Skagit County
Flood Insurance Study Update

Ryan Ike, CFM
FEMA Region 10
- Process, Schedule, & Deliverables

- Base Flood Elevations, Modeling, & Levees

- Flood Insurance Rates & Grandfathering
New maps cover Sedro Woolley downstream to bay
Study uses an unsteady-state, 2-D hydraulic model
The hydrologic data for the study:
- Regulated 100-year discharge of 226,400 cfs (at Concrete)
- 50-year discharge of 185,000 cfs (at Concrete)
There are no 100-year flood protective levees
Vertical datum changes from NGVD 29 to NAVD 88
New maps will not contain a floodway (at this time)
Follows a USGS Quad layout – countywide coverage with no city “cut-outs”

Currently working with the County GIS staffs to ensure that quality LiDAR-topo data is used

Contains 100 & 500 year floodplains (AE/X zones)

10, 50, 100, 500 year flood elevations published

Not the same results as the USACE is using for their Flood Damage Reduction Study
Digital Flood Insurance Rate Maps

Vertical Datum Change

- **NGVD 29**
  - Based on a mean sea level from 21 tidal stations in the US & 5 stations in Canada

- **NAVD 88**
  - Based on the density of the Earth instead of varying values of sea heights
  - More accurate

- **Conversion in Skagit County is 3.77’**
  - \( \text{NGVD} + (3.77’) = \text{NAVD} \)
Digital Flood Insurance Rate Maps
Vertical Datum and FIRMs (ex uses 3.77’ conversion)

NGVD 29

- BFE = 2 ft

NAVD 88

- BFE = 5.77 ft
• Finish mapping upper Skagit from Sedro Woolley to Concrete (including portions of the Sauk)
  – Will include updated topo/floodway/new BFEs
• Meet with communities to start to discuss a floodway downstream of Sedro Woolley
• Work with the communities to outreach study results and homeowner implications
• Issue revised maps
Floodway + Floodway Fringe = 100 Year Floodplain
Surcharge not to exceed 1.0 feet
Historically, Skagit County, Burlington, and Mount Vernon have all adopted their own version of a conveyance preservation tool pursuant to 60.3(C)(10) of the 44 Code of Federal Regulations.

- RCW 86.16 applies to a “floodway” as shown on a FEMA map
- A floodway is a standardized approach to preserving open space to convey the 100-year flood without causing greater than a 1’ rise.
- Floodways are used from Sedro Woolley upstream
1. Restudy is requested – July 1997 (part of USACE GI)
2. Scoping meetings - January 4, 2001
6. 90 day appeal period begins after 2nd public notice in local newspaper – est. Sept, 2007
Restudy Process

7. 90-day appeal period ends – est. December, 2007

8. FEMA reviews submitted technical appeals and modifies or maintains maps as appropriate


9. Communities have 6 months to adopt the study before the data becomes “effective”. *Failure to adopt results in suspension from NFIP*

Appeals

- “requests for changes to proposed BFEs”
- Must be based on scientific evidence demonstrating error
- FEMA will not accept anecdotal information

Protests

- “requests that do not involve BFEs”
- Floodplain boundaries
- Corporate limits
- Road locations
- Road names
- Etc.
Rumors vs. Facts

• **Myth:** “BFEs would be lower if we removed the four controversial “Stewart” floods!”

• **Fact:** FEMA evaluated a 50-year flood event with a lower discharge than would occur with the 4 floods removed and verified that the BFE would only decrease by about 1-2’
A 50-year flood has a 2% chance of occurring (or being exceeded) each year or a 45% chance of occurring over 30 years.

Two Examples…

- At I-5 (in “3 bridge corridor”) NAVD 88
  - Draft 100 year SWL: ~44.3’
  - Draft 50 year SWL: ~43.8’ (.5’ less than draft 100 year)
  - Effective BFE: ~39.2’ (5.1’ less than draft 100 year)

- At intersection of I-5 & HW20 “Overflow Path 1” NAVD 88
  - Draft 100 year SWL: ~39.8’
  - Draft 50 year SWL: ~38.9’ (.9’ less than draft 100 year)
  - Effective BFE: ~34.2’ (5.6’ less than draft 100 year)
Base Flood Elevations
What accounts for the change from 1984 – 2007?

• Previous model
  – Assumed 3 “Flow Paths” each caring a limited amount of water
    • Flow Path 1: 130k CFS  Flow Path 2: 86k CFS  Flow Path 3: 44k CFS
  – Did not factor levee failures
    • Flooding in Fir Island: effective BFE is 12.7’ (NAVD88), but levee failure resulted in observed depths of 10’ above the ground (exceeding BFE’s by 3-9’)
  – Used a single est. of 240,000 cfs entering the river (steady-state) and routed it in a uniform direction downstream (1-dimension)
  – Relied on a variety of simplified engineering assumptions (e.g. 3 flow paths with finite amounts of water)
• New model factors conditions such as:
  – *Water entering or exiting* the river system 2-dimensions) as the river rises, crests, and falls over time (unsteady-state)
  – *Water freely moving/interacting* throughout the entire delta (as opposed to assumed separate “flow paths” with their own assumed 100-year discharge)
  – *levee failure scenarios*
How does FEMA model levees?
Scenarios 1: Assume no levees exist

- Establishes a baseline for comparison
- Used for calculating the Floodway
- Provides lowest BFEs

No levee BFE: 20’

Ground elevation: 18’

Ground elevation: 16’
Scenario 2: Simulate right bank levee failure

This determines the BFE on the right bank (behind levee)
Scenario 3: Simulate left bank levee failure

- This determines the BFE on the left bank (behind levee)

Left bank BFE: 22’
No levee BFE: 20’
Ground elevation: 18’
Ground elevation: 16’
Scenario 4: Simulate no levee Failures

- Determines the BFE within the levee
- Indicates insufficient freeboard?

