



ENVIRONMENTAL NOTIFICATION FORM

JOINT REVIEW PROCESS
WITH THE
MASSACHUSETTS ENVIRONMENTAL POLICY ACT UNIT
AND THE
CAPE COD COMMISSION

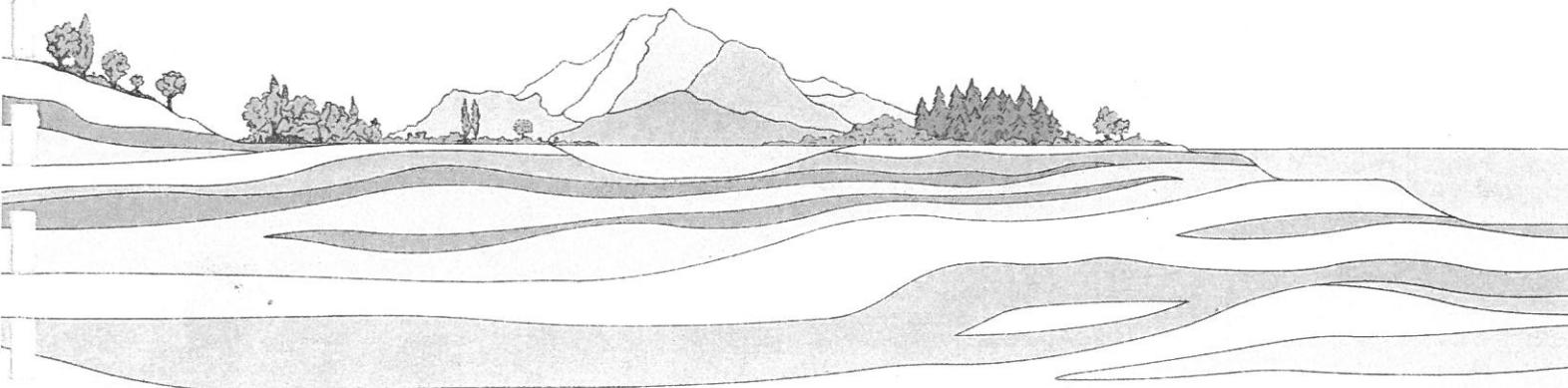
PAMET CRANBERRY BOG RESTORATION PROJECT

Cape Cod National Seashore
North Pamet Road
Truro, Massachusetts

August 31, 1995

Prepared for:

National Park Service
Cape Cod National Seashore
Marconi Station Area
South Wellfleet, MA 02663



FUGRO EAST, INC.

August 31, 1995

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Sandwich, MA 02563
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Secretary Trudy Coxe
Executive Office of Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02202
Attn: MEPA Unit

16233381

Cape Cod Commission
3225 Main Street
P.O. Box 226
Barnstable, Massachusetts 02630

RE: Environmental Notification Form
Joint Review Process
Pamet Cranberry Bog Restoration Project
Truro, Massachusetts

Dear Secretary Coxe and Members of the Cape Cod Commission:

On behalf of the US Department of the Interior National Park Service (NPS), Fugro East, Inc. (Fugro) is pleased to submit this Environmental Notification Form (ENF) for the Pamet Cranberry Bog Restoration Project, located within the Cape Cod National Seashore in Truro, Massachusetts.

Project Description

The project involves restoring approximately 5.5 acres of abandoned cranberry bog back into production for the harvesting of dry picked fresh fruit. The Massachusetts Executive Office of Communities and Development (EOCD) is providing a Community Development Grant administered through the Barnstable County Commissioners to place abandoned cranberry bogs back in production and provide jobs for low to moderate income families.

Categorical Inclusion

This project is categorically included to require the preparation of an Environmental Impact Report (EIR) pursuant to 301 CMR Section 11.25(2) of the Massachusetts Environmental Policy Act (MEPA) regulations for "any project resulting in the ... alteration ... of one or more acres of bordering vegetated wetland" Pursuant to the Cape Cod Commission Act, if a project requires

the filing of an EIR, then the project shall be deemed a Development of Regional Impact (DRI) and is subject to review by the Cape Cod Commission. Therefore, we elect to have this project subject to the Joint Review Process established through a Memorandum of Understanding between MEPA and the Cape Cod Commission. The EIR, if required, will cover issues of concern to an within the jurisdiction of MEPA and the Cape Cod Commission.

Jurisdiction

In addition, this project is before MEPA because state funds will be used for the reconstruction of the bog. The project will require an Order of Conditions subject to the Massachusetts Wetlands Protection Act. According to 310 CMR 10.53 (3)(b), the project is allowed as a limited project. MEPA jurisdiction extends to those aspects of the projects that are related to the interests of the Wetlands Protection Act. In addition, this project will require a Section 401 Water Quality Certification from the Massachusetts Department of Environmental Protection, will be subject to federal consistency review by the Massachusetts Coastal Zone Management (MCZM) office, and will require the issuance of an Section 404 individual permit (Category III under the PGP Program) by the US Army Corps of Engineers.

On behalf of the NPS, we request that the requirement of preparing an Environmental Impact Report (EIR) be combined with the NPS obligation to complete an Environmental Assessment (EA) under the National Environmental Policy Act (NEPA). The EA for this project cannot be waived for the federal compliance requirements for the NPS. The EIR issues from scoping can easily be combined and accommodated into the EA as one document. This would save both time and costs associated with the requirement of two documents. NEPA regulations, promulgated under 42 U.S.C. 4321-4370 sections 1506.2 and 1506.4 allow for this procedure under federal law. In brief these sections state: "Agencies shall cooperate with State and Local agencies to the fullest extent possible to reduce duplication between NEPA and State and Local requirements . . ." These sections also allow for adoption of NEPA documents into state required planning processes.

The project enjoys considerable support. The affected property is eligible, through its longstanding past use as a cultivated bog and its association with the history of the cranberry industry, for the National Register of Historic Places. Historic preservation and interpretation are the primary motives for undertaking this rehabilitation. Restoration of this property as an educational exhibit has been contemplated by the National Park Service since its acquisition of the land. The objectives embodied in this project were first articulated in the Cape Cod National Seashore Master Plan of 1963. The Cape Cod National Seashore interpretation division attempted an in-house restoration effort in 1978-79 for a portion of the bog as an exhibit; a trail was built to bring visitors to it, an educational folder was produced, and a wayside exhibit installed. Ranger-guided interpretive walks were also provided. All of these efforts were very popular with visitors, enough so that the Seashore's diminishing ability to maintain the demonstration plot and provide the services became

the focus of criticism from the public. There is no doubt that rehabilitation of the bog and resumption of interpretation would be extremely well received by Seashore visitors.

The project is compatible with the Cape Cod Commission Regional Policy Plan including the action item which states: "The Cape Cod Commission will assist County Cooperative Extension in working with the Cranberry Growers Association, Cape Cod Conservation District, and other organizations to encourage continued and expanded agricultural use of land on Cape Cod." In addition, this project is consistent with "the preservation and enhancement of agricultural uses that are environmentally compatible with the Cape's natural resources in order to maintain opportunities to enjoy the traditional occupations, economic diversity, and scenic resources associated with agricultural lands."

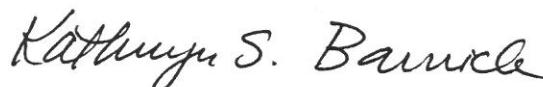
Wetlands Protection Act

The project qualifies as a limited project under the Massachusetts Wetlands Protection Act (310 CMR 10.53(3)(b)). According to the limited project regulations, this project will not have to meet performance standards for the various wetland resource areas involved with this project (i.e., bordering vegetated wetland, land under water, etc.). This regulation states that an Order of Conditions may be issued for "work on land to be used primarily and directly in the raising of cranberries ..." The project site was once an active cranberry bog that has been fallow since the early 1960's. Structures associated with the previous bog are still evident including ditches, flumes, and perimeter roadways.

No filing fee has been included pursuant to MEPA or the Cape Cod Commission Act because the proponent is a federal agency and co-proposed by a public agency. Thank you for your consideration of this request. Please do not hesitate to contact us should you have any questions.

Very truly yours,

Fugro East, Inc.



Kathryn S. Barnicle
Senior Wetlands Scientist

cc: Circulation List

Distribution List
Pamet Cranberry Bog Restoration Project
Barnstable County Commissioners
Truro, Massachusetts

Executive Office of Environmental Affairs
100 Cambridge Street
20th Floor
Boston, Massachusetts 02202
Attn: MEPA Unit

Cape Cod Commission
3225 Main Street
P.O. Box 226
Barnstable, Massachusetts 02630

Michael T. Reynolds
Chief, Natural Resources Management
Cape Cod National Seashore
South Wellfleet, Massachusetts 02663

Massachusetts Executive Office of
Communities and Development
100 Cambridge Street
Room 1803
Boston, Massachusetts 02202

Department of Environmental Protection
One Winter Street
Boston, Massachusetts 02108

Department of Environmental Protection
Southeast Regional Office
20 Riverside Drive
Lakeville, Massachusetts
Attn: George Crombie

Massachusetts Historical Commission
The Massachusetts Archives Building
220 Morrissey Boulevard
Boston, Massachusetts 02125

U.S. Army Corps of Engineers
New England Division
424 Trapelo Road
Waltham, Massachusetts 02254
Attn: Karen Adams

U.S. Environmental Protection Agency
Region One
J.F.K. Federal Building
Boston, Massachusetts 02203
Attn: Matt Schweisberg

Truro Department of Public Works
Town Hall Road
Truro, Massachusetts 02666

Truro Conservation Commission
Town Hall Road
Truro, Massachusetts 02666

Truro Planning Board
Town Hall Road
Truro, Massachusetts 02666

Coastal Zone Management
3225 Main Street
Barnstable, Massachusetts 02630

Coastal Zone Management
100 Cambridge Street
20th Floor
Boston, Massachusetts 02202

Massachusetts Division of Marine Fisheries
100 Cambridge Street
Boston, Massachusetts 02202

Massachusetts Division of Marine Fisheries
18 Route 6A
Sandwich, Massachusetts 02563

Cape Cod Cranberry Grower's Association
P.O. Box 730
East Wareham, Massachusetts 02538

Massachusetts Highway Department
District 5
1000 County Street
Taunton, Massachusetts 02780

Department of Food and Agriculture
100 Cambridge Street
Boston, Massachusetts 02202

Dave Clark
National Park Service
15 State Street
Boston, Massachusetts 02109

National Park Service
Water Resources Division
12795 W. Alameda Parkway
Lakewood, Colorado 80225

Barnstable County Commissioners
Superior Courthouse
3195 Route 6A
Barnstable, Massachusetts 02630

**PAMET CRANBERRY BOG RESTORATION PROJECT
NORTH PAMET ROAD
TRURO, MASSACHUSETTS**

TABLE OF CONTENTS

**ENVIRONMENTAL NOTIFICATION FORM
CAPE COD COMMISSION DEVELOPMENT OF REGIONAL IMPACT APPLICATION FORM SECTION A
SUMMARY OF CAPE COD COMMISSION POLICIES
PLANT AND WILDLIFE HABITAT ASSESSMENT**

1.0	Introduction
2.0	Study Methods
3.0	Site Description
4.0	Results and Discussion
5.0	Summary
6.0	References

LIST OF FIGURES

Figure 1	Locus Map
Figure 2	Soils Map
Figure 3	FEMA Flood Map
Figure 4	MNHESP Atlas
Figure 5	Development Plan (reduced scale)

LIST OF ATTACHMENTS

Attachment 1	Addendum 1: Certified Abutters List and Proof of Notification
Attachment 2	Addendum 3: MHC Response
Attachment 3	Deed of Land
Attachment 4	Proof of Filings with State and Local Agencies
Attachment 5	MNHESP Response

MAP POCKET

Development Plan (Full Scale) *(Included only with the CCC and MEPA copies)*

ENVIRONMENTAL NOTIFICATION FORM

ENVIRONMENTAL NOTIFICATION FORM

I. SUMMARY

A. Project Identification

1. Project Name Pamet Cranberry Bog Restoration Project
Address/Location North Pamet Road
Cape Cod National Seashore
City/Town Truro
2. Project Proponent Nation Park Service
Address Cape Cod National Seashore
Marconi Station Area, S. Wellfleet, MA 02663
3. Est. Commencement Spring 1996. Est. Completion Spring 1996.
Approx. Cost \$ 110,000. Status of Project Design 50 % Complete.
4. Amount (if any) of bordering vegetated wetlands, salt marsh, or tidelands to be dredged, filled, removed, or altered (other than by receipt of runoff) as a result of the project.
5.5 acres square feet.
5. This project is categorically included and therefore requires preparation of an EIR.
Yes X No ?

B. Narrative Project Description

DATE OF SCOPING SESSION/PUBLIC HEARING IS
Describe project and site. *****September 22, 1995 *****

The National Park Service (NPS) is participating in the Regional Cranberry Bog Restoration Project being funded by the Massachusetts Executive Office of Communities and Development (EOCD) through a Community Development Grant and sponsored by the Barnstable County Commissioners. The purpose of the grant is to provide jobs for low to moderate income families through the restoration of cranberry bogs.

The Pamet Bog located within the Cape Cod National Seashore, is one of two sites selected for this economic development project. The project covers approximately 27.3 acres of which 9.8 acres are abandoned bog. The bog has been abandoned and out of production since the early 1960's. Approximately 5.5 acres of abandoned cranberry bog will be restored with the construction of new dikes, culverts, and a pumphouse in order to improve water management and to implement Best Management Practices (BMP's). The bog will be regraded and replanted with cranberry vines for the production of dry picked fresh fruit.

This project is categorically included pursuant to 301 CMR 11.25(2) because it will result in the alteration of one or more acres of bordering vegetated wetlands. This work is allowed as a limited project pursuant to 310 CMR 10.53(3)(b) of the Massachusetts Wetlands Protection Act Regulations with the issuance of an Order of Conditions. This project is being reviewed by MEPA and the Cape Cod Commission under the Joint Review Process. In addition, we request that the requirement of the EIR be combined with the NPS obligation to complete an Environmental Assessment (EA) under the National Environmental Policy Act. (NEPA).

Copies of the complete ENF may be obtained from (proponent or agent):

Name: Kathryn S. Barnicle Firm/Agency: Fugro East, Inc.
Address: 90 Route 6A, Sandwich, MA Phone No. (508) 888-3900

C. List the State or Federal agencies from which permits or other actions have been/will be sought:

Agency Name	Permit	Date filed; file no.
Truro Conservation Comm/DEP	Order of Conditions	To be filed
U.S. Army Corps of Engineers	Section 404 Permit	To be filed
Dept. of Environmental Protection	Water Quality Certification	To be filed
Massachusetts Coastal Zone Management	Federal Consistency Statement	To be filed

D. List any government agencies or programs from which the proponent will seek financial assistance for this project:

Agency Name	Funding Amount
Massachusetts Executive Office of Communities and Development	\$52,866.00

E. Areas of potential impact (complete Sections II and III first, before completing this section).

1. Check all areas in which, in the proponent's judgment, an impact of this project may occur. Positive impacts, as well as adverse impacts, may be indicated.

	Construction Impacts	Long Term Impacts
Inland Wetlands.....	X	X
Coastal Wetlands/Beaches.....	None	None
Tidelands.....	None	None
Traffic.....	Minimal	X
Open Space/Recreation.....	Minimal	Positive
Historical/Archaeological.....	X	Positive
Fisheries/Wildlife.....	X	Positive
Vegetation/Trees.....	X	Positive
Agricultural Lands.....	Positive	Positive
Water Pollution.....	Minimal	None
Water Supply/Use.....	Minimal	None
Solid Waste.....	None	None
Hazardous Materials.....	None	None
Air Pollution.....	None	None
Noise.....	X	None
Wind/Shadow.....	None	None
Aesthetics.....	X	Positive
Growth Impacts.....	None	None
Community/Housing and the Built Environment.....	None	None
Other (Specify).....		

