Statewide Plan - Handout

July 17, 2007

Attachment #3

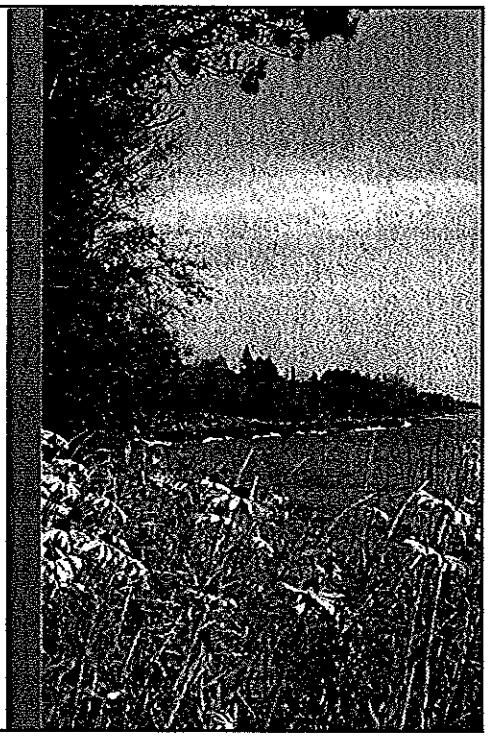
LCCMR Minnesota Statewide Conservation and Preservation Plan

July 17, 2007

INSTITUTE ON THE ENVIRONMENT

UNIVERSITY OF MINNESOTA

CR Planning (Community Resources) Bonestroo



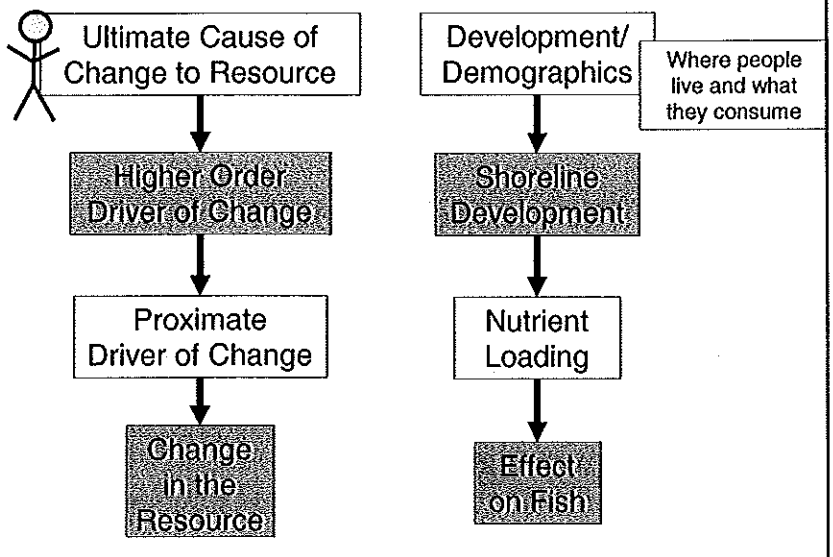
Purpose of Today's Presentation

- Deliver the report on the first phase - Preliminary Plan
- Present recommendations on key issues to investigate in second phase
- Today's objective: Decide with LCCMR which key issues to investigate

