Connecticut Coastal Zone Management Program

CONNECTICUT COASTAL

FLOOD HAZARD AREA STUDY

Submitted to

STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
COASTAL AREA MANAGEMENT PROGRAM
Hartford, Connecticut

Prepared by

RALPH M. FIELD ASSOCIATES, INC.
Westport, Connecticut

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This report was financed in part by a grant through the Office of Coastal Zone Management, National Oceanic and Atmospheric Administration of the U.S. Department of Commerce under the Coastal Zone Management Act of 1972, and was prepared in cooperation with the Connecticut Department of Environmental Protection's Coastal Area Management Program.

ACKNOWLEDGMENTS

This report was prepared by Ralph M. Field Associates, Inc. under the direction of the staff of the Coastal Area Management Program. Assistance was provided throughout the study by staff from the Water Resources Unit, Property Management Unit, and Natural Resources Center of the Department of Environmental Protection. Many individuals in each of the coastal towns and Regional Planning Agencies provided valuable assistance through interviews, providing maps and documents, and locating other information used in the study.

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EXECUTIVE SUMMARY

Much of Connecticut's coastline has been developed for marinas and other water-dependent activities, for business and industry, and especially for residences, both year-round and seasonal. Some of this development has occured in hazard prone areas subject to coastal flooding and erosion. Government and individual property owners have attempted to reduce the frequency and extent of flood related damage through structural means, such as seawalls, as well as through nonstructural measures including floodplain regulations, floodproofing, mapping of flood hazard areas, and flood insurance.

Another approach to reducing future flood damages is through the acquisition of floodprone properties by public agencies. Section 1362 of the National Flood Insurance Act of 1968, as amended, specifically provides for the acquisition of flood damaged properties and conversion of the properties to a public open space or recreational use. This study identifies specific locations along the Connecticut coast where this technique has high potential for being applicable following a future major flood.

Acquisition of flood damaged properties pursuant to Section 1362 is possible only in very limited circumstances. Under the terms of the legislation and implementing regulations, all the following requirements must be satisfied before acquisition may take place[1]:

(1) developed property must be severely damaged by flooding;

(2) the damaged property must be insured under the National Flood Insurance Program;

(3) the owner must be willing to sell the property voluntarily;

(4) the state or local government must be willing to accept title to the property following acquisition and use it for open space or other public purposes compatible with the flood risk;

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[1]For a more precise description of these requirements, see page 17 of the report.

(5) federal funds sufficient to finance the acquisition must be available.

These requirements shaped the methodology of this study.

The study was conducted in two phases. Phase I was a preliminary screening designed to identify areas meeting three criteria:

- vulnerability to damage from coastal flooding;
- good potential to serve public purposes if acquired following damage from coastal floods; and
- acceptability of acquisition to property owners and state or local governments.

In Phase II, the twenty areas identified in Phase I were examined more thoroughly.[1] All but one of the twenty areas proved to contain at least some properties with high potential for meeting the flood damage criteria established for 1362 eligibility. Areas were not judged to have high potential for future eligibility, however, unless they also satisfied other program criteria. Two of these additional criteria proved particularly important: suitability for future public use (thus excluding, for example, some areas in which properties having high potential for future eligibility were widely scattered) and community interest in acquisition of the areas. The areas judged to have high potential for future eligibility for acquisition under the Section 1362 program are smmarized in Table A.

Even if Section 1362 funding is made available for an acquisition project, the community or state agency undertaking the project may need to supplement it with additional funding. The amount of supplementary funding needed would depend on the extent of damage incurred during a future flood, the amount of Section 1362 funding available, and other factors.

It is important to note that the results of this study depend upon the specific methodology used and the assumptions and limitations built into the methodology.

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[1] For a description of the Phase II methodology, see page 31.

For example, all estimates of property damage were based on the occurrence of a one percent flood and on estimates of water level and wave crest elevations during that flood. The next major flood that occurs along the Connecticut coast may, of course, be greater or less than the one percent flood. The actual water levels and wave crest elevations may be greater or less than the estimates. Local conditions may also change. In sum, the pattern of flooding and damages can only be approximated by the methodology.

In addition to the identification of areas with a high potential suitability for Section 1362 acquisition, the report suggests a number of specific actions that both the state and municipalities may take. Many of these suggestions involve ways of strengthening their overall floodplain management programs -- thereby also improving their opportunities for obtaining Section 1362 funds. Other suggestions are offered for those communities that may wish to develop a post-flood recovery and hazard mitigation plan. By developing this type of plan, a municipality may be able to respond to a future disaster in ways that bring positive community changes.

TABLE A: AREAS WITH HIGH POTENTIAL SUITABILITY FOR SECTION 1362 ACQUISITION

Town/Areas	Community or State Interest in Public Reuse	Properties Having High Potential for Future Section 1362 Eligibility
Norwalk		
Harborview	Community boat launch as recommended in town recreation plan	Group of 5 structures at south end of Beach Road
Fairfield		
Pine Creek Beach	Provide parking and expand existing town beach at end of South Pine Creek Road	Group of about 15 contiguous structures east of South Pine Creek Road
Milford		
Cedar Beach	Additional beach recreation area for Milford	Two small groups of structures at eastern and western ends of Cedar Beach
Guilford		
Grass Island and Madison Circle Beach	Develop state recreation area adjacent to existing state boat launch	Small groups and scattered properties in both the Grass Island and Circle Beach areas
Clinton		
Cedar Island	Town recreation or expansion of Hammonassett State Park	More than one-half of the structures on the island
Harbor View	Expand existing town beach and marsh holdings and develop as public beach	Contiguous group of structures in northern section
Westbrook		
West Beach	Expansion to existing town beach	Small group of structures adjacent to existing town beach
Old Saybrook		
Chalker Beach	Additional public beach	Essentially all structures
Great Hammock Beach	Expansion of state holding for wildlife protection or additional public beach for town	All structures
Plum Bank Beach	Expand existing town beach; additional town beach	Structures on both sides of existing town beach; group of structures south of existing town beach
Old Lyme		
Sound View	Expand existing town beach and provide parking	Group of structures on both sides of existing town beach

PART I

INTRODUCTION

PURPOSE OF THE STUDY

This coastal flood hazard area study is designed to contribute to the state's ongoing coastal area management and floodplain management programs. The study began with the state's recognition of the following:

- *coastal development in many places is vulnerable to severe damage from hurricanes and other coastal storms*
- *the period following severe damage from coastal storms provides special opportunities for taking actions to reduce future damages*
- *advance planning for actions to take after storms greatly increases the chances of taking advantages of these special opportunities*
- *planning now for post-disaster acquisition of damaged structures and associated land could increase the chances of Connecticut communities obtaining a portion of limited federal funds available for such projects under Section 1362 of the National Flood Insurance Act.*

Three outputs to guide pre-disaster planning and lay the groundwork for obtaining post-disaster funding were expected to result from the study:

(1) Identification of about 20 developed areas subject to severe flood and wave damage and an inventory of structures in these areas.

(2) Evaluation of the identified areas' potential for local or state management serving needed recreation, open space, or other public purposes.

(3) Guidance to municipalities on selected aspects of floodplain management planning.

It is important to note that this study is not intended to identify the most hazardous coastal areas in Connecticut. Instead, it seeks to identify already developed coastal flood hazard areas that may be suitable for conversion to public recreational or other open space uses following a major flood disaster.

Accordingly, the study focuses on, but is not limited to, the possible future acquisition by coastal municipalities or the State of Connecticut of coastal properties that may be severely damaged by flooding. The Flooded Property Acquisition Program (Section 1362 program) of the Federal Emergency Management Agency (FEMA)[1] is the principal program that may provide funding for any future acquisition of flood damaged properties. Consequently, the methodology for conducting this study, and the results of the study, are largely dependent upon the FEMA eligibility criteria for the Section 1362 program.

[1] See page 17 for a discussion of the Section 1362 program.

PHASES OF THE STUDY

The coastal flood hazard area study was conducted in two phases. The first phase was designed to identify areas meeting three criteria:

(1) Located in a flood risk area within the Connecticut coastal zone;

(2) Good potential to serve public purposes if acquired following damage from coastal floods, and

(3) Acquisition desirable from a local or state perspective.

The identification of these areas proceeded in a series of steps involving a successive screening of candidate areas as progressively more detailed information was gathered. Twenty areas in ten towns were selected for further investigation during Phase II. The detailed findings of Phase I are described in Final Phase I Report; Flood Hazard Area Study, August 12, 1981. A summary of Phase I findings is included in this report.

The second phase included a more detailed investigation of the twenty areas selected in Phase I to determine which properties have high potential for future eligibility to meet the flood damage and other criteria required for acquisition under Section 1362 of the National Flood Insurance Act. In addition, recommendations to the state and to coastal communities regarding pre- and post-disaster actions to reduce the adverse impacts of coastal storms were developed.

COASTAL FLOOD HAZARDS IN CONNECTICUT

Connecticut has a diverse and attractive coastline. Natural features include bluffs and escarpments, rocky shorefronts, beaches and dunes, extensive areas of tidal and inland wetlands, and islands. The entire shoreline is subject to flooding. In many coastal areas, flooding results from the overflow of rivers as well as the onshore movement of water from Long Island Sound. Along the bluffs and in some rocky areas, only a very small portion of the shore is subjected to flooding, but in some beach and wetland areas, flooding can extend inland for one mile or more.

These coastal flood hazard areas are affected by flooding in three ways: (1) tidal flooding from Long Island Sound, which is a function of the astronomical tides and storm surge; (2) impact from waves generated by winds over a long stretch of open water and by the nearshore topography; and (3) flooding from inland sources, such as river and stream overflows and inadequate drainage systems.

Because Long Island Sound acts as a funnel, the daily tidal fluctuation varies considerably from east to west along the Connecticut coast. At Stonington in the east, mean high water is only about one foot above the National Geodetic Vertical Datum (NGVD)[1] and the normal difference between mean high water and mean low water is about 2.5 feet. On the western edge, at Greenwich, mean high water is about four feet above NGVD and the difference between mean high and mean low water is about 7.5 feet.

During storms the normal high tide may increase significantly. For a flood with a one percent chance of being equalled or exceeded in any given year[2], the tidal

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[1] The National Geodetic Vertical Datum (NGVD) is a fixed reference adopted as a standard geodetic datum for elevations in the United States. NGVD was formerly referred to as Mean Sea Level (MSL) Datum. This reference datum should not be confused with local mean sea level.

[2] A flood with a one percent chance of being equalled or exceeded in any given year is commonly referred to as a "100-year flood" or "one percent flood". FEMA also uses the term "base flood" in its flood insurance program, including flood insurance maps.

level at Stonington is about 10.5 feet and at Greenwich about 12 feet. Tidal levels at Stonington for a flood with a two percent chance of occurring each year (50-year flood or two percent flood) are 9.25 feet, and 6.75 feet for a flood with a 10 percent chance of occurrence (10-year or 10 percent flood); at Greenwich, 11.5 feet for the two percent flood, and 9.5 feet for the 10 percent flood. Tidal levels as determined by the Corps of Engineers in January 1980 are shown for the entire Connecticut coast in Figure 1.[1]

These tidal flood elevations reflect only an off-shore "still-water" elevation. They do not take into account the effect of waves formed by high winds acting on the water surface over a long stretch of open water (fetch), the formation of breakers in shallow water near the shore, and the "run-up" of these waves as they encounter obstructions at the shore. Flood levels can be considerably increased in the areas reached by waves.[2] For example, using the methodology for wave height calculation developed by the National Academy of Sciences and approved by the Federal Emergency Management Agency, an 11-foot tidal flood elevation would have a wave crest of about 17 feet; a 9-foot tidal flood elevation would have a 14-foot wave crest elevation.[3] Figure 2 illustrates some of the relationships among different tidal and wave levels.

Waves are the most destructive element of coastal storms. They can completely devastate improperly constructed or located buildings and cause extensive erosion to natural shoreline features such as bluffs and beaches. Although sand dunes along beaches often protect landward areas from the effects of these waves, the dunes may be breached during especially large storms.

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[1] Taken from New England Coastline Tidal Flood Survey. Department of the Army, New England Division, Corps of Engineers, Waltham, Mass. January 1980.

[2] Areas affected by wave impact are referred to in this report as coastal high hazards areas or V-zones. These areas are shown on maps (Flood Insurance Rate Maps and Flood Boundary and Floodway Maps) prepared by the Federal Emergency Management Agency as V-zones, and represent those coastal areas where high velocity waters are expected because of wave action.

[3] The procedure used in this study for estimating wave heights and wave crests is described in the FEMA Field Manual for Estimating Wave Heights in Coastal High Hazard Areas in Atlantic and Gulf Coast Regions, March 1981.

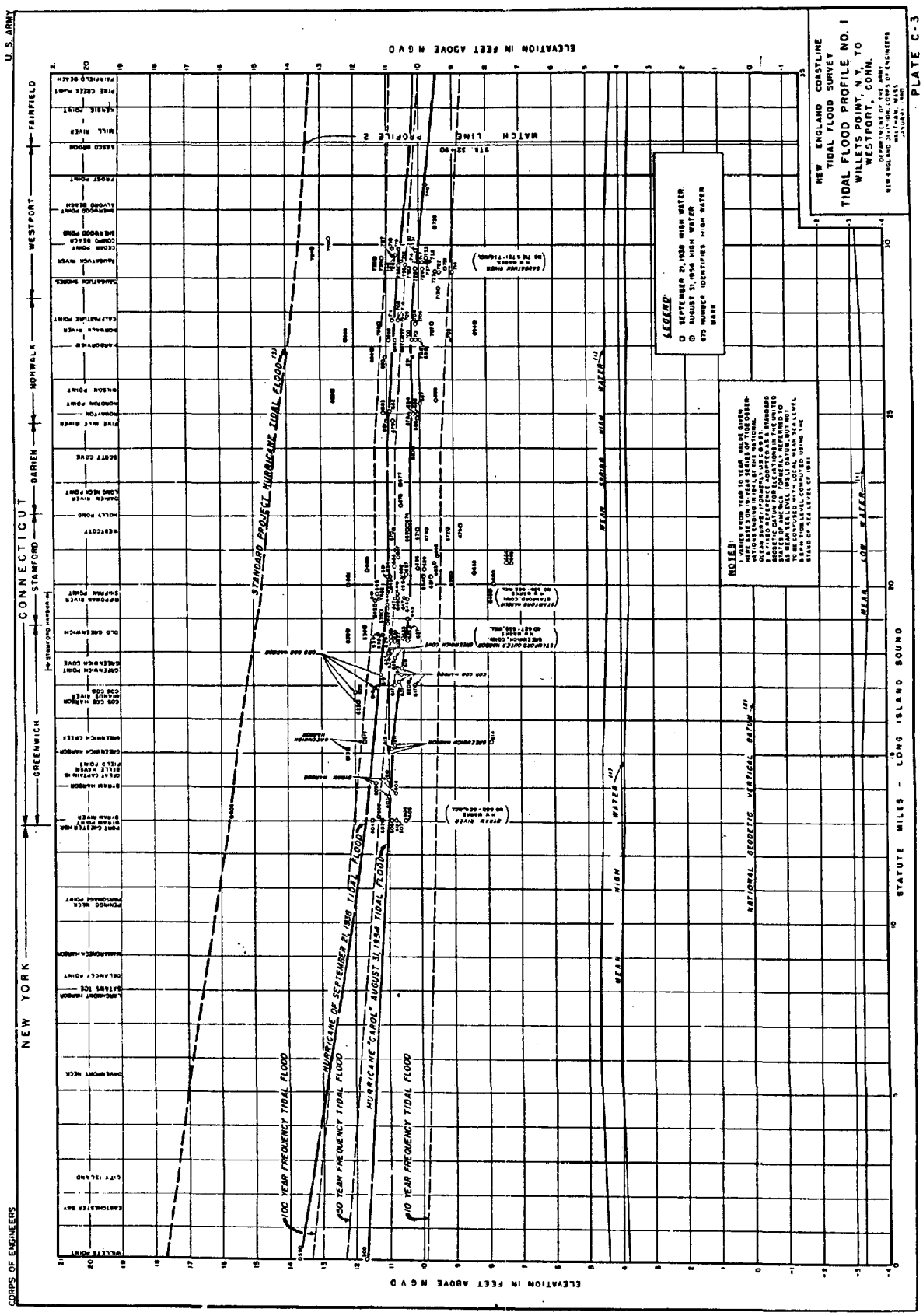

FIGURE 1: TIDAL FLOOD PROFILE FOR CONNECTICUT

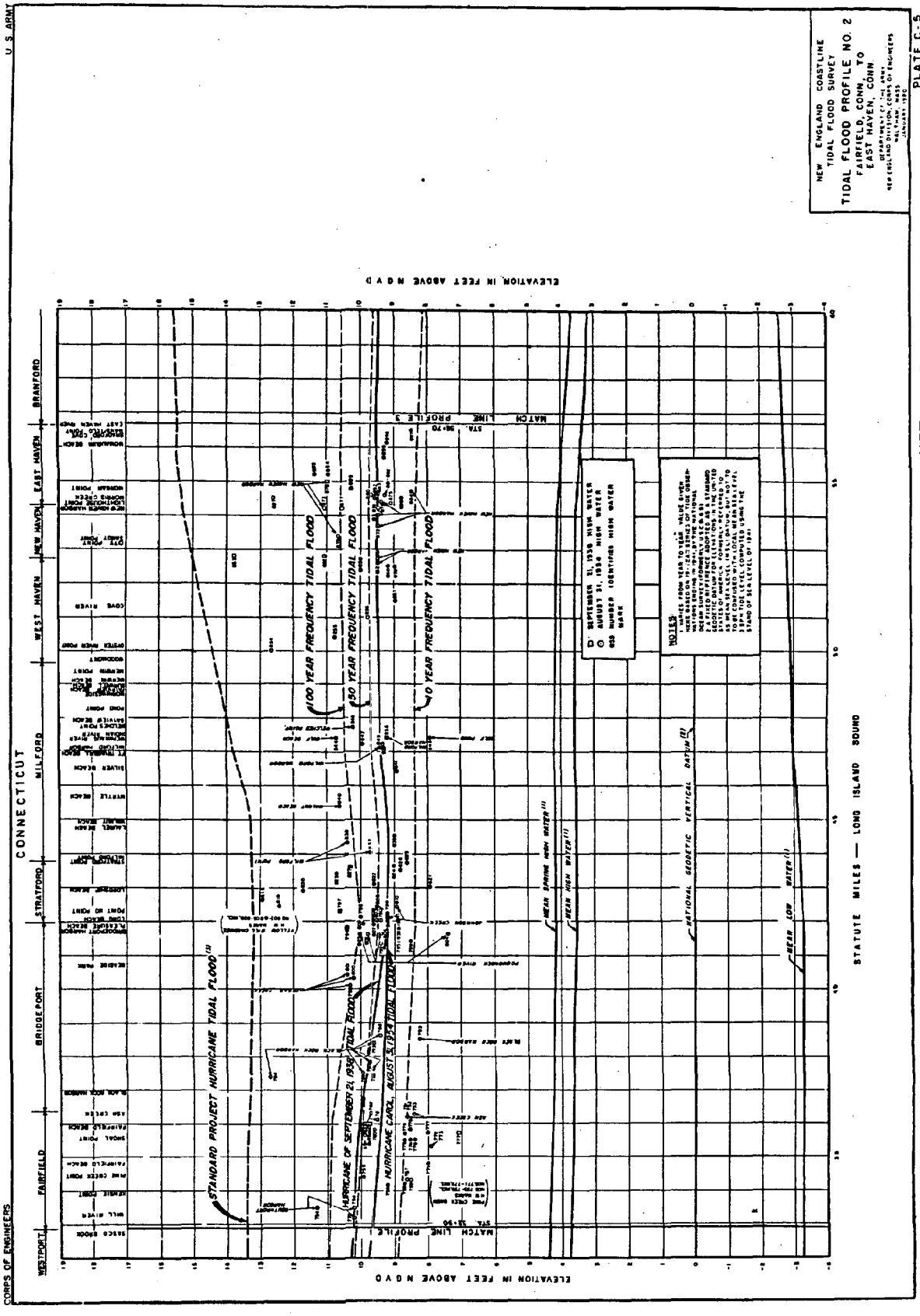

FIGURE 1 (CONTINUED): TIDAL FLOOD PROFILE FOR CONNECTICUT

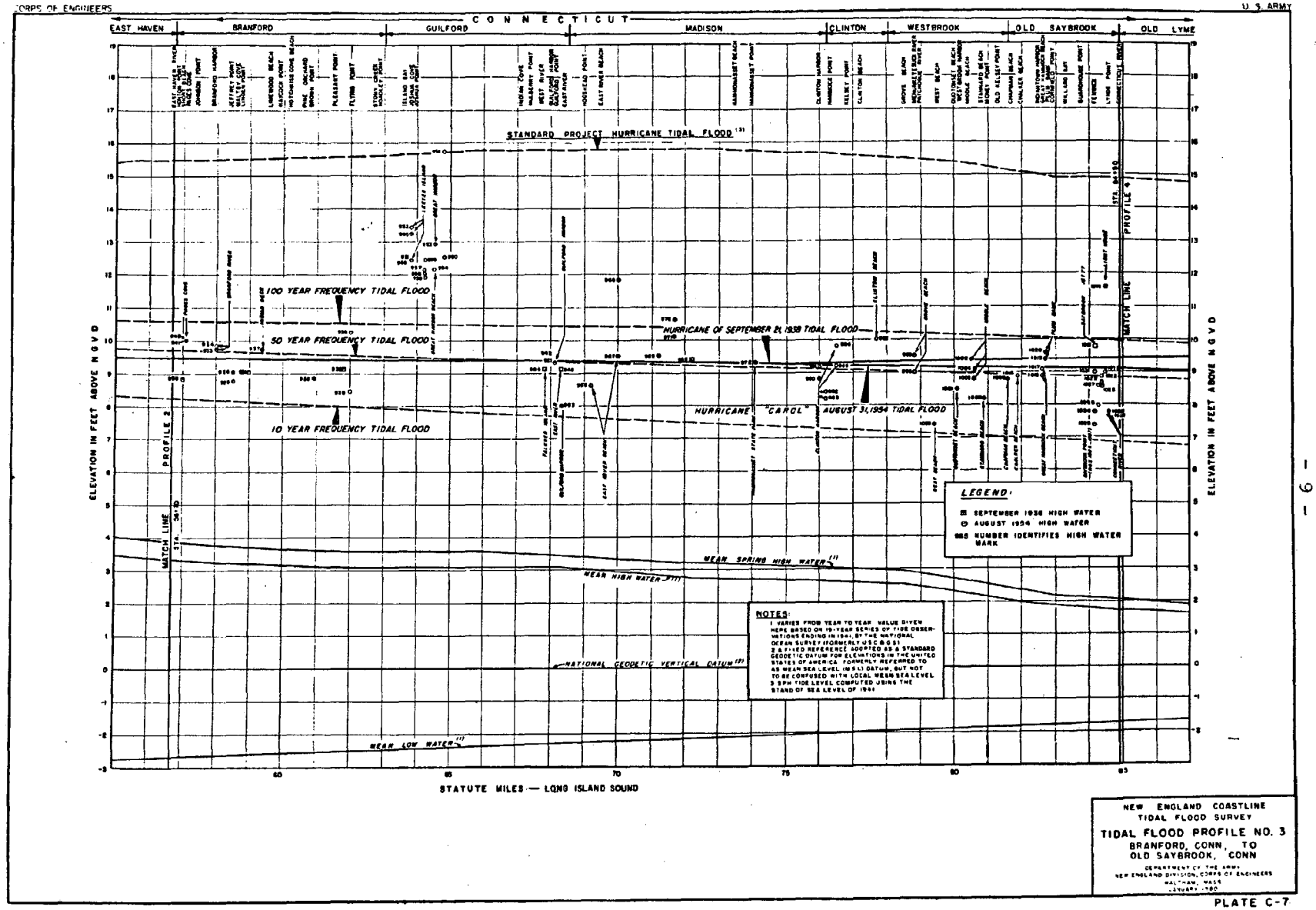

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FIGURE 1 (CONTINUED): TIDAL FLOOD PROFILE FOR CONNECTICUT

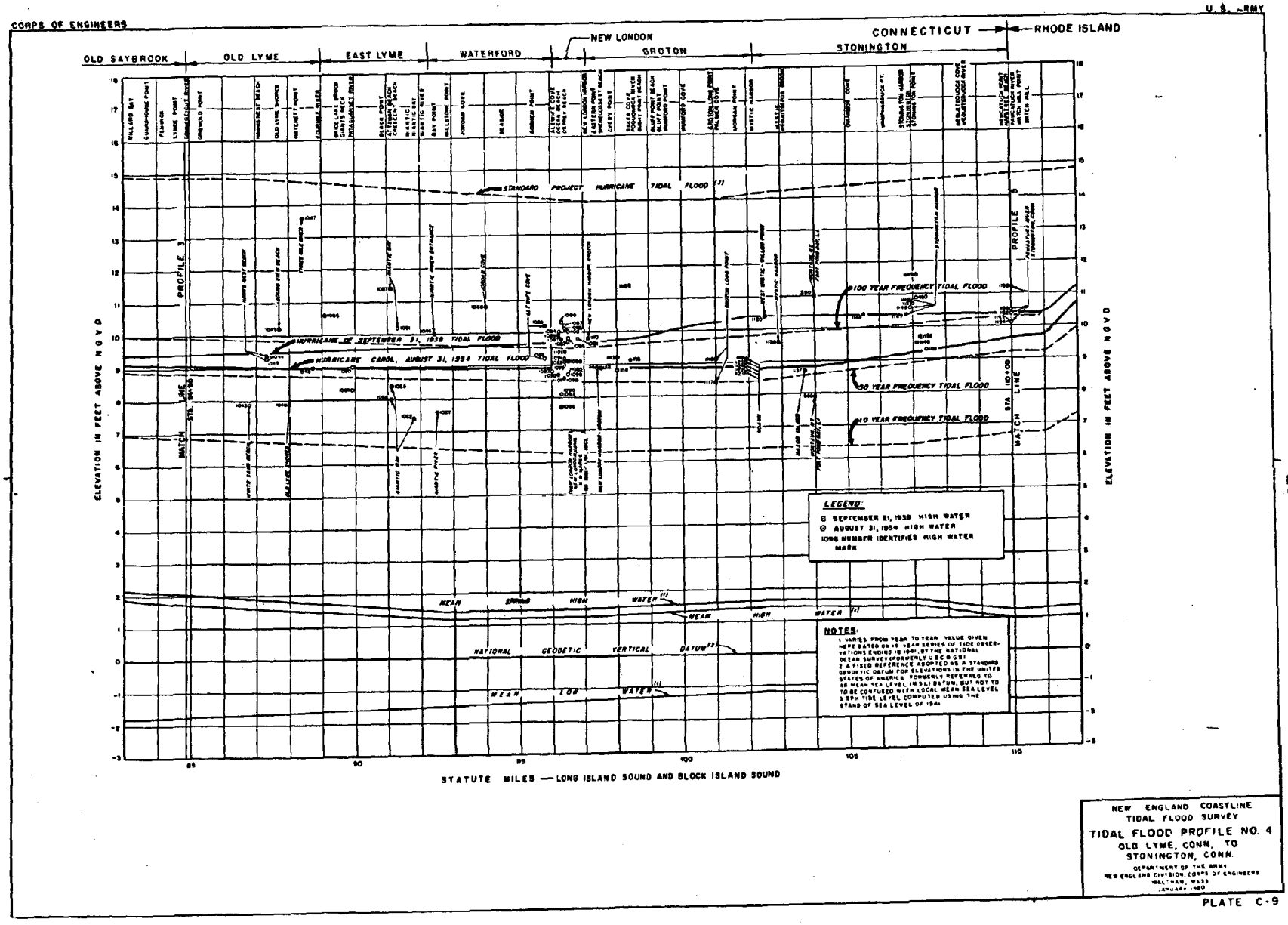
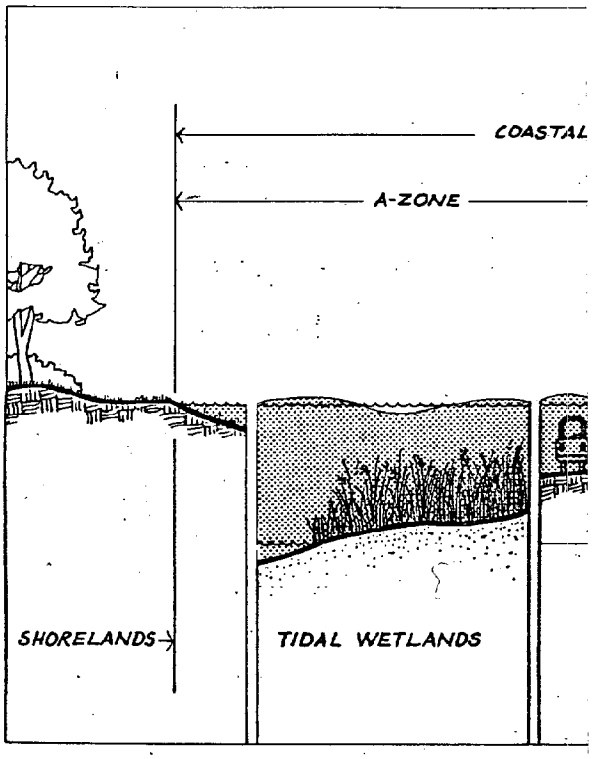


FIGURE 1 (CONTINUED): TIDAL FLOOD PROFILE FOR CONNECTICUT



Coastal Hazard Areas[1] - The land areas inundated during coastal storm events or subject to erosion induced by such events, including flood hazard areas as defined and determined by the National Flood Insurance Act, and all erosion hazard areas as determined by the Commissioner of Environmental Protection.

Shorelands[1] - Those land areas within the coastal boundary exclusive of coastal hazard areas, which are not subject to dynamic coastal processes and which are comprised of typical upland features such as bedrock hills, till hills, and drumlins.

Tidal Wetlands[1] - Those areas which border or lie beneath tidal waters, such as but not limited to banks, bogs, salt marsh, swamps, meadows, flats, or other low lands subject to tidal action, including those areas now or formerly connected to tidal waters, and whose surface is at or below an elevation of one foot above local extreme high water, and upon which may grow or be capable of growing, some but not necessarily all of specified plants listed in the general statutes.

Beaches and Dunes[1] - Beach systems including barrier beach spits and tombolos, barrier beaches, pocket beaches, land contact beaches and related dunes and sandflats.

Intertidal Flats[1] - Very gently sloping or flat areas located between high and low tides composed of muddy, silty and fine sandy sediments and generally devoid of vegetation.

Largely as a result of wave action, much of the Connecticut coast is subject to erosion. The Corps of Engineers has determined that erosion is critical on 26 miles[1] of Connecticut's 583-mile[2] shoreline. In these areas an average of 1 to 1.5 feet of land is lost per year[1]. Most of the erosion takes place during storms, and the severe erosion occurs mostly on beaches.

Because the coast is attractive, much of it has been developed -- for marinas and other water-dependent activities, for some business and industry, and especially for residences, both year-round and seasonal. Where this development has occurred in coastal flood hazard areas, it may be adversely affected by flooding depending upon its particular location, elevation and method of construction. Some development has occurred that is subject to flooding from tides only slightly above normal, while other development is unaffected by moderate flooding, but subject to severe damage from waves during major storms. Still other development has occurred in areas subject to rapid erosion.

In the past 100 years, 15 hurricanes, as well as numerous tropical storms and Northeasters, have affected the Connecticut coastline. The amount of flood damage from these storms has varied greatly, but three severe storms can be identified as causing the most harm. The storm of record is the September 21, 1938 hurricane that hit most of the Connecticut coastline with winds up to 100 mph and tides of up to 12 feet above NGVD (see Figure 1). A less severe storm hit Connecticut on September 14 and 15, 1944 with winds up to 70 mph. The most recent severe storm was Hurricane Carol which entered southern New England on August 31, 1954. The eye of this storm moved up the Connecticut-Rhode Island border, and affected mostly eastern Connecticut, Rhode Island, and Massachusetts. Hurricane

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[1] People and the Sound, Erosion and Sedimentation. Prepared for the New England River Basins Commission by the U.S. Department of the Army, Corps of Engineers, and the U.S. Department of Agriculture, Soil Conservation Service, January 1975. The report gives Connecticut shoreline as 250 miles, including estuarine areas; a measurement made for the National Shoreline Study.

[2] State of Connecticut Coastal Management Program and Final Environmental Impact Statement, National Oceanic and Atmospheric Administration, Office of Coastal Zone Management, 1980. The estimated shoreline is longer because it includes the estuarines and riverine shorelines of all the Connecticut municipalities included within the Connecticut Coastal Management Program.

Carol had sustained winds of up to 90 mph and gusts up to 100 mph. The Corps of Engineers has estimated that the economic cost (in terms of 1975 dollars) of flood damage from a recurrence of the 1938 hurricane would be over $100 million and for the 1954 hurricane the resultant cost would be $72 million[1] (see Table 1). Smaller storms also cause damages, often quite localized. Damage estimates for smaller storms are not well recorded.

In response to coastal flooding and damages that have occurred over the years, some actions have been taken in an attempt to reduce the frequency and extent of coastal flooding and erosion. The federal government, through the Corps of Engineers, has undertaken a few large flood control projects; most notably the construction of a hurricane barrier in Stamford Harbor. Federal, state and local governments have also undertaken a number of smaller erosion control projects such as beach widening and groin construction at several locations along the coast. The largest response, however, has been the construction, by individual property owners, of seawalls, groins, jetties and the placement of riprap in front of individual properties in an effort to prevent flooding and reduce erosion. These small individual projects can be quite effective against moderate flooding, but are usually relatively ineffective against major flooding such as would occur in a one percent flood. In addition, they may have undesirable side effects on neighboring properties.

Nonstructural measures to minimze the impacts of flooding and erosion (such as regulations, floodproofing, warning and evacuation, and mapping of flood hazard areas) have also been undertaken. The most prominent actions have been those related to passage of the National Flood Insurance Act of 1968. As part of the National Flood Insurance Program, the federal government has mapped the flood hazard areas in all coastal communities. In order to make federally subsidized flood insurance available to property owners in their communities, all Connecticut coastal towns have now passed at least minimum floodplain management

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[1] Connecticut Coastline Study, Effects of Coastal Storms. U.S. Army Corps of Engineers, Waltham, Mass. July 1976. These estimates represent only damages to property present at the time of the 1938 and 1954 hurricanes and do not include estimates of damages to new development that has since occurred (telephone communication with U.S. Army Corps of Engineers, Waltham, Mass).

TABLE 1: ESTIMATED POTENTIAL FLOOD DAMAGES ALONG THE CONNECTICUT COAST

Location	Estimated Damages[1] (Thousands of Dollars - 1975 Price Levels) Recurring 1954 Hurricane	Recurring 1938 Hurricane
Greenwich	$ 1,500.0	$ 2,000.0
Stamford	7,200.0	13,500.0
Darien	1,100.0	1,300.0
Norwalk	2,600.0	4,600.0
Westport	2,400.0	3,000.0
Fairfield	1,500.0	3,300.0
Bridgeport	2,000.0	4,300.0
Stratford	3,300.0	3,300.0
Milford	1,100.0	1,100.0
West Haven	400.0	400.0
New Haven	2,200.0	2,200.0
East Haven	1,500.0	1,500.0
Branford	3,000.0	2,800.0
Guilford	400.0	400.0
Madison	1,500.0	1,500.0
Clinton	400.0	700.0
Westbrook	1,500.0	2,000.0
Old Saybrook	2,600.0	3,000.0
Old Lyme	3,700.0	4,300.0
East Lyme	2,200.0	2,400.0
Waterford	700.0	900.0
New London	9,300.0	11,900.0
Montville	1,500.0	2,000.0
Norwich	2,600.0	11,300.0
Preston	minor	minor
Ledyard	minor	minor
Groton	5,600.0	11,100.0
Stonington	10,600.0	16,700.0
TOTALS	$72,400.0	$111,500.0

Source: U.S. Army Corps of Engineers, New England Division. Connecticut Coastline Study: Effects of Coastal Storms. Waltham, Mass. 1976.

[1] These estimates represent only damages to property present at the time of the 1938 and 1954 hurricanes and do not include estimates of damages to new development that has since occurred (telephone communication with U.S. Army Corps of Engineers, Waltham, Mass.).

regulations. These regulations basically require that all new and substantially improved structures be elevated or floodproofed to or above the level of the one percent flood. Many property owners in coastal towns now have flood insurance to help defray the costs of flood damages (as of August 1981, over 9,300 policies with a value of over $439 million were in force).[1] More recently the Connecticut Department of Environmental Protection, Coastal Area Management Office has established policies and guidelines which communities must consider when reviewing applications for construction in coastal flood hazard areas.[2]

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[1] Data supplied by State of Connecticut, Department of Environmental Protection, Natural Resources Center, and compiled from National Flood Insurance Program Report for the month ending August 31, 1981.

[2] Coastal Policies and Use Guidelines. Planning Report No. 30. State of Connecticut, Department of Environmental Protection, Coastal Area Management Program, December 1979.

OPPORTUNITIES FOR POST-FLOOD HAZARD MITIGATION THROUGH PUBLIC ACQUISITION OF FLOOD DAMAGED PROPERTIES

The responses to coastal flooding outlined in the previous section are primarily of two types: (1) structural measures to protect developed areas subject to coastal flooding and erosion; and (2) regulatory measures to limit the amount and type of new development in undeveloped areas. The regulatory measures may also act in a limited way -- usually over a long time period -- to modify existing development so that it is less susceptible to flooding and to remove development subject to an unacceptable flood risk. Other opportunities for post-flood hazard mitigation include the elevation or floodproofing of rebuilt structures, the installation of flood warning systems, and the preparation of evacuation plans.

Another apprcach for dealing with existing development subject to flood hazards -- one that is often considered but less frequently used -- is the acquisition of floodprone properties by public agencies. Following acquisition, the property is usually converted to some form of open space or public recreation use less susceptible to damages from flooding. In areas that have been frequently flooded and in areas that are clearly subject to severe flooding, communities have in some cases acted to acquire areas at risk before additional flooding occurs. Usually this action has been taken when the community found it possible to meet some additional public objective -- e.g., provision of public recreation area or open space, waterfront revitalization, or removal of substandard housing -- in addition to alleviating a flood risk. In other cases, communities have acted to acquire floodprone areas only after a devastating flood has caused substantial property damage and sometimes injury and loss of life.

Although many communities throughout the country have acted to reduce their flood risk through acquisition and relocation, most have not. Some which have not acted, have not done so because they lacked the financial resources, or because they were unprepared to take the necessary actions following a flood (as well, perhaps, as being financially unable).

SECTION 1362 OF THE NATIONAL FLOOD INSURANCE ACT

In 1979 the federal government decided to implement Section 1362 of the National Flood Insurance Act. This program of financial and technical assistance is devoted specifically to acquisition of flood-damaged properties. The most prominent reasons for the decision to implement the program were: to assist communities that wished to reduce future flood damages; to assist property owners who found themselves financially unable to leave their floodprone residences; and to reduce federal costs of disaster aid by breaking the cycle of flood damage, followed by federal aid to assist rebuilding, followed by a recurrence of flood damage.

Federal funds, administered by the Federal Emergency Management Agency (FEMA), can be provided under Section 1362 for the purchase, from willing sellers, of properties located in flood risk areas and covered by federal flood insurance where one of the following property damage criteria is met:

- damaged "substantially beyond repair"[1] by flood while covered under the NFIP;
- incurred significant flood damage on not less than three previous occasions within a five-year period while covered under the NFIP; and on each occasion the cost of repair, on the average, was at least 25 percent of the value of the structure; or
- while covered under the NFIP, property has sustained damage from a "single casualty of any nature" so that a statute, ordinance, or regulation precludes its repair or restoration or permits repair or restoration only at significantly increased cost.

Under the Section 1362 program, FEMA purchases qualified properties from willing sellers (eminent domain is not available -- this is strictly a voluntary program) and subsequently turns the property over to a unit of local or state government for an appropriate, low-flood-risk, public use. Because funds for the program

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[1] Damaged substantially beyond repair has been defined by FEMA regulations to mean "(a) damages to the improved real property are such that as a condition of repair as imposed by a state or local government, the structure must be elevated or floodproofed to or above the the 100-year flood elevation, or (b) damages to the improved real property equals or exceeds 50 percent of the structure's fair market or actual cash value, whichever is less, or (c) where damages to the improved real property are such that repair is physically impossible or infeasible." Federal Register, Vol. 45, No. 146, page 50282.

are quite limited ($5.4 million allocated in FY 80 and 81, and $1.5 million allocated for FY 82), FEMA established several community eligibility criteria (see Figure 3) as part of its program regulations[1] in an effort to ensure that the projects undertaken are effective. These criteria emphasize the manner in which a Section 1362 acquisition project would mesh with other ongoing or planned floodplain management, recreation, or community development programs.

Because funds for Section 1362 are so limited, the ability of a state of community to rank high on the community eligibility criteria is likely to affect its ability to obtain a share of Section 1362 funding. The list of Section 1362 projects funded during FY 1980 and FY 1981 gives some indication of the wide range of situations FEMA has chosen to fund in the program's first two years (see Table 2). Some of these projects were conceived immediately after a major flood without benefit of any advance planning -- Gulf Shores, Alabama and Phoenix, Arizona, for example. In other cases, extensive planning between floods enabled the integration of Section 1362 with a host of related programs -- the Clay County, Minnesota project, for instance.

The potential benefits of a Section 1362 program in Connecticut could be large. Over a period of time, use of the Section 1362 program in combination with other acquisition programs and effectively applied regulatory measures could help to remove much of the most vulnerable development from threat of damaging floods. At the same time, the state and communities could carry out existing recommendations for expanded open space and recreation lands along the coast and for new and expanded wildlife protection areas. In some areas, substandard housing could also be removed.

Connecticut already meets some of the community eligibility criteria incorporated into the Section 1362 regulations. The State Comprehensive Outdoor Recreation Plan (SCORP), for example, identifies acquisition of flood damaged and floodprone properties as a high priority. It also recommends the acquisition of areas subject to severe erosion, the provision of beach access, and the public acquisition

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[1] FEMA Interim Rule for Acquisition of Flood Damaged Structures, and Guidelines on Property Acquisition Under Section 1362 are published in the Federal Register, Vol. 45, No. 146, pages 50282-50293, and provided in Appendix B to this report.

FIGURE 3: FEMA GUIDELINES FOR COMMUNITY ELIGIBILITY[1]

a. Existing, On-going Program for Permanent Evacuation of Floodplains

The permanent removal of flooded buildings in a community will contribute to the achievement of existing, on-going programs for the permanent evacuation of floodplains (provided that the Section 1362 program fulfills a unique need not addressed in the on-going program nor not duplicative of existing funding).

b. Multiple Goals

Acquisition will contribute to the achievement of multiple goals of community development in addition to hazard mitigation, including but not limited to, environmental enhancement, open space, recreation, urban renewal, or some other public purpose.

c. Economic Benefit

The acquisition and removal of floodprone structures will have an economic benefit, in terms of elimination of future flood insurance claims, avoidance of future damage and reduction of future local, state and federal disaster relief costs, avoidance of business interruption and reduction in exposure to loss of life. This criterion will favor structures located in floodways, velocity zones and other flood risk zones of high flood loss potential.

d. Favorable Property Distribution

The distribution of properties eligible for acquisition under Section 1362, or the distribution of these eligible properties combined with those properties that can be acquired and removed through programs that are readily available from sources other than FIA, will result in a pattern of properties which lends itself to a logical and desirable reuse function.

e. Other Alternatives Less Effective

Alternatives to acquisition under Section 1362 have been investigated and found to be less effective than Section 1362 acquisition in meeting floodplain management and hazard mitigation goals. These alternatives could include, but are not limited to, acquisition programs and permanent relocation programs of local, state, or other federal agencies; floodproofing; or structural flood protection.

f. Planning Process

Communities have undergone a planning process and found acquisition and relocation of structures to be the most desirable in terms of cost, degree of flood protection achieved, environmental enhancement and other factors.

g. Good Floodplain Management Program

Communities have demonstrated or agree to pursue an active program of sound floodplain management which exceeds the minimum requirements of the National Flood Insurance Program.

h. Community Resources Available

The communities can actively participate in the planning and implementation phases of the Section 1362 program through the provision of either financial or staff resources.

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[1]Source: Federal Emergency Management Agency. Guidelines on Property Acquisition under Section 1362, Section II 5, Selection of Eligible Communities. Federal Register, Vol. 45, No. 146. p. 50287.

TABLE 2: SUMMARY OF SECTION 1362 PROJECTS

Project	Source of Flooding	Number of Properties	Total Costs
FY '80 Projects			
Clay County, MN	Platte River	6	$ 556,000
Gulf Shores, AL	Gulf of Mexico	5	1,068,400
Arnold, MO	Meramec River	34	831,333
San Bernardino, CA	Harrison Canyon (mudflow)	20	1,497,754
Phoenix, AZ[1] (3 locations)	Salt & Gila Rivers	4	186,664
North Stratford, NH	Connecticut River (ice jams)	1	58,000
Scituate, MA[1]	Atlantic Ocean	8	395,200
Cowlitz County, WA	Toutle River (Mt. St. Helens)	16	914,800
	FY '80 TOTAL	94	$5,508,151
FY '81 Projects			
Hull, MA	Atlantic Ocean	3	$ 130,900
Scituate, MA[1]	Atlantic Ocean	2	87,335
Lost Creek, WV	West Fork	7	78,340
Hamilton, WA	Skagit River	8	185,963
Lake Elsinore, CA	Lake Elsinore	36	2,231,886
Lodi, NJ	Saddle River	6	394,900
Peoria, IL	Illinois River	7	364,500
Phoenix, AZ[1]	Salt & Gila Rivers	6	150,157
Belmont County, OH	Ohio River	2	38,182
San Bernardino, CA	Harrison Canyon	2	141,610
	FY '81 TOTAL	79	$3,804,049[2]
Anticipated FY '82 Projects			
Mobile, AL	Gulf of Mexico	22	$1,100,000

[1]Land deeded to State agency

[2]Additional costs which did not involve acquisition of additional properties included $79 in Cowlitz County, WA and $197 in Jackson, MS.

