

## Oregon State Bar Sustainable Future Section

Photo: J. Michael Mattingly

# The Long View

## Lines in the Sand - Climate Change and the Oregon Coast

By Steven R. Schell

The 2013 Northwest Climate Assessment Report (“NW Climate Report”) summarizes the work that many scientists at Oregon State University, Portland State University, and University of Washington have been doing for several years. This Report, clarifies some of the projected impacts of climate change on the Oregon coast. They will be significant. For example, for portions of Oregon’s ocean shore, scientists predict waves up to 85 feet high and loss of above-low-tide beach widths of 600 feet due to sea-level rise. Further, inundation and storm damage will cause loss of homes, streets, electricity, water and other infrastructure in several coastal cities, including Seaside, Cannon Beach, Rockaway, Neskowin, Lakeside, and Bandon.

Over many years, people, courts, and legislatures have drawn lines in the sands of Oregon and established uses behind those lines. The findings in the NW Climate Report raise questions about where those lines should be drawn for various uses in response to predicted impacts and other coastal changes and about how to best adapt future use and protections.

### Law and Regulation

Historically the code of Justinian provided that navigable waters and their beds and banks belong to the sovereign. Later, English common law developed concepts of accretion, reliction, and avulsion, which address changes in the beds and banks. Responding to a 1913 proposal by Governor Oswald West, the Oregon legislature established our beaches as highways from the low water mark to the mean higher high water mark (i.e. the “wet sands”). Later, recreation was added as a use in this area.

In 1967, Oregon’s famous Beach Bill (along with an Oregon Supreme Court decision) declared the dry sands to be subject to a public use easement from the beginning of time. The line in the sand for this legislation was set at the beach vegetation line, that is, 16 feet above mean sea level. The line was later surveyed and is imbedded in statute. A permit opportunity was given to upland owners to protect their developed property (as it existed at the end of 1976) by intruding into the dry sands area using hard protection such as riprap or sea walls.

Later, Oregon’s Land Use system resulted in an LCDC Beaches and Dunes Goal and implementation measures that prevented upland owners (who built structures after December 31, 1976) from using such hard protection in the dry sands. The Goal also prohibited construction on movable foredunes and deflation plains between the foredunes and more permanent dunes. Flood Insurance has also had

an impact on lines in the sand. The Federal Emergency Management Administration (FEMA) recently established VE zones, the landward line of which is now in places like Newport at 35 feet above sea level. While the LCDC adopted a hazards goal it has proved ineffective in addressing natural hazards. Finally, under LCDC’s Shorelands Goal, unstable geological formations along the Oregon coast must be identified by local governments, and building on them is prohibited.

### Geology

Lines in the sand are complicated by Oregon’s geology. Off Oregon’s coast, two massive tectonic plates collide. As the Pacific Plate presses against the smaller Juan de Fuca Plate it forces part of the coast to rise, part to stay the same, and part to fall. Every few hundred years when the tension gets too great the smaller plate dives under the larger plate. The result is a drop in elevation of certain areas along the coast, and the creation of a giant Tsunami wave. In a similar situation off Sumatra the wave was 100 feet high. Oregon is not unprepared for this event. Specifically, inundation zones have been established by statute as additional “lines in the sand”, and essential service buildings used such as fire stations, hospitals, and large assembly gathering places cannot be built in these zones.

### Planning for Adaptation

The NW Climate Report predicts sea levels will rise by 2070 by 4 to 54 inches, with the lower number based on the unlikely scenario of immediately stabilizing the level of CO2 equivalents in the atmosphere. To prepare for a sea-level rise of one to three feet will present a set of complicated issues. Adaptation planning should include, but not be limited to, three initiatives:

- ⇒ Adoption by the LCDC of a comprehensive Climate Change Goal.
- ⇒ Revisions to the Beach Bill to protect beach widths.
- ⇒ Post-disaster planning that includes abandonment of infrastructure for inundated areas.

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NOTE: For a longer article on this topic, by Steve Schell and Courtney Johnson, see:

<http://law.uoregon.edu/wp-content/uploads/2014/04/JohnsonProof1Final.pdf>