

## **Evaluating Residential Development Impacts to Drinking Water Quality in the McKenzie River Watershed: Impacts from Historic Land Use Decisions and Potential Future Development**

David J. Richey and Bob DenOuden, Lane Council of Governments

Assessment of the long-term viability of the McKenzie River watershed as a continued source of high-quality drinking water requires an understanding of past land use impacts, monitoring of current land use activities, and a look ahead to future potential threats affecting water quality. In this presentation on protecting water quality in the McKenzie River watershed, we relate the results of a residential build-out analysis, implemented in GIS, for the McKenzie watershed.

In this project we make a supply-side analysis for the potential projected residential capacity under a suite of development assumptions. While current residential population distribution, physical and policy constraints, and present zoning configuration form the basis for the analysis, other factors come into play as well, in particular Measure 37 and 49 claims. Despite the fact that under current zoning district configurations, only one percent of the McKenzie River watershed area is zoned for non-resource uses, Oregon's recent Measure 37 claims have placed a large quantity of lands under scrutiny for possible development. According to data supplied by Lane County's Land Management Division, a total of 7,033 acres of land within the watershed fall under an approved M37 claim. These claims extend across the majority of the zoning districts for the watershed, but by far the predominance (95%) fall in resource land districts. One-quarter of the area of the claims are within a quarter-mile of the main stem of the McKenzie River, and the predominance of claims are proximate to at least one perennial stream flowing into the McKenzie. Other complicating factors in the way that residential developments gain approval make the build-out analysis more complex and variable than one might assume.

Accounting for these planning instruments, we estimate a projected population and distribution for the watershed under a build-out scenario using GIS. These data can then be used to estimate future potential impacts on the water quality of the McKenzie River, especially from on-site (septic tank) wastewater treatment and provide inputs for modifications to the planning instruments and frameworks used through the implementation of revised and new zoning regulations. Additionally, results from the build-out analysis will be input into a basin scale water quality model to assess the potential magnitude of impacts to water quality from future residential growth in the watershed.

### **David J. Richey**

David Richey is a cartographer; spatial analyst; and urban, regional, and natural resource planner with Lane Council of Government Information Research and Analysis group, a position he has held since December of 2004. In addition to collaborative on-going database maintenance and development, data and map sales, and client relations with business and the public, he contributes to and manages projects in a number of different land use and landscape planning arenas: developable lands inventories, natural resource management, public health, agricultural land use, food systems, water and watershed analysis, management, and health. Educated in biology (BA 1991) at Oberlin College in Ohio, he worked in landscape construction and horticulture in Albuquerque, New Mexico, before studying Landscape Architecture at the University of Oregon (BLA 1997, MLA 2000). While at UO, David was a researcher in a 5-year EPA-funded project, *Alternative Futures for the Willamette River Basin*, analyzing impacts of land use over a 60-year planning horizon on terrestrial and aquatic vertebrates, water supply, and urban and rural land supply. He also taught plant identification and use, urban farming, and geographic information systems. After graduating, he created or contributed to site plans, landscape designs, urban redevelopment, and comprehensive refinement plans as project staff with Satre Associates, a landscape architecture and land use consulting firm.