HA FILE # 80.13

A HERPETOLOGICAL SURVEY OF THE MANASQUAN RIVER FLOOD PLAIN IN THE VICINITY OF THE PROPOSED OAK GLEN RESERVOIR SYSTEM PROJECT

SUBMITTED SEPTEMBER 13, 1980

TO

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION, DIVISION OF WATER RESOURCES
P.O. BOX CN-029, TRENTON, NEW JERSEY 08625

BY

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Notice: Certain portions of this document have been redacted in order to protect, and not divulge the exact locations of critical Bog Turtle habitat.

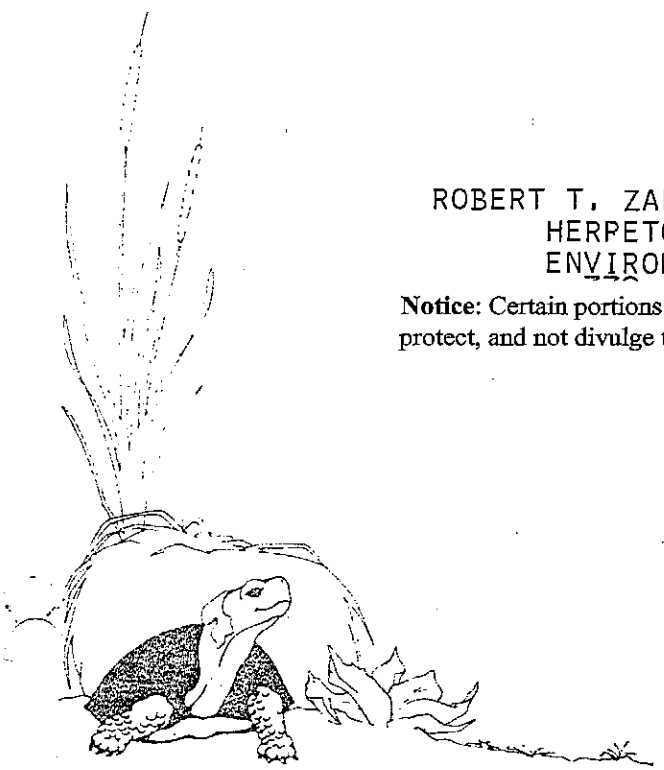


TABLE OF CONTENTS

A Herpetological Survey of the Manasquan River
Flood Plain in the Vicinity of the Proposed
Oak Glen Reservoir System Project

ABSTRACT

Information was sought by the New Jersey Department of Environmental Protection, Division of Water Resources, (N.J.D.E.P.) on the status of endangered reptiles and amphibians which may naturally occur on the sites of the proposed Manasquan River Reservoir System Project. Herpetological Associates, (HA) was commissioned by NJDEP to conduct an intensive 25 day field survey of both the [redacted] site and the larger Oak Glen Storage Reservoir site. The main objectives were to evaluate the proposed sites to see if they were suitable habitat for two of New Jersey's endangered species; the pine barrens treefrog, Hyla andersonii and the bog turtle, Clemmys muhlenbergii. It was determined that the larger Oak Glen Storage Reservoir site was not critical habitat for neither of the above mentioned species, nor were any found on the site. However, the proposed site of the [redacted] is critical habitat for the endangered bog turtle, Clemmys muhlengergii. HA staff and this author found eight (8) specimens on the proposed site. The marshy, springfed wetlands are prime bog turtle habitat and the [redacted] would have both short and long-term adverse impacts on the bog turtle population which naturally occurs on the site. This author strongly recommends that an alternative site, either upstream or downstream, be chosen for the Allaire Intake Reservoir which would not cause the permanant destruction of critical habitat for the bog turtle.

INTRODUCTION:

The NJDEP is planning to construct a massive reservoir system in southeastern Monmouth County, New Jersey. It was determined that the Manasquan River is the most feasible source of surface water supply for the region. Such a project would help meet the future water demands in Monmouth and northern Ocean County. NJDEP contracted with the New Jersey Agricultural Experiment Station of Rutgers University to assemble data and prepare a comprehensive environmental impact analysis. While the report which was prepared by Rutgers was quite thorough, in most respects, it did not address the long and short term adverse impacts on endangered or threatened species which may occur on the proposed sites.

