CONTAINS REVISED MITIGATION PLAN

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
P.O. BOX 25201, RALEIGH, N.C. 27611-5201

JAMES B. HUNT, JR.
GOVERNOR

R. SAMUEL HUNT III
SECRETARY

February 23, 1995

Division of Coastal Management
N. C. Department of Environment, Health
and Natural Resources
P. O. Box 27687
Raleigh, North Carolina 27611

ATTENTION: Mr. John Parker

Dear Sir:

SUBJECT: Dare County, proposed relocation of NC 12 from four miles south of Oregon Inlet to six miles south of Oregon Inlet, State Project No. 6.051029, TIP No. R-3113, COE Action ID. No. 199404858.

Please reference the North Carolina Department of Transportation's September 23, 1994 permit application for the relocation of 3.3 miles of NC 12 in Dare County to a location approximately 350 feet west of its present alignment. This application contained a proposed mitigation plan to offset wetland impacts associated with the project. Since the time of our application package, coordination between the Department and various environmental review agencies has resulted in revisions to the original mitigation proposal. Therefore, the Department wishes to submit a revised mitigation proposal which should replace the proposal found in the original permit application package.

One major revision has been made to the original mitigation plan. In the original mitigation plan, the Department proposed mitigating for the impact to 5.3 acres of man-dominated grainfield habitat by planting Coastal Bermuda grass in the grainfield area east of stations 44+00 to 89+40. The area to be planted began at the eastern right of way limit of the proposed roadway, and extended to the eastern right of way limit of the existing roadway, including the area underneath the existing roadway pavement which is to be removed. This proposal would have allowed for the creation of ~4.38 acres of grainfield habitat in the area underneath the existing roadbed, and an enhancement of ~18.8 acres

between the existing and proposed roadbeds. This proposal was based on an assumption that the grainfield between the existing and proposed roadways qualified as a jurisdictional wetland.

However, coordination with the Corps of Engineers has recently revealed that much of the area between the existing and proposed roadways does not meet the hydrological criteria required for a wetland determination to be made. Therefore, the Department is now proposing to mitigate grainfield habitat impacts at the same location where low shrub/grassland mitigation is proposed. Full details on this and other revisions can be found in the revised mitigation plan.

Copies of the mitigation plan are also being provided to environmental review agencies in an effort to expedite review of the plan. State review agency comments should be forwarded to the Division of Coastal Management and federal review agency comments should be forwarded to the U.S. Army Corps of Engineers.

If you require any additional information concerning this application, please contact Mr. Scott Gottfried of NCDOT's Permit and Mitigation Unit at (919) 733-3141.

Sincerely,

H. Franklin Vick

H. Franklin Vick, P.E., Manager
Planning and Environmental Branch

HFV/dh

cc: Mr. David Griffin, DCM, Elizabeth City
Mr. John Dorney, DEM
District Engineer, COE
Mr. David Lekson, COE, Washington
Mr. Dennis Stewart, Pea Island National Wildlife Refuge
Ms. L. K. Gantt, U.S. Fish and Wildlife Service
Mr. Lee Pelej, U.S. Environmental Protection Agency
Mr. David Cox, NCWRC
Mr. Mike Street, NCDMF
Mr. Larry Hardy, NMFS
Mr. Don Morton, P.E., Highway Design Branch
Mr. A. L. Hankins, P.E., Hydraulics Unit
Mr. John Smith, P.E., Structure Design Unit
Mr. D. R. Conner, P.E., Division 1 Engineer
Mr. G. T. Shearin, P.E., Roadway Design Unit
Mr. W.D. Johnson, Roadside Environmental Unit
Mr. Randy Wise, Roadside Environmental Unit

REVISED
MITIGATION PLAN

Dare County

Proposed Relocation of NC 12

From Four Miles South of Oregon Inlet

to Six Miles South of Oregon Inlet

State Project No. 6.051029

TIP No. R-3113.

February 1995

Dare County
Proposed Relocation of NC 12 From Four Miles South of
Oregon Inlet to Six Miles South of Oregon Inlet State Project No. 6.051029
TIP No. R-3113.

