January 1998

DLCD SECTION 309 COASTAL NATURAL HAZARDS STRATEGY

Oceanfront Construction Setbacks Project:

Chronic Coastal Natural Hazards Model Overlay Zone

Section 0-0.010 PURPOSE

The purpose of this ordinance is to:

- identify areas that may be subject to chronic coastal natural hazards including ocean flooding, beach and dune erosion, dune accretion, bluff recession, landsliding, and inlet migration;
- assess the potential risks to life and property posed by chronic coastal natural hazards; and
- reduce potential risks to life and property through hazard avoidance.

Section 0-0.020 APPLICABILITY

The requirements of this ordinance apply to new construction or expansions to permanent structures, semi-permanent structures, accessory structures and regular infrastructure.

Section 0-0.050 DEFINITIONS

! **accessory structures** are appurtenant structures, either attached or detached from the primary structure, that are not suitable for human habitation, that are not essential to the continued existence or use of the primary structure, that have less than 250 square feet of total floor area, and that are constructed in a manner that renders them readily

movable. Accessory structures include but are not limited to:

- ! decks, porches, and gazebos;
- ! single-story storage sheds or greenhouses; and
- ! wooden walkways.

! **accessory uses** include but are not limited to parking areas, campgrounds, tennis courts, golf courses, and temporary amusement stands.

! **building footprint** is the greatest exterior dimensions of a structure, including cantilevered floor areas as well as enclosed stairways, decks, porches, gazebos, and other such attached improvements, when extended to ground level.

! **crest of the bluff** is the junction separating the bluff face and upland. This feature typically lies at the landward edge of the steeply-sloping bluff face and at the seaward edge of the gently-sloping upland.

! **crest of the dune** is the point at which the primary dune reaches it highest elevation.

! **erosion scarp** is the near-vertical cut in the dune produced by wave action.

! **expansion** encompasses alterations to permanent structures or semi-permanent structures that **exceed** the building footprint.

! **headscarp crest** is the the landward edge of the near-vertical cut in the bluff face produced by slope failure.

! **imminent peril** is the condition that exists when damage to structures is expected to take place in the immediate future (i.e. days to weeks).

! **nonconforming structure** is a permanent structure, semi-permanent structure, accessory structure, or regular infrastructure that existed prior to the effective date of this ordinance and which is determined to not conform to the

provisions of this ordinance.

! **Ocean Shores Vegetation Line** as defined in ORS 390.770 and which corresponds to the location of the 16 foot N.G.V.D. contour datum as surveyed in 1969 (a.k.a. the 'Beach Zone Line').

! **permanent structures** are substantial structures including but not limited to residential, commercial, industrial, public, and other buildings. Septic systems, tile fields, and other waste handling facilities are also included in this category. For the purpose of this ordinance two classes of permanent structures are identified:

! small structures are residential buildings which have less than four dwelling units, less than 5000 square feet of total floor area, and a building footprint of less than 2,500 square feet; and

! large structures are all permanent structures not otherwise classified as small.

! **planning period** or the anticipated years of risk reduction, represents the time span in years associated with the useful life of the structure. For the purpose of this ordinance the following planning periods are identified:

! 50 years for small structures; and

! **100 years** for large structures.

! **primary dune** is the first mound of sand landward of the beach with sufficient bulk to withstand significant wave attack. It is typically well vegetated and is the highest in the series of dunes landward of the beach. It may lie directly landward of the beach. However it is common for secondary, smaller dunes to lie between it and the beach.

! qualified professionals include geologists, engineering geologists, coastal engineers, coastal oceanographers and others trained and experienced in the study of coastal processes, sediment transport, and slope stability.

! **regular infrastructure** includes but is not limited to sewers, waterlines, roads, and bridges.

! **renovation** encompasses alterations to permanent structures or semi-permanent structures that **do not exceed** the building footprint. Renovation does not include normal building maintenance and repair.

! **risk** is the threat to life and property posed by a hazard.

! **risk zone** is that zone measured as a linear distance landward from a reference feature to a line on the ground which is subject to hazards, and which, on the balance of evidence and in light of scientific knowledge of the moment, it would be prudent to restrict development.

! **semi-permanent structures** are structures that are designed, sited, and constructed so as to be readily movable according to the following criteria:

! Single unit, single story residential structures with less than 2,500 square feet of total floor area;

! Placed on perimeter footing, piling, or other type of foundation that will render them readily movable. Slab-on-grade foundations do not meet this criterion;

! Composed of stud wall or other type of construction that will render them readily movable. Walls that are constructed of masonry, including stone walls, concrete poured or concrete block walls, and brick veneer walls do not meet this criterion;

! Access to and from the site is of sufficient width and acceptable grade to permit the structure to be relocated: and

! Relocation can be accomplished at a reasonable cost relative to other structures of the same size and construction.