2. List the alternatives which have been considered.

Please refer to the attached narrative on next page. Alternatives considered include: No-build, off-site alternatives, and on-site alternatives.

E.2. Continued

No-build Alternative

The intent of this Community Development Grant is to restore existing abandoned cranberry bogs in order to provide jobs for low to moderate income families. Therefore, the no-build alternative was not a valid option for this project.

Off-site Alternatives

Over 20 abandoned cranberry bog sites have been reviewed as possible candidates for this project. Site considerations included, but were not limited to: suitable hydrology and soil substrate for cranberry cultivation, adequate and available water resources, ability to construct and manage appropriate and sustainable water management systems, adequate adjacent upland for cranberry harvesting and management procedures, limited sensitive receptors (i.e., public water supplies, rare and endangered species habitat, etc.), and adequate upland to provide cranberry bog system with a buffer from residential areas and public buildings. This project is one of two site chosen based on these and other reasons.

On-site Alternatives

Standard Bog Design: The bogs were initially designed to be reconstructed in accordance with existing standard bog designs which include squaring off of bog boundaries and redesign of bog ditches. This alternative was not compatible with the cultural and historical aspects of the NPS requirements and the visual impacts to visitors.

West Bog vs. East Bog: The abandoned bogs on the site are comprised of the west bog, the east bog, and a small bog located to the south of the pond. Each of these alone, and in various combinations, were reviewed for restoration and were considered as viable. It was decided that there was greater potential to involve the park visitor both physically and visually if the east bog was restored. Therefore, the other bogs are not proposed for restoration at this time under the grant program.

Other Design Considerations: Although the proposed dike was not part of the original bog design (smaller dikes were located in other locations within the bog), for best management practices and the ability of the cranberry grower to keep water on the bogs, it was decided that the construction of the dike could be done in a way that was aesthetically and visually pleasing and compatible with NPS cultural requirements.

F. Has this project been filed with EOEA before? No Yes EOEA No. _____

G. WETLANDS AND WATERWAYS

1. Will an Order of Conditions under the Wetlands Protection Act (c.131s.40) or a License under the Waterways Act (c.91) be required?
Yes No _____
2. Has a local Order of Conditions been:
 - a. issued? Date of issuance _____; DEQE File No. _____.
 - b. appealed? Yes ; No .
3. Will a variance from the Wetlands or Waterways Regulations be required? Yes _____; No .

II. PROJECT DESCRIPTION

A. Map; site plan. Include an original 8½ x 11 inch or larger section of the most recent U.S.G.S. 7.5 minute series scale topographic map with the project area location and boundaries clearly shown. If available, attach a site plan of the proposed project.

See Figure 1

B. State total area of project: 27.3 acres.

Estimate the number of acres (to the nearest 1/10 acre) directly affected that are currently:

1. Developed	<u>0.10</u> acres	6. Tidelands	<u>NA</u> acres
2. Open Space/		7. Productive Resources	
Woodlands/Recreation	<u>27.3</u> acres	Agriculture	<u>NA</u> acres
3. Wetlands	<u>9.8</u> acres	Forestry	<u>NA</u> acres
4. Floodplain	<u>15.0</u> acres	8. Other	<u>NA</u> acres
5. Coastal Area	<u>NA</u> acres		

C. Provide the following dimensions, if applicable: Not applicable

	Existing	Increase	Total
Length in miles	_____	_____	_____
Number of Housing Units	_____	_____	_____
Number of Stories	_____	_____	_____
Gross Floor Area in square feet	_____	_____	_____
Number of parking spaces	_____	_____	_____
Total of Daily vehicle trips to and from site (Total Trip Ends)	_____	_____	_____
Estimated Average Daily Traffic on road(s) serving site	_____	_____	_____
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____

D. TRAFFIC PLAN. If the proposed project will require any permit for access to local roads or state highways, attach a sketch showing the location and layout of the proposed driveway(s).

Please refer to the attached narrative on next page.

D. TRAFFIC PLAN

Non-agricultural related vehicles will park at an existing National Park Service trailhead parking lot. Visitors will access the bog on foot. The bog operator will access the bog with vehicles approximately two times on a daily basis. In comparison, a family of four will generate more trips than will be generated by agricultural related vehicle trips. There will be an increase in activity during the harvesting season in the fall. Trucks accessing the bog may be larger in size but truck trips will be minimal.

III. ASSESSMENT OF POTENTIAL ADVERSE ENVIRONMENTAL IMPACTS

Instructions: Explain direct and indirect adverse impacts, including those arising from general construction and operations. For every answer explain why significant adverse impact is considered likely or unlikely to result. Positive impact may also be listed and explained.

Also, state the source of information or other basis for the answers supplied. Such environmental information should be acquired at least in part by field inspection.

A. Open Space and Recreation

1. Might the project affect the condition, use, or access to any open space and/or recreation area?

Explanation and Source: The project is located within the Cape Cod National Seashore and the site is presently accessed by park visitors via a walking trail, boardwalk, and wayside exhibit. These features were constructed to provide access to the demonstration plot and the adjoining historic structure (bog house). Source: Fugro East, Inc.

2. Is the project site within 500 feet of any public open space, recreation, or conservation land?

Explanation and Source: Yes, the project is within the Cape Cod National Seashore and abuts public open space and conservation land. This project has been incorporated into the NPS CCNS Master Plan of 1963.

Source: Fugro East, Inc.

B. Historic and Archaeological Resources

1. Might any site or structure of historic significance be affected by the project? (Prior consultation with Massachusetts Historical Commission is advised.)

Explanation and Source: According to the MHC, the cranberry bogs are eligible for listing in the National Register of Historic Places as an historic rural landscape. The property has the potential for significant archaeological deposits. The NPS is presently conducting a survey to obtain additional information.

Source: February 27, 1995 MHC letter

2. Might any archaeological site be affected by the project? (Prior consultation with Massachusetts Historical Commission is advised.)

Explanation and Source: Work proposed is within the same footprint of the previously altered bog footprint. The bog will be restored to historical boundaries in accordance with the NPS cultural requirements.

Source: NPS

C. Ecological Effects

1. Might the project significantly affect fisheries or wildlife, especially any rare or endangered species? (Prior consultation with the Massachusetts Natural Heritage Program is advised).

Explanation and Source: The site is not identified as rare or endangered habitat. A vernal pool has been identified in an isolated wetland to the northwest of the west bog. According to the Plant and Wildlife Habitat Assessment prepared by Fugro, there will be minimal impacts to fisheries and wildlife.

Source: 1995 Edition MNHESP Atlas, Fugro East, Inc.

2. Might the project significantly affect vegetation, especially any rare or endangered species of plant? (Prior consultation with the Massachusetts Natural Heritage Program is advised.)

(Estimate approximate number of mature trees to be removed: minimal)

Explanation and Source: According to the MNHESP, the only known rare or endangered species is the Broom Crowberry (Corema conradii). Based on Fugro observations, this plant is found on the site at higher elevations than where the work is proposed. Therefore, we do not anticipate any impacts to this species. Minimal trees will be cut for the dirt access road. A variety of commonly found woody shrubs and herbaceous vegetation will be removed from the bog surface.

Source: August 8, 1995 MNHESP letter, Fugro East, Inc.

3. Agricultural Land. Has any portion of the site been in agricultural use within the last 15 years?

If yes, specify use and acreage.

Explanation and Source: The National Park Service attempted to reactivate the east bog in 1978/1979 for cranberry production. Approximately 2.5 acres were cleared ditches restored and vines were planted. The National Park Service built a boardwalk across the east bog and tours of the site were administered by Park Service Interpretative Staff. The restoration project was consequently abandoned due to change in park priorities. The entire bog operation has been out of production since 1962.

Source: Cape Cod National Seashore - National Park Service

D. Water Quality and Quantity

1. Might the project result in significant changes in drainage patterns?

Explanation and Source: Drainage patterns will be altered by the restoration of the bog in order to improve water usage and to implement Best Management Practices (BMP's). These changes are not significant as the drainage patterns presently existing will be maintained. For example, existing drainage ditches will be restored. There will be no increase in flow and volume of water at the site after the bog is restored.

Source: Fugro East, Inc.

2. Might the project result in the introduction of any pollutants, including sediments, into marine waters, surface fresh waters or ground water?

Explanation and Source: All precautions will be taken to prevent the introduction of pollutants including erosion and sedimentation controls during construction and the implementation of Best Management Practices (BMP's). Management practices include holding water on-site. The water will be taken from the pond and returned. Only during storm events or periods of high water will the water be released into the west bog. The water will be stored in the ditches and on the bog surface of the west bog prior to being released off-site. An Integrated Pest Management (IPM) program will be implemented as a BMP. During construction, silt fencing and hay bales will be placed at the outlet.

Source: 3. Does the project involve any dredging? No X Yes Volume . If 10,000
Fugro East, cy or more, attach completed Standard Application Form for Water Quality Certification,
Inc. Part I (314 CMR 9.02(3), 9.90, DEQE Division of Water Pollution Control).

4. Will any part of the project be located in flowed or filled tidelands, Great Ponds, or other waterways? (Prior consultation with the DEQE and CZM is advised.)

Explanation and Source: No. No work will be performed in any of these areas.
Source: Fugro East, Inc.

5. Will the project generate or convey sanitary sewage? No Yes

If Yes, Quantity: _____ gallons per day

Disposal by: (a) Onsite septic systems Yes No
(b) Public sewerage systems (location; average and peak daily flows to treatment works) Yes No

Explanation and Source:

Source: Fugro East, Inc.

6. Might the project result in an increase in paved or impervious surface over a sole source aquifer or an aquifer recognized as an important present or future source of water supply?

Explanation and Source: No. The project will not result in the increase in paved or impervious surfaces. The entire Cape is designated as a sole source aquifer.

Source: Fugro East, Inc.

7. Is the project in the watershed of any surface water body used as a drinking water supply?

Explanation and Source: No. The project is not within the watershed to a drinking water supply.

Source: Fugro East, Inc.

~~8.~~ Are there any public or private drinking water wells within a 1/2-mile radius of the proposed project?

Explanation and Source: Yes, Residential properties located along North Pamet Road are serviced by private water supply wells. No municipal water is available in the area. According to a study performed by the Natural Resources Conservation Service (NRCS), peat at the Pamet Bog ranges in thickness from 21 to 30 feet. Peat is relatively impermeable which prevents water from passing through this layer.
Source: NRCS, Fugro East, Inc.

9. Does the operation of the project result in any increased consumption of water? No
Approximate consumption 20,000 gallons per day. Likely water source(s) Pond

Explanation and Source: The water taken from the pond will be returned to the pond. Only during storm events or high water levels will water be allowed to leave the pond and enter the west bog where it can be held before being released south of the road. The site is virtually a closed system.

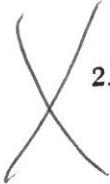
Source: G.A.F. Engineering, Inc.

E. Solid Waste and Hazardous Materials

1. Estimate types and approximate amounts of waste materials generated, e.g., industrial, domestic, hospital, sewage sludge, construction debris from demolished structures. How/ where will such waste be disposed of?

Explanation and Source: Debris generated during the construction phase will consist of woody vegetation and stumps much of which can be burned on-site with approval from the Truro Fire Department. An alternative to burning is chipping and recycling vegetation and stumps on-site.

Source: Fugro East, Inc.

 2. Might the project involve the generation, use, transportation, storage, release, or disposal of potentially hazardous materials?

Explanation and Source: Agricultural chemicals, such as pesticides and fertilizers are part of the cultural practices used in growing cranberries. Use on bogs is determined through an Integrated Pest Management (IPM) program and BMPs. Any chemical applications will be applied by a licensed applicator. No chemicals will be stored on the site.

Source: Fugro East, Inc.

3. Has the site previously been used for the use, generation, transportation, storage, release, or disposal of potentially hazardous materials?

Explanation and Source: No. There is no evidence of these activities having occurred at this site.

Source: Fugro East, Inc.

F. Energy Use and Air Quality

1. Will space heating be provided for the project? If so, describe the type, energy source, and approximate energy consumption.

Explanation and Source: No. The project will not involve space heating. The pump will be powered either by electric current or by propane depending on the pump house location and associated costs.

Source: Fugro East, Inc.

2. Will the project require process heat or steam? If so, describe the proposed system, the fuel type, and approximate fuel usage.

Explanation and Source: No. The project will not require process heat or steam.

Source: Fugro East, Inc.

3. Does the project include industrial processes that will release air contaminants to the atmosphere? If so, describe the process (type, material released, and quantity released).

Explanation and Source: No. The project does not include industrial processes.

Source: Fugro East, Inc.

4. Are there any other sources of air contamination associated with the project (e.g. automobile traffic, aircraft traffic, volatile organic compound storage, construction dust)?

Explanation and Source: Yes. During the construction phase, it is anticipated that there will be a slight increase in exhaust generated by equipment, but only on a temporary basis. There will be an insignificant increase in traffic associated with the normal operation of the bogs.

Source: Fugro East, Inc.

5. Are there any sensitive receptors (e.g. hospitals, schools, residential areas) which would be affected by air contamination caused by the project?

Explanation and Source: Yes. There are residential areas and visitor areas. Any air contamination is expected to be temporary.

Source: Fugro East, Inc.

G. Noise

1. Might the project result in the generation of noise?

(Include any source of noise during construction or operation, e.g., engine exhaust, pile driving, traffic.)

Explanation and Source: Yes. Construction activities will be a source of noise during the early phase of the proposed bog restoration. After bog restoration is complete, routine bog maintenance and associated farming practices may occasionally generate noise. The pump will be fitted with a muffler so noise will be minimized.

Source: Fugro East, Inc.

2. Are there any sensitive receptors (e.g., hospitals, schools, residential areas) which would be affected by any noise caused by the project?

Explanation and Source: Yes. Several residences are located in the vicinity of the Pamet Bogs. Noise impacts are limited to the construction phase and harvesting activities which are expected to be minimal.

Source: Fugro East, Inc.

3. Is the project a sensitive receptor, sited in an area of significant ambient noise?

Explanation and Source: No. The proposed project is not a sensitive receptor.

Source: Fugro East, Inc.

H. Wind and Shadow

1. Might the project cause wind and shadow impacts on adjacent properties?

Explanation and Source: No. There will be no wind or shadow impacts.

Source: Fugro East, Inc.

I. Aesthetics

1. Are there any proposed structures which might be considered incompatible with existing adjacent structures in the vicinity in terms of size, physical proportion and scale, or significant differences in land use?

Explanation and Source: No. The only structures to be constructed include the pump house and water control structures such as culverts. The project is compatible with previously existing site uses. The bog is being reconstructed to the previously existing footprint to restore a cultural agricultural practice for viewing by park visitors.

Source: Fugro East, Inc.

2. Might the project impair visual access to waterfront or other scenic areas?

Explanation and Source: The project will not impair visual access to the waterfront or other service areas. Cranberry bogs are considered aesthetically pleasing places and add value to the natural landscape. A diversity of views will be created as a result of this project.

Source: Fugro East, Inc.

IV. CONSISTENCY WITH PRESENT PLANNING

Discuss consistency with current federal, state and local land use, transportation, open space, recreation and environmental plans and policies. Consult with local or regional planning authorities where appropriate.

