



DEPARTMENT OF THE ARMY

NEW ENGLAND DIVISION, CORPS OF ENGINEERS
424 TRAPELO ROAD
WALTHAM, MASSACHUSETTS 02254
7 November 1986

REPLY TO
ATTENTION OF:

NEDOD- Operations Division

Mr. Frank Ciavattieri
U.S. Environmental Protection Agency
J.F. Kennedy Federal Building
Boston, Massachusetts 02203

*New Bedford
1.3*



SDMS DocID 000200382

Dear Mr. Ciavattieri:

Enclosed is the draft scope of work to perform additional wetlands assessment work at the New Bedford Superfund Site. This scope was previously telecopied to you.

Please provide comments on this scope as soon as possible.

Sincerely,

Alan D. Randall
Project Manager
Operations Division

Scope of Work
for Wetland Report of
Wetland/Mudflat Alteration at the
New Bedford Superfund Site

1. The contractor shall perform environmental analyses and prepare a Wetland Report of impacts of the proposed project to determine biological impacts on wetlands and mudflats of the study area based on the informational requirements of the 404 (b)(1) Guidelines.

2. Coordination and collection of baseline information.

The project description, elevation maps, description of alternatives and other similar project information will be provided by Environmental Protection Agency (EPA) upon contract award. The contractor shall coordinate with the US Fish and Wildlife Service, Massachusetts Division of Fisheries and Wildlife, Massachusetts Department of Environmental Management, National Marine Fisheries Service, and other Federal, State and local resource agencies as necessary to collect background information on regional and local fish and wildlife, endangered species, water quality, and other resources of the project area. The contractor shall conduct all field sampling necessary to fulfill the objectives of the scope of work.

3. Field Effort.

The study area is located north of an imaginary line drawn from the southernmost point on Clark Point to the southernmost point on Scoticutt Point. It shall include the project site wetland west of the end of Lawson Street, the control site wetland west of Pope Beach, and all fringe wetlands and mudflats north of the southernmost boundary and south of the Tarklin Hill Road Acushnet River crossing (Figure 1).

All field efforts shall be targeted against biological requirements under Section 404 (b)(1) Guidelines for protection of special aquatic sites, particularly effects on wetlands and mudflats. All efforts shall be directed towards wetland vegetation, organisms dependant on wetlands, and physical changes which have a potential to effect the wetlands.

A. Data Collection and Synthesis.

The contractor shall prepare lists and location maps of all vegetation in the project site, control site, and fringe wetlands (Figure 1) and determine vegetation zones in relation to water regime, salinity, substrate and nutrient exchange. A cover map shall be

prepared depicting these zones of dominant vegetation with descriptions of vegetation types within each zone and measured areas. A ratio of wet areas (low marsh and pannes) to dry areas (high marsh) shall be prepared for each site. Successional trends within wetland zones will be described in the report. Any rare, endangered, or threatened species shall be noted as to species (state and/or Federal lists) location and habitat requirements.

Indirect indices of productivity shall be collected by measuring percent cover (1m quadrats), and stem density, and stem height (0.1m quadrats) on parallel transects spaced at 100 meter intervals and perpendicular to the adjacent water body. Locations of the quadrats on the transect shall be determined by the contractor. Minimum valid sample size shall be determined based on the number of plots using statistical analyses of variances about the sample mean. We estimate this minimum at 150 samples. The ratio of the standard error of the mean to the sample mean shall be used as a measure of accuracy of the sample size. The limit of accuracy shall be 10 percent error of the mean.

Above ground primary productivity will be measured by collecting all above ground vegetation within 0.1m² sample plots and determining grams of dry weight/m²/yr. Vegetation shall be collected at the beginning (Time 1) and the end (Time 2) of the growing season. The difference between Time 1 and Time 2 will be used as an estimate of net productivity of the study area wetlands and control wetlands.

B. Wildlife.

The variable strip census method of J. T. Emlen (1971) as used in the June 1985 study prepared for NED by Sanford Ecological Services, Inc. shall be used to census avifauna on the wetlands and uplands of the project site and control site and larger fringe wetlands. One thousand meter transects shall be used. A minimum of 10 censuses shall be performed during fall and winter. The results of these studies will be used to determine density of birds in each area and shall be compared to studies performed by the Loyd Center. These transects shall include all saltmarsh and salt marsh/upland edge habitats types in the study area. Waterfowl and other large water birds shall be observed and enumerated on open water habitats and the marsh proper of the study area from blinds located at the perimeter of the marsh. All nest sites shall be recorded and enumerated.

