

Prairie Water Global Water Futures 2021 Operations Team Meeting – Project Reporting Template

Instructions: All GWF projects are asked to provide a summary update on their activities and accomplishments in preparation for the upcoming Operations Team meeting. **Please submit these by email to chris.debeer@usask.ca by no later than December 2.** These will be used to help guide discussions and breakout synthesis activities and will be made generally accessible on our website in advance of the meeting.

Project Name:	Prairie Water
Our major accomplishments to date are:	
<ul style="list-style-type: none"> • Strongly user-oriented program, including effective ongoing engagement activities through Annual Partner Meetings in 2018, 2019, and 2020, and engagement of advisory committee. • Extensive work on how landforms, climate, and land use change influence prairie hydrology and ecosystem services. • Major outputs include: <ul style="list-style-type: none"> • Publication of wetland conservation cost paper in CJAE • Publication of wetland classification paper in HESS • Publication of state of the science of addressing impacts of wetland drainage in the CWRJ. This has had attention in provincial government and in US. Led to article on the importance of prairie wetlands wrt resilience to climate and land-use change in “The Conversation” and CBC interview on the importance of wetlands • Delivery of a well-received and informative (to both users and researchers) workshop on the development of the Prairie Runoff and Flood Modelling Tool. 	
Our current activities are:	
<ul style="list-style-type: none"> • Developing pilot test applications and projects with partners to translate research outputs into practical products for users. • Integration of research outputs based on user needs. • Continuing virtual basin model simulations of combined climate change and wetland drainage scenarios. Includes linking of hydrological, biogeochemical and biodiversity models to simulate changes in ecosystem services associated with drainage scenarios • Working with VISforce on developing user-friendly visualizations of research results • Analyzing results from wetland conservation costs and producer decisions survey • Mechanistic work to understand N retention/release in wetlands, and variability in P across prairie wetlands. • Planning our 4th Annual Partners Meeting • Supporting work on visioning prairie futures (scenario work, partnered with ResNET). 	
The main accomplishments expected by the end of the project are:	
<ul style="list-style-type: none"> • Completion of pilot applications and projects. • Enhanced awareness of how climate change and wetland drainage • Frameworks for developing maps for the Prairie ecozone of risk to groundwater recharge, biodiversity, nutrient loads, and streamflow regimes from climate change and wetland drainage • Online wetland conservation cost assessment tool. • Fostering conversations on prairie resilience, and the importance of wetlands in resilience and ecosystem services. A ‘reframing’ of a contentious issue about wetlands to a discussion about how to build the future prairie we want. 	

Here is a key visual from the project (figure, photo, table, graph, etc.)

Table - Summary of drainage effects categories, impacts of drainage, and scientific confidence of effects from drainage. The magnitude of effect depends on watershed characteristics, and conditions such as weather, climate and drainage intensity

Category of effect	Impact of increased drainage	Confidence of effects	Synthesis
Discharge volume	<i>increase</i>	<i>moderate to high</i>	Drainage can increase annual discharge volumes
Flooding	<i>increase</i>	<i>moderate to high</i>	Drainage can increase flood magnitude and frequency
Nutrient export	<i>increase</i>	<i>moderate to high</i>	Drainage can increase nutrient export. Note: the magnitude may vary depending on in-field management practices and extreme climate events.
Groundwater recharge	<i>decrease</i>	<i>high</i>	Drainage of seasonally and ephemerally flooded depressions will reduce shallow groundwater recharge.
Salt transport	<i>increase</i>	<i>moderate</i>	Drainage could potentially result in export of salts, risking salinization of soils and receiving water bodies.
Biodiversity	<i>decrease</i>	<i>very high</i>	Habitat loss directly impacts overall abundance and diversity of wetland species.
Carbon and greenhouse gases	<i>poorly known</i>	<i>moderate</i>	Carbon cycling and greenhouse gas budgets will be impacted. <i>Note: the direction and magnitude of impacts are poorly known.</i>
Economics	<i>see synthesis</i>	<i>very high</i>	Economic drivers favour wetland drainage activities by producers. While drainage increases arable land, society loses economically valuable ecosystem services when wetlands are not conserved.

