

# FY 2009 RESEARCH PROBLEM STATEMENT

## Use this form to submit a problem statement

Submittal via E-mail is preferred: Save the form and give it a new, descriptive name, then send to:  
barnie.p.jones@odot.state.or.us

**ODOT Research Unit**  
200 Hawthorne Ave. SE, Suite B-240  
Salem, OR 97301-5192

**Office Phone: (503) 986-2700**  
**FAX Phone: (503) 986-2844**

### TITLE

The use of storage in urban flood frequency regression equations

### PROBLEM (Description of need)

Regional flow analysis is ineffective in urban areas. Large areas of impervious surfaces, urban storage and routed water pathways result in streamflow regimes exceedingly dissimilar from streams in surrounding rural areas. Consequently, regional streamflow equations using storage as a variable for estimating peaks, flow percentiles and low-flow statistics are sometimes not appropriate for small catchments in highly urbanized areas.

### PROPOSED RESEARCH, DEVELOPMENT OR TECHNOLOGY TRANSFER ACTIVITY

This research would take advantage of two urban streamflow studies conducted in the early 1980's. By incorporating this previously successful approach with data acquired since the previous study and modern tools such as defining storage with GIS coverages, regional flow equations for urban areas will be developed for floods, flow percentiles and/or low-flow statistics. These data will be input into USGS StreamStats and utilize PSU Students through OTREC.

### BENEFITS

Accurate estimations of urban flow storage parameters provide numerous benefits. More accurate flood estimations 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. Low-flow flow percentile statistics serve as benchmarks for setting wastewater treatment plant effluent limits and allowable pollutant loads to meet water-quality standards. In addition, these data are paramount in the study and management of fish passage, erosion control and stream restoration.

### CONTACT PERSON:

Name, address phone number and e-mail

**Adam Stonewall, USGS**  
2130 SW 5<sup>th</sup> Ave  
Portland OR 97201  
503-251-3276  
stonewal@usgs.gov

### FOR RESEARCH UNIT USE ONLY

NCHRP  
SPR  
POOLED FUND  
STATE  
OTHER

PLEASE RENAME THE COMPLETED FORM WITH A SHORT NAME RELATING TO THE RESEARCH TOPIC.

Submittal of this form via E-mail is preferred. Send to: barnie.p.jones@odot.state.or.us