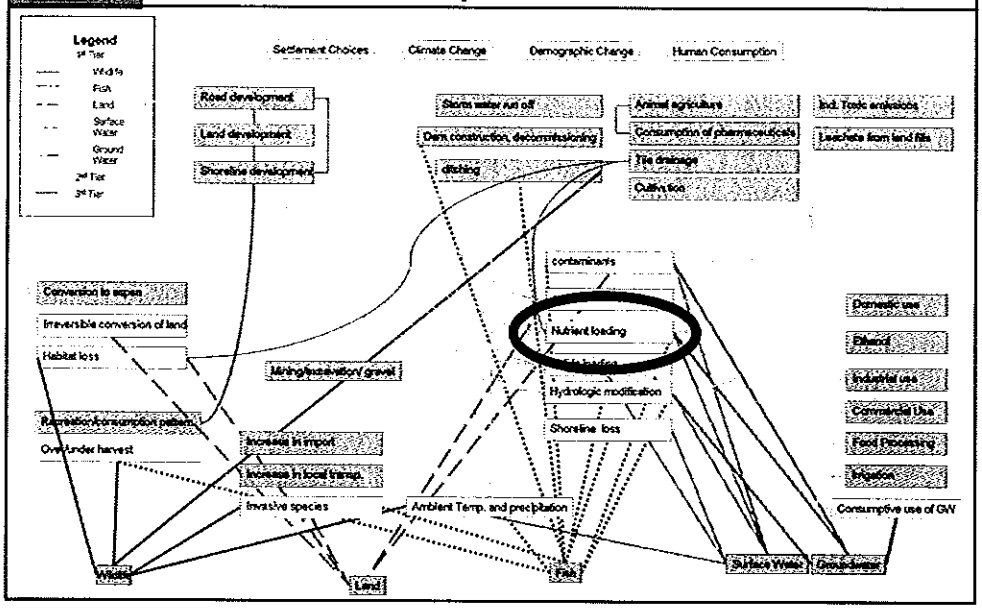
Our Work in the First Phase

- Applied team members' broad scientific and applied knowledge
- Described changing natural resources
- Identified and prioritized drivers of change affecting natural resources
- Identified cross-cutting drivers

Identification of Drivers of Change



Drivers Affecting Multiple Resources



Key Issues

- Land & water habitat fragmentation, degradation, conversion & loss
- Land use practices
- Energy production and use
- Impacts of resource consumption
- Toxic contaminants
- Transportation
- Invasive species

Criteria for Selecting Key Issues

- Does the driver affect multiple resources?
- How extensive is our knowledge base?
- How quickly will a resource respond to a change in the driver?
- What are implementation challenges to changes in policy or investment?
- Are there public acceptance challenges to a change in policy or investment?
- What is the relative public urgency?
- Does the driver affect adaptation to climate change or mitigation to climate change by the state?

Interconnections

	Habitat	Land use	Energy	Consumption	Toxics	Transportation	Invasives
Air	✓	✓	✓	✓	✓	✓	
Water	✓	✓	✓	✓	✓	✓	✓
Land	✓	✓	✓	✓	✓	✓	✓
Fish	✓	✓	✓	✓	✓	✓	✓
Wildlife	✓	✓	✓	✓	✓	✓	✓
Recreation	✓	✓		✓	✓	✓	✓

Key Issues Summary

	Habitat	Land use	Energy	Consumption	Toxics	Transportation	Invasives
Multiple resources	High	High	Med	High	High	High	Med
Knowledge base	Med-high	High	Good	Varies	Varies	Med	Varies
Response time	Y-D	Y-D				Y	D-C
Implementation challenge	High	Med-high	High	High	High	High	High
Public acceptance	Low	Med	Low	Med w/ed	High w/ed	Low	Med w/ed
Climate change	High	High		High	Med	High	High
Urgency	High	High		Water high	Varies	High	

Y=years D=decades C=centuries M=millenia w/ed=with education

Low in public acceptance is bad.

Habitat fragmentation, degradation, conversion & loss: *Definition*

- Land fragmentation: changes in landscape pattern caused by habitat conversion
- Lake and stream fragmentation: disturbances to fish habitats, loss/removal of aquatic vegetation, shoreline alteration and removal of riparian wetlands
- Habitat degradation: associated with fragmentation which reduces the complexity of habitat structure, functions, and value

Habitat fragmentation, degradation, conversion & loss: *Key questions*

- What parts of the forest, agricultural and aquatic resources of Minnesota are most 'at-risk' of increasing rates of habitat fragmentation?
- What is the relationship between the remaining large intact tracts of land and patterns of change in land ownership?
- What are the effective social and economic incentives for aquatic and land habitat protection and restoration?
- What policies are needed to reduce habitat loss, degradation and fragmentation?

