EARL BALES PARK AREA STORMWATER MANAGEMENT PLAN & CLASS ENVIRONMENTAL ASSESSMENT

PRESENTATION

PUBLIC OPEN HOUSE No. 2

November 30, 2004

INTRODUCTION

- Who's who?
  - City of Toronto staff
  - TRCA staff
  - MMM staff
- Why are we here?
  - What is the EBP Area SWM Plan About?
- What are we trying to achieve this evening?

“We must give lengthy deliberation to what has to be decided once and for all.”

Publilius Syrus, (~100 BC)

EARL BALES PARK STORMWATER MANAGEMENT PLAN
CONTRIBUTING DRAINAGE AREA

BACKGROUND

- "Toronto's Water Pollution Solution"
  - Wet Weather Flow Management Master Plan
  - 25 year & 100 year plans to improve stream and lakeshore water resources in Toronto

BACKGROUND (2)

- Project History
  - Earl Bales Park Master Plan
  - Downsview Redevelopment
- EA Process
  - Schedule B

THE PROBLEM?

- To Improve Water Quality in the Don River by Treating Storm Runoff from Storm Sewer Discharges in Earl Bales Park Area
- To Stabilize Ravines in Earl Bales Park Negatively Impacted by Storm Sewer Discharges
- To Identify a Synergistic Solution to Both Problems

THE PROBLEM?

- Water Quality in the Don River & Other GTA Watercourses

THE PROBLEM?

- Water Quality in the Don River

		West Don at Sheppard Avenue		
Parameter	PWQO	1990 - 1996		1975 -1990
		Mean	Frequency of Exceedance	Mean
Phosphorous (mg/l)	0.03	0.1	97	>0.15
Suspended Solids (mg/l)	25	29.4	43	25 - 50
Chlorides (mg/l)	250	260	100	150 - 250
Fecal Coliform (counts/100 m	100	6200	87	1000 - 5000
Note: CCME Index = 34/100 in 1994. Insufficient data for evaluation in 1999.				

THE PROBLEM?

- Need to Stabilize Ravines

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- Need to Stabilize Ravines

"*The goal of life is living in agreement with nature.*"

Zeno, Greek philosopher (335 BC - 264 BC)

from Diogenes Laertius, Lives of Eminent Philosophers

OVERVIEW OF OPTIONS

- Hierarchy of Measures (Source, Conveyance, End-of-Pipe)
- Source Controls (Survey)
- Conveyance Controls (Drilling Results)
- End-of-Pipe Controls (Possible Locations)
- Ravine Stabilization (Various Methods)

HIERARCHY OF MEASURES

Source Controls

Porous Pavers

Conveyance Controls

Exfiltration Systems

End-of-Pipe Controls

Wet Pond

SOURCE CONTROLS

- Mail Back Survey & Field Survey

Survey

The City of Toronto's Water Pollution Solution is a 25-year plan to deal with stormwater and the impact it has on our watercourses and Lake Ontario. This plan has identified the Earl Bales Park Area as a potential site for stormwater management controls. This study will look at the quality and quantity of water flowing into the West Don River and will also look at methods to help prevent erosion along the ravines in Earl Bales Park and improve fish and wildlife habitat.

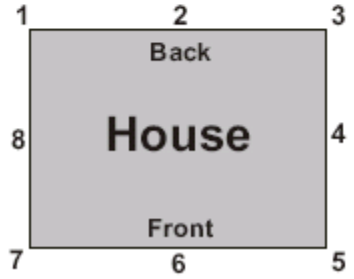
We need your help.

Please take a moment to fill out the enclosed survey and mail it back in the postage-paid envelope by September 24. This information will help us determine how much stormwater is entering the system and what can be done to lessen its impact.

If you have questions about this survey, please contact:
Tracy Manolakakis
Public Consultation and Community Outreach
Works and Emergency Services, City of Toronto
Phone: 416- 392-8834
Fax: 416-392-2974
Email: tmanola@toronto.ca

1. **Please indicate the type of house on your property**
   - ☐ Detached single family
   - ☐ Semi-detached single family
   - ☐ Townhouse
   - ☐ Multi-unit (7 units or less)
   - ☐ Other - please specify _____

2. **Where does rain water go on your property?**
   Step 1: On the diagram, please circle the location of the downspouts outside your home.