Source: FY '80 data from Federal Insurance Administration Section 1362 Fiscal Year 1980 Summary; FY '81 and FY '82 data provided by FEMA staff.

of certain recreation and critical habitat areas. The CAM program, in its Shoreline Erosion Analysis and Coastal Recreation planning reports, set forth the general need for land acquisition and identified some specific areas to be acquired, and the state's Coastal Management Program has established policies and guidelines that communities must consider when evaluating proposals for development in coastal flood hazard areas. Most recently, new requirements for building in all flood hazard areas were added to the state building code, including standards for development in coastal high hazard areas.

Thus, a number of important policies and regulations are already in place at the state level. Additional efforts can be taken, however, to strengthen and clarify these existing state positions, to identify high priority candidate areas for acquisition, and to encourage municipalities to take appropriate steps to reduce coastal flood hazards, including increasing their chances of qualifying for the Section 1362 program. Recommendations in each of these areas are provided in Part III of this report.

SUMMARY OF PHASE I RESULTS

INITIAL SELECTION OF AREAS FOR DETAILED STUDY

Phase I was designed to identify approximately 20 developed coastal hazard areas for detailed study in Phase II. Three criteria were used to select these areas:

- *vulnerability to damage from coastal flooding*
- *potential for fulfilling any of a variety of public needs*
- *acceptability of acquisition to property owners and state or local governments.*

Information relevant to these criteria was gathered from a number of published sources and from interviews with officials of state and regional agencies. Based on the published data and interviews, a list of 54 potential areas was developed. These areas were ranked by the contractor as high, medium, or low priority based on their potential for public use and the likelihood that acquisition would be acceptable. Areas were ranked low priority if potential for public use was minimal or if interviews indicated that opposition to an acquisition project was likely. Medium priority areas were those whose acceptability was unknown and whose potential for public use seemed moderate. Areas with multiple public uses or areas whose acquisition was considered especially desirable by local governments were classified as high priority.

This initial list of 54 areas was reduced to 30 following discussions with staff from CAM, Water Resources Unit, Natural Resources Center, and the Property Management Unit of DEP. The selected areas are listed in Table 3; Figure 4 shows their location.

These 30 areas -- the areas with potential for acquisition initially identified -- are concentrated in three regions in the center of the state, stretching from Norwalk to Old Lyme. The southwestern and southeastern portions of the coast had fewer areas. The southwestern part of the state yielded few areas because the coast there is rocky and because residents are largely uninterested in moving from the coast. The southeastern portion of the state's coast yielded few areas because it is rocky and relatively sparsely developed.

TABLE 3: AREAS INITIALLY SELECTED FOR DETAILED STUDY

Norwalk

1. Norwalk Islands
2. Harborview

Fairfield

3. Pine Creek Beach
4. Fairfield Beach
5. Ash Creek (Riverside Drive)

Stratford

6. Long Beach
7. Point No Point (Lordship)
8. Short Beach

Milford

9. Milford Point
10. Cedar Beach
11. Silver Beach
12. Welches Point to Pond Point/ Bayview Beach

East Haven

13. Momauguin
14. Silver Sands Beach
15. West Silver Sands Beach

Guilford

16. Grass Island

Madison

17. Circle Beach

Clinton

18. Cedar Island
19. Harbor View
20. Clinton Beach

Westbrook

21. Grove Beach
22. West Beach

Old Saybrook

23. Chalker Beach
24. Great Hammock Beach and Plum Bank Beach

Old Lyme

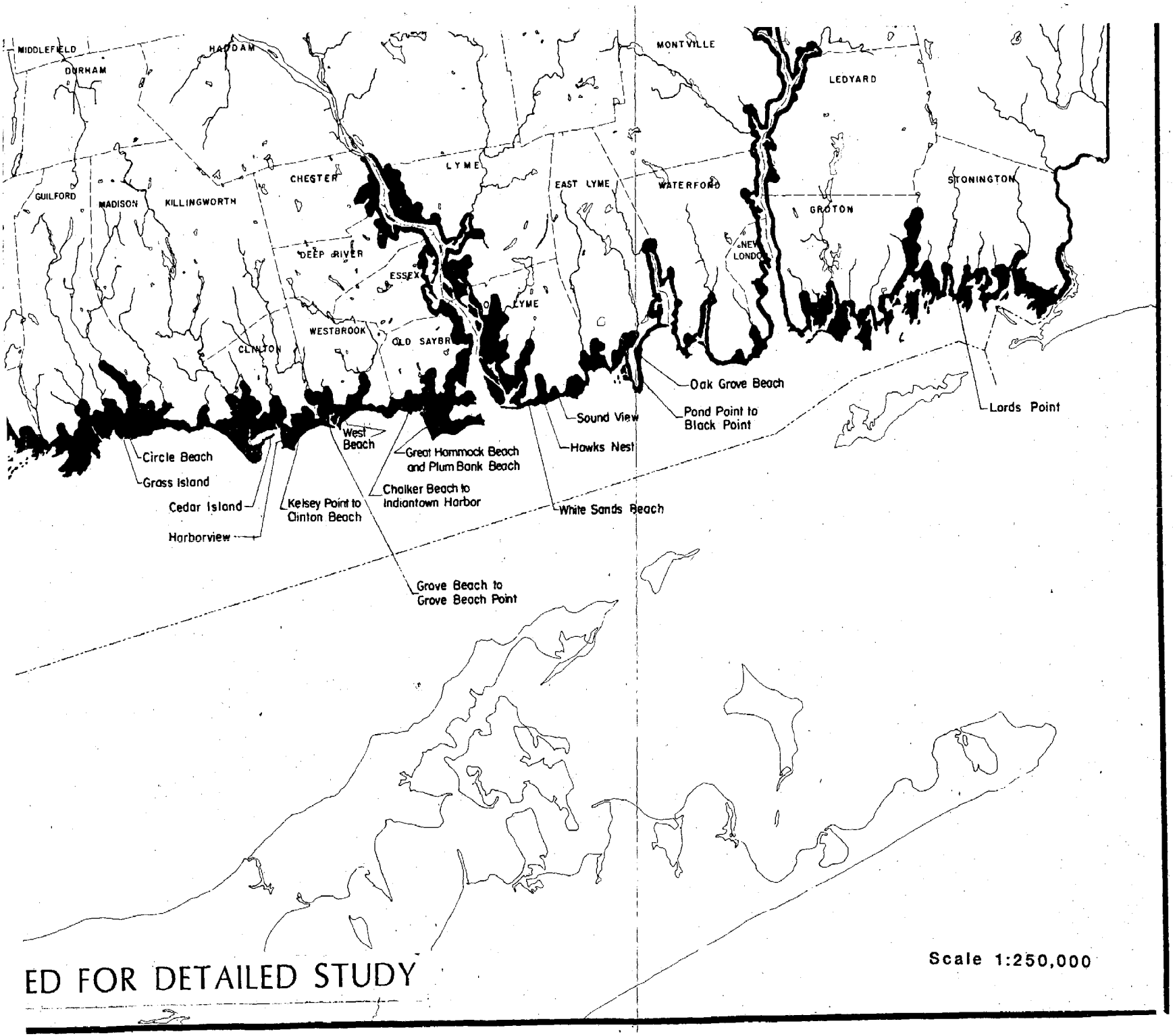
25. White Sands Beach
26. Hawks Nest
27. Sound View

East Lyme

28. Oak Grove Beach
29. Pond Point to Black Point

Stonington

30. Lords Point



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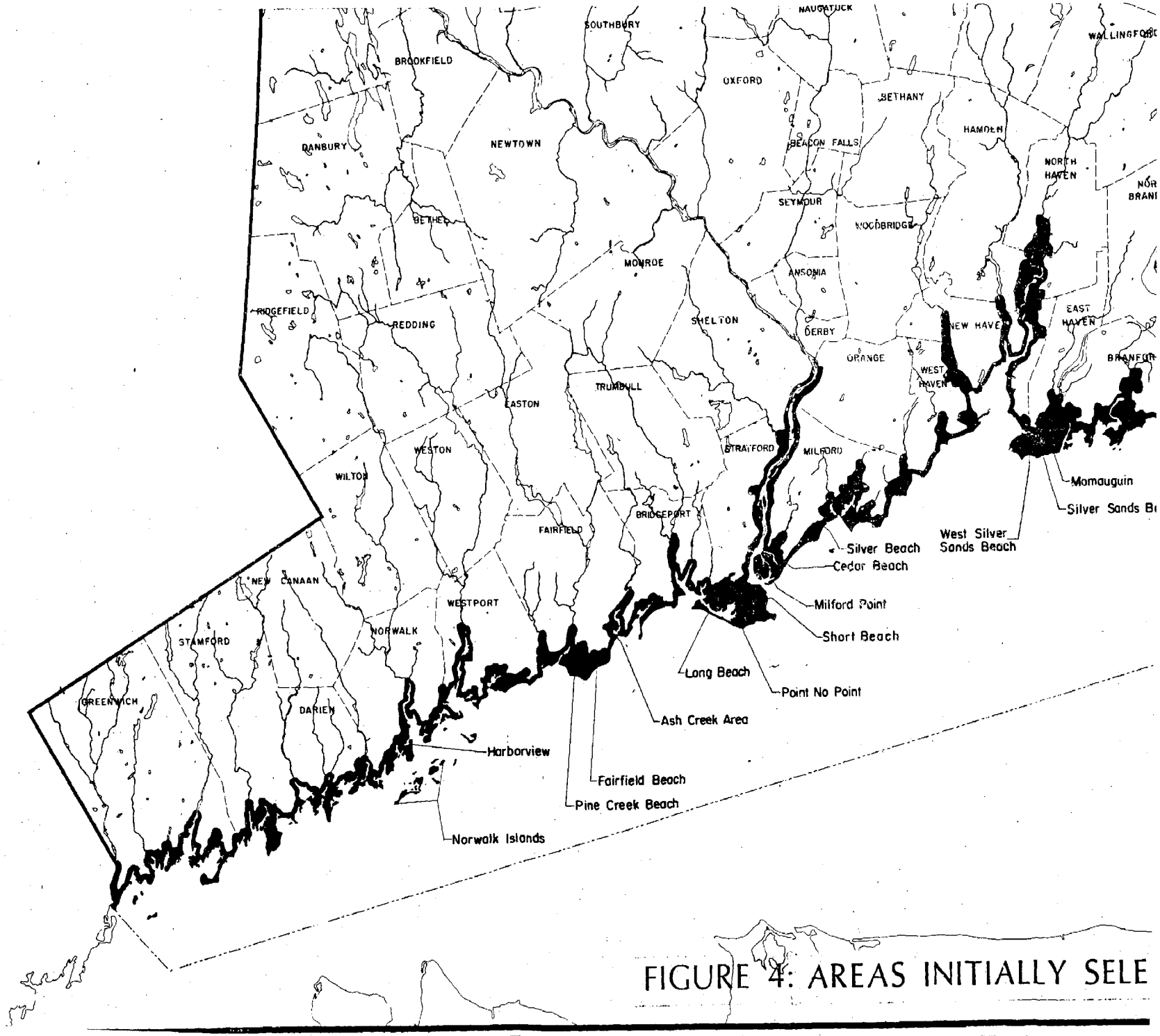


FIGURE 4: AREAS INITIALLY SELE

SELECTION OF AREAS FOR STUDY IN PHASE II

Once the initial 30 areas were selected, additional information was collected for each area and meetings were scheduled with local officials in order to determine which of these areas were most likely to qualify for Section 1362 acquisition.

Local officials, suggested by CAM, were contacted in each of the 13 communities to explain the nature of the study and the Section 1362 program. These officials were asked to provide the contractor with information on any land use plans and maps, floodplain regulations, and other information that might be helpful for the study. A letter was sent to each of these officials describing what was expected to be accomplished at the meeting, and providing a brief description of the Flood Hazard Area Study and the Section 1362 program.

Meetings were held with all but one of the officials contacted. Additional town representatives were also present at some meetings. Those interviewed included first selectmen, town planners, town engineers, planning and zoning officials, and conservation commission officials. Site visits were made to most of the areas either before or after the meetings with local officials.

During the meetings, discussions focused on:

- o community interest in acquiring -- through the 1362 program or other means -- all or part of the identified areas in the community
- o other areas in the town that might be suitable for acquisition under the Section 1362 program
- o likely interest on the part of residents in selling after flood damage
- o any existing plans for acquisition or use of the selected areas
- o potential reuse of the areas if acquired
- o floodplain regulations and other flood loss reduction measures undertaken by the community
- o history of flood damage in the selected areas

Following the meetings with local officials, descriptions of each area were prepared based largely on the meetings, but also including relevant information from aerial photographs, and any land use maps or plans, floodplain regulations and other information available on the town and selected areas. These descriptions consisted of a summary description of the area, information on how acquisition might meet the Section 1362 Community Eligibility Criteria, the type of interest expressed by the community in acquisition, and a recommendation as to whether further investigation of the area should be pursued in Phase II.

Using these descriptions and maps of the areas as a basis for discussion, the areas to be investigated further in Phase II were selected in consultation with staff from CAM and other DEP units.

The amount of information available concerning the 30 areas varied considerably as did interest on the part of the communities in acquiring areas through the Section 1362 program. Most communities have given little or no consideration to acquiring areas that are already developed; they have focused any existing acquisition plans on undeveloped lands.

Although flooding and erosion are recognized problems in all of the areas, and some have experienced moderate flooding in the past several years, none have sustained catastrophic damage in recent years -- in some areas not since the 1938 hurricane. Because of the lack of major damage in recent years, it is difficult to determine property owner and community interest in acquisition following such a major storm. According to officials interviewed, some owners do appear to be interested in selling following damage, while many others do not. Owners typically find the coast of Connecticut an attractive place to live, including sites directly on the beach fully exposed to flooding and erosion. They rely on warnings before a major storm to reduce risk of injury and loss of life. They appear to consider minor property damage an acceptable price for living in such an attractive environment. Further, all of the communities are in the flood insurance program, and, for individuals choosing to purchase it, flood insurance will cover much of the cost of any flood damages sustained.

Coastal property owners do not appear to have problems selling homes because of their vulnerability to flood damage. Property values are increasing in all of

the selected areas, keeping pace with or exceeding increases in property values at other locations in the towns.

Despite all this, a number of coastal areas were identified by CAM and the contractor as potentially qualifying for acquisition under the Section 1362 program following a major flood. These areas are largely ones in which communities have a definite need for additional public beaches, beach access, parking areas or boat launching areas; in which there is a history of flood damages; and in which local officials speculate that area residents may well consider relocation following a major coastal storm. The remaining areas selected for further investigation in Phase II are ones whose acquisition would serve state needs for recreational land or critical habitat protection.

Of the 30 areas investigated, 20 were selected for more detailed study in Phase II because they may offer good potential for eventual acquisition under the Section 1362 program. Table 4 lists these areas, and their location is shown in Figure 5.

TABLE 4: AREAS SELECTED FOR FURTHER STUDY IN PHASE II

1. Harborview, Norwalk
2. Norwalk Islands, Norwalk
3. Pine Creek Beach, Fairfield
4. Long Beach, Stratford
5. Milford Point, Milford
6. Cedar Beach, Milford
7. Silver Beach, Milford
8. Bayview Beach, Milford
9. Grass Island, Guilford
10. Circle Beach, Madison
11. Cedar Island, Clinton
12. Harbor View, Clinton
13. Clinton Beach, Clinton
14. Grove Beach, Westbrook
15. West Beach, Westbrook
16. Chalker Beach to Oyster River, Old Saybrook
17. Great Hammock Beach, Old Saybrook
18. Plum Bank Beach, Old Saybrook
19. Hawks Nest, Old Lyme
20. Sound View, Old Lyme

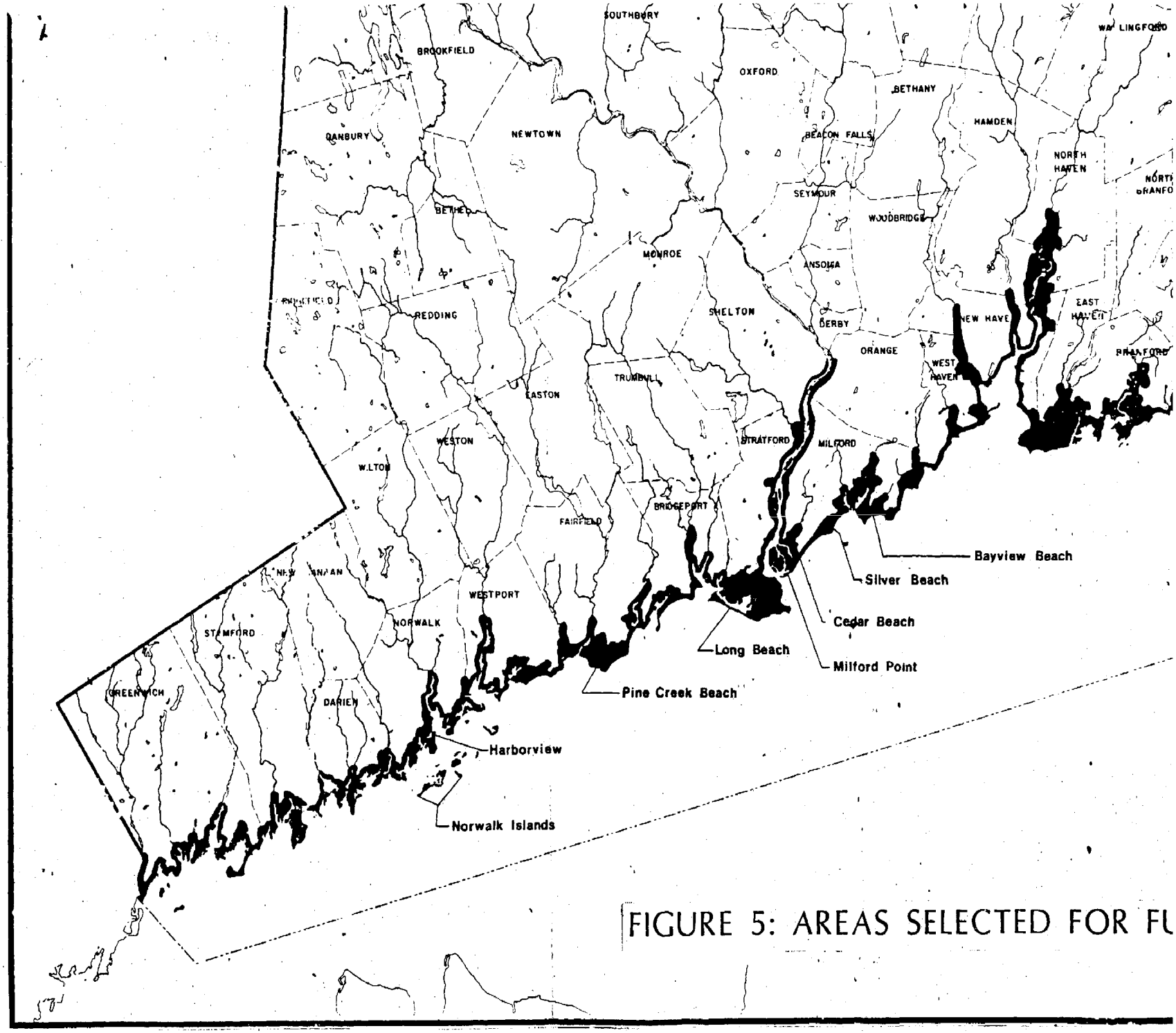
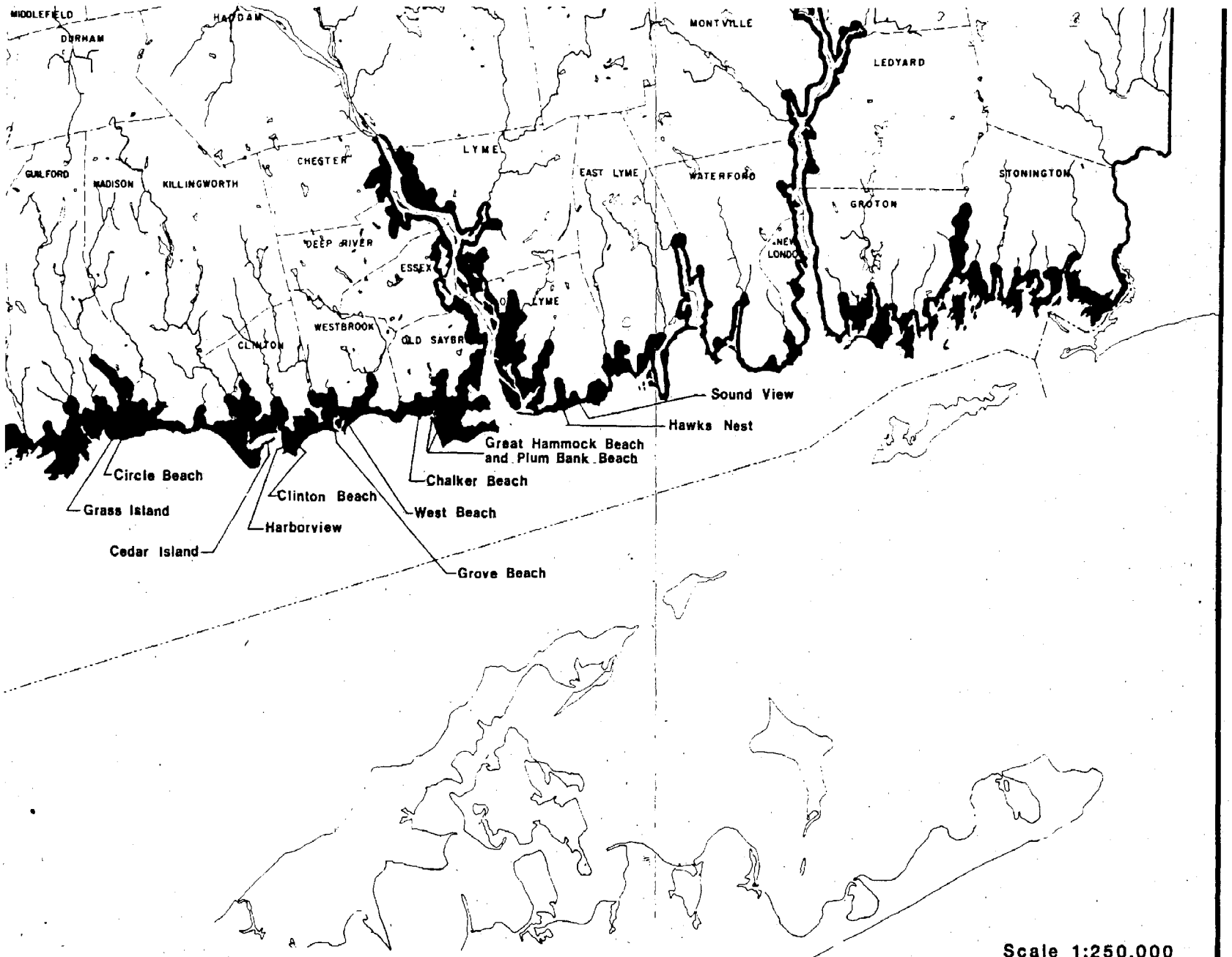


FIGURE 5: AREAS SELECTED FOR FI



THER INVESTIGATION IN PHASE II

PART II

EVALUATION OF SELECTED

STUDY AREAS

PHASE II METHODOLOGY

Each of the 20 areas selected in Phase I were investigated in detail during Phase II. More specific information concerning each of the areas and the towns in which they are located was obtained from several sources:

- review of relevant documents, such as town plans of development, zoning maps, zoning regulations, floodplain ordinances, town annual reports, topographic maps, FEMA Flood Insurance Rate Maps, CAM Coastal Resource maps, etc.

- interviews with town officials and staff, such as First Selectmen, town engineers, planning directors, conservation commission members and staff, town clerks, draftsmen, engineer's aides, assessors, etc.

- conversations with town residents, principally individuals who approached members of the project staff during field visits, but including a few meetings and telephone conversations with representatives of beach associations.

- review of tax assessors' records to obtain information about the approximate value of properties in the study areas and the size and type of construction of buildings on the properties (e.g., one or two story, with or without basement, etc.)

- field visits to each area to: make observations concerning the general area, individual structures, presence of flood and erosion protection measures, such as seawalls, groins, etc.; make measurements and estimates of ground elevations and elevations of the first floor of structures above ground level, etc.

- estimates of still water elevations and wave crest elevations in each of the areas using the FEMA Field Manual for Estimating Wave Heights in Coastal High Hazard Areas in Atlantic and Gulf Coast Regions, March 1981.

Information from these sources formed the basis for evaluating the potential eligibility of each of the 20 areas for possible future public acquisition under the

FEMA Section 1362 program. The following criteria for eligibility in the Section 1362 program were considered:

CRITERIA AFFECTING INDIVIDUAL PROPERTIES

To be eligible for acquisition under Section 1362, properties must satisfy all of the following criteria as set forth in FEMA Guidelines.[1]

A. Flood Risk Area. "The property must be located in a flood risk area as determined by" ... (FEMA).

All of the areas under investigation are located in a flood risk area as designated on FEMA Flood Insurance Rate Maps and CAM Coastal Resource Maps.

B. Flood Insurance Coverage. "The property must have been covered by a flood insurance policy under the National Flood Insurance Program at the time damage took place."

This study is making estimates of properties that may be damaged during some future one percent (100-year) flood, and there is no way to know which properties will be insured at the time of any such future flood. Moreover, information on current flood insurance coverage of individual properties was not available for the study because of Privacy Act restrictions on the release of this information. For purposes of this study it has been assumed that all of the properties within the study areas would be covered by flood insurance at the time of the one percent flood.

C. Voluntary Program. "Improved real property will only be acquired through voluntary sale and not through any eminent domain or condemnation proceeding. Thus, no property owners will be required to sell their properties under Section 1362."

Unless otherwise specified in the evaluation of individual areas, it has been assumed that owners of property meeting other eligibility criteria would be willing to sell.

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[1] Federal Emergency Management Agency, Guidelines on Property Acquisition Under Section 1362. Federal Register, Vol. 45, No. 146, p. 50285-50293.

D. Damage to Structures. "The property must meet any one of the following damage criteria:"

1. Damage criterion a: "Property that has incurred significant flood damage on not less than three previous occasions while covered under the NFIP under a five-year period; and on each occasion the cost of repair, on the average, was at least 25 percent of the value of the structure."

   This criterion -- 25 percent damage three times in five years -- is extremely strict, with the result that very few properties throughout the country have qualified under it. This study did not attempt to identify any properties that would sustain 25 percent damage three times within five years.

2. Damage criterion b: "Property, while covered under the NFIP, that has sustained damaged from a 'single casualty of any nature' so that a statute, ordinance or regulation precludes its repair or restoration of permits repair or restoration only at significantly increased cost."

   This criterion is dependent upon local floodplain management regulations and building codes and on the extent to which these regulations and codes are strictly enforced. Most local floodplain regulations and building codes use 50 percent of the fair market value to trigger any requirements for more stringent rebuilding or to prevent rebuilding. Therefore, for flood-caused damages, this criterion becomes nearly equivalent to the "damaged substantially beyond repair" criterion, as discussed below. No attempt was made to estimate how many or which properties might be damaged at some future date by casualties other than floods, such as fire, tornadoes, etc.

3. Damage criterion c. "Property that has been damaged 'substantially beyond repair' by flood while covered under the NFIP."

   This study focused on this damage criterion, which provides for property that has been damaged "substantially beyond repair". As defined by FEMA regulations, "damaged substantially beyond repair" means that

(i) "damages to the improved real property are such that as a condition of repair as imposed by a state or local government, the structure must be elevated or floodproofed to or above the 100-year flood elevation, or"

(ii) "damages to the improved real property equals or exceeds 50 percent of the structure's fair market or actual cash value, whichever is less, or"

(iii) "where damages to the improved real property are such that repair is physically impossible or infeasible."

Of these three criteria (i) and (ii) are essentially equivalent where, as is typically the case, local regulations and building codes are keyed to 50 percent of fair market value. Criterion (iii) is impossible to estimate before flood damage occurs. Therefore, the study was concerned with estimating which structures had a high potential for sustaining 50 percent damage.

Damage estimation methodology. Estimates of potential for sustaining 50 percent damage were made using a specific methodology. That methodology is explained in detail in Appendix C; the general procedures and assumptions involved in the methodology are outlined below:

- All damage estimates were based on the occurrence of a one percent (100-year) flood.
- In order to include properties very close to the cutoff point, 40 percent damage was used as the qualifying limit rather than 50 percent.
- Damage estimates were derived by applying Depth of Water/Percent Damage tables developed by FEMA and modified by the contractor for this study.
- These tables do not distinguish different types and quality of construction, and no estimates of these were made for individual structures.
- Estimates of depth of water were derived by comparing estimated flood elevations with estimated first floor elevations.
- Flood elevations: estimates of still water elevations were determined from FEMA Flood Insurance Rate Maps and estimates of wave crest elevations were prepared using the FEMA Field Manual for Estimating Wave Heights in Coastal High Hazard Areas in Atlantic and Gulf Coast Regions, March 1981.

- o Structure elevations: estimates of ground elevations and first floor elevations of structures were sometimes based on the average elevation of groups of properties.

CRITERIA AFFECTING COMMUNITIES

In addition to the property eligibility criteria, FEMA regulations and guidelines require that "A community must be willing to accept title to the acquired real property for land management and restrict its use to open space use or similar purposes."

In order to ensure that the most worthwhile projects are selected for funding under the Section 1362 program, FEMA has established several specific criteria that it takes into consideration when evaluating a possible Section 1362 project. These guidelines, described in Figure 3 above, are also outlined below:

1. Community has an existing on-going program for permanent evacuation of floodplains.
2. Acquisition will contribute to the achievement of multiple goals.
3. Acquisition will have an economic benefit.
4. There is a favorable property distribution.
5. Other alternatives are less effective.
6. A planning process has found acquisition desirable.
7. Community has a good floodplain management program.
8. Community can provide resources to assist with the program.

EVALUATION

Using the property damage estimation methodology outlined above (detailed in Appendix C), properties were identified that had a high potential for meeting the Section 1362 property eligibility criteria. Based on a review of documents, interviews with town officials, conversations with residents, and site visits, the community eligibility criteria were also taken into consideration. The results of these evaluations are the identification of areas that are potentially suitable for future acquisition under the Section 1362 program. Depending on the actual extent of damage during a future flood, the availability of funding, and other factors, funding in addition to that available under Section 1362 may be needed to

carry out an acquisition project. The results of these evaluations are described for each of the 20 areas and displayed on maps in the following sections.

It is important to note that the results of this study depend upon the specific methodology used and the assumptions and limitations built into the methodology. For example, all estimates of property damage were based on the occurrence of a one percent flood and estimates of water level and wave crest elevations that would occur during that flood. The next major flood that occurs along the Connecticut coast and causes significant damage may be greater or less than the one percent flood. The actual water levels and wave crest elevations may be greater or less than the estimates. Local conditions may also change. In sum, the pattern of flooding and damages can only be approximated by the methodology.

NORWALK

Two areas were identified in Norwalk; Harborview and the Norwalk Islands (see Figure 6).

HARBORVIEW

General Description

Harborview is a private year-round residential area located on a peninsula (essentially an island) at the mouth of the Norwalk Harbor. The area is bounded on the west by an inlet and by marshland, on the south by marshland, and on the north and east by Norwalk Harbor/Long Island Sound. Harborview contains 102 dwellings (plus a Community Beach House) that are, for the most part, well-kept structures on concrete foundations. All of the homes in the area are served by sewers. (See Figure 7.)

Concrete seawalls extend almost completely around the area providing protection against moderate flooding and erosion. Nonetheless, residents reported that flooding is a common occurence and that shoreline erosion is extensive on the eastern shore (fronting the Sound).

Some homes fronting the Sound have received wave damage (most recently in October 1980) and some of the affected homeowners have used SBA loans to repair this damage. Wave impact on the shorefront properties is affected by the configuration of the surrounding shoreline and by the presence of the Norwalk Islands. The extent of wave impact on the shorefront homes is therefore largely dependent on the direction as well as the intensity of storm winds.

As determined from the City's topographic maps, ground elevations are predominantly in the range of 6 to 10 feet with some higher points in the central and northern parts of the area. The average ground elevation of the structures fronting the Sound is in the range of 8 to 10 feet.

Several homeowners have elected to floodproof their homes by elevating them on concrete foundations. The city now requires such elevation to be to 13 feet above mean sea level. Some residents with basement garages have attempted to prevent water from entering their basements by constructing low asphalt or concrete walls in front of driveways leading to their basements.

Evacuation in the event of a major storm could pose a problem as there is only one access road -- Longshore Avenue -- connecting the area to the mainland.

On the average, individual lots are approximately .1 acre in size and in several cases adjacent lots are combined to form a single parcel of property. Assessed values of individual structures range from about $6,000 to $19,000 with $12,000 an approximate average. Total individual assessments (land plus buildings) range from about $11,000 to $30,000 with $19,000 about average.

The last city-wide real estate evaluation was completed in 1972. Present assessments represent 65 percent of the 1972 market values. The mill rate for property owners in Harborview is 64.

Potential Damage Assessment

As determined from the Flood Insurance Rate Map, the base flood elevation in the area is 11 feet above NGVD and five structures are located within the FEMA-designated V-zone.

There are 26 dwellings and the Community Beach House fronting Long Island Sound that are not included in the FEMA-designated V-zone. Of these 27 structures, roughly half, or those north of Oliver Street, are effectively sheltered from wave action by Peach Island and Calf Pasture Point. The remaining shorefront properties are most vulnerable to waves generated by winds blowing directly out of the east (as evidenced by the October 1980 storm). The three largest Norwalk Islands to the southeast protect Harborview from storm waves out of that direction. Since homes fronting the Sound have received wave damage in the past, the 27 structures on the eastern shorefront were, for the purposes of the potential damage assessment, evaluated both as non-V-zone and V-zone properties.

As a result of the initial screening, none of the structures outside the V-zone and not fronting the Sound were estimated to have high potential for future Section 1362 eligibility.

The 27 structures fronting the Sound but not included in the FEMA-designated V-zone and the five structures located in the V-zone were all evaluated as if they were in the V-zone. A concrete seawall is the only barrier between these

shorefront structures and the Sound, and there is only a very narrow and eroding forebeach area in front of the seawall. A maximum wave crest elevation of 13 feet was used to estimate potential V-zone damage; sill elevations[1] were used to approximate first floor elevation.

Even though several of the shorefront homes south of Oliver Street have experienced wave damage, the Phase II methodology estimated that only one of the structures in the area would have high potential for future Section 1362 eligibility even if the area were to be included in the V-zone. North of Oliver Street, shorefront homes are well-sheltered from storm waves and even if this area were to be included in the V-zone, the methodology estimated only one property with high potential. Two of the five structures in the designated V-zone (south of Beach Street) were estimated to have high potential for future Section 1362 eligibility.

Conclusions

The general location south of Beach Street and within the V-zone, where two properties were estimated to have high potential, has been designated on the 1977 City Parks and Recreation Plan as the site for a boat launch ramp or boat basin. Acquisition of this small group of properties with Section 1362 and other funds would allow the city to carry out the plan recommendations. This location would also pose little interference with residents since users of a boat launch could arrive and exit without entering the rest of the Harborview area. A driveway currently exists to Lot 16 from Longshore Avenue. Consequently, the group of properties south of Beach Street appear suitable for possible future acquisition under Section 1362 and other programs.

The five parcels included in this area total about 1.4 acres. The total assessed value is $128,000 (land - $52,080 and buildings - $75,920), and the existing annual real estate tax revenue to the city is $8,128.

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[1] Metcalf & Eddy, Engineers, Woodward Avenue Area, Norwalk, CT, Lateral Sewers and Appurtenant Work, Contract 77-3.

NORWALK ISLANDS

General Description

The Norwalk Islands, located from one to two miles offshore from Norwalk (see Figure 8), create a buffer zone that provides protection for Norwalk's harbor and coastline.

Three main islands, Chimmons, Shea (Ram), and Sheffield, and sixteen smaller islands were formed by glacial deposition. Today these islands present several land forms and support large numbers of birds, many intertidal species of grasses and aquatic life.

The 60-acre Chimmons Island holds one of the largest avian nesting sites in Long Island Sound. Gulls, herons, egrets, ibis, ducks and assorted songbirds inhabit Chimmons Island during the warmer months. It is also noted for its heron rookery -- a feature that makes it unique in Long Island Sound.

The northern shore of Chimmons has two areas of steeply sloping cliffs composed of boulders. The remaining shore is a gravel to cobble-sized rocky beach with exposed intertidal flats at low tide. Two seasonal, one-story structures are located on Chimmons Island. The Nature Conservancy is negotiating to purchase this island.

Sheffield Island is lined with a seawall along its western exposure where remains of a deteriorated house and adjacent pier stand. The remaining shoreline of Sheffield Island is composed of gravelly to cobbly beaches with intertidal flats exposed at low tides. Two areas of brackish wetlands occur inland in the higher elevations, both on the northwestern portions of the island. A lighthouse is also located on the island.

Shea Island has no permanent structures. Of the smaller islands, Pilot Island has four structures; El Hammock Island three structures; Great Hammock Island one; Copps Island two; Betts Island one; and Calf Pasture Island one. The remainder of the islands do not have permanent structures.

Both the City of Norwalk and the State have identified these islands as important natural features that should be protected, possibly through acquisition. The City already owns Shea, the Plains, Little Ram, and Grass Islands, and has established a special account to accumulate funds for the eventual purchase of Chimmons

or Sheffield and possibly other islands. The islands are presently designated an Island Conservation Zone, a two-acre residential zone.

Potential Damage Assessment

The Flood Insurance Rate Maps for Norwalk do not include the Norwalk Islands, but the base flood elevation is assumed to be 11 feet.

Topographic information is not available for all of the islands, but where it is available, the structures are elevated well above the base flood elevation and do not have high potential for future Section 1362 eligibility.

Estimates of potential damage assessment could not be made for structures without elevation data. (No site visit was made to the Norwalk Islands.)

Conclusions

Even though officials of both the state and the City of Norwalk have expressed interest in acquiring some or all of the Norwalk Islands, Section 1362 application does not appear suitable. Some structures do not have high potential for Section 1362 eligibility. For most others, the potential for eligibility is unknown, but the assessed values of the structures are relatively low compared to the total assessed value of the property, resulting in little potential for financial savings in disaster assistance and reduced flood insurance subsidies if the entire property were to be acquired with Section 1362 funds.

FIGURE 6: LOCATION OF HARBORVIEW AND THE NORWALK ISLANDS IN NORWALK

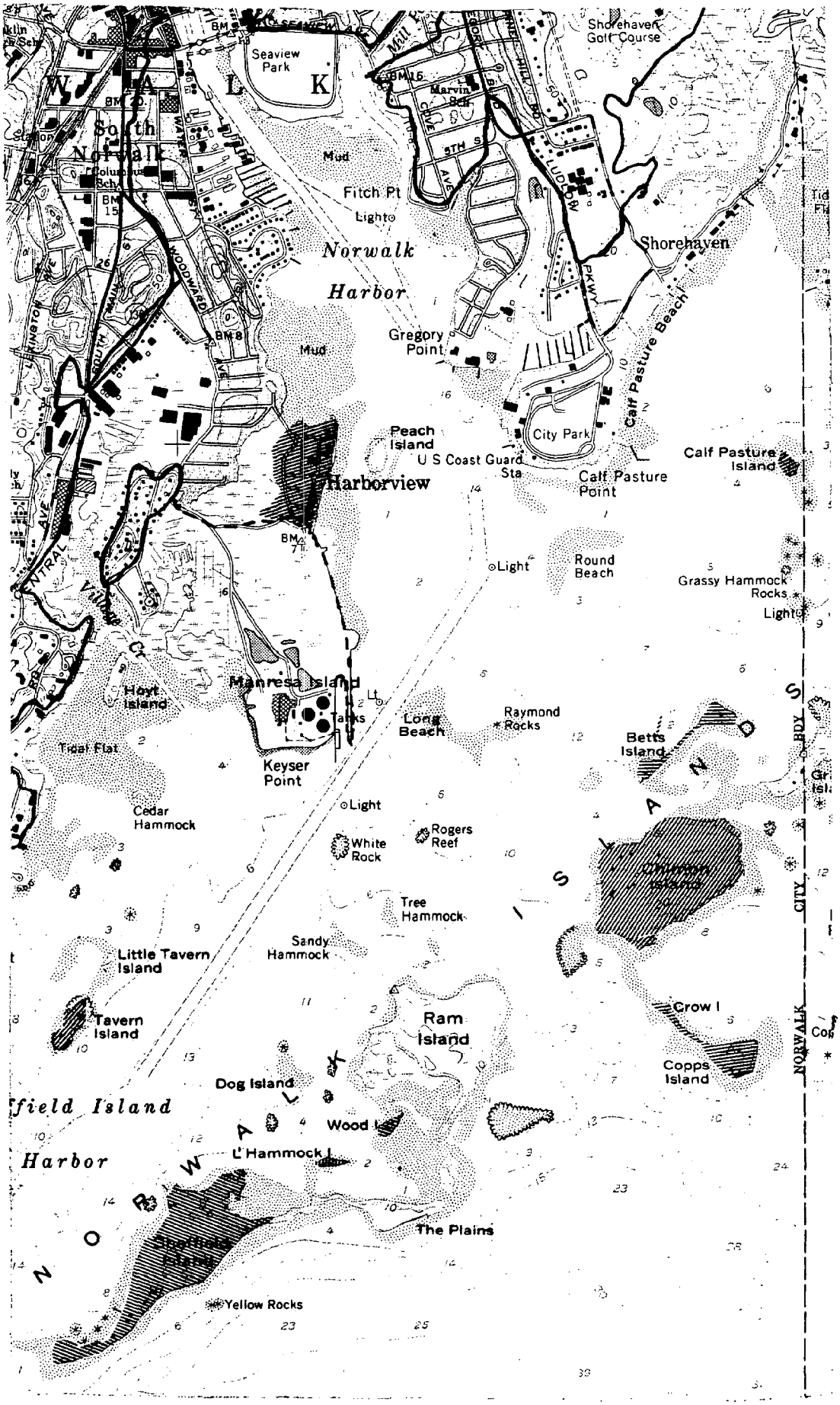


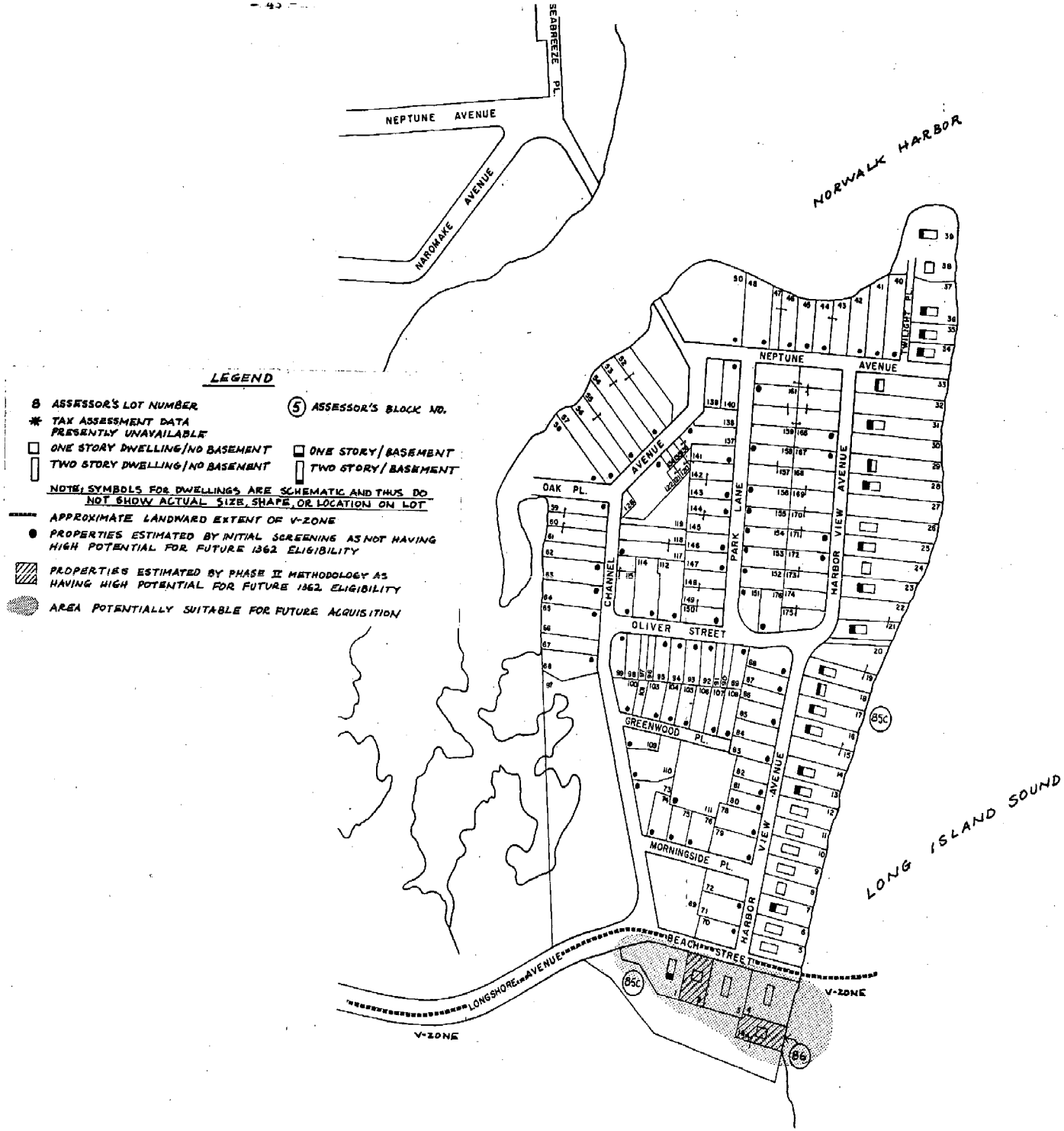
Figure 7

CONNECTICUT COASTAL FLOOD HAZARD AREA STUDY

CITY OF NORWALK: HARBORVIEW AREA

Ralph M. Field Associates, Inc.

