			<u> </u>		Part 1: Ge	eneral Info	rmation		
Dury Daniel Onitania Olivert								No llou na trans	
Dry Pond Criteria Check				· · · ·			Pond Name	Valleyview	
As per Stormwater Management Planning and De	sian Manual (March .	2003)	Inni	stil		Munici	al Pond ID	4-1	
				5111					-
		F 4					CA Pond ID	-	-
STORMWATER MANAGEMENT MAST	ER PLAN - PAR						of Approval:	- Dry pond	-
By: Hatch Mott MacDonald							acility Type	Dry pond	_
Environmental Engineera & Scientita					ł	Facili	ty Function	- NVCA	-
unicipal Address:	GIS Coordinate		Year:	1			Watershed		-
2380 4th Line, 30-046-64	Latitude:	44°15'0" N	Constructed:	-	-	Receiv	ing Waters	Innisfil Creek	_
	Longitude:	79°36'33" W	Retrofitted:	1.1		Re	ceiver Type	•	
				1					
Checklist	Assessment Value	Units	Design Value (CofA and/or Design Report)	Units	Min. Design	Max. Design	Criteria Check	Notes	MOE Page
art 2: Catchment Information	Value	onito	neporty	Onits	Design	Design	Oneek		-
								Minimum drainage area should be 5 ha, preferred drainage area is >10 ha	4-80
ontributing Drainage Area	7.16	ha	-	ha	5.0		ок		
atchment Predominate Landuse atchment Imperviousness %	- 50	%		%				Describe % / Is curb & gutter or ditch system pre-dominant	
sheries Protection Level	Basic	Level	Basic	Level	Basic		Failed	Dry ponds cannot achieve higher than basic treatment	
art 3a: Pond Design Parameters - Main Po									
and Fenced (vegetative barrier or fence)								Standards for fencing vary from municipality to municipality, thorny vegetative	4-60
	Yes	yes/no	-	yes/no	no		ок	barriers very effective Should describe the pend's function and warn of water level fluctuations, this iso	
terpretive & Warning signage	-	yes/no	_	yes/no	yes		FALSE	Should describe the pond's function and warn of water level fluctuations, thin ice and other specific hazards	4-60
tal SWM Pond Surface Area	814	m ²	-	m ²	,00			Measured at PP level or through mid section of the pond	
and Block Area / Pond Area (top surface) ratio	6.8	PBA/PA	-	PBA/PA	1.5		ок	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5	
verall Pond Length	22.2	m	-	m				Measured at top of berm	
rerall Pond Width ngth / Width Ratio	<u>10.9</u> 2.0	m I/w		m I/w	3		Failed	Preferred is 4:1 to 5:1	4-59
•	2.0	1/ 99	_	1/ 1/	3		raneu		
pth of Extended Detention Storage	0	m	-	m		3	ок	Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-81
isting Extended Detention Storage		3						A short success and short and short success the start start success to	3-10
tonded Detention Storage Drawdown Time	0	m ³	-	m ³	966		Failed	Actual volume must equal or exceed the design volume	1 50
tended Detention Storage Drawdown Time tive Storage Depth (total storage @ spillway Elev.)	N/A 1.27	hours m	-	hours m	24 1	3	OK OK	Based on Equation 4.11 Total active storage including quantity control	4-58 4-81
aximum Pond Side Slopes		:1 (h/v)		:1 (h/v)	4	3	Failed	Maximum pond side slopes 4:1 or flatter	4-61
art 3b: Pond Design Parameters - Forebay									
tal Forebay Surface Area	-	m²	-	m²		271	Failed	Forebay area should be less than 1/3 of pond surface area	4-80
prebay provided at each inlet	no	yes/no	-	yes/no				If multiple inlets	4-80
ax Depth of Forebay: F		m	-	m	1	3		Minimum forebay depth is 1 m	4-80
rovided Length to Width Ratio: F	-2 - 1 -	m I/w	-	m I/w	1	3	ок	Minimum forebay depth is 1 m Minimum forebay length to width ratio is 2:1 if single inlet	4-80 4-80
	2	l/w	-	l/w	2		OK		4-80
prebay Berm: F1		yes/no	-	yes/no	yes			Submerged preferred for safety reasons	4-80
	-2	yes/no	-	yes/no	yes			Submerged preferred for safety reasons	4-80
art 3c: Pond Design Parameters - Inlet	1		-	1		1	ок		4-81
et 1			-	J			UK		4-81
et Pipe Diameter_1	520	mm	-	mm	450		ОК	Minimum inlet pipe diameter of 450mm	4-81
let Pipe Slope_1	10.7	%	-	%	1		ок	Inlet pipe slope preferred > 1%	4-81
et Pipe Length_1	65.6	m	-	m					
Ibmerged Inlet_1	No	yes/no	-	yes/no	no		OK	A submerged inlet is not preferred	4-81
Ibmerged Pipe Grade_1 lergy dissipation provided to prevent scour 1	- Yes	% yes/no	-	% yes/no	1 yes		ОК ОК	Submerged pipe slope should be a minimum of 1 % Only portions of forebay required to be hardened	4-81 4-81
et Headwalls and Wingwalls 1	Yes	yes/no yes/no	-	yes/no yes/no	yes yes		OK OK	Biotechnical structures highly preferred	4-81
art 3d: Pond Design Parameters - Outlet		,		,	,				
tlet located in embankment	Yes	yes/no	-	yes/no	yes		ОК	Outlet structure should be located in embankment for maintenance purposes	4-82
tlet Pipe Diameter	380	mm	-	mm	450		Failed	Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)	4-79
tlet Pipe Slope	2.3	%	-	%	1		ОК	Outlet pipe slope preferred > 1% (Cold climate min. requirement) Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse	4-79 4-79, 4
verse Sloped Pipe Diameter, if provided	-	mm	-	mm	150		ок	slope pipe should have a minimum diameter of 150 mm	4-79,2
ifice Diameter	-	mm	-	mm	75	100	ок	Smallest acceptable diameter is 75 mm	4-82
art 3e: Pond Design Parameters - Major Fl				1		1			
p of Berm Elevation	275.2	m	-	m				Data input	
p of Emergency Spillway Elevation ovided Freeboard (@ spill elev.)	275.05 0.15	m m	-	m m	0.300		Failed	Data input Minimum freeboard above maximum design water level should be 0.3 m	4-60
art 4: Sediment	0.15		-		0.000		i uncu	Minimum neeboard above maximum design water level should be 0.5 m	4-00
inual sediment loading	11	m ³ /year	-	m ³ /year					6-14
timated sediment volume	195.39	m ³	-	m ³					
umber of years before clean-out required	#VALUE!	yrs 3 a	-	yrs			#VALUE!		
ljusted water quality storage	0 >3	m³/ha	-	-	135				
eatment Level			-						

					Part 1: Ge	onoral Infe	rmation		
Dry Pond Criteria Check				>	Part 1: Ge		Pond Name	Coralwoods	1
As per Stormwater Management Planning and Design	Manual (March	2003)	Inni	efil				4-2	-
As per stornwater wanagement i fanning and Design	indiada (indicii	2003/		5111			pal Pond ID CA Pond ID	No Data	-
CTORMWATER MANAGEMENT MACTER		T 4						3-1520-89-006	-
STORMWATER MANAGEMENT MASTER	PLAN - PAR	11			(of Approval:		-
By: Hatch Mott MacDonald						F	acility Type	Dry pond	_
MacDonald Enternental Engineere & Scientifi						Facil	ity Function	Water quantity control	_
Municipal Address:	GIS Coordinate		Year:				Watershed	NVCA	-
2304 Meadowland St., 2-256-22	Latitude:	44°15'22" N	Constructed:	1990		Recei	ving Waters	Innisfil Creek	
	Longitude:	79°36'28'' W	Retrofitted:	0		Re	ceiver Type	-	
		1	ſ						
Checklist Part 2: Catchment Information	Assessment Value	Units	Design Value (CofA and/or Design Report)	Units	Min. Design	Max. Design	Criteria Check	Notes	MOE Page
		1		1				Minimum drainage area should be 5 ha, preferred drainage area is >10 ha	4-80
Contributing Drainage Area	18.41	ha	-	ha	5.0		ок		4-00
Catchment Predominate Landuse Catchment Imperviousness %	- 45	%	-	%				Describe % / Is curb & gutter or ditch system pre-dominant	
Fisheries Protection Level	Basic	Level	Basic	Level	Basic		Failed	Dry ponds cannot achieve higher than basic treatment	
Part 3a: Pond Design Parameters - Main Pond		1	[1		1		Standarda far fanaing van fram municipality ta municipality, tharpy vagatative	
Pond Fenced (vegetative barrier or fence)	Yes	yes/no	-	yes/no	no		ок	Standards for fencing vary from municipality to municipality, thorny vegetative barriers very effective	4-60
Interpretive & Warning signage								Should describe the pond's function and warn of water level fluctuations, thin ice	4-60
Total SWM Pond Surface Area	- 3827	yes/no m ²	- 4100	yes/no m ²	yes		FALSE	and other specific hazards Measured at PP level or through mid section of the pond	
Pond Block Area / Pond Area (top surface) ratio	1.4	PBA/PA		PBA/PA	1.5		Failed	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5	
Overall Pond Length	88.9	m	-	m				Measured at top of berm	
Overall Pond Width Length / Width Ratio	16 5.6	m I/w	-	m I/w	3		ок	Preferred is 4:1 to 5:1	4-59
Depth of Extended Detention Storage	0.0				Ū		U.V.	Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-81
	0	m	-	m		3	ОК	Active storage depirition water quality/erosion control - 1.0 in pretened maximum	
Existing Extended Detention Storage	0	m ³		m ³	0010		E .11.4	Actual values must actual as availed the design values	3-10
Extended Detention Storage Drawdown Time	0	hours	-	hours	2210 24		Failed OK	Actual volume must equal or exceed the design volume Based on Equation 4.11	4-58
Active Storage Depth (total storage @ spillway Elev.)	2.73	m	-	m	1	3	ок	Total active storage including quantity control	4-81
Maximum Pond Side Slopes	3.1	:1 (h/v)	-	:1 (h/v)	4		Failed	Maximum pond side slopes 4:1 or flatter	4-79
Part 3b: Pond Design Parameters - Forebay Total Forebay Surface Area	-	m ²	-	m²		1276	Failed	Forebay area should be less than 1/3 of pond surface area	4-80
Forebay provided at each inlet	no	yes/no	-	yes/no				If multiple inlets	4-80
Max Depth of Forebay: F1 F2		m	-	m	1	3		Minimum forebay depth is 1 m	4-80 4-80
Provided Length to Width Ratio: F1		m I/w	-	m I/w	2	3		Minimum forebay depth is 1 m Minimum forebay length to width ratio is 2:1 if single inlet	4-80 4-80
F2	-	l/w	-	l/w	2				4-80
Forebay Berm: F1 F2	-	yes/no yes/no	-	yes/no yes/no	yes yes			Submerged preferred for safety reasons Submerged preferred for safety reasons	4-80 4-80
Part 3c: Pond Design Parameters - Inlet		yes/no		yes/no	yes			Cushiergea pretented for salety reasons	4-00
Number of pond inlets	2		-]		1		More than one inlet may require increases in effective storage volumes	4-81
Inlet 1 Inlet Pipe Diameter 1	825	mm	-	mm	450	1	ОК	Minimum inlet pipe diameter of 450mm	4-81
Inlet Pipe Slope_1	4.46	%	-	%	1		ок	Inlet pipe slope preferred > 1%	4-81
Inlet Pipe Length_1	23.3 No	m voo/no	-	m			01/	A submerged inlet is not preferred	4-81
Submerged Inlet_1 Submerged Pipe Grade 1	-	yes/no %		yes/no %	no 1		ОК ОК	Submerged nine is not preferred Submerged pipe slope should be a minimum of 1 %	4-81
Energy dissipation provided to prevent scour_1	Yes	yes/no	-	yes/no	yes		ОК	Only portions of forebay required to be hardened	4-81
Inlet Headwalls and Wingwalls_1 Inlet 2	Yes	yes/no	-	yes/no	yes	1	ОК	Biotechnical structures highly preferred	4-81
Inlet Pipe Diameter_2	Swale	mm	-	mm	450		ок	Minimum inlet pipe diameter of 450mm	4-81
Inlet Pipe Slope_2	-	%	-	%	1		ок	Inlet pipe slope preferred > 1%	4-81
Inlet Pipe Length_2 Submerged Inlet 2	- No	m yes/no	-	m yes/no	no			A submerged inlet is not preferred	4-81
Submerged Pipe Grade_2	-	%	-	%	1		ок	Submerged pipe slope should be a minimum of 1 %	4-81
Energy dissipation provided to prevent scour_2 Exposed Pilot Channel 2	Yes	yes/no	-	yes/no	yes		OK	Only portions of forebay required to be hardened	4-81
Exposed Pilot Channel_2 Inlet Headwalls and Wingwalls 2	No No	yes/no yes/no	-	yes/no yes/no	yes	0	Failed Failed	An exposed pilot channel is not preferred Biotechnical structures highly preferred	4-81
Part 3d: Pond Design Parameters - Outlet									
Outlet located in embankment Outlet Pipe Diameter	Yes 500	yes/no mm		yes/no mm	yes 450		ОК ОК	Outlet structure should be located in embankment for maintenance purposes Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)	4-82 4-79
Outlet Pipe Slope	0.53	%	-	%	450		Failed	Outlet pipe slope preferred > 1% (Cold climate min. requirement)	4-79
Reverse Sloped Pipe Diameter, if provided					150		011	Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse	4-79, 4
Orifice Diameter		mm mm	-	mm mm	150 75	100	ОК ОК	slope pipe should have a minimum diameter of 150 mm Smallest acceptable diameter is 75 mm	83 4-82
Part 3e: Pond Design Parameters - Major Flow		-		1					
Top of Berm Elevation Top of Emergency Spillway Elevation	271.25 271	m m	-	m m				Data input Data input	
Provided Freeboard (@ spill elev.)	0.25	m	-	m	0.300		Failed	Minimum freeboard above maximum design water level should be 0.3 m	4-60
Part 4: Sediment		- 3.							
			-	m ³ /year					6-14
Annual sediment loading Estimated sediment volume	23 1147.82	m³/year m³	-						
Annual sediment loading Estimated sediment volume Number of years before clean-out required	23 1147.82 #VALUE!	m'/year m ³ yrs		m ³ yrs			#VALUE!		
Estimated sediment volume	1147.82	m ³	-	m ³	120		#VALUE!		

					Part 1: Ge	eneral Info	rmation		
Wet Pond Criteria Check				<hr/>				Previn Court	1
		2000)	Inni	fil			Pond Name		
As per Stormwater Management Planning and Design	Manual (March	2003)		5111			al Pond ID	6-1a	-
					4	LSRO	CA Pond ID	I-S70	
STORMWATER MANAGEMENT MASTER	PLAN - PAR	Γ1			(Certificate o	f Approval:	2124-4L5REZ	
By: Hatch Mott						F	acility Type	Wet pond	
Hatch Mott MacDonald						Facili	ty Function	Water quality and quantity control	
lunicipal Address:	GIS Coordinate	e.	Year:		1		Watershed	Innisfil Creeks	
1006 Quarry Dr., 023-005-02	Latitude:		Constructed:	#N/A		Dessi	ving Waters	Banks Creek	
·····		70/20150/1 14		0			-		
	Longitude:	79°32'58'' W	Retrofitted:	U		Re	ceiver Type	· · · · · · · · · · · · · · · · · · ·	
			D						
	Assessment		Design Value (CofA and/or Design		Min.	Max.	Criteria	Notes	MOE
Checklist	Value	Units	Report)	Units	Design	Design	Check		Page
art 2: Catchment Information		1	[1		1		Minimum drainage area should be 5 ha to sustain wet pond, preferred drainage	
ontributing Drainage Area	73.7	ha	107.8	ha	5.0		ок	area is >10 ha	4-52
atchment Predominate Landuse	-		-					Describe % / Is curb & gutter or ditch system pre-dominant	
ttchment Imperviousness % sheries Protection Level	22 Enhanced	% Level	- Enhanced	% Level	Enhanced		ок	All streams within NVCA and LSRCA require Enhanced Protection (Level 1)	
art 3a: Pond Design Parameters - Main Pond	Ennanced	Level	Ennanceu	Level	Limanceu	1	UK	All streams within NVCA and LSNCA require Enhanced Protection (Lever 1)	
nd Fenced (vegetative barrier or fence)								Standards for fencing vary from municipality to municipality, thorny vegetative	4-60
	Yes	yes/no	-	yes/no	no		ОК	barriers very effective Should describe the pand's function and warp of water level fluctuations, this issue	U
erpretive & Warning signage	_	yes/no	-	yes/no	yes		FALSE	Should describe the pond's function and warn of water level fluctuations, thin ice and other specific hazards	4-60
otal SWM Pond Surface Area	24080	m ²	-	m ²	,03		. ALGE	Measured at top of berm	
ond Block Area / Pond Area (top surface) ratio	1.3	PBA/PA	-	PBA/PA	1.5		Failed	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5	
rerall Pond Length rerall Pond Width	314 84	m m	-	m m				Measured at PP level or through mid section of the pond	
ength / Width Ratio	3.7	m I/w	-	l/w	3		ок	Preferred is 4:1 to 5:1	4-59
erage Permanent Pool depth	1.2	m	1	m	1	2	ок	Average permanent pool depth should be between 1 - 2 m	4-60
ax Depth Permanent Pool	1.7	m	-	m 3 //	1	3	ок	Maximum permanent pool depth should be less than 3 m	4-60
ermanent Pool Volume Unit isting Permanent Pool Volume	75 5503	m ³ /ha m ³	38 4115	m³/ha m³	4631		ок	As per Table 3.2 (MOE) Compare Unit rate volume to actual design	3-10 3-10
•			4110				on		
pth of Extended Detention Storage	1.2	m	-	m		1.5	ОК	Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-60
								Actual volume must equal or exceed the design volume / Design extended	4.52
isting Extended Detention Storage	14569	m³		m³	2,947		ок	detention storage (Table 3.2) should exceed 40 m ³ /ha or 24 hr 25 mm Chicago storm runoff volume (~ 40m3/ha used as a minimum criteria)	3-10
tended Detention Storage Drawdown Time	NA	hours		hours	2,947	48	Failed	Based on Equation 4.11	4-58
tive Storage Depth (total storage @ spillway Elev.)	1.0	m	-	m		2	ОК	Total active storage including quantity control	4-60
aximum Grade at Permanent Pool	5	:1 (h/v)	-	:1 (h/v)	5	7	ОК	Minimum slope at the permanent pool should be 5:1 - 7:1 preferred maximum	4-61
ximum Pond Side Slopes Int 3b: Pond Design Parameters - Forebay	3.4	:1 (h/v)	3:1	:1 (h/v)		3	ОК	Maximum pond side slopes 3:1 or flatter	4-61
tal Forebay Surface Area	-	m²	-	m²		8026.53	Failed	Forebay area should be less than 1/3 of pond surface area	4-56
rebay provided at each inlet	no	yes/no	-	yes/no				If multiple inlets	4-56
ax Depth of Forebay: F1 F2	-	m	-	m	1	3		Minimum forebay depth is 1 m Minimum forebay depth is 1 m	4-55
ovided Length to Width Ratio: F1	-	m I/w	-	m I/w	2	3		Minimum forebay depth is 1 m Minimum forebay length to width ratio is 2:1 if single inlet	
F2	-	l/w	-	l/w	2			······································	
bmerged Forebay Berm: F1	-	yes/no	-	yes/no	yes			Submerged preferred for safety reasons	4-58
F2 Int 3c: Pond Design Parameters - Inlet	-	yes/no	-	yes/no	yes			Submerged preferred for safety reasons	4-58
mber of pond inlets	1		-			1	ок		4-62
et 1			t						
et Pipe Diameter_1 et Pipe Slope 1	900 x 1800	mm %	-	mm %	450 1		OK Failed	Minimum inlet pipe diameter of 450mm Inlet pipe slope preferred > 1%	4-9 4-9
et Pipe Slope_1 et Pipe Length_1	0.45	m	-	- % m			Paned	nnet pipe siope prereneu > 1 /o	4-9
bmerged Inlet_1	-	yes/no	-	yes/no	no			A submerged inlet is not preferred	4-63
ibmerged Pipe Grade_1	-	%	-	%	1		ОК	Submerged pipe slope should be a minimum of 1 %	4-63
ergy dissipation provided to prevent scour_1 posed Pilot Channel_1	No No	yes/no yes/no	-	yes/no yes/no	yes	0	Failed Failed	Only portions of forebay required to be hardened An exposed pilot channel is not preferred	4-63 4-62
et Headwalls and Wingwalls_1	Yes	yes/no	-	yes/no	yes		OK	Biotechnical structures highly preferred	4-65
et Area Depth_1	-	m	-	m	1.0	3.0	Failed	Depth at the inlet pipe should be a minimum of 1 m (Plunge pool)	4-65
Int 3d: Pond Design Parameters - Outlet Itlet located in embankment	Yes	yes/no	-	ves/no	yes		ок	Outlet structure should be located in embankment for maintenance purposes	4-65
ttom Draw Outlet	No	yes/no	-	yes/no	yes		Failed	Recommended in conjunction with deeper outlet area (2-3 m): temp. mitigation	4-03
utlet Pipe Diameter	300	mm	200	mm	450		Failed	Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)	4-9
utlet Pipe Slope	0.3	%	-	%	1		Failed	Outlet pipe slope preferred > 1% (Cold climate min. requirement) Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse	4-9 4-66;
everse Sloped Pipe Diameter, if provided		mm	-	mm	150		ок	slope pipe should have a minimum diameter of 150 mm	4-66; 69
ifice Diameter	-	mm	155	mm	75	100	ок	Smallest acceptable diameter is 75 mm	4-58
rforated Riser Orifice Plate Dia., if riser pipe used		m	200		FO		04	Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser orifice	4-67
esign Modifications for Cold Climates: alpha	- 15	mm	200	mm	50		ок	plate diameter should be greater than 50 mm in diameter Coefficient of ice growth	4-8
Df				1				Sum of freezing degree-days - Based on MSC Canadian Climate Normals 1971-	4-8
	753.3				MOLE	ation 11		2000 - City of Barrie	
h Submerged outlet depth	412	mm m		mm m	MOE Equ 562	ation 4.1	ок	lce thickness Submerged outlets obvert to be set 150 mm lower than ice cover	4-8 4-9
art 3e: Pond Design Parameters - Major Flow	Outlet				502	1	UK		3
p of Berm Elevation	226	m	200	m				Data input	
op of Emergency Spillway Elevation	225 1.00	m	- #VALUE!	m m	0.300		01	Data input Minimum frashoard shows maximum dasign water level should be 0.2 m	4.00
ovided Freeboard (@ spill elev.) art 4: Sediment	1.00	m	#VALUE!		0.300	1	ОК	Minimum freeboard above maximum design water level should be 0.3 m	4-60
nnual sediment loading	44.2	m ³ /year	Not defined	m ³ /year					6-14
stimated sediment volume	997.18	m³	Not defined	m³					
umber of years before Pond clean-out required ljusted water quality storage	57 115	yrs m³/ha	Not defined Not defined	yrs	87		OK OK	Target efficiency required storage	
djusted water quality storage reatment Level	TBD	m /na	Not defined		0/		UK	raiger emotency required storage	

					Part 1: Ge	noral Info	rmation		
Wet Dand Oritzaia Otaci				>	Fart 1: Ge			Tanan Narth	
Wet Pond Criteria Check				C:1			Pond Name	Tepco North	
As per Stormwater Management Planning and Design	Manual (March	2003)	Inńi	STH		Municip	al Pond ID	6-2	
						LSR	A Pond ID	I-S72	
STORMWATER MANAGEMENT MASTER	PLAN - PAR	T 1			c	Certificate o	f Approval:	2416-6HZKC3	
By: Hatch Mott						F	acility Type	Wet pond	
By: Hatch Mott MacDonald							ty Function	Water quality and quantity control	
Iunicipal Address:	GIS Coordinate		Year:		1		Watershed	Innisfil Creeks	
East of 930 Booth Ave., 023-238-92		s: 44°18'6" N		2005				Ditch north side of Seventh Line / Banks Creek	-
Lust 01 500 Bootin Ave., 025-255-52	Latitude:		Constructed:		-	Receiv	ing Waters		-
	Longitude:	79°32'40'' W	Retrofitted:	2008		Re	eiver Type		
]		[
Checklist	Assessment Value	Units	Design Value (CofA and/or Design Report)	Units	Min. Design	Max. Design	Criteria Check	Notes	MOE Page
art 2: Catchment Information		1						Minimum drainage area should be 5 ha to sustain wet pond, preferred drainage	
ontributing Drainage Area	8.50	ha	9.7	ha	5.0		ок	area is >10 ha	4-52
atchment Predominate Landuse	-		-					Describe % / Is curb & gutter or ditch system pre-dominant	
atchment Imperviousness %	35	%	-	%	F				
sheries Protection Level art 3a: Pond Design Parameters - Main Pond	Enhanced	Level	Enhanced	Level	Enhanced		ОК	All streams within NVCA and LSRCA require Enhanced Protection (Level 1)	
Ŭ		1						Standards for fencing vary from municipality to municipality, thorny vegetative	4 60
nd Fenced (vegetative barrier or fence)	Yes	yes/no	-	yes/no	no		ок	barriers very effective	4-60
erpretive & Warning signage		Voeles		Voolaa	Voc			Should describe the pond's function and warn of water level fluctuations, thin ice and other specific hazards	4-60
otal SWM Pond Surface Area	- 2991	yes/no m ²	-	yes/no m ²	yes			and other specific nazards Measured at top of berm	
ond Block Area / Pond Area (top surface) ratio	1.8	PBA/PA	-	PBA/PA	1.5		ок	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5	
verall Pond Length	72.2	m	-	m				Measured at PP level or through mid section of the pond	
verall Pond Width	31.1	m	-	m				Destanced in 4rd to Erd	
ngth / Width Ratio rerage Permanent Pool depth	2.3 0.54	l/w m		l/w m	3 1	2	Failed Failed	Preferred is 4:1 to 5:1 Average permanent pool depth should be between 1 - 2 m	4-59 4-60
ax Depth Permanent Pool	0.54	m	-	m	1	3	Failed	Maximum permanent pool depth should be less than 3 m	4-60 4-60
rmanent Pool Volume Unit	74	m ³ /ha	57	m ³ /ha				As per Table 3.2 (MOE)	3-10
tisting Permanent Pool Volume	630	m ³	549	m³	850		Failed	Compare Unit rate volume to actual design	3-10
epth of Extended Detention Storage	0.51	m		m		1.5	ок	Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-60
	0.51		-			1.5	UK	Actual volume must equal or exceed the design volume / Design extended	
isting Extended Detention Storage	1030	m ³	1204	m ³	340		ок	detention storage (Table 3.2) should exceed 40 edsign volume 7 besign extended storage (Table 3.2) should exceed 40 m ³ /ha or 24 hr 25 mm Chicago storm runoff volume (~ 40m3/ha used as a minimum criteria)	4.52; 3-10
tended Detention Storage Drawdown Time	NA	hours		hours	24	48	Failed	Based on Equation 4.11	4-58
tive Storage Depth (total storage @ spillway Elev.)	1.2	m	-	m		2	ОК	Total active storage including quantity control	4-60
aximum Grade at Permanent Pool aximum Pond Side Slopes	3.33	:1 (h/v) :1 (h/v)	-	:1 (h/v)	5	7	Failed	Minimum slope at the permanent pool should be 5:1 - 7:1 preferred maximum Maximum pond side slopes 3:1 or flatter	4-61 4-61
nd shape optimized for shading/open water shaded	3.33	yes/no	-	:1 (h/v) yes/no		3	ОК	Length to width ratio maximized	4-01
itlet channel is shaded /designed to mitigate temp.	-	yes/no	-	yes/no		#VALUE!		Temperature mitigation measures recommended	H-8
art 3b: Pond Design Parameters - Forebay				-					
tal Forebay Surface Area	380	m ²	-	m²		997.01	ок	Forebay area should be less than 1/3 of pond surface area	4-56
rebay provided at each inlet ax Depth of Forebay: F1	Yes 1.01	yes/no m	no -	yes/no m	1	3	ок	If multiple inlets Minimum forebay depth is 1 m	4-56 4-55
F2	-	m	-	m	1	3	UK	Minimum forebay depth is 1 m	4 00
ovided Length to Width Ratio: F1	0.95	l/w		l/w	2	-	Failed	Minimum forebay length to width ratio is 2:1 if single inlet	
F2	-	l/w	-	l/w	2			Colorenza de sector se de la contente sector de la contente de la	4 50
Ibmerged Forebay Berm: F1 F2	No -	yes/no yes/no	-	yes/no yes/no	yes yes		Failed	Submerged preferred for safety reasons Submerged preferred for safety reasons	4-58 4-58
rt 3c: Pond Design Parameters - Inlet		,		,	,				
mber of pond inlets	1	_	1			1	ОК		4-62
et 1 et Pipe Diameter_1	600	mm	600	mm	450		ОК	Minimum inlet pipe diameter of 450mm	4-9
et Pipe Slope_1	0.90	%	-	%	1		Failed	Inlet pipe slope preferred > 1%	4-9
et Pipe Length_1	6.7	m	-	m					
bmerged Inlet_1	No	yes/no	-	yes/no	no		OK	A submerged inlet is not preferred	4-63
bmerged Pipe Grade_1 ergy dissipation provided to prevent scour_1	- No	% yes/no	- yes	% yes/no	1 yes		OK Failed	Submerged pipe slope should be a minimum of 1 % Only portions of forebay required to be hardened	4-63 4-63
posed Pilot Channel_1	No	yes/no yes/no	yes -	yes/no yes/no	yes	0	Failed	An exposed pilot channel is not preferred	4-63 4-62
et Headwalls and Wingwalls_1	Yes	yes/no	=	yes/no	yes	-	OK	Biotechnical structures highly preferred	4-65
et Area Depth_1	-	m	-	m	1.0	3.0		Depth at the inlet pipe should be a minimum of 1 m (Plunge pool)	4-65
Int 3d: Pond Design Parameters - Outlet itlet located in embankment	Yes	Voelne	-	V00/20	Voc		OK	Outlet structure should be located in embankment for maintenance purposes	4-65
tter located in embankment ttom Draw Outlet	Yes No	yes/no yes/no	-	yes/no yes/no	yes yes		OK Failed	Recommended in conjunction with deeper outlet area (2-3 m): temp. mitigation	4-65 4-11
tlet Pipe Diameter	375	mm	450	mm	450		Failed	Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)	4-9
itlet Pipe Slope	0.57	%	-	%	1		Failed	Outlet pipe slope preferred > 1% (Cold climate min. requirement)	4-9
everse Sloped Pipe Diameter, if provided			050		450			Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse	4-66; 4
ifice Diameter	-	mm mm	250 80	mm mm	150 75	100	ок ок	slope pipe should have a minimum diameter of 150 mm Smallest acceptable diameter is 75 mm	69 4-58
	-		00	nun	75	100	UK	Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser orifice	
erforated Riser Orifice Plate Dia., if riser pipe used	-	mm	-	mm	50		ок	plate diameter should be greater than 50 mm in diameter	4-67
sign Modifications for Cold Climates: alpha	15	-						Coefficient of ice growth	4-8
Df	753.3							Sum of freezing degree-days - Based on MSC Canadian Climate Normals 1971- 2000 - City of Barrie	4-8
h	412	mm		mm	MOE Equ	ation 4.1		Ice thickness	4-8
Submerged outlet depth	-	m		m	562		ок	Submerged outlets obvert to be set 150 mm lower than ice cover	4-8
art 3e: Pond Design Parameters - Major Flow		1							
op of Berm Elevation	225.7	m	-	m				Data input	
op of Emergency Spillway Elevation rovided Freeboard (@ spill elev.)	225.48 0.22	m m	-	m m	0.300		Failed	Data input Minimum freeboard above maximum design water level should be 0.3 m	4-60
art 4: Sediment	0.22		-	m	0.300		railed	winning needoard above maximum design water level should be 0.3 th	4-00
nnual sediment loading	5.1	m ³ /year	-	m ³ /year					6-14
stimated sediment volume	55	m ³	-	m ³					
umber of years before Forebay A clean-out required			Not de C						
umber of years before Pond clean-out required ljusted water quality storage	0 114	yrs m³/ha	Not defined	yrs	115		Failed Failed	Target efficiency required storage	
eatment Level	2	/iia	-		113		, aneu		
ND OF CHECKLIST									

