

Community Health and Public Safety, Part 1: Healthy, Safe People
Natural Disasters and Hazards (Goal 7) CLEAN POLICIES
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Statewide Planning Goal 7: Areas Subject To Natural Disasters And Hazards

"To protect life and property from natural disasters and hazards"

GOALS & POLICIES

GOAL

Minimize future impacts and risk to life and property from natural hazards* and disasters.

A. General Hazard Policies

1. Coordinate the City's hazard planning between departments, programs, agencies, and jurisdictions to promote consistency and implementation.
2. Work with DOGAMI, DLCD, Clackamas County and other agencies to maintain updated hazard inventories that inform potential development.
3. Locate new City infrastructure, essential facilities*, major structures, hazardous facilities and special occupancy structures* in non-hazard areas where possible.
4. Improve the resilience of the City's infrastructure by reducing the vulnerability of critical facilities.
5. Use the City's Natural Hazards Mitigation Plan Addendum to prioritize hazard mitigation projects.

B. FLOOD POLICIES

1. Apply flood management standards to areas defined and mapped as being within the City's Flood Management Area which includes:
 - a. Land within the 100-year flood boundary as depicted on the most recent Flood Insurance Rate Maps (FIRM) and Flood Boundary and Floodway Maps created for the National Flood Insurance Program by the Federal Emergency Management Agency (FEMA).
 - b. The area of inundation by the February 1996 flood along the Willamette River, along the Tualatin River, and along the Oswego Canal south of Bryant Road.

Comment [BSA1]: This is existing Policy 7-1.11

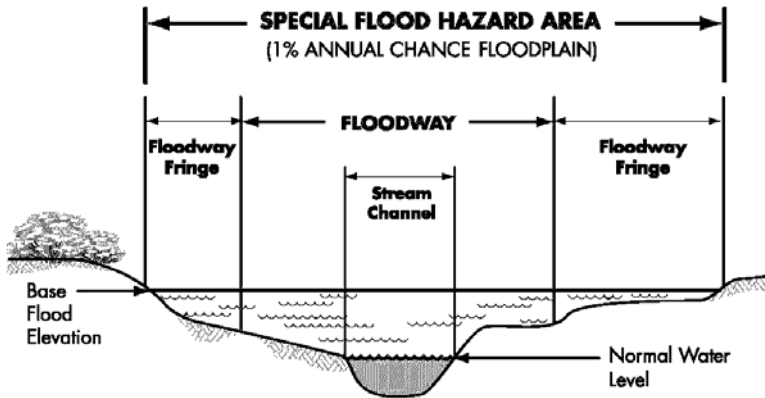
2. Continue to participate in the National Flood Insurance Program* and comply with Federal Emergency Management Agency (FEMA)* standards.
3. Limit new development in the FEMA-regulated floodway, including filling and removal of earth, to the following uses provided there is no increase in base-year flood levels.*
 - a. Public and private open space and recreational uses;
 - b. Water-dependent structures* such as docks, piers, bridges, and floating marinas; and,
 - c. Public facilities including unpaved roads and private access ways.
4. Implement regulations and standards to ensure public facilities and development meet City, FEMA and Metro Title 3 and other regulatory agency requirements, and
 - a. Reasonable protection of public facilities;
 - b. The flow, velocity and elevation of flood waters are not changed so as to endanger other property;
 - c. Other problems associated with flooding such as ponding, poor drainage, high water tables and unstable soils are addressed.
4. Protect, restore and maintain the natural systems of floodplains including riparian vegetation, wooded areas, wetlands and fish and wildlife habitat.
5. Allow development density within the floodway fringe to be transferred to higher portions of the development site.
6. *(This original policy was implemented in the CDC; however, the 2003 CDC amendments removed this policy. It no longer exists. Recommend deletion.)*

Comment [BSA2]: See figure 1. This policy is implemented in the CDC. A flood way is reserved and regulated by individual communities in cooperation with FEMA and the National Flood Insurance Program (NFIP) so water levels should never rise above a specific, safe designation during floods. The floodway should not be obstructed, be built on or have any encroachment without danger of flooding. An encroachment is any activity, construction, improvement or development which has not been approved to occur within the flood way. Encroachments are banned in flood ways unless it can be proved, via hydro-logic analysis, that the encroachment will not result in a rise in flood levels.

