FEDERAL COORDINATING OFFICE

federal emergency management agency

MOUNT ST. HELENS TECHNICAL INFORMATION NETWORK

Wednesday, June 25, 1980

BULLETIN #25 - "Flood Hazard Reduction in the Vicinity of Mount St. Helens"

This bulletin describes the problems associated with reducing flood hazards caused by the eruption of Mount St. Helens. Also it outlines the steps in process now or to be taken by various federal agencies to lessen the impacts of any flooding.

Drainage basins develop a system of streams that will efficiently transport sediment and water from upland slopes. Individual stream channels in turn adjust themselves to transport a certain volume of water. This volume is commonly expressed as cubic feet per second (cfs)--a volume passing a point on the river in one second. If the flow is greater than the channel capacity, the river spills out of the channel and floods adjacent parts of the valley.

River channel capacity is normally exceeded only once every ~~two~~ or three years. The May 18 eruption, however, completely filled the upper 14 miles of the North Fork of the Toutle River channel with mudflow material. Several million cubic yards of that material washed down into the Cowlitz and Columbia Rivers, leaving up to 15 feet of sediment in the lower Cowlitz River. The lower Cowlitz channel no longer has its normal channel capacity and will not be able to readjust itself quickly to safely carry its normal winter flow. For example, where the Cowlitz River had a 76,000 cfs channel capacity prior to May 18, it now has only a 10,000 cfs channel capacity. Flows greater than 10,000 cfs generally happen at least once every year. Therefore, flooding

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can be expected to occur along the lower Cowlitz River if the capacity is not artificially restored (dredged) or if the greater than normal runoff is not prevented from reaching the stream. Current daily flow is about 8,000 cfs.

This situation is further complicated by the large volumes of newly deposited material (ash and debris) in the Toutle River drainages and on the slopes of Mount St. Helens. During heavy rains and streamflows the material on the slopes and in the Toutle River drainages can move into the stream channel downstream further reducing channel capacity in the lower Cowlitz River. Additionally, the loss of vegetation on the slopes in the Cowlitz-Toutle River drainage system could lead to larger amounts of both runoff and sediment than normally expected.

For the present there is very little danger of flooding as heavy precipitation is not expected until late in the year. In preparation for heavy seasonal runoff that may cause some flooding, Federal agencies are undertaking damage reduction measures and providing a warning system for communities that may be flooded. The following steps have been taken:

- New flood hazard maps have been prepared. These maps delineate the areas expected to be flooded and are being used by officials responsible for establishing emergency housing sites required because of the events at Mount St. Helens. They are also available to and being used by other officials responsible for public safety.
- To help restore channel capacity, the Army Corps of Engineers is dredging a portion of the lower Cowlitz River.

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- To lessen further sedimentation of the Cowlitz River during the coming years (rainy season) the Corps of Engineers is considering construction of a series of debris retention structures on both the North and South Forks of the Toutle River. These debris retention structures would serve as a barrier to sediment moving downstream where it would further reduce channel capacity.
- To provide early warning to the residents in the Kalama, Toutle, Lewis, and Cowlitz River basins, special river gauges are being installed. This system of gauges will quickly warn of severe flooding conditions and will also give routine data essential for flood forecasting.

These measures are intended to provide a significant measure of added protection for residents of the communities along the lower 20 miles of the Cowlitz River. Nevertheless, people should use common sense in determining when and where they re-occupy low-lying areas adjacent to affected streams. Further, residents of areas susceptible to flooding should consider purchasing flood insurance through their insurance broker or agent (see Technical Information Bulletin #17).