					Part 1: Ge	eneral Info	ormation		
Wet Pond Criteria Check							Pond Name	Tepco South	
As per Stormwater Management Planning and Design	Manual (March	2003)	Innis	sfil		Munici	ipal Pond ID	6-3	-
							CA Pond ID	I-S71	-
STORMWATER MANAGEMENT MASTER	PLAN - PAR	T 1				Certificate	of Approval:	2416-6HZKC3	
By: Hatch Mott						F	Facility Type	Wet pond	
By: Hatch Mott MacDonald							lity Function	Water quality and quantity control	
Municipal Address:	GIS Coordinate	s:	Year:		Î		Watershed	Innisfil Creeks	
West of 965, Nantyr Dr., 023-238-32	Latitude:	44°17'49" N	Constructed:	2005		Recei	iving Waters	Ditch north side of Nantyr Drive east of St. John's Road / Belle Ai	ire Ck
	Longitude:	79°32'35" W	Retrofitted:	2009		Re	eceiver Type	-	
					<u>.</u>				
	Assessment		Design Value (CofA and/or Design		Min.	Max.	Criteria	Notes	MOE
Checklist	Value	Units	Report)	Units	Design	Design	Check	notes	Page
Part 2: Catchment Information		1				1		Minimum drainage area should be 5 ha to sustain wet pond, preferred drainage	4.50
Contributing Drainage Area	5.86	ha	5.5	ha	5.0		ок	area is >10 ha	4-52
Catchment Predominate Landuse Catchment Imperviousness %	- 42.5	%	-	%				Describe % / Is curb & gutter or ditch system pre-dominant	
Fisheries Protection Level	Enhanced	Level	Enhanced	Level	Enhanced	I	ОК	All streams within NVCA and LSRCA require Enhanced Protection (Level 1)	
Part 3a: Pond Design Parameters - Main Pond		1		1		1		Standards for fencing vary from municipality to municipality, thorny vegetative	
Pond Fenced (vegetative barrier or fence)	No	yes/no	-	yes/no	no		Failed	barriers very effective	4-60
Interpretive & Warning signage	-	yes/no	-	yes/no	yes		FALSE	Should describe the pond's function and warn of water level fluctuations, thin ice and other specific hazards	4-60
Total SWM Pond Surface Area	2806	m ²	-	m ²				Measured at top of berm	
Pond Block Area / Pond Area (top surface) ratio Overall Pond Length	1.5 24.6	PBA/PA m	-	PBA/PA m	1.5		ОК	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5 Measured at PP level or through mid section of the pond	
Overall Pond Width	30.3	m	-	m					
Length / Width Ratio Average Permanent Pool depth	0.8	l/w m	-	l/w m	3 1	2	Failed OK	Preferred is 4:1 to 5:1 Average permanent pool depth should be between 1 - 2 m	4-59 4-60
Max Depth Permanent Pool	1.14	m	-	m	1	3	ок	Maximum permanent pool depth should be less than 3 m	4-60
Permanent Pool Volume Unit Existing Permanent Pool Volume	221 1298	m³/ha m³	- 453	m³/ha m³	703		ок	As per Table 3.2 (MOE) Compare Unit rate volume to actual design	3-10 3-10
Depth of Extended Detention Storage			400		705			Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-60
Departor Extended Detention Otorage	0.16	m	-	m		1.5	ОК	Actual volume must equal or exceed the design volume / Design extended	
Existing Extended Detention Storage								detention storage (Table 3.2) should exceed 40 m ³ /ha or 24 hr 25 mm Chicago	4.52; 3-10
Entended Detention Charges Drawdown Time	284 NA	m ³	619	m ³	234	40	ОК	storm runoff volume (~ 40m3/ha used as a minimum criteria)	4-58
Extended Detention Storage Drawdown Time Active Storage Depth (total storage @ spillway Elev.)	0.9	hours m	-	hours m	24	48 2	Failed OK	Based on Equation 4.11 Total active storage including quantity control	4-58 4-60
Maximum Grade at Permanent Pool	5.625	:1 (h/v)	-	:1 (h/v)	5	7	ОК	Minimum slope at the permanent pool should be 5:1 - 7:1 preferred maximum	4-61
Maximum Pond Side Slopes Part 3b: Pond Design Parameters - Forebay	5.625	:1 (h/v)	-	:1 (h/v)		3	ОК	Maximum pond side slopes 3:1 or flatter	4-61
Total Forebay Surface Area	-	m ²	-	m ²		935.49	Failed	Forebay area should be less than 1/3 of pond surface area	4-56
Forebay provided at each inlet Max Depth of Forebay: F1	no -	yes/no m	no -	yes/no m	1	3		If multiple inlets Minimum forebay depth is 1 m	4-56 4-55
F2	-	m	-	m	1	3		Minimum forebay depth is 1 m	
Provided Length to Width Ratio: F1 F2	-	l/w l/w	-	l/w l/w	2 2			Minimum forebay length to width ratio is 2:1 if single inlet	
Submerged Forebay Berm: F1	-	yes/no	-	yes/no	yes			Submerged preferred for safety reasons	4-58
F2 Part 3c: Pond Design Parameters - Inlet		yes/no	-	yes/no	yes	1		Submerged preferred for safety reasons	4-58
Number of pond inlets Inlet 1	2		1			1		More than one inlet may require increases in effective storage volumes	4-62
Inlet Pipe Diameter_1	600	mm	600	mm	450	1	ок	Minimum inlet pipe diameter of 450mm	4-9
Inlet Pipe Slope_1	0.6	%	-	%	1		Failed	Inlet pipe slope preferred > 1%	4-9
Inlet Pipe Length_1 Submerged Inlet_1	18.9 No	m yes/no	-	m yes/no	no		ок	A submerged inlet is not preferred	4-63
Submerged Pipe Grade_1	-	%	-	%	1		ок	Submerged pipe slope should be a minimum of 1 %	4-63
Energy dissipation provided to prevent scour_1 Exposed Pilot Channel_1	No No	yes/no yes/no	yes -	yes/no yes/no	yes	0	Failed Failed	Only portions of forebay required to be hardened An exposed pilot channel is not preferred	4-63 4-62
Inlet Headwalls and Wingwalls_1	Yes	yes/no	-	yes/no	yes		ОК	Biotechnical structures highly preferred	4-65
Inlet Area Depth_1 Inlet 2	-	m	-	m	1.0	3.0	Failed	Depth at the inlet pipe should be a minimum of 1 m (Plunge pool)	4-65
Inlet Pipe Diameter_2	Swale	mm	-	mm	450		ОК	Minimum inlet pipe diameter of 450mm	4-81
Inlet Pipe Slope_2 Inlet Pipe Length_2	-	% m	-	% m	1		ОК	Inlet pipe slope preferred > 1%	4-81
Submerged Inlet_2	No	yes/no	-	yes/no	no			A submerged inlet is not preferred	4-81
Submerged Pipe Grade_2 Energy dissipation provided to prevent scour 2	- No	% yes/no	-	% yes/no	1 yes		OK Failed	Submerged pipe slope should be a minimum of 1 % Only portions of forebay required to be hardened	4-81 4-81
Exposed Pilot Channel_2	No	yes/no	-	yes/no		0	Failed	An exposed pilot channel is not preferred	
Inlet Headwalls and Wingwalls_2 Part 3d: Pond Design Parameters - Outlet	No	yes/no	-	yes/no	Voo	1	Enlad	Biotechnical structures highly preferred	4-81
Outlet located in embankment	Yes	yes/no	-	yes/no	yes	1	ок	Outlet structure should be located in embankment for maintenance purposes	4-65
Bottom Draw Outlet Outlet Pipe Diameter	No 450	yes/no mm	- 450	yes/no mm	yes 450		Failed OK	Recommended in conjunction with deeper outlet area (2-3 m): temp. mitigation Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)	4-11 4-9
Outlet Pipe Slope	0.901639344	%	-	%	1		Failed	Outlet pipe slope preferred > 1% (Cold climate min. requirement)	4-9
Reverse Sloped Pipe Diameter, if provided	450	mm	450	mm	150		ок	Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse slope pipe should have a minimum diameter of 150 mm	4-66; 4 69
Orifice Diameter	450	mm mm	450 75	mm	75	100	OK	Smallest acceptable diameter is 75 mm	69 4-58
Perforated Riser Orifice Plate Dia., if riser pipe used				m m	50		OK	Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser orifice plate diameter should be greater than 50 mm in diameter	4-67
Design Modifications for Cold Climates: alpha	15	mm	-	mm	50		ок	Coefficient of ice growth	4-8
Df								Sum of freezing degree-days - Based on MSC Canadian Climate Normals 1971-	4-8
h	753.3 412	mm		mm	MOE Equ	ation 4.1		2000 - City of Barrie Ice thickness	4-8
Submerged outlet depth	0.57	m		m	562		Failed	Submerged outlets obvert to be set 150 mm lower than ice cover	4-9
Part 3e: Pond Design Parameters - Major Flow Top of Berm Elevation	225.9	m	-	m				Data input	
Top of Emergency Spillway Elevation	225.18	m	-	m	0.000			Data input	
Provided Freeboard (@ spill elev.) Part 4: Sediment	1	m	-	m	0.300	1	ОК	Minimum freeboard above maximum design water level should be 0.3 m	4-60
Annual sediment loading	6.4	m ³ /year	Not defined	m ³ /year					6-14
Estimated sediment volume Number of years before Forebay A clean-out required	-1547.66	m³	Not defined	m³			Failed		
,	100	yrs	Not defined	yrs					
Number of years before Pond clean-out required	162			-			· _	The set of	
Number of years before Pond clean-out required Adjusted water quality storage Treatment Level	162 270	m ³ /ha	- Not defined		129		ОК	Target efficiency required storage	

					Part 1: Ge	eneral Info	ormation		
Wet Pond Criteria Check							Pond Name	Royal Alcona	
As per Stormwater Management Planning and Design	Manual (March	2003)	Inni	stil		Munici	pal Pond ID	7-1	
					Ļ	LSR	CA Pond ID	No Data	
STORMWATER MANAGEMENT MASTER	PLAN - PAR	T 1				Certificate	of Approval:	0.0	
By: Hatch Mott MacDonald						I	acility Type	Wet Pond	
MacDonald Environmental Engineers & Scientific						Faci	lity Function	0.0	
Municipal Address:	GIS Coordinate	s:	Year:				Watershed	Innisfil Creeks	
971 Garden Ave., 24-214-05	Latitude:	44°18'22" N	Constructed:	2007		Recei	iving Waters	Lake Simcoe Tributary / Banks Creek Watershed	
	Longitude:	79°32'43" W	Retrofitted:	0		Re	eceiver Type	0	
		1		F		1			
	Assessment		Design Value (CofA and/or Design		Min.	Max.	Criteria	Notes	MOE
Checklist Part 2: Catchment Information	Value	Units	Report)	Units	Design	Design	Check		Page
Part 2: Catchment Information						1		Minimum drainage area should be 5 ha to sustain wet pond, preferred drainage	4.50
Contributing Drainage Area	40.37	ha	-	ha	5.0		ок	area is >10 ha	4-52
Catchment Predominate Landuse Catchment Imperviousness %	47.75	%	-	%				Describe % / Is curb & gutter or ditch system pre-dominant	
Fisheries Protection Level	Enhanced	Level	Enhanced	Level	Enhanced		ОК	All streams within NVCA and LSRCA require Enhanced Protection (Level 1)	
Part 3a: Pond Design Parameters - Main Pond		1				1		Standards for fencing vary from municipality to municipality, thorny vegetative	
Pond Fenced (vegetative barrier or fence)	No	yes/no	-	yes/no	no		Failed	barriers very effective	4-60
Interpretive & Warning signage	_	yes/no	-	yes/no	yes		FALSE	Should describe the pond's function and warn of water level fluctuations, thin ice and other specific hazards	4-60
Total SWM Pond Surface Area	6610	m ²	-	m ²				Measured at top of berm	
Pond Block Area / Pond Area (top surface) ratio Overall Pond Length	4.1 171.63	PBA/PA m	-	PBA/PA m	1.5		ОК	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5 Measured at PP level or through mid section of the pond	
Overall Pond Width	14.93	m	-	m					
Length / Width Ratio Average Permanent Pool depth	11.5 0.20	l/w m	-	l/w m	3 1	2	OK Failed	Preferred is 4:1 to 5:1 Average permanent pool depth should be between 1 - 2 m	4-59 4-60
Max Depth Permanent Pool	0.25	m	-	m	1	3	Failed	Maximum permanent pool depth should be less than 3 m	4-60
Permanent Pool Volume Unit Existing Permanent Pool Volume	6 238	m ³ /ha m ³	-	m ³ /ha m ³	5349		Failed	As per Table 3.2 (MOE) Compare Unit rate volume to actual design	3-10 3-10
Depth of Extended Detention Storage					50-10			Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-60
	0.19	m	-	m		1.5	ок	Actual volume must equal or exceed the design volume / Design extended	
Existing Extended Detention Storage								detention storage (Table 3.2) should exceed 40 m ³ /ha or 24 hr 25 mm Chicago	4.52;
	410	m ³	-	m³	1,615		Failed	storm runoff volume (~ 40m3/ha used as a minimum criteria)	3-10
Extended Detention Storage Drawdown Time Active Storage Depth (total storage @ spillway Elev.)	NA 1.8	hours m	-	hours m	24	48	Failed OK	Based on Equation 4.11 Total active storage including quantity control	4-58 4-60
Maximum Grade at Permanent Pool	4.2	:1 (h/v)	-	:1 (h/v)	5	7	Failed	Minimum slope at the permanent pool should be 5:1 - 7:1 preferred maximum	4-61
Maximum Pond Side Slopes Part 3b: Pond Design Parameters - Forebay	3.1	:1 (h/v)	-	:1 (h/v)		3	ОК	Maximum pond side slopes 3:1 or flatter	4-61
Total Forebay Surface Area	512.62	m²	-	m²		2203.23	ОК	Forebay area should be less than 1/3 of pond surface area	4-56
Forebay provided at each inlet Max Depth of Forebay: F1	No 0.78	yes/no m	-	yes/no m	1	3	Failed	If multiple inlets Minimum forebay depth is 1 m	4-56 4-55
F2	0.38	m	-	m	1	3	Failed	Minimum forebay depth is 1 m	4-00
Provided Length to Width Ratio: F1 F2	1.2 2.0	l/w l/w	-	l/w l/w	2 2		Failed OK	Minimum forebay length to width ratio is 2:1 if single inlet	
Submerged Forebay Berm: F1	No	yes/no	-	yes/no	yes		Failed	Submerged preferred for safety reasons	4-58
F2 Part 3c: Pond Design Parameters - Inlet	No	yes/no	-	yes/no	yes		Failed	Submerged preferred for safety reasons	4-58
Number of pond inlets	3		-			1		More than one inlet may require increases in effective storage volumes	4-62
Inlet 1 Inlet Pipe Diameter 1	825		<u> </u>	mm	450	1	ок	Minimum inlet pipe diameter of 450mm	4-9
Inlet Pipe Slope_1	2.1	mm %	-	%	450		OK	Inlet pipe slope preferred > 1%	4-9 4-9
Inlet Pipe Length_1	15.6	m	-	m				A subscript is let is not suffered	4-63
Submerged Inlet_1 Submerged Pipe Grade_1		yes/no %	-	yes/no %	no 1		FALSE OK	A submerged inlet is not preferred Submerged pipe slope should be a minimum of 1 %	4-63
Energy dissipation provided to prevent scour_1 Exposed Pilot Channel_1	No	yes/no	-	yes/no	yes	0	Failed Failed	Only portions of forebay required to be hardened An exposed pilot channel is not preferred	4-63 4-62
Inlet Headwalls and Wingwalls_1	No Yes	yes/no yes/no	-	yes/no yes/no	yes	U	OK	Biotechnical structures highly preferred	4-62 4-65
Inlet Area Depth_1	-	m	-	m	1.0	3.0	Failed	Depth at the inlet pipe should be a minimum of 1 m (Plunge pool)	4-65
Inlet Pipe Diameter 2	1220 x 1930	mm	-	mm	450	1	ОК	Minimum inlet pipe diameter of 450mm	4-81
Inlet Pipe Slope_2	0.64	%	-	%	1		Failed	Inlet pipe slope preferred > 1%	4-81
Inlet Pipe Length_2 Submerged Inlet 2	52.2 No	m yes/no	-	m ves/no	no			A submerged inlet is not preferred	4-81
Submerged Pipe Grade_2	-	%	-	%	1		ок	Submerged pipe slope should be a minimum of 1 %	4-81
Energy dissipation provided to prevent scour_2 Exposed Pilot Channel 2	No No	yes/no yes/no	-	yes/no yes/no	yes	0	Failed Failed	Only portions of forebay required to be hardened An exposed pilot channel is not preferred	4-81
Inlet Headwalls and Wingwalls_2	Yes	yes/no	-	yes/no	yes		ОК	Biotechnical structures highly preferred	4-81
Inlet 3 Inlet Pipe Diameter 3	900	mm	-	mm	450	1	ок	Minimum inlet pipe diameter of 450mm	4-81
Inlet Pipe Slope_3	4.00	%	-	%	1		ОК	Inlet pipe slope preferred > 1%	4-81
Inlet Pipe Length_3 Submerged Inlet 3	41.7 No	m yes/no	-	m yes/no	no			A submerged inlet is not preferred	4-81
Submerged Pipe Grade_3	-	%	-	%	1		ок	Submerged pipe slope should be a minimum of 1 %	4-81
Energy dissipation provided to prevent scour_3 Exposed Pilot Channel 3	No No	yes/no yes/no	-	yes/no yes/no	yes	0	Failed Failed	Only portions of forebay required to be hardened An exposed pilot channel is not preferred	4-81
Inlet Headwalls and Wingwalls_3	Yes	yes/no	-	yes/no	yes		OK	Biotechnical structures highly preferred	4-81
Part 3d: Pond Design Parameters - Outlet Outlet located in embankment	Yes	yes/no	-	yes/no	yes	1	ок	Outlet structure should be located in embankment for maintenance purposes	4-65
Bottom Draw Outlet	No	yes/no	-	yes/no	yes		Failed	Recommended in conjunction with deeper outlet area (2-3 m): temp. mitigation	4-11
Outlet Pipe Diameter Outlet Pipe Slope	400 3.3	mm %	-	mm %	450 1		Failed OK	Minimum outlet pipe diameter of 450mm (Cold climate min. requirement) Outlet pipe slope preferred > 1% (Cold climate min. requirement)	4-9 4-9
Reverse Sloped Pipe Diameter, if provided	0.0	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		<i>,</i> 0	•		U.V.	Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse	4-66; 4-
Orifice Diameter	· ·	mm mm	-	mm mm	150 75	100	ОК ОК	slope pipe should have a minimum diameter of 150 mm Smallest acceptable diameter is 75 mm	69 4-58
Perforated Riser Orifice Plate Dia., if riser pipe used					75	100	UK	Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser orifice	
Design Modifications for Cold Climates: alpha	- 15	mm	-	mm	50		ок	plate diameter should be greater than 50 mm in diameter Coefficient of ice growth	4-67 4-8
Design woonications for Cold Cilmates. alpha	15	-						Sum of freezing degree-days - Based on MSC Canadian Climate Normals 1971-	4-8
Dī h	753.3			m	MOE Equ	lation 4.1		2000 - City of Barrie Ice thickness	4-8 4-8
Submerged outlet depth	412	mm m		mm m	MOE Equ 562	4.1	ок	Ice INICKNESS Submerged outlets obvert to be set 150 mm lower than ice cover	4-8 4-9
Part 3e: Pond Design Parameters - Major Flow	Outlet 222.6	m	-	m		1			
Top of Berm Elevation Top of Emergency Spillway Elevation	222.6	m m	-	m m				Data input Data input	
Provided Freeboard (@ spill elev.)	0	m	-	m	0.300		Failed	Minimum freeboard above maximum design water level should be 0.3 m	4-60
Part 4: Sediment Annual sediment loading	57.7	m ³ /year	Not defined	m ³ /year					6-14
Estimated sediment volume	615.52	m ³	Not defined	m ³					
Number of years before Forebay A clean-out required Number of years before Pond clean-out required	0	yrs	Not defined	yrs			Failed		
Adjusted water quality storage	16	m ³ /ha	-	-	137.75		Failed	Target efficiency required storage	
Treatment Level	<3	1	Not defined			1			

Treatment Level	<3	Not defined	
END OF CHECKLIST	,		

			·		Part 1: Ge	eneral Inf	ormation		
Wet Pond Criteria Check							Pond Name	Wallace Mills	1
As per Stormwater Management Planning and Design	Manual (March	2003)	Inńi	sfil		Munici	pal Pond ID	7-3	
							CA Pond ID	I-S68	
STORMWATER MANAGEMENT MASTER	PLAN - PAR	T 1			(Certificate	of Approval:	3-1808-98-996	
By: Hatch Mott MacDonald							acility Type	Wet pond	-
Environmental Engineera & Scientian					ł	Faci	lity Function	- Innisfil Creeks	-
Municipal Address: 1896 Webster Blvd., 23-636-10	GIS Coordinate	s: 44°18'9" N	Year:	#N/A		Deser	Watershed	Banks Creek	-
1050 Webster Biva., 25-050-10	Latitude:	70 0000711 144	Constructed:	2002	-		iving Waters		-
	Longitude:	10 00 01 11	Retrofitted:	2002	1	He	eceiver Type		
	Assessment		Design Value (CofA		Min.	Max.	Criteria	Notes	MOE
Checklist	Value	Units	and/or Design Report)	Units	Design	Design	Check	NOIES	Page
Part 2: Catchment Information		1				1		Minimum drainage area should be 5 ha to sustain wet pond, preferred drainage	4.50
Contributing Drainage Area Catchment Predominate Landuse	28.12	ha	-	ha	5.0		ОК	area is >10 ha Describe % / ls curb & gutter or ditch system pre-dominant	4-52
Catchment Imperviousness %	40	%	-	%					
Fisheries Protection Level Part 3a: Pond Design Parameters - Main Pond	Enhanced	Level	Enhanced	Level	Enhanced	1	ОК	All streams within NVCA and LSRCA require Enhanced Protection (Level 1)	
Pond Fenced (vegetative barrier or fence)								Standards for fencing vary from municipality to municipality, thorny vegetative	4-60
	Yes	yes/no	-	yes/no	no		ок	barriers very effective Should describe the pond's function and warn of water level fluctuations, thin ice	
Interpretive & Warning signage Total SWM Pond Surface Area	- 3992	yes/no m ²	-	yes/no m²	yes		FALSE	and other specific hazards Measured at top of berm	4-60
Pond Block Area / Pond Area (top surface) ratio	1.7	PBA/PA	-	PBA/PA	1.5		ок	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5	
Overall Pond Length Overall Pond Width	55.35 79.32	m m	-	m m				Measured at PP level or through mid section of the pond	
Length / Width Ratio	0.7	l/w	-	l/w	3		Failed	Preferred is 4:1 to 5:1	4-59
Average Permanent Pool depth Max Depth Permanent Pool	1.87 1.87	m m	-	m m	1	2 3	ок ок	Average permanent pool depth should be between 1 - 2 m Maximum permanent pool depth should be less than 3 m	4-60 4-60
Permanent Pool Volume Unit	57	m³/ha	-	m ³ /ha	-			As per Table 3.2 (MOE)	3-10
Existing Permanent Pool Volume	1604	m ³	-	m³	3164		Failed	Compare Unit rate volume to actual design	3-10
Depth of Extended Detention Storage	0.94	m	-	m		1.5	ок	Active storage depth for water quality/erosion control - 1.0 m preferred maximum Actual volume must equal or exceed the design volume / Design extended	4-60
Existing Extended Detention Storage								detention storage (Table 3.2) should exceed 40 m ³ /ha or 24 hr 25 mm Chicago	4.52; 3-10
Extended Detention Storage Drawdown Time	2620 NA	m ³ hours	-	m ³ hours	1,125 24	48	OK Failed	storm runoff volume (~ 40m3/ha used as a minimum criteria) Based on Equation 4.11	4-58
Active Storage Depth (total storage @ spillway Elev.)	0.8	m	-	m		2	OK	Total active storage including quantity control	4-60
Maximum Grade at Permanent Pool Maximum Pond Side Slopes	2.2	:1 (h/v) :1 (h/v)	-	:1 (h/v) :1 (h/v)	5	7	Failed OK	Minimum slope at the permanent pool should be 5:1 - 7:1 preferred maximum Maximum pond side slopes 3:1 or flatter	4-61 4-61
Part 3b: Pond Design Parameters - Forebay			[
Total Forebay Surface Area Forebay provided at each inlet	- no	m² yes/no	-	m² yes/no		1330.71	Failed	Forebay area should be less than 1/3 of pond surface area If multiple inlets	4-56 4-56
Max Depth of Forebay: F1 F2	-	m m	-	m m	1	3 3		Minimum forebay depth is 1 m Minimum forebay depth is 1 m	4-55
Provided Length to Width Ratio: F1	-	l/w	-	l/w	2	3		Minimum forebay length to width ratio is 2:1 if single inlet	
F2 Submerged Forebay Berm: F1	-	l/w yes/no	-	l/w yes/no	2 yes			Submerged preferred for safety reasons	4-58
F2	•	yes/no	-	yes/no	yes			Submerged preferred for safety reasons	4-58
Part 3c: Pond Design Parameters - Inlet Number of pond inlets	3	1	-			1		More than one inlet may require increases in effective storage volumes	4-62
Inlet 1 Inlet Pipe Diameter 1	1200	mm	-	mm	450	1	ок	Minimum inlet pipe diameter of 450mm	4-9
Inlet Pipe Slope_1	1.1	%	-	%	1		ок	Inlet pipe slope preferred > 1%	4-9
Inlet Pipe Length_1 Submerged Inlet 1	91.0	m yes/no	-	m yes/no	no		FALSE	A submerged inlet is not preferred	4-63
Submerged Pipe Grade_1	-	%	-	%	1		ок	Submerged pipe slope should be a minimum of 1 %	4-63
Energy dissipation provided to prevent scour_1 Exposed Pilot Channel_1	No No	yes/no yes/no	-	yes/no yes/no	yes	0	Failed Failed	Only portions of forebay required to be hardened An exposed pilot channel is not preferred	4-63 4-62
Inlet Headwalls and Wingwalls_1 Inlet Area Depth 1	Yes	yes/no m	-	yes/no m	yes 1.0	3.0	OK Failed	Biotechnical structures highly preferred Depth at the inlet pipe should be a minimum of 1 m (Plunge pool)	4-65 4-65
Inlet 2			-			3.0			
Inlet Pipe Diameter_2 Inlet Pipe Slope 2	300 1.05	mm %	-	mm %	450 1		Failed OK	Minimum inlet pipe diameter of 450mm Inlet pipe slope preferred > 1%	4-81 4-81
Inlet Pipe Length_2	21.1	m	-	m	-				
Submerged Inlet_2 Submerged Pipe Grade 2	No -	yes/no %	-	yes/no %	no 1		ок	A submerged inlet is not preferred Submerged pipe slope should be a minimum of 1 %	4-81 4-81
Energy dissipation provided to prevent scour_2	No	yes/no	-	yes/no	yes		Failed	Only portions of forebay required to be hardened	4-81
Exposed Pilot Channel_2 Inlet Headwalls and Wingwalls_2	No Yes	yes/no yes/no	-	yes/no yes/no	yes	0	Failed OK	An exposed pilot channel is not preferred Biotechnical structures highly preferred	4-81
Inlet 3 Inlet Pipe Diameter 3	530	mm	-	mm	450	1	ок	Minimum inlet pipe diameter of 450mm	4-81
Inlet Pipe Slope_3	1.00	%	-	%	1		ок	Inlet pipe slope preferred > 1%	4-81
Inlet Pipe Length_3 Submerged Inlet 3	22.2 No	m yes/no	-	m ves/no	no			A submerged inlet is not preferred	4-81
Submerged Pipe Grade_3	- No	%	-	%	1		ОК	Submerged pipe slope should be a minimum of 1 %	4-81
Energy dissipation provided to prevent scour_3 Exposed Pilot Channel_3	NO	yes/no yes/no	-	yes/no yes/no	yes	0	Failed Failed	Only portions of forebay required to be hardened An exposed pilot channel is not preferred	4-81
Inlet Headwalls and Wingwalls_3 Part 3d: Pond Design Parameters - Outlet	Yes	yes/no	-	yes/no	yes		ок	Biotechnical structures highly preferred	4-81
Outlet located in embankment	Yes	yes/no	-	yes/no	yes		ок	Outlet structure should be located in embankment for maintenance purposes	4-65
Bottom Draw Outlet Outlet Pipe Diameter	No 220	yes/no mm	-	yes/no mm	yes 450		Failed Failed	Recommended in conjunction with deeper outlet area (2-3 m): temp. mitigation Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)	4-11 4-9
Outlet Pipe Slope	0.5	%	-	%	1		Failed	Outlet pipe slope preferred > 1% (Cold climate min. requirement)	4-9
Reverse Sloped Pipe Diameter, if provided	300	mm	-	mm	150		ок	Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse slope pipe should have a minimum diameter of 150 mm	4-66; 4- 69
Orifice Diameter	-	mm	-	mm	75	100	ок	Smallest acceptable diameter is 75 mm Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser orifice	4-58
Perforated Riser Orifice Plate Dia., if riser pipe used	-	mm	-	mm	50		ок	plate diameter should be greater than 50 mm in diameter	4-67
Design Modifications for Cold Climates: alpha	15	-						Coefficient of ice growth Sum of freezing degree-days - Based on MSC Canadian Climate Normals 1971-	4-8
Df	753.3				MOT -	ation 4		2000 - City of Barrie	4-8
h Submerged outlet depth	412	mm m		mm m	MOE Equ 562	ation 4.1	ок	Ice thickness Submerged outlets obvert to be set 150 mm lower than ice cover	4-8 4-9
Part 3e: Pond Design Parameters - Major Flow	Outlet 239	m	-	m		1		Data input	
Top of Berm Elevation Top of Emergency Spillway Elevation	238.74	m	-	m				Data input	
Provided Freeboard (@ spill elev.) Part 4: Sediment	0] m	-	m	0.300		Failed	Minimum freeboard above maximum design water level should be 0.3 m	4-60
Annual sediment loading	26.0	m ³ /year	Not defined	m ³ /year					6-14
Estimated sediment volume Number of years before Forebay A clean-out required	590.1	m ³	Not defined	m ³			Failed		
Number of years before Pond clean-out required	36	yrs m³/ha	Not defined	yrs	104			Target efficiency required storage	
Adjusted water quality storage Treatment Level	97 2		- Not defined		124		Failed	Target efficiency required storage	

