

CONCLUSIONS

The North Coast Basin in the northwestern part of Oregon includes the headwaters of several coastal rivers, and a unique and sensitive groundwater aquifer. While much of the basin area is forest land, groundwater studies have focused on the areas with the highest population and commercial and agricultural activity. The sensitive Clatsop Plains dunal aquifer is present in an area that has been the focus of growth and development in the basin. Productive groundwater aquifers are present in the Tillamook Valley in shallow alluvial sediments that are vulnerable to pollution from human activities on the land surface overlying these aquifers.

Groundwater in the North Coast Basin is a significant natural resource. There are over 2,000 water rights for groundwater use in the basin. Over 200 public drinking water systems serving 77,000 people in the basin use groundwater either exclusively or in combination with surface water. Another 4,000 domestic water wells in the basin provide drinking water to rural residences and areas not served by public water providers.

Groundwater quality studies in the North Coast Basin have shown impacts from several pollutants, including nitrate, bacteria, and lead.

Nitrate contamination is present in the North Coast Basin, particularly in the Clatsop Plains area. In and around the City of Gearhart, with a high density of housing using on-site septic systems, groundwater nitrate contamination occurs. Out of 14 wells sampled in Gearhart, 1 well (7%) had a nitrate level of 3.8 mg/L, indicative of anthropogenic influences. Three of the wells (21%) had nitrate levels exceeding the drinking water standard of 10 mg/L. In the Tillamook area, the deeper groundwater aquifer shows levels of nitrate below the drinking water standard. Information is not available on the area's shallow groundwater quality.

The Department of Human Services' (DHS) testing of domestic drinking water wells involved in real estate transactions, shows bacteria contamination is present throughout the basin in up to 10% of the wells. The DEQ has no control over the DHS data quality. Sampling practices and sample handling procedures may lead to false positive results. These detections are more likely due to poor well construction and maintenance activities, rather than a region-wide groundwater problem.

In the Clatsop Plains area, DEQ sampling has shown bacteria were present in 30% to 60% of the wells sampled in the 1996 and 1998 sampling events. The vast majority of these detections (18 out of 23 wells, 78%), have come from old, poorly constructed monitoring wells with inadequate or absent surface seals. Bacteria from any source can migrate down along the well casing and enter the well at its bottom where the well screen is located.

Pesticides and certain volatile organic compounds (chlorinated or halogenated VOCs) have been found in only a few isolated North Coast Basin locations (two Warrenton Landfill monitoring wells, and two Gearhart area monitoring wells). Penta, a VOC commonly used in wood preservative, was detected in one of the Gearhart area monitoring wells. This well was located adjacent to a telephone pole, with highly visible quantities of preservative oozing out and down

the pole, onto the ground, next to the monitoring well. The paucity of pesticide and VOC detections may reflect the lack of major industrial, urban, and agricultural land uses in the basin.

Potential sources for the nitrate and bacteria contamination in areas within the North Coast Basin are high densities of on-site septic systems in areas with permeable, sandy soils. A potential point source for other toxic contaminants include the Warrenton Landfill, in the basin's northwest corner.

RECOMMENDATIONS

Additional investigation and action are warranted in areas in the North Coast Basin where nitrate, bacteria, and lead contamination occur. Specific recommendations are as follows:

- In the Clatsop Plains area, with a special emphasis in and around the City of Gearhart, a sampling strategy should be developed and implemented to address the following:
 - Evaluate the effectiveness of the geographic rule, particularly as it pertains to nitrate.
 - Determine the implementation status of local regulations regarding aquifer reserves.
 - Assess the models and predictions for groundwater impacts from permitted development using on-site septic systems.
 - Identify nitrate and bacteria sources (e.g., septic versus agricultural).
 - Determine lead levels, source(s), and its distribution.
- Where sufficient information is available in the Clatsop Plains area, the DEQ could pursue declaring an Area of Groundwater Concern, or a Groundwater Management Area ([ORS 468b.175](#) & [ORS 468b.180](#), and [OAR 340-040-0105\(7\)](#)). After such a declaration, the DEQ and other agencies would develop an action plan to reduce existing contamination and prevent further contamination of the affected groundwater.

More work should also be done to ascertain ambient groundwater quality conditions in the Tillamook area's shallow alluvial aquifer system. This would mean getting permission from owners of wells completed in the shallow aquifer, or constructing a network of new monitoring wells in the shallow aquifer.

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