

# Linking Transportation and Conservation Planning Workshop

Lakewood, Colorado  
August 14, 2006

Don Cote

FHWA-Resource Center

# Eco-Logical: An Ecosystem Approach to Developing Infrastructure Projects

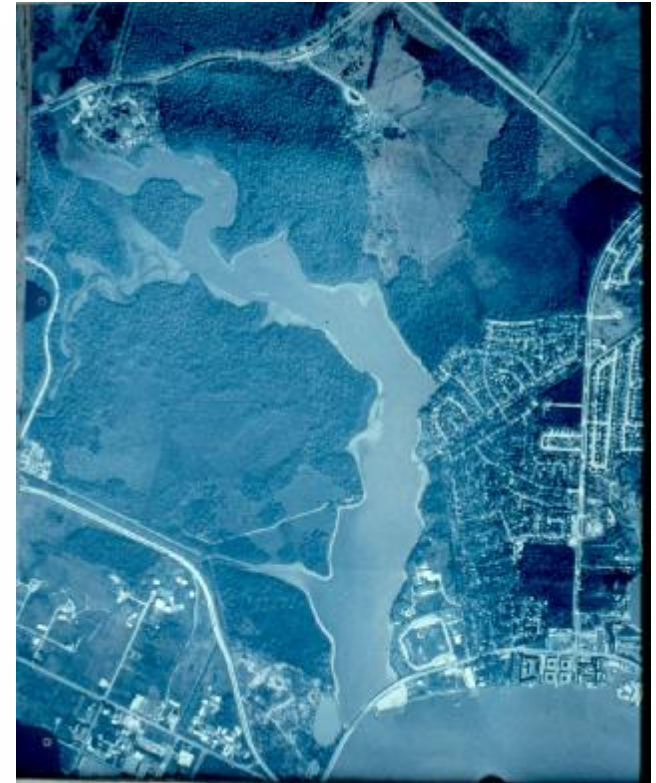
## Presentation Topics

- | Challenges and Lessons Learned
- | Solutions for Long-Range Planning  
& Project Delivery Cycles
- | Approach and Products
- | Future Efforts and Next Steps



# Agency Challenges

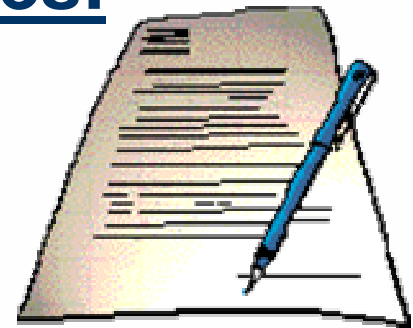
- % Unknowns & duplicated efforts**
- % Limits posed by jurisdictions**
- % Traditional mitigation –  
project by project or on-site  
can be piecemeal & ineffective**
- % Vanishing opportunities**



# Changes in Response to Challenges

## Several Executive Orders & Initiatives:

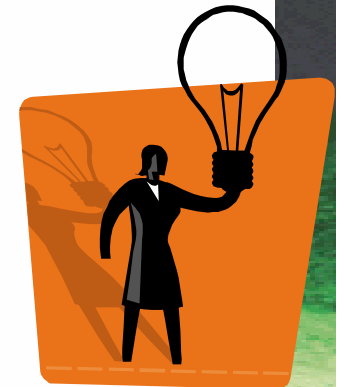
- 1995 Multi-Agency Memorandum of Understanding to foster an ecosystem approach
- Executive Order (EO) 13274– Environmental Stewardship & Transportation Infrastructure Project Reviews
- EO 13352 – Facilitation of Cooperative Conservation
- **Develop “Eco-Logical” multi-agency solutions**



# Eco-Logical: Approach to Solutions



1. Inter-agency Steering Team\* & strategy
2. Develop/write Eco-Logical framework
3. Engage participants, public & private sector
4. To develop & implement strategies



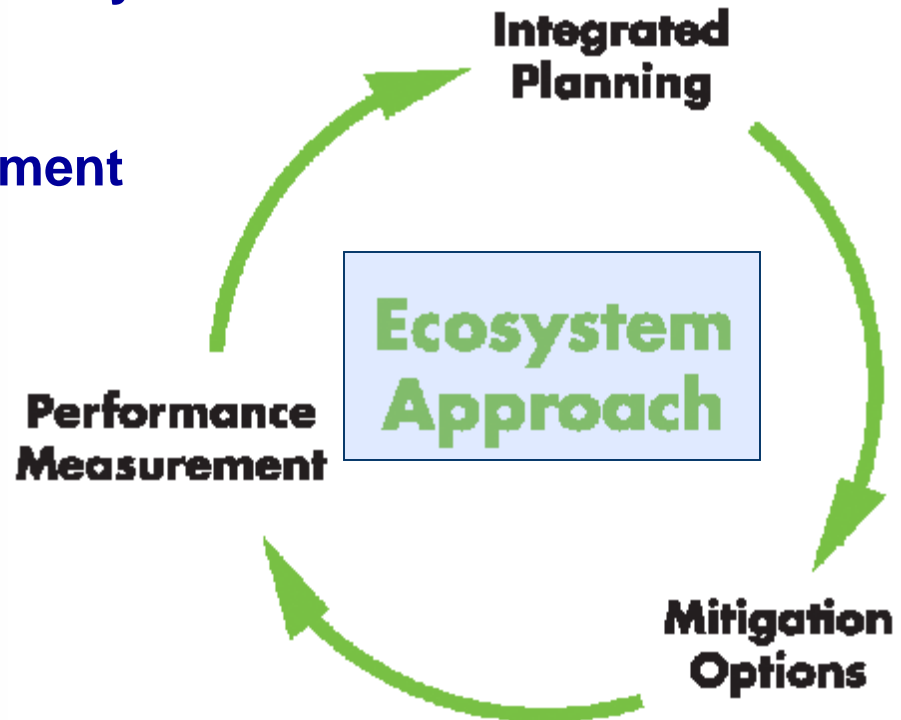
\* (Inter-agency team of 8 federal agencies and 4 state Depts of Trans)