All wildlife (mammals, reptiles, amphibians) and wildlife sign (e.g. tracks, scat, foraging areas, etc.) observed incidentally during field investigation shall be recorded including species, number, and habitat type.

Twenty scent posts shall be established on the edge of salt marsh habitats for three nights during the summer or fall season and all sign observed on these sites shall be recorded and identified as to species for a qualitative measurement of large mammal use.

A minimum of 10 randomly placed 1/1000 acre rectangular plot surveys of the study area wetlands shall be conducted to search for reptiles, amphibians and mammalian sign including scat, tracks, foraging disturbance and fur samples.

The Lincoln Index method shall be used to estimate the small mammal population size. Small mammal trapping shall be conducted for a minimum of 100 trap nights of capture and 100 trap nights of recapture during the fall in the study site and control site wetlands and shall include one (1) night of prebaiting in each location. Sherman box traps shall be used for this effort. All proper controls shall be used to avoid biasing the data. Study data, existing information and literature shall be used to describe wildlife usage.

C. Fisheries.

Fisheries of the salt marsh tidal creeks and those dependent on the saltmarsh and mudflats shall be sampled by placing minnow traps at 100m intervals along the tidal creeks and salt marsh/mudflat interface. A statistical analysis of population size shall be prepared based on the trap night effort. All standard lengths and pooled species weights for species collected shall be recorded.

D. Saltmarsh/Mudflat Benthos.

The contractor shall:

- a. quantitatively describe the affected and control environments. Three one (1) liter hand cores shall be obtained from each of three (3) randomly generated stations in each of the saltmarsh zones (mudflat, mudbanks, low marsh, high marsh, pannes, and subtidal creeks) for both the study and control site (three stations with three replicates each; a

total of 9 samples in each habitat type). These shall be analyzed in the manner described in Appendix 2. Statistical analysis shall describe the results of the sampling. These analyses shall include an analysis of variance between stations and between replicates (two way ANOVA). Community structure shall be analyzed by density, Shannon diversity ($\log 10$), evenness and askewedness. This sampling shall occur in spring and fall. Therefore, this sampling shall produce 216 one liter hand core samples.

- b. a marine ecologist shall visit the project site, fringe marshes, and control site and qualitatively describe the environment. Particular attention shall be given to comparing the fringe marsh habitats with the control and project site. Where possible the marine ecologist shall quantify his description, e.g. density and age/length structure of shellfish beds (e.g. Mytilus edulus, Mya arenaria, etc.) These qualitative observations shall be limited, where practical, to ten (10) day's effort (five per season).

E. Bioaccumulation.

To determine the bioaccumulation of PCBs, the ribbed mussel (Geukensia demissa) shall be collected during mid April from five stations at the control site. All mussels shall be collected at random locations along a 15 m transect located 1-2 m below the seaward limit of salt marsh cordgrass (Spartina alterniflora) colonization, and placed in hexane rinsed glass jars. These specimens shall be transported back to the lab on ice and one half immediately frozen (archived) for any analyses needed in the future (e.g., histological). On the remaining mussels whole wet weight, shell weight, meat wet weight and length shall be measured. Shells shall be scrubbed clean of any debris before weighing. Shell length shall be measured. Meats shall be placed on filter paper for 2 minutes before weighing. Within each station, sufficient tissue weight shall be pooled to form three replicate samples for analysis from each of the 5 stations.

Data from previous and ongoing bioaccumulation studies shall be evaluated and statistically compared with the control data. An analysis of availability of contaminants, bioaccumulation, and the existing food web shall be undertaken. The most likely sources of contaminants to the food chain shall be described. The null hypothesis to be statistically analyzed shall be: H_0 = There is no statistical difference between PCB concentrations in the mussel tissue from the project site and the control site.

F. Surface and Groundwater.

Existing surface and groundwater data and classifications from previous EPA and NED studies and state water quality sources shall be evaluated and used in the assessment of the relationship between the wetlands and water resources. These shall include an assessment of the flow characteristics from the marsh to saline groundwater and fresh groundwater and nutrient and chemical constituent exchange between the marsh and water resources.

Salinity measurements shall be recorded throughout the tidal cycle during winter, spring, summer, and fall at spring tides. These shall be spaced at intervals in the adjacent areas of the estuary, in the marsh tidal creeks, and in the marsh proper at a level of effort sufficient to determine existing salinity gradients. Data from existing sources and field measurements shall be used to determine current patterns and velocities and flushing rates in the estuary, tidal creeks, and marsh. These salinity and current data shall be used in evaluating water regime of the marsh.

