Great Lakes and St. Lawrence Cities Initiative Presents:

Understanding Climate Change – Physical Changes in the Region Over the Next Century

David A. Goldwater, Stantec
Stantec Tackling Climate Change

Net Zero
Carbon neutral by 2022, then net zero by 2030
Our Operational Pledge

#5
Ranked fifth most sustainable corporation in the world
2021 Corporate Knights Global 100
Climate and Water Supply

What are we seeing?

- Extreme weather is becoming the new normal
- Long-term water supply issues
- Change and implementation
- Increased pressure for more water diversions
- Availability and access, depleted wetlands and the great lake basin
- Water quality
Coastal Erosion

- Drought and severe and frequent flooding have resulted in increased coastal and soil erosion with massive damage to the natural environment and built infrastructure.
- Natural defense against storms to protect our shorelines:
  - Wetland enhancement
  - Eco-revetments
  - Hardened dune systems
  - Shoreline plantings
  - Maritime
  - Forest restoration
  - Earthen berms
Coastal Resilience

What is happening to our shorelines?

• Rising sea levels
• Extreme weather events
Flood Protection

Communities must adapt—flooding is not going away

• Dams and levees help but when they are breached it can be a catastrophe
• Restore and protect community land
• Use land to store or redirect flooding—sustainable urban drainage (parks, ponds)
• Floating island ecosystems
• Design and model flood embankments
• Design secondary drainage networks and pumping stations
Water Reuse

How do we expand our water supply?

- Enhancing rainwater use
- Stormwater harvesting and reuse
- Avoiding saturation of sewerage networks
- Minimizing the consumption and waste of drinking water
- Desalination
- Better approach to water and wastewater
- Conveyance
Emerging Contaminants

PFAS

• Forever chemicals
• Find them everywhere
• Resistant to water
• Exposure to PFAS is mainly through consumption of drinking water
• Current standards and regulations
Redundancy

- Redundancy of critical infrastructure (intakes, conveyance pipelines, etc.)
- Aquifer Recharge
- Reservoirs
- Quarry Reuse
Groundwater

Different kinds of bedrock in aquifers can cause differences in how quickly groundwater recharges.