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Title: Evaluating Benefits and Costs of Changes in Water Quality

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Journal: Gen. Tech. Rep. PNW-GTR-548; Portland, OR; U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station

Date: July 2002

Pages: 32 p. (11/5 KB)

Abstract:

This report defines uses of water and the particular water quality variables particular to defining water quality for each particular use. To do this, it examines six water quality measures/parameters and how they influence six water uses. When this is defined, the major nonmarket valuation methods (travel cost, contingent valuation, and hedonic pricing) are used to estimate changes in benefits from a change in water quality.

The six water uses examined in this paper are municipal, industrial, hydropower, recreation, agricultural, and passive use.

The six water quality measures/parameters examined in this paper are:

- Total suspended solids - measured as dry weight of particulates in water; major source is runoff from urban and agricultural areas
- Dissolved Oxygen - measured in parts per million or milligrams per liter (mg/L) of oxygen in the water; 5.0 mg/L or higher is generally needed to maintain healthy biological community
- Temperature - has major effect on biological community; steam-electric generating plants or a loss of vegetation surrounding streams has major effect in raising temperatures
- Salinity - removing salts is expensive, but high salinity is harmful to almost all water uses
- Clarity - primarily related to aesthetics; has nonmarket and recreational use value
- Quantity - changes often affect other water quality parameters, as well as various uses

The results of this study are very comprehensive. Several tables are used to link various combinations of water uses and water quality parameters according to the findings from previous studies. Often, these studies provide data for the value of water for the different uses (in dollars per acre-foot of water), the geographical location of the water, and the valuation method used to reach that value.

***Abstract author note: The results of this study are so extensive, it is worth revisiting this article later to expand on the findings. However, the results are complicated enough where the tables used in this study are the only real efficient way to summarize this data.**