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Comprehensive Lakes Plan
The Next Phase – Implementation

Improving Storm Water Management

19 slides

Agenda for

1 A quick look at the Cedar Corporation

2. A brief look at storm water and how it can be better managed

3. A review of the Cedar Corporation's proposal to engineer the Island's storm sewers

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Cedar corporation

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engineers • architects • planners • environmental specialists • land surveyors • landscape architects

Bidding Information

Welcome to Cedar Corporation.

We provide professional engineering, building design, planning, land surveying, landscape architecture, building inspection, and environmental services to public and private clients throughout Wisconsin.






604 Wilson Avenue
Menomonie, WI 54751
715-235-9081 ph
715-235-2727 fax

2820 Walton Commons West
Suite 142
Madison, WI 53718
608-249-5046 ph
608-249-5824 fax

Special areas of expertise include municipal engineering, water resources planning and management, GIS mapping, comprehensive planning, environmental assessments, building inspection, private land development, interior space planning, multi-modal trails, bridges and dams, flood studies, hazardous materials management, environmental contamination investigations and restoration, wastewater treatment facilities, industrial/commercial business recruitment, and grant programs.

Thank you for visiting our Web Site. Please contact us if we can be of assistance.

Presentation Uses Information From Recent Plan

The Formal Name: Comprehensive Lakes Management Plan

Required by DNR

Journey began in 2002 and ended in 2012

Six studies for a cost of over $470,000

Comprehensive Lakes Plan – Four Areas Are Involved:

Storm Water – reduce sediment loading

Reduce phosphorus loading

Manage aquatic invasive species

Improve habitat

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Storm Water Management

In 2020 - 40 loads/yr
33,000 lbs/load

Some background:

Cedar Corporation produced the study: *Minocqua – Ka* *rshed Management Plan* (2005, $40,000)

Using computer modeling of our watershed they find that*:

1. Total solids moving into the two lakes 1993 = 662,000 lbs./yr
2. Total solids moving into the two lakes 2020 =1,310,000 lbs./yr.
3. With thorough remediation 2020 could drop to 361,000 lbs./yr

(This reduction would also lead to a reduction of 2000 lbs. phos./yr)

The increases projected are based on the county land-use plan for 2020

Reason, there will be many more acres of impervious surfaces

*Source: : *Minocqua – Kawaguesaga Lakes Watershed Management Plan,* Table 5-7, after page 5-34

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Loadings Used In Simulation Models

Our immediate watershed (excludes all but the two lakes) has 6122 acres or 10.6 sq. miles

Table 5-13
Pollutant Loading for Different Land Uses (Unit: [lb/ac])

Land Use	TSS	P	N	Pb	Cu	Zn
Commercial	538.47	1.70	7.62	0.11	0.15	0.69
Industrial	456.12	1.44	6.47	0.09	0.004	0.02
Multiple	411.80	1.30	5.85	0.08	0.17	0.81
Single	190.10	0.60	2.73	0.04	0.13	0.62
Rural	31.68	0.24	0.51	0.02	0.06	0.29
Forrest	12.67	0.04	0.24	0.004	0.004	0.02
Recreation	12.67	0.04	0.24	0.004	0	0

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Storm Water Management

A misconception about a suspended solid.

We usually think about visible grains of sand or small rocks

55% of the particles flowing into the lakes
are not visible to the naked eye - size less than 10 microns

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Storm Water Management

The main culprit for storm water management is VELOCITY – we must slow the water down so some sediments can fall out before they reach the lake.

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Storm Water Management

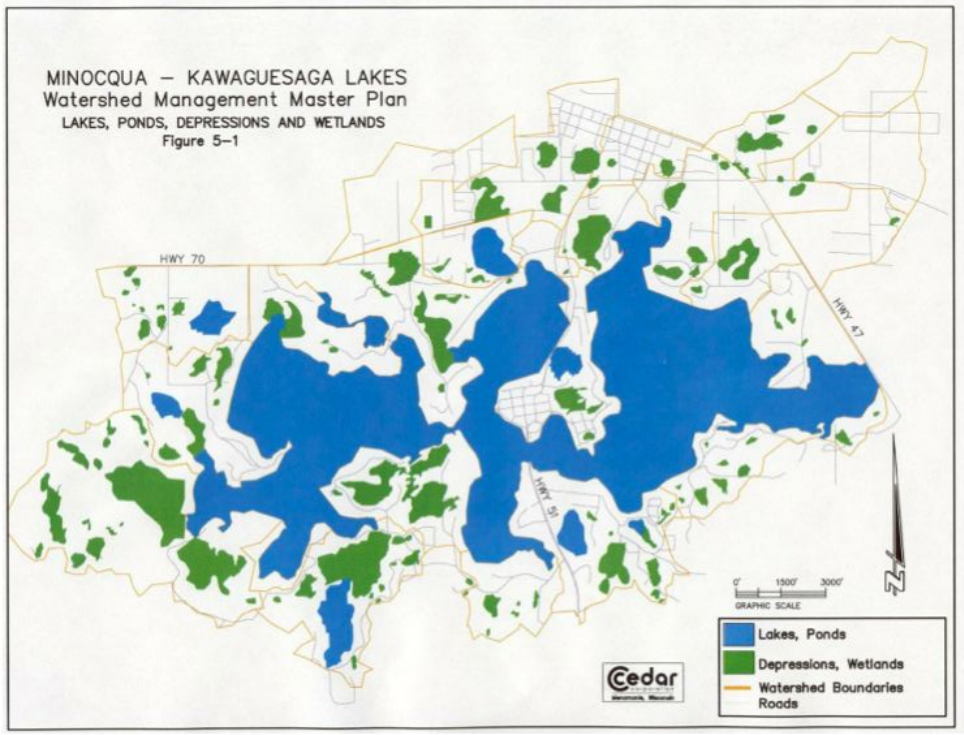
Recommendations from Comprehensive plan:

Highway 51 reconstruction – an ideal time to install the proper systems

Town , county and state – includes 111 storm sewers! - Town, State resp.