The proposed cranberry bog restoration project is consistent with the Minimum Performance Standards (MPS) of the Cape Cod Commission Regional Policy Plan as described in this application. The project's benefits outweigh any potential project detriments. The project has been designed to be consistent with the Park Service's plans and policies.

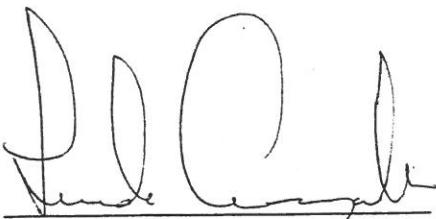
V. FINDINGS AND CERTIFICATION

A. The public notice of environmental review has been/will be published in the following newspaper(s):

(NAME) The Cape Codder (Date) September 5 & 8, 1995

The Banner September 7, 1995

B. This form has been circulated to all agencies and persons as required by 301 CMR 11.24.

<u>8/30/95</u> Date	 Signature of Responsible Officer or Project Proponent	<u>8/30/95</u> Date	<u>Kathryn S. Barnicle</u> Signature of person preparing ENF (if different from above)
<u>Linda Canzanelli</u> Name (print or type)		<u>Kathryn S. Barnicle</u> Name (print or type)	
<u>Cape Cod National Seashore</u> Address <u>P.O. Box 250</u> <u>S. Wellfleet, MA 02663</u>		<u>Fugro East, Inc.</u> Address <u>90 Route 6A, Sandwich, MA</u>	
<u>(508) 349-3785</u> Telephone Number		<u>508-888-3900</u> Telephone Number	

11.29: FORMS OF NOTICE

(1) PUBLIC NOTICE OF ENVIRONMENTAL REVIEW PROJECT:

FORMS OF NOTICE

(1) PUBLIC NOTICE OF ENVIRONMENTAL REVIEW

PROJECT: Pamet Cranberry Bog Restoration Project
(Brief description of project)

LOCATION: North Pamet Road, Truro

PROPOSER: National Park Service, Cape Cod National Seashore

The undersigned is submitting an Environmental Notification Form ("ENF") to the Secretary of Environmental Affairs on or before August 31, 1995
(Date)

This will initiate review of the above project pursuant to the Massachusetts Environmental Policy Act ("MEPA", G.L. c. 30, secs. 61, 62-62H). Copies of the ENF may be obtained from:

Kathryn S. Barnicle, Fugro East, Inc. 90 Route 6A, Sandwich, MA 02563.
(Name, address, phone number of proponent or proponent's agent)

Copies of the ENF are also being sent to the Conservation Commission and Planning Board of Truro
(Municipality)

where they may be inspected.

The Secretary of Environmental Affairs will publish notice of the ENF in the Environmental Monitor, will receive public comments on the project for twenty days, and will then decide, within ten days, if an Environmental Impact Report is needed. A site visit and consultation session on the project may also be scheduled. All persons wishing to comment on the project, or to be notified of a site visit or consultation session, should write to the Secretary of Environmental Affairs, 100 Cambridge Street, Boston, Massachusetts 02202, Attention: MEPA Unit, referencing the above project.

By Kathryn S. Barnicle
(proponent)
for the NPS

**CAPE COD COMMISSION DEVELOPMENT OF REGIONAL IMPACT
APPLICATION FORM SECTION A**

MEPA UNIT / CAPE COD COMMISSION
Joint Review Process Application Form

Section A: General Information

1. Project Name: Pamet Cranberry Bog Restoration Project

2. Applicant Phone Number: (508) 349-3785

3. Contact Person: Kathryn S. Barnicle
(if different from applicant)

Address: Fugro East, Inc.

90 Route 6A, Sandwich, MA 02563

Phone #: (508) 888-3900

4. Billable entity (if different from applicant): Fugro East, Inc.

Address 90 Route 6A, Sandwich, MA 02563

Phone # (508) 888-3900

5. What is the present zoning classification of the property and when was the zoning adopted? What was the prior zoning classification?

The present zoning is the Seashore District established in 1961 during the establishment of the Cape Cod National Seashore.

6. Owners of Record. Provide the following information for all involved parcels (attach additional sheets if necessary):

Deeds Lot/Parcel	Owner Name	Land Court Certificate of Title #	Registry of - or Book/Page #
<u>Map 47, No Lot</u>	<u>National Park Service</u>		
<u>designation</u>			

7. List all court claims, pending and completed, involving this proposed development, including parties, basis for claim, synopsis of arguments where relevant, court, outcome if available:

Not applicable

8. List the Local Agencies from which permit or other actions have been/will be sought:

Agency Name	Permit	Date filed/File No.
Truro Conservation Comm.	Order of Conditions	To be filed
MA DEP	Water Quality Certification	To be filed
Coastal Zone Management	Federal Consistency	To be filed
U.S. Army Corps of Engineers Section 404 Permit		To be filed

I hereby certify that all information provided in this application form and required attachments is true and accurate to the best of my knowledge. I agree to notify the MEPA Unit and the Cape Cod Commission of any substantial changes in the information provided in this application, in writing, as soon as is practicable.

Name of Applicant (Please Print)

8/30/95

Date of Signature

✓ Linda Canzanelli

Signature of Applicant

Kathryn S. Barnicle, Fugro East, Inc. 90 Route 6A, Sandwich, MA 02563

Name and Address of Preparer(s) (if different from applicant)

(508) 888-3900

Telephone of Preparer

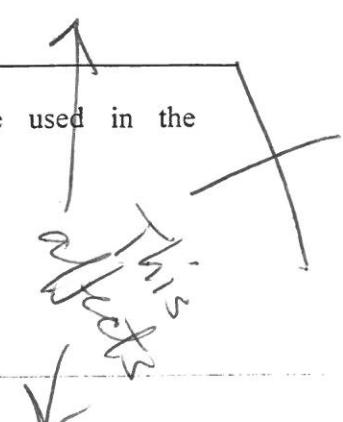
Pamet Cranberry Bog Restoration Project Truro
Project Name Project Location (Town)

SUMMARY OF CAPE COD COMMISSION POLICIES

**SUMMARY OF CAPE COD COMMISSION POLICIES
PAMET CRANBERRY BOG RESTORATION PROJECT
TRURO, MASSACHUSETTS**

The following describes the regional policies that are applicable to the proposed Pamet Cranberry Bog Restoration project relative to the Cape Cod Commissions Regional Policy Plan's Minimum Performance Standards. It is our opinion that the project benefits outweigh the project detriments. In addition, information is provided on the Other Development Review Policies and Recommended Commission and Town Actions including the action policy which states that the Cape Cod Commission will "... assist County Cooperative Extension in working with the Cranberry Growers Association, Cape Cod Conservation District, and other organizations to encourage continued and expanded agricultural use of land on Cape Cod." In addition, this project is consistent with "the preservation and enhancement of agricultural uses that are environmentally compatible with the Cape's natural resources in order to maintain opportunities to enjoy the traditional occupations, economic diversity, and scenic resources associated with agricultural lands.

1. *Does the project enhance the overall state of the Cape's natural resources, such as surface water, drinking water, coastal resources, plant and wildlife habitat and the overall state of the Cape's environment and natural resources?*

Possible B E N E F I T S	Possible D E T R I M E N T S
<p>The creation of a restored cranberry bog will result in the increase of diversity of valuable wildlife habitat. Cranberry bogs have been determined to provide valuable wildlife habitat to numerous species. The juxtaposition of an active bog to undisturbed forested uplands and shrub wetlands provides diverse habitat for feeding, nesting, and cover.</p>	<p>There will be a temporary disturbance of wildlife in the vicinity of the project during the construction phase. Wildlife species that will be directly affected by the restoration include the common yellowthroat and song sparrow which nest in scrub wetlands. There are remaining scrub wetlands in the area which can be utilized by these species.</p>
<p>Private drinking water wells utilized by residential dwellings in the area will not be affected by the project due to the geology and hydrology of the site. The bogs are comprised of deep levels of</p>	<p>Pesticides and fertilizers are used in the growing of cranberries.</p> 

peat which provide barriers to the travel of water through this layer. Organic soils are impermeable and do not readily allow for the movement of groundwater. This presence of peat is probably one of the reasons why the bog was created in this location. Based on the hydrology, the bog can be managed as a closed system without releasing runoff off-site.

A producing bog, even though managed, will provide a traditional setting of cranberry vines and other vegetation commonly associated with bogs.

The overall state of the Cape's environment and natural resources will not be affected by this project. The wetlands will still function as wetlands and the restoration of the bog will provide diverse views, habitats, and plants within the Cape's environment.

The scrub-shrub wetland community presently existing on the abandoned bog will be altered.

2. *Does the project contribute to balanced economic development and diversity, consistent with the Cape's environmental and cultural strengths and constraints?*

Possible BENEFITS	Possible DEDIMENTS
<p>The goal of the project is to employ low and moderate income people. Cranberry production is predominately in the hands of small family farmers. Cranberry growing is a traditional cultural activity and a source of economic strength on the Cape. In addition, this agricultural activity will support local businesses for supplies and labor.</p>	
<p>The production and sale of cranberries is an agricultural activity that is supported through local and regional economic development organizations and by the Regional Policy Plan.</p>	

The project will enhance the Cape's character by providing traditional employment in an agricultural activity. It is both a cultural and natural resources based occupation.

→ For How MANY?

This project will contribute to the Cape's sustainable economy by adding value locally to natural resource to create a marketable product.

→ How Large a product?

Because cranberry farming on a small scale does not necessarily require a full day of work (except during harvesting time, frost nights, etc.) this project will provide a year-round employment with the ability to diversify with other work opportunities.

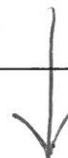
→ for example?

The grant program funding this project provides the initiative for a family to improve their financial stability.

→ ONE FAMILY? for \$2,866

3. *Does the project enhance capital facilities and infrastructure needed by Cape Cod residents, including but not limited to transportation, sewage, waste management and disposal, water supply, energy or other public services?*

Possible BENEFITS	Possible DEDIMENTS
The NPS is looking at using compressed natural gas powered buses to transport visitors within the Cape Cod National Seashore to sites such as this. This proposal is part of a park-wide transportation plan.	The project does not enhance capital facilities or infrastructure but the project is self-sufficient relative to water supply.



What about traffic?

4. *Does the project increase the availability of decent affordable housing on Cape Cod?*

Possible BENEFITS	Possible DEDIMENTS
<p>The grant requires that the participant be a resident of one of the eight participating towns on the Lower Cape. Therefore, this project provides economic opportunity without burdening existing housing.</p>	<p>The project will not increase the availability of housing.</p>

5. *Does the project help preserve or enhance the availability of open space for its natural resource, habitat, recreational or aesthetic value, or help to sustain the traditional settlement pattern of Cape Cod?*

Possible BENEFITS	Possible DEDIMENTS
<p>The project site is presently in open space and will continue to be used as open space within the Cape Cod National Seashore. Agriculture is included in the open space definition in the Regional Policy Plan. Therefore, there will be no change in the 100 percent of the site area that is presently utilized as open space.</p>	<p>PESTICIDES + FERTILIZERS</p>
<p>Vegetated buffers will be maintained to preserve existing residential conditions along North Pamet Road. There may be limited clearing to provide better views for the seashore visitors.</p>	

6. *Does the project help protect or enhance important historic, cultural, visual or community character features of the Cape?*

Possible BENEFITS	Possible DEDIMENTS
<p>One of the goals of this project is to restore a traditional cultural activity within the CCNS for</p>	

viewing by seashore visitors. The NPS must follow specific historic guidelines for a restoration of a site with past cultural activities such as this. The bog is being restored to its previously existing footprint (in addition to improvements for water management purposes).

The visual impact of the active cranberry bog within the setting of the project site and the ability of seashore visitors to walk along an active bog is intended to enhance the visitors experience of the character of Cape Cod.

The site is eligible for listing in the National Register of Historic Places as an historic rural landscape. The property has the potential for significant archeological deposits.

*What effect will this have
on them?*

7. *Are there special regional benefits not otherwise mentioned which would result if the project were built?*

Possible BENEFITS	Possible DEDIMENTS
The regional economics will be benefited by the addition of this acreage to be restored into agricultural production.	<i>→ How? To what extent?</i>
Restoration of this property as an educational exhibit has been contemplated by the NPS since its acquisition of the land. The objectives embodied in this project were first articulated in the CCNS Master Plan of 1963.	
The existing trail, access to the bog, wayside exhibition, and interpretive walks have been very popular with park visitors. It is expected that the restoration of the bog will only improve the visitors experience.	

8. *Does the project help preserve the carrying capacity of Cape Cod through sustainable growth and development?*

Possible BENEFITS	Possible DEDIMENTS
<p>The bog will provide a renewable and sustainable agricultural product. This activity provides a non-consumptive use of the natural resources.</p>	

PLANT AND WILDLIFE HABITAT ASSESSMENT

**PAMET CRANBERRY BOG RESTORATION PROJECT
NORTH PAMET ROAD
TRURO, MASSACHUSETTS**

PLANT AND WILDLIFE HABITAT ASSESSMENT

1.0 Introduction

Fugro East, Inc. (Fugro) biological staff performed a plant and wildlife habitat assessment on the Pamet Cranberry Bog in Truro, Massachusetts. Wildlife utilization was evaluated through field investigations and a review of existing reference materials for the region. A vegetation inventory was compiled during the site inspections.

2.0 Study Methods

The plant and wildlife surveys were performed by a staff biologist during the field inspections conducted on June 8 and July 7, 1995. Field surveys were conducted by a Fugro biologist to catalogue the primary landscape units and to assess the abandoned cranberry bog for the presence of significant wildlife habitat. Wildlife functions were also assessed. The vegetation inventory was compiled during the site inspections. Tree diameters at breast height (dbh) were measured with a tree calipers or tape. Soil profiles were examined with a nineteen inch soil auger.

The bird and small mammal surveys were conducted by a Fugro biologist walking predetermined survey transects along the perimeter of the freshwater pond and random meander surveys within the abandoned cranberry bog and adjacent upland communities. The bird surveys were conducted from 7:45 am to 9:45 am on June 8, 1995 and from 7:00 am to 8:15 am on July 7, 1995. All species observed or identified by auditory calls were recorded in the surveys. Bird species recorded on the site incidental to the predetermined survey periods were also recorded in the site inventory lists.

Confirmation of wildlife utilization and the presence of small mammals, reptiles, and amphibians was based on field observations and secondary wildlife signs, e.g. tracks, scat, burrows, feathers, skeletal remains, etc. Additional information on wildlife habitat requirements and utilization by specific species was collected from regional reference materials, field guides, journal reports, and professional experience. Species documented within the property boundaries have been included in the comprehensive wildlife lists which are incorporated in the Appendices. A vegetative inventory is included as Appendix A.

3.0 Site Description

The Pamet Cranberry Bog is an approximately 27 acre site located in North Truro, Barnstable County, Massachusetts (refer to Figure 1, Locus Map). The site is located entirely within the boundary of the Cape Cod National Seashore (CCNS) and managed by the U.S. Department of the Interior National Park Service (NPS). The principal habitat type present on the site is an early succession scrub wetland community established on the abandoned cranberry bog. The scrub cover is relatively dense over the entire bog, except for a small section of the bog used by the CCNS interpretive staff for demonstration purposes. Associated habitat types found adjacent to the abandoned cranberry bog include pine-oak woodlands, coastal heathland, a freshwater reservoir pond, small open grassy meadows, and a maintained lawn community. The reservoir pond apparently discharges water to the north-northwest through a series of irrigation ditches before entering a man-made drainage channel which carries the flow in a westerly direction to a culvert under North Pamet Road toward the Pamet River.

