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(Draft) Section 2

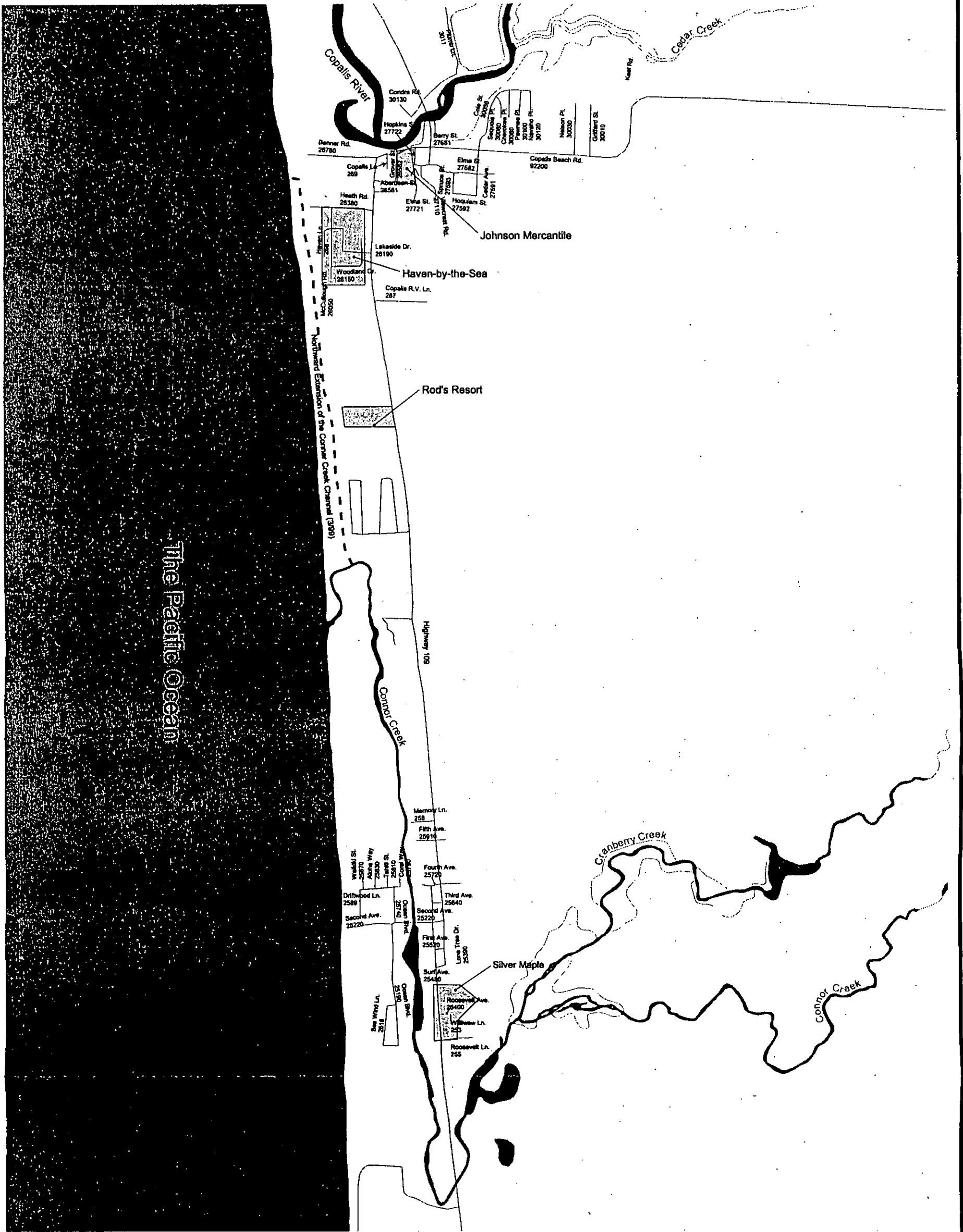
## RECOMMENDED FLOOD HAZARD MANAGEMENT PLAN

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This section reports the recommended Flood Hazard Management Plan (FHMP) improvements that resulted from this study. The planning process, project area background and goals follow in subsequent chapters. To meet the goals and objectives, recommended alternatives must:

- Have a reasonable certainty of improving the targeted drainage issue;
- Be cost-effective and have realistic funding sources;
- Have the agreement of the interested public;
- Have approval from Grays Harbor County and other regulatory agencies;
- Maximize beneficial environmental impacts and minimize adverse environmental impacts;
- Be implementable in a timely manner;
- Provide long-term benefits; and
- Address future growth conditions in North Beach.

