

# FY 2009 RESEARCH PROBLEM STATEMENT

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### TITLE

The use of L-Moments in Flood Frequency Analysis

### PROBLEM (Description of need)

L-Moments are a valuable statistical tool that are underutilized in flood frequency analysis. L-Moments have been shown to be more statistically robust to outliers than conventional moments. Conventional moments, in conjunction with the Log Pearson distribution are currently used in FEMA and DOT design guidelines. However, L-moments are better suited for peak annual streamflow analysis, and in particular, regional peak annual streamflow analysis.

### PROPOSED RESEARCH, DEVELOPMENT OR TECHNOLOGY TRANSFER ACTIVITY

The objective is to develop a regional approach to flood frequency analysis in the state of Oregon using L-moments. This approach will be developed by dividing the state into homogeneous regions, and developing regional formulas that can be used for streams with little or no gaging record.

### BENEFITS

The use of L-moments will result in 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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