PERSPECTIVE AND SCOPE:

Herpetological Associates (HA), an environmental consulting firm based in Staten Island, New York, who specializes in amphibians and reptiles, was commissioned by the NJDEP (Division of Water Resources) to conduct an intensive 25 day field survey in order to determine the following questions:

1. Are there endangered or threatened species on the sites?
2. If so, are the sites critical habitat or only marginally suitable?
3. What alternatives are available to possibly mitigate adverse impacts on the endangered herpitles and/or their critical habitat?

MATERIALS AND METHODS:

HA staff and this author spent 25 days in the field at various times of the year. Field work began on April 19, 1980 and continued throughout the spring and summer until August 10, 1980. We spent about 7 hours a day in the field conducting various phases of the work and data collection. My staff ranged from 2 to 8 persons on a given day. We were in the field

at different times as well, because bog turtles are best found during daylight hours in April, May and June. Pine barrens treefrog work can only be done in the evening and nighttime when the males begin their breeding calls in May, June and early July.

We were looking for reptiles and amphibians in general and bog turtles and pine barrens treefrogs in particular. The main objectives of the survey were to walk both proposed reservoir sites and to visually inspect and evaluate the marshy wetlands, fields, wooded areas, river edges and streams to see if they fell into the known habitat criteria for bog turtles and pine barrens treefrogs. This authors particular scope of expertise and past experience uniquely qualify me to make such potential judgements on likely habitats. Revisiting the areas, and eventually finding specimens confirmed the presence of endangered species. Various maps of the study area were consulted, i.e. United States Geological Survey Topographic maps, Hagstrom Street and Road map of Monmouth County, United States Department of Agriculture Soil Survey Maps of the area, and maps provided by the Division of Water Resources.

Bog turtles were found by visually searching the grassy meadows, rivulets and sedge grass tussocks. Once observed, they were captured by hand. Each turtle was weighed, measured and permanently marked with a triangular shaped file. Photographs were taken with a Nikon F, 35 mm camera. All specimens were released at the exact capture site.

Pine barrens treefrogs were sought during their known breeding season. Each study area was walked at night in the hope of hearing the sound of their mating-call. Marginal habitat was observed, but no pine barrens treefrogs were heard calling on either of the proposed reservoir sites. There are old records of this species in southern Monmouth and northern Ocean Counties, Conant and Bailey, (1936).

RESULTS OF THE HERPETOLOGICAL SURVEY

OAK GLEN STORAGE RESERVOIR

The proposed Oak Glen Reservoir would be located in Howell Township, approximately [redacted] southwest of Farmingdale near [redacted]. It would have a storage capacity of about 5 billion gallons and water surface area of almost 770 acres at an elevation of 100 feet. It would be an "off-river" facility on the [redacted] Brook, which is a tributary to the Manasquan River with a drainage area of about 3.3 square miles. This reservoir would allow water from the Manasquan River to be stored during times of peak flows. The site for the proposed reservoir is mostly open grassy fields which are in various stages of succession. However, there are some heavily wooded areas, especially on the northwestern and southern edges of the site. Additionally, many large trees grow along the edge of Timber Swamp Brook and its tributaries. A few small ponds were noted which probably retain water year-round. Some wet seepage areas were also found which fill with water during heavy rains but dry-up in the summer. The overall area supports many forms of mammals, birds, reptiles and amphibians. HA vigorous field investigation has shown that this larger proposed site for the Oak Glen Reservoir is not critical habitat for neither the bog turtle, Clemmys muhlenbergii, nor the pine barrens treefrog, Hyla andersonii. HA field survey team failed to find any evidence that either species occurs on the site.