Within levee BFE: 24’

Ground elevation: 18’

Ground elevation: 16’
• Final BFE shown reflects what would occur when a levee fails by factoring in the unknown of where the levee will fail.

Channel BFE: 24'

Left bank BFE: 22'
Right bank BFE: 21'

Ground elevation: 18'
Ground elevation: 16'
Is the levee certified by USACE?

- Levees must meet standards identified at 44 CFR 65.10
- Based on FEMA Guidelines and Specifications for mapping
- Original interim levee policy: May 15, 1981
• Myth: “I won’t be able to purchase flood insurance because of FEMA’s maps”

• Fact: Flood Insurance will remain available to every resident in Skagit County or City
  – Skagit Co residents save 25%
  – Mount Vernon Residents save 20%
  – Burlington Residents save 20%
  – La Conner Residents save 10%
Flood Insurance Statistics

Skagit County Facts

- Total number of policies: 2,737 (highest in State)
- Average premium: $650
  - 90% of policies are in the floodplain
- Insurance in force: $489 million
- 73% of County buildings are Pre-FIRM
- 27% are Post-FIRM
- Total losses since 1978: 532
- $6.7 million claims paid
• Policy holders in the SFHA save 25% on premiums
• SFHA buildings save $227 annually
  – This equals ~$561,000 saved each year
• B, C, X Zone buildings save $55 annually
• Average residential premium: $605
• Average non-residential premium: $986
When maps change, homeowners may have access to additional funds to help mitigate…

ICC provides up to $30,000 to:
- Elevate the building on site;
- Relocate the building to another site;
- Demolish the building;
- Floodproof the building (non-residential only)
- Any combination above

Total claim payment cannot exceed $250k for residential, $500k for non-residential
**Flood Insurance Rates**

*2007 Post FIRM Residential Rates ($100k)*

- 3 ft above BFE = $196
- 2 ft above BFE = $261
- 1 ft above BFE = $411
- 0 ft at BFE = $741
- -1 ft below BFE = $2,296
- -2 ft below BFE = $2,535
- -3 ft below BFE = $2,825
- -5 ft below BFE = $5,500
Flood Insurance Rates

2007 Post FIRM Non-residential Rates ($150k)

+4 ft above BFE *= $888
1 ft above BFE = $726
0 ft at BFE = $1,806
-1 ft below BFE = $7,041

* $500k building, $500k contents w/ Class 5 CRS discount
• To recognize policy holders who have built in compliance and have maintained a continuous and current flood insurance policy, FEMA will allow the policy holder to continue to benefit from the original rating of that building.
• Policies are transferable from one owner to another (e.g. due sale of property)
• Owner has the option of using the updated maps as the rating criteria for that property or continuing to use the rate established based on the original (old) maps.
• Or…
Flood Insurance
Grandfathering Rate Require Documentation

- The date of the FIRM in effect when building was constructed
- The flood zone from that FIRM in which the property is located
- The Base Flood Elevation (BFE) for that zone (if applicable)
- A copy of the map panel showing the location of the building
- The rating element that is to be grandfathered (rate or zone). Evidence supporting the rating element includes documents such as Elevation Certificates.
- A letter from the community official verifying this information also is acceptable, as long as the above information is provided.
Why use the draft maps for permitting?

• If a building is voluntarily elevated today using the draft BFEs, when the maps become effective, that owner will still be able to pay rates reflecting the additional freeboard!

• The key to rating buildings built in compliance with old maps is to retain copies of the old maps!
Grandfathering

2007 – Existing, Compliant, Post-FIRM Structure

Current Effective
BFE = 39’

DRAFT BFE = 44’

Annual premium: ~$411 (BFE +1’ rate) for $100,000 insurance
**Grandfathering**

2007 – Existing, Compliant, Post-FIRM Structure: no changes

Old BFE = 39’

Grandfathered annual premium: ~$411 (retains BFE +1’ rate) for $100,000 insurance (unless substantially improved)

New BFE = 44’
Grandfathering

2007 – New construction or substantial improvement

Current Effective BFE = 39’

DRAFT BFE = 44’

Grandfathered annual premium: ~$196 (retains BFE + 5’ rate) for $100,000 insurance
Questions & Comments

FEMA Region X
Ryan Ike, CFM (425) 487-4767

Ecology, NWRO Bellevue
Chuck Steele (425) 649-7139

NFIP Insurance Questions
Leslie Melville (425) 482-0316

FEMA Map Services Center: www.msc.fema.gov
Access current maps for your location

Letter of Map Amendment (LOMA) Hotline - 1-877-FEMA-MAP