G. Sediment/Substrate

Sediment core samples shall be collected from in randomly generated locations in the project site, control site and fringe wetlands. These samples shall be analyzed for copper, chromium, lead, zinc, and PCB's. Three replicates shall be collected in each of the major mudflat and saltmarsh zones for a total of 54 core samples. This information shall be used with bioaccumulation study results to determine effects and sources of contamination in the study area wetlands. All proper scientific techniques shall be used in the handling of samples.

4. Determination of Effects

The contractor shall assess all short term and long term effects, cumulative effects, and secondary effects of the project alternatives based on the information gathered in the above described tasks in compliance with 404 (b)(1) Guidelines.

5. Mitigation

The contractor shall explore all reasonable methods of mitigation of the impacts of the alternatives in accordance with 40 CFR 1508.20. These shall include: 1) avoidance of the impacts; 2) minimizing the impacts; 3) rectifying the impacts; 4) reducing or eliminating the impact over time; and 5) compensating for the impact by providing substitute environments.

6. Coordination.

The contractor shall:

- a. coordinate development of the Wetland Assessment and other documents with all appropriate agencies.
- b. assemble a written record of all coordination telephone calls and written correspondence.
- c. schedule and conduct a project site visit with personnel of NED and the interested resource agencies.
- d. prepare a memorandum on the coordinated site meeting conducted under subtask 1.c.

7. Literature research.

The contractor shall:

- a. conduct such literature research as is necessary to define and characterize the affected environment of the project area in accordance with the topical outline.
- b. conduct such literature research as is necessary to identify, characterize and quantify the environmental impacts which may be anticipated to occur as a result of the subject project.

8. Report Preparation.

The Contractor shall prepare the Wetland Report in accordance with the outline provided in Appendix A.

9. Period of Service.

A draft of the Wetland Assessment shall be provided to NED within 270 calendar days for review. NED shall provide comments on this draft within thirty (30) calendar days. The contractor shall incorporate NED's comments within thirty (30) calendar days, and submit the final Wetland Report after this period. The final submittal shall include one single space, reproducible camera-ready-copy, four (4) copies on white bond, and an IBM compatible disk containing these documents. All work shall continue during all review processes.

10. Visits to the Study Area-Private and Governmental Agencies and Individuals.

The Contractor shall advise the Project Manager, NED Office, at least five (5) days prior to each visit to the study area or the private sources and Governmental agencies (Federal, State and County). The Project Manager, NED Office, shall review the necessity for each visit and shall inform the Contractor that these contacts shall be limited to research and coordination of data pertinent to the study. The Contractor shall proceed with the visits only with prior approval of the Project Manager, NED Office.

11. Release of Data.

All data, reports, and materials obtained as a result of this contract shall become property of the U.S. Government and shall be turned over to the Contracting Officer, NED Office, upon completion of the contract.

12. Material to be Provided by the Government.

The New England Division will provide the following:

- A. Project Information
- B. Maps of the study area.
- C. Access to pertinent NED files.
- D. Previous Reports.

13. Coordination with the Project Manager.

Larry Oliver, Environmental Resource Section, Corps of Engineers, New England Division, (617-647-8347), shall be the project manager. The project manager shall be contacted to arrange meetings or answer any questions about this work order.

14. Quality Control.

The Contractor shall be held responsible for the quality of the services provided and for all damages caused the Government as a result of their negligence in the performance of any services under this contract.

Although submissions required by the contract are technically reviewed by the Government, it is emphasized that your work shall be prosecuted using proper internal controls and review procedures. The letter of transmittal for each submission which you will make shall include a certification that the submission has been subjected to your own review and coordination procedures to insure (a) completeness for each discipline commensurate with the level of effort required for that submission,

(b) elimination of conflicts, errors and omissions, and
(c) the overall professional and technical accuracy of the
submission. Documents which are significantly deficient in
any of these areas will be returned to you for correction
and/or upgrading prior to our completing our review.
Contract submission dates will not be extended if a
resubmission of draft material is required for this reason.

Contractor shall schedule a progress meeting at the NED
offices every month at the discretion of the NED project
manager.

The final documents shall be reviewed and corrected by
an editor for organization, content and grammatical
structure.

Appendix A

Wetland Assessment Report Outline

Title page

Table of Contents

1. Executive Summary

2. Introduction

The introduction section shall present a brief overview of what the Wetland Report is for and also include a statement of project location and a brief project history.

3. Purpose and Need

Input for this section will be provided by the EPA. This input shall be typed into the Environmental Assessment by the contractor.

