

PHASE 1 REPORT

THE COASTAL WETLANDS MAPPING
PROGRAM, NEW HAMPSHIRE

Prepared for

The New Hampshire Coastal Program
Office of State Planning, NH

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NORMANDEAU ASSOCIATES, INC.
**ENVIRONMENTAL SCIENTISTS,
ENGINEERS & PLANNERS**

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Prepared for

The New Hampshire Coastal Program
Office of State Planning, NH

Prepared by

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1.0 INTRODUCTION

Normandeau Associates, Inc. (NAI) has completed the inventory of existing maps, regulations, procedures, and literature for mapping the six coastal NH towns of New Castle, Rye, North Hampton, Hampton, Hampton Falls, and Seabrook. Following is a brief description of findings for work completed and the specifications for the remaining work products, given the quality of the source materials, the time available for field verification and the commitment to provide the best possible product for townwide and statewide planning. A complete list of the inventory is appended (Appendix A).

Since recent, suitable, leaf-off aerial photographs were not available, the James W. Sewall Company was commissioned to fly the six towns during September, 1985, and provide color infra-red photos at a scale of 1" = 700 feet. These were contact printed in Cibachrome and will serve very well for stereo photo-interpretation. Draft soils maps were obtained at scales of 1" = 1667 feet, 1" = 1000 feet, and 1" = 800 feet, for all towns except Seabrook, where the mapping will be completed within the next three months. Topographic maps (USGS 7½ minute series) covering the study area were obtained for contour information. Unfortunately, most of these were mapped at a contour interval of 20 feet, providing only general information on drainage patterns for this nearly level terrain.

2.0 WETLANDS DEFINITIONS

Following is a very brief synopsis of our Phase 1 findings regarding the boundary definitions for wetlands to be used for the project. The subject is complex and inter-disciplinary, and the definitions strictly apply only to natural vegetated wetlands where little recent modification has occurred.

FEDERAL CRITERIA; §404-c GUIDELINES

Wetlands are areas occupied by plants specially adapted to saturated soils; soil must be saturated during the growing season, especially the upper foot. Wetlands are deemed worthy of protection due to the benefits they provide, including: prevention of downstream flooding; provision of wildlife habitat, including critical habitat and protection for threatened or endangered species of plants and animals; groundwater recharge protection; attenuation of pollution from surface waters; and educational, scientific, historic and aesthetic values.

STATE CRITERIA; RSA-483; NH CAR Chapter Wt 100, Part Wt 101 & Appendix A

Wetlands are areas occupied by plants specially adapted to saturated soils; soil must be saturated during the growing season, especially the upper foot. The CAR Wt 301 specifically describes values in the public interest to be protected, and the criteria for prime wetlands (Wt 701.02) agree closely with most of the specific benefits in the federal regulations.

Tidal Wetlands: List of typical plants, encompasses areas up to 3½ feet above Mean High Tide.

Freshwater: List of typical plants for bogs, marshes and swamps.

TOWN CRITERIA

Soils criteria alone are described: Very Poorly Drained and Poorly Drained soils; there are no plant species criteria. Emphasis is on prohibition of subsurface sewage disposal (SSD) in soils with occasional high water table, not on wetlands defined by and protected for their beneficial functions. Unfortunately, some poorly drained soils encompass wetlands, some uplands.

2.1 DISCUSSION OF MAPPING CRITERIA

The federal and state criteria agree, there being an emphasis on benefits that have been demonstrated legally and scientifically to accrue to the public from wetland areas, and which require some measure of governmental protection. Town criteria, however, focus on avoiding SSD in unsuitable areas, not on any of the benefits wetlands provide the public.

In mapping steep areas in glacial till, most wetland areas would match all the criteria and mapping conflicts would seldom arise. However, sandy soils are highly permeable, with water tables rising and falling several feet seasonally in many areas. This produces soils with sufficient saturation to be placed in the Poorly Drained category, and thus be unsuited to SSD. However, during most of the growing season, low water tables prevail, allowing upland plants to dominate the site, and establishing no beneficial wetlands. NAI experience in New Hampshire boundary delineation where such soils are nearly level shows that the wetlands boundary may differ from the Poorly Drained Soils boundary by up to several hundred feet. This establishes a mapping conflict we feel to be unacceptable for this project, which will be resolved by mapping separate lines, as described below.