AILLAIRE INTAKE RESERVOIR

The proposed Allaire Intake Reservoir would be located in Wall Township, right on the Manasquan River at [redacted] west of the Garden State Parkway. Its purpose would be to serve as an intake for a proposed raw water treatment plant and subsequently, for a pumping station to store water at the upper Oak Glen Reservoir. This site has a drainage area of about 65 square miles. Its storage capacity would be about 100 million gallons with a water surface area of about 70 acres. It is anticipated that this facility would be capable of yielding 10 million gallons per day directly from the Manasquan River flow. The proposed site is best described as an open marshy,

wetland with typical moisture loving plants and numerous spring-fed streams and rivulets transversing it. There are some large trees growing along the edge of the wet areas and on the dry ground. Large stands of cattail, sedge grass, jewel weed, skunk cabbage and alder were noted. All of which are plants that are often found in bog turtle habitat. A total of 8 bog turtles were captured or observed on the proposed Allaire Intake Reservoir site. Of these 4 were adult females, 3 were hatchlings and one was the empty shell of a dead male. In general, bog turtles are a highly secretive species and difficult to find. Our successful field work has shown that a large colony of bog turtles occurs naturally on the site.

Pine barrens treefrogs were not found on, or in the vicinity of the Allaire Intake Reservoir site. Nighttime searching with the aid of flashlights and listening for mating calls did not produce any specimens. Voice identification is the best way to locate pine barrens treefrogs and HA staff is quite familiar with their call; Conant, (1975). However, none were heard, even on nights when weather conditions were perfect. We did locate breeding colonies of pine barrens treefrogs at 2 locations [redacted] which is northeast of the proposed projects in Wall Township, Zappalorti, (1979). These were heard calling on warm nights on several occasions, yet none were heard on the sites when checked on the same evening. It is my opinion that the pine barrens treefrog does not breed on either of the proposed reservoir sites. Furthermore, no critical habitat exists on or in the close vicinity of them and no critical habitat would be lost due to the construction of the reservoirs.

HERPETOFAUNA COLLECTED DURING SURVEY:

In addition to the bog turtles found on the Allaire Intake Reservoir site, there were many other species of amphibians and reptiles captured or observed on both sites and/or in the "buffer zone" of the Manasquan River flood plain in Howell and Wall Townships, Monmouth County, New Jersey. The herpitles found were as follows:

AMPHIBIANS - FROGS AND TOADS

COMMON NAME	SCIENTIFIC NAME	CURRENT N.J. CLASSIFICATION
Spadefoot Toad,	Scaphiopus holbrooki	Undetermined
Fowlers Toad,	Bufo w. fowleri	Stable
Spring Peeper,	Hyla crucifer	Stable
Gray Treefrog,	Hyla versicolor	Stable
* Pine Barrens Treefrog,	Hyla andersonii	Endangered
Leopard Frog,	Rana utricularia	Stable
Wood Frog,	Rana sylvatica	Stable
Pickerel Frog,	Rana palustris	Stable
Green Frog,	Rana c. melenota	Stable
Bullfrog,	Rana catesbeiana	Stable

REPTILES - TURTLES

COMMON NAME	SCIENTIFIC NAME	CURRENT N.J. CLASSIFICATION
Snapping Turtle,	Chelydra serpentina	Stable
Eastern Mud Turtle,	Kinosternon subrubrum	Stable
Stinkpot (Musk Turtle),	Sternotherus odoratus	Stable
Eastern Box Turtle,	Terrapene carolina	Stable
Spotted Turtle,	Clemmys guttata	Undetermined
* Bog Turtle,	Clemmys muhlenbergii	Endangered
Eastern Painted Turtle,	Chrysemys picta	Stable

REPTILES - LIZARDS

COMMON NAME	SCIENTIFIC NAME	CURRENT N.J. CLASSIFICATION
Northern Fence Lizard,	Sceloporus undulatus	Stable

REPTILES - SNAKES

COMMON NAME	SCIENTIFIC NAME	CURRENT N.J. CLASSIFICATION
Northern Water Snake,	Nerodia sipedon	Stable
Eastern Garter Snake,	Thamnophis sirtalis	Stable
Ring-neck Snake,	Diadophis punctatus	Stable
Northern Black Racer,	Coluber constrictor	Undetermined
Eastern Milk Snake,	Lampropeltis triangulum	Stable

Note: The classifications used in this commentary are based on those which were published by the New Jersey Department of Environmental Protection in their official list which was prepared by the Endangered and Non-game Species Project, March 29, 1979. Other species may also occur on the sites, but were not found due to their secretive habits.

