



Floodplain Management Assessment

Chehalis River Basin Floodplain Management Assessment

Floodplain Management Assessment

Objective:

1. Assess the status of floodplain management in the Basin.
2. Recommend community and Basin-level efforts.
3. Focus on flood loss prevention and reduction rather than protecting natural floodplain functions.

Floodplain Management Analysis

City of Aberdeen

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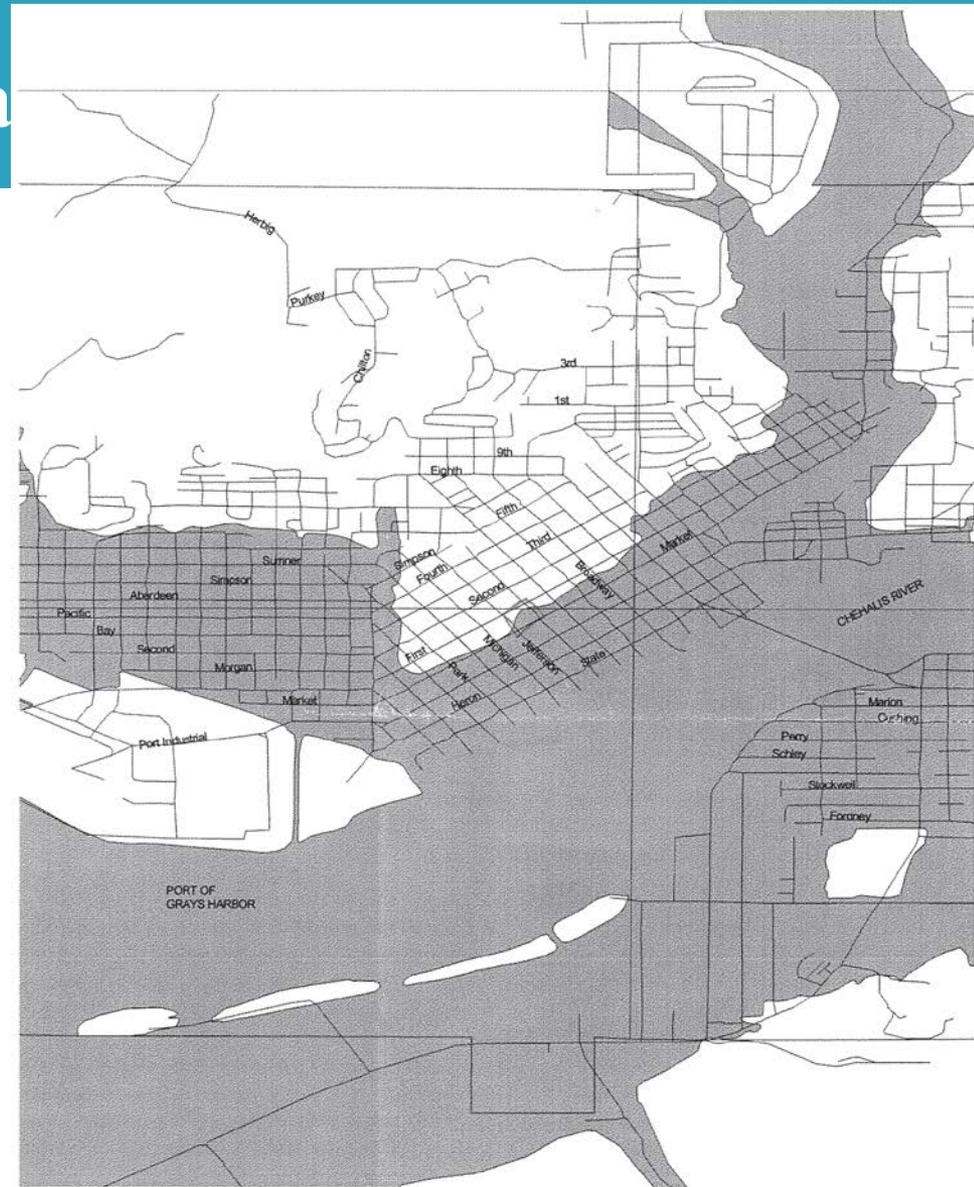
September 16, 2014



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2601 Havelock Court
Steilacoom, WA 98388

