.9	0.9	0.0
Great Egg Harbor River at Sicklerville	15.1	17.0	2.3
Great Egg Harbor River near Blue Anchor	37.3		13.3
Great Egg Harbor River at Folsom	57.1	86.2	22.0
Tuckahoe River at Head of River	30.8	44.3	11.0
Penny Pot Stream near Folsom	5.3	5.3	0.4
Babcock Creek at Mays Landing	20.0	23.0	2.8
Fourmile Branch near Williamstown	5.3	5.5	1.0
Fourmile Branch at Winslow Crossing	6.2	8.1	1.6
Fourmile Branch at New Brooklyn	7.7	11.0	3.0
Deep Run at Weymouth	20.0	36.0	7.3
Hospitality Branch at Berryland	20.0	38.0	6.3

Source: USGS, Low-Flow Characteristics and Flow Duration of New Jersey Streams, January, 1982, and USGS, Unpublished data, September, 1984.

the free-flowing riverine characteristics of these tributaries.

The mainstem of the lower Great Egg Harbor River is tidally influenced up to Mays Landing while the lower Tuckahoe River is tidal up to Head of River.

D. Water Quality

Water quality of the Great Egg Harbor River varies considerably as one moves downstream from the headwaters. The New Jersey 1982 State Water Quality Inventory Report and New Jersey 1986 State Water Quality Inventory Report both noted poor water quality in the upper reaches of the river near Sicklerville. Reported problems include high nutrient concentrations, low dissolved oxygen, and elevated pH. (Typical Pinelands streams have low pH and are mildly acidic.) Both state water quality reports pointed to the Berlin Borough sewage treatment plant as the major source of pollution. The discharge to the Great Egg from this plant is to be eliminated in 1988-89 by transferring it to the Camden County Regional Sewerage Authority system, which should improve water quality in the upper portion of the river. Other contributors to the poor water quality of the upper segment of the river are urban and agricultural non-point source pollutants.

Water quality monitoring stations operated by the U.S. Geological Survey are located on the Great Egg Harbor River at Blue Anchor, Sicklerville, Folsom and Weymouth, and on the Tuckahoe River at Head of River.

Water quality standards and stream classifications for New Jersey rivers are set by the State of New Jersey as set forth in N.J.A.C. 7:9-4. Streams in the Great Egg Harbor River Basin have been classified into one of the following categories:

PL - for freshwater streams in the NJ Pinelands Area

FW1 - for freshwater streams in state managed areas

FW2-NT - for freshwater nontrout streams outside the Pinelands

Area.

FW2-NT/SE1 - for tidal streams

FW2-NT/SE1 (C-1) - for tidal streams in state managed areas.

Flowing downstream from Sicklerville, the river enters New Brooklyn Lake. The lake appears to trap nutrients since the monitoring stations below the lake show improved water quality. The stations at Blue Anchor and Folsom show lower total nitrogen, higher dissolved oxygen, and lower pH (but pH remains high for Pinelands streams). However, total phosphorus remains high at both stations.

The next station downstream is at Weymouth. Water quality is improved to fair at this station. The pH is lowered to a more typical Pinelands condition. Dissolved phosphorus is also lower, but still above state water quality criterion. The two state water quality studies report that the major source of pollution in the middle segment is residential onsite sewage disposal systems.

Overall the nontidal portions of the river are marginal for swimming and support a healthy warm water fishery, except in the headwaters. Current state surface water classifications are FW2-NT for nontidal reaches outside of the Pinelands Area and PL for those reaches inside the Pinelands Area.

There is less published water quality information available on the tidal portions of the river. The current state surface water classification is FW2-NT/SE1 (C1), with one unnamed tributary in the MacNamara Wildlife Management Area being classified as FW1. This section of the river is an important saltwater fishery. However, all shellfish harvesting areas above Lakes Creek are condemned by the state. The 1982 Water Quality Inventory Report suggests that water quality in the Lower Great Egg Harbor River is affected by residential onsite sewage disposal, one industrial discharge, effluent from the Hamilton Township Municipal Utility Authority (MUA) treatment plant, and possibly by three landfills.

There is even less specific information about the tributaries. The 1982 Water Quality Inventory Report rated water quality in the Tuckahoe River at Head of River as generally good, but noted periods of high fecal coliform which may make the river unsafe for swimming. Much of the Tuckahoe River is condemned by the state for shellfish harvesting. The

current state surface water classification is PL in the Pinelands Area as far as Head of River, except for the Peaslee Wildlife Management Area. The remainder of the river, including the wildlife management area, is classified FW2-NT/SE1 (C1).

Pollution problems were noted on two other tributaries in the New Jersey 1982 State Water Quality Inventory Report. Fourmile Branch showed elevated nutrient levels, possibly from the Winslow Township treatment plant. Babcock Creek is occasionally polluted by inadequately treated discharges from the Hamilton Township MUA treatment plant, and this results in high suspended solids and high biological oxygen demand. The problems on Babcock Creek may effect the Lower Great Egg Harbor River. However, the discharge to Babcock Creek and the lower Great Egg from the Hamilton Township plant will be eliminated in 3-5 years when it is transferred to the Atlantic County Regional Sewerage Authority system.

E. Vegetation

The river-related vegetation of the Great Egg Harbor River within the Pinelands Area is typical of the New Jersey Pine Barrens. The Pinelands support a unique vegetation characterized by low dense forests of pine and oak, drainage courses bordered by cedar and hardwood swamp, pitch pine lowlands, bogs and inland wetlands, and productive tidal marsh.

The Pinelands have a rich diversity of plant life numbering 850 species, 580 of which are native species. (Fairbrothers, 1979) A notable feature of the Pinelands flora is that a large number of species reach either their northern or southern geographical limits in the area. Another interesting feature is the number of species that are "fire adapted", responding to the important role fire plays in Pinelands ecology.

Differences in Pinelands groundwater levels have resulted in two distinct vegetative associations - upland and lowland. Lowland vegetation is found on sites where water is near or above the surface during some part of the year. The upland associations occur in the remaining areas where water is seldom near the surface.

The upland forests support pitch and shortleaf pines and a variety of oak species not often found in the lowlands. Lowland forests include Atlantic white cedar swamps, hardwood swamps, bogs, inland freshwater wetlands, and coastal tidal marshes.

In the coastal area, the lower Great Egg Harbor River flows through an extensive broad band of marshes that are generally undeveloped. These marshes lie within the state's Lester G. McNamara Wildlife Management Area. Adjacent to these marshes, a hardwood swamp band narrows somewhat in the northeast portion due to agricultural use and development in the adjacent uplands. Below Mays Landing, the river typically supports ribbons of hardwood swamp fringed by pitch pine lowland forest.