Habitat fragmentation, degradation, conversion & loss: *Potential outcomes*

- Identify 'at-risk' land and aquatic habitats and trends in habitat fragmentation
- Recommend changes to land and aquatic habitat management policies

Value: *High*

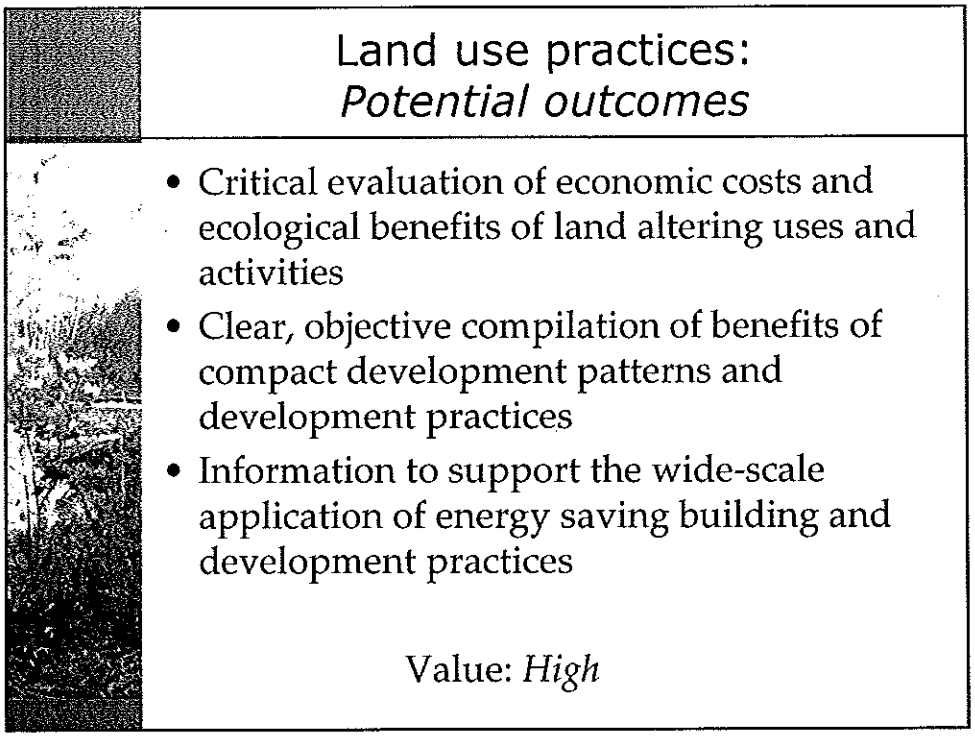
Land use practices: *Definition*

The full spectrum of human activities on the land:

- conservancy and restoration activity
- low impact design in urban and shoreland development and redevelopment
- BMPs in agriculture and other land use

Land use practices: *Key questions*

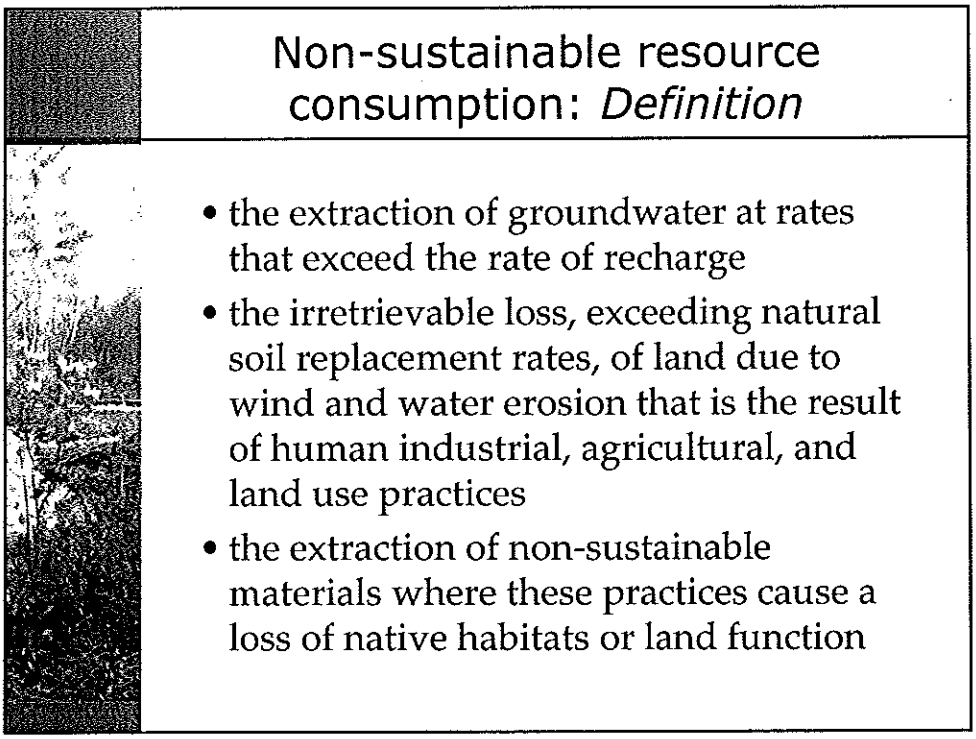
- Can the benefits of compact and high density developments be quantified to overcome political opposition?
- Which low impact development practices are the most effective and possible to implement?
- How can we structure policies and BMPs to achieve responsible and sustainable development/redevelopment that minimize and mitigate environmental degradation?