0 100 200 300 approx. scale of feet | date: Feb. 1982 | north



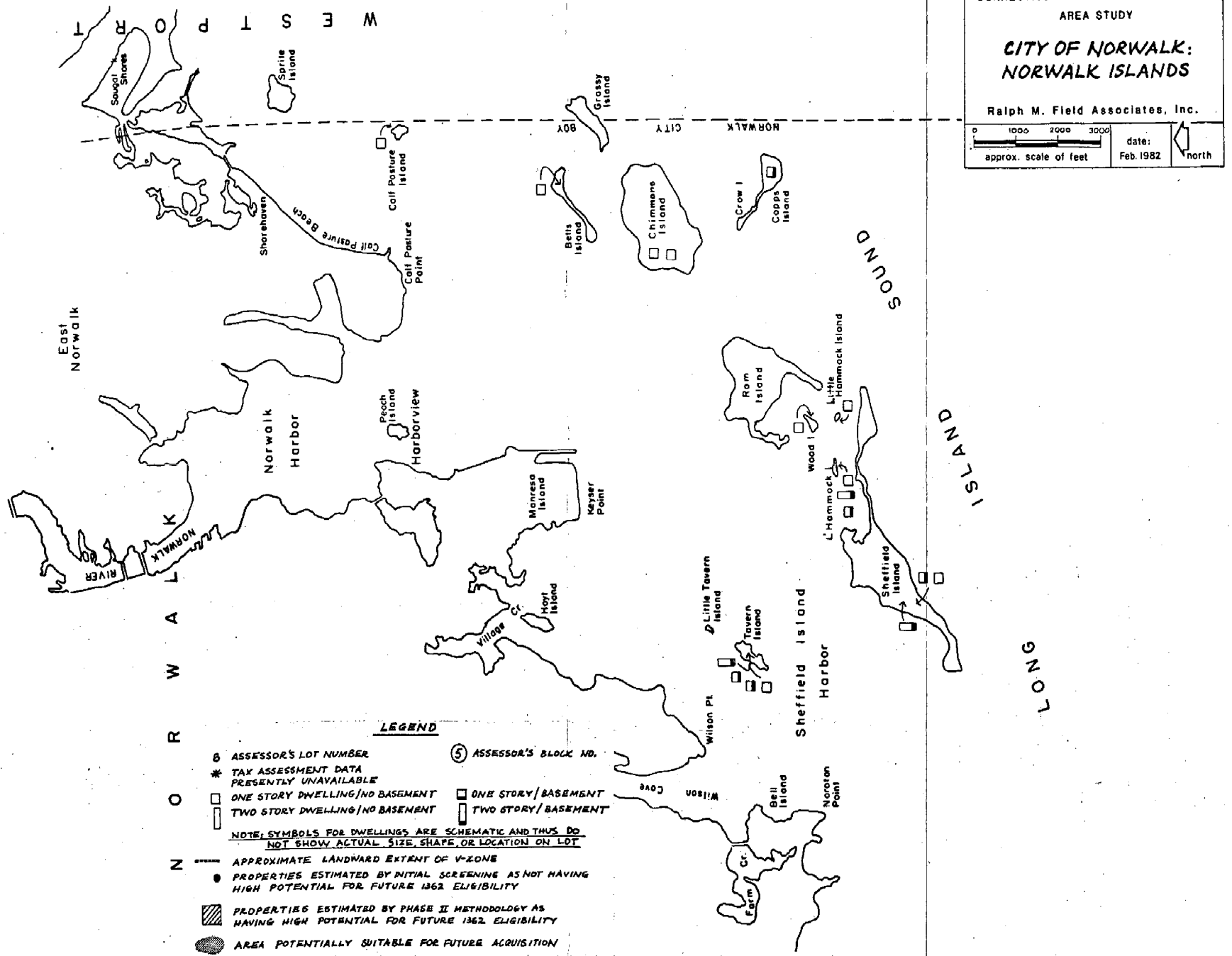


Figure 8

CONNECTICUT COASTAL FLOOD HAZARD AREA STUDY

CITY OF NORWALK: NORWALK ISLANDS

Ralph M. Field Associates, Inc.

0 1000 2000 3000
approx. scale of feet

date: Feb. 1982

north

FAIRFIELD

Only one area in Fairfield was selected for detailed study: Pine Creek Beach (see Figure 9).

PINE CREEK BEACH

General Description

The Pine Creek Beach area (see Figure 10) contains a predominantly year-round residential neighborhood extending from South Pine Creek Road eastward to the end of Pine Creek Avenue. The area includes the homes on French Street and is bounded on the north by the Pine Creek salt marsh and a town-owned recreation area, on the east by Pine Creek and on the south by Long Island Sound and Pine Creek Point. An attractive town-owned beach is located at the end of South Pine Creek Road, but there is practically no off-street parking space. This section of shoreline is oriented towards the southwest and there are no islands or adjacent shoreline features providing a sheltering effect from storm waves originating from that direction.

The area contains a mix of small summer homes, coverted summer homes, larger year-round homes, and substantial new homes recently completed or still under construction. In addition, several of the older dwellings are being remodelled. There are a total of 82 generally well-kept dwellings (plus the Swedish Athletic Club). None of these homes are presently serviced by sewers although the homeowners association, the South Pine Creek Area Association, has been arguing for sewer service for the past 5 years. Plans are presently being prepared to install sewers in the western part of the study area, from French Street to Long Island Sound, in conjunction with a proposed condominium project at the corner of South Pine Creek Road and Pine Creek Avenue. In the past the Town Sewer Commission has seen no viable need to extend sewers, which could encourage added development, to the end of South Pine Creek Avenue.

The Pine Creek dike, constructed by the town in 1969, protects homes fronting Long Island Sound and Pine Creek from flooding and wave damage. The top of the dike is approximately 10½ feet above NGVD. Due to the presence of the dike, residents did not seem particularly concerned about flooding and mentioned that the adjacent Fairfield Beach area was much more susceptible to flood damage.

Some residents did express concern about flooding from the marsh side.

As determined from the town's topographic maps, ground elevations are all within the 4 to 10 foot range. Homes fronting the Sound have been built on the highest terrain in the area (approximately 8 to 10 feet). Ground elevation slopes downward on the marsh side of Pine Creek Avenue and towards the eastern end of Pine Creek Avenue. Most of the dwellings have been elevated at least 2 feet above grade on concrete foundations in response to the major floods of 1938, 1950, and 1954.

Individual lots range in size from about .1 acre to .35 acre, and several lots contain more than one dwelling. There is a wide range in the assessed values of individual structures with some of the smaller summer dwellings assessed as low as $2,000 and more substantial structures assessed as high as $30,000. $11,000 is an approximate average. Total individual assessments (land plus buildings) range from about $6,000 to $50,000 with $22,000 about average. The last real estate evaluation in Fairfield was completed in 1973, and present assessments represent 70 percent of that year's market value. The mill rate is 43.2.

Potential Damage Assessment

The base flood elevation is 11 feet above NGVD. The landward limit of the V-zone roughly follows Pine Creek Avenue from the intersection of South Pine Creek Road eastward approximately 1,800 feet, or until the barrier beach that is Pine Creek Point protects shorefront properties from wave damage. Thirty-six dwellings seaward of Pine Creek Avenue are considered to be in the FEMA-designated V-zone.

As a result of the initial screening, all but ten non-V zone structures adjacent to the town-owned marshland were eliminated from further estimates of high damage potential, and these ten were eliminated during the second screening.

The shorefront properties within the V-zone are protected from the Sound by the dike. In addition, some of the V-zone structures are protected by individual seawalls (of lower elevation than the dike), and there is a forebeach area approximately 100 feet wide in the western half of the shorefront. A maximum wave crest elevation of 13 feet was used to estimate potential V-zone damage; an average first floor elevation of 2 to 3 feet above grade was used for each structure. Although the Pine Creek dike would appear to offer considerable protection

from wave damage, the Phase II methodology estimates that several dwellings in the western portion of the V-zone have high potential for future Section 1362 eligibility.

Conclusions

Town officials of Fairfield have expressed considerable interest in acquiring properties in this area. The town has been interested since the 1960's in acquiring property adjacent to the Pine Creek marsh for the purpose of restoring the natural tidal marsh system. Community Development Block Grants from the Department of Housing and Urban Development have been used for restoration of portions of the marsh and for the development of recreation areas. This study, however, did not identify any properties adjacent to the marsh as having high potential for future Section 1362 eligibility.

The primary interest expressed by the town during this study was to expand the parking facilities serving the public beach at the end of South Pine Creek Road. Land costs in this area are reportedly escalating rapidly. Several properties in this same area are estimated by the methodology to have high potential; therefore, this area appears suitable for future application of Section 1362.

Fifteen dwelling lots totalling approximately 2.7 acres make up the potential acquisition area shown in Figure 10. The total assessed value of these properties is $352,020[1] (land, $217,130; buildings, $150,300), and the current annual real estate tax revenue to the town is $15,207.[1]

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[1]Total does not include value of one dwelling presently under construction.

FIGURE 9 : LOCATION OF PINE CREEK BEACH AREA IN FAIRFIELD

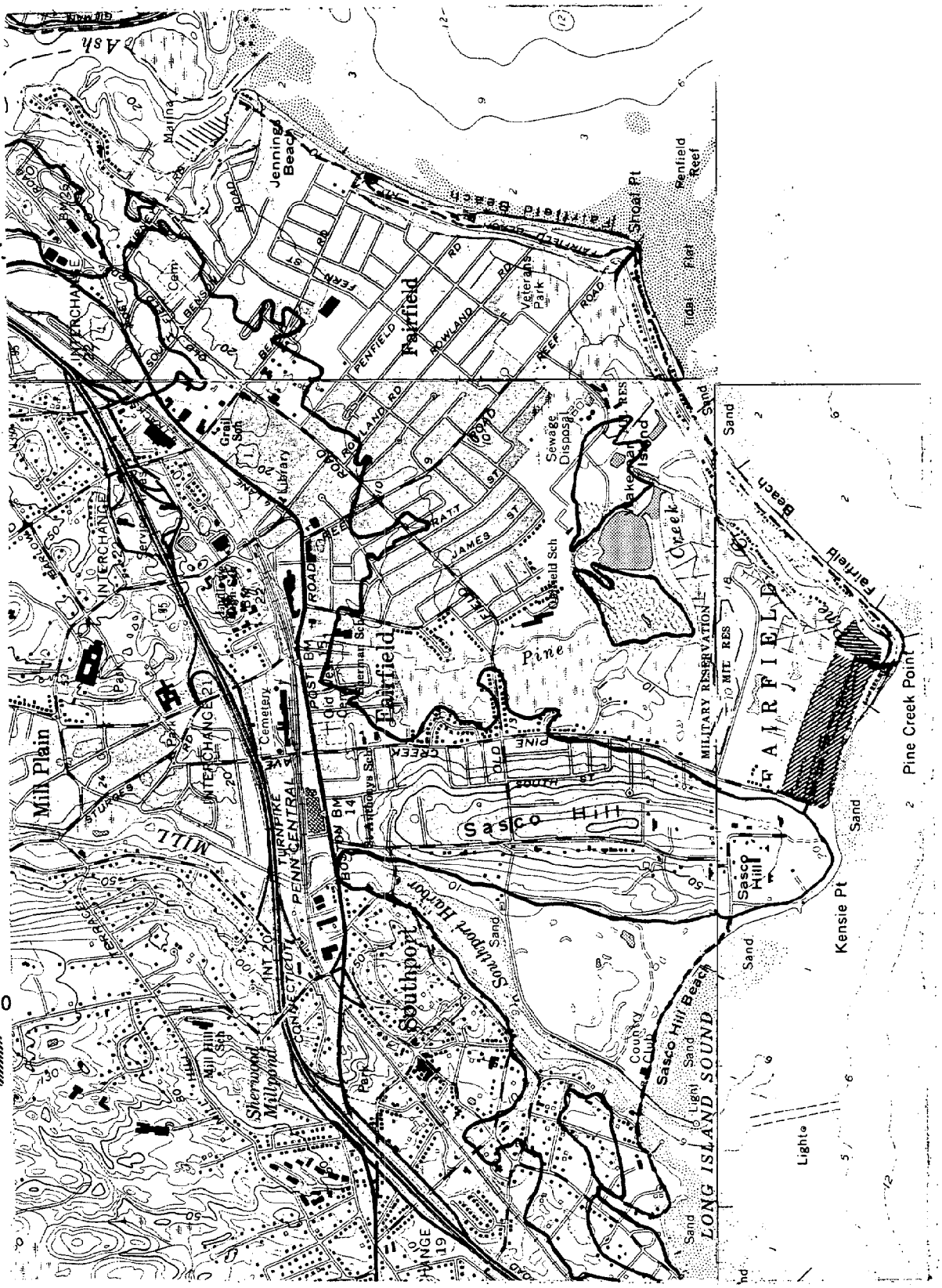


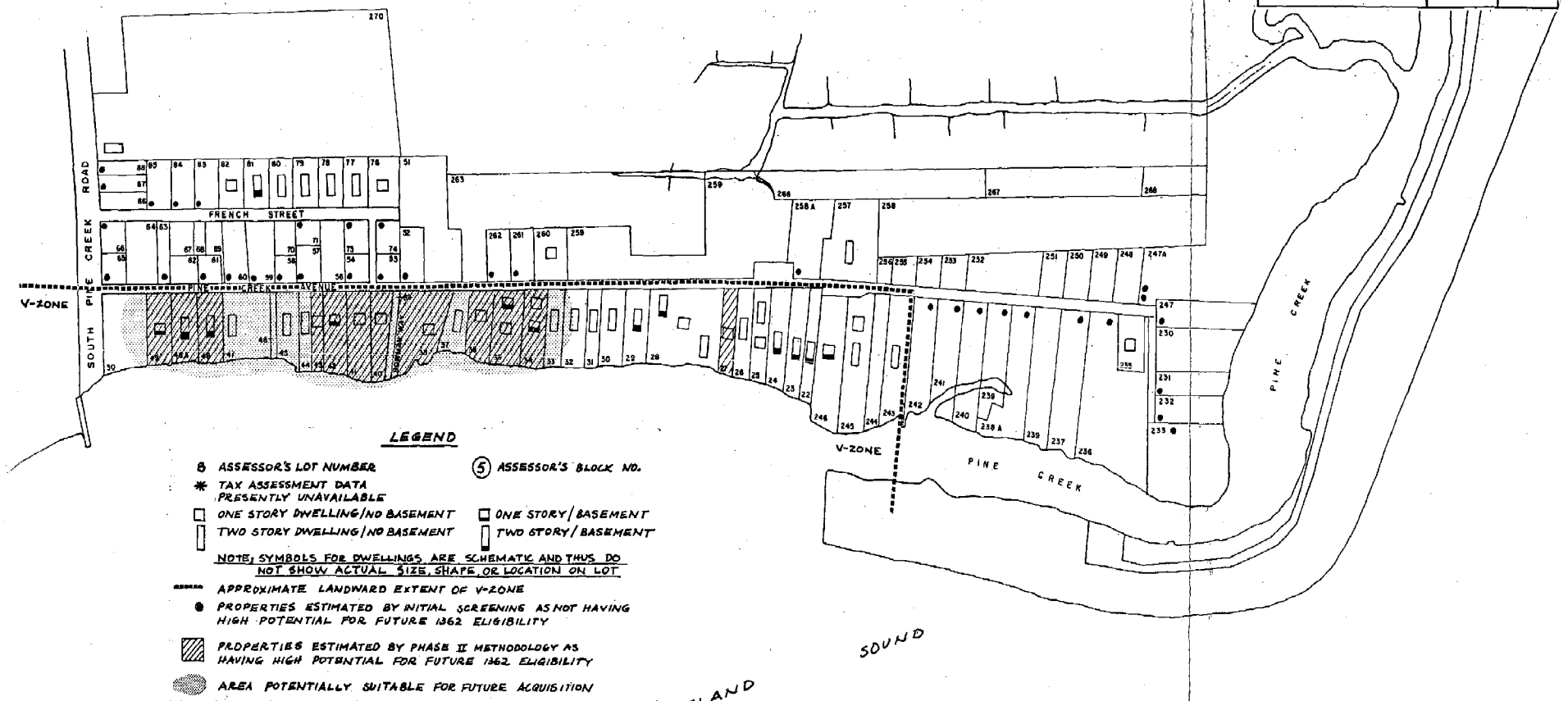
Figure 10

CONNECTICUT COASTAL FLOOD HAZARD AREA STUDY

TOWN OF FAIRFIELD: PINE CREEK BEACH AREA

Ralph M. Field Associates, Inc.

0 100 200 300 approx. scale of feet | date: Feb. 1982 | north



LEGEND

8 ASSESSOR'S LOT NUMBER

(5) ASSESSOR'S BLOCK NO.

* TAX ASSESSMENT DATA PRESENTLY UNAVAILABLE

ONE STORY DWELLING/NO BASEMENT

ONE STORY/BASEMENT

TWO STORY DWELLING/NO BASEMENT

TWO STORY/BASEMENT

NOTE: SYMBOLS FOR DWELLINGS ARE SCHEMATIC AND THUS DO NOT SHOW ACTUAL SIZE, SHAPE, OR LOCATION ON LOT

APPROXIMATE LANDWARD EXTENT OF V-ZONE

PROPERTIES ESTIMATED BY INITIAL SCREENING AS NOT HAVING HIGH POTENTIAL FOR FUTURE 1362 ELIGIBILITY

PROPERTIES ESTIMATED BY PHASE II METHODOLOGY AS HAVING HIGH POTENTIAL FOR FUTURE 1362 ELIGIBILITY

AREA POTENTIALLY SUITABLE FOR FUTURE ACQUISITION

STRATFORD

Only one area in Stratford was selected for detailed study; Long Beach (see Figure 11).

LONG BEACH AREA

General Description

The Long Beach area is part of an almost two-mile long barrier island that extends westward from Point No Point in Stratford to Pleasure Beach in the city of Bridgeport. The developed portion of Long Beach is bounded on the west by Pleasure Beach and on the east by a mile-long stretch of narrow, sandy beach that is managed by the town as an important nesting area for terns. During critical periods access to this nesting area on Long Beach is restricted. The town is also actively planting dune grass and salt spray rose here to help stabilize the dunes and to create well defined pathways to control walking on the dunes. The state is interested in seeing this area protected because of the tern nesting site. To the north, Lewis Gut separates Long Beach from the Great Meadows wetlands, another imporant wildlife habitat area. To the south is Long Island Sound. The shorefront has an unobstructed orientation towards the southwest. (See Figure 12.)

There is only one access road, and that is from the Bridgeport site across the narrow drawbridge that connects Pleasure Beach with the mainland. Pleasure Beach itself, the site of an old amusement park, is currently undeveloped and has been nominated for inclusion in the proposed Federal Coastal Barrier Resources System.

Forty-five structures are located in the developed portion of Long Beach. Fifteen are on the Lewis Gut side of the roadway and 30 front Long Island Sound. Almost all of these structures are seasonal cottages elevated on piers. Many were built in the period 1910 to 1920. Most are well-maintained. The area is not serviced by sewers and does not have year-round water. Residents mentioned that the 1938 hurricane destroyed approximately 15 cottages, but that more recent storms have not caused substantial damage.

A forebeach area between the dwellings and Long Island Sound was built up about 16 years ago with sand dredged from the Bridgeport harbor. The Corps of Engineers built the existing groin at the same time. Dunes were created on the western

part of the area and planted with beach grass. These dunes protect about half of the dwellings fronting the sound from storm waves. The dwellings on the Lewis Gut side of the roadway are very close to the inlet.

The town has no detailed topographic information for the Long Beach area. The elevation of the landward ends of the stone groins were used as elevation reference points. Grade elevation between the shoreline and the dwellings fronting the sound were found to be relatively high -- in the range of 11 to 14 feet. Although the terrain drops off on the Lewis Gut side of the shorefront dwellings, the houses themselves are on high ground -- approximately 11 feet. The cottages on the northern side of the roadway next to the Gut are slightly lower but are still at an elevation of 10 feet or above. Between these cottages and the Sound is a narrow dune line of approximately 13 feet elevation.

Relative to this study, the developed portion of Long Beach is unique in that all of the developed land is owned by the town of Stratford. Residents of the area own their dwellings but lease the land from the town. Starting in 1981 the leases are for 16-year periods with 5 percent yearly increases in rent. Each lot was rented for $605 a year in 1981.

The last real estate valuation in Stratford was completed in 1974. Present assessments represent 70 percent of the 1974 market value. Assessed values of individual structures in the Long Beach area range from about $3,500 to $11,000 with most assessments in the $5,000 to $7,000 range. The mill rate is 36.

Potential Damage Assessment

The Flood Insurance Rate Maps shows that the entire Long Beach area is within the FEMA-designated V-zone. The base flood elevation is 11 feet above NGVD.

Due to the unobstructed southwest orientation of the shoreline, the area is most vulnerable to storm generated waves approaching from the southerly direction. The forebeach and dune areas provide some protection from storm waves. The combination of high ground elevations and the roughly 2 to 4 feet elevation of individual structures above grade results in none of the dwellings in this area having high potential for future Section 1362 eilibility according to the Phase II methodology.

Conclusions

Town officials have indicated that they are not interested in acquiring the existing structures through the Section 1362 program. Since the town owns the land, it could convert the area to public open space simply by deciding not to renew the leases of the cottage owners. The current town beach -- Short Beach -- was created in just this fashion in the 60's, even though the structures on town land were large colonials rather than small beach cottages.

For the above reasons and because none of the structures were found to have high potential, no part of the Long Beach area appears suitable for future Section 1362 application. If the state were interested in eventually acquiring the area, it could perhaps establish an agreement with the town of Stratford whereby leases to owners of the structures would not be renewed.

Based on a total assessed value of $301,770, real estate tax revenues to the town totalled $10,863 in the past year. Revenue from rent of the land totalled $27,225 in 1981.

FIGURE 11: LOCATION OF THE LONG BEACH AREA IN STRATFORD

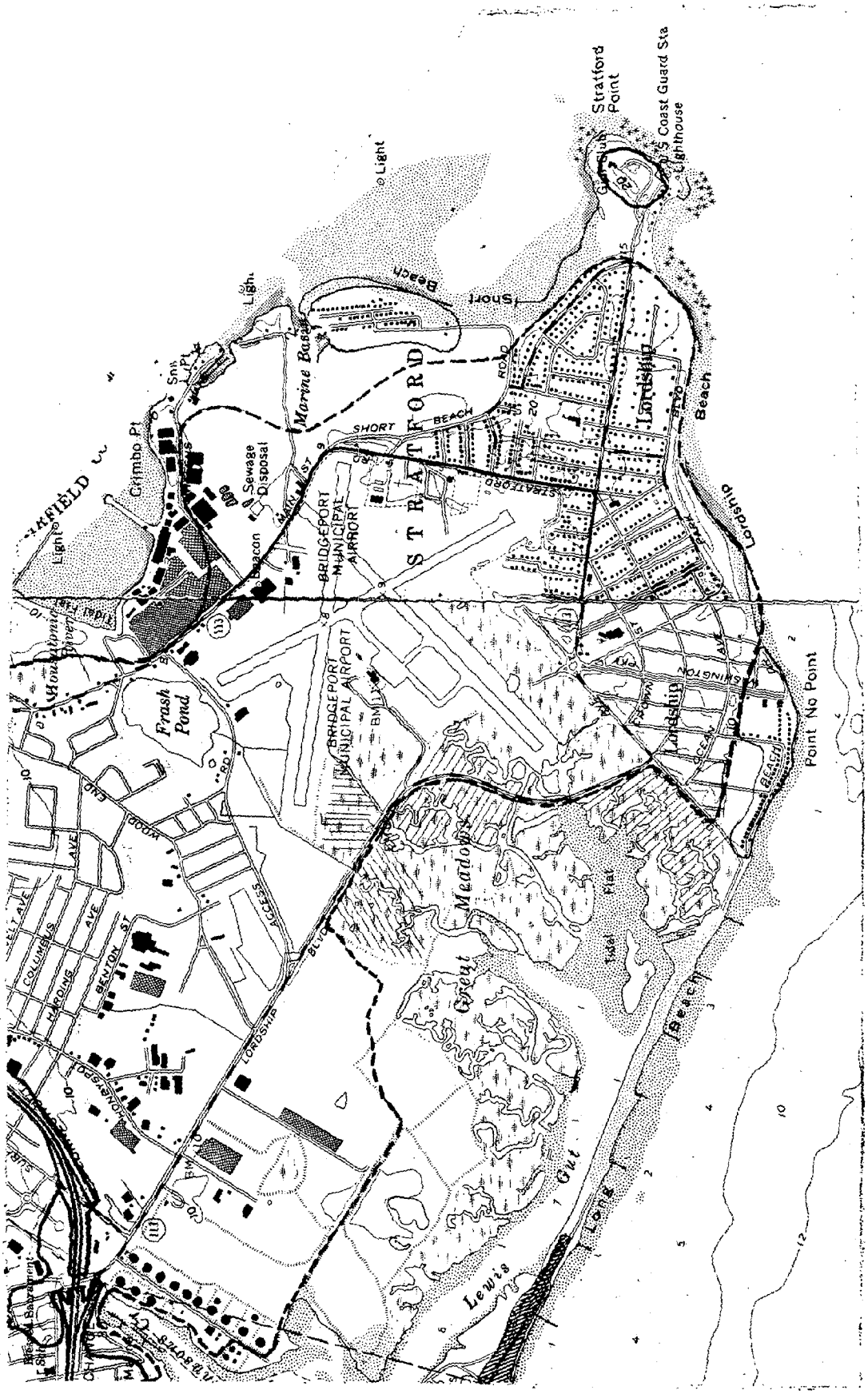


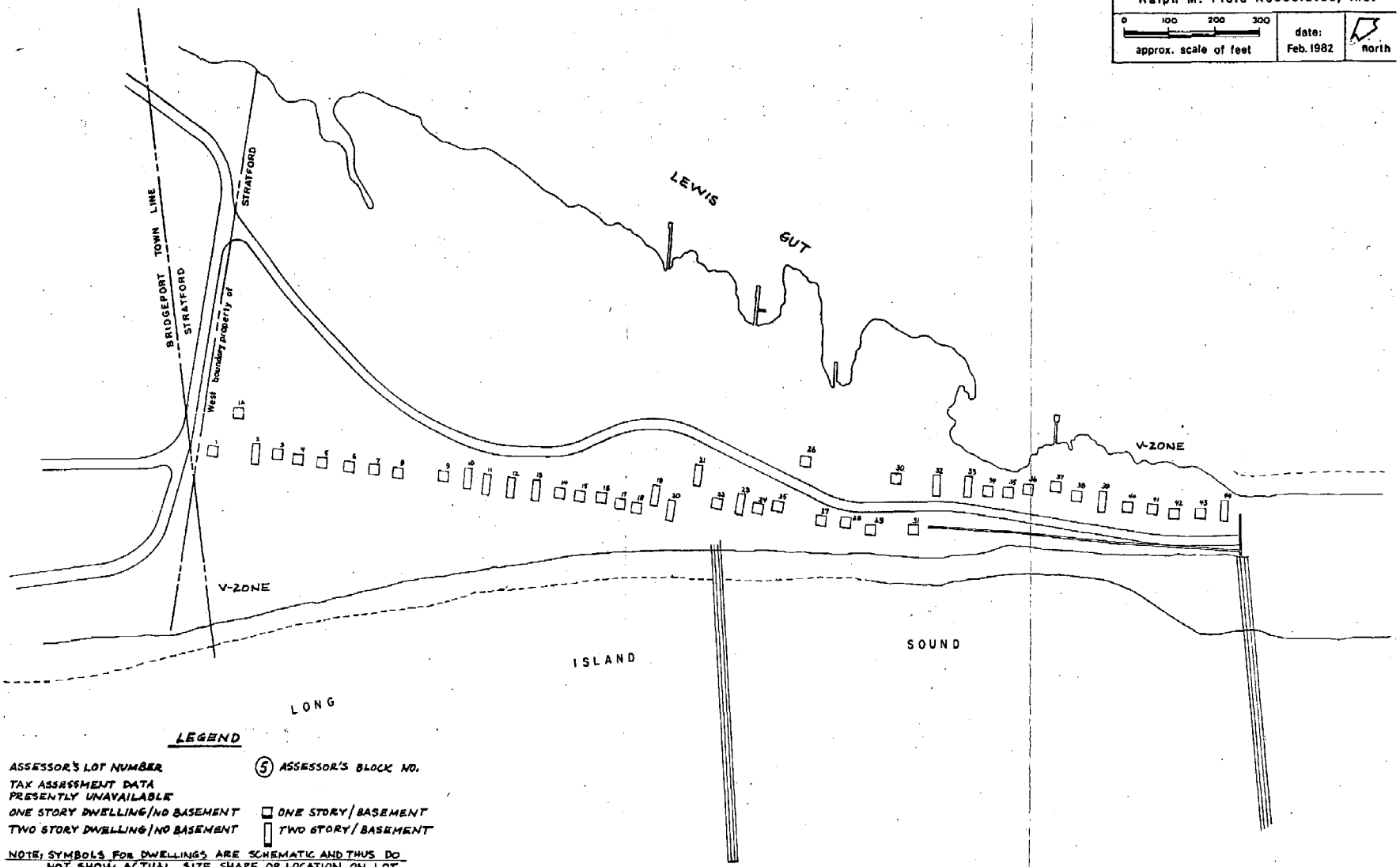
Figure 12

CONNECTICUT COASTAL FLOOD HAZARD AREA STUDY

TOWN OF STRATFORD: LONG BEACH AREA

Ralph M. Field Associates, Inc.

0 100 200 300 approx. scale of feet | date: Feb. 1982 | north



LEGEND

- 8 ASSESSOR'S LOT NUMBER
- (5) ASSESSOR'S BLOCK NO.
- * TAX ASSESSMENT DATA PRESENTLY UNAVAILABLE
- ONE STORY DWELLING/NO BASEMENT
- ONE STORY/BASEMENT
- TWO STORY DWELLING/NO BASEMENT
- TWO STORY/BASEMENT

NOTE; SYMBOLS FOR DWELLINGS ARE SCHEMATIC AND THUS DO NOT SHOW ACTUAL SIZE, SHAPE, OR LOCATION ON LOT

- APPROXIMATE LANDWARD EXTENT OF V-ZONE
- PROPERTIES ESTIMATED BY INITIAL SCREENING AS NOT HAVING HIGH POTENTIAL FOR FUTURE 1362 ELIGIBILITY
- PROPERTIES ESTIMATED BY PHASE II METHODOLOGY AS HAVING HIGH POTENTIAL FOR FUTURE 1362 ELIGIBILITY
- AREA POTENTIALLY SUITABLE FOR FUTURE ACQUISITION

MILFORD

Four areas in Milford were selected for detailed study: Milford Point, Cedar Beach, Silver Beach, and Bayview Beach (see Figures 13 and 16).

MILFORD POINT

General Description

Milford Point is a private, year-round residential area made up of 12 homes located on a mile long sand spit. The entire spit is made up primarily of beach and dunes and is called Milford Point. It is bounded on the north by the large expanse of tidal wetlands that forms the Charles E. Wheeler Wildlife Management Area and on the west by the mouth of the Housatonic River. The shoreline fronting Long Island Sound is oriented to the southeast. (See Figure 14.)

The private developed area is located between the undeveloped westernmost portion of Milford Point (which has been nominated for inclusion in the proposed Federal Coastal Barrier Resources System) and an open space area to the east owned by the state but presently leased and managed by the New Haven Bird Club (a residential structure is also located on the state-owned property). The city denied an application to construct condominiums on the undeveloped property at the western end of Milford Point. The property owner who was denied the permit may be a willing seller. The city may foreclose on the property, as about $50,000 in city taxes are owed.

Several of the structures are newly renovated, and most are assessed in the $20,000 - $30,000 range. Lots are approximately 2/10 of an acre in size, and the total individual assessment (land and buildings) averages about $57,000.

Potential Damage Assessment

The base flood elevation is 11 feet, and all dwellings are in the V-zone. A sandy beach 100 to 300 feet wide lies between the dwellings and the Sound, but there are no seawalls or other barriers. Waves generated by storm winds directly out of the south would probably strike the shoreline in this area with less velocity than waves out of the southeast due to the protection afforded by Stratford Point and an offshore breakwater. As determined from the city's topographic maps, the

average ground elevation of the dwellings in this area is in the range of 8 to 10 feet. All of the houses are raised approximately 2 to 3 feet above grade. Because of the relatively high grade elevation and the height of the individual structures above grade, the Phase II methodology identified only one structure having high potential for future Section 1362 eligibility. Given the inherent instability of this barrier beach formation, however, it is possible that a major storm could cause significant erosion of this narrow sand spit and that some or all of the structures would subsequently be damaged significantly.

Conclusions

Milford city officials expressed interest in the entire privately-owned portions of Milford Point as a potential site for a public beach. However, because the Phase II methodology identified only one property as having high potential, the area does not appear suitable for application of Section 1362.

CEDAR BEACH

General Description

Cedar Beach is located to the east of the private Milford Point residential area, on the same southeast facing coastline, and is part of the same barrier beach formation. The area includes all of the shorefront homes on Milford Point Road between the New Haven Bird Club property on the west and the beginning of Seaview Avenue on the east, as well as the structures on the marsh side of Milford Point Road. There are 52 shorefront structures and 53 dwellings on the marsh side, most of which are old buildings built in the period 1910-1920. Most are seasonal, rental properties. (See Figure 14.)

The 52 shorefront structures have an average assessment of $22,000; most are assessed in the $15,000 to $25,000 range. Most lots range in size from .1 to .2 acres, and the average total assessment is $50,000. Several lots contain more than one dwelling.

Potential Damage Assessment

As determined from the Flood Insurance Rate Maps the base flood elevation in the area is 11 feet, and all of the structures between Milford Point Road and Long Island Sound are located in the V-zone. There is an approximate 100-foot wide

sandy beach between these structures and the Sound, and there are no seawalls or other barriers providing protection from waves. There are also no offshore obstructions to modify the effects of storm waves approaching the shoreline from the southwest and from the east.

The city's topographic maps show that the shorefront dwellings are on the highest ground in this study area -- roughly 8 to 10 feet above NGVD. The structures on the marsh side of Milford Point Road are built on lower grade elevations ranging from 4 to 6 feet. The lowest areas are flooded at ordinary high tide.

Even though many structures are at a low grade elevation, the Phase II methodology indicates that none of the non-V zone structures have high potential for future Section 1362 eligibility. Scattered structures throughout the V-zone area and 2 small groups of continguous structures at the east and west side of the area do have high potential according to the methodology (see Figure 14).

Conclusions

Milford city officials expressed interest in acquiring property in Cedar Beach for use as a public beach. The two small groups of structures identified could help meet these needs and appear suitable for possible future acquisition under Section 1362. Total assessed value of the five lots in the eastern section (lots 39-43, Figure 14) is $233,490. The maximum[1] annual real estate tax revenue to the city from these lots is $10,595. Total assessed value of the 12 lots in the western section is $458,680, and the maximum tax revenue is $20,814.[1]

SILVER BEACH

General Description

Silver Beach is a barrier beach backed by marshland, southeast of Milford Harbor and within the small gulf that protects the mouth of the Harbor. The study area stretches from Samuel Smith Land and Silver Sands State Park on the west to Surf Avenue on the east and also includes the shorefront dwellings on Shell Avenue between Surf Avenue and Seaside Avenue. The marshland backing much of the area

[1]Property owners are not presently taxed on their total assessment. Taxes are paid on a net assessment representing a 20% yearly increase in the difference between the pre-1980 assessment and 1980 assessment.

is also included in Silver Sands State Park. The coastline in this area is oriented to the southeast. (See Figure 15.)

The study area is zoned urban low density residential and contains 330 structures, 103 of which are on the shorefront side of East Broadway and Shell Avenue. There is great variation in the condition of these structures; the shorefront properties are generally better maintained than properties on the marsh side of East Broadway.

Of the 85 structures on the shorefront side of East Broadway, most are assessed in the range of $20,000 - $35,000, with $29,000 about average. The average total assessment (land and buildings) is about $55,000. Most structures were built around 1910 or earlier, and there is a scattering of new and remodelled structures. Most are seasonal. Lots range in size from less than 1/10 acre to about 2/10 acre. Ground elevations along the shorefront are generally in the 8 to 10 foot range.

In the northern part of the area, most of the 18 structures shoreside of Shell Avenue are assessed at $35,000 and over, with $44,000 about average (including an apartment house and condominium project). The average total assessment (land and buildings) is about $50,000. Ground elevations are substantially higher than in the rest of the study area, ranging from 10 to 18 feet.

Most of the structures inland of East Broadway were built around 1920 or earlier. Many are in a severely deteriorated state, and several appear to be abandoned. Although some are occupied year round, most are seasonal. Ground elevations are lower in this part of the study area, with the structures built on grade elevations of 4 to 8 feet. Most of the structures in this area are assessed in the range of $10,000 to $20,000, with some under $10,000; $16,000 is about average. The average total assessment is about $23,000.

Potential Damage Assessment

The base flood elevation is 11 feet above NGVD and all of the dwellings between East Broadway and Shell Avenue and the Sound are in the V-zone. The V-zone properties appear to be most vulnerable to storm waves approaching from the southeast and east. There is a sandy forebeach area ranging in width from 50 to 200 feet between these properties and the Sound. Some of the structures

are protected by concrete seawalls. A combination of relatively high ground elevation and the approximate 3 feet average elevation of individual structures above grade keep all but a small group of V-zone properties from having high potential for future Section 1362 eligibility.

Conclusions

Milford city officials expressed no interest in acquiring properties in the Silver Beach area. The primary acquisition interest in the Silver Beach Area was expressed by state officials for the purpose of expanding the adjacent, but presently undeveloped, Silver Sands State Park. State acquisition of this park area a number of years ago involved the acquisition of a number of structures. The area has never been developed, however, and current plans are uncertain.

In the absence of a definite plan and commitment by the state to acquire the entire Silver Beach area, the area does not appear suitable for application of Section 1362. If the state adopted a definite plan to expand and develop the Silver Sands State Park, then Section 1362 acquisition might contribute to the overall acquisition plan.

BAYVIEW BEACH

General Description

Bayview Beach is located to the east of Milford Harbor in the shallow gulf between Welches Point and Pond Point. The study area is bounded on the west by higher ground and the more expensive Point Lookout homes, on the east by the mouth of the Calf Pen Meadow Creek. The area contains a 200-foot wide by 600-foot long expanse of private beach. The northern boundary of the study area corresponds to the approximate inland extent of the V-zone along Lawrence Court, Fold Court and Bayshore Drive. The shoreline has an unobstructed orientation to the southeast. (See Figure 17.)

Almost all of the 38 dwellings in the study area have been built close to the shoreline on what is essentially the primary dune line. Ground elevations are roughly in the range of 10 to 12 feet west of the private beach and slightly lower east of the beach. These dwellings are mostly summer cottages that have been converted to year-round use, although a few seasonal dwellings remain.

Assessed values of individual structures are mostly in the $25,000 to $35,000 range, and the average total assessment (land and buildings) is about $62,000. Lots west of the beach area are generally slightly less than 1/10 of an acre. East of the beach, lot sizes are about .15 acre. Many of these houses are partially protected from wave impact by concrete seawalls. Individual homes west of the private beach are raised 2 to 3 feet on the average. The smaller group of houses east of the beach are raised approximately 3 to 4 feet. The Bayview Beach area is flooded often and is also subject to significant erosion.

Potential Damage Assessment

The base flood elevation is 11 feet. All dwellings in the study area are in the V-zone. As mentioned above, there is only a very narrow forebeach area (less than 50 feet) between most of these dwellings and the Sound. Some individual seawalls in the area show signs of significant damage, apparently caused by waves.

Homes are apparently most vulnerable to storm waves out of the south and southeast while Pond Point to the east shelters the area from waves generated by northeasterly and easterly winds.

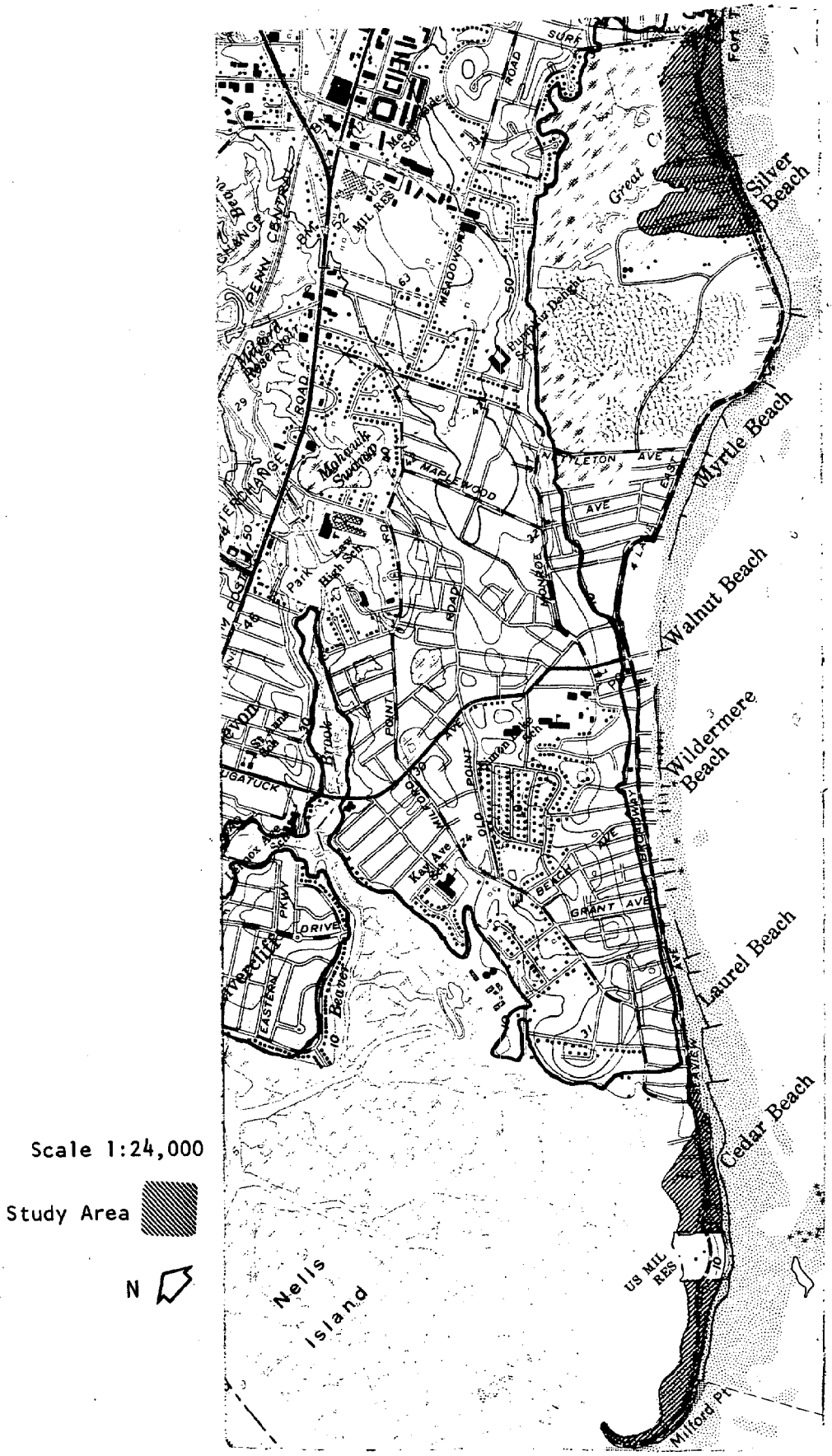
Individual homes west of the private beach are raised 2 to 3 feet on the average. The smaller group of structures east of the beach are raised approximately 3 to 4 feet. These elevations combined with the relatively high ground on which most of these structures are built result in only a few dwellings having high potential for future Section 1362 eligibility.

Conclusions

Milford city officials expressed interest in acquiring properties in the Bayview Beach area for the purpose of creating a new public beach. The only public beach on this side of the city (Gulf Beach, see Figure 16) does not adequately meet existing demand. Officials indicated, however, that acquisition in the Bayview Beach area is of lower priority than at Cedar Beach. Because of the lower priority, and because the Phase II methodology identifies only three

structures with high potential for future Section 1362 eligibility, the area does not appear suitable for application of the Section 1362 program.