Introduction

The North Carolina Department of Transportation proposes to relocate approximately 3.3 miles of NC 12 in Dare County to a location approximately 350 feet west of its present alignment. The proposed project begins approximately 3.5 miles south of the southern end of the Bonner Bridge over Oregon Inlet and continues southward, ending approximately 2000 feet south of the Pea Island National Wildlife Refuge maintenance facility.

This portion of NC 12 is in need of relocation due to severe overwash from the Atlantic Ocean. The frequency and severity of these overwash events has accelerated in recent years. The frequent periods of overwash has required almost continual maintenance of the highway, and continued overwash could wash out the highway completely, severing the only highway link from populated areas of Hatteras Island to the Dare County mainland. Therefore, the purpose of the proposed relocation project is to provide a safer and more reliable transportation route and reduce annual expenditures related to maintenance of the facility over the next 15 years.

The proposed improvements consist of relocating NC 12 for a distance of 3.3 miles. The relocated roadway will be located approximately 350 feet west of its present location, and will consist of a two-lane roadway, 22-foot travelway, and eight-foot shoulders. Four feet of each eight-foot shoulder will be paved to accommodate pedestrians and bicyclists and to provide a safe recovery zone for vehicular traffic.

Affected Environment

Grainfield (Man-Dominated) Community

5.3 acres of man-dominated grainfield habitat will be impacted by the proposed project. The grainfield occurs west of NC 12 along the eastern edge of the middle impoundment. The grainfield is regularly maintained by the USFWS as a forage point for migrating Canada geese (Branta canadensis) and snow geese (Chen caerulescens). Other avian species also frequently forage at these fields.

Low Shrub/Grassland Community

This community type is a mosaic of habitats situated between dunes and the marsh. Some areas bordering the dune community are dominated by smooth cordgrass (Spartina alternaflora), while sections bordering marsh pockets may have pockets of black needlerush (Juncus romerianus) scattered throughout. The bulk of this community is dominated by a mixture of smooth cordgrass, broomstraw (Andropogon sp.), seaside pennywort (Hydrocotyle bonariensis), bulrush (Scirpus americanus), goldenrod, blackberry (Rubus sp.), wax myrtle (Myrica cerifera), silverling (Baccharis halimifolia), yaupon (Ilex vomitoria) and winged sumac (Rhus copallina). This community type provides habitat for a large number of birds and animals. 7.0 acres of this habitat type will be impacted by the proposed project.

Mitigation Sequencing

The proposed project will require environmental permit authorization from: 1) the N.C. Division of Coastal Management (NCDCM), which administers the Coastal Area Management Act (CAMA), 2) The U.S. Army Corps of Engineers (COE), which administers Section 404 of the Clean Water Act, and 3) The N.C. Division of Environmental Management (NCDEM), which administers Section 401 of the Clean Water Act.

In areas where a CAMA permit will be required, it is required that "Proposals to mitigate losses of coastal resources shall be considered only for those projects shown to be in the public interest, as defined by the standards in 15A NCAC 7M.0703, and only after all reasonable means of avoiding or minimizing such losses have been exhausted" (15A NCAC 7M.0701(b)). Furthermore, on February 6, 1990, the Department of the Army (DOA) and U.S. Environmental Protection Agency (EPA) signed a Memorandum of Agreement (MOA) establishing procedures to determine the type and level of mitigation necessary to comply with the Clean Water Act Section 404(b)(1) Guidelines. This MOA provides for first avoiding impacts to waters and wetlands through the selection of the least damaging, practical alternative, then taking appropriate and practical steps to minimize impacts on waters and wetlands. The third criteria of this step-down procedure is to compensate for any remaining unavoidable wetland impacts to the extent appropriate and practical. With this information in mind, NCDOT offers the following evidence of our efforts at wetland impact avoidance and minimization.

Avoidance

The extent of the wetlands in the area and the overriding public need to relocate this section of NC 12 for safety reasons do not allow for total avoidance of wetlands. However, all studied alignments, including the chosen alignment, were developed in coordination with the U.S. Fish and Wildlife Service. The chosen alignments reflect an effort to provide adequate setback from the active beach while balancing the amount of disruption to wetlands and Refuge facilities and operations. Furthermore, the preferred alignment has been shifted approximately 30 feet to the east near station 155 to ensure that no impacts occur to a Coastal Wetland Area of Environmental Concern (AEC).