i leatinent Level	2	Not defined			
END OF CHECKLIST			·		

			*		Dort 1 C	an or all had	una etta		
Dry Bond Critoric Chook				>	Part 1: Ge	eneral Info		Ecrost Valley	
Dry Pond Criteria Check							Pond Name		_
As per Stormwater Management Planning and Design N	vianual (March	2003)	Inńi	2111			pal Pond ID	7-4	
						LSR	CA Pond ID	No Data	
STORMWATER MANAGEMENT MASTER F	PLAN - PAR	T 1				Certificate of	of Approval:	•	
							acility Type	Dry pond	
By: Hatch Mott MacDonald									
Environmental Engineera & Solentiate					-	Facil	ity Function		
	GIS Coordinate		Year:				Watershed	Lovers Creek	
1891 Forest Valley Dr., 019-033-28	Latitude:	44°16'37" N	Constructed:	1998		Receiv	ving Waters	Upper Lovers Creek	
	Longitude:	79°40'10'' W	Retrofitted:	0		Re	ceiver Type	-	
	_ongnuue.		nou ontieu.			ne	-э.г.эг туре	the second s	
			Design Value (CofA						MOE
Obset-Vist	Assessment	Line State	and/or Design	110.10-	Min.	Max.	Criteria	Notes	Page
Checklist Part 2: Catchment Information	Value	Units	Report)	Units	Design	Design	Check		. age
Part 2: Catchment Information				1					
Contributing Drainage Area	9.86	ha	-	ha	5.0		ок	Minimum drainage area should be 5 ha, preferred drainage area is >10 ha	4-80
Catchment Predominate Landuse	-		-					Describe % / Is curb & gutter or ditch system pre-dominant	
Catchment Imperviousness %	16	%	-	%				Development of the big back of the set	
Fisheries Protection Level Part 3a: Pond Design Parameters - Main Pond	Basic	Level	-	Level	Basic		Failed	Dry ponds cannot achieve higher than basic treatment	
		1		1				Standards for fencing vary from municipality to municipality, thorny vegetative	
Pond Fenced (vegetative barrier or fence)	Yes	yes/no	-	yes/no	no		ок	barriers very effective	4-60
Interpretive & Warning signage		-						Should describe the pond's function and warn of water level fluctuations, thin ice	4-60
	-	yes/no	-	yes/no	yes		FALSE	and other specific hazards	+ 00
Total SWM Pond Surface Area Pond Block Area / Pond Area (top surface) ratio	743 2.6	m ² PBA/PA	-	m ² PBA/PA	1.5		ок	Measured at PP level or through mid section of the pond Check for retrofit feasibility - pond expansion not feasible if ratio <1.5	
Overall Pond Length	2.6	рва/ра m	-	m PBA/PA	1.5		UK	Measured at top of berm	
Overall Pond Width	18	m	-	m					
Length / Width Ratio	1.3	l/w	-	l/w	3		Failed	Preferred is 4:1 to 5:1	4-59
Depth of Extended Detention Storage	-	m	-	m		3	Failed	Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-81
Existing Extended Detention Storage	0	m ³		m ³	406		Failed	Actual volume must equal or exceed the design volume	3-10
Extended Detention Storage Drawdown Time	NA	hours	-	hours	406 24		Failed OK	Actual volume must equal or exceed the design volume Based on Equation 4.11	4-58
Active Storage Depth (total storage @ spillway Elev.)	1.49	m	-	m	24 1	3	OK	Total active storage including quantity control	4-58
Maximum Pond Side Slopes	3.4	:1 (h/v)	-	:1 (h/v)	4		Failed	Maximum pond side slopes 4:1 or flatter	4-79
Part 3b: Pond Design Parameters - Forebay									
Total Forebay Surface Area Forebay provided at each inlet	-	m ² yes/no	-	m² yes/no		247.70	Failed	Forebay area should be less than 1/3 of pond surface area If multiple inlets	4-80 4-80
Max Depth of Forebay: F1	no -	yes/no m	-	yes/no m	1	3		Minimum forebay depth is 1 m	4-80 4-80
F2	-	m	-	m	1	3		Minimum forebay depth is 1 m	4-80
Provided Length to Width Ratio: F1	-	l/w	-	l/w	2			Minimum forebay length to width ratio is 2:1 if single inlet	4-80
F2	-	l/w	-	l/w	2				4-80
Forebay Berm: F1 F2	-	yes/no	-	yes/no	yes			Submerged preferred for safety reasons	4-80 4-80
Part 3c: Pond Design Parameters - Inlet	-	yes/no	-	yes/no	yes			Submerged preferred for safety reasons	4-80
Number of pond inlets	1		-]		1	ок		4-81
Inlet 1		1		1		1			
Inlet Pipe Diameter_1	600	mm	-	mm	450		ОК	Minimum inlet pipe diameter of 450mm	4-81
Inlet Pipe Slope_1	1.65 13.3	% m	-	% m	1		ок	Inlet pipe slope preferred > 1%	4-81
Inlet Pipe Length_1 Submerged Inlet 1	13.3 No	m yes/no	-	m yes/no	no		ок	A submerged inlet is not preferred	4-81
Submerged Pipe Grade_1	-	%	-	% yes/10	1		ОК	Submerged nine is not preferred Submerged pipe slope should be a minimum of 1 %	4-81
Energy dissipation provided to prevent scour_1	Yes	yes/no	-	yes/no	yes		ок	Only portions of forebay required to be hardened	4-81
Inlet Headwalls and Wingwalls_1	Yes	yes/no	-	yes/no	yes		ок	Biotechnical structures highly preferred	4-81
Part 3d: Pond Design Parameters - Outlet Outlet located in embankment	Ver	10 - l		110-1-			011	Outlet structure should be logated in ambankment for mainte	4.00
Outlet located in embankment Outlet Pipe Diameter	Yes 300	yes/no mm	-	yes/no mm	yes 450		OK Failed	Outlet structure should be located in embankment for maintenance purposes Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)	4-82 4-79
Outlet Pipe Diameter Outlet Pipe Slope	- 300	mm %	-	mm %	450		OK	Outlet pipe slope preferred > 1% (Cold climate min. requirement)	4-79 4-79
Reverse Sloped Pipe Diameter, if provided								Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse	4-79, 4
		mm	-	mm	150	107	ОК	slope pipe should have a minimum diameter of 150 mm	83
Orifice Diameter Part 3e: Pond Design Parameters - Major Flow C	200 Dutlet	mm	-	mm	75	100	ОК	Smallest acceptable diameter is 75 mm	4-82
Top of Berm Elevation	283.6	m	-	m				Data input	
Top of Emergency Spillway Elevation	283.6	m	-	m				Data input	
Provided Freeboard (@ spill elev.)	0.00	m	#VALUE!	m	0.300		Failed	Minimum freeboard above maximum design water level should be 0.3 m	4-60
Part 4: Sediment									-
Annual sediment loading	6 239.17	m³/year m³	-	m³/year m³					6-14
Estimated sediment volume Number of years before clean-out required	239.17 #VALUE!	m° yrs	-	m° yrs			#VALUE!		
		m ³ /ha	-	,	41.1				
Adjusted water quality storage	0								
Adjusted water quality storage Treatment Level END OF CHECKLIST	<3		Not defined						

	Year: Constructed: Retrofitted: esign Value (CotA and/or Design	2003 -	c	Munici LSR Certificate o F	Pond Name pal Pond ID CA Pond ID of Approval: facility Type	Innisbrook Estates (IH) 7-5 - 0693-5PAQ7A Infiltration Pond	-
STORMWATER MANAGEMENT MASTER PLAN - PART 1 By: MacDonald CCCCC Municipal Address: GIS Coordinates: East of 1949, Innisbrooke St., 020-025-73 Latitude: 44°17'2" N Longitude: 79°39'28" W Checklist Assessment Value Units	Year: Constructed: Retrofitted: esign Value (CofA and/or Design		c	LSR Certificate o F	CA Pond ID of Approval: acility Type	- 0693-5PAQ7A	-
By: MacDonald Constant GIS Coordinates: East of 1949, Innisbrooke St., 020-025-73 Latitude: 44°17'2" N Longitude: 79°39'28" W Checklist Assessment Value Units	Constructed: Retrofitted: esign Value (CofA and/or Design	2003	c	Certificate o F	of Approval: acility Type		
By: Hatch Mott MacDonald Municipal Address: GIS Coordinates: East of 1949, Innisbrooke St., 020-025-73 Latitude: 44°17'2" N Longitude: 79°39'28" W Checklist	Constructed: Retrofitted: esign Value (CofA and/or Design	2003		F	acility Type		
MacDonald GIS Coordinates: East of 1949, Innisbrooke St., 020-025-73 Latitude: 44°17'2" N Longitude: 79°39'28" W	Constructed: Retrofitted: esign Value (CofA and/or Design	2003		Facil			
East of 1949, Innisbrooke St., 020-025-73 Latitude: 44°17'2" N Longitude: 79 °39'28" W Checklist	Constructed: Retrofitted: esign Value (CofA and/or Design	2003 -			ity Function	Water quality and quantity control	
Checklist Checklist	Retrofitted: esign Value (CofA and/or Design	-		Beer	Watershed	Lovers Creek Upper Lovers Creek	-
Checklist Dealerst Units	esign Value (CofA and/or Design				ving Waters ceiver Type	-	-
Checklist Value Units	and/or Design						
Part 2: Catchment Information	Report)	Units	Min. Design	Max. Design	Criteria Check	Notes	MOE Page
						Minimum drainage area should be 5 ha to sustain wet pond, preferred drainage	4-52
Contributing Drainage Area 23.70 ha Catchment Predominate Landuse -	- 23.6	ha	5.0		ок	area is >10 ha Describe % / ls curb & gutter or ditch system pre-dominant	
Catchment Imperviousness % 32.75 % Fisheries Protection Level Enhanced Level	- Enhanced	% Level	Enhanced		ок	All streams within NVCA and LSRCA require Enhanced Protection (Level 1)	
Part 3a: Pond Design Parameters - Main Pond	Limanced	Level	Limanceu		UK		
Pond Fenced (vegetative barrier or fence) Yes yes/no	-	yes/no	no		ок	Standards for fencing vary from municipality to municipality, thorny vegetative barriers very effective	4-60
Interpretive & Warning signage		-				Should describe the pond's function and warn of water level fluctuations, thin ice	4-60
Total SWM Pond Surface Area 3953 m ²	-	yes/no m ²	yes		FALSE	and other specific hazards Measured at top of berm	
Pond Block Area / Pond Area (top surface) ratio 3.2 PBA/PA	-	PBA/PA	1.5		ок	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5	
Overall Pond Length 127.78 m Overall Pond Width 26.9 m	-	m m				Measured at PP level or through mid section of the pond	ļ
Length / Width Ratio 4.8 I/w Average Permanent Pool depth 0.58 m	-	l/w m	3 1	2	OK Failed	Preferred is 4:1 to 5:1 Average permanent pool depth should be between 1 - 2 m	4-59 4-60
Max Depth Permanent Pool 0.63 m	-	m	1	3	Failed	Maximum permanent pool depth should be less than 3 m	4-60
Permanent Pool Volume Unit 24 m ³ /ha Existing Permanent Pool Volume 557 m ³	-	m ³ /ha m ³	2234		Failed	As per Table 3.2 (MOE) Compare Unit rate volume to actual design	3-10 3-10
Depth of Extended Detention Storage				1.5	ок	Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-60
Existing Extended Detention Storage	-	m		1.5	ŬŔ	Actual volume must equal or exceed the design volume / Design extended detention storage (Table 3.2) should exceed 40 m ³ /ha or 24 hr 25 mm Chicago	4.52;
517 m ³	400	m ³	948		Failed	storm runoff volume (~ 40m3/ha used as a minimum criteria)	3-10
Extended Detention Storage Drawdown Time NA hours Active Storage Depth (total storage @ spillway Elev.) 0.5 m	-	hours m	24	48 2	Failed OK	Based on Equation 4.11 Total active storage including quantity control	4-58 4-60
Maximum Grade at Permanent Pool 5:1 (h/v)	-	:1 (h/v)	5	7	ок	Minimum slope at the permanent pool should be 5:1 - 7:1 preferred maximum	4-61
Maximum Pond Side Slopes 5:1 (h/v) Part 3b: Pond Design Parameters - Forebay	-	:1 (h/v)		3	ОК	Maximum pond side slopes 3:1 or flatter	4-61
Total Forebay Surface Area 433 m ²	-	m²		1317.69	ОК	Forebay area should be less than 1/3 of pond surface area	4-56
Forebay provided at each inlet yes yes/no Max Depth of Forebay: F1 0.74 m	no -	yes/no m	1	3	Failed	If multiple inlets Minimum forebay depth is 1 m	4-56 4-55
F2 - m	•	m	1	3		Minimum forebay depth is 1 m	
Provided Length to Width Ratio: F1 0.8 I/w F2 - I/w	-	l/w l/w	2 2		Failed	Minimum forebay length to width ratio is 2:1 if single inlet	
Submerged Forebay Berm: F1 No yes/no F2 - yes/no Image: second se	-	yes/no yes/no	yes yes		Failed	Submerged preferred for safety reasons Submerged preferred for safety reasons	4-58 4-58
Part 3c: Pond Design Parameters - Inlet Number of pond inlets 2	-			1		More than one inlet may require increases in effective storage volumes	4-62
Inlet 1 Inlet Pipe Diameter 1 600 mm		mm	450		ок	Minimum inlet pipe diameter of 450mm	4-9
Inlet Pipe Slope_1 1.3 %		%	450		ОК	Inlet pipe slope preferred > 1%	4-9
Inlet Pipe Length_1 13.3 m Submerged Inlet_1 No yes/no	-	m yes/no			ок	A submerged inlet is not preferred	4-63
Submerged Pipe Grade_1%	-	%	no 1		OK	Submerged pipe slope should be a minimum of 1 %	4-63
Energy dissipation provided to prevent scour_1 No yes/no Exposed Pilot Channel 1 - yes/no	•	yes/no yes/no	yes	0	Failed FALSE	Only portions of forebay required to be hardened An exposed pilot channel is not preferred	4-63 4-62
Inlet Headwalls and Wingwalls_1 No yes/no	-	yes/no	yes		Failed	Biotechnical structures highly preferred	4-65
Inlet Area Depth_1 m m	-	m	1.0	3.0	Failed	Depth at the inlet pipe should be a minimum of 1 m (Plunge pool)	4-65
Inlet Pipe Diameter_2 375 mm Inlet Pipe Slope 2 0.32 %	-	mm	450		Failed	Minimum inlet pipe diameter of 450mm	4-81 4-81
Inlet Pipe Slope_2 0.32 % Inlet Pipe Length_2 52.2 m	-	% m	1		Failed	Inlet pipe slope preferred > 1%	4-01
Submerged Inlet_2 Yes yes/no Submerged Pipe Grade 2 0.32 %	-	yes/no %	no 1		Failed	A submerged inlet is not preferred Submerged pipe slope should be a minimum of 1 %	4-81 4-81
Energy dissipation provided to prevent scour_2 No yes/no	-	yes/no	yes		Failed	Only portions of forebay required to be hardened	4-81
Exposed Pilot Channel_2 No yes/no Inlet Headwalls and Wingwalls 2 Yes yes/no	-	yes/no yes/no	yes	0	Failed OK	An exposed pilot channel is not preferred Biotechnical structures highly preferred	4-81
Part 3d: Pond Design Parameters - Outlet	-	yes/no	yes	1	UK		
Outlet located in embankment Yes yes/no Bottom Draw Outlet No yes/no	-	yes/no yes/no	yes yes		OK Failed	Outlet structure should be located in embankment for maintenance purposes Recommended in conjunction with deeper outlet area (2-3 m): temp. mitigation	4-65 4-11
Outlet Pipe Diameter 450 mm	-	mm	450		OK	Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)	4-9
Outlet Pipe Slope 2.6 %	-	%	1		ок	Outlet pipe slope preferred > 1% (Cold climate min. requirement) Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse	4-9 4-66; 4-
Reverse Sloped Pipe Diameter, if provided mm	-	mm	150		ок	slope pipe should have a minimum diameter of 150 mm	69
Orifice Diameter - mm	108	mm	75	100	ОК	Smallest acceptable diameter is 75 mm Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser orifice	4-58
Perforated Riser Orifice Plate Dia., if riser pipe used mm	150	mm	50		ок	plate diameter should be greater than 50 mm in diameter	4-67
Design Modifications for Cold Climates: alpha 15						Coefficient of ice growth Sum of freezing degree-days - Based on MSC Canadian Climate Normals 1971-	4-8
Df 753.3			NG5 -			2000 - City of Barrie	4-8
h 412 mm Submerged outlet depth - m		mm m	MOE Equation 562	ation 4.1	ок	Ice thickness Submerged outlets obvert to be set 150 mm lower than ice cover	4-8 4-9
Part 3e: Pond Design Parameters - Major Flow Outlet	150						
Top of Berm Elevation 261.1 m Top of Emergency Spillway Elevation 260.82 m	150	m m				Data input Data input	
Provided Freeboard (@ spill elev.) 0 m	-	m	0.300		Failed	Minimum freeboard above maximum design water level should be 0.3 m	4-60
Part 4: Sediment Annual sediment loading 14.2 m ³ /year	Not defined	m ³ /year					6-14
Estimated sediment volume 763.3 m ³	Not defined	m ³			P - 1 - 1		
	Not defined	yrs			Failed		
Adjusted water quality storage 45 m ³ /ha	- Not defined		111		Failed	Target efficiency required storage	
Treatment Level <3 END OF CHECKLIST	Not defined			1			

					Part 1: Ge	eneral Info	rmation		
				>	ran 1: Ge				
Wet Pond Criteria Check			Inni	· · · ·			Pond Name	Innisbrook Developments	
As per Stormwater Management Planning and Design	Manual (March	2003)	Inni	stil		Munici	bal Pond ID	7-6 (BMP 4Q1)	
							CA Pond ID	I-S64	
					•				-
STORMWATER MANAGEMENT MASTER	PLAN - PAR	Τ1			C	Certificate of	of Approval:	6045-5J2TP3	
By: Hatch Mott						F	acility Type	Wet pond	
Hatch Mott MacDonald						Facil	ity Function	Water quality control	
unising L Address			Veen		1		•	Innisfil Creeks	
unicipal Address:	GIS Coordinate		Year:				Watershed		-
1295 Gina St., 023-057-32	Latitude:	44°18'43" N	Constructed:	#N/A	-	Recei	ving Waters	Bon Secuors Creek (Ck #4)	-
	Longitude:	79°33'21" W	Retrofitted:	-		Re	ceiver Type	-	
			Design Value (CofA]					MOE
	Assessment		and/or Design		Min.	Max.	Criteria	Notes	Page
Checklist art 2: Catchment Information	Value	Units	Report)	Units	Design	Design	Check		
art 2. Catchment information		1		1				Minimum drainage area should be 5 ha to sustain wet pond, preferred drainage	
ontributing Drainage Area	5.96	ha	5.56	ha	5.0		ок	area is >10 ha	4-52
atchment Predominate Landuse	-		-					Describe % / Is curb & gutter or ditch system pre-dominant	
atchment Imperviousness %	50	. % .		. % .					
sheries Protection Level art 3a: Pond Design Parameters - Main Pond	Enhanced	Level	Enhanced	Level	Enhanced		OK	All streams within NVCA and LSRCA require Enhanced Protection (Level 1)	
5		1		1				Standards for fencing vary from municipality to municipality, thorny vegetative	
nd Fenced (vegetative barrier or fence)	No	yes/no	-	yes/no	no		Failed	barriers very effective	4-60
erpretive & Warning signage								Should describe the pond's function and warn of water level fluctuations, thin ice	4-60
	-	yes/no	-	yes/no	yes		FALSE	and other specific hazards	4-00
otal SWM Pond Surface Area	1784		-		1.5		01/	Measured at top of berm Check for retrofit feasibility - pond expansion not feasible if ratio <1.5	
ond Block Area / Pond Area (top surface) ratio verall Pond Length	7.5	PBA/PA m	-	PBA/PA m	1.5		ок	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5 Measured at PP level or through mid section of the pond	
verall Pond Width	19.4	m	-	m					
ength / Width Ratio	2.9	l/w	-	l/w	3		Failed	Preferred is 4:1 to 5:1	4-59
verage Permanent Pool depth	0.76	m	-	m	1	2	Failed	Average permanent pool depth should be between 1 - 2 m	4-60
ax Depth Permanent Pool	1.04	m	-	m 3 // -	1	3	OK	Maximum permanent pool depth should be less than 3 m	4-60
ermanent Pool Volume Unit xisting Permanent Pool Volume	38 227	m³/ha m³	63 353	m³/ha m³	819		Failed	As per Table 3.2 (MOE) Compare Unit rate volume to actual design	3-10 3-10
•		•••			013		i ancu	· -	
epth of Extended Detention Storage	0.4	m	-	m		1.5	ОК	Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-60
								Actual volume must equal or exceed the design volume / Design extended	4.52;
kisting Extended Detention Storage		2						detention storage (Table 3.2) should exceed 40 m ³ /ha or 24 hr 25 mm Chicago	3-10
	393	m ³	818	m ³	238		OK	storm runoff volume (~ 40m3/ha used as a minimum criteria)	
xtended Detention Storage Drawdown Time ctive Storage Depth (total storage @ spillway Elev.)	NA 1.6	hours	-	hours	24	48 2	Failed OK	Based on Equation 4.11 Total active storage including quantity control	4-58 4-60
aximum Grade at Permanent Pool	6.9	m :1 (h/v)	-	m :1 (h/v)	5	7	OK	Minimum slope at the permanent pool should be 5:1 - 7:1 preferred maximum	4-61
aximum Pond Side Slopes	6.9	:1 (h/v)	-	:1 (h/v)	· ·	3	ок	Maximum pond side slopes 3:1 or flatter	4-61
art 3b: Pond Design Parameters - Forebay									
tal Forebay Surface Area	-	m²	-	m²		594.54	Failed	Forebay area should be less than 1/3 of pond surface area	4-56
prebay provided at each inlet	no	yes/no	no	yes/no		_		If multiple inlets	4-56
ax Depth of Forebay: F1 F2		m m	-	m m	1	3		Minimum forebay depth is 1 m Minimum forebay depth is 1 m	4-55
rovided Length to Width Ratio: F1	-	l/w	-	l/w	2	J J		Minimum forebay depth is 1 m Minimum forebay length to width ratio is 2:1 if single inlet	
F2	-	l/w	-	l/w	2				
ubmerged Forebay Berm: F1	-	yes/no	-	yes/no	yes			Submerged preferred for safety reasons	4-58
F2	-	yes/no	-	yes/no	yes			Submerged preferred for safety reasons	4-58
Int 3c: Pond Design Parameters - Inlet mber of pond inlets	1	1	-	1		1 1	ок		4-62
t1	•	1		J			UK		4-02
et Pipe Diameter_1	900	mm	-	mm	450		ОК	Minimum inlet pipe diameter of 450mm	4-9
et Pipe Slope_1	3.49	%	-	%	1		ок	Inlet pipe slope preferred > 1%	4-9
et Pipe Length_1	8.89	m	-	m voo/no			01/	A submarrand inlat is not professed	4 00
bmerged Inlet_1 bmerged Pipe Grade 1	No -	yes/no %	-	yes/no %	no 1		ок ок	A submerged inlet is not preferred Submerged pipe slope should be a minimum of 1 %	4-63 4-63
ergy dissipation provided to prevent scour_1	yes	yes/no	-	yes/no	yes		OK	Only portions of forebay required to be hardened	4-63
posed Pilot Channel_1	No	yes/no	-	yes/no		0	Failed	An exposed pilot channel is not preferred	4-62
et Headwalls and Wingwalls_1	No	yes/no	-	yes/no	yes		Failed	Biotechnical structures highly preferred	4-65
et Area Depth_1	0.8	m	-	m	1.0	3.0	Failed	Depth at the inlet pipe should be a minimum of 1 m (Plunge pool)	4-65
art 3d: Pond Design Parameters - Outlet utlet located in embankment	Yes	yes/no	-	yes/no	yes		ок	Outlet structure should be located in embankment for maintenance purposes	4-65
ottom Draw Outlet	No	yes/no	-	yes/no	yes		Failed	Recommended in conjunction with deeper outlet area (2-3 m): temp. mitigation	4-11
utlet Pipe Diameter	300	mm	-	mm	450		Failed	Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)	4-9
utlet Pipe Slope	6.53	%	-	%	1		ок	Outlet pipe slope preferred > 1% (Cold climate min. requirement)	4-9
everse Sloped Pipe Diameter, if provided	300	m m			150		ок	Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse slope pipe should have a minimum diameter of 150 mm	4-66; 69
ifice Diameter	- 300	mm mm	-	mm mm	150 75	100	OK OK	Siope pipe should have a minimum diameter of 150 mm Smallest acceptable diameter is 75 mm	ь9 4-58
		1		1				Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser orifice	4-67
erforated Riser Orifice Plate Dia., if riser pipe used	-	mm	-	mm	50		ок	plate diameter should be greater than 50 mm in diameter	
sign Modifications for Cold Climates: alpha	15	-		ł				Coefficient of ice growth	4-8
Df	753.3							Sum of freezing degree-days - Based on MSC Canadian Climate Normals 1971- 2000 - City of Barrie	4-8
h	412	mm		mm	MOE Equ	ation 4 1		Ice thickness	4-8
Submerged outlet depth	0.25	m		m	0.56	4.1	Failed	Submerged outlets obvert to be set 150 mm lower than ice cover	4-0
art 3e: Pond Design Parameters - Major Flow	Outlet								
p of Berm Elevation	239.7	m	-	m				Data input	
op of Emergency Spillway Elevation	239.7	m	-	m	0.000		F actor	Data input	
ovided Freeboard (@ spill elev.)	0	m	-	m	0.300		Failed	Minimum freeboard above maximum design water level should be 0.3 m	4-60
	9.4	m ³ /year	-	m ³ /year					6-14
art 4: Sediment				m ³					014
	238.6	m³	-						
art 4: Sediment Innual sediment loading stimated sediment volume	238.6 0	yrs	Not defined	yrs			Failed		
art 4: Sediment	238.6				141		Failed Failed	Target efficiency required storage	