2.2 PROJECT MAPPING CRITERIA AND WORK PRODUCTS SPECIFICATION

For mapping wetland boundaries during this project, the state and federal criteria will be followed, and wetland evaluations will be based on state functional benefits and prime wetlands criteria. All wetlands greater than two acres will be delineated on the September 1985 Color Infra-red Aerial Photographs at a scale of 1" = 700 feet. As many of the smaller wetlands as discernable will be delineated, down to a resolution of 1/4 acre in areas of sharp topographic relief.

The primary work products of the project will consist of six uncorrected townwide mylar aerial photographs, at an overall scale of 1

*This has been changed
to 1:200 feet see
letter*

inch to 1000 feet (1:12,000). One copy will be presented to each town and an additional copy to the NH OSP. Wetlands will be inked as solid lines directly on these mylars, with typical boundary accuracies of \pm fifty (50) feet. Finer precision will be possible in hilly areas with somewhat less in level areas. Where soils maps and/or fieldwork indicate that Poorly Drained Soils exist outside of wetland areas, dotted lines will be mapped to the best accuracy available. A final report will list wetlands evaluation results, using the Hollands-Magee models, and will describe how persons concerned with protecting these wetland values will use the mapped solid lines and numbered areas, while SSD evaluations will be planned using the dotted lines as guidelines to unsuitable soils.

Secondary work products will include wetland boundaries approximately drawn onto town tax maps. For each town providing a set of clean copies of their tax maps, NAI will re-draft wetland (solid) and soil (dotted) boundaries at the appropriate scales. Much of the accuracy of this process depends upon fixed features (control points) being identifiable on both tax maps and aerial photographs. Accurately mapped roadways, bodies of water, and large buildings are typical control points. Many tax maps show no natural features, only property lines, invisible on the aerial photographs, and thus provide the mapper with little positional information. No claim is made for the resulting accuracy of transferring wetlands boundaries to these maps. The best accuracy will be a probable error of approximately fifty feet at all scales. This will mean the following increases in effective line error as the maps become larger: at 1"= 1000' line error will be 0.05 inch; at 1"= 400' line error will be 0.125 (one eighth) inch; at 1" = 200', line error will be 1/4 inch; at 1" = 100', line error will be 1/2 inch; and at 1" = 50', line error will be 1 inch. In other words, for towns having many detailed maps, wetland lines will have to be used as if they were up to an inch broad.

3.0 APPENDIX A: INVENTORY

3.1 LITERATURE

Guide to the designation of prime wetlands in New Hampshire. NHACC, Strafford RPC, and Env. Law Clinic. June 1983

Identification, documentation and mapping of prime tidal wetlands in the town of Hampton, NH. F. D. Richardson, Durham, NH December 1982. Coastal Program funded.

Sipple, W. S. 1985. Wetland identification and delineation manual. Draft report. U.S. EPA.

IEP, Inc. 1985. Portsmouth wetland delineation and mapping project. June 1985. Coastal Program funded.

Breeding, C.H.J., F. D. Richardson, and S. A. L. Pilgrim 1974. Soil survey of New Hampshire tidal marshes. NH Agr. Expt. Station, Durham, NH, and USDA SCS.

New Hampshire Code of Administrative Rules, Chapter Wt 100, 200, 300, 400,500, eff. 10-83; and Wt 700 (Prime Wetlands) eff. 10-81.

3.2 ADDITIONAL MATERIAL

USGS Topographic maps, 7½ minute quadrangles: Hampton, Portsmouth, Kittery, Exeter, Newburyport East.

Draft Soils maps for each town: New Castle, Rye, Hampton, North Hampton, Hampton Falls. Seabrook has yet to be completed.

Aerial photos of the six towns flown September 9 and 29, 1985: 246 Aerial Ektachrome transparencies and a Cibachome print of each.

Mylar enlargements of aerial photos flown September 10, 1985, of each town at approximate overall scale of 1" = 1000 feet, \pm 50 feet. Two complete sets of six, one each for New Castle, Rye, Hampton, North Hampton, Hampton Falls, Seabrook, twelve in all.