Specific recommendations are summarized in Table 2-1. Figure 2-1 shows the locations of specific problem areas and recommended structural measures.



2000 0 2000 Feet

Figure 2-1 Local Drainage Study Sites

**Table 2-1  
North Coast Flood Hazard Management Plan  
Recommendations**

	<b>Policy and Program Recommendations</b>	<b>Capital Improvement Project Recommendations</b>
<p><b>Area-Wide Issues</b></p>	<ul style="list-style-type: none"> <li>•Regulate development in flood-plains and wetlands and impacts to drainage courses</li> <li>•Evaluate revisions to FEMA mapped floodplain boundaries</li> <li>•Coordinate flood hazard management activities with other County divisions and other agencies</li> <li>•Consider development of a conservation easement program to preserve flood storage areas</li> <li>•Develop flood hazard public education programs</li> </ul>	<ul style="list-style-type: none"> <li>•Elevate affected homes and businesses where necessary</li> </ul>
<p><b>Local Drainage Issues</b></p>		<p>Silver Maple Resort – Install culvert</p> <p>Haven-by-the-Sea - Replace deteriorated pipe (further study needed to confirm)</p> <p>Johnson’s Mercantile – None recommended</p> <p>Rod’s Resort – Deepen existing highway ditch</p> <p>(See Section 5 for more details)</p>

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## POLICY AND PROGRAM RECOMMENDATIONS

While structural alternatives for flood hazard management address problems already identified, non-structural alternatives seek to prevent future problems by addressing the causes of flooding. They are typically focused on the regulation of land use, which is the largest controllable factor in most flooding problems. In some cases, homes and other structures are built within an identified floodplain; in others, although structures are outside the floodplain, fill or other features of development alters natural drainage courses, creating flooding up- or downstream. Development of wetlands removes the important natural floodwater storage function they provide. Overall, as well, the cumulative effects of development add impervious surface area within watersheds, increasing stormwater runoff, and result in additional fill that displaces water, diverts flow, and raises flood elevations. Addressing these issues through land use policies and regulations is a cost-effective way of helping to avoid future flooding problems that require costly capital solutions. Also effective are educational programs, which help maintain property owner awareness of the types of activities that can contribute to flooding and provide guidance on the regulations and permit processes related to flood hazard management.

It is important to note in any discussion of policy and regulatory solutions that Grays Harbor County, and particularly the coastal areas, are by nature exceptionally prone to flooding. Most of the North Beach study area is less than 20 feet above sea level, and many areas lie within designated floodplains or wetlands. Any regulations preventing development that was subject to flooding or that in some way contributed to flooding would result in unacceptably severe restrictions on development through much of North Beach. Thus, it must be recognized that, given the nature of the area, flooding will continue to occur to some degree if landowners are to exercise their property rights. This will be true even with strict enforcement of all existing regulations and implementation of the other measures described below. For this reason, the

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County relies in large measure upon local initiation and sponsorship of drainage projects by the affected residents, themselves.

This plan recommends that each of the non-structural alternatives presented here be implemented by Grays Harbor County.

### ***Regulate Development in Floodplains and Impacts to Drainage Courses***

Regulations are a means of limiting actions taken by individuals that may put them at risk or adversely affect others or the environment. As detailed in the Regulatory Overview of Section 3 and Appendix E of this FHMP, there are a number of federal, state, and local laws that pertain to flood hazard management. Any new development in the floodplain should strictly follow the guidelines specified in these regulations.

To reduce localized flooding, land use policies in the North Beach Area must ensure that development does not impact drainage courses and that increases in runoff are kept to a minimum. Regulations that address the goal of protecting drainage pathways should be enforced. This requires that the County:

- Identify permanent drainage pathways.
- Prevent filling or blocking of natural drainage courses. Prevent alterations or relocations of drainage courses that affect their flood carrying capacity. This can be done by vigorously enforcing the Uniform Building Code and the County Zoning Ordinance.
- Limit fill materials for new development or improvements to the minimum necessary to elevate homes and septic mound systems above the designated flood level.
- Review all filling activities for adverse downstream and upstream impacts.
- Establish policies to comply with Sections 401 and 404 of the Clean Water Act. (Related to construction measures for flood hazard protection that may affect wetlands)
- Establish policies to formalize the posting of warnings of flooding hazards during events that cause closure of roadways, bridges, or facilities.

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This alternative has the potential for the most comprehensive benefits of all of the alternatives considered.