Above Mays Landing, the river becomes a wide meandering stream bordered by a broad band of hardwood swamp. Islands of pine-oak forest and pitch pine lowland forest occur within this hardwood swamp, and the hardwood swamp is often fringed by pitch pine lowland forest. In this portion of the Great Egg, there are several broad hardwood swamps in low-lying areas between tributaries. Several areas have been severely burned, forming a complex mosaic with large boggy areas. Cedar stands once existed in these areas but have been substantially reduced by harvesting. Pitch pine forests fringe the hardwood swamps.

The upland areas of the Great Egg are almost entirely oak-pine forest, with the headwater areas of the watershed supporting a substantial amount of agriculture.

The New Jersey Natural Heritage Program has identified plant species proposed for the federal threatened and endangered species list that occur along the Great Egg Harbor River below Mays Landing. These plants are: Knieskern's Beaked Rush (Rhynchospora knieskernii), Parker's Pipewort (Eriocaulon parkeri), and Long's Bulrush (Scirpus longii), all of which inhabit bog or marsh areas.

Several rare, threatened, or endangered plant species occur along the tributaries of the Great Egg Harbor River. Some of these plants are the Pine Barren Boneset, Parker's Pipewort, Barratt's Sedge, Long's Bulrush, Knieskern's Beaked Rush, and Sensitive Joint-Vetch, all of which are under consideration by the federal government for listing as threatened or

endangered species. Also occurring along the tributaries are Virginia thistle, butterfly pea, and long-awned smoke grass, which are listed as rare by the State of New Jersey. Tributaries identified by the New Jersey Natural Heritage Program as locations of rare plants include Cedar Swamp Creek, Tuckahoe River, South River, Gravelly Run, Babcock Creek, Deep Run, Penny Pot Stream, and Big Bridge Branch.

Resource experts employed by the Pinelands Commission and the State of New Jersey have identified a number of significant vegetative communities along the Great Egg Harbor River. The tidal, brackish and freshwater wetlands of the lower Great Egg are of particular interest. Specifically, three sites near Mays Landing, Clarkstown, and Catawba are considered "biologically unusual or unique". In the upper Great Egg, areas in and around Weymouth are good examples of pitch pine lowlands with the tallest recorded pitch pine; they have been termed an "ecologically critical area". These assessments by experts have been used by the Pinelands Commission to identify "critical areas" in the Pinelands Comprehensive Management Plan.

These same studies also identified important vegetative communities along the Tuckahoe River area. Cedar Swamp Creek, a tributary of the lower Tuckahoe, is a significantly large area of cedar swamp considered to be an "ecologically critical area". Also, coastal wetlands in tidal portions of the Tuckahoe and Great Egg Harbor River are designated as "Geographic Areas of Particular Concern" pursuant to Sec.305(b)(3) of the Federal Coastal Zone Management Act.

F. Fisheries

The fishery resources of the Great Egg Harbor and its tributaries have traditionally provided great economic and recreational benefits to residents and visitors to the area. The naturalist John James Audubon noted the abundant fish and wildlife along the Great Egg Harbor River in his book, Delineations of American Scenery and Character.

In the upper portions of the Great Egg and its tributaries, vegetation beds and quiet backwaters provide habitat for such species as the American eel, redfin, chain pickerel, and the creek chubsucker. A number of sunfish species are found that include the blackbanded sunfish and the banded

sunfish, which are virtually restricted to the Pinelands. Tree roots and indentations along stream margins are favored by the eastern mud minnow.

No fish are currently stocked in the Great Egg Harbor River or its tributaries. Most stocked species do not respond well to the acid waters and low nutrient levels in Pinelands streams.

The lower stretches of the Great Egg Harbor River and its tributaries widen considerably and become tidal. They contain a different community of fish life, with peripheral Pinelands fish, marine and anadromous fisheries, and shellfish. Common peripheral species found in the Great Egg Harbor River are the golden shiner, the white sucker, the white catfish, the banded killifish, the mummichog, white perch, and yellow perch.

The lower river areas and estuaries of the Great Egg Harbor and Tuckahoe Rivers are very important resources because they serve as critical nursery and spawning grounds for transient marine fish, as well as habitat for resident estuarine fish. The protection of these areas is necessary to sustain the significant commercial and sport fisheries in the area.

Several anadromous fish species spawn in Pinelands rivers including alewife, Atlantic shad, blueback herring, and striped bass. Three of these species have been reported in the Great Egg Harbor River or its tributaries: alewife, blueback herring, and striped bass. (NJDEP, 1971) Alewife and blueback herring are known to spawn in the Great Egg Harbor River and the following tributaries: Patcong Creek, Miry Run, Gravelly Run, Gibson Creek, South River, Tuckahoe River and Cedar Swamp Creek. (Byrne, D.M., 1986) The conservation and restoration of anadromous fish species has been recognized as a national priority with the passage of the Anadromous Fish Conservation Act of 1965 (Public Law 89-304, as amended).

Marine fish found in the lower Great Egg and its tributaries include Atlantic menhaden, Atlantic silversides, bay anchovy and white flounder. Shellfish found are oyster, blue crab, hard clam (contaminated) and sea clam. The lower Great Egg Harbor and Tuckahoe Rivers are one of four areas in the State of New Jersey where commercially important quantities

of oysters are still harvested. Oysters from the lower Great Egg Harbor River and Tuckahoe River are not harvested for human consumption, but are used to restock other estuarine areas in New Jersey affected by MSX disease. This represents a very significant resource considering that the average annual value of the New Jersey oyster catch from 1982-86 was \$1,067,000.

G Wildlife

The fauna of the Pinelands portion of the Great Egg Harbor and its tributaries is characteristic of the New Jersey Pinelands. Thirty-nine species of mammals, 299 bird species and 59 species of reptiles and amphibians have been identified as occurring in the Pinelands. They include two species listed as endangered or threatened by the U.S. Department of the Interior, and four species listed as endangered or threatened by the New Jersey Department of Environmental Protection.

Typical species of mammals that can be found along the Great Egg Harbor River and its tributaries are the white-tailed deer, grey fox, grey squirrel, red squirrel, opossum, racoon and striped skunk. Mammals closely associated with river resources are the long-tailed weasel, mink, beaver, river otter, and muskrat. The beaver, once eliminated in the Pinelands, has been reintroduced and is now considered common. (Pinelands CMP) The population of river otters in the Great Egg Harbor watershed has recently increased due to improvements in water quality. (Rutgers, 1978)

Although the variety of bird species found in the Pinelands is not considered extraordinarily rich, about 300 species occur regularly in the area. Of these, 163 are breeding species. The region supports 44 species of game birds including 3 species of geese, 2 species of swans, 26 species of duck, and 3 species of rails. The coastal marshes of the lower Great Egg Harbor and Tuckahoe Rivers are an important habitat complex for entire groups of birds that include waterfowl, raptors, wading birds and shorebirds. Coastal wetlands provide migration, wintering and breeding habitat.

