

Chehalis River Basin Basin-Wide Floodplain Management Assessment



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French & Associates, LTD.
2601 Havelock Court
Steilacoom, WA 98388

Chehalis River Basin

Basin-Wide

Floodplain Management Assessment

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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” is defined as the nonstructural activities that can help prevent and reduce flood losses. This project only addresses the property protection part of floodplain management. Other Flood Authority projects are assessing protection of natural floodplain functions.

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

1. A floodplain management assessment report for each of the 12 communities
2. A strategy for mitigating repetitively flooded properties
3. A summary of how communities could take advantage of the Community Rating System
4. A summary of the above reports as a Basin-wide assessment and recommendations

This document is the fourth product. The following pages summarize the findings from each of the earlier products. More details on these findings are in the individual reports.

Findings: Floodplain management in the Chehalis River Basin is doing well, but improvements would help.

- Communities need to coordinate their various regulations and revise them to better fit local needs and condition.
- The maps on which their programs are based need updating.
- There are problems with administering the local regulations.
- There are 55 areas with repetitive flooding problems that affect 1,850 buildings.
- All of the communities would benefit by being in the Community Rating System.

Recommendations: The cities and counties should:

- Get their maps corrected and updated or regulate to protect property from at least the flood of record.
- Address new development with locally appropriate regulatory standards and plans that guide development to safer areas.
- Adopt procedures and train staff to ensure proper administration of the standards.
- Educate, involve, and assist property owners.

The Flood Authority should:

- Provide technical assistance and on-call help.
- Provide training, templates, checklists, and model procedures.
- Provide financial support to mitigate flood problems.
- Coordinate and support Basin-wide efforts.

Introduction

The Chehalis River Basin has experienced severe flooding 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, 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 Chehalis River Basin Flood Authority has undertaken a broad approach to flood hazard mitigation. Examples of its projects include evaluating flood control alternatives, modeling flood flows to evaluate the impact of alternative measures, establishing an early flood warning program, and promoting and supporting livestock evacuation areas (“critter pads”).

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 not developing in hazardous areas or by protecting new development from damage by floodwaters.

Floodplain management is most effective at preventing future flood problems while flood control projects are primarily conducted to address existing problems. The two approaches, flood control and floodplain management, complement each other to produce a complete range of flood hazard mitigation measures.

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1. A floodplain management assessment report for each of the 12 communities
2. A strategy for mitigating repetitively flooded properties
3. A summary of how communities could take advantage of the Community Rating System
4. A summary of the above reports as a Basin-wide assessment and recommendations

This document is the fourth product. It is intended for public distribution, so it does not mention specific findings for any individual community and it does not include any flood insurance information that is protected by the Privacy Act of 1974.

Note that this report only addresses the property protection part of floodplain management. Other Flood Authority projects are assessing protection of natural floodplain functions.

The following pages summarize the findings from each of the earlier products. More details on these findings are in the individual reports. At the end of this document, the various reports’ recommendations are collated and coordinated as a master set of recommendations for the communities and the Chehalis River Basin Flood Authority.

Community Assessments

French & Associates staff collected background information on the twelve Basin communities in the Spring of 2014. Relevant information included floodplain maps, ordinances, website pages, and flood insurance data. Staff met with each community in June. Draft reports were sent to the community staff in August and comments were received. The reports were finalized in October. This section is a summary of the twelve community floodplain management assessment reports.

Floodplain Mapping

A variety of shortcomings were noted for the Flood Insurance Studies and Flood Insurance Rate Maps provided by the Federal Emergency Management Agency under the National Flood Insurance Program (NFIP). 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.

Mapping recommendations:

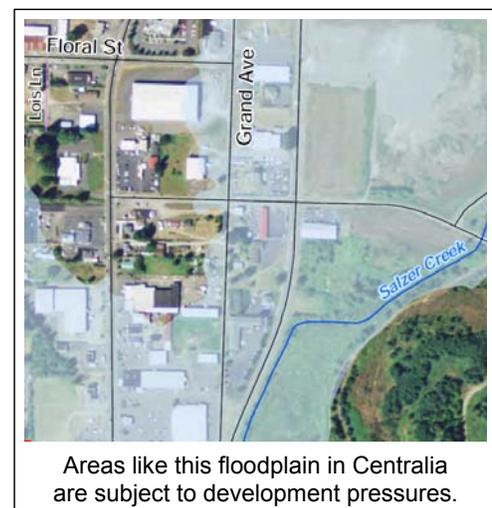
- FEMA should be asked to prepare new maps with detailed data for all areas expected to develop over the next 10 – 20 years. They should be based on studies that account for recent flooding.
- Where the flood of record was higher than the FEMA base flood elevation, communities should regulate the area 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 Flood Authority should provide technical assistance to these efforts.

