

CHEHALIS RIVER BASIN

Floodplain Management Assessment

Master Report

Final – April, 2015

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Executive Summary

In 2014, the Chehalis River Basin Flood Authority initiated an analysis of local floodplain management programs in order to see how they could be supported and strengthened. “Floodplain management,” in this context, is defined as the nonstructural activities that can help prevent and reduce flood losses. While flood control projects seek to reduce flooding through the use of dams, levees and other structural measures to manage the flow of floodwaters, floodplain management seeks to reduce the exposure of human development to damage by floodwaters by avoiding hazardous areas or by protecting new development from damage by floodwaters.

The floodplain management firm of French & Associates of Steilacoom, Washington, was contracted to conduct the analyses. This Master Report is a summary of floodplain management assessment reports for each of the twelve Chehalis Basin communities (Aberdeen, Bucoda, Centralia, Chehalis, Cosmopolis, Montesano, Napavine, Oakville, Pe Ell, and Grays Harbor, Lewis, and Thurston counties) and three Basin-wide reports related to mitigating repetitively flooded properties, the Community Rating System, and an overall assessment and recommendations for improving floodplain management in the Basin.

The findings and recommendations are organized under four headings:

1. The Floodplain, which includes a description of current development in the basin and floodplain mapping needs.
2. Managing New Floodplain Development, which discusses planning, zoning, and construction regulations that guide new development and administration of those regulations.
3. Protecting Existing Development, which includes a review of regulatory, flood control, retrofitting, and public information tools that can reduce property exposure to flood damage. This section also discusses plans that help select appropriate tools for improved floodplain management, the benefits of flood insurance, one funding source for repairs, and mitigation of flooded buildings.
4. The Community Rating System, a program that can encourage and support the recommendations in this report.

The recommendations of the reports mentioned above are combined into 21 recommendations under the various headings of this report. They are also listed in a table on the last page. They call for a mix of initiatives by communities and by the Flood Authority to revise current programs and start some new activities. The primary role of the Flood Authority would be to support local efforts and staff.

Copies of the three Basin-wide reports are available at https://www.ezview.wa.gov/site/alias__1492/28124/library.aspx#GovWrkGrp. Those interested in reviewing an individual community’s report should contact their local floodplain management staff directly or their Flood Authority representative.

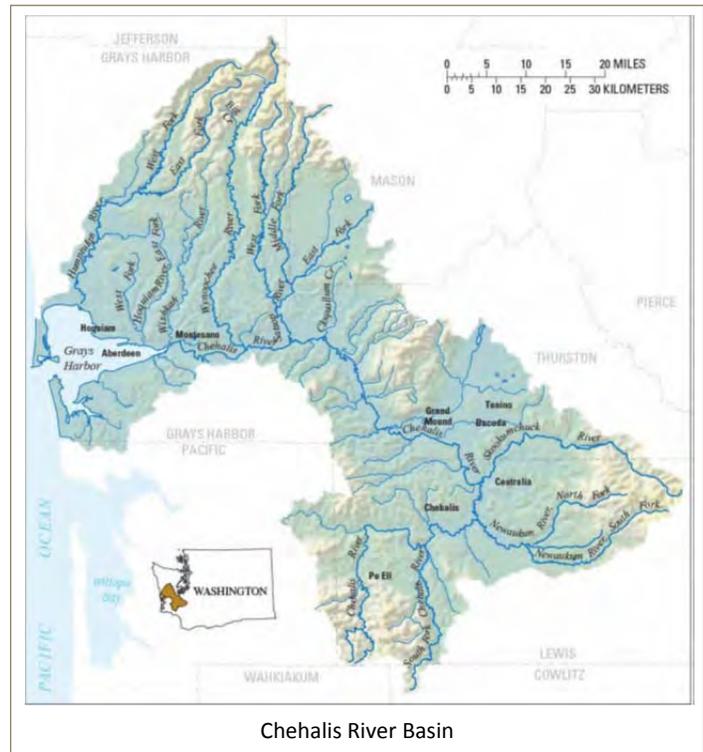
Introduction

The Chehalis River Basin has experienced severe flooding on an average of twice per decade over the last 100 years, and most recently in 1990, 1996, 2007, and 2009. The 2007 flood elicited a response by local and state governments that resulted in the formation of the Chehalis River Basin Flood Authority (Flood Authority), which was charged with developing flood hazard mitigation measures throughout the Basin. Communities which are members of the Flood Authority are Aberdeen, Bucoda, Centralia, Chehalis, Cosmopolis, Montesano, Napavine, Oakville, Pe Ell, and Grays Harbor, Lewis, and Thurston counties.

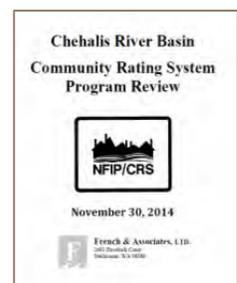
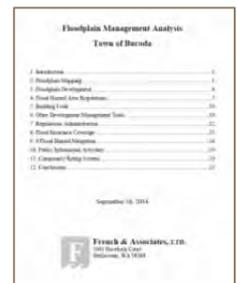
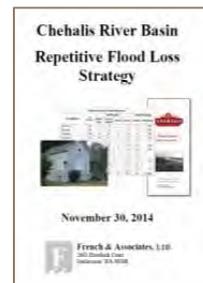
The Flood Authority has undertaken a broad approach to flood hazard mitigation, evaluating alternative structural flood control measures, activities to preserve and protect natural floodplain functions, and a flood warning program.