Dominant tree species recorded in the pine-oak woodland community habitat surrounding the Pamet Cranberry Bog include pitch pine, scarlet oak (*Quercus coccinea*), white oak (*Quercus alba*), and black oak (*Quercus velutina*), with occasional specimens of black cherry (*Prunus serotina*), red cedar (*Juniperus virginiana*), and big-tooth aspen (*Populus grandidentata*). Random clusters of scrub oak (*Quercus ilicifolia*), shadbush (*Amelanchier canadensis*), bayberry (*Myrica*

pensylvanica), beach plum (*Prunus maritima*), early lowbush blueberry (*Vaccinium angustifolia*), late lowbush blueberry (*Vaccinium vacillans*), and black huckleberry (*Gaylussacia baccata*) occur in the understory layer. Characteristic ground layer herbaceous species and low-growing woody shrubs present in the forest habitat are hairgrass (*Deschampsia flexuosa*), Pennsylvania sedge (*Carex pensylvanica*), sweet goldenrod (*Solidago odora*), and bearberry (*Arctostaphylos uva-ursi*).

Plants characteristically found in the coastal heathland habitat found adjacent to the site include bearberry, golden heather (*Hudsonia ericoides*), false heather (*Hudsonia tomentosa*), little bluestem grass (*Schizachyrium scoparium*), broom crowberry (*Corema conradii*), and black huckleberry.

A dense association of woody shrubs occurs in a defined band along the perimeter of the reservoir pond and on the beds of the abandoned cranberry bog. Common plants recorded in this association are highbush blueberry (*Vaccinium corymbosum*), swamp azalea (*Rhododendron viscosum*), common winterberry (*Ilex verticillata*), maleberry (*Lyonia ligustrina*), sweet gale (*Myrica gale*), arrowwood (*Viburnum dentatum*), sweet pepperbush (*Clethra alnifolia*), marsh fern (*Thelypteris thelypteroides*), cinnamon fern (*Osmunda cinnamomea*), and royal fern (*Osmunda regalis*).

The abandoned bog house located in the central section of the site is surrounded by a maintained lawn community with trees. The CCNS maintains this structure and a small section of cultivated cranberry bog nearby as a demonstration plot for the interpretive programs on the site.

The Pamet Cranberry Bog is located on Wellfleet Plain Deposits which consist of gravelly sand and scattered boulders (Oldale and Barlow, 1986). The USDA Soil Conservation Service Survey of Barnstable County, Massachusetts (March 1993) identifies two major soil types on the site: Carver coarse sand and Freetown sand (refer to Figure 2, SCS Soil Map). The Carver coarse sand soil type consists of a deep, excessively drained, soil with moderately steep and steep slopes typically associated with uplands. The Freetown coarse sand is a very deep, very poorly drained soil type associated with outwash plains, moraines, and glacial lake deposits, typically associated with

wetlands. The agricultural activities associated with the past cultivation of cranberries on the site has altered this soil type. The Natural Resource Conservation Service (NRCS) performed a soil investigation on the east and west bogs on July 25 and 26, 1995. The NRCS determined the presence of Freetown soils with peat thicknesses ranging from 21 feet to greater than 30 feet.

4.0 Results and Discussion

The principal habitat type identified on the site is a scrub shrub wetland community which developed on the abandoned cranberry bog. Other significant habitat types recorded on the site include open forest, coastal heathland, a freshwater reservoir pond and its associated water supply ditches and channels, a grassy meadow, and a small area of maintained lawn habitat around the former cranberry storage house.

During the field inspections twenty-five bird species and six mammal species were documented on the site. Only two amphibian species were recorded in the field surveys. No reptile species were documented on the site in the preliminary surveys. Since suitable habitat for reptiles and amphibians common to the region exists on the property, a series of intensive field surveys would be required to increase the representative lists for these species. Wildlife species recorded during the designated wildlife surveys and incidental to the field inspection activities are presented in Table 1. The species listed in Table 1 consist predominantly of avian species common to open woodlands, edge habitat, and scrub wetland communities. The field surveys also documented the presence of a few species which utilize the adjacent freshwater pond and coastal heathland habitats more exclusively.

The avian species recorded in the field surveys include a preponderance of ecological generalists and "edge" species tolerant of habitat alterations or human disturbance. Species tolerant of habitat alterations and human disturbance recorded in the surveys include black-capped chickadee, northern flicker, blue jay, mourning dove, northern cardinal, and northern mockingbird. American crow,

goldfinch and robin are other recognized “edge” species recorded in the surveys. These species will utilize the scrub wetland and upland forest habitats for food sources, cover habitat, and breeding sites. Conversion of a section of the scrub wetland to active cranberry bog will not significantly reduce the capacity of the remaining wetland to provide cover habitat and potential breeding areas for these species, as they are known to utilize a variety of habitat types. Due to the absence of a mature canopy layer and well developed vertical stratification in the scrub wetland, this community is unable to provide breeding habitat for cavity-nesters and canopy species. Potential nesters in the scrub wetland habitat are those species which prefer scrub wetland communities such as the common yellowthroat and song sparrow. Cardinals, catbirds, mourning doves, and finches are potential nesters in the woody shrubs established along the margin of the abandoned bog. Blue jays, common grackles, and crows nest in open woodlands and along forest edges, but may visit the abandoned bog in search of food sources. These three species are reported to be opportunistic feeders, which prey on eggs and nestlings. The brown-headed cowbird is a nest parasite. Predation and nest parasitism caused by these species may impact the population density of resident species and sensitive neotropical migrants recorded in the surveys.

Song sparrows and common yellowthroats were observed most frequently north of the reservoir pond in the dense wetland thickets established on the abandoned cranberry bog. Red-winged blackbirds were active in the brushy thickets around the perimeter of the reservoir pond and in the canopy of the pitch pine stand that has developed on the abandoned cranberry bog to the southwest of the reservoir pond. Song sparrows and American goldfinches were singing actively in a small grove of pitch pine saplings north of the dike. The belted kingfisher was observed hunting for small fish over the reservoir pond. The belted kingfisher was frequently seen perched on the top of the sign posts set out on the margin of the reservoir pond. Tree swallows were also active over the waters of the reservoir pond and the scrub wetland thickets. These species will not be significantly impacted by the conversion of the scrub wetland to commercial cranberry bog. Common grackles, brown-headed cowbird, gray catbirds, and American robins were very active around the cranberry storage house. These species will not be significantly impacted by the restoration of the cranberry

bog. Woodland species, such as bobwhite, northern flicker, and rufous-sided towhee, will not be impacted by the project. All of these species will, however, feed on insects and seeds produced in the low grassy buffers created around the margin of the cranberry bogs. Other avian species that feed on the insects common to commercial cranberry bogs are the Eastern kingbird, cedar waxwing, tree swallow, barn swallow, and other species which feed on insects.

The northern harrier, a threatened species in Massachusetts, was observed hunting for meadow voles or other prey species over the coastal heathland and open moor habitats. These habitat types are preferred hunting grounds for the northern harrier. The northern harrier was not recorded over the scrub wetland thickets that have developed on the abandoned cranberry bog. The scrub wetland is not the preferred nesting habitat for this species, and the proposed conversion will not adversely impact this species. Creation of open grassy margins along the margin of the commercial bog will create habitat for small mammals, the principal prey of the northern harrier. The perimeter ditches will be hunted by fish eaters, such as the great blue heron and the black-crowned night heron. Amphibians which breed in the ditches will be hunted by raccoons, fox, and opossum. Based on a review of the habitat requirements reported in the literature and the existing site conditions, bird species common to the existing habitat types are listed in Appendix B. Field information collected by Fugro biologists (Ellsworth and Schall, 1994) on wildlife utilization on commercial cranberry wetland systems in southeastern Massachusetts has been used to supplement the representative list generated in the appendices.

Table 1
Wildlife Species Documented On-Site by Habitat Type

Common Name	Habitat	Status
Birds		
Black capped chickadee	Woodland and scrub thicket	Permanent resident
Blue jay	Woodland and scrub thicket	Permanent resident
American crow	Woodland and field	Permanent resident
American goldfinch	Woodland and field	Permanent resident
Northern cardinal	Woodland and scrub thicket	Permanent resident
Gray catbird	Woodland and scrub thicket	Migratory
Chipping sparrow	Woodland and scrub thicket	Migratory
Common yellowthroat	Woodland and scrub thicket	Migratory
Song sparrow	Brushy scrub thicket	Migratory
Mourning dove	Woodland and field	Permanent resident
Belted kingfisher	Pond and stream	Permanent resident
Yellow-rumped warbler	Woodland and scrub thicket	Permanent resident
Prairie warbler	Woodland	Migratory
Red-winged blackbird	Pond and Marsh	Migratory
Northern harrier	Field and Marsh	Migratory
American robin	Woodland edge and field	Permanent resident
Brown-headed cowbird	Woodland edge and field	Migratory
Northern flicker	Woodland	Permanent resident
Tree swallow	Field and meadow	Migratory
Northern mockingbird	Roadside and thicket	Permanent resident
House finch	Field and scrub thicket	Permanent resident
Rufous-sided towhee	Woodland and scrub thicket	Migratory
Northern oriole	Scrub thicket	Migratory
Northern bobwhite	Woodland and field	Permanent resident
Common grackle	Woodland and field	Migratory
Mammals		
White-tailed deer	Woodland and field	Permanent resident
Eastern chipmunk	Woodland	Permanent resident
Meadow vole	Woodland and field	Permanent resident
Eastern cottontail	Field and meadow	Permanent resident
Red squirrel	Woodland	Permanent resident
Raccoon	Woodland and field	Permanent resident
Amphibians		
Green frog	Pond and stream	Permanent resident
Bullfrog	Pond and stream	Permanent resident
Reptiles		
No Observations		

Aside from the northern harrier, no other state-listed animals were confirmed by Fugro biologists on the site. In addition the site does not fall within an estimated habitat for any state-listed rare wetlands wildlife species as shown in the 1995-1996 edition of the *Massachusetts Natural Heritage Atlas* produced by the Massachusetts Natural Heritage and Endangered Species Program. *The Cape Cod Critical Habitats Atlas* produced by the Association for the Preservation of Cape Cod identifies a coastal plain pondshore community along the eastern perimeter of the reservoir pond and a vernal pool to the north-northwest of the site (APCC, 1990). Broom crowberry, a special concern plant species in Massachusetts, was recorded only in the coastal heathlands and open moors

Mammal signs and observations confirmed the presence of white-tailed deer, eastern chipmunk, meadow vole, red squirrel, raccoon, and eastern cottontail on the property. All of the documented mammal species are widespread and common in the New England region. They are also relatively tolerant of minor habitat alterations. No impacts to the mammal species are anticipated; and the creation of grassy buffer zones adjacent to the bog will provide habitat for rabbits, mice, voles, and woodchucks. No deer yards were identified on the site, but white-tailed deer are moving through the stand of pitch pine trees located to the southwest of the reservoir pond on a dry section of the abandoned cranberry bog. Cranberry fruits are eaten by white-tailed deer and other small rodents. Mammal species recorded or potential inhabitants on the site are listed in Appendix C. Animals which have been documented by Fugro biologists to utilize commercial cranberry wetland systems in southeastern Massachusetts have also been incorporated into the representative list in Appendix C.

In addition to the confirmed sightings of green frog and bullfrog, other amphibian species with a high probability of occurrence on the site are the red-back salamander, spotted salamander, Fowler's toad, spring peeper, and pickerel frog. This list is based on data collected by the Massachusetts Herp Atlas Project (Jackson, 1994). However, these species were not confirmed in the recent field surveys conducted by Fugro. No reptiles were recorded during the field surveys. The sand storage piles commonly found in association with active cranberry operations will provide nesting habitat

for snakes and turtles. The perimeter ditches may provide habitat for musk turtles, snapping turtles, and perhaps spotted turtles. Field data collected by the Massachusetts Herp Atlas Project (1994) contains documented information on the presence of eastern painted turtle, milk snake, black racer, eastern garter snake, and eastern box turtle in the Truro area. These species are probably present on the site and will remain on the site. These species have been included in the representative list of reptiles and amphibians in Appendix D. Other reptiles and amphibians recorded by Fugro biologists during field surveys conducted on commercial cranberry wetland systems in southeast Massachusetts have also been included in Appendix D.

5.0 Summary

Renovation of the Pamet Cranberry Bog will result in the partial loss of a scrub wetland community presently utilized by resident and migratory birds, small and large mammals, and certain reptiles and amphibians. Partial loss of the scrub wetland community will not significantly diminish the important wildlife habitat functions presently provided on the site. Suitable habitat will remain available to the recorded wildlife species for cover habitat, breeding sites, and food sources in the undisturbed sections of the abandoned cranberry bogs and in the surrounding upland habitats. Since the majority of the species recorded in the field surveys are tolerant of habitat alterations and human disturbance, no significant adverse impacts to the existing wildlife community are anticipated. While certain species, such as common yellowthroat and song sparrow, will be impacted by the partial loss of the scrub wetland habitat on the abandoned cranberry bogs, the open cranberry beds and irrigation ditches will provide habitat for those species recorded frequently around active cranberry bogs. Creation of grassy meadow habitat in the buffer areas will be beneficial to small rodents (meadow vole, white-footed mouse, etc) and their predators (northern harrier, black racer, red fox, etc).

The biotic community associated with the freshwater pond will remain undisturbed. Great-blue heron and green heron will continue to hunt for prey from the shore, while belted kingfisher dive for

small fish over the pond. The woody thicket established on the pondshore will provide cover habitat for cardinal, catbird, common grackle, and red-winged blackbird. Fox, raccoon, skunk, and opossum will continue to hunt the cranberry bog and adjacent uplands for small mammals and other prey.

- Conversion of a section of the scrub wetland to active cranberry bog will not significantly reduce the capacity of the remaining wetland to provide cover habitat and potential breeding areas for edge species including the black-capped chickadee, northern flicker, blue jay, mourning dove, northern cardinal, northern mockingbird, American crow, goldfinch, and robin, as they are known to utilize a variety of habitat types.
- Due to the absence of a mature canopy layer and well developed vertical stratification in the scrub wetland, this community is unable to provide breeding habitat for cavity-nesters and canopy species.
- Potential nesters in the scrub wetland habitat include the common yellowthroat and song sparrow. This scrub community will be converted to bog but there is scrub community directly adjacent to the bog which can be utilized by these species.
- In addition to the song sparrow and the common yellowthroat, other species which utilize the thickets in the bog include red-winged blackbirds, American goldfinches, belted kingfisher, and tree swallows. These species will not be significantly impacted by the conversion of the scrub wetland to commercial cranberry bog.
- Common grackley, brown-headed cowbirds, gray catbirds, and American robins will not be significantly impacted by the restoration of the cranberry bog.
- Woodland species, such as bobwhite, northern flicker, and rufous-sided towhee, will not be impacted by the project. All of these species will feed on insects and seeds produced in the low grassy buffers created around the margin of the cranberry bogs.
- The scrub wetland is not the preferred nesting habitat for the northern harrier, and the proposed conversion will not adversely impact this species.

- Creation of open grassy margins along the margin of the commercial bog will create habitat for small mammals, the principal prey of the northern harrier.
- The perimeter ditches will be hunted by fish eaters, such as the great blue heron and the black-crowned night heron. Amphibians which breed in the ditches will be hunted by raccoons, fox, and opossum.
- All of the documented mammal species are widespread and common in the New England region. They are also relatively tolerant of minor habitat alterations.
- No impacts to the mammal species are anticipated; and the creation of grassy buffer zones adjacent to the bog will provide habitat for rabbits, mice, voles, and woodchucks.
- Cranberry fruits are eaten by white-tailed deer and other small rodents.
- The sand storage piles commonly found in association with active cranberry operations will provide nesting habitat for snakes and turtles.
- The perimeter ditches may provide habitat for musk turtles, snapping turtles, and perhaps spotted turtles.