Floodplain Development

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

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

- Six of the Basin communities' floodplains have large open areas that could still be developed.



- 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.

Floodplain development recommendations: A three part approach is recommended as a way to guide damage-prone and intensive construction away from the flood hazard area:

1. Preserve the remaining open areas as open space. 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.
2. 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.
3. Set effective flood protection standards for new construction in the floodplain. That is the thrust of the next section.

Flood Hazard Area Regulations

Much attention in the individual community reports is devoted to the various regulations that affect floodplain development. These are found in up to four different ordinances:

- 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 arise when the different ordinances are administered by different departments in the community.
 - The standards and terminology also differ between the communities.

At a minimum, communities need to enforce the four basic floodplain management requirements of the NFIP, which are summarized in the box on the next page. 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

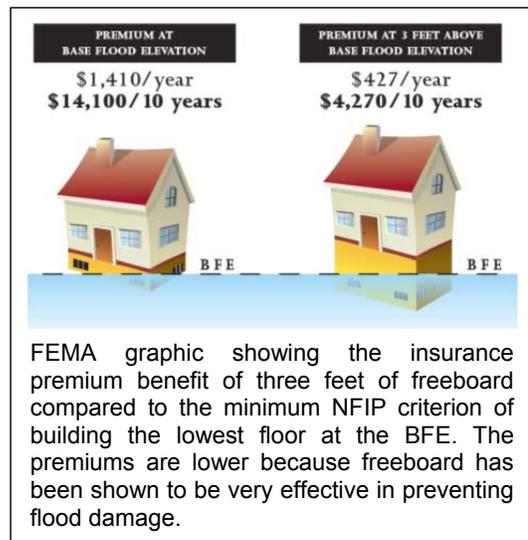
1. All "development" within the Special Flood Hazard Area (SFHA – the 100-year floodplain mapped by FEMA) must get a permit. "Development" includes buildings, filling, and any manmade change to the land.
2. New development cannot obstruct flood flows.
3. New buildings must be protected at least to the 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 that 11 communities have some regulatory provisions that exceed the minimum NFIP criteria.

Higher standards are recommended by the NFIP and recognized under the Community Rating System (CRS). The CRS is discussed later in this report. The review found twelve different ways to receive CRS credit in the various ordinances. 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 (FIRM – the regulatory map provided by FEMA).
- 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.
- Counting substantial damage and improvements cumulatively.
- Requiring critical facilities (e.g., police stations, hospitals, and water treatment plants) to be protected to the 500-year 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.
- Requiring developers to remove an amount of fill to compensate for the flood storage lost by filling their site.



Flood hazard area regulations recommendations:

The Flood Authority should:

- Sponsor a meeting to review appropriate standards for development in the Basin, and
- Develop example ordinance language for those standards that are preferred by the communities.

Communities should:

- Bring their ordinances up to NFIP requirements.
- Meet and provide feedback on appropriate higher standards for the Basin.
- Get their regulations to be consistent internally.

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. A common problem violation of the NFIP requirements is illustrated below.

		
<p>This is an example of a properly elevated house. Note the location of the openings, near the ground.</p>	<p>This is an example of an improperly elevated building in the Basin. The openings are too high to relieve hydrostatic pressure.</p>	<p>This is what happens to a block wall when the openings do not meet code and water pressure is not equalized.</p>

The above is just one example of what can happen when the regulations are not fully administered, which is not uncommon when permit officials only handle one or two floodplain construction permits each year.

- Most of the smaller communities process only one or two floodplain permits each year.
- Regulatory staff ranges from 1 part time to 4 full time people.
- Of the 28 permit staff members in the 12 communities, only three have been to floodplain management training and only two are Certified Floodplain Managers.
- 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.

