ALBERTA INNOVATES

Research and Innovation Project – Knowledge Transfer Summary

Project Title: **Expanding Functional Flows - Floods, Floodplains and Groundwater**

Project No: **2341**

Project Lead: **Stewart Rood and Larry Flanagan, University of Lethbridge**

Partners: **Alberta Innovates, University of Lethbridge, Alberta Environment and Parks, Transalta, Klohn Crippen Berger, City of Calgary, Alberta WaterSMART, Conoco Phillips**

Status: **Ongoing**

Project Summary:

This project will continue to advance understanding of river flow regimes in the South Saskatchewan River Basin (SSRB) and how dam operations and Functional Flow regimes can benefit environmental health while also supporting human uses and economic prosperity. The study will investigate water exchange between rivers and floodplain groundwater, and water use by the floodplain forests along the Oldman and Red Deer Rivers. This provides the largest knowledge gap for river basin water balance models that are essential to optimize river regulation in the SSRB. The project will quantify the amount of river water used in evapo-transpiration (ET) by riparian cottonwood ecosystems and determine how this ET flux is regulated by environmental conditions and river flow regulation. The flux monitoring system also measures methane exchange between the atmosphere and forest ecosystems. Studies by the research team have shown that methane production in tree stems can exceed simultaneous oxidation of methane in aerobic soils, so that cottonwood forests are net emitters of methane to the atmosphere, a novel finding that is relevant to climate change.

Geographically, the study area will extend from the Oldman Basin northward to the Bow River and especially the Red Deer River, which is the SSRB tributary that remains open for further water allocation and will seek to implement functional flows with the Dickson Dam on that river. Overlapping activities with common themes will be undertaken including river regulation and floodplain ecohydrology and work to extend the implementation of Functional Flows in the SSRB.

Outcomes:

None available.

Links:

Stewart Rood Google Scholar

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