



Impacts of Changing Land Use

Principal authors:

Steve Thorp — Great Lakes Commission

Ray Rivers — Environment Canada

Victoria Pebbles — Great Lakes Commission

Presenter:

Michael J. Donahue, Ph.D.

Great Lakes Commission



Presentation Outline

- **Review of conclusions**
- **Changing land use and the nearshore**
 - ▶ **Development**
 - ▶ **Agriculture**
 - ▶ **Transportation**
- **Conclusions and key points**
- **Questions for breakout sessions**



Conclusions

- **Land use has been destructive to the nearshore ecosystem**
- **Current land use is not efficient**
- **Planning and incentives are the keys to sustainability**







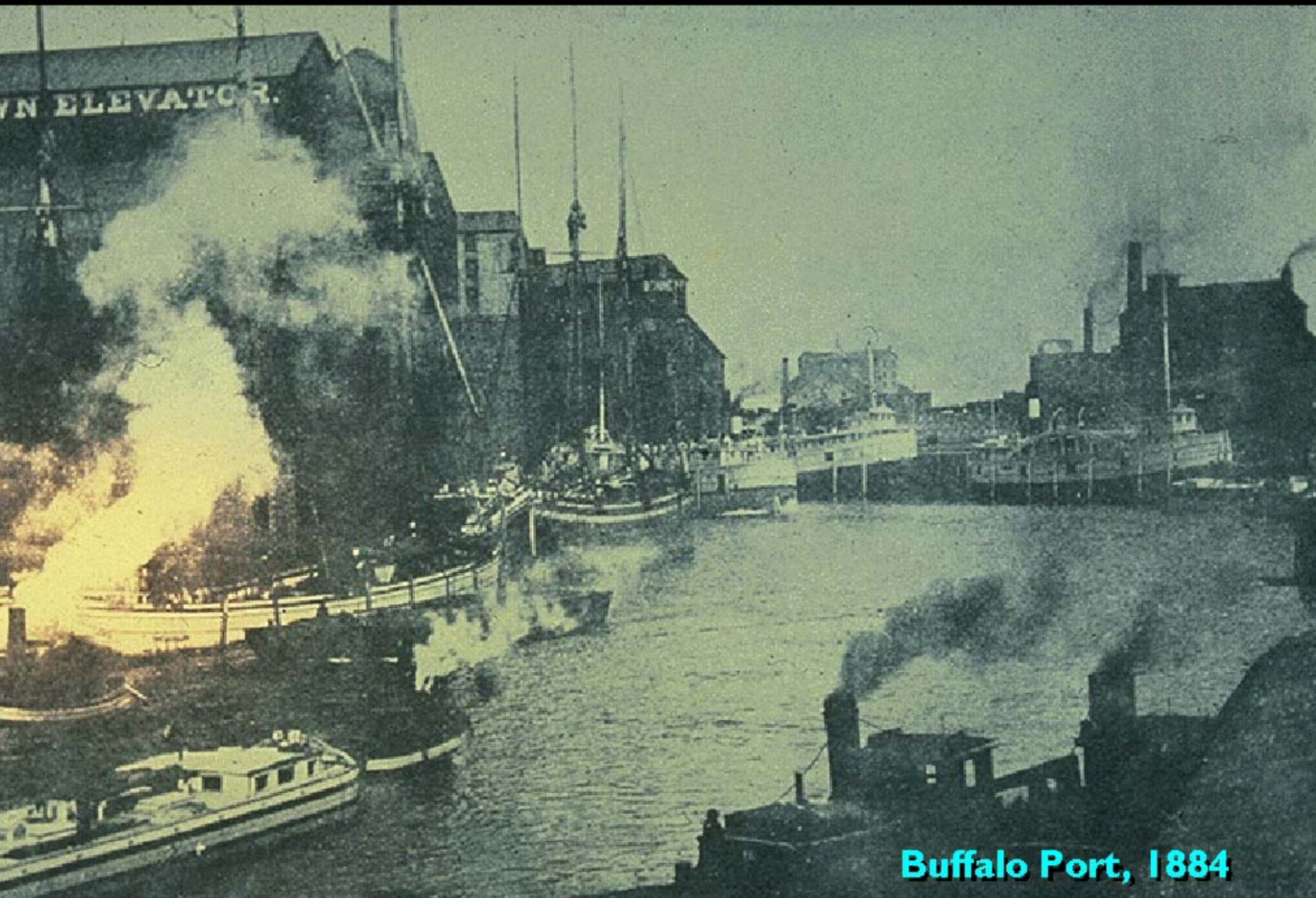


Land Use in the Great Lakes Basin

- Legend**
- Urban
 - Forest
 - Cropland
 - Water

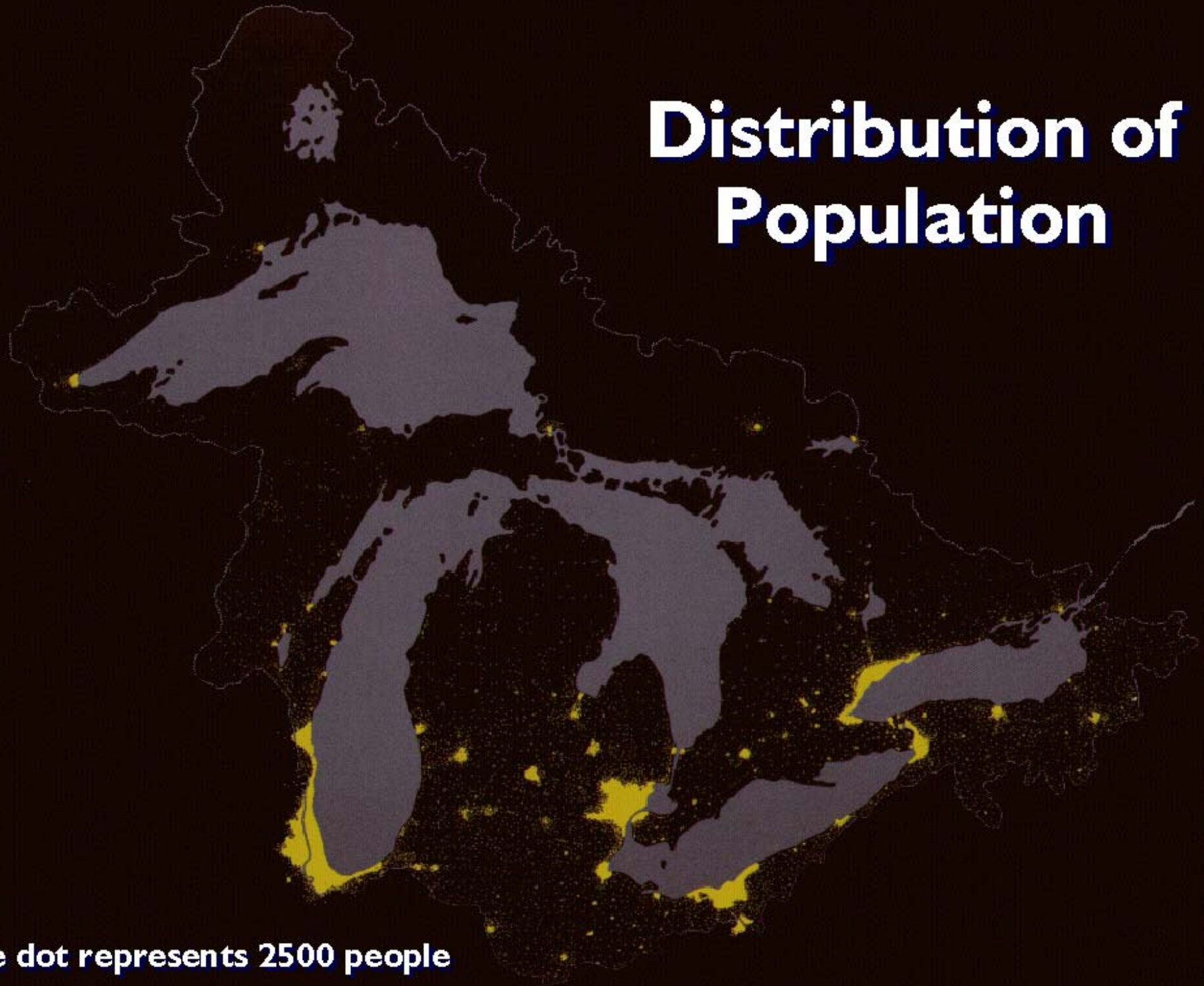


Based on 1989 AVHRR data