Regulation administration recommendations: Communities can overcome the problems that arise due to inexperience with all the details of their floodplain management regulations if they:

- Use procedures and checklists.
- Require and maintain completed FEMA Elevation Certificates.
- Send staff to training.
- Are able to access technical assistance at any time.

The Flood Authority can play a key role by providing model procedures and checklists and sponsoring staff training. Probably the most effective support would be having 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.

Flood Insurance Coverage

Flood insurance 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 whole Basin:

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

The fact that \$82 million has helped people repair and rebuild is a testament to the importance of the NFIP to the Basin. The data above was compiled from tables in the community reports like the one below.

Flood Insurance Coverage in Aberdeen					
Policy Type	Total Policies	Premium	Coverage	Paid Claims	Claim Payments
Special Flood Hazard Area	890	\$1,122,952	\$126,812,500	80	\$522,512
X Zone Standard	6	\$6,507	\$771,800	5	\$68,403
Preferred Risk	37	\$16,372	\$10,065,000	1	\$3,289
Total	933	\$1,145,831	\$137,649,300	83	\$594,204
Policy data are as of May 31, 2014. Claims data are for 1978 – 2014					

Aberdeen has not had the claims history of the communities to the east. However, its residents are still paying over \$1 million each year for insurance coverage. Even so, Aberdeen, like all the other communities, does not have 100% of its floodprone property covered by flood insurance.

The information in the community tables came from flood insurance policies. 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. Therefore, the numbers may not accurately summarize the status of flood insurance coverage in each community. CRS discounts are based on the policy's community ID, so one fallout from these errors is that some people will not get the discounts they deserve and some will get discounts they don't deserve.

Flood insurance recommendations:

- Communities should advise their residents of the historical flood hazard and the benefits of having a flood insurance policy.
- The Flood Authority should prepare example public information materials on flood insurance for communities to use.
- The Flood Authority should initiate and coordinate an effort to educate insurance agents on how to record the correct community ID number when writing or renewing flood insurance policies.

Flood Hazard Mitigation

All but two of the twelve Basin communities have their own or are in their county's hazard mitigation plan, a prerequisite for FEMA mitigation funds. Six have a local Comprehensive Flood Hazard Management Plan that qualifies the community for funding support under the State's Flood Control Assistance Account Program (FCAAP). However, these plans need to be periodically updated to keep the communities eligible for mitigation funds and not all of them are on schedule.

One way to mitigate flooding caused or aggravated by obstructions in drainage channels is to have a formal drainage system maintenance program. Only the four CRS communities (Centralia, Chehalis, and Lewis and Thurston Counties) have such a program with written procedures and records.

 <p>06/13/2014 12:55</p>	
<p>The pumps and electrical boxes of Oakville's water pump station have been elevated several feet, providing protection up to the 2007 flood.</p>	<p>The owner of this house in Centralia built this floodwall around the house after his first flood. It has worked during subsequent floods.</p>

There are a variety of building retrofitting projects throughout the basin, most of them elevated buildings that had been flooded (see examples on page 5). Nine communities have at least one such building. Many measures can be implemented by property owners at a relatively low cost.

Flood hazard mitigation recommendations:

- Communities need to update their hazard mitigation plans on a five year cycle.
- Communities should inform the public on low cost retrofitting measures.
- The Flood Authority should prepare and provide:
 - Model drainage maintenance procedures and
 - Public information materials on retrofitting

Public Information Activities

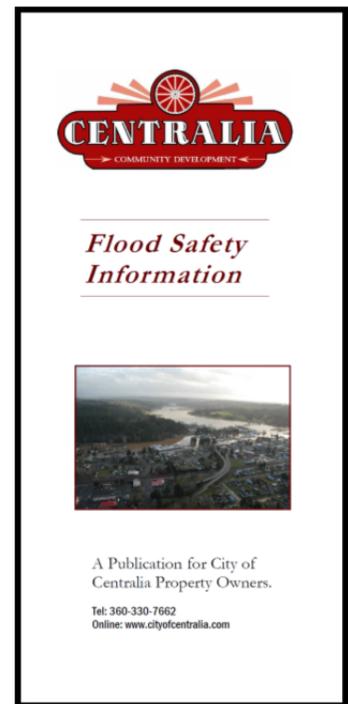
Floodplain management programs are greatly facilitated when the public understands and supports them. Much trouble can be prevented if people know when and where they need a floodplain development permit. Much damage can be prevented if people know how to protect their homes. Financial suffering can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

Communities have a variety of public information tools available, including newsletters, utility bills, signs, brochures (see example), 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:

- All communities should inform their residents about the flood hazard, construction regulations, flood insurance, and retrofitting possibilities.
- The Flood Authority should prepare and provide model public information materials.
- The Flood Authority should develop a central floodplain management website that all communities can link to.