1. Introduction

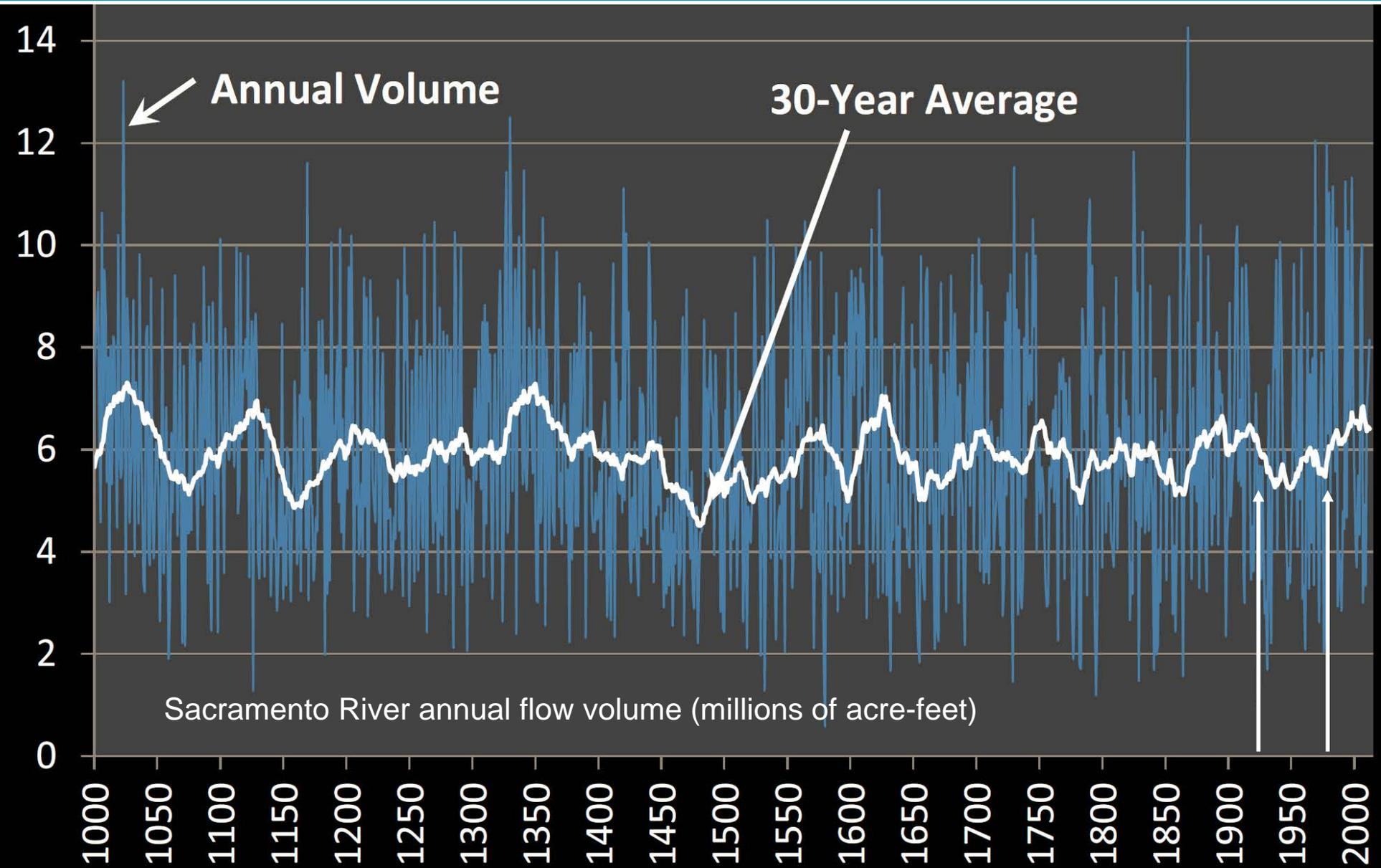
- Major flood threats: Grays Harbor, tsunamis, Chehalis and Wishkah Rivers
- 1990 – 2010: flood insurance claims on 10 different occasions not related to large rivers
- 9,500 people in floodplain



