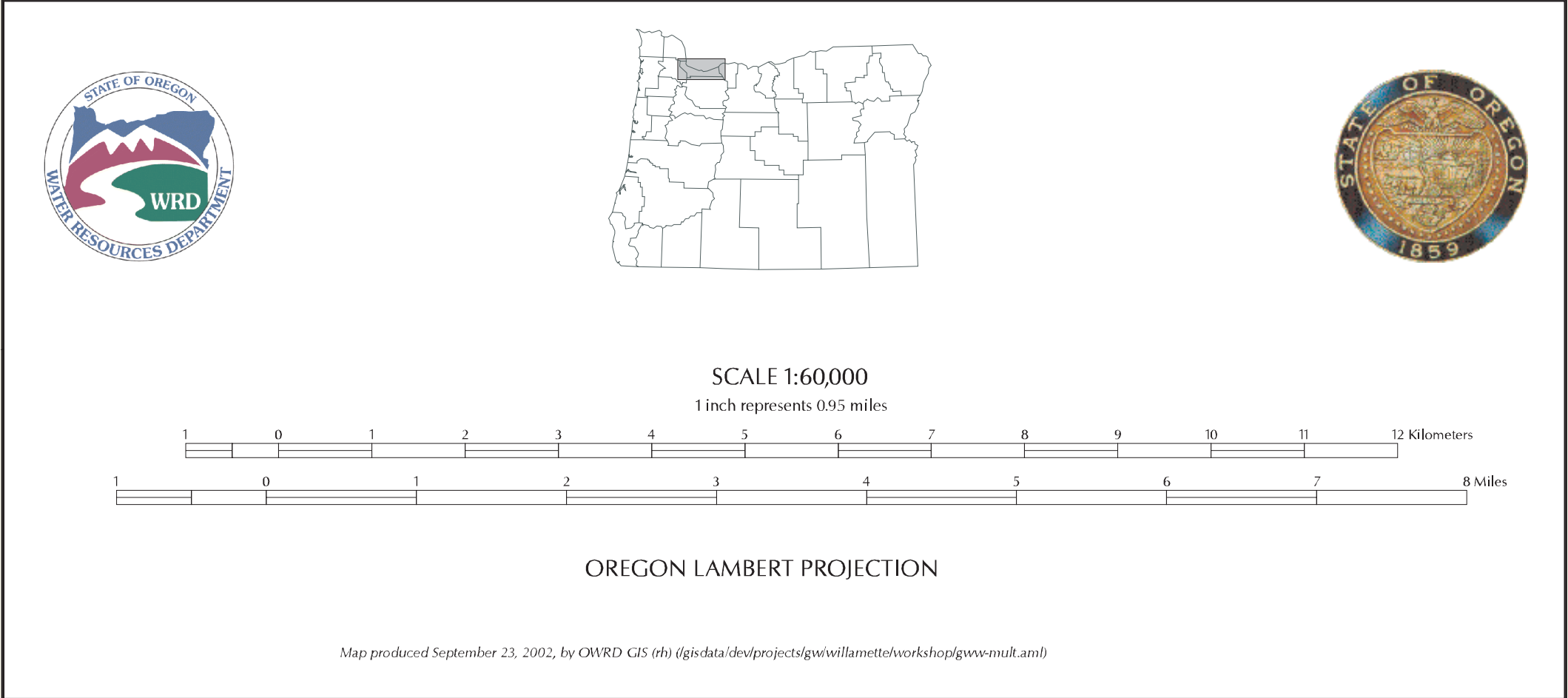
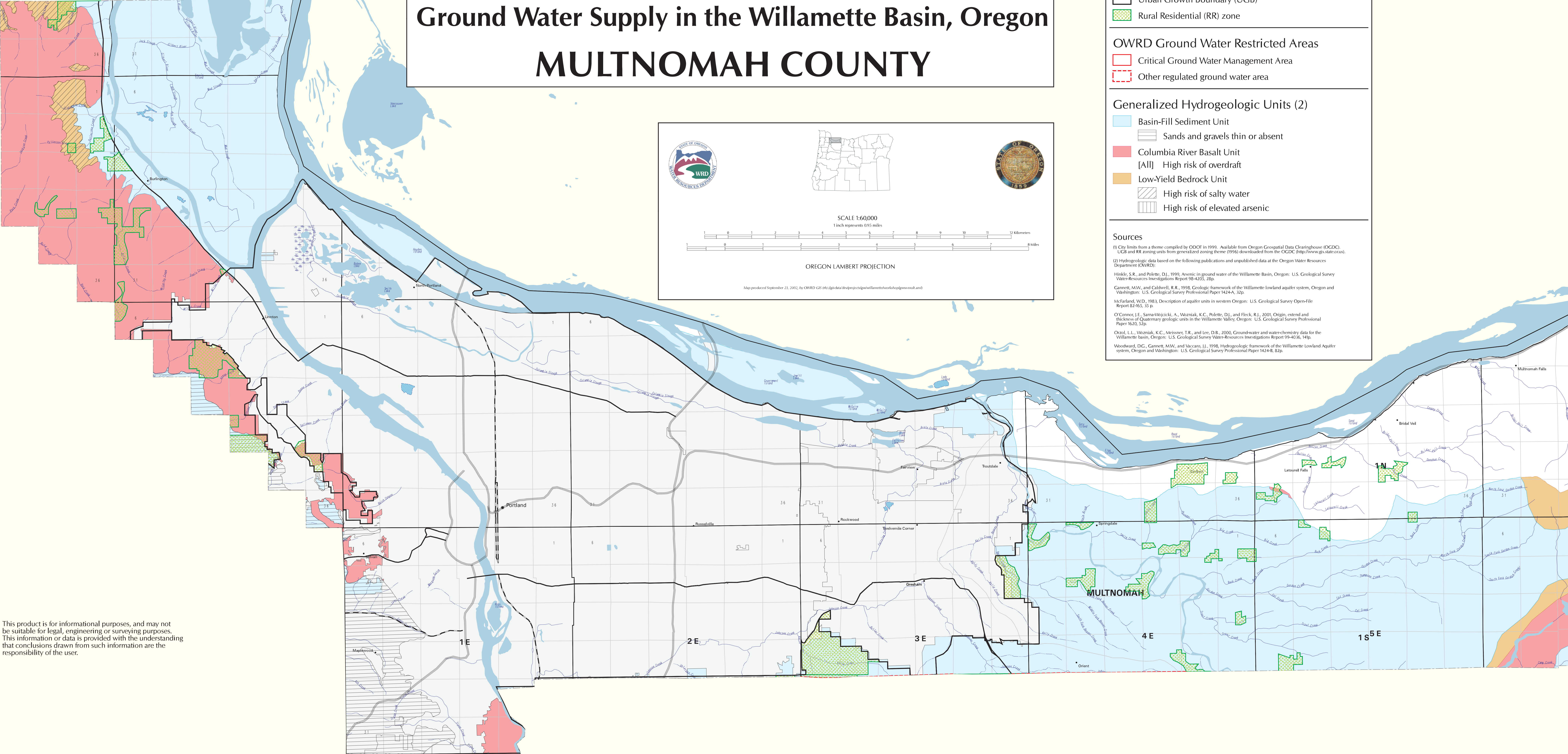