Repetitive Flood Loss Strategy

Repeated flooding of the same areas was identified as a priority by the Flood Authority. Developing a strategy for repetitive loss mitigation was one of the main assignments of the floodplain management assessment. This section is a summary of the separate “Repetitive Flood Loss Strategy” report.

Work on the Strategy started with flood insurance data on repetitive loss properties.

The NFIP defines a repetitive loss property as one with two or more flood insurance claims of more than \$1,000 having been paid within any 10-year period since 1978 (e.g., two claims during the periods 1978–1987, 1979–1988, etc.). The NFIP selected this definition because it has a particular problem with repetitive flood loss properties. Almost \$9 billion have been paid to repetitive loss properties, about one-fourth of all NFIP payments since 1978.

Currently, only 1.3% of all the policies in the NFIP cover repetitive loss properties, but those properties are expected to account for 15% to 20% of future losses. NFIP actuaries have reported that repetitive loss is the single most important factor that affects the stability of the National Flood Insurance Fund. This is the reason why mitigating repeatedly flooded properties is a priority for FEMA.

NFIP data: The eleven Basin communities in the NFIP (all but Napavine) submitted a request to FEMA for lists of the flood insurance policies in force in the community, the claims history, and the designated repetitive loss properties. The FEMA lists contain information about private property that is protected under the Privacy Act of 1974. The lists are secured and not included with the Strategy. The report only provides aggregate data, as required by the Privacy Act.

Extent of the Problem

The flood insurance lists have a total of 249 repetitive loss properties in Basin communities. The table below identifies which community they are listed under. The properties on the NFIP lists are not the entire problem. They are indicators of problem areas. Accordingly, the French & Associates project team plotted and visited all the sites on the lists to identify neighboring properties that have the same exposure to repetitive flooding, but have not had the history of NFIP claim payments. Properties in repetitive loss areas that are not on the NFIP list may not have been insured, were not insured during more than one flood, or the policies and addresses changed, so FEMA’s tracking system may not recognize that the same building had repetitive claims.

Jurisdiction	In CRS?	NFIP Data				Field Findings	
		FEMA List	Unmitigated	SRLs	Areas	Areas	Buildings
Aberdeen	No	9	9		6	4	>500
Bucoda	No	2	2		2	1	±175
Centralia	Yes	64	31	6	8	8	760
Chehalis	Yes	65	47	9	8	8	130
Cosmopolis	No	0	0		0	0	
Grays Harbor County	No	30	28	1	14	15	100
Lewis County	Yes	54	27	3	15	15	165
Montesano	No	2	2		2	0	
Napavine	No	0	0		0	0	
Oakville	No	2	2		2	1	16
Pe Ell	No	0	0		0	0	
Thurston County	Yes	21	3		2	3	6
		249	151	19	59	55	>1,850

