



DEPARTMENT OF
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Addendum to Quality Assurance Project Plan

Little Spokane River Watershed Dissolved Oxygen and pH Total Maximum Daily Load Study: Water Quality Study Design (Quality Assurance Project Plan)

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Addendum

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EAP: Environmental Assessment Program
EIM: Environmental Information Management database
WQP: Water Quality Program

Time of Travel Dye Study

Modeling efforts to simulate DO and pH on the Little Spokane River (LSR) from Camden to the mouth have been stymied by the lack of observed time-of-travel data. The previous data collections (Joy, 2010 and Barber et al., 2007) did not conduct time-of-travel studies for the river. The time-of-travel study will aid in the development of the LSR QUAL2Kw model by allowing velocity and depth of the river to be calculated.

Study Procedures

The time-of-travel study procedures will follow the Environmental Assessment Program (EAP) Standard Operating Procedure for Time-of-Travel Studies in Freshwater Using a Dye Tracer #EAP037 (Carroll, 2012). EAP will be injecting and measuring the travel of Rhodamine WT dye in the LSR using deployed Hydrolabs, equipped with Rhodamine sensors, downstream.

The dye will be injected at three separate locations: LSR at Dartford, LSR at Chattaroy, and LSR at Camden. The dye injections will begin at the most downstream site (LSR at Dartford) and end at the most upstream site (LSR at Camden). Four Hydrolabs will be deployed downstream of each dye injection to track and measure the travel of the dye in the river.

Sites may be added or moved from this sampling plan depending on access and the number of Hydrolabs available for deployment. The calibration and deployment of Hydrolabs will follow EAP Standard Operating Procedure #EAP033 (Swanson, 2010).

Survey Dates

The time-of-travel dye study will be conducted the week of August 5, 2013 or the week of August 12, 2013. Significant rainfall can affect the time-of-travel in the river, so two weeks have been chosen to give the survey flexibility in scheduling.

References

Barber, M., T. Cichosz, S. Chen, Y. Luo, G. Fu, and A. Al-Omari, 2007. Total Maximum Daily Load Technical Report for the Little Spokane River: Data Collection, Analysis, and Recommendations. November 16, 2007. Report to the Washington State Department of Ecology, Environmental Assessment Program, Olympia, WA.

Carroll, J., 2012. Standard Operating Procedure for Time-of-Travel Studies in Freshwater using a Dye Tracer, Version 2.0. Washington State Department of Ecology, Olympia, WA. SOP Number EAP037. www.ecy.wa.gov/programs/eap/quality.html

Joy, J., 2010. Little Spokane River Watershed Dissolved Oxygen and pH Total Maximum Daily Load Study: Water Quality Study Design (Quality Assurance Project Plan). Washington State Department of Ecology, Olympia, WA. Publication No. 10-03-113. <https://fortress.wa.gov/ecy/publications/SummaryPages/1003113.html>

Swanson, T., 2010. Standard Operating Procedures for Hydrolab DataSonde and MiniSonde Multiprobes, Version 1.0. Washington State Department of Ecology, Olympia, WA. SOP Number EAP033. www.ecy.wa.gov/programs/eap/quality.html