SUMMARY AND RECOMMENDATIONS:

The bog turtle has rather specific habitat requirements and are not widely distributed as most other species of turtles, Zappalorti, (1976). A typical bog turtle habitat may have the following components:

1. water = spring-fed streams or seepage-areas.
2. soil = muddy bottomed, soft substrate.
3. vegetation= sedge grass, sphagnum moss, skunk cabbage, cattail, alder, jewel weed, arrow head, redmaple and other moisture loving plants.

Additional habitat components are also necessary which are poorly understood. It should be noted that the above habitat components are found in many areas throughout New Jersey and most places that fall into this category do not have bog turtles. It seems the above components must be situated nearby a source of permanent, unpolluted water. The Manasquan River, and its tributaries, are a source of water for the bog turtle in southeastern Monmouth County. HA has been conducting field surveys and

ecological studies on the bog turtle for three years in the flood plain of the Manasquan River, Zappalorti and Farrell, (1980). We have found evidence of 5 different bog turtle locations within the flood plain, but only 3 of these can be considered "large populations". In the last three years, 2 of the colonies were destroyed, one by the construction of a tennis court, the other by a large housing development. Only 2 of the known bog turtle colonies are on state land of which [redacted]. It is common knowledge among herpetologists that bog turtles are a shallow-water turtle and are never found in deep streams, ponds or lakes. The flooding of the marshy wetland at the proposed site of the Allaire Intake Reservoir would totally destroy the critical habitat of the bog turtle population that lives there. This would have both short and long-term adverse impacts on the turtles, and the colony would be lost forever. There is no evidence in the literature, or has HA ecological studies shown that displaced bog turtles can recolonize at a nearby suitable habitat once their original habitat is no longer suitable. HA studies have shown, however, that bog turtles have a strong fidelity to their original bog. Most marked turtles that were recaptured were within 100 meters of their last capture and displaced turtles traveled over one half mile back to their original capture site. Bog turtles have a small home-range and the destruction of a marshy wetland that supports a large population of this endangered New Jersey species would indeed be a sad blow to the protection of wildlife in general and the bog turtle in particular.

POSSIBLE MITIGATION:

It is the opinion of this author that the construction of the Oak Glen Storage Reservoir, as planned, would not have any adverse impacts on the bog turtle, Clemmys muhlenbergii or the pine barrens treefrog, Hyla andersonii. None were captured or observed during HA 25 day intensive field survey and it is believed that neither species occurs on the specific site. However, I strongly recommend that an alternative site be chosen for the smaller Allaire Intake Reservoir for the following reasons:

1. There is a population of bog turtles living on the marshy wetland, in the flood plain of the Manasquan River.

2. HA has evidence that the population is of significant size; 8 individuals were captured during HA field investigations of which 4 were gravid females (carrying eggs).

3. It is probable that a suitable site up-river could be used, which would not have adverse impacts on this bog turtle population.

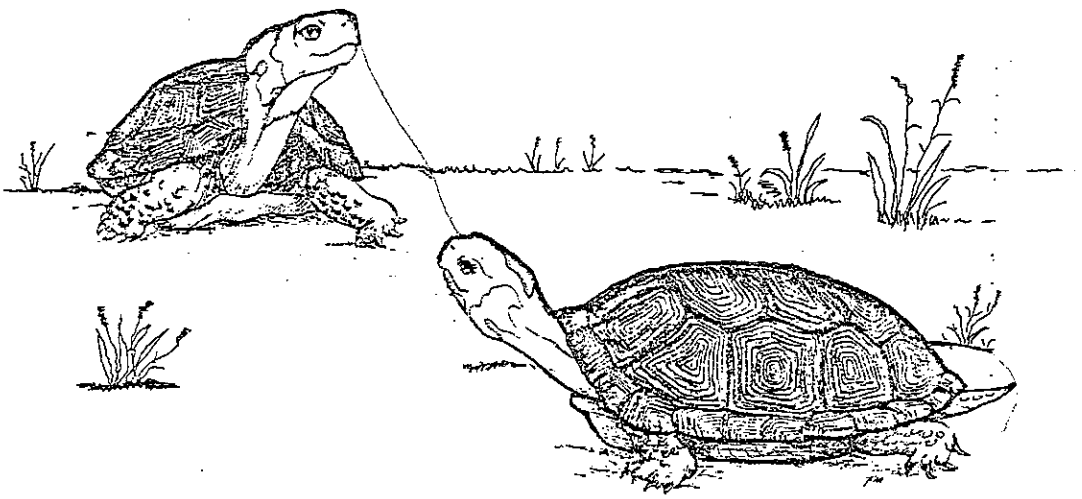
4. This project could serve as a model for future endeavors. With careful field inspections prior to actual construction, critical habitats for threatened and endangered species will not be inadvertently lost due to the installation of dams, reservoirs, highways or sewerage treatment plants that are supported by state and federal funds. It is possible to place the Allaire Intake Reservoir on the Manasquan River. We just have to find an alternative site nearby which has a similar landscape, but would not effect an endangered species.