In 2014, the Flood Authority initiated an analysis of local floodplain management programs in order to see how they could be supported and strengthened. “Floodplain management” is defined as the (nonstructural) activities that can help prevent and reduce flood losses. While flood control projects seek to reduce flooding through the use of dams, levees and other structural measures to manage the flow of floodwaters, floodplain management seeks to reduce the exposure of human development to damage by floodwaters by avoiding hazardous areas or by protecting new development from damage by floodwaters.

The floodplain management firm of French & Associates of Steilacoom, Washington, was contracted to conduct the analyses. There are four products to this project:



Chehalis River Basin



1. A floodplain management assessment report for each of the 12 Chehalis Basin communities
2. A strategy for mitigating repetitively flooded properties
3. A summary of how communities could take advantage of the Community Rating System¹
4. A Basin-wide assessment and recommendations for improving floodplain management in the Basin

This Master Report summarizes the findings and recommendations from each of the earlier products. More details on these findings are in the individual reports. Note that this project only addresses the property protection part of floodplain management

¹ The Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum National Flood Insurance Program (NFIP) requirements.

The Floodplain

The floodplain is that portion of a community adjacent to its rivers, streams, and bays that periodically carry or store floodwaters. Because floodplains are dry most of the time, they are often developed, and often for uses that are not compatible with flooding.

Recent floods in the Chehalis River Basin have resulted in extensive damage to private property, livestock, farms, public buildings, and bridges located in the floodplain. The level and recurrence of damage can be seen in two summary statistics:

- Lewis County has had 13 Presidential Disaster declarations since 1971.
- There have been over \$82,000,000 in flood insurance payments in the 12 Basin communities since 1978. Insurance payments represent only a small percentage (10-25%) of the total damage experienced.

The objective of a floodplain management program is to prevent or minimize the potential for the types of flood damage that warrant disaster declarations and insurance claims. This is done by managing future development of vacant areas and redevelopment of areas already built on.

FLOODPLAIN DEVELOPMENT

The floodplain in the 12 communities varies from 5% to 75% of the communities' areas. The Washington Growth Management Act population projections predict 15,000 – 20,000 more people in the three counties by 2020. Therefore, there will be pressure to further develop in floodplains.

Repetitive Loss Areas

Some developed locations have been repetitively flooded. The project's Repetitive Loss Strategy used National Flood Insurance Program (NFIP) claims data to identify 55 "repetitive loss areas²." Addressing these areas is a priority of the Federal Emergency Management Agency (FEMA) because



Photo Courtesy of the Chronicle



Areas like this floodplain in Centralia are subject to development pressures.

Repetitive Loss Areas Summary

JURISDICTION	AREAS	BUILDINGS
Aberdeen	4	>500
Bucoda	1	+175
Centralia	8	760
Chehalis	8	130
Cosmopolis	0	
Grays Harbor County	15	100
Lewis County	15	165
Montesano	0	
Napavine	0	
Oakville	1	16
Pe Ell	0	
Thurston County	3	6
Total	55	>1,850

² A repetitive loss area is defined as an area that has one or more buildings that have been flooded two or more times over a ten year period.

while only 1.3% of all the policies in the NFIP cover repetitive loss properties, those properties are expected to account for 15% to 20% of future claim payments.

Tackling repetitive loss properties focuses attention on the Basin's chronic flooding problems and on FEMA's mitigation funding priorities.

Here are some facts about the 55 repetitive flood loss areas in the Chehalis Basin:

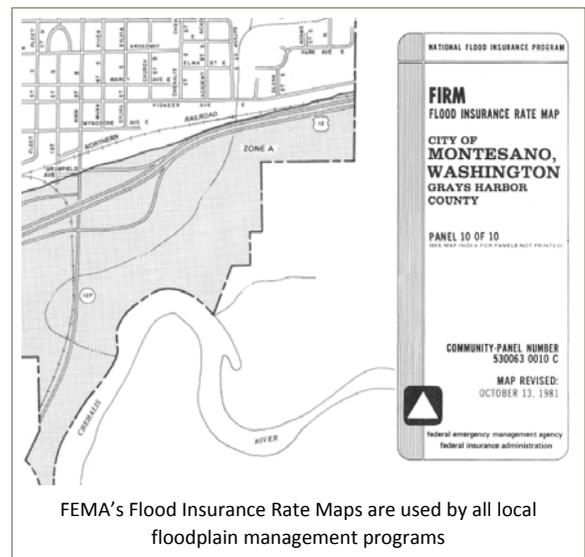
- These areas are spread across the basin, in both populated and rural areas.
- Ninety percent of the areas are subject to overbank flooding by the Chehalis River or other large rivers or creeks in the Basin. Four areas are subject to tidal flooding and only two are repeatedly flooded solely by local drainage problems.
- The 55 areas have approximately 1,850 buildings in them. For the most part, the buildings are single family homes in fair or good condition.
- Damage to most of the 1,850 buildings can probably be mitigated by elevating them above the flood level. In fact, many have already been elevated.