Land use practices: *Potential outcomes*

- Critical evaluation of economic costs and ecological benefits of land altering uses and activities
- Clear, objective compilation of benefits of compact development patterns and development practices
- Information to support the wide-scale application of energy saving building and development practices

Value: *High*



Non-sustainable resource consumption: *Definition*

- the extraction of groundwater at rates that exceed the rate of recharge
- the irretrievable loss, exceeding natural soil replacement rates, of land due to wind and water erosion that is the result of human industrial, agricultural, and land use practices
- the extraction of non-sustainable materials where these practices cause a loss of native habitats or land function

Non-sustainable resource consumption: *Key questions*

- What is the best approach to developing a comprehensive water management framework to manage water supply on a long-term, sustainable basis?
- What are the impacts of climate change on soil loss and related agricultural practices?
- Where are the critical areas and regions where soil loss is greatest and how can it be best reduced through policy changes?
- What mine reclamation standards are needed that balance extraction and preservation of sensitive/unique natural features?

Non-sustainable resource consumption: *Potential outcomes*

- Recommended changes to public policies to achieve a comprehensive water management framework
- A better understanding of the location, extent, characteristics and future demands of groundwater resources
- Recommendations for consistent mine reclamation standards and enforcement at the local, regional, and state level that balance extraction and preservation of sensitive/unique natural features
- A better understanding of the effects of climate change on the sustainability of groundwater and timber extraction, and on soil loss and mining impacts

Value: *High*

Toxic contaminants: *Definition*

- Commercial chemicals that are regulated due to human or wildlife toxicity
- Include:
  - Criteria air pollutants
  - "legacy" toxic chemicals
  - "emerging" toxic chemicals
  - pesticides
  - mercury

Toxic contaminants: *Key questions*

- Are current policies protective of public health and wildlife?
- What policies are needed for emerging contaminants to protect the public and ecosystem health?
- What policies are needed to limit or remove exposure to "legacy" contaminants?

Toxic contaminants: *Potential outcomes*

- Assessment of contaminant status and trends with comparison to benchmarks and health outcomes, and evaluation of effectiveness of current state policies
- Recommendations for policy changes to minimize or prevent exposures

Value: *High*

Energy production and use: *Definition*

Human activities related to the extraction, production and consumption of energy, including fossil fuels and renewable energy sources

Energy production and use: *Key questions*

- What are the potential effects of biomass energy production systems on Minnesota's fish, wildlife, land, water resources and recreational opportunities?
- What are the effects of renewable energy production structures such as large wind turbine farms on wildlife?

Energy production and use: *Potential outcomes*

To assess the impacts on our natural resources of attaining the goal of 25% renewable energy sources by 2025 :

- Better understand impacts of biomass cropping systems and wind energy production on natural resources, recreational opportunities and climate change
- Determine if wind turbines constructed in grasslands/prairies influence grassland bird species mortality and/or fragment habitat

Value: *High*

Transportation: *Definition*

Infrastructure networks that enable and support personal and commercial freight traffic

Transportation: *Key questions*

- Are emission reduction goals sufficiently supported by other transportation policies?
- Will newer vehicle or fuel technologies have greater or fewer benefits for air, land, ecosystem, and hydrological conditions?
- What policies are needed to examine impacts of expanding transportation networks on species adaptation or migration?
- What role can transit play in reducing environmental impacts stemming from an increasing transportation network?

Transportation: Potential outcomes

- Recommendations for better transportation modeling protocols and inputs
- Recommendations for coherent transportation policies that protect public health and indirectly protect habitat, water quality, ecosystem services and minimize global warming

Value: *High*

Invasive species: *Definition*

Undesirable aquatic and terrestrial species, accidentally or intentionally introduced into Minnesota, that:

- disrupt native plants and animals;
- are a nuisance to human activities

Invasive species: *Key questions*

- What are the policy options for reducing the spread of invasive species within Minnesota?
- How can Minnesota strengthen current efforts to prevent the entry of new invasive species into the state?