					Part 1: Ge	eneral Info	ormation		
Wet Pond Criteria Check							Pond Name	Orsi/Bayshore Estates	
As per Stormwater Management Planning and Design	Manual (March	2003)	Inni	stil		Munici	pal Pond ID	7-8	
						LSR	CA Pond ID	I-S67	
STORMWATER MANAGEMENT MASTER	PLAN - PAR	Т1			c	Certificate	of Approval:	4163-4P6GPY	
By: Hatch Mott						F	acility Type	Wet pond	
By: Hatch Mott MacDonald					ļ	Facil	lity Function	Water quality and quantity control	
Municipal Address:	GIS Coordinate	s:	Year:				Watershed	Innisfil Creeks	
W of 1097, Anna Maria Ave., 023-015-57	Latitude:	44°18'5" N	Constructed:	1999		Recei	iving Waters	Banks Creek (Ck #5)	
	Longitude:	79 <i>°</i> 33'8'' W	Retrofitted:	0		Re	eceiver Type	·	
	Assessment		Design Value (CofA and/or Design		Min.	Max.	Criteria	Notes	MOE
Checklist Part 2: Catchment Information	Value	Units	Report)	Units	Design	Design	Check		Page
Part 2: Catchment Information						1		Minimum drainage area should be 5 ha to sustain wet pond, preferred drainage	4.50
Contributing Drainage Area	32.50	ha	45	ha	5.0		ок	area is >10 ha	4-52
Catchment Predominate Landuse Catchment Imperviousness %	- 11	%	-	%				Describe % / Is curb & gutter or ditch system pre-dominant	
Fisheries Protection Level	Enhanced	Level	Enhanced	Level	Enhanced		ок	All streams within NVCA and LSRCA require Enhanced Protection (Level 1)	
Part 3a: Pond Design Parameters - Main Pond		1	[1		Standards for fencing vary from municipality to municipality, thorny vegetative	
Pond Fenced (vegetative barrier or fence)	Yes	yes/no	-	yes/no	no		ок	barriers very effective	4-60
Interpretive & Warning signage	_	yes/no	_	yes/no	yes		FALSE	Should describe the pond's function and warn of water level fluctuations, thin ice and other specific hazards	4-60
Total SWM Pond Surface Area	12242	m ²	-	m ²				Measured at top of berm	
Pond Block Area / Pond Area (top surface) ratio Overall Pond Length	3.3 136.14	PBA/PA	-	PBA/PA	1.5		ок	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5 Measured at PP level or through mid section of the pond	
Overall Pond Length Overall Pond Width	31.46	m m	-	m m				measured at the rever of through this section of the polici	
Length / Width Ratio	4.3	l/w	-	l/w	3		ОК	Preferred is 4:1 to 5:1 Average permanent pool depth should be between 1 - 2 m	4-59
Average Permanent Pool depth Max Depth Permanent Pool	1.25 1.40	m m	-	m m	1 1	2 3	ОК ОК	Average permanent pool depth should be between 1 - 2 m Maximum permanent pool depth should be less than 3 m	4-60 4-60
Permanent Pool Volume Unit	68	m ³ /ha	-	m ³ /ha				As per Table 3.2 (MOE)	3-10
Existing Permanent Pool Volume	2219	m³	6800	m³	1021		ОК	Compare Unit rate volume to actual design	3-10
Depth of Extended Detention Storage	0.56	m	-	m		1.5	ок	Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-60
Eviation Evitended Detertion Otorean								Actual volume must equal or exceed the design volume / Design extended	4.52;
Existing Extended Detention Storage	2794	m ³	_	m³	1,300		ок	detention storage (Table 3.2) should exceed 40 m ³ /ha or 24 hr 25 mm Chicago storm runoff volume (~ 40m3/ha used as a minimum criteria)	3-10
Extended Detention Storage Drawdown Time	NA	hours	-	hours	24	48	Failed	Based on Equation 4.11	4-58
Active Storage Depth (total storage @ spillway Elev.) Maximum Grade at Permanent Pool	1.6 5	m :1 (h/v)	-	m	5	2 7	ОК ОК	Total active storage including quantity control Minimum slope at the permanent pool should be 5:1 - 7:1 preferred maximum	4-60 4-61
Maximum Pond Side Slopes	2.6	:1 (h/v) :1 (h/v)	-	:1 (h/v) :1 (h/v)	5	3	Failed	Maximum slope at the permanent pool should be 5.1 - 7.1 preferred maximum Maximum pond side slopes 3:1 or flatter	4-61
Part 3b: Pond Design Parameters - Forebay		m²	[m²		4080.59	E. S. A.	Fourthern and a loss than 1/0 of an ad an food and	4-56
Total Forebay Surface Area Forebay provided at each inlet	no	yes/no	-	yes/no		4060.59	Failed	Forebay area should be less than 1/3 of pond surface area If multiple inlets	4-56
Max Depth of Forebay: F1	-	m	-	m	1	3		Minimum forebay depth is 1 m	4-55
F2 Provided Length to Width Ratio: F1	-	m I/w	-	m I/w	1 2	3		Minimum forebay depth is 1 m Minimum forebay length to width ratio is 2:1 if single inlet	
F2	-	l/w	-	l/w	2				
Submerged Forebay Berm: F1 F2		yes/no yes/no	-	yes/no yes/no	yes yes			Submerged preferred for safety reasons Submerged preferred for safety reasons	4-58 4-58
Part 3c: Pond Design Parameters - Inlet			- T	,	,				
Number of pond inlets Inlet 1	2		-			1		More than one inlet may require increases in effective storage volumes	4-62
Inlet Pipe Diameter_1	1350	mm	-	mm	450		ОК	Minimum inlet pipe diameter of 450mm	4-9
Inlet Pipe Slope_1 Inlet Pipe Length 1	0.6 24.0	% m		% m	1		Failed	Inlet pipe slope preferred > 1%	4-9
Submerged Inlet_1	-	yes/no	-	yes/no	no		FALSE	A submerged inlet is not preferred	4-63
Submerged Pipe Grade_1 Energy dissipation provided to prevent scour_1	- No	% yes/no	-	% yes/no	1 yes		OK Failed	Submerged pipe slope should be a minimum of 1 % Only portions of forebay required to be hardened	4-63 4-63
Exposed Pilot Channel_1	No	yes/no	-	yes/no	yes	0	Failed	An exposed pilot channel is not preferred	4-62
Inlet Headwalls and Wingwalls_1	Yes	yes/no	-	yes/no	yes	3.0	OK	Biotechnical structures highly preferred	4-65 4-65
Inlet Area Depth_1 Inlet 2	-	m	-	m	1.0	3.0	Failed	Depth at the inlet pipe should be a minimum of 1 m (Plunge pool)	4-65
Inlet Pipe Diameter_2	Swale	mm	-	mm	450		ОК	Minimum inlet pipe diameter of 450mm	4-81
Inlet Pipe Slope_2 Inlet Pipe Length 2	-	% m	-	% m	1		ок	Inlet pipe slope preferred > 1%	4-81
Submerged Inlet_2	No	yes/no	-	yes/no	no			A submerged inlet is not preferred	4-81
Submerged Pipe Grade_2 Energy dissipation provided to prevent scour 2	- No	% yes/no	-	% ves/no	1 yes		OK Failed	Submerged pipe slope should be a minimum of 1 % Only portions of forebay required to be hardened	4-81 4-81
Exposed Pilot Channel_2	No	yes/no	-	yes/no		0	Failed	An exposed pilot channel is not preferred	
Inlet Headwalls and Wingwalls_2 Part 3d: Pond Design Parameters - Outlet	No	yes/no	-	yes/no	yes	1	Failed	Biotechnical structures highly preferred	4-81
Outlet located in embankment	Yes	yes/no	-	yes/no	yes		ок	Outlet structure should be located in embankment for maintenance purposes	4-65
Bottom Draw Outlet Outlet Pipe Diameter	Yes 250	yes/no	- 250	yes/no	yes 450		OK	Recommended in conjunction with deeper outlet area (2-3 m): temp. mitigation Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)	4-11 4-9
Outlet Pipe Diameter Outlet Pipe Slope	4.5	mm %	- 250	mm %	450 1		Failed OK	Outlet pipe slope preferred > 1% (Cold climate min. requirement)	4-9 4-9
Reverse Sloped Pipe Diameter, if provided	300	m m		mm	150		OK	Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse	4-66; 4- 69
Orifice Diameter	- 300	mm mm	- 128	mm mm	150 75	100	ОК ОК	slope pipe should have a minimum diameter of 150 mm Smallest acceptable diameter is 75 mm	69 4-58
Perforated Riser Orifice Plate Dia., if riser pipe used								Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser orifice	
Design Modifications for Cold Climates: alpha	- 15	mm	200	mm	50		ок	plate diameter should be greater than 50 mm in diameter Coefficient of ice growth	4-8
Design meaneaterie for conclusion and aprila		1						Sum of freezing degree-days - Based on MSC Canadian Climate Normals 1971-	4-8
h	753.3 412	mm		mm	MOE Equ	ation 4.1		2000 - City of Barrie Ice thickness	4-8
Submerged outlet depth	-	m		m	562		ок	Submerged outlets obvert to be set 150 mm lower than ice cover	4-9
Part 3e: Pond Design Parameters - Major Flow Top of Berm Elevation	Outlet 230	m	200	m				Data input	
Top of Emergency Spillway Elevation	228.9	m	-	m				Data input	
Provided Freeboard (@ spill elev.) Part 4: Sediment	1.1	m	-	m	0.300		ок	Minimum freeboard above maximum design water level should be 0.3 m	4-60
Annual sediment loading	19.5	m ³ /year	Not defined	m ³ /year					6-14
Estimated sediment volume	3721.28	m ³	Not defined	m ³					
Number of years before Pond clean-out required Adjusted water quality storage	189 108	yrs m³/ha	Not defined -	yrs	63.6		ок	Target efficiency required storage	
Treatment Level	1		Not defined					· · · · ·	
END OF CHECKLIST									

				Part 1: General Information					
Wet Pond Criteria Check					i art i. Ge		Pond Name	Crossroads	1
As per Stormwater Management Planning and Design	Manual (March	2003)	Innis	sfil		Munici	pal Pond ID	8-3	
					Ļ	LSR	CA Pond ID	•	
STORMWATER MANAGEMENT MASTER	PLAN - PAR	Γ1			(of Approval:	8844-7PZJAS	-
By: Hatch Mott MacDonald							acility Type	Wet pond Water quality and quantity control	-
Environmental Engineera & Scientists	GIS Coordinate		Year:		ł	Faci	ity Function Watershed	Innisfil Creeks	-
Municipal Address: 2163 Jans Blvd, 23-184-00	Latitude:	s. 44 °18'53 N	Constructed:	1991		Becei	ving Waters	Leonard's Ck (Ck #3) & Bon Secuors Creek (Ck #4)	
	Longitude:	79°33'30'' W	Retrofitted:	-			ceiver Type	-	
	Assessment		Design Value (CofA and/or Design		Min.	Max.	Criteria	Notes	MOE Page
Checklist Part 2: Catchment Information	Value	Units	Report)	Units	Design	Design	Check		rage
	00.54	h.,	24.05		5.0		011	Minimum drainage area should be 5 ha to sustain wet pond, preferred drainage area is >10 ha	4-52
Contributing Drainage Area Catchment Predominate Landuse	20.54	ha	34.05	ha	5.0		ок	Describe % / Is curb & gutter or ditch system pre-dominant	
Catchment Imperviousness % Fisheries Protection Level	49.25 Enhanced	% Level	- Enhanced	% Level	Enhanced		ок	All streams within NVCA and LSRCA require Enhanced Protection (Level 1)	
Part 3a: Pond Design Parameters - Main Pond		2010.		2010.		1			
Pond Fenced (vegetative barrier or fence)	Yes	yes/no	-	yes/no	no		ок	Standards for fencing vary from municipality to municipality, thorny vegetative barriers very effective	4-60
Interpretive & Warning signage								Should describe the pond's function and warn of water level fluctuations, thin ice	4-60
Total SWM Pond Surface Area	- 6651	yes/no m ²	-	yes/no m ²	yes		FALSE	and other specific hazards Measured at top of berm	
Pond Block Area / Pond Area (top surface) ratio Overall Pond Length	4.1 40	PBA/PA	-	PBA/PA	1.5		ок	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5 Measured at PP level or through mid section of the pond	
Overall Pond Length Overall Pond Width	40 50	m m	-	m m				weasured at PP level of through this section of the pond	
Length / Width Ratio Average Permanent Pool depth	0.8	l/w m	-	l/w m	3 1	2	Failed OK	Preferred is 4:1 to 5:1 Average permanent pool depth should be between 1 - 2 m	4-59 4-60
Max Depth Permanent Pool	2.13	m	-	m	1	3	ОК	Maximum permanent pool depth should be less than 3 m	4-60
Permanent Pool Volume Unit Existing Permanent Pool Volume	181 3708	m³/ha m³	- 3303	m ³ /ha m ³	2773		ок	As per Table 3.2 (MOE) Compare Unit rate volume to actual design	3-10 3-10
Depth of Extended Detention Storage	0.04	 m				1.5	ок	Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-60
	0.04	т	-	m		1.5	UK	Actual volume must equal or exceed the design volume / Design extended	
Existing Extended Detention Storage		3		э				detention storage (Table 3.2) should exceed 40 m ³ /ha or 24 hr 25 mm Chicago	4.52; 3-10
Extended Detention Storage Drawdown Time	342 NA	m ³ hours	2622	m ³ hours	822 24	48	Failed Failed	storm runoff volume (~ 40m3/ha used as a minimum criteria) Based on Equation 4.11	4-58
Active Storage Depth (total storage @ spillway Elev.)	2.2	m	-	m		2	Failed	Total active storage including quantity control	4-60
Maximum Grade at Permanent Pool Maximum Pond Side Slopes	6.7 6.7	:1 (h/v) :1 (h/v)	7:1	:1 (h/v) :1 (h/v)	5	7	OK OK	Minimum slope at the permanent pool should be 5:1 - 7:1 preferred maximum Maximum pond side slopes 3:1 or flatter	4-61 4-61
Part 3b: Pond Design Parameters - Forebay Total Forebay Surface Area	-	m ²	-	m ²		2217.00	Failed	Forebay area should be less than 1/3 of pond surface area	4-56
Forebay provided at each inlet	- no	yes/no	- yes	yes/no			Falled	If multiple inlets	4-56
Max Depth of Forebay: F1 F2	-	m m	-	m m	1	3		Minimum forebay depth is 1 m Minimum forebay depth is 1 m	4-55
Provided Length to Width Ratio: F1	-	l/w	-	l/w	2			Minimum forebay length to width ratio is 2:1 if single inlet	
F2 Submerged Forebay Berm: F1	-	l/w yes/no	- yes	l/w yes/no	2 yes			Submerged preferred for safety reasons	4-58
F2 Part 3c: Pond Design Parameters - Inlet	-	yes/no	yes	yes/no	yes			Submerged preferred for safety reasons	4-58
Number of pond inlets	3		2			1		More than one inlet may require increases in effective storage volumes	4-62
Inlet 1 Inlet Pipe Diameter 1	1350	mm	(WQual), 1350 (Wq	mm	450	1	ОК	Minimum inlet pipe diameter of 450mm	4-9
Inlet Pipe Slope_1	1.5	%	-	%	1		ок	Inlet pipe slope preferred > 1%	4-9
Inlet Pipe Length_1 Submerged Inlet_1	14.4 No	m yes/no	-	m yes/no	no		ок	A submerged inlet is not preferred	4-63
Submerged Pipe Grade_1	-	%	-	%	1		ОК	Submerged pipe slope should be a minimum of 1 %	4-63 4-63
Energy dissipation provided to prevent scour_1 Exposed Pilot Channel_1	Yes No	yes/no yes/no	yes -	yes/no yes/no	yes	0	OK Failed	Only portions of forebay required to be hardened An exposed pilot channel is not preferred	4-62
Inlet Headwalls and Wingwalls_1 Inlet Area Depth 1	Yes -	yes/no m	yes -	yes/no m	yes 1.0	3.0	OK Failed	Biotechnical structures highly preferred Depth at the inlet pipe should be a minimum of 1 m (Plunge pool)	4-65 4-65
Inlet 2									
Inlet Pipe Diameter_2 Inlet Pipe Slope 2	300 1.84	mm %	-	mm %	450 1		Failed OK	Minimum inlet pipe diameter of 450mm Inlet pipe slope preferred > 1%	4-81 4-81
Inlet Pipe Length_2	21.1	m	-	m					4-81
Submerged Inlet_2 Submerged Pipe Grade_2	No -	yes/no %	-	yes/no %	no 1		ок	A submerged inlet is not preferred Submerged pipe slope should be a minimum of 1 %	4-81
Energy dissipation provided to prevent scour_2 Exposed Pilot Channel_2	No No	yes/no yes/no	-	yes/no yes/no	yes	0	Failed Failed	Only portions of forebay required to be hardened An exposed pilot channel is not preferred	4-81
Inlet Headwalls and Wingwalls_2	Yes	yes/no	-	yes/no	yes	Ŭ	OK	Biotechnical structures highly preferred	4-81
Inlet 3 Inlet Pipe Diameter 3	0	mm	-	mm	450	1	Failed	Minimum inlet pipe diameter of 450mm	4-81
Inlet Pipe Slope_3	0.00	%	-	%	1		Failed	Inlet pipe slope preferred > 1%	4-81
Inlet Pipe Length_3 Submerged Inlet_3	0.0	m yes/no	-	m yes/no	no			A submerged inlet is not preferred	4-81
Submerged Pipe Grade_3 Energy dissipation provided to prevent scour_3	0	% yes/no	-	% yes/no	1 yes		Failed FALSE	Submerged pipe slope should be a minimum of 1 % Only portions of forebay required to be hardened	4-81 4-81
Exposed Pilot Channel_3	0	yes/no	-	yes/no	yes	0	FALSE	An exposed pilot channel is not preferred	
Inlet Headwalls and Wingwalls_3 Part 3d: Pond Design Parameters - Outlet	0	yes/no	-	yes/no	yes		FALSE	Biotechnical structures highly preferred	4-81
Outlet located in embankment	Yes	yes/no	-	yes/no	yes		ОК	Outlet structure should be located in embankment for maintenance purposes	4-65
Bottom Draw Outlet Outlet Pipe Diameter	No 600	yes/no mm	- 0 (minor), 600 (maj	yes/no mm	yes 450		Failed OK	Recommended in conjunction with deeper outlet area (2-3 m): temp. mitigation Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)	4-11 4-9
Outlet Pipe Slope	1.0	%	-	%	1		Failed	Outlet pipe slope preferred > 1% (Cold climate min. requirement) Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse	4-9 4-66; 4-
Reverse Sloped Pipe Diameter, if provided	-	mm	300	mm	150		ок	slope pipe should have a minimum diameter of 150 mm	69
Orifice Diameter	-	mm	0 (minor), 200 (maj	mm	75	100	ок	Smallest acceptable diameter is 75 mm Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser orifice	4-58
Perforated Riser Orifice Plate Dia., if riser pipe used	-	mm	-	mm	50		ок	plate diameter should be greater than 50 mm in diameter	4-67
Design Modifications for Cold Climates: alpha	15							Coefficient of ice growth Sum of freezing degree-days - Based on MSC Canadian Climate Normals 1971-	4-8
Df h	753.3 412	m		m	MOE Equ	ation 4.1		2000 - City of Barrie Ice thickness	4-8 4-8
Submerged outlet depth	-	mm m		mm m	562	4.1	ок	Submerged outlets obvert to be set 150 mm lower than ice cover	4-8 4-9
Part 3e: Pond Design Parameters - Major Flow Top of Berm Elevation	Outlet 240.3	m	-	m				Data input	
Top of Emergency Spillway Elevation	240.1	m	-	m	0.000			Data input	
Provided Freeboard (@ spill elev.) Part 4: Sediment	0	m	-	m	0.300		Failed	Minimum freeboard above maximum design water level should be 0.3 m	4-60
Annual sediment loading	31.3	m ³ /year m ³	Not defined Not defined	m ³ /year m ³					6-14
Estimated sediment volume Number of years before Pond clean-out required	454.26 47	yrs	Not defined Not defined	m² yrs					
Adjusted water quality storage Treatment Level	221 1	m ³ /ha	- Not defined		140		ОК	Target efficiency required storage	
END OF CHECKLIST		ĺ.	Not delined			1			

					Part 1: Ge	eneral Info	rmation		
Wet Pond Criteria Check				>	i art i. de			Crossroads #2	
			Inni	5:1			Pond Name		
As per Stormwater Management Planning and Design	Manual (March	2003)		SIII		Munici	oal Pond ID	8-4	
					ļ	LSR	CA Pond ID	I-N2	
STORMWATER MANAGEMENT MASTER	PLAN - PAR	Τ1			(Certificate o	of Approval:	3-0825-91-006	
By: Hatch Mott						F	acility Type	Wet pond	
Hatch Mott MacDonald							ity Function	Water quality and quantity control	
	aia a				ł	1 acri	•	Innisfil Creeks	
•	GIS Coordinate		Year:				Watershed		
1041 Corrie St, 23-176-00	Latitude:	44°19'5" N	Constructed:	1993	-	Recei	ving Waters	Leonard's Ck (Ck #3)	
	Longitude:	79°33'23'' W	Retrofitted:	0		Re	ceiver Type	0	
	•		Design Value (CofA		Min.	Max.	Criteria	N .	MOE
Checklist	Assessment Value	Units	and/or Design Report)	Units	Design	Design	Check	Notes	Page
art 2: Catchment Information	14.40	•	noporty	onito	Deorgin	Design	oncon		
								Minimum drainage area should be 5 ha to sustain wet pond, preferred drainage	4-52
ontributing Drainage Area	19.87	ha	10.2	ha	5.0		ок	area is >10 ha	4-52
atchment Predominate Landuse atchment Imperviousness %	47.5	%	-	%				Describe % / Is curb & gutter or ditch system pre-dominant	
sheries Protection Level	Enhanced	Level	Enhanced	Level	Enhanced		ок	All streams within NVCA and LSRCA require Enhanced Protection (Level 1)	
art 3a: Pond Design Parameters - Main Pond	-		-	_					
nd Fenced (vegetative barrier or fence)								Standards for fencing vary from municipality to municipality, thorny vegetative	4-60
	Yes	yes/no	-	yes/no	no		ок	barriers very effective Should describe the pend's function and warp of water level fluctuations, this iso	
terpretive & Warning signage	_	yes/no	-	yes/no	yes		FALSE	Should describe the pond's function and warn of water level fluctuations, thin ice and other specific hazards	4-60
otal SWM Pond Surface Area	7513	m ²	-	m ²	,00			Measured at top of berm	
ond Block Area / Pond Area (top surface) ratio	5	PBA/PA	-	PBA/PA	1.5		ок	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5	
verall Pond Length	187.08	m	-	m				Measured at PP level or through mid section of the pond	
verall Pond Width	100.76	m I/w	-	m I/w	3		Failed	Proferrad is 1:1 to 5:1	4-59
ength / Width Ratio verage Permanent Pool depth	1.9 0.89	n/w	-	n/w m	3 1	2	Failed Failed	Preferred is 4:1 to 5:1 Average permanent pool depth should be between 1 - 2 m	4-59 4-60
ax Depth Permanent Pool	1.11	m	-	m	1	3	OK	Maximum permanent pool depth should be less than 3 m	4-60
ermanent Pool Volume Unit	73	m³/ha	-	m³/ha				As per Table 3.2 (MOE)	3-10
kisting Permanent Pool Volume	1450	m ³	-	m³	2633		Failed	Compare Unit rate volume to actual design	3-10
epth of Extended Detention Storage	0.11	-				1.5	ок	Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-60
	0.11	m	-	m		1.5	UK	Actual volume must equal or exceed the design volume / Design extended	
kisting Extended Detention Storage								detention storage (Table 3.2) should exceed 40 m ³ /ha or 24 hr 25 mm Chicago	4.52;
	422	m ³	1275	m ³	795		Failed	storm runoff volume (~ 40m3/ha used as a minimum criteria)	3-10
tended Detention Storage Drawdown Time	NA	hours	-	hours	24	48	Failed	Based on Equation 4.11	4-58
ctive Storage Depth (total storage @ spillway Elev.)	1.4	m	-	m		2	ОК	Total active storage including quantity control	4-60
aximum Grade at Permanent Pool	5.4	:1 (h/v)	-	:1 (h/v)	5	7	ОК	Minimum slope at the permanent pool should be 5:1 - 7:1 preferred maximum	4-61
aximum Pond Side Slopes art 3b: Pond Design Parameters - Forebay	3.3	:1 (h/v)	-	:1 (h/v)		3	OK	Maximum pond side slopes 3:1 or flatter	4-61
tal Forebay Surface Area	-	m ²	-	m ²		2504.29	Failed	Forebay area should be less than 1/3 of pond surface area	4-56
prebay provided at each inlet	Yes	yes/no	-	yes/no				If multiple inlets	4-56
ax Depth of Forebay: F1	1.11	m	-	m	1	3	ОК	Minimum forebay depth is 1 m	4-55
F2	-	m	-	m	1	3		Minimum forebay depth is 1 m	
rovided Length to Width Ratio: F1 F2	4.50	l/w l/w	-	l/w l/w	2 2		ОК	Minimum forebay length to width ratio is 2:1 if single inlet	
ubmerged Forebay Berm: F1	Yes	yes/no	-	yes/no	yes		ок	Submerged preferred for safety reasons	4-58
F2	-	yes/no	-	yes/no	yes			Submerged preferred for safety reasons	4-58
art 3c: Pond Design Parameters - Inlet			r						
mber of pond inlets	1		-			1	ОК		4-62
let 1 et Pipe Diameter 1	1000	mm	-	mm	450	1	ок	Minimum inlet pipe diameter of 450mm	4-9
et Pipe Slope_1	0.61	%	-	%	450		Failed	Inlet pipe slope preferred > 1%	4-9 4-9
let Pipe Length_1	57.2	m	-	m					
ubmerged Inlet_1	No	yes/no	-	yes/no	no		ОК	A submerged inlet is not preferred	4-63
ubmerged Pipe Grade_1	-	%	-	%	1		OK	Submerged pipe slope should be a minimum of 1 %	4-63
nergy dissipation provided to prevent scour_1 <pre>cposed Pilot Channel_1</pre>	Yes No	yes/no yes/no	-	yes/no yes/no	yes	no	ОК ОК	Only portions of forebay required to be hardened An exposed pilot channel is not preferred	4-63 4-62
et Headwalls and Wingwalls_1	Yes	yes/no	-	yes/no	yes		OK	Biotechnical structures highly preferred	4-65
et Area Depth_1	0.78	m	-	m	1.0	3.0	Failed	Depth at the inlet pipe should be a minimum of 1 m (Plunge pool)	4-65
art 3d: Pond Design Parameters - Outlet				1.		1			
utlet located in embankment httom Draw Outlet	Yes No	yes/no	-	yes/no	yes		OK Esiled	Outlet structure should be located in embankment for maintenance purposes Recommended in conjunction with deeper outlet area (2-3 m): temp. mitigation	4-65 4-11
utlet Pipe Diameter	850	yes/no mm	- 300	yes/no mm	yes 450		Failed OK	Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)	4-11
utlet Pipe Slope	1.71	%	-	%	430		OK	Outlet pipe slope preferred > 1% (Cold climate min. requirement)	4-9
everse Sloped Pipe Diameter, if provided]				Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse	4-66;4
	-	mm	-	mm	150		ок	slope pipe should have a minimum diameter of 150 mm	69
rifice Diameter	-	mm	130	mm	75	100	ОК	Smallest acceptable diameter is 75 mm Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser orifice	4-58
erforated Riser Orifice Plate Dia., if riser pipe used	_	mm	300	mm	50		ок	Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser orifice plate diameter should be greater than 50 mm in diameter	4-67
esign Modifications for Cold Climates: alpha	15			1				Coefficient of ice growth	4-8
Df								Sum of freezing degree-days - Based on MSC Canadian Climate Normals 1971-	4-8
	753.3				No			2000 - City of Barrie	
h Submerged outlet depth	412	mm		mm	MOE Equ	ation 4.1	OK	lce thickness Submerged outlets obvert to be set 150 mm lower than ice cover	4-8 4-9
Submerged outlet depth art 3e: Pond Design Parameters - Major Flow	- Outlet	m		m	562	1	OK	Coomerged outlets obven to be set 150 min tower (namice cover	4-9
p of Berm Elevation	237	m	300	m				Data input	
p of Emergency Spillway Elevation	237	m	-	m				Data input	
ovided Freeboard (@ spill elev.)	0.00	m	-	m	0.300		Failed	Minimum freeboard above maximum design water level should be 0.3 m	4-60
art 4: Sediment	00.1	m ³ /		m ³ /					6 1 4
nnual sediment loading stimated sediment volume	28.1 986.75	m³/year m³	-	m ³ /year m ³					6-14
umber of years before Forebay A clean-out required	300.75		-	1					
		1		1					
	0	yrs	-	yrs			Failed		
umber of years before Pond clean-out required jjusted water quality storage eatment Level	0 113 3	yrs m³/ha %		yrs	138		Failed Failed	Target efficiency required storage	

					Part 1: Ge	eneral Info	rmation		
Wet Pond Criteria Check							Pond Name	Crossroads #2	
As per Stormwater Management Planning and Design	Manual (March	2003)				Municia	al Pond ID	8-4	
							CA Pond ID	I-N2	
STORMWATER MANAGEMENT MASTER	PLAN - PAR	T 1			1,	Certificate o	of Approval:	3-0825-91-006	
							acility Type	Wet pond	
By: Hatch Mott MacDonald							ity Function	Water guality and guantity control	
			Veen		ł	racin		Innisfil Creeks	
Municipal Address: 1041 Corrie St. 23-176-00	GIS Coordinate	s: 44 °19'5" N	Year:	1993			Watershed	Leonard's Ck (Ck #3)	
1041 Come St, 23-176-00	Latitude:		Constructed:		-	Receiv	ving Waters		
	Longitude:	79°33'23" W	Retrofitted:	0		Re	ceiver Type	0	
	-								
Checklist	Assessment Value	Units	Design Value (CofA and/or Design Report)	Units	Min. Design	Max. Design	Criteria Check	Notes	MOE Page
Part 2: Catchment Information	14.40	•	nopony	onno	Dealgh	Design	oncon		
								Minimum drainage area should be 5 ha to sustain wet pond, preferred drainage	4-52
Contributing Drainage Area	19.87	ha	10.2	ha	5.0		ОК	area is >10 ha	4 02
Catchment Predominate Landuse Catchment Imperviousness %	- 47.5	%	-	%				Describe % / Is curb & gutter or ditch system pre-dominant	
Fisheries Protection Level	Enhanced	Level	Enhanced	Level	Enhanced		ок	All streams within NVCA and LSRCA require Enhanced Protection (Level 1)	
Part 3a: Pond Design Parameters - Main Pond									
Pond Fenced (vegetative barrier or fence)	Yes	yes/no		yes/no	no		ок	Standards for fencing vary from municipality to municipality, thorny vegetative barriers very effective	4-60
Interpretive & Warning signage	-	ves/no	-	ves/no	ves		FALSE	Should describe the pond's function and warn of water level fluctuations, thin ice and other specific hazards	4-60
Total SWM Pond Surface Area	7513	m ²	-	m ²	,			Measured at top of berm	
Pond Block Area / Pond Area (top surface) ratio	5	PBA/PA	-	PBA/PA	1.5		ОК	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5	
Overall Pond Length	187	m	-	m				Measured at PP level or through mid section of the pond	
Overall Pond Width	101	m	-	m			mana a	Preferred is 4:1 to 5:1	4.50
Length / Width Ratio Average Permanent Pool depth	1.9 0.89	l/w m	-	l/w m	3 1	2	Failed Failed	Preferred is 4:1 to 5:1 Average permanent pool depth should be between 1 - 2 m	4-59 4-60
Max Depth Permanent Pool	1.11	m		m	1	3	OK	Maximum permanent pool depth should be less than 3 m	4-60
Permanent Pool Volume Unit	73	m ³ /ha	-	m ³ /ha			UN	As per Table 3.2 (MOE)	3-10
Existing Permanent Pool Volume	1450	m ³	-	m ³	2633		Failed	Compare Unit rate volume to actual design	3-10

