

# FLOOD DAMAGE PREVENTION





## Kootenai County Flood Damage Prevention Ordinance

CHAPTER 7 FLOOD DAMAGE PREVENTION ARTICLE 7.2

ORDINANCE 493 *as amended*

# Flood Damage Prevention



- How do I know if I am in a SFHA?
- Can I build in a SFHA?
- Why would I need an Elevation Certificate?
- Are you sure I am in a SFHA? It has never flooded since I've lived here.

# Flood Acronyms



## *NFIP Mapping Terminology*

<b>Base Flood</b>	<b>100-year or 1% chance flood</b>
<b>BFE</b>	<b>Base flood elevation</b>
<b>NGVD</b>	<b>National Geodetic Vertical Datum</b>
<b>FIRM</b>	<b>Flood Insurance Rate Map</b>
<b>SFHA</b>	<b>Special Flood Hazard Area: base floodplain</b>
<b>A Zones</b>	<b>SFHA: A, AE, A1 - A30, AH, AO, A99, AR</b>
<b>V Zones</b>	<b>Coastal high hazard SFHA: V, VE, V1-V30</b>
<b>X Zone</b>	<b>Outside SFHA,</b>
<b>B or C Zones</b>	<b>Outside SFHA (older maps)</b>
<b>D Zones</b>	<b>SFHA undetermined</b>
<b>Floodway</b>	<b>Channel and adjacent SFHA with deeper and faster flows, higher hazard, more sensitive to obstructions to flow</b>
<b>COBRA</b>	<b>Coastal Barriers Resource Act: no federal assistance or flood insurance in designated undeveloped coastal barriers</b>
<b>Pre-FIRM</b>	<b>Before the effective date of the FIRM</b>
<b>Post-FIRM</b>	<b>After the effective date of the FIRM</b>

North  
American  
Vertical  
Datum of  
1988  
(NAVD88)

# Flood History

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- Floods are the most common natural disaster in north Idaho.
- Most major floods occur during winter and spring.
  - Rain or snow events.

# Flood History

- 2017 KXLY Reports on Floods

<https://www.youtube.com/watch?v=cCh5Lee5WYc>

- 2018 KXLY Report on Floods

<https://www.youtube.com/watch?v=3h-Gxho6m48>



# Flood History



# Flood History





# Flood History



# Flood Damage in Kootenai County

**TABLE 12-2.  
HISTORY OF FLOOD EVENTS**

Date	Declaration #	Description	Estimated Damage
12/31/1964	DR-186	Heavy Rains & Flooding	\$834,972 <sup>a</sup>
1/25/1974	DR-415	Severe Storms, Snowmelt, Flooding	\$8,438,025 <sup>a</sup>
2/1982	—	Flooding	\$1,000,000 <sup>a</sup>
2/11/1996	DR-1102	Storms/Flooding	\$10,888,154 <sup>a</sup>
1/04/1997	DR-1154	Severe Storms/Flooding	\$1,272,641 <sup>a</sup>
6/13/1997	DR-1177	Flood	Public Damage = \$762,600
7/31/2008	DR-1781	Flooding	Public Damage = \$1,501,030

a. Data obtained from Spatial Hazard Events and Losses Database for the United States

# Flood Damage Prevention

## Purpose

- Maximize public safety.
- Protect development and personal investments.
- Meet Federal requirements of NFIP.



# The National Flood Insurance Program



# National Flood Insurance Program



Federal program that provides flood insurance to participating communities

- The community will adopt and enforce a floodplain ordinance.
- The Federal Government will make flood insurance available within the community as a source of financial protection.



# Is NFIP Participation Mandatory?

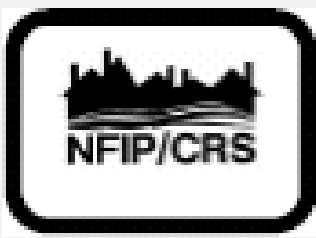
COMMUNITY PARTICIPATION IS  
VOLUNTARY

Consequences of non-participation

- ❑ Federal flood insurance is not available.
- ❑ Not eligible for post-disaster financial assistance.