# Ecosystem Approach

## WHAT IS AN ECOSYSTEM ?

An interconnected community  
of living things  
and the physical environment  
they depend upon  
(humans included)



# Eco-Logical: Solutions



- *Fulfill relevant statutes & regulations*
- *Healthy ecosystems support sustainable economies and communities*
- *Useful at any time in planning & project delivery*
- *Non-prescriptive: Framework that can be adapted to integrate information, decisions, people*

## ***Eco-Logical Approach to Improve:***

**Predictability** – Commitments honored by all agencies

**Connectivity** – Corridors to support multiple uses and reduce habitat fragmentation

**Conservation** – Larger areas, sustain and adapt into long-term

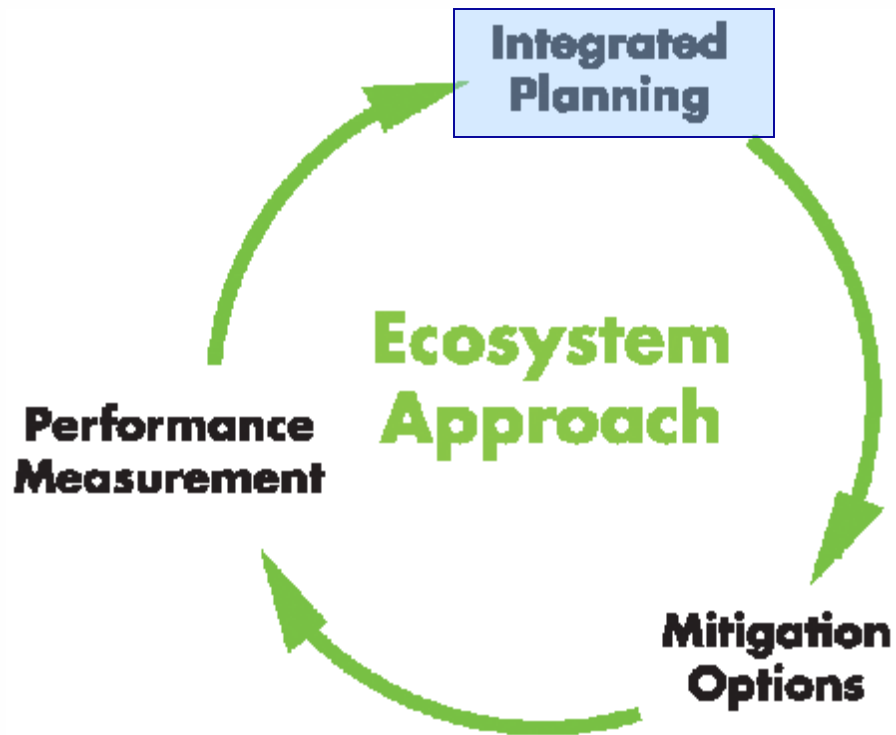
**Transparency** – Public involvement at all key stages, reduces unknowns

Stream corridors and floodplains





# Ecosystem Approach

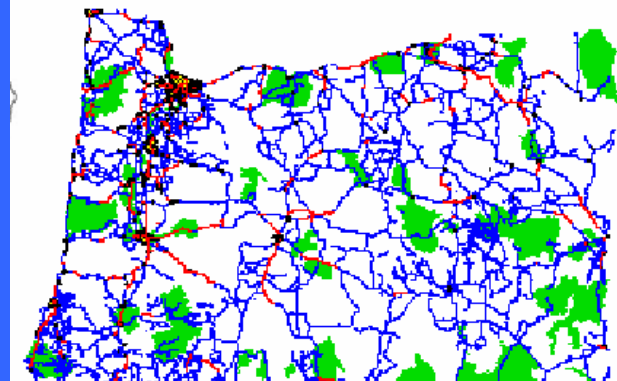
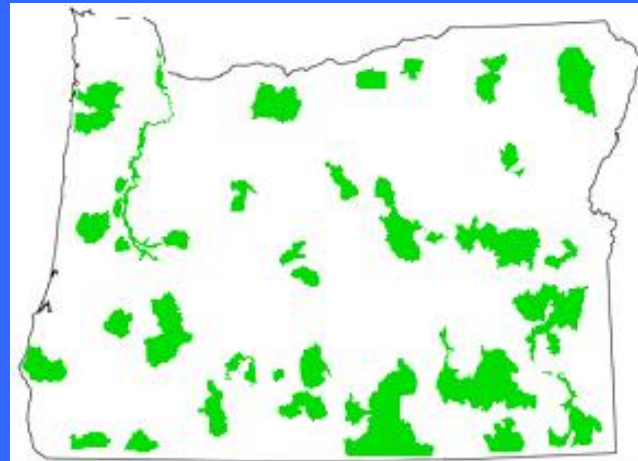