ERROR: OFFENDING COMMAND:

STACK:

					Part 1: Ge	neral Info	rmation		
Wat Dand Critaria Okasta				>	Fart 1: Ge			Ckiuwaan	1
Wet Pond Criteria Check			Inni	C:1			Pond Name	Skivereen	
As per Stormwater Management Planning and Design	Manual (March	2003)	Innis	STH		Munici	al Pond ID	8-5	
						LSR	CA Pond ID	I-N15	
STORMWATER MANAGEMENT MASTER		Т 1			1,	Cortificato (f Approval:	3-0257-99-006	
		• •						Wet pond	
By: Hatch Mott MacDonald							acility Type	•	-
Indecident and Assentation					ļ	Facil	ty Function	Water quality and quantity control	-
Iunicipal Address:	GIS Coordinate	s:	Year:				Watershed	Innisfil Creeks	
2324 Jack Cres, 030-196-00	Latitude:	44 °19'33" N	Constructed:	1999		Recei	ving Waters	Leonard's Ck (Ck #3)	
		79°32'39" W		0			-		
	Longitude:	10 02 00 11	Retrofitted:	v		Re	ceiver Type		
		1		1					
	Assessment		Design Value (CofA and/or Design		Min.	Max.	Criteria	Notes	MOE
Checklist	Value	Units	Report)	Units	Design	Design	Check		Page
art 2: Catchment Information	r	1		1		1		No.	
ontributing Drainage Area	11.92	ha	10.11	ha	5.0		ок	Minimum drainage area should be 5 ha to sustain wet pond, preferred drainage area is >10 ha	4-52
atchment Predominate Landuse	-	IIa	-	IIa	5.0		UK	Describe % / Is curb & gutter or ditch system pre-dominant	
atchment Imperviousness %	47.5	%	-	%				,	
sheries Protection Level	Enhanced	Level	Enhanced	Level	Enhanced		ОК	All streams within NVCA and LSRCA require Enhanced Protection (Level 1)	
rt 3a: Pond Design Parameters - Main Pond	·	1	r	1		1			
nd Fenced (vegetative barrier or fence)	Yes	yes/no		yes/no	20		ок	Standards for fencing vary from municipality to municipality, thorny vegetative barriers very effective	4-60
	Tes	yes/no	-	yes/no	no		UK	Should describe the pond's function and warn of water level fluctuations, thin ice	
erpretive & Warning signage	-	yes/no	-	yes/no	yes		FALSE	and other specific hazards	4-60
otal SWM Pond Surface Area	3998	m²	-	m ²				Measured at top of berm	
ond Block Area / Pond Area (top surface) ratio	23	PBA/PA	-	PBA/PA	1.5		ОК	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5	
verall Pond Length verall Pond Width	86.65 71.47	m		m				Measured at PP level or through mid section of the pond	
verall Pond Width ength / Width Ratio	1.2	m I/w	-	m I/w	3		Failed	Preferred is 4:1 to 5:1	4-59
verage Permanent Pool depth	2.42	m	-	m	1	2	Failed	Average permanent pool depth should be between 1 - 2 m	4-59
ax Depth Permanent Pool	2.37	m	-	m	1	3	ок	Maximum permanent pool depth should be less than 3 m	4-60
ermanent Pool Volume Unit	187	m³/ha	-	m³/ha				As per Table 3.2 (MOE)	3-10
isting Permanent Pool Volume	2226	m ³	-	m³	1579		ОК	Compare Unit rate volume to actual design	3-10
epth of Extended Detention Storage	0.45	m	_	m		1.5	ок	Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-60
	0.45		-			1.5	UK	Actual volume must equal or exceed the design volume / Design extended	
kisting Extended Detention Storage								detention storage (Table 3.2) should exceed 40 m ³ /ha or 24 hr 25 mm Chicago	4.52;
	1118	m³	1870	m³	477		ок	storm runoff volume (~ 40m3/ha used as a minimum criteria)	3-10
tended Detention Storage Drawdown Time	NA	hours	-	hours	24	48	Failed	Based on Equation 4.11	4-58
tive Storage Depth (total storage @ spillway Elev.)	1.0	m	-	m		2	ОК	Total active storage including quantity control	4-60
aximum Grade at Permanent Pool	3.7	:1 (h/v)	-	:1 (h/v)	5	7	Failed	Minimum slope at the permanent pool should be 5:1 - 7:1 preferred maximum	4-61
aximum Pond Side Slopes art 3b: Pond Design Parameters - Forebay	2.7	:1 (h/v)	-	:1 (h/v)		3	Failed	Maximum pond side slopes 3:1 or flatter	4-61
tal Forebay Surface Area	523	m ²	45	m ²		1332.78	ОК	Forebay area should be less than 1/3 of pond surface area	4-56
prebay provided at each inlet	Yes	yes/no	no	yes/no			•	If multiple inlets	4-56
ax Depth of Forebay: F1	1.62	m	2	m	1	3	ОК	Minimum forebay depth is 1 m	4-55
F2	-	m	-	m	1	3		Minimum forebay depth is 1 m	
rovided Length to Width Ratio: F1	1.06	l/w	5	l/w	2		Failed	Minimum forebay length to width ratio is 2:1 if single inlet	
ubmerged Forebay Berm: F1	Yes	l/w yes/no	- yes	l/w yes/no	2 yes		ок	Submerged preferred for safety reasons	4-58
F2	-	yes/no	yes	yes/no	yes		U.	Submerged preferred for safety reasons	4-58
art 3c: Pond Design Parameters - Inlet	·		-		,				
mber of pond inlets	1		1			1	ОК		4-62
et 1 et Bine Diemeter, 1	650		750		450	1	01/	Minimum inlet nine diameter of 450mm	4.0
et Pipe Diameter_1 et Pipe Slope 1	650 0.79	mm %	750	mm %	450 1		OK Failed	Minimum inlet pipe diameter of 450mm Inlet pipe slope preferred > 1%	4-9 4-9
let Pipe Length_1	16.5	m	-	m				e e companya da companya d	
ibmerged Inlet_1	-	yes/no	-	yes/no	no		FALSE	A submerged inlet is not preferred	4-63
ibmerged Pipe Grade_1		%	-	%	1		ОК	Submerged pipe slope should be a minimum of 1 %	4-63
nergy dissipation provided to prevent scour_1	No	yes/no	yes	yes/no	yes		Failed	Only portions of forebay required to be hardened An exposed pilot channel is not preferred	4-63
posed Pilot Channel_1 et Headwalls and Wingwalls 1	No Yes	yes/no yes/no	- yes	yes/no yes/no	yes	no	ОК ОК	An exposed pilot channel is not preferred Biotechnical structures highly preferred	4-62 4-65
et Area Depth_1	-	m	- yes	m	1.0	3.0	Failed	Depth at the inlet pipe should be a minimum of 1 m (Plunge pool)	4-65
art 3d: Pond Design Parameters - Outlet		-		_				, ,, ,,	
utlet located in embankment	Yes	yes/no	-	yes/no	yes		ок	Outlet structure should be located in embankment for maintenance purposes	4-65
ottom Draw Outlet	Yes	yes/no	-	yes/no	yes		OK	Recommended in conjunction with deeper outlet area (2-3 m): temp. mitigation	4-11
utlet Pipe Diameter utlet Pipe Slope	Ditch 8.6	mm %	500	mm %	450 1		ОК ОК	Minimum outlet pipe diameter of 450mm (Cold climate min. requirement) Outlet pipe slope preferred > 1% (Cold climate min. requirement)	4-9 4-9
	0.0	/0	-	/0			UK	Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse	4-9
everse Sloped Pipe Diameter, if provided	300	mm	300	mm	150		ок	slope pipe should have a minimum diameter of 150 mm	69
ifice Diameter	-	mm	125	mm	75	100	ок	Smallest acceptable diameter is 75 mm	4-58
erforated Riser Orifice Plate Dia., if riser pipe used								Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser orifice	4-67
	- 15	mm	-	mm	50		ОК	plate diameter should be greater than 50 mm in diameter Coefficient of ice growth	4-8
÷ ,	15	1						Sum of freezing degree-days - Based on MSC Canadian Climate Normals 1971-	
Df	753.3]						2000 - City of Barrie	4-8
h	412	mm		mm	MOE Equ	ation 4.1		Ice thickness	4-8
Submerged outlet depth		m		m	562		ок	Submerged outlets obvert to be set 150 mm lower than ice cover	4-9
art 3e: Pond Design Parameters - Major Flow				-				Data input	
p of Berm Elevation p of Emergency Spillway Elevation	225.15 225.15	m m	-	m m				Data input Data input	
ovided Freeboard (@ spill elev.)	0.00	m	-	m	0.300		Failed	Minimum freeboard above maximum design water level should be 0.3 m	4-60
art 4: Sediment	·		·					.	
nnual sediment loading	16.8	m ³ /year	-	m ³ /year					6-14
stimated sediment volume	274.28	m³	-	m³					
Imber of years before Forebay A clean-out required Imber of years before Pond clean-out required	79	Vite		VIC			ок		
limber of years before Pond clean-out required	227	yrs m³/ha	-	yrs	138		OK	Target efficiency required storage	
eatment Level	1	%	-	1					
ND OF CHECKLIST									-

Dry Bond Critoria Chool									
					Part 1: Ge			Alcona Woods	
Dry Pond Criteria Check	Manual /Manual	20021	Inni	fil			Pond Name		
As per Stormwater Management Planning and Design I	wanual (March .	2003)		2111			pal Pond ID	9-1	
						LSR	CA Pond ID	No Data	
STORMWATER MANAGEMENT MASTER I	PLAN - PAR	Τ1			(Certificate of	of Approval:	0.0	
By: Hatch Mott						F	acility Type	0.0	
Hatch Mott MacDonald							ity Function	0.0	
Aunicipal Address:	GIS Coordinate		Year:				Watershed	Innisfil Creeks	
698 Trinity St, 40-139-00		s: 44 °19'59'' N		1988					-
000 minty 00, 40-100-00	Latitude:		Constructed:			Recei	ving Waters		-
	Longitude:	79°32'20" W	Retrofitted:	0		Re	ceiver Type	-	
	Assessment		Design Value (CofA and/or Design		Min.	Max.	Criteria	Notes	MOE
Checklist	Value	Units	Report)	Units	Design	Design	Check	10100	Page
Part 2: Catchment Information									
Contribution Decisions Area	F 70	ha		h.a.	5.0		01/	Minimum drainage area should be 5 ha, preferred drainage area is >10 ha	4-80
Contributing Drainage Area Catchment Predominate Landuse	5.76	ha	-	ha	5.0		ок	Describe % / Is curb & gutter or ditch system pre-dominant	
Catchment Imperviousness %	45	%	-	%					
isheries Protection Level	Basic	Level	-	Level	Basic		Failed	Dry ponds cannot achieve higher than basic treatment	
Part 3a: Pond Design Parameters - Main Pond		1				1		Chandrada far far sins yn farm mysiais lite ta mysiais lite the mysiais alt	
Pond Fenced (vegetative barrier or fence)	Yes	yes/no	-	yes/no	no		ок	Standards for fencing vary from municipality to municipality, thorny vegetative barriers very effective	4-60
nterprotivo 8 Morning signago		<i>yee</i> /e		<i>yee</i> /e			•	Should describe the pond's function and warn of water level fluctuations, thin ice	4-60
nterpretive & Warning signage	-	yes/no	-	yes/no	yes		FALSE	and other specific hazards	4-00
otal SWM Pond Surface Area Pond Block Area / Pond Area (top surface) ratio	2700 3	m ² PBA/PA	-	m ² PBA/PA	1.5		ок	Measured at PP level or through mid section of the pond Check for retrofit feasibility - pond expansion not feasible if ratio <1.5	
Overall Pond Length	149.2	m n	-	m m	1.5		UK	Measured at top of berm	
Dverall Pond Width	9.4	m	-	m					
ength / Width Ratio	15.9	l/w	-	l/w	3		ОК	Preferred is 4:1 to 5:1	4-59
Depth of Extended Detention Storage	0	m	-	m		3	ок	Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-81
Tricking Friday day Determine Observe									0.10
Existing Extended Detention Storage		m ³	_	m ³	692		ок	Actual volume must equal or exceed the design volume	3-10
Extended Detention Storage Drawdown Time	NA	hours	-	hours	24		OK	Based on Equation 4.11	4-58
Active Storage Depth (total storage @ spillway Elev.)	0.90	m	-	m	1	3	ОК	Total active storage including quantity control	4-81
Maximum Pond Side Slopes	3.1	:1 (h/v)	-	:1 (h/v)	4		Failed	Maximum pond side slopes 4:1 or flatter	4-79
Part 3b: Pond Design Parameters - Forebay Total Forebay Surface Area		m ²	-	m²		900.12	Failed	Forebay area should be less than 1/3 of pond surface area	4-80
Forebay provided at each inlet	No	yes/no	-	yes/no		900.12	Falled	If multiple inlets	4-80
Max Depth of Forebay: F1	-	m	-	m	1	3		Minimum forebay depth is 1 m	4-80
F2	-	m	-	m	1	3		Minimum forebay depth is 1 m	4-80
Provided Length to Width Ratio: F1 F2		l/w l/w	-	l/w l/w	2 2			Minimum forebay length to width ratio is 2:1 if single inlet	4-80 4-80
Forebay Berm: F1		yes/no	-	yes/no	yes			Submerged preferred for safety reasons	4-80
F2	-	yes/no	-	yes/no	yes			Submerged preferred for safety reasons	4-80
Part 3c: Pond Design Parameters - Inlet									
Number of pond inlets nlet 1	1		-			1	ОК		4-81
nlet Pipe Diameter_1	600	mm	-	mm	450		ок	Minimum inlet pipe diameter of 450mm	4-81
nlet Pipe Slope_1	0.52	%	-	%	1		Failed	Inlet pipe slope preferred > 1%	4-81
nlet Pipe Length_1	7.64	m	-	m				A submarriad inlat is not preferred	
Submerged Inlet_1 Submerged Pipe Grade 1	No -	yes/no %	-	yes/no %	no 1		OK OK	A submerged inlet is not preferred Submerged pipe slope should be a minimum of 1 %	4-81 4-81
Energy dissipation provided to prevent scour_1	No	yes/no	-	yes/no	yes		Failed	Only portions of forebay required to be hardened	4-81
nlet Headwalls and Wingwalls_1	Yes	yes/no	-	yes/no	yes		ОК	Biotechnical structures highly preferred	4-81
Part 3d: Pond Design Parameters - Outlet Dutlet located in embankment	N.					1		Outlet structure should be leasted in anti-structure to maintenance	4.00
Dutlet located in embankment Dutlet Pipe Diameter	Yes 230	yes/no mm	-	yes/no mm	yes 450		OK Failed	Outlet structure should be located in embankment for maintenance purposes Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)	4-82 4-79
Dutlet Pipe Slope	1.11	%	-	%	1		OK	Outlet pipe slope preferred > 1% (Cold climate min. requirement)	4-79
Reverse Sloped Pipe Diameter, if provided								Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse	4-79, 4
		mm	-	mm	150 75	100	OK	slope pipe should have a minimum diameter of 150 mm Smallest acceptable diameter is 75 mm	83 4-82
Drifice Diameter Part 3e: Pond Design Parameters - Major Flow (- Outlet	mm	-	mm	15	100	ОК		4-82
op of Berm Elevation	220.1	m	-	m				Data input	
op of Emergency Spillway Elevation	220.1	m	-	m				Data input	
Provided Freeboard (@ spill elev.)	0.00	m	-	m	0.300	1	Failed	Minimum freeboard above maximum design water level should be 0.3 m	4-60
Part 4: Sediment Annual sediment loading	7	m ³ /year	Not defined	m ³ /year					6-14
Estimated sediment volume	-23.43	m ³	Not defined	m ³					5.1
Number of years before clean-out required	0	yrs	Not defined	yrs			Failed		
Adjusted water quality storage Treatment Level	0	m³/ha	Not define d		120				
	<3		Not defined	l		1			

			*		Dout 1. C	movel lat-	motion		
Dry Pond Criteria Chook				<hr/>	Part 1: Ge	eneral Info		Southview	
Dry Pond Criteria Check	Annual (same)	20021	Inni	fil			Pond Name		-
As per Stormwater Management Planning and Design N	vianuai (March	2003)		2111		Municip	pal Pond ID	9-2	_
						LSR	CA Pond ID	No Data	
STORMWATER MANAGEMENT MASTER F	PLAN - PAR	T1				Certificate o	of Approval:	•	
By:							acility Type	-	
By: Hatch Mott MacDonald									
Paraceural regimental regimental					1	Facili	ity Function	Lovers Creek	-
	GIS Coordinate		Year:				Watershed		-
7883 Yonge St, 36-028	Latitude:	44°19'21" N	Constructed:	1988		Receiv	ving Waters	Upper Lovers Creek	_
	Longitude:	79°36'57'' W	Retrofitted:	0		Re	ceiver Type	•	
			• •						
			Design Value (CofA		Min.	Max.	Criteria	Neter	MOE
Checklist	Assessment Value	Units	and/or Design Report)	Units	Design	Design	Check	Notes	Page
Part 2: Catchment Information					<u>.</u>	13			
								Minimum drainage area should be 5 ha, preferred drainage area is >10 ha	4-80
Contributing Drainage Area	28.03	ha	-	ha	5.0		ок		4 00
Catchment Predominate Landuse	42.5	%	-	%				Describe % / Is curb & gutter or ditch system pre-dominant	
Fisheries Protection Level	Basic	Level	-	Level	Basic		Failed	Dry ponds cannot achieve higher than basic treatment	
Part 3a: Pond Design Parameters - Main Pond				,					
Pond Fenced (vegetative barrier or fence)	Ver	1000/000		voc/			C 14	Standards for fencing vary from municipality to municipality, thorny vegetative	4-60
	Yes	yes/no	-	yes/no	no		ок	barriers very effective Should describe the pond's function and warn of water level fluctuations, thin ice	
Interpretive & Warning signage	-	yes/no	-	yes/no	yes		FALSE	and other specific hazards	4-60
Total SWM Pond Surface Area	21300	m ²	-	m ²				Measured at PP level or through mid section of the pond	
Pond Block Area / Pond Area (top surface) ratio	1 182	PBA/PA	-	PBA/PA	1.5		Failed	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5	
Overall Pond Length Overall Pond Width	182	m m	-	m m				Measured at top of berm	
Length / Width Ratio	1.1	l/w	-	l/w	3		Failed	Preferred is 4:1 to 5:1	4-59
Depth of Extended Detention Storage								Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-81
-	-0.39	m	-	m		3	ок		
Existing Extended Detention Storage									3-10
Existing Extended Detention Storage	1244	m ³	_	m ³	3196		Failed	Actual volume must equal or exceed the design volume	3-10
Extended Detention Storage Drawdown Time	#DIV/0!	hours	-	hours	24		#DIV/0!	Based on Equation 4.11	4-58
Active Storage Depth (total storage @ spillway Elev.)	1.20	m	-	m	1	3	ОК	Total active storage including quantity control	4-81
Maximum Pond Side Slopes	3.7	:1 (h/v)	-	:1 (h/v)	4		Failed	Maximum pond side slopes 4:1 or flatter	4-79
Part 3b: Pond Design Parameters - Forebay Total Forebay Surface Area	_	m²	-	m²		7100.16	Failed	Forebay area should be less than 1/3 of pond surface area	4-80
Forebay provided at each inlet	No	yes/no	-	yes/no		/100.10	i alleu	If multiple inlets	4-80 4-80
Max Depth of Forebay: F1	-	m	-	m	1	3	Failed	Minimum forebay depth is 1 m	4-80
F2 F2 F2 F2 F2 F1	-	m	-	m	1	3	Failed	Minimum forebay depth is 1 m Minimum forebay longth to width ratio is 2:1 if single inlat	4-80
Provided Length to Width Ratio: F1 F2	<u> </u>	l/w l/w	-	l/w l/w	2 2		OK OK	Minimum forebay length to width ratio is 2:1 if single inlet	4-80 4-80
Forebay Berm: F1	-	yes/no	-	yes/no	yes		FALSE	Submerged preferred for safety reasons	4-80
F2	-	yes/no	-	yes/no	yes		FALSE	Submerged preferred for safety reasons	4-80
Part 3c: Pond Design Parameters - Inlet		1	-	1				Mana the and in later way way in increases in effective stars and when	4.01
Number of pond inlets		1	-	I		1		More than one inlet may require increases in effective storage volumes	4-81
Inlet Pipe Diameter_1	675	mm	-	mm	450		ок	Minimum inlet pipe diameter of 450mm	4-81
Inlet Pipe Slope_1	0.3	%	-	%	1		Failed	Inlet pipe slope preferred > 1%	4-81
Inlet Pipe Length_1 Submerged Inlet 1	78.5	m voo/no	-	m			C 14	A submargad inlat is not proferred	4.07
Submerged Inlet_1 Submerged Pipe Grade_1	No -	yes/no %	-	yes/no %	no 1		OK OK	A submerged inlet is not preferred Submerged pipe slope should be a minimum of 1 %	4-81 4-81
Energy dissipation provided to prevent scour_1	No	yes/no	-	yes/no	yes		Failed	Only portions of forebay required to be hardened	4-81
Inlet Headwalls and Wingwalls_1	Yes	yes/no	-	yes/no	yes		ок	Biotechnical structures highly preferred	4-81
Part 3d: Pond Design Parameters - Outlet Outlet located in embankment	Vee	NOC/20	-	NOC/20	Vee	1	ок	Outlet structure should be located in embankment for maintenance purposes	4-82
Outlet Pipe Diameter	Yes 675	yes/no mm	-	yes/no mm	yes 450		OK OK	Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)	4-82 4-79
Outlet Pipe Slope	2.5	%	-	%	1		ок	Outlet pipe slope preferred > 1% (Cold climate min. requirement)	4-79
Reverse Sloped Pipe Diameter, if provided								Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse	4-79, 4
Orifice Diameter		mm mm	-	mm mm	150 75	100	OK OK	slope pipe should have a minimum diameter of 150 mm Smallest acceptable diameter is 75 mm	83 4-82
Part 3e: Pond Design Parameters - Major Flow C	Dutlet	1	-		/5	100	UK		+-02
Top of Berm Elevation	225.2	m	-	m				Data input	
Top of Emergency Spillway Elevation	225.2	m	-	m				Data input	
Provided Freeboard (@ spill elev.) Part 4: Sediment	0.00	m	-	m	0.300		Failed	Minimum freeboard above maximum design water level should be 0.3 m	4-60
Annual sediment loading	30	m ³ /year	Not defined	m ³ /year					6-14
Estimated sediment volume	0	m ³	Not defined	m ³					2.1
Number of years before clean-out required		yrs	Not defined	yrs			Failed		
					444	1			
Adjusted water quality storage Treatment Level	0 <3	m³/ha	Not defined		114				

			i		Part 1. G	eneral Info	rmation		
Dry Pond Criteria Check					Fart I. Ge		Pond Name	Victoria Green	7
As per Stormwater Management Planning and Design	Manual (March	20021	Inni	fil				9-3	-
As per Stormwater Management Planning and Design	Manual (March	2003)		2111			pal Pond ID		_
					ļ	LSR	CA Pond ID	•	_
STORMWATER MANAGEMENT MASTER	PLAN - PAR	Τ1				Certificate of	of Approval:	-	
By: Hatch Mott						F	acility Type	Dry pond	
By: Hatch Mott MacDonald December & Sciences							ity Function	-	
Municipal Address:	GIS Coordinate	. .	Year:		ł		Watershed	Lovers Creek	
2600 Lawrence Ave., 33-048-49		s. 44°19'4'' N		_				Upper Lovers Creek	-
2000 Lawrence Ave., 33-040-45	Latitude:		Constructed:			Recei	ving Waters		_
	Longitude:	79°37'29'' W	Retrofitted:	-		Re	ceiver Type	•	
							_		
	Assessment		Design Value (CofA and/or Design		Min.	Max.	Criteria	Notes	MOE
Checklist	Value	Units	Report)	Units	Design	Design	Check	1000	Page
Part 2: Catchment Information	-								
Contributing Designed Area	00.00	ha		ha	5.0		01/	Minimum drainage area should be 5 ha, preferred drainage area is >10 ha	4-80
Contributing Drainage Area Catchment Predominate Landuse	23.82	ha	-	ha	5.0		ок	Describe % / Is curb & gutter or ditch system pre-dominant	
Catchment Imperviousness %	46.5	%	-	%					
Fisheries Protection Level	Basic	Level	Basic	Level	Basic		Failed	Dry ponds cannot achieve higher than basic treatment	
Part 3a: Pond Design Parameters - Main Pond	[1			
Pond Fenced (vegetative barrier or fence)	No	yes/no	_	yes/no	no		Failed	Standards for fencing vary from municipality to municipality, thorny vegetative barriers very effective	4-60
	110	yes/no		yes/no	110		Taneu	Should describe the pond's function and warn of water level fluctuations, thin ice	
Interpretive & Warning signage	-	yes/no	-	yes/no	yes		FALSE	and other specific hazards	4-60
Total SWM Pond Surface Area	8799	m ²	-	m ²				Measured at PP level or through mid section of the pond	
Pond Block Area / Pond Area (top surface) ratio Overall Pond Length	3 105.9	PBA/PA m		PBA/PA m	1.5		ОК	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5 Measured at top of berm	
Overall Pond Width	58.8	m	-	m				Neastred at top of berni	
Length / Width Ratio	1.8	l/w	-	l/w	3		Failed	Preferred is 4:1 to 5:1	4-59
Depth of Extended Detention Storage	-	m	-	m		3	Failed	Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-81
							Tuncu		
Existing Extended Detention Storage		3		3					3-10
Extended Detention Storage Drowdown Time	-	m ³	-	m ³	3002		OK	Actual volume must equal or exceed the design volume	4 50
Extended Detention Storage Drawdown Time Active Storage Depth (total storage @ spillway Elev.)	NA 1.72	hours m	-	hours m	24 1	3	OK OK	Based on Equation 4.11 Total active storage including quantity control	4-58 4-81
Maximum Pond Side Slopes	3.3	:1 (h/v)	-	:1 (h/v)	4		Failed	Maximum pond side slopes 4:1 or flatter	4-79
Part 3b: Pond Design Parameters - Forebay						1			
Total Forebay Surface Area	-	m ²	-	m ²		2933.15	Failed	Forebay area should be less than 1/3 of pond surface area	4-80
Forebay provided at each inlet Max Depth of Forebay: F1	no -	yes/no m	-	yes/no m	1	3		If multiple inlets Minimum forebay depth is 1 m	4-80 4-80
F2	-	m	-	m	1	3		Minimum forebay depth is 1 m	4-80
Provided Length to Width Ratio: F1	-	l/w	-	l/w	2			Minimum forebay length to width ratio is 2:1 if single inlet	4-80
F2 Forebay Berm: F1	-	l/w	-	l/w	2			Submargad professed for actaty reasons	4-80 4-80
Forebay Berm: F1 F2	-	yes/no yes/no	-	yes/no yes/no	yes yes			Submerged preferred for safety reasons Submerged preferred for safety reasons	4-80 4-80
Part 3c: Pond Design Parameters - Inlet	L	,	I	,,	,	1			
Number of pond inlets	1		-			1	ОК		4-81
Inlet 1	E05				450	1	01/	Minimum inlat ning diamator of 450mm	4.01
Inlet Pipe Diameter_1 Inlet Pipe Slope 1	525 -	mm %	-	mm %	450 1		OK OK	Minimum inlet pipe diameter of 450mm Inlet pipe slope preferred > 1%	4-81 4-81
Inlet Pipe Length_1	_	m	130	m					
Submerged Inlet_1	No	yes/no	-	yes/no	no		ок	A submerged inlet is not preferred	4-81
Submerged Pipe Grade_1	- N-	%	-	%	1		OK	Submerged pipe slope should be a minimum of 1 % Only portions of forebay required to be hardened	4-81
Energy dissipation provided to prevent scour_1 Inlet Headwalls and Wingwalls_1	No No	yes/no yes/no	-	yes/no yes/no	yes yes		Failed Failed	Dhiy portions of forebay required to be hardened Biotechnical structures highly preferred	4-81 4-81
Part 3d: Pond Design Parameters - Outlet		,		,,	,				
Outlet located in embankment	Yes	yes/no	-	yes/no	yes		ОК	Outlet structure should be located in embankment for maintenance purposes	4-82
Outlet Pipe Diameter	600	mm ø⁄	-	mm	450		OK	Minimum outlet pipe diameter of 450mm (Cold climate min. requirement) Outlet pipe slope preferred > 1% (Cold climate min. requirement)	4-79 4-79
Outlet Pipe Slope	5.32	%	-	%	1		ок	Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse	4-79
Reverse Sloped Pipe Diameter, if provided	_	mm	-	mm	150		ок	slope pipe should have a minimum diameter of 150 mm	83
Orifice Diameter		mm	-	mm	75	100	ок	Smallest acceptable diameter is 75 mm	4-82
Part 3e: Pond Design Parameters - Major Flow Top of Berm Elevation	Outlet 262.3	m	-	m		1		Data input	
Top of Emergency Spillway Elevation	262.05	m m	-	m m				Data input Data input	
Provided Freeboard (@ spill elev.)	0.25	m	-	m	0.300		Failed	Minimum freeboard above maximum design water level should be 0.3 m	4-60
Part 4: Sediment						1		• •	
Annual sediment loading	32	m ³ /year	-	m ³ /year					6-14
Estimated sediment volume Number of years before clean-out required	690	m³ yrs	-	m³ yrs			Failed		
Adjusted water quality storage	0	m ³ /ha	-	,13	126		i alicu		
Treatment Level	<3		-		-				
END OF CHECKLIST									

