

FY 2009 RESEARCH PROBLEM STATEMENT

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TITLE

Trace copper metals inventory in roadside streams with salmonoid fish species

PROBLEM (Description of need)

Trace metals such as copper are often found in higher concentrations in streams along roadways than would be expected in natural conditions. Elevated levels of copper can have detrimental effects on fish, especially salmonoid species. However, there is little comprehensive knowledge of actual levels of these trace metals on a regional basis. Most previous studies have focused in on a single watershed at a single point, which provides little insight into which nonpoint sources may be contributing to elevated trace metal concentrations.

PROPOSED RESEARCH, DEVELOPMENT OR TECHNOLOGY TRANSFER ACTIVITY

Proposed research would take advantage of the existing USGS streamflow and water quality network to further understanding of occurrence and distribution of copper. There are many Oregon streams with historical USGS / DEQ and Storet water quality data such as copper levels. At site where additional copper data is needed, sediment and water samples will be taken five to six times a year at each streamflow station. Sediment and water samples will be analyzed for copper using the atomic emission optical spectroscopic technique. The lab work will be performed in conjunction with Portland State University and/or a private lab. GIS techniques will be utilized to determine the levels of urbanization, percentage of impervious surface and proximity to roadways for each station.

BENEFITS

More comprehensive knowledge of copper metal sources and distribution will enable ODOT to better plan where larger riparian buffer zones are needed for both existing and new roads. Also, in some instances traffic patterns can be altered for the same net benefit. Accumulation of copper water quality data can also provide a benchmark for which future mitigation efforts can be measured.

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