FLOODPLAIN MAPPING

The foundation for a good floodplain management program is a map of the floodplain and data on the flood hazard. The national standard for mapping is the Flood Insurance Rate Map, which is produced by FEMA for each community that participates in the NFIP.

A variety of shortcomings were noted for the Flood Insurance Rate Maps and their accompanying Flood Insurance Studies in the Chehalis Basin. These included:

- Several communities had significant sources of flooding that do not have the data needed for effective management of future development.
- Six communities' corporate limits were not up to date, resulting in confusion over regulatory authority and assigning flood insurance policies to the wrong community.
- In spite of the dates on their maps, seven communities' maps are based on data from the 1970's or 1980's and show regulatory floodplains smaller than historic flooding. The estimate for the 100-year flood has increased by over 30 percent since the 1980s.



Mapping Recommendations

Recommendation 1. Where the flood of record was higher than the FEMA base flood elevation, communities should regulate the area flooded and require protection to or above either the level of the flood of record or a specified freeboard above the base flood, whichever is higher. The Chehalis HEC-RAS hydraulic model should be used to provide more accurate maps of the floodplain area and the depth of funding.

Recommendation 2. FEMA should be asked to prepare new maps with detailed data for all areas expected to develop over the next 10 – 20 years. They should be based on studies that account for recent flooding.

Recommendation 3. The Flood Authority should provide technical assistance to these efforts.

Managing New Floodplain Development

PLANNING AND ZONING

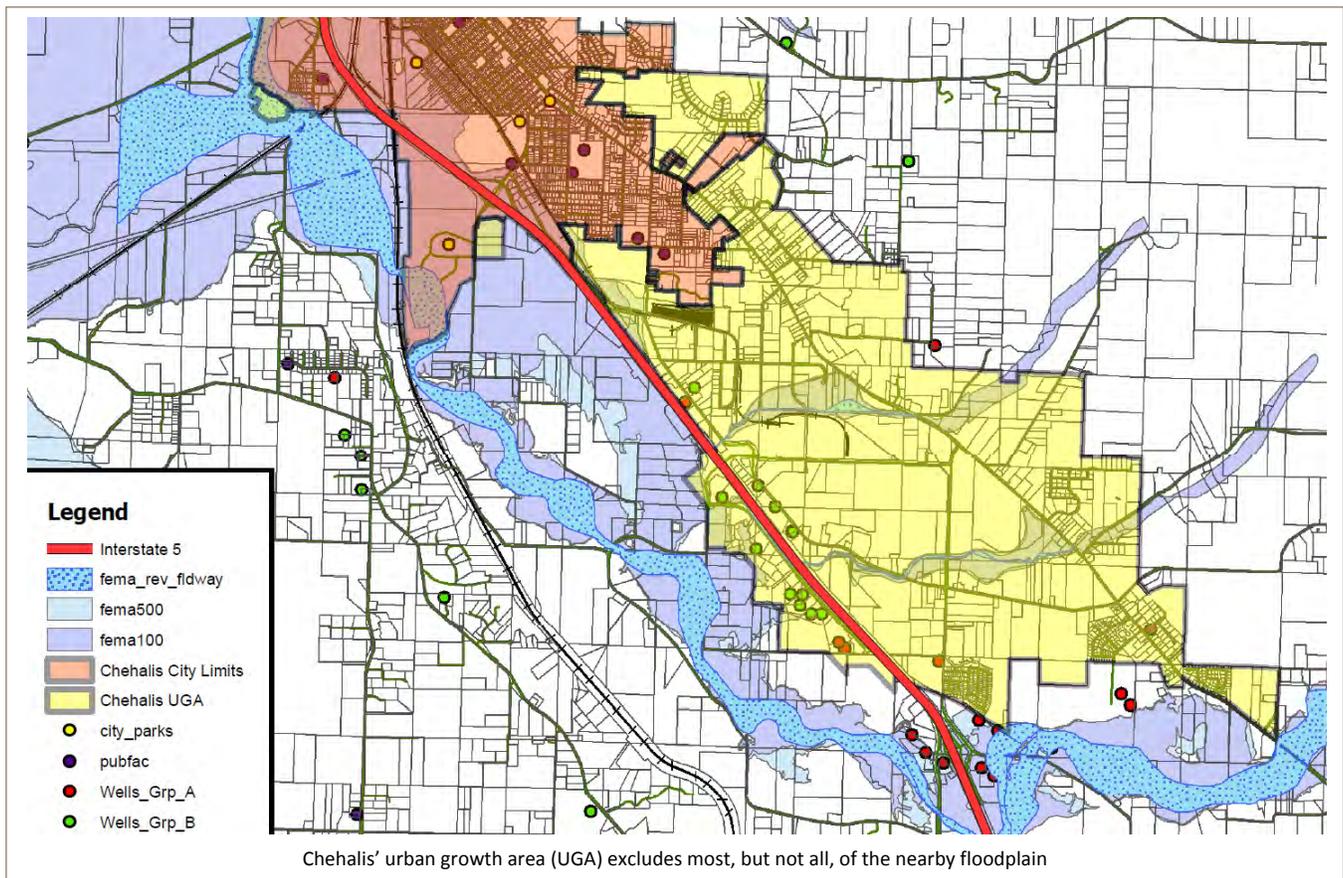
Some communities have community development plans to guide damage-prone development away from the hazard area and some have plans and zoning districts that do the opposite, by planning for higher density uses in the floodplain.

