Office of the Great Lakes

Policy and programs to protect, restore and sustain our Great Lakes.

Work with federal state and provincial partners, legislators, and communities to:

• support sustainable coasts, beaches and harbors
• coordinate GLRI restoration
• coordinate lakewide management plans
• address water quantity and diversions (Compact)
• prevent aquatic invasive species
• assess emerging issues
• engage in regional management and governance

Ensure a healthy environment, strong economy and a remarkable quality of life with respect to our Great Lakes.
Activities, Programs and Issues

• Area of Concern
• Coastal Zone Management
• Lakewide Management
• Regional Issues and Relationships
  • Council of GL Governors
  • Great Lakes Commission, IJC, GLEC, GLAB, GLPF, etc...

• Some Key Issues
  • Invasive Species
  • Water Strategy
  • Water Use Council
  • Lake Levels and Fluctuations
  • Water Diversions – Waukesha

  • Harbor Sustainability
  • Aquaculture
  • Non Point Sources
  • Lake Erie Nutrients
  • Groundwater Resources
Economic Value

- The Great Lakes region is a huge financial power
- Gross production in the Great Lakes is **fourth worldwide**, between Japan and Germany.
Leadership Summit on Mackinac Island

Council of Great Lakes Governors

MAY 31 - JUNE 2, 2013

Mackinac Island, Michigan - June 1, 2013

Resolution

Great Lakes-St. Lawrence River Maritime Initiative
Governors’ Great Lakes Agenda

- **Invasive Species** – Mutual aid, regional solutions
- **Maritime Initiative** – Improve maritime transportation and infrastructure for internal and external markets
- **System Monitoring** – Data, management and information systems for social, economic and environmental outcomes.
- **Regional Tourism** – Visibility and attractiveness of Great Lakes Region internationally for tourism
- **International Trade** – Investment models, to attract direct foreign investment; connect mid-market firms
- **Great Lakes-St. Lawrence River Water Partnership** – Coordinates international trade missions, creates a regional brand and region-wide collaboration
Economic Value of the Great Lakes

**MICHIGAN’S TOP 10 TRADE PARTNERS**

1. Canada $61.540 billion
2. Mexico $32.526 billion
3. China $6.170 billion
4. Germany $4.423 billion
5. Japan $4.288 billion
6. South Korea $1.669 billion
7. France $1.410 billion
8. United Kingdom $1.348 billion
9. Brazil $1.215 billion
10. Saudi Arabia $921 million

*(four year average: 2008–2011)*

*Source: U.S. Department of Commerce, International Trade Administration*
Growing Pressure on Water

- **World-wide population Expansion**
  - Areas in urgent need of water supply and sanitation.
    - 2.5 billion people lack access to safe sanitation
    - Nearly ½ of world population will live in high water stress by 2030
  - Global demand for projects in the trillions of dollars over next decades.
  - Water for ag accounts for **70% of global freshwater withdrawals**
  - Significant pressure on water resources as populations grow.

- **Pacific Institute and Vox Global survey (2013)**
  - 80% of U.S. companies now say water availability is a key issue
  - 63% said water issues affect their future location decisions
  - 50% report water scarcity may impact growth and profitability

- **Water Risk**
  - *Global Risks* report from the World Economic Forum, ranked water as third greatest risk to the global economy
  - Water is key to corporate sustainability, management and performance
Agricultural Expansion

- Agriculture is booming in Michigan and the Great Lakes region
  - Second in overall crop diversity in US
  - Seed Corn – biggest in North America
  - $95+ Billion Dollars in Agriculture in Mi through value chain
  - Ag is expanding northwards
Water Research at the URC for Michigan

- Water Industry Employment in Michigan - 21.3%
  - 4th Largest in the US
  - 800,000 jobs in ag, mining, forestry, manufacturing and water treatment
- Five years of Water-Related Research - $300 million

Tremendous Water Capacity

Lake Superior – 12,100 km$^3$
Lake Michigan – 4,920 km$^3$
Lake Huron – 3,540 km$^3$
Lake Erie – 484 km$^3$
Lake Ontario – 1,640 km$^3$

**Groundwater** – 4,168 km$^3$
Ground Water

Figure 1
Glacial Deposits - Estimated Yield

Note: Yield is defined as the pumping rate necessary to produce an estimated 50% decrease in water level at a well, for the used thickness of the glacial deposits as derived from Wellogic well records.
Michigan’s Use of Groundwater

WWAT registrations (2890) 7-9-09 through 6-3-14
Michigan’s Water Strategy

Governor Snyder called for a Water Strategy based on an ecosystem approach addressing:

- Invasive species
- Algal blooms/muck
- Coastal communities
- Beach closings
- Historical pollution/restoration
- Water withdrawal, use and conflict
- Water quality/infrastructure
- Storm/sewer, green infrastructure
- Sediment management
Ecosystem Approach

• **Based on**
  • Healthy Functional Systems
    • Physical Processes, Biological Health and System Connectivity
    • Resilience, Representativness, Rarity, Intactness
  • Human Use and Enjoyment
    • Extraction and Use, Assimilation of waste, non-use and recreation
  • Creation of social, ecological, cultural and economic values
Michigan’s Water Strategy

- **Purpose**
  - Focus on our greatest natural resource
  - Connectivity of water
  - Guide actions and investments
  - Connect people to water and place
  - Connect plans together

- **Implementation and Timeline**
- **Engagement**
- **Audience**
Human Connections

• How too cultivate affinity for the Great Lakes?