DRAFT

# Hydrogeologic Factors That Limit Ground Water Supply in the Willamette Basin, Oregon

## MULTNOMAH COUNTY



**Zoning (1)**

- City limits
- Urban Growth Boundary (UGB)
- Rural Residential (RR) zone

**OWRD Ground Water Restricted Areas**

- Critical Ground Water Management Area
- Other regulated ground water area

**Generalized Hydrogeologic Units (2)**

- Basin-Fill Sediment Unit
  - Sands and gravels thin or absent
- Columbia River Basalt Unit
  - [All] High risk of overdraft
- Low-Yield Bedrock Unit
  - High risk of salty water
  - High risk of elevated arsenic

**Sources**

(1) City limits from a theme compiled by ODOT in 1999. Available from Oregon Geospatial Data Clearinghouse (OGDC). UGB and RR zoning units from generalized zoning theme (1996) downloaded from the OGDC (<http://www.gis.state.or.us>).

(2) Hydrogeologic data based on the following publications and unpublished data at the Oregon Water Resources Department (OWRD):

Hinkle, S.R., and Polette, D.J., 1999, Arsenic in ground water of the Willamette Basin, Oregon: U.S. Geological Survey Water-Resources Investigations Report 98-4203, 28p.

Gannett, M.W., and Caldwell, R.R., 1998, Geologic framework of the Willamette lowland aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-A, 32p.

McFarland, W.D., 1983, Description of aquifer units in western Oregon: U.S. Geological Survey Open-File Report 82-165, 35 p.

O'Connor, J.E., Sarna-Wojcicki, A., Wozniak, K.C., Polette, D.J., and Fleck, R.J., 2001, Origin, extent and thickness of Quaternary geologic units in the Willamette Valley, Oregon: U.S. Geological Survey Professional Paper 1620, 52p.

Orzol, L.L., Wozniak, K.C., Meisner, T.R., and Lee, D.B., 2000, Ground-water and water-chemistry data for the Willamette basin, Oregon: U.S. Geological Survey Water-Resources Investigations Report 99-4036, 14p.

Woodward, D.G., Gannett, M.W., and Vaccaro, J.J., 1998, Hydrogeologic framework of the Willamette Lowland Aquifer system, Oregon and Washington: U.S. Geological Survey Professional Paper 1424-B, 82p.

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