3.3 TOWN SUMMARIES

NEW CASTLE:

MAPS: 1" = 500' OR 800' (1978) RPA from old DRED base.
1" = 400' 19 tax maps, J. Sewall composite.
1" = 50' and 1" = 100'

WETLAND ZONING: none. FEMA flood hazard study by Stone & Webster (1984). Structures prevented from w/in 10' of mean high tide.

WETLAND MAPPING: none.

AERIALS: 1972 by J. Sewall
1975. 1" = 1667' for soil survey

SOIL SURVEY: fieldwork 1973.

RYE:

MAPS: 1" = 1000' (1975) RPA from old DRED map
1" = 1000' (1975 topo) RPA from old DRED map
1" = 2000' (date?) tax map composite
1" = 200' tax maps (22)
new tax maps by Durgin Assoc. same scale by 1/86

WETLAND ZONING: Passed 1977. Similar to Wetlands Board regs. tidal marsh, fresh marsh, streams and ponds. Soils defined as Poorly and Very Poorly Drained soils. Provision for 50 feet buffer.

WETLAND MAPPING: SCS map of Wetland Conservation Districts.

AERIALS: 1" = 1320' (1952) original.
1" = 1667' (1952) positives
1" = 1667' (1975) for soil survey

SOIL SURVEY: Soils report map at 1" = 1000'; fieldwork 1973.

(RYE)

OTHER REPORTS: Master plan, base 1" = 1000'.
Water quality management plan; Wetlands inventory Apr 1971.

NORTH HAMPTON:

MAPS: 1" = 200' (23 tax maps).
1" = 500' composite.
1" = 1000' (1979) Coastal Zone Map

WETLAND ZONING: 1979 adopted; 1981 ammended. Defined by
Poorly and Very Poorly Drained Soils. Tidal marshes,
see prev. study.

WETLAND MAPPING: May 1980. SCS map 1" = 1000'.

AERIALS: old set maybe still exists.
1975. 1" = 1667' for soil survey, reproducibles
still available.

SOIL SURVEY: Soils report map at 1" = 1000'; fieldwork 1979.

HAMPTON:

MAPS: 1" = 1000' (1984). RPA from old DRED base.
1" = 800' (1985). for wetland zoning.
1" = 1000' (date?) tax map composite.
tax maps (156) at:
1" = 50' (110)
1" = 100' (32)
1" = 200' (14)
New tax maps in preparation, (305) at:
1" = 50' (Underwood)

WETLAND ZONING: Accepted March 1985; 50' buffer zone. Wetlands
defined by RSA 483-A:1 and by Poorly and Very Poorly
Drained soils.

WETLAND MAPPING: Salt marsh, F. Richardson, 12-82
Inland wetlands: soils info. for Res. Plan. (4/82)
Older reports: Wetlands of Hampton (1980); Results
of Hampton, NH wetlands survey (1980), Keith Assoc.

AERIALS: 1" = 100' (spring 1984) 40 - 50 sheets, Underwood.
1" = 1667' (1975) for soil survey

SOIL SURVEY: 1" = 1000', fieldwork 1981.

HAMPTON FALLS:

MAPS: 1" = 1000' (1982) RPA from old DRED base
1" = 400' (1983 update)

WETLAND ZONING: To be voted on 11/85. Defined as Poorly and Very Poorly Drained soils. Presently disallow structures or SSD systems in Very Poorly Drained soils.

WETLAND MAPPING: none. Flood plain overlay 1" = 300' (1982).

AERIALS: 1" = 1667' (1975) for soil survey

SOIL SURVEY: 1" = 1000' report map; fieldwork done 1979.

SEABROOK:

MAPS: 1" = 1000' (1980) RPA from old DRED maps
1" = 200' tax maps (23)
1" = 3000' composite. 1984 update.

WETLAND ZONING: none.

WETLAND MAPPING: none. Tidal marsh maps are prepared.

AERIALS: 1" = 1667' (1975) for soil survey

SOIL SURVEY: Field mapping in progress; not currently reproducible; ready by 2/86