Invasive species: *Potential outcomes*

- Recommended changes to policies and outreach efforts to reduce entry and spread of invasive species
- Recommended priorities for improving data collection on economic impacts and pathways of spread

Value: *High*

Discussion of Key Issues

- Feedback on key issues
- Input on strategic priorities
- Guidance for final plan

Thank You!

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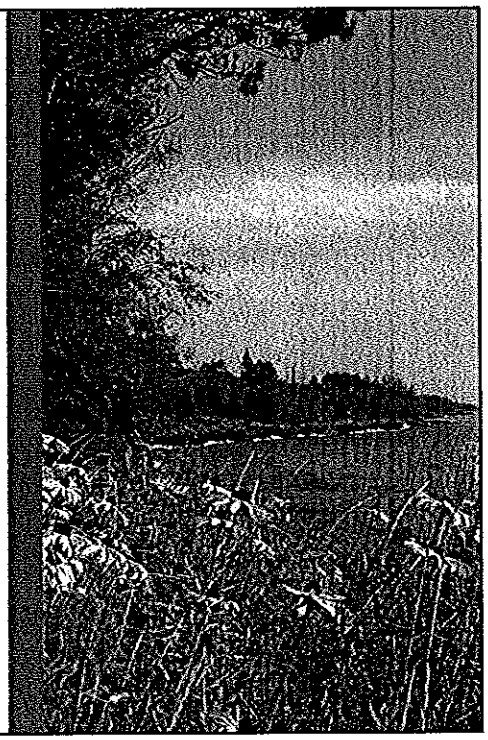

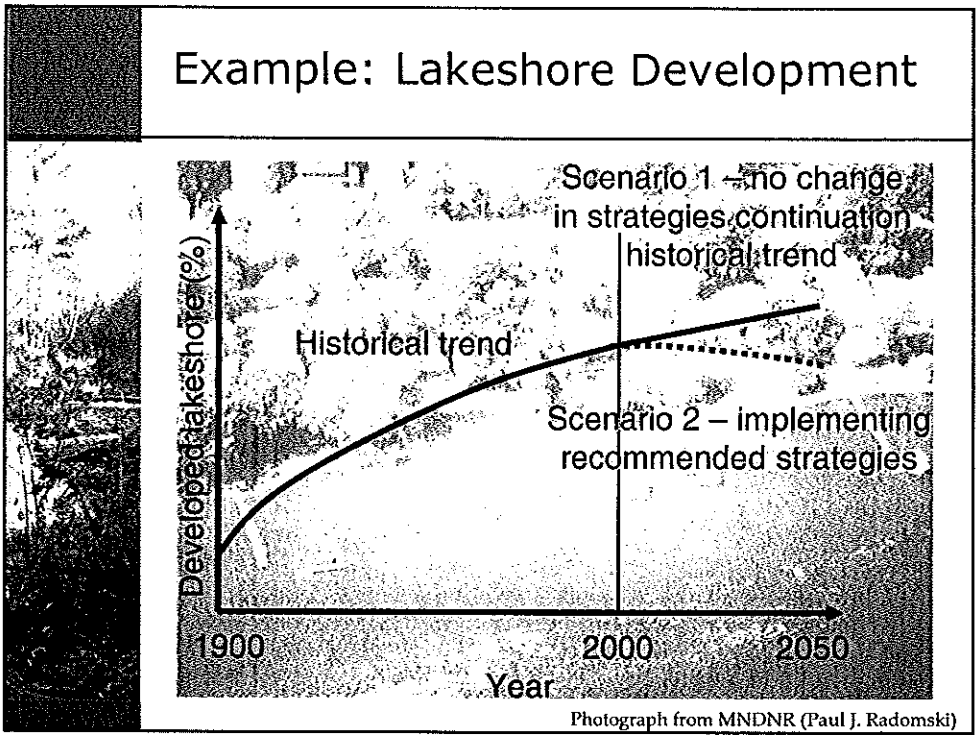
Example: Lakeshore Development
Scenario 1 – no change in strategies continuation historical trend
Historical trend
Scenario 2 – implementing recommended strategies
Developed lakeshore (%)
1900
2000
2050
Year
Photograph from MNDNR (Paul J. Radomski)