4. Project Description

Input for this section will be provided by EPA. This input shall be typed into the Environmental Assessment by the contractor.

5. Alternatives

Alternatives to the proposed action will be defined by EPA. These shall be addressed by the contractor in this section of the assessment.

6. Affected Environment

This section shall present a biological, physical, chemical, and aesthetic (as related to biological resources) characterization of the study area and control sites relying primarily on site specific sampling and testing for a data base. This section shall comparatively discuss the data collected at the control and project sites and other available site information as related to contamination.

6.1 Acushnet Estuary setting

6.2 Tidal wetland identification within the Estuary
(include maps, topography, vertical profiling)

6.3 Existing Uses (aesthetics, educational, and recreational values, uniqueness)

6.4 Hydrological characteristics

6.4.1 Normal water fluctuations

6.4.2 Current patterns and water circulation

6.5 Groundwater

6.6 Sediments

6.6.1 Chemical contamination

- 6.7 Water Quality
 - 6.7.1 Quality classification
 - 6.7.2 Salinity gradients
 - 6.7.3 Chemical contamination
- 6.8 Wetland Communities
 - 6.8.1 Wetland Vegetation
 - 6.8.2 Invertebrates
 - 6.8.3 Mammals
 - 6.8.4 Birds
 - 6.8.5 Aquatic organisms
 - 6.8.6 Endangered, threatened, rare, and unique species
- 7. Bioconcentration/Bioaccumulation
 - 7.1 Mussels - Ring-billed Gull
 - 7.2 Arthropods, Seeds, Nuts - White-footed Mice
 - 7.3 Results and Discussion
- 8. Effect of Contamination on Wetlands
 - 8.1 Community structure
 - 8.2 Bioaccumulation/Bioconcentration
- 9. Functional Attributes of Wetlands
 - 9.1 Flood control and storm protection
 - 9.2 Aquifer recharger
 - 9.3 Water purification
 - 9.4 Food chain production and nutrient exchange
 - 9.5 Wildlife habitat
 - 9.6 Fisheries and shellfish habitat
 - 9.7 Socioeconomic attributes
- 10. Environmental Consequences

All portions of this section will discuss short term, long term, cumulative, and secondary positive and negative effects of the project alternatives. The discussions shall emphasize the interrelationships of the parameters which were studied and the contaminated condition of the site.

 - 10.1 Vegetation

This section shall discuss effects on vegetation of the study area wetlands, uplands, and mudflats in conformance with the values and causes described in 40 CFR 230.41 and 230.42.
 - 10.2 Wildlife

This section shall discuss effects on wildlife of the study area habitats in conformance with the values and causes described in 40 CFR 230.41, 230.42 and 230.32 and will discuss the effects on carrying capacity.

10.3 Fisheries

This section shall discuss effects to fisheries in conformance with the values and causes described in 40 CFR 230.41, 230.42 and 230.32. This section shall emphasize impacts to species dependent on the salt marsh, tidal creeks, and mudflats.

10.4 Benthic Invertebrates

This section shall discuss effects on benthic invertebrates in conformance with the values and causes described in 40 CFR 230.41 and 230.42 and shall emphasize food chain values and the effects of contamination and bioaccumulation.

10.5 Endangered and Threatened Species

This section shall discuss impacts to Federal and State endangered and threatened species in conformance with the values and causes described in 40 CFR 230.30.

10.6 Water Quality

This section shall discuss effects to water quality in conformance with the values and causes described in 40 CFR Subpart E and shall emphasize biological impacts.

10.7 Mitigation

This section shall be developed according to the definition of impacts in 40 CFR 1508.20 based on the information collected in this study.

11. Coordination

This section shall provide a listing of the Federal, State and local agencies coordinated with for the development of the Environmental Assessment. All significant issues raised during coordination shall be identified to IAB immediately and then responded to by the contractor.

12. References

13. Appendices

13.1 404 (b)(1) Compliance evaluation

13.2 Scientific names of animal species observed during the field investigation

13.3 Scientific names of plant species observed during the field investigation

13.4 Salt marsh bird densities recorded during breeding season, summer, and winter transects

13.5 Data from wildlife plot surveys

13.6 Data from scent post surveys

13.7 Data from small mammal trapping effort

13.8 Data from fisheries studies

13.9 Correspondence from the Massachusetts Natural Heritage Program

13.10 Chemical analyses

Appendix B

Benthic Taxonomic Identification

1. General

The contractor shall identify benthic invertebrate organisms to species from samples obtained in the project area.

2. Purpose

The objective of these analyses is to assist in predicting impacts from proposed improvement dredging projects.