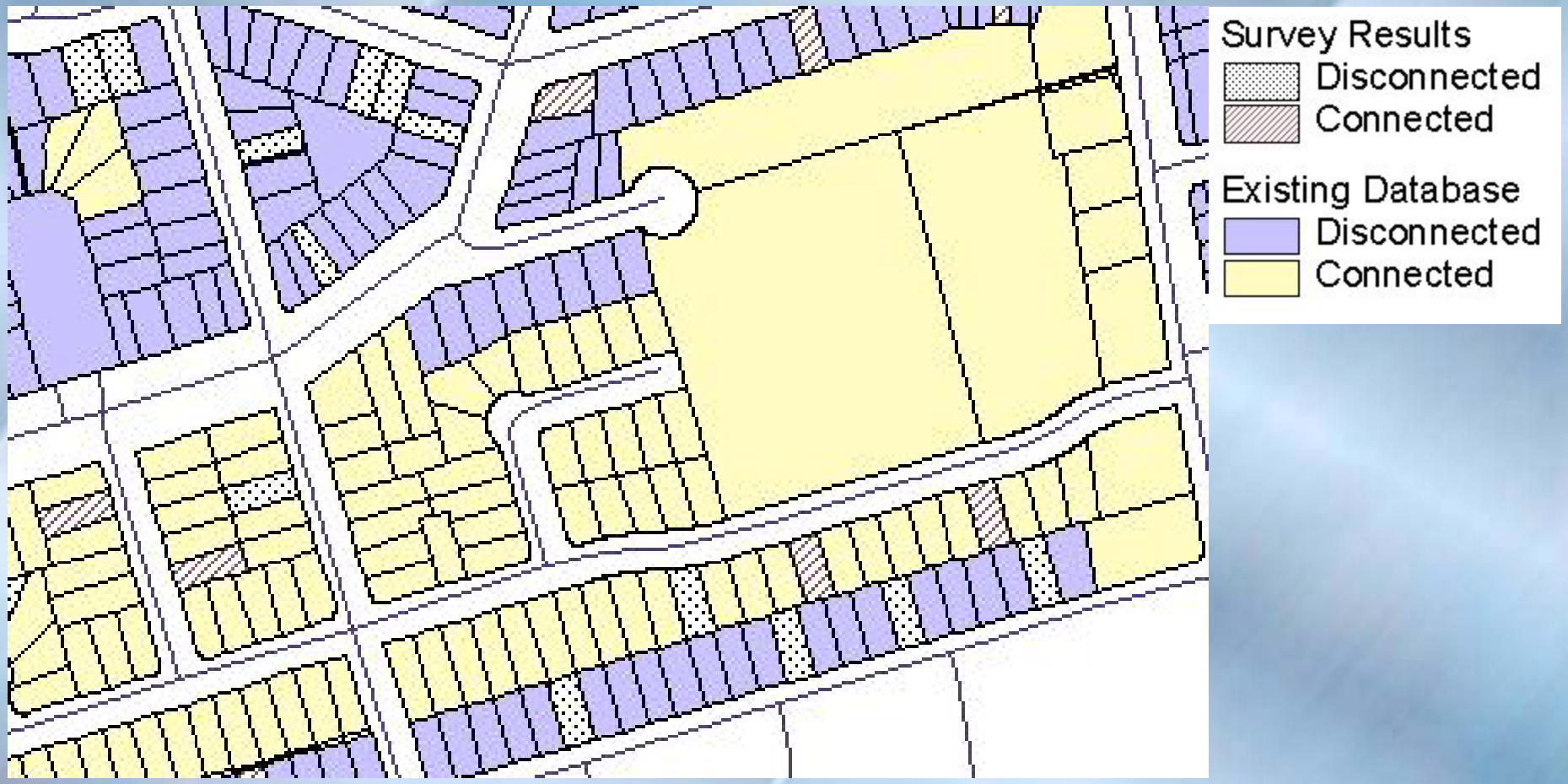
TORONTO

SOURCE CONTROLS

- All Residences (1200+/-) Received Survey, 120 Responses
- Follow Up Field Survey of 500 Properties