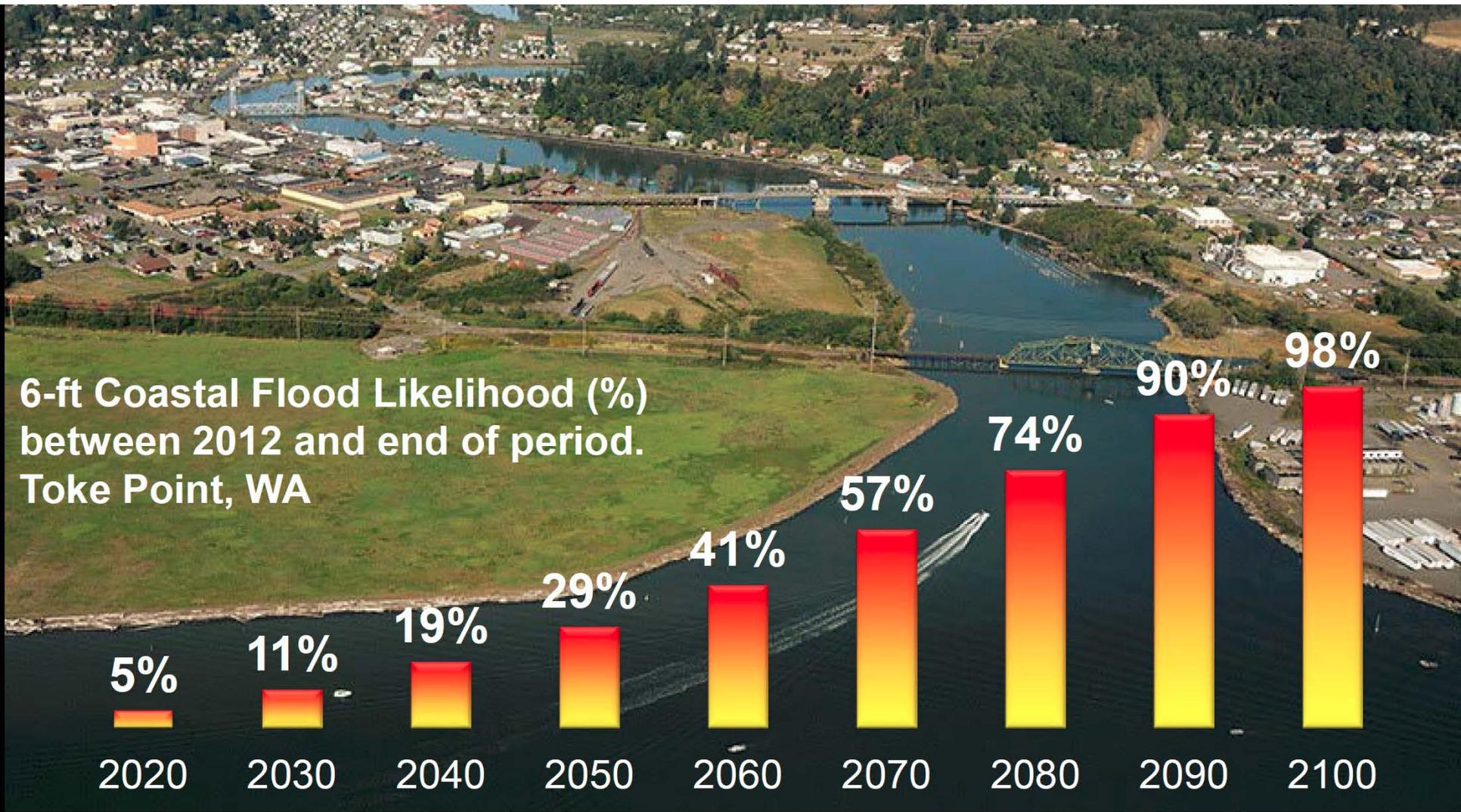
FEMA FLOOD
ZONE DESIGNATION

	A
	X

Floodplain Management Assessment



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Floodplain Management Assessment

New: Flood Warning

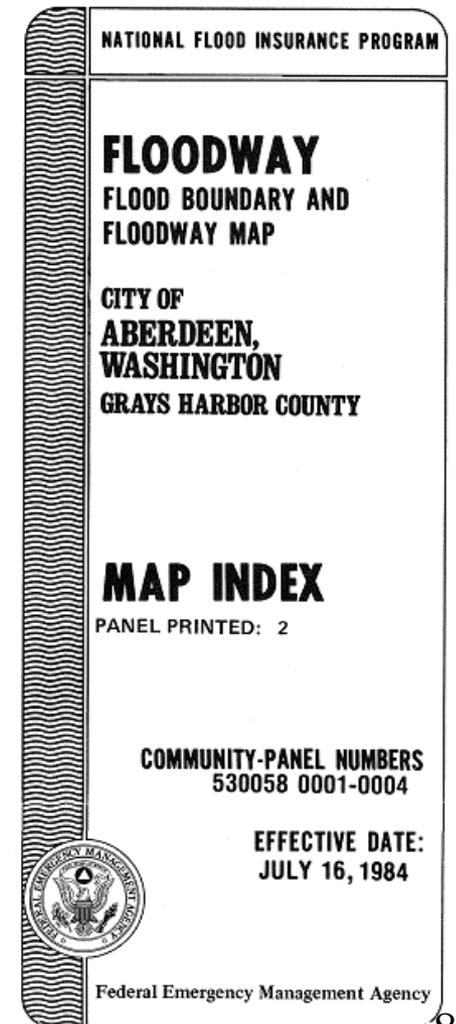


2. Floodplain Mapping

- Map data old (1970's)
- Map and data inadequate for regs/insurance
- Map does not reflect South Bank Levee
- New DFIRM only updates coastal data
- Problems with elevation datums

Recommendations

- Regulate to the flood of record elevation
where > base flood elevation

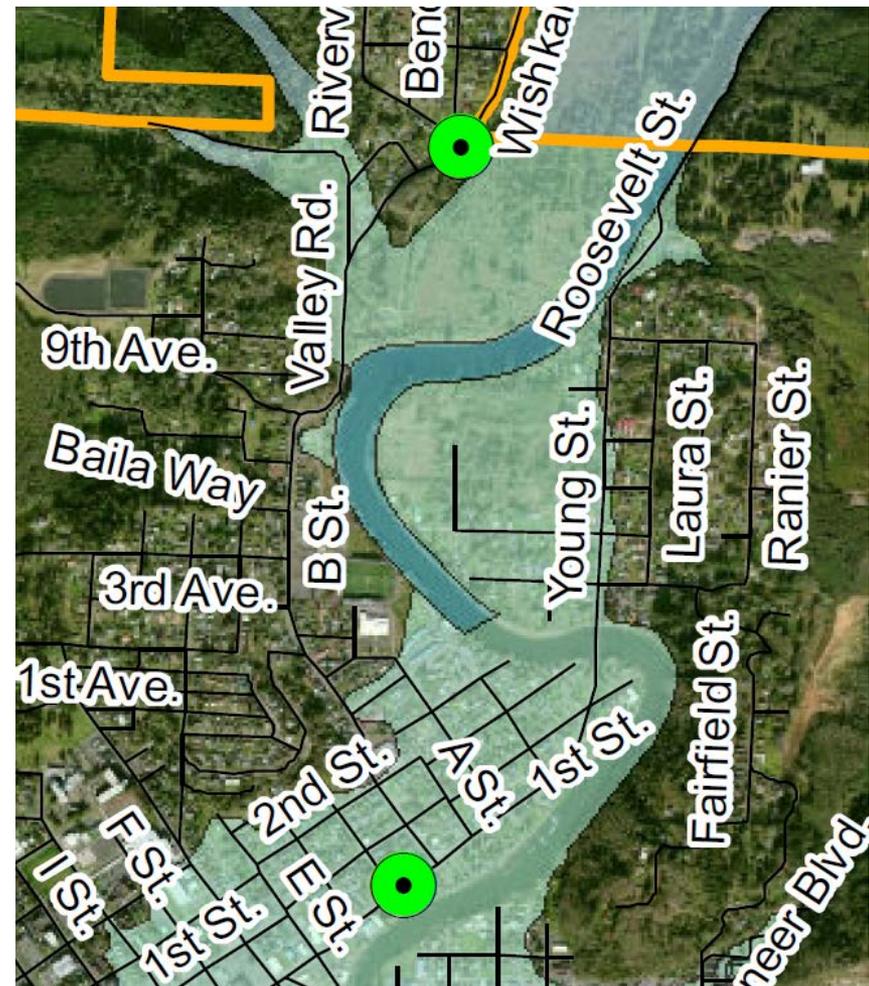


3. Floodplain Development

- Most of the floodplain is heavily developed (mostly before floodplain regulations)
- Only vacant area is on Wishkah (zoned residential)