- Seven communities' comprehensive plans do not address floodplain development.
- Five communities have zoning ordinances that do not have any special floodplain zoning district or low density uses in the floodplain. Some have parts of their floodplains zoned for manufacturing or high density uses.
- Five cities' urban growth areas are mostly out of floodplain, due to the requirements of the State's Growth Management Act.

Planning and Zoning Recommendations

Recommendation 4. Preserve the remaining undeveloped open areas in the floodplain in open space uses like parks, agriculture, or natural reserves. The Flood Authority could help communities identify alternatives to outright (and expensive) acquisition of the remaining open areas, such as using tax incentives and buffer-type regulations.

Recommendation 5. When plans and zoning ordinances are up for revision, communities should review the allowed land uses and their densities and add criteria to guide damage-prone development away from the floodplain.



FLOOD HAZARD AREA REGULATIONS

While plans and zoning ordinances guide development to or away from various locations, there are four types of regulations that govern construction of what is allowed in the floodplain:

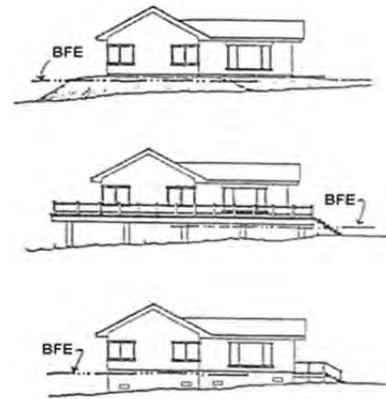
- Flood hazard area ordinance
- Building code
- Critical areas ordinance
- Shoreline management regulations

Every community has different regulatory standards in these ordinances. For example, a community's critical areas ordinance regulates development in "frequently flooded areas," including the FEMA mapped Special Flood Hazard Area (SFHA). The community's flood hazard area ordinance also regulates development in the SFHA. The standards in the two ordinances are not the same, so the permit applicant and the permit reviewer must determine which is more restrictive. Problems can also arise when the different ordinances are administered by different departments in the community.

At a minimum, communities need to enforce the four basic floodplain management requirements of the NFIP, which are summarized in the box below. The assessment found that six communities' regulations do not meet all the current NFIP minimum requirements and will need to be amended in order to stay in compliance with the program. Most of the corrections needed are technical edits.

The NFIP's Four Basic Requirements for New Development

1. All “development” within the Special Flood Hazard Area (SFHA – the 100-year floodplain mapped by FEMA) must get a permit. “Development” includes buildings, filling, and any manmade change to the land.
2. New development cannot obstruct flood flows.
3. New buildings must be protected at least to the base flood elevation (BFE – the elevation of the 100-year flood mapped by FEMA). Residential buildings must be elevated on fill, piers, posts, or flow-through crawlspaces (illustrated).
4. Existing buildings must be brought up to the standards for new construction if they are substantially improved or substantially damaged.



The NFIP criteria are the minimum national standards for participating in the National Flood Insurance Program. Higher local standards are explicitly recommended by the NFIP where they provide better protection from local hazards. The assessment found twelve different ways where higher local standards would be of benefit. Some of the more common ones include:

- Requiring builders and developers to calculate the base flood elevation and/or floodway boundary as a condition of building in the floodplain, where such data are not shown on the Flood Insurance Rate Map.
- Requiring new buildings to be elevated or otherwise protected to one or more feet higher than the base flood elevation. This is called “freeboard.” The benefits of freeboard are shown in the graphic.
- Requiring critical facilities (e.g., police stations, hospitals, and water treatment plants) to be protected to higher than the base flood level.
- Requiring individual building site plans to account for the flow of drainage off the site to not divert flows onto other properties.
- Prohibiting the storage of hazardous materials from the floodplain or requiring that they be stored well above the base flood level.



Flood Hazard Area Regulations Recommendations

Recommendation 6. The Flood Authority should sponsor a meeting with the communities to review appropriate standards for development in the Basin, and prepare example ordinance language for those standards that are most appropriate.

Recommendation 7. Communities should, at a minimum, bring their ordinances up to NFIP requirements and, in the process, ensure that the standards in their flood hazard area, building code, critical areas, and shoreline management regulations are consistent.

REGULATION ADMINISTRATION

The French & Associates assessment team visited all the communities' floodplains and concluded that not all new development was meeting the standards in the communities' regulations. The Building Code Effectiveness Grading Schedule reviews communities' regulatory standards, procedures, and staffing. Consistently across the Basin, communities' lowest scoring in their BCEGS ratings related to staffing, training, and certification, with points ranging from as low as 16% to a high of 70% of the maximum possible score. Problems with administering flood hazard area regulations are not uncommon because:

- There are many details and nuances in the NFIP criteria and the standards in the other ordinances.
- Some permit officials only handle one or two floodplain construction permits each year. Several are part-time permit officials.
- Of the 28 permit staff members in the 12 communities, only a handful have been to floodplain management training and only three are Certified Floodplain Managers.

