

Preliminary Alternatives Descriptions

- Alternative 1 – Swinomish Diversion
- Alternative 2 – Small Swinomish Diversion with Setback Levee
- Alternative 3 – Ring Dike with Selective Overtopping Levees
- Alternative 4 – Ring Dikes with Overtopping Levees
- Alternative 5 – Setback Levee
- Alternative 6 – Samish Diversion
- Alternative 7 – North Swinomish Diversion

Other Alternatives considered but eliminated from further consideration;

- Do Nothing
- New Upstream Storage Dam
- Dredging
- Increased Dam Storage (in existing reservoirs)

Detailed Alternatives.

In all alternatives, a floodwall will be built in Mount Vernon to prevent the continued flood fight that is required with even a small frequency event. A levee will also be built near Sterling to preclude the necessary flood fighting along Highway 20. Even though the flood plan would be protected from a 100-year event in the diversion and setback alternatives, development on the entire flood plain would continue to be restricted by zoning. Each alternative has a mitigation feature for construction of habitat. Riparian habitat will be developed along setback levees and within the diversions. A saltwater marsh will be encouraged in the estuaries at the downstream end of the diversions. Year round fresh water flow is an option in the Swinomish alternatives. The Samish diversion during non-flood conditions, will not include a fresh water flow to prevent mixing of Skagit and Samish fish stock. A number of old oxbow and sloughs have been identified for restoration depending on which alternative is selected.

a. Alternative 1 – Swinomish Diversion. This alternative would involve building a new dike downstream of Sedro Woolley. The levee would be set back South of Burlington. The bridges would be lengthened for the railroad, Highway 99 and Interstate 5. An inlet structure would be built into the levee in the River Bend area. A diversion would be constructed from the inlet to Swinomish Slough. The flood-way would be confined by dikes across the existing ground line to the LaConner-Whitney Road, where a salt-water

estuary would be developed. The diversion would only be used when the event exceeded a 25-year flood event. A floodwall would be built in Mount Vernon. The total cost of the alternative is \$216,000,000 including, real estate, planning, engineering and design and construction management. There would be riparian habitat feature in the diversion.

b. Alternative 2 – Small Swinomish Diversion and Setback Levee. This diversion would be 1,000 feet wide. This diversion is similar to alternative one except the addition of 500-foot setback levees from Mount Vernon to the mouth of the river. The diversion would only be used when the event exceeded a 50-year flood event. The total cost of the alternative is \$211,000,000 including planning, engineering and design and construction management. There would be riparian habitat feature in the diversion and where the levee is setback.

c. Alternative 3 – Ring Dikes with Selective Overtopping. This alternative would include the levee downstream of Sedro Woolley and the floodwall at Mount Vernon. It would also include dikes to protect West of Burlington and West Mount Vernon. The levee would be raised on the East side of the South Fork. The river levee South of Burlington would be setback 500 feet and the three bridges require lengthening. Overtopping sections would be built into the levees at River Bend, Fir Island and East of the North Fork. A 750 foot area would be purchased landward of the overtopping sections because of the flow directed by the overtopping sections. The alternative would protect Burlington, Mount Vernon, Conway and the transportation corridor. Access to Anacortes would be cutoff. The total cost of the alternative is approximately \$115,000,000 including planning, engineering and design and construction management. Mitigation would be development of some the sloughs and oxbows on the river.

d. Alternative 4 – Ring Dikes With Overtopping Levees. This alternative is similar to alternative 3, except that an overtopping section would be built downstream of Sedro Woolley and the another would be built South of Mount Vernon. The river levee South of Burlington would be setback 250 feet and modifications are required on the three bridges. Ring dikes would be required around Burlington and Mount Vernon to prevent the urban areas from flooding. Other urban areas that would require protection would be Conway and areas North West of Burlington. The total cost of the alternative is \$116,000,000 including planning, engineering and design and construction management. Mitigation would be development of some the sloughs and oxbows on the river. Cross-County transportation would be flooded in a 100-year event.

e. Alternative 5 – Setback Levee. This alternative would include a new levee downstream of Sedro Woolley, lengthened bridges South of Burlington where the levees would be setback. In the West Mount Vernon, the levee would be setback to Wall Street. And 1,000 foot setback levees downstream of Mount Vernon to the mouth. The bridges at Mount Vernon and Conway would both require lengthening. The total cost of the alternative is \$251,000,000 including planning, engineering and design and construction management. There would be riparian habitat feature where the levee is setback.

f. Alternative 6 – Samish Diversion. The inlet would be just down stream of Sedro Woolley. The flood way would require excavation but would enter the Samish River flood plain and prevent flooding from that river as well. All major roads and railroads would require a bridge. An estuary would be developed at the outlet on Samish Bay. The total cost of the alternative is \$223,000,000 including planning, engineering and design and construction management. There would be riparian habitat feature in the diversion.

g. Alternative 7 – North Swinomish Diversion. Same as alternative one except that the diversion would follow Highway 20. The total cost of the alternative is \$213,000,000 including planning, engineering and design and construction management.

Do Nothing Alternative;

Continue Existing Conditions (without project condition). No new action would be taken for flood damage reduction through either structural or nonstructural means.

Development on the flood plain would be restricted through existing zoning. Flood proofing of future structures would be required for continuation of the flood insurance program in Skagit County. This would indemnify property owners against losses, but would not prevent flooding. Undeveloped land in the flood plain could be preserved for parks and open space. The existing levee system and upstream flood control storage would be maintained. The existing flood-warning system would provide forecasts of floods and give emergency information to flood plain residents. This alternative would not meet the planning objectives since the existing average annual flood damages of \$67,000,000 would increase in the future.

Upstream Storage Alternative;

This alternative was eliminated from further consideration because of the Sauk River as part of the Wild and Scenic Rivers System and its high cost. Of the three remaining undammed tributaries, Suiattle, Sauk and Cascade, the Sauk River is the largest. All of these drainage basins are in the Wild and Scenic Rivers Area.

Dredging Alternative;

Channel dredging was studied to sufficient level of detail to determine that the desired levels of flood protection could not be provided by dredging alone, and that a combination of dredging and levee construction to provide desired levels of protection would be significantly more costly than levee construction alone. The project would also cause severe adverse environmental impacts, primarily the destruction of significant fish and wildlife habitat. Consequently, channel dredging is not considered a viable alternative for detailed study.

Increased Storage Alternative;

Increased storage at existing dams was ruled out because the option has already been optimized in earlier studies. Increased flood storage in the Ross and Upper Baker projects would not provide an economical increase in flood protection.