Recommendation

- Use the comprehensive plan and zoning to keep open areas open



4. Flood Hazard Area Regulations

- Aberdeen has basic, minimum standards
- Some conflicts with NFIP requirements
- Higher standards are recommended
- Freeboard example:
 - NFIP standard: build to the base flood elevation (BFE)
 - 2007 and 2009 floods were up to 2 feet over the BFE in some places
 - More freeboard = lower insurance premiums



Floodplain Management Assessment

4. Flood Hazard Area Regulations

**PREMIUM AT
BASE FLOOD ELEVATION**

\$1,410/year

**PREMIUM AT 3 FEET ABOVE
BASE FLOOD ELEVATION**

\$427/year

→ Aberdeen: 1 foot of freeboard for residences



B F E



B F E

Recommendations: technical corrections, higher standards

5. Building Code

6. Other Development Management Tools

- Washington State Building Code
- Critical areas ordinance
- Shoreline management (being updated)
- Stormwater management (*Western Washington Manual*)

- All help floodplain management
- May or may not be coordinated with flood hazard area regulations

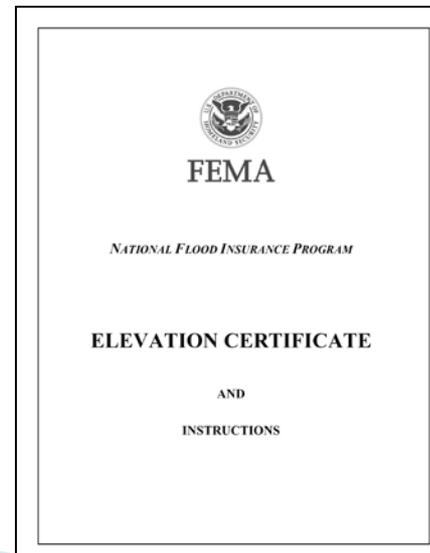


7. Regulations Administration

- Public Works and Community Development share responsibilities
- No staff has been to FEMA's NFIP course
- No staff is a Certified Floodplain Manager
- FEMA Elevation Certificates not required
- No Building Code Effectiveness Grading Schedule (BCEGS)

Recommendations:

- Improve training
- Formalize procedures and record keeping
- Get a BCEGS rating



U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT FEDERAL EMERGENCY MANAGEMENT AGENCY National Flood Insurance Program		ELEVATION CERTIFICATE		OMB No. 2560-0058 Expiration Date: July 31, 2015
SECTION A - PROPERTY INFORMATION				FBI INSURANCE COMPANY USE
A1. Building Owner's Name				Insurer
A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No. 1 or R), Route and Box No.				Contract No./Number
City				ZIP Code
A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)				
A4. Building Use (e.g., Residential, Nonresidential, Address, Accessory, etc.)				Residential District: <input type="checkbox"/> NAD 1507 <input type="checkbox"/> NAD 1563
A5. Latitude/Longitude, Lot	Elev. of highest finished floor of the building if the Certificate is being used to obtain flood insurance.			
A6. For a building with a basement or sub-basement:				
a) Square footage of basement or sub-basement	sq ft	b) Square footage of attached garage	sq ft	
c) No. of basement level openings in the attached garage		d) No. of basement level openings in the attached garage		
e) Total net area of flood openings in A6a	sq ft	f) Total net area of flood openings in A6b	sq ft	
g) Engineered flood openings? <input type="checkbox"/> Yes <input type="checkbox"/> No	h) Engineered flood openings? <input type="checkbox"/> Yes <input type="checkbox"/> No			
SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION				
B1. MFP Community Name & Community Number	B2. County Name	B3. State		
B4. MFP Panel Number	B5. Section	B6. Flood Zone	B7. Flood Protection	B8. Base Flood Elevation (Zone A6, see base flood depth)
B9. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth (depth) used in this BFE.				
B10. Indicate whether adjacent used for BFE in this BFE: <input type="checkbox"/> NAD 1507 <input type="checkbox"/> NAD 1563 <input type="checkbox"/> Other/Source:				
B11. Is the building located in a Coastal Storm Surge Hazard Area (CSSHA) or an otherwise Protected Area (OPA)? <input type="checkbox"/> Yes <input type="checkbox"/> No				
B12. Designation Date: <input type="checkbox"/> NAD 1507 <input type="checkbox"/> NAD 1563				
SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)				
C1. Building elevations are based on: <input type="checkbox"/> Construction Drievest* <input type="checkbox"/> Building Under Construction* <input type="checkbox"/> Finished Construction				
*As new Elevation Certificates will be required when construction of the building is complete.				
Elevations: Zone A2-A6, A8, A9, A10, A11, A12, A13, A14, A15, A16, A17, A18, A19, A20, A21, A22, A23, A24, A25, A26, A27, A28, A29, A30, A31, A32, A33, A34, A35, A36, A37, A38, A39, A40, A41, A42, A43, A44, A45, A46, A47, A48, A49, A50, A51, A52, A53, A54, A55, A56, A57, A58, A59, A60, A61, A62, A63, A64, A65, A66, A67, A68, A69, A70, A71, A72, A73, A74, A75, A76, A77, A78, A79, A80, A81, A82, A83, A84, A85, A86, A87, A88, A89, A90, A91, A92, A93, A94, A95, A96, A97, A98, A99, A100, A101, A102, A103, A104, A105, A106, A107, A108, A109, A110, A111, A112, A113, A114, A115, A116, A117, A118, A119, A120, A121, A122, A123, A124, A125, A126, A127, A128, A129, A130, A131, A132, A133, A134, A135, A136, A137, A138, A139, A140, A141, A142, A143, A144, A145, A146, A147, A148, A149, A150, A151, A152, A153, A154, A155, A156, A157, A158, A159, A160, A161, A162, A163, A164, A165, A166, A167, A168, A169, A170, A171, A172, A173, A174, A175, A176, A177, A178, A179, A180, A181, A182, A183, A184, A185, 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Floodplain Management Assessment

