Fiscal Year 2017 Environmental Assessment Program Proposals

Spokane River at Nine Mile Groundwater Study

This proposal is to study groundwater along the Spokane River in the vicinity of Nine Mile Dam and downstream to the confluence with the Little Spokane River. We would like more information on groundwater from both sides of the river. The geology of the area, the terminus of the Spokane Valley-Rathdrum Prairie Aquifer, and the presence of the Nine Mile Dam create a complex situation for understanding groundwater movement in the area. This complexity came to light while trying to calculate the water balance for the model used in the Spokane River and Lake Spokane Dissolved Oxygen TMDL. The water balance indicates there is a good deal of groundwater coming into the system, but we are uncertain where the groundwater is coming from, and of what quality it is.

The goal of the study would be to gather, review, and interpret existing information from the various studies and sources that exist. However, additional work such as installing piezometers and nutrient sampling may be necessary if the information gathering effort is unable to produce information that increases our understanding.

Methodology to Assess Sediment Loads

Calculating sediment load in a waterbody is labor intensive due to the need to sample for TSS, collect composite bedload samples at even intervals across the creek, and take flow measurements. The sampling is time consuming, expensive, and high flows can prevent data collection due to safety concerns. This proposal is for developing an easier and less expensive method to assess sediment loading that can be used to track sediment loads over time. Such a method would provide information about the impact TMDL implementation activities are or are not having, and could be a useful effectiveness monitoring tool. Initial thoughts about how to complete this work include installing a meter in existing USGS gage houses. We envision the method being used to establish a trend analysis.

This methodology would be useful in the Hangman Creek watershed because there is existing data from a sediment discharge study from 1998-2001, and in 2009 Ecology completed a turbidity TMDL. Since then, numerous riparian restoration projects and many acres of cropland have been converted from conventional tillage to direct seed. It would be good to have an idea of the sediment loading now so we know what progress has been made.

This methodology would also be useful in areas with toxics TMDLs that have surrogate TSS and turbidity allocations, such as Walla Walla or Yakima.

Suncrest Sediment Nutrient Study

In partnership with Ecology, the United States Geologic Survey (USGS) has been studying groundwater along the shoreline of Lake Spokane near the Suncrest Community to determine if nutrients from the septic systems are leaching into groundwater and Lake Spokane. One part of the USGS study involved sampling rooted vegetation in the near shore littoral area for the N 15 isotope; if levels are high then the nitrogen very likely came from septic systems. A confounding variable of the study is that the plants may have taken up nutrients from the lake bed sediments, which are influenced by upstream sources. To better refine the data collected from the Suncrest shoreline, I am proposing a study to collect

sediment cores from Lake Spokane and analyze them for the suite of nutrients. Specifically, the study would take two-inch x 30 cm sediment cores, then partition them into three intervals at the upper, middle, and lower sections of the core. Each section would then be analyzed independently for nitrogen, total phosphorus, and soluble reactive phosphorus. An estimated 10 to 30 sediment samples would be needed to characterize the sediment. If possible, pore water could also be sampled for nutrients.

Perhaps the sediment samples can be preserved for future toxics or metals analysis.