

Wentz, D.A., Bonn, B.A., Carpenter, K.D., Hinkle, S.R., Janet, M.L., Rinella, F.A., Uhrich, M.A., Waite, I.R., Laenen, A., and Bencala, K.E. "Water Quality in the Willamette Basin, Oregon, 1991-95." U.S. Geological Survey Circular 1161, 1998. (Reviewed by Aimee Furber)

The report summarizes the major water quality findings in the Willamette basin between 1991 and 1995. The report was intended to address the concerns of water-resource management groups and parties interested in the Willamette.

The report identifies five types of pollution in the Willamette:

Degraded fish habitat (large agricultural sites)

- high abundance of torrent and reticulate sculpin, minnows, and introduced species
- small riffle area
- open canopies of low riparian quality
- high maximum water temperatures
- medium concentrations of nutrients and pesticides

Dams

- Increased erosion downstream
- Similar sediment loads before and after dam construction which implies a new source (increased erosion) is adding sediment
- Possible sources: channel erosion or land erosion after dam construction

Ground and Surface Water

- Significant ground and surface water interaction in large, gravel-bed streams (hyporheic exchange)
- Can cause increased flow rates
- Can introduce nutrients and pesticides to streams from groundwater

Pesticide Pollution

- Measured 50 pesticides in streams; 10 exceeded EPA standards
- Atrazine, simazine, metolachlor, deethylatrazine, diuron, and diazinon were found in more than half the samples
- Greater variety and higher concentration of pesticides in agricultural than in urban streams
- Dinoseb, an herbicide, found in drinking wells in excess of EPA standards
- Organochlorine pesticides (banned in the 1980's) found in bed sediment and aquatic biota

Nutrient Pollution

- 45 percent of streams phosphorus concentrations exceed limitations
- these streams were predominantly in agricultural land
- nitrate concentrations were higher downstream from irrigated agricultural areas than non irrigated areas
- nitrogen likely to increase because use of more frequent application as a fertilizer

Critique

The report provides useful information about what type crops the land was used for and gives some explanation of water use. This contributes to the later discussion of pesticide and nutrient pollution in the water. The report also compares the Willamette to other rivers across the country, which is useful to see how the Willamette ranked in terms of pollution on a national level.

The report focused more on agricultural pollution than the previous water quality reports I have read. Those tended to focus on pollution from factory based industries. However, the previous studies were conducted much earlier and probably focus on point-source pollution because it was the most obvious and easiest to measure.

The report would be more useful if it included information about measures taken to reduce agricultural based pollution. It would have also been helpful to see what recommendations the study would make on controlling pollution.

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