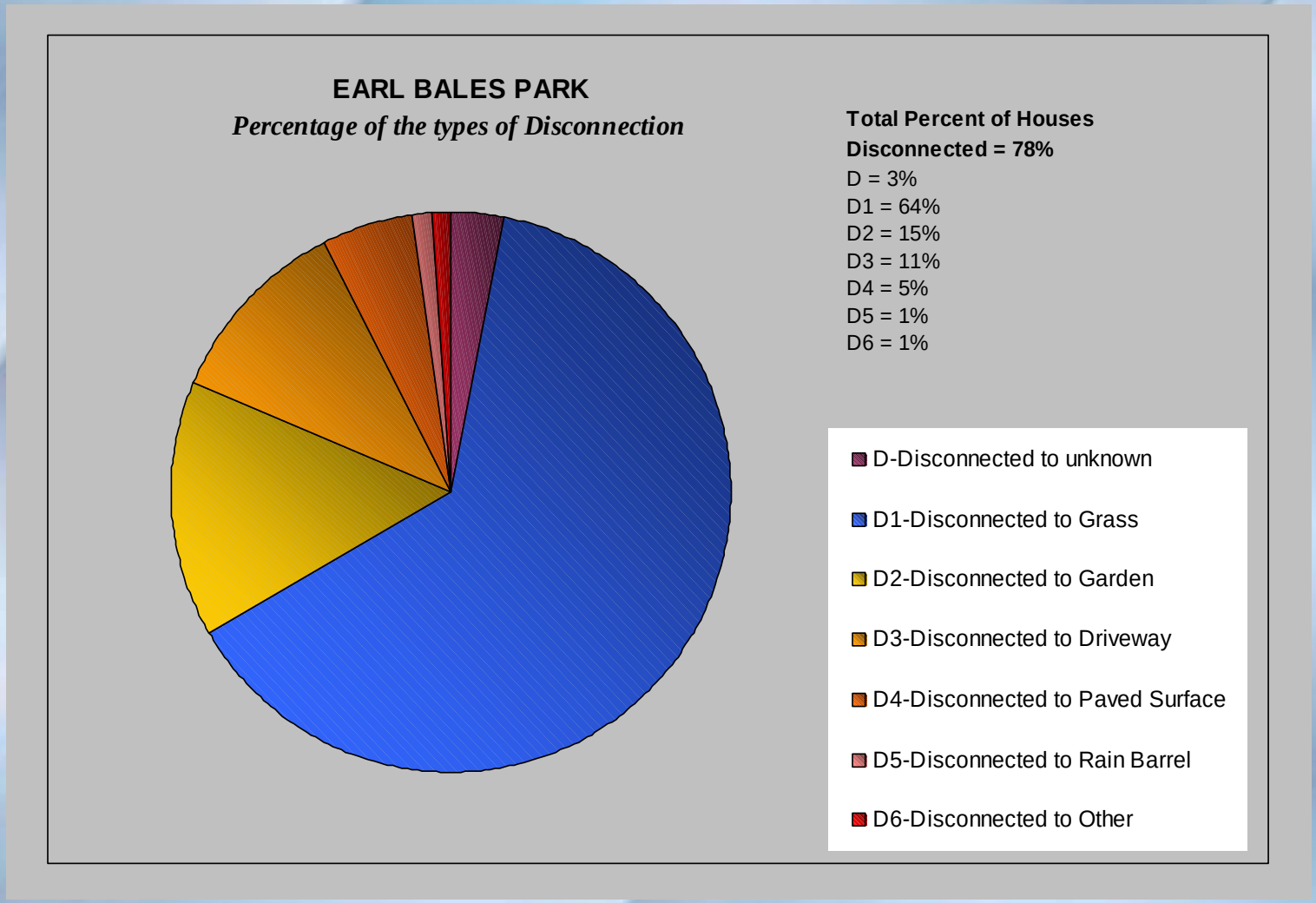
SOURCE CONTROLS

- Results Generally Verify City Mapping



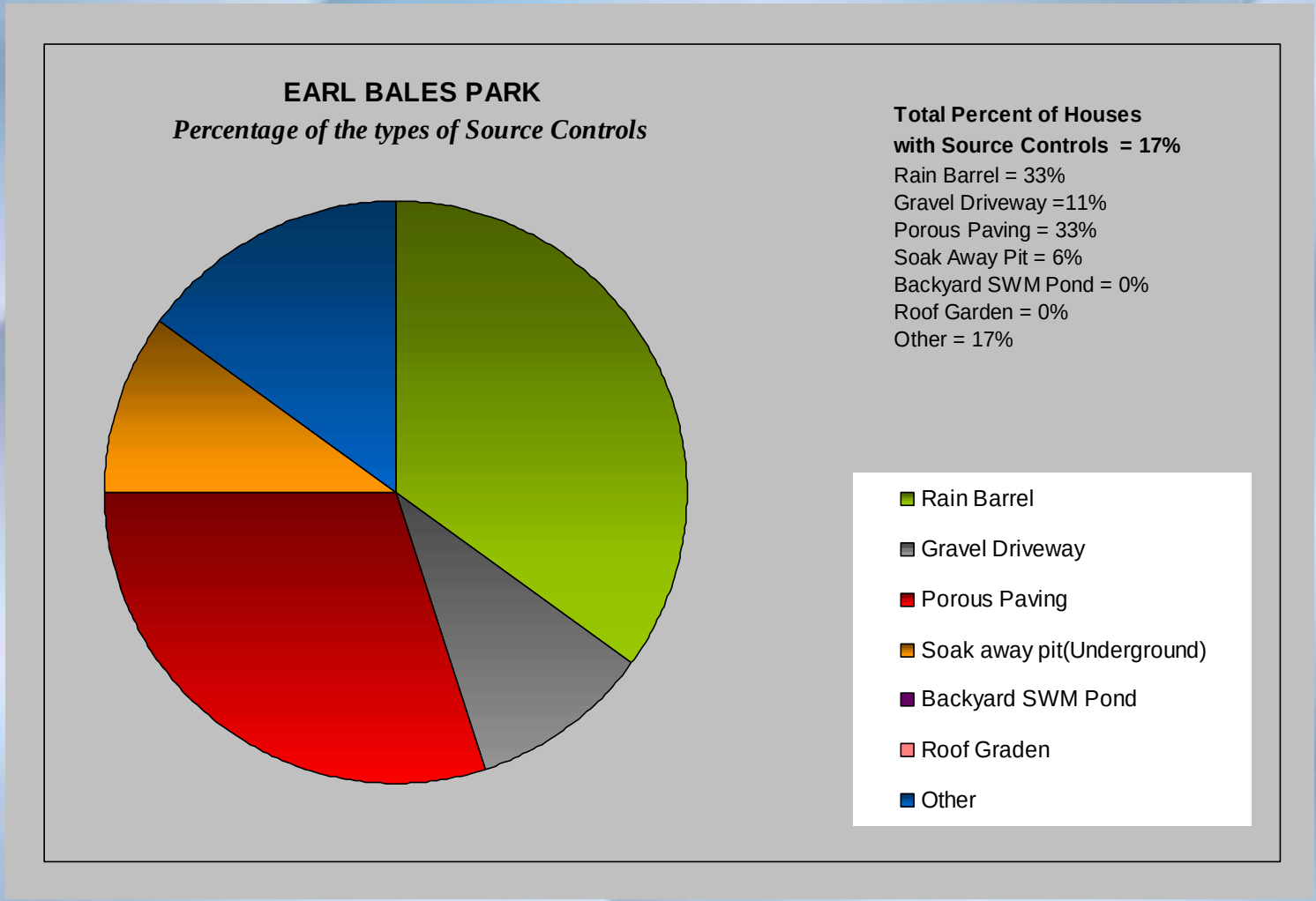
SOURCE CONTROLS

- Results Confirm High Level (>75%) of Disconnection



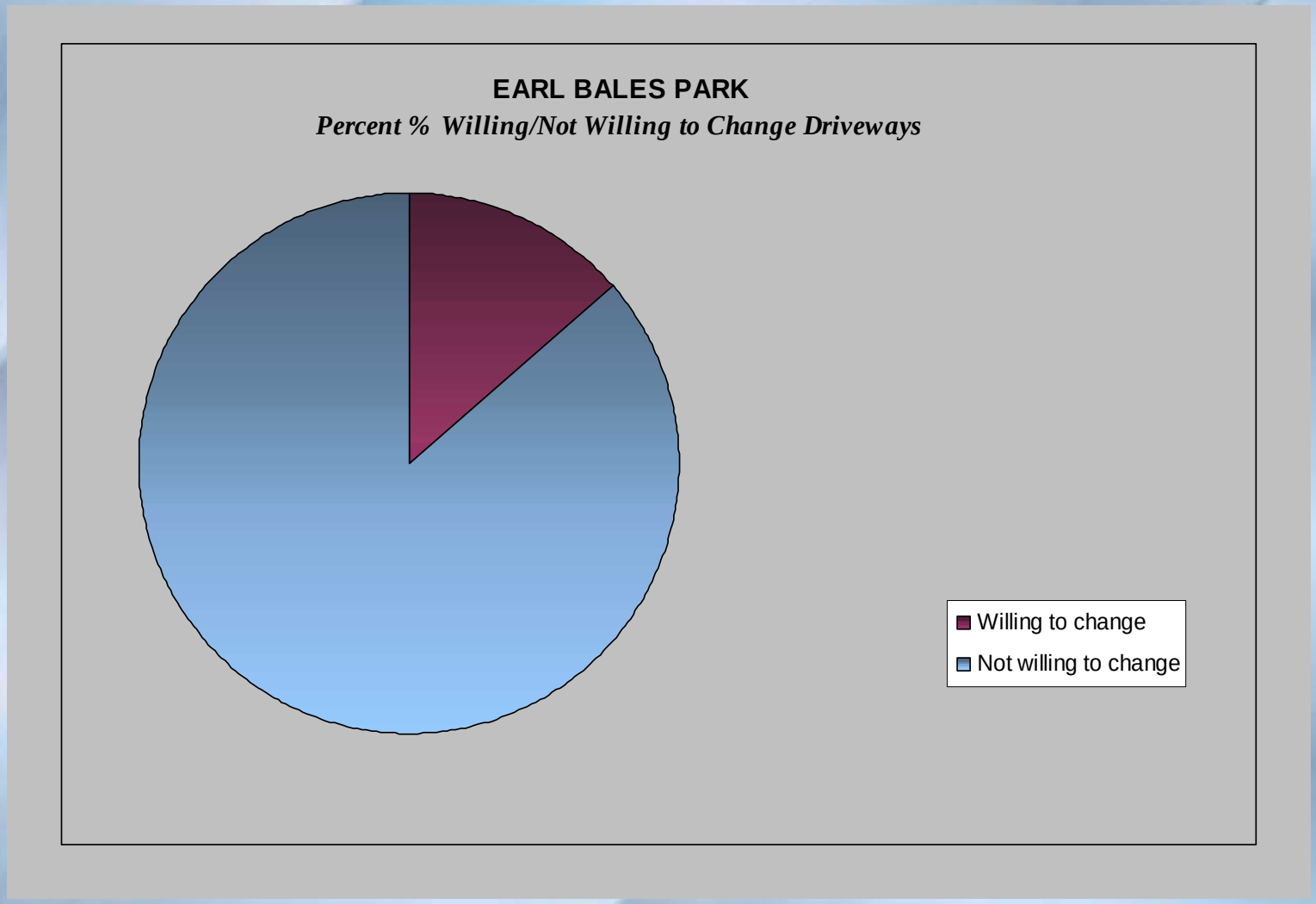