Minimization

As was stated above, the preferred alignment reflects an effort to provide adequate setback from the active beach while balancing the amount of disruption to wetlands and Refuge facilities and operations. The chosen alignment has the second lowest anticipated impact to wetlands. The alignment with the lowest wetland impact was not chosen because this alternative would have lead to what the U.S. Fish and Wildlife Service considered an unacceptable disruption to the Refuge maintenance facility.

Impact minimization has also been achieved by reducing travelway widths. Current NCDOT design standards recommend a 24-foot travelway for roadways such as NC 12. However, a lesser travelway width of 22 feet is considered appropriate for this project. The use of the 22-foot travelway will reduce the project footprint and reduce impacts to the natural environment.

Mitigation

In the past, extensive searches for mitigation sites in the area have taken place, generally with little if any success. In that the wetland impacts take place on Refuge land, NCDOT has turned to the Pea Island National Wildlife Refuge in an attempt to locate

potential mitigation sites on Refuge property. As a result of this request, the Refuge has offered two sites for potential compensatory mitigation usage. Furthermore, the USFWS, as a condition of their Special Use Permit (SUP) authorizing NCDOT work on Service lands, is expected to require that the Department utilize these sites to mitigate for Refuge functions and values lost due to the roadway relocation.

The proposed project will lead to unavoidable impacts to 12.3 acres of wetland habitat. Of this 12.3 acres, 5.3 acres is accounted for by impacts to the jurisdictional, man-dominated "grain field" at the northern end of the project. The remaining 7.0 acres of impact is predominantly comprised of low shrub/grassland. The N.C. Division of Environmental Management has indicated that the impacted wetlands associated with this project have minimal water quality and water storage functions (see enclosed August 3, 1994 correspondence).

Mitigation of Grainfield (Man-Dominated) Community Impacts

5.3 acres of this habitat type will be impacted between stations 42+00 and 89+50. The Division of Environmental Management has indicated that this wetland community type possesses minimal water quality and flood storage values in the project area. The impact area predominantly functions as a forage point for migrating Canada geese, snow geese, and other avian species. The area, which requires periodic maintenance by the Refuge, is frequently grazed clear by the birds. Because of this grazing, the area is largely bare, and consequently serves little wildlife function for much of the year.

As was stated above, the N.C. Division of Environmental Management has indicated that the impacted wetlands associated with this project have minimal water quality and water storage functions. Therefore, the purpose of the proposed mitigation for this habitat type is to replace the wildlife foraging value lost due to project-related construction.

In the original mitigation plan, the Department proposed mitigating for the impacts to man-dominated grainfield habitat by planting Coastal Bermuda grass in the grainfield area east of stations 44+00 to 89+40. The area to be planted began at the eastern right of way limit of the proposed roadway, and extended to the eastern right of way limit of the existing roadway, including the area underneath the existing roadway pavement, which is to be removed. This proposal would have allowed for the creation of ~4.38 acres of grainfield habitat in the area underneath the existing roadbed, and an enhancement of ~18.8 acres between the existing and proposed roadbeds. This proposal was based on an assumption that the grainfield between the existing and proposed roadways qualified as a jurisdictional wetland.

However, coordination has recently revealed that much of the area between the existing and proposed roadways does not meet the hydrological criteria required for a wetland determination to be made. Therefore, the Department is now proposing to mitigate grainfield habitat impacts at the same location where low shrub/grassland mitigation is proposed.

It should be noted that while the grainfield area is no longer considered appropriate for wetland mitigation purposes, the area will still be planted with an appropriate seeding mixture, which is being coordinated between the Department and the Refuge. This seeding will be a condition of the Special Use Permit issued by the Refuge. Therefore, the grainfield area will still provide for an increase in wildlife functions and values, even though this enhancement can not be officially considered wetland mitigation.

Mitigation of Low Shrub/Grassland Community Impacts

7.0 acres of this habitat type will be impacted by the proposed project involving several sites throughout the project area. This community primarily serves as habitat for a large number of birds and animals.

The N.C. Division of Environmental Management has indicated that the impacted wetlands associated with this project have minimal water quality and water storage functions. Therefore, the purpose of the proposed mitigation for this community type is to replace the wildlife foraging and habitat values lost due to project-related construction.