### ***Evaluate Revisions to FEMA Floodplain Boundaries***

The special permitting requirements for development within floodplains (administered under chapter 13.07 of the County's zoning ordinance, as described in Chapter 3) apply only to those areas within the 100-year floodplain mapped by FEMA. Figure 3-3 shows the 100-year floodplain mapped for North Beach. Discussions with County staff resulted in the observation that some areas adjacent to but outside the mapped floodplain appear to experience significant flooding; because of the dynamic nature of the coastal topography (such as beach accretion and shifting of dune locations) and the significant northward migration of Conner Creek it is likely that changes have occurred in the floodplain boundaries that are not reflected on the current maps. Computer modeling of the area using up-to-date topography and hydrologic data could establish whether additional areas should be subject to floodplain development permit requirements to protect property and safety in the floodplain area. The County should also consider adopting a policy of performing such floodplain boundary reviews on a periodic basis in coastal areas like North Beach where conditions are subject to change.

### ***Coordinate Planning with County Divisions and Other Jurisdictions***

At public meetings held during the FHMP planning process, a number of citizens noted that more coordination among divisions within the County would be helpful in identifying and managing flooding hazards. For example, they cited the issuance of permits for wetland filling that resulted in a loss of flood storage and resulting impacts on downstream properties. Some of the situations cited are the result of issues beyond the County's control, such as "grandfathered" development under permits issued in the past when regulations were less stringent, and some are the result of regulatory violations by property owners. However, opportunities may exist for a coordinated process among the County's Planning, Building, and Utilities and Development divisions to ensure that all new development with the potential to experience or exacerbate flooding is reviewed for consistency with this FHMP as well as other applicable plans and regulations. It is recommended that the County include such coordination in current permit program improvements.

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Because flooding occurs on a watershed basis, without respect to city and county boundaries, interjurisdictional coordination is another important aspect of flood hazard management planning. Typically, a number of public agencies are affected by, or have authority over, activities that can contribute to flooding in a given watershed. In North Beach, for example, the Washington State Department of Transportation (WSDOT) has jurisdiction over the operation and maintenance of SR 109, where many of the local drainage problems occur. Policies and processes should be established between the County and WSDOT for:

- Notification of projects and maintenance activities that may affect flooding in areas under the other agency's jurisdiction
- Development of mechanisms for cost-sharing on projects of mutual benefit

### ***Consider Development of Flood Storage Conservation Easements***

As noted elsewhere, much of the North Beach area consists of floodplains and jurisdictional wetlands. These areas serve as natural storage for floodwaters, and filling and development within them force the water elsewhere—often over roads or into already developed areas. To address similar issues, some jurisdictions—for example, in King County—have established natural resource conservation easements, whereby property owners can voluntarily agree to forego development in exchange for property tax reductions or other incentives. The areas thus protected will reduce future flood hazards by continuing to provide their natural storage functions, and can also provide other public benefits such as recreation. Though the effects of such voluntary programs cannot be quantified, they can be a cost-effective way of serving multiple public purposes without increasing regulation. It is recommended that the County investigate the development of such a program for interested property owners.

### ***Develop Flood Hazard Public Education Programs***

Educational programs are important tools to protect the public safety and health of citizens in flood-prone areas. It is recommended that a series of posters be developed for display in the lobbies of County offices and other public places to inform people of the local flooding issues; efforts could be coordinated with similar activities in other areas of the County such as South Beach. Pamphlets should also be distributed to educate the public. Examples of topics to be included in the educational series are as follows:

- Flood zones: where they are and what they mean
- Potential for damages when buying/building a structure in a floodplain
- Likely impacts to roads and bridges in floodplains
- The importance of maintaining existing drainage courses, not creating any that drain wetlands, and minimizing the use of fill materials
- Impacts of flooding on water quality, including increased erosion and sedimentation, and the washing of pesticides and herbicides into the main channel
- Measures to reduce flood hazards and minimize damages
- Explanation of regulatory programs and permits related to improvements on private property

While education programs of this nature will serve to inform people of the dangers of construction within floodplains and the need to maintain natural drainage courses, they do not guarantee changes in existing practices. This is a choice that must be made by individuals and the community as a whole; therefore, safety, flood hazard reduction, and environmental benefits depend upon public attitudes and actions. Without significant interest or acceptance of the goals, these benefits may not be realized.

## STRUCTURAL IMPROVEMENTS

Section 3 identifies a number of local flood problems within the Study Area. These include the Silver Maple Resort, Haven-by-the-Sea, Johnson's Mercantile and Rod's Resort. Improvements for these four sites are summarized in Table 2-2.