A detached garage with less than 500 square feet of total floor area, which is bolted to a slab foundation, which does not have living space within or above the structure, and which does not have plumbing or interior walls shall be considered a readily movable structure.

Existing permanent structures shall be considered readily movable structures if the cost of relocation is not more than 25% of the replacement cost.

! **substandard lot** is a lot or parcel created prior to the effective date of this ordinance and which, through the application of the provisions of this ordinance, and other yard and setback requirements, has a permissible building footprint of 1000 square feet or less.

! **toe of the bluff** is the junction separating the beach and bluff. Manifest as a distinct change in slope, this feature typically lies at the seaward edge of the steeply-sloping bluff face and at the landward edge of the gently-sloping beach face.

! **toe of the foredune** is the junction separating the beach and dune. Manifest as a distinct change in slope, this feature typically lies at the seaward edge of vegetation or at the base of the erosion scarp.

! **vegetation line** is the first line of stable natural vegetation. This line is typically located at the toe of the accreted foredune or erosion scarp. In areas where there is no vegetation this line shall be established by connecting or extending the lines form the nearest adjacent vegetation on either side of the site and extrapolating to establish the line.

Section 0-0.100 COASTAL HAZARD AREAS.

For the purpose of this ordinance four types of chronic coastal natural hazard areas are identified:

A. DUNE HAZARD AREAS are segments of shoreline backed by a sandy beach and dune. The following are designated as dune hazard areas: *(substitute local inventory information below)*

(1) areas seaward of and 500 feet landward of the primary dune crest;

(2) areas identified as Active Dunes or Recently Stabilized Dunes in the document Beaches and Dunes of the Oregon Coast, USDA Soil Conservation Service, March 1975;

(3) areas identified as Foredune, Active Dune, Conditionally Stable Dune, or Deflation Plain in the document Environmental Hazard Inventory, Coastal Lincoln County, Oregon, RNKR Associates, 1978;

(4) areas seaward of the Erosion Hazard Area as identified in the document Geologic Hazard Maps, Oregon Department of Geology and Mineral Industries,1997; and

(5) other areas there is reason to believe may be subject to hazards as a result of new or improved information received by the City/County subsequent to the adoption of this ordinance .

B. BLUFF HAZARD AREAS are segments of shoreline backed by a sandy beach and bluff. The following are designated as bluff hazard areas: *(substitute local inventory information below)*

(1) areas seaward of and 100 feet landward of the bluff crest;

(2) areas including and 100 feet landward of those areas identified as Minor Slope Sloughing in the document Environmental Hazard Inventory, Coastal Lincoln County, Oregon, RNKR Associates, 1978;

(3) areas seaward of the Erosion Hazard Area as identified in the document Geologic Hazard Maps, Oregon Department of Geology and Mineral Industries,1997; and

(4) other areas there is reason to believe may be subject to hazards as a result of new or improved information received by the City/County subsequent to the adoption of this ordinance.

C. SLIDE HAZARD AREAS are segments of shoreline where slide scarps, hummocky topography, and other morphologic features commonly associated with complex deep-seated landslides back a sandy beach. The following are designated as slide hazard areas: *(substitute local inventory information below)*

(1) areas including and 500 feet landward of those areas identified as Geologically Recent Slides in the document Environmental Hazard Inventory, Coastal Lincoln County, Oregon, RNKR Associates, 1978;

(2) areas including and 500 feet landward of those areas identified as Active Slide Block or Slump, Active Complex Landslide, Potentially Active Slide Block or Slump, and Potentially Active Complex Landslide in the document Chronic Geologic Hazard Maps, Oregon Department of Geology and Mineral Industries,1994; and

(3) areas including and 500 feet landward of those areas identified as Erosion Hazard Areas in the document Geologic Hazard Maps, Oregon Department of Geology and Mineral Industries, 1997; and

(4) other areas there is reason to believe may be subject to hazards as a result of new or improved information received by the City/County subsequent to the adoption of this ordinance.

D. INLET HAZARD AREAS are segments of shoreline along or adjacent to and influenced by unaltered tidal inlets and their associated shoals. The following are designated as inlet hazard areas: *(substitute local inventory information below)*

(1) areas including and 500 feet landward of an unaltered tidal inlet;

(2) areas 2000 feet alongshore in both directions from an unaltered tidal inlet; and

(3) other areas there is reason to believe may be subject to hazards as a result of new or improved information received by the City/County subsequent to the adoption of this ordinance.