FIGURE 13: LOCATION OF MILFORD POINT, CEDAR BEACH, AND SILVER BEACH AREAS IN MILFORD



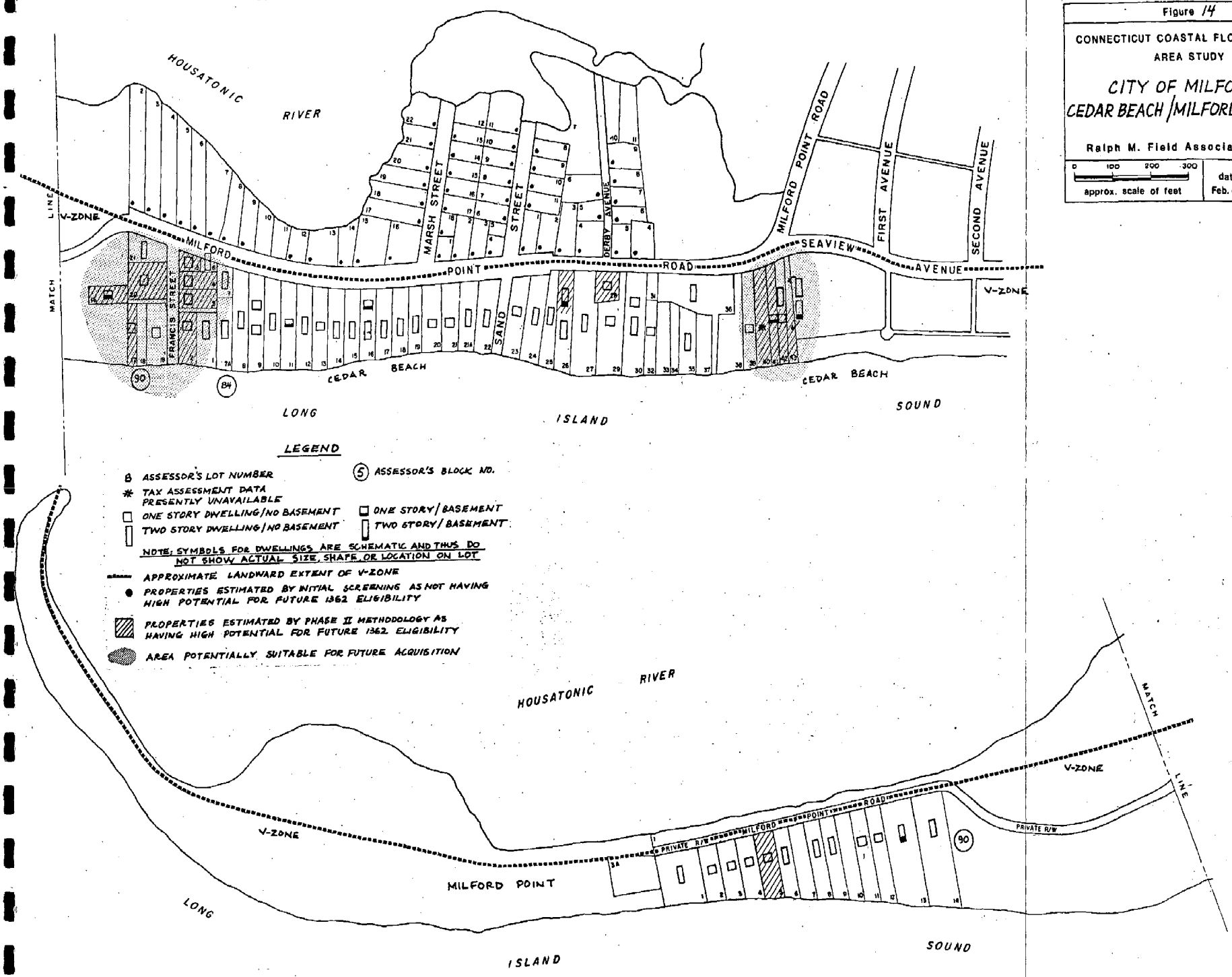


Figure 14

CONNECTICUT COASTAL FLOOD HAZARD AREA STUDY

CITY OF MILFORD: CEDAR BEACH / MILFORD PT. AREAS

Ralph M. Field Associates, Inc.

0 100 200 300
approx. scale of feet

date: Feb. 1982

north

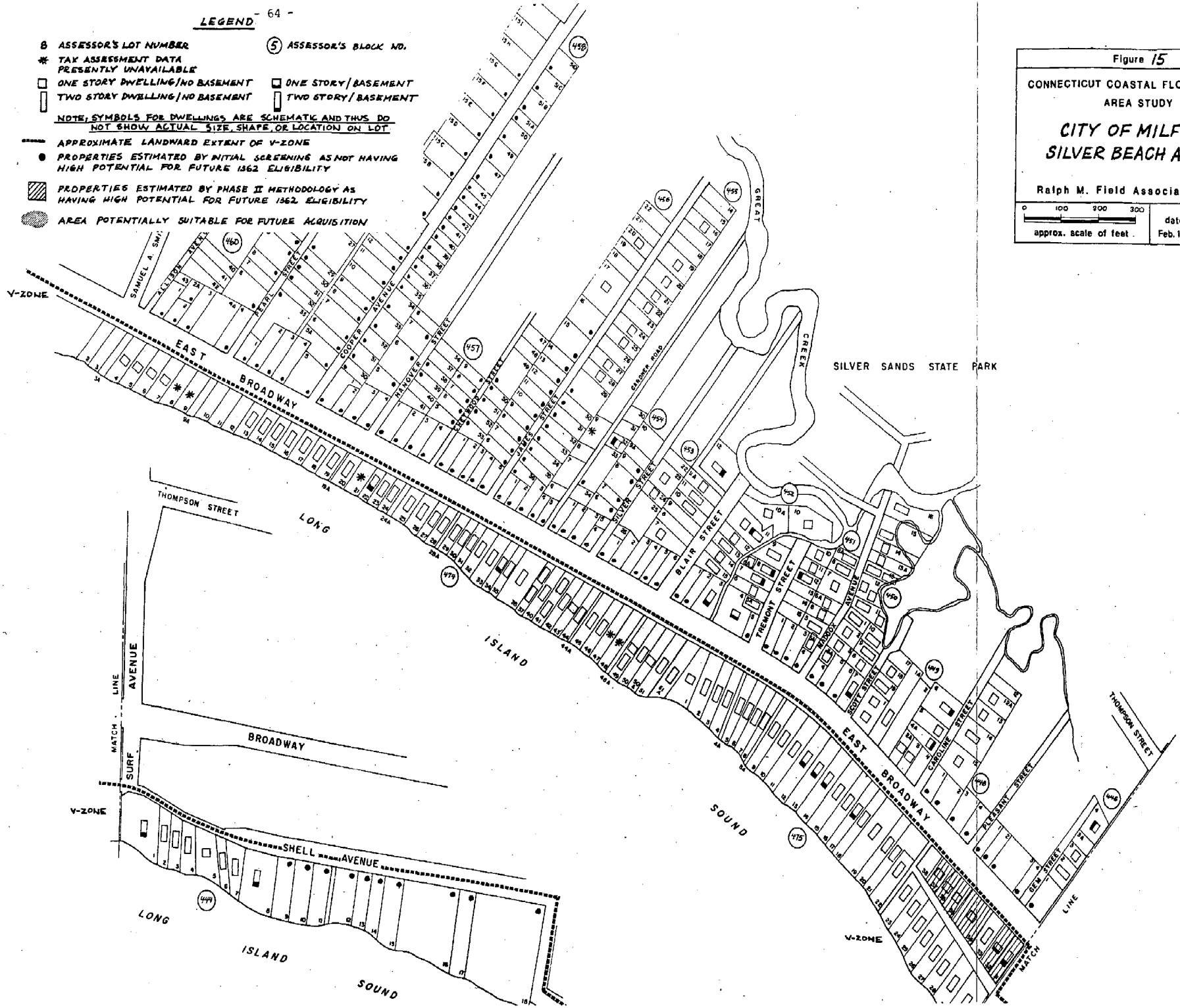


Figure 15

CONNECTICUT COASTAL FLOOD HAZARD AREA STUDY

CITY OF MILFORD: SILVER BEACH AREA

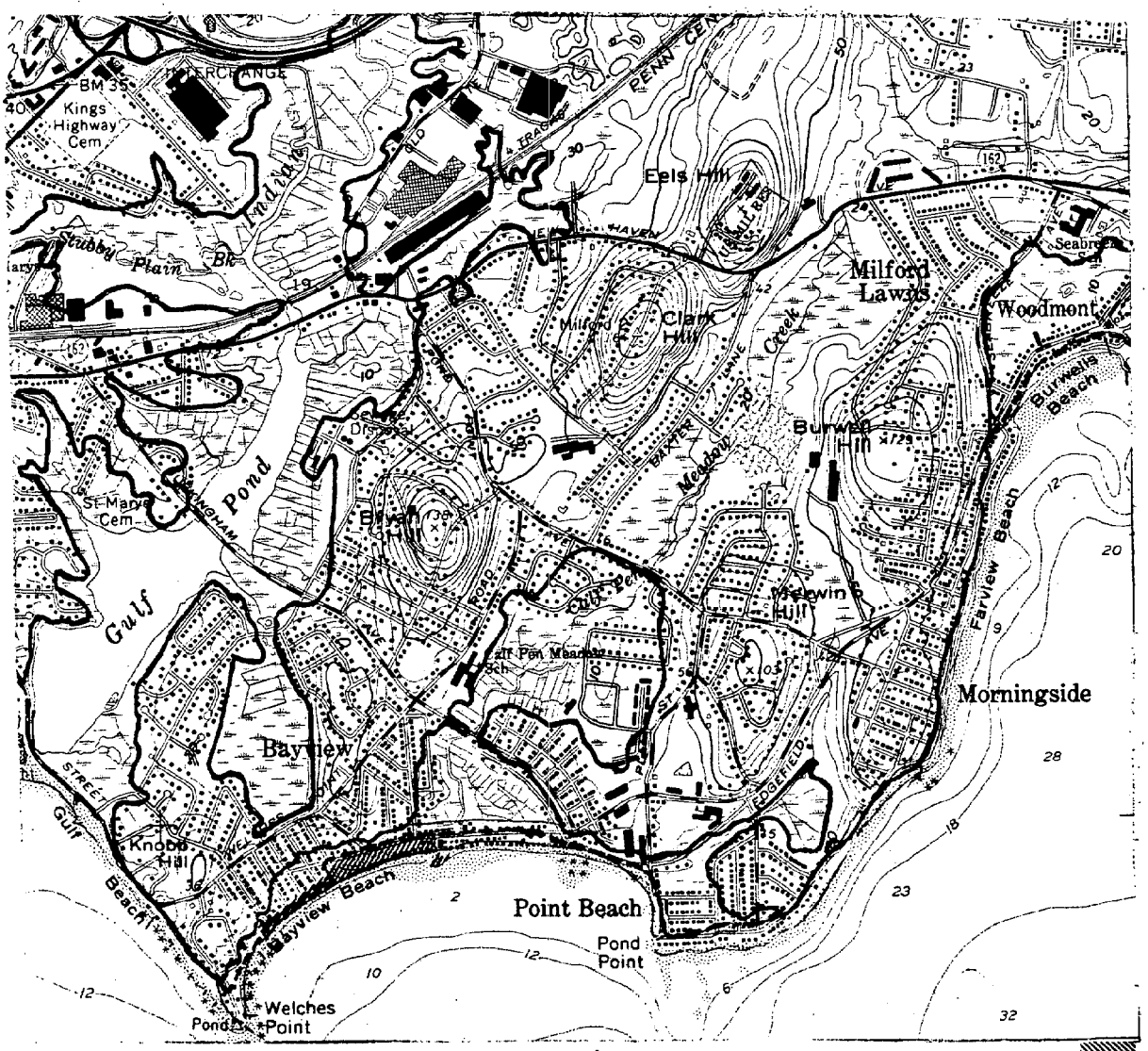
Ralph M. Field Associates, Inc.

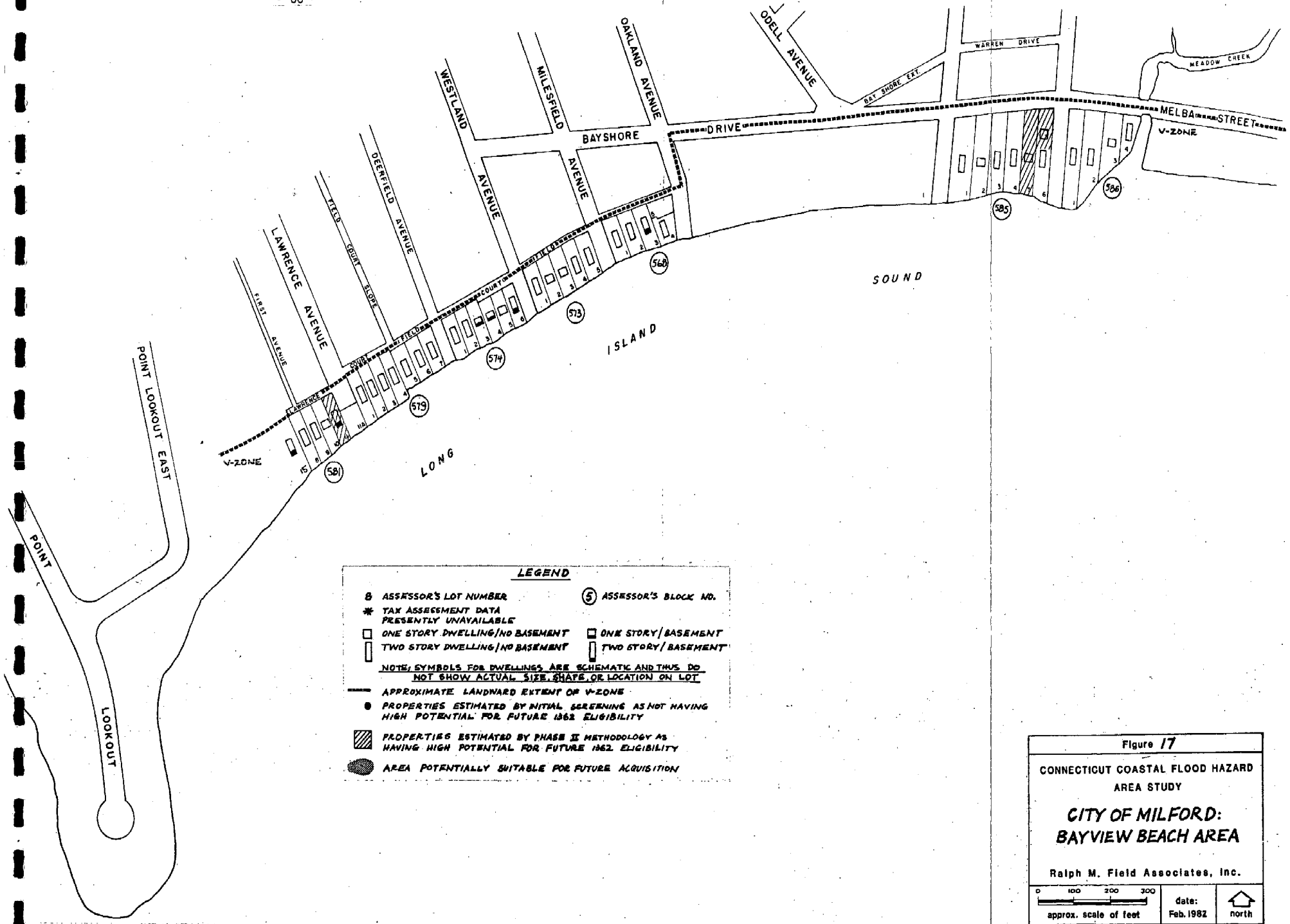
0 100 200 300 approx. scale of feet

date: Feb. 1982

north

FIGURE 16: LOCATION OF BAYVIEW BEACH AREA IN MILFORD





LEGEND

- 8 — ASSESSOR'S LOT NUMBER
- (5) — ASSESSOR'S BLOCK NO.
- * — TAX ASSESSMENT DATA PRESENTLY UNAVAILABLE
- ONE STORY DWELLING/NO BASEMENT
- ONE STORY/BASEMENT
- TWO STORY DWELLING/NO BASEMENT
- TWO STORY/BASEMENT

NOTE; SYMBOLS FOR DWELLINGS ARE SCHEMATIC AND THUS DO NOT SHOW ACTUAL SIZE, SHAPE, OR LOCATION ON LOT

- APPROXIMATE LANDWARD EXTENT OF V-ZONE
- PROPERTIES ESTIMATED BY INITIAL SCREENING AS NOT HAVING HIGH POTENTIAL FOR FUTURE 1362 ELIGIBILITY
- PROPERTIES ESTIMATED BY PHASE II METHODOLOGY AS HAVING HIGH POTENTIAL FOR FUTURE 1362 ELIGIBILITY
- AREA POTENTIALLY SUITABLE FOR FUTURE ACQUISITION

Figure 17

CONNECTICUT COASTAL FLOOD HAZARD AREA STUDY

CITY OF MILFORD: BAYVIEW BEACH AREA

Ralph M. Field Associates, Inc.

0 100 200 300 approx. scale of feet | date: Feb. 1982 | north

GUILFORD

Only the Circle Beach area in Guilford was selected for detailed study (see Figure 18).

GRASS ISLAND

General Description

The Grass Island study area is located just east of Guilford Harbor and extends along Neck Road to the Madison border (see Figure 19). It is part of a barrier beach formation backed by extensive tidal wetlands along the East River and Neck River. A very narrow beach area, subject to erosion, is present. The coastline is oriented to the south.

A single narrow road through neighboring Madison provides the only access to the 12 residences located on Grass Island in Guilford. Most of these dwellings are used year-round; some are relatively new. Several are built on piles and the structures on the marsh side of the road are built on fill. Assessed values of the structures range from about $7,000 to $38,000. Average total assessment is about $32,500. Present real estate tax assessments represent 70 percent of the 1975 market value. The current mill rate is 38.75.

The area is flooded frequently, and at high tide Neck Road used to be flooded. The road was raised about one foot in October 1980 by the Town of Madison in response to requests from residents. The area is also subject to severe erosion, and in October 1980, significant erosion occurred. In the 1938 hurricane, houses were washed off their foundation and Neck Road (then located adjacent to Neck River) was washed out. Other storms have caused some structural damage, but most past flooding problems have been related to access.

Guilford is actively seeking additional public open space and beach areas, for the present town beach is not large enough and it is unsatisfactory at low tide. The town already owns some land on Grass Island and would be interested in the entire area for public beach or a marina or boat launch. The state already has a small boat launch on the East River with access from Neck Road.

Potential Damage Assessment

The entire study area is located in the FEMA-designated V-zone. Although the base flood elevation shown on the FEMA Flood Insurance Rate Map is 12 feet, an elevation of 11 feet was used in this study to be consistent with the base flood elevation shown for adjacent Madison and with the one percent flood elevation shown on the U.S. Army Corps of Engineer's tidal flood profile for this area.

On the shorefront side of Neck Road, ground elevations were estimated to range between five and seven feet. On the marsh side of the road, elevation ranged from six to seven feet and was higher in some areas where fill had been used. Neck Road was estimated to be between five and six feet. The first floors of structures ranged from about two to seven feet above grade. Five of the structures in the area were estimated by the Phase II methodology to have high potential for future Section 1362 eligibility.

Conclusions

Since access to the area is through Madison, acquisition and development of the area for a marina by Guilford could cause difficulties with the Town of Madison. If the two towns were to agree on development of the Grass Island -- or both Grass Island and Circle Beach in Madison -- area for recreation purposes and to acquire by other means properties ineligible for Section 1362, then acquisition with Section 1362 assistance might be appropriate. However, Madison officials are apparently not interested in accepting any federal funding for development of recreation areas. Therefore, the area does not appear suitable for Section 1362 application by the towns. However, if the state were to acquire the area and expand its present boat launch into a larger recreation area, Section 1362 would be suitable for application if combined with other funding sources to acquire properties that do not meet the Section 1362 eligibility criteria. Apparently, neither town would have major objections to state acquisition of the area, although Madison expressed reservations about access through narrow residential streets and about the adequacy of state maintenance.

FIGURE 18: LOCATION OF GRASS ISLAND IN GUILFORD AND CIRCLE BEACH IN MADISON

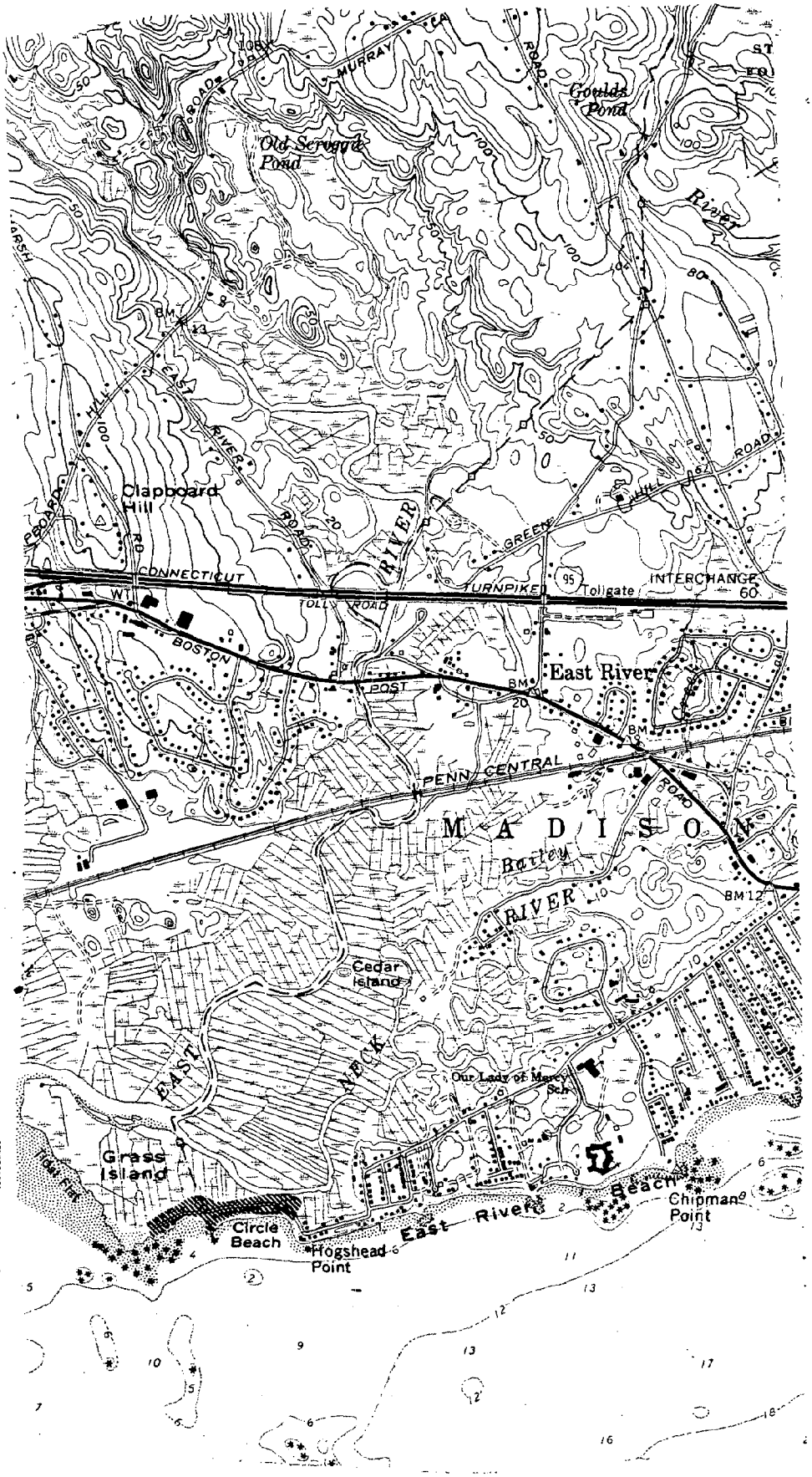


Figure 19

CONNECTICUT COASTAL FLOOD HAZARD AREA STUDY

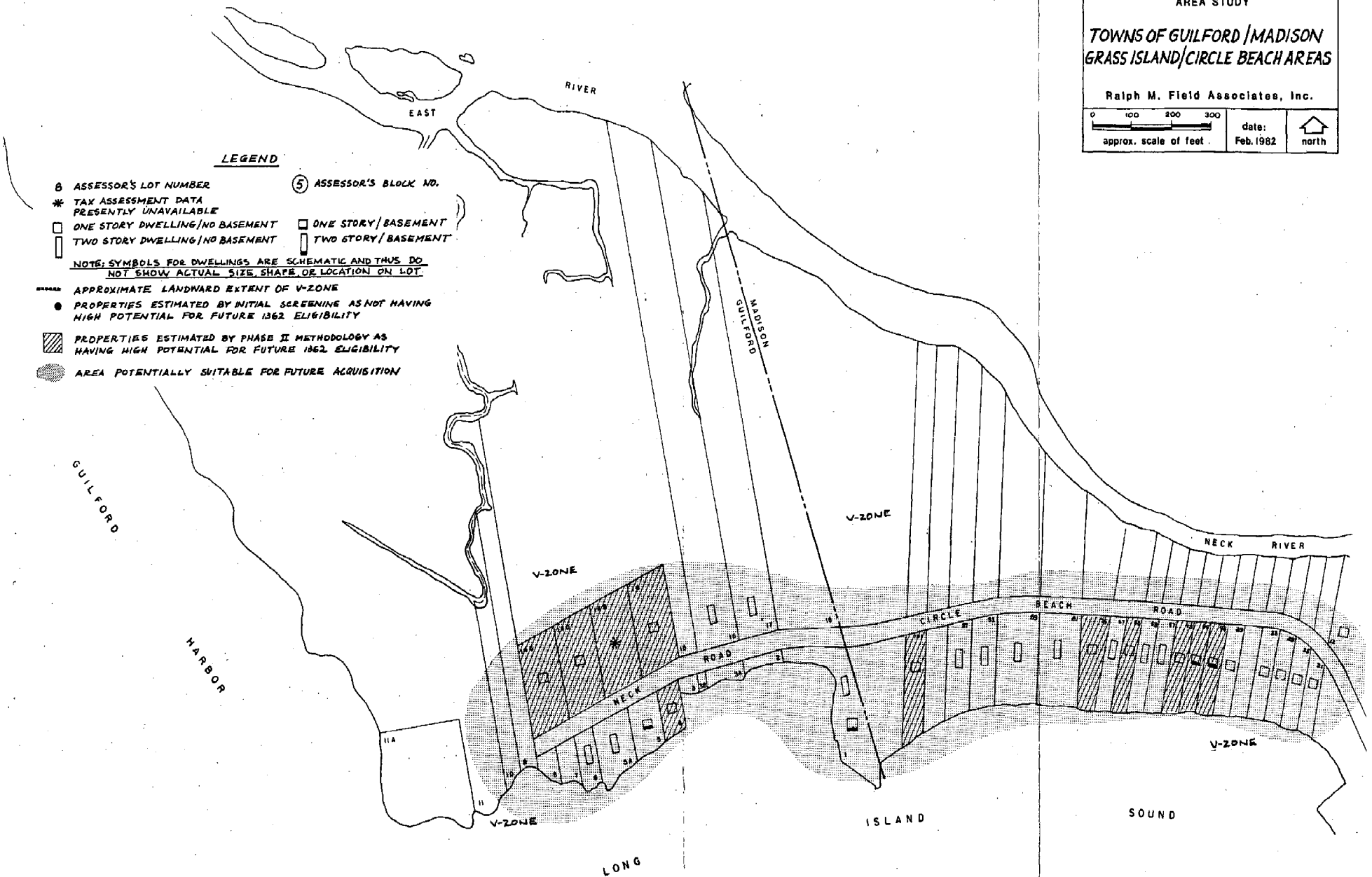
TOWNS OF GUILFORD / MADISON
GRASS ISLAND / CIRCLE BEACH AREAS

Ralph M. Field Associates, Inc.

0 100 200 300
approx. scale of feet

date: Feb. 1982

north



MADISON

Circle Beach is the only area in Madison selected for detailed study (see Figure 18).

CIRCLE BEACH

General Description

The Circle Beach study area is part of the same barrier beach as the Grass Island study area. Nineteen mostly seasonal residences are located in the area. Eighteen of these front the Sound and one is located on the marsh side of Circle Beach Road. The shorefront homes are built directly on the beach. At high tide some are almost completely surrounded by water. Almost all of the structures are elevated on wooden piers.

A townwide property revaluation was completed in October 1980, and assessed values represent 70 percent of the 1980 market value. The mill rate is 22.75. Most structures are assessed in the range of $10,000 to $20,000; the average is about $17,500. Lots range in size from less than one-tenth acre to over an acre. Average total assessed value is $49,000.

The Town of Madison expressed no interest in acquiring any property for expanding public recreation areas. They were particularly not interested in receiving any federal financial assistance.

Potential Damage Assessment

All of the structures are located within the FEMA-designated V-zone. The base flood elevation is 11 feet. Ground elevations on the shorefront side of Circle Beach Road were found to be mostly between five and six feet, just slightly higher than the elevation of the road surface. The first floors of houses were raised above grade level anywhere from about two to seven feet. The Phase II methodology estimated that six of the houses in the area have high potential for future Section 1362 eligibility.

Conclusions

Since the Madison officials are not interested in expanding the town's public beaches or in accepting federal financial assistance, the area does not appear

suitable for application of the Section 1362 program by the Town of Madison. However, application of Section 1362 by the state appears suitable if, as discussed under Grass Island in Guilford, the state were to complement Section 1362 funds with other sources for expansion of its existing boat launch area.

CLINTON

Three areas in Clinton were identified for detailed study; Cedar Island, Harbor View, and Clinton Beach (see Figure 20).

CEDAR ISLAND

General Description

Cedar Island, located in Clinton Harbor, is a barrier island that has been artificially joined by a timber bulkhead (built by the Corps of Engineers) to Hammonassett State Park to the west (see Figure 21). The Corps of Engineers recently selected a nearby area in Clinton Harbor as the site of a demonstration project for artifical containment of dredged spoils. Cedar Island contains 52, mostly one-story, summer residences. Residents have gradually been elevating their structures, and most are elevated on piers anywhere from 1 to 6 feet above ground. Most of the lots are 1/10 of an acre. A few lots remain undeveloped.

The only access to Cedar Island is by boat or by foot across the marshes and the beach area that connects the island with Hammonasett State Park to the west. There is no electrical power to the island (although many residents have electric generators), but the town does supply potable water. A 75 to 100 foot wide beach area is located on the south and eastern side of the island, owned by Cedar Island Improvement Association.

Ground elevation on the island ranges from about 6 to 9 feet. Elevation is highest on the south side of the island and decreases towards the north side. The developed portion of Cedar Island, including empty lots and the beach area, is approximately 11.5 acres. Total assessed value of developed lots is $1,263,100. Present property taxes on these properties paid to the town is $27,282.96.

Most structures are assessed at between $10,000 and $15,000, with $13,000 about average. The average total assessment (land and buildings) is about $24,300.

Potential Damage Assessment

The entire island is within the FEMA designated V-zone, and the base flood elevation is 11 feet. The Phase II methodology estimated that more than half of

the structures on the island have high potential for future Section 1362 eligibility.

Conclusions

Town officials are very interested in the possibility of acquiring all or a substantial part of Cedar Island for use as a town recreation area. Cedar Island would also appear to provide a logical expansion of the Hammonassett State Park. Because of the public recreation reuse potential and the large number of properties with high potential for Section 1362 eligibility, the island appears suitable for application of the Section 1362 program by either the Town of Clinton or the State. Total assessed value of all developed lots is $1,263,100. Present property taxes paid to the town on these properties are $27,283.

HARBOR VIEW

General Description

The Harbor View study area is a residential community containing a mix of summer and year-round residences on the east bank of Clinton Harbor, southeast of Cedar Island. The entire area is located between Long Island Sound on the west and Beach Park Road on the east. It is bounded on both the north and south by marshland. The coastline is oriented to the west.

Only the first three rows of dwellings fronting the Sound were examined during this study (see Figure 22). This area includes 44 dwellings. Eighteen structures are located seaward of West Road within the V-zone. Most of the homes were built in the 1940's and 1950's. The area is not sewered. Practically no beach area exists between the houses and the Sound. A small beach area, about 1.4 acre, is owned by the Harbor View Association which has been unsuccessful in past efforts to purchase an additional shorefront lot to expand the beach area.

Some larger, more expensive year-round homes are located on high ground in the private section of West Road. In this area assessed values range from about $13,000 to $60,000, with $29,000 about average. Average total assessment is about $63,000 in this area. The remainder of the study area is on lower ground. Assessments are less, with most in the $15,000 to $20,000 range; average total assessment is about $46,000.

Potential Damage Assessment

The V-zone extends inland to West Road, and includes 18 homes seaward of West Road. Ground elevations at the shorefront homes in the non-private section of West Road are between six and seven feet, and the houses are elevated only about one foot above grade. A series of groins in the area has built up a very narrow beach area between the houses and the Sound. Most of the structures in this part of the V-zone were estimated by the Phase II methodology to have high potential for Section 1362 eligibility.

Ground elevations are slightly less for the first row of houses east of West Road. These dwellings are raised approximately two feet above grade. Ground elevation then gradually increases away from the shore. Ground elevation of the V-zone properties in the private section of West Road is higher; approximately nine feet and greater. There is also a rock seawall between these structures and the Sound. None of the non-V-zone structures or the V-zone structures in the private section of West Road were estimated to have high potential.

Conclusions

The Town of Clinton already owns marshland and a beach just to the north of Harbor View. It has proposed, and has partially developed plans, to acquire some properties at the northern end of Harbor View adjacent to the existing town property and to develop the area as a public recreation area. Because most of the shorefront properties in this area were estimated to have high potential for Section 1362 eligibility, the area appears potentially suitable for application of the Section 1362 program.

Total assessed value of the lots in the potential acquisition area is $612,360. Current real estate tax revenues to the town from these properties is $13,227.

CLINTON BEACH

General Description

Clinton Beach is located east of Kelsey Point. The study area (see Figure 23) is the lower portion of Clinton Beach and is bounded by higher ground on both the east and west. Marshland lies to the north and Long Island Sound to the south. The coastline has an unobstructed orientation to the southeast. There is a sandy

beach throughout the area, averaging about 100 feet wide between shorefront properties and the Sound.

A total of 203 dwellings are located within the study area: 107 shorefront structures and 96 landward of Shore Road and Groveway. About one-half of the structures located landward of Shore Road and Groveway are assessed at less than $10,000. Most others are assessed at less than $20,000. The average assessment is about $13,000. Most structures are seasonal cottages and many are rentals. Lots range in size from one-tenth to two-tenths of an acre. Average total assessed value is about $33,000.

Shorefront structures in the western portion of the study area are mostly seasonal, rental, beach cottages. Many lots contain more than one dwelling. Most structures are assessed at less than $20,000 with an average of about $18,000. Average total assessment is about $53,000. Shorefront structures in the eastern portion of the study area are generally year-round dwellings and assessed over $20,000.

Public access to the beach in the western portion of the study area is currently provided from Shore Road at about 100 feet intervals. However, no public parking is available. The Town of Clinton expressed only a modest interest in acquiring properties in this area. It felt that 400 to 500 feet of beach frontage would be needed in order to develop a public beach area.

Potential Damage Assessment

The FEMA-designated V-zone extends along Shore Road in the western part of the study area, but does not include any of the shorefront properties along Groveway. The base flood elevation is 11 feet.

Ground elevation of the shorefront properties seaward of Shore Road and Groveway range from about 6.5 feet to 9 feet with the higher elevations found at the middle of the study area. Most dwellings were raised an average of one to two feet above grade. Scattered structures and small groupings of structures throughout the V-zone were estimated by the Phase II methodology to have high potential for future Section 1362 eligibility.

On the marsh side of Shore Road and Groveway, ground elevations range from a low of about four feet near the intersection of Causeway and Shore Road/Groveway, to a high of approximately 10 feet in the middle of the study area. Two structures at the low point were estimated to have high potential for Section 1362 eligibility because they were elevated only slightly above grade.

Conclusions

Although a number of properties throughout the V-zone were estimated to have high potential for Section 1362 eligibility, their scattered location does not meet town desires for a 400 to 500 feet contiguous beachfront area. Because of this scatter and the relatively low interest by the town in this area, it does not appear suitable for future Section 1362 application.

FIGURE 20: LOCATION OF CEDAR ISLAND, HARBOR VIEW, AND CLINTON BEACH AREAS IN CLINTON

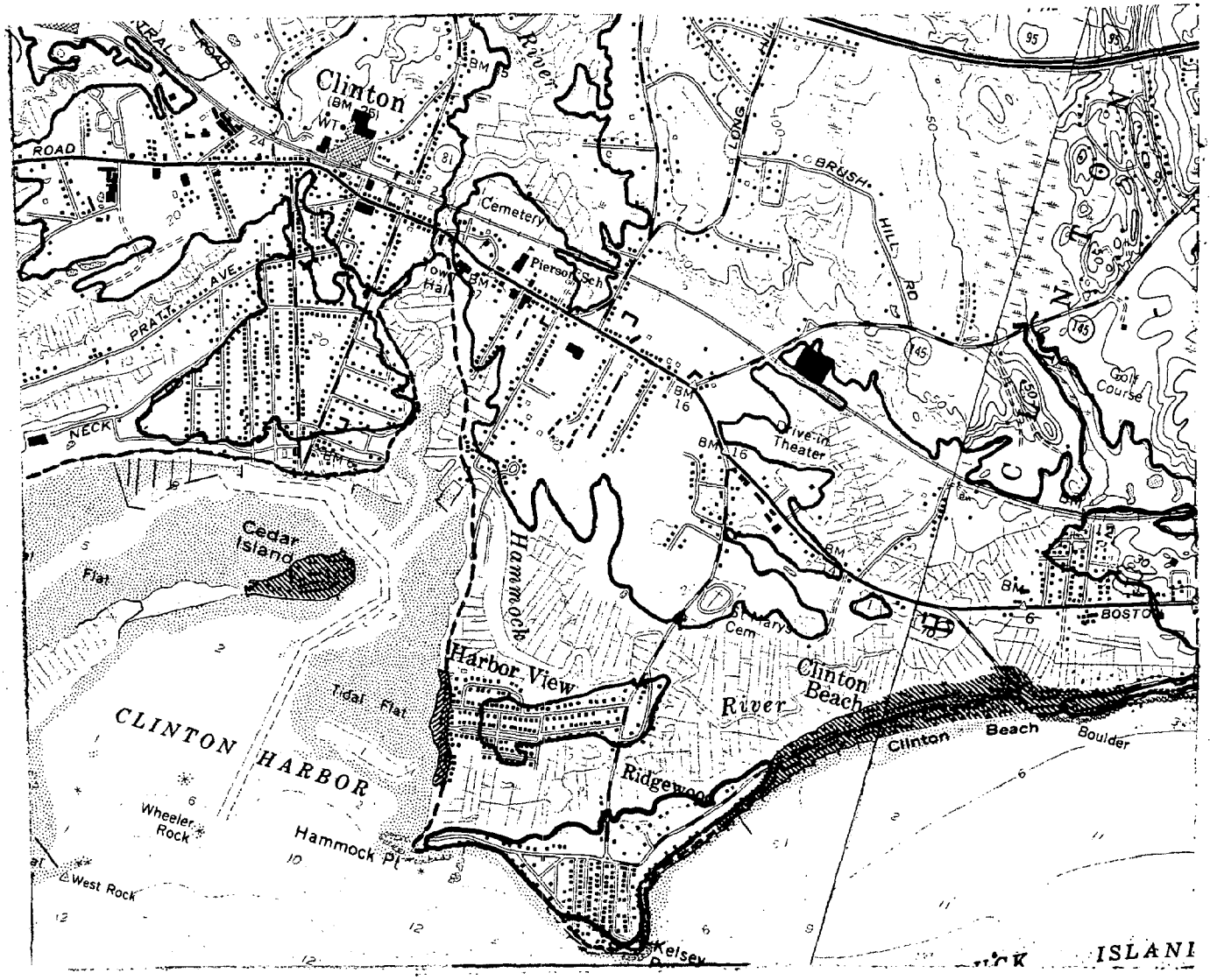


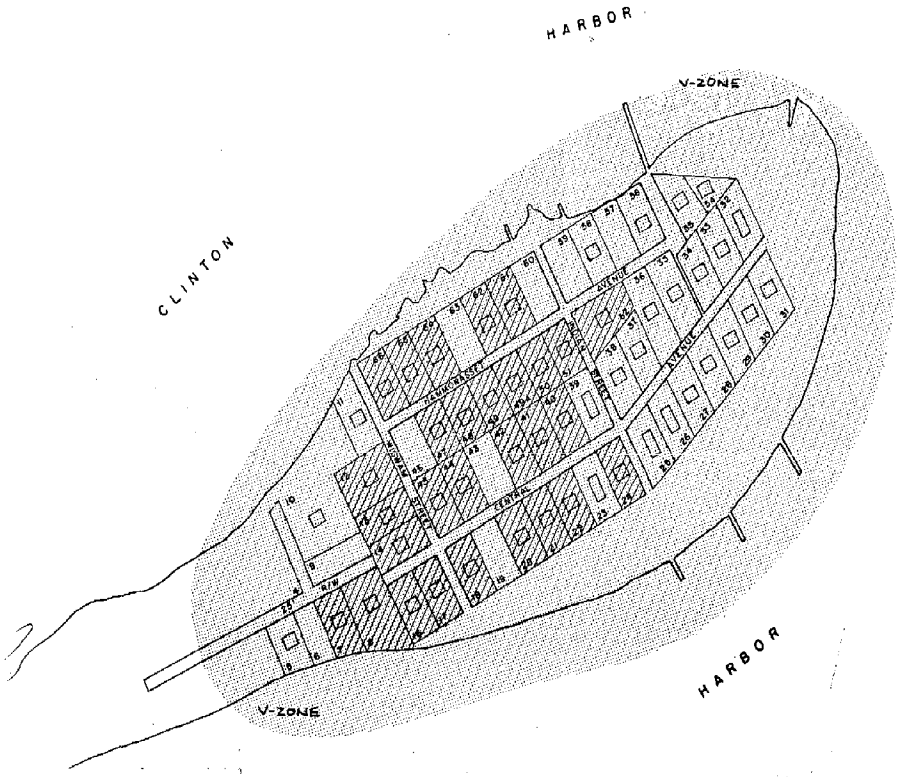
Figure 21

CONNECTICUT COASTAL FLOOD HAZARD AREA STUDY

TOWN OF CLINTON: CEDAR ISLAND AREA

Ralph M. Field Associates, Inc.

0 100 200 300 approx. scale of feet | date: Feb. 1982 | north



LEGEND

8 ASSESSOR'S LOT NUMBER

(5) ASSESSOR'S BLOCK NO.

* TAX ASSESSMENT DATA PRESENTLY UNAVAILABLE

□ ONE STORY DWELLING/NO BASEMENT

▭ ONE STORY/BASEMENT

▯ TWO STORY DWELLING/NO BASEMENT

▮ TWO STORY/BASEMENT

NOTE: SYMBOLS FOR DWELLINGS ARE SCHEMATIC AND THUS DO NOT SHOW ACTUAL SIZE, SHAPE, OR LOCATION ON LOT

APPROXIMATE LANDWARD EXTENT OF V-ZONE

● PROPERTIES ESTIMATED BY INITIAL SCREENING AS NOT HAVING HIGH POTENTIAL FOR FUTURE 1362 ELIGIBILITY

▨ PROPERTIES ESTIMATED BY PHASE II METHODOLOGY AS HAVING HIGH POTENTIAL FOR FUTURE 1362 ELIGIBILITY

AREA POTENTIALLY SUITABLE FOR FUTURE ACQUISITION

Figure 22

CONNECTICUT COASTAL FLOOD HAZARD AREA STUDY

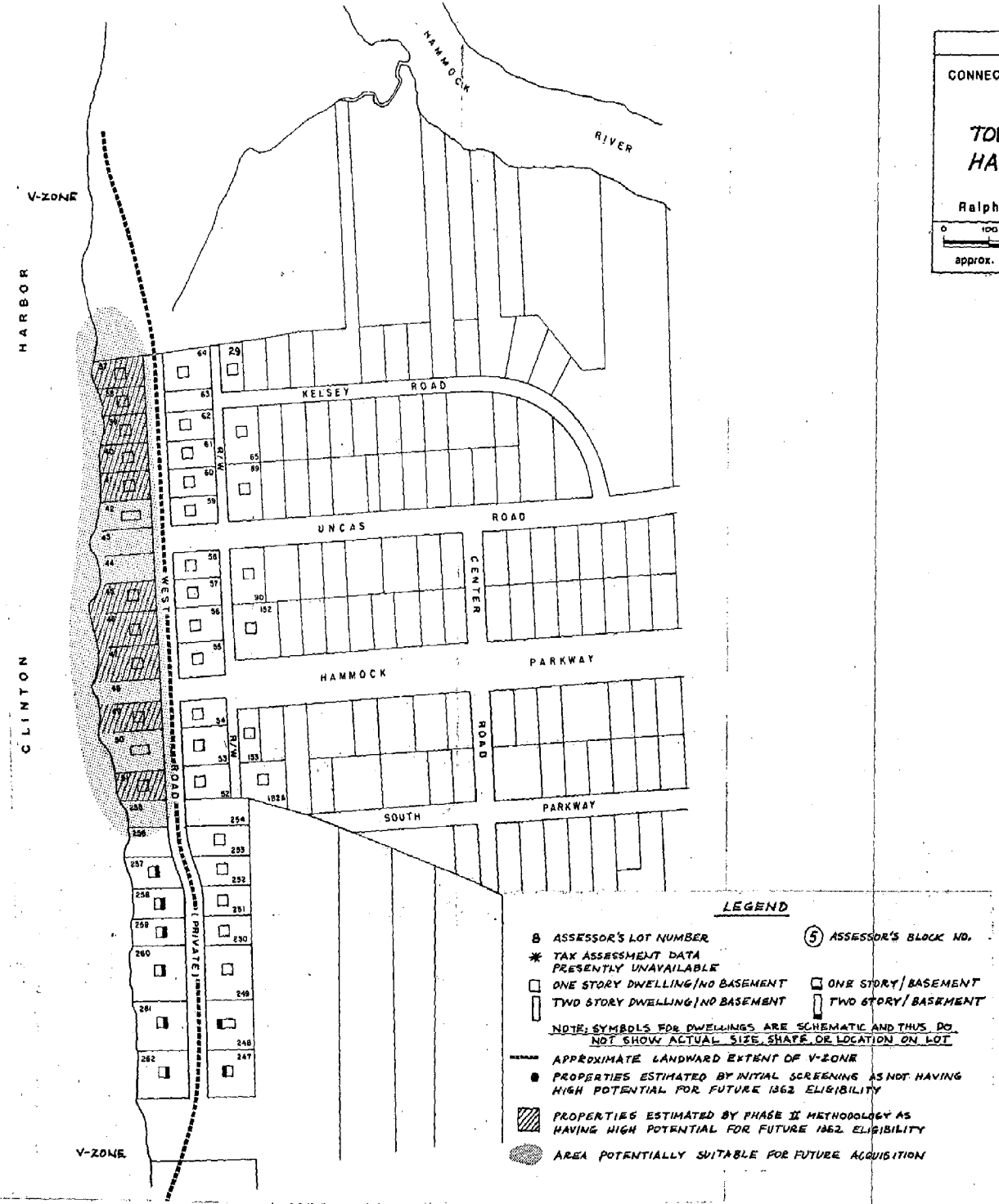
TOWN OF CLINTON: HARBOR VIEW AREA

Ralph M. Field Associates, Inc.

