



# WE WANT TO GO BACK TO THE FUTURE

FROM THIS



BACK TO THIS



Presentation by Fred Peters  
General Committee, Markham Council  
Monday June 15, 2020

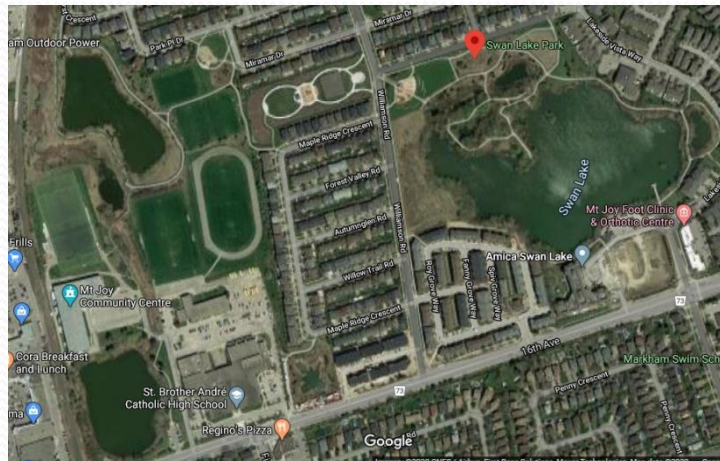
# Swan Lake Park and Mount Joy Park

- Underutilized jewels within Markham – great recreational facilities
- But Swan Lake is dying – too much phosphorus from goose droppings and stormwater runoff. Invasive plant species overtaking the Park
- **For Greensborough – this is a community highlight**
  - To us, Swan Lake Park is what Toogood Pond is to Unionville

**Please stop managing Swan Lake as a stormwater pond!**

**Mount Joy  
Park**

Approx.  
20 acres  
(8 Ha)



**Swan Lake Park  
& Lake**  
25 acres (10.5 Ha)

**Swan Lake**  
13.5 acres (5.5 Ha)

# Swan Lake: Three Pathways Forward

## Drain & Convert to Wetland/ Park



- Partially drain, plant bulrushes, water plants
- Still supports stormwater management needs
- Eliminates geese, cyanobacteria
- One time cost, minimal ongoing costs

## Just Worry About Containing Bacteria



- Fish kill, March 2012
- Water based plants dying
- Regular algae blooms
- Role is to monitor and manage Cyanobacteria
- Deal with cyanobacteria every 3-5 years

## Restore & Sustain



### Restore

- Water quality, fish and water based plants
- Shoreline, wildlife habit
- Address invasive plants

### Invest and Sustain

**Staff report rejects Drain & Convert; perpetuates Containment strategy  
Our lower cost proposals support Restore and Sustain**