					Part 1: Ge	eneral Info	ormation		
Wet Pond Criteria Check							Pond Name	Doral Business Park	
As per Stormwater Management Planning and Design	Manual (March	2003)	Innis	sfil		Munici	pal Pond ID	9-4	
							CA Pond ID	I-NW9	
STORMWATER MANAGEMENT MASTER	PLAN - PAR	T 1				Certificate	of Approval:	-	
By: Hatch Mott MacDonald							acility Type	Wet pond	
MacDonald						Faci	lity Function	•	
Municipal Address:	GIS Coordinate	s:	Year:				Watershed	Lovers Creek	
N of 2521, Bowman St., 020-164-80	Latitude:	44°18'18" N	Constructed:	-		Recei	iving Waters	Upper Lovers Creek	
	Longitude:	79°40'39'' W	Retrofitted:	-		Re	eceiver Type	-	
		1				1			
Checklist	Assessment Value	Units	Design Value (CofA and/or Design Report)	Units	Min. Design	Max. Design	Criteria Check	Notes	MOE Page
Part 2: Catchment Information						1		Minimum drainage area should be 5 ha to sustain wet pond, preferred drainage	4-52
Contributing Drainage Area	21.67	ha	-	ha	5.0		ОК	area is >10 ha Describe % / ls curb & gutter or ditch system pre-dominant	4-52
Catchment Predominate Landuse Catchment Imperviousness %	- 25.5	%	-	%				Describe % / is curb & guiler or aller system pre-dominant	
Fisheries Protection Level Part 3a: Pond Design Parameters - Main Pond	Normal	Level	Normal	Level	Enhanced		Failed	All streams within NVCA and LSRCA require Enhanced Protection (Level 1)	
5		1				1		Standards for fencing vary from municipality to municipality, thorny vegetative	4.00
Pond Fenced (vegetative barrier or fence)	Yes	yes/no	-	yes/no	no		ок	barriers very effective	4-60
Interpretive & Warning signage	-	yes/no	-	yes/no	yes		FALSE	Should describe the pond's function and warn of water level fluctuations, thin ice and other specific hazards	4-60
Total SWM Pond Surface Area	8744	m ²	-	m ²	-			Measured at top of berm	
Pond Block Area / Pond Area (top surface) ratio Overall Pond Length	1.8 118.9	PBA/PA m	-	PBA/PA m	1.5		ок	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5 Measured at PP level or through mid section of the pond	
Overall Pond Width	57	m	-	m				с ,	
Length / Width Ratio Average Permanent Pool depth	2.1 1.06	l/w m	-	l/w m	3 1	2	Failed OK	Preferred is 4:1 to 5:1 Average permanent pool depth should be between 1 - 2 m	4-59 4-60
Max Depth Permanent Pool	1.11	m	-	m	1	3	OK	Maximum permanent pool depth should be less than 3 m	4-60
Permanent Pool Volume Unit Existing Permanent Pool Volume	151 3273	m ³ /ha m ³	-	m ³ /ha m ³	1610		ок	As per Table 3.2 (MOE) Compare Unit rate volume to actual design	3-10 3-10
Depth of Extended Detention Storage			-		1010			Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-60
Depth of Extended Detention Storage	1.03	m	-	m		1.5	ОК	Actual volume must equal or exceed the design volume / Design extended	4-00
Existing Extended Detention Storage								detention storage (Table 3.2) should exceed 40 m ³ /ha or 24 hr 25 mm Chicago	4.52;
	7097	m ³	-	m ³	867		ок	storm runoff volume (~ 40m3/ha used as a minimum criteria)	3-10
Extended Detention Storage Drawdown Time Active Storage Depth (total storage @ spillway Elev.)	NA 1.4	hours m	-	hours m	24	48	Failed OK	Based on Equation 4.11 Total active storage including quantity control	4-58 4-60
Maximum Grade at Permanent Pool	3.9	:1 (h/v)	-	:1 (h/v)	5	7	Failed	Minimum slope at the permanent pool should be 5:1 - 7:1 preferred maximum	4-61
Maximum Pond Side Slopes Part 3b: Pond Design Parameters - Forebay	3.9	:1 (h/v)	-	:1 (h/v)		3	ОК	Maximum pond side slopes 3:1 or flatter	4-61
Total Forebay Surface Area	-	m²	-	m²		2914.71	Failed	Forebay area should be less than 1/3 of pond surface area	4-56
Forebay provided at each inlet Max Depth of Forebay: F1	yes 1.01	yes/no m	-	yes/no m	1	3		If multiple inlets Minimum forebay depth is 1 m	4-56 4-55
F2	0.91	m	-	m	1	3		Minimum forebay depth is 1 m	
Provided Length to Width Ratio: F1 F2	1.8 1.5	l/w l/w	-	l/w l/w	2 2			Minimum forebay length to width ratio is 2:1 if single inlet	
Submerged Forebay Berm: F1	No	yes/no	-	yes/no	yes			Submerged preferred for safety reasons	4-58
F2 Part 3c: Pond Design Parameters - Inlet	No	yes/no	-	yes/no	yes			Submerged preferred for safety reasons	4-58
Number of pond inlets	2		-			1		More than one inlet may require increases in effective storage volumes	4-62
Inlet 1 Inlet Pipe Diameter 1	1000	mm	-	mm	450	1	ок	Minimum inlet pipe diameter of 450mm	4-9
Inlet Pipe Slope_1	8.9	%	-	%	1		ок	Inlet pipe slope preferred > 1%	4-9
Inlet Pipe Length_1 Submerged Inlet_1	30.0 No	m yes/no	-	m yes/no	no		ок	A submerged inlet is not preferred	4-63
Submerged Pipe Grade_1	-	%	-	%	1		ОК	Submerged pipe slope should be a minimum of 1 %	4-63
Energy dissipation provided to prevent scour_1 Exposed Pilot Channel_1	No No	yes/no yes/no	-	yes/no yes/no	yes	o	Failed Failed	Only portions of forebay required to be hardened An exposed pilot channel is not preferred	4-63 4-62
Inlet Headwalls and Wingwalls_1	No	yes/no		yes/no	yes	0	Failed	Biotechnical structures highly preferred	4-65
Inlet Area Depth_1	-	m	-	m	1.0	3.0	Failed	Depth at the inlet pipe should be a minimum of 1 m (Plunge pool)	4-65
Inlet 2 Inlet Pipe Diameter_2	Swale	mm	-	mm	450	1	ок	Minimum inlet pipe diameter of 450mm	4-81
Inlet Pipe Slope_2	-	%	-	%	1		ок	Inlet pipe slope preferred > 1%	4-81
Inlet Pipe Length_2 Submerged Inlet_2	- No	m yes/no	-	m yes/no	no			A submerged inlet is not preferred	4-81
Submerged Pipe Grade_2	-	%	-	%	1		ок	Submerged pipe slope should be a minimum of 1 %	4-81
Energy dissipation provided to prevent scour_2 Exposed Pilot Channel_2	No No	yes/no yes/no	-	yes/no yes/no	yes	0	Failed Failed	Only portions of forebay required to be hardened An exposed pilot channel is not preferred	4-81
Inlet Headwalls and Wingwalls_2	No	yes/no	-	yes/no	yes		Failed	Biotechnical structures highly preferred	4-81
Part 3d: Pond Design Parameters - Outlet Outlet located in embankment	Yes	yes/no	-	yes/no	yes		ок	Outlet structure should be located in embankment for maintenance purposes	4-65
Bottom Draw Outlet	No	yes/no	-	yes/no	yes		Failed	Recommended in conjunction with deeper outlet area (2-3 m): temp. mitigation	4-11
Outlet Pipe Diameter Outlet Pipe Slope	500 1.6	mm %	-	mm %	450 1		ОК ОК	Minimum outlet pipe diameter of 450mm (Cold climate min. requirement) Outlet pipe slope preferred > 1% (Cold climate min. requirement)	4-9 4-9
Reverse Sloped Pipe Diameter, if provided								Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse	4-66; 4-
Orifice Diameter	-	mm mm	-	mm mm	150 75	100	ОК ОК	slope pipe should have a minimum diameter of 150 mm Smallest acceptable diameter is 75 mm	69 4-58
Perforated Riser Orifice Plate Dia., if riser pipe used								Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser orifice	
Design Modifications for Cold Climates: alpha	- 15	mm	-	mm	50		ок	plate diameter should be greater than 50 mm in diameter Coefficient of ice growth	4-07
Design woodincations for Cold Climates. alpha		4						Sum of freezing degree-days - Based on MSC Canadian Climate Normals 1971-	4-0 4-8
h	753.3	mm		mm	MOE Equ	ation 4.1		2000 - City of Barrie	4-8 4-8
h Submerged outlet depth	412	mm m		mm m	MOE Equ 562	auon 4.1	ок	Ice thickness Submerged outlets obvert to be set 150 mm lower than ice cover	4-8 4-9
Part 3e: Pond Design Parameters - Major Flow	Outlet 297.4	-				1			
Top of Berm Elevation Top of Emergency Spillway Elevation	297.4 297.3	m m	-	m m				Data input Data input	
Provided Freeboard (@ spill elev.)	0.1	m	-	m	0.300		Failed	Minimum freeboard above maximum design water level should be 0.3 m	4-60
Part 4: Sediment Annual sediment loading	13.0	m ³ /year	Not defined	m ³ /year					6-14
Estimated sediment volume	158.46	m ³	Not defined	m ³					
Number of years before Pond clean-out required Adjusted water quality storage	798 191	yrs m³/ha	Not defined	yrs	95.7		ок	Target efficiency required storage	
Treatment Level	1]	Not defined						
END OF CHECKLIST									

					Part 1: Ge	eneral Info	ormation		
Wet Pond Criteria Check							Pond Name	Doral Business Park	1
As per Stormwater Management Planning and Design	Manual (March	2003)	Innis	sfil		Munici	pal Pond ID	9-5	-
							CA Pond ID	I-NW10	
STORMWATER MANAGEMENT MASTER	PLAN - PAR	T 1				Certificate	of Approval:	•	
By: Hatch Mott						F	acility Type	Wet pond	
By: Hatch Mott MacDonald						Facil	lity Function	-	
Municipal Address:	GIS Coordinate	s:	Year:				Watershed	Lovers Creek	
Doral Dr., 020-166-80	Latitude:	44°18'12" N	Constructed:	#N/A		Recei	iving Waters	Upper Lovers Creek	
	Longitude:	79°40'57'' W	Retrofitted:	-		Re	eceiver Type	·	
							_		
	Assessment		Design Value (CofA and/or Design		Min.	Max.	Criteria	Notes	MOE
Checklist	Value	Units	Report)	Units	Design	Design	Check		Page
Part 2: Catchment Information		1				İ.		Minimum drainage area should be 5 ha to sustain wet pond, preferred drainage	4.50
Contributing Drainage Area	7.65	ha	-	ha	5.0		ок	area is >10 ha	4-52
Catchment Predominate Landuse Catchment Imperviousness %	- 21.25	%	-	%				Describe % / Is curb & gutter or ditch system pre-dominant	
Fisheries Protection Level	Enhanced	Level	Enhanced	Level	Enhanced		ОК	All streams within NVCA and LSRCA require Enhanced Protection (Level 1)	
Part 3a: Pond Design Parameters - Main Pond		1						Standards for fencing vary from municipality to municipality, thorny vegetative	4.00
Pond Fenced (vegetative barrier or fence)	Yes	yes/no	-	yes/no	no		ок	barriers very effective	4-60
Interpretive & Warning signage	-	yes/no	-	yes/no	yes		FALSE	Should describe the pond's function and warn of water level fluctuations, thin ice and other specific hazards	4-60
Total SWM Pond Surface Area	5264	m ²	-	m²				Measured at top of berm	
Pond Block Area / Pond Area (top surface) ratio Overall Pond Length	2.0 73.3	PBA/PA m	-	PBA/PA m	1.5		ок	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5 Measured at PP level or through mid section of the pond	
Overall Pond Width	12.2	m	-	m			0.4		4.50
Length / Width Ratio Average Permanent Pool depth	6.0 0.78	l/w m	-	l/w m	3 1	2	OK Failed	Preferred is 4:1 to 5:1 Average permanent pool depth should be between 1 - 2 m	4-59 4-60
Max Depth Permanent Pool	0.78	m	-	m	1	3	Failed	Maximum permanent pool depth should be less than 3 m	4-60
Permanent Pool Volume Unit Existing Permanent Pool Volume	113 862	m ³ /ha m ³	-	m³/ha m³	459		ок	As per Table 3.2 (MOE) Compare Unit rate volume to actual design	3-10 3-10
Depth of Extended Detention Storage						4.5		Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-60
	0.7	m	-	m		1.5	ок	Actual volume must equal or exceed the design volume / Design extended	
Existing Extended Detention Storage								detention storage (Table 3.2) should exceed 40 m ³ /ha or 24 hr 25 mm Chicago	4.52; 3-10
Extended Detention Storage Drawdown Time	2610 NA	m ³ hours	-	m ³ hours	306 24	48	OK Failed	storm runoff volume (~ 40m3/ha used as a minimum criteria) Based on Equation 4.11	4-58
Active Storage Depth (total storage @ spillway Elev.)	1.0	m	-	m	24	2	OK	Total active storage including quantity control	4-58
Maximum Grade at Permanent Pool Maximum Pond Side Slopes	5.6	:1 (h/v)	-	:1 (h/v)	5	7	ОК	Minimum slope at the permanent pool should be 5:1 - 7:1 preferred maximum	4-61 4-61
Part 3b: Pond Design Parameters - Forebay	5.6	:1 (h/v)	-	:1 (h/v)		3	ОК	Maximum pond side slopes 3:1 or flatter	4-61
Total Forebay Surface Area	-	m ²	-	m ²		1754.77	Failed	Forebay area should be less than 1/3 of pond surface area If multiple inlets	4-56 4-56
Forebay provided at each inlet Max Depth of Forebay: F1	yes 1.08	yes/no m	-	yes/no m	1	3	ок	n multiple mets Minimum forebay depth is 1 m	4-56 4-55
F2 Provided Length to Width Ratio: F1	0.98	m	-	m	1 2	3	Failed	Minimum forebay depth is 1 m	
Provided Length to Width Ratio: F1 F2	1.9	l/w l/w	-	l/w l/w	2		OK Failed	Minimum forebay length to width ratio is 2:1 if single inlet	
Submerged Forebay Berm: F1 F2	Yes Yes	yes/no	-	yes/no	yes		ок ок	Submerged preferred for safety reasons Submerged preferred for safety reasons	4-58 4-58
Part 3c: Pond Design Parameters - Inlet	165	yes/no		yes/no	yes	1	UK	Submerged preferred for salety reasons	4-30
Number of pond inlets Inlet 1	2		-			1		More than one inlet may require increases in effective storage volumes	4-62
Inlet Pipe Diameter_1	900	mm	-	mm	450		ОК	Minimum inlet pipe diameter of 450mm	4-9
Inlet Pipe Slope_1 Inlet Pipe Length 1	1.6 20.0	% m	-	% m	1		ок	Inlet pipe slope preferred > 1%	4-9
Submerged Inlet_1	No	yes/no	-	yes/no	no		ок	A submerged inlet is not preferred	4-63
Submerged Pipe Grade_1 Energy dissipation provided to prevent scour_1	- Yes	% yes/no	-	% yes/no	1 yes		ОК ОК	Submerged pipe slope should be a minimum of 1 % Only portions of forebay required to be hardened	4-63 4-63
Exposed Pilot Channel_1	No	yes/no	-	yes/no	yes	0	Failed	An exposed pilot channel is not preferred	4-62
Inlet Headwalls and Wingwalls_1 Inlet Area Depth 1	No	yes/no m	-	yes/no m	yes 1.0	3.0	Failed Failed	Biotechnical structures highly preferred Depth at the inlet pipe should be a minimum of 1 m (Plunge pool)	4-65 4-65
Inlet 2			-		1.0		Taneu		
Inlet Pipe Diameter_2 Inlet Pipe Slope_2	Swale	mm %	-	mm %	450 1		ОК ОК	Minimum inlet pipe diameter of 450mm Inlet pipe slope preferred > 1%	4-81 4-81
Inlet Pipe Length_2	-	m	-	m			UK		
Submerged Inlet_2 Submerged Pipe Grade_2	No	yes/no %	-	yes/no %	no 1		ок	A submerged inlet is not preferred Submerged pipe slope should be a minimum of 1 %	4-81 4-81
Energy dissipation provided to prevent scour_2	Yes	yes/no	-	yes/no	yes		ОК	Only portions of forebay required to be hardened	4-81
Exposed Pilot Channel_2 Inlet Headwalls and Wingwalls 2	No No	yes/no yes/no	-	yes/no yes/no	yes	0	Failed Failed	An exposed pilot channel is not preferred Biotechnical structures highly preferred	4-81
Part 3d: Pond Design Parameters - Outlet	с	yeanio		ye3/10	yes	1	T alley		
Outlet located in embankment Bottom Draw Outlet	Yes No	yes/no yes/no		yes/no yes/no	yes yes		OK Failed	Outlet structure should be located in embankment for maintenance purposes Recommended in conjunction with deeper outlet area (2-3 m): temp. mitigation	4-65 4-11
Outlet Pipe Diameter	350	mm	-	mm	450		Failed	Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)	4-9
Outlet Pipe Slope	0.0	%	-	%	1		Failed	Outlet pipe slope preferred > 1% (Cold climate min. requirement) Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse	4-9 4-66; 4
Reverse Sloped Pipe Diameter, if provided	-	mm	-	mm	150		ок	slope pipe should have a minimum diameter of 150 mm	69
Orifice Diameter	-	mm	-	mm	75	100	ок	Smallest acceptable diameter is 75 mm Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser orifice	4-58
Perforated Riser Orifice Plate Dia., if riser pipe used	-	mm	-	mm	50		ок	plate diameter should be greater than 50 mm in diameter	4-67
Design Modifications for Cold Climates: alpha	15							Coefficient of ice growth	4-8
Df	753.3							Sum of freezing degree-days - Based on MSC Canadian Climate Normals 1971- 2000 - City of Barrie	4-8
h Submerged outlet depth	412	mm m		mm m	MOE Equ 562	ation 4.1	ок	lce thickness Submerged outlets obvert to be set 150 mm lower than ice cover	4-8 4-9
Part 3e: Pond Design Parameters - Major Flow					502		UK		4-9
Top of Berm Elevation Top of Emergency Spillway Elevation	302.6 302.6	m m	-	m m				Data input Data input	
Provided Freeboard (@ spill elev.)	0.0	m m	-	m m	0.300		Failed	Data input Minimum freeboard above maximum design water level should be 0.3 m	4-60
Part 4: Sediment	4.6	m ³ /	Not define d	m ³ /		1			6 1 4
Annual sediment loading Estimated sediment volume	4.6 412.08	m³/year m³	Not defined Not defined	m³/year m³					6-14
Number of years before Pond clean-out required	768	yrs	Not defined	yrs	05.0			Toract officiancy required stars	
Adjusted water quality storage Treatment Level	153 1	m³/ha	- Not defined		85.0		ОК	Target efficiency required storage	
	1	-							

					Part 1: Ge	eneral Info	ormation		
Wet Pond Criteria Check							Pond Name	Brandy Lane	
As per Stormwater Management Planning and Design	Manual (March	2003)	Inni	stil		Munici	ipal Pond ID	10-1	
						LSR	CA Pond ID	No Data	
STORMWATER MANAGEMENT MASTER	PLAN - PAR	T 1			(Certificate	of Approval:	6832-5F5JU4	
By: Hatch Mott MacDonald						F	Facility Type	Wet pond	
MacDonald Descrete a Education						Facil	lity Function	Water quality and quantity control	
Municipal Address:	GIS Coordinate		Year:				Watershed	Lovers Creek	
2706 Dempster Ave., 33-040-28	Latitude:		Constructed:			Recei	iving Waters	Upper Lovers Creek	
	Longitude:	79°37'34" W	Retrofitted:	0		Re	eceiver Type	-	
		1	Design Value (CofA	1					MOE
Checklist Part 2: Catchment Information	Assessment Value	Units	and/or Design Report)	Units	Min. Design	Max. Design	Criteria Check	Notee	Page
	15.46	ha	0.45		5.0		0 11	Minimum drainage area should be 5 ha to sustain wet pond, preferred drainage area is >10 ha	4-52
Contributing Drainage Area Catchment Predominate Landuse	-	ha	0.45	ha	5.0		ОК	Describe % / Is curb & gutter or ditch system pre-dominant	
Catchment Imperviousness % Fisheries Protection Level	50.25	% Level	- Enhanced	%	Enhanced		01	All streams within NVCA and LSBCA require Enhanced Brotestian (Level 1)	
Part 3a: Pond Design Parameters - Main Pond	Enhanced	Level	Enhanced	Level	Enhanced	1	ОК	All streams within NVCA and LSRCA require Enhanced Protection (Level 1)	
Pond Fenced (vegetative barrier or fence)	Nee							Standards for fencing vary from municipality to municipality, thorny vegetative	4-60
	Yes	yes/no	-	yes/no	no		ок	barriers very effective Should describe the pond's function and warn of water level fluctuations, thin ice	4.00
Interpretive & Warning signage	-	yes/no	-	yes/no	yes		FALSE	and other specific hazards	4-60
Total SWM Pond Surface Area Pond Block Area / Pond Area (top surface) ratio	1698 1.1	m ² PBA/PA	-	m ² PBA/PA	1.5		Failed	Measured at top of berm Check for retrofit feasibility - pond expansion not feasible if ratio <1.5	
Overall Pond Length	59.93	m	-	m				Measured at PP level or through mid section of the pond	
Overall Pond Width Length / Width Ratio	18.4 3.3	m I/w	-	m I/w	3		ок	Preferred is 4:1 to 5:1	4-59
Average Permanent Pool depth	0.37	m	-	m	1	2	Failed	Average permanent pool depth should be between 1 - 2 m	4-60
Max Depth Permanent Pool Permanent Pool Volume Unit	0.42	m m³/ha	-	m m³/ha	1	3	Failed	Maximum permanent pool depth should be less than 3 m As per Table 3.2 (MOE)	4-60 3-10
Existing Permanent Pool Volume	9	m ³	55.2	m ³	2125		Failed	Compare Unit rate volume to actual design	3-10 3-10
Depth of Extended Detention Storage	-0.32	m	-	m		1.5	ок	Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-60
	0.02						•	Actual volume must equal or exceed the design volume / Design extended	4.52;
Existing Extended Detention Storage	-	m ³	40.0	m ³	610		E .11.1	detention storage (Table 3.2) should exceed 40 m ³ /ha or 24 hr 25 mm Chicago	4.52, 3-10
Extended Detention Storage Drawdown Time	-7 NA	hours	48.2	hours	618 24	48	Failed Failed	storm runoff volume (~ 40m3/ha used as a minimum criteria) Based on Equation 4.11	4-58
Active Storage Depth (total storage @ spillway Elev.)	1.4	m	-	m		2	ОК	Total active storage including quantity control	4-60
Maximum Grade at Permanent Pool Maximum Pond Side Slopes	2.8 3.1	:1 (h/v) :1 (h/v)	-	:1 (h/v) :1 (h/v)	5	7	Failed OK	Minimum slope at the permanent pool should be 5:1 - 7:1 preferred maximum Maximum pond side slopes 3:1 or flatter	4-61 4-61
Part 3b: Pond Design Parameters - Forebay									
Total Forebay Surface Area Forebay provided at each inlet	- no	m² yes/no	-	m² yes/no		566.07	Failed	Forebay area should be less than 1/3 of pond surface area If multiple inlets	4-56 4-56
Max Depth of Forebay: F1	-	m	-	m	1	3		Minimum forebay depth is 1 m	4-55
F2 Provided Length to Width Ratio: F1	· ·	m I/w	-	m I/w	1 2	3		Minimum forebay depth is 1 m Minimum forebay length to width ratio is 2:1 if single inlet	
F2	-	l/w	-	l/w	2				
Submerged Forebay Berm: F1 F2		yes/no yes/no	-	yes/no yes/no	yes yes			Submerged preferred for safety reasons Submerged preferred for safety reasons	4-58 4-58
Part 3c: Pond Design Parameters - Inlet		ycanio		yes/no	yes				
Number of pond inlets Inlet 1	2		1			1		More than one inlet may require increases in effective storage volumes	4-62
Inlet Pipe Diameter_1	1000	mm	-	mm	450	1	ок	Minimum inlet pipe diameter of 450mm	4-9
Inlet Pipe Slope_1 Inlet Pipe Length 1	4.6 14.4	% m	-	% m	1		ок	Inlet pipe slope preferred > 1%	4-9
Submerged Inlet_1	No	yes/no	-	yes/no	no		ок	A submerged inlet is not preferred	4-63
Submerged Pipe Grade_1 Energy dissipation provided to prevent scour 1	- No	% yes/no	-	% ves/no	1		OK Failed	Submerged pipe slope should be a minimum of 1 % Only portions of forebay required to be hardened	4-63 4-63
Exposed Pilot Channel_1	No	yes/no	-	yes/no	yes	0	Failed	An exposed pilot channel is not preferred	4-63
Inlet Headwalls and Wingwalls_1 Inlet Area Depth 1	Yes	yes/no m	-	yes/no m	yes 1.0	3.0	OK Failed	Biotechnical structures highly preferred	4-65 4-65
Inlet 2	-			10	1.0	3.0	Falled	Depth at the inlet pipe should be a minimum of 1 m (Plunge pool)	4-00
Inlet Pipe Diameter_2	300	mm	-	mm	450		Failed	Minimum inlet pipe diameter of 450mm Inlet pipe slope preferred > 1%	4-81
Inlet Pipe Slope_2 Inlet Pipe Length_2	0.47 23.9	% m	-	% m	1		Failed	iniel pipe slope preferred > 1%	4-81
Submerged Inlet_2	No	yes/no	-	yes/no	no			A submerged inlet is not preferred	4-81
Submerged Pipe Grade_2 Energy dissipation provided to prevent scour 2	No	% yes/no	-	% yes/no	1 yes		OK Failed	Submerged pipe slope should be a minimum of 1 % Only portions of forebay required to be hardened	4-81 4-81
Exposed Pilot Channel_2	No	yes/no	-	yes/no		0	Failed	An exposed pilot channel is not preferred	
Inlet Headwalls and Wingwalls_2 Part 3d: Pond Design Parameters - Outlet	Yes	yes/no	-	yes/no	yes	1	ОК	Biotechnical structures highly preferred	4-81
Outlet located in embankment	Yes	yes/no	-	yes/no	yes		ок	Outlet structure should be located in embankment for maintenance purposes	4-65
Bottom Draw Outlet Outlet Pipe Diameter	No 900	yes/no mm	- 750	yes/no mm	yes 450		Failed OK	Recommended in conjunction with deeper outlet area (2-3 m): temp. mitigation Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)	4-11 4-9
Outlet Pipe Slope	0.2	%	-	%	1		Failed	Outlet pipe slope preferred > 1% (Cold climate min. requirement)	4-9
Reverse Sloped Pipe Diameter, if provided	-	mm	-	mm	150		ок	Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse slope pipe should have a minimum diameter of 150 mm	4-66; 4- 69
Orifice Diameter	-	mm	200	mm	75	100	ок	Smallest acceptable diameter is 75 mm	4-58
Perforated Riser Orifice Plate Dia., if riser pipe used	-	mm	150	mm	50		ок	Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser orifice plate diameter should be greater than 50 mm in diameter	4-67
Design Modifications for Cold Climates: alpha	15	1		1				Coefficient of ice growth	4-8
Df	753.3							Sum of freezing degree-days - Based on MSC Canadian Climate Normals 1971- 2000 - City of Barrie	4-8
h	412	mm		mm	MOE Equ	ation 4.1		Ice thickness	4-8
Submerged outlet depth Part 3e: Pond Design Parameters - Major Flow	- Outlet	m		m	562	1	ОК	Submerged outlets obvert to be set 150 mm lower than ice cover	4-9
Top of Berm Elevation	267.4	m	150	m				Data input	
Top of Emergency Spillway Elevation Provided Freeboard (@ spill elev.)	267.28 0.1	m m	-	m m	0.300		Failed	Data input Minimum freeboard above maximum design water level should be 0.3 m	4-60
Part 4: Sediment			L		5.000		. uneu		
Annual sediment loading Estimated sediment volume	24.6 -49.55	m ³ /year m ³	Not defined Not defined	m ³ /year m ³					6-14
	-49.55	yrs	Not defined	yrs					
Number of years before Pond clean-out required				1		(i)			
Adjusted water quality storage Treatment Level	41 <3	m³/ha	- Not defined	-	141.3		Failed	Target efficiency required storage	