To offset the lost wildlife functions of the impacted habitat types, the Department proposes utilizing an area provided by the Pea Island National Wildlife Refuge. This area is approximately 3.5 miles south of the Pea Island Refuge maintenance facility, immediately west of highway NC 12. This site, which is ±70 acres in size, possesses both low shrub/grassland habitat and sand/overwash habitat (see Figure 1). The vegetation present in the wetland areas are similar to those listed in the low shrub/grassland community description. Much of the sand/overwash area does not exhibit any vegetation. Where vegetation does exist in sand/overwash areas, the vegetation predominantly resembles that of the low shrub/grassland habitat type described above.

The predominantly barren sand/overwash areas do not possess significant wildlife habitat or foraging values. It is within these areas that NCDOT proposes to mitigate for wildlife functions and values lost due to the impact on 7.0 acres of low shrub/grassland habitat and 5.3 acres of jurisdictional, man-dominated "grain field" habitat.

The Pea Island National Wildlife Refuge has stipulated that large jurisdictional wetland areas within the mitigation study area should not be adversely impacted by NCDOT's mitigation effort. Therefore, the Department has initiated studies in the proposed project area to determine which areas are or are not 404 jurisdictional wetlands. NCDOT biologists flagged wetland areas in July. These wetland determinations have been confirmed by the Corps of Engineers.

The wetland boundaries were located using a global positioning system (GPS) and a wetland boundary map produced. This boundary map was then overlaid on an aerial photograph of the mitigation site (indicated by the yellow line on Figure 1). Mr. Dennis Stewart of the Pea Island National Wildlife Refuge then utilized the wetland boundary photograph to determine the desired limits of NCDOT's mitigation efforts (indicated by the pink lines on figure 1). The mitigation proposal also include provisions for several small areas to be left as upland "islands" to serve as nesting and roosting habitat, which should further enhance the wetland mitigation effort[1]. These upland islands are enclosed by the orange lines on Figure 1.

Grading

Aerial photography with ground reference elevations were utilized to develop a model to produce a topography map of the mitigation site and adjacent wetlands. A second model, utilizing the topography information, was then used to determine grading plans for 34 transects throughout the mitigation site. These transects will provide sufficient detail to allow for grading to take place in the areas between transects. If grading is required to provide borrow for the roadway construction, a second, final grading will take place immediately prior to planting. Otherwise, grading will take place immediately prior to planting. The topography mapping and transect cross-sections are provided for your information.

Any excavated material will either be utilized as roadway construction borrow, or will be deposited within the Refuge under the direction of Refuge personnel.

Species Selection

To determine the species to be planted at this site, a biotic community survey of an adjacent reference wetland was carried out. This survey generated a species composition list, which was forwarded to Pea Island National Wildlife Refuge staff for review. The refuge staff determined that some of the naturally occurring species were inconsistent with achieving the target functions of the mitigation site. Therefore, the following species identified by the biotic community survey have been chosen for mitigation planting:

Panicum sp. (amarum, amarulum as well as others) – PLANTED
Setaria geniculta (and possibly some other foxtail species) NA (Not available)
Scirpus olneyi – PLANTED
Scirpus americanus – PLANTED
Scirpus robostus – PLANTED
Centella asiatica NA (Not available)
Elymus virginicus NA WILD RYE (Not available)
Bidens ~~cernua~~ aristosa – PLANTED
Diodia virginiana NA (Not available)
Ipomoea sagitattat Morning glory, noxious weed, considered a noxious weed by Dept. of Agriculture. Thus, not planted.

Species will be randomly placed on approximate 2 foot centers. It is also expected that other species will invade from surrounding areas. The Department will attempt to obtain seeds or sprigs for all of these species. However, availability of seeds or sprigs may affect final species selection. Any deviation from the above list will be coordinated with the environmental review agencies prior to planting.

Soils/Hydrology

According to the Soil Conservation Service Soil Survey for Dare County (1992), the soil type of the mitigation area is predominantly Corolla fine sand. This soil is a nearly level, gently sloping, moderately well drained to somewhat poorly drained soil in troughs and on flats on the outer banks. The seasonal high water table is 1.5 to 3.0 feet below the surface. The soil is subject to occasional flooding during periods of strong wide tides, hurricanes, and sound- side flooding. This soil type supports most native vegetation. The seasonal wetness and flooding limit the suitability of development and commercial agriculture. The average annual precipitation in Dare County is 52.6 inches.