Section 0-0.200 COASTAL HAZARD ASSESSMENT.

In designated coastal hazard areas a coastal hazard permit is required to construct new or expansions to permanent structures, semi-permanent structures, accessory structures, and regular infrastructure. A coastal hazard assessment prepared by a registered professional geologist, certified engineering geologist, or other qualified professional shall be submitted in conjunction with an application for a coastal hazard permit. A coastal hazard assessment shall:

A. Examine the full range of geologic and oceanographic factors affecting chronic shoreline stability including short term events and long term trends attributable to processes of wave attack (overtopping/undercutting), mass wasting (sloughing/landsliding), wind-driven dune erosion or accretion, inlet migration, and human activities, as well as relative sea level rise and the sediment budget (sources/sinks);

B. Identify areas of high and moderate relative risk, or 'risk zones', pursuant to the requirements of Sections 0-0.210-240;

C. Describe the proposed development, including plan maps and cross-sections showing the location of proposed structures on the property and the structures relation to property lines and identified risk zones; and

D. Describe potential adverse impacts to adjacent development and measures to avoid or minimize such impacts.

Section 0-0.210 DUNE HAZARD ZONE. In designated dune hazard areas (Section 0-0.100-A) the horizontal extent of high and moderate risk zones shall be determined according to the following formula, unless otherwise approved by the City/County :

$$\textbf{Relative Risk in Dune Hazard Areas} = [(S_{dune} + D) + (L_R \times T_p) + (L_r \times T_p)]$$

(Formula 210)

where

S_{dune} = the total horizontal extent of shoreline erosion (wave undercutting) projected to occur during a design storm event or cluster of storm events (feet). A storm having a two percent chance of being equaled or exceeded in any given year (50 year storm) shall be used to calculate high relative risk and a storm having a one percent chance of being equaled or exceeded in any given year (100 year storm) shall be used to calculate moderate relative risk;

D = the dune topographic stability factor (feet). This factor shall be calculated as 1.5 times the height of the primary dune;

L_R = the average annual rate that the shoreline is projected to migrate landward due to sediment budget considerations (feet/year). The value of this term shall be taken as zero in areas of net accretion;

L_r = the average annual rate that the shoreline is projected to migrate landward due to relative sea level rise (feet/year); and

T_p = the planning period (years). Time spans of 50 years and 100 years shall be used to calculate high and moderate relative risk respectively.

The distances determined through the application of Formula 210 shall be measured landward from the following reference locations:

- The **Ocean Shores Vegetation Line**; or
- The existing **vegetation line**, whichever is furthest landward.

Section 0-0.220 BLUFF HAZARD ZONE. In designated bluff hazard areas (Section 0-0.100-B) the horizontal extent of high and moderate risk zones shall be determined according to the following formula, unless otherwise approved by the City/County:

$$\textbf{Relative Risk in Bluff Hazard Areas} = [S_{bluff} + (L_R \times Tp) + (L_r \times Tp)]$$

(Formula 220)

where

S_{bluff} = the total horizontal extent of erosion projected to occur during a simple, shallow sloughing event (feet);

L_R = the average annual rate that the bluffline is projected to migrate landward due to mass wasting (feet/year);

L_r = the average annual rate that the shoreline is projected to migrate landward due to relative sea level rise (feet/year); and

T_p = the planning period (years). Time spans of 50 years and 100 years shall be used to calculate high and moderate relative risk respectively.

The distances determined through the application of Formula 220 shall be measured landward from the following reference locations:

- The **Ocean Shores Vegetation Line**; or

! The **toe of the bluff**, whichever is further landward.

Section 0-0.230 SLIDE HAZARD ZONE. In designated slide hazard areas (Section 0-0.100-C) the horizontal extent of risk zones shall be determined according to the following formula, unless otherwise approved by the City/County:

$$\textbf{Relative Risk in Slide Hazard Areas} = [S_{slide} + S_{bluff}]$$

(Formula 230)

where

S_{slide} = the the total horizontal extent of erosion projected to occur during a complex, deep-seated landsliding event (feet); and

S_{bluff} = the total horizontal extent of erosion projected to occur during a simple, shallow sloughing event (feet).

The distances determined through the application of Formula 230 shall be referenced to one of the following locations:

! The **Ocean Shores Vegetation Line**;
! The **toe of the bluff**; or
! The landward-most active **headscarp crest**.