					Part 1: Ge	eneral Info	rmation		
Dry Pond Criteria Check				\$				Village North	
-		2000)	Inni	fil			Pond Name		-
As per Stormwater Management Planning and	Design Manual (March	2003)				Munici	oal Pond ID	10-2	_
						LSR	CA Pond ID	•	
STORMWATER MANAGEMENT MAS	STER PLAN - PAR	Τ1				Certificate of	of Approval:	-	
By: Hatch Mott						F	acility Type	Dry pond	
By: Hatch Mott MacDonald									
assignments agreed a scientist					ł	Facil	ity Function	- Lauren Orrech	-
Aunicipal Address:	GIS Coordinate		Year:				Watershed	Lovers Creek	_
2856 Dempster Ave., 32-020-02	Latitude:	44°19'44" N	Constructed:	1988		Recei	ving Waters	Upper Lovers Creek	
	Longitude:	79°37'51'' W	Retrofitted:	0		Re	ceiver Type		
	Longitude.		field officed.			ne			
			Design Value (CofA						MO
	Assessment		and/or Design		Min.	Max.	Criteria	Notes	MOE Page
Checklist	Value	Units	Report)	Units	Design	Design	Check		Fay
Part 2: Catchment Information		1				1			
ontributing Drainage Area	30.97	ha	-	ha	5.0		ок	Minimum drainage area should be 5 ha, preferred drainage area is >10 ha	4-80
atchment Predominate Landuse	-		-					Describe % / Is curb & gutter or ditch system pre-dominant	
atchment Imperviousness %	48.5	%	-	%					
sheries Protection Level	Basic	Level	Basic	Level	Basic		Failed	Dry ponds cannot achieve higher than basic treatment	
art 3a: Pond Design Parameters - Main F	ond	1				1		Standarda for fanaing you from municipality to municipality thermy upgatative	
ond Fenced (vegetative barrier or fence)	Yes	yes/no	-	yes/no	no		ок	Standards for fencing vary from municipality to municipality, thorny vegetative barriers very effective	4-60
	103	,00,110		,00/10			U.K.	Should describe the pond's function and warn of water level fluctuations, thin ice	
nterpretive & Warning signage	-	yes/no	-	yes/no	yes		FALSE	and other specific hazards	4-60
otal SWM Pond Surface Area	12620	m ²	-	m ²				Measured at PP level or through mid section of the pond	
ond Block Area / Pond Area (top surface) ratio	1.9	PBA/PA	-	PBA/PA	1.5		ОК	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5	
verall Pond Length verall Pond Width	116.7 45.2	m m	-	m m				Measured at top of berm	
ength / Width Ratio	2.6	l/w	-	l/w	3		Failed	Preferred is 4:1 to 5:1	4-59
epth of Extended Detention Storage								Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-81
open of Excended Determinen Otoldye	0.8	m	-	m		3	ОК		0 I
vioting Extended Determine Otomore									
xisting Extended Detention Storage	1965	m ³	_	m ³	4088		Failed	Actual volume must equal or exceed the design volume	3-10
xtended Detention Storage Drawdown Time	1965	hours	-	hours	4088 24		Failed OK	Based on Equation 4.11	4-58
ctive Storage Depth (total storage @ spillway Elev		m	-	m	1	3	OK	Total active storage including quantity control	4-81
aximum Pond Side Slopes	3.1	:1 (h/v)	-	:1 (h/v)	4		Failed	Maximum pond side slopes 4:1 or flatter	4-79
art 3b: Pond Design Parameters - Foreb	bay	2		2		1			
otal Forebay Surface Area	-	m²	-	m ²		4207	Failed	Forebay area should be less than 1/3 of pond surface area	4-80
prebay provided at each inlet ax Depth of Forebay:	no F1 -	yes/no m	-	yes/no m	1	3		If multiple inlets Minimum forebay depth is 1 m	4-80 4-80
	F2 -	m	-	m	1	3		Minimum forebay depth is 1 m	4-80
rovided Length to Width Ratio:	F1 -	l/w	-	l/w	2	-		Minimum forebay length to width ratio is 2:1 if single inlet	4-80
	F2 -	l/w	-	l/w	2			•·····	4-80
prebay Berm:	F1 - F2 -	yes/no	-	yes/no	yes			Submerged preferred for safety reasons	4-80
art 3c: Pond Design Parameters - Inlet	F2 -	yes/no	-	yes/no	yes	1		Submerged preferred for safety reasons	4-80
umber of pond inlets	2		-			1		More than one inlet may require increases in effective storage volumes	4-81
let 1		4							
let Pipe Diameter_1	1200	mm	-	mm	450		ОК	Minimum inlet pipe diameter of 450mm	4-81
let Pipe Slope_1	11.92	%	-	%	1		ОК	Inlet pipe slope preferred > 1%	4-81
let Pipe Length_1 ubmerged Inlet_1	41.1 No	m yes/no	-	m yes/no	no		ок	A submerged inlet is not preferred	4-81
ubmerged Pipe Grade_1	-	%	-	% %	1		OK	Submerged nine is not pretened Submerged pipe slope should be a minimum of 1 %	4-81
nergy dissipation provided to prevent scour_1	No	yes/no	-	yes/no	yes		Failed	Only portions of forebay required to be hardened	4-81
nlet Headwalls and Wingwalls_1	Yes	yes/no	-	yes/no	yes		ОК	Biotechnical structures highly preferred	4-81
nlet 2 Not Rino Diamotor 2	Occurs				450	1	01/	Minimum inlet pipe diameter of 450mm	4-81
llet Pipe Diameter_2 llet Pipe Slope_2	Swale -	mm %	-	mm %	450 1		OK OK	Minimum inlet pipe diameter of 450mm Inlet pipe slope preferred > 1%	4-81 4-81
ilet Pipe Siope_2 ilet Pipe Length_2	-	m m	-	m m			UK	יייט איז	+-0 I
ubmerged Inlet_2	No	yes/no	-	yes/no	no			A submerged inlet is not preferred	4-81
ubmerged Pipe Grade_2	-	%	-	%	1		ОК	Submerged pipe slope should be a minimum of 1 %	4-81
nergy dissipation provided to prevent scour_2	No	yes/no	-	yes/no	yes		Failed	Only portions of forebay required to be hardened	4-81
xposed Pilot Channel_2 net Headwalls and Wingwalls_2	No No	yes/no yes/no	-	yes/no yes/no	yes	0	Failed Failed	An exposed pilot channel is not preferred Biotechnical structures highly preferred	4-81
art 3d: Pond Design Parameters - Outlet		,00/10	-	,03/10	yes		raneu		
utlet located in embankment	0	yes/no	-	yes/no	yes		FALSE	Outlet structure should be located in embankment for maintenance purposes	4-82
utlet Pipe Diameter	300	mm	-	mm	450		Failed	Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)	4-79
utlet Pipe Slope	0.63	%	-	%	1		Failed	Outlet pipe slope preferred > 1% (Cold climate min. requirement) Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse	4-79 4-79,
everse Sloped Pipe Diameter, if provided	_	mm	-	mm	150		ок	slope pipe should have a minimum diameter of 150 mm	4-79, 83
rifice Diameter	-	mm	-	mm	75	100	OK	Smallest acceptable diameter is 75 mm	4-82
art 3e: Pond Design Parameters - Major									
op of Berm Elevation	267.5	m	-	m				Data input	
op of Emergency Spillway Elevation	<u>267</u> 0.50	m m	-	m m	0.300		ок	Data input Minimum freeboard above maximum design water level should be 0.3 m	4-60
rovided Freeboard (@ spill elev.) art 4: Sediment	0.50	т	-	in	0.300		UK	winimum neeboard above maximum design water level should be 0.3 m	4-60
nnual sediment loading	46	m ³ /year	-	m ³ /year					6-14
stimated sediment volume	290.14	m ³	-	m ³					
lumber of years before clean-out required	#VALUE!	yrs 3	-	yrs	100		#VALUE!		
djusted water quality storage reatment Level	0	m³/ha	-		132				
	<3	1	-			1			

					Part 1: Ge	neral Info	rmation		
Wet Pond Criteria Check				>				McKee	
			Inni	5:1		1	Pond Name		-
As per Stormwater Management Planning and Design	Manual (March	2003)	Inni	STH		Municip	al Pond ID	10-3	
						LSRO	A Pond ID	I-N36	
STORMWATER MANAGEMENT MASTER	PLAN - PAR	٢1				Certificate o	f Approval:	3-0464-99-006	
								Wet pond	
By: Hatch Mott MacDonald							acility Type		
Inaccontrato Engineera & Scientali					4	Facili	y Function	Water quality control	
Iunicipal Address:	GIS Coordinate	s:	Year:				Watershed	Innisfil Creeks	
2877 Ireton St., 043-153-50	Latitude:	44°21'0" N	Constructed:	#N/A		Receiv	ing Waters	Mooselanka Ck (Ck # 2)	
		79°32'12" W		0			-		
	Longitude:	10 02 12 11	Retrofitted:	Ů		Ree	eiver Type		
				1		-			
	Assessment		Design Value (CofA and/or Design		Min.	Max.	Criteria	Notes	MOE
Checklist	Value	Units	Report)	Units	Design	Design	Check		Page
art 2: Catchment Information				1					
at the three Devices and Assoc	44.70		0.00					Minimum drainage area should be 5 ha to sustain wet pond, preferred drainage	4-52
ontributing Drainage Area atchment Predominate Landuse	11.76	ha	9.36	ha	5.0		ок	area is >10 ha Describe % / ls curb & gutter or ditch system pre-dominant	
atchment Imperviousness %	35	%	-	%					
sheries Protection Level	Enhanced	Level	Enhanced	Level	Enhanced		ОК	All streams within NVCA and LSRCA require Enhanced Protection (Level 1)	
art 3a: Pond Design Parameters - Main Pond				1					
nd Fenced (vegetative barrier or fence)	Vee	N00/5-		100/			014	Standards for fencing vary from municipality to municipality, thorny vegetative	4-60
	Yes	yes/no	-	yes/no	no		ОК	barriers very effective Should describe the pond's function and warn of water level fluctuations, thin ice	
erpretive & Warning signage	-	yes/no	-	yes/no	yes		FALSE	and other specific hazards	4-60
otal SWM Pond Surface Area	3468	m ²	-	m ²				Measured at top of berm	
ond Block Area / Pond Area (top surface) ratio	2.2	PBA/PA	-	PBA/PA	1.5		ок	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5	
verall Pond Length	97.91	m	-	m				Measured at PP level or through mid section of the pond	
verall Pond Width ength / Width Ratio	<u>22.15</u> 4.4	m I/w	-	m I/w	3		ок	Preferred is 4:1 to 5:1	4-59
verage Permanent Pool depth	1.38	m	-	m	1	2	OK	Average permanent pool depth should be between 1 - 2 m	4-59
ax Depth Permanent Pool	1.68	m	-	m	1	3	ок	Maximum permanent pool depth should be less than 3 m	4-60
ermanent Pool Volume Unit	108	m ³ /ha	-	m ³ /ha				As per Table 3.2 (MOE)	3-10
tisting Permanent Pool Volume	1276	m³	-	m ³	1176		ок	Compare Unit rate volume to actual design	3-10
epth of Extended Detention Storage	-0.38	m	-	m		1.5	ок	Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-60
						-		Actual volume must equal or exceed the design volume / Design extended	4 50.
sisting Extended Detention Storage		2		2				detention storage (Table 3.2) should exceed 40 m ³ /ha or 24 hr 25 mm Chicago	4.52; 3-10
	-581	_ m ³	912	m ³	470		Failed	storm runoff volume (~ 40m3/ha used as a minimum criteria)	
tended Detention Storage Drawdown Time tive Storage Depth (total storage @ spillway Elev.)	NA 0.8	hours m	36	hours	24	48 2	Failed OK	Based on Equation 4.11 Total active storage including quantity control	4-58 4-60
iximum Grade at Permanent Pool	3.4	:1 (h/v)		m :1 (h/v)	5	7	Failed	Minimum slope at the permanent pool should be 5:1 - 7:1 preferred maximum	4-61
aximum Pond Side Slopes	4.7	:1 (h/v)	-	:1 (h/v)	·	3	ОК	Maximum pond side slopes 3:1 or flatter	4-61
rt 3b: Pond Design Parameters - Forebay	-								
al Forebay Surface Area		m²	-	m²		1155.85	Failed	Forebay area should be less than 1/3 of pond surface area	4-56
ebay provided at each inlet x Depth of Forebay: F1	Yes 1.88	yes/no	no	yes/no	1	3	ок	If multiple inlets Minimum forebay depth is 1 m	4-56 4-55
F1 F2	-	m m		m m	1	3	UK	Minimum forebay depth is 1 m Minimum forebay depth is 1 m	4-55
ovided Length to Width Ratio: F1	1.5	l/w	15/x	l/w	2	•	Failed	Minimum forebay length to width ratio is 2:1 if single inlet	
F2	-	l/w	-	l/w	2				
bmerged Forebay Berm: F1	Yes	yes/no	-	yes/no	yes		ок	Submerged preferred for safety reasons	4-58
F2 Int 3c: Pond Design Parameters - Inlet	-	yes/no	-	yes/no	yes			Submerged preferred for safety reasons	4-58
mber of pond inlets	1		-	1		1	ок		4-62
et 1									
et Pipe Diameter_1	750	mm	1150 x 750	mm	450		ОК	Minimum inlet pipe diameter of 450mm	4-9
et Pipe Slope_1 et Pipe Length_1	1.22	%	-	% m	1		ок	Inlet pipe slope preferred > 1%	4-9
et Pipe Length_1 Ibmerged Inlet 1	24.3 No	m yes/no	-	m yes/no	no		ок	A submerged inlet is not preferred	4-63
ibmerged Pipe Grade_1	-	%	-	%	1		ОК	Submerged pipe slope should be a minimum of 1 %	4-63
ergy dissipation provided to prevent scour_1	Yes	yes/no	-	yes/no	yes		ок	Only portions of forebay required to be hardened	4-63
posed Pilot Channel_1	No	yes/no	-	yes/no		0	Failed	An exposed pilot channel is not preferred	4-62
et Headwalls and Wingwalls_1 et Area Depth_1	Yes	yes/no	-	yes/no	yes 1.0	2.0	OK Epilod	Biotechnical structures highly preferred Depth at the inlet pipe should be a minimum of 1 m (Plunge pool)	4-65 4-65
art 3d: Pond Design Parameters - Outlet	-	m	-	m	1.0	3.0	Failed	Departat are met pipe snould be a minimulti of 1 m (Flunge poor)	4-03
tlet located in embankment	Yes	yes/no	-	yes/no	yes		ок	Outlet structure should be located in embankment for maintenance purposes	4-65
ttom Draw Outlet	No	yes/no	-	yes/no	yes		Failed	Recommended in conjunction with deeper outlet area (2-3 m): temp. mitigation	4-11
utlet Pipe Diameter	300	mm	300	mm	450		Failed	Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)	4-9
tlet Pipe Slope	0	%	-	%	1		Failed	Outlet pipe slope preferred > 1% (Cold climate min. requirement) Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse	4-9 4-66; 4
everse Sloped Pipe Diameter, if provided	_	mm	-	mm	150		ок	slope pipe should have a minimum diameter of 150 mm	4-66; 4
ifice Diameter	-	mm	95	mm	75	100	ок	Smallest acceptable diameter is 75 mm	4-58
rforated Riser Orifice Plate Dia., if riser pipe used								Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser orifice	4-67
	- 15	mm	-	mm	50		ок	plate diameter should be greater than 50 mm in diameter	
	15			-				Coefficient of ice growth Sum of freezing degree-days - Based on MSC Canadian Climate Normals 1971-	4-8
Df	753.3							2000 - City of Barrie	4-8
h	412	mm		mm	MOE Equ	ation 4.1		Ice thickness	4-8
Submerged outlet depth	-	m		m	562		ОК	Submerged outlets obvert to be set 150 mm lower than ice cover	4-9
art 3e: Pond Design Parameters - Major Flow				1				Data input	
p of Berm Elevation p of Emergency Spillway Elevation	222.4 222.34	m m	-	m m				Data input Data input	
ovided Freeboard (@ spill elev.)	0.06	m	- #VALUE!	m	0.300		Failed	Minimum freeboard above maximum design water level should be 0.3 m	4-60
art 4: Sediment									
nnual sediment loading	7.1	m ³ /year	Not defined	m ³ /year					6-14
stimated sediment volume	-11.1	m ³	Not defined	m ³					
umber of years before Forebay A clean-out required	70	Vre		VIC			OV		
umber of years before Pond clean-out required ljusted water quality storage	148	yrs m³/ha	- Not defined	yrs	115		OK OK	Target efficiency required storage	
eatment Level	0	%	Not defined	1			U.K.		

						Part 1: Ge	eneral Info	ormation		
	Wet Pond Criteria Check				>	i art i. de			Monrepos (Bay Point Estates)	1
		Manual (March	2003)	Inni	sfil					
	· · · · · · · · · · · · · · · · · · ·	,								
	STORMWATER MANAGEMENT MASTER	T 1			•			•		
									Wet pond	
Image definition Decision Decision <thdecision< th=""> Decision Decision</thdecision<>										
Interpretation Langence Name Normal	Municipal Address	CIE Coordinata		Vaar		1	i acii	•	Innisfil Creeks	
					2004		Deeel			
ConclusionConclusionConclusionConclusionConclusionNameNameParty of the second secon								-		
Oxedati Main		Longitude:	10 000 11	Retrofitted:	Ŭ	<u>.</u>	Re	ceiver Type		
Checkels Value		Assessment				Min.	Max.	Criteria	Notes	-
Space interpretation interpretatinterend interpretation interpretation interpretation in		Value	Units		Units	Design	Design	Check		Page
Distance			1						Minimum drainage area should be 5 ha to sustain wet pond, preferred drainage	4-52
Data meta status Data meta status<	Contributing Drainage Area	37.43	ha	-	ha	5.0		ОК		4-52
	Catchment Imperviousness %	40	%		%				Describe %7 is curb & guiler or anch system pre-dominant	
Name Name <th< td=""><td>Fisheries Protection Level</td><td>Enhanced</td><td>Level</td><td>Enhanced</td><td>Level</td><td>Enhanced</td><td></td><td>ОК</td><td>All streams within NVCA and LSRCA require Enhanced Protection (Level 1)</td><td></td></th<>	Fisheries Protection Level	Enhanced	Level	Enhanced	Level	Enhanced		ОК	All streams within NVCA and LSRCA require Enhanced Protection (Level 1)	
Name Number Number <td>•</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td></td> <td>Standards for fencing vary from municipality to municipality, thorny vegetative</td> <td></td>	•						1		Standards for fencing vary from municipality to municipality, thorny vegetative	
minute minut <thminut< th=""> minut</thminut<>	Pond Fenced (vegetative barrier or fence)	Yes	yes/no	-	yes/no	no		ок	barriers very effective	4-60
Gild Will And Surger Area Model Mo	Interpretive & Warning signage		vaalma					FALOF		4-60
Due Back Amp "Park Amp Back Amp Than Amp Back Amp Than Amp Back Amp Than Amp Back Amp Amp Back Amp Amp Back Amp Bac	Total SWM Pond Surface Area	4064		-		yes		FALSE		
Deck Deck <thdeck< th=""> Deck Deck <thd< td=""><td>Pond Block Area / Pond Area (top surface) ratio</td><td>2.2</td><td>PBA/PA</td><td>-</td><td>PBA/PA</td><td>1.5</td><td></td><td>ОК</td><td>Check for retrofit feasibility - pond expansion not feasible if ratio <1.5</td><td></td></thd<></thdeck<>	Pond Block Area / Pond Area (top surface) ratio	2.2	PBA/PA	-	PBA/PA	1.5		ОК	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5	
angle 1.000000000000000000000000000000000000	Overall Pond Length Overall Pond Width								measured at PP level or through mid section of the pond	
Subject Part of the part o	Length / Width Ratio	1.6	l/w	-	l/w					
Demands of bases bit bit Demands of bases bit Deman	Average Permanent Pool depth			-						
Distance Part Part Part Part Part Part Part Part	Max Depth Permanent Pool Permanent Pool Volume Unit			-	-	1	3	OK		
No. Out No. No. No. Add unit many due or source the store whether A basis many due or source	Existing Permanent Pool Volume			-		4210		Failed		
Actual of particular lossing in submit and base in proceeding of particular shares and an expeed de despine shares	Depth of Extended Detention Storage	-0.14	m		m		1.5	OK	Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-60
La L		0.14						UK		1 50.
Construction of home p characters in the construction of the	Existing Extended Detention Storage	000	3		3	1 10-				
Scheid Scheig Delein (bill Stong) E gehlung Flour) 0.3 m - T 135 m m - m - m - m m - m m m m m m m m m m m m m m	Extended Detention Storage Drawdown Time					,	48			4-58
Add a multiple manufactors Id. Id. </td <td>Active Storage Depth (total storage @ spillway Elev.)</td> <td></td> <td></td> <td>-</td> <td></td> <td></td> <td>2</td> <td></td> <td></td> <td></td>	Active Storage Depth (total storage @ spillway Elev.)			-			2			
Part B2: Four Dissign Parameters - Fourbay (and for Parabulations and for Parabulations	Maximum Grade at Permanent Pool				• •	5				
Cold Product Control Strate Area Strate Area </td <td></td> <td>4.4</td> <td>:1 (n/v)</td> <td>•</td> <td>: I (N/V)</td> <td></td> <td>3</td> <td>UK</td> <td>Maximum pond side slopes 3:1 or natier</td> <td>4-61</td>		4.4	:1 (n/v)	•	: I (N/V)		3	UK	Maximum pond side slopes 3:1 or natier	4-61
Max Digits P 0.33 Pm Pm 1 3 Pm Max Digits Ma	Total Forebay Surface Area			-			1354.56	ОК		
Product Lungth on Wath Radie: Pr					-	1	3	Failed		
Balance grant Pic bill Viv Image of the second basis of parameters - Intel Market of Pa	F2	-		-					Minimum forebay depth is 1 m	
Buckenerged Finature Series Final Sector No. yearso yearso<		2.1		-				ок	Minimum forebay length to width ratio is 2:1 if single inlet	
construction P2 intermedia Submergial primeter for safely reasons 443 and Table from Cleaning Parameters - Intell 2 - - - - - More Hanons with intergrade framework or strateging and more with intergrade discrete and more with intergrade dintergrade dintergrade discrete and more with intergrade dintergra		No						Failed	Submerged preferred for safety reasons	4-58
Surger of price 2 1 More than one influence strange volumes 4 set the price is price is a field by price is price is price is a field by		-	-	-	-	-			Submerged preferred for safety reasons	4-58
Intel 1 mm 450 OK Maintain their pipe damater of 450mm 459 Nate Pipe Day 1 100<		2		-			1		More than one inlet may require increases in effective storage volumes	4-62
nate Pie Stop_1_ 11 15 5 1 00 Init pipe stope pretends - 1% 49 Submarged Intel _ 1 10 7% 1 00 Automation of the pipe stope pretends - 1% 49 Submarged Intel _ 1 100 7% 1 00 Automation of the pipe stope pretends - 1% 43 Submarged Intel _ 1 No yesho 10 7% Automation of the pipe stope pretends - 1% 43 Submarged Intel _ 2 No yesho 10 7% 0 Feade Automation of the pipe stope pretends - 1% 43 Submarged Intel _ 2 0.04 % 1 0 42 5% 0 Feade Automation of the pipe stope pretends - 1% 43 Submarged Intel _ 2 0.04 % % 1 7% 60 Feade Automation of the pipe stope pretends - 1% 43 Submarged Intel _ 2 0.04 % % 0 7% 60 7% 43 Submarged Intel _ 2 0.04 % % 0	Inlet 1		1		1					
Inter Pipe Langin 1. Tool m - m n										
Submergrave Pape Grade, 1 . <td>Inlet Pipe Length_1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>UK</td> <td>met ppe slope preieneu > 1 %</td> <td>4-5</td>	Inlet Pipe Length_1							UK	met ppe slope preieneu > 1 %	4-5
Energy despition provided to provide to provide sour, 1 No yeano - yeano y	Submerged Inlet_1				-					
Expose of bits Channel 1 No yesho - yesho - Partial An opposed plot channel is not preterred 442 Antel Hackwill and Winyaults 1 No yesho - No yesho - Partial Bitechnical structures high preterred 445 Antel Hackwill and Winyaults 2 No yesho - No Yesho - Mainturn bite preterred 445 Submerged Intel 2 No yesho - yesho - Automagne bite for preterred 45 Submerged Intel 2 No yesho - yesho - - Automagne bite for preterred 45 Submerged Intel 2 No yesho - yesho - - Automagne bite for preterred 45 Submerged Intel 2 No - yesho - yesho - - Automagne bite for Drathmerd I 441 Intel Pole Stope 2 No - yesho - yesho - or - - - <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>										
niel Ace niel Ace niel Ace niel Ace 3.0 Failed Depth at the inter pipe abnoit be a minimum of 1 m (Plunge pool) 4.45 niel Pool Stope 2 0.00 mm - mm 4.51 Association of the antification antite anthe antification of the antite antification of the a	Exposed Pilot Channel_1	No	yes/no		yes/no		0	Failed		
niel 2 heiel Pop Diameter, 3 heier Pop Diameter, 4 heier Pop Diam		No		-			2.0			
Intel Pipe Stope, 2 0.44 % . % 1 Failed Intel pipe Stope preferred > 1%. 4.51 Submerged Pinel, 2 No. yesho . % 1 A submerged Pinel pice Stope 2 A su	Inlet 2					1.0	5.0	Talleu		4-05
Intel Pipe Lengh, 2 50.0 m - m no vest no submerged hiel is not preferred 4.81 Submerged Pipe Grade, 2 No Yesno - Yesno Yesno - Pailed No Yesno 4.81 Encry disspation provided to prevent scour_2 No Yesno - Yesno Yesno - Pailed No provides of prevent scour_2 4.81 Encry disspation with Wingwalls 2 Yesno - Yesno - Yesno - Yesno - 4.81 Hiel Baounter, 3 400 mm mm - Yesno - - Yesno - Yesno - Yesno - Yesno - Yesno -	Inlet Pipe Diameter_2									
Submerged Piel 2 No yesino · yesino · filt Submerged Piel Scale 2 No yesino · filt Filted ON submerged Piel Scale 2 No yesino · filt Filted ON submerged Piel Scale 2 No yesino · filt Filted No yesino · filt Filted No yesino · filt Filted No yesino · filt filt </td <td></td> <td></td> <td></td> <td></td> <td></td> <td>1</td> <td></td> <td>Failed</td> <td>iniet pipe slope preferred > 1%</td> <td>4-81</td>						1		Failed	iniet pipe slope preferred > 1%	4-81
Energy dissipation provided to prevent scour_2 No yesino yesino <td< td=""><td>Submerged Inlet_2</td><td></td><td>yes/no</td><td></td><td>yes/no</td><td>no</td><td></td><td></td><td></td><td></td></td<>	Submerged Inlet_2		yes/no		yes/no	no				
Exposed Pilo Channel 2 No vesino vesi		-				-				
niet 3 niet Piep Baneter-3 400 mm	Exposed Pilot Channel_2					yes	0			4-01
Piel Pointer 3 400 mm - mm 450 False Minimum inter type dameter of 450mm 4-81 niel Pop Eope 3 1.60 % - % 1 OK Niet pae stope preferred > 1% Net pae sto	Inlet Headwalls and Wingwalls_2	Yes	yes/no	-	yes/no	yes		ОК	Biotechnical structures highly preferred	4-81
niel Pie plangen 2 in de Type Stope 3 in de Type St	Inlet 3 Inlet Pipe Diameter_3	400	mm	-	mm	450		Failed	Minimum inlet pipe diameter of 450mm	4-81
Submerged Inlef, 3 No yesino - yesino 481 Submerged Pice (3 de) No yesino - % 1 Aubmerged Inlef, 3 Submerged Pice (3 de) Aubmerged Inlef, 4 Aubmerg	Inlet Pipe Slope_3	1.60	%	-	%					
Submerged Pipe Grade_3 - *% - *% 1 yes 9 OK Submerged pipe Stope Should be a minimum of 1% 4-81 Energy dissipation provided to prevent sour_3 No yes/no - yes/no - yes/no - 9 Part 3d: Pond Design Parameters - Outlet - yes/no - yes/no - yes/no - 9 Part 3d: Pond Design Parameters - Outlet - yes/no - yes/no - yes/no - yes/no - - 9 Part 3d: Pond Design Parameters - Outlet - - yes/no - yes/no - yes/no - yes/no - - yes/no - - yes/no - - yes/no -				-		no			A submeraed inlet is not preferred	4-81
No yes/no - yes/no	Submerged Pipe Grade_3	-	%	-	%	1			Submerged pipe slope should be a minimum of 1 %	4-81
nieł Headwalls and Wingwalls_3 Yes yes/no	Energy dissipation provided to prevent scour_3		-		-	yes	0			4-81
Part 3d: Pond Design Parameters - Outlet Ves yes/no yes/	Inlet Headwalls and Wingwalls_3					yes	U			4-81
Bottom Draw Outlet No yes/no - yes/no yes/no yes/no yes/no yes/no yes/no yes/no yes/no failed Recommended in conjunction with deeper outlet area (2-3 m); temp, mitigation 4-11 Dutlet Pipe Diameter 0.03 % - mm 450 No Minimum outlet pipe olameter of 450mm (Cold climate min. requirement) 4-9 Reverse Sloped Pipe Diameter, if provided - mm - mm 150 OK Slope pipe should have a minimum diameter of 150 mm 4-66; 4 Orlice Diameter - mm - mm 75 100 OK Snallest acceptable diameter is 75 mm 4-58 Perforated Riser Orlice Plate Dia., if riser pipe used - mm - mm 50 OK patient diameter should be greater than 50 mm in diameter 4-67 Design Modifications for Cold Climates: alpha 15 mm - mm 50 OK patient diameter should be greater than 50 mm in diameter 4-8 Submerged outlet bight - mm mm mm mm - - - - - -	Part 3d: Pond Design Parameters - Outlet									
Dutter Pipe Diameter 600 mm - mm 450 OK Minimum outlet pipe diameter of 450mm (Cold climate min. requirement) 4-9 Outlet Pipe Slope 0.3 % - % 1 Failed OUTLET pipe Slope proferred > 1% (Cold climate min. requirement) 4-9 Reverse Slope Pipe Diameter, if provided - mm 150 Outlet pipe slope proferred > 1% (Cold climate min. requirement) 4-9 Office Diameter - mm - mm 75 100 OK Slope pipe should have a minimum diameter of 150 mm 69 Optice Diameter - mm - mm 75 100 OK Submeter outlets commended for ponders or filter outlets may be used in pond <= 1 m deep. Perforated riser outlets of 150 mm					-	-				
Adverse Sloped Pipe Diameter, if provided . . mm 150 OK Slope Pipe Slope Duelter tecommended for ponds greater than 1 m deep. Reverse 4-66; 4 Orlfice Diameter . mm . mm 75 100 OK Slope Pipe should have a minimu diameter is 75 mm 4-58 Perforated Riser Orlfice Plate Dia., if riser pipe used . mm . mm 75 100 OK Smallex corptable diameter is 75 mm 4-58 Design Modifications for Cold Climates: alpha 15 mm . mm 50 OK Smallex corptable diameter is 75 mm 4-67 Design Modifications for Cold Climates: alpha 15 . mm 50 OK Smallex corptable diameter is 75 mm 4-67 Design Modifications for Cold Climates: alpha 15 . mm mm 50 OK Smallex corptable diameter is 75 mm 4-67 Def 753.3 . . . mm . mm <td>Outlet Pipe Diameter</td> <td>600</td> <td>mm</td> <td>-</td> <td>mm</td> <td></td> <td></td> <td></td> <td>Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)</td> <td>4-9</td>	Outlet Pipe Diameter	600	mm	-	mm				Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)	4-9
Adverse Sloped Pipe Dilameter, It provided - mm - mm 150 OK slope pipe should have a minimum diameter of 150 mm 69 Orlifoe Diameter - mm - mm 75 100 OK Smallest acceptable diameter is 75 mm 4-58 Deriforated Riser Orlifoe Plate Dia., if riser pipe used - mm - mm 75 100 OK Smallest acceptable diameter is 75 mm 4-67 Design Modifications for Cold Climates: alpha 15 mm - mm 50 OK Samellest acceptable diameter is 75 mm 4-67 Design Modifications for Cold Climates: alpha 15 mm - mm 50 OK Samellest acceptable diameter of 150 mm (ameter of 160 mm (ameter	Outlet Pipe Slope	0.3	%	-	%	1		Failed		
Ortifice Diameter . mm . mm . mm 75 100 OK Smallest acceptable diameter is 75 mm 4-58 Perforated Riser Orifice Plate Dia., if riser pipe used . mm . mm . mm . Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser outlets may	Reverse Sloped Pipe Diameter, if provided	-	mm	-	mm	150		ок		
Periodicate Haser Office Plate Dia., in ser pipe used - mm - mm 50 OK plate diameter should be greater than 50 mm in diameter 4-67 Design Modifications for Cold Climates: alpha 15 - mm 50 OK plate diameter should be greater than 50 mm in diameter 4-87 Df 753.3 m - mm MOE Equation 4.1 Sum of freezing degree-days - Based on MSC Canadian Climate Normals 1971- 2000 - City of Barrie 4-8 Submerged outlet depth - m mm 562 OK Submerged outlets obvert to be set 150 mm lower than ice cover 4-9 Part 3e: Pond Design Parameters - Major Flow Outlet - m - m other - 0K Submerged outlets obvert to be set 150 mm lower than ice cover 4-9 Por of Berm Elevation 236.03 m - m 0.300 Failed Minimum freeboard above maximum design water level should be 0.3 m 4-0 Por otide Freeboard (@ spill elev.) -0 m - m 0.300 Failed Minimum freeboard above maximum design water level should be 0.3 m 4-0 Part 4: Sediment - m³ m³ <td>Orifice Diameter</td> <td>-</td> <td></td> <td>-</td> <td></td> <td></td> <td>100</td> <td></td> <td>Smallest acceptable diameter is 75 mm</td> <td>4-58</td>	Orifice Diameter	-		-			100		Smallest acceptable diameter is 75 mm	4-58
Design Modifications for Cold Climates: alpha 15 4.8 Df 753.3 mm mm MOE Equation 4.1 Submerged outlet depth - m MOE Equation 4.1 Submerged outlets obvert to be set 150 mm lower than ice cover 4.8 Part 3e: Pond Design Parameters - Major Flow Outlet m - m Moe m - m - 4.8 Coefficient of ice growth - m MOE Equation 4.1 562 OK Submerged outlets obvert to be set 150 mm lower than ice cover 4.9 Part 3e: Pond Design Parameters - Major Flow Outlet 236 m - m m - m - Defection 0.300 Part 3e input Data input Data input Data input Data input Data input -	Perforated Riser Orifice Plate Dia., if riser pipe used		mm		mm	50		ОК		4-67
Dr 753.3 h 124 mm 2000 - City of Barrie 4-8 ice thickness 4-8 ice thicknes <td>Design Modifications for Cold Climates: alpha</td> <td>15</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>UK</td> <td>Coefficient of ice growth</td> <td>4-8</td>	Design Modifications for Cold Climates: alpha	15						UK	Coefficient of ice growth	4-8
h 412 mm mm MOE Equation 4.1 loc thickness 4-8 Submerged outlet depth - m score 64 Part 3e: Pond Design Parameters - Major Flow Outlet Out Submerged outlets obvert to be set 150 mm lower than ice cover 4-9 Part 3e: Pond Design Parameters - Major Flow Outlet 236.03 m - m Data input	Df	753.9								4-8
Submerged outlet depth - m m 562 OK Submerged outlets obvert to be set 150 mm lower than ice cover 4-9 Part 3e: Pond Design Parameters - Major Flow Outlet - m - m Data input Top of Berm Elevation Op of Emergency Spillway Elevation 236.03 -0 m - m Data input Data input Orwided Freeboard (@ spill elev.) -0 m - m 0.300 Failed Minimum freeboard above maximum design water level should be 0.3 m 4-60 Part 4: Sediment Convided Sediment loading 34.6 m³/year Not defined m³/year m³ m³/year Mot defined m³/year m³/sha Failed Target efficiency required storage 6-14	h		mm		mm	MOE Equ	ation 4.1			4-8
Top of Berm Elevation 236 m - m m Data input Data input Top of Emergency Spillway Elevation -0 m - m Data input Data input Provided Freeboard (@ spill elev.) -0 m - m 0.300 Failed Minimum freeboard above maximum design water level should be 0.3 m 4-60 Part 4: Sediment - m 0.300 Failed Minimum freeboard above maximum design water level should be 0.3 m 4-60 Part 4: Sediment volume 263.88 m ³ Not defined m ³ res -		-						ОК		
Top of Emergency Spillway Elevation 236.03 m - m 0.300 Data input Provided Freeboard (@ spill elev.) -0 m - m 0.300 Failed Minimum freeboard above maximum design water level should be 0.3 m 4-60 Part 4: Sediment tooling 34.6 m³/year Not defined m³ estimated sediment volume 6-14 Unumber of years before Pond clean-out required 0 yrs Not defined yrs 124 Failed Target efficiency required storage 6-14	Part 3e: Pond Design Parameters - Major Flow Top of Berm Elevation		m	-	m				Data input	
Part 4: Sediment 34.6 m³/year m³/year m³/year m³/year m³/year 6-14 Estimated sediment volume 263.88 m³ Not defined m³ m³ 6-14 Jumber of years before Pond clean-out required 0 yrs Not defined yrs m³ Adjusted water quality storage 79 m³/ha - 124 Failed Target efficiency required storage	Top of Emergency Spillway Elevation	236.03	m	-	m				Data input	
Annual sediment loading 34.6 m³/year Not defined m³/year m³/year 6-14 Estimated sediment volume 263.88 m³ Not defined m³ Annual sediment volume 6-14 Number of years before Pond clean-out required 0 yrs Not defined yrs Failed Target efficiency required storage	Provided Freeboard (@ spill elev.)	-0	m		m	0.300		Failed	Minimum freeboard above maximum design water level should be 0.3 m	4-60
Estimated sediment volume 263.88 m ³ Not defined m ³ Number of years before Pond clean-out required 0 yrs Not defined yrs Adjusted water quality storage 79 m ³ /ha - 124 Failed Target efficiency required storage	Annual sediment loading	34.6	m ³ /year	Not defined	m ³ /year					6-14
Adjusted water quality storage 79 m ³ /ha 124 Failed Target efficiency required storage	Estimated sediment volume	263.88	m³	Not defined	m ³					
				Not defined	yrs	124		Failed	Target efficiency required storage	
	Treatment Level			Not defined						