Given the relatively shallow depth to the seasonal high water table, the amount of precipitation, occasional sound- side flooding and proximity to adjacent wetland communities, it is anticipated that, if properly graded, adequate wetland hydrology will be established for the mitigation areas. Following grading of the selected areas, hydrological monitoring wells will be placed within this mitigation site to document success or failure in achieving the hydrological success criteria. The proposed locations of these wells is indicated on Figure 1, although a final determination of well numbers and locations may change based upon coordination with the Corps of Engineers. The wells will be constructed in accordance with WRP Technical Note HY-IA-3.1:Installing Monitoring Wells/Piezometers in Wetlands. Figure 2 shows standard shallow monitoring well construction.

Erosion Control

In an effort to minimize possible adverse impacts ILEX GLABRA caused by sand blowing into the mitigation site, a barrier of wax myrtle and gall berry plants is proposed along the exposed eastern and southern boundaries of the mitigation site, as indicated on Figure 1. More rigid barriers, such as sand fences, are not acceptable to the Refuge.

Monitoring

The enclosed monitoring plan will allow for adequate documentation of the success of this plan.

Planting Schedule

The Department will begin making provisions to obtain plants upon approval of this mitigation plan. Due to the number of plants required, it is not anticipated that planting will take place until the Spring 1996 planting window.

Final Disposition of Mitigation Site

The mitigation site will remain under the management of the Pea Island National Wildlife Refuge following documentation of achievement of mitigation success criteria.

Summary

The proposed project will lead to the unavoidable loss of 7.0 acres of low shrub/grassland habitat and 5.3 acres of man- dominated "grainfield" habitat. Successful implementation of this mitigation plan will lead to the establishment of 37.6 acres of wetland habitat, which should adequately offset the lost wildlife functions and values of the impacted wetlands. This acreage does not include the proposed upland "islands".

References

1 U.S. Department of Agriculture - Soil Conservation Service (USDA-SCS). 1992. Engineering Field Handbook, Part 650, Chapter 13 -Wetland Restoration, Enhancement or Creation.

MONITORING PLAN

I. Monitoring Timeframe

Mitigation sites will be inspected at the following times.

A. Prior to planting

B. At completion of planting

C. During August-September of each growing season until success criteria (>50% plantings living for at least 3 years) has been met.

II. Data to be Obtained at Specific Inspection Times

A. Prior to planting

1. Check for proper plant species and for acceptable plant quality

2. Coordinate hydrologic sampling with U.S. Army Corps of Engineers*

* Hydrological sampling will take place periodically throughout the growing seasons until adequate hydrological conditions are met.

B. At completion of planting

1. Check for proper planting methods

2. Check for proper plant spacing (2' O.C.)

3. Check for proper species composition

4. Present to Corps of Engineers an "as built" plan drawing of the area, including final elevations, species compositions including numbers, well and sample plot locations . Elevations will be reported based on three transect lines per site, with elevations taken every 100' along these transects. The lines will run along the long axis of the mitigation site. A discussion of the planting design, including what species were planted, the species mix and numbers planted will be also be included. The report will be provided within 60 days of completion of planting.

C. During August-September of each growing season until success criteria (>50% plants living for at least 3 years) has been met.

1. Determine number of plants per acre. Plant counts will be determined through the use of 15' square sample plots (225 square feet/plot). Sample plots will be placed in areas representative of the entire site or communities within the entire site. No more than 10 plots per mitigation site is proposed. The location of these plots will be coordinated with the Corps of Engineers prior to planting.

2. Take photographs

Note: Information from monitorings will be submitted to the Corps of Engineers by December 1 of each year.