8. Flood Insurance

Floodplain Management Assessment

8. Flood Insurance

Flood Insurance Coverage In Aberdeen, as of May 31, 2014

Page 17

	Policies in Force	Premium	Insurance in Force	Number of Closed Paid Losses	\$ of Closed Paid Losses	Adjustment Expense
A01-30 & AE Zones	836	\$1,060,830	\$119,438,300	71	\$471,527.46	\$35,610.76
A Zones						\$3,075.00
AO Zones						\$0.00
AH Zones	24	\$20,854	\$3,068,000	1	\$3,496.36	\$650.00
B, C & X Zone						
Standard	6	\$6,507	\$771,800	5	\$68,403.74	\$2,975.00
Preferr	6/30/2015: 844	\$1,083,974		230	\$2,218,226	\$500.00
Total	<u>933</u>	\$1,145,831	\$137,649,300	86	<u>\$594,204.00</u>	\$42,810.00

Recommendation: Tell people about the hazard and the benefits of flood insurance

9. Flood Hazard Mitigation

→ 2003 *Hazard Mitigation and Preparedness Plan*

→ Recommendations

- Chehalis River dikes
- Higher regulatory standards
- Coordinate flood and other regulations
- Improve drainage system
- Public awareness/education

CITY OF ABERDEEN

**HAZARD
MITIGATION
AND
PREPAREDNESS
PLAN**

2003

9. Flood Hazard Mitigation

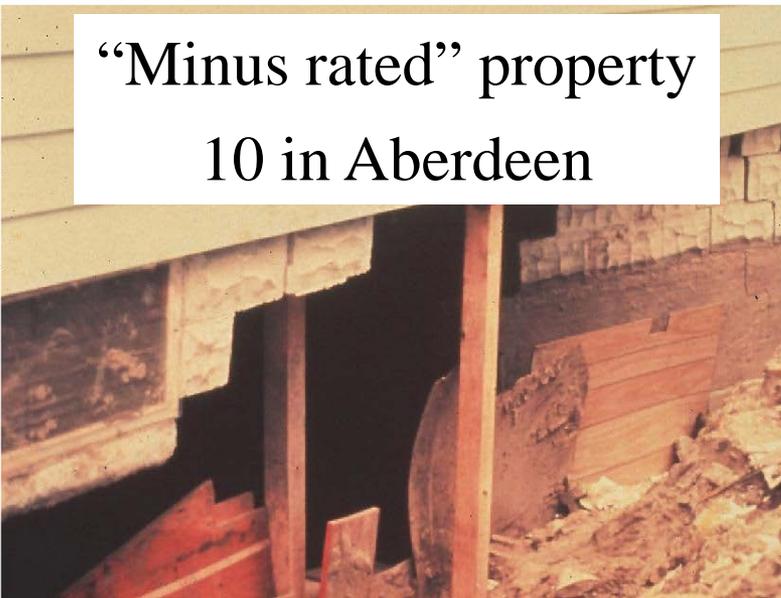
Repetitive Loss Areas					
Field Findings Area Name	Buildings	Flooding Source	Building Type	Foundation Type	Mitigation in area
Aberdeen 1	>500	Tidal, Fry Creek	SF+	Crawl+	Elev.
Aberdeen 2-A	2	Tidal, drainage	Com'l	Slab	
Aberdeen 2-B	10	Wishkah R., tidal	MF	Crawl	
Aberdeen 3	3	Tidal	SF+	Slab	



Floodplain Management Assessment



“Minus rated” property
10 in Aberdeen



9. Flood Hazard Mitigation

Recommendations

- Work with the County's update of its *Hazard Mitigation Plan*
- Continue to pursue a north bank levee
- Consider a formal drainage maintenance program
- New: Pursue Basin Authority support for retrofitting elevated buildings without effective flood openings
- New: Conduct a repetitive loss area analysis to identify appropriate flood protection measures

10. Public Information Activities

- Lots of potential to get property owners to protect themselves
- Aberdeen has a website, newsletter, tsunami handouts

Recommendation

- Inform citizens on how to protect themselves and their properties

WHAT IS A TSUNAMI?
A tsunami is a series of waves most commonly caused by an earthquake beneath the sea floor. As tsunamis enter shallow water near land, they increase in height and can cause great loss of life and property damage where they come ashore.
Recent research suggests that tsunamis have struck the Washington coast on a regular basis. They can occur at any time of the day or night, under any and all weather conditions, and in all seasons. Beaches open to the ocean, bay entrances, tidal flats, and coastal rivers are especially vulnerable to tsunamis.

WHAT IS THE DIFFERENCE BETWEEN A 'DISTANT' AND A 'LOCAL' TSUNAMI?
When a tsunami has been generated by a distant earthquake, it will not reach the Washington coast for several hours, and there is time to issue a warning. When a tsunami is generated by a strong offshore earthquake, its first waves would reach the outer coast minutes after the ground stops shaking. Feeling an earthquake could be your only warning!

WHAT CAN I DO TO PROTECT MYSELF FROM A TSUNAMI?
■ Develop a family disaster plan. Everyone needs to know what to do on their own.