Regulation Administration Recommendations

Recommendation 8. The Flood Authority should provide technical support to the communities in the form of training, procedures, and checklists. The specific materials to be provided would be determined at the meeting noted in Recommendation 6.

Recommendation 9. The Flood Authority should provide a floodplain management expert available to help any community. That person could review permit applications, assist in site inspections, help with enforcement issues, and advise on other floodplain management topics, such as helping with Community Rating System requirements.

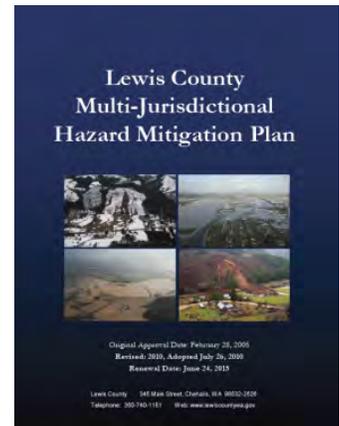
Protecting Existing Development

The previous section focused on new development and redevelopment. This section identifies some floodplain management approaches to reduce the exposure of existing buildings to flood damage.

LOSS REDUCTION PLANS

As shown in this section, there are a variety of approaches to protect people and property from the impact of flooding. A loss reduction plan is a systematic review of these techniques as they could be applied to a locale. Some loss reduction plans are done at the community level:

- Hazard mitigation plans review the hazard and alternative approaches at the community level. They are a prerequisite for FEMA mitigation funds. All but two of the twelve Basin communities have their own mitigation plans or are in their county’s hazard mitigation plan.
- Six communities have a local Comprehensive Flood Hazard Management Plan that qualifies them for funding support under the State’s Flood Control Assistance Account Program (FCAAP).
- Both hazard mitigation and FCAAP plans need to be periodically updated to keep the communities eligible for mitigation funds. Not all of the communities are on schedule.



Area analyses are similar to loss reduction plans, but are conducted at a smaller scale. They are usually done to review alternatives for a repetitive loss area. There are 55 identified repetitive loss areas in the Basin, but no area analyses have been conducted to determine the best approach to protect the repeatedly flooded buildings in these areas.

Loss Reduction Plan Recommendations

Recommendation 10. Communities should update their hazard mitigation and FCAAP plans to maintain their eligibility for FEMA and State funds.

Recommendation 11. The Flood Authority should assist communities in conducting area analyses to determine the best mix of loss reduction measures for each repetitive loss area.

Area Analyses

A repetitive loss area analysis is an in-depth review of each repetitive loss area, alternative loss reduction measures (including flood control projects), and recommendations on a building-by-building basis. It can be an objective way to select appropriate mitigation measures. The analysis report can be useful to both local officials and property owners.

REGULATORY TOOLS

Two flood hazard area regulatory provisions can help protect existing buildings. These are described in more detail in the Repetitive Flood Loss Strategy.

Building enclosure requirements: Even if a building was elevated to have the lowest floor above the flood level, a common problem is the conversion of the lower area to a non-compliant living area. Owners who have forgotten the last flood (or have not been flooded since they purchased the property) are often tempted to remodel the lower level to gain more living space. They replace bare walls and floors with carpeting, furniture, insulation, and even plumbing fixtures.

Often such modifications happen behind enclosed walls and/or in remote areas and the building officials are not aware of them. If the problems are caught by an insurance agent or claims adjuster, the building is re-rated and subject to insurance premiums for an unprotected building. There are enclosure regulations that can help prevent this.

Enforcing the substantial improvement and substantial damage rule is the primary regulatory tool for bringing existing buildings up to the flood protection level. The minimum NFIP improvement rules have their limitations, primarily by allowing owners to get under the regulatory threshold by making improvements piecemeal. Enforcing the substantial damage rules after a flood or other disaster is very difficult, both politically and administratively. Success often depends on a lot of assistance and oversight from the State and FEMA.



When a house is elevated a full story, the owner can be tempted to improve the lower area

Regulatory Tools Recommendations

Recommendations 6, 7, 8, and 9 address the need for higher regulatory standards and assistance in administering the flood hazard area regulations. Therefore, no additional recommendations are needed here.

FLOOD CONTROL MEASURES

Flood control projects modify flood flows or divert floodwaters to reduce the level of flooding on a property. Examples include:

- Flood control dams
- Detention/retention basins
- Levees and floodwalls
- Channel modifications
- Modifications to bridges and culverts to alleviate backwater flooding



Flood control measures have their pros and cons. The biggest “con” is their cost. They are usually 100% government funded and they take years to get approval, design, and construct.

The Flood Authority has identified several large-scale capital projects and smaller-scale local flood control projects that could be funded in the near future. The Repetitive Flood Loss Strategy has a list of 31

repetitive loss areas that will be protected to some degree if all the proposed projects currently under consideration are funded and constructed.

Flood Control Measure Recommendation

Recommendation 12. Mitigation plans and area analyses should include planned flood control projects. No funding should be provided to retrofit properties that are slated to be protected by a flood control project.

