

HAZARD IDENTIFICATION AND VULNERABILITY ANALYSIS (HIVA)

Walla Walla County, Washington

FLASH FLOODING

Hazard Overview

Flash floods are characterized by a very rapid quick rise of the water level in a small stream, river or dry wash. In the extreme case, a flash flood is a literal wall of water moving down a steep canyon or ravine. Flash floods are common in areas of steep terrain and alluvial fans. Flash floods are distinguished from other types of flooding by the short time scales of their development and intensification. They are the leading cause of deaths from natural hazards in the United States. A majority of flash flood deaths is motor vehicle related.

The brief, intense rainfall from a thunderstorm is usually the cause of a flash flood. Severe stalled thunderstorms over steep mountain watersheds can have calamitous results as in the Big Thompson Canyon in Colorado in July 1976 when 145 people were killed.

Inadequate urban drainage systems can transform even small intense rainstorms into killer catastrophes such as the flash floods in Dallas, Texas in May 1995 and in Fort Collins, Colorado in July 1997.

Flash floods on alluvial fans are attracting greater attention as the population living in hazardous areas continues to increase. In places where urban environments, where vegetation has been removed, where bridges and culverts constrict flow, and where buildings and paving have greatly expanded impermeable surfaces, there is an increasingly serious flash flood problem. The patterns, amount and timing of heavy rain runoff are altered with potentially disastrous consequences.

Flash floods occur within six hours of a rain event or following a sudden release of water held by an ice or debris jam, and flash floods can catch people unprepared. People and animals may not always have a warning that these sudden floods are coming.

As land is converted from fields or woodlands to roads and parking lots, it loses its ability to absorb rainfall. Urbanization increases runoff two to six times, over what would occur on natural terrain. During periods of urban flooding, streets can become swift moving rivers, while basements and viaducts can become traps as they fill with water.

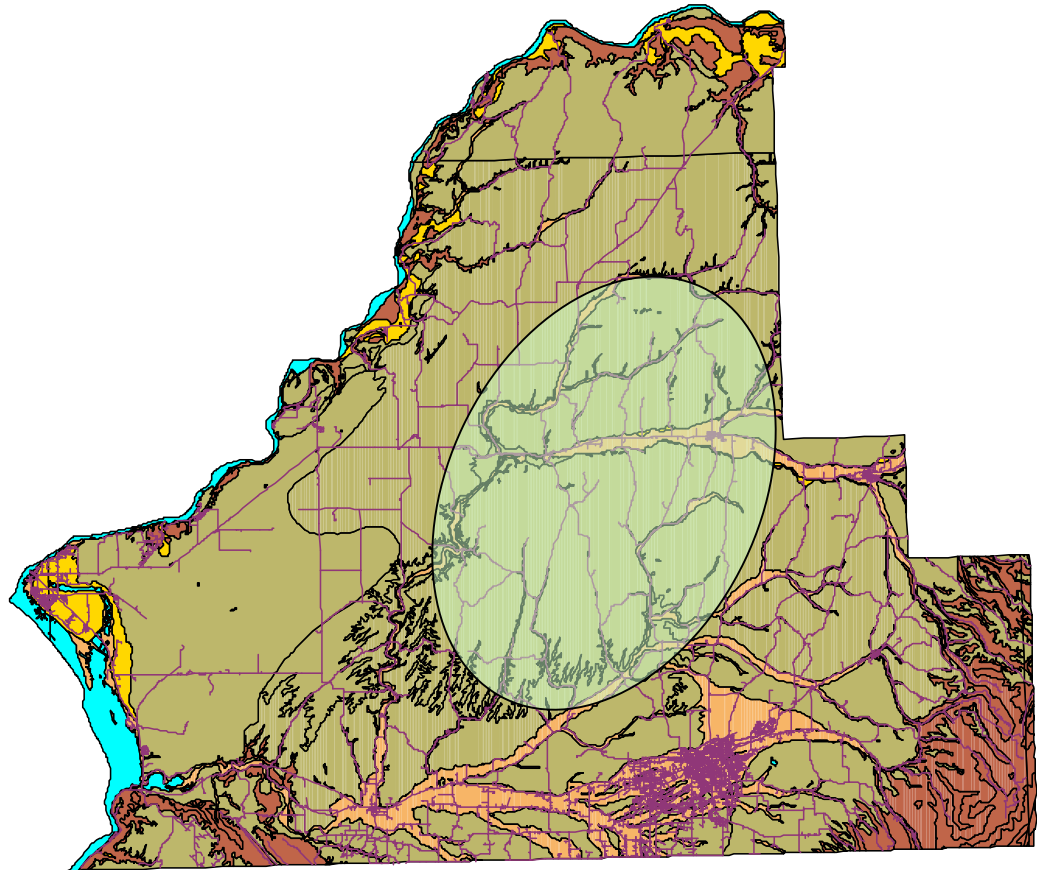
Several factors contribute to flooding. Two key elements are rainfall intensity and duration. Intensity is the rate of rainfall, and duration is how long the rain lasts. Topography, soil conditions, and ground cover also play important roles. Most flash flooding is caused by slow-moving thunderstorms, thunderstorms repeatedly moving over the same area, or heavy rains from hurricanes and tropical storms. Floods, on the other hand, can be slow or fast rising, but generally develop over a period of hours or days.

History and Probability of Occurrence

Thunderstorms in Walla Walla County are common occurrences, which can drop as much as two inches of rain in a few hours. Thunderstorms moving along the foothills of the Blue Mountains are the most common cause of flash flooding in Walla Walla County.

Walla Walla County HIVA – FLASH FLOODING

Flash flooding can occur anywhere in Walla Walla County. Since most of Walla Walla County is relatively arid, many large areas forming a watershed flowing into a single small stream are at risk. In these cases, even modest rainfall can swell these streams to dangerous proportions very quickly. The central region of Walla Walla County is more often hit by flash floods than other areas of the county. The region centered by the City of Prescott is mostly wheat farms with large drainage areas.



Although no historical data is available to infer future probability of occurrence of destructive flash flooding, increased urbanization and building adjacent to drainages there is a high likelihood that localized damage from flash flooding will occur in Walla Walla County in the next 25 years.

A probability rating of HIGH is assigned.

Vulnerability

Damage from localized flash flooding will most likely be contained to a relatively small area or drainage. Homes and other structures built along drainages, roads and bridges and animals in the path of flash floods are at risk.

Walla Walla County HIVA – FLASH FLOODING

A limited area or segment of population, property, commerce, infrastructure or service is exposed to the effects of a hazard. In a worse case scenario there could be a disaster of minor to moderate proportions. As a result a vulnerability rating of LOW is assigned.

Risk Rating

A risk rating of LOW is assigned. There is little potential for a flash flood disaster during the next 25 years. The threat is such as to warrant little special effort to prepare for, respond to, recover from, or mitigate against this hazard. This hazard need not be specifically addressed in the county's emergency management training and exercise program except as generally dealt with during hazard awareness training.