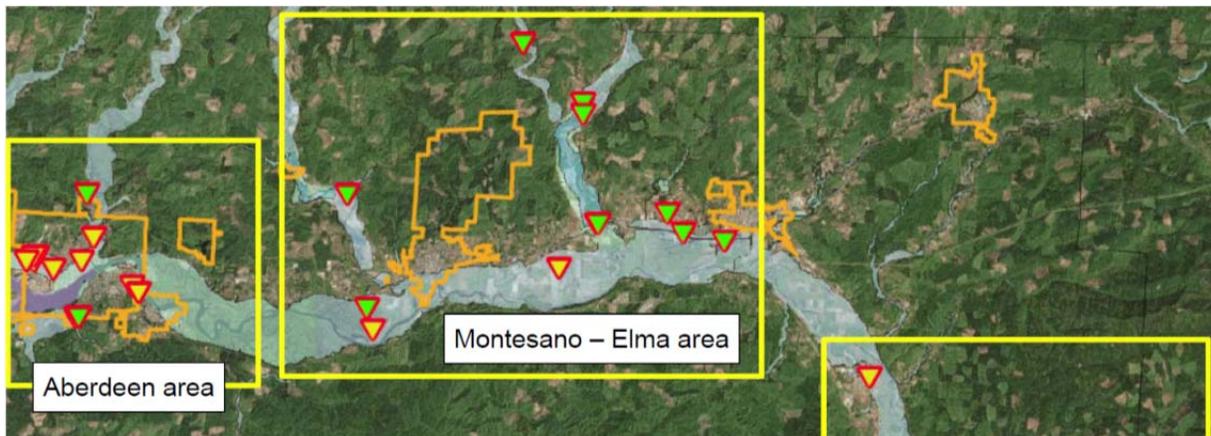
FEMA considers these properties as “repetitive losses in waiting.” From a community’s perspective, a local government does not differentiate between insured and uninsured citizens and businesses. All the properties in a repetitive loss area should be addressed.

The results of the project team’s field work are summarized in the table on the previous page. Fifty-five repetitive loss areas were identified. They have roughly 1,850 buildings. Note that the field work concluded that some properties were miscoded to the wrong NFIP community number. For example, Montesano was listed as having two NFIP repetitive loss properties, but they were found to be well outside the city limits and incorrectly rated under the City’s community ID.

The Repetitive Loss Strategy Report includes a table that lists and names the 55 repetitive loss areas and provides summary information. An excerpt from the table appears below.

Repetitive Loss Areas					
Field Findings Area Name	Buildings	Flooding Source	Building Type	Foundation Type	Mitigation in area
Aberdeen 1	>500	Tidal, Fry Creek	SF+	Crawl+	Elev.
Aberdeen 2-A	2	Tidal, drainage	Com'l	Slab	
Aberdeen 2-B	10	Wishkah R., tidal	MF	Crawl	
Aberdeen 3	3	Tidal	SF+	Slab	
Bucoda 1	~175	Skookumchuck R.	SF	Crawl+	Elev.+
Centralia 1	133	Skookumchuck R.	SF	Elev.	Elev.
Centralia 2	132	Skookumchuck R.	SF+	Elev.	Elev.
Centralia 3	52	Skookumchuck R.	Com'l+	Elev.	Elev.
Centralia 4	40	Chehalis R.	SF	Elev.	Elev.
Centralia 5	184	Chehalis R., China Cr.	SF+	Elev.	Elev.

The Strategy report also includes maps showing the general locations of the 55 areas. An excerpt from one of them appears below. It shows how the repetitive loss areas are distributed throughout the Basin, in both rural and urban areas, and how most are in the floodplain of the larger rivers.



Findings

The extent and types of repetitive loss properties are summarized in the Strategy report:

- There are 55 different known repetitive flood loss areas in the Chehalis Basin.
- These areas are spread widely across the basin, in both populated and rural areas.
- Ninety percent (90%) of the areas are next to, and subject to overbank flooding by, the Chehalis or other large river or creek.
- 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.
 - Most of the buildings are single family homes
 - Most of the buildings are on crawlspace or elevated foundations, the types of foundations that are most cost-effective to elevate above flood levels.
 - The buildings in 45 of the 55 areas (82%) are considered in “good” or “fair” condition.
 - Thirty of the 55 areas (55%) already have some buildings that have undertaken mitigation measures. There may be more, but the field team did not go onto private property and could not tell for several of the areas.
- The most common existing mitigation measure taken to date is elevation of the building. Some low floodwalls were noted.

In sum, there are a lot of repetitive flood loss areas and potential repetitive flood loss properties in the Chehalis River Basin. For the most part, the buildings are single family homes in fair or good condition. The bulk of them can probably be mitigated using feasible measures that have already been implemented on some of the buildings in the areas.

Loss Reduction Tools

Four general approaches to mitigate the Basin’s repetitive loss problems are reviewed in the “Repetitive Flood Loss Strategy” report. Each has its advantages and disadvantages.