0 100 200 300
approx. scale of feet

date: Feb. 1982

north



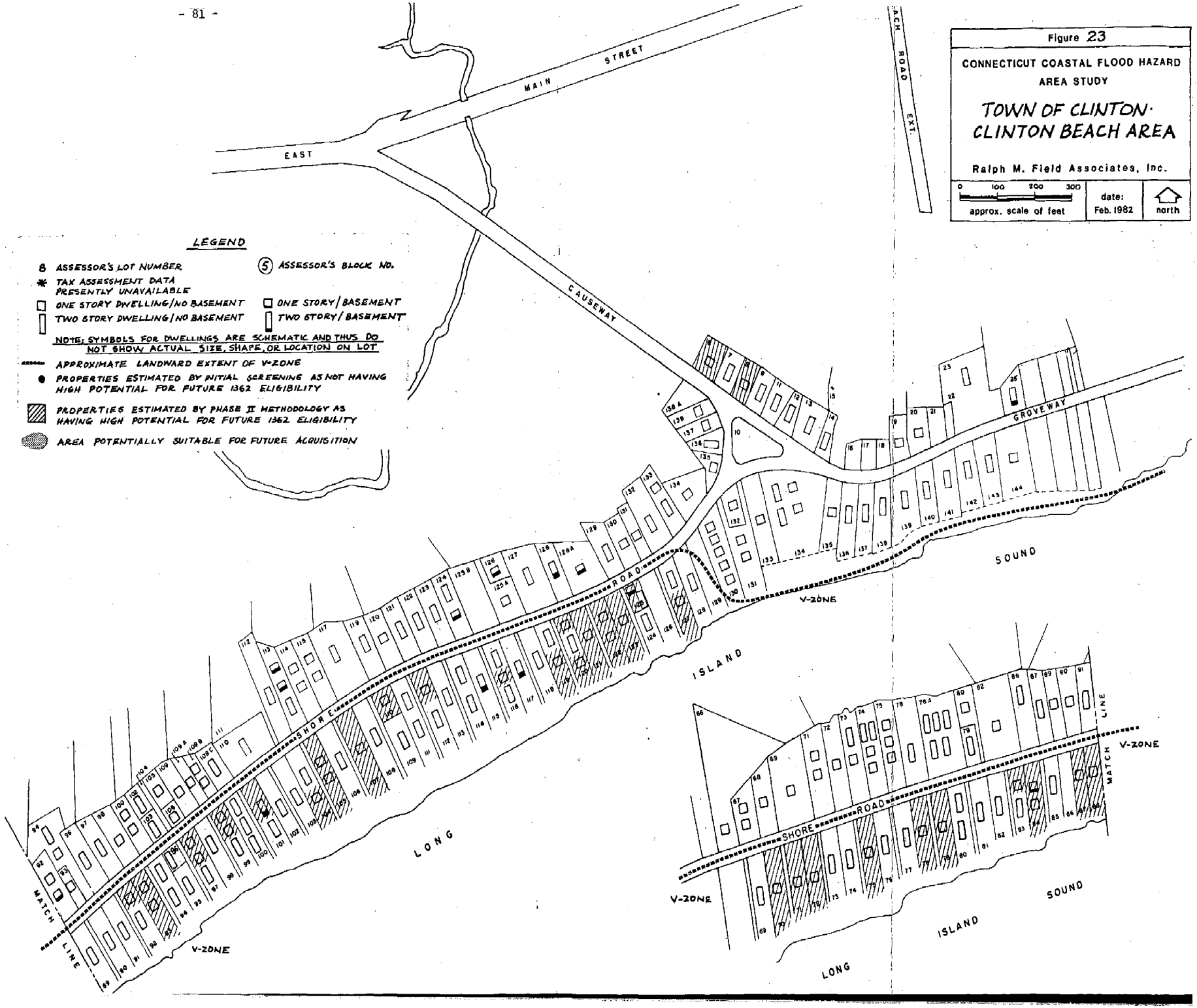


Figure 23

CONNECTICUT COASTAL FLOOD HAZARD AREA STUDY

TOWN OF CLINTON
CLINTON BEACH AREA

Ralph M. Field Associates, Inc.

0 100 200 300
approx. scale of feet

date: Feb. 1982

north

WESTBROOK

Two areas in Westbrook were identified; Grove Beach and West Beach (see Figure 24).

GROVE BEACH

General Description

Grove Beach is located a short distance along the coastline east of Clinton Beach and just east of the Westbrook town line. The study area includes about 3,000 feet of shoreline. The beach is relatively wide especially in the western and central portions of the study area where it is at least 100 feet wide. The area is oriented to the south, and some protection from storm waves is afforded by an offshore breakwater. West of Riverview Road is a land contact formation. East of Riverview the study area is a barrier beach, backed by a salt marsh and extending to the mouth of Mennunketesuck River. The eastern boundary of the study area is marked by a jetty protecting the channel that leads to the boatyards found in the mouths of the Mennunketesuck and Patchogue Rivers (which have a common outlet to the Sound through this channel).

The study area contains 64 structures, including 48 shorefront structures (see Figure 25). Most of the shorefront structures are built on the area that would apparently be the natural dune line. There is a mixture of year-round and seasonal dwellings. The year-round dwellings occur mostly at the eastern end of the study area, some smaller beach cottages are present at the western end of the study area (west of Elm Street). Most of the homes are elevated on piers.

A portion of Grove Beach is owned by the town. There are three active beach associations in the area. The area is regularly flooded at high tide, and erosion is a significant problem. Many residents evacuated the area two years ago during a winter storm. No homes were lost, but extensive damage to foundations and seawalls occurred.

The state has expressed an interest in owning recreation land in this area. Although the town is not actively seeking property in the area, it would not turn away additional beach frontage that became available and would welcome additional

land that could be used for parking adjacent to the existing town beach.

Almost all of the lots are less than 1/10 of an acre in size. The assessed values are generally less than $12,000 although there are some higher.

Potential Damage Assessment

Westbrook is still in the Emergency Phase of the Flood Insurance Program and the V-zone has not been mapped. For purposes of this study, the V-zone was assumed to extend along Old Mail Trail and Beachway Road.

The lowest grade elevations are found on the western end of the study area, in the area with the least expensive homes. Summer cottages in this area have elevations ranging from approximately 6 foot grade with first floors elevated about 3 feet, to approximately 3.5 foot grade elevation with first floors raised 5 to 7 feet. Grade elevation for beachfront homes in the rest of the study area to the east are in the 6.5 to 7 foot range with grades between 7 and 8 feet at the eastern end of the study area. Most of the homes are raised 2 to 4 feet above grade with several raised significantly higher.

Only scattered properties throughout the area were estimated by the Phase II methodology as having high potential for meeting Section 1362 eligibility criteria.

Conclusions

Access into the area for any public recreation beach would appear to present problems because of the narrow roads. Because of possible access problems, active beach associations, limited town interest, and only scattered properties with high potential, the area does not appear suitable for future Section 1362 acquisition by either the town or the state.

WEST BEACH

General Description

The West Beach area is a barrier beach formation backed by salt marsh and the Patchogue River. The coastline is oriented to the southeast. The study area includes 45 structures on the beach side of Seaside Avenue and 45 structures on the marsh side of Seaside Avenue as it runs west to east from Pilots Point Road

on the west to Post Avenue on the east (see Figure 26).

The structures in the West Beach study area are almost all summer cottages with the exception of a small group (12 structures) of year-round homes fronting the Sound in the Coral Sands section (just west of the paved parking are for the public beach). The shorefront homes in this group are built right on the beach, very close to the shoreline.

Grade elevation on the Sound side of Seaside Avenue gradually increases from west to east across the study area. In the area of the summer cottages, the grade ranges from approximately 6 to 7 feet. In the central Coral Sands area (year-round houses) the grade increases to about 9 feet. The summer cottages are raised on the average about 3 feet above grade; the year-round group about 2 feet above grade.

A separate group of summer cottages is located on the marsh side of Seaside Avenue in the Coral Sands section. The cottages are on small lots, most less than .1 acre, extending into the marsh. All of these structures are assessed at less than $10,000, most in the $4,000 to $6,000 range. Almost all are elevated on piers. Most were built during the 1950's. Structures are generally elevated 4 to 6 feet above grade, and grade elevations decrease away from the road to less than 5 feet above mean sea level at the north end. These structures were built prior to zoning regulations established in 1956, and they pose a potentially serious problem with inadequately functioning septic systems, particularly when flood waters are impounded in the area for a long time.

Also included in the study area is the row of structures extending from the group of cottages described above eastward to Post Avenue. The grade here gradually rises from about 6.5 feet at the western portion to over 8 feet at the eastern end with individual structures raised 3 to 4 feet. Most of these structures are seasonal and almost all are assessed at less than $10,000.

Current assessments represent 65 percent of 1971 market value. Revaluation is presently being done which will be based on 70 percent of current market value. The present mill rate is 38.00.

Potential Damage Assessment

Westbrook is in the Emergency Phase of the Flood Insurance Program, and the V-zone has not been mapped. For purposes of this study the V-zone was assumed to extend to Seaside Avenue. None of the structures north of Seaside Avenue were estimated by the Phase II methodology to have high potential for meeting Section 1362 eligibility criteria. A fairly large grouping of structures west of the existing town beach and parking area are estimated to have high potential (others without high potential are interspersed within this group of structures).

Conclusions

The area immediately west of the existing town beach and parking area to Pilot Point Drive includes several properties estimated to have high potential for future Section 1362 eligibility and would provide a convenient expansion of the existing town beach. Therefore, the area appears suitable for future application of Section 1362, perhaps in combination with other sources of funds. Total assessed value of properties in this area is $319,570. The amount of annual real estate tax revenue to the town is $12,144.

FIGURE 24: LOCATION OF GROVE BEACH AND WEST BEACH AREAS IN WESTBROOK

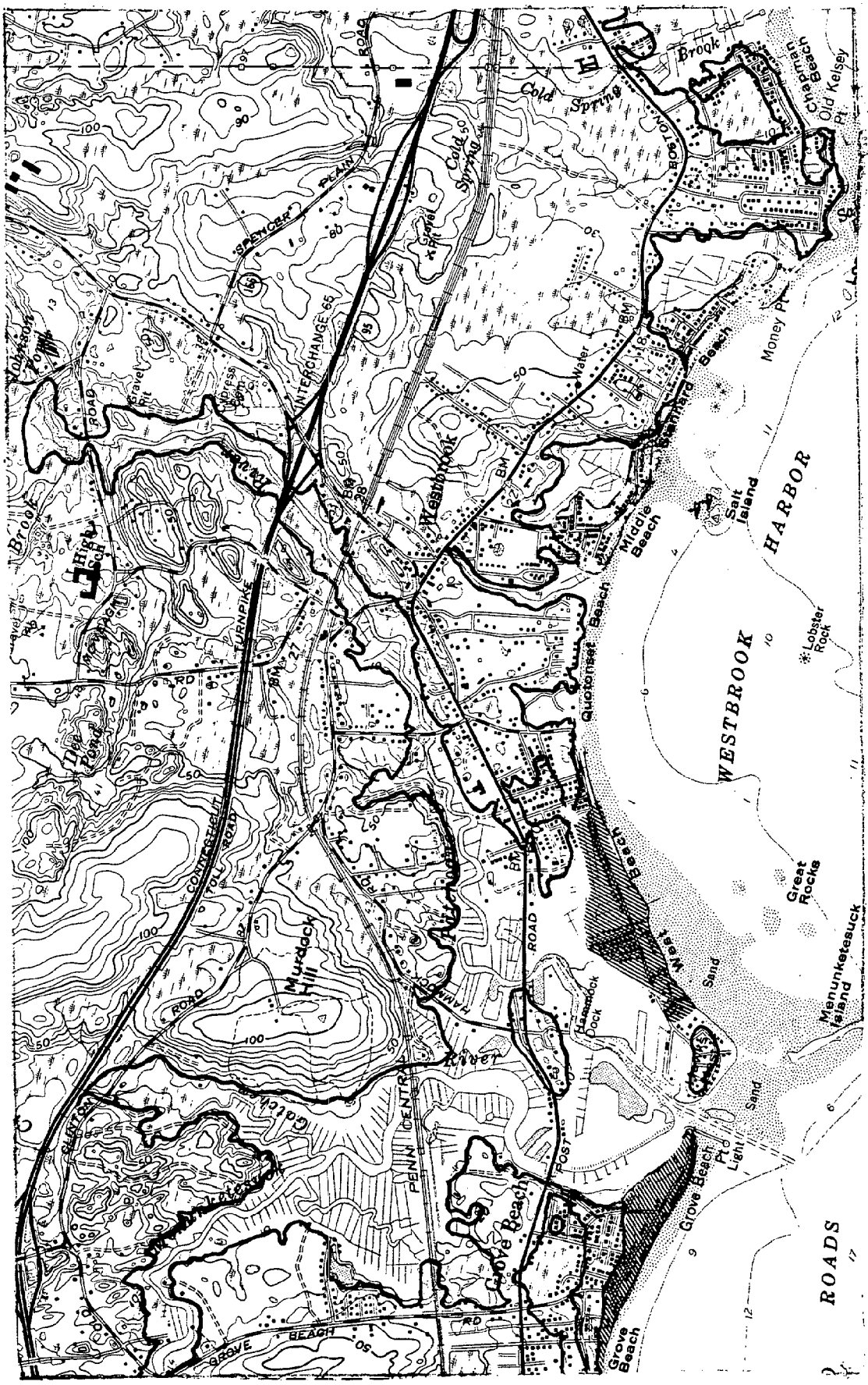


Figure 25

CONNECTICUT COASTAL FLOOD HAZAR
AREA STUDY

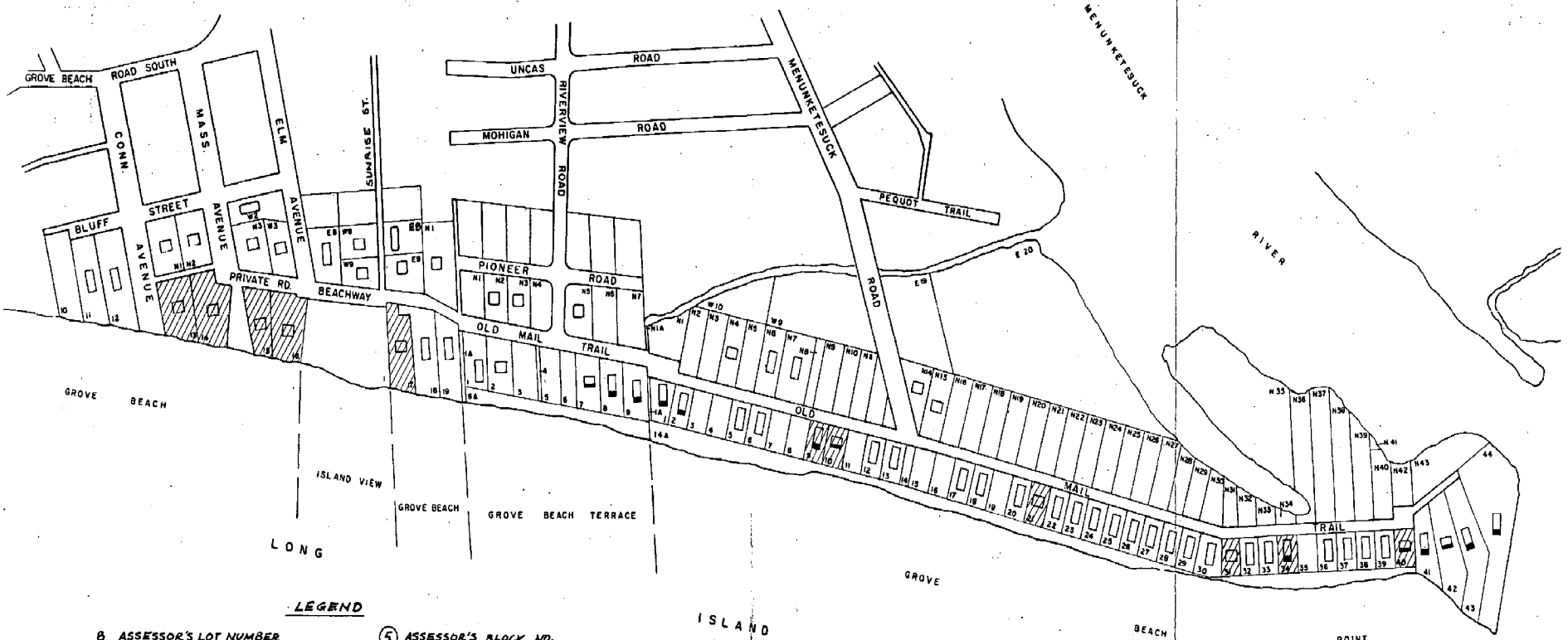
TOWN OF WESTBROOK
GROVE BEACH AREA

Ralph M. Field Associates, Inc.

0 100 200 300
approx. scale of feet

date:
Feb. 1982

nort



LEGEND

- B — ASSESSOR'S LOT NUMBER
- (5) — ASSESSOR'S BLOCK NO.
- * — TAX ASSESSMENT DATA PRESENTLY UNAVAILABLE
- ONE STORY DWELLING/NO BASEMENT
- ONE STORY/BASEMENT
- TWO STORY DWELLING/NO BASEMENT
- TWO STORY/BASEMENT

NOTE; SYMBOLS FOR DWELLINGS ARE SCHEMATIC AND THUS DO NOT SHOW ACTUAL SIZE, SHAPE, OR LOCATION ON LOT

- APPROXIMATE LANDWARD EXTENT OF V-ZONE
- PROPERTIES ESTIMATED BY INITIAL SCREENING AS NOT HAVING HIGH POTENTIAL FOR FUTURE 1362 ELIGIBILITY
- PROPERTIES ESTIMATED BY PHASE II METHODOLOGY AS HAVING HIGH POTENTIAL FOR FUTURE 1362 ELIGIBILITY
- AREA POTENTIALLY SUITABLE FOR FUTURE ACQUISITION

Figure 26

CONNECTICUT COASTAL FLOOD HAZARD AREA STUDY

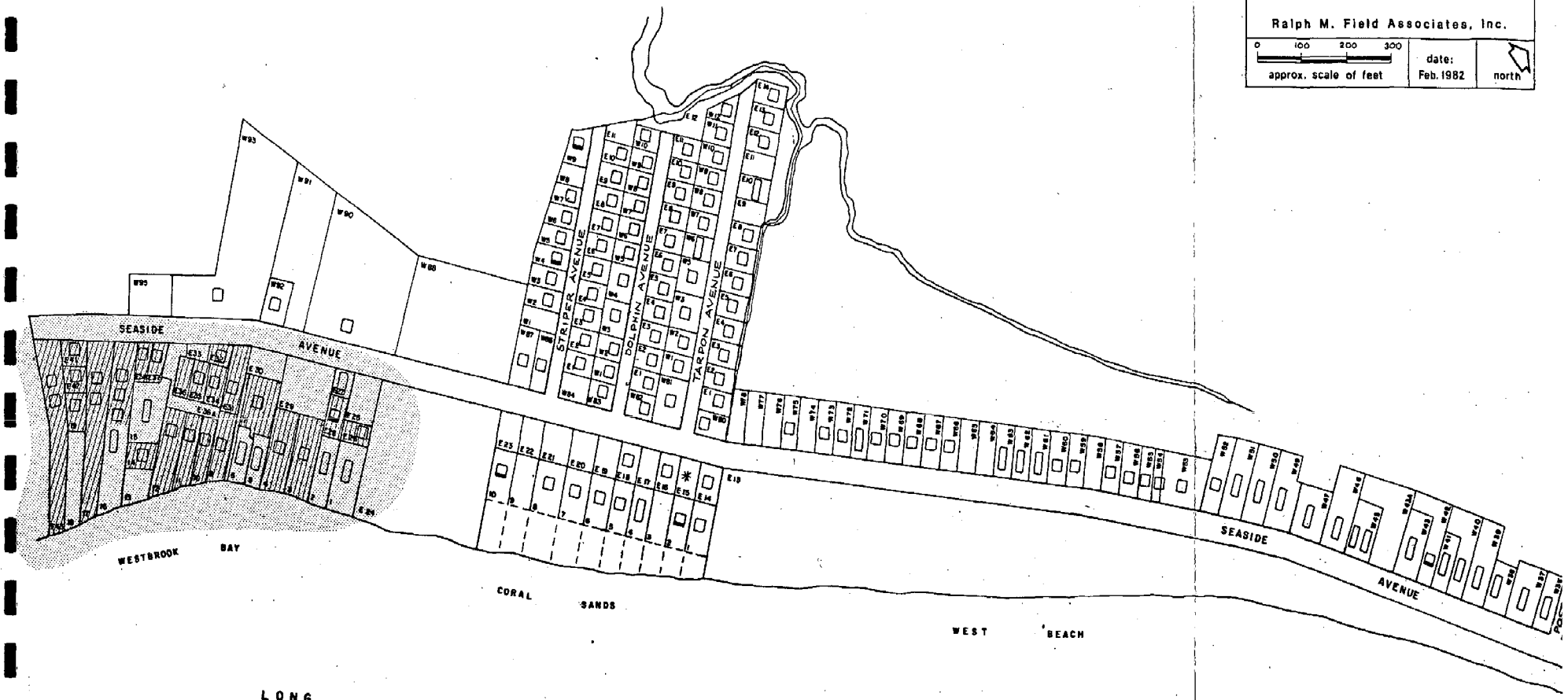
TOWN OF WESTBROOK: WEST BEACH AREA

Ralph M. Field Associates, Inc.

0 100 200 300
approx. scale of feet

date: Feb. 1982

north



LEGEND

- 8 ASSESSOR'S LOT NUMBER
- (5) ASSESSOR'S BLOCK NO.
- * TAX ASSESSMENT DATA PRESENTLY UNAVAILABLE
- ONE STORY DWELLING/NO BASEMENT
- ONE STORY/BASEMENT
- TWO STORY DWELLING/NO BASEMENT
- TWO STORY/BASEMENT

NOTE: SYMBOLS FOR DWELLINGS ARE SCHEMATIC AND THUS, DO NOT SHOW ACTUAL SIZE, SHAPE, OR LOCATION ON LOT

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- PROPERTIES ESTIMATED BY INITIAL SCREENING AS NOT HAVING HIGH POTENTIAL FOR FUTURE 1362 ELIGIBILITY
- PROPERTIES ESTIMATED BY PHASE II METHODOLOGY AS HAVING HIGH POTENTIAL FOR FUTURE 1362 ELIGIBILITY
- AREA POTENTIALLY SUITABLE FOR FUTURE ACQUISITION

OLD SAYBROOK

Three areas were identified in Old Saybrook: Chalker Beach, Great Hammock Beach and Plum Bank Beach (see Figure 27).

CHALKER BEACH

General Description

The study area is located east of Westbrook Harbor and includes all of the structures in the Chalker Beach area between Cold Spring Brook on the west and the end of Bel-Aire Drive on the east and is bounded on the north by the approximate landward extent of the V-zone, approximately 200 feet inland of Beach Road (see Figure 28). (Saybrook Manor area and Nehantic Trail area are not included in this study area.)

This is a barrier beach formation backed by wetland with landward development on artificial fill. The shoreline has an unobstructed orientation to the southwest. There is a 200 foot long by 100 foot wide existing recreational beach area. The remaining beach area is relatively narrow but widens in the eastern part of the study area in the Bel-Aire Drive section.

The study area includes 100 structures. Two different subareas within the study area can be identified. East of Bliss Street is a group of 22 structures that are relatively more expensive and are built on slightly higher grade elevation than the rest of the study area. This appears to be predominantly a year-round section. Most of these structures are assessed in the $20,000 to $30,000 range -- average structure asssessment is about $29,000. Average total assessment in this subgroup is about $59,000. Of the 78 remaining structures -- mostly summer cottages, elevated on piers -- most are assessed at less than $15,000. The average total assessment is $31,000. Assessments represent 70 percent of 1979 market values. The mill rate is 20.8.

Most of the seasonal cottages were built in the 1920's and 1930's. It is highly vulnerable to flooding and was damaged severely in 1938. Most of the cottages have been in the same family for at least a generation and there is little turnover. The Chalker Beach Association has been active in representing the interests of the residents in recent discussion of a community septic system.

Acquisition in the Chalker Beach or Saybrook Manor areas would meet town needs either for additional beach property or for additional access to the Sound. According to officials interviewed, the town would be interested in any Chalker Beach properties voluntarily offered for sale following severe flood damage. The town has a need for additional beach areas, established by a study commissioned by the town's beach study commission in the 1970's. Chalker Beach is physically the best beach area in town -- it is wide, sandy, and has good depth at low tide. Beach erosion only occurs during storms with a strong southwest wind; most often the beach is in an accretion area. Though Chalker Beach itself would make an admirable site for a public beach, there would be some access and parking problems. The town has only two boat launches, of which only one is open to the public; accordingly, public access for an additional boat launch would serve an important community need.

The town would not, according to officials interviewed, use its power of eminent domain to acquire properties adjacent to eligible properties to make a suitable reuse area; it believes that its aggressive evacuation policy during severe storms removes any threat to life and the threat of property damages or need for public recreational areas are not sufficient justification for taking people's property.

Potential Damage Assessment

Grade elevations throughout the study area are low. Shorefront structures are built right on the beach system and these structures are on the highest grade elevation in the study area -- what would appear to correspond to the natural location of the dune line. The elevation of the shorefront structures is approximately six feet in the area west of Cranton Street. East of Cranton Street, the grade rises to over eight feet in the shorefront area of Bel-Aire Drive. Landward of Bel-Aire Drive grade elevation decreases but is still within the range of six to seven feet. Landward of Beach Road elevations are significantly lower, especially to the west of Chalker Beach Road. Grade elevation of structures landward of Beach Road are generally in the four to six foot range. Most of the cottages are raised two to three feet above grade on piers. The Phase II methodology estimated that almost all of the structures in the study area have potential for future Section 1362 eligibility.

Conclusions

Because the town has a high interest in developing a public recreation beach in this area, and because almost all of the properties have a high potential, the entire area appears suitable for application of the Section 1362 program. The assessed value of the entire area is $3,755.560. Annual real estate taxes to the town are $78,116.

GREAT HAMMOCK BEACH

General Description

Great Hammock Beach is an extremely low and flat area south of Oyster River. The study area includes all of the structures located between Plum Bank Road (State Rt. 154) and the Sound. It is bounded on the north by the mouth of Indiantown Harbor and on the south by the outlet of Plum Bank Creek (see Figure 29).

The study area includes 82 mostly seasonal structures, all of which are within the mapped V-zone. Most of the structures are assessed in the $10,000 to $20,000 range -- more than half are assessed at less than $15,000. Average assessment is about $15,000. Average total assessment is about $32,000.

Great Hammock Beach is the most vulnerable of the Old Saybrook beaches due to its southwestern exposure. Numerous private groins and seawalls line the beach in this area. Because the beaches are so shallow, they are good for small children. Only a few of the cottages on Great Hammock Beach are winterized.

The town needs additional land for beaches and beach parking facilities. The town also needs additional boat access points to the shore. Acquisition may also help protect the extensive state-owned marshlands across Plum Beach Road -- a critical natural area identified by the DEP wildlife unit.

According to officials interviewd, the town would be interested in any Great Hammock properties voluntarily offered for sale following severe flood damage. However, such voluntary sales would likely be rare according to town officials, and the town would not use its power of eminent domain to acquire additional properties to make a suitable reuse area.

Potental Damage Assessment

All of the structures are located within the FEMA-designated V-zone. The base flood elevation is 11 feet. Grade elevation throughout the study area is relatively very low, particularly in the Barnes Road area where shorefront structures are built right on the beach, very close to the water and on grades generally less than five feet. Landward elevations are also generally less than five feet. Most of the structures in the area are elevated on piers. Structures in the Barnes Road area are generally elevated four to five feet above grade. The remainder of the structures are generally elevated one to three feet above grade. The Phase II methodology estimated that all structures in this area have high potential for future Section 1362 eligibility.

Conclusions

Because all of the structures in this area have high potential and there is interest by both the town and the state in acquiring property in this area, it appears to be suitable for application of Section 1362. Since the Chalker Beach area and Plum Bank Beach area (see following discussion) are both suggested for town application of Section 1362, the Great Hammock Beach area is suggested as being most appropriate for state use as an expansion of its holdings in the marshland across the road. Total assessed value of all properties in the area is $2,613,360. Annual real estate taxes to the town are $54,358.

PLUM BANK BEACH

General Description

This area is just south of Great Hammock Beach on the same southwest oriented shoreline. This is a barrier beach backed by extensive wetlands owned by the state. The study area extends southward from the mouth of Plum Bank Creek to the end of Plum Bank Road (State Route 154) and includes 54 structures between the Sound and Plum Bank Road -- 47 of these structures are considered to be in the V-zone (see Figure 30).

The structures in this area are a mixture of year-round and seasonal dwellings. More than half of the structures are assessed at less than $20,000; several, however, are assessed at over $30,000. Average structure assessment is about $23,000.

This is a strip of shorefront approximately 1/2 mile long. Located in the middle is a town beach. Houses are not built as close to the shoreline as in Great Hammock Beach but the beach area here is relatively narrow, particularly in the area south of the public beach where numerous private groins have been built to trap sand.

The town would also be interested in any available properties at Plum Bank Beach for expanded beach area and parking facilities. The state has indicated interest in the entire area to help protect the marsh.

Potential Damage Assessment

Grade elevations are higher here than in the other two Old Saybrook study areas. North of the town beach there is a low area immediately on the shore side of Route 154. The structures, however, are built on higher ground closer to the Sound. There is a high point in the northern part of the study area where grade elevation of the shorefront structures are greater than 10 feet. Structures in this area are raised only about 0 to one foot above grade. South of this high point grade elevations range fron six to nine feet and structures in this area are raised two to three feet above grade.

South of the town beach grade elevations of the shorefront structures range from six to eight feet until the topography begins to rise approximately 300 feet from the end of Plum Bank Road. Structures south of the beach area are only 0 to one foot above grade.

The Phase II methodology estimated that 23 structures in the study area have high potential for future Section 1362 eligibility. These include a large, almost contiguous group near the south end of the study area, a small group immediately adjacent to the existing town beach, and some additional properties in the northern part of the study area.

Conclusions

Two groupings of properties appear suitable for Section 1362 application to assist the town in expanding its public beach areas. The small group of high-potential properties north and south of the existing town beach could be used to expand the town beach. The larger group of high-potential properties at the southern end of

the study could be used to develop a new public beach. Total assessed value of the 14 properties at the southern end is $832,270 and annual real estate taxes are $17,311. Total assessed value of the four properties adjacent to the town beach is $219,930 and annual taxes are $4,574.

FIGURE 27: LOCATION OF CHALKER BEACH, GREAT HAMMOCK BEACH, AND PLUM BANK BEACH AREAS IN OLD SAYBROOK

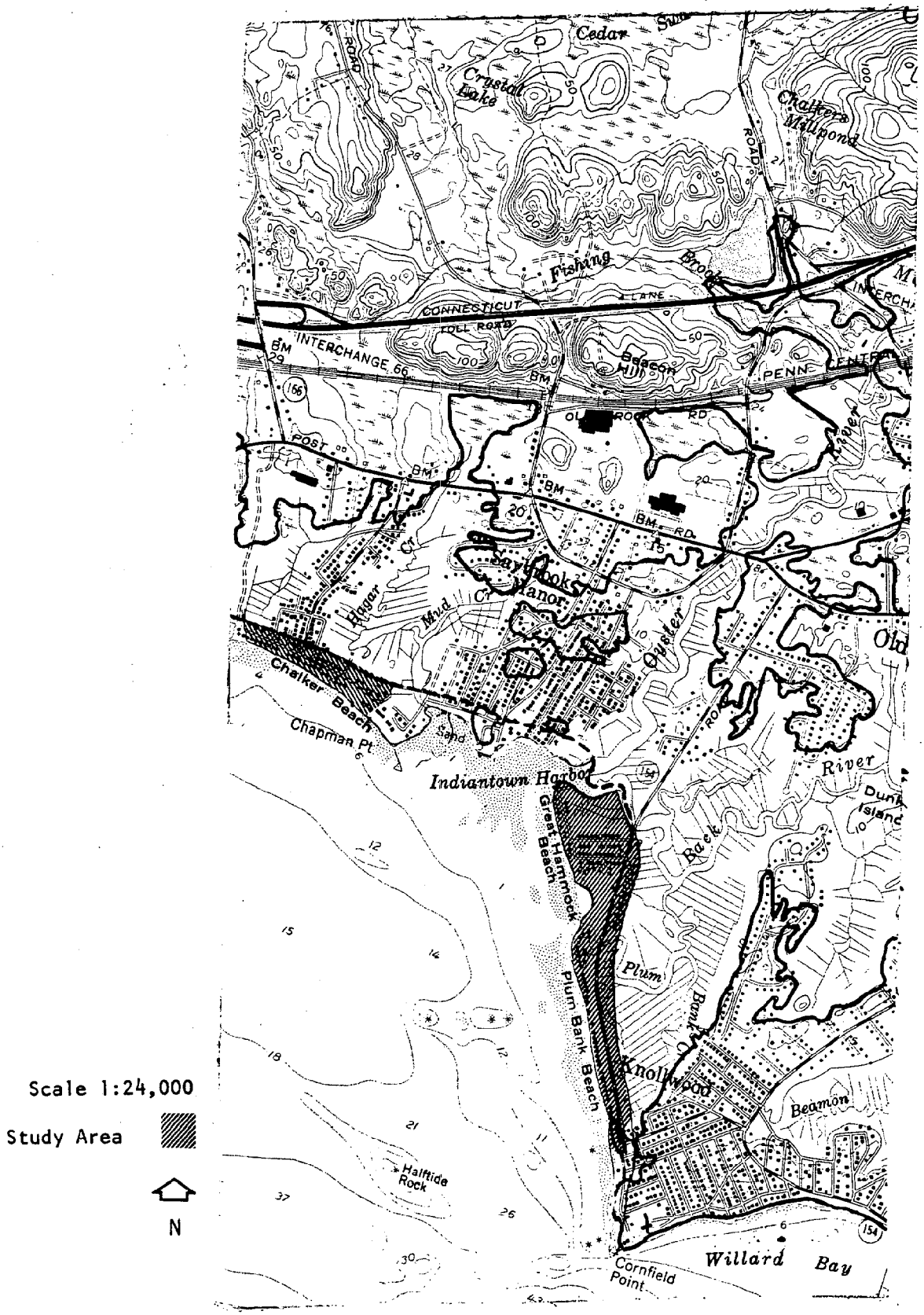


Figure 28

CONNECTICUT COASTAL FLOOD HAZARD AREA STUDY

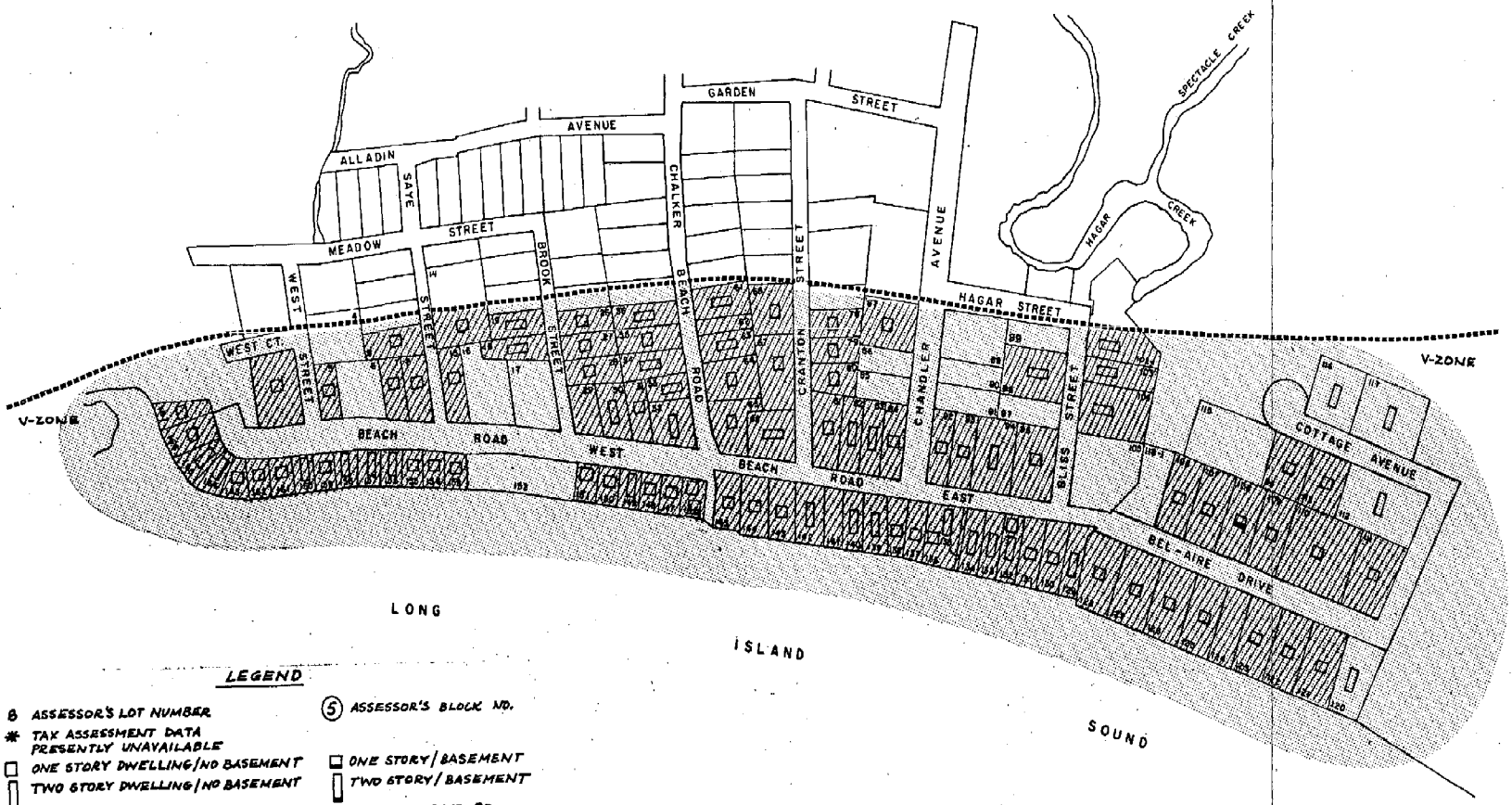
TOWN OF OLD SAYBROOK: CHALKER BEACH AREA

Ralph M. Field Associates, Inc.

0 100 200 300
approx. scale of feet

date: Feb. 1982

north



LEGEND

- 8 ASSESSOR'S LOT NUMBER
- (5) ASSESSOR'S BLOCK NO.
- * TAX ASSESSMENT DATA PRESENTLY UNAVAILABLE
- ONE STORY DWELLING/NO BASEMENT
- ONE STORY/BASEMENT
- TWO STORY DWELLING/NO BASEMENT
- TWO STORY/BASEMENT

NOTE: SYMBOLS FOR DWELLINGS ARE SCHEMATIC AND THUS DO NOT SHOW ACTUAL SIZE, SHAPE, OR LOCATION ON LOT

- APPROXIMATE LANDWARD EXTENT OF V-ZONE
- PROPERTIES ESTIMATED BY INITIAL SCREENING AS NOT HAVING HIGH POTENTIAL FOR FUTURE 1362 ELIGIBILITY
- PROPERTIES ESTIMATED BY PHASE II METHODOLOGY AS HAVING HIGH POTENTIAL FOR FUTURE 1362 ELIGIBILITY
- AREA POTENTIALLY SUITABLE FOR FUTURE ACQUISITION

LEGEND

8 ASSESSOR'S LOT NUMBER
(5) ASSESSOR'S BLOCK NO.
* TAX ASSESSMENT DATA PRESENTLY UNAVAILABLE
ONE STORY DWELLING/NO BASEMENT
ONE STORY/BASEMENT
TWO STORY DWELLING/NO BASEMENT
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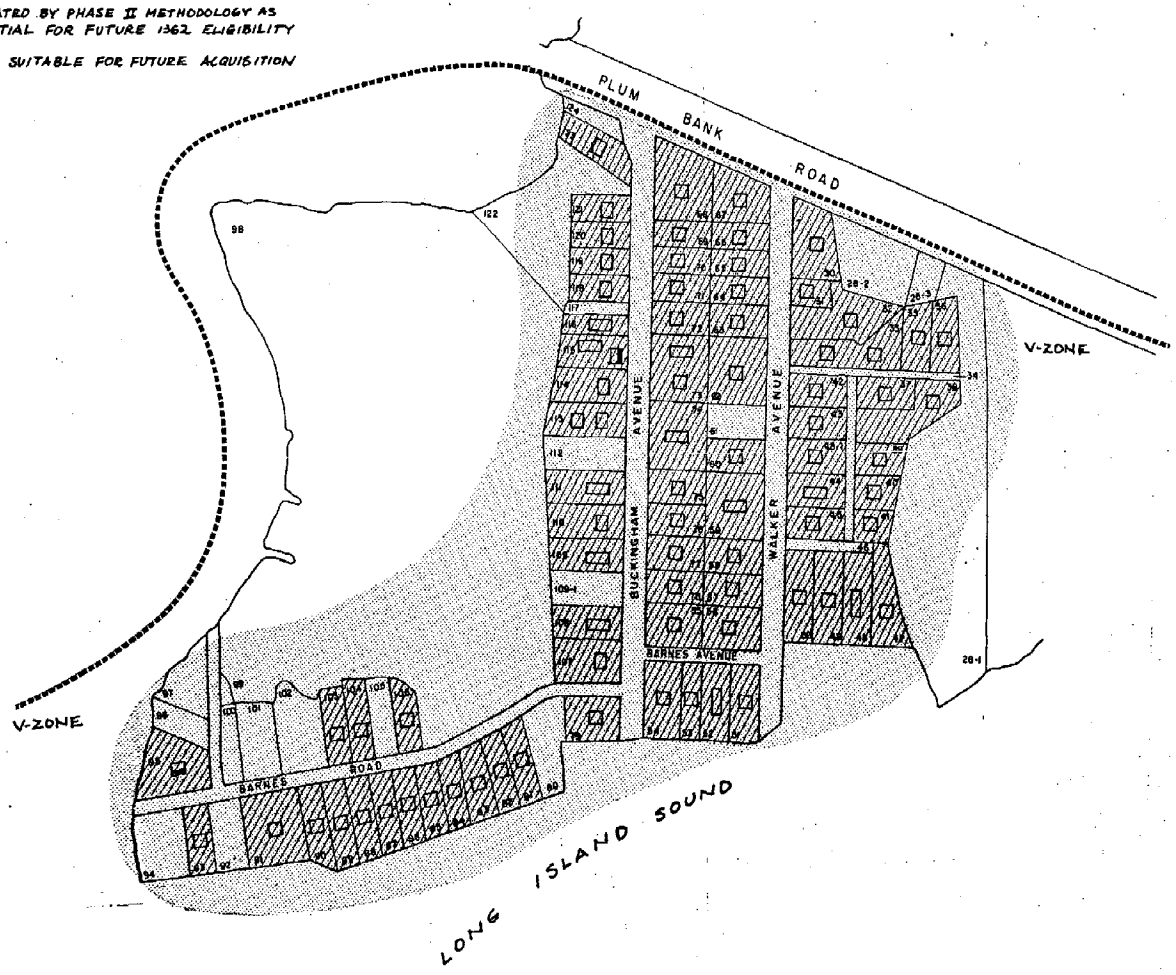


Figure 29

CONNECTICUT COASTAL FLOOD HAZARD AREA STUDY

TOWN OF OLD SAYBROOK: GREAT HAMMOCK BEACH AREA

Ralph M. Field Associates, Inc.