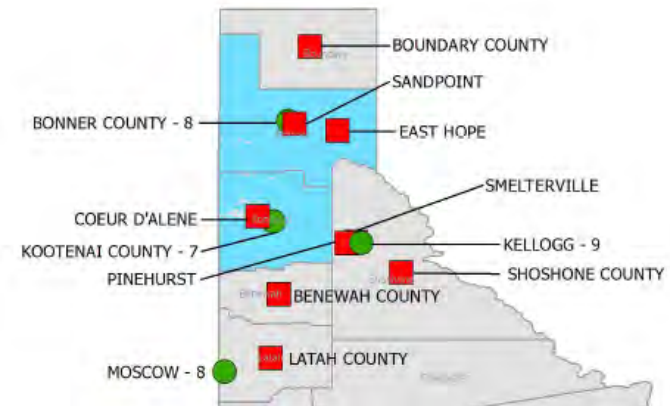






# Idaho Communities Community Rating System

Rank	CID	Community Name	Policies	Class
1	160002	Boise	845	6
2	160004	Garden City	536	8
3	160003	Eagle	356	6
4	160131	Kellogg	347	9
5	165167	Blaine County	343	7
6	160001	Ada County	338	6
7	160023	Ketchum	304	7
8	160076	Kootenai County	218	7
9	160208	Canyon County	205	--
10	160038	Nampa	191	--
11	160206	Bonner County	177	8
12	160022	Hailey	151	8
13	160180	Meridian	107	8
14	160025	Sandpoint	98	--
15	160090	Moscow	98	8
16	160018	Bingham County	85	--
17	160027	Bonneville County	82	--



# Mapping

- FEMA prepared a SFHA map and developed hazard data for most communities in the Country.
- Used for the following reasons:
  - Basis for regulating new development.
  - Determination of flood insurance purchase requirement.
  - Determination of flood insurance rating.

# Special Flood Hazard Areas



## MAPPED FLOOD ZONES

AE: Established Base Flood Elevation

A: Base Flood Elevation not established

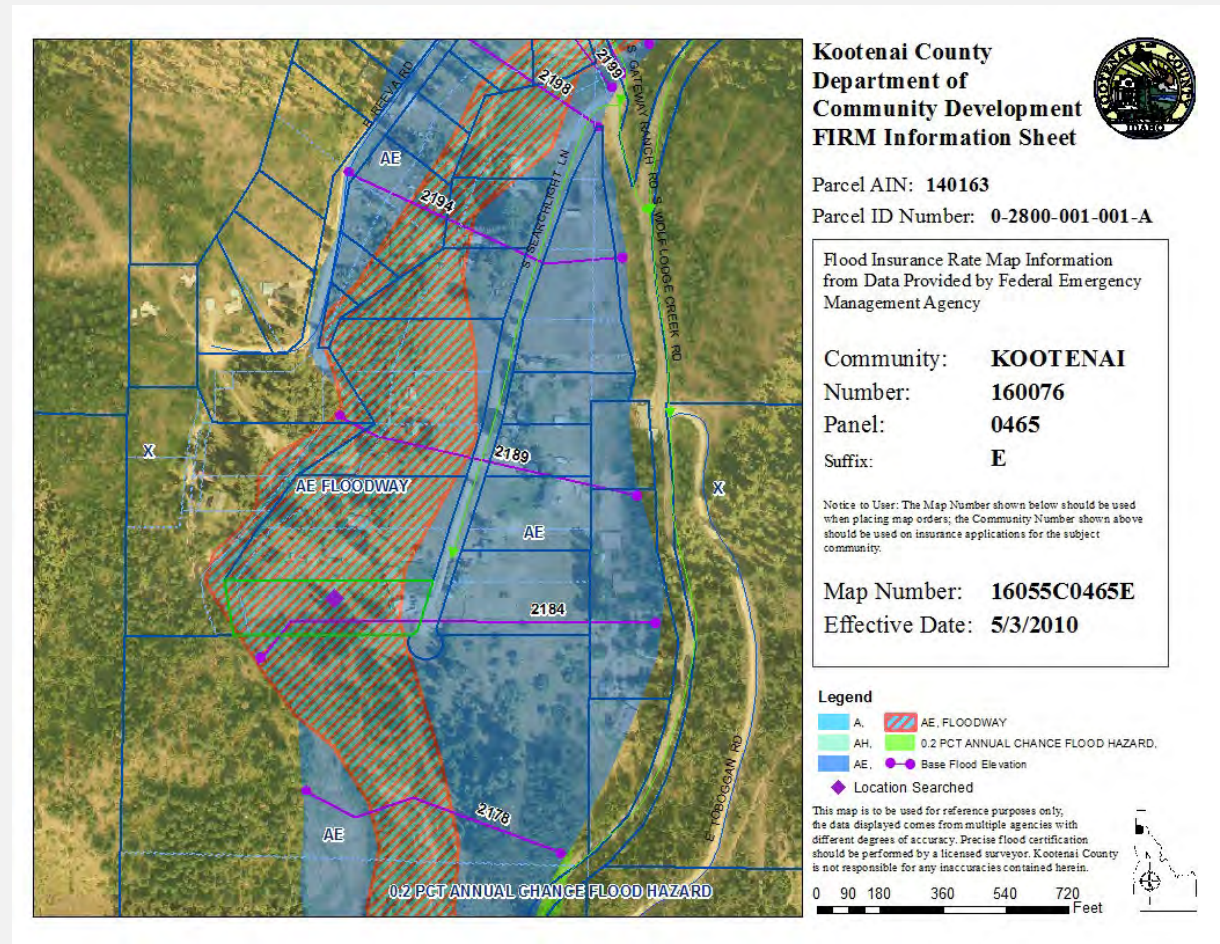
X: Low risk/not required to meet NFIP standards