Section 0-0.240 INLET HAZARD ZONE. In designated inlet hazard areas (Section 0-0.100-D) the horizontal extent of risk zones shall be determined according to the following formula, unless otherwise approved by the City/County:

$$\textbf{Relative Risk in Inlet Hazard Areas} = L_{inlet}$$

(Formula 240)

where

L_{inlet} = the maximum historical extent of alongshore inlet migration (feet).

The distances determined through the application of formula 240 shall be referenced to one of the following locations:

! The location of the **ebb channel**;

! The location of the **toe of the scarp** on the eroding bank; or

! Relevant **cultural features** (e.g. property boundaries, existing structures, etc.).

Section 0-0.301 CONSTRUCTION IN AREAS of HIGH RELATIVE RISK

In high risk zones the following uses are permitted:

A. Renovation of nonconforming permanent structures, semi-permanent structures, accessory structures, and regular infrastructure.

In high risk zones the following uses are permitted subject to the standards of Section 0-0.310:

A. New semi-permanent structures, accessory structures, and regular infrastructure; and

B. Expansion of existing semi-permanent structures, accessory structures, and regular infrastructure.

In high risk zones the following uses are not permitted:

A. New large permanent structures;

B. Expansion of existing large permanent structures;

C. New small permanent structures, except as authorized under Section 0-0.320: and

D. Expansion of existing small permanent structures, except as authorized under Section 0-0.330

Section 0-0.302 CONSTRUCTION IN AREAS of MODERATE RELATIVE RISK

In moderate risk zones the following uses are permitted:

A. Renovation of nonconforming permanent structures, semi-permanent structures, accessory structures, and regular infrastructure;

B. New small permanent structures;

C. Expansion of existing small permanent structures;

D. New semi-permanent structures, accessory structures, and regular infrastructure; and

E. Expansion of existing semi-permanent structures, accessory structures, and regular infrastructure.

In moderate risk zones the following uses are not permitted:

A. New large permanent structures, except as authorized under Section 0-0.320; and

B. Expansion of existing large permanent structures, except as authorized under Section 0-0.330.

Section 0-0.310 SITING STANDARDS IN HIGH RISK AREAS

Recognizing the limited suitability of these areas for development, semi-permanent structures shall be allowed in areas of high relative risk provided they meet the following standards:

A. The structure will be located as far landward as practicable, and in no cases on the beach, or seaward of the crest of the primary dune, bluff, or active headscarp:

B. The structure will be relocated within one year of a determination that it is in imminent peril or it has been damaged such that there is a loss of greater than 50 percent of the habitable area of the structure.

Section 0-0.321 EXEMPTIONS: SUBSTANDARD LOTS

On lots determined to be substandard through the application of the provisions of this ordinance and recognizing the limited suitability of these areas for development, exemptions to Sections 0-0.301 and 0-0.302 may be taken to allow the construction of new small permanent structures in areas of high relative risk and new large permanent structures

in areas of moderate relative risk provided:

A. The lots are located in designated dune or bluff hazard areas;

B. The structure shall be located as far landward as possible, after allowable variances to street and side yard setback requirements have been taken to increase the buildable area;

C. The total building footprint shall not exceed 1000 square feet;

D. No more than 500 square feet of the building footprint shall lie within the risk zone; and

E. In no cases shall the structure be located on the beach, or seaward of the crest of the primary dune or bluff.

Section 0-0.322 EXEMPTIONS: NONCONFORMING STRUCTURES

For permanent structures determined to be nonconforming through the application of the provisions of this ordinance and recognizing the limited suitability of these areas for development, exemptions to Sections 0-0.301 and 0-0.302 may be taken to allow a **one time** expansion of small permanent structures in areas of high relative risk and large permanent structures in areas of moderate relative risk provided:

A. Expansion is limited to no more than a 10% increase in the total square footage of the existing building footprint, and

B. Expansion will result in the new structure being no further seaward than the existing structure.

C. Expansion is limited to the enclosure of existing roof covered porches not involving an increase in the existing building footprint or modification of existing foundations.

Section 0-0.401 COASTAL HAZARD PERMIT NOTICE PROCEDURES

Within ten days upon acceptance of a complete application for a coastal hazard permit pursuant to Section 0-0.200 the City/County shall:

A. Post a sign giving 'Notice of Intent to Permit Activity within a Coastal Hazard Area' on the subject property. The sign shall be placed as determined by the City/County to be readily visible from a public right of way. The sign shall state:

1. The nature of the proposed activity for which the permit is is being applied;
2. The owner of the property;
3. The date the notice was posted;

4. That a a permit review shall be granted upon written request and submittal of substantiating evidence to the City/County:
5. The last date which the permit review shall be granted; and
6. That a copy of the complete application and other relevant information can be obtained by contacting a named City/County official at a given address and phone number.