III. Evaluation and Recourse Action

A. 1. Acceptable survival rate of a minimum of >%50 per acre at each post planting monitoring event - no action

2. Below acceptable survival rate at any monitoring event (recourse options)

a. Replant (supplemental or complete)

b. Discuss corrective measures with environmental review agencies

c. Reevaluate feasibility

B. 1. Adequate hydrological conditions (soil saturation to within 12 inches of the surface for at least 12.5% of the growing season) - no action

2. Inadequate hydrological conditions (recourse options)

a. Discuss corrective measures with technical sources and environmental review agencies

b. Reevaluate feasibility

State of North Carolina
Department of Environment,
Health and Natural Resources
Division of Environmental Management

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
A. Preston Howard, Jr., P.E., Director

DEHNR

August 3, 1994

MEMO

To: Doug Huggett, DOT

From: John Dorney, DEM

Re: Wetland evaluation
NC 12 relocation
State Project No. 6.051029, TIP # R-3113
Dare County

In response to your 1 August memo and our 11 July 1994 field trip, I agree that the wetlands slated for impact by the NC 12 relocation have minimal water quality and water storage function. Wetlands directly adjacent to the Sound have significant water quality and quantity functions; however, road designs will avoid these areas.

Please call me at 733-1786 if you have any questions.

NC12.mem

cc: DEM Washington Regional Office
Eric Galamb
Central Files

P.O. Box 29535, Raleigh, North Carolina 27626-0535 Telephone 919-733-7015 FAX 919-733-2496
An Equal Opportunity Affirmative Action Employer 50% recycled/ 10% post-consumer paper

PHOTO INTERPRETATION DATA

- Approximate Scale 1"=200'.
- Boundary lines are approximate.
- Yellow line indicates 404 jurisdictional boundary limits.
- Pink line indicates wetland mitigation area boundary.
- Orange lines indicate upland "island" areas.
- Proposed well locations indicated by "W".

