

NPSN-PL-ER

February 1978

MEMO FOR: RECORD

SUBJECT: Formulation of Alternatives - Skagit River Levee and  
Channel Improvement Project

1. Subject meeting was held in the Planning Branch conference room,  
1 February 1978. Those in attendance were:

Forest Brooks	Regional Planning
Bill McKinley	Regional Planning
Vern Cook	Design Branch
Karen Mettling	Environmental Resources Section

2. Purpose. The purpose of the meeting was to formulate alternatives to present to the public at a March public meeting on the Skagit River Levee and Channel Improvement project. This project is one part of the comprehensive basin flood control plan. The other two parts are potential upstream storage and the authorized but deferred Avon Bypass (due to lack of local assurances). All three parts together provide more than 100-year protection to urban and rural areas in the Skagit River delta and flood plain. The authorized project (levees and channel improvements in restricted areas up to I-5) would provide 11-year flood protection to Mt. Vernon and rural areas downstream (Skagit delta). No protection beyond existing conditions is provided for Burlington or the Samish Delta. Special legislation is currently being pursued which would extend our levee and channel improvement authority upstream beyond I-5. An attempt is now being made in Congress to in effect take the levee extension portion of the Avon Bypass and put it under the authority of the levee and channel improvement project.

3. Considerations in Alternatives Formulation. In formulating alternatives to the authorized plan, consideration was given not only to measures including the Avon Bypass and/or upstream storage but also to those which would provide flood protection without either the Avon Bypass or upstream storage. Both the Avon Bypass and the upstream storage have serious problems and may never be built. Therefore, some other means must be developed to provide high level protection for the urban areas. The primary objective was to provide high level (100-year)

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protection for urban areas (Burlington and Mt. Vernon), at least 11-year protection to rural areas downstream, and no increased damage to the Samish Delta. If greater than 11-year protection is desired for urban areas, levee improvements must be extended beyond I-5 on the right bank of the Skagit River at Burlington and on the left bank at Mt. Vernon. However, if urban levees are now built for 100-year protection and upstream storage is later authorized, then greater than 100-year protection will be provided. This will affect the calculation of benefits for the upstream storage project. Other points to consider in alternatives formulation are where will the overflow from flood events of greater than the level of protection provided by the project go (Samish or Skagit Deltas) and should protection be provided the delta as well as the urban areas (and to what level).

4. Alternatives - First Iteration.

- a. Do nothing.
- b. Authorized project (11-year protection).
- c. Authorized project plus Avon Bypass (60-year protection).
- d. Authorized project plus Avon Bypass plus upstream storage (100+ year protection).
- e. Authorized project plus Avon Bypass plus urban levees and protect Samish Delta.
- f. Authorized project plus Avon Bypass plus urban levees without protection to Samish Delta.
- g. Authorized project plus urban levees; overflow to Samish Delta.
- h. Authorized project plus urban levees plus upstream storage.
- i. Authorized project plus Avon Bypass plus upstream storage.

5. Alternatives - Second Iteration. With the exception of the Do nothing plan and the authorized project, those alternatives which did not satisfy the objective of 100-year protection to urban areas were eliminated and the final array of alternatives discussed.

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a. Do Nothing.

b. Authorized Project. Levee and channel improvements up to I-5 providing 11-year protection to Mt. Vernon and downstream rural areas. Overflow to the Samish Delta begins at 150,000 c.f.s. (25-year - same as existing condition).

c. Authorized project plus urban levees. Higher levees for Mt. Vernon on the left bank and Burlington on the right bank. Tie in at Sterling Hill and back to Burlington Hill if necessary. Provides 100-year protection to urban areas. Overflow to Samish Delta begins at 150,000 c.f.s. A low levee would be provided from Burlington to Sedro Woolley, if necessary, to keep Samish from flooding beyond current level as a result of levee improvements at Burlington.

d. Authorized Project plus urban levees plus single purpose upstream storage. Same levees as c.; however, due to upstream storage, levees could be smaller to give same level of protection and low dike at Samish may not be necessary.

e. Authorized project plus urban levees plus Avon Bypass. Levee system extended from Burlington to Sedro Woolley and Samish Delta provided protection from 180,000 c.f.s. flow. Urban levees at Mt. Vernon could be shorter to provide same level of protection as a result of the Bypass which would protect the Skagit Delta and Mt. Vernon.

f. Authorized Project plus Avon Bypass plus upstream storage. The entire Skagit and Samish flood plains would be provided protection from 100-year plus floods on the Skagit River. Levee height would not be as high to get desired level of protection as a result of upstream storage. This alternative in the past was considered to be the ultimate flood control plan for the basin.

6. Upstream storage sites were discussed, including: Cascade, Suiattle, Lower Sauk, and Upper Sauk. In studies in 1966, preliminary estimates were made of the cost of dams at these sites, both with and without power. Since the lower Sauk with 134,000 acre-feet of flood storage has more than twice as much storage as the other dams, it will be used for cost purposes in the preparation of the alternatives.

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7. There were several questions that came up that will have to be answered:

a. What storage is needed in the basin to provide 100-year flood protection (with Upper Baker)?

b. What happens when the levee design flood is exceeded?

c. What is the discharge of the 100-year summer (April-October) flood?

METTLING  
Environmental Resources Section

BROOKS  
Regional Planning Section

cc:  
Dice (ERS)  
Mettling (ERS)  
Brooks (Reg Plng)  
McKinley (Reg Plng)  
Cook (Des Br)  
Econ & Soc Eval Sec  
Foundations & Mat Br  
Civil Des Section  
Flood Plain Management  
ERS RP File  
Munsell/Salo (ERS)