Figure 1

Floodplain Cross Section

Comment [BSA3]: Updates Figure 6.



C. EARTHQUAKE POLICIES

1. When siting essential public facilities*, evaluate hazard risk and location based on the most recent geologic and seismic studies.
2. Require compliance with the current edition of the Oregon Structural Specialty Code regarding building design for earthquake resistance.
3. Provide education and public awareness of earthquake risks and public safety.

D. LANDSLIDES, EROSION AND UNSTABLE SOIL POLICIES

1. Continue updating maps within the Lake Oswego Urban Services Boundary with the best and most current information to minimize hazards associated with soil erosion, landslides and unstable soils.
2. Implement regulations, standards and incentives to protect life and property from hazards associated with landslides, soil erosion and unstable soils to ensure:

- a. Appropriate engineering and site development measures to prevent damage from hazards associated with erosion, landslides and unstable soils;
- b. Protection and restoration of natural and topographic features such as ridge lines and vegetation to preserve slope and soil stability;
- c. Open space preservation of slopes which cannot be developed because of severe landslide and erosion hazard;
- d. Protection of natural resources associated with steep slopes such as stream corridors, trees and other vegetation and wildlife habitat; and,
- e. Erosion control measures.
- f. Property owners include erosion and drainage control measures in site planning, during and after development, to prevent increases in surface water runoff, erosion and siltation.

Comment [bsa4]: Undisturbed slopes greater than 50 percent cannot develop more than 30% of the site.

Comment [bsa5]: Will ensure consistency with stormwater updates.

- 3. Regulate density and intensity of land use in areas with the potential for unstable soils, known or potential landslide hazards and soil erosion hazard areas, in accord with the degree of hazard.
- 4. Control erosion through the following measures:
 - a. Minimize the disturbance of existing vegetation to control erosion.
 - b. Land identified with a potential for high erosion hazard will be maintained in open space, unless appropriate evidence demonstrates that engineering can effectively overcome soil and slope limitations.
- 5. Allow innovative site and building design, including the clustering of buildings, to avoid development in hazard areas and encourage steep slopes to be used for open space uses.
- 6. Ensure that public facilities and services are designed to withstand movement of soil and rock if locating in hazard areas is unavoidable.

Definitions

Base Flood: The flood having a one percent change of being equaled or exceeded in any given year. The base flood is also known as the 100 year flood.

DOGAMI: The Oregon Department of Geology and Mineral Industries’ (DOGAMI) primary function is to map the state’s varied geology and natural hazards to help Oregonians understand and prepare for the vast array of natural hazards that accompany the state’s spectacular geology.

Floodplain: The area bordering a watercourse subject to flooding. The floodplain includes both the floodway fringe and the floodway. The floodplain is further defined as being flooded by the 100-year flood, also referred to as the base flood (Figure 1).

Floodway : The area within the floodplain which includes the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot (Figure 1).

Floodway Fringe: The area within the floodplain lying outside the floodway. This is the area, in addition to the floodway, which is inundated by the 100 year or base flood (Figure 1).

Essential Public Facilities: As defined by ORS 455.447 (a) "Essential facility" means: (A) Hospitals and other medical facilities having surgery and emergency treatment areas; (B) Fire and police stations; (C) Tanks or other structures containing, housing or supporting water or fire-suppression materials or equipment required for the protection of essential or hazardous facilities or special occupancy structures; (D) Emergency vehicle shelters and garages; (E) Structures and equipment in emergency-preparedness centers; (F) Standby power generating equipment for essential facilities; and (G) Structures and equipment in government communication centers and other facilities required for emergency response.

Natural hazards: Floods, earthquake, landslides, wildfire, severe storms and volcanic eruption, as defined in statewide planning Goal 7 and the City of Lake Oswego's Natural Hazards Mitigation Plan Addendum (2010).

