

ID#	Indicator Name	Indicator Type	Environmental Compartments							Great Lakes Issues					SOLEC Groupings <sup>1</sup>					GLWQA Annex <sup>2</sup>												
			State	Pressure	Human Activity	Air	Water	Land	Sediments	Biota (excluding fish & humans)	Fish	Humans	Contaminants & Pathogens	Nutrients	Exotics	Habitat	Climate Change	Stewardship	Open Waters	Nearshore Waters	Coastal Wetlands	Nearshore Terrestrial	Land Use	Human Health	Societal	Unbounded	1 Spec Objectvs	2 LaMPs / RAPs / BUIs	3 Phosphorus	4 Oil - Vessels	5 Wastes - Vessels	
<b>Nearshore and Open Waters Indicators</b>																																
6	Fish Habitat	X			X			X						X			X	X	X									X				
8	Salmon and Trout	X						X			X	X	X	X			X	X									X					
9	Walleye and Hexagenia	X					X	X			X	X	X	X			X	X									X					
17	Preyfish Populations	X						X			X	X	X	X			X	X									X					
18	Sea Lamprey		X					X					X				X	X									X					
68	Native Unionid Mussels	X						X					X				X	X	X								X					
93	Lake Trout and Scud ( <i>Diporeia hoyi</i> )	X						X	X		X	X	X	X			X									X	X					
101	Deformities, Eroded Fins, Lesions and Tumors (DELT) in Nearshore Fish	X						X			X							X									X					
104	Benthos Diversity and Abundance	X						X			X	X		X			X	X	X								X					
109	Phytoplankton Populations	X						X			X	X	X				X	X									X	X				
111	Phosphorus Concentrations and Loadings		X			X						X					X	X	X								X	X	X			
114	Contaminants In Young-of-the-Year Spottail Shiners		X						X		X							X									X	o				
115	Contaminants in Colonial Nesting Waterbirds		X					X			X						X	X									X	X				
116	Zooplankton Populations		X					X			X	X	X				X	X									X					
117	Atmospheric Deposition of Toxic Chemicals		X		X	X					X						X										o					
118	Toxic Chemical Concentrations in Offshore Waters		X			X					X						X										X					
119	Concentrations of Contaminants in Sediments Cores		X				X				X						X	X									X					
120	Contaminant Exchanges Between Media: Air to Water, and Water to Sediment		X		X	X	X				X						X	X									X					
7059	Wastewater Pollution		X			X					X	X					X										X	X	X			
8142	Sediment Available for Coastal Nurishment		X			X	X						X				X		X								X					
<b>Coastal Wetland Indicators</b>																																
4501	Coastal Wetland Invertebrate Community Health		X					X					X					X									X					
4502	Coastal Wetland Fish Community Health		X					X				X	X					X									X					
4503	Deformities, Eroded Fins, Lesions and Tumors (DELT) in Coastal Wetland Fish		X					X			X							X									X					
4504	Amphibian Diversity and Abundance		X					X					X					X														
4506	Contaminants in Snapping Turtle Eggs		X					X			X							X									X					
4507	Wetland-Dependent Bird Diversity and Abundance		X					X					X					X									X					
4510	Coastal Wetland Area by Type		X			X	X						X					X									X					
4511	Gain in Restored Coastal Wetland Area by Type			X		X	X						X	X				X									X					
4513	Presence, Abundance & Expansion of Invasive Plants		X					X					X	X				X	X								X					
4516	Sediment Flowing Into Coastal Wetlands		X			X	X						X					X	X								X	X				

GLWQA Annex (con'd)																	IJC Desired Outcomes									GLFC Objectives					Beneficial Use Impairments														Totals					
6 Shipping / Pollution	7 Dredging	8 Facilities	9 Contingency Plan	10 Hazard. Poll. List	11 Monitoring	12 Pers. Toxic Subs.	13 Non-point Sources	14 Contam. Sed's	15 Airborne Toxic Subs.	16 Groundwater	17 Res. & Devel.	1 Fishability	2 Swimmability	3 Drinkability	4 Healthy Humans	5 Economic Viability	6 Bio. Integ. & Divers.	7 Virt. Elim. PTS	8 Excess Phos.	9 Physical Env. Integ.	Ontario	Erie	Huron	Michigan	Superior	1 F&W Consumption	2 Tainting	3 F&W Pop's	4 Tumors	5 Deformities/Reprod.	6 Benthos	7 Dredging	8 Eutrophication	9 Drinking Water	10 Beach Closings	11 Aesthetics	12 Ag./ Indust. Costs	13 Phyto-/ Zoo-plankton	14 F&W Habitat	Totals										
					X											X			X		X	X	X	X	X																	X	17							
					X											X					X	X	X	X	X		X																	X	16					
					X											X					X	X	X				X		X																X	17				
					X											X					X	X	X	X	X		X																			X	17			
					X											X					X	X	X	X	X		X																				X	14		
					X											X					X	X	X	X	X		X																				X	10		
					X											X					X	X	X	X	X		X																				X	19		
					X	X										X	X										X																					X	10	
					X											X											X																					X	12	
					X											X	X																															X	13	
					X	X										X	X																															X	18	
					X	X										X	X																															X	10	
					X											X	X																															X	14	
					X											X																																X	11	
					X	X			X	X						X																																X	11	
					X	X										X																																X	8	
	X				X	X		X								X																																X	13	
					X	X		X	X	X						X																																	X	14
					X	X										X	X																															X	14	
					X											X																																X	10	
					X	X										X	X																															X	10	
					X	X										X																																X	12	
					X	X	X			X						X	X																															X	12	
					X	X										X																																X	10	
					X	X	X									X																																X	9	
					X											X																															X	10		
					X	X										X	X																														X	11		
					X	X										X																															X	12		
					X	X										X																															X	11		
					X	X										X																															X	12		