# There are many interconnected elements in a healthy ecosystem

## Interconnected Elements within Swan Lake Park

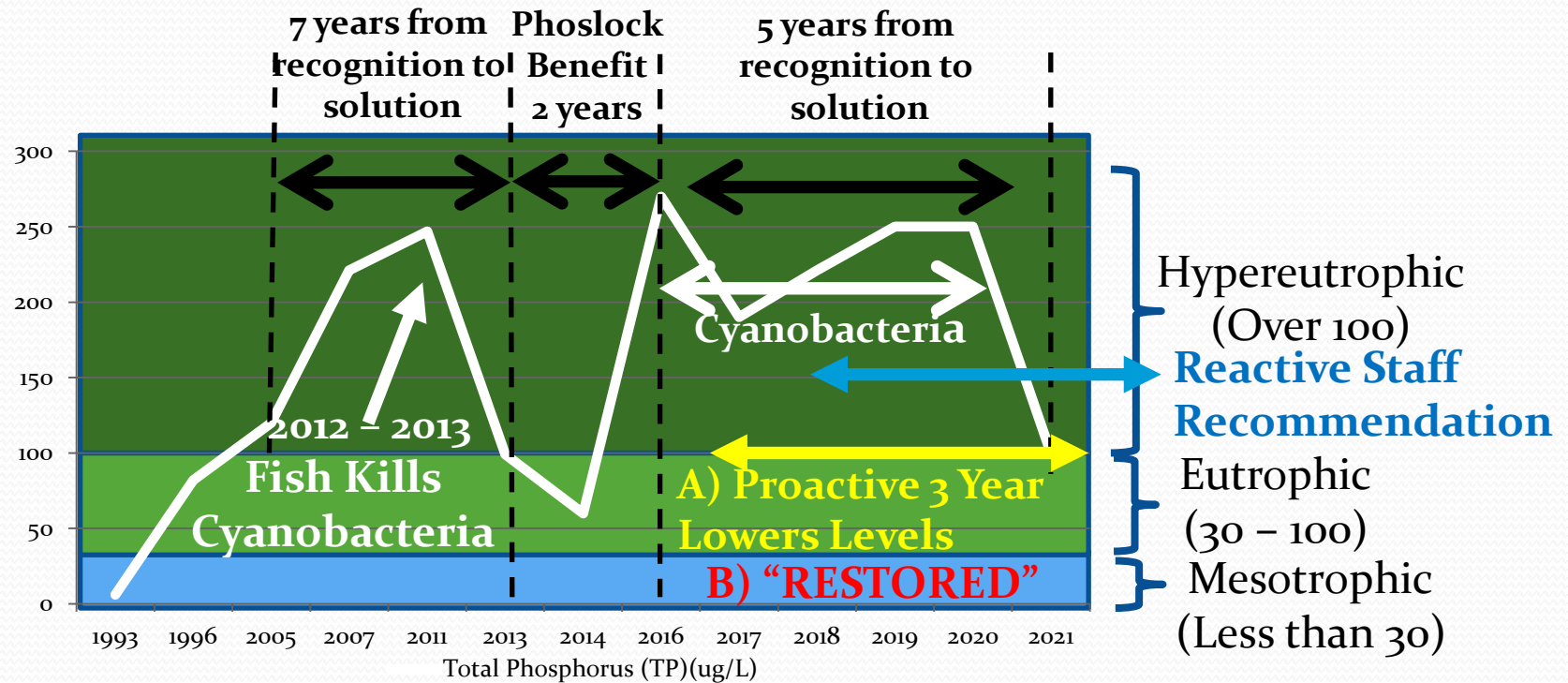


Today's staff report only addresses containment strategies for:

- Level 1 water quality and Level 4 Goose Management

**NO CONCERN OR FOCUS ON ENVIRONMENTAL ELEMENTS OR RESTORATION**

# History of Swan Lake and Phosphorus



- Staff proposal reacts to excessive levels and perpetuates large swings in phosphorus levels as realized after treatment in 2013

**Two better options – both lower cost**

- Lower levels under a fixed three year follow up treatment**
- “Restored” Lake under a Proactive 1 year program**

# Justify Expenditures on Ability To Reduce Phosphorus

Costing Model for Phoslock	
a) Installation and Phoslock costs	\$4,000 per tonne
b) In 2013, one tonne eliminated	3 kg of phosphorus
c) Phosphorus entering lake each year	30 kg
d) Phoslock needed per year	10 tonnes
e) Cost to eliminate 1 year of phosphorus	\$40,000

Value For Money Measures	
Justify all expenditures in terms of their ability to reduce the problem of phosphorus.	
Expenditure	Minimum Phosphorus Reduction Required
a) \$4,000 Goose/Fish Management	3 kg
b) \$12,000 consulting/monitoring	9 kg
c) \$225,000 on alterations, bioswale	169 kg or 8.4 kg/year
d) \$280,000 goose management	210 kg or 10.5 kg/year
<p><b>If expenditure cannot improve phosphorus levels more than minimum, use funds for Phoslock.</b></p>	