Site	Recommended Project	Total Cost	# affected homes or business (1)
Silver Maple Resort	Install culvert connection to outlet	\$9,000	21
Haven-by-the-Sea	Subject to confirmation from by further study, replace collapsed storm pipe connection to Heath Road	\$33,000 (2)	43
Rod's Resort	Deepen highway drainage ditch to provide adequate drainage along highway frontage	\$3,700	1

NOTES:  
 (1) From 1999 color aerial photos.  
 (2) Assumes that there would be no costs to acquire new drainage easements.

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### **Elevate Affected Homes and Businesses**

One structure subject to flooding was specifically reviewed in this study: Johnson's Mercantile in Copalis Beach. There may be other existing homes and businesses (including basements) affected by frequent flooding that may benefit from elevating their structures. Although the Federal Emergency Management Agency (FEMA) did not perform detailed modeling in the Study Area to establish the base flood level, they did specify the 100-year tide elevation for the Port of Grays Harbor as elevation 13.5 feet. This elevation and the FEMA floodplain mapping can be used as a basis for required bottom elevation of structures.

## **COSTS**

### **Area-Wide Recommendations**

Several program and policy recommendations address area-wide flooding and drainage concerns in North Beach. Their costs have been approximated as follows:

- **Regulate development in floodplain and impacts to drainage courses:** Regulations can be enforced under existing County regulatory programs with minimal impact to operating budgets.
- **Evaluate revisions to FEMA floodplain boundaries.** Costs for this activity will vary according to the size and complexity of an area which is re-examined and could vary from \$1,000 to \$10,000 or more per revision.
- **Coordinate planning with County divisions and other jurisdictions.** This can be done for a minimal investment of staff time by the two jurisdictions (Grays Harbor County and WSDOT).
- **Consider the development of flood conservation storage easements.** The costs of a voluntary easement program are difficult to quantify, as participation is unpredictable; further, costs to the County would depend upon the types of incentives offered to property owners.
- **Develop flood hazard and water quality public education programs:** These programs tend to rely heavily on volunteers and can be successfully completed for approximately \$5,000 - \$10,000 per year.

Elevating affected homes and businesses (including septic systems) will cost approximately \$10,000 to \$60,000 per structure. This cost will vary with the size of the structure, the site conditions, the elevation height required, and other factors.

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## Local Drainage Improvements

Order-of-magnitude cost estimates for the specific sites with flooding problems were developed in terms of total project costs. These costs are presented above in Table 2-2. The cost estimates represent 1999 dollars and do not include escalation, financial costs, or operation and maintenance costs. As a result, the final project costs will vary from the estimates. It is also stressed that if these ideas are implemented by individual property owners or groups with donated labor, equipment, and little or no overhead or engineering fees, costs could be *substantially lower*. Since two of the projects involve WSDOT drainage systems located within highway right-of-way, it is likely that only the Haven-by-the-Sea Project would be amenable to donated equipment or labor.

County funding to address local drainage and flooding problems is very limited. Active cooperation and sponsorship will be required from the benefiting property owners to implement these projects.

## SCHEDULES AND LENGTH OF TIME OF BENEFITS

If the necessary budget is available, the non-structural improvements should be implemented within the 2000 fiscal year or as soon as possible. Grant monies to help with the development of the educational program should be applied for during the next grant application period. All non-structural benefits should be ongoing efforts, and the time of benefits is expected to be indefinite. Elevating homes and businesses is an individual property owner concern. For this reason, the process will be an ongoing one that proceeds as individuals decide the process is necessary and can allocate funds accordingly. The time of benefits of elevating structures is expected to equal the life of the structure.

Final design of localized drainage improvement projects that are funded by State Road funds should be implemented as soon as funding is available. Improvements could be completed within one year of the establishment of funding. With proper maintenance, these benefits are expected to last 50 years (before the culverts and drainage structures will need to be replaced).

Improvements that require the establishment of a local drainage district and/or grant funding will take longer to implement. Because of the need for consensus building, the petition to

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County Commissioners, the public hearing and property-owner vote required to establish a special district, and the length of time involved in obtaining grants, the establishment of funding for improvements could take one to two years.

## **CONFORMANCE WITH GOALS**

Comprehensive goals and objectives were developed to provide an organized framework to guide the analysis and planning processes. As set forth in Section 3, the main goals of this FHMP are as follows:

- Improve the protection of public health and safety from flooding threats in the North Beach Study Area.
- Provide practical, cost-effective solutions that will result in measurable reductions in flooding frequency, duration, and frequently flooded area damages.
- Improve County regulations and programs to control flooding impacts to future growth.

The structural and non-structural measures presented in this section achieve these goals.