# Eco-Logical: Integrated Planning

## Solutions across:

- | Multiple projects
- | Agencies & levels
- | Geographic regions
- | Public & private sectors
- | Multiple jurisdictions

Natural Resource Plan

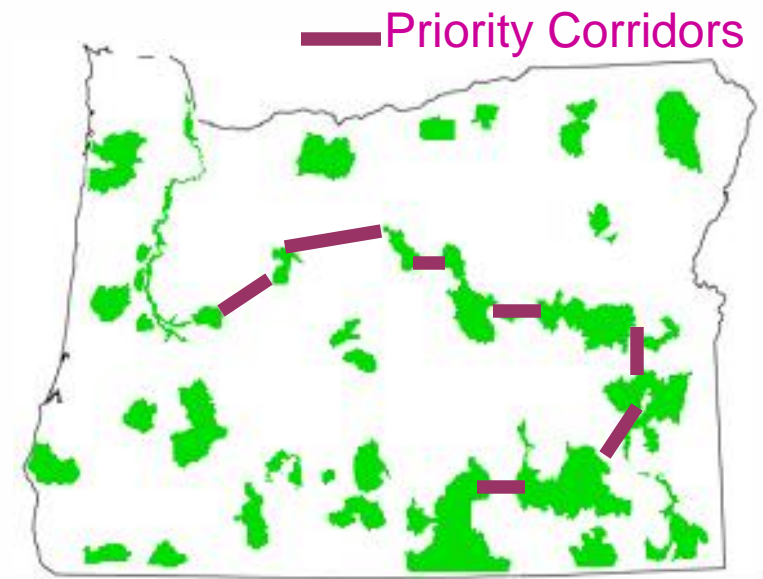


Simple, Integrated Map: STIP, urban areas, natural resource areas

# Eco-Logical Goal: Integrated Planning

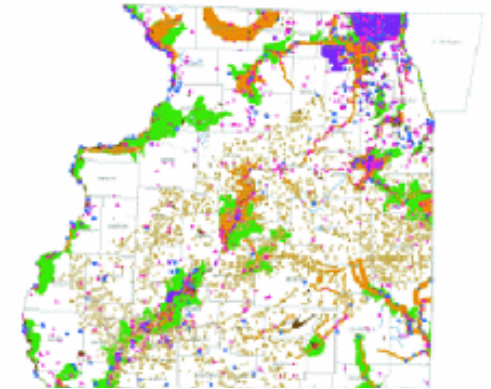
- **Integrating**
  - information
  - people
  - decisions

Examples: Connecting Corridors,  
Site selection for mitigation

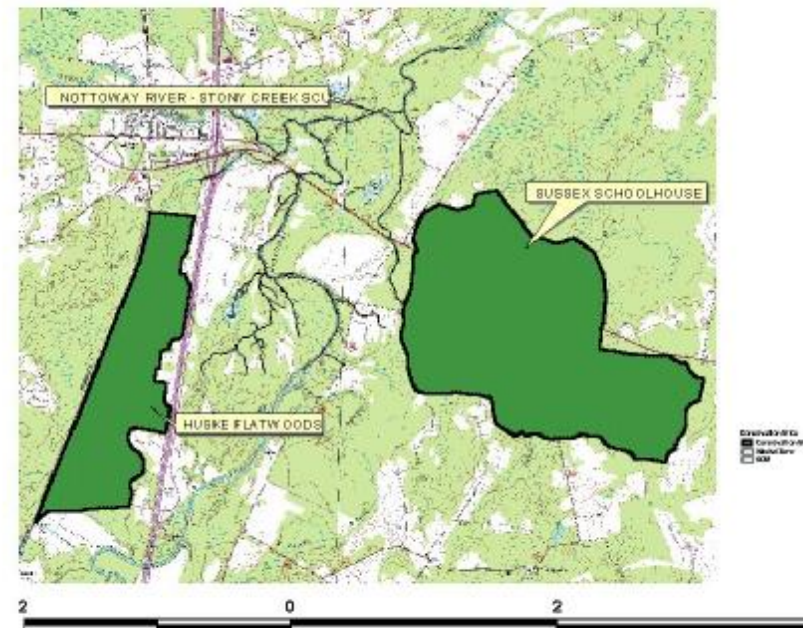