RETROFITTING

A variety of retrofitting measures can reduce a building’s exposure to damage by flooding. There are four general types:

- Removing the building from harm’s way
- Elevating the structure above flood levels
- Flood barriers to keep water away from the building
- Floodproofing the structure to minimize damage from the water

Most of the buildings in the Basin’s repetitive loss areas are on crawlspace foundations and are in good shape. Elevation is usually the most appropriate retrofitting measure for such buildings. However, one problem noted during the French & Associates team’s field work is that many elevated houses are still subject to flood damage, as explained below.



This is an example of a properly elevated house. Note the location of the openings, near the ground.



This is an example of an improperly elevated building in the Basin. The openings are too high to relieve hydrostatic pressure.



This is what happens to a block wall when the openings do not meet code and water pressure is not equalized.

In areas of shallow flooding, less expensive measures can often be constructed by the property owner. On the next page are examples of wet floodproofing and a low floodwall, both constructed by the owners at their own expense. These measures may be less dependable, may not work if no one is home to install them, and do not reduce the cost of flood insurance. But, they do work and they should be among the measures that property owners should consider.



The pumps and electrical boxes of Oakville's water pump station have been elevated several feet, providing protection up to the 2007 flood.



The owner of this house in Centralia built this floodwall around the house after his first flood. It has worked during subsequent floods.

Retrofitting projects depend on the owner's support and funding. A successful program needs to address both of these concerns. In addition, a public information program can inform and encourage owners to look into retrofitting and is discussed in the next section.

Funding support is usually needed for elevation projects. Several Basin communities have obtained FEMA mitigation grants for removal and elevation projects, which put repetitive loss properties as a priority. FEMA grants have proven to be difficult and time consuming and most communities are not interested in pursuing more such grants. Fortunately, the Flood Authority has funds for flood loss mitigation efforts in 2015.

Retrofitting Recommendations

Recommendation 13. The Flood Authority should budget its mitigation funds for retrofitting projects. Two types of projects should take priority:

1. Projects to retrofit the flood openings on elevated buildings (see photos, previous page). These should be offered to all owners of buildings with noncompliant openings.
2. Projects to protect buildings in repetitive loss areas where (a) the community is willing to sponsor the project, (b) an area analysis has been conducted to identify the most appropriate retrofitting measure(s), and (c) the building will not be protected by any planned flood control projects.

Recommendation 14. The Flood Authority should provide technical assistance to communities to help with:

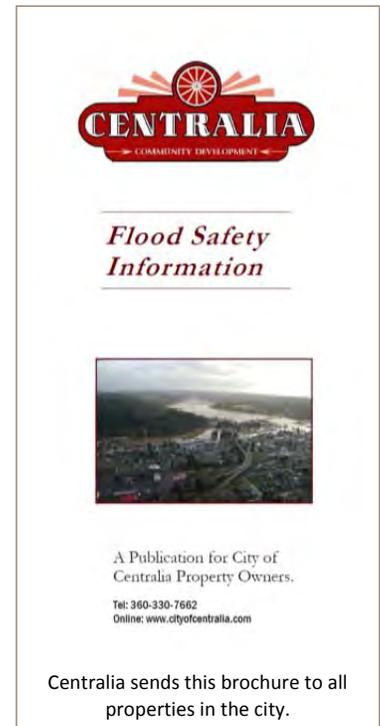
- Public information and assistance to property owners,
- Conducting repetitive loss area analyses,
- Preparing post-flood mitigation procedures to guide substantial damage determinations and incorporate mitigation measures during reconstruction, and
- Working to improve administration of Federal and State grant programs.

PUBLIC INFORMATION

Floodplain management programs are greatly facilitated when the public understands and supports them. Much trouble can be prevented if people know when and where they need a floodplain development permit. Much damage can be prevented if people know how to protect their homes. Financial suffering after a flood can be reduced if people know about and purchase flood insurance coverage.

Public information efforts work. Research has shown that educating people about their flood hazard can motivate them to take steps to protect themselves and their properties. Information dissemination can also bring about voluntary mitigation activities at little or no cost to the government.

The 12 Basin communities have a variety of public information tools available, including brochures (see example), newsletters, utility bills, signs, handouts at permit counters, and local civic organizations. All but one community has its own website. However, only four communities currently implement public information activities on floodplain management topics.



Public Information Recommendations

Recommendation 15. All communities should inform their residents about the flood hazard, construction regulations, flood insurance, retrofitting possibilities, and retrofitting funding sources.

Recommendation 16. The Flood Authority should prepare and provide model public information materials, including a central floodplain management website that all communities can link to.

FLOOD INSURANCE

The National Flood Insurance Program (NFIP) helps people recover after a flood and often provides additional funds that can be used to retrofit a building to protect it from the next flood. Here are some flood insurance statistics for the Basin. Because the policy data are provided by FEMA for each community, these numbers include the unincorporated areas of the three counties that are outside the Chehalis River Basin.

- 4,788 - Flood insurance policies in the 12 communities
- \$4,074,345 - Annual premium paid by policy holders
- \$985,958,300 - Amount of coverage
- 2,148 - Claims paid since 1978
- \$82,254,992 - Paid in claims since 1978

The fact that \$82 million has been provided to help people repair and rebuild is a testament to the importance of the NFIP to the Basin. In spite of this, many properties in the Basin’s floodplains are not insured. French & Associates estimates that only half of the buildings in the Basin’s floodplains have a flood insurance policy.