0 100 200 300
approx. scale of feet

date: Feb. 1982

north

Figure 30

CONNECTICUT COASTAL FLOOD HAZARD AREA STUDY

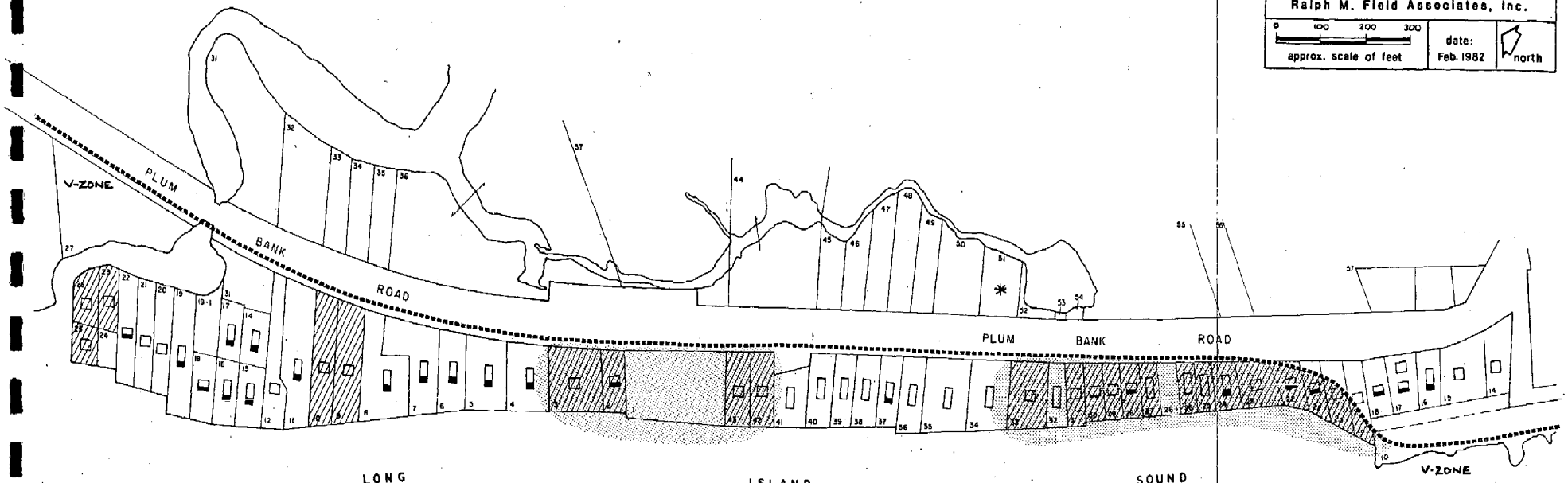
TOWN OF OLD SAYBROOK: PLUM BANK BEACH AREA

Ralph M. Field Associates, Inc.

0 100 200 300
approx. scale of feet

date: Feb. 1982

north



LEGEND

- 8 ASSESSOR'S LOT NUMBER
- (5) ASSESSOR'S BLOCK NO.
- * TAX ASSESSMENT DATA PRESENTLY UNAVAILABLE
- ONE STORY DWELLING/NO BASEMENT
- ONE STORY/BASEMENT
- TWO STORY DWELLING/NO BASEMENT
- TWO STORY/BASEMENT

NOTE: SYMBOLS FOR DWELLINGS ARE SCHEMATIC AND THUS DO NOT SHOW ACTUAL SIZE, SHAPE, OR LOCATION ON LOT

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- PROPERTIES ESTIMATED BY PHASE II METHODOLOGY AS HAVING HIGH POTENTIAL FOR FUTURE 1362 ELIGIBILITY
- AREA POTENTIALLY SUITABLE FOR FUTURE ACQUISITION

OLD LYME

Two areas in Old Lyme were selected for detailed study; Hawks Nest and Sound View (see Figure 31).

HAWKS NEST

General Description

This study area is located on an approximately half-mile long barrier beach formation that is backed by marshland. The shoreline fronting Long Island Sound is oriented towards the southeast, and there are no offshore obstructions to storm waves. There is a fairly large groin field, and the beach is good for swimming. The study area is bounded on the west by Mile Creek and on the east by Hawks Nest Road. (See Figure 32.)

The study area contains 85 dwellings. Although most of these structures are seasonal, rental cottages, they all appear to be well-maintained. Most of these cottages are owned by one family. Conversation with the owner revealed that, for economic reasons, he has decided not to purchase flood insurance for these rental cottages.

Structures in the study area may be divided into subgroups. In the eastern part of the study area are smaller, one-story seasonal rental cottages -- most assessed at less than $15,000. There is a smaller middle group of about seven year-round structures, each of which is assessed at over $20,000. The largest subgroup is composed of the remaining 59 structures, most fronting the Sound, seasonal, and generally more substantial than the cottages in the eastern part of the area. The average structure assessment in this subgroup is approximately $19,000.

Old Lyme has taken a hard line against rebuilding substantially damaged beachfront structures -- it feels that such structures should not be rebuilt. To prevent such rebuilding, the zoning enforcement officer has determined that the requirement for a floodproofed septic system cannot be met in a coastal high hazard area.

Potential Damage Assessment

The base flood elevation is 11 feet. The V-zone boundary follows West End Avenue from west to east. As the road begins to curve inland in the eastern part of the study area, the V-zone does not follow the road but instead continues eastward approximately 150 feet inland of the shoreline.

Sixty-six structures are estimated to be in the V-zone. Shorefront homes are built right on the beach system with generally less than 100 feet between the house and the shoreline.

Grade elevations for the shorefront cottages forming the largest subgroup is generally in the range of 7 to 9 feet. Grade elevation increases to over 10 feet in the central year-round area and then decreases slightly to the east edge of the study area. Almost all of the seasonal dwellings are elevated on piers. Most of the structures are elevated, on the average of about 2 feet above grade level.

The Phase II methodology identifies scattered one-story structures in the V-zone as having high potential for future Section 1362 eligibility.

Conclusion

Officials of the Town of Old Lyme noted the usefulness of an additional town beach in the Hawks Nest area. However, because only scattered properties were estimated to have high potential and because most of the structures in the area are unlikely to be covered by flood insurance, the area does not appear suitable for application of the Section 1362 program.

SOUND VIEW

General Description

This study area is located just to the east of Hawks Nest on a land contact beach area and adjacent shorelands. The shoreline is oriented to the south and there are no offshore obstructions to stormwaves. Almost all of the structures are seasonal; some have been recently renovated but others are poorly maintained. The area is densely developed and the focal point of the area is the public beach

located at the end of Hartford Ave. The study area is bisected by Hartford Ave. which in the summer is the entertainment strip for what becomes a crowded resort area. (See figure 33.)

Of the 64 shorefront structures (between Pond Rd. and Hartung Place and the Sound) a few individual structures are assessed at over $30,000 each but many are assessed at $10,000 or less. Most are assessed at less than $15,000. Some of the shorefront structures are in a seasonal, commercial use.

Potential Damage Assessment

The base flood elevation is 11 feet and for the purpose of estimating potential damage, the 64 shorefront dwellings were treated as if they were in the V-zone. The landward extent of the mapped V-zone passes through the interior of the shorefront lots, approximately midway between Pond Rd. and Hartung Place and the shoreline. For purposes of estimating potential damage, all structures on the shorefront lots were considered to be subject to wave damage (in the V-zone). The first row of structures fronting the Sound are built on the beach system. The beach is relatively wide -- in most places over 100 feet.

High grade elevations between Pond Rd. and Hartung Rd. and the shoreline were found to be generally within the seven to eight feet range. Most of the structures are raised above grade on piers. Most of the structures are raised about two feet above grade. Throughout the V-zone the Phase II methodology has identified scattered structures as having high potential for future 1362 eligibility. A small group of contiguous structures adjacent to the town beach are estimated to have high potential.

West of Hartford Ave. and just landward of the shorefront structures, grade elevation decreases significantly to low points estimated at less than four feet along Pond Rd. Grade elevations rise slightly north of Pond Rd. but elevations in this area (north of Pond Rd. - west of Hartford Ave.) remain generally low; the lowest in the study area. Despite the low elevations, structures here are not estimated to have high potential for future 1362 eligibility, primarily because the area is out of the V-zone.

East of Hartford Ave. and landward of the shorefront structures, grade elevations do not drop off as significantly as they do in the Pond Rd. area. Hartung Place

is at roughly equal elevation to the shorefront grade and north of Hartung Place grade elevations remain relatively high in comparison to the area west of Hartford Ave.

Conclusions

The town owns vacant lots in the study area which it rents for parking, but a shortage of parking areas limits the beach's use. It is a good swimming beach with better road access than White Sands and Hawks Nest Beaches. In the early 1970's a redevelopment plan was proposed for the area, but the voters turned it down decisively.

By acquiring properties in Sound View, the town could extend a popular town beach. Additional parking facilities would also be needed if the beach were expanded. Old Lyme officials expressed interest in acquiring properties in Sound View, although residents are unlikely to want to sell if they are allowed to rebuild.

The areas adjacent to the Town Beach at the south end of Hartford Ave. appear suitable for future application of the Section 1362 program.

FIGURE 31: LOCATION OF HAWKS NEST AND SOUND VIEW AREAS IN OLD LYME

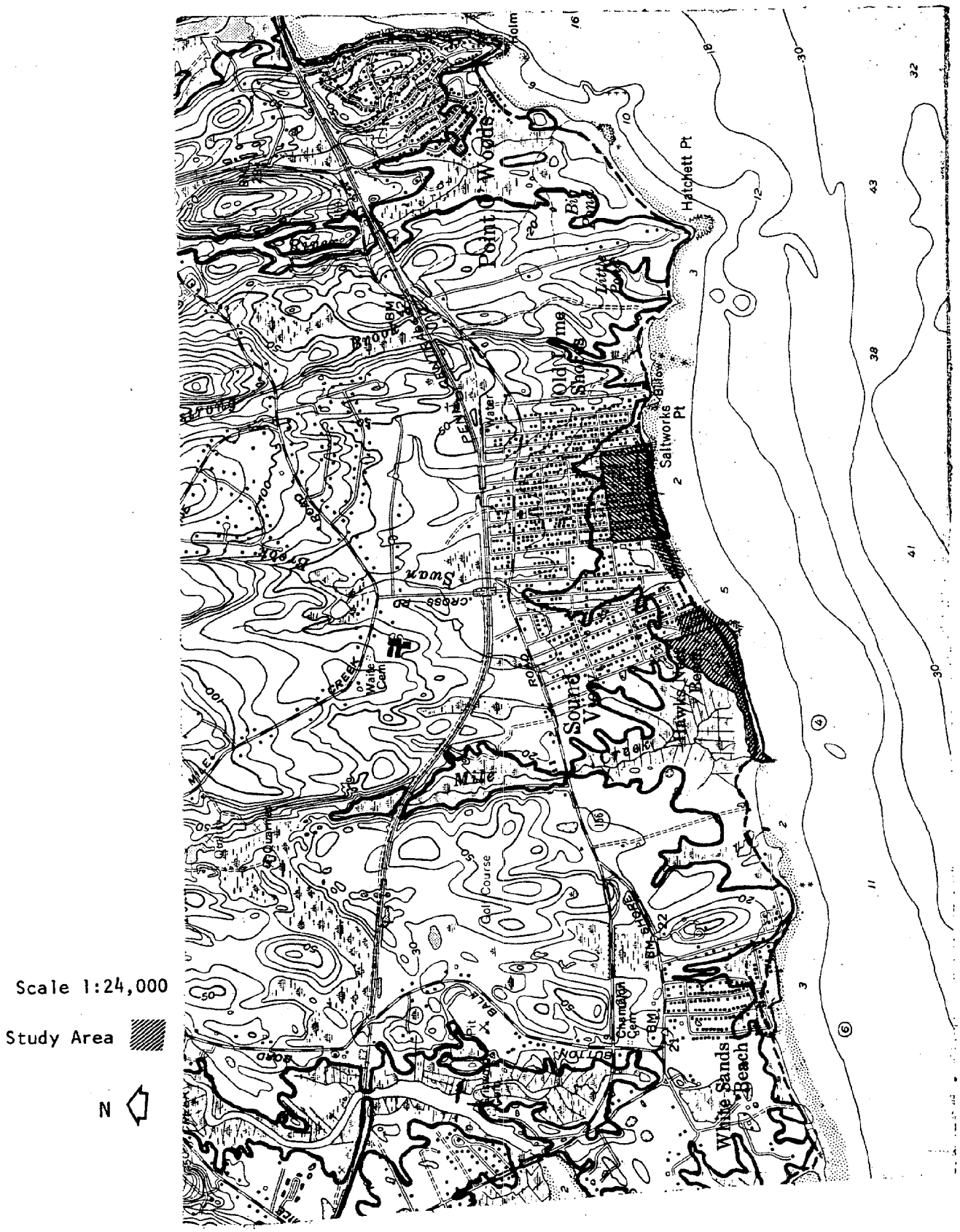


Figure 32

CONNECTICUT COASTAL FLOOD HAZARD AREA STUDY

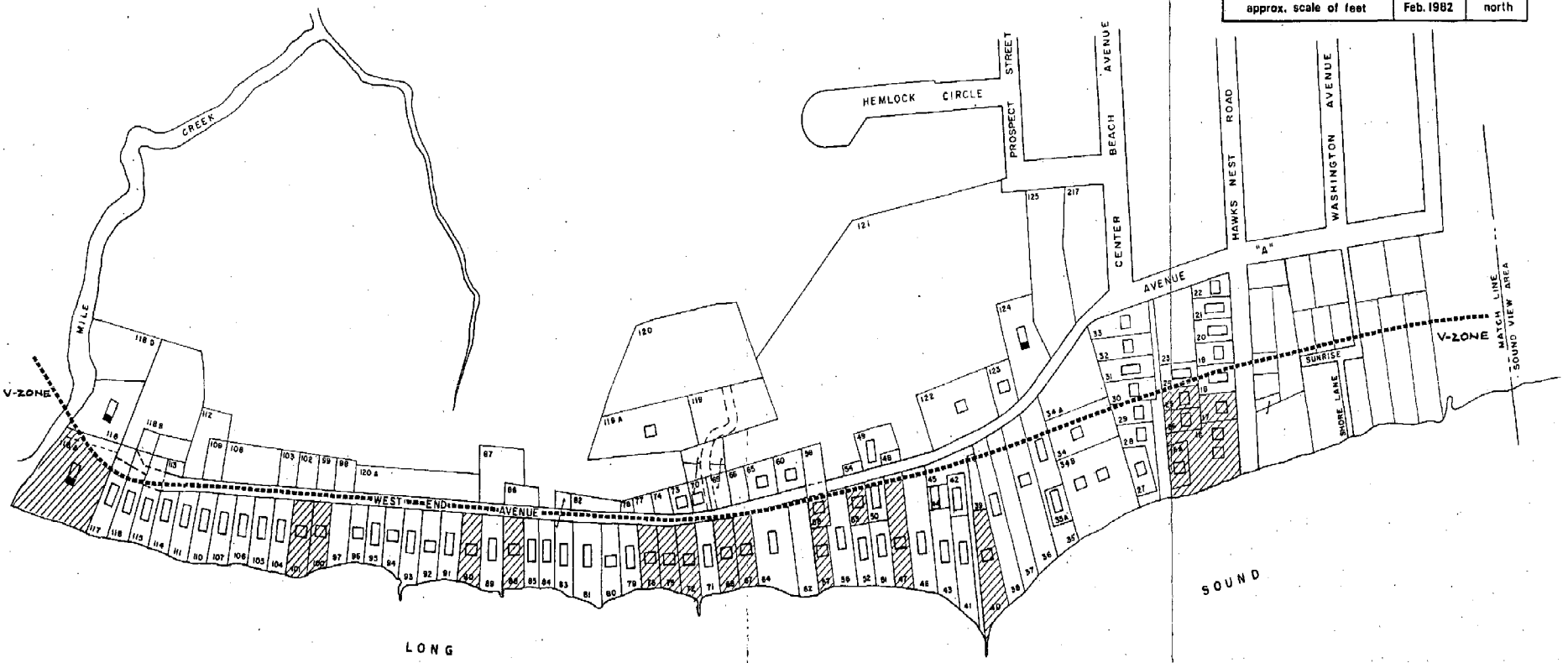
TOWN OF OLD LYME: HAWKS NEST AREA

Ralph M. Field Associates, Inc.

0 100 200 300
approx. scale of feet

date: Feb. 1982

north



LEGEND

- 8 ASSESSOR'S LOT NUMBER
- (5) ASSESSOR'S BLOCK NO.
- * TAX ASSESSMENT DATA PRESENTLY UNAVAILABLE
- ONE STORY DWELLING/NO BASEMENT
- ONE STORY/BASEMENT
- TWO STORY DWELLING/NO BASEMENT
- TWO STORY/BASEMENT

NOTE: SYMBOLS FOR DWELLINGS ARE SCHEMATIC AND THUS DO NOT SHOW ACTUAL SIZE, SHAPE, OR LOCATION ON LOT

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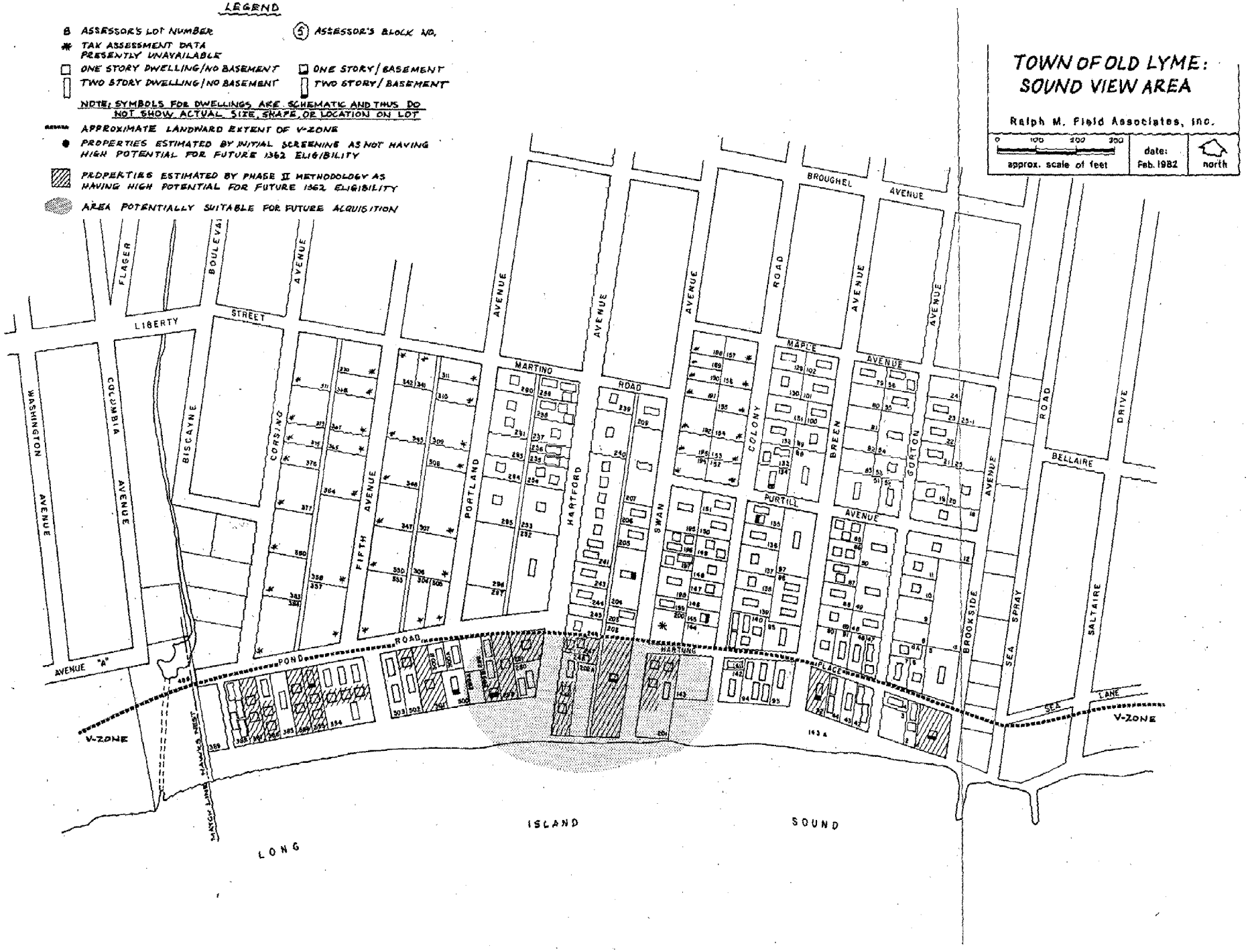
- PROPERTIES ESTIMATED BY INITIAL SCREENING AS NOT HAVING HIGH POTENTIAL FOR FUTURE 1362 ELIGIBILITY
- PROPERTIES ESTIMATED BY PHASE II METHODOLOGY AS HAVING HIGH POTENTIAL FOR FUTURE 1362 ELIGIBILITY
- AREA POTENTIALLY SUITABLE FOR FUTURE ACQUISITION


LEGEND
B ASSESSOR'S LOT NUMBER
(5) ASSESSOR'S BLOCK NO.
TAX ASSESSMENT DATA PRESENTLY UNAVAILABLE
ONE STORY DWELLING/NO BASEMENT
ONE STORY/BASEMENT
TWO STORY DWELLING/NO BASEMENT
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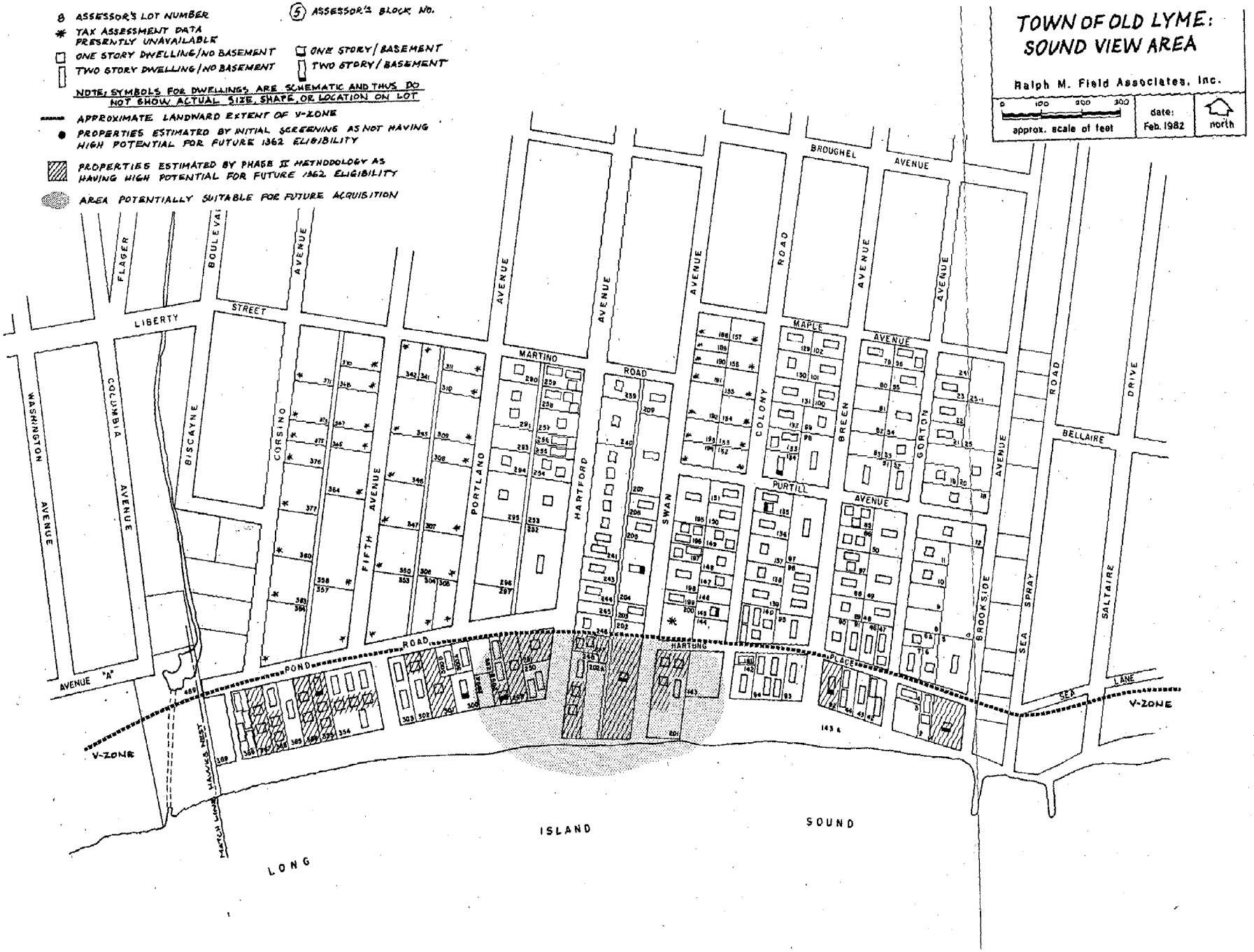
PROPERTIES ESTIMATED BY PHASE II METHODOLOGY AS HAVING HIGH POTENTIAL FOR FUTURE 1362 ELIGIBILITY
AREA POTENTIALLY SUITABLE FOR FUTURE ACQUISITION
TOWN OF OLD LYME: SOUND VIEW AREA
Ralph M. Field Associates, Inc.
0 100 200 300
approx. scale of feet
date: Feb. 1982
north
BROUGHEL AVENUE
LIBERTY STREET
FLAGER
BOULEVARD
AVENUE
MARTINO ROAD
MAPLE AVENUE
PURTILL AVENUE
WASHINGTON AVENUE
COLUMBIA AVENUE
BISCAYNE
CORSINO
FIFTH AVENUE
PORTLAND
HARTFORD
SWAN
COLONY ROAD
BREEN AVENUE
GORTON AVENUE
BROOKSIDE AVENUE
SEA SPRAY ROAD
SALTAIRE DRIVE
BELLAIRE
SEA LANE
AVENUE "A"
POND ROAD
HARTUNG PLACE
HAWKS NEST
MATCH LINE
V-ZONE
V-ZONE
LONG ISLAND SOUND


LEGEND
8 ASSESSOR'S LOT NUMBER
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ONE STORY DWELLING/NO BASEMENT
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PROPERTIES ESTIMATED BY PHASE II METHODOLOGY AS HAVING HIGH POTENTIAL FOR FUTURE 1362 ELIGIBILITY
AREA POTENTIALLY SUITABLE FOR FUTURE ACQUISITION
TOWN OF OLD LYME: SOUND VIEW AREA
Ralph M. Field Associates, Inc.
0 100 200 300
approx. scale of feet
date: Feb. 1982
north
FLAGER
BOULEVARD
LIBERTY
STREET
WASHINGTON AVENUE
COLUMBIA AVENUE
BISCAYNE
CORSINO
AVENUE
FIFTH AVENUE
PORTLAND AVENUE
MARTINO ROAD
HARTFORD AVENUE
SWAN AVENUE
COLONY ROAD
BROUGHEL AVENUE
MAPLE AVENUE
BREEN AVENUE
GORTON AVENUE
PURTILL AVENUE
BROOKSIDE AVENUE
SEA SPRAY ROAD
BELLAIRE DRIVE
SALTAIRE
AVENUE "A"
POND ROAD
HARTSHORN PLACE
SEA LANE
V-ZONE
V-ZONE
HAMMOCK RIVER
MARSH LAND
LONG ISLAND SOUND

PART III

FINDINGS AND RECOMMENDATIONS

SUMMARY OF SECTION 1362 ELIGIBILITY FOR SELECTED AREAS

As discussed in Part II, not all of the areas investigated as part of this study were judged to have high potential eligibility for acquisition under the Section 1362 program. Although all of the areas except Long Beach in Stratford had at least some properties with high potential for eligibility, in many areas these properties were widely scattered. In other areas, large groups of properties appear to have high potential for future eligibility, notably Cedar Island, Chalker Beach and Great Hammock Beach. Those areas with a high potential for Section 1362 eligibility are summarized in Table 5.

Since information on flood insurance coverage of individual structures was not available, it has been assumed that the structures having high potential to meet the damage criteria will be covered by flood insurance. It is also difficult to judge the future willingness of owners to voluntarily sell their property if it and surrounding properties have been destroyed or severely damaged by a major flood. Although town officials varied in their assessments of the likelihood that property owners would voluntarily sell, the general perception seemed to be that long-time residents would elect to stay while relative newcomers might be interested in selling. Some officials observed an increased turnover in properties following each significant flood.

No systematic survey of property owners was conducted during the study, but members of the study team did talk with many residents who approached them during field surveys of the areas. These conversations with property owners did not reveal many who would definitely be interested in selling. A few people did state that immediately after a flood a lot of people would be willing to sell if offered a good price, but that within only a few days the desire to sell usually disappeared.

Almost without exception, residents readily acknowledged that the areas were subject to frequent flooding. Somewhat less common was acknowledgment that property might be subject to total destruction or severe damage. A type of comment often heard was "You have to be crazy to live here!" However, this was usually expressed with considerable pride. Others commented that it was worth putting up with occasional flooding for the pleasure of living in such an

attractive area. Another frequently heard comment, especially by those not immediately on the beach, was "If I get flooded, the whole town will be under water".

In some of the study areas, such as Clinton Beach in Clinton, that were reportedly "wiped out" during the 1938 hurricane (slightly less than a one percent flood), the Phase II methodology showed only a portion of the structures as having high potential for future Section 1362 eligibility. Presumably, this is because the rebuilt structures were elevated higher above grade and would not be subject to as severe wave impact in another one percent flood. In general, structures were elevated above grade -- usually on piles or posts -- in relation to their exposure to wave impact and high water, but many exceptions exist.

Almost all structures estimated by the Phase II methodology as having high potential for future Section 1362 eligibility are in the V-zone. Structures outside the V-zone could qualify, under the methodology, only if estimated water depth above the first floor in the structure exceeded seven feet. A structure with a first floor elevation of only four feet, very close to the normal mean high tide level, could thus qualify only if the anticipated stillwater elevation exceeded 11 feet. According to FEMA Flood Insurance Rate Maps, stillwater levels exceeding 11 feet during a one percent flood are anticipated in very few places outside V-zones along the Connecticut coast.

The depth of water/percent damage tables used in this study do not relate the amounts of damage to differences in quality of construction. The tables are based on empirical data, so they presumably represent a range of type and quality of construction in the study areas. Although determinations were not made on an individual structure basis, it is of course likely that many poorly constructed structures would in fact be damaged more than comparable structures of sound construction.

The estimates of potential for future eligibility do not include estimates of properties that could become eligible because of community enforcement of ordinances prohibiting rebuilding or permitting rebuilding only at significantly increased costs. As explained in the Phase II methodology, these ordinances in most communities have results very similar to those under other damage criteria.

TABLE 5: AREAS WITH HIGH POTENTIAL SUITABILITY FOR SECTION 1362 ACQUISITION

Town/Areas	Community or State Interest in Public Reuse	Properties Having High Potential for Future Section 1362 Eligibility
Norwalk		
Harborview	Community boat launch as recommended in town recreation plan	Group of 5 structures at south end of Beach Road
Fairfield		
Pine Creek Beach	Provide parking and expand existing town beach at end of South Pine Creek Road	Group of about 15 contiguous structures east of South Pine Creek Road
Milford		
Cedar Beach	Additional beach recreation area for Milford	Two small groups of structures at eastern and western ends of Cedar Beach
Guilford		
Grass Island and Madison Circle Beach	Develop state recreation area adjacent to existing state boat launch	Small groups and scattered properties in both the Grass Island and Circle Beach areas
Clinton		
Cedar Island	Town recreation or expansion of Hammonassett State Park	More than one-half of the structures on the island
Harbor View	Expand existing town beach and marsh holdings and develop as public beach	Contiguous group of structures in northern section
Westbrook		
West Beach	Expansion to existing town beach	Small group of structures adjacent to existing town beach
Old Saybrook		
Chalker Beach	Additional public beach	Essentially all structures
Great Hammock Beach	Expansion of state holding for wildlife protection or additional public beach for town	All structures
Plum Bank Beach	Expand existing town beach; additional town beach	Structures on both sides of existing town beach; group of structures south of existing town beach
Old Lyme		
Sound View	Expand existing town beach and provide parking	Group of structures on both sides of existing town beach

IMPROVING OPPORTUNITIES FOR OBTAINING SECTION 1362 FUNDS

The preceding section indicates that there are several developed floodprone areas along the Connecticut coast that could become eligible for acquisition under the Section 1362 program. Some of these areas appear most appropriate for the state to acquire and others for municipalities to acquire. In Part I of this report several existing state actions and requirements were listed that already increase the chances of flood damaged areas in Connecticut qualifying for Section 1362 funds. There are additional actions that can be taken by both the state and interested municipalities to increase their chances of actually receiving Section 1362 funds. Most of these actions would prove useful for the state and communities to pursue, even without consideration of improving their chances of receiving Section 1362 funding.

ACTIONS TO TAKE BEFORE A FLOOD DISASTER OCCURS

A. State of Connecticut

1. Amend the Connecticut SCORP to identify specific coastal flood hazard areas that the state is interested in acquiring when an opportunity may become available following a disastrous flood. Provide in the SCORP that prior funding commitments of federal and matching state funds can be modified to take advantage of the unique opportunities that may be presented at that time.

2. Proceed with the development of plans for the reuse of floodprone areas designated in the SCORP.

3. Proceed with acquisition of the highest priority floodprone area(s) designated in the SCORP even in the absence of a flood that makes some or all structures in the area eligible for Section 1362 funds.

4. Establish a record of strict enforcement of the new state building code (Section 743) requirements concerning construction in special flood hazard areas.

5. Encourage municipalities to develop post-flood recovery and hazard mitigation plans and provide guidance for the development of these plans (see page 125 of this report). (Example - the Commonwealth of Puerto Rico, through its Coastal Zone Management Program, has worked with several of its municipalities to develop hazard mitigation plans for areas with a high flood risk.)

6. Establish a program -- in cooperation with FEMA -- to aggressively promote the purchase of flood insurance by property owners and tenants in special flood hazard areas. (Example -- several states, using funds from the FEMA State Assistance program, are developing strong public awareness programs including information on the availability of flood insurance.)

7. Establish legislation that would require all real estate agents to inform prospective purchasers and renters that the property is in a special flood hazard area. (Example - Santa Clara County, California requires that property buyers be provided a written statement of flood hazards and landslide and seismic risk. Realtor associations have prepared maps and other materials to assist real estate agents in complying with the law.)

8. Establish a state requirement of a minimum set-back from mean high water or the first dune line for all new construction or substantial improvements. (Example - Florida has enacted a Coastal Construction Setback Line Law in order to "prevent beach encroachment that would endanger the existing beach dune system and to help prevent existing and future structures from being unreasonably subject to great and irreparable harm".)

9. CAM, in cooperation with the state Civil Preparedness Office, encourage coastal communities to develop improved programs of flood warning and evacuation. (Example - Florida has used the FEMA State Assistance Program to re-evaluate the hazard mitigation program for the City of Sanibel, including procedures for total evacuation.)

10. Continue to request that FEMA improve its procedures for making flood insurance claims data available to the state, and use the data to:

    a. Identify the areas that receive flood damage from different levels of storms. (Example - North Dakota has also requested insurance claims data from FEMA to assist in developing a history of flood damages in selected communities.)

    b. Develop depth of water/percent damage tables specifically applicable to Connecticut flooding and construction
        i. structures not built in conformance with minimum FEMA regulations
        ii. structures built in conformance with minimum FEMA regulations.

    (Example - Using a FEMA grant the Tampa Bay Regional Planning Council under contract to the Florida Bureau of Disaster Preparedness, is undertaking a Hurricane Loss and Contingency Planning Study that will include projected structural loss based on the development of thresholds for percentage of unit damage correlated to surge height and wind velocity.)

11. Establish a state policy concerning whether pre- or post-flood value will be paid for damaged structures acquired by the state. (Example - Pennsylvania requires that pre-flood fair market value be paid for public acquisition of flood damaged properties, whereas South Dakota state law forbids public bodies from paying for property which is not present at the time of the appraisal; e.g., requires post-flood land value for a completely destroyed structure.)

12. An appropriate state official should send a letter to the FEMA regional director in Boston with a copy to the FEMA Associate Director, State and Local Programs and Support, Washington, D.C. stating Connecticut's commitment to proper floodplain management at both state and municipal levels and expressing an intent to apply for (or support municipal applications for) Section 1362 funds should the opportunity arise. If deemed appropriate, a copy of this report may be submitted along with other appropriate information as supporting evidence of the state's intent and commitment.

B. Municipalities

1. Modify existing floodplain management regulations so that they go beyond the minimum FEMA regulations. Some possible actions are:

   o Reserve all undeveloped V-zones for open space and public recreation.

   o Allow limited new development and substantial improvements within the V-zone, but require that all structures be elevated above the estimated wave-crest level.

   o Prohibit certain critical facilities from being constructed within the one percent flood zone or provide that they be floodproofed or elevated to the level of the 0.5 percent (500-year) flood. Critical facilities could include hospitals, nursing homes, non-water dependent portions of electrical generating facilities, hazardous waste generators or storage areas.

   o Provide that all new construction and substantial improvements in flood zones be elevated or floodproofed at least one foot above the level of the one percent flood (instead of to the level of the one percent flood) to provide protection from floating debris, a flood of greater magnitude than the base flood, and increases in flood levels due to future development.

   o Establish a substantial improvement definition lower than 50 percent structural damage or 50 percent of fair market value of the structures (e.g., 30 percent of fair market value). A lower limit could be established for all flood hazard areas, or only within the V-zone and floodways and the 50 percent limit retained in other portions of the floodplain.

2. Maintain a record of strict enforcement of floodplain regulations, with few or no variances permitted.

3. Prepare a post-flood recovery and hazard mitigation plan (see following section of this report).

4. Develop an effective flood warning and evacuation plan.

5. Submit a complete and timely annual report to FEMA (including all variances granted and denied).

6. Establish a procedure to notify all prospective purchasers and renters of floodprone properties of the risk of living in the area. This could include a requirement that all real estate agents notify prospective purchasers and renters whether or not the property is in a flood hazard area.

ACTIONS IMMEDIATELY FOLLOWING A FLOOD DISASTER

Immediately after a major flood, both the community and the state should take the necessary actions to apply for Section 1362 funds. At a minimum, the formal application procedures required by FEMA should be followed (see Appendix B). The initial steps in this process are described below. Eligibility is likely to be enhanced and the process speeded up if the community and state go beyond the minimum requirements and assist FEMA with other necessary actions. Therefore, the steps described include both the minimum requirements and additional useful actions. Unless specified otherwise, it is suggested that both the state and community be involved in each of these steps regardless of which government unit will eventually accept title to the property.

1. Inventory Damaged Properties. All areas of the community that suffered significant damage should be inventoried and the amount of damage estimated. If structures in areas in which the community or state are interested in acquiring meet the "damaged substantially beyond repair" criterion, the community should proceed with steps 2 through 6 below.

2. Assemble Initial Data. Within a few days following the flood, the community and the state should assemble the information called for in Figure 34.[1] Some of this information (such as insurance claims data) may not be

[1]Figure 34: Section 1362 Potential Project Form was developed by FEMA and has been used by FEMA headquarters and regional offices in evaluating the eligibility of communities to participate in the Section 1362 program. A revised form is currently under preparation, but the type and detail of information requested is not anticipated to be greatly different than the present form.

available to either the state or community but will be supplied later by FEMA.

In addition to the information listed in Figure 34, the community and state should compile the following information:

- o Name of the community and state contacts for the project.
- o Copy of community floodplain management regulations or ordinance, including a summary statement of any special features of that regulation, such as provisions that go beyond the minimum regulations required by FEMA.
- o Copy of any appropriate state floodplain management regulations, building codes, etc., if they include special features or go beyond minimum FEMA requirements.
- o Copies of any additional local, regional or state regulations, legislation, policy statements, executive orders, memorandums of understanding, etc., that may be applicable to the proposed Section 1362 project.
- o Summary statements describing any existing or proposed flood control works or studies affecting the study area, studies of non-structural floodplain management measures that may have been conducted, land use plans affecting the area, etc.
- o Copies of maps describing the proposed project area:
  - map showing location of the project area within the community, including standard land use categories within the community such as industrial, commercial, residential, open space, etc.
  - Flood Insurance Rate Maps (FIRM) and Flood Boundary and Floodway Maps (FBFW) of the project area.
  - large scale map of the project area showing property boundaries, size of parcels, location of structures, and different types of land use within the project area.
- o Estimated recurrence interval of the flood, if known (high water marks compared to elevations shown on FIRM's may provide a rough estimate of recurrence interval).

3. Letter of Intent to FEMA. As soon as the community or state has decided that it wishes to pursue Section 1362 funding, it should send a letter to FEMA stating its desire to participate in the Section 1362 program. This letter should be sent to the FEMA Regional Director in Boston[1] with a copy to the FEMA Associate Director, State and Local Programs and Support, at FEMA headquarters in Washington. Included with the letter should be as much of the information described in Step 2 above as the community and state have been able to assemble.[2] The state or community (whichever is not proposing to acquire the property) should write a letter endorsing the application, to accompany the primary request.

4. Assemble Additional Data. In anticipation of FEMA inquiries concerning the individual properties and community eligibility, the community and state should cooperate to complete the compilation of data described in Step 2 above and should develop additional information in support of their request for Section 1362 funds. Additional efforts should concentrate on the community eligibility criteria (see Figure 2) and on community permit decisions if properties are believed to be eligible on the basis of local ordinances concerning rebuilding.

5. Prepare for Public Meetings. If FEMA determines that the structures and the communities are potentially eligible and that Section 1362 funds may be available, it will require one or more public meetings with local officials and property owners. In anticipation of these meetings, the community should notify property owners that it is seeking federal assistance to acquire their properties (emphasizing the voluntary nature of the program), provide them with information about the Section 1362 program, and describe what the community intends to do with the property if acquired. The community may also wish to provide information about the

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[1] FEMA guidelines published in the Federal Register state that the letter should be sent to the Federal Insurance Administrator, but, as a result of internal FEMA reorganizations and modified program procedures, the letter should be sent as stated in this report.

[2] FEMA guidelines require, at this stage, only an identification of the structures and the individual and community criteria (see Figure 2) under which the structures are believed to qualify. Providing additional information at this time should speed up the process and perhaps improve community changes of being included in the program.

program to the general public through newspaper articles or other appropriate methods.

6. Reuse Plan. The community should prepare a plan, or update any existing plan, for reuse of the acquired properties. This plan will have to be approved by FEMA before FEMA will order a property appraisal and begin negotiations with property owners. The plan need not be detailed, but it must include assurances that the land will be "managed in a manner consistent with sound land management and use".

FIGURE 34: SECTION 1362 POTENTIAL PROJECT FORM[1]

1. Community Name: _____

2. Program Status:

   Emergency ☐ _____

   Regular ☐ _____

   Anticipated Entrance to Regular Program - Date: _____

   History of FPM Compliance: (check one)

   ☐ High Satisfactory ☐ Satisfactory ☐ Poor

   Please explain if either "Highly Satisfactory" or "Poor" is checked.

   (Include any unique or innovative regulatory approaches): _____

   _____

   _____

3. Number of Policies In Force: _____

4. Number of Claims (most recent event):

   $_____ Date of Loss: _____

5. Flood History: (Last 10 years)

(a) Date of Event	Total Number of Damaged Structures	Structures w/Claims	Amount

(b) Date of Event Triggering Eligibility: _____

[1] Figure 34: Section 1362 Potential Project Form was developed by FEMA and has been used by FEMA headquarters and regional offices in evaluating the eligibility of communities to participate in the Section 1362 program. A revised form is currently under preparation, but the type and detail of information requested is not anticipated to be greatly different than the present form.

(Figure 34 continued)

6. Flood Characteristics

(a) For 100 Year Flood

Insurance Zone Number _____

Base Flood Elevation _____

Approximate Depth of Flooding Above Grade _____ (indicate range if applicable)

(b) For Event Triggering Eligibility

If Coastal flooding, indicate if

☐ non-wave action, or

☐ wave action

If riverine flooding, indicate if

☐ Standard Over Bank

☐ flash flooding

☐ Backwater

Describe flood characteristics

Comments:

_____ depth (above grade) _____

_____ velocity _____

_____ duration _____

_____ flooding warning time _____

flood frequency (estimate from best available information) _____

_____

(Figure 34 continued)

(c) Other

Flooding: (check one) mapped ☐; proposed ☐; probable ☐

Existing Flood Control: ☐ Yes ☐ No

Proposed: ☐ Yes ☐ No

Comments: (If yes, explain) _____

_____

_____

7. Number of Potential Project Structures: _____

Estimate of Average Property Market Value: $ _____

Range of Property Values: $ _____ - $ _____

Property Descriptions (i.e., number of levels, basement, foundation type, approximate height(s) of first floor above grade, approximate age, condition, lot size): _____

_____

_____

_____

_____

☐ Wood ☐ One Family ☐ Rental ☐ Primary Residence

☐ Brick ☐ Two Family ☐ Home Ownership

(indicate # of structures in each category)
(use boxes for all factors in #7)

(Figure 34 continued)

8. Probable Criteria Under Which Structures Will Qualify:

List Number of Structures Under Appropriate Category

Permit Denial	☐
Substantially Damaged	☐
Repetitive Flooding	☐

9. Number of of Candidate Structures Currently

Repaired:	☐
Unrepaired:	☐
Partially Repaired:	☐

10. Reuse Potential of Acquired Land:

(a) Are the majority of parcels contiguous?