SOURCE CONTROLS

- Results Show Few Properties Have Other Source Controls



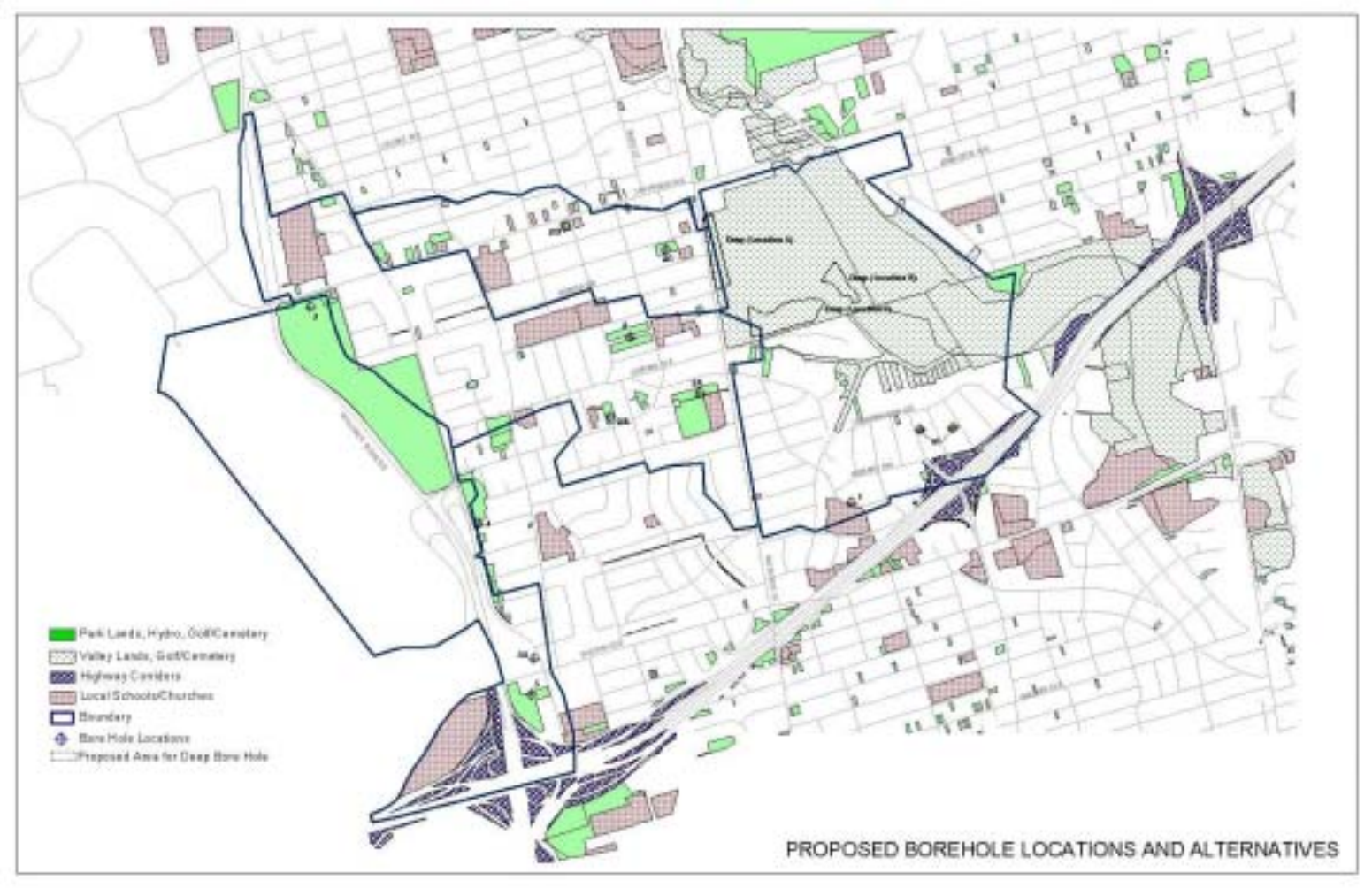
SOURCE CONTROLS

- Results Show Low Interest In Other Source Controls



CONVEYANCE CONTROLS

- Drilling Results Indicate No Opportunities



END-OF-PIPE OPTIONS

- Possible Locations

RAVINE STABILIZATION OPTIONS

- Bio-Engineering
- Armour Stone Steps + Riverstone Lining
- Piping Minor System Flow
- Flow Reduction Using Storage in End-of-Pipe Ponds (one or more of EOP2 to EOP5)

RAVINE STABILIZATION OPTIONS (2)

