

SECTION 3 PROBABILITY

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PROBABILITY

RISK ASSESSMENT AND HAZARD ANALYSIS

Coos County Emergency Management revised their Hazard Analysis in 1995 and again in 2000. Oregon Emergency Management provided an opportunity to all counties to revise their report the summer of 2002. This assessment involved participation from all local governments in Coos County.

This Hazard Analysis was a planning process that was essential to insure effective mitigation of hazards and efficient recovery from events. A hazard is viewed as a situation or event having the potential for doing damage to life, property, resources, and the environment. The Hazard Analysis provides information, assists in management decisions and is designed to encourage local government to meet previously unmet emergency management procedures. Further, a hazard analysis strives to raise the level of understanding of local officials and citizens in the area of measures to prevent or mitigate hazard events.

The Coos County Hazard Analysis provides current quantitative information for ranking hazards and provides the platform for the Natural Hazard Mitigation Plan action items.

HAZARD ANALYSIS CRITERIA

In analyzing the risk posed by specific hazards, a rating criteria and weighting factor have been used. This formula is based on point value in which:

Low	=	1-3 points
Medium	=	4-6 points
High	=	7-10 points

EVENT HISTORY

Event history is based on the number of previous disasters / emergencies. Examples of events to include in assessing history of a hazard were those events for which the following activities were required:

- The EOC (or alternate) was activated;
- Activation / implementation of three or more EOP functions;
- A multi-jurisdictional response was required;
- A unified command structure was necessary to coordinate response;
- A "Local Declaration of Emergency" was made.

Weighting Factor is 2.

Low	=	0-1 events per 100 years
Medium	=	2-3 events per 100 years
High	=	4 + events per 100 years

VULNERABILITY

Vulnerability is based on the percentage of population or property likely to be affected.

Weighting Factor is 5.

Low	=	< 1% affected
Medium	=	1-10% affected
High	=	> 10% affected

MAXIMUM THREAT

Maximum threat is based on the percentage of population and property that could be impacted under a worst case scenario.

Weighting Factor is 10.

Low	=	< 5% could be affected
Medium	=	1-10% could be affected
High	=	> 25% could be affected

PROBABILITY

Probability is based on the likelihood of an occurrence within a specified period of time.

Weighting Factor is 7.

Low	=	At least 1 event within a 100 year period.
Medium	=	At least 1 event within a 50 year period.
High	=	At least 1 event within a 10 year period.

HAZARD ANALYSIS & PROBABILITY

The numeric score is not as important as how it compares with the scores of other hazards we face. By comparing scores, we can determine priorities: Which hazards should we be most concerned about? Which ones less so? By completing this process, planning can first be focused where the risk is greatest.

Based on the hazard analysis criteria, the following hazards were considered to pose the greatest threat to Coos County communities.

SEVERE WEATHER & HIGH WIND PROBABILITY HIGH SCORE 191

Coos County communities are subject to extremely high winds generated by strong Pacific Ocean storm systems that come ashore along the Oregon Coast. Severe storms are frequent with damaging winds. These natural events can and do result in power outages, disruption of services, transportation problems due to trees down and landslides, in addition to property damage.

Dates of occurrence with winds greater than 59 mph:

10/12/62	115 mph
11/13/81	75 mph
10/20/84	93 mph
07/03/68	68 mph
12/12/95	86 mph
11/19/96	60 mph
07/20/00	65 mph
02/07/02	120 mph DR1405

FLOOD (excludes Dam Failure) PROBABILITY HIGH SCORE 163

Coos County communities average annual rainfall ranging from 52” to 120”. The floods of 1964 and 1996 caused significant damage to infrastructure and properties within Coos County. These and other less significant flood events are caused by abnormally high water levels. Several days of heavy winter rains, which could be intensified by tidal effects, storm surges, and/or dike failure, are the causes. With approximately 1,418 people in 434 homes living in the flood plain (equates to .02% of the population) are at risk. Significant events:

- 10/31/24
- 12/22/64
- 02/08/96
- 11/16/96

EARTHQUAKE **PROBABILITY HIGH** **SCORE 149**

Past history of earthquakes in Oregon is relatively new. Recent quakes in Oregon were in March of 1993 Mw5.6, Scotts Mills quake and the September 1993 Mw6.9 and Mw5.9 quake in Klamath Falls. Despite their relatively small size the rural epicenters, both caused property damage. The greatest risk from earthquake in Coos County would be from an offshore Subduction Zone earthquake, with the maximum credible event ranging from Mw8.0 to Mw9.5 depending on how much of the zone ruptures at once. Other reports estimate earthquake recurrence intervals ranging from 340 to 590 years, the last large quake was about 1700 (300 years ago), placing the probability of another event in the next 50 years at 10 to 20 percent. Coos County has very few multi-story buildings, which would be damaged in a significant event. Only the newer buildings have been built to the seismic 4 standard for Oregon.