☐ Yes ☐ No

If not, explain. _____

_____

_____

(b) What are the likely potential uses?

_____

_____

_____

11. Probable Receptivity of Program (if known):

	High	Low
Community	☐	☐
Affected Individuals	☐	☐

(Figure 34 continued)

Explain: (include if community would be willing to provide coordination, manpower of funds)

12. Indicate if and how community meets (or might meet) the following factors:

(a) Community has plan for post-disaster recovery which includes acquisition and relocation.

(b) Community has on-going relocation plans or programs or 1362 might be a logical continuation of a previous relocation project.

(c) There is potential for significant savings in flood insurance, disaster relief and other monetary savings, as compared to program costs (estimates only).

(Figure 34 continued)

(d) There is potential for significant avoidance of future personal injury and loss of life.

(e) Significant environmental improvement will result from the acquisition program.

13. Would any of the following mitigation alternatives be more practicable or as practicable as acquisition? Briefly explain, if possible, whether or not the alternative could apply.

☐ Elevation _____

_____

Floodproofing:

☐ Dry Floodproofing _____

☐ Wet Floodproofing _____

☐ Temporary or permanent closures _____

_____

(Figure 34 continued)

☐ Walls or levees _____

_____

☐ Repairs with water resistant materials

_____

_____

Remarks: _____

_____

_____

14. Can the project be separated into logical phrases?
(This might be necessary where a project could potentially account for a large percentage of the 1362 funds available). Indicate nature of project phasing (i.e., Justification, number of properties involved, approximate cost of each phase).

15. Describe the social characteristics of the project area (i.e., project neighborhood services, quality of infra-structure, general age of impacted community, approximate income range, any unique characteristics, etc.)

16. Indicate any comments you feel would further justify selection of this project.

Name: _____

Title: _____

Regional Office: _____

Date: _____

POST-FLOOD RECOVERY AND HAZARD MITIGATION

NEED FOR A POST-FLOOD RECOVERY AND HAZARD MITIGATION PLAN

Historically, development in coastal flood hazard areas has occurred with fewer controls on the location and type of construction than exist today. Consequently, some of the existing development is in areas that state and local governments would now prefer to have undeveloped -- areas that could serve functions of public recreation, open space, and protection of valuable natural resources such as fish and wildlife habitat. Other development has occurred that does not meet today's construction standards for public health and safety or that does not make efficient use of scarce coastal resources.

Some of this unguided development has occurred in areas or in a manner that make it susceptible to severe damage from flooding and erosion caused by major hurricanes and northeasters. Although Connecticut has been fortunate that few major storms have hit the Connecticut shore in recent years, inevitably they will occur.

What will be state and local reactions when the next instance of severe flooding and erosion devastates portions of one or more Connecticut coastal communities? Will property owners be allowed to rebuild to the pre-flood condition? rebuild to more stringent construction standards? not be allowed to rebuild at all? rebuild with a different development pattern?

Answers are not readily available. In response to inquiries made during this study, local officials indicated they did not know what the official town position would be. Although expressed in different ways, their responses generally indicated that a case-by-case decision would be made based on existing building codes, zoning regulations, floodplain management ordinances and other applicable regulations. Some officials expressed personal views that some areas should not be allowed to be rebuilt, others should be acquired by the municipality for recreation or open space purposes, and still others should be converted to different uses. Sometimes officials were able to express what they considered to be a general view of town officials. Occasionally, the town plan of development identified specific areas that should be converted to another use or acquired for open space or recreation purposes.

None of the towns have specifically addressed the issue of post-flood recovery and hazard mitigation. Neither general policies nor specific plans exist to guide town actions in the difficult period immediately following a major flood disaster.

Failure to plan ahead for post-disaster actions is not unusual: nationwide, few communities have been properly prepared for disasters when they struck. Most commonly, pre-disaster planning is limited to some type of flood warning and evacuation plan. Only communities that have recently experienced several damaging floods -- and are especially attuned to the possibility of still greater flooding -- seem motivated to develop some type of post-flood action plan.

Even though few communities throughout the country have undertaken pre-disaster planning, professionals in the field of flood hazard mitigation increasingly are pointing out the advantages of doing so. In response, government agencies that provide post-disaster financial and technical assistance have been attempting to promote hazard mitigation as a part of post-flood recovery actions instead of focusing exclusively on returning the community to pre-flood conditions and recreating the same flood risk.

Efforts at post-flood hazard mitigation have so far met with only limited success. There are many reasons for this limited success, but one prominent cause is that following major floods communities are not prepared to make the decisions and take the actions necessary to implement hazard mitigation actions. Often the decisions and actions are politically difficult. In the aftermath of a major disaster, and with no prior consideration having been given to the issues, the emotional atmosphere often leads to decisions that favor short-term interests, especially of affected residents and businesses (i.e., return to pre-flood conditions) rather than long-term interests (i.e., hazard mitigation). Rebuilding is frequently permitted in areas subject to flood damage, and variances to local building codes and other regulations are commonly permitted in an attempt to reduce the economic hardship on individuals.

Communities with a known major flood risk would be well-served to examine the degree and nature of that risk and to make at least tentative plans for what to do in the event of a major flood disaster (i.e., preparation of a post-flood

recovery and hazard mitigation plan). Almost all coastal communities in Connecticut would benefit from such an effort.

One of the major advantages to a municipality of preparing a post-flood recovery and hazard mitigation plan is that it allows the community to turn a disastrous situation into a unique opportunity for positive changes. It may also lessen the trauma associated with the disaster because community officials and affected residents will be better prepared to deal with the many decisions and actions that will be forced on them.

A mechanism already exists by which Connecticut coastal communities could undertake this type of planning effort: the municipal coastal program. Although CAM does not require development of a post-flood recovery plan as part of a municipal coastal program, a contingency recovery plan could easily be incorporated into a community's initial municipal coastal plan or added as an amendment once the initial plan has been completed. CAM could provide communities with guidance on how to develop a post-flood recovery and redevelopment plan. The following section provides suggestions on the types of issues that should be considered in the development of a post-flood recovery and hazard mitigation plan.

CONSIDERATIONS IN DEVELOPING A POST-FLOOD RECOVERY AND HAZARD MITIGATION PLAN

A. Basic Considerations

Any post-flood recovery and hazard mitigation plan should be prepared with the following points in mind:

- o To what extent does the municipality wish to bring nonconforming uses into conformance with existing plans and regulations?
- o Under what circumstances should they be brought into conformance?
- o What is the desired level of protection from flooding (and other health and safety hazards) that the municipality wishes to provide for future property owners and residents?

B. Identification of Areas Subject to Flooding

The first step toward preparation of a post-flood recovery plan is to inventory those areas within the coastal zone that are subject to flooding. Communities should also identify those areas that are subject to wave impact in addition to tidal or river flooding. Existing

FEMA Flood Insurance Rate Maps and Flood Boundary and Floodway Maps will provide the starting point for this effort. However, these maps should be reviewed for accuracy in light of known local conditions or changes that may have occurred since the maps were prepared -- both physical changes and changes in data availability.

For example, the Flood Insurance Rate Maps for Guilford and Madison show different one percent tidal flood (base flood) elevations: 11 feet in Madison and 12 feet in Guilford. As a result, adjacent areas such as Grass Island in Guilford and Circle Beach in Madison are subject to different regulatory requirements. These communities should consult with CT DEP, Water Resources Unit and the Federal Emergency Management Agency to try and resolve this discrepancy.

C. Determination of the Degree of Flooding

Once areas subject to flooding have been identified, the next step is to estimate the degree of risk within these areas. Not all areas identified as subject to flooding from the one percent flood are subject to the same degree of risk.

In areas not subject to wave impact, the degree of flood risk relates primarily to the site elevation. Some areas may be subject to a flooding from a ten percent (10-year) flood, others only from a two percent (50-year) flood, and others only from the one percent (100-year) flood. The elevation of flood waters during a ten percent and two percent flood can usually be determined from the FIRM, even though only the level of the one percent flood is shown directly on the map. Many Connecticut coastal communities do not have the detailed topographic information needed to determine areas subject to different flood levels. During this study, for example, the contractor was unable to obtain detailed topographic information (2-foot contour intervals) in Stratford, Guilford, Madison, Clinton, Old Saybrook, and Old Lyme. Detailed topographic information is basic to floodplain management and most other land use planning and should be developed by all communities.

The degree of flood risk in V-zones is more difficult to determine. In addition to the site elevation, obstructions -- both natural and man-made -- affect the height of waves and how far inland they extend. The wave crest

elevation at locations within the V-zone cannot be determined from current FIRM's. These maps provide only the stillwater elevation and cover areas subject to the greatest wave impact (at least a three-foot wave). FEMA is currently preparing revised maps that will indicate the expected wave crest elevation in V-zones from a one percent flood, but only a few preliminary maps have so far been prepared for Connecticut coastal communities. In the absence of revised maps, communities may use a simplified methodology (used in this study) prepared by FEMA -- Field Manual For Estimating Wave Heights In Coastal High Hazard Areas In Atlantic And Gulf Coast Regions, March 1981.

D. Identification of Developed Areas within Coastal Flood Hazard Areas
All developed areas within the coastal flood hazard area that might be considered for redevelopment or hazard mitigation actions should be identified.

1. All development that can reasonably be expected to sustain substantial damage during a one percent flood. FEMA and many states and communities use 50 percent of the market value of a structure as the criterion for substantial improvement that triggers many regulatory requirements. A few communities have established more restrictive definitions of substantial improvement.

2. All development that would be prohibited under existing codes, regulations and ordinances or that would require a substantial increase in reconstruction costs in order to meet current code requirements, or that would require variances to be rebuilt to the same use or construction standards. In Old Lyme the Zoning Enforcement Officer has prohibited rebuilding in the V-zone of some structures requiring substantial improvement on the basis that an on-site sewage system cannot be properly floodproofed in a wave impact zone. In Milford, the Planning and Zoning Office has required property owners requesting a substantial improvement to their home to incur considerable additional costs for elevation and floodproofing.

3. All development that could help meet current or future community needs for public recreation or open space. For example, Clinton officials have expressed a desire to expand the existing public beach, to add parking in the Clinton Beach area, and to develop a public beach in the Harborview section.

4. All development that the town would prefer to see in some other type of development, e.g., water-dependent rather than nonwater-dependent, conversion of substandard housing to better housing. As part of the development of a municipal coastal program, Norwalk has established a Citizens Advisory Committee that is currently identifying coastal areas that they consider incompatible with existing zoning.

5. Any areas that the state of Connecticut has formally expressed an interest in for recreation, wildlife, or other purpose. Under the Natural Heritage Program, DEP is currently identifying areas that it would like to acquire such as Long Beach, Stratford, and the Norwalk Islands.

6. Areas where public roads and other infrastructure and utilities are subject to periodic damages and require unusual expenditures to maintain. Several Connecticut coastal towns acknowledged incurring extra costs for frequent road repairs and sand removal, but did not keep records of the additional expense involved.

7. Areas where there may be risk of injury or loss of life to residents in the event of a major storm, including areas from which evacuation would be difficult. Islands, such as Cedar Island in Clinton, would pose a significant evacuation problem if residents failed to heed early warnings. Other areas such as Harborview in Norwalk and Milford Point and Cedar Beach in Milford provide risks because access roads into the areas can become flooded before maximum flood levels are reached.

E. Determine Desired Uses in Each of These Areas

The community should determine the most desirable use for each of the areas identified in the previous step.

1. Areas where a different use is desired.
2. Areas where the same use is desired, but with higher standards of construction.
3. Areas where open space or recreation uses are desired.

F. Determine Community Options for Attaining These Desired Uses

1. Might some areas be acquired by the community? If so, what sources of funding could be sought? Possibilities include:

a. Town funds: o Annual Operating Funds (Guilford recently allocated $100,000 to acquire a parcel of land that became available adjacent to an existing town beach at White Sands).

o Bond Issue

o Special Capital Fund (Norwalk makes annual contributions to a special fund intended to eventually be used for purchase of one or more of the Norwalk Islands).

b. State funds: Parks and Recreation (state matching funds to federal Land and Water Conservation funds).

c. Federal funds: Section 1362, Land and Water Conservation funds.

2. Could existing regulations be strictly enforced, and hardship variances be given only in limited cases?

3. Do existing regulations need to be strengthened and new requirements added: Some possibilities are:

   a. Establishment of a set-back line; e.g., no construction of permanent dwellings on or seaward of the primary dune line.

   b. Establishment of more stringent requirements concerning elevation of structures above the one percent flood levels; e.g., at least 1 foot above the stillwater level in A-zones and at least 1 foot above the wave crest level in V-zones, to provide a margin of safety.

   c. Strengthening of structural requirements through amendments to the building code; e.g., adoption of specific standards for tie-downs, bracing, break-away walls, etc.

   d. Strengthening of standards for onsite sewage disposal, with specific reference to beaches and wetlands. For example, Old Lyme currently refuses to issue new permits for onsite septic systems in V-zones because it feels that the system cannot be adequately floodproofed against the effect of waves. The Soil Conservation Service does not give beach soils a capability rating for any type of development,

stating that "Beaches are poorly suited for most uses other than recreation...", and states that the Westbrook soil series found in tidal wetlands is generally unsuitable for development without considerable fill because of the high water tables and flooding.

G. General Policy and Guidance

Develop a general set of policies and guidelines that articulate the town's preferred policy for rebuilding following a disaster.

H. Adopt Plans

Once the desired changes have been identified, appropriate public meetings should be held and other legal requirements complied with, and the resulting plans and policies adopted as amendments to:

1. Town Plan of Development
2. Zoning regulations and zoning map
3. Building code
4. Subdivision regulations
5. Floodplain management ordinance
6. Other necessary town documents

I. Identification of Responsibilities

Since any time when this post-flood recovery plan will be implemented will be a difficult one, the community may wish to establish special procedures for what each town department should do following the disaster. Special procedures can help prevent conflicting actions on the part of different departments. Special task forces to deal with the program of post-flood recovery can also be provided for.

J. Rebuilding Moratorium

To provide time for the orderly implementation of the post-flood recovery plan, a community may wish to provide for automatic adoption of a temporary rebuilding moratorium during the initial recovery period. Such a moratorium could last about one to six months and prohibit all building and rebuilding except for temporary and emergency repairs. This time period would also give the community an opportunity to update and modify the post-flood recovery

and hazard mitigation plan if needed to reflect changes that may have occurred since it was originally adopted. Post-flood moratoria have been successfully adopted in other parts of the country.

K. Encourage Purchase of Flood Insurance

In communities with floodable areas, the entire community benefits if residents, including tenants in floodprone areas, are adequately covered by flood insurance:

- o Residents face less financial hardship
- o Fewer community resources will be needed to assist flood victims
- o Flood insurance may make other assistance available, such as Section 1362 funds.

Accordingly, the community should take appropriate actions to promote the purchase of flood insurance by all floodplain residents and property owners.

L. Notification to Property Owners

Property owners and tenants should be notified concerning the probably effect implementation of the post-flood recovery and hazard mitigation plan will have on their property following a major flood.

M. Implementation

Determine what events will trigger implementation of the post-flood recovery and hazard mitigation plan. Options include:

- o A presidential disaster declaration
- o A Small Business Administration disaster declaration
- o Request by the Governor for a disaster declaration
- o Request by the chief elected municipal officials for a disaster declaration
- o A designated minimum number or percentage of identified properties receiving substantial damage
- o Applies to any property that is damaged; i.e., continuous implementation
- o Should the post-flood recovery and hazard mitigation plan apply to structures damaged from other causes such as wind and fire?

APPENDIX A

SELECTED REFERENCES

GENERAL REFERENCES

Federal Emergency Management Agency, Design Guidelines for Flood Damage Reduction, December, 1981.

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APPENDIX B

FEDERAL EMERGENCY MANAGEMENT AGENCY

Acquisition of Flood Damaged Structures;

Guidelines on Property Acquisition

federal register

Monday
July 28, 1980

Part VII

Federal Emergency Management Agency

Acquisition of Flood Damaged Structures; Guidelines on Property Acquisition

FEDERAL EMERGENCY MANAGEMENT AGENCY

44 CFR Part 77

[Docket No. FEMA FIA-77]

Acquisition of Flood Damaged Structures

AGENCY: Federal Insurance Administration, FEMA.

ACTION: Interim Rule.

SUMMARY: This rule implements Section 1362 of Pub. L. 90-448 as amended, which provides for the acquisition of flood damaged structures (buildings) along with the associated land, meeting certain criteria, and transfer of title to this real property to a local or state government for management.

EFFECTIVE DATE: The effective date of this rule is July 28, 1980. Comment due date: On or before September 1, 1980.

ADDRESS: Send comments to Rules Docket Clerk, Office of the General Counsel, Federal Emergency Management Agency, Room 802, 1725 I Street, N.W., Washington, D.C. 20472.

FOR FURTHER INFORMATION CONTACT: Richard W. Krimm, Assistant Administrator, Office of Natural Hazards Reduction and Evaluation, Federal Insurance Administration, Federal Emergency Management Agency, 1725 I Street, N.W., Washington, D.C. 20472, Phone: (202) 755-5581.

SUPPLEMENTARY INFORMATION: In creating the National Flood Insurance Act of 1968, Congress stated that "A program of Flood Insurance can promote the public interest by providing appropriate protection against the peril of flood losses and encouraging sound land use by minimizing the exposure of property to flood losses" (42 USC 4001, Section 1302(e)(1)). In seeking to minimize this exposure, emphasis has previously been directed toward measures regulating new construction in flood hazard areas. Several provisions, however, address reduction of flood losses to existing property.

One of these provisions, Section 1362 of Pub. L. 90-448, as amended, provides the Director of FEMA with the authority to negotiate for the purchase and subsequent transfer to a state or local government of flood damaged, improved real property under certain conditions. Acquisition of flood damaged, improved real property not only reduces flood losses to properties built prior to the adoption of adequate flood plain management measures, but it also reduces future federal costs for disaster relief and flood insurance subsidies, and offers flood victims the opportunity to break the cycle of damage and costly recovery from flooding. Acquisition of such property may be the most efficient, economical or perhaps the only means of reducing future flood damage to certain existing structures.

Research performed for the Federal Insurance Administration (FIA) between 1977 and 1979 has examined the potential scope of a flooded property purchase program, its costs, potential benefits, relationship to other disaster related assistance programs and its social, environmental and economic impact on individuals and communities (Evaluation of Alternative Means of Implementing Section 1362 of the National Flood Insurance Act of 1968, Draft, March 1980). This research has found that acquisition of certain flood damaged structures can make a significant contribution to Federal flood damage reduction policies and will produce a wide range of benefits when compared to costs of the program. It can also be a significant tool in helping communities implement comprehensive hazard mitigation strategies.

During fiscal year 1980, FIA's initial year of implementation of a flooded property purchase program under Section 1362, the program will be regarded as a demonstration program. FIA will examine the impacts of acquisition under a wide range of social and geographical conditions to the extent possible. Guidelines for implementing the program will be published as a Notice. These Guidelines will set forth more specific acquisition criteria, priorities, and steps for program implementation.

Public comment will be welcomed throughout fiscal year 1980 to this Rule and to the Guidelines to be published separately. At the end of fiscal year 1980, based on comments received and evaluations of program impacts, formal program rules will be proposed.

Pub. L. 90-448, the National Flood Insurance Act of 1968, included, at Section 1362, authority for FIA to negotiate for the purchase of flood damaged improved real property under certain conditions. Included in the conditions were requirements that structures be located in a flood risk area, be covered by flood insurance, and be damaged substantially beyond repair while so covered. The 1977 amendments to the National Flood Insurance Act of 1968 expanded Section 1362 to include several new criteria. Under one criterion, Section 1362(a)(3), a property may be eligible if it has incurred significant flood damage on not less than three previous occasions over five years, and on each occasion the cost of repair on the average, constituted at least 25 percent of the value of the structure. In addition, under Section 1362(b), a property may be eligible for purchase if it has suffered damages from a single casualty of any nature such that a statute, ordinance, or regulation precludes its repair or restoration or permits repair or restoration only at a significantly increased construction cost.

An additional provision was added to Section 1362 in 1977 allowing low interest loans for elevating structures located in floodways. Implementation of this provision, Section 1362(c), will be withheld during fiscal year 1980 for further consideration.

This program has been determined not to be a major federal action having significant environmental impact. This finding is on file with the Rules Docket Clerk for public inspection.

The program number in the Catalog of Domestic Assistance is 83.104. The program is subject to OMB Circular A-95. Accordingly, a new Part 77 of Title 44 of the Code of Federal Regulations is added as follows:

PART 77—Acquisition of Flood Damaged Structures

General Provisions

Sec.
77.1 Definitions.
77.2 Criteria for acquisition.

Authority: National Flood Insurance Act of 1968 (Title XIII of Housing and Urban Development Act of 1968), effective January 28, 1969 (33 FR 17804, November 28, 1968), as amended; 42 U.S.C. 4001-4129; Reorganization Plan No. 3 of 1978 (43 FR 41943) and Executive Order 12127, dated March 31, 1979 (44 FR 19367); and delegation of authority to Federal Insurance Administrator

General Provisions

§ 77.1 Definitions.

(a) Definitions found in Section 59.1 of this subchapter are applicable to this section.

(b) Furthermore, the following definitions are established:

Damaged Substantially Beyond Repair—means where (a) damages to the improved real property are such that as a condition of repair as imposed by a state or local government, the structure must be elevated or floodproofed to or above the 100-year flood elevation, or (b) damages to the improved real property equals or exceed 50 percent of the structure's fair market or actual cash value, whichever is less, or (c) where damages to the improved real property are such that repair is physically impossible or infeasible.

Flood Risk Area—See definition for *Special Hazard Area* in Section 59.1, or

other area subject to flooding as determined by the Administrator.

Significantly Increased Contruction Cost—occurs when a specific State or local statute, ordinance, or code requires that improvements be made to a structure as a condition of the repair of damages sustained, such that the actual cost of repair would be greater by 25 percent than the cost which would be required for repair of the damages only.

Sound Land Management and Use—The process wherein the governmental body responsible for land use regulation in a political jurisdiction plans and regulates the use of land within its jurisdiction in order to promote the reduction of property exposure to flood hazard and the protection of environmental values of flood plains. Sound use of land acquired by FEMA and transferred to local governments pursuant to Section 1362 of Pub. L. 95-126 is use for primarily open space and recreational purposes to minimize potential for any future flood damage, with a general prohibition of enclosed structures unless functionally dependent for some recreational or open space use. The criteria set forth in paragraph d(i-iv), below and restrictions to be placed in deeds used to convey title to real property from the Federal Government to local governments will set forth more specific requirements to be used in determining what constitutes sound Land Management and Use for individual land parcels.

§ 77.2 Criteria for acquisition.

(a) The objectives of the Flooded Property Purchase Program under the National Flood Insurance Program are:

(1) To reduce future flood insurance and disaster assistance costs by removing repetitively and/or substantially damaged structures from flood risk areas;

(2) to provide an opportunity for owners of repetitively and substantially damaged structures to be permanently removed from flood risk areas, and to reduce risk to life from flooding; and

(3) to complement Federal, State and local efforts to restore flood plain values, protect the environment and provide recreational and open space resources.

(b) The Administrator will, when he or she deems it to be in the public interest, enter into negotiation with property owners whose improved real property has been damaged by flooding for the purpose of purchasing such buildings and associated land or lot for transfer by sale, lease, or donation to a community when the following conditions are met:

(1) The property must be located in a flood risk area as determined by the Administrator;

(2) The property must have been covered by a flood insurance policy under the National Flood Insurance Program at the time damage took place.

(3) The building, while covered by flood insurance under the National Flood Insurance program, must have been damaged substantially beyond repair or must have been damaged not less than three previous times during the preceding five year period, each time the cost of repair equalling 25 percent or more of the structure's value, or must have been damaged from a single casualty of any nature so that a statute, ordinance or regulation precludes its repair or restoration or permits repair or restoration only at significantly increased cost.

(4) A state or local community must enter into an agreement authorized by ordinance or legally binding resolution to take title to and manage the property in a manner consistent with sound land managment use as determined by the Administrator.

(5) The community must agree to remove without cost to the Federal Emergency Management Agency (FEMA), by demolition, relocation, donation or sale any damaged structures to which the community accepts title from FEMA, provided the Administrator may, when it is in the public interest to do so, agree to assume a part or all of the cost of such removal.

(c) Title to the real property acquired by FEMA shall be conveyed to local communities subject to specific restrictive covenants, conditions and agreements which will run with the land and be binding on subsequent successors, grantees and assigns. These restrictive covenants, conditions and agreements will be recited in the deed a community receives from FEMA and the community shall join in the execution of the deed.

(d) The general criteria from which specific deed restrictions will be developed may include, among other things, that:

(1) the land must be dedicated in perpetuity for open space purposes, or such other purposes as the Administrator may agree are consistent with the objectives set forth in § 77.2 (a)(1-3) above; that the community shall faithfully manage the land for its dedicated purposes; that the community shall not erect or permit to be erected and structures or other improvements on the land unless such structures are, except for restrooms, open on all sides and functionally related to a designated open space use without the prior approval in writing of the Administrator; and that the community shall not permit any use which will create a threat to human life from flooding.

(2) in general, allowable open space uses include parks for outdoor recreational activities, nature reserves, cultivation, grazing, camping (except where adequate warning time is not available to allow evacuation), temporary storage in the open of wheeled vehicles which are easily movable (except mobile homes), unimproved parking lots, buffer zones, or open space areas that are part of Planned Unit Developments (PUD's). Structures functionally related to these uses are open-sided picnic and camping facilities, kiosks and refreshment stands or nonhabitable, elevated or floodproofed service structures associated with a marina.

(3) The rights to enforce the restrictive covenants shall be assigned to the Federal Insurance Administrator as assignee, together with a declaration that any future violation of the restrictive covenants or agreements, delivered in writing to the Chief Executive Officer within thirty (30) days from the date the Administrat. : receives actual notice of the violation, shall be deemed, at the Administrator's option, to cause a reversion of title to FEMA; and

(4) The property shall be transferred subject to zoning and building laws and ordinances; easements, agreements, reservations, covenants and restriction of record; any state of facts an accurate survey might show; encroachments and variations from the record lines of hedges, retaining walls, sidewalks and fences;

(e) Any structures, as described at paragraph (d)(2) of this section, and built in accordance with the deed restrictions shall be floodproofed or elevated to withstand the effects of the 500 year or .02 percent chance flood.

(f) Appraisals for the determination of compensation for flood damaged real property will be undertaken in conformance with the "Uniform Appraisal Standards for Federal Land Acquisitions" published by the Interagency Land Acquisition Conference, GPO (1973). Appraisals will reflect the adjusted (for time) pre-damage fair market value (FMV) of the structure and land to the extent that this FMV may have been reduced or depressed in the open market as a result of flooding. Actual compensation of FMV will be inclusive of any flood insurance claim payments made or to be made as a result of the most recent flood event to the extent that repairs have not yet been made.

(g) Agreement to sell real property on the part of owners will be completely voluntary. No property owners will be required to sell their properties under Section 1362.

(h) Relocation assistance under the Uniform Relocation Assistance and Real Property Acquisition Policies Act (42 U.S.C. 4601 et seq.) is not available to property owners who sell their properties under Section 1362.

(National Flood Insurance Act of 1968 (Title XIII of Housing and Urban Development Act of 1968), effective January 28, 1969 (33 FR 17804, November 26, 1968), as amended; 42 U.S.C. 4001–4128; Reorganization Plan No. 3 of 1978 (43 FR 41943) and Executive Order 12127, dated March 31, 1979 (44 FR 19367); and delegation of authority to Federal Insurance Administrator).

Issued at Washington, D.C. July 18, 1980.

Gloria M. Jimenez,

Federal Insurance Administrator.

[FR Doc. 80-22571 Filed 7-25-80; 8:45 am]

BILLING CODE 6718-03-M

FEDERAL EMERGENCY MANAGEMENT AGENCY

Guidelines on Property Acquisition Under Section 1362

PART I—INTRODUCTION

PART II—GENERAL PROVISIONS

SUBPART A—GENERAL

Sec.
II.1 Definitions.
II.2 Description of program.

Subpart B—Eligibility Requirements

II.3 Purpose of subpart.
II.4 Determination of eligibility—general.
II.5 Selection of eligible communities.
II.6 Community commitments upon which negotiation with real property owners is predicated.
II.7 Selection of eligible property owners once the community is fully qualified under sections II.4, 5 and 6.

PART III—APPRAISAL, VALUATION OF REAL PROPERTY AND NEGOTIATION PROCEDURES

Sec
III.1 Appraisal.
III.2 Valuation of real property.
III.3 Negotiation procedures.

PART IV—SETTLEMENT AND CLOSING

Sec.
IV.1 Settlement and closing

Part I—Introduction

In creating the National Flood Insurance Act of 1968, Congress stated that "A program of Flood Insurance can promote the public interest by providing appropriate protection against the peril of flood losses and encouraging sound land use by minimizing the exposure of property to flood losses (42 USC 4001, see 1302(c)(1)). In seeking to minimize this exposure, emphasis has previously been directed toward measures regulating new construction in flood hazard areas. Several provisions, however, address reduction of flood losses to existing property.

One of these provisions, Section 1362 of Pub. L. 90-448, as amended, provides the Director of FEMA with the authority to negotiate for the purchase and subsequent transfer to a State or local government of damaged (usually by flood), improved real property under certain conditions. Acquisition of flood damaged real property not only reduces flood losses to properties built prior to the adoption of adequate flood plain management measures, but it also reduces future federal costs for disaster relief and flood insurance subsidies and offers flood victims the opportunity to break the cycle of damage and costly recovery from flooding. Acquisition of such property may be the most efficient, economical, and perhaps, the only means of reducing future flood damage to certain existing buildings.

Research performed for FIA between 1977 and 1979 has examined the potential scope of a flooded property purchase program, its costs, potential benefits, relationship to other disaster related assistance programs and its social, environmental and economic impact on individuals and communities ("Evaluation of Alternative Means of Implementing Section 1362 of the National Flood Insurance Act of 1968," Draft, March 1980). This research has found that acquisition of certain flood damaged buildings can make a significant contribution to federal flood damage reduction policies and will produce a wide range of benefits when compared to the costs of the program. It can also be a significant tool in helping communities to implement comprehensive hazard mitigation strategies.

Inasmuch as fiscal year 1980 is FIA's initial year of implementation of Section 1362, the program will be regarded as a demonstration project. The procedures set forth in these guidelines will provide specific acquisition criteria, priorities, and steps for program implementation. FIA will examine the impacts of acquisition under a wide range of social and geographical conditions.

FIA initially published Section 1362 statutory criteria in the form of an Interim Rule.

Public comment will be welcomed throughout fiscal year 1980 to the Rule and to this Notice of Guidelines. At the end of fiscal year 1980, on September 30, 1980, based on comments received and evaluation of program impacts, final program rules and regulations will be proposed.

As additional background Pub. L. 90-448, the National Flood Insurance Act of 1968, included, at Section 1362, authority for FIA to negotiate for the purchase of flood damaged improved real property under certain conditions. These conditions included that structures be located in a flood risk area, be covered by flood insurance, and be damaged substantially beyond repair while so covered. The 1977 amendments to the "National Flood Insurance Program" expanded Section 1362 to include several new criteria. Under one criterion (Section 1362(a)(3)), a property may be eligible if it has incurred significant flood damage on not less then three privious occasions over a five year period, and on each occasion the cost of repair, on the average, constituted at least 25 percent of the value of the structure. In addition under 1362(b), structures may be eligible for purchase that have been damaged from a single casualty of any nature such that a statute, ordinance, or regulation precludes its repair or restoration or permits repair or restoration only at significantly increased construction cost.

An additional provision was added to Section 1362 in 1977 allowing low interest loans for elevating structures located in floodways. Implementation of this provision, Section 1362(c), will be withheld during fiscal year 1980 for further consideration.

This program has been determined not to be a major federal action having significant environmental impact. This finding is on file with the Rules Docket Clerk for public inspection.

Part II—General Provisions

Subpart A—General

Section II.1 *Definitions*

As used in these guidelines:

"*Administrator*" (same as in 44 CFR 59.1).

"*Actual Cash Value*" means the replacement cost of a structure reduced by an amount for depreciation.

"*Building*" (same as "structure").

"*Coastal High Hazard Area*" (same as in 44 CFR 59.1).

"*Community*" (same as in 44 CFR 59.1).

"*Damaged Substantially Beyond Repair*" means where (a) damages to the improved real property are such that as a condition of repair as imposed by a State or local government, the structure must be elevated or floodproofed to or above the 100-year flood elevation, or (b) damages to the improved real property equals or exceed 50 percent of the structure's fair market or actual cash value, whichever is less, or (c) where damages to the improved real property are such that repair is physically impossible or infeasible.

"*Fair Market Value*" (FMV) means the amount an owner would be willing, but not obliged to accept, and a buyer would be willing, but not compelled to pay. It is an estimate of what is fair, economic, just and equitable value under normal local market conditions and is arrived at by a consideration of prior sales of the property being acquired, reasonably recent and not forced, including sales occurring several years before acquisition. Absent transactions involving the property itself, sales of comparable properties conducted at arms length are to be considered. Establishment of FMV by other means (e.g., capitalization of income, replacement cost less depreciation) may be resorted to should there be no basis for using past sales of the subject property or comparable properties as elements in arriving at FMV.

"*FEMA*" means the Federal Emergency Management Agency.

"*FIA*" means the Federal Insurance Administration.

"*Flood*" (same as in 44 CFR 59.1).

"*Flood Hazard Boundary Map*" (same as in 44 CFR 59.1).

"*Flood Insurance*" (same as in 44 CFR 59.1).

"*Flood Insurance Rate Map*" (same as in 44 CFR 59.1).

"*Floodproofing*" (same as in 44 CFR 59.1).

"*Flood Risk Area*" (same as "Special Hazard Area" in 44 CFR 59.1); or other subject to flooding as determined by the Administrator.

"*Floodway*" (same as "Regulatory Floodway" in 44 CFR § 59.1).

"*Significantly Increased Construction Cost*" occurs when a specific State or local statute, ordinance, or code requires that improvements be made to a structure as a condition of the repair of damages sustained, such that the actual cost of repair would be greater by 25 percent than the cost which would be required for repair of the damages only.

"*Sound Land Management and Use*" means the process wherein the government body responsible for land use regulation in a political jurisdiction plans and regulates the use of land within its jurisdiction in order to promote the reduction of property exposure to flood hazards and the protection of environmental values of flood plains. Sound use of land acquired by FEMA and transferred to local governments pursuant to Section 1362 of Pub. L. 95-128 presupposes use for primarily open space and recreational purposes to minimize potential for any future flood damage, with a general prohibition of enclosed structures unless such structures are, except for restrooms, open all sides and functionally dependen. for some open space use.

"*State*" (same as in 44 CFR 59.1).

"*Structure*" means a walled and roofed building, other than a gas or liquid storage tank, that is principally above ground and affixed to a permanent site, as well as a mobile home on foundation. The term includes a building while in the course of construction, alteration or repair, but does not include building materials or supplies intended for use in such construction, alteration or repair.

"*100 Year Flood*" (same as "base flood" in 44 CFR 59.1).

Section II.2 *Description of Program*

(a) Section 1362 provides FEMA with the authority to acquire flood-damaged, improved real property and such property damaged by other casualty for transfer to a community subject to a number of restrictions. Three general conditions must be met for real property to be considered eligible for acquisition under Section 1362.

(1) The property must be located in a flood risk area, as determined by FEMA; and

(2) The property must be covered by flood insurance under the NFIP; and

(3) The property must meet any one of the following damage criteria:

(i) Property that has been damaged "substantially beyond repair by flood while covered under the NFIP;

(ii) Property that has incurred significant flood damage on not less than three previous occasions while covered under the NFIP under a five year period; and on each occasion the cost of repair, on the average, was at least 25 percent of the value of the structure; or

(iii) Property, while covered under the NFIP, that has sustained damage from a "single casualty of any nature" so that a statute, ordinance or regulation precludes its repair or restoration or permits repair or restoration only at significantly increased cost.

(b) Improved real property will only be acquired through voluntary sale and not through any eminent domain or condemnation proceeding. Thus, no property owners will be required to sell their properties under Section 1362. Subsequent use will be for open space and not for any purpose involving a construction project.

(c) A community must be willing to accept title to the acquired real property for land management and restrict its use to open space use or similar purposes. The community shall join in the execution of the deed which will recite such use restrictions which will run with the land, accompanying the property in perpetuity, even if title is subsequently transferred by the community. Any improvements on the real property shall be demolished, transferred to the former owner for relocation to a site outside of any flood risk area or sold for salvage value, as appropriate and agreed upon between the community and the federal government.

Subpart B—Eligibility Requirements

Section II.3 *Purpose of Subpart*

This subpart sets forth criteria to be used in determining community and individual eligibility for Section 1362 acquisitions and to prescribe the general method by which determinations of eligibility are made.

Section II.4 *Determination of Eligibility—General*

Eligibility for community and property owner participation in a Section 1362 acquisition project, can be established through either of two ways.

(A) *Community Initiated*

(1) Following a flood or a single casualty of any nature involving real property meeting the conditions set forth in Section II.2(a) (1), (2), and (3), a community upon review of the published criteria may initiate the process of establishing eligibility by writing to the Federal Insurance Administrator and identifying (i) the specific structures and locations of structures considered to be eligible for acquisition and (ii) the community and individual eligibility criteria under which these structures are believed to qualify. The Administrator, after consultation with the FEMA Regional Director, will respond to individual community requests as promptly as is reasonably possible by indicating whether or not the case(s) identified meet the eligibility criteria, priorities and budget constraints of the Section 1362 program. This will constitute only a preliminary notice of interest and will be accompanied by a written inquiry, for response by the community, leading to a determination of whether the community is eligible pursuant to Section II.5 hereof.

(2) Property owners interested in sale of their real property under Section 1362 should contact their community directly. Inquiries to FIA from individuals will be referred to their community by FIA along with an offer to investigate the potential for initiating an acquisition project.

(B) *FIA Initiated*

(1) Following a flood or single casualty of any nature involving real property meeting the conditions set forth in Section II.2(a) (1), (2) and (3), the Administrator, upon recommendation from FEMA headquarters or field staff and after consultation with the Regional Director, will identify communities in which acquisition under Section 1362 may be a feasible contribution to a community's comprehensive hazard mitigation strategy. In such cases, FIA staff and FEMA regional office staff will develop preliminary information (i) of the eligibility of the community pursuant to Sections II.4 and 5 and (ii) of structures for acquisition.

(2) Upon receipt of eligibility documentation, if a determination is made by the Administrator that a community and specific case(s) meet the criteria, priorities and budget constraints of the Section 1362 program, the Administrator will, after

consultation with the Regional Director, notify the Chief Executive Officer of the community in writing of its potential eligibility for a Section 1362 project and explain the requirements, specific acquisition opportunities, and the process for participating in a project. A meeting with community officials will be scheduled to discuss the program further.

(C) Following eligibility identification pursuant to Sections II.4 and 5, the decision-making processes and public notice procedures of 44 CFR Part 9 shall be commenced and public meetings may be held in the community between FEMA staff and community officials and property owners to discuss further the details of the acquisition program.

Section II.5 *Selection of Eligible Communities*

Communities, which express, in writing, a willingness to remove, by demolition, relocation, donation or sale, damaged structures in respect to which the community accepts title from FEMA, will be selected for participation in Section 1362 acquisition initiatives on the basis of a series of factors. These factors will be used by the Administrator on recommendations submitted by FIA staff or by FEMA field staff and information submitted by the community in determining whether acquisition of real property in a given community will be in the public interest as required by Section 1362. These factors include, but are not limited to, situations in which:

(a) The permanent removal of flooded buildings in a community will contribute to the achievement of existing, on-going programs for the permanent evacuation of flood plains (provided that the Section 1362 program fulfills a unique need not addressed in the on-going program nor not duplicative of existing funding).

(b) Acquisition will contribute to the achievement of multiple goals of community development in addition to hazard mitigation, including, but not limited to, environmental enhancement, open space, recreation, urban renewal, or some other public purpose.

(c) The acquisition and removal of flood-prone structures will have an economic benefit, in terms of elimination of future flood insurance claims, avoidance of future damage and reduction of future local, state and federal disaster relief costs, avoidance of business interruption and reduction in exposure to loss of life. This criterion will favor structures located in floodways, velocity zones and other flood risk zones of high flood loss potential.

(d) The distribution of properties eligible for acquisition under Section 1362, or the distribution of these eligible properties combined with those properties that can be acquired and removed through programs that are readily available from sources other than FIA, will result in a pattern of properties which lends itself to a logical and desirable reuse function.

(e) Alternatives to acquisition under Section 1362 have been investigated and found to be less effective than Section 1362 acquisition in meeting flood plain management and hazard mitigation goals. These alternatives could include, but are not limited to, acquisition programs and permanent relocation programs of local, state or other federal agencies; floodproofing; or structural flood protection.

(f) Communities have undergone a planning process and found acquisition and relocation of structures to be the most desirable alternative in terms of cost, degree of flood protection achieved, environmental enhancement and other factors.

(g) Communities have demonstrated or agree to pursue an active program of sound flood plain management which exceeds the minimum requirements of the National Flood Insurance Program.

(h) The communities can actively participate in the planning and implementation phases of the Section 1362 program through the provision of either financial or staff resources.

Communities are not required to meet all or even certain of these factors. Community eligibility and priorities among communities for Section 1362 assistance will be determined by the Administrator on the basis of the extent to which these factors are achieved as well as the number of factors achieved. The Administrator will notify the Chief Executive Officer (CEO) in writing of any community selection determination made pursuant to this section.

Section II.6 *Community Commitments Upon Which Negotiations With Real Property Owner(s) is Predicated*

Once a community has been determined by the Administrator to be eligible for Section 1362 acquisitions, the following requirements must be met by the community before FIA will order a property appraisal and commence negotiations leading to a contract with a property owner for the purchase of the flood damaged real property and subsequent transfer of title to the community:

(a) The community must be participating in the Emergency or Regular phase of the NFIP by having in force legally adopted ordinances, regulations, or statutes meeting the applicable requirements of § 60.3 of 44 CFR Part 60 and by adequately enforcing such land use measures.

Note.—FEMA field staff are responsible for advising the Administrator of the adequacy of a Community's program for meeting the requirements of the NFIP. A community is not considered to be participating satisfactorily if a general pattern of violation of the NFIP regulations by the community, including regulations concerning elevation, floodproofing placement in identified floodways, or variances under §§ 60.3 (b), (c), (d), and (e) of 44 CFR Part 60, exists in the community and there is no clear evidence that the community has corrected, prior to the event triggering eligibility, its past practices of non-compliance and/or improper or unsafe issuing of variances.

(b) The community, if in the Emergency Phase of the NFIP, must agree to enforce elevation and floodproofing standards for new construction and substantial improvements in flood risk areas as required under § 60.3(b)3 and 4 of 44 CFR Part 60 and maintain on file first floor elevation information as required under § 60.3(b)5 of 44 CFR Part 60.

Note.—Where base flood elevation data is not available from any existing source, the FEMA field staff should determine, based upon the potential for future development in the community, whether base flood data should be required as a condition for the community's participation in the Section 1362 program. If it is likely that the future development potential will be significant, the community should be required to generate base flood data or adopt an ordinance restricting development in the flood plain.

(c) The community must submit to the Administrator a proposal for the use of acquired land including, among other things, assurances that land transferred to the community will be managed in a manner consistent with sound land management and use. FEMA will assist in preparation of a land reuse proposal where requested and the Administrator will accept or reject any submitted proposal within seven (7) days of its receipt by the Administrator.

(d) Upon acceptance by the Administrator of a community's land reuse proposal, the community must enter into an Agreement with FEMA for the conveyance by FEMA to the community of title to the subject real property acquired by FEMA as a result of the Section 1362 acquisition. The terms of this Agreement shall include, but not be limited to, the following provisions:

(1) The legal description of the property to which the local government agrees to accept title;

(2) That delivery of the deed, which, usually, shall be a general or special

warranty deed, as appropriate, shall be accepted by the community immediately after and at the same closing or settlement at which FEMA takes title from the property owner (a "simultaneous" closing);

(3) That the community shall join in the execution of the deed and provide written assurance in the form of a certified copy of a resolution or similar instrument that the official signing the deed has the authority to do so, which deed shall include, among other things, the following provision:

(i) Title to the real property shall be subject to specific restrictive covenants that the land is dedicated in perpetuity for open space purposes, that the community shall faithfully manage the land for its dedicated open space purposes, for public use, and that the community shall not erect or permit to be erected any structures or other improvements on the land, unless such structures are, except for restrooms, open on all sides and functionally relate to some open space use, all of the foregoing restrictive covenants and agreements to run with the land and be binding on subsequent successors, grantees or assigns;

(ii) An assignment to FEMA, as assignee, of the community's rights to enforce the restrictive covenants together with a declaration that any future violation of the restrictive covenants or agreements, at FEMA's option, in writing to be delivered to the community's Chief Executive Officer within thirty (30) days from the date the Administrator receives actual notice of the violation, shall be deemed at the Administrator's option to cause a reversion of title to FEMA;

(iii) That the property is transferred subject to zoning and building laws and ordinances; easements, agreements, reservations, covenants and restrictions of record; any state of facts an accurate survey might show; encroachments and variations from the record lines of hedges, retaining walls, sidewalks and fences.