Regulatory Tools: Three specific regulatory provisions can have a bearing on repetitive losses:

1. Post-FIRM standards: The requirements for new construction should ensure that no new buildings are built subject to damage by the base flood. However, this only applies to construction in the mapped and regulated floodplain, where the maps accurately reflect the known flood hazard, and if local staff enforce all the code requirements.
2. Building enclosure requirements: A common problem is the conversion of the lower area of an elevated building to a non-compliant living area. A community with higher regulatory standards governing building enclosures can prevent this.
3. Substantial improvement and substantial damage requirements: These rules can require existing buildings to be brought up to post-FIRM standards but there are ways around the minimum NFIP substantial improvement requirement and often flood damage is not

enough to trigger the substantial damage requirement. Again, there are some higher standards that can counter these shortcomings.

Regulatory standards are only as effective as their enforcement. The Strategy report recommends training, on-call technical assistance, and setting up procedures to follow after a flood or other disaster to use regulatory authorities to generate mitigation opportunities.

Flood Control Measures: Flood control projects modify flood flows or divert floodwaters to reduce the level of flooding on a property. These are public projects and are constructed at some distance from the protected properties. 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.

There are several flood control projects in the Basin that are under consideration. The Strategy report has a list of 31 repetitive loss areas that will be protected to some degree if all the proposed projects are funded and constructed. The projects may not be enough to eliminate the problem.

Retrofitting: A variety of retrofitting measures can reduce a building’s exposure to damage by flooding. These are implemented by the property owner, but some measures can be funded by a government grant. The most common ones are reviewed in this section. They are covered under four general categories:

- 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

Examples of some of these measures are shown on pages 5 and 7 of this report. The more effective measures are more expensive, but there are FEMA mitigation grants for removal and elevation projects and those grants put repetitive loss properties as a priority.

In areas of shallow flooding, less expensive measures can often be constructed by the property owner. However, these measures are less dependable, will not work if no one is home to install them, and do not reduce the cost of flood insurance. Elevation is likely to be the most appropriate measure for most of the buildings in the Basin’s repetitive loss areas.

Two key factors in the use of retrofitting are the owner’s support and funding. A successful program needs to address both of these concerns.

Public Information: Public information efforts are important in order to obtain the support and cooperation of all parties, especially the property owners. Further, information dissemination can bring about voluntary mitigation activities at little or no cost to the government.

Public information efforts work. Research has shown that educating people about their repetitive flood hazard can motivate them to take steps to protect themselves and their properties. The Strategy summarizes the key factors for success.

There are some guidelines to make public information efforts effective. These have been incorporated into the CRS credits for such efforts. The four CRS communities (Centralia, Chehalis, and Lewis and Thurston Counties) are receiving CRS credit for their programs.

Recommendations

The Flood Authority and the nine communities with repetitive loss areas should recognize the exposure of their residents and should implement programs to help mitigate the impacts of repetitive flooding.

- All the loss reduction tools should be used: regulations, flood control, retrofitting, and public information.
- The Community Rating System was made to encourage and support the types of efforts reviewed here. Communities should use the CRS for guidance and to gain support for projects that use the tools recommended by this report.
- Communities should start by preparing a repetitive loss area analysis for each area (see box).
- Loss reduction projects should involve the property owners as much as possible. They are vital to any retrofitting and some mitigation measures can be implemented by owners without government funding.
- Community staff should be prepared for mitigation opportunities that may arise when a building is to be improved and after a building has been damaged.

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.

The Flood Authority has \$1.5 million for flood loss mitigation. The following criteria are recommended for use of these funds.

- \$1,400,000 should be budgeted for funding retrofitting projects (there are separate Flood Authority sources for funding flood control projects). The Strategy report lists recommended criteria to ensure the greatest return for these funds.
- The remaining \$100,000 should be budgeted to fund technical assistance to communities to help with public information and assistance to property owners, conducting repetitive loss area analyses, preparing post-flood mitigation procedures, and working to improve administration of grant programs.

Community Rating System Program Review

As part of the Flood Authority’s assessment of floodplain management programs, French & Associates was tasked to review how they would benefit from the Community Rating System (CRS). The separate “CRS Program Review” 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 National Flood Insurance Program. It is modeled on the fire insurance program: the more the community does about the hazard, the less their residents pay for hazard insurance. It 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 floodplain management programs going and to start new ones.