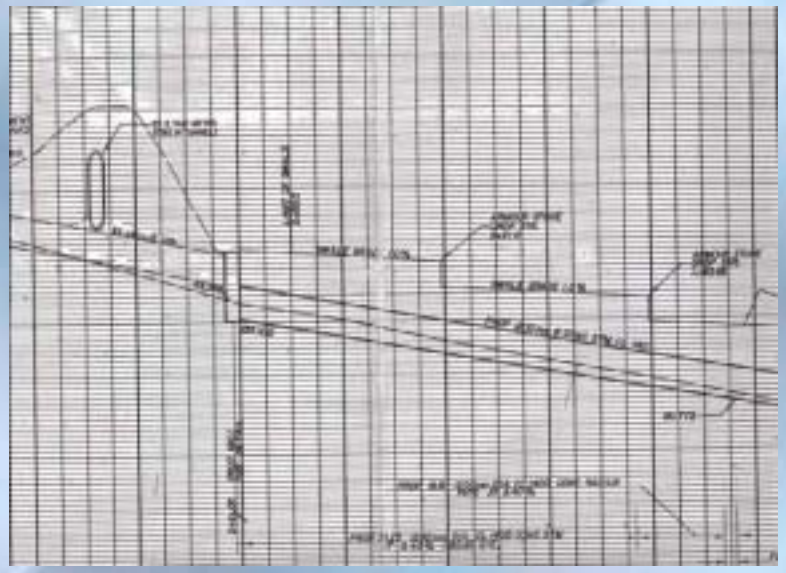
- Bio-Engineering - Brush Mat Example

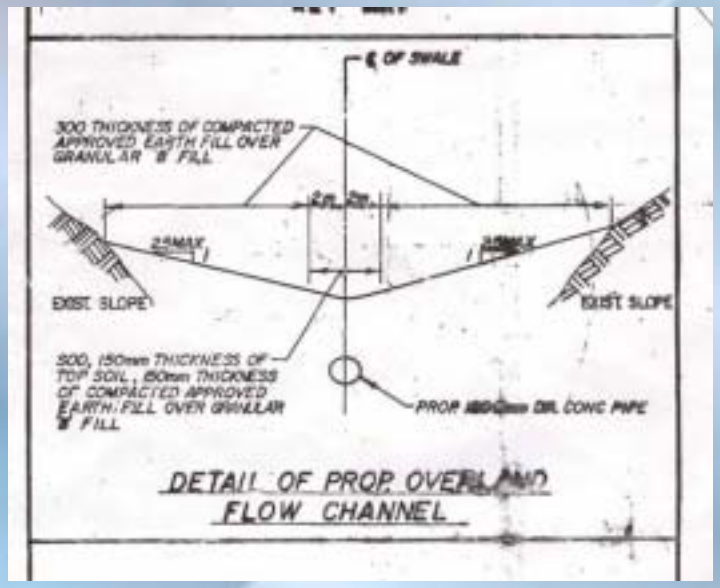
RAVINE STABILIZATION OPTIONS (3)

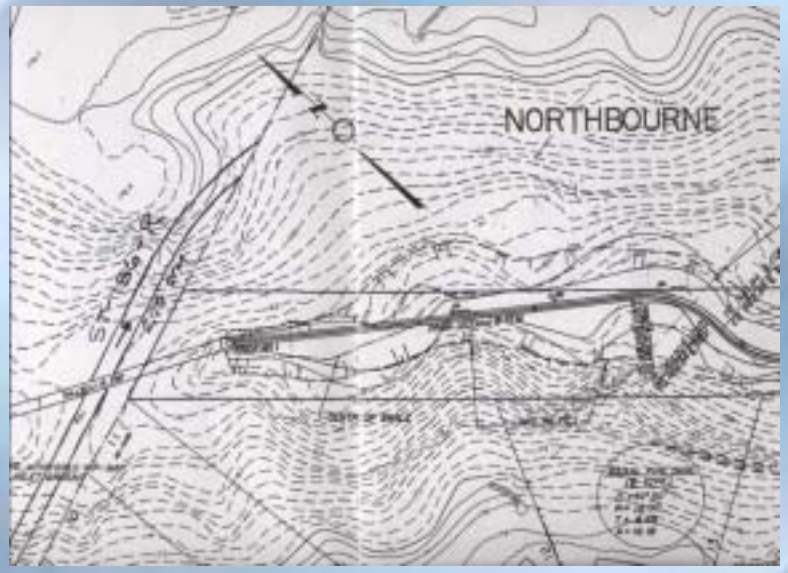
- Armour Stone Steps + Riverstone Lining

RAVINE STABILIZATION OPTIONS (4)

- Piping Minor System Flow







EOP/RAVINE RESTORATION OPTIONS (USING A SYSTEMS ANALYSIS APPROACH)

- Option 1 - Parkland Ponds (EOP2 & EOP3) + Ravine Stabilization + Valley Pond (EOP1)
- Option 2 - Ravine Ponds (EOP4 & EOP5) + Ravine Stabilization + Valley Pond (EOP1)
- Option 3 - OverSized Ponds (EOP3A & EOP4A) + Ravine Naturalization + Valley Pond (EOP1)
- Option 4 - Diversion + Valley Ponds (EOP1 & EOP1A) + Ravine Naturalization
- Option 5 - Do Nothing