# Option B: Proactive Annual Program - \$77,000 Per Year Restored/ Healthy (Mesotrophic) Lake

<b>Cost of Mesotrophic Solution For Swan Lake (With Oxygen)</b>			
<b>Program Components (5 year Reassessment)</b>	<b>Per Year/ Application</b>	<b>Phoslock With Investment</b>	
Goose Management (50%)	\$ 14,000	20	\$ 280,000
Strobe Lights	\$ 6,000	4	\$ 24,000
Water Monitoring (Year 4/9/14)	\$ 12,000	3	\$ 36,000
Fish Management	\$ 5,000		\$ -
Specialist Assessment (Year 5/10/15)	\$ 30,000	3	\$ 90,000
Phoslock or Aluminum (2021)	\$ 250,000	1	\$ 250,000
Phoslock or Aluminum (Annual)	\$ 40,000	19	\$ 760,000
Oxygenation Equipment	\$ 100,000	1	\$ 100,000
<b>Total 20 Year Cost</b>		<b>\$1,540,000</b>	
		<b>Per Year</b>	<b>\$ 77,000</b>
<b>Assumptions - Apply Value for Money Measure</b>			
a) Apply 10 tonnes phoslock every year. If costs lower by applying every 2 or 3 years then apply enough in year 1 for subsequent years.			
b) Dog program cancelled (50% of \$28,000), replaced by stobe lights			
c) Invest \$225,000 in alterations, programs only of they reduce phosphorus by 169 kg or improve oxygen levels			
d) Every 5 years full program review.			

## From Containment to Restoration

# Comparison of Environmental Impact

	<b>Staff Proposal</b>	<b>Friends of Swan Lake Park</b>	
	<b>React 2 Yrs After Exceeds 150 µ/L</b>	<b>Option A Fixed Schedule</b>	<b>Option B Fixed Schedule</b>
<b>Frequency of Treatment</b>	<b>5 Years</b>	<b>3 Years</b>	<b>1 Year</b>
<b>Environmental Impact</b>	<b>Poor</b>	<b>Healthy</b>	<b>Very Healthy</b>
Number of Low Phosphorus Years	8	12	20
Number of High Phosphorus Years	12	8	0
Improvement in Oxygen Levels	No	Significant	Significant
Impact on Aquatic Life	Volatile	Healthy	Healthy
Expected Trophic State	Hypereutrophic	Eutropic/ Mesotrophic	Mesotrophic
<b>Cost Estimates (20 Years)</b>	<b>\$2,150,000</b>	<b>\$1,485,000</b>	<b>\$1,540,000</b>
Per Year	\$107,500	\$74,250	\$77,000



# Recommendation On Staff Proposals

## **Staff Report – \$2,150,000 over 20 years**

- ✓ Troublesome lake, but worth keeping – we agree!
- ✓ Please support Chemical Treatment in 2021 (\$250,000)
- X Reject, reactive 5 year chemical treatments
  - At best contains cyanobacteria, requires costly monitoring
  - Perpetuates unstable aquatic environment
- X Reject approval for fish kills
  - Minimal impact on phosphorus, unnecessary environmental damage. Many better alternatives available!
- ✓ Maintain Goose Management Program – review dog portion

## **Staff Report Does Not Address**

- a) Inflow of Phosphorus from stormwater runoff
- b) Need and benefits of oxygenation

## Summary:

# We ask the Committee to Adopt the Following:

1. A Restoration Policy for Swan Lake and Swan Lake Park
2. Approve a phosphorus chemical treatment every year (Option B)
3. Invest \$325,000 in phosphorus reduction and oxygen enhancement programs in 2021 (if represent value for money)
4. Authorize \$10,000 to be spent in 2020 for Goose Relocation Consultant and installation of strobe lights
5. Ask staff to report back to committee in 1 year on:
  - a) What programs and related costs would be required to improve oxygen levels in Swan Lake adequate enough to support a Fish Management Program that restores the variety of fish in the Lake
  - b) On a Stewardship Policy for Swan Lake and Swan Lake Park including an outline on what programs, with the related costs, would be required to restore the aquatic and land based habitats within Swan Lake and Swan Lake Park.



**Friends of  
Swan Lake Park**

**PLEASE LET TODAY BE THE  
FIRST DAY TOWARDS  
THE RESTORATION OF  
SWAN LAKE AND SWAN LAKE PARK**

General Committee, Markham Council  
Monday June 15, 2020