

Highway 63 Wetland Creation Program

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Implementation of the Alberta Wetland Habitat Compensation Program

Highway 63 Twinning

Government of Alberta

Ministry of Transportation

- **Vision**
 - Alberta Transportation will be a centre of excellence for transportation in North America.
- **Mission**
 - To provide a safe, innovative and sustainable world-class transportation system that supports Alberta's economy and quality of life.

Highway 63

- The existing highway was built in the mid-1960s, with improvements completed between 1987 and 1991. This included safety rest areas and passing lanes.
- Final twinning work continues.



Highway 63 Project Information

- **Primary highway route between Edmonton and Fort McMurray, including over-dimensional loads destined for oil sands projects.**



Highway 63 History

- **2006 the Government of Alberta announced the Twinning of 240 km between Atmore and Fort McMurray.**
- **2012 the Government of Alberta accelerated the twinning to be complete by the fall of 2016.**



The Eco System

- **The southern leg of the project area is in the Alberta White Zone.**
 - Farthest northeast extent of agricultural activities
- **The majority of the project is in the Boreal Forest (Alberta Green Zone).**



Alberta Water Act

- Construction of Highway 63 is predominantly within the boreal forest in Alberta, which characteristically has abundant wetlands.
- Efforts were made to minimize wetland impacts.



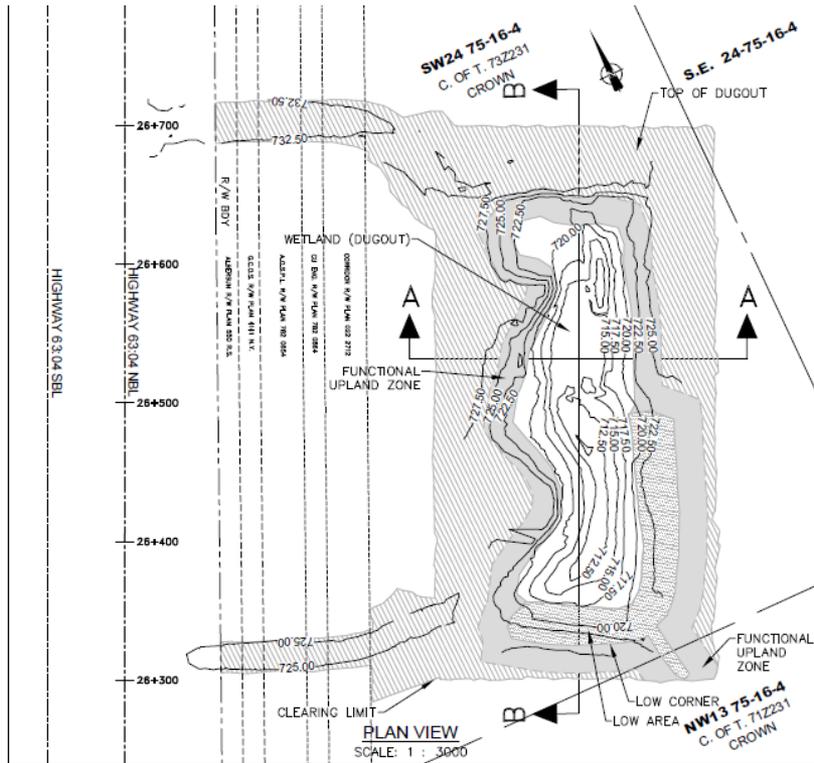
Construction Facts...

- Hundreds of thousands of tonnes of soil are used for highway construction each year.
- Approximately 64 million tonnes of earth and 2.5



million tonnes
of gravel used
to date on
twinning
Highway 63.

