

GROUNDWATER QUALITY REPORT FOR THE NORTH COAST BASIN, OREGON



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Department of
Environmental
Quality

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EXECUTIVE SUMMARY

Preventing groundwater contamination and conserving and restoring this resource are statewide goals in Oregon. Groundwater monitoring and assessment programs provide statewide groundwater quality information. The North Coast Basin in Oregon includes several important coastal watersheds and a sensitive groundwater aquifer. The groundwater is an important natural resource in the basin, providing drinking water to over 200 public water systems serving 77,000 people and over 4,000 private residential systems.

The North Coast Basin is located in the northwest corner of Oregon and encompasses all or portions of seven counties. The land use in the area is mostly forest (84%) with about 7% urban, commercial or industrial, 5% agricultural, and the remainder estuary, residential, or other.

North Coast Basin geology includes volcanic rocks, marine sedimentary rocks, alluvium, and a dunal sand complex. Primary basin aquifers are shallow, occurring in unconfined and unconsolidated sedimentary material, primarily sand and gravel near the coastline and adjacent to the major rivers.

The DEQ and other state and local agencies have collected data and conducted several groundwater quality studies in the North Coast Basin. This report compiles and summarizes groundwater quality information from the following sources:

- the Oregon Department of Human Services (DHS) Domestic Well Testing for Real Estate Transactions program,
- the Oregon DHS Public Water Systems program,
- two DEQ studies, and
- one local study.

Over the course of these studies, the following constituents were analyzed:

- nitrate
- bacteria
- volatile organic compounds
- physical parameters
- metals
- pesticides

North Coast Basin studies show nitrate, bacteria, and lead impact shallow groundwater in some basin areas. Both the DHS databases and local DEQ studies showed elevated groundwater nitrate concentrations in the Clatsop Plains area. The DEQ study showed four wells out of 36 wells sampled had nitrate concentrations above 10 mg/L. On a regional scale, the real estate transaction database indicated 88 transactions involving drinking water wells, out of 924 such transactions, were positive for bacteria. In the Clatsop Plains area local studies detected bacteria in 30% to 66% of the drinking water wells. Bacteria concentrations likely reflect substandard well construction and poor maintenance activities, rather than a regional, aquifer-wide problem.

One pesticide, atrazine, was detected in a well at a concentration above the drinking water standard. This occurred adjacent to the Warrenton Landfill. Trace amounts of volatile organic compounds were detected but not confirmed on resampling. Lead above the drinking water action level was found in three public water supply wells (DHS database) in Columbia County.

In 1996 a local Clatsop Plains study detected lead above the drinking water action level (0.015 mg/L) in 20% of the wells. Confirmational resampling detected lead in only a few of these wells. Low levels of arsenic, copper, cadmium, chromium, and barium were also detected in the 1996 sampling event, but none were confirmed when the wells were resampled.

In a local DEQ Tillamook study, lead above the drinking water action level was found in one well in spring 1998, but had not been detected initially in fall 1997. Antimony was detected above the drinking water standard in 20% of the wells sampled in fall 1997, but was not confirmed on re-sampling in spring 1998.

Potential sources for North Coast Basin groundwater nitrate and bacteria contamination are high on-site septic system densities in areas with permeable, sandy soils. Poor well construction and maintenance activities can also lead to this contamination in the wells. Potential point sources for other toxic contaminants include the basin's landfills.

Further investigations and monitoring are warranted in local areas where nitrate and bacteria have been found. Recommendations include:

- Review the effectiveness of the current Clatsop Plains Geographic Rule ([OAR 340-071-0400\(5\)](#)).
- Determine if the 1970s and 1980s Clatsop Plains contaminant loading predictions have been met.
- Review the existing Clatsop Plains information to determine if the area should be declared an Area of Groundwater Concern, or a Groundwater Management Area.
- Conduct further groundwater investigations to determine lead levels and extent in the Clatsop Plains and Columbia County areas.