D: Areas that are unmapped

# Flood Insurance Rate Map (FIRM)

SFHA based on  
Flood Insurance  
Study

FIRMs usually  
provide  
Base Flood  
Elevations (BFE)  
for floodplains

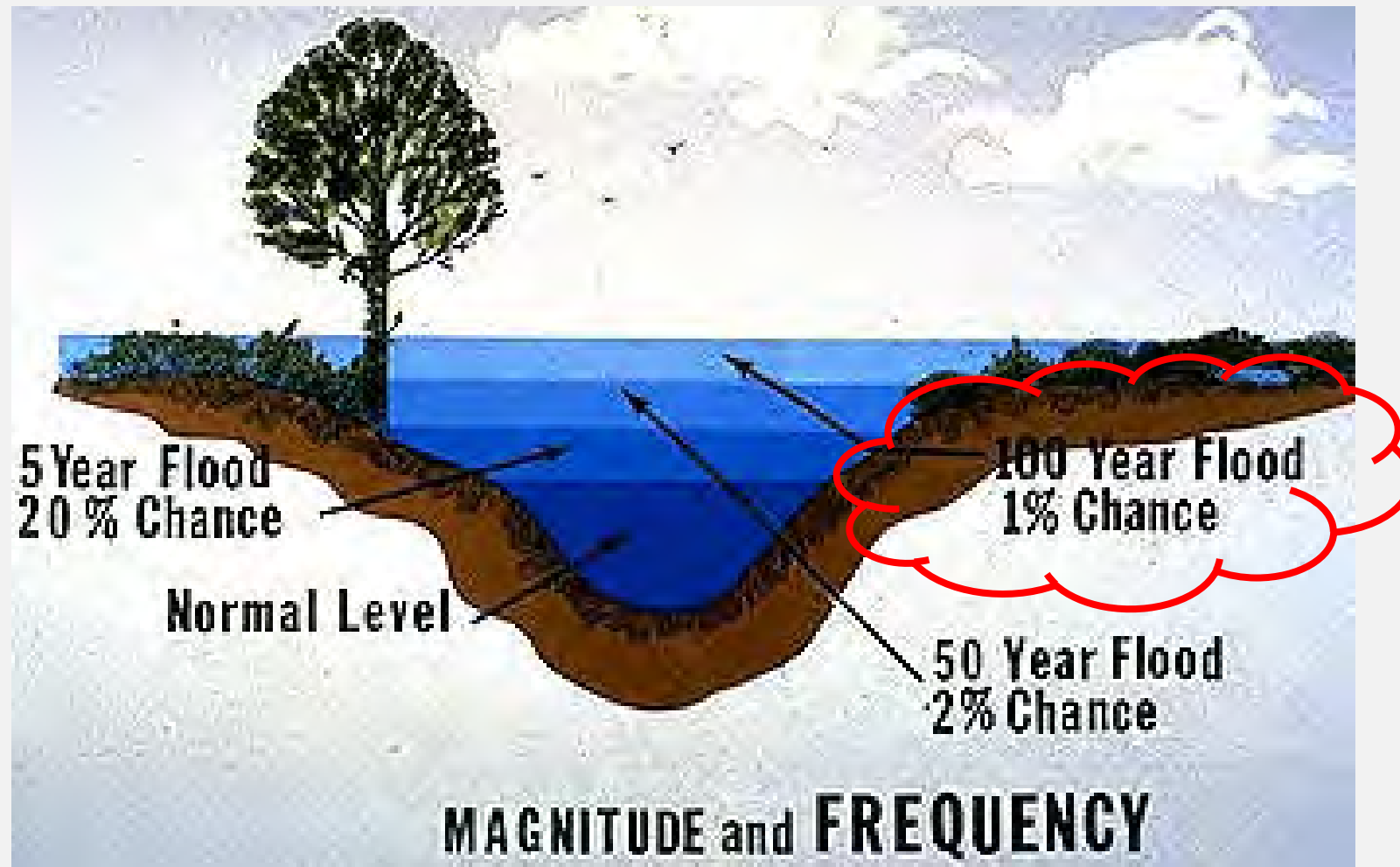


# Base Flood Elevation (BFE)

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Generally the height of floodwaters during discharge of the base flood as indicated on the FIRM.

The base flood elevation is measured in feet using North American Vertical Datum of 1988 (NAVD88), as of May 2010.



1 Chance/100 Years = 1% annual chance (every year)

1 Chance/50 Years = 2% annual chance

1 Chance/20 Years = 5% annual chance



# Insurance

PREMIUMS available for communities participating in the NFIP

Pre-FIRM (Prior to March 1, 1982)

These rates are subsidized by the NFIP.

Owners of these rates do not pay “actuarial” rates.

Post-FIRM (On or after March 1, 1982)

Premiums are based on the degree of flood protection provided to a subject property

(rates are based upon true risk the building is exposed to)

# Rating Examples

Type	Coverage	Premium		
		-1'	at BFE	+1'
Pre-FIRM	\$100,000	\$595*	\$595*	\$595*
Post-FIRM	\$100,000	\$1161	\$401	\$286
Mfg. Home	\$60,000	\$896	\$579	\$289
Un # A Zone	\$100,000	submit	submit	\$791**
Commercial	\$150,000	\$3137	\$1088	\$573
B,C X Zone	\$100,000	\$326	\$326	\$326

\* Pre-FIRM can be elevation rated

\*\* In UA, \$425 if 2' > ground; \$276 if 5' > (less if BFE used)

\*\*\* Can be less with as PRP (e.g. \$221 for \$100,000 ins)

All policies include an \$80 Expense Constant

# Process Overview

## Building Permit Stage

- Flood Review

## Can I build in SFHA?

- Unplatted: Yes – must meet flood regulations.
- New Subdivision: Must build completely outside SFHA