Alberta Transportations Wetland Creation Program for Highway 63

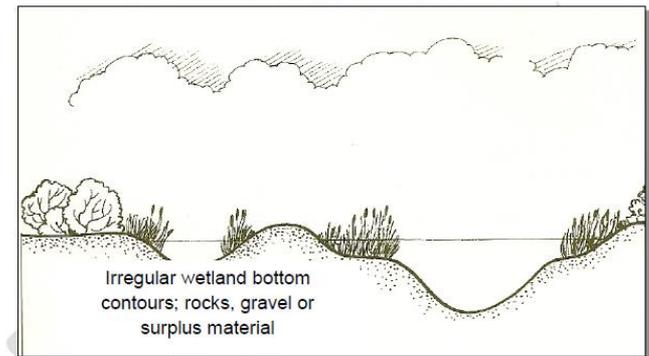


Low Area 0.71 ha (1.75 acre)
 Wetland (Dugout) 1.91 ha (4.72 acre)

Government of Alberta
Transportation



Figure 6.0 Irregular Wetland Bottom Contours



Source: A User Guide to Pit and Quarry Reclamation in Alberta, 1992.

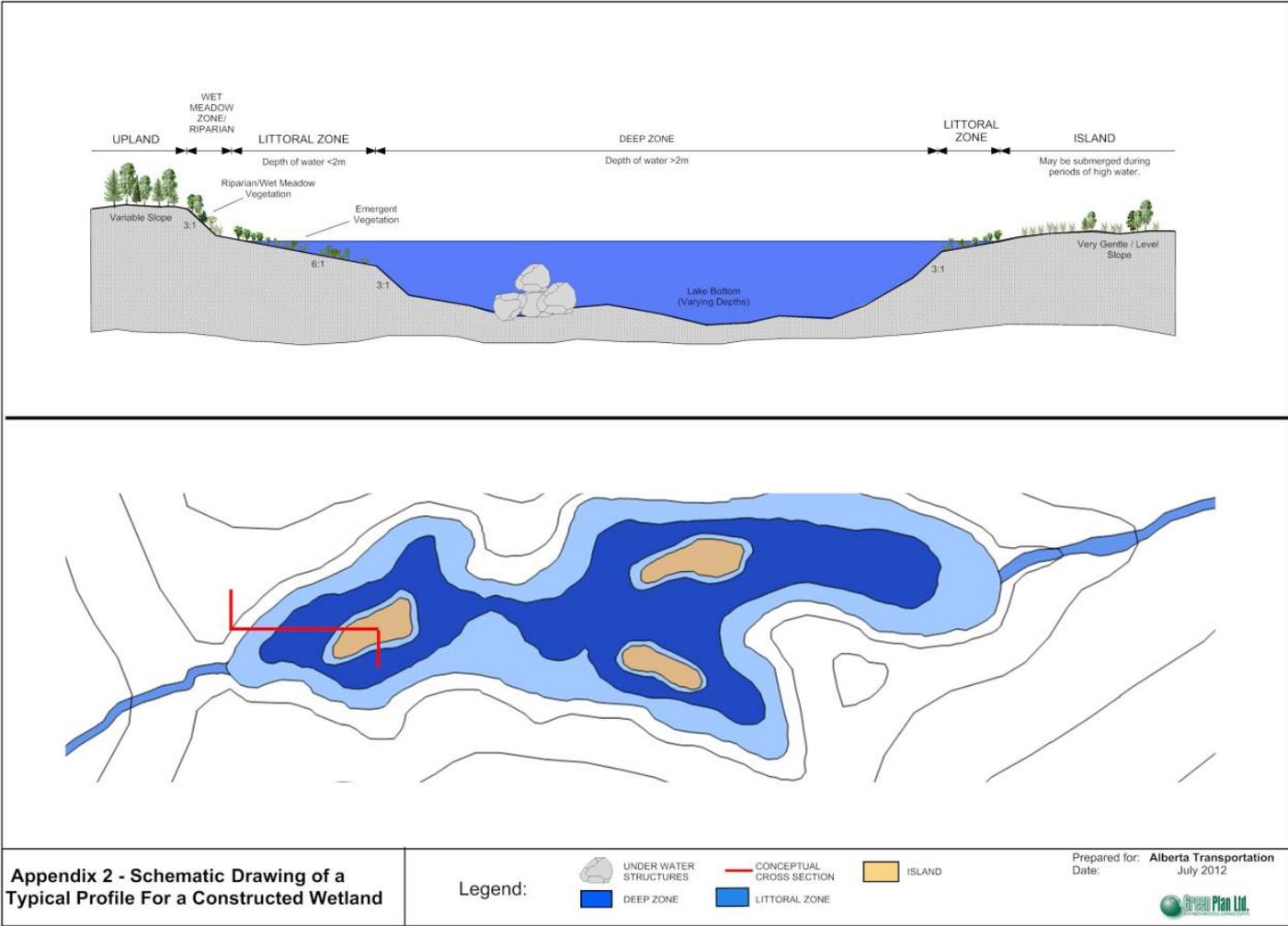
Wetland Loss and Compensation Plan

- **Wetland Loss and Compensation Plan was developed by Alberta Environment and Sustainable Resource Development and Alberta Transportation.**



Implementation

- Outsourced Construction



Implementation

- **Use of the design guide or typical in all tender packages.**
- **Allowing for field fit and creativity.**
- **As built drawings.**



Post Construction Monitoring

- Three years of monitoring commitment.
- Year one is the first full growing season following construction.
- Early and late summer monitoring events.



Comparison

- 1960s vs 2007 vs New Design vs Natural



Post-Construction Monitoring

- **Hydrological Function**
- **Vegetation**
 - Species richness
 - Exotic species
 - Wetland indicators
- **Water**
 - Multiple parameters
- **Wildlife**
 - Observational
 - Sound recorders
- **Fish**
- **Aquatic invertebrates**
- **Soils**



Detailed Post-Construction Monitoring Plan

- **Submitted in 2013, the detailed monitoring plan is designed to complete the following objectives:**
 - Monitor a number parameters
 - Assess if the parameters can be used to determine trajectory towards functional values similar to naturally occurring wetlands.
 - Determine if the created wetlands are projected to or have met measures of progress.
 - Improve the Alberta Transportations existing Wetland Creation program

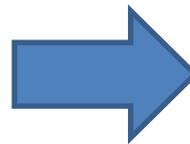
Measures of Progress

Questions we have asked

- Has a borrow pit reached hydrological equilibrium? What are the water sources (groundwater, runoff)?
- How are water levels changing over time?
- Is water quality being affected by external sources? Is water quality changing over time?
