

## Tahoe Science Program Quarterly Progress Report

### P084: Development of an Online Watershed Interface to predict the effects of forest and fire management on sediment and phosphorus loads in surface runoff in the Lake Tahoe Basin

**Principal Investigator: William Elliot**

**QUARTER: July - September, 2015**

Deliverables	Task	Start Date	End Date	Status Update	Percent Complete	
IGO, Task Order, or Initial Funding Transfer	Initiate project	7/1/12	11/20/12	Received first and second year's funding. Still awaiting final year's funding	80%	
Agreements	Establish agreements	1/1/13	5/30/13	Complete	100%	
Inventory/assessment/monitoring	Install a server specific for this project	1/1/13	12/31/13	Complete	100%	
	Carry out rainfall simulations on landings	9/1/12	12/31/13	Complete	100%	
	Carry out concentrated flow simulations on landings	10/1/12	1/31/13	Complete	100%	
	Incorporation of DEM and Soil layers on server	2/1/13	7/31/13	Complete	100%	
	Incorporation of groundwater flow	2/1/13	7/31/13	The computer codes for incorporating the base flow are nearly complete.	80%	
	Incorporation of nutrient and fine sediment prediction into WEPP output	2/1/13	7/31/13	Modeling continues. We have a framework, but need to complete base flow and flood routing first.	75%	
	Incorporate flood and sediment routing	7/1/13	1/31/14	The new WEPP model with the sediment routing developed by Wang, 2010 is on the server. Now addressing bugs in the computer code	85%	
	Validation		7/1/13	1/31/14	Awaiting completion of interface	

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Scientific reports, systems, or related products	Draft peer-reviewed manuscript	2/1/14	9/30/14	Addressed peer-review comments of a Journal of Hydrology paper on WEPP watershed assessment of hydrology and sediment transport for five watersheds in the Tahoe Basin	75%
	Final report	6/1/14	4/30/16	Project Extended due to delayed funding	
Stakeholder Meetings		1/1/13	12/31/14	Two onsite meetings completed with stakeholders	100%
Outreach/training	Workshop	4/1/14	7/31/14	Planning on April, 2016 Workshop	
Contract Administration	Quarterly report	1/1/13	12/31/14	This is the 12 <sup>th</sup> of 14 reports	86%
	Yearly report	1/1/13	12/31/15	Two out of three reports completed	67%

The overall goal of this project is to develop an online watershed GIS interface to predict the effects of forest and fire management on sediment and nutrient loads in surface runoff in the Tahoe Basin. A secondary goal was to compare the performance of two styles of rainfall simulator that had been used for past research in the basin.

**Project Management**

Discussion is ongoing with PSW administrators to receive the final year’s funding for the project. The Forest Service WO is still processing the BLM funds to make them available for Forest Service Research.

**Phosphorus Modeling**

An additional part time programmer has been hired through the University of Idaho to assist in getting the P modeling incorporated into the online interface. In a separate, but potentially useful approach, the ARS has shared some work that has been done to incorporate P modeling within the WEPP model, rather than within the interface. We will pursue this option as well to determine the best approach for the Tahoe Basin.

**Presentations**

We made two presentations at the Tahoe Science Conference in Reno in September.

Elliot, W. J. Trotochaud, D. Flanagan and B. Engel. Evaluating fire risk in the Tahoe Basin for projected future climates. Trotochaud was an MS student partially supported by this project at Purdue University. Flanagan is a Co PI on this project, and Engel is the Chair of the Agric. Engr. Dept. at Purdue University.

Dobre, M., E.S. Brooks, W.J. Elliot and J.R. Frankenberger. Development of a WEPP online watershed interface to predict effects of watershed management on runoff, sediment and phosphorus delivery in the Lake Tahoe Basin.

Frankenberger is a computer specialist with the ARS National Soil Erosion Research Laboratory who did much of the original coding on the online watershed interface.

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**Manuscripts**

A manuscript entitled "*Watershed-scale evaluation of the Water Erosion Prediction Project (WEPP) model in the Lake Tahoe basin*" was peer-reviewed. We addressed the review comments, and resubmitted the manuscript to the *Journal of Hydrology*.

**Next Quarter**

We expect to address final review comments from *the Journal of Hydrology* paper. Modeling work will continue on incorporating new channel routines, base flow and phosphorus delivery into the online watershed interface.