Buffalo Port, 1884

Distribution of Population



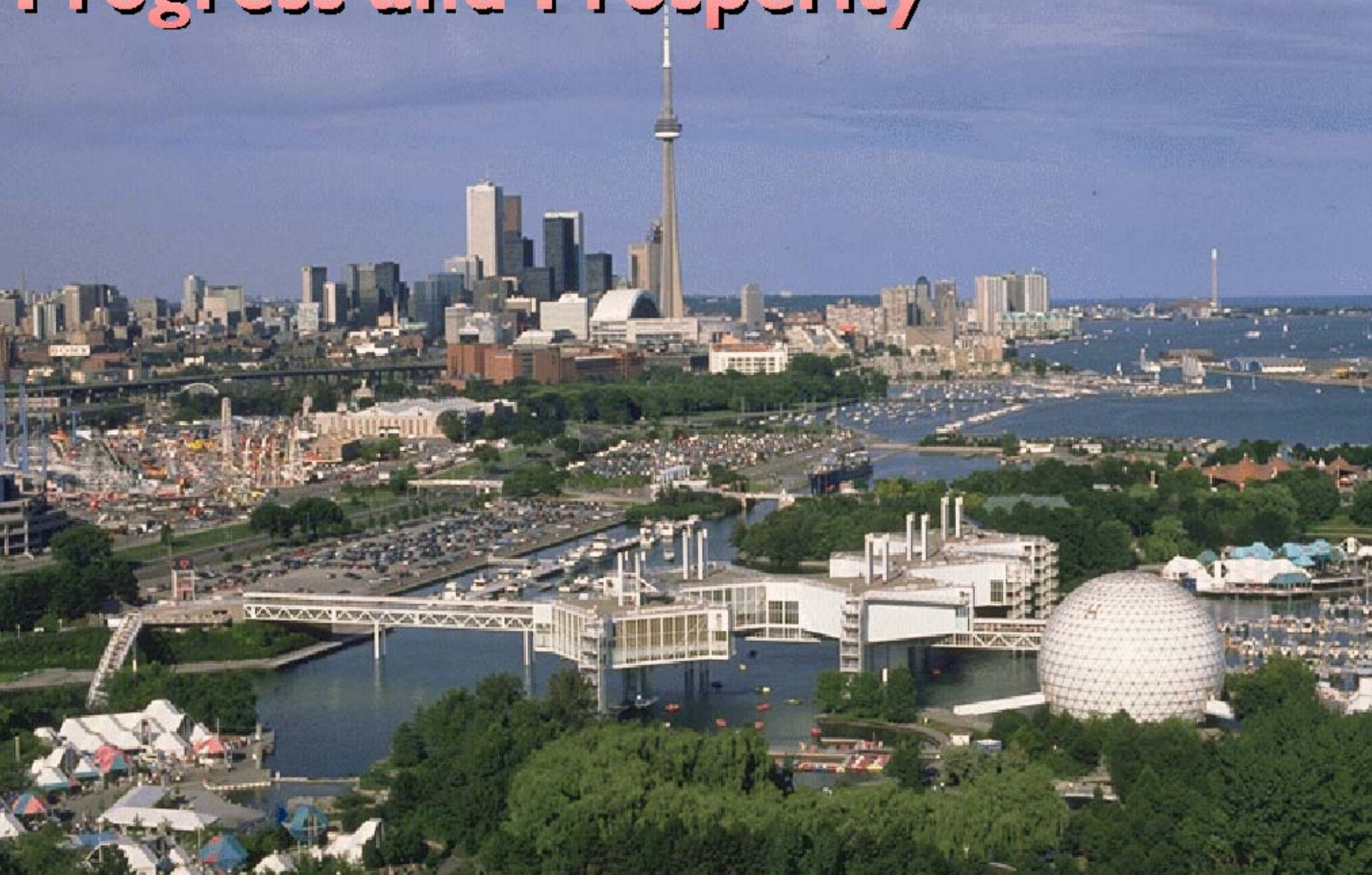
One dot represents 2500 people



Development — The Good, the Bad and Major Issues

- **Progress and prosperity**
- **Environmental impacts of development**
- **Urban sprawl**
- **Conversion of farmland**

Progress and Prosperity



Environmental Impacts of Development









Hardening of Land Surface





Stormwater Quality



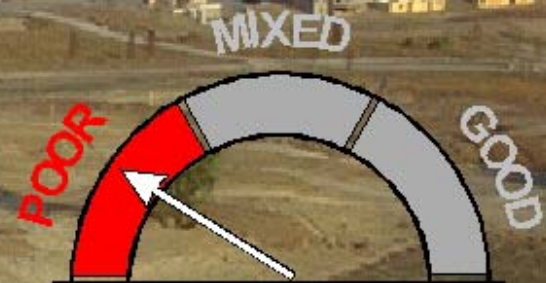
Urban Sprawl





Conversion of Farmland





**Agricultural and
Natural Land
Conversion**





Agriculture — On the Farm and Off

- **Soil erosion and sedimentation**
- **Pesticide use**
- **Manure management**

Soil Erosion and Sedimentation







MIXED

POOR

GOOD

Conservation Tillage

Pesticide Use



Manure Management





Transportation — Its Land Use Connection