Two endangered species of birds occur in the lower Great Egg Harbor and Tuckahoe Rivers: the southern bald eagle and the peregrine falcon. Both

species are listed as endangered by the U.S. Fish and Wildlife Service. The peregrine falcon is not a native breeder in the lower Great Egg, but has been introduced there and is breeding. Bald eagles once nested near Gibson Creek, a tributary of the Great Egg Harbor River. The estuarine areas of the Great Egg Harbor and Tuckahoe Rivers remain important bald eagle feeding areas, especially the Corbin City area. Eagle sightings (both golden and bald eagles) have increased four fold from the late 1970's to the mid 1980's. Bald eagles account for about half of the current eagle activity in the Corbin City area. However, this activity is less than that observed above either the Maurice or Mullica Rivers.

In the Great Egg Harbor River and its tributaries, three species of amphibians are listed as endangered or threatened by the New Jersey Division of Fish, Game and Wildlife:

- o the Pine Barrens tree frog;
- o bog turtle; and
- o pine snake.

The Pine Barrens tree frog and pine snake occur along the upper and middle Great Egg Harbor River. The bog turtle occurs along tributaries of the lower Great Egg Harbor River. The first two species are proposed for listing as federal threatened or endangered species.

One other state endangered species occurs along the Great Egg Harbor River and its tributaries, the northern harrier. The Natural Heritage Program has records of threatened or endangered wildlife occurring along the Great Egg Harbor River, Cedar Swamp Creek, Tuckahoe River, Middle River, English Creek, Powell Creek, Stephen Creek, South River, Gravelly Run, Babcock Creek, Mare Run, Penny Pot Stream, and Squankum Branch.

The State of New Jersey administers three wildlife management areas (WMA) totalling over 30,000 acres that border the Great Egg Harbor and Tuckahoe Rivers:

- o Lester G. McNamara WMA in Atlantic and Cape May Counties (12,438 acres)
- o Peaslee WMA in Cumberland County (14,000 acres)
- o Winslow WMA in Camden and Gloucester Counties (3,743 acres)

H. Land Use

The Great Egg Harbor River corridor is characterized by a variety of land uses and developments. The watershed as a whole is approximately 67 percent forested, 22 percent agricultural and 11 percent developed. In general, the upper portions of the river and its tributaries in Camden and Gloucester Counties tend to be the more developed with more land devoted to agricultural, residential and commercial uses. In Atlantic County, the river and its tributaries above Mays Landing are bordered by hardwood forests and wetlands, with residential development occurring on upland areas and agriculture. Below Mays Landing, the river and most of its tributaries are tidal and are bordered by large expanses of undisturbed tidal marsh.

The headwaters of the Great Egg Harbor River lie in Berlin Borough and flow through the Camden County park in Berlin. Although the park itself is not developed along the river, there are impoundments in the park as well as substantial residential and commercial development in the vicinity of the river corridor. Below the park, the river is crossed by a paved road and is bordered by a county air landing strip and residential development. The river is then crossed by the old Pennsylvania-Reading Seashore Railroad right-of-way. Below this right-of-way, the Great Egg corridor is bordered by largely undeveloped bottomland hardwood forest until it crosses the Williamstown-New Freedom Road. Below this road, the river is crossed and paralleled by powerline right-of ways with transmission line towers that are three abreast. This powerline right-of-way continues to parallel the river as it flows through the New Brooklyn County Park and into New Brooklyn Lake. In addition, part of the flow of the river that courses through New Brooklyn Park has been diverted to a man-made channel which also flows into New Brooklyn Lake. Below the lake, the river is crossed by Cedar Brook Road and, further down, the Atlantic City Expressway.

Below the Atlantic Expressway, the Great Egg Harbor River flows through the state-managed Winslow Wildlife Management Area. This portion of the river again flows through undeveloped wetlands and bottomland hardwood forest until it reaches the lower boundary of the wildlife management area, where the river is crossed by Piney Hollow Road. Below this road,

the river is bordered on one side by the Winslow Township Sanitary Landfill and then, as it flows toward the Atlantic County Line, is crossed by the New Jersey Central Railroad right-of-way.

Between the Atlantic County Line and Weymouth, the river meanders through bottomland hardwood forest, but is crossed by five paved roads and is paralleled on its western side by Rt. 322 and scattered residential developments. On its western side, there are some cranberry bogs and blueberry farms. Below Weymouth, the Great Egg is crossed by Rt. 322 but remains undeveloped hardwood forest until it reaches the backwaters of Lake Lenape. Here the river is impounded by the dam at Mays Landing. US Rt. 50 crosses the river below the Lake Lenape dam at Mays Landing.

Below Mays Landing, the Great Egg Harbor River becomes tidal. From Mays Landing to the river's confluence with Perch Cove Run, the Great Egg is bordered on its western banks by largely undeveloped tidal marshlands. The eastern shore of this portion of the river is somewhat more developed with scattered residential development, a few commercial developments, and the small communities of Clarkstown, Thompsettown, and Catawba. No roads or railroads cross the river, but Rt. 559 parallels the eastern shore.

Below the confluence with Perch Cove Run, the western shore of the Great Egg is undeveloped tidal marshland until the river's confluence with the Tuckahoe River. Much of the tidal wetlands below Gibson Creek on this side of the river lie within the state-managed Lester G. McNamara Wildlife Management Area. On the eastern banks, there is only scattered residential development, the small communities of Jeffers Landing and Morris Beach, and a small segment of parallel paved road.

As the river enters Great Egg Harbor Bay, the Beasley Point Power Substation lies on the western bank below the Tuckahoe River. The river is also spanned by the bridges for US Rt. 9 and the Garden State Parkway.

I. Recreational Resources

The rivers, forests, swamps and marshes of the Pinelands constitute a large expanse of undisturbed land that is significant because of its close

proximity to the major metropolitan areas of the Mid-Atlantic region. The Great Egg Harbor River and its tributaries contain a great variety of outdoor recreation opportunities that together represent a recreational resource of high potential.

The Great Egg Harbor River is the longest canoeable river in the Pinelands, offering approximately 50 miles of canoeing. Twenty-nine miles of the river are canoeable above the Lake Lenape dam at Mays Landing. This portion of the river allows for leisurely canoeing trips on a meandering stream that passes through primitive hardwood swamps. Groundwater recharge to the river from the Cohansey aquifer maintains adequate base flows and allows for year-round canoeing. At least 10 canoe access points exist on the Great Egg between New Brooklyn Lake and the Lake Lenape dam. Canoeing, fishing, swimming, camping, hunting and nature study are common recreational activities.