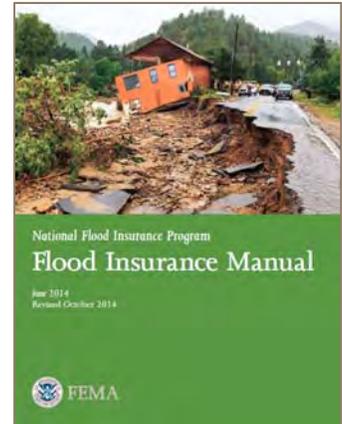
When policy data were plotted, it was found that many policies with a city’s community ID were for addresses that have the name of the city in them, but which are located outside the corporate limits. Similarly, there are many policies recorded under a county’s community ID that are within city limits.

Flood Insurance Recommendations

Recommendation 17. Communities should advise their residents of the historical and potential flood hazard and the benefits of having a flood insurance policy.

Recommendation 18. The Flood Authority should prepare example public information materials on flood insurance for communities to use.

Recommendation 19. The Flood Authority should initiate and coordinate an effort with insurance agents on joint efforts to promote flood insurance and recording the correct community ID number when writing or renewing flood insurance policies.



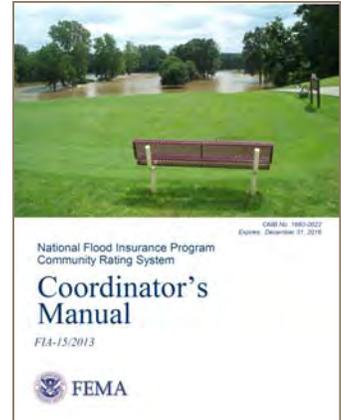
Community Rating System

The Community Rating System (CRS) can be a very effective tool to encourage and support the types of floodplain management activities recommended in this report. The separate “CRS Program Review” report referenced in the introduction of this report is summarized here.

CRS BASICS

The CRS provides a flood insurance premium rate reduction in communities that implement flood protection activities above and beyond the minimum requirements of the NFIP. It is modeled on the fire insurance program: the more the community does about the hazard, the less their residents pay for hazard insurance.

The CRS is administered for FEMA by the Insurance Services Office (ISO), the same people who administer the fire and building department gradings for the insurance industry in most of the country. As with fire insurance, the CRS has been shown to be an incentive to keep good programs going and to start new ones. The program criteria are detailed in the *CRS Coordinator’s Manual*.



The community’s program is recognized by CRS credit provided for up to 19 creditable activities, organized under four categories:

- 300 - Public Information
- 400 - Mapping and Regulations
- 500 - Flood Damage Reduction
- 600 - Warning and Response

Each activity has one or more elements. In all, there are 94 elements, or ways to calculate credit points. The separate CRS Program Review report discusses each activity and element and has a series of tables showing which Chehalis Basin communities should get which elements’ credits.

A community receives a CRS classification based upon the total score for its floodplain management activities and elements. There are ten CRS classes: Class 1 requires the most credit points and gives the greatest premium reduction (45%) for flood insurance policies on properties

CLASS	POINTS	PREMIUM DISCOUNT	
		SFHA	NON-SFHA
1	4,500	45%	10%
1	4,500	45%	10%
2	4,000	40%	10%
3	3,500	35%	10%
4	3,000	30%	10%
5	2,500	25%	10%
6	2,000	20%	10%
7	1,500	15%	5%
8	1,000	10%	5%
9	500	5%	5%
10		0	0

There is no CRS premium reduction for Preferred Risk Policies (policies for properties outside the SFHA with no significant history of flood claims).

in the floodplain mapped by FEMA (the Special Flood Hazard Area or “SFHA”). A Class 10 community receives no premium reduction. A community that does not apply for the CRS, or does not obtain the minimum number of credit points, is a Class 10 community.

Community participation in the CRS is voluntary. Any community in full compliance with the rules and regulations of the NFIP may apply for a CRS classification better than Class 10. The applicant community submits documentation that shows that it is implementing the activities for which credit is requested. All CRS credit is verified during a visit conducted by the ISO/CRS Specialist.

There are 34 Washington cities and counties in the program. Four of the 34 Washington cities and counties are in the Chehalis River Basin:

- Lewis County (CRS Class 7 – 15% premium reduction)
- Chehalis (CRS Class 6 – 20% premium reduction)
- Centralia (Class 5 – 25% premium reduction)
- Thurston County (Class 4 – 30% premium reduction).

COSTS AND BENEFITS

Costs: There are three components of the cost of participating in the CRS:

1. The cost of starting up a new activity, such as legal costs to draft an ordinance,
2. The cost of implementing the activity, and
3. Direct CRS costs, such as collecting documentation and similar work, that is not considered a normal part of implementing an activity.

The dollar value of these costs depends on local staff salaries and is not calculated for this project. While the costs to implement activities that a community was implementing before it joined the CRS should not be considered a CRS cost, there is a cost to document or revise the activity in order to meet CRS credit criteria. This can be onerous when the CRS revises its credit criteria and the community must revise its activities if it wants to keep the credit.

