

FY 2009 RESEARCH PROBLEM STATEMENT

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TITLE

Improving Flow Duration Regression Equations at Stream Crossings in Eastern Oregon

PROBLEM (Description of need)

Flow duration regression relations are used to determine the fish passage stream flows for each month at stream crossings. In regions of sparse hydrologic data, regression relations can have high errors. This is especially true when considering ungaged watersheds. Additional hydrologic data is needed for the region of Oregon east of the Cascade mountain range.

PROPOSED RESEARCH, DEVELOPMENT OR TECHNOLOGY TRANSFER ACTIVITY

The 2008 ODOT/USGS report by Risley and Stonewall determined flow duration relations for the entire state of Oregon. For arid areas of eastern Oregon, the prediction errors were high due to sparse long term continuous flow data. Studies in Montana and Nevada have shown that errors can be reduced with as little as three years of additional streamflow data. Prediction errors could be lessened with additional monthly stream flow data at previously ungaged sites. Also a compilation of historic streamflow measurements from paper archives could provide more hydrologic data to be used to lessen errors.

BENEFITS

The completed study will provide more accurate estimations of design floods for ungaged stations. This will result in fiduciary benefits by minimizing the occurrences of failures of stream structures such as bridges and culverts, and by minimizing the occurrences of over-design for those same structures.

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