The lower reaches of the Great Egg Harbor River and its tributaries offer an array of very different recreational opportunities. The broad channels and the freshwater and tidal wetlands are popular for fresh and saltwater fishing, boating, swimming and diving, water skiing, and shellfishing. The marine wetlands serve as resting, feeding and breeding areas for waterfowl throughout the year, and allow for hunting and birdwatching.

There is a large amount of publicly owned land in the Great Egg Harbor River and its tributaries that is available for public recreational use. As indicated previously, the State of New Jersey owns in excess of 30,000 acres of land in three state wildlife management areas that border the Great Egg and its tributaries. In addition, the Belleplain State Forest (11,689 acres) lies near to a portion of the Tuckahoe River in Cape May and Cumberland Counties. The state forest has 203 campsites.

Atlantic County owns a number of public park lands along the Great Egg Harbor River. With land acquisition funds provided through the New Jersey Green Acres Program, the county has purchased park lands to establish a "Great Egg Harbor River Linear Park". The majority of these lands are destined to be maintained in a natural state. These park lands in Atlantic County include:

River Bend Park	535	acres
Estell Manor Park	1,672	acres
Lake Lenape Park	1,843	acres
Gaskill Park	10	acres
Weymouth Furnace Park	7.5	acres
Penny Pot Park	<u>20</u>	acres
TOTAL	4087.5	acres

Camden County also owns approximately 600 acres at New Brooklyn County Park and over 100 acres at Berlin Park which borders the Great Egg Harbor River.

There are at least three private canoe liveries which serve the Great Egg Harbor River that provide approximately 90 canoes for rental. There are also a number of private campgrounds adjacent to or close to the river and its tributaries. Seventeen private marinas do business on the lower portion of the Great Egg Harbor River.

Scenic Resources

The New Jersey Pinelands and the Great Egg Harbor River Basin have notable scenic resources. The subdued scenic quality of the Pinelands landscape is attributable to three factors: 1) the flat or gently rolling terrain characteristic of the outer coastal plain; 2) the vast areas of unbroken forest that are rare in New Jersey; and 3) the tea-colored streams and rivers that meander through the region.

In 1980 the U.S. Department of the Interior, Heritage Conservation and Recreation Service in cooperation with the Pinelands Commission and the New Jersey Department of Environmental Protection, published a report entitled the Pinelands Scenic Study to define and assess the relative value of the scenic resources of the Pinelands. As part of the study, residents and users of the Pinelands were surveyed to measure scenic preferences for different types of Pinelands landscapes, as well as scenic preferences for different geographic areas in the Pinelands.

The most preferred scenic landscape in the Pinelands was surface water in lakes and streams. The next most preferred landscapes were undisturbed forests, such as cedar and hardwood swamp areas. The Great Egg Harbor river contains an abundance of both of these scenic resources.

In addition to the survey, the study participants were asked to nominate areas in the Pinelands important for scenic qualities. Of those sites lying outside the Pinelands Preservation Area, the Great Egg Harbor River above Mays Landing and below the Atlantic City Expressway was among the sites receiving the most support.

K. Cultural Resources

The Great Egg Harbor River Basin has probably been occupied and the scene of human activity since Paleo-Indian times (circa 10,000 BC). A recent archaeological survey of the Lower Great Egg Harbor River found evidence of human habitation during the Late Woodland Period (1000-1600 AD), Early/Middle Woodland Period (1000 BC-1000 AD), Late Archaic Period (4000-1000 BC), and Early/Middle Archaic Period (8000-4000 BC). Most of the sites uncovered occur near existing or relict streams or bodies of water. The absence of a large number of known prehistoric sites in the area is more attributable to a lack of investigation rather than an absence of sites. A recent assessment of the environmental and archeological conditions indicate that the region has a high potential for prehistoric sites.

The New Jersey Indians of historic times called themselves the "Lenape", but were renamed the "Delaware" by the Europeans. Increased contact with Europeans brought about a breakdown of traditions and increased reliance on trade goods. Warfare, disease and alcoholism had decimated the Lenape by 1759. By the end of the 18th century, most Lenape in the Delaware Valley had migrated out of the area.

The first Europeans to inhabit the Pinelands were woodcutters who came to exploit the vast forests in the 1700's. The forests provided an abundant supply of wood for lumber, charcoal, pitch, tar and turpentine.

The maritime industry has existed on the Great Egg since before the Revolutionary War. All raw materials for shipbuilding (timber, tar, turpentine, iron products) could be found locally. Mays Landing was once an important port and shipbuilding center and, during the Revolution, was the scene of a British landing in retaliation for privateering by rebels along the Atlantic Coast. By 1900 New Jersey was home to the largest working sailing fleet in the country. Most of that fleet was built in

South Jersey. The remains of this maritime heritage can be found along the Great Egg Harbor River and its tributaries. Historic shipyard sites can be found on Stephen Creek, Tuckahoe River, Cedar Swamp Creek, and the Great Egg Harbor River. Other remains of the maritime industry include landings at Gibson Landing on Gibson Creek, Thompsontown Landing and Fitches Point on the Great Egg Harbor River, English Creek ship remains, and wharfs at Marshallville on the Tuckahoe River. The remains of the schooner Weymouth near Fitches Point, and the graveyard at Head of River which contains the burials of Revolutionary War era sea captains, are both sites listed on the National Register of Historic Places.

Another important early industry was the production of "bog iron" from the limonite ore found in stream beds and bogs throughout the Pinelands. Forges, furnaces, and other bog iron processing activities were located at Weymouth on the Great Egg Harbor River, Concord Forge and Aetna Furnace on the Tuckahoe, and Walkers Forge on the South River. The Weymouth Iron Furnace was established in 1801 with a furnace and forge that produced stoves, iron plate and pipes. The 1834 Gazetteer of the State of New Jersey, compiled by Thomas Gordon, described Weymouth:

"Weymouth, blast furnace, forge and village, in Hamilton Township, Gloucester County, upon the Great Egg Harbor River, about five miles above the head of navigation. The furnace makes about 900 tons of casting annually: the forge having four fires and two hammers, makes about 200 tons bar iron, immediately from the ore. There are also a grist and a saw mill, and buildings for the workmen, of whom 100 are constantly employed about the works, and the persons depending upon them for subsistence, average 600 annually. There are 85,000 acres of land pertaining to this establishment....The works have a superabundant supply of water, during all seasons of the year."

A mule-powered railway, used for shipping ore, connected Weymouth Furnace to May's Landing in the 1840's. The ruins at the site are extensive. The site is considered eligible for the National Register by the State Historic Preservation Office.

Following the discovery of anthracite in the 1840's and the advent of the railroads, the bog iron industry could no longer compete with the

Pennsylvania iron works. As the bog iron industry collapsed, buildings and water power installations were converted to glass factories, cotton mills, sawmills and brick and tile works. The Weymouth Furnace site was converted to a paper mill in 1866. The Estellville Glass Works, founded in 1825, produced window and bottle glass and was active for at least half of the 19th century. The site as it exists today contains the remains of three structures, which are notable for their architecture, and is eligible for the National Register.