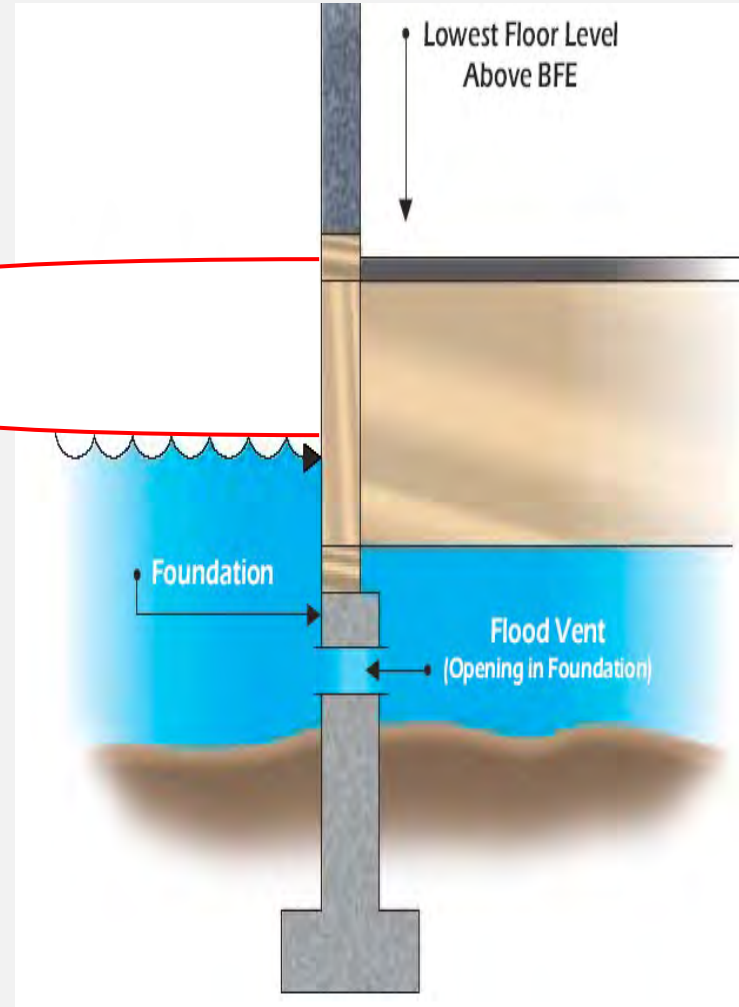
## Subdivision

- Min building site: 4000 sf outside SFHA
- Access outside SFHA



# Floodplain Regulations

3' above the BFE



## The Elevation Certificate (EC) is a critical administrative tool:

- ✓ Rate post-FIRM and some pre-FIRM buildings.
- ✓ Determine compliance with floodplain ordinances.
- ✓ Support LOMA/LOMR-F.

U.S. DEPARTMENT OF HOMELAND SECURITY  
Federal Emergency Management Agency  
National Flood Insurance Program

# ELEVATION CERTIFICATE

OMB No. 1660-0008  
Expires March 31, 2012

Important: Read the instructions on pages 1-9.

## SECTION A - PROPERTY INFORMATION

A1. Building Owner's Name: Elizabeth Coleman, Life Est: K.A. & C. A. Morris

For Insurance Company Use

Policy Number

A2. Building Street Address (including Apt., Unit, Suite, and/or Bldg. No.) or P.O. Route and Box No.  
746 Campbells Creek Rd.

Company NAIC Number

City: Charleston State: WV ZIP Code: 25306

A3. Property Description (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)  
Lot 8A Moser Crossover Subdivision; Malden Dist. Tax Map 10C Parcel 68

A4. Building Use (e.g., Residential, Non-Residential, Addition, Accessory, etc.): Residential

Horizontal Datum: ☐ NAD 1927 ☒ NAD 1983

A5. Latitude/Longitude: Lat. 38.3274657 Long. 81.5063248

A6. Attach at least 2 photographs of the building if the Certificate is being used to obtain flood insurance.

A7. Building Diagram Number: 2

A8. For a building with a crawlspace or enclosure(s):

A9. For a building with an attached garage:

a) Square footage of crawlspace or enclosure(s): 135 sq ft  
b) No. of permanent flood openings in the crawlspace or enclosure(s) within 1.0 foot above adjacent grade: 0  
c) Total net area of flood openings in A8.b: 0 sq in  
d) Engineered flood openings? ☐ Yes ☒ No

a) Square footage of attached garage: sq ft  
b) No. of permanent flood openings in the attached garage within 1.0 foot above adjacent grade: sq ft  
c) Total net area of flood openings in A8.b: sq in  
d) Engineered flood openings? ☐ Yes ☒ No

## SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. NFIP Community Name & Community Number  
Kanawha County No. 540070

B2. County Name  
Kanawha

B3. State  
WV

B4. Map/Panel Number  
54039C04358

B5. Suffix  
E

B6. FIRM Index Date  
2/06/2008

B7. FIRM Panel Effective/Retired Date  
2/06/2008

B8. Flood Zone(s)  
AE

B9. Base Flood Elevation(s) (Zone AE, use base flood depth)  
637.8

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in item B9.

☐ FIS Profile ☒ FIRM ☐ Community Determined ☐ Other (Describe) Flood Insurance Study

B11. Indicate elevation datum used for BFE in item B9: ☐ NGVD 1929 ☒ NAVD 1983 ☐ Other (Describe)

B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? ☐ Yes ☒ No  
Designation Date ☐ CBRS ☐ OPA

## SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: ☐ Construction Drawings\* ☐ Building Under Construction\* ☒ Finished Construction

\*A new Elevation Certificate will be required when construction of the building is complete.

C2. Elevations - Zones A1-A30, AE, AH, A, V1-V30, V (with BFE), AR, AR/A, AR/AE, ARI-A30, ARI/AH, ARI/AE. Complete items C2.a-h below according to the building diagram specified in item A7. Use the same datum as the BFE.