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APPENDIX A
VEGETATIVE INVENTORY

Common Name	Scientific Name
Trees	
Pitch pine	<i>Pinus rigida</i>
White oak	<i>Quercus alba</i>
Black oak	<i>Quercus velutina</i>
Scarlet oak	<i>Quercus coccinea</i>
Black cherry	<i>Prunus serotina</i>
Big-tooth aspen	<i>Populus grandidentata</i>
Black locust	<i>Robinia pseudoacacia</i>
Shrubs	
Highbush blueberry	<i>Vaccinium corymbosum</i>
Scrub oak	<i>Quercus ilicifolia</i>
Bayberry	<i>Myrica pensylvanica</i>
Early lowbush blueberry	<i>Vaccinium angustifolia</i>
Late lowbush blueberry	<i>Vaccinium vacillans</i>
Swamp azalea	<i>Rhododendron viscosum</i>
Black alder	<i>Ilex verticillata</i>
Maleberry	<i>Lyonia ligustrina</i>
Sweet gale	<i>Myrica gale</i>
Black huckleberry	<i>Gaylussacia baccata</i>
Arrowwood	<i>Viburnum dentatum</i>
Sweet pepperbush	<i>Clethra alnifolia</i>
Bearberry	<i>Arctostaphylos uva-ursi</i>
Golden heather	<i>Hudsonia ericoides</i>
False heather	<i>Hudsonia tomentosa</i>
Bush honeysuckle	<i>Lonicera morrowii</i>
Shadbush	<i>Amelanchier canadensis</i>
Purple chokeberry	<i>Aronia prunifolia</i>
Meadowsweet	<i>Spiraea latifolia</i>
Poison sumac	<i>Rhus vernix</i>
Beach plum	<i>Prunus maritima</i>
Winged sumac	<i>Rhus copallina</i>

APPENDIX A
VEGETATIVE INVENTORY (CONTINUED)

Common Name	Scientific Name
Vines	
Poison ivy	<i>Toxicodendron radicans</i>
Wild grape	<i>Vitis labrusca</i>
Bullbrier	<i>Smilax rotundifolia</i>
Catbrier	<i>Smilax glauca</i>
Japanese honeysuckle	<i>Lonicera japonica</i>
Common blackberry	<i>Rubus allegheniensis</i>
Large cranberry	<i>Vaccinium macrocarpon</i>
Dewberry	<i>Rubus hispida</i>
Woodbine	<i>Parthenocissus quinquefolia</i>
Broom crowberry	<i>Corema conradii</i>
Herbaceous	
Little bluestem grass	<i>Schizachyrium scoparium</i>
Hairgrass	<i>Deschampsia flexuosa</i>
Pennsylvania sedge	<i>Carex pensylvanica</i>
Cinnamon fern	<i>Osmunda cinnamomea</i>
Royal fern	<i>Osmunda regalis</i>
Marsh fern	<i>Thelypteris thelypteroides</i>
Starflower	<i>Trientalis borealis</i>
Soft rush	<i>Juncus effusus</i>
Canada rush	<i>Juncus canadensis</i>
Bluejoint grass	<i>Calamagrostis canadensis</i>
Olney's bulrush	<i>Scirpus americanus</i>
Lance-leaf violet	<i>Viola lanceolata</i>
Spikerush	<i>Eleocharis spp.</i>
Ditchreed	<i>Phragmites australis'</i>
Sensitive fern	<i>Onoclea sensibilis</i>
Narrow-leaf goldenrod	<i>Euthamia galertorum</i>
Cattail	<i>Typha latifolia</i>
Three-way sedge	<i>Dulichium arundinaceum</i>
Marsh St. Johnswort	<i>Triadenum virginicum</i>
Manna grass	<i>Glyceria canadensis</i>

APPENDIX B
POTENTIAL AND RECORDED BIRD SPECIES

Project No.: 16233381 *Weather:* Variable
Date: _____ *Temperature:* Seasonal
Location: Pamet Cranberry Bog Restoration Project, Truro, MA
Comments: _____

COMMON NAME	STATUS	COMMON NAME	STATUS
GAVIIFORMES		Heron, Little Blue	
Loon, Red-throated		Tricolored	
Common	MASC	Egret, Cattle	
PODICIPEDIFORMES		Heron, Green-backed	
Grebe, Pied-billed	MAT	Black-crowned Night-	
Horned		Yellow-crowned Night-	
Red-necked		Ibis, Glossy	
PROCELLARIIFORMES		ANSERIFORMES	
Fulmar, Northern		Swan, Mute	
Shearwater, Cory's		Goose, Snow	
Greater		Brant	
Sooty		Canada	
Manx		Duck, Wood	○
Storm-Petrel, Wilson's		Teal, Green-winged	○
Leach's	MAE	Duck, American Black	○
PELECANIFORMES		Mallard	○
Gannet, Northern		Pintail, Northern	
Cormorant, Great		Teal, Blue-winged	
Double-crested		Shoveler, Northern	
CICONIIFORMES		Gadwall	
Bittern, American	MASC	Widgeon, Eurasian	
Least	MAT	American	
Heron, Great Blue	○	Canvasback	
Egret, Great		Redhead	
Snowy		Duck, Ring-necked	

COMMON NAME	STATUS	COMMON NAME	STATUS
Scaup, Greater		GALLIFORMES	
Lesser		Pheasant, Ring-necked	
Eider, Common		Grouse, Ruffed	
King		Turkey, Wild	
Duck Harlequin		Bobwhite, Northern	●
Oldsquaw		GRUIFORMES	
Scoter, Black		Rail, Clapper	
Surf		King	MAT
White-winged		Virginia	
Goldeneye, Common	○	Sora	
Barrow's		Moorhen, Common	MASC
Bufflehead		Coot, American	
Merganser, Hooded		CHARADRIIFORMES	
Common		Plover, Black-bellied	
Red-breasted		Lesser, Golden	
Duck, Ruddy		Semipalmated	
FALCONIFORMES		Piping	MAT, FT
Vulture, Turkey		Killdeer	
Osprey	○	Oystercatcher, American	
Eagle, Bald	MAE, FE	Yellowlegs, Greater	
Harrier, Northern	MAT	Lesser	
Hawk, Sharp-shinned	MASC	Sandpiper, Solitary	○
Cooper's	MASC	Willet	
Goshawk, Northern		Sandpiper, Spotted	○
Hawk, Red-shouldered		Upland	MAE
Broad-winged		Eskimo curlew	MAE, FE
Red-tailed	○	Long-billed curlew	
Rough-legged		Whimbrel	
Eagle, Golden		Godwit, Hudsonian	
Kestrel, American	○	Marbled	
Merlin		Turnstone, Ruddy	
Falcon, Peregrine	MAE, FE	Red Knot	

COMMON NAME	STATUS	COMMON NAME	STATUS
Sanderling		Tern, Caspian	
Sandpiper, Semipalmated		Royal	
Western		Roseate	MAE, FE
Least		Common	MASC
White-rumped		Arctic	MASC
Baird's		Forster's	
Pectoral		Least	MASC
Purple		Black	
Dunlin		Skimmer, Black	
Sandpiper, Stilt		Dovekie	
Buff-breasted		Murre, Thick-billed	
Ruff		Razorbill	
Dowitcher, Short-billed		Guillemot, Black	
Long-billed		COLUMBIFORMES	
Snipe, Common		Dove, Rock	
Woodcock, American		Mourning	●
Phalarope, Wilson's		CUCULIFORMES	
Red-necked		Cockoo, Black-billed	
Red		Yellow-billed	
Jaeger, Pomarine		STRIGIFORMES	
Parasitic		Owl, Common Barn-	MASC
Gull, Laughing		Eastern Screech-	
Little		Great Horned	○
Common Black-headed		Snowy	
Bonaparte's		Barred	
Ring-billed		Long-eared	MASC
Herring	○	Short-eared	MAE
Iceland		Northern Saw-whet	
Lesser Black-backed		CAPRIMULGIFORMES	
Glaucous		Nighthawk, Common	
Great Black-backed	○	Chuck-will's-widow	
Kittiwake, Black-legged		Whip-poor-will	

COMMON NAME	STATUS	COMMON NAME	STATUS
APODIFORMES		Barn	○
Swift, Chimney	○	Jay, Blue	●
Hummingbird, Ruby-throated		Crow, American	●
CORACIFORMES		Fish	
Kingfisher, Belted	●	Raven, Common	
PICIFORMES		Chickadee, Black-capped	●
Woodpecker, Red-headed		Boreal	
Red-billed		Titmouse, Tufted	○
Sapsucker, Yellow-bellied		Nuthatch, Red-breasted	
Woodpecker, Downy	○	White-breasted	○
Hairy	○	Creeper, Brown	○
Flicker, Northern	●	Wren, Carolina	
Woodpecker, Pileated		House	
PASSERIFORMES		Winter	
Flycatcher, Olive-sided		Sedge	MAE
Pewee, Eastern Wood-	○	Marsh	
Flycatcher, Yellow-bellied		Kinglet, Golden-crowned	
Acadian		Ruby-crowned	
Alder		Gnatcatcher, Blue-gray	
Willow		Bluebird, Eastern	
Least		Veery	
Empidonax, sp.		Thrush, Gray-cheeked	
Phoebe, Eastern	○	Swainson's	
Flycatcher, Great Crested	○	Hermit	○
Kingbird, Western		Wood	
Eastern	○	Robin, American	●
Lark, Horned		Catbird, Gray	●
Martin, Purple		Mockingbird, Northern	●
Swallow, Tree	●	Thrasher, Brown	○
N. Rough-winged	○	Pipit, Water	
Bank	○	Waxwing, Cedar	○
Cliff		Shrike, Northern	

COMMON NAME	STATUS	COMMON NAME	STATUS
Loggerhead	MAE	Louisiana	
Starling, European	○	Warbler, Connecticut	
Vireo, White-eyed		Mourning	MASC
Solitary		Yellowthroat, Common	●
Yellow-throated		Warbler, Hooded	
Warbling	○	Wilson's	
Philadelphia		Canada	
Red-eyed		Chat, Yel.-breasted	
Warbler, Blue-winged	○	Tanager, Scarlet	○
Golden-winged	MAE	Cardinal, Northern	●
Tennessee		Grosbeak, Rose-breasted	
Orange-crowned		Blue	
Nashville		Bunting, Indigo	
Parula, Northern	MAT	Dickcissel	
Warbler, Yellow	○	Towhee, Rufous-sided	●
Chestnut-sided		Sparrow, American Tree	
Magnolia		Chipping	●
Cape May		Clay-colored	
Black-throated Blue		Field	
Yellow-rumped	●	Vesper	
Black-throated Green	○	Lark	
Blackburnian		Savannah	
Pine		Grasshopper	MASC
Prairie	●	Henslow's	MAE
Palm		Sharp-tailed	
Bay-breasted		Seaside	
Blackpoll	MASC	Fox	
Black-and-white		Song	●
Redstart, American		Lincoln's	
Warbler, Worm-eating		Swamp	○
Ovenbird	○	White-throated	
Waterthrush, Northern		White-crowned	

COMMON NAME	STATUS	COMMON NAME	STATUS
Junco, Dark-eyed		Grosbeak, Pine	
Longspur, Lapland		Finch, Purple	
Bunting, Snow		House	●
Bobolink		Crossbill, Red	
Blackbird, Red-winged	●	White-winged	
Meadowlark, Eastern		Redpoll, Common	
Blackbird, Rusty		Siskin, Pine	
Grackle, Common	○	Goldfinch, American	●
Cowbird, Brown-headed	●	Grosbeak, Evening	
Oriole, Orchard		Sparrow, House	
Northern	●		

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FE = Federally Endangered by the U.S. Fish and Wildlife Service

FT = Federally Threatened by the U.S. Fish and Wildlife Service

Massachusetts status based on January 1992 MNHESP list

Federal status is based on current federal list

- Species observed during site inspection(s)
- Species which may utilize the on-site habitats based on the literature

Boldface = Breeding bird in Massachusetts.

Chart adapted from Massachusetts Audubon Society Field Card.

APPENDIX C
POTENTIAL AND RECORDED MAMMAL SPECIES

Project No.: 16233381 *Weather:* Variable
Date: June 8, July 7, 1995 *Temperature:* Seasonal
Location: Pamet Cranberry Bog Restoration Project, North Truro, MA
Comments: _____

SCIENTIFIC NAME	COMMON NAME	STATUS
<i>Didelphis virginiana</i>	Virginia opossum	
<i>Sorex cinereus cinereus</i>	Masked shrew	
<i>Sorex palustris albobarbis</i>	Water shrew	MASC
<i>Sorex fumeus</i>	Smoky shrew	
<i>Sorex dispar dispar</i>	Long-tailed shrew	MASC
<i>Blarina brevicauda</i>	Northern short-tailed shrew	○
<i>Parascalops breweri</i>	Hairy-tailed mole	
<i>Scalopus aquaticus</i>	Eastern mole	
<i>Condylura cristata</i>	Star-nosed mole	
<i>Myotis sodalis</i>	Indiana myotis	MAE, FE
<i>Myotis leibii leibii</i>	Small-footed myotis	MASC
<i>Myotis lucifugus</i>	Little brown myotis	○
<i>Myotis keenii</i>	Keen's myotis	○
<i>Lasionycteris noctivagans</i>	Silver-haired bat	
<i>Pipistrellus subflavus obscurus</i>	Eastern pipistrelle	
<i>Eptesicus fuscus</i>	Big brown bat	
<i>Lasiurus borealis</i>	Red bat	
<i>Lasiurus cinereus</i>	Hoary bat	
<i>Sylvilagus floridanus</i>	Eastern cottontail	●
<i>Sylvilagus transitionalis</i>	New England cottontail	
<i>Lepus americanus</i>	Snowshoe hare	

<i>Lepus californicus melanotis</i>	Black-tailed jackrabbit	
<i>Tamias striatus</i>	Eastern chipmunk	●
<i>Marmota monax</i>	Woodchuck	○
<i>Sciurus carolinensis</i>	Gray squirrel	○
<i>Tamiasciurus hudsonicus</i>	Red squirrel	●
<i>Glaucomys volans</i>	Southern flying squirrel	○
<i>Glaucomys sabrinus macrotis</i>	Northern flying squirrel	
<i>Castor canadensis</i>	Beaver	
<i>Peromyscus maniculatus</i>	Deer mouse	
<i>Peromyscus leucopus</i>	White-footed mouse	○
<i>Clethrionomys gapperi</i>	Southern red-backed vole	
<i>Microtus pennsylvanicus</i>	Meadow vole	●
<i>Microtus breweri</i>	Beach vole	
<i>Microtus pinetorum scalopsoides</i>	Pine vole	
<i>Ondatra zibethicus</i>	Muskrat	○
<i>Synaptomys cooperi</i>	Southern bog lemming	MASC
<i>Rattus norvegicus</i>	Norway rat	
<i>Mus musculus</i>	House mouse	
<i>Zapus hudsonius</i>	Meadow jumping mouse	
<i>Napaeozapus insignis</i>	Woodland jumping mouse	
<i>Erethizon dorsatum dorsatum</i>	Porcupine	
<i>Canis latrans</i>	Coyote	○
<i>Vulpes vulpes</i>	Red fox	○
<i>Urocyon cinereoargenteus</i>	Gray fox	
<i>Ursus americanus</i>	Black bear	
<i>Procyon lotor</i>	Raccoon	●
<i>Martes pennanti</i>	Fisher	
<i>Mustela erminea</i>	Ermine	
<i>Mustela frenata</i>	Long-tailed weasel	○