B. Mail notice to owners of property within 500 feet of the boundaries of the subject property and publish notice in a newspaper of general circulation within the City/County. Mailed and published notices shall state:

1. The nature of the proposed activity for which the permit is being applied;
2. Applicable City/County standards and criteria by commonly used citation;
3. The owner of the property
4. The location of the property by street address or other easily understood geographical reference;
5. The date the 'Notice of Intent to Undertake Activity within a Coastal Hazard Area' was posted on the subject property;
6. That a permit review shall be granted upon written request and submittal of substantiating evidence to the City/County:
7. The last date which the permit review shall be granted; and
8. That a copy of the complete application and other relevant information can be obtained by contacting a named City/County official at a given address and phone number.

The cost of providing notice is to be covered by the applicant.

Section 0-0.402 EXTERNAL REVIEW PROCEDURE

Within thirty days upon posting of a sign giving 'Notice of Intent to Permit Activity within a Coastal Hazard Area' any party who believes the coastal hazard assessment fails to meet the requirements of Section 0-0.200 shall upon written request and submittal of substantiating evidence to the City/County be granted a coastal hazard permit review. Such an external review shall be handled according to the following procedure:

A. Within fifteen days from the date the permit review request period closes the City/County shall convene a panel consisting of registered professional geologists, certified engineering geologists, or other qualified professionals. One member of the panel is to be designated by the City/County, one by the applicant, and one by each requestor. The chair of the panel shall be the City's/County's designee;

B. Within thirty days from the date the permit review request period closes , the panel shall review the applicant's coastal hazard assessment as well as the requestor's substantiating evidence and prepare a report

identifying what, if any, deficiencies exist in the applicant's coastal hazard assessment pursuant to the requirements of Section 0-0.200; and

C. Within ten days from the date of submittal of the panel's report the City/County shall upon findings approve or deny the coastal hazard permit.

The cost of conducting an external review is to be shared equally by the applicant and requester(s).

Section 0-0.403 INTERNAL REVIEW PROCEDURE

A review of the coastal hazard assessment may also be conducted by the City/County on its own behalf. Such an internal review shall be handled according to the following procedure:

A. No less than thirty days nor more than forty-five days from the posting of a sign giving 'Notice of Intent to Permit Activity within a Coastal Hazard Area' the City/County shall inform the applicant of its intent to conduct an internal review of the applicant's coastal hazard assessment;

B. No less than thirty days nor more than forty-five days from the posting of a sign giving 'Notice of Intent to Permit Activity within a Coastal Hazard Area' the City/County shall appoint a registered professional geologist, certified engineering geologist, or other qualified professional to review the applicant's coastal hazard assessment;

C. Within sixty days from the posting of a sign giving 'Notice of Intent to Permit Activity within a Coastal Hazard Area' the above mentioned professional shall review the coastal hazard assessment and prepare a report identifying what, if any, deficiencies exist in the applicant's coastal hazard assessment pursuant to the requirements of Section 0-0.200; and

D. Within ten days from the date of submittal of the professional's report the City/County shall upon findings approve or deny the coastal hazard permit.

The cost of conducting an internal review is to be covered by the applicant.

Section 0-0.404 COASTAL HAZARD PERMIT APPROVAL

Barring a review of the coastal hazard assessment conducted pursuant to Sections 0-0.401 and 0-0.402, a coastal hazard permit shall be approved by the City/County no less than thirty days nor more than forty-five days following the posting of a sign giving 'Notice of Intent to Permit Activity within a Coastal Hazard Area' upon findings by the

City/County that the coastal hazard assessment meets the requirements of Section 0-0.200.

Unless events occur which alter existing conditions, an approved coastal hazard assessment shall be deemed valid for a period of 2 years from the date indicated on the applicants's signed and stamped coastal hazard assessment.

? Mixed settings ?

...may have a bluff fronted by dunes....in this case treat it as a bluff-backed shoreline unless the horizontal extent of the dune complex exceeds some minimum distance (e.g. 100 feet)...

...may also have dunes backed by an inlet...

? Hardened Shorelines ?

In areas where shore protection structures back the shoreline a default setback distance of *...25 feet...* from the crest of the shore protection structure is recommended.

?Wind Hazard Zone (WHZ)? =

CRITICAL/ESSENTIAL FACILITIES and INFRASTRUCTURE?........new essential facilities, hazardous facilities, major sturctures, and special occupancy structures....major highways, bridges, etc...