- **Modes**
- **Rights-of-way**
- **Pollution issues**

Modes



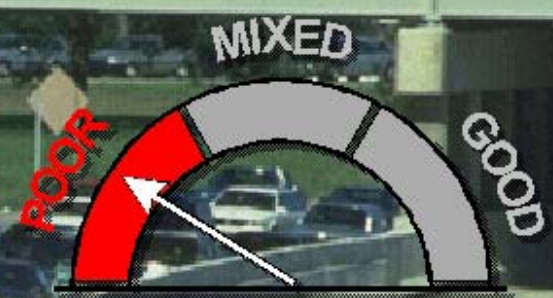


Rights-of-Way





Pollution Issues



Traffic Congestion & Air Pollution Levels



Land Use has been Destructive to the Nearshore Ecosystem

- **Sprawl and other development**
- **Continuing air and water pollution**
- **Loss/Degradation of habitat**



Current Land Use is Not Efficient

- **Urban sprawl increases infrastructure costs and disinvestment in inner city areas**
- **Inefficient land use results in more resource use and pollution**
- **More efficient land use will enhance competitiveness**



Planning and Incentives are the Keys to Sustainability

- **Subsidies mask long-term economic and environmental costs**
- **Incentives to promote more sustainable development are inconsistently applied**
- **More comprehensive land use planning and greater regional coordination is needed**



Key Points

Land Use Issues and Opportunities

- Impervious*** - surfaces affect nearshore water quality
- Inefficient*** - use of natural resources and built environment
- Irreversible*** - commitment of land
- Irretrievable*** - loss of a finite resource
- Incentives*** - are needed to achieve sustainability
- Integrate*** - land use planning into water quality programs



Questions

- 1. What kind of incentives might be used to promote brownfields redevelopment and/or greenfields protection?**
- 2. How can land use planning be better incorporated into water quality management programs at the federal, state/ provincial or local levels?**
- 3. What will it take to get full cost development charges applied uniformly across the basin? What are the next steps?**