HOW DO I KNOW WHEN TO EVACUATE?
If you feel the ground shake, evacuate inland or to high ground immediately! A wave as high as 10 feet could reach the Aberdeen/Hoquiam area within an hour and a half of the quake. The first wave is often not the largest; successive waves may be spaced many minutes apart and continue

WHERE DO I EVACUATE TO?
The map shows tsunami hazard areas in yellow. Go to the nearest high ground—at least 50 feet above sea level, if possible. If you don't have time to travel to high ground, but are in a multi-story building, go to an upper level. If you are on the beach and unable to get to high ground, go inland as far as you can.

HOW DO I GET INLAND OR TO HIGH GROUND?
main roads to direct motorists to higher ground. In some places, there may be more than one way to reach safer areas. These routes are marked with multiple signs showing additional options for evacuation. You will need to know the evacuation routes for your area.

HOW DO I GET INLAND OR TO HIGH GROUND?
main roads to direct motorists to higher ground. In some places, there may be more than one way to reach safer areas. These routes are marked with multiple signs showing additional options for evacuation. You will need to know the evacuation routes for your area.



Legend:
 ● Assembly area
 ● Police station
 ● Fire station
 ● Hospital
 ■ Tsunami hazard area
 — Driving evacuation route
 - - - Walking evacuation route

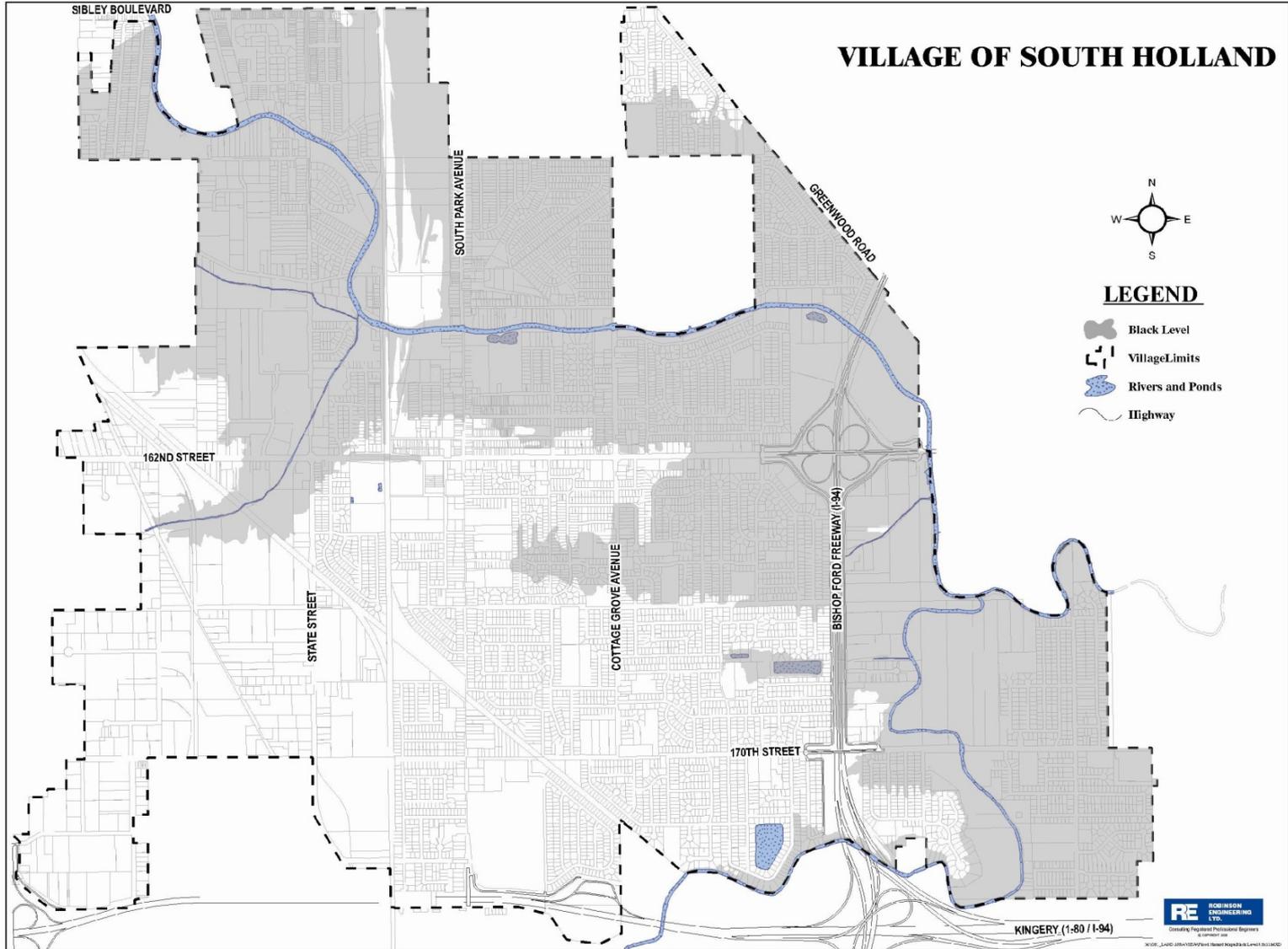
For a distant earthquake, follow the tsunami evacuation route signs. For a local earthquake, if car evacuation is not possible, go directly to the nearest high ground. Police and fire stations are shown as landmarks only. Do not go there for help—they will likely be deserted. Assembly areas have been designated where you can get help and services when you can't go home.