<i>Mustela vison</i>	Mink	
<i>Mephitis mephitis</i>	Striped skunk	○
<i>Lutra canadensis</i>	River otter	
<i>Felis rufus</i>	Bobcat	
<i>Odocoileus virginianus</i>	White-tailed deer	●
<i>Alces alces americana</i>	Moose	

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Massachusetts status based on January 1993 MNHESP list

Federal status is based on current federal list

- Species observed during site inspection(s)
- Species which may utilize the on-site habitats based on the literature

APPENDIX D

POTENTIAL AND RECORDED REPTILE AND AMPHIBIAN SPECIES

Project No.: 16233381 Weather: Variable
 Date: June 8 and July 7, 1995 Temperature: Seasonal
 Location: Pamet Cranberry Bog Restoration Project, North Truro, MA
 Comments: _____

SCIENTIFIC NAME	COMMON NAME	STATUS
<i>Necturus m. maculosus</i>	Mudpuppy	
<i>Ambystoma opacum</i>	Marbled salamander	MAT
<i>Ambystoma jeffersonianum</i>	Jefferson salamander	MASC
<i>Ambystoma platineum</i>	Silvery salamander	
<i>Ambystoma laterale</i>	Blue-spotted salamander	MASC
<i>Ambystoma tremblayi</i>	Tremblay's salamander	
<i>Ambystoma maculatum</i>	Spotted salamander	○
<i>Desmognathus f. fuscus</i>	Northern dusky salamander	
<i>Desmognathus ochrophaeus</i>	Mountain dusky salamander	
<i>Plethodon g. glutinosus</i>	Slimy salamander	
<i>Gyrinophilus p. porphyriticus</i>	Northern spring salamander	MASC
<i>Notophthalmus v. viridescens</i>	Red-spotted newt	
<i>Plethodon cinereus</i>	Redback salamander	○
<i>Hemidactylum scutatum</i>	Four-toed salamander	MASC
<i>Eurycea b. bislineata</i>	Northern two-lined salamander	
<i>Scaphiopus h. holbrookii</i>	Eastern spadefoot	MAT
<i>Bufo a. americanus</i>	Eastern American toad	
<i>Bufo woodhousii fowleri</i>	Fowler's toad	○
<i>Hyla c. crucifer</i>	Northern spring peeper	○
<i>Hyla versicolor</i>	Gray treefrog	
<i>Rana catesbeiana</i>	Bullfrog	●
<i>Rana clamitans melanota</i>	Green frog	●
<i>Rana sylvatica</i>	Wood frog	

<i>Rana pipiens</i>	Northern leopard frog	
<i>Rana palustris</i>	Pickerel frog	○
<i>Rana septentrionalis</i>	Mink frog	
<i>Chelydra s. serpentina</i>	Common snapping turtle	○
<i>Sternotherus odoratus</i>	Stinkpot	
<i>Clemmys guttata</i>	Spotted turtle	MASC
<i>Clemmys muhlenbergii</i>	Bog turtle	MAE
<i>Clemmys insculpta</i>	Wood turtle	MASC
<i>Terrapene c. carolina</i>	Eastern box turtle	MASC
<i>Chrysemys picta marginata</i>	Midland painted turtle	
<i>Chrysemys p. picta</i>	Eastern painted turtle	○
<i>Emydoidea blandingii</i>	Blanding's turtle	MAT
<i>Graptemys geographica</i>	Map turtle	
<i>Pseudemys scripta elegans</i>	Red-eared slider	
<i>Pseudemys rubriventris bangsi</i>	Plymouth redbelly turtle	MAE, FE
<i>Trionyx s. spiniferus</i>	Eastern spiny softshell	
<i>Eumeces fasciatus</i>	Five-lined skink	
<i>Nerodia s. sipedon</i>	Northern water snake	○
<i>Storeria d. dekayi</i>	Northern brown snake	
<i>Storeria o. occipitomaculata</i>	Northern redbelly snake	
<i>Thamnophis sirtalis pallidula</i>	Maritime garter snake	
<i>Thamnophis sauritus septentrionalis</i>	Northern ribbon snake	○
<i>Thamnophis s. sirtalis</i>	Eastern garter snake	○
<i>Thamnophis s. sauritus</i>	Eastern ribbon snake	
<i>Heterodon platyrhinos</i>	Eastern hognose snake	
<i>Diadophis punctatus edwardsi</i>	Northern ringneck snake	○
<i>Coluber c. constrictor</i>	Northern black racer	○
<i>Opheodrys v. vernalis</i>	Eastern smooth green snake	○
<i>Lampropeltis t. triangulum</i>	Eastern milk snake	○

<i>Carphophis a. amoenus</i>	Eastern worm snake	MAT
<i>Elaphe o. obsoleta</i>	Black rat snake	MAE
<i>Agkistrodon contortrix mokeson</i>	Northern Copperhead	MAE
<i>Crotalus horridus</i>	Timber rattlesnake	MAE

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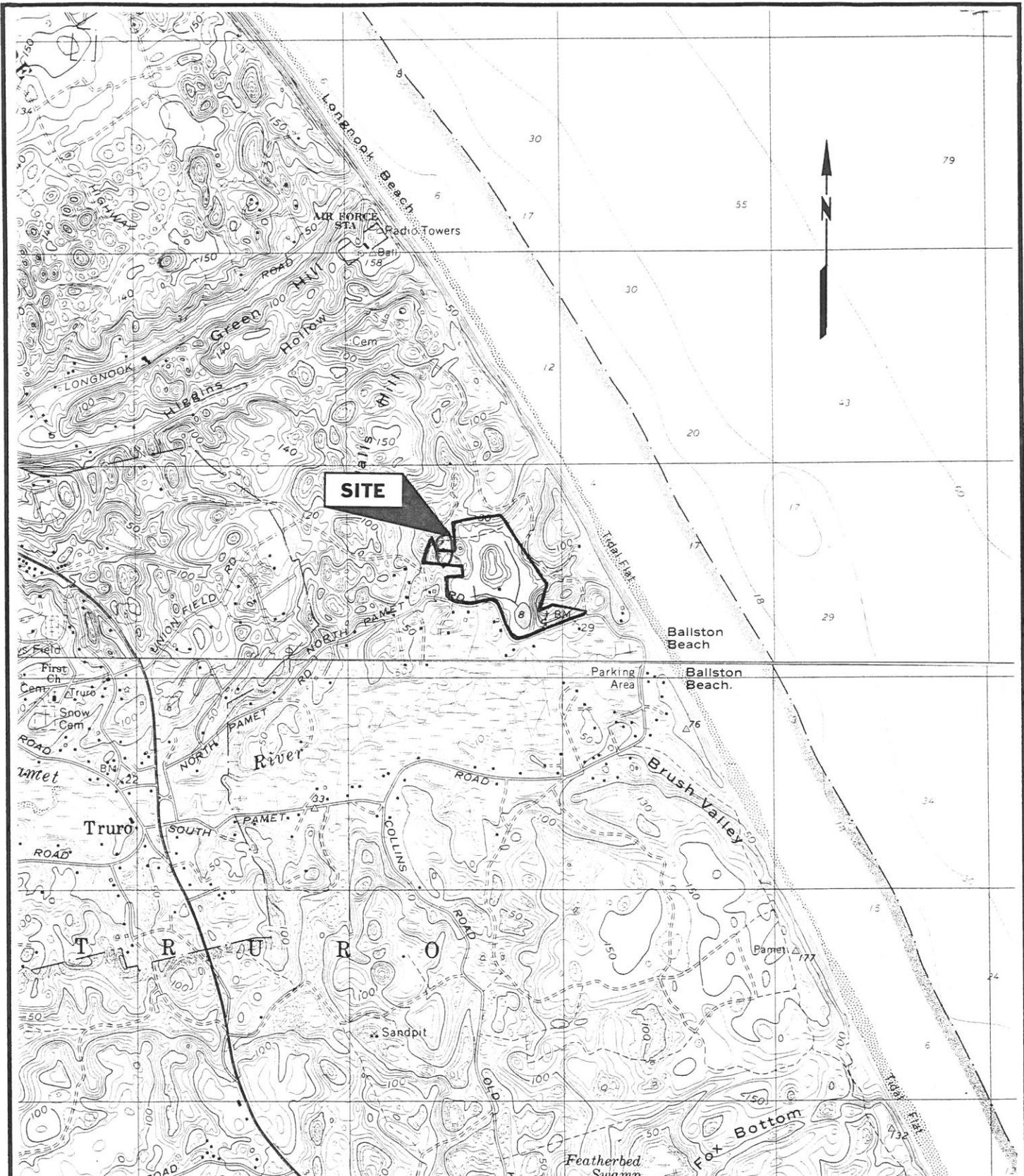
FT = Federally Threatened by the U.S. Fish and Wildlife Service

Massachusetts status based on January 1992 MNHESP list

Federal status is based on current federal list

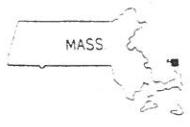
- Species observed during site inspection(s)
- Species which may utilize the on-site habitats based on the literature

FIGURES



LOCUS MAP

Pamet Cranberry Bog Restoration Project
Cod National Seashore
Truro, Massachusetts



Base Map Source:
U.S.G.S. Quadrangle,
North Truro, MA

Note: Lot lines are approximate only.

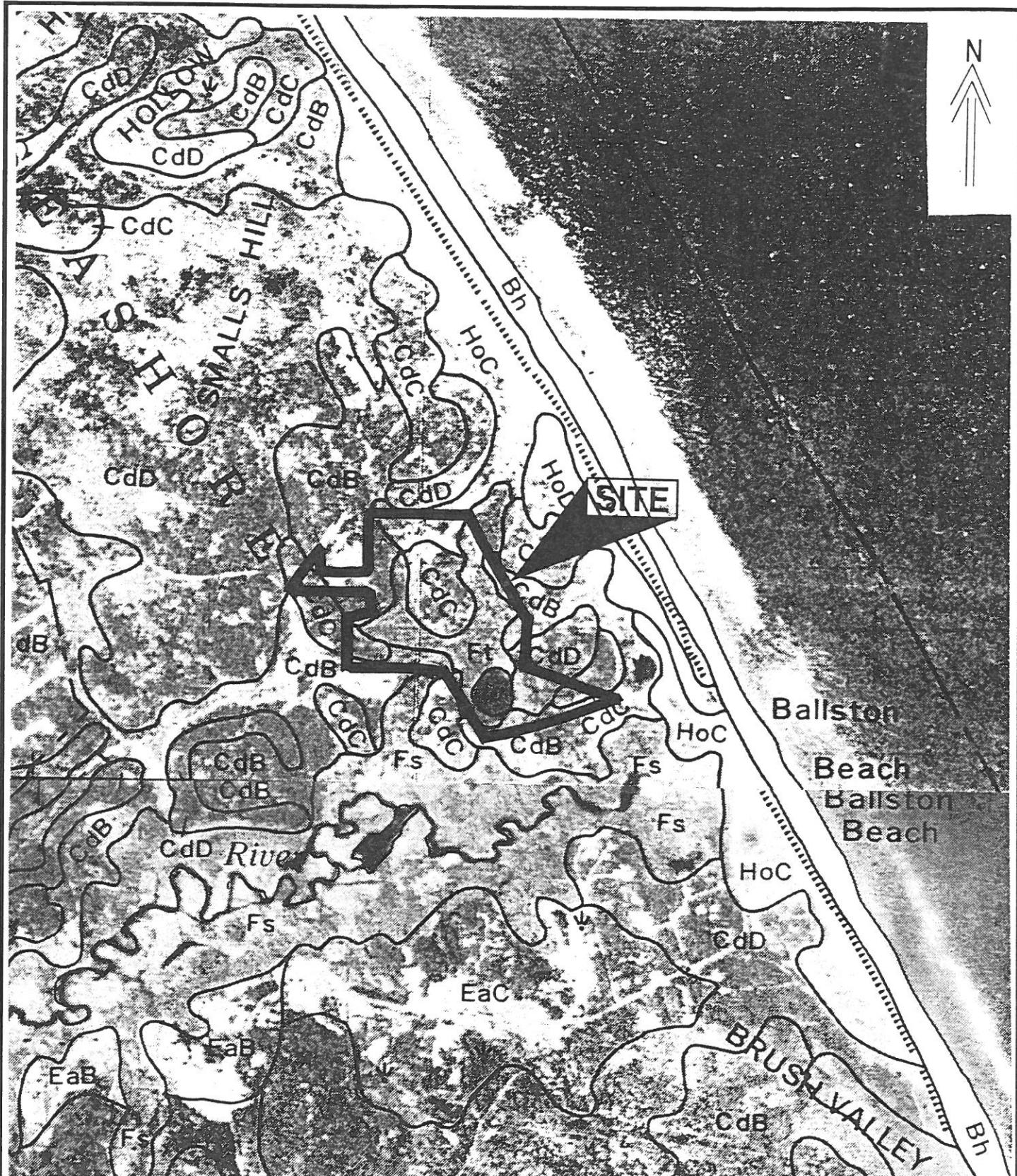
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APPROXIMATE SCALE IN FEET

JOB #16233381
AUGUST 1995

FIGURE 1





Base Map Source:
Soil Conservation Service, Soil Survey of Barnstable County,
Mass., March 1993.

Note: Lot lines are approximate only.

SOILS MAP

Pamet Cranberry Bog Restoration Project
Cod National Seashore
Truro, Massachusetts

0 1000 2000

APPROXIMATE SCALE IN FEET

JOB #16233381
AUGUST 1995

FIGURE 2





Base Map Source:
FIRM, Town of Truro, Mass., Panel 4 of 13, No. 255222 0004 C,
revised July 15, 1992.

Note: Lot lines are approximate only.

