

DRAFT for Discussion

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To: Roger Gauthier, GLC  
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II-Strategy Team

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Subject: Best Value Indicators

The following items are offered as specific, high value projects that would advance the development and implementation of Great Lakes indicators, and that would provide immediate benefit to the understanding of the status and trends of Great Lakes land cover and land conversion. These ideas are presented to foster discussion and to provide a rationale for new investment into Great Lakes indicator development and reporting. Estimated costs are "ball park" only should not be construed as definitive or justified at this time. Suggestions and comments are welcomed.

**Item 1.** *What are the "best-value indicators" to implement for the Great Lakes into which new money would be invested? Include also consideration of the quickest return on investment.*

Paul Bertram and Nancy Stadler-Salt consensus: **#7002 Land Cover / Land Conversion**

### **History**

#### Selection of Indicators Version 4 and Version 5

##### #7002 Land Conversion

Measure: Percent change in land use type, including agriculture, urban development, and forest, marsh or other natural cover.

Purpose: To assess the changes in land use within the Great Lakes basin, and to infer the potential impact of land conversion on Great Lakes ecosystem health.

#### Stakeholder Review of the Great Lakes Indicators, January 27-28, 2004.

##### #7002 Land Conversion

- very important
- If we look at conversion we have the potential to measure human density
- The biggest impact is the conversion of forest to any other use
- Change title to "Land Cover Change"
- Combine Indicators 7000 Urban Density, #7006 Brownfield Redevelopment and #7054 Ground Surface Hardening
- Measure % change in land use type

Other indicators that should be able to be assessed using the same data (extent of land cover by type):

# 4510 Coastal Wetland Area by Type

# 4863 Land Use Adjacent to Wetlands

# 7054 Ground Surface Hardening

# 8114 Habitat Fragmentation

# 8132 Nearshore Land Use

# 8136 Extent and Quality of Nearshore Natural Land Cover

# 8500 Forest Lands

(undeveloped: Extent of Agriculture Lands by Type)

Other indicators that may be able to be assessed in part using the same data (extent of land cover by type):

# 7000 Urban Density

# 7006 Brownfield Redevelopment

# 8129 Area, Quality, and Protection of Special Lakeshore Communities

Cobble Beaches

Alvars

Islands

Sand dunes

# 8131 Extent of hardened Shoreline

# 8146 Artificial Coastal Structures

### Land Cover / Land Change Videoconference

17 February 2005

Participants: EPA/GLNPO; EPA/ORD Las Vegas; Purdue University; Univ. Minnesota-Duluth; Univ. Windsor; Environment Canada; Natural Resources Canada; Great Lakes Commission

Consensus:

- Very worthwhile
- Great Lakes network of Land Cover practitioners would be useful, productive
- Individuals ready to provide analyses for SOLEC
- Several groups are waiting for a coordinator with time & energy to lead

### **Proposal for II-Strategy Team**

*Organize and implement a Great Lakes Land Cover/Land Change Consortium:*

#### Products:

- Current map and analysis of land cover by type for U.S. and Canadian Great Lakes watershed
- Land Conversion from forestry and agriculture cover to urban/developed from 1980s 1990s to current conditions, U.S. and Canada, in Great Lakes Basin.
  - Area and extent by type
  - Rate of conversion by type
  - Analysis of historically high rates of conversion
  - Analysis of high risk locations for land cover conversion
- Using Remote Sensing/GIS technology, complete an analysis and report of the following indicators, spatially covering U.S. and Canadian areas of the Great Lakes basin watershed:
  - Analysis of #4510 Coastal Wetland Area by Type
  - Analysis of #4863 Land Use Adjacent to Wetlands
  - Analysis of #7054 Ground Surface Hardening
  - Analysis of #8114 Habitat Fragmentation
  - Analysis of #8132 Nearshore Land Use
  - Analysis of #8136 Extent and Quality of Nearshore Natural Land Cover

#### Costs:

	<u>per year</u>
Coordinator ½ time (\$30 k + \$20 k benefits)	= \$ 50,000
Travel (10 trips @ \$1000 each)	= \$ 10,000
Data Acquisition (WAG)	= \$ 50,000
Sub-projects support (8 @ \$30,000)	= \$240,000

Total = \$350,000

Duration: 5 years = \$1,750,000

**Item 2.** *What indicators could be applied in the Lake Huron to Lake Erie corridor (i.e., St. Clair River – Lake St. Clair – Detroit River Ecosystem) with nominal investment?*

Proposal: *Implement a U.S. SCR-LSC-DR Land Cover/Land Change Analysis.*

Rationale: See the Item 1, above, for an overall rationale for focusing on land cover/land conversion.

A recent Canadian publication demonstrates a reasonably good handle on land cover on the Canadian side of the St. Clair River – Lake St. Clair corridor. The document is, *Lake St. Clair Canadian Watershed. Draft Technical Report. An Examination of Current Conditions,* January 2005. The data are current up to and including 2003. Contents include background, basin characteristics, stresses on the environment, effects of the stressors, and a discussion of monitoring. Sponsors include Environment Canada, St. Clair Region Conservation Authority, and Ontario Ministry of Natural Resources. The report includes a fold-out map of land use in the Canadian part of the Lake St. Clair basin.

Because land cover and land conversion is critical to understanding stressors on the Great Lakes and their connecting channels, an analysis of the U.S. part of the Lake St. Clair watershed would complement that already completed for Canadian lands. The U.S. and Canadian information, combined, would then allow a more detailed analysis of watershed stressors, sources and locations. More informed decision-making and management implications could then be derived from the information.

Costs (rough estimate only):

Year 1

Analyst 100% time (\$60 k + \$40 k benefits)	= \$ 100,000
Travel (5 trips @ \$1000 each)	= \$ 5,000
Data Acquisition (WAG)	= \$ 10,000
Sub-projects support (2 @ \$30,000)	= \$ <u>60,000</u>
Total	\$ 175,000

Year 2

Analyst 100% time (\$60 k + \$40 k benefits)	= \$ 100,000
Travel (5 trips @ \$1000 each)	= \$ 5,000
Publication/Distribution	= \$ 5,000
Sub-projects support (1 @ \$30,000)	= \$ <u>30,000</u>
Total	\$ 140,000