(4) An agreement that the community will remove without cost to FEMA, unless the Administrator agrees in furtherance of the public interest to assume part or all of such cost, all improvements and debris, including any concrete slabs or foundations, from the land and restore the site to its natural environment within ninety (90) days from delivery of the deed by either:

(A) Demolition, in the event FEMA enters into a contract for the purchase of the real property from the property owner under which the consideration for the sale is the fair market value of the real property with no allowance being made for a deduction from the purchase price of the salvage value of any remaining improvements; or

(B) Public sale of the improvement(s) for salvage value, in the event FEMA enters into a contract for the purchase of the real property from the property owner under which the consideration for the sale is the fair market value of the real property with no allowance being made for the deduction from the purchase price of the salvage value of any remaining improvements; or

(C) Transfer by donation of the improvement(s) to the original owner for relocation to land outside of any flood risk area, in the event FEMA enters into a contract for the purchase of the real property from the property owner under which the consideration for the sale is the fair market value of the real property less a deduction from the purchase price of the salvage value of any remaining improvements.

(5) An agreement that, should the community remove any improvement(s) from the land pursuant to (4)(A) or (4)(B), above, any proceeds resulting from such removal, after deducting the reasonable costs of conducting such removal, shall be returned to FEMA;

(6) An agreement that the provisions of (4) and (5), above, shall survive delivery of the deed;

(7) An agreement that the community will assume responsibility for any legal, administrative, or other expenses that may be incurred as a result of the transfer and that any taxes, general and special assessments, sewer rents, water charges, utility charges and similar expenses are not to be apportioned between the parties but are to be assumed by the community;

(8) An agreement that the requirements and procedures to be adhered to under the Section 1362 program are understand and will be complied with by the community;

(9) That the property is to be conveyed in an "as is" condition with no representations having been made by FEMA as to the condition of the property;

(10) That FEMA is not responsible for compliance with any notes or notices of violations of law or municipal ordinances, orders or requirements, issued by any governmental body having jurisdiction, against or affecting the premises;

(11) That the deed shall convey to the community fee simple title;

(12) That FEMA shall convey and the community shall accept marketable title (except as otherwise provided in the Agreement), that expenses of title examination, survey and related costs shall be borne by the community and, if the community shall assert objections to the marketability of title (other than matters to which title is made subject in the Agreement), FEMA shall be entitled to a reasonable adjournment to remove such objections but shall not be obliged to bring any action or proceeding or to incur any expense in order to render title marketable. In the event such objections cannot be removed all rights and liabilities of the parties shall cease under the Agreement, unless the community elects to accept such title as FEMA is able to convey;

(13) That all State and local revenue, and documentary stamps, grantor's or grantee's realty transfer taxes, recording charges and legal fees, closing costs, and similar expenses shall be borne by the community;

(14) That FEMA makes no representations as to the kind, number, condition and title to any fixtures and articles of personal property attached or appurtenant to or used in connection with the property;

(15)That the Agreement may not be modified or assigned by the community without the prior written consent of FEMA;

(16) That risk of loss or damage to the improved real property from fire, natural or other casualty of any kind shall be borne by the community after delivery of the deed from FEMA.

(17) That there shall be annexed to the Agreement and incorporated by reference therein, a resolution or similar instrument by the governing body of the community authorizing the official(s) executing the Agreement to enter into the Agreement on behalf of the community and citing the appropriate local law under which the transaction is authorized;

(18) That the Agreement is subject to and conditioned upon the ability of FEMA to acquire the real property and should FEMA's contract vendor fail, for any reason, to deliver title, as provided for in the contract for the sale of the real property to FEMA, all rights and obligations of the parties shall cease; and

(19) The community must certify to the Administrator that no duplication of Federal benefits will knowingly occur in any Section 1362 assistance being requested.

(20) Any other matters that may be agreed to by the community and the Administrator for conveyance of title.

Section II.7 *Selection of Eligible Property Owners Once the Community is Fully Qualified Under Sections II.4, 5, and 6*

(a) The following minimum criteria shall be met in order for a specific

improved real property to qualify as an eligible property under the statutory requirements of Section 1362:

(1) The property must qualify under the conditions set forth in Section II.2, above;

(2) There must be economic benefit, in terms of reduction of flood insurance claim payments, avoidance of future damage and reduction of future local, state and federal disaster relief costs, to be gained through acquisition of the property. In general in the following situations, properties will, if otherwise eligible, receive preferential consideration for acquisition:

(i) Structures located in an identified floodway as established on FIA's Flood Insurance Rate Map (FIRM), or which are determined through FIA's analysis to be located in a floodway area;

(ii) Structures located in an identified Velocity zone (V-zone) or which are determined through FIA's analysis to be located in a Velocity zone; and

(iii) Structures meeting the statutory eligibility requirements which have an established history of repetitive flooding in excess of the statutory criteria or which on the basis of available or developed flood frequency and depth-damage data can be shown to have a high probability for meeting the statutory requirements for repetitive flooding, or have a high probability of incurring future damage, the cost for repair of which exceed the anticipated costs of acquisition.

(3) The anticipated contribution that the acquisition may have toward the achievement of existing, on-going programs in the community for permanent excavation of flood plains, and the extent to which the intended land reuse of the property provides benefits to the public.

(b) In addition, priority will be given to eligible property owners who agree to limit FEMA's actual program cost by substituting benefits available from other government and non-government loan and disaster relief programs for benefits available under this program.

(c) Once the property qualifies under (a), above, the feasibility of using practicable alternatives to acquisition under Section 1362 will be considered, including but not limited to acquisition and permanent relocation by local, state or other federal sources, floodproofing; or structural flood protection.

(d) Assuming practicable alternatives to acquisition under (b), above, do not exist and the property qualifies under (a), above, the Administrator shall, assuming Section 1362 budget constraints do not preclude acquisition, determine the property under consideration to be eligible for acquisition by requesting the property owner to execute a written Request for Appraisal, which must be filed, together with a copy of the recorded deed under which the owner took title, with the Administrator within 60 days from the date of the Administrator's request that the Request for Appraisal be filed, unless the time for filing is, at the sole discretion of the Administrator, extended and which must contain the following provisions:

(1) An expression of the owner's willingness to enter into negotiations for the sale of the real property;

(2) Permission by the owner for an appraiser(s) appointed by FEMA, at FEMA's expense, to enter in and upon the real property to conduct the appraisal during normal working hours on forty-eight (48) hours written notice to the owner.

(3) An acknowledgement that the benefits, requirements and procedures of the program have been explained and understood and that any relocation of the improvement(s) on the property shall be to land outside of any flood risk zone;

(4) An acknowledgement that FEMA may refuse to complete the property purchase, if marketable title cannot be delivered to the United States Government, if the local or state government does not, for any reason, accept title from FEMA, or if other criteria set forth in these guidelines cannot be met;

(5) An acknowledgement that the purchase price to be offered in any negotiation will consist of the predamaged appraised fair market value less any salvage if the community is to return the structure to the owner and any insurance claims paid or to be paid as a result of any flooding event which caused the damage and which is used to establish eligibility under this section, and that no other costs incurred by the seller as a result of acquisition under this section are compensable;

(6) The assurance that a valid flood insurance policy purchased under the National Flood Insurance Program was in force the time of the event(s) which initiated eligibility for acquisition under this section, together with a recitation of the policy number and expiration date;

(7) An agreement to cooperate in every way reasonable in the appraisal and any title search to be undertaken by FEMA;

(8) An acknowledgement that the Request for Appraisal does not constitute a commitment to sell;

(9) An acknowledgement that, where the cost to the Federal government for purchase of the land is deemed unreasonable and not in the public interest due to the extraordinary lot sizes, or because of high land costs, the Administrator may offer to purchase only part of the lot to reduce the direct cost to the government on condition that the property owner enter a restrictive covenant upon the land records, as to the land not purchased, restricting its uses consistent with such sound land management and use purposes as may be agreed upon by the Administrator;

(10) An agreement that the property owner must include a duplicate original copy of either an Option or a Contract to purchase new land site outside of the flood risk area upon which any improvement(s) transferred to the property owner by the community is to be located before FEMA can proceed with the purchase process by executing an Acceptance of the Offer to Sell Real Property pursuant to Section III.3(d) below. Relocation to the new site must be accomplished in conformance with all state and local codes and ordinances. All aspects of any physical relocation of an improvement(s) transferred back to the property owner to the community, including obtaining estimates and securing contracts for property removal, locating and purchasing the new property site and other relocation costs, are the sole responsibility of the property owner. The Administrator may, at her sole discretion, modify the requirements of this paragraph (c)(10) to accommodate the reasonable needs of a particular acquisition project.

Part III—Appraisal, Valuation of Real Property and Negotiation Procedures

Section III.1 *Appraisal*

(a) Following receipt by the Administrator of the property owner's "Request for Appraisal," FEMA will assign an appraiser to collect evidence of the probable fair market value (FMV) of the real property with which the Administrator can establish an amount which the Administrator believes to be a just reflection of the FMV and which can be used as a basis for negotiation. Detailed instructions will be provided to the appraiser so that the appraisal will be performed according to the standards for conducting appraisals contained in the *Uniform Appraisal Standards for Federal Land Acquisitions*, published by the Interagency Land Acquisition Conference to the extent that such standards are consistent with the NFIP and the state law in the state in which the appraisal is being performed.

(b) The appraisal will be conducted by qualified appraisers as determined by FEMA to be familiar with the community and experienced with performing appraisals for federal government acquisition programs.

(c) The appraisal shall provide evidence of the fair market value of the land and improvements, following the standards set forth in (a), above, for the property in its condition, to the extent that it can be determined, prior to the occurrence of the flooding or other casualty event which initiated consideration of eligibility for acquisition under Section 1362.

(d) During the course of the appraiser's personal inspection of a property being appraised, the appraiser is required to see or talk personally to the owner, or in the owner's absence his agent or representative. In addition, the owner must be given an opportunity to accompany the appraiser during any inspection of the property.

(e) Appraisal reports must contain sufficient documentation, including verification of past sales of the property and sales of comparable properties supporting valuation data and the appraiser's analysis of that data, to demonstrate the correctness of the appraiser's opinions of FMV.

Section III.2 *Valuation of Real Property*

(a) Following receipt by the Administrator of the Appraiser's reports and recommendations, the evidence of property value shall be duly considered and the FMV of the real property shall be established by the Administrator based on the order of evidence evaluation provided below:

(1) Prior sales of the property being acquired, reasonably recent (within several years) and between willing buyers and sellers, shall first be considered.

(2) If FMV cannot be fairly established using (1), above, sales of comparable properties in the area, reasonably recent (within several years) and between willing buyers and sellers, shall be considered.

(3) If FMV cannot be established using (1) or (2), above, and the property is income producing, capitalization of income produced by the property shall be considered.

(4) If FMV cannot be established using (1), (2), or (3), above, reproduction cost of the property less depreciation shall be considered.

Section III.3 *Negotiation Procedures*

(a) Once the Administrator has established the FMV for the property, the owner will be furnished with:

(1) A Statement of Determination of Compensation to be offered for the property which will include:

(i) A description and location identification of the real property and the interest therein to be acquired;

(ii) An inventory identifying the buildings, structures, fixtures, and other improvements, including appurtenant removal buildings and equipment, which were considered in establishing the FMV of the real property;

(iii) A statement that the established FMV is the full amount believed by the Administrator to be the fair market value of the property as determined by the appraisals, less any flood insurance claim amount paid or to be made and, if appropriate, less salvage value;

(iv) A statement indicating that the compensation disregards any increase or decrease in the fair market value of the property caused by the project for which the property is being acquired, noting that the compensation is based upon value of the property determined, to the extent possible, as it was prior to the flooding or other casualty used as a basis for acquisition; and

(v) An explanation of the principal appraisal techniques used in appraising the real property.

(2) An "Offer to Sell Real Property" to FEMA which is an offer on the part of the homeowner to sell the improved real property to FEMA for the FMV established by the Administrator.

(b) Upon receipt of the Offer to Sell Real Property and the Statement of Determination of Compensation, the property owner will have three options: (a) make an offer to sell for the established FMV; (b) reject the FMV; or (c) request a second appraisal while remaining willing to sell, all as follows:

(1) *Acceptance of FMV.* If the property owner(s) wishes to sell the real property for the established FMV, the property owner(s) will sign the Offer to Sell Real Property in duplicate and return it to the Administrator who will cause one copy to be executed and returned to the property owner and order a title search. Upon receipt of a title report, binder or abstract, as appropriate, which establishes to the satisfaction of the Administrator, upon receipt of a satisfactory preliminary title opinion from the Department of Justice, that title is marketable, the transaction may proceed to closing.

(2) *Rejection of FMV.* If the FMV is rejected by the property owner without the intention to continue negotiation, the acquisition process for that particular property is terminated.

(3) *Contest of FMV.* If the property owner(s) still desires to sell his or her property following receipt of the initially established FMV, but feels that the FMV does not adequately reflect the fair market value of the property, the FMV may be contested. To contest the FMV, the property owner, at this or her own expense, must retain a qualified appraiser acceptable to the Administrator, and have a second appraisal performed. This appraisal must be performed within two weeks of receipt by the property owner of the Offer to Sell Real Property. If it is not, the process will be terminated in accordance with (2), above. Upon completion of the second appraisal, the property owner may either accept as reasonable the Administrator's established FMV, or forward the second appraisal to the Administrator for review. The Administrator may accept, reject or modify the second FMV appraisal and may revise the Offer to Sell Real Property in accordance with any modification by mailing an amended Offer to Sell Real Property to the property owner, along with an amended Statement of Determination. Upon receipt of the amended documents the property owner at this point, or at any other point in the appraisal process, may either execute the original or amended Offer to Sell Real Property, mailing the offer to the Administrator, or terminate the transaction.

(c) Aside from the process described in this Section, there is no other basis for negotiation of the amount of the FMV.

(d) Upon execution of any initial or amended Offer to Sell Real Property, the property owner(s) shall return this executory purchase contract to the Administrator in duplicate, upon receipt of which the Administrator shall execute the instrument and return a duplicate original executed contract to the property owner(s). A title search shall then be ordered by the Administrator, preparatory to fixing a date for the transfer of title.

(e) Contract vendors executing an Offer to Sell Real Property in a representative capacity shall so indicate and provide, by separate document, evidence of the authority under which the instrument is executed. For example, if the Offer to Sell Real Property is executed by a corporation, it must be executed in the full and correct name of the corporation by its duly authorized officer or officers, under seal if required by State law, and be duly attested and acknowledged. A corporate secretary's certificate transmitting a certified copy of the action of the Board of Directors which authorized the corporate officer(s) to act must accompany the Offer to Sell Real Property. Similarly, if the instrument is executed by an attorney-in-fact, the offer to Sell Real Property must be accompanied by the original, or duplicate original, executed and acknowledged power of attorney.

Part IV—Settlement and Closing

Section IV. 1 *Settlement and Closing*

Upon execution by the Administrator of the Offer to Sell Real Property, FEMA will proceed with obligating funds for completing the transaction and acquiring title evidence and other documentation in preparation for settlement and closing. This part sets forth the procedures and standards to be followed in acquistion of title evidence and closing.

(a) *Procuring evidence of title.* All title evidence will be prepared pursuant to the standards of and following the recommended format and process of "Standards for the Preparation of Title Evidence in Land Acquisitions by the United States." (Department of Justice, Land and Natural Resources Division, Washington, D.C., 1970, hereinafter referred to as the "Standards"). The Standards generally provide, among other things, that:

(1) Title evidence will be collected by title companies, abstractors or attorneys approved by the Department of Justice and retained by FEMA.

(2) Purchase orders or contracts with those searching title will specify the format and content of title evidence to be acquired, the form and content of abstrats of title, certificates of title, title insurance policies and Torrens system documents of title.

(3) Title evidence will be collected and submitted to the administrator in the required format as expeditiously as possible. Upon receipt of this information, it will be forwarded to the Department of Justice, Land and Natural Resources Division, for a preliminary opinion of title. The preliminary submittal to the Justice Department will include a copy of the title report, abstract or binder, a copy of the Offer to Sell Real Property contract and a copy of the deed to be delivered to the Federal government at the closing.

(4) The Department of Justice will provide a preliminary opinion of the acceptability of the title for federal ownership, and will specify at this time the precise information required and steps that should be taken in completing the closing.

(b) *Deeds.* The conveyance of title to the Federal government and then to the local unit of government will require the preparation, execution and recordation of two deeds:

(1) *Deed to the United States.* The deed to the United States should conform to local statutory requirements and generally adhere to the following requirements:

(i) Be a general warranty deed: however, this requirement may be waived, upon a proper showing, as to conveyance by states, municipal corporations, and fiduciaries and other persons acting solely in a representative capacity.

(ii) Disclose the capacity in which any grantor acts who conveys in other than an individual capacity.

(iii) Show the name of the grantor in the body of the deed and in its acknowledgement, be signed by the grantor exactly as the grantor's name appears as grantee in the conveyance to the grantor; and account for any unavoidable difference by a recital identifying the grantor with the grantee in the preceding conveyance.

(iv) Disclose the marital status of each grantor.

(v) Recite the true consideration and the receipt thereof.

(vi) Convey the land to the "United States of America and its assigns."

(vii) Contain the correct legal description of the real property to be conveyed.

(viii) Convey all the right, title and interest of the grantor in and to any alleys, streets, ways, strips, or gores abutting or adjoining the land.

(ix) Contain no reservations or exceptions not approved by FEMA/ however, when land is to be conveyed subject to certain rights, such as easements or mineral rights thought to be outstanding in third parties, they must not be excepted from the conveyance, but the deed should be framed to convey all the grantor's right, title, and interest subject to the outstanding rights, unless the Offer to Sell Real Property contract expressly provides otherwise.

(x) Refer to the deed(s) to the grantor(s), or other source of grantor's title, by book, page and place of record, wherever customary or required by statute.

(xi) Contain a reference to the Federal Emergency Management Agency. This reference should follow description of the land and in no instance should it be included in the granting, habendum or warranty provisions of the deed.

(xii) Release all rights of homestead, dower, courtesy and other interests of the grantor's spouse, as required by local law.

(xiii) Be signed, sealed, attested and acknowledged by all grantors and their spouses, as required by local law.

(xiv) If executed by a corporation, be signed in the full and correct name of the corporation by its duly authorized officer or officers, sealed with the corporate seal if required by State law and attested and acknowledged, as required by State Law. In addition, the corporation shall deliver a Secretary's certified copy of the Minutes of the Board of Director's meeting in which the Resolution was adopted by the Board authorizing the officer(s) executing the deed to do so.

(xv) If executed by an attorney-in-fact to be signed in the name of the principal by the attorney, properly acknowledged by the attorney as the free act and deed of the principal, and to be accompanied by the original or a certified copy of the power of attorney and satisfactory proof that the principal was living and the power in force at the time of its exercises.

(xvi) Have affixed sufficient documentary revenue stamps.

(2) *Deed to the Local Unit of Government.* The deed to the local unit of government will be a general warranty or, if appropriate, special warranty deed in a form consistent with applicable state statutes, unless the Federal government takes title by lesser deed, in which case the deed shall be of the same kind (e.g., bargain and sale or quitclaim deed). The community shall execute and join in on the deed which will set forth the specific restrictions and agreements regarding the use of the property as are set forth in Section 11.6(d)(3), above. In addition, the restrictions will acknowledge and conform to 44 CFR Part 9, Flood Plain Management and Protection of Wetlands.

(c) *Certificate of Possession.* As part of the title evidence, a certificate of possession, based on an inspection made at the time of the closing of the purchase, must be signed by a duly authorized employee of FEMA. The certificate of possession must be in a form approved by the Department of Justice.

(d) *Simultaneous Closing.*

(1) At the closing, a deed will be delivered to the United States in exchange for whatever consideration has been previously agreed to. FEMA will be represented by one of its own attorneys, an attorney from another Federal agency, or an attorney retained by FEMA for the purpose. Acceptance of the deed by the Federal government shall be subject to and conditioned upon the acceptance by the community of the real property to the community. Therefore, the local unit of government will be represented, in addition to the property owner and Federal government, and will immediately accept title to property subsequent to its being acquired by the government.

(2) Following the closing, the settlement documents will be forwarded to the Administrator and then to the Justice Department for a final title opinion. The documents to be forwarded

will include a conformed copy of the deed delivered to the United States Government, the title evidence, the certificate of inspection and evidence obtained at the closing (affidavits, marked up title report, conformed copies of executed releases or satisfaction of mortgages, etc.).

(3) Following review by the Justice Department, the acquisition and transfer will be considered final.

(e) *Monitoring.* Following any Section 1362 project, FEMA will from time to time review the performance of communities that have accepted title to property acquired under Section 1362 to assure that the terms of the deed are being complied with.

Part V—Offer To Sell Real Property

The "Offer to Sell Real Property" for which FEMA will be the offeree, referred to in III.3(d)(2) above, shall generally conform to the following format and contain the following provisions:

Offer To Sell Real Property

Project, Tract No., and Contract No.

The undersigned, hereinafter called the Vendor, in consideration of the mutual covenants and agreements herein set forth, offers to sell and convey to the United States of America and its assigns, the fee simple title to the following described land, with the building and improvements thereon, and all rights, hereditaments, easements, and appurtenances thereunto belonging, located in the County of ———, State of ———, bounded and described as follows:

Subject to the following rights in third parties:

Excepting and reserving only the following rights and interests in the above described property: [namely:]

The terms and conditions of this offer are as follows:

(1) The Vendor agrees that this offer may be accepted by the United States through any duly authorized representative, by delivering, mailing, or telegraphing a notice of acceptance to the Vendor at the address stated below, at any time within ——— ( ) month(s) from the date hereof, whereupon this offer and the offer and the acceptance thereof become a binding contract.

(2) The United States of America agrees to pay to the Vendor for said land the sum of ——— ($———), payable at the settlement after the acceptance of this offer and preliminary approval of the Vendor's title; provided the Vendor can execute and deliver a good and sufficient general warranty deed conveying marketable title to said land with the hereditaments and appurtenances thereto belonging to the United States of America and its assigns, in fee simple, free and clear from all liens and encumbrances, except those specifically excepted or reserved above, together with all right, title, and interest of the Vendor in and to any streams, alleys, roads, streets, ways, strips, gores, or railroad rights-of-way abutting or adjoining said land and in and to any unpaid award for damage to said premises; and the Vendor will execute and deliver to the United States, on closing of title, or thereafter, on demand, all proper instruments for the conveyance of such title and the assignment and collection of any such award; and further provided that (community) accepts a deed to the described property from the United States immediately after Vendor delivers the above deed to the United States, it being the intention of the parties that the transfer of title shall take place at a simultaneous closing at which the United States shall accept delivery of the deed from the Vendor and immediately deliver a deed to the (community). Upon acceptance of the deed by the (community), both deeds shall be recorded and the purchase price shall be paid to the Vendor. Should the (community for any reason refuse to accept the deed from the United States, the parties herein agree that the deed from the Vendor to the United States shall be returned forthwith to the Vendor and all rights and liabilities of and between the parties under this agreement shall cease and be of no effect; this provision shall survive delivery of the deed to the United States.

(3) It is agreed that the United States will defray the expenses incident to the preparation and recordation of the deed to the United States and the procurement of the necessary title evidence establishing marketable title. If the United States shall assert objections to the marketability of title (other than encumbrances which title is made "subject to" herein), Vendor shall be given due notice thereof, within a reasonable time prior to the date set for the closing of title and, if necessary, Vendor shall be entitled to a reasonable adjournment to remove such objections, but shall not be compelled to bring any action or proceeding or to incur any expense in order to render title marketable. In the event such objections cannot be removed and as a result thereof title shall prove unmarketable, as a condition precedent to the execution of this Offer to Sell Real Property, it is agreed that the rights of the United States and the liability of the Vendor shall be limited to the following: (a) United States may elect to rescind this contract by giving due notice thereof to Vendor who shall thereupon pay to the United States its net actual disbursement for examining title (without policy issuing), whereupon this contract shall become null and void and terminated with the same force and effect as if it had not been executed, and none of the parties shall have any further rights, duties, liabilities, claims or obligations arising hereunder or in any manner from this transaction; or (b) United States may elect, by giving Vendor due notice thereof, to accept such title as the Vendor is able to convey, without abatement of the purchase price for defects, objections or encumbrances of title.

(4) The Vendor agrees that all taxes, general and special assessments, and any other liens or encumbrances which are a lien against the land at the time of conveyance to the United States shall be satisfied of record by the Vendor at or before the transfer of title, and, if the Vendor fails to do so, the United States may pay any such taxes, assessments, and encumbrances which are a lien against the land provided the Vendor shall simultaneously either deliver to the purchaser at the closing of title instruments in recordable form and sufficient to satisfy such liens and encumbrances of record together with the cost of recording or filing said instruments; and, provided further, that the amount of such payments by the United States shall be deducted from the purchase price of the land; that the Vendor will, at the request of the United States and without prior payment or tender of purchase price, execute and deliver the general warranty deed to the United States, subject to (2), above, pay the documentary revenue stamp tax, and obtain and record such other curative evidence of title as may be required by the United States. For purposes of this Offer to Sell Real Property, if, at the time of the delivery of the deed, the property or any part thereof shall have been affected by an assessment or assessments which are or may become payable in annual installments, of which the first installment is then a charge or lien, or has been paid, then for the purposes of this Offer to Sell Real Property all the unpaid installments of any such assessment, including those which are to become due and payable after the delivery of the deed, shall be deemed to be due and payable and to be liens upon the property affected thereby and shall be paid and discharged by the Vendor, upon the delivery of the deed or by an appropriate diminution in the purchase price to be paid to the Vendor.

(5) The Vendor agrees that loss or damage to the property by fire, acts of God or other casualty shall be at the risk of the Vendor until the title to the land and deed to the (community) have been accepted by the United States; and, in the event that such loss or damage occurs, the United States may, without liability, refuse to accept conveyance of the title or it may elect to accept conveyance of title to such property, in which case there shall be an equitable adjustment of the purchase price.

(6) The property is sold subject to: (a) Utility easements, agreements, reservations, covenants and restrictions of record, providing the same are not violated by existing buildings or use thereof; (b) any state of facts an accurate survey might show providing title is not rendered unmarketable thereby; and (c) encroachments and variations from the record line of hedges, retaining walls, sidewalks and fences (which shall not be deemed to render title unmarketable).

(7) Vendor has not made, and, except as expressly set forth herein, does not make any representations as to the physical condition, income, expense, taxes, operation or any other matter or thing affecting or relating to the herein described premises or the fixtures, utilities, equipment, furnishings and personality therein. The United States expressly acknowledges that no representations have been made other than those set forth in this contract; and having inspected the subject premises and being familiar with the condition thereof, the United States agrees to accept the same, and

any personality included in this sale, "as is" on the date hereof subject to normal wear and tear to the time of closing title. Vendor agrees that the United States shall receive vacant possession upon closing title to the subject property.

(9) Settlement shall be made on or about —— at the Office of ——.

(9) Should the Vendor for any reason other than default by the United States fail to deliver a deed to the United States, the Vendor shall reimburse the United States for any expenses incurred in connection with examination of title, including the cost of any survey of the property, obtained by the United States.

(10) It is agreed that the spouse, if any, of the Vendor, by signing below, agrees to join in any deed to the United States and to execute any instrument deemed necessary to convey to the United States any separate or community estate or interest in the subject property and to relinquish and release any dower, courtesy, homestead, or other rights or interests of such spouse therein.

(11) The Vendor represents and it is a condition of acceptance of this offer that no member of or delegate to Congress, or resident commissioner, shall be admited to or share any part of this agreement, or to any benefits that may arise therefrom, but this provision shall not be construed to extend to any agreement if made with a corporation for its general benefit.

(12) If the Vendor is a corporation, it will deliver to the United States at the time of the delivery of the deed hereunder a resolution of its Board of Directors authorizing the sale and delivery of the deed, and a certificate by the Secretary of the corporation certifying such resolution and setting forth facts showing that the conveyance is in conformity with the requirements of the State's business corporation law. The deed in such case shall contain a recital sufficient to establish compliance with said section.

(13) This Offer to Sell Real Property and Acceptance of Offer to Sell Real Property may not be assigned by Vendor without the express written consent of the United States. The terms and conditions aforesaid are to apply to and bind the heirs, executors, administrators, successors, and assigns of the Vendors.

(14) This Offer to Sell Real Property, upon acceptance and execution by the United States, shall contain the final and entire agreement between the parties and they shall not be bound by any terms, conditions, statements or representations, oral or written, not herein contained and Vendor agrees that no representative or agent of the United States has made any representation or promise with respect to this offer not expressly contained herein.

Signed, Sealed, and Delivered this —— day of —— 19—.

Witnesses.

(Seal) ——————————
Vendor

(Seal) ——————————
Spouse of Vendor

(Seal) ——————————
Vendor

(Seal) ——————————
Spouse of Vendor

Notice of acceptance of this offer is to be sent to:

(Name and Address) ——————————

Acceptance of Offer to Sell Real Property

Date: ——————.

The offer of the Vendor contained herein is hereby accepted for and on behalf of the United States of America.

(Name and Title) ——————————

Witness: ——————————

(National Flood Insurance Act of 1968 (Title XIII of Housing and Urban Development Act of 1968), effective January 28, 1969 (33 FR 17804, November 28, 1968), as amended; 42 U.S.C. 4001–4128; Reorganization Plan No. 3 of 1978 (43 FR 41943) and Executive Order 12127, dated March 31, 1979 (44 FR 19367), and delegation of authority to Federal Insurance Administrator, dated April 1, 1979 (44 FR 20962))

Issued at Washington, D.C. July 18, 1980.

Gloria M. Jimenez,

Federal Insurance Administrator.

[FR Doc. 80-22572 Filed 7-25-80 8:45 am]

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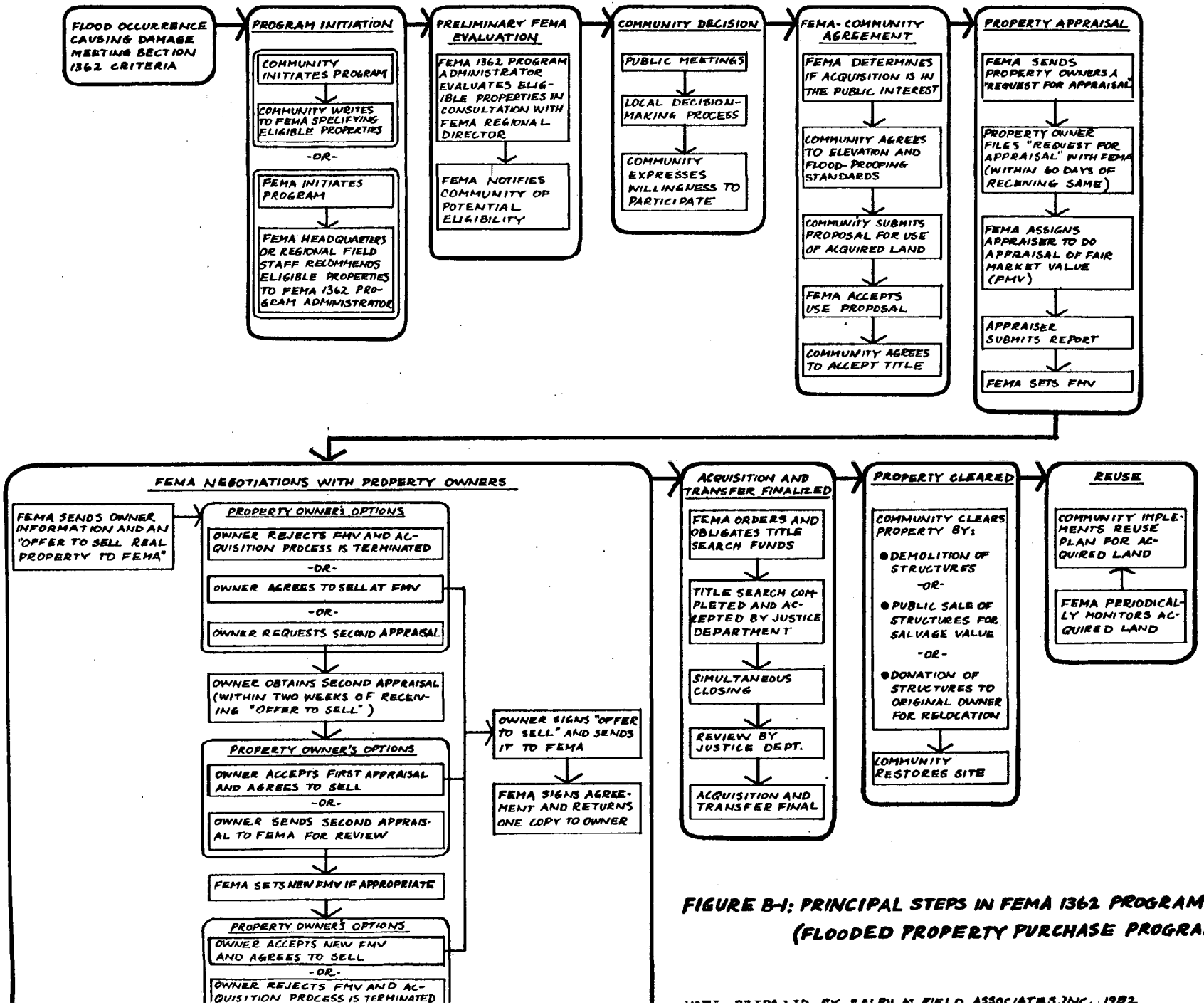

FIGURE B-1: PRINCIPAL STEPS IN FEMA 1362 PROGRAM (FLOODED PROPERTY PURCHASE PROGRAM)

APPENDIX C

METHODOLOGY FOR ESTIMATING

POTENTIAL PROPERTY DAMAGE

METHODOLOGY FOR ESTIMATING POTENTIAL PROPERTY DAMAGE

The identification of properties with a high potential for meeting Section 1362 property eligibility criteria is based on estimates of the amount of damage that is likely to be caused by a one percent (100-year) flood. These damage estimates are based on "Depth of Water/Percent Damage" relationships developed and currently used by the Federal Emergency Management Agency (see Table C-1).

In order to apply these relationships, estimates are required of the first floor elevation of each affected structure and the elevation of flood waters during the projected one percent flood. Estimates of first floor elevation were usually made by estimating the ground level elevation at the structure and then estimating the height of the first floor above ground level. In some cases, detailed data available from surveys conducted for sewerage studies provided data on the sill elevations of individual structures. Table C-2 describes the sources of information for these elevation estimates. Estimates of flood water elevations also had two parts. Estimates of still water elevations were taken directly from FEMA Flood Insurance Rate Maps (FIRMS) for each of the study areas. Wave crest elevations were estimated using the FEMA Field Manual for Estimating Wave Heights in Coastal High Hazard Areas in Atlantic and Gulf Coast Regions, March 1981.

A detailed study procedure was developed to identify structures with a high potential for meeting Section 1362 property eligibility criteria. This procedure allows for the sequential application of three sets of screening criteria. The damage threshold used in each screening was set at 40 percent rather than 50 percent to ensure that structures marginally subject to "damage substantially beyond repair" were included.

1. Initial Screening. The preliminary screening involved only structures outside the V-zone and criteria were selected in order to identify, on the basis of the most easily and quickly obtainable data, structures which could not be expected to suffer extensive flood damage under the most extreme circumstances. This first screening involved four main steps:

   - o identification of structures located outside the V-zone
   - o grouping of structures within the smallest contour intervals delineated on available topographic maps

TABLE C-1: DEPTH OF WATER/PERCENT DAMAGE RELATIONSHIPS[1]

Depth of Water At 1st Floor (ft)	Percent Damage Per Structure Type							
	One Story No Basement		2 or More No Basement		One Story With Basement		2 or More With Basement	
	A-zone	V-zone[2]	A-zone	V-Zone[2]	A-zone	V-zone[2]	A-zone	V-zone[2]
-3					0	0	0	0
-2					4	7	3	5
-1	0	0	0	0	8	14	5	9
0	7	12	5	9	11	19	7	12
1	10	18	9	16	18	32	11	19
2	14	25	13	23	20	35	17	30
3	26	46	18	32	23	40	22	39
4	28	49	20	35	28	49	28	49
5	29	51	22	39	33	58	33	58
6	41	72	24	42	38	67	35	61
7	43	75	26	46	44	77	38	67
8	44	77	31	54	49	86	40	70
9	45	79	36	63	51	89	44	77
10	46	81	38	67			46	81
11	47	82	40	70			48	84
12	48	84	42	74			50	88
13	49	86	44	77				
14	50	88	46	81				
15			47	82				
16			48	84				
17			49	86				
18			50	88				

[1]Source: Federal Insurance Administration, FEMA, "Depth-Percent Damage Data," January 21, 1974, except as noted in footnote 2 below.

[2]V-zone estimates = 1.75 x A-zone estimates. The 1.75 factor represents an adjustment, based on an evaluation of damages to structures caused by wave impact during Hurricane Frederic in September 1979, discussed in Elevating to the Wave Crest Level, A Benefit: Cost Analysis, Federal Emergency Management Agency, July 1980.

Damage thresholds used for this study.

TABLE C-2: DATA SOURCES FOR ELEVATION ESTIMATES

Study Areas	Primary Data	Elevation Reference Points (Ft. above M.S.L.)	Source of Detailed Topographic Mapping or Elevation Reference Points
Norwalk			
Harborview	Detailed topographic mapping. Scale 1" = 100 ft. Contour interval = 2 ft. Supplemented with sill elevations from Metcalf & Eddy sewer plan.	--	City of Norwalk Engineering Office
Norwalk Islands			
Fairfield			
Pine Creek Beach	Detailed topographic mapping. Scale 1" = 100 ft. Contour interval = 2 ft.	--	Town of Fairfield Town Plan & Zoning Office
Stratford			
Long Beach	RMFA elevation measurements. (Town topographic mapping does not include Long Beach area)	Top of landward ends of stone groin, Elevation 12.0.	Town of Stratford Town Engineer
Milford			
Milford Point	Detailed topographic mapping. Scale 1" = 200 ft. Contour interval = 2 ft.		City of Milford Engineering Office
Cedar Beach	Detailed topographic mapping. Scale 1" = 200 ft. Contour interval = 2 ft. Supplemented with sill elevations from Metcalf & Eddy sewer plans.	--	City of Milford Engineering Office
Bayview	Detailed topographic mapping. Scale 1" = 200 ft. Contour interval = 2 ft.	--	City of Milford Engineering Office
Silver Beach	Detailed topographic mapping. Scale 1" = 200 ft. Contour interval = 2 ft.	--	City of Milford Engineering Office
Guilford			
Grass Island	RMFA elevation measurements. (Town topographic mapping does not include Grass Island area)	Nail 1 ft. up utility pole #258, Circle Beach Road. Elevation 5.75 ft.	Town of Madison Town Engineer
Madison			
Circle Beach	RMFA elevation measurements. (Town does not have topographic mapping)	Nail 1ft. up utility pole #258, Circle Beach Road. Elevation 5.75 ft.	Town of Madison Town Engineer
Clinton			
Cedar Island	RMFA elevation measurements. (Town does not have topographic mapping)	Top of catch basin in Grove Street near concrete bulkhead at town dock. Elevation 5.64 ft.	Town of Clinton Zoning Enforcement Office
Harbor View	RMFA elevation measurements. (Town does not have topographic mapping)	Large nail in utility pole #963, West Road. Elevation assumed to be 10.0 ft.	Town of Clinton Zoning Enforcement Office
Clinton Beach	RMFA elevation measurements. (Town does not have topographic mapping)	Top flange of fire hydrant at #143 Shore Road (Property Map 86, Block 72, Lot 112). Elevation 10.40 ft.	Town of Clinton Zoning Enforcement Office
Westbrook			
Grove Beach	Detailed topographic mapping. Scale 1" = 200 ft. Contour interval = 5 ft. (Town does not have topographic mapping)	--	C.E. Maguire, Inc. New Britain, Connecticut
West Beach	Detailed topographic mapping. Scale 1" = 200 ft. Contour interval = 5 ft. (Town does not have topographic mapping)		C.E. Maguire, Inc. New Britain, Connecticut
Old Saybrook			
Chalker Beach	RMFA elevation measurements. (Town does not have topographic mapping)	Top of fire hydrant on Cranton Street just north of Lot 76 (Property Map 12). Elevation 7.59 ft.	Town of Old Saybrook Zoning Enforcement Officer
Great Hammock Beach	RMFA elevation measurements. (Town does not have topographic mapping)	Lowest floor of dwelling off Walker Avenue (Lot 48, Map 14). Elevation 12.76 ft.	Town of Old Saybrook Zoning Enforcement Officer
Plum Bank Beach	RMFA elevation measurements. (Town does not have topographic mapping)	Lowest floor of dwelling off Walker Avenue (Lot 48, Map 14). Elevation 12.76 ft.	Town of Old Saybrook Zoning Enforcement Officer
Old Lyme			
Hawks Nest and Sound View	RMFA elevation measurements. (Town does not have topographic mapping)	Nail marked on utility pole near Lot 246, Map 6, Hartford Avenue. Elevation 8 ft.	Town of Old Lyme Zoning Enforcement Officer
		Bronze disk in ledge outcrop 165 ft. south of State Route 156, 43 ft. east of Washington Ave. Elevation 20.53 ft.	Flood Insurance Rate Map, Town of Old Lyme, Ct. Elevation Reference Mark #13

- o estimation of the height of water in each structure outside of the V-zone, based on the still water elevation of the one percent flood and lowest case first floor elevation assumptions (e.g., first floor is at the same level as the lowest contour).
- o estimation of the worst case amount of damage to each structure caused by the one percent flood, based on the height of flood water estimates and worst case assumptions of structural characteristics (e.g., one story with basement). (Table C-3 was prepared to assist in this determination.)

2. Second Screening. The second screening included structures inside and outside of the V-zone and was designed to eliminate additional structures from consideration before detailed field observations of each site were necessary. The application of the second set of screening criteria to the candidate structures that passed through the initial screening involved three main steps:

   - o calculation of wave crest elevations at representative points in each study area where detailed topographic mapping was available.
   - o estimation of one percent flood water height in each structure, based on still water flood elevation, calculated wave crest elevations, and where available, more precise first floor elevation data than could be interpolated off the topographic maps, i.e. sewerage studies (rather than lowest case first floor elevation assumptions used in the initial screening).
   - o estimation of percent damage to each structure taking into consideration the number of stories and presence of a basement, as determined from tax assessment records.

3. Final Assessment. The final assessment applied to all structures passing through the first and second screening and to all structures for which these screenings were not possible. This assessment required detailed field observations and measurements. As a result of wide town-to-town variation in data quantity and quality, it was necessary to determine the approximate ground and first floor elevations using a surveyor's level and the closest and most easily obtainable elevation reference points in each study area for which detailed topographic mapping was unavailable.

These measurements did not include a detailed elevation determination of each individual structure. Sufficient elevation points were established to allow (a) the grouping of structures into areas of approximately equal elevation; (b) the analysis of relative elevations throughout the study area; (c) the calculation of wave crest elevations along continuous reaches of the shoreline with similar elevations. The average first floor elevations above grade level of groups of similarly elevated structures, rather than the first floor elevation of each individual structure, were also estimated.

The height of the water (wave crest) in groups of structures was calculated and Table C-1 was used to estimate potential damage. Table C-3 served as a field guide for estimating potential damage to groups of structures. In some cases, the calculation of the first floor elevations and worst case damage of the lowest structures in a group allowed the entire group to be eliminated from consideration. The elevation of some structures, naturally, will vary from the average elevation. These exceptions are not factored into the final assessments.

TABLE C-3 FIELD GUIDE FOR ESTIMATING PERCENT DAMAGE

V-ZONE STRUCTURES (Base Flood Elevation = 11 ft. above NGVD)

Height of Structure Above Ground (ft.) (Avg. Hgt. of Group)	Average Grade Elevation in Flood Reach (ft. Above NGVD)	Maximum Wave Crest Elevation (Rounded to nearest ft. above NGVD)	Type of Structures Meeting Damage Criteria
0	4	15	all
	5	14	all
	6	14	all
	7	13	all
	8	13	1S noB/1S B/2S B
	9	12	1S noB/1S B
	10	12	no structures
1	4	15	all
	5	14	all
	6	14	all
	7	13	1S noB/1S B/2S B
	8	13	1S noB/1S B/2S B
	9	12	no structures
	10	12	no structures
2	4	15	all
	5	14	all
	6	14	all
	7	13	1S noB/1S B/2S B
	8	13	1S noB/1S B
	9	12	no structures
	10	12	no structures
3	4	15	all
	5	14	all
	6	14	1S noB/1S B/2S B
	7	13	1S noB/1S B
	8	13	no structures
	9	12	no structures
	10	12	no structures
4	4	15	all
	5	14	1S B/1S noB/2S B
	6	14	1S B/1S noB/2S B
	7	13	no structures
	8	13	no structures
	9	12	no structures
	10	12	no structures
5	4	15	all
	5	14	1S B/1S noB/2S B
	6	14	1S B/1S noB/2S B
	7	13	no structures
	8	13	no structures
	9	12	no structures
	10	12	no structures
6	4	15	1S B/1S noB/2S B
	5	14	1S B/1S noB/2S B
	6	14	no structures
	7	13	no structures
	8	13	no structures
	9	12	no structures
	10	12	no structures

NON-V ZONE STRUCTURES (Base Flood Elevation = 11 ft. above NGVD)

Height of Structure Above Ground (Aver. hgt. of group)	Average Grade Elevation in Flood Reach	Type of Structures Meeting Damage Criteria
0	4	1S B/1S no B
	5	1S noB
	6	no structures
	7	no structures
	8	no structures
1	4	1S noB
	5	no structures
	6	no structures
	7	no structures
	8	no structures

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