The highway systems for both the State and the County would suffer as Coos County has 43 bridges on priority one routes identified by ODOT as Highway 101, 42, and 242, which are on the 20 year plan to be retrofitted.

WILDLAND FIRE **PROBABILITY HIGH** **SCORE 146**

The major threat of fire in Coos County comes from the wildland/urban interface fires. With continued building in the interface zone, combined with the popularity of the rural lifestyle, the threat of wildland interface fire will increase. The other threat comes from the vast amount of forestland in the County. Coos County has had 68 big fires since 1917. Of those 68 fires, 7 have been over 1,000 acres and those 7 fires, 1 has been over 6,000 acres, and 2 have been 30,000 acres and over.

Major Coos County Fires since 1917:

Tioga	1919	6,080 acres
Tioga	1932	41,435 acres
Bandon	1936	30,000 acres including 90% of the City

TSUNAMI**PROBABILITY HIGH****SCORE 124**

Tsunami is an event that has resulted in serious impact in 1957 in the Aleutian Islands of Alaska, 1946 in the Aleutian Islands of Alaska, and 1964 in Prince William Sound of Alaska. With the recent completion of the Coos County Tsunami inundation maps by DOGAMI, the impact from a generated tsunami is not as severe as previously believed. Those maps have brought greater awareness and preparedness by the citizens of Coos County especially those living along the coastline for the Cities of Bandon, Charleston, Coos Bay, and North Bend.

Tsunami Warnings for Coos County:

April 1, 1946

March 28, 1964

May 7, 1986

June 10, 1996

LANDSLIDE**PROBABILITY HIGH****SCORE 115**

Landslides in Coos County usually occur due to the following: intense or prolonged rainfalls that cause sharp changes in groundwater levels; undercutting of a slope or cliff by erosion; vegetation removal by fires, timber harvesting, or land clearing; rockfall, rockslide, slump, and debris flows are all relative to landslides. The type of slides most common in the Tye geologic formation in Coos County is debris flows. Within the last 10 years the following roadways have experienced slides due to fill failure, rockfall or landslide causing closure in some degree: Highway 42 – 28; Highway 42S – 2; Coos River Highway – 14; Powers 242 – 6; Highway 101 – Coast Highway –5; Cape Arago Highway 240 – 1; Empire to Coos Bay Highway –1; and Coos County Highways 22 (too numerous to name).

INFESTATION**PROBABILITY MEDIUM****SCORE 61**

The major disease infestation is the Swiss Needle Cast epidemic. It is more evident in Douglas fir of the Coast Range. Nearly one million acres of forest in Oregon are affected with losses in tree volume growth approaching 100 million board feet per year. Sudden Oak Death, a newly detected disease is a threat to Oregon's oak. Root diseases and dwarf mistletoe continue to cause tree mortality and growth loss throughout Oregon's forests.

Coos County has approximately 900,000 acres of forest, which is 87% of the total land area and touches every community. The acreage is equally divided among public, small private, and forest industry ownership. The majority of the standing saw timber in the county (55%) is located on the public lands as opposed to 29% on forest industry lands and 16% on small private plots.

HAZARD ANALYSIS MATRIX

HAZARD	HISTORY WF=2	VULNERABILITY WF=5	MAXIMUM WF=10	PROBABILITY WF=7	TOTAL =
Severe Weather High Wind	2X9 =18	5X8 = 40	10X7 =70	7X9 =63	191
Flood	2X10 =20	5X6 =30	10X5 =50	7X9 =63	163
Earthquake	2X2 =4	5X6 =30	10X8 =80	7X5 =35	149
Wildland Fire	2X6 =12	5X7 =35	10X5 =50	7X7 =49	146
Tsunami	2X2 =4	5X5 =25	10X6 =60	7X5 =35	124
Landslide	2X8 =16	5X2 =10	10X4 =40	7X7 =49	115
Infestation	2X1 =2	5X1 =5	10X4 =40	7X2 =14	61