3. Description of Work

The contractor shall execute the following:

- a. A biotechnician shall sort samples that have been screened through a 0.5 mm sieve. (These samples will be preserved in a 10% buffered formalin and Rose Bengal solution). This sorting process will retain all whole organisms and anterior ends of partial organisms to be identified.
- b. A benthic taxonomist shall identify all organisms to species. A voucher collection of the identification shall be provided to the Impact Analysis Branch (IAB) containing a representative organism from each species identified. The reference collection shall be preserved in alcohol and each organism properly labeled.
- c. A list of species with corresponding number of individuals shall be provided to IAB. This list shall be organized in standard systematic classification for each sample. A description of taxonomic identification quality control shall also be included.

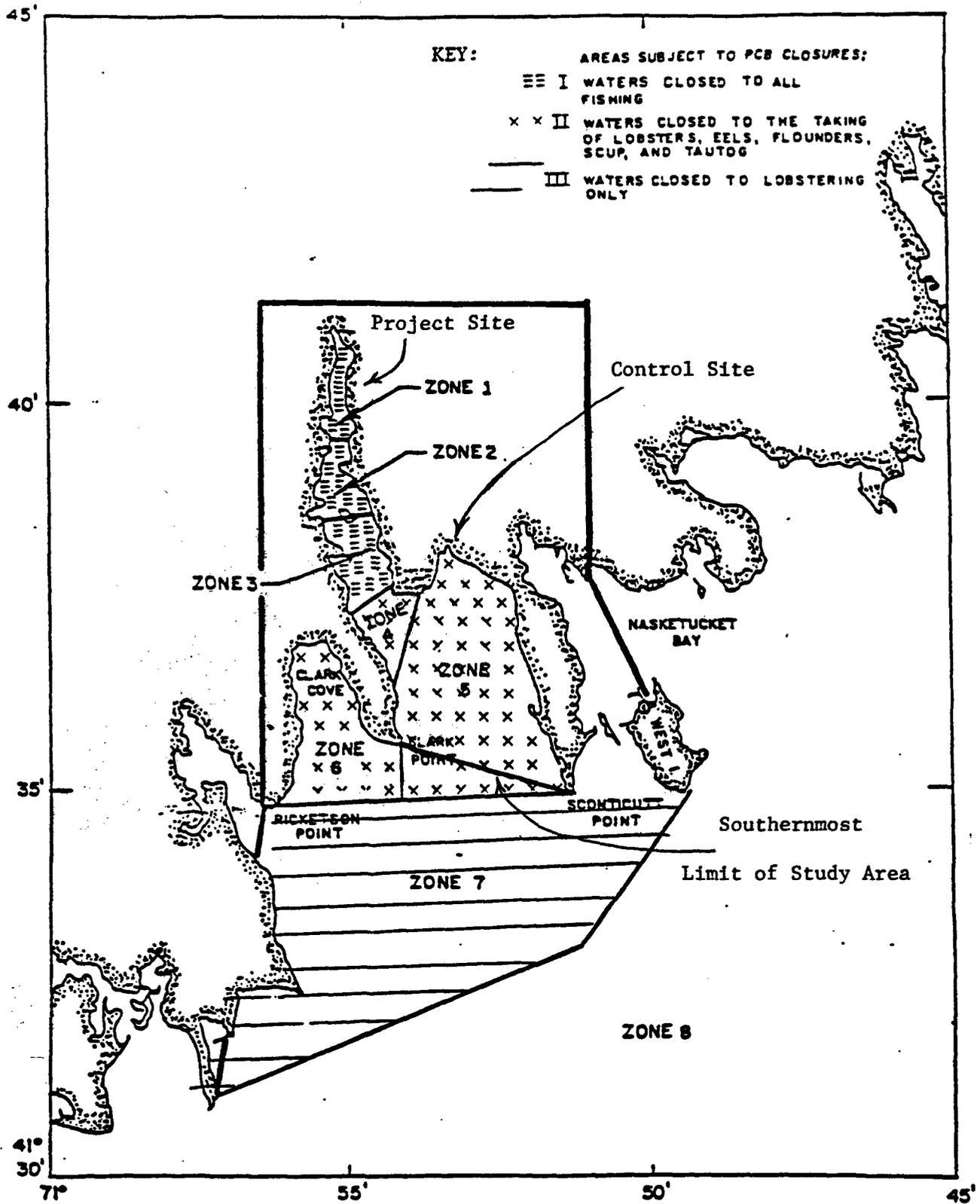


Figure 1. Endangerment Assessment Study Area.