A community receives a CRS classification based upon the total score for its floodplain management activities. 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 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.

A community can receive credit for work that benefits them, even if implemented by the State, the county, or private organizations. With a few exceptions, FEMA does not provide credit for activities implemented by Federal agencies.

There are 34 Washington cities and counties in the program. Their class distribution is shown in the table to the right. It can be seen that Washington has a higher overall ranking than the nation as a whole. The Class 2 communities are King and Pierce Counties.

Class	Points	Premium Discount	
		SFHA	Non-SFHA
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

Non-SFHA premium reductions apply to B, C, D and X Zones.

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

Class	WA	US
1		1
2	2	3
3		1
4	3	7
5	11	93
6	9	219
7	5	309
8	4	471
9		209
As of October 1, 2014		

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), and 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 amendment,
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 in this report. 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 CRS report.

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, a 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.

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:

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. The community can evaluate the effectiveness of its flood program against nationally recognized benchmarks.
5. Technical assistance is available from ISO at no cost to the community.
6. The public information activities help build a knowledgeable constituency interested in supporting and improving flood protection measures.
7. Every time residents pay their insurance premiums, they are reminded that their community is working to protect them from flood losses.

Likely Credits

There are six participation prerequisites. Most of the Basin communities should be able to meet most of these based on their current programs. The following will be more difficult:

- Napavine will have to join the National Flood Insurance Program and be in it for at least one year before it can apply.
- 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 nine repetitive loss communities (all but Cosmopolis, Pe Ell, and Napavine) will have to do some additional work as explained in the separate Repetitive Flood Loss Strategy.

CRS credit is 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. The report discusses each activity and element and has a series of tables showing which communities should get which elements' credits. An example appears below.

Estimated CRS Credits – Activity 420 (Open Space Preservation)														
Elements	Max Points	Quick Check	Aberdeen	Bucoda	Centralia	Chehalis	Cosmopolis	Grays Harbor	Lewis Co.	Montesano	Napavine	Oakville	Pe Ell	Thurston Co.
OSP – Open space	1,450			✓	✓	✓			✓	✓		✓		✓
DR – Deed restrictions	50	15			✓	✓			✓					✓
NFOS – Natural functions	170				✓	✓								✓
SHOS – Special hazards	50													
OSI1–5 – Regulatory incentives	250	15												✓
OSI6 – Tax incentives	25							✓	✓					✓
OSI7 – Plan recommendation	10		✓	✓	✓	✓			✓			✓		✓
LZ – Low density zoning	600							✓	✓					✓
NSP – Shoreline protection	120					✓		✓	✓	✓	✓	✓		✓

Most communities would receive credit for the following:

- 310 EC – maintaining FEMA Elevation Certificates on all new construction in the floodplain (minimum requirement for participation in the CRS)
- 320 MI1, MI2, MI6 – providing floodplain map information to inquirers

- 340 ODR – credit for state hazard disclosure laws
- 350 LIB, LPD, WEB – providing flood protection information in the local library and on the community’s website (or links on the community’s website)
- 420 OSP, OSI7 – preserving areas of floodplain open space and having plans or programs to encourage maintaining floodplain open space
- 430 DL2, FRB – having higher regulatory standards in the flood hazard area regulations
- 430 FDN, BC, LDP, SMS, RA – having higher regulatory standards and procedures mandated under the state building code
- 450 SMR, ESC, WQ – for stormwater management requirements
- 510 FMP – credit for adopting a hazard mitigation or floodplain management plan
- 530 – having buildings that have been retrofitted to flood protection standards
- 610 – it is likely that all communities can qualify for credit for the Basin’s new flood warning and response system, but more research would be necessary to document this
- 630 – it is likely that all counties and some cities can qualify for credit for the State’s dam safety program, but more research would be necessary to document the cities’ credits

Every community in the Basin could qualify for a Class 9 or better based on its current programs, provided they meet the prerequisites.

Because of the extensive changes to the program brought about by the 2013 *CRS Coordinator’s Manual*, communities currently in the CRS can be expected to have different scores for the same activities they have been implementing. Therefore, both new communities and current CRS communities could use technical assistance on various CRS topics.