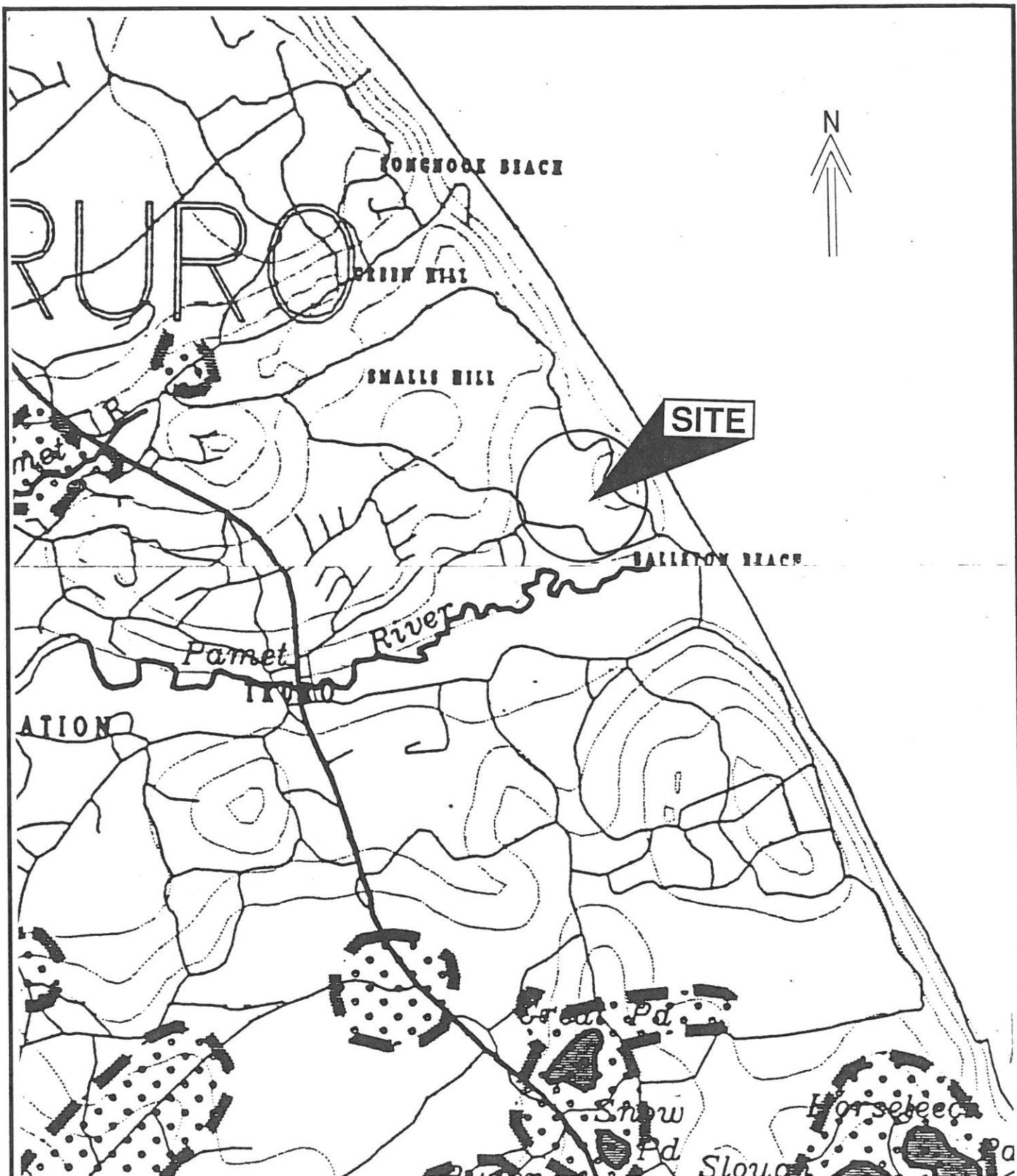
JOB #16233381
AUGUST 1995

FEMA FLOOD MAP

Pamet Cranberry Bog Restoration Project
Cod National Seashore
Truro, Massachusetts

FIGURE 3





Base Map Source:
Massachusetts Natural Heritage Atlas, 1995-96.

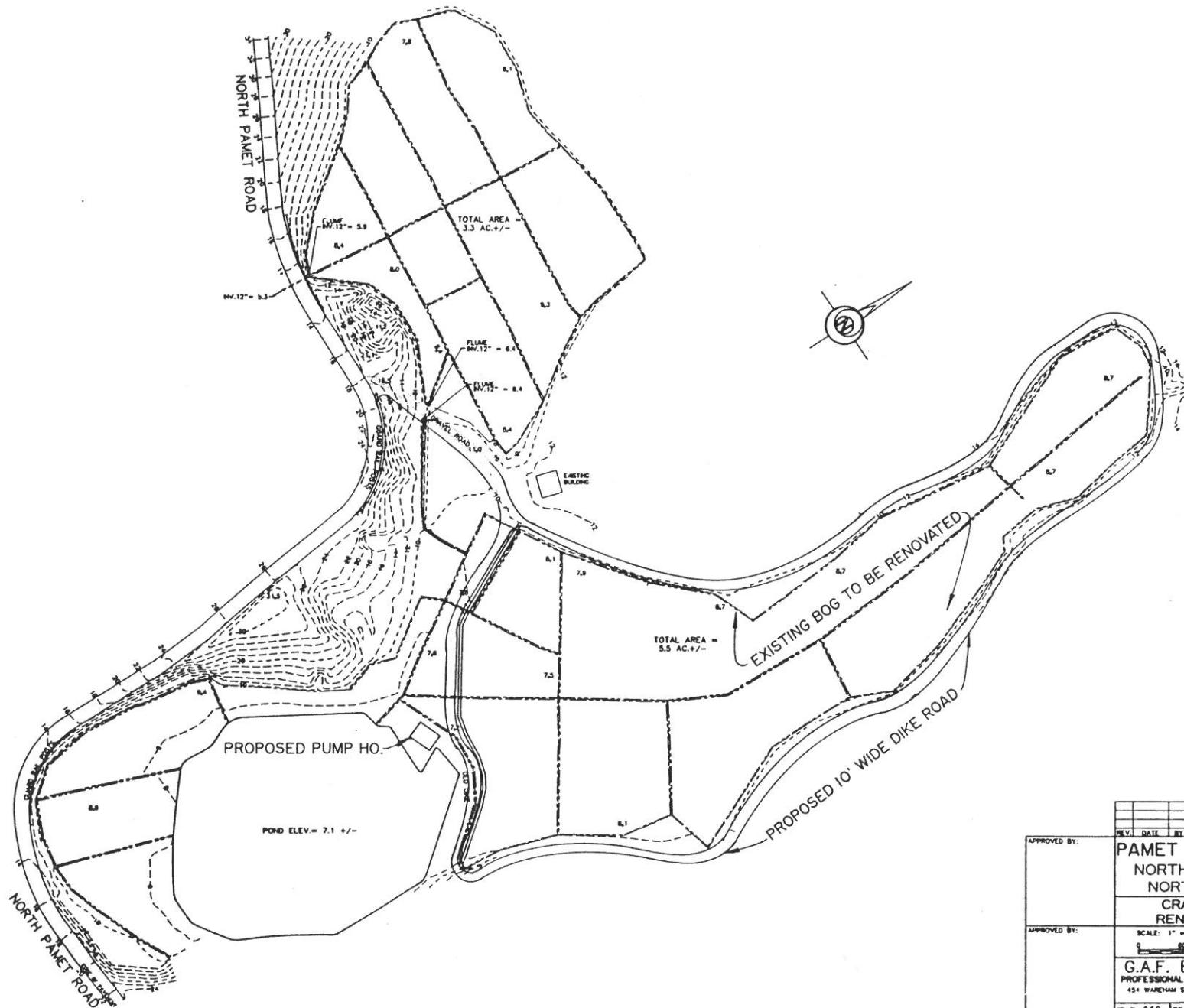
MNHESP ATLAS

Pamet Cranberry Bog Restoration Project
Cod National Seashore
Truro, Massachusetts

JOB #16233381
AUGUST 1995

FIGURE 4





ATTACHMENT 1

ADDENDUM 1: CERTIFIED ABUTTERS LIST AND PROOF OF NOTIFICATION

Addendum 1: Certified Abutters List

Pamet Cranberry Bog Restoration Project

Barbara Kislak
135 West 17th Street
New York, NY 10011

Brian Dunne
Kim Kettler
P.O. Box 69
Truro, MA 02666

Martin & Ann Peretz
c/o the Clark Estates
30 Wall Street
New York, NY 10005

Veronica Kraft
P.O. Box 479
Truro, MA 02666

Jay Ward Kislak
135 West 17th Street
New York, NY 10011

Nancy Fales
132 Beachside Avenue
Greens Farms, CT 06436

Jeannette & Stephen Kinzer
c/o Ilona Kinzer
1675 Beacon Street
Brookline, MA 02146

Monica & Edward Cornelius
18 Pond Path
North Hampton, NH 03862

Anne Irwin
P.O. Box 846
Truro, MA 02666-0846

Ellen Keniston
63 Washington Avenue
Cambridge, MA 02140

Carol Aiken
c/o Chapin/Carol
9 Aspen Court
Bloomfield, CT 06002

Robert Riley
P.O. Box 51
Truro, MA 02666

Richards Noble
40 Bulls Ridge Road
South Kent School
South Kent, CT 06785

William & Jane Aiken
P.O. Box 19
Truro, MA 02666

Richard Aiken
P.O. Box 1130
Truro, MA 02666

Daniel & Judyth Ann Katz
271 Compo Road
Westport, CT 06880

Abutters List

SITE LOCUS: Map 47-48 Pamet Cranberry Bog Restoration Project Truro, Massachusetts		
ABUTTERS		
Map/Lot No.	Site Address	Owner/Mailing Address
47 - 125	7 Dyers Hollow Road	Veronica Kraft P.O. Box 479 Truro, MA 02666
47-126		Daniel & Judyth Ann Katz 271 Compo Road Westport, CT 06880
47 - 127	74 North Pamet Road	Brian Dunne Kim Kettler P.O. Box 69 Truro, MA 02666
47 - 128	70 North Pamet Road	Robert Riley P.O. Box 51 Truro, MA 02666
47 - 129, 143	83A North Pamet Road	Richard Aiken P.O. Box 1130 Truro, MA 02666
47 - 130	83 North Pamet Road	Richards Noble 40 Bulls Ridge Road South Kent School South Kent, CT 06785
47 - 131	91 North Pamet Road	Carol Aiken c/o Chapin/Carol 9 Aspen Court Bloomfield, CT 06002
47-134	71 North Pamet Road	Nancy Fales 132 Beachside Avenue Greens Farms, CT 06436
47 - 135	85 North Pamet Road	William & Jane Aiken P.O. Box 19 Truro, MA 02666

Abutters List (continued)

Map/Lot No.	Site Address	Owner/Mailing Address
47 - 137	97 North Pamet Road	Anne Irwin P.O. Box 846 Truro, MA 02666-0846
47 - 146	93 North Pamet Road	William & Jane Aiken 905 Preston Avenue Blacksburg, VA 24060
47 - 160	12 Old King's Highway	Monica & Edward Cornelia 18 Pond Path North Hampton, NH 03862
47 - 159	10 Old King's Highway	Ellen Keniston 63 Washington Avenue Cambridge, MA 02140
48 - 1	112 North Pamet Road	Martin & Ann Peretz c/o the Clark Estates 30 Wall Street New York, NY 10005
48 - 2	191 North Pamet Road	Jeanette & Stephen Kinzer c/o Ilona Kinzer 1675 Beacon Street Brookline, MA 02146
48 - 3	116 North Pamet Road	Barbara Kislak 135 West 17th Street New York, NY 10011
48 - 4	118 North Pamet Road	Jay Ward Kislak 135 West 17th Street New York, NY 10011

(PARCEL > 000124 AND PARCEL < 000132) OR (PARCEL > 000133 AND PARCEL < 000138 AND PARCEL # 000136) OR (PARCEL > 000142 AND PARCEL < 000147 A AND PARCEL # 000145) OR PARCEL = 000159 OR PARCEL = 000160

14112 G-B.

JULY 26, 1995		TOWN OF TRURO		PAGE: 1			
		CERTIFIED ABUTTERS-CRANBERRY BOG ON MAP 47&48) PG1					
NAME	STREET	CITY	ST ZIP	MAP	PCL	UNIT	
KRAFT VERONICA S	PO BOX 479	TRURO	MA 026660479	000047	000125		
KATZ DANIEL & JUDYTH ANN	271 COMPO RD	WESTPORT	CT 06880	000047	000126		
DUNNE BRIAN F &	PO BOX 69	TRURO	MA 026660069	000047	000127		
RILEY ROBERT	P O BOX 51	TRURO	MA 026660051	000047	000128		
AIKEN RICHARD	PO BOX 1130	TRURO	MA 026661130	000047	000129		
RICHARDS NOBUK	40 BULLS RIDGE RD	SO KENT	CT 06785	000047	000130		
AIKEN CAROLE	9 ASPEN CT	BLOOMFIELD	CT 06002	000047	000131		
FALES NANCY E	132 BEACHSIDE AVE	GREENS FARM	CT 06436	000047	000134		
AIKEN WILLIAM M & JANE A	PO BOX 19	TRURO	MA 026660019	000047	000135		
IRWIN ANNE	PO BOX 846	TRURO	MA 026660846	000047	000137		
AIKEN RICHARD	PO BOX 1130	TRURO	MA 026661130	000047	000143		
AIKEN WILLIAM M & JANE A	PO BOX 19	TRURO	MA 026660019	000047	000144		
AIKEN WILLIAM W & JANE A ET AL	905 PRESTON AVE	BLACKSBURG	VA 24060	000047	000146		
KENISTON ELLEN	63 WASHINGTON AVE	CAMBRIDGE	MA 02140	000047	000159		
CORNELIA MONICA S & EDWARD	18 POND PATH	NO HAMPTON	NH 03862	000047	000160		
TOTAL RECORDS READ: 34		TOTAL RECORDS PRINTED: 15					

(PARCEL > 000000 AND PARCEL < 000005)

JULY 26, 1995		TOWN OF TRURO		PAGE: 2			
CERTIFIED ABUTTERS-CRANBERRY BOG ON MAP 47848 PG2							
NAME	STREET	CITY	ST ZIP	MAP	PCL	UNIT	
PERETZ MARTIN & ANN L	30 WALL ST	NEW YORK	NY 10005	000048	000001		
KINZER JEANETTE M & STEPHEN A	1675 BEACON ST	BROOKLINE	MA 02146	000048	000002		
KISLAK BARBARA M	135 W 17TH ST	NEW YORK	NY 10011	000048	000003		
KISLAK JAY WARD	135 W 17TH ST	NEW YORK	NY 10011	000048	000004		
TOTAL RECORDS READ:	4	TOTAL RECORDS PRINTED:	4				

ADDENDUM

Cape Cod National Seashore
U.S. Dept. of Interior P.O. Box 250 So. Wellfleet MA 02663 All Surrounding Nat'l Park Land

Patricia Nelson
July 26, 1995 Deputy Assessor-Truro

Z 364 119 825



**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to **Brian Dunne/Kim Kettler**

Street and No.	P.O. Box 69
P.O. State and ZIP Code	Truro, MA 02666
Postage	\$.32
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$ 2.52
Postmark or Date	

PS Form 3800, March 1993

Fold at line over top of envelope to the right of the return address

CERTIFIED

Z 364 119 825

MAIL

Z 364 119 826



**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to **Richard Noble**

Street and No.	40 Bulls Ridge Road
P.O. State and ZIP Code	South Kent, CT 06785
Postage	\$.32
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$ 2.52
Postmark or Date	

PS Form 3800, March 1993

Fold at line over top of envelope to the right of the return address

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**Receipt for
Certified Mail**

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Do not use for International Mail
(See Reverse)

Sent to **Daniel & Judyth Ann Katz**

Street and No.	271 Compo Road
P.O. State and ZIP Code	Westport, CT 06880
Postage	\$.32
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$ 2.52
Postmark or Date	

PS Form 3800, March 1993

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Z 364 119 824

MAIL

Z 364 119 827



**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to **Richard Aiken**

Street and No.	P.O. Box 1130
P.O. State and ZIP Code	Truro, MA 02666
Postage	\$.32
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$ 2.52
Postmark or Date	

PS Form 3800, March 1993

Fold at line over top of envelope to the right of the return address

CERTIFIED

Z 364 119 823



**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to **Veronica Kraft**

Street and No.	P.O. Box 479
P.O. State and ZIP Code	Truro, MA 02666
Postage	\$.32
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$ 2.52
Postmark or Date	

PS Form 3800, March 1993

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Z 364 119 823

MAIL

Z 364 119 826



**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to **Robert Riley**

Street and No.	P.O. Box 51
P.O. State and ZIP Code	Truro, MA 02666
Postage	\$.32
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$ 2.52
Postmark or Date	

PS Form 3800, March 1993

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**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to William & Jane Aiken	
Street and No. P.O. Box 19	
P.O., State and ZIP Code Truro, MA 02666	
Postage	\$.32
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$ 2.52
Postmark or Date:	