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4860	Nitrate and Total Phosphorus Into Coastal Wetlands	X			X							X							X							X	X							
4861	Effect of Water Level Fluctuations	X			X									X	X				X	X						X								
<b>Nearshore Terrestrial Indicators<sup>3</sup></b>																																		
8129	Area, Quality, and Protection of Lakeshore Communities	X				X	X						X	X					X								X							
8131	Extent of Hardened Shoreline	X				X							X						X	X						X								
8132	Nearshore Land Use	X				X							X						X	X						X								
8134	Nearshore Plant and Animal Problem Species	X					X					X	X						X							X								
8135	Contaminants Affecting Productivity of Bald Eagles	X					X				X						X	X	X							X								
8136	Extent and Quality of Nearshore Natural Land Cover	X				X							X						X							X								
8137	Nearshore Species Diversity and Stability	X					X					X							X							X								
8139	Community / Species Plans		X				X								X				X		X													
8141	Shoreline Managed Under Integrated Management Plans		X			X									X				X	X		X												
8146	Artificial Coastal Structures	X				X							X				X		X							X								
8147	Contaminants Affecting the American Otter	X					X				X							X	X							X	X							
8149	Protected Nearshore Areas		X			X							X	X					X		X					X								
<b>Land Use Indicators</b>																																		
7000	Urban Density	X				X													X															
7002	Land Conversion	X				X													X															
7006	Brownfield Redevelopment		X			X								X					X															
7012	Mass Transportation	X			X	X								X	X				X															
7028	Sustainable Agricultural Practices		X			X								X					X							X	X							
7053	Green Planning Process		X			X	X							X					X		X													
7055	Habitat Adjacent to Coastal Wetlands	X				X							X					X	X	X						X								
8114	Habitat Fragmentation	X				X							X						X							X								
<b>Human Health Indicators</b>																																		
113	Contaminants in Recreational Fish	X						X			X						X	X			X					X	X							
4081	E. coli and Fecal Coliform Levels in Nearshore Recreational Waters	X			X		X				X						X				X					X	X							
4083	Contaminants in Edible Fish Tissue	X					X				X						X	X			X					X	X							
4088	Chemical Contaminant Intake from Air, Water, Soil and Food	X						X			X										X													
4175	Drinking Water Quality	X			X						X	X					X	X			X					X	X							
4176	Air Quality	X			X						X										X					X	o							
4177	Chemical Contaminants in Human Tissue	X						X			X										X					X								
4178	Radionuclides	X			X	X		X			X										X					X								

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				X		X										X		X												X														10					
				X						X						X		X																									X		12				
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				X												X		X																												9			
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				X						X						X		X									X																				12		
				X	X					X						X	X										X		X																		14		
				X												X		X																													9		
				X												X		X										X																			8		
				X												X		X																												6			
				X												X		X																													6		
				X												X		X																													9		
				X	X	X										X	X												X																			13	
				X		X										X		X																														8	
				X	X											X		X																														11	
				X												X		X																														8	
				X	X							X		X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		20		
				X	X							X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		13	
				X	X							X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		20	
				X	X							X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		8	
				X	X							X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		15	
				X								X				X		X																													10		
				X	X							X				X		X																														10	
				X								X				X		X																														10	

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4179	Geographic Patterns and Trends in Disease Incidence	X								X													X								
<b>Societal Indicators</b>																															
3509	Capacities of Sustainable Landscape Partnerships		X							X						X								X							
3510	Organizational Richness of Sustainable Landscape Partnerships		X							X						X								X							
3511	Integration of Ecosystem Management Principles Across Landscapes		X							X						X								X							
3512	Integration of Sustainability Principles Across Landscapes		X							X						X								X							
3513	Citizen/Community Place-Based Stewardship Activities		X							X						X								X							
7042	Aesthetics	X								X						X								X		X					
7043	Economic Prosperity	X																						X							
7056	Water Withdrawal	X			X					X						X					X		X								
7057	Energy Consumption	X			X					X					X	X					X		X								
7060	Solid Waste Generation	X			X	X				X	X				X	X								X							
8140	Financial Resources Allocated to Great Lakes Programs		X							X						X								X							
<b>Unbounded Indicators</b>																															
4519	Climate Change: Number of Extreme Storms	X			X										X				X	X				X							
4857	Climate Change: First Emergence of Water Lily Blossoms in Coastal Wetlands	X						X							X				X					X							
4858	Climate Change: Ice Duration on the Great Lakes	X			X										X		X	X	X					X							
8150	Breeding Bird Diversity and Abundance	X						X						X										X		X					
8161	Threatened Species	X						X	X			X	X											X		X					
9000	Acid Rain	X			X	X	X				X													X		X					
9002	Exotic Species	X						X	X			X												X							
79	COUNT	30	36	13	9	19	19	4	24	14	13	29	11	14	27	7	19	21	24	21	18	13	9	15	7	18	49	5	0	0	
<sup>1</sup> Bold X designates the primary SOLEC Grouping for each indicator																															
<sup>2</sup> o = Some LaMPs /RAPs are incorporating these measures into their plans even though the indicators do not have an associated BUI																															
<sup>3</sup> #8142 Sediment Available for Coastal Nurishment and #4861 Water Level Fluctuations are also co-grouped with Nearshore Terrestrial Indicators																															