OPTION 1

- Parkland Ponds
- Ravine Stabilization
- Valleyland Pond

OPTION 1

- EOP 2 - Volume Needed = 17,000 m^3
  - Depth = 6m, Excavation = 69,000 m^3
- EOP 3 - Volume Needed = 14,000 m^3
  - Depth = 7m, Excavation = 66,300 m^3
- Ravines need armour stone drops to reduce velocities plus riverstone lining
- Requires EOP1 pond at Metro Outfall for water quality treatment
- Total cost approx. $10 million

OPTION 2

- Ravine Ponds
- Ravine Stabilization
- Valleyland Pond

OPTION 2

- EOP 4 - Volume Needed = 17,000 m^3
  - Depth = 2 to 3 m, Limited Excavation
  - Construct Embankment
- EOP 5 - Volume Needed = 14,000 m^3
  - Depth = 2 to 3m, Limited Excavation
  - Construct Embankment
- Ravines need armour stone drops to reduce velocities plus riverstone lining
- Requires EOP1 pond at Metro Outfall for water quality treatment
- Total cost approx. $7.6 million

OPTION 3

- Oversized Ponds
- Ravine Naturalization
- Valleyland Pond

OPTION 3

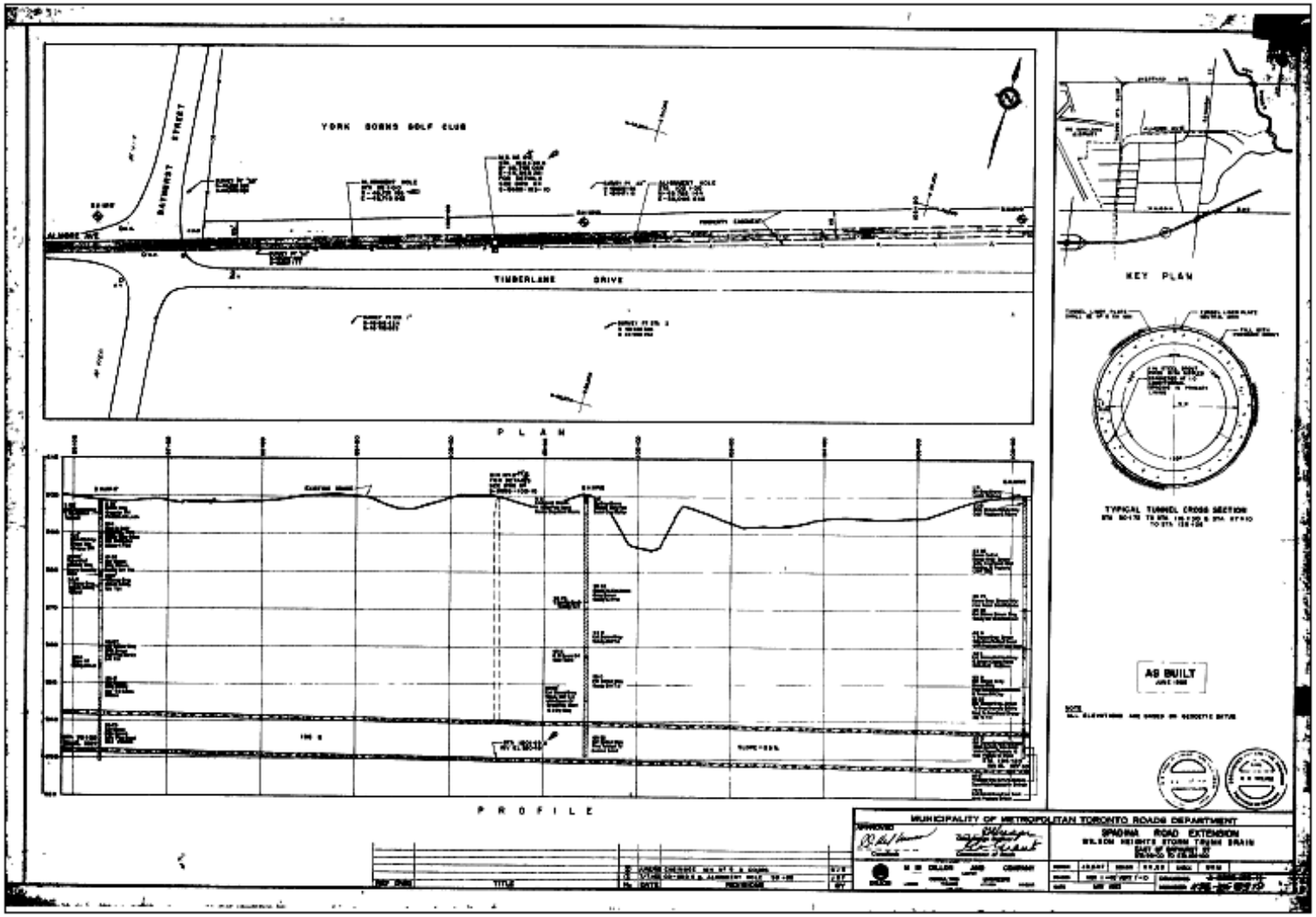
- EOP 3A - Volume Needed = 37,400 m^3
  - Depth = 7m, Excavation = 153,300 m^3
- EOP 4A - Volume Needed = 47,300 m^3
  - Depth = 4 to 5 m, Limited Excavation,
  - Construct Embankment
- Ravines need limited restoration using low impact methods.
- Requires EOP1 pond at Metro Outfall for water quality treatment
- Total cost approx. $7.7 million