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Z 364 119 831

MAIL

Z 364 119 834

**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Monica & Edward Cornelius	
Street and No. 18 Pond Path	
P.O., State and ZIP Code North Hampton, NH 03862	
Postage	\$.32
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$ 2.52
Postmark or Date	

Fold at line over top of envelope to the right of the return address

CERTIFIED

**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Nancy Fales	
Street and No. 132 Beachside Avenue	
P.O., State and ZIP Code Greens Farms, CT 06436	
Postage	\$.32
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$ 2.52
Postmark or Date	

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Z 364 119 830

MAIL

Z 364 119 833

**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to William & Jane Aiken	
Street and No. 905 Preston Avenue	
P.O., State and ZIP Code Blacksburg, VA 24060	
Postage	\$.32
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$ 2.52
Postmark or Date	

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CERTIFIED

**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Carol Aiken	
Street and No. 9 Aspen Court	
P.O., State and ZIP Code Bloomfield, CT 06002	
Postage	\$.32
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$ 2.52
Postmark or Date	

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CERTIFIED

Z 364 119 829

MAIL

Z 364 119 832

**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Anne Irwin	
Street and No. P.O. Box 846	
P.O., State and ZIP Code Truro, MA 02666-0846	
Postage	\$.32
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$ 2.52
Postmark or Date	

Fold at line over top of envelope to the right of the return address

CERTIFIED

Fold at line over top of envelope to the right of the return address

CERTIFIED



**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Jeanette & Stephen Kinzer	
Street and No. 1675 Beacon Street	
P.O., State and ZIP Code Brookline, MA 02146	
Postage	\$.32
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$ 2.52
Postmark or Date	

Fold at line over top of envelope to the right of the return address

CERTIFIED

Z 364 119 837

MAIL



**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Martin & Ann Peretz	
Street and No. 30 Wall Street	
P.O., State and ZIP Code New York, NY 10005	
Postage	\$.32
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$ 2.52
Postmark or Date	

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Z 364 119 836

MAIL



**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Ellen Keniston	
Street and No. 63 Washington Avenue	
P.O., State and ZIP Code Cambridge, MA 02140	
Postage	\$.32
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$ 2.52
Postmark or Date	

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CERTIFIED

Z 364 119 835

MAIL



**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Jay Ward Kislak	
Street and No. 135 West 17th Street	
P.O., State and ZIP Code New York, NY 10011	
Postage	\$.32
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$ 2.52
Postmark or Date	

Fold at line over top of envelope to the right of the return address

CERTIFIED



**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Barbara Kislak	
Street and No. 135 West 17th Street	
P.O., State and ZIP Code New York, NY 10011	
Postage	\$.32
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$ 2.52
Postmark or Date	

Fold at line over top of envelope to the right of the return address

CERTIFIED

ATTACHMENT 2

ADDENDUM 3: MHC RESPONSE



February 27, 1995

The Commonwealth of Massachusetts

William Francis Galvin, Secretary of the Commonwealth
Massachusetts Historical Commission

Marie Rust
Regional Director
National Park Service
Northeast Regional Office
15 State Street
Boston, MA 02109

RE: Pamet Cranberry Bog, Cape Cod National Seashore, Truro, MA (MHC #14647)

Dear Ms. Rust:

Thank you for submitting information to the Massachusetts Historical Commission, received January 27 and February 14, 1995, regarding the proposed lease of the former Pamet Cranberry Bog property located within the Cape Cod National Seashore in Truro. The property contains 27.3 acres and includes an historic rural landscape (including two overgrown bogs, drainage ditches, pond, sand borrow pit) and two buildings (bog house, shed) associated with the commercial production of cranberries from 1888-1962. As proposed, the lessee would be expected to rehabilitate and operate one or both of the bogs in a manner consistent with the property's historic use. MHC staff have reviewed the information submitted and would like to offer the following comments.

MHC concurs with NPS's determination that the Pamet Cranberry Bog property is eligible for listing in the National Register of Historic Places as an historic rural landscape under Criterion C. The property may also contain significant historic archaeological resources associated with the seasonal occupation of the Bog House as well as features associated with the cranberry operation. At this time there is not sufficient information to determine whether or not the property is also eligible under Criterion D. An archaeological survey would be needed to identify and evaluate any archaeological resources which may be present. In addition, the property also has the potential to contain significant archaeological deposits associated with Native Americans who once inhabited the area. A review of MHC's inventory files indicates that Site 19-BN-477 is immediately adjacent to the project area on the south side of the road. This site was identified during the archaeological survey of the Cape Cod National Seashore conducted in the early 1980s. Areas north of North Pamet Road have not been surveyed.

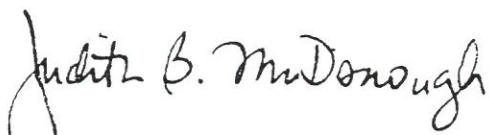
The lease of a National Register eligible property constitutes an adverse effect unless adequate restrictions or conditions are included in the lease agreement to ensure the preservation of the property's significant historic and archaeological features (36 CFR 800.9(b)(5) & 800.9(c)(3)). The MHC requests that an archaeological survey be conducted to

identify and evaluate any historic and prehistoric archaeological resources which may exist on the property. The results of the survey should be taken into account in developing provisions to adequately protect any significant archaeological resources on the property. The MHC requests the opportunity to review and comment on more detailed project plans and a draft of the lease agreement as they become available. MHC staff look forward to working with the National Park Service on developing a scope for the archaeological survey and appropriate protection measures for the property.

These comments are offered to assist in compliance with Section 106 of the National Historic Preservation Act of 1966 as amended (36 CFR 800).

Please feel free to contact Connie Crosby or Doug Kelleher at this office with any questions you may have.

Sincerely,



Judith B. McDonough
Executive Director
Massachusetts Historical Commission
State Historic Preservation Officer

xc: Paul Weinbaum, NARO
Dick Hsu, NARO
Steven Pendery, CRC Lowell
Truro Historical Commission
Sarah Korjeff, Cape Cod Commission

ATTACHMENT 3

DEED OF LAND

ATTACHMENT 3

DEED OF LAND

The Deed of Land will be submitted under separate cover.

ATTACHMENT 4

PROOF OF FILINGS WITH STATE AND LOCAL AGENCIES

Z 364 119 822


**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

PS Form 3800, March 1993

Sent to Michael J. Reynolds Cape Cod National Seashore	
Superintendent Natural Resources Mgmt.	
P.O. Box 1803 South Wellfleet, MA 02663	
Postage	\$
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

Fold at line over top of envelope to the right of the return address

CERTIFIED

Z 364 119 822

MAIL

Z 364 122 264


**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

PS Form 3800, March 1993

Sent to Mass. Executive Office of Communities & Development	
100 Cambridge St. Rm. 1803	
Boston, MA 02202	
Postage	\$
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

Fold at line over top of envelope to the right of the return address

CERTIFIED

Z 364 122 264

MAIL

Z 364 119 899


**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

PS Form 3800, March 1993

Sent to Executive Office of Environmental Affairs	
Street and No. 100 Cambridge St. 20th Floor	
Boston, MA 02202	
Postage	\$
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

Fold at line over top of envelope to the right of the return address

CERTIFIED

Z 364 119 899

Z 364 122 269


**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

PS Form 3800, March 1993

Sent to Dept. of Environmental Prot	
Street and No. One Winter Street	
Boston, MA 02108	
Postage	\$ 1.10
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

Fold at line over top of envelope to the right of the return address

CERTIFIED

Z 364 122 269

MAIL

Z 364 119 900


**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

PS Form 3800, March 1993

Sent to Cape Cod Commission	
Street and No. 3225 Main St. Box 226	
Barnstable, MA 02630	
Postage	\$
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

Fold at line over top of envelope to the right of the return address

CERTIFIED

Z 364 119 900

MAIL



Z 364 122 273

**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Truro Dept. of Public Works	
Street and No. Town Hall Road	
P.O. State and ZIP Code Truro, MA 02666	
Postage	\$
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

Fold at line over top of envelope to the right of the return address

CERTIFIED

Z 364 122 273

MAIL

Z 364 122 270


**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Dept. of Environ. Protect Southeast Reg. Office	
Street and No. 20 Riverside Drive	
P.O. State and ZIP Code Lakeville, MA 02346	
Postage	\$
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

Fold at line over top of envelope to the right of the return address

CERTIFIED

Z 364 122 274

**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Truro Conservation Commission	
Street and No. Town Hall Road	
P.O. State and ZIP Code Truro, MA 02666	
Postage	\$
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

Fold at line over top of envelope to the right of the return address

CERTIFIED

Z 364 122 274

MAIL
**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Mass. Historical Commission Mass. Archive Building	
Street and No. 220 Morrissey Blvd.	
P.O. State and ZIP Code Boston, MA 02125	
Postage	\$
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

Fold at line over top of envelope to the right of the return address

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Z 364 122 275

**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Truro Planning Board	
Street and No. Town Hall Road	
P.O. State and ZIP Code Truro, MA 02666	
Postage	\$
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
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CERTIFIED

Z 364 122 275

MAIL
**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to U.S. Army Corps of Engineers	
Street and No. 424 Trapelo Road	
P.O. State and ZIP Code Waltham, MA 02254	
Postage	\$
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

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**Receipt for
Certified Mail**

No Insurance Coverage Provided
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(See Reverse)

PS Form 3800, March 1993

Sent to Barnstable County Commissioners Office	
Street and No 3195 Rt. 6A Superior Court	
P.O., State and ZIP Code Barnstable MA 02360	
Postage	\$
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

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Z 364 122 286



**Receipt for
Certified Mail**

No Insurance Coverage Provided
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(See Reverse)

PS Form 3800, March 1993

Sent to Dave Clark National Park Service	
Street and No 15 State Street	
P.O., State and ZIP Code Boston, Ma 02109	
Postage	\$
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

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MAIL

Z 364 122 283



**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

PS Form 3800, March 1993

Sent to U.S. Environmental Protection Agency	
Street and No J.F.K. Federal Bldg. Region One	
P.O., State and ZIP Code Boston, MA 02203	
Postage	\$
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

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**Receipt for
Certified Mail**

No Insurance Coverage Provided
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(See Reverse)

PS Form 3800, March 1993

Sent to National Park Service Water Resources Division	
Street and No 12795 W. Alameda Parkway	
P.O., State and ZIP Code Lakewood, Colorado 80225	
Postage	\$
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
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TOTAL Postage & Fees	\$
Postmark or Date	

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**Receipt for
Certified Mail**

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(See Reverse)

Sent to Cape Cod Cranberry Grower's Association	
Street and No P.O. Box 730	
P.O. State and ZIP Code East Wareham, MA 02538	
Postage	\$
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

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right of the return address

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MAIL
**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Coastal Zone Management	
Street and No 100 Cambridge St. 20th Flcor	
P.O. State and ZIP Code Boston, MA 02202	
Postage	\$
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

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**Receipt for
Certified Mail**

No Insurance Coverage Provided
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(See Reverse)

Sent to Mass. Highway Department	
Street and No District 5 1000 County St.	
P.O. State and ZIP Code Taunton, MA 02780	
Postage	\$
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
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TOTAL Postage & Fees	\$
Postmark or Date	

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MAIL
**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Mass. Division of Marine Fisheries	
Street and No 100 Cambridge Street	
P.O. State and ZIP Code Boston, MA 02202	
Postage	\$
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

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right of the return address

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Z 364 122 281

**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Dept. of Food and Agriculture	
Street and No \$100 Cambridge Street	
P.O. State and ZIP Code Boston, MA 02202	
Postage	\$
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
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Z 364 122 281

MAIL
**Receipt for
Certified Mail**

No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

Sent to Mass. Division of Marine Fisheries	
Street and No \$18 Rte 6A	
P.O. State and ZIP Code Sandwich, MA 02563	
Postage	\$
Certified Fee	1.10
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	1.10
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

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right of the return address

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ATTACHMENT 5
MNHESP RESPONSE

AUG 11 1995



Division of Fisheries & Wildlife

Wayne F. MacCallum, Director

8 August 1995

Jeffrey D. O'Connell
Fugro East, Inc.
90 Route 6A
Sandwich, MA 02563

Re: Restoration of Abandoned Cranberry Bog; North Pamet Rd.
Truro, MA
NHESP File No: 94-710

Dear Mr. O'Connell,

Thank you for contacting the Natural Heritage and Endangered Species Program for information regarding state-listed rare species in the vicinity of the above referenced project. I have reviewed the project and would like to offer the following comments.

Our records indicate the occurrence of the state-listed plant Broom Crowberry (*Corema conradii*) on the site that is proposed to be restored to a cranberry bog. This species is protected under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations. Please send us detailed project plans so that we may assess potential impacts to this species.

This evaluation is based on the most recent information available in the Natural Heritage database, which is constantly being expanded and updated through ongoing research and inventory. Should your project plans change, or new rare species information become available, this evaluation may be reconsidered.

Please do not hesitate to call me if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Hanni Dinkeloo".

Hanni Dinkeloo
Environmental Reviewer



Natural Heritage & Endangered Species Program
Route 135, Westborough, MA 01581 (508) 792-7270 x 200; Fax 792-7275
An Agency of the Department of Fisheries, Wildlife & Environmental Law Enforcement

MASSACHUSETTS RARE AND ENDANGERED PLANTS

BROOM CROWBERRY

(Corema Conradii Torr.)

DESCRIPTION

Broom Crowberry, a low growing, bushy evergreen shrub (seldom greater than 10 inches (25 cm.) in height) appears as bright green mounds, densely branched and covered with tiny leaves (1/8 to 1/4" long). Small, purple or reddish flowers without petals are borne in terminal heads and are subtended by one or more bracts. The dry, fleshy, spherical fruit is less than an 1/2 inch (1.5 mm.) in diameter and does not open at maturity. Broom Crowberry blooms between March and May.

SIMILAR SPECIES IN MASSACHUSETTS

Hudsonia ericoides, although similar in appearance to Corema conradii remains dull green in winter while Corema is brownish in color. In summer, the new growth of Hudsonia is dark green separating it from the yellow-green color of Corema. Also in March and early April, Hudsonia has yellow flowers and Corema has inconspicuous reddish or purple ones. Corema can also be confused with true heather Calluna or Erica, but in late summer both of these species have pink/lavender flowers.

HABITAT IN MASSACHUSETTS

Broom Crowberry often occurs in few to several clumps or in scattered patches in low shrub or moor communities, inhabiting very dry, sandy flats. In other locales, this plant inhabits dry pitch pine/scrub oak barrens, relic sand dunes,



Britton, N.L. and A. Brown. An Illustrated Flora of the Northern United States and Canada. Dover Publications, Inc. 1970 reprint of 1913 ed.

(continued overleaf)



● Verified since 1978
○ Reported prior to 1978

Distribution of Broom Crowberry

Distribution in Massachusetts by Town

BROOM CROWBERRY (continued)

areas long ago grazed, and road bed embankments. Broom Crowberry often colonizes open areas created by human and natural disturbances. Other species which co-occur with Broom Crowberry include Quercus ilicifolia (Scrub Oak), Pinus rigida (Pitch Pine), Hudsonia ericoides (Golden Heather) and Arctostaphylos Uva-ursi (Bearberry).

RANGE

Distribution is mostly coastal, Newfoundland south to New Jersey and Corema Conradii can also be found in Ulster Co., New York.

POPULATION STATUS

In Massachusetts, Broom Crowberry is considered a species of "Special Concern". Thirty nine current occurrences (1978 to present) were reported and twelve historical records (prior to 1978) have been recorded. Factors influencing rarity include fire suppression and the cessation of grazing which allows shrubs, Scrub Oak and Pitch Pine to become established, crowding out and shading Broom Crowberry.