Topographical depressions and artificial wetlands - protection of/creation of wetlands and depressions -Town responsibility

The green areas MUST be protected – a Town/DNR responsibility. These areas capture approx. 140,000 lbs. of TSS each year.



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Storm Water Management

Recommendations cont.

Stiff enforcement of silt fencing around disturbed land – Town Resp.

Ordinances: County responsibility
- Storm water runoff management
- Septic system pumping and inspection

Encourage shoreline restoration - Town and Lakes Assoc. responsibility

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Engineering Study

Some Steps Already Taken:

June 25, 2013 – Mark Herzheim send letter to Cedar Corporation requesting three things:

1. The cost to engineer storm water solids reduction on the entire island

2. The cost to reduce storm water solids for lands including and close to the island

3. The cost to engineer storm water solids reduction for the entire watershed

Engineering Study

Cedar's Response

On August 16, 2013 Mark received Cedar's response;

They only replied to point 1. – the island, the other two areas require investigation to make good estimates.

In fact, they did not do the entire island, they did not include Reuben Town or part of the commercial area

In their letter they offer improvements for 8 existing storm sewers and 7 new sewers + limited street intersection curb and gutter conveyance system improvements at 8 locations

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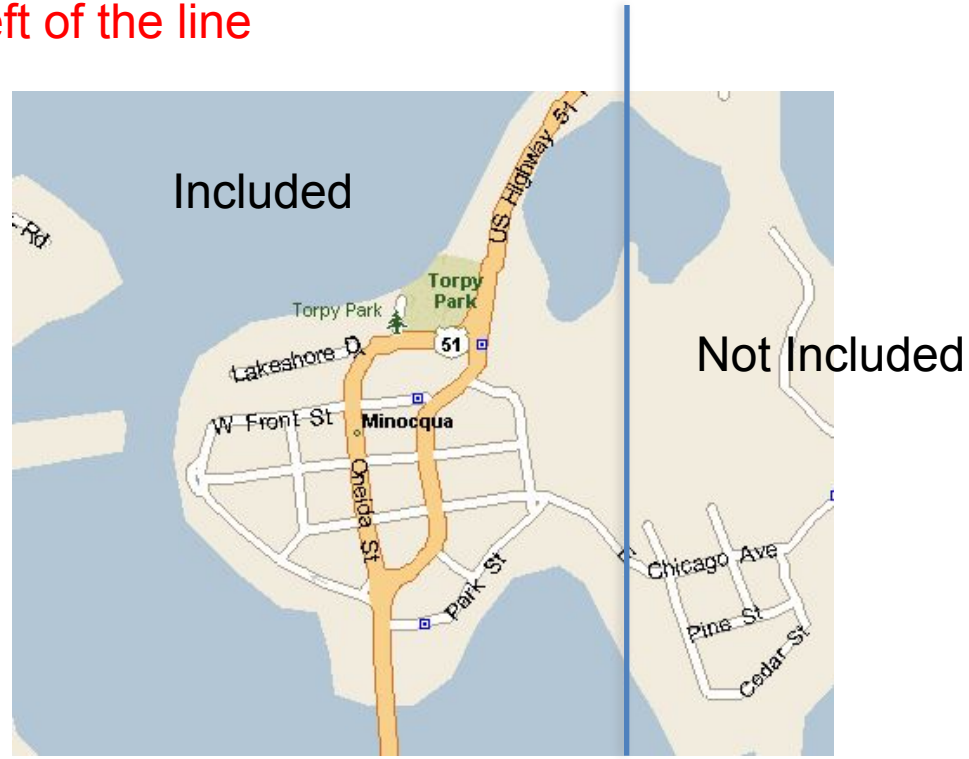
Engineering Study

I pointed out …..

Proposal 1 asks for: The cost to engineer storm water solids reduction on the entire island – They will do all the portion to the left of the line



Engineering Study

What We Get…..

Engineering plans to redo old and add new sewers for all of the commercial portion of the island

An estimate of the sediment load reduction associated with each site

Also includes their engineering estimates of the sediment reduction associated with the Highway 51 project.

And all the usual things associated with such an engineering proposal

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Engineering Study

Now We Have a Way to "Keep Score"

This year's approximate sediment loading – 1,000,000 lbs./yr.

Reductions:	
Hwy 51	XXXX lbs
Seven new sewers	YYYY lbs
Redo eight old sewers	WWW lbs
Grand total	ZZZZ lbs

Revised total solids into lakes 1,000,000 - ZZZZ

Engineering Study

The Costs:

Already spent:

Highway 51 Project – Lake Association Funds	$8600	

New Projects

Phase 1 – Engineering

File for engineering grant (Cedar Corp.)	$5000	(2014 budget)
Cost of engineering - town's 25% share	6250	(2014 budget)
Total Phase 1	$11, 250	

Phase 2 – Construction

File for construction grant	$5000	(2015 budget)
Grant administration – 25% share	1250	
Construction engineering – 25% share	6250	
Subtotal	$12500	
Construction cost – 25% share	?	

Engineering Study

Construction Grants

A cursory look

Can range up to $250,000

Can last for 2-3 yrs.

Lake Association Position

We would like the Town Board to move ahead with this proposal and provide $5000 for writing the engineering funds grant request

Submit grant in May 2014, should know status in August 2014, begin engineering in late 2014 -2015

The End