Algal Control and Prevention Techniques in the Lake Diefenbaker Irrigation Canals

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Problem Statement

Filamentous algae is growing over the irrigation pumps. This hinders the efficiency of the system.

Decreased flow for farmland irrigation and mining operations adversely impacts the ... Saskatchewan economy

Purpose

 To analyze biological, chemical, physical, and canal design techniques for algae control and prevention.

Create a conceptual design alternative that is:

✓ Low cost



✓ Low Environmental Impact



✓ High Effectiveness



High Suitability for Location



Overall Scores



Design Options Primary Secondary Comment Magnacide H Chemical control Fish screens Biological control Prussian carp Fine screens Air burst screen Physical control **Ultrasound** Cross-section Supplementary Drainage Constructed **Canal Design** design (deeper, ditches wetlands **Options:** narrower)

Weighted Criteria Matrix

Criteria	Weight	Magnacide H		Prussian Carp		Ultrasound Tech.	
		Eval.	Score	Eval.	Score	Eval.	Score
	3	2.5	7.5	1.5	4.5	1	3
	3	2	6	2	6	3	9
	2	2.5	5	1.5	3	2.5	5
	1.5	2.5	3.75	1	1.5	1.5	2.25

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19.25

22.25

Methodology

Literature Review



Stakeholder Analysis



Comparative Analysis



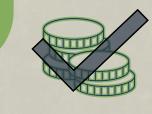
Design Options

Weighted Criteria Matrix



Conclusion

Magnacide H with fish screens is the most suitable option









Recommendations

- With limited studies on canals, more research is required for algal treatment options
- Supplementary canal design options should also be considered