			*		David 4 C	an and but			
Dry Dand Critaria Chasti				>	Part 1: Ge	eneral Info		Menvenee (Rev Deint Estates)	
Dry Pond Criteria Check			S:1	Pond Name				_	
As per Stormwater Management Planning and Design I	Manual (March	2003)	Inńi	STH		Munici	pal Pond ID	13-2	
						LSR	CA Pond ID	No Data	
STORMWATER MANAGEMENT MASTER	PLAN - PAR	T 1				Certificate of	of Approval:	7553-5SZHFP	
	•••							-	
By: Hatch Mott MacDonald							acility Type		-
Endocrmental Engineer & Scientist			1	_	ł	Facili	lity Function		-
Municipal Address:	GIS Coordinate	s:	Year:				Watershed	Innisfil Creeks	_
W of 1708, Wilkonson St, 54-201-00	Latitude:	44°22'10" N	Constructed:	1988		Recei	iving Waters	Kempenfelt Bay	
	Longitude:	79°36'29" W	Retrofitted:	0		Re	eceiver Type	-	
	Longitude.		neu ontieu.			ne	ociver type		
			Design Value (CofA	1					MOE
Checklist	Assessment	Units	and/or Design		Min.	Max.	Criteria	Notes	Page
Part 2: Catchment Information	Value	Units	Report)	Units	Design	Design	Check		
		1		1		1			
Contributing Drainage Area	22.37	ha	-	ha	5.0		ок	Minimum drainage area should be 5 ha, preferred drainage area is >10 ha	4-80
Catchment Predominate Landuse	-		-					Describe % / Is curb & gutter or ditch system pre-dominant	
Catchment Imperviousness % Fisheries Protection Level	38 Basic	%	-	%	Basic		Falled	Dry panda connet achieve higher than basis tractment	
Part 3a: Pond Design Parameters - Main Pond	Basic	Level	-	Level	Basic		Failed	Dry ponds cannot achieve higher than basic treatment	
				1				Standards for fencing vary from municipality to municipality, thorny vegetative	4.00
Pond Fenced (vegetative barrier or fence)	Yes	yes/no	-	yes/no	no		ок	barriers very effective	4-60
Interpretive & Warning signage								Should describe the pond's function and warn of water level fluctuations, thin ice	4-60
Total SWM Pond Surface Area	- 5311	yes/no m ²		yes/no m ²	yes		FALSE	and other specific hazards Measured at PP level or through mid section of the pond	
Pond Block Area / Pond Area (top surface) ratio	2	PBA/PA	-	PBA/PA	1.5		ок	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5	
Overall Pond Length	120.8	m	-	m				Measured at top of berm	
Overall Pond Width	43.3	m	-	m					
Length / Width Ratio	2.8	l/w	-	l/w	3		Failed	Preferred is 4:1 to 5:1	4-59
Depth of Extended Detention Storage	-	m	0.2	m		3	Failed	Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-81
Existing Extended Detention Storage									3-10
Existing Extended Detention Storage	18	m ³	322	m ³	2215		Failed	Actual volume must equal or exceed the design volume	3-10
Extended Detention Storage Drawdown Time	-	hours	-	hours	24		OK	Based on Equation 4.11	4-58
Active Storage Depth (total storage @ spillway Elev.)	1.70	m	1.73	m	1	3	ОК	Total active storage including quantity control	4-81
Maximum Pond Side Slopes	3.3	:1 (h/v)	-	:1 (h/v)	4		Failed	Maximum pond side slopes 4:1 or flatter	4-79
Part 3b: Pond Design Parameters - Forebay Total Forebay Surface Area	_	m²	-	m²		1770.36	Failed	Forebay area should be less than 1/3 of pond surface area	4-80
Forebay provided at each inlet	no	yes/no	no	yes/no		1770.50	raneu	If multiple inlets	4-80
Max Depth of Forebay: F1	-	m	1	m	1	3		Minimum forebay depth is 1 m	4-80
F2	-	m		m	1	3		Minimum forebay depth is 1 m	4-80
Provided Length to Width Ratio: F1 F2		l/w l/w		l/w l/w	2 2			Minimum forebay length to width ratio is 2:1 if single inlet	4-80 4-80
Forebay Berm: F1	-	yes/no	yes	yes/no	yes			Submerged preferred for safety reasons	4-80
F2	-	yes/no		yes/no	yes			Submerged preferred for safety reasons	4-80
Part 3c: Pond Design Parameters - Inlet	1	1		1		1 .			
Number of pond inlets Inlet 1	1	_	-	1		1	ОК		4-81
Inlet Pipe Diameter 1	Swale	mm	-	mm	450	1	ОК	Minimum inlet pipe diameter of 450mm	4-81
Inlet Pipe Slope_1		%	-	%	1		ок	Inlet pipe slope preferred > 1%	4-81
Inlet Pipe Length_1	-	m	-	m					
Submerged Inlet_1	No	yes/no	-	yes/no	no 1		OK OK	A submerged inlet is not preferred	4-81 4-81
Submerged Pipe Grade_1 Energy dissipation provided to prevent scour_1	- No	% yes/no	-	yes/no	1 yes		OK Failed	Submerged pipe slope should be a minimum of 1 % Only portions of forebay required to be hardened	4-81 4-81
Inlet Headwalls and Wingwalls_1	No	yes/no	-	yes/no	yes		Failed	Biotechnical structures highly preferred	4-81
Part 3d: Pond Design Parameters - Outlet									
Outlet located in embankment	Yes	yes/no	-	yes/no	yes		ОК	Outlet structure should be located in embankment for maintenance purposes	4-82
Outlet Pipe Diameter Outlet Pipe Slope	600 2.65	mm %	300	mm %	450 1		OK OK	Minimum outlet pipe diameter of 450mm (Cold climate min. requirement) Outlet pipe slope preferred > 1% (Cold climate min. requirement)	4-79 4-79
	2.05	/0	-	/0			UN	Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse	4-79
Reverse Sloped Pipe Diameter, if provided	-	mm	200	mm	150		ок	slope pipe should have a minimum diameter of 150 mm	83
Orifice Diameter	-	mm	100	mm	75	100	ОК	Smallest acceptable diameter is 75 mm	4-82
Part 3e: Pond Design Parameters - Major Flow C Top of Berm Elevation	242.7	m	-	m		1		Data input	
Top of Berm Elevation Top of Emergency Spillway Elevation	242.7	m	-	m				Data input Data input	
Provided Freeboard (@ spill elev.)	0.00	m	-	m	0.300		Failed	Minimum freeboard above maximum design water level should be 0.3 m	4-60
Part 4: Sediment			· · · · · · · · · · · · · · · · · · ·					· ·	
Annual sediment loading	18	m ³ /year	-	m ³ /year					6-14
Estimated sediment volume Number of years before Pond clean-out required	-476.16 #VALUE!	m³ yrs	-	m° yrs			#VALUE!		
Adjusted water quality storage	0	m ³ /ha	-	yıs	99		#VALUE!		
Aujusteu water quality storaue				-		1			
Treatment Level	<3		-						

[Part 1: Ge	eneral Info	ormation		
Wet Pond Criteria Check							Pond Name	South Shore Woods	
As per Stormwater Management Planning and Design	2003)	Innis	sfil		Munici	pal Pond ID	13-3		
							CA Pond ID	I-N74	
STORMWATER MANAGEMENT MASTER	PLAN - PAR	T 1			Certificate of Approval:			4589-5UYQTH	
By: Hatch Mott				Facility Type			Wet pond		
By: Hatch Mott MacDonald Conserved Experts & Exercise					Facility Function			Water quality and quantity control	
Municipal Address:	GIS Coordinate	s:	Year:				Watershed	Innisfil Creeks	
E of Dalkab, Shoreview Dr., 053-121-06	Latitude:	44°23'0" N	Constructed:	#N/A		Becei	ving Waters	Kempenfelt Bay	
	Longitude:	79°34'26'' W	Retrofitted:	0			ceiver Type	· ·	
	Longitude.		netronitied.			The	cerver Type		
	Assessment		Design Value (CofA		Min.	Max.	Criteria	Notes	MOE
Checklist Part 2: Catchment Information	Value	Units	and/or Design Report)	Units	Design	Design	Check	Notes	Page
								Minimum drainage area should be 5 ha to sustain wet pond, preferred drainage	4-52
Contributing Drainage Area Catchment Predominate Landuse	37.71	ha	73.3	ha	5.0		ОК	area is >10 ha Describe % / ls curb & gutter or ditch system pre-dominant	
Catchment Imperviousness %	24	%	-	%					
Fisheries Protection Level Part 3a: Pond Design Parameters - Main Pond	Enhanced	Level	Enhanced	Level	Enhanced		ОК	All streams within NVCA and LSRCA require Enhanced Protection (Level 1)	
Pond Fenced (vegetative barrier or fence)		1						Standards for fencing vary from municipality to municipality, thorny vegetative	4-60
Pond Fenced (Vegetative barrier or fence)	Yes	yes/no	-	yes/no	no		ок	barriers very effective	4-60
Interpretive & Warning signage	-	yes/no	-	yes/no	yes		FALSE	Should describe the pond's function and warn of water level fluctuations, thin ice and other specific hazards	4-60
Total SWM Pond Surface Area	4350	m ²	-	m ²				Measured at top of berm	
Pond Block Area / Pond Area (top surface) ratio Overall Pond Length	14.4 111.09	PBA/PA m	-	PBA/PA m	1.5		ок	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5 Measured at PP level or through mid section of the pond	
Overall Pond Width	16.88	m	-	m					
Length / Width Ratio	6.6	l/w	-	l/w	3		OK	Preferred is 4:1 to 5:1	4-59
Average Permanent Pool depth Max Depth Permanent Pool	0.98	m m	-	m m	1 1	2 3	Failed OK	Average permanent pool depth should be between 1 - 2 m Maximum permanent pool depth should be less than 3 m	4-60 4-60
Permanent Pool Volume Unit	25	m³/ha	-	m³/ha				As per Table 3.2 (MOE)	3-10
Existing Permanent Pool Volume	938	m ³	800	m ³	2586		Failed	Compare Unit rate volume to actual design	3-10
Depth of Extended Detention Storage	0.02	m	-	m		1.5	ок	Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-60
Eviating Extended Detention Storage								Actual volume must equal or exceed the design volume / Design extended detention storage (Table 3.2) should exceed 40 m ³ /ha or 24 hr 25 mm Chicago	4.52;
Existing Extended Detention Storage	0	m ³	1257	m ³	1,508		Failed	storm runoff volume (~ 40m3/ha used as a minimum criteria)	3-10
Extended Detention Storage Drawdown Time	NA	hours	-	hours	24	48	Failed	Based on Equation 4.11	4-58
Active Storage Depth (total storage @ spillway Elev.) Maximum Grade at Permanent Pool	1.0 4.3	m :1 (h/v)	-	m :1 (h/v)	5	2 7	OK Failed	Total active storage including quantity control Minimum slope at the permanent pool should be 5:1 - 7:1 preferred maximum	4-60 4-61
Maximum Pond Side Slopes	4.3	:1 (h/v)		:1 (h/v)	5	3	OK	Maximum pond side slopes 3:1 or flatter	4-61
Part 3b: Pond Design Parameters - Forebay		2		2					4.50
Total Forebay Surface Area Forebay provided at each inlet	767 Yes	m ² ves/no	-	m² yes/no		1450.04	ОК	Forebay area should be less than 1/3 of pond surface area If multiple inlets	4-56 4-56
Max Depth of Forebay: F1	1.07	m	-	m	1	3	ок	Minimum forebay depth is 1 m	4-55
F2 Provided Length to Width Ratio: F1	1.09 0.3	m I/w	-	m I/w	1 2	3	OK Failed	Minimum forebay depth is 1 m Minimum forebay lenath to width ratio is 2:1 if single inlet	
F1001ded Length to Width Hallo.	0.4	l/w	-	l/w	2		Failed	winimum forebay length to width fallo is 2.1 in single inlet	
Submerged Forebay Berm: F1	No	yes/no	-	yes/no	yes		Failed	Submerged preferred for safety reasons	4-58
F2 Part 3c: Pond Design Parameters - Inlet	No	yes/no	-	yes/no	yes	1	Failed	Submerged preferred for safety reasons	4-58
Number of pond inlets	2]	-			1		More than one inlet may require increases in effective storage volumes	4-62
Inlet 1 Inlet Pipe Diameter 1	960	mm	-	mm	450	1	ОК	Minimum inlet pipe diameter of 450mm	4-9
Inlet Pipe Slope_1	0.7	%	-	%	1		Failed	Inlet pipe slope preferred > 1%	4-9
Inlet Pipe Length_1	23.0	m voo/no	-	m			01/	A submerged inlet is not preferred	4-63
Submerged Inlet_1 Submerged Pipe Grade_1	No -	yes/no %	-	yes/no %	no 1		OK OK	Submerged nine is not preferred Submerged pipe slope should be a minimum of 1 %	4-63
Energy dissipation provided to prevent scour_1	No	yes/no	-	yes/no	yes		Failed	Only portions of forebay required to be hardened	4-63
Exposed Pilot Channel_1 Inlet Headwalls and Wingwalls 1	No Yes	yes/no yes/no	-	yes/no yes/no	yes	0	Failed OK	An exposed pilot channel is not preferred Biotechnical structures highly preferred	4-62 4-65
Inlet Area Depth_1	-	m	-	m	1.0	3.0	Failed	Depth at the inlet pipe should be a minimum of 1 m (Plunge pool)	4-65
Inlet 2 Inlet Pipe Diameter 2	900	mm	-	mm	450	1	ок	Minimum inlet pipe diameter of 450mm	4-81
Inlet Pipe Slope 2	0.75	%	-	%	450		Failed	Inlet pipe slope preferred > 1%	4-81
Inlet Pipe Length_2	22.2	m	-	m					
Submerged Inlet_2 Submerged Pipe Grade 2	No -	yes/no %	-	yes/no %	no 1		ок	A submerged inlet is not preferred Submerged pipe slope should be a minimum of 1 %	4-81 4-81
Energy dissipation provided to prevent scour_2	No	yes/no	-	yes/no	yes		Failed	Only portions of forebay required to be hardened	4-81
Exposed Pilot Channel_2 Inlet Headwalls and Wingwalls 2	No Yes	yes/no yes/no	-	yes/no yes/no	NOC	0	Failed OK	An exposed pilot channel is not preferred Biotechnical structures highly preferred	4-81
Part 3d: Pond Design Parameters - Outlet	103	yes/no	-	yes/no	yes	1	UK	Biolechnical structures highly preferred	4-01
Outlet located in embankment	Yes	yes/no	-	yes/no	yes		ОК	Outlet structure should be located in embankment for maintenance purposes	4-65
Bottom Draw Outlet Outlet Pipe Diameter	No 250	yes/no mm	- 600	yes/no mm	yes 450		Failed Failed	Recommended in conjunction with deeper outlet area (2-3 m): temp. mitigation Minimum outlet pipe diameter of 450mm (Cold climate min. requirement)	4-11 4-9
Outlet Pipe Slope	3.7	%	-	%	1		ОК	Outlet pipe slope preferred > 1% (Cold climate min. requirement)	4-9
Reverse Sloped Pipe Diameter, if provided		mm		mm	150		ок	Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse slope pipe should have a minimum diameter of 150 mm	4-66; 4- 69
Orifice Diameter	-	mm mm	- 50	mm mm	150 75	100	OK OK	Smallest acceptable diameter is 75 mm	69 4-58
Perforated Riser Orifice Plate Dia., if riser pipe used								Perforated riser outlets may be used in pond <= 1 m deep. Perforated riser orifice	4-67
Design Modifications for Cold Climates: alpha	- 15	mm	250	mm	50		ОК	plate diameter should be greater than 50 mm in diameter Coefficient of ice growth	4-8
Design meaneatons for cold climitates. alpha		1		1				Sum of freezing degree-days - Based on MSC Canadian Climate Normals 1971-	4-8
	753.3 412	mm		mm	MOE Equ	ation 4 1		2000 - City of Barrie Ice thickness	4-8
Submerged outlet depth	-	m		m	562		ок	Submerged outlets obvert to be set 150 mm lower than ice cover	4-8 4-9
Part 3e: Pond Design Parameters - Major Flow		1	050	-		1		Date input	
Top of Berm Elevation Top of Emergency Spillway Elevation	230.5 230.2	m m	250	m m				Data input Data input	
Provided Freeboard (@ spill elev.)	0.3	m	-	m	0.300		ок	Minimum freeboard above maximum design water level should be 0.3 m	4-60
Part 4: Sediment Annual sediment loading	22.6	m ³ /year	Not defined	m ³ /year					6-14
Estimated sediment volume	42.95	m ³	Not defined	m ³					0-14
Number of years before Pond clean-out required	0 65	yrs m³/ha	Not defined	yrs	01.1		P - 14 - 1	Target efficiency required storess	
			-	1	91.4		Failed	Target efficiency required storage	
Adjusted water quality storage Treatment Level	<3	in /na	Not defined						

					Part 1: Ge	anaral Info	ormation		
Dry Pond Criteria Check				>	Part 1: Ge			Goldcrest	1
As per Stormwater Management Planning and Design	2003)	Inni	Pond Name Municipal Pond ID			15-1	-		
As per storniwater infandgement Flamming and Design								-	-
STORMWATER MANAGEMENT MASTER	PLAN - PAR	T 1					CA Pond ID of Approval:	3-0662-89-006	
							acility Type	Dry pond	
By: Hatch Mott MacDonald Degree & Exercise						lity Function	Water quantity control		
Municipal Address:	GIS Coordinate		Year:		•		Watershed	Inviatil Overla	
2098 Fennel Dr, 74-186-22	Latitude:		Constructed:	1980		Poooi	ving Waters	White Direct Orests	-
		70 00 415 011 144		0			-		-
	Longitude:		Retrofitted:	•		Re	eceiver Type		_
Checklist Part 2: Catchment Information	Assessment Value	Units	Design Value (CofA and/or Design Report)	Units	Min. Design	Max. Design	Criteria Check	Notes	MOE Page
Fart 2. Catchinent information		1]		1		Minimum drainage area should be 5 ha, preferred drainage area is >10 ha	4-80
Contributing Drainage Area Catchment Predominate Landuse	12.57	ha	- 14.4	ha	5.0		ок	Describe % / Is curb & gutter or ditch system pre-dominant	4 00
Catchment Imperviousness %	49.5	%	-	%				Describe % / is carb & guiler of anch system pre-dominant	
Fisheries Protection Level	Basic	Level	Basic	Level	Basic		Failed	Dry ponds cannot achieve higher than basic treatment	
Part 3a: Pond Design Parameters - Main Pond	-	1	[1		1		Standards for fencing vary from municipality to municipality, thorny vegetative	
Pond Fenced (vegetative barrier or fence)	Yes	yes/no	-	yes/no	no		ок	barriers very effective	4-60
Interpretive & Warning signage								Should describe the pond's function and warn of water level fluctuations, thin ice	4-60
Total SWM Pond Surface Area	- 1997	yes/no m ²	-	yes/no m ²	yes		FALSE	and other specific hazards Measured at PP level or through mid section of the pond	
Pond Block Area / Pond Area (top surface) ratio	1.2	PBA/PA	-	PBA/PA	1.5		Failed	Check for retrofit feasibility - pond expansion not feasible if ratio <1.5	
Overall Pond Length	11.5	m	-	m				Measured at top of berm	
Overall Pond Width Length / Width Ratio	11.5 1.0	m I/w	-	m I/w	3		Failed	Preferred is 4:1 to 5:1	4-59
Depth of Extended Detention Storage	0	m	-	m		3	ок	Active storage depth for water quality/erosion control - 1.0 m preferred maximum	4-81
Existing Extended Detention Storage		m ³	_	m ³	1697		ок	Actual volume must equal or exceed the design volume	3-10
Extended Detention Storage Drawdown Time	0	hours	-	hours	24		OK	Based on Equation 4.11	4-58
Active Storage Depth (total storage @ spillway Elev.)	2.17	m	-	m	1	3	ок	Total active storage including quantity control	4-81
Maximum Pond Side Slopes Part 3b: Pond Design Parameters - Forebay	2.7	:1 (h/v)	-	:1 (h/v)	4	1	Failed	Maximum pond side slopes 4:1 or flatter	4-79
Total Forebay Surface Area	-	m²	-	m ²		666	Failed	Forebay area should be less than 1/3 of pond surface area	4-80
Forebay provided at each inlet	no	yes/no	-	yes/no				If multiple inlets	4-80
Max Depth of Forebay: F1 F2	-	m m	-	m m	1	3		Minimum forebay depth is 1 m Minimum forebay depth is 1 m	4-80 4-80
Provided Length to Width Ratio: F1	-	l/w	-	l/w	2			Minimum forebay length to width ratio is 2:1 if single inlet	4-80
F2 Forebay Berm: F1	-	l/w	-	l/w yes/no	2			Submerged preferred for safety reasons	4-80 4-80
F2	-	yes/no yes/no	-	yes/no	yes yes			Submerged preferred for safety reasons	4-80
Part 3c: Pond Design Parameters - Inlet				1					
Number of pond inlets Inlet 1	2	_	-]		1		More than one inlet may require increases in effective storage volumes	4-81
Inlet Pipe Diameter_1	750	mm	-	mm	450		ок	Minimum inlet pipe diameter of 450mm	4-81
Inlet Pipe Slope_1 Inlet Pipe Length 1	0.94 23.3	% m	-	% m	1		Failed	Inlet pipe slope preferred > 1%	4-81
Submerged Inlet 1	No	yes/no	-	yes/no	no		ок	A submerged inlet is not preferred	4-81
Submerged Pipe Grade_1	-	%	-	%	1		ок	Submerged pipe slope should be a minimum of 1 %	4-81
Energy dissipation provided to prevent scour_1 Inlet Headwalls and Wingwalls 1	Yes Yes	yes/no yes/no	-	yes/no yes/no	yes yes		ОК ОК	Only portions of forebay required to be hardened Biotechnical structures highly preferred	4-81 4-81
Inlet 2			[, -					
Inlet Pipe Diameter_2 Inlet Pipe Slope 2	450	mm %	-	mm %	450 1		ок ок	Minimum inlet pipe diameter of 450mm Inlet pipe slope preferred > 1%	4-81 4-81
Inlet Pipe Length_2	-	m m	-	m m			UK	איז איז איזער א	+-01
Submerged Inlet_2	No	yes/no	-	yes/no	no			A submerged inlet is not preferred	4-81
Submerged Pipe Grade_2 Energy dissipation provided to prevent scour 2	- No	% yes/no	-	% yes/no	1 yes		OK Failed	Submerged pipe slope should be a minimum of 1 % Only portions of forebay required to be hardened	4-81 4-81
Exposed Pilot Channel_2	No	yes/no	-	yes/no	,03	0	Failed	An exposed pilot channel is not preferred	
Inlet Headwalls and Wingwalls_2 Part 3d: Pond Design Parameters - Outlet	Yes	yes/no	-	yes/no	yes		ОК	Biotechnical structures highly preferred	4-81
Outlet located in embankment	Yes	yes/no	-	yes/no	yes		ОК	Outlet structure should be located in embankment for maintenance purposes	4-82
Outlet Pipe Diameter Outlet Pipe Slope	300 0.00	mm %	300	mm %	450 1		Failed Failed	Minimum outlet pipe diameter of 450mm (Cold climate min. requirement) Outlet pipe slope preferred > 1% (Cold climate min. requirement)	4-79 4-79
Reverse Sloped Pipe Diameter, if provided					150		e.	Reverse slope outlet recommended for ponds greater than 1 m deep. Reverse	4-79, 4
Orifice Diameter		mm mm	-	mm mm	150 75	100	ОК ОК	slope pipe should have a minimum diameter of 150 mm Smallest acceptable diameter is 75 mm	83 4-82
Part 3e: Pond Design Parameters - Major Flow				1					
Top of Berm Elevation Top of Emergency Spillway Elevation	289.55 289.5	m m	-	m m				Data input Data input	
Provided Freeboard (@ spill elev.)	0.05	m	-	m	0.300		Failed	Minimum freeboard above maximum design water level should be 0.3 m	4-60
Part 4: Sediment		3.							
		m ³ /year	-	m ³ /year					6-14
Annual sediment loading Estimated sediment volume	19 552.38		-	m ³					
Estimated sediment volume Number of years before clean-out required	19 552.38 #VALUE!	m³ yrs	-	m³ yrs			#VALUE!		
Estimated sediment volume	552.38	m ³		-	135		#VALUE!		