After the Civil War, agriculture became a more important economic activity in the Great Egg Harbor River Area. Row crops and vegetable and fruit farming were emphasized in the western Pinelands of Camden and Gloucester Counties.

Since the 18th century, the Pinelands have been a refuge for European immigrants. After 1850, ethnic groups including Germans, Russians, Italians and Jews began to move into the interior of the southern Pinelands and have contributed greatly to the cultural diversity and richness of the Great Egg Harbor River.

IV. PROPOSED CLASSIFICATIONS

The Great Egg Harbor River and its tributaries were evaluated to determine the proposed classifications which best fit the existing conditions of the streams. Section 2(b) of the National Wild and Scenic Rivers Act, indicates that eligible rivers shall be classified as one of the following:

1. Wild river areas--Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.

2. Scenic river areas--Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.

3. Recreational river areas--Those rivers or sections of rivers that are readily accessible by road or railroad, that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

The Great Egg Harbor River and its tributaries have been evaluated and divided into four different units based upon the patterns of land use, resources, and water quality. Each of these units appear to have a different character which offers certain opportunities and constraints for future management and conservation. The stream areas are identified as:

- 1) the Lower Great Egg Harbor River #1;
- 2) the Lower Great Egg Harbor River #2;
- 3) the Middle Great Egg Harbor River; and
- 4) the Upper Great Egg Harbor River.

The four following charts describe the characteristics of Great Egg Harbor River in relationship to the National Wild and Scenic Rivers System Guidelines and Criteria for Classification of River Areas. A copy of the guidelines and criteria are included in the Appendix. The proposed classifications for the eligible tributaries of the Great Egg Harbor River are included in the appendix. The final decision on classifications will be accomplished by working with the Great Egg Harbor River Task Force.

CLASSIFICATION EVALUATION FOR THE GREAT EGG HARBOR RIVER

SEGMENT: LOWER GREAT EGG HARBOR RIVER #1 (from the mouth of Patcong Creek to the mouth of Perch Cove Run).

CRITERIA	EXISTING CHARACTERISTICS AND CONDITIONS
Water Resource Development	The Lower Great Egg Harbor River segment is free of impoundments.
Shoreline Development	The Lower Great Egg Harbor River is largely undeveloped, with no substantial evidence of human activity. The vast majority of this segment is bordered by tidal marshlands with no development, and lies within the state-managed Lester G. McNamara Wildlife Management Area on the west bank. On the east bank, this segment is bordered by tidal marshland and largely undeveloped except for one small community and some scattered dwellings.
Accessibility	The area is accessible in places by road. No roads or railroads bridge the river. No roads exist on the west bank and it is only accessible by boat. The east bank is paralleled by a road in one small stretch and three roads reach the river. All roads on the east bank are generally inconspicuous from the river.
Water Quality	This segment does not currently meet some federal and state water quality standards for conservation, recreation and other uses. Point sources of pollution are largely attributable to discharges from the Hamilton Township treatment plant, but plans exist to eliminate this discharge from the Great Egg by transferring it to the Atlantic County Regional Sewerage Authority's system in 3-5 years. Non-point sources of pollution are due to septic systems, suburban runoff, and scattered agricultural areas in the watershed.

PROPOSED CLASSIFICATION: SCENIC

CLASSIFICATION EVALUATION FOR THE GREAT EGG HARBOR RIVER

SEGMENT: LOWER GREAT EGG HARBOR RIVER #2 (from the mouth of Perch Cove Run to the Mill Street Bridge in Mays Landing).

CRITERIA	EXISTING CHARACTERISTICS AND CONDITIONS
Water Resource Development	The Lower Great Egg Harbor River segment is free of impoundments.
Shoreline Development	This segment of Lower Great Egg Harbor River is somewhat developed, with some evidence of human activity. The western shore of this segment is bordered by tidal marshlands with little development. On the eastern bank, this segment contains a portion of Mays Landing, three small communities and some scattered residential development.
Accessibility	The area is accessible by road. A road bridge crosses the river in Mays Landing. No roads exist on the west bank. The east bank is paralleled by Rt. 559 and some minor roads leading to residential areas, but they are generally inconspicuous.
Water Quality	This segment does not currently meet some federal and state water quality standards for conservation, recreation and other uses. Point sources of pollution are largely attributable to discharges from the Hamilton Township treatment plant, but plans exist to eliminate this discharge from the Great Egg by transferring it to the Atlantic County Regional Sewerage Authority's system in 3-5 years. Non-point sources of pollution are due to septic systems, suburban runoff, and scattered agricultural areas in the watershed.

PROPOSED CLASSIFICATION: RECREATIONAL

CLASSIFICATION EVALUATION FOR THE GREAT EGG HARBOR RIVER

SEGMENT: MIDDLE GREAT EGG HARBOR RIVER (from the mouth of Mare Run just above the backwaters of Lake Lenape to the Atlantic City Expressway).

CRITERIA

EXISTING CHARACTERISTICS AND CONDITIONS

Water Resource
Development

The Middle Great Egg Harbor River segment is free of impoundments.

Shoreline
Development

The Middle Great Egg Harbor River contains some development, giving evidence of human activity. The upper portion of this segment lies within the state managed Winslow Wildlife Management Area and is largely undeveloped. Below that point, scattered residential developments border the river, but are mostly confined to the west bank. Some lands in the area have been developed for agricultural uses, primarily cranberry bogs and blueberry farms.

Accessibility

The area is readily accessible by road. Four roads and one unused railroad line cross the river and a number of roads parallel portions of the river, primarily on the west bank, but are generally inconspicuous.

Water Quality

This segment does not currently meet some federal and state water quality standards for conservation, recreation and other uses. Water quality problems in this segment are largely attributable to point sources in the upper Great Egg, principally the Berlin Borough wastewater treatment plant. However, a plan exists to eliminate discharges from the Berlin treatment plant to the Great Egg Harbor River in 1989 by linking Berlin to the Camden County Regional Sewerage Authority's wastewater treatment system.

PROPOSED CLASSIFICATION: RECREATIONAL

CLASSIFICATION EVALUATION FOR THE GREAT EGG HARBOR RIVER

SEGMENT: UPPER GREAT EGG HARBOR RIVER (from the Williamstown-New Freedom Road to the Pennsylvania-Reading Seashore Railroad Line right-of-way).