Recommendations

1. The Flood Authority should sponsor a meeting of interested staff and elected officials from the communities in the CRS and those not yet in. At that meeting, the details of the program, credit criteria for likely activities, and the changes in the 2013 *CRS Coordinator’s Manual* would be reviewed. CRS coordinators from one or more of the four CRS communities should discuss their experiences and recommendations.
2. After the interested communities have received the additional information, they should decide if the benefits of the program are worth their participation.
3. 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. Likely areas of assistance range from explaining the program to city councils or board of county commissioners to helping with the application paperwork, providing models, templates, and example procedures and records, and working with county and state agencies to qualify their programs for credit for all the communities in their jurisdiction.

Basin-Wide Recommendations

Findings: To sum up the findings in the various reports, floodplain management in the Chehalis River Basin is doing well, but improvements would help.

- All communities have the basics and the framework needed to administer good programs, but over the years their regulations have been added to and adjusted so they are no longer internally consistent. Some need revisions to meet the minimum requirements of the National Flood Insurance Program.
- The maps on which their programs are based need updating.
- There are different levels of staff expertise and most of the communities have experienced problems administering their regulations at some point in the past.
- There are 55 areas within the Basin with repetitive flooding problems that affect 1,850 buildings. Thirty-one of the areas may be protected to some degree by a proposed flood control project.
- All of the communities are implementing a number of activities and enforcing regulatory standards that are above and beyond the minimum Federal requirements, but only four are getting their efforts recognized through flood insurance premium reductions for their residents under the Community Rating System.

The good news is that all of the shortcomings can be fixed.

For communities: Each report has recommendations for the communities and for the Flood Authority. Overall, the community assessments recommend that the cities and counties:

- Get their maps corrected and updated or regulate to the flood of record.
- Address new development with locally appropriate regulatory standards and plans that guide development to safer areas.
- Adopt procedures and train staff to ensure proper administration of the standards.
- Educate, involve, and assist property owners.

For the Flood Authority: The Flood Authority can play an important role in improving floodplain management in the Chehalis River Basin. It should:

- Provide technical assistance and on-call help.
- Provide training, templates, checklists, and model procedures.
- Provide financial support to mitigate flood problems.
- Coordinate and support Basin-wide efforts.

While the Flood Authority does not currently provide these types of activities, it can arrange for funding and contractual services that would help the Basin's communities. Over the long run, the Flood Authority should consider an employee or contractor to provide on-call assistance on the full gamut of issues listed in these reports. An advisor who devotes full time to floodplain

management will be more knowledgeable than community staff who infrequently deal with floodplain issues.

Below is a table that summarizes the recommendations for the Flood Authority and identifies which reports have more details on what is needed. They are listed in recommended priority order.

The Community Rating System provides an incentive for communities to improve their programs and to continue maintaining them over the years. Both the communities and the Flood Authority should use the Community Rating System to support these recommendations.

Recommendations (listed in priority order)	Community Assessments	Rep Loss Strategy	CRS Review
Host meetings for communities			
On regulatory standards	✓	✓	✓
On the Community Rating System			✓
Budget \$1,500,000 to mitigate flood losses			
Use \$1,400,000 to fund retrofitting of properties		✓	
Use the balance for technical assistance to repetitive loss communities	✓	✓	✓
Prepare templates, models, and examples			
Regulatory language for internal consistency and for higher standards	✓	✓	✓
Regulatory language for areas lacking adequate mapping	✓		✓
Regulatory procedures and records	✓		✓
Permit review and inspection checklists	✓		✓
Public information materials	✓	✓	✓
Post-flood mitigation procedures	✓	✓	
Drainage maintenance and other mitigation programs		✓	✓
Sponsor training on administering floodplain management regulations	✓	✓	✓
Develop a central website that all communities can link to	✓	✓	✓
Provide on call technical assistance to community staff			
On regulatory issues, such as permit review and records	✓		✓
On advising property owners interested in loss reduction	✓	✓	✓
On conducting repetitive loss area analyses		✓	✓
On Community Rating System requirements and documentation			✓
Assist communities in dealing with State and Federal agencies			
With FEMA on improving local maps	✓		
With the Emergency Management Division on mitigation grants		✓	
With the Department of Ecology on CRS credit for its dam safety program			✓
Coordinate a regional effort to improve writing of flood insurance policies	✓		✓