Floodplain Management Assessment

New: Flood Warning



Floodplain Management Assessment



Floodplain Management Assessment

← 596.0 Public Works

Primary areas of responsibility: closing off flooded streets, protecting critical facilities, clean up, non-building damage assessment

Flood Stage
Stage
Elevation
Frequency (2000 FIS) *
Number of homes affected **
Other structures affected **
Critical facilities affected **
Streets to be closed **
* The flood response levels do not change
** Summary data taken from Attachment C

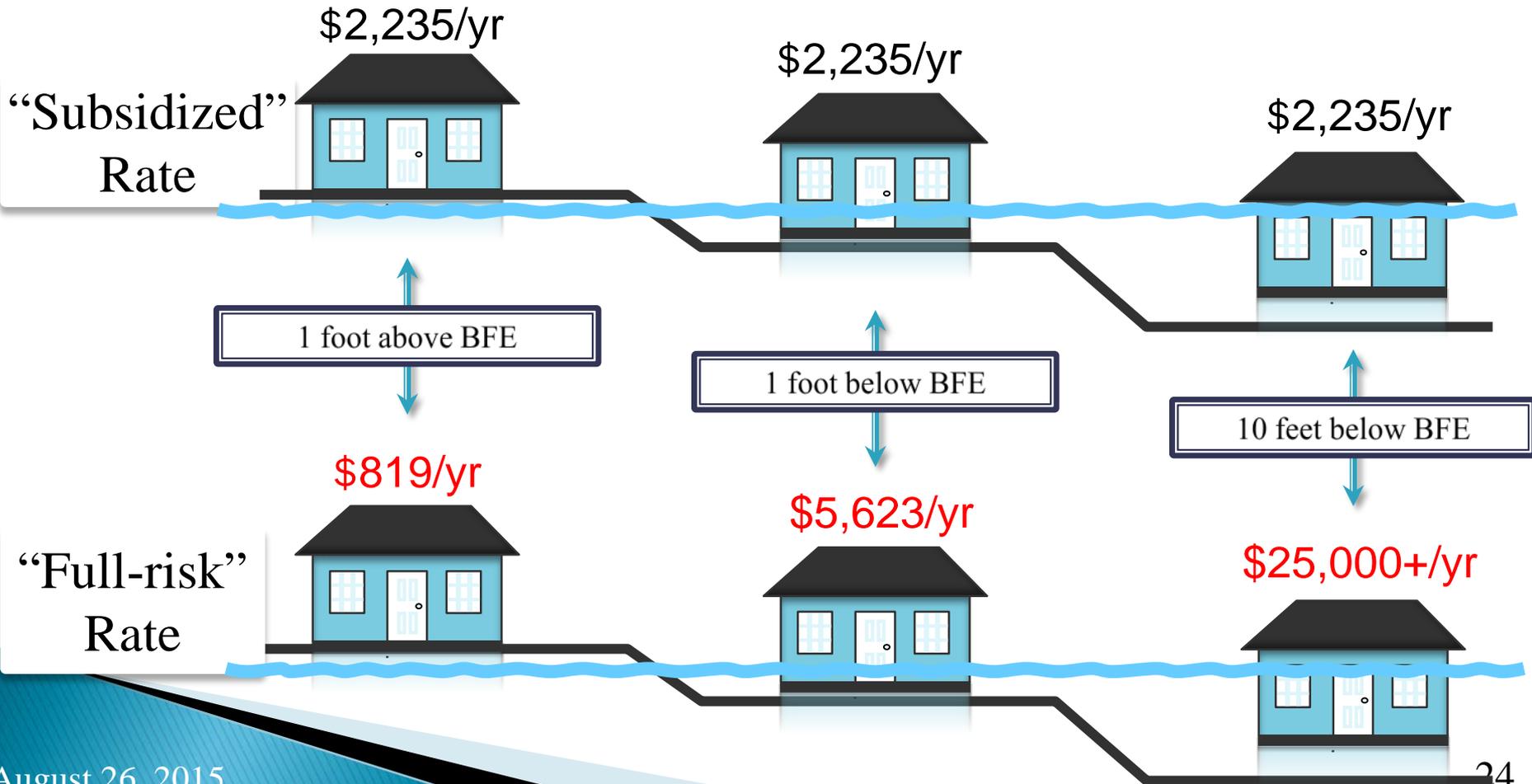
17.0 -- -- 592.0 Flood warning issued

16.0 -- -- 591.0 Flood watch starts

Flood Response Duties				
Flood Threat	Action	Staff	Equipment	Supplies
Green	Check in to the ICC	Director, Deputy Director, Water Foreman	Computer, telephone	
	Check flap valves on the riverbank for operability	1 employee	1 truck, binoculars	
	Set out barricades at designated locations (see Attachment E *)	3 two-person crews	3 trucks and trailers	Barricades for 32 streets
Orange	Do all lower level activities			
	Set out barricades at designated locations (see Attachment E *)	4 two-person crews	4 trucks and trailers	Barricades for 57 streets
Yellow	Contact Eisenhower School to determine if help is needed	Deputy Director	Cell phone	
	Set out sand and sandbags on public property at (in order): – Pacesetter Park – Gowans Park – Veterans Park	1 operator 2 drivers	Wheel loader 2 dump trucks	8 yards of sand, 100 bags per truck
	Do all lower level activities			
Blue	Set out barricades at designated locations (see Attachment E *)	4 two-person crews	4 trucks and trailers	Barricades for 84 streets
	Contact Gibson Chevrolet and Truck O Matic to determine if help is needed	Deputy Director	Cell phone	