Benefits: The flood insurance premium discount is only one of the benefits of participating in the CRS, but it is the one most often queried. The current and potential discounts for each community in the Basin is shown in tables in the separate CRS Program Review report.

In addition to the direct financial reward for participating in the Community Rating System, there are other reasons to join the CRS. These other benefits are more difficult to measure in dollars. They include:

CRS Savings

Each community’s potential savings is different because of different levels of insurance coverage, but policy holders in the floodplain would save \$50 - \$90 on their annual premiums for each CRS class. For example, the average floodplain policy holder in Aberdeen would save \$64 every year if the City were a Class 9, \$128 every year if a Class 8, etc.

1. The credited activities provide flood loss reduction, flood safety, and protection of natural floodplain functions benefits.
2. Credited activities that used to be done on an ad hoc basis are better organized.
3. There is an incentive to keep implementing flood protection activities during dry years.
4. Technical assistance is available from ISO at no cost to the community.
5. The public information activities help build a knowledgeable constituency interested in supporting and improving flood protection measures.
6. Every time residents pay their insurance premiums, they are reminded that their community is working to protect them from flood losses.

Every community in the Basin could qualify for a Class 9 or better based on its current programs, provided they meet the prerequisites. Each new community will need a Community Assistance Visit and will need to be recognized by FEMA as in full compliance with the minimum requirements of the NFIP. The communities with repetitive loss properties (see table, page 2) have some additional work, as explained in the separate Repetitive Flood Loss Strategy.

More on the CRS can be found at www.FloodSmart.gov and www.CRSResources.org.

CRS Recommendations

Recommendation 20. The Flood Authority should sponsor a meeting of interested community staff and elected officials to review the details of the program and credit criteria for likely activities. After they have received the additional information, the communities should decide if the benefits of the program are worth their participation.

Recommendation 21. If several communities (CRS and non-CRS) are interested in doing something together or have a common concern, the Flood Authority should provide technical assistance to support or help coordinate their efforts.

Recommendations

Each of the twelve community floodplain management assessment reports and the three Basin-wide reports have their own, more detailed, recommendations for the respective communities and the Flood Authority. This Master Report has 21 recommendations that are drawn from those reports. They are listed here, in tabular form, identifying the lead (“L”) and supporting (“S”) agency or agencies.

NO.	RECOMMENDATION	COMMUNITY	FLOOD AUTHORITY
Mapping Recommendations			
1.	Where the flood of record was higher than the FEMA base flood elevation, it should be used as the basis for regulating new development	<i>Lead</i>	
2.	FEMA should prepare new maps	<i>Lead</i>	<i>Support</i>
3.	The Flood Authority should provide technical assistance to these mapping efforts		<i>Lead</i>
Planning and Zoning Recommendations			
4.	Preserve the remaining open areas as open space.	<i>Lead</i>	<i>Support</i>
5.	When plans and zoning ordinances are up for revision, review them and add criteria to guide damage-prone development away from the floodplain.	<i>Lead</i>	<i>Support</i>
Flood Hazard Area Regulations Recommendations			
6.	Have a meeting to review appropriate standards for development and prepare example ordinance language	<i>Support</i>	<i>Lead</i>
7.	Communities should bring their ordinances up to NFIP requirements and ensure that their floodplain management regulatory standards are consistent	<i>Lead</i>	<i>Support</i>
Regulation Administration Recommendations			
8.	Provide technical support to the communities		<i>Lead</i>
9.	Provide a floodplain management expert available to help any community with permit, enforcement and CRS issues		<i>Lead</i>
Loss Reduction Plan Recommendations			
10.	Communities should update their hazard mitigation and FCAAP plans	<i>Lead</i>	
11.	Assist communities in conducting area analyses	<i>Support</i>	<i>Lead</i>
Flood Control Measure Recommendation			
12.	Mitigation plans and area analyses should include planned flood control projects	<i>Lead</i>	
Retrofitting Recommendations			
13.	The Flood Authority should budget \$1,400,000 of its mitigation funds for retrofitting elevated buildings with improper openings and buildings in repetitive loss areas	<i>Support</i>	<i>Lead</i>
14.	The Flood Authority should budget the remaining \$100,000 for technical assistance	<i>Support</i>	<i>Lead</i>
Public information Recommendations			
15.	Inform residents about the flood hazard, construction regulations, flood insurance, retrofitting possibilities, and retrofitting funding sources.	<i>Lead</i>	<i>Support</i>

NO.	RECOMMENDATION	COMMUNITY	FLOOD AUTHORITY
16.	Prepare and provide model public information materials	<i>Support</i>	<i>Lead</i>
Flood Insurance Recommendations			
17.	Advise residents of the historical and potential flood hazard and the benefits of having a flood insurance policy.	<i>Lead</i>	<i>Support</i>
18.	Prepare example public information materials		<i>Lead</i>
19.	Initiate an effort with insurance agents to promote flood insurance	<i>Support</i>	<i>Lead</i>
CRS Recommendations			
20.	Have a meeting to review the CRS	<i>Support</i>	<i>Lead</i>
21.	If several communities are interested in doing something together, the Flood Authority should provide technical assistance to support or coordinate their efforts	<i>Support</i>	<i>Lead</i>