

**MAINTENANCE/REPAIR BUDGET
ALSEA WATERSHED STUDY**

The Watersheds Research Cooperative (<http://watershedsresearch.org/>) is evaluating the effectiveness of various forest management strategies in protecting and restoring small headwater streams and downstream fish bearing streams. OWEB has invested close to \$900,000 in the three watershed studies in two separate grant cycles for capital investments. These studies would not have been possible without these OWEB investments. While long-term studies are needed to address these kinds of effectiveness questions, they also result in annual equipment repair and replacement costs. The purpose of this paper is to provide budget and Oregon Plan context for these watersheds studies and discuss the expected nature of our expected equipment maintenance costs over the life of the studies (through 2017).

Total estimated annual maintenance or replacement costs for three watershed studies: **\$13,835/year**. The actual equipment is itemized in Tables 1, 2 and 3. This estimate does not include batteries that will eventually wear out nor does it include catastrophic damage to any station such as treefall on a weir or gauging house or loss of a flume site during debris flow or storm event. Costs to completely re-establishment a gauging station or flume site would range from \$12,000 - \$23,000 depending on the site.

Table 1. Estimated annual equipment maintenance costs for the Alsea.

Alsea Items	Cost
Annual replacement of tubing for pump samplers (3 sets)	\$250
Annual replacement for DO probe sensor caps (6)	\$510
HACH DO Probes (1 per year due to vandalism or weather damage)	\$2,425
Precipitation gauges (average of 2 lost per year due to vandalism)	\$100
1 TTS station to be vandalized every three years	<u>\$2,000</u>
TOTAL ANNUAL	\$5,285

Table 2. Estimated annual equipment maintenance costs for the Trask.

Trask Items	Costs
Annual TTS Maintenance	\$ 2,685
Annual headwater flume maintenance	\$ 2,385
TOTAL ANNUAL	\$ 5,070

Table 3. Estimated annual equipment maintenance costs for Hinkle.

Hinkle Items	
Annual Micro Met Maintenance	\$ 600
Annual TTS Maintenance	\$ 2,880
TOTAL ANNUAL	\$ 3,480

TOTAL ANNUAL COSTS FOR 3 STUDIES	\$13,835
---	-----------------

The three watershed studies- Alsea, Hinkle, and Trask, have been able to leverage OWEB's substantial investment against an even larger operating budget from diverse funding sources. The operating budget for the three studies is approximately \$695,000-\$1,527,000/year for a total anticipated cost of \$10,545,000

when the project is complete. Funding sources include but are not limited to ODF, NCASI, OFRI, BLM, Douglas County, OFIC, Weyco, USGS, OSU, EPA, and other Grant money.

The research and monitoring conducted under the three watershed studies benefits the Oregon Plan. These studies address effectiveness of current forest management (a critical component of the Oregon Plan), across multiple landowner types (State, Private, and Federal), multiple regions, and at a watershed scale. The Alsea, Hinkle, and Trask studies include biological and downstream responses to forest management. No other project currently addresses all of these topics. Furthermore, effectiveness monitoring is currently recognized as a knowledge gap for the Oregon Plan. This research compliments other OWEB research focused on status and trends or restoration. In fact, the Alsea Study will evaluate restoration as well as general forest management.

While long-term studies are needed to address these kinds of effectiveness questions, they also require annual equipment repair and replacement. Thus, we are now faced with repairing and replacing equipment initially purchased with OWEB capital investments. Not maintaining equipment is not an option. It could result in temporally and spatially inconsistent data collection, lower data quality, data gaps, or complete loss of data stations if damaged equipment is not replaced. These types of issues can limit final study conclusions.

We estimate that the WRC can cover some of the maintenance costs. Examples could include batteries or catastrophic damage both of which were not included in the estimate. The WRC funds will come from current funding sources in proportions to their relative investments (i.e. ODF, NCASI, OFRI, BLM, Douglas County, OFIC, Weyco, and USGS). Given our available budget for equipment repair, we estimate the following maintenance grant requests to OWEB through the life of these studies as follows:

- 13k/year from 2009 - 2011 (Hinkle will be done),
- 10K/year from 2012-2016 (Trask will finish),
- 5K in 2017 (Alsea will finish)

Actual maintenance costs may differ from this estimate and may vary from year to year. While large storm events can be particularly devastating to instream equipment, even average storm events cause damage. Some equipment is simply limited in longevity or needs battery upgrades and replacements (e.g. temp probes). Other equipment, by design is subjected to damaging floods (TTS probes and samplers). Therefore it is reasonable to anticipate annual maintenance will be needed. Our estimates are based on knowledge from principle investigators who have experience with other large scale, long term studies (e.g. H.J. Andrews, Hinkle Creek)

We can only estimate what we would purchase based on operation for the last several years. Luminescent DO and temperature probes need to be maintained every year or two. We have had vandalism of cables and theft of instruments over the last couple years. In these damp locations electronic can short out.

We recognize multiple requests for high priority work outweigh available OWEB funds. We appreciate OWEB's past support and investment in this well-designed set of watershed studies. We do not plan to solicit additional funding from OWEB but there could be an unforeseen, compelling development in the future that might warrant a request. Because we have the basic watershed research structure in place these sites become high valuable for "add-on" studies. For example, the question about stormwater runoff and herbicides can be address at these sites in a much tighter experiment and at lower cost than it would elsewhere.

We appreciate your consideration of this request. Any questions should be forward to Chris Jarmer or Liz Dent.

Chris Jarmer
Oregon Forest Industries Council
503.586.1243

Liz Dent
Aquatic Specialist
State Forests Program
Oregon Department of Forestry
Phone Numbers:
Philomath: 541.929.9168
Salem: 503.945.7371