Public facilities: any and all on-site and off-site improvements to be accepted for ownership, maintenance and operation by the City, including but not limited to sanitary sewers, pump stations, water lines and hydrants, storm drain systems, streets, alleys, streetlights, street name signs and traffic control signs and devices (CDC, 50.10.003)

Or

Public facilities: As defined by ORS include sewer, water and transportation systems.

Action Plan Items:

Consider park or natural area opportunities for undeveloped areas subject to high hazard ratings, consistent with the Parks Plan 2025 recommendations and City policy. Analysis how much land would be affected; define the problem.

Update code provisions relating to hillside protection standards and weak foundation soils, when new data and inventories become available.

[Community Health and Public Safety, Part 1: Healthy, Safe People](#)

Natural Disasters and Hazards (Goal 7) TRACK CHANGES (Clean begins on page

Goal 7 Areas Subject To Natural Disasters And Hazards

Section 1, Flood Hazards

BACKGROUND

Statewide Planning Goal 7: Areas Subject To Natural Disasters And Hazards

"To protect life and property from natural disasters and hazards"

GOALS & POLICIES

GOAL

Minimize future impacts and risk to life and property from natural hazards* and disasters.

A. General Hazard Policies

1. Coordinate the City's hazard planning between departments, programs, agencies, and jurisdictions to promote consistency and implementation.

2. Work with DOGAMI, DLCD, Clackamas County and other agencies to maintain updated hazard inventories that inform potential development.

3. Locate new City infrastructure, essential facilities*, major structures, hazardous facilities and special occupancy structures* in non-hazard areas where possible.

4. Improve the resilience of the City's infrastructure by reducing the vulnerability of critical facilities.

5. Use the City's Natural Hazards Mitigation Plan Addendum to prioritize hazard mitigation projects.

~~The City shall protect life and property from flood hazards.~~

B. FLOOD POLICIES

~~1. Continue to participate in the National Flood Insurance Program* and comply with all Federal Emergency Management Agency (FEMA)* standards.~~

1. Apply flood management standards to areas defined and mapped as being within the City's Flood Management Area which includes:

a. Land within the 100-year flood boundary as depicted on the most recent Flood

Comment [BSA6]: This policy got moved down.

Comment [BSA7]: This is existing Policy 7-1.11

Insurance Rate Maps (FIRM) and Flood Boundary and Floodway Maps created for the National Flood Insurance Program by the Federal Emergency Management Agency (FEMA).

b. The area of inundation by the February 1996 flood along the Willamette River, along the Tualatin River, and along the Oswego Canal south of Bryant Road.

2. Continue to participate in the National Flood Insurance Program* and comply with Federal Emergency Management Agency (FEMA)* standards.

3. Limit new development in the FEMA-regulated floodway, including filling and removal of earth, to the following uses provided there is no increase in base-year flood levels.*

- a. Public and private open space and recreational uses;
- b. Water-dependent structures* such as docks, piers, bridges, and floating marinas; and,
- c. Public facilities including unpaved roads and private access ways.

~~4. Implement regulations and standards to ensure public facilities and development meet City, FEMA and Metro Title 3 and other regulatory agency requirements, and Review development proposals, including public facilities, filling and grading, within areas subject to flooding to ensure:~~

- ~~a. Conformance with City, FEMA and other regulatory agencies;~~
- ~~ba. Reasonable protection of public facilities;~~
- ~~eb. The flow, velocity and elevation of flood waters are not changed so as to endanger other property;~~
- ~~d. Natural systems such as fish and wildlife habitat, vegetation, wetlands and stream corridors are protected; and,~~
- ~~ec. Other problems associated with flooding such as ponding, poor drainage, high water tables and unstable soils are addressed.~~

4. Protect, restore and maintain the natural systems of floodplains including riparian vegetation, wooded areas, wetlands and fish and wildlife habitat.

5. Allow development density within the flood fringe/floodway fringe to be transferred to higher portions of the development site.