CRITERIA	EXISTING CHARACTERISTICS AND CONDITIONS
Water Resource Development	The Upper Great Egg Harbor River segment is free of impoundments.
Shoreline Development	The Upper Great Egg Harbor River area includes scattered residential development that demonstrates some evidence of human activity. A power line right-of-way crosses the river segment. Some lands in the area are used for the production of truck farm vegetables. There is evidence of past timber harvesting, however the forested areas appear natural from the streambanks.
Accessibility	The area is accessible by road. The upper limit of the river segment is crossed by a railroad right-of-way, while the lower limit is crossed by the Williamstown-New Freedom Road. Only one primitive road is predominantly within the stream area, inconspicuously paralleling the river.
Water Quality	This segment does not currently meet all federal and state water quality standards for conservation, recreation and other uses. Water quality problems in this segment are largely attributable to point source discharges from the Berlin Borough wastewater treatment plant. However, a plan exists to eliminate discharges from the Berlin treatment plant to the Great Egg Harbor River in 1989 by linking Berlin to the Camden County Regional Sewerage Authority wastewater treatment system.

PROPOSED CLASSIFICATION: RECREATIONAL

V. BIBLIOGRAPHY

- Akers, James F. All Year Birding in Southern New Jersey. 1981.
- Andropogon Associates. Forest Vegetation of the Pinelands, prepared for the New Jersey Pinelands Commission. New Lisbon, New Jersey. 1980
- Atlantic County Department of Regional Planning and Development, Division of Planning. Atlantic County Open Space Plan. 1985.
- Atlantic County Department of Regional Planning and Development, Division of Planning. River Bend Park Master Plan. 1987.
- Atlantic County Department of Regional Planning and Development, Division of Planning. Weymouth Furnace Historic Park Improvements. 1987.
- Caiazza, Nicholas and David E. Fairbrothers. Threatened and Endangered Vascular Plant Species of the New Jersey Pinelands and Their Habitats, prepared for the New Jersey Pinelands Commission. New Lisbon, NJ. 1980
- Cavallo, John and R. Alan Mounier. A Regional Predictive Survey of the New Jersey Pinelands - Phase I, report to the New Jersey Pinelands Commission. New Lisbon, NJ. 1982.
- Esser, Anthony J. Pinelands Water Resources Data Analysis, New Jersey Pinelands Commission. 1981.
- Fenneman, Nevil. Physiography of Eastern North America. 1938.
- Moonsammy, Rita Zorn, David Steven Cohen and Lorraine E. Williams (Eds.). Pinelands Folklife. Rutgers University Press, New Brunswick, NJ. 1987.
- Mounier, R. Alan. Survey of Cultural Resources of the Historic Era in the Watersheds of the Great Egg Harbor and Tuckahoe Rivers. New Jersey Department of Environmental Protection. 1982.
- Parnes, Robert. Canoeing the New Jersey Pine Barrens. Charlotte, NC. 1981.
- Ranere, Anthony J. and Patricia Hansell. Archeological Survey in the Drainage of the Lower Great Egg Harbor River, submitted to the Office of New Jersey Heritage, Department of Environmental Protection. Trenton, NJ. 1985.
- Rogers, Golden and Halpern (Consultants). Critical Areas Study for the Pinelands, prepared for the New Jersey Pinelands Commission. New Lisbon, NJ. 1980.
- Roman, Charles T. And Ralph E. Good. Wetlands of the New Jersey Pinelands: Values, Functions and Impacts. Rutgers University Center for Coastal and Environmental Studies. New Brunswick, NJ. 1983.
- Rutgers University, Center for Coastal and Environmental Studies. A Plan for the Pinelands National Reserve. New Brunswick, NJ. 1978.

- Sinton, John W. (Ed.). History, Culture and Archeology of the Pine Barrens: Essays from the Third Pine Barrens Conference. Stockton State College, Center for Environmental Research. Pomona, NJ.
- Sinton, John W. (Ed.). Natural and Cultural Resources of the New Jersey Pine Barrens: Proceedings and Papers of the First Research Conference on the New Jersey Pine Barrens. Stockton State College, Center for Environmental Research. Pomona, NJ. 1978.
- State of New Jersey Bureau of Forest Management. New Jersey Pinelands Forestry Report, prepared for the New Jersey Pinelands Commission, New Lisbon, NJ. 1980.
- State of New Jersey Department of Environmental Protection, Division of Fish, Game and Shellfish. Studies of the Great Egg Harbor River and Bay, Miscellaneous Report 8M. Trenton, NJ. 1971.
- State of New Jersey Department of Environmental Protection, Division of Fish, Game and Wildlife. An Assessment of the Game Mammals and Birds and Small Mammals of the Pinelands, prepared for the New Jersey Pinelands Commission, New Lisbon, NJ. 1980.
- State of New Jersey Department of Environmental Protection, Division of Water Resources. New Jersey 1982 State Water Quality Inventory Report. Trenton, NJ. 1982.
- State of New Jersey Department of Environmental Protection, Division of Water Resources. New Jersey 1986 State Water Quality Inventory Report. Trenton, NJ. 1986.
- State of New Jersey Department of Environmental Protection, Division of Water Resources. Surface Water Quality Standards: N.J.A.C. 7:9-4, Index B - Surface Water Classifications of the Atlantic Coastal Basin. Trenton, NJ. 1985.
- State of New Jersey Department of Environmental Protection, Division of Water Resources. Wastewater Discharge Requirements, N.J.A.C. 7:9-5 et seq. Trenton, NJ. 1985.
- State of New Jersey Department of Environmental Protection, Green Acres Program. Outdoor Recreation Plan of New Jersey. Trenton, NJ. 1984.
- State of New Jersey Department of Environmental Protection, Green Acres Program. Statewide Comprehensive Outdoor Recreation Plan. Trenton, NJ. 1977.
- State of New Jersey Pinelands Commission. Comprehensive Management Plan for the Pinelands National Reserve. New Lisbon, NJ. 1980.
- Sutton, Clay C. and Patricia Taylor Sutton. A Six Year Study of Wintering Eagle Populations and Wintering Eagle Habitat in Southern New Jersey, in Cassinia, Journal of Ornithology of Pennsylvania, New Jersey and Delaware, Number 59. 1980-81. pp. 3-35.