• How do coastal communities depend on water?

• What makes people value water?

• What is the psychological connection to water?

• What do demographic trends say about future Great Lakes and societal needs?
Economic Connections

- How is economy linked with water?
- Which industries depend on water? What can grow?
- How can we grow economic capacity and manage healthy systems?
- How is global trade changing? What are infrastructure needs?
- How is agriculture changing and growing?
- Can we grow production aquaculture?
15 Outcomes for Strategy

Four Values - Cultural, Social, Ecological and Economic

- **Healthy Systems**
  - **Drinking water** is safe, available and affordable
  - Safe and accessible for **swimming**
  - Healthy for fishing, hunting and other **recreation**

- **Systems Management**
  - **Infrastructure** is well-designed and maintained
  - **Harbors and waterways** are well-maintained
  - **Coasts** are resilient, shoreline is compatible with use and ecological function
  - **Aquatic life** is managed for resilience and diversity
Outcomes for Strategy, cont’d

- **Economies**
  - **Technologies** help grow sustainable water-based economies
  - Connection between water and **sense of place**
  - **Groundwater** is managed for human use and system integrity

- **Policies**
  - Recognize **land - water and hydrologic connections**
  - **Monitoring** to ensure quality and quantity support uses
  - Informed, **responsible decisions** regarding water
  - Communities **resolve conflict** about water use
  - Support for **investments** in water resources grows
Key Water Strategy Themes

- **Retaining and Managing Water**
  - Groundwater, infiltration, green infrastructure, stormwater management, water use efficiency, farmland management, drainage

- **Invasive Species, Nutrients and other Threats**

- **Infrastructure and Asset Management ... including maritime access**

- **Monitoring for Economic, Social and Ecological Outcomes**

- **Growing Economic Opportunities**
  - Removing legacy drag, clean ups, etc.
  - Blue Economy
  - Technology and Innovation
  - Value, risk, volatility and capital
  - Agriculture and Aquaculture growth, processing

- **Placemaking**

- **Stewardship**
An Enterprise Point of View

Michigan – Statewide Enterprise Budget for Stormwater, Drinking Water and Wastewater Management*

- Federal
  - Grants
  - Loans
- State
  - Restricted
  - General Fund
- Local
  - Municipal*
  - Drains
- Private
  - Industrial
  - Commercial
  - Wells/Septic

* Includes Drinking and Storm/Sewer

- Public Fund
  - Clean Michigan Initiative (CMI)
    Bond (1998)
    $68 Million Balance
    (not all water quality)
- Strategic Water Quality Initiatives Fund (2002)
  $290 Million Balance
  PA 511, 560, 562 of 2012
- Drinking Water Revolving Fund
  Part 54, 1994 PA 451
- Water Pollution Control Revolving Fund (State Revolving Fund - SRF)
  Part 53, 1994 PA 451

* Does not include remediation and clean ups

Revenue Sources

Public Expenditures

Private Expenditures

Public Fund Balances

State Restricted Fund Balances

* does not include pension obligations

Operation and Maintenance*

Assess Management

Capital Expenditures

Debt Service

Florida 
- Grants  
  - Loans
State
  - Restricted
  - General Fund
  - Universities
  - Municipal*
  - Drains
Private
  - Industrial
  - Commercial
  - Wells/Septic

* Does not include remediation and clean ups

Operation and Maintenance

Capital

Debt Service

Debt Repayment to Appropriate Fund
Water Technology and Innovation

[Diagram with nodes and arrows representing various stages and processes related to water technology and innovation, including Current System State, Desired State or Condition, System Monitoring Information Management, Water Council (Governance), Water Innovation Center, Accelerator, Private Equity, Public Equity, Self Funded, Design Fabrication Manufacturing, Market Sales, Universities, Private Corporation, Innovation Invention Ideation, Deployment and Use.]
System Monitoring and Management
Thank you
Engagement Strategy Elements

- Water Cabinet - Outcome Development
- 10 White Papers
- 10 Regional Roundtable Dialogs
- 16 Community Conversations
- Michigan’s Water Heritage Project
- Tribal Engagement
- Presentations
- Marquette
- Traverse City
- Gaylord
- Grand Rapids
- Saginaw
- Flint
- Battle Creek
- Bath
- Adrian
- Detroit
Residents Attitudes

U of M Survey of 1000+ Americans and Canadians

- Residents in the Basin are strongly connected to the lakes
  - Mostly through recreational activities
  - Lakes have a significant impact on their daily life (71%)
- The Great Lakes are a valuable economic resource (94%)
- Lakes are in “at least fair condition”, but not necessarily improving
- Most support policies that reduce pollution
  - Rebuilding sewers
  - Regulating the release of pharmaceuticals
- Asian Carp and water levels matter too