6. ~~Designate undeveloped floodplains as potential Protection Open Space*. (This original policy was implemented in the CDC; however, the 2003 CDC amendments removed this policy. It no longer exists. Recommend deletion.)~~

7. ~~Prohibit the storage of hazardous substances* within the floodplain. (redundant with 3a)~~

Comment [BSA8]: See figure 1. This policy is implemented in the CDC. A flood way is reserved and regulated by individual communities in cooperation with FEMA and the National Flood Insurance Program (NFIP) so water levels should never rise above a specific, safe designation during floods. The floodway should not be obstructed, be built on or have any encroachment without danger of flooding. An encroachment is any activity, construction, improvement or development which has not been approved to occur within the flood way. Encroachments are banned in flood ways unless it can be proved, via hydro-logic analysis, that the encroachment will not result in a rise in flood levels.

8. ~~Ensure that filling in the flood fringe/floodway fringe is conducted in accordance with City and applicable state and federal regulations, and is the minimum necessary for development to conform with FEMA standards. (redundant with 3a.)~~

Comment [BSA9]: This policy is proposed for deletion as it addresses regulations in place; however, staff is exploring language that language that governs the overall **approach** to fill in the City.

9. ~~Protect, restore and maintain watercourses* within the floodplain.~~

Comment [bsa10]: Policy 4 addresses this already; the specific term "watercourse" is more appropriate for Goal 5, as it refers to drainageways and contribute to the overall natural systems including hydrology, vegetation and wildlife habitat.

10. ~~Require new or replacement water and sanitary sewer systems within the floodplain, constructed to prevent infiltration of floodwaters and discharge of untreated waste water during flooding.~~

Comment [BSA11]: This is exact wording from the code 50.05.011-13 and is already covered.

11. ~~Flood management standards shall be applied to those areas defined and mapped as being within the~~

Comment [BSA12]: This policy moved up.

~~Flood Management Area of the City of Lake Oswego. These areas shall include:~~

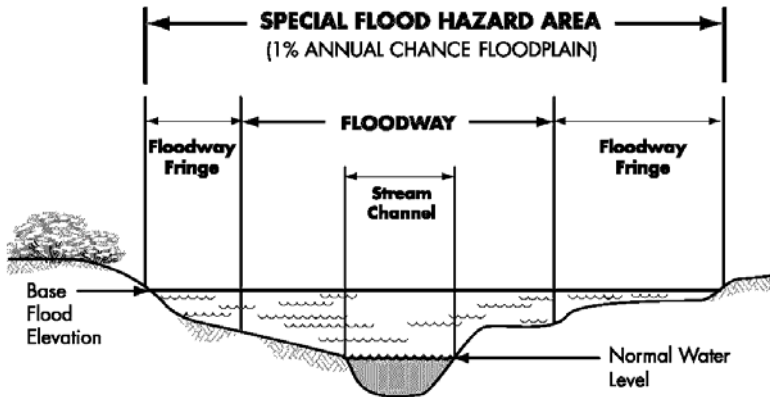
~~a. Land within the 100-year flood boundary as depicted on the most recent *Flood Insurance Rate Maps (FIRM)* and *Flood Boundary and Floodway Maps* created for the National Flood Insurance Program by the Federal Emergency Management Agency (FEMA).~~

~~b. The area of inundation by the February 1996 flood along the Willamette River, along the Tualatin River, and along the Oswego Canal south of Bryant Road.~~

Figure 1

Floodplain Cross Section

Comment [BSA13]: Updates Figure 6.



Section 2, Earthquake Hazards

BACKGROUND

Statewide Planning Goal 7: Areas Subject To Natural Disasters And Hazards

"To protect life and property from natural disasters and hazards."

GOALS & POLICIES

GOAL

The city shall protect life and property from earthquake hazards.

C. EARTHQUAKE POLICIES

1. ~~Cooperate with the DOGAMI in the delineation of areas of relatively greater hazard due to potential damage from earthquakes. Now addressed in the general policies.~~
2. When siting essential public facilities*, evaluate hazard risk and location based on the most recent geologic and seismic studies. Enact regulations governing the location of structures and land uses, as new seismic information becomes available.
3. ~~Coordinate adequate earthquake emergency response with the Federal Emergency Management Agency, Clackamas County Emergency Operations and other appropriate government agencies. Now addressed in the general policies~~
4. Require compliance with the current edition of the Oregon Structural Specialty Code regarding building design for earthquake resistance.
5. Provide education and public awareness of earthquake risks and public safety.