- Sutton, Clay C. and Patricia Taylor Sutton. The Status and Distribution of Barred Owl and Red Shouldered Hawk in Southern New Jersey, in Cassinia, Journal of Ornithology of Pennsylvania, New Jersey and Delaware, Number 61. 1984-85. pp.20-29.
- Sutton, Clay C. and Patricia Taylor Sutton. Wintering Eagle Populations in Southern New Jersey, 1980-86, in Cassinia, Journal of Ornithology of Pennsylvania, New Jersey and Delaware, Number 61. 1984-85. pp.50-54.
- U.S. Department of the Interior, Geological Survey. Low Flow Characteristics and Flow Durations of New Jersey Streams, Open File Report 81-1110, prepared in cooperation with the New Jersey Department of Environmental Protection, Division of Water Resources, Trenton, NJ. 1982.
- U.S. Department of the Interior, Geological Survey. Water Resources Data - New Jersey Water Year 1985, Vol. 1, Water Report NJ-85-1. Trenton, NJ. 1986.
- U.S. Department of the Interior, Heritage Conservation and Recreation Service. Nationwide Rivers Inventory: Draft Criteria for River Evaluations. Philadelphia, PA. 1979.
- U.S. Department of the Interior, Heritage Conservation and Recreation Service. The Pinelands Scenic Study - Summary Report. Philadelphia, PA.
- U.S. Department of the Interior, National Park Service, Division of Park and Resources Planning. A Determination of the Eligibility and Classification of Wildcat Brook for Potential Inclusion in the National Wild and Scenic Rivers System. Philadelphia, PA. 1986.
- U.S. Department of the Interior, National Park Service. The Nationwide Rivers Inventory. Washington, DC. 1982.
- U.S. Department of the Interior, National Park Service. Nationwide Rivers Inventory: Final List of Rivers - New Jersey. Philadelphia, PA. 1981.
- U.S. Department of the Interior, National Park Service. NPS-2, Planning Process, New Area, Wild and Scenic Rivers and National Trail Studies. Washington, DC. 1982.
- U.S. Department of the Interior and U.S. Department of Agriculture. National Wild and Scenic Rivers System: Final Revised Guidelines for Eligibility, Classification, and Management of River Areas. Federal Register. Washington, DC. 1982.

VI. APPENDICES

- A. Classification Criteria for Wild, Scenic and Recreational Rivers
- B. Eligible River Segments Chart
- C. River Resource Values Summary Chart

APPENDIX A. Classification Criteria for Wild, Scenic and Recreational Rivers

TABLE 2.
CLASSIFICATION CRITERIA FOR WILD, SCENIC AND RECREATIONAL RIVER AREAS *

ATTRIBUTE	WILD	SCENIC	RECREATIONAL
Water Resources Development	Free of impoundment.	Free of impoundment.	Some existing impoundment or diversion. The existence of low dams, diversions or other modifications of the waterway is acceptable, provided the waterway remains generally natural and riverine in appearance.
Shoreline Development	Essentially primitive. Little or no evidence of human activity. The presence of a few inconspicuous structures, particularly those of historic or cultural value, is acceptable. A limited amount of domestic livestock grazing or hay production is acceptable. Little or no evidence of past timber harvest. No ongoing timber harvest.	Largely primitive and undeveloped. No substantial evidence of human activity. The presence of small communities or dispersed dwellings or farm structures is acceptable. The presence of grazing, hay production or row crops is acceptable. Evidence of past or ongoing timber harvest is acceptable, provided the forest appears natural from the riverbank.	Some development. Substantial evidence of human activity. The presence of extensive residential development and a few commercial structures is acceptable. Lands may have been developed for the full range of agricultural and forestry uses. May show evidence of past and ongoing timber harvest.
Accessibility	Generally inaccessible except by trail. No roads, railroads or other provision for vehicular travel within the river area. A few existing roads leading to the boundary of the river area is acceptable.	Accessible in places by road. Roads may occasionally reach or bridge the river. The existence of short stretches of conspicuous or longer stretches of inconspicuous roads or railroads is acceptable.	Readily accessible by road or railroad. The existence of parallel roads or railroads on one or both banks as well as bridge crossings and other river access points is acceptable.
Water Quality	Meets or exceeds Federal criteria or federally approved State standards for aesthetics, for propagation of fish and wildlife normally adapted to the habitat of the river, and for primary contact recreation (swimming) except where exceeded by natural conditions.	No criteria prescribed by the Federal Water Pollution Control Act Amendments of 1972 have made it a national goal that all waters of the United States be made fishable and swimmable. Therefore, rivers will not be precluded from scenic or recreational classification because of poor water quality at the time of their study, provided a water quality improvement plan exists or is being developed in compliance with applicable Federal and State laws.	

* Table to be used only in conjunction with text.

ELIGIBLE SEGMENTS OF THE GREAT EGG HARBOR RIVER AND ITS TRIBUTARIES

APPENDIX B. ELIGIBLE RIVER SEGMENTS CHART

ELIGIBLE SEGMENTS OF THE GREAT EGG HARBOR RIVER AND ITS TRIBUTARIES

RIVER/STREAM NAMES	SEGMENT DESCRIPTION	LENGTH	DEVELOPMENT	FREE-FLOWING	WATER QUALITY	OUTSTANDING RESOURCES [±]	PRELIMINARY CLASSIFICATION
GREAT EGG HARBOR RIVER	PATCONG CREEK TO PERCH COVE RUN	10	slightly dev.	yes	good	V,W,F,R,C	SCENIC
GREAT EGG HARBOR RIVER	PERCH COVE RUN TO MILL ST. BRIDGE	5.5	just qualif.	yes	fair	V,W,F,R,C	RECREATIONAL
GREAT EGG HARBOR RIVER	N. OF LK LENAPE TO ATLANTIC CITY EX	21	just qualif.	yes	fair	V,W,R,S,C	RECREATIONAL
GREAT EGG HARBOR RIVER	NEW FREEDOM RD. TO PENN. RR R-0-W	3	slightly dev.	yes	poor	V,W	RECREATIONAL
SQUANKUM BRANCH	CONFLUENCE TO MALAGA RD.	4.5	undeveloped	yes	poor	W	RECREATIONAL
BIG BRIDGE BRANCH	CONFLUENCE TO HEADWATERS	2.2	slightly dev.	yes	n.a.	V	RECREATIONAL
PENNY POT BRANCH	CONFLUENCE TO 14TH ST.	4.1	slightly dev.	yes	good	V,W	RECREATIONAL
DEEP RUN	CONFLUENCE TO PANCOAST MILL RD.	5.4	slightly dev.	yes	fair	V,C	RECREATIONAL
MARE RUN	CONFLUENCE TO WEYMOUTH AVZ.	3	slightly dev.	yes	good	W	RECREATIONAL
BABCOCK CREEK	CONFLUENCE TO HEADWATERS	7.5	slightly dev.	yes	fair	V,W	RECREATIONAL
GRAVELLY RUN	CONFLUENCE TO PENN. RR R-0-W	2.7	slightly dev.	yes	good	V,W,F	RECREATIONAL
MIRY RUN	CONFLUENCE TO ASBURY RD.	1.7	slightly dev.	yes	good	V,F	RECREATIONAL
SOUTH RIVER	CONFLUENCE TO MAIN AVE.	13.5	slightly dev.	yes	good	V,W,F,C	RECREATIONAL
STEPHEN CREEK	CONFLUENCE TO NJ ROUTE 50	2.3	undeveloped	yes	good	F,C	RECREATIONAL
GIBSON CREEK	CONFLUENCE TO 1ST AVE.	5.6	slightly dev.	yes	good	W,F,C	RECREATIONAL
ENGLISH CREEK	CONFLUENCE TO ZION RD. (DAM)	3.5	slightly dev.	yes	good	W,C	RECREATIONAL
LAKES CREEK	CONFLUENCE TO DAM	2.2	undeveloped	yes	good	V,W,F	SCENIC
MIDDLE RIVER	CONFLUENCE TO LEVEE	5.6	undeveloped	yes	fair	W,F	RECREATIONAL
PATCONG CREEK	CONFLUENCE TO GARDEN STATE PKWY	2.8	just qualif.	yes	good	F	SCENIC
TUCKAHOE RIVER	CONFLUENCE TO RT.50 BRIDGE	9	undeveloped	yes	fair	V,W,F,R	RECREATIONAL
TUCKAHOE RIVER	RT. 50 BRIDGE TO RT.49 BRIDGE	7.3	slightly dev.	yes	fair	V,F,C	RECREATIONAL
CEDAR SWAMP CREEK	CONFLUENCE TO HEADWATER	6	slightly dev.	yes	n.a.	V,W,F,C	RECREATIONAL