- How does borrow pit water quality compare to that of the reference wetlands?
- Are borrow pit vegetation communities functionally comparable to reference wetlands?
- How is vegetation changing over time?
- How do wildlife observations at the borrow pit compare to those at the reference wetlands?
- Do borrow pits support wetland-dependent wildlife species?
- Is a diverse community of aquatic invertebrates supported? Are communities comparable to the reference wetlands?

What are we really trying to answer?

- Are our created wetlands providing value or on a trajectory to do so?



Measures of Progress

- **Goals**
 - Assess how the facilities are doing
 - Graduate facilities preferably in 3-5 years post construction
 - Provide a metric for assessing comparative value
 - Program improvements
 - Including more targeted wetland monitoring in the future.
 - Standardize the process
- **This all feeds into the Alberta Transportation Wetland Habitat Compensation Program**
 - Allows us to deposit surplus areas in the bank for future projects.

Measures of Progress Tool

- Naturalization is a slow process prone to seasonal variation.
- How can we shorten this process?
- Trajectory towards similar functionality when compared to naturally occurring reference wetlands.



Measures of Progress Tool

- **Following three years of monitoring, this tool will be then used on a project by project basis.**
- **It was developed in consultation with Alberta Environment and Sustainable Resource Development.**
- **It provides a simple method of assessing the trajectory of each facility**
- **Once a trajectory is established the comparative value can be ranked.**

Measures of Progress Tool

- **After the first analysis**
 - Shortens the time required to monitor
 - Provides basis for a value assignment
 - Provides the background for banked credits to be used on future projects
- **Ultimately ensures Alberta Transportation meets commitments to regulators**



Questions?