HA is immediately available to aid the NJDEP in the selection of an alternative site for the Allaire Intake Reservoir.

Respectfully submitted,

Robert T. Zappalorti

Robert T. Zappalorti
Executive Director
Herpetological Associates



A pair of bog turtles, Clemmys muhlenbergii

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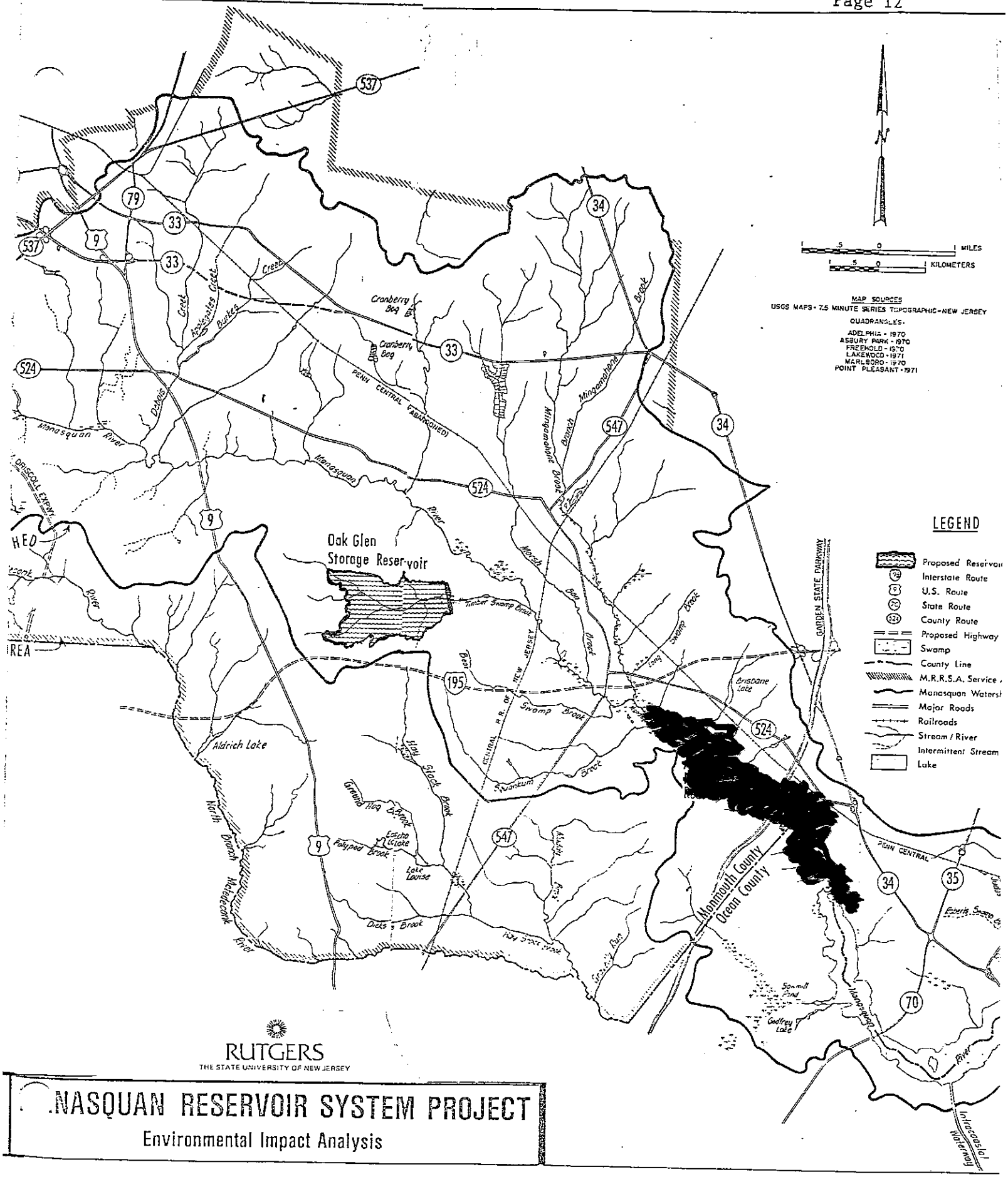
An Ecological Study of the Bog Turtle, Clemmys muhlenbergii in New Jersey, Part III. Unpublished Manuscript submitted to the NJDEP, Endangered and Nongame Species Project. Vol. 80.01, Part III. pp. 1 - 18.