OPTION 4

- Diversion to Trunk Sewer
- Ravine Naturalization
- Valleyland Pond
- Additional Area in Valley

OPTION 4

- Metro Trunk Storm Sewer



OPTION 4

- Divert Wallenberg outfall & Timberlane outfall to Metro Trunk Sewer
  - 4 manholes, 1 drop shaft & 3 sections of pipe
- Provide water quality treatment at EOP1
  - Added area of 1.5 ha (EOP1A) to obtain Level 1 treatment
- Ravines need limited restoration using low impact methods. Minimum flow to be maintained to protect vegetation & indirect fish habitat
- Total cost approx. $5.3 million

EVALUATION CRITERIA

- Technical Feasibility
- Terrestrial/aquatic impacts
- Social (recreation/aesthetics) impact
- Adjacent property impacts
- Construction impacts
- West Nile Virus
- Cost
- Maintenance requirements
- *See preliminary matrix*

“The more alternatives, the more difficult the choice.”

Abbe' D'Allanival

OPTIONS EVALUATION (1)

OPTION #	OPTION DESCRIPTION	EVALUATION FACTORS					
		TECHNICAL FEASIBILITY		TERRESTRIAL IMPACTS		AQUATIC IMPACTS	
		WATER QUALITY	RAVINES	EOP SITES	RAVINES	EOP SITES	RAVINES
1	Park land ponds (EOP2 & EOP3) Ravine stabilization Valley land pond (EOP1)	Enhanced Level Treatment	Stabilized by Armouring	Low	Very High	None	Low
2	Ravine ponds (EOP4 & EOP5) Ravine stabilization Valley land pond (EOP1)	Enhanced Level Treatment	Stabilized by Armouring	Very High	Very High	High (On-line)	Low
3	Oversized Ponds (EOP3A & EOP4A) Ravine Naturalization Valley land pond (EOP1)	Enhanced Level Treatment	Stabilized by Flow Reduction & Naturalization	Very High	Low	High (EOP4A On-line)	Low
4	Diversion to Trunk Sewer Ravine Naturalization Valley land pond (EOP1/EOP1A)	Enhanced Level Treatment	Stabilized by Flow Reduction & Naturalization	Low	Low	None	None ("Baseflow" Maintained)
5	Do Nothing	No Treatment	No Stabilization	None	None	None	None

OPTIONS EVALUATION (2)

OPTION #	EVALUATION FACTORS								
	SOCIAL IMPACTS					CONSTRUCTION IMPACTS	MAINTENANCE REQUIREMENTS	COST	OVERALL RANKING
	CULTURAL	HEALTH (WNV)	SAFETY	RECREATION	PRIVATE PROPERTY				
1	High (Close to Memorial)	Low (Ponds in open areas)	High (Deep ponds near other uses)	High (Park space used / valley trail relocation)	Low	High	High (3 ponds)	$9,900,000	Low
2	Low	Medium (Ponds near treed areas)	Medium (Ponds near houses & other uses)	Medium (Valley trail relocation)	High (EOP5 near houses)	Very High	High (3 ponds)	$7,600,000	Low
3	Low	Medium (Ponds near treed areas)	High (Deep pond near other uses)	Very High (Park space used / valley trail relocation)	Low	High	High (3 ponds)	$7,700,000	Medium
4	Low	Low (Ponds in open areas)	Low	Medium (Valley trail relocation)	Low	Medium	Medium (2 ponds)	$5,300,000	High
5	None	None	None	None	None	None	None	$0	N/A (Does not address problem)

DIRECTION for PREFERRED OPTION

- Option 4 - (Diversion plus EOP1/EOP1A)
- Advantages?
  - Least terrestrial impact on ravines
  - Least impact on neighbours/adjacent uses
  - Least cost
  - Least future operation/maintenance
  - Can create attractive landscaped feature
- Disadvantages?
  - Surcharge of Trunk Sewer - minimal
  - Loss of sewer capacity for future - no issue with SWM
  - Need additional land to meet Level 1 treatment - still investigating

DIRECTION for PREFERRED OPTION

- EOP1 Current Site

DIRECTION for PREFERRED OPTION

- Examples of Similar Ponds

DIRECTION for PREFERRED OPTION

- Examples of Similar Ponds

“An invasion of armies can be resisted, but not an idea whose time has come.”

Victor Hugo, 'Histoire d'un crime,' 1852

French dramatist, novelist, & poet (1802 - 1885)

NEXT STEPS

- Tonight
  - Questions/Discussion/Comments

"The reason we have two ears and only one mouth, is that we may hear more and speak less."

Zeno, Greek philosopher (335 BC - 264 BC)

NEXT STEPS

- Going Forward
  - Refine Preferred Option Concept Design
  - Prepare ESR & Issue for Comment
  - Public Open House #3 & Design Charrette
  - Preliminary Design