

Case Study: Belding Lagoon Weed Removal

By William Ribbens, WWTP Superintendent
Village of Belding

Overview of WWTP & Performance History (slides 4 to 5)

- ▶ Using many natural treatment systems



NPDES Permit Requirement: Plant Removal (slides 6 to 12)

- ▶ Part 1a.2b.2 “Operation & Maintenance”
- ▶ Even though the system consistently produced super quality water
- ▶ “Spring began with... Clean Water Final Effluent”



MDEQ insisted: Remove Cattail & Floating Vegetation (slides 13 to 25)

- ▶ Letter from DNRE
- ▶ Known to polish water quality for nutrients ... yet must be removed

Removal Process (slides 16 to 105)

- ▶ Cattail Removal (slides 16 to 59)
- ▶ Weed Removal Attempts (slides 60 to 105)



- ▶ Staff Wonders “Why Us?” “Is this really necessary and important?”
- ▶ Lab Data after cattail and weed removal – July through September

Filamentous Algae Bloom and Removal (slides 60 to 105)

- ▶ Many methods attempted, tied up with other weeds
- ▶ Ponds 3, 4 and 5

Duckweed Formation and Removal (slides 126 to 128)

- ▶ Wind-blown, along shoreline
- ▶ Collection in a transfer structure/vactor removal

Conclusions

- ▶ Going Forward
 - 1) Trial and error efforts cost more than weed harvesting & chemical application
 - 2) 2009 clear water and high nutrients – not normal
 - 3) Management Plan 2010:
 - deeper water levels (to reduce light penetration)
 - fluctuating water levels (to submerge weeds)
 - control deeper weeds; allow wind collection of duckweed
 - timely harvesting & chemical application, as necessary

Bill is advocating:

***Flexibility to do what's necessary;
let Mother Nature do her part.***

Comments - Rich Grant P.E. (F&V)

- ▶ Big Picture: Previous Presentations
 - 1) “Wally’s Findings”
 - 2) Mark Desinski’s Findings
 - 3) DNRE Experts: Chemical Treatment
 - 4) Suggested Next Steps:
 - Lagoon Committee Discussion & Networking
 - Discussion with DNRE regarding seasonal and natural treatment systems
 - Develop permit language with flexibility where possible

Questions/Answers