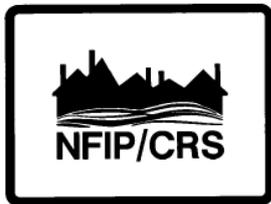
Floodplain Management Assessment

Biggert-Waters Flood Insurance Reform Act of 2012



11. Community Rating System

**Chehalis River Basin
Community Rating System
Program Review**



November 30, 2014



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

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

Floodplain Management Assessment

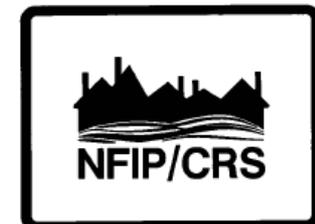
Costs

- Staff time to document what's being done
- Optional to improve or start new activities



Benefits

- Direct dollar savings



Floodplain Management Assessment

Aberdeen

	TOTAL	SFHA *	X-STD/AR/A99 **	PRP ***
PIF	921	878	6	37
PREMIUM	\$1,143,994	\$1,120,825	\$6,507	\$16,662
AVERAGE PREMIUM	\$1,242	\$1,277	\$1,084	\$450

CRS Class

09	Per Policy	\$61	\$64	\$54	\$0
	Per Community	\$56,367	\$56,042	\$325	\$0
08	Per Policy	\$122	\$128	\$54	\$0
	Per Community	\$112,083	\$112,083	\$325	\$0
07	Per Policy	\$103	\$191	\$54	\$0
	Per Community	\$168,125	\$168,125	\$325	\$0
06	Per Policy	\$255	\$255	\$108	\$0
	Per Community	\$224,166	\$224,166	\$651	\$0
05	Per Policy	\$319	\$319	\$108	\$0
	Per Community	\$280,208	\$280,208	\$651	\$0
04	Per Policy	\$366	\$383	\$108	\$0
	Per Community	\$336,899	\$336,249	\$651	\$0

Each class = \$64 per SFHA policy

Lewis County: Class 7

Chehalis: Class 6

Centralia: Class 5

Thurston County : Class 4

Floodplain Management Assessment

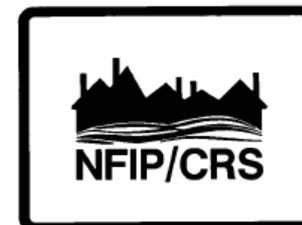
Costs

- Staff time to document what's being done
- Optional to improve or start new activities



Benefits

- Direct dollar savings
- Better organized programs
- New programs, especially public information
- Reason to keep implementing good programs



Floodplain Management Assessment

94 Credited Elements Reviewed

Expected CRS Credits – Activity 450 (Stormwater Management)

Elements	Max Points	Quick Check	Aberdeen	Bucoda	Centralia	Chehalis	Cosmopolis	Grays Harbor	Lewis Co.	Montesano	Napavine	Oakville	Pe Ell	Thurston Co.
SMR – Stormwater mgmt regs	380	30	✓		✓	✓	✓	✓	✓	✓				✓
WMP – Watershed master plan	315		✓		✓				✓	✓				✓
ESC – Erosion/sed'mt. control regs	40	10			✓	✓		✓	✓					✓
WQ – Water quality regulations	20	20	✓		✓	✓	✓	✓	✓	✓		✓		✓

NOVEMBER 30, 2014



French & Associates
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Steilacoom, WA 98388

Recommendation: Check it out

Floodplain Management Assessment

Summary of Recommendations by Agency

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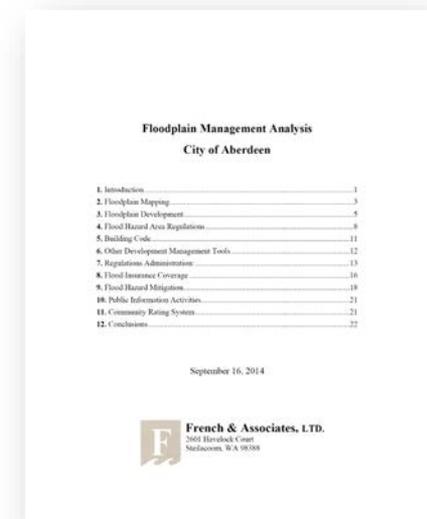
Recommendation

28 Recommendations

	Aberdeen	Flood Authority	Dept. of Ecology	FEMA
2.4.1 Acquire and use the Floodway Map and FIS rather than the FIRM	X			
2.4.2. Request a new flood study from FEMA	X			X
2.4.3 Require that all elevation information be based on NGVD 29	X			
2.4.4 Continue to pursue accreditation of the South Bank levee	X			X
2.4.5 Develop a handout on elevation datums		X		
3.4.3 Only annex floodplain areas that are in open space	X			
4.3.1 Amend ordinance to comply with NFIP and State criteria	X			
4.3.2 Review higher regulatory standards and prepare model language		X		
5.2.1 Review code sections not adopted	X			
5.2.2 Review the IRC for missing flood protection standards	X			
7.9.1 Staff should attend training	X			
7.9.2 Prepare a permit review checklist	X			
7.9.3 Require Elevation Certificates	X			

Overall Recommendations

- Regulate to the flood of record elevation
- Use land use tools to guide development to safer areas
- Use all the tools to prevent and reduce flood problems
(and keep flood insurance premiums down)
 - Regulatory standards
 - North and south bank levees
 - Drainage improvements and maintenance
 - Retrofitting existing buildings
 - Public information
- Maximize property owner involvement/self-help
- Use the CRS to support these efforts



Floodplain Management Analysis
City of Aberdeen

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September 16, 2014

 **French & Associates, LTD.**
2601 Harborside Court
Seattle, WA 98135

Where to Start

1. Review area analysis and flood opening programs
2. Review CRS credited activities
 - a) Identify what's creditable now
 - b) See what could be improved at low cost
 - ✓ Ordinance revisions
 - ✓ Formal procedures
 - ✓ Public information activities
 - c) Coordinate with updating mitigation plan
 - d) Coordinate with Grays Harbor County

We can help