± V=VEGETATION, W=WILDLIFE, R=RECREATION, F=FISHERIES, S=SCENIC, C=CULTURAL

SEGMENTS WITHOUT OUTSTANDINGLY REMARKABLE VALUES, BUT MEET ALL OTHER REQUIREMENTS

SHARPS BRANCH	CONFLUENCE TO CROSS KEYS/BERLIN RD.	1.1	slightly dev.	yes	n.a.	n.a.
INDIAN BRANCH	CONFLUENCE TO 8TH ST.	2.2	just qualif.	yes	good	n.a.
PERCH COVE RUN	CONFLUENCE TO HEADWATERS	1.1	slightly dev.	yes	good	n.a.
MATHEWS RUN	CONFLUENCE TO HEADWATERS	1.1	slightly dev.	yes	good	n.a.

INELIGIBLE SEGMENTS OF THE GREAT EGG HARBOR RIVER

TINKERS BRANCH		1.3	exceeds max.		n.a.	NOT ELIGIBLE
FOURMILE BRANCH		4	exceeds max.		n.a.	NOT ELIGIBLE
DUCKS NEST BRANCH		1.4	n.a.	no	n.a.	NOT ELIGIBLE
HOSPITALITY BRANCH		14	n.a.	no	n.a.	NOT ELIGIBLE
WHITEHALL BRANCH	2 tributary of ineligible				n.a.	NOT ELIGIBLE
WHITEOAK BRANCH	4.2 tributary of ineligible				n.a.	NOT ELIGIBLE
PARAWAY BRANCH	3 tributary of ineligible				n.a.	NOT ELIGIBLE
THREE POND BRANCH	3 tributary of ineligible				n.a.	NOT ELIGIBLE
LITTLE MILL CREEK		2	n.a.	no	n.a.	NOT ELIGIBLE
BIG DITCH		n.a.	n.a.	no	n.a.	NOT ELIGIBLE
WATERING RACE BRANCH		8	exceeds max.	no	n.a.	NOT ELIGIBLE
DRY RUN		1	exceeds max.	no	n.a.	NOT ELIGIBLE
POWELL CREEK		2	exceeds max.		n.a.	NOT ELIGIBLE

APPENDIX C. RIVER RESOURCE VALUES SUMMARY CHART

OUTSTANDINGLY REMARKABLE RESOURCE VALUES

SEGMENT NAME	VEGETATION (V)	WILDLIFE (W)	FISHERIES (F)	RECREATIONAL RESOURCES (R)	SCENIC RESOURCES (S)	CULTURAL RESOURCES (C)
LOWER GREAT EGG HARBOR RIVER #1	RARE PLANTS RARE COMMUNITIES	FED. ENDANGERED SPECIES	ANADROMOUS FISH HABITAT	BOATING, FISHING AND HUNTING		NATIONAL REGISTER SITE
LOWER GREAT EGG HARBOR RIVER #2	RARE PLANTS RARE COMMUNITIES	STATE ENDANGERED SPECIES	ANADROMOUS FISH HABITAT	BOATING, FISHING AND HUNTING		NATIONAL REGISTER SITE
MIDDLE GREAT EGG HARBOR RIVER	RARE PLANTS	STATE ENDANGERED SPECIES		CANOING	IDENTIFIED BY HCRS	REMAINS OF IRON INDUSTRY
UPPER GREAT EGG HARBOR RIVER		STATE ENDANGERED SPECIES				
SQUANKUM BRANCH		STATE ENDANGERED SPECIES				
BIG BRIDGE BRANCH	RARE PLANTS					
PENNY POT STREAM	RARE PLANTS	STATE ENDANGERED SPECIES				
DEEP RUN	RARE PLANTS					REMAINS OF IRON INDUSTRY
MARE RUN		STATE ENDANGERED SPECIES				
BABCOCK CREEK	RARE PLANTS	STATE ENDANGERED SPECIES				
GRAVELLY RUN	STATE ENDANGERED SPECIES	STATE ENDANGERED SPECIES	ANADROMOUS FISH HABITAT			
MIRY RUN	RARE COMMUNITIES		ANADROMOUS FISH HABITAT			
SOUTH RIVER	RARE PLANTS	STATE ENDANGERED SPECIES	ANADROMOUS FISH HABITAT			REMAINS OF IRON INDUSTRY
STEPHEN CREEK			POSSIBLE HABITAT ANADROMOUS FISH			REMAINS OF SHIPYARD
GIBSON CREEK		HISTORIC BALD EAGLE HABITAT	ANADROMOUS FISH HABITAT			REMAINS OF SHIPPING INDUSTRY
ENGLISH CREEK		STATE ENDANGERED SPECIES				REMAINS OF SHIPPING INDUSTRY
LAKES CREEK		BLACK DUCK HABITAT				
MIDDLE RIVER		STATE ENDANGERED SPECIES	ANADROMOUS FISH HABITAT			
PATCONG CREEK			ANADROMOUS FISH HABITAT			
LOWER TUCKAHOE RIVER	RARE PLANTS RARE COMMUNITIES	FED. ENDANGERED SPECIES	ANADROMOUS FISH HABITAT	BOATING, FISHING AND HUNTING		
UPPER TUCKAHOE RIVER	RARE PLANTS RARE COMMUNITIES		ANADROMOUS FISH HABITAT			NATIONAL REGISTER SITE
CEDAR SWAMP CREEK	RARE PLANTS	STATE ENDANGERED SPECIES	ANADROMOUS FISH HABITAT			REMAINS OF SHIPYARD