



# Impeded aquatic plant production in oil sand affected wetlands delaying reclamation timelines?

**JON HORNUNG**

Post Doctoral Fellow, University of Alberta

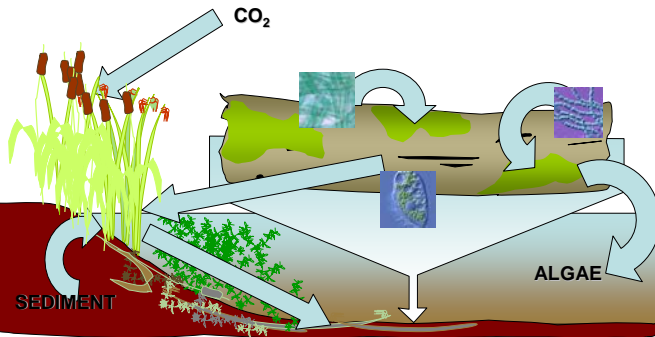


## Question:

Are cattail (*Typha latifolia*) growth and carbon accrual affected by oil sands process materials (OSPM) such as Consolidated Tailings (CT)?

## Introduction:

- *Typha* plants acquire and cycle carbon and nutrients through wetlands.



- Emergent aquatic plants like cattail contribute substantially to the energy flow in wetlands.
- The growth and eventual recycling of nutrients captured by aquatic plants like cattail are an important part of natural, healthy wetland ecosystems.
- Cattail are ubiquitous – could be used as indicators of wetland integrity.

## Materials and Methods:



### FACTORS:

- 1) Experimental Trench Water:
  - Half filled with natural water (<600 uS) half filled with oil sands process water (>1200 uS).
- 2) *Typha* planted in different growth medium (into buckets)
  - CT over CT
  - Soil over Soil
  - Soil over CT
  - Soil over Sterilized Sand



4 *Typha* in buckets per station x  
4 stations per trench x  
6 trenches =  
96 *Typha* plants (buckets)

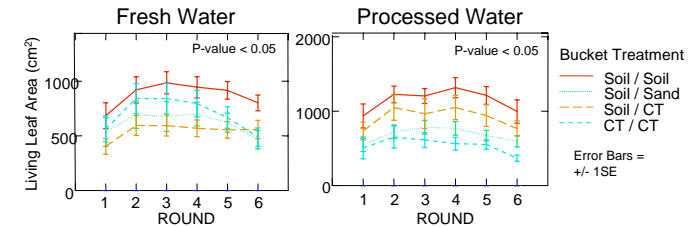
### MEASUREMENTS:

- 1) Six rounds of individual leaf length by width of all leaves.
- 2) Photosynthesis of *Typha* leaf (Licor 6400 Photosynthesis meter).

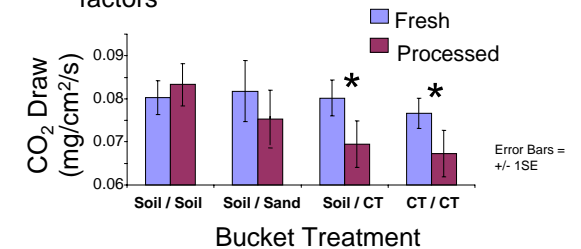


## Results:

**Fig. 1** – Living leaf area of *Typha* plants under experimental factors.



**Fig. 2** – Photosynthesis of *Typha* under experimental factors



## Conclusions:

- Increased leaf area under oil sands process influence could mean increased carbon accrual.
- Leaf area data suggests CT affected plants are quite productive.

## Acknowledgements:

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