

Williston Trial Wetlands

GMSMON-15 Williston Trial Wetland Habitat Study

GMSWORKS-16 Williston Wetland Inventory Project

GMSWORKS-17 Williston Trial Wetlands Physical Works Project

Williston Trial Wetland Habitat Study

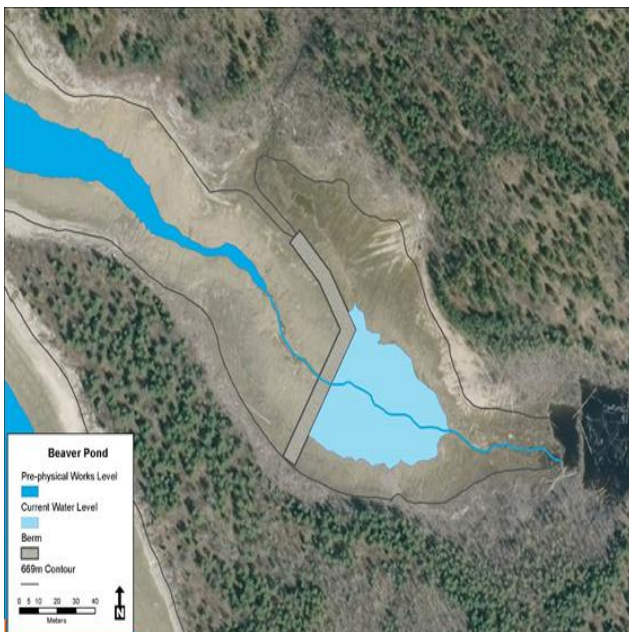
Monitoring of the biological response to wetland creation

The Peace Water Use Plan Committee recommended trial wetland enhancement projects to determine if physical works could improve habitat for fish and wildlife along the shores of Williston Reservoir. This study will monitor changes in vegetation and fish, waterfowl, wildlife use of trial wetland sites before and after project construction and will monitor the effectiveness of the project in maintaining the habitat over time.



Questions We Wanted to Answer

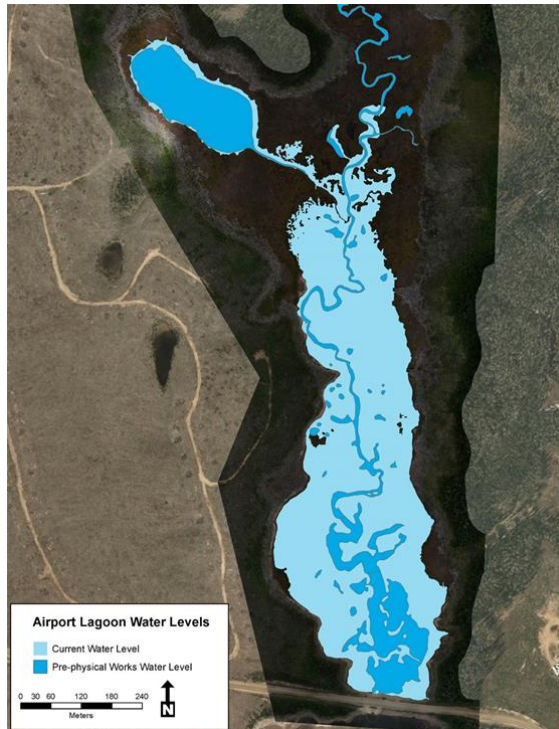
1. Are the trial wetlands used by fish?
2. Are the trial wetlands used by waterfowl and other wildlife?
3. Is there a change in the abundance, diversity, and extent of vegetation in the enhancement area?
4. Is the area and quality of fish and wildlife habitat created by the wetland enhancement maintained over time?



Results of the Study – In progress

- Baseline monitoring of trial sites began in 2011.
- Two years of post-construction data collected from the Airport Lagoon (completed 2013) observed changes in all indicator groups that are likely associated with the new water level and habitat.
- The Beaver Pond project was completed in 2014. First year post-construction observations identified changes in some of the indicator groups.

Williston Wetland Habitat Project



Lessons Learned

- The uniqueness of both trial sites and works means there are no associated control sites in this project.
- The baseline data collected pre-construction will support the analysis of impacts and benefits of the trial works.
- Post-construction monitoring indicates that there has been some changes and that the survey methods will help detect changes associated with the projects.
- Monitoring will continue at the trial sites until 2020, providing ten years of data.



Key Findings and Next Steps

- Pre and post-enhancement comparisons will be made to evaluate the observed biological use of the trial wetland sites and the effectiveness of the works to maintain the created habitat.

Williston Wetland Inventory Project

Inventory of candidate areas for wetland habitat trials

The Peace Water Use Plan Committee recommended trial wetland enhancement projects to determine if physical works could improve habitat for fish and wildlife along the shores of Williston Reservoir. The purpose of this project was to compile and rank a list of sites with potential for creation of wetlands that could benefit wildlife and fish by improving conditions in the drawdown zone.



Questions We Wanted to Answer

1. Where are candidate sites, adjacent to the Williston Reservoir, which could be useful for the creation of wetland habitats?
2. How do candidate sites rank for suitability as trials considering fish and wildlife benefits, accessibility, cost and other factors?



Project Update

- This project surveyed 42 candidate sites in the Parsnip reach in May 2009.
- Five sites, representing a diversity of treatment options and locations, were shortlisted.
- Two sites: Beaver Pond and Airport Lagoon, were selected.
- Feasibility was determined through the use of guiding principles such as cost, durability and potential learning opportunities.

Williston Wetland Inventory Project



Lessons Learned

- Cost estimates should be further refined with each phase. Initial estimates are often inaccurate.
- Accurate estimates for final selection should review details engineered drawings and local site conditions.



Key Findings and Next Steps

- Construction was completed at Airport Lagoon in 2013 and Beaver Pond in 2014 under GMSWORKS-17, Williston Trial Wetlands.
- Monitoring of biological indicators under GMSMON-15 began in 2011 to collect baseline data and continues post-construction to assess success of these projects.

Williston Trial Wetlands Physical Works Project

Construction of physical works projects for wetland habitat trials

The Peace Water Use Plan Committee recommended trial wetland enhancement projects to determine if physical works projects could improve habitat for fish and wildlife along the shores of Williston Reservoir. This project completed construction of two trial wetlands to study the effectiveness of the techniques at maintaining fish and wildlife habitat in the drawdown zone.



Project Objectives

- Wetlands were constructed at Airport Lagoon and Beaver Pond for the purpose of testing construction and designs for their structural and biological effectiveness.



Project Update

- Airport Lagoon was completed in 2013. The project involved raising the height of the culverts between a wetland and the reservoir near the Mackenzie air strip. This created a wetland that remained wetted for longer periods.
- Beaver Pond was completed in 2014. The project makes use of a geo-textile synthetic berm to hold back water in the wetland area for longer periods.

Williston Trial Wetlands Project



Lessons Learned

- Dam safety regulations must be considered.
- The geo-textile material was punctured during filling. Spare tubes on site may come in handy.
- Site access requirements for equipment and materials need to be considered in site selection. Barge access could be impeded by low reservoir levels.



Key Findings and Next Steps

- The design of the Beaver Pond berm using geosynthetic tubes has proven to be constructible.
- Ongoing monitoring of the completed physical works is in place.
- GMSMON-15 monitors the biological effectiveness of the trial wetlands.