Section 3, Landslides, Erosion and Unstable Soils

BACKGROUND

Statewide Planning Goal 7: Areas Subject To Natural Disasters And Hazards

"To protect life and property from natural disasters and hazards."

GOALS & POLICIES

GOAL

The City shall protect life and property, from hazards associated with landslides, soil erosion and unstable soils.

D. LANDSLIDES, EROSION AND UNSTABLE SOIL POLICIES

~~1. Identify areas~~ Continue updating maps within the Lake Oswego Urban Services Boundary with the best and most current information to minimize hazards associated with ~~.... within the Lake Oswego Urban Services Boundary with a potential for~~ soil erosion hazard, landslides hazard and unstable soils, ~~including the degree of potential hazard.~~

~~2. Regulate density and intensity of land use in areas with the potential for unstable soils, known or potential landslide hazards and soil erosion hazard areas, in accord with the degree of hazard.~~

Comment [bsa14]: Moved down to Policy 6.
Action item: need to be rewritten based on weak foundation soils atlas from 1960; need new information that is expected.

~~3. 2. Implement regulations, standards and incentives to protect life and property from hazards associated with landslides, soil erosion and unstable soils to ensure:~~
~~Enact and maintain regulations and standards which require:~~

- a. Appropriate engineering and site development measures to prevent damage from hazards associated with erosion, landslides and unstable soils;
- b. Protection and restoration of natural and topographic features such as ridge lines and vegetation to preserve slope and soil stability;
- c. Open space preservation of slopes which cannot be developed because of severe landslide and erosion hazard;
- d. Protection of natural resources associated with steep slopes such as stream corridors, trees and other vegetation and wildlife habitat; and,
- e. Erosion control measures.

Comment [bsa15]: Undisturbed slopes greater than 50 percent cannot develop more than 30% of the site.

~~f. Property owners to include erosion and drainage control measures in site planning, during and after development, to prevent increases in surface water runoff, erosion and siltation.~~

Comment [bsa16]: Will ensure consistency with stormwater updates.

~~4. Control erosion at its source through minimizing the disturbance of existing vegetation.~~

Comment [BSA17]: Addressed under 2 above.

~~5. Require property owners to include erosion and drainage control measures in site planning, during and after development, to prevent increases in surface water runoff, erosion and siltation. (addressed under 2 above)~~

~~6. 3. Regulate density and intensity of land use in areas with the potential for unstable soils, known or potential landslide hazards and soil erosion hazard areas, in accord with the degree of hazard.~~

~~7. Control erosion through the following measures:~~
~~a. Minimize the disturbance of existing vegetation to control erosion.~~

~~b. Require that~~ Land identified with a potential for high erosion hazard will be maintained in open space, unless appropriate evidence demonstrates that engineering can effectively overcome soil and slope limitations.

7. ~~Allow development density proposed on steep slopes and on lands with unstable soils to be transferred to stable portions of the site when these areas are preserved as open space.~~

8. Allow innovative site and building design, including the clustering of buildings, to avoid development in hazard areas and encourage steep slopes to be used for open space uses.

Comment [bsa18]: Eight covers seven and 8 both.

9. ~~Ensure that public facilities and services are planned to be located in non-hazard areas, where possible.~~ Ensure that public facilities and services are designed to withstand movement of soil and rock if locating in hazard areas is unavoidable.

~~10. Require the review of any development proposal by the appropriate local, state and federal agencies.~~

Definitions

Base Flood: The flood having a one percent chance of being equaled or exceeded in any given year. The base flood is also known as the 100 year flood.

DOGAMI: The Oregon Department of Geology and Mineral Industries' (DOGAMI) primary function is to map the state's varied geology and natural hazards to help Oregonians understand and prepare for the vast array of natural hazards that accompany the state's spectacular geology.

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Public facilities: As defined by ORS include sewer, water and transportation systems.

Action Plan Items:

Consider park or natural area opportunities for undeveloped areas subject to high hazard ratings, consistent with the Parks Plan 2025 recommendations and City policy. Analysis how much land would be affected; define the problem.

Update code provisions relating to hillside protection standards and weak foundation soils, when new data and inventories become available.