PEA ISLAND MITIGATION SITE

Figure 1

"Grain-Field" Mitigation Site

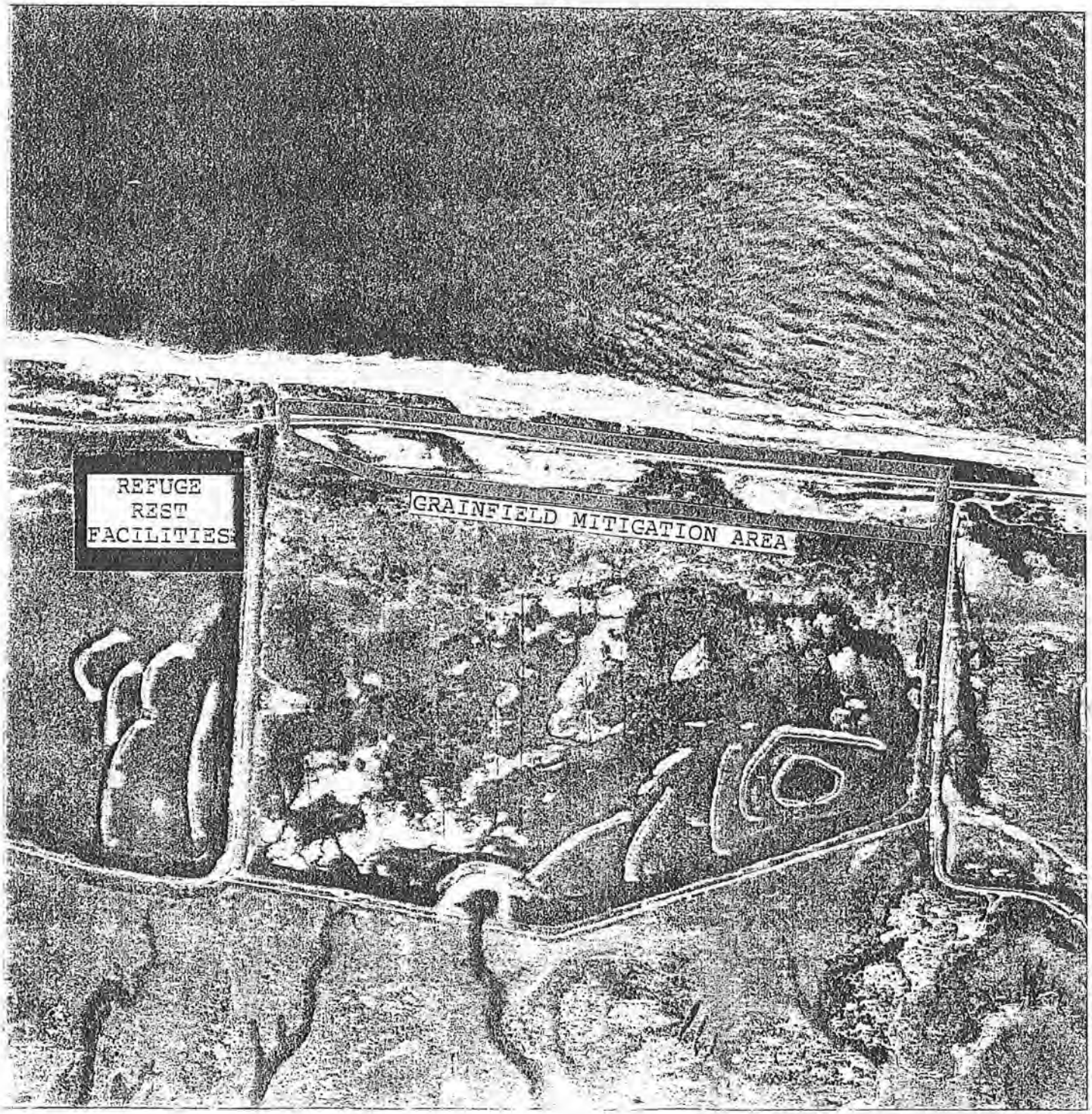

REFUGE
REST
FACILITIES
GRAINFIELD MITIGATION AREA

Figure 2

Low Shrub/Grassland Mitigation Area

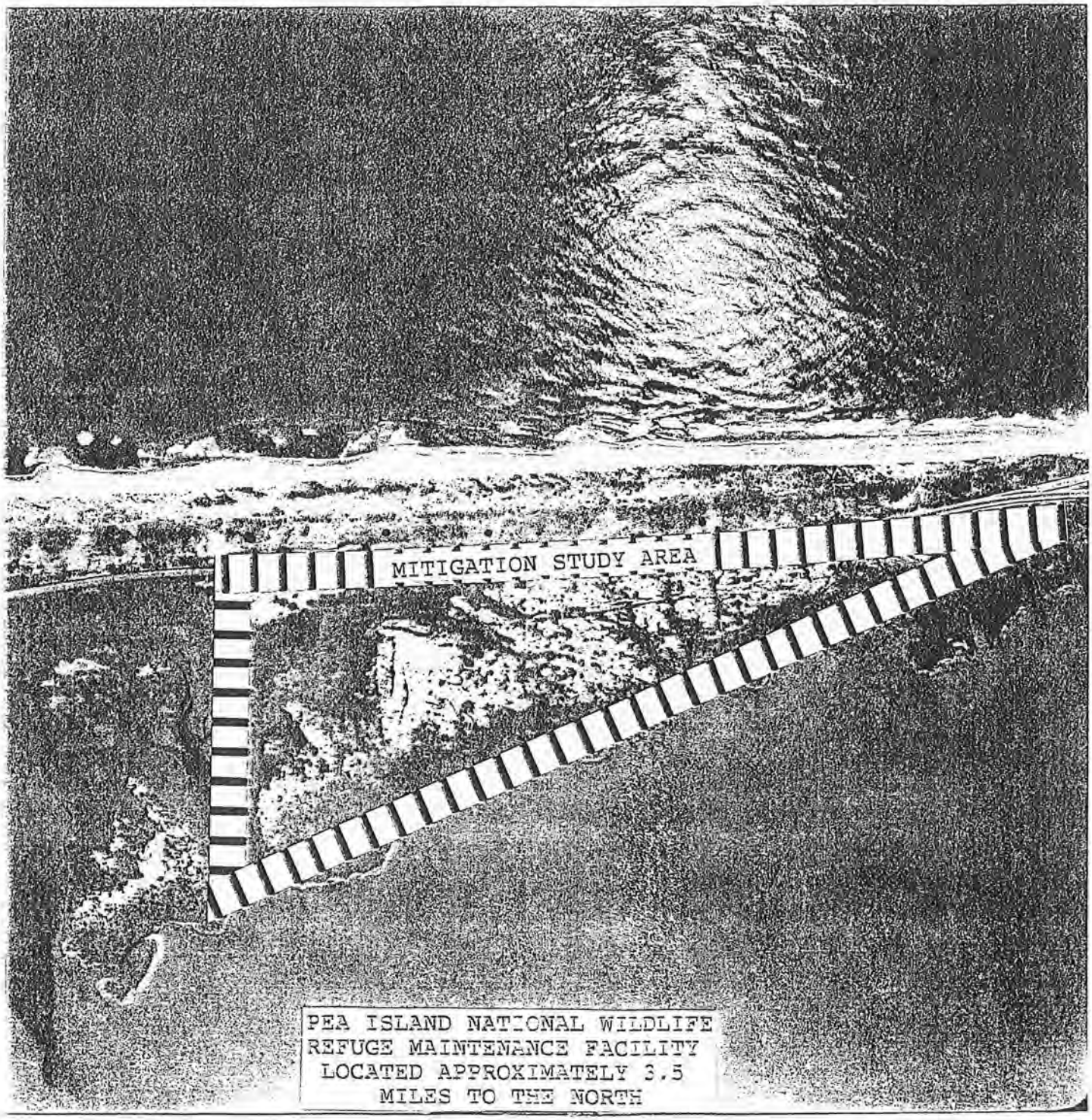
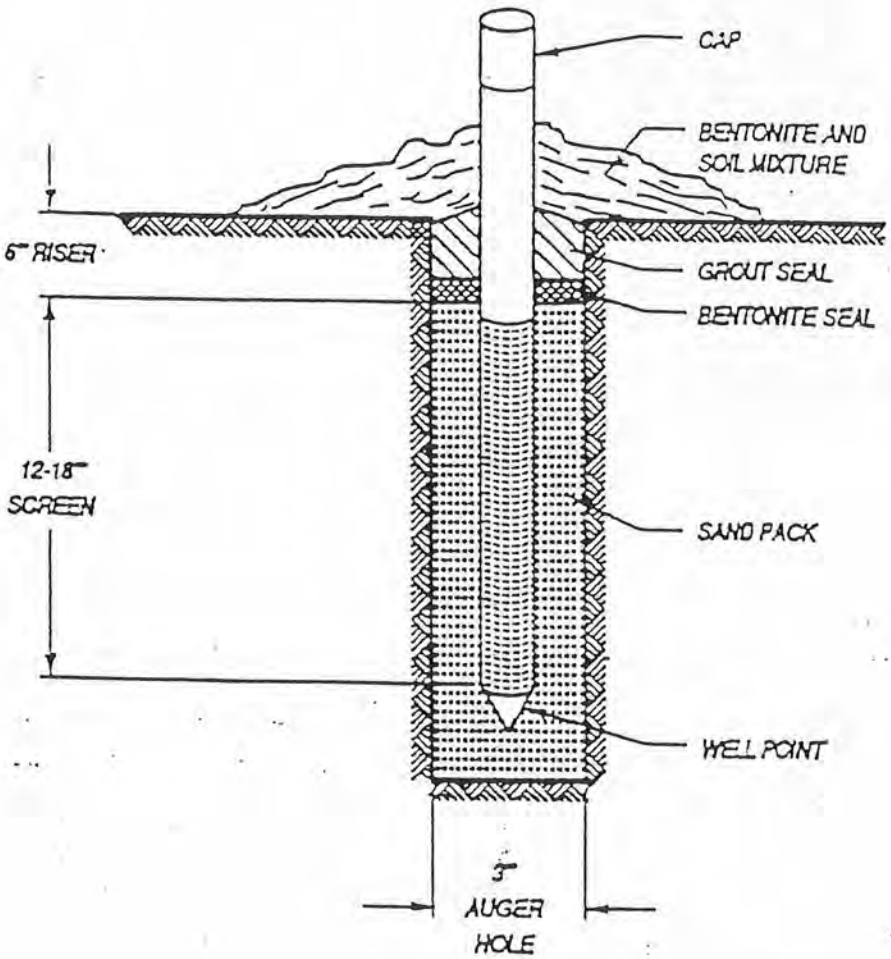

MITIGATION STUDY AREA
PEA ISLAND NATIONAL WILDLIFE
REFUGE MAINTENANCE FACILITY
LOCATED APPROXIMATELY 3.5
MILES TO THE NORTH

Figure 3

Standard Shallow Monitoring
Well


CAP
BENTONITE AND
SOIL MIXTURE
6" RISER
GROUT SEAL
BENTONITE SEAL
12-18"
SCREEN
SAND PACK
WELL POINT
5"
AUGER
HOLE