See Appendix 1 for area location map of proposed project.

See Appendix 2 for exact capture locations of the bog turtle at the proposed Allaire Intake Reservoir.



RUTGERS
THE STATE UNIVERSITY OF NEW JERSEY

.NASQUAN RESERVOIR SYSTEM PROJECT

Environmental Impact Analysis

CRITCAL HABITAT OF THE BOG TURTLE ON THE PROPOSED SITE.

(Source of map Environmental Impact Analysis, Rutgers).

Herpetological Associates~Environmental Consultants
Robert T. Zappalorti, Executive Director~P.O. Box 332~Staten Island, N.Y. 10314

September 22, 1980

Mr. Rocky C. Richards
Principal Environmental Engineer
Department of Environmental Protection
Division of Water Resources
P. O. Box CN-029
Trenton, New Jersey 08625

Dear Rocky:

Enclosed please find a copy of my report on the survey which was conducted on the proposed Oak Glen Reservoir site in the Manasquan River area of Monmouth County, New Jersey.

The report speaks for itself. I can only add that Herpetological Associates is immediately available on a contractual basis to help with the selection of an alternative site for the Allaire Intake Reservoir.

If you need any additional information, please do not hesitate to call upon me.

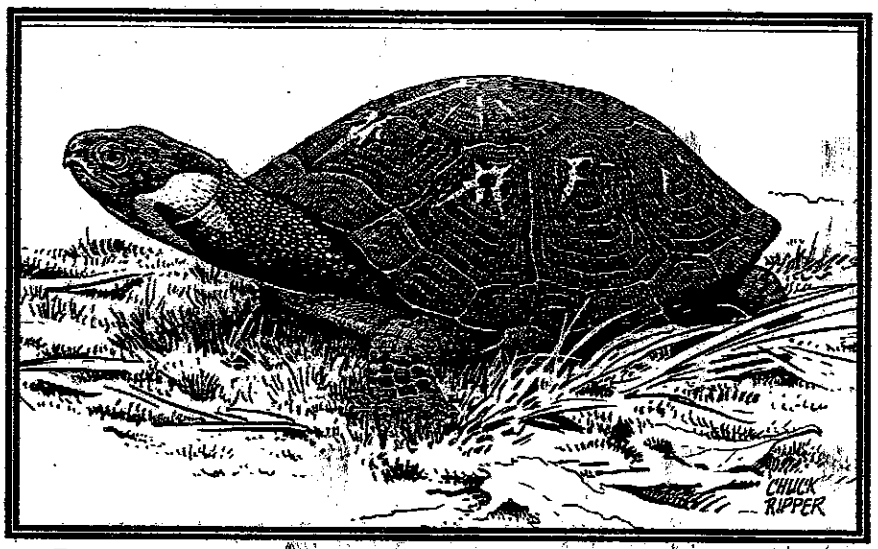
Sincerely,

Robert T. Zappalorti

Robert T. Zappalorti
Executive Director

enc.
RTZ:po

Bog Turtle Habitat Studies



Bog Turtle drawing courtesy of the National Audubon Society, New York.

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