Benchmark Utilized: GCR Vertical Datum NAVD83

Conversion/Comments

Check the measurement used.

a) Top of bottom floor (including basement, crawlspace, or enclosure floor) 636.7 ☒ feet ☐ meters (Puerto Rico only)  
b) Top of the next higher floor 645.5 ☒ feet ☐ meters (Puerto Rico only)  
c) Bottom of the lowest horizontal structural member (V Zones only) ☐ feet ☐ meters (Puerto Rico only)  
d) Attached garage (top of slab) ☐ feet ☐ meters (Puerto Rico only)  
e) Lowest elevation of machinery or equipment servicing the building (Describe type of equipment and location in Comments) 652.4 ☒ feet ☐ meters (Puerto Rico only)  
f) Lowest adjacent (finished) grade next to building (LAG) 635.3 ☒ feet ☐ meters (Puerto Rico only)  
g) Highest adjacent (finished) grade next to building (HAG) 644.4 ☒ feet ☐ meters (Puerto Rico only)  
h) Lowest adjacent grade at lowest elevation of deck or stairs, including structural support ☐ feet ☐ meters (Puerto Rico only)

## SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information. I certify that the information on this Certificate represents my best efforts to interpret the data available. I understand that any false statement made may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

Check here if comments are provided on back of form. Where latitude and longitude in Section A provided by a licensed land surveyor? ☒ Yes ☐ No

Certifier's Name: Dennis P. King

License Number: 1119

Title: Owner

Company Name: King Engineering & Land Surveying Co.

Address: 1992 Parkwood Road

City: Charleston

State: WV

ZIP Code: 25314

Signature

Date: 11/05/2010

Telephone: 304-344-6839

PLACE  
SEAL  
HERE

FEMA Form 81-31, Mar 09

See reverse side for continuation.

Replaces all previous editions.

# Kootenai County Floodways

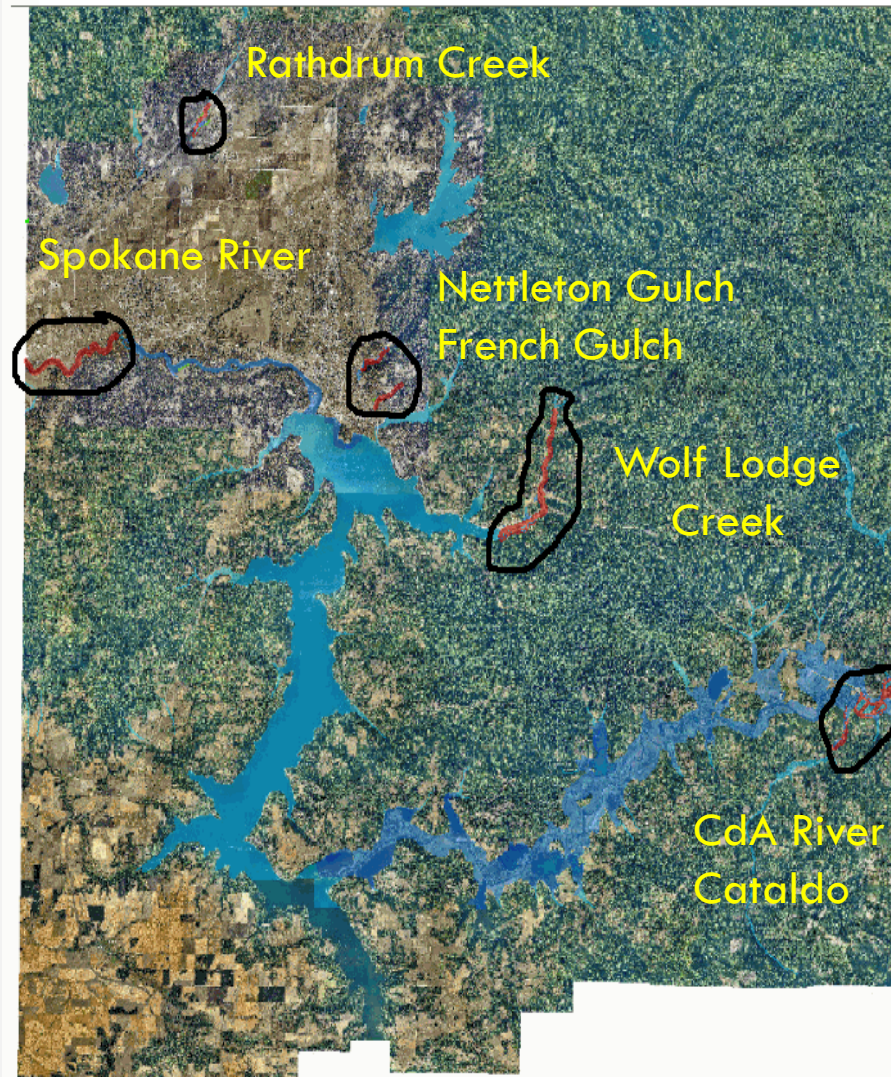


A "Regulatory Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

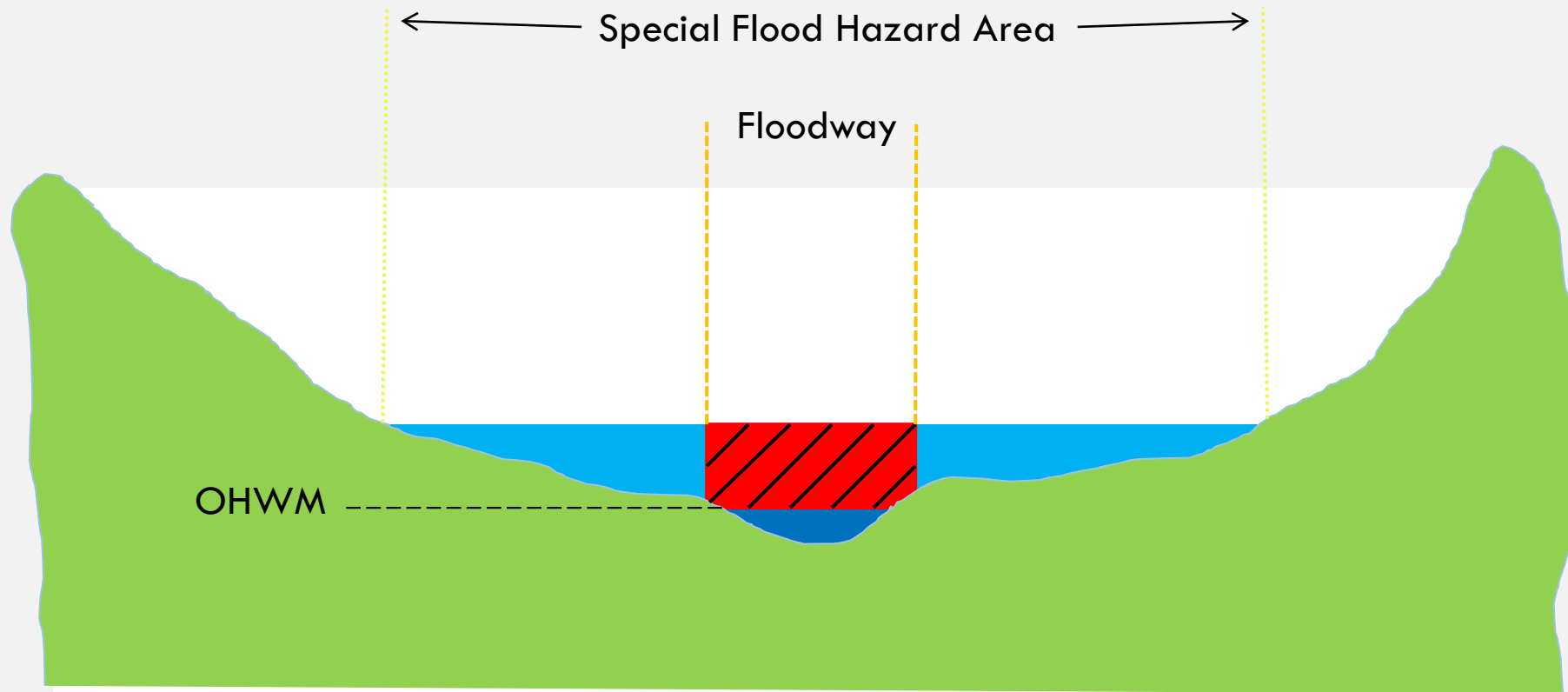


# Kootenai County Floodways

FLOODWAYS  
are extremely  
*hazardous*  
due to high velocity  
floodwaters within  
floodplains



# SFHA and FLOODWAY Schematic



**SFHA = 1% Annual Chance Flood Height**

# QUESTIONS?





# Thank you!

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Jim Ekins, Ph.D., Extension Water Educator  
University of Idaho Extension Water  
Outreach

[jekins@uidaho.edu](mailto:jekins@uidaho.edu); 208-292-1287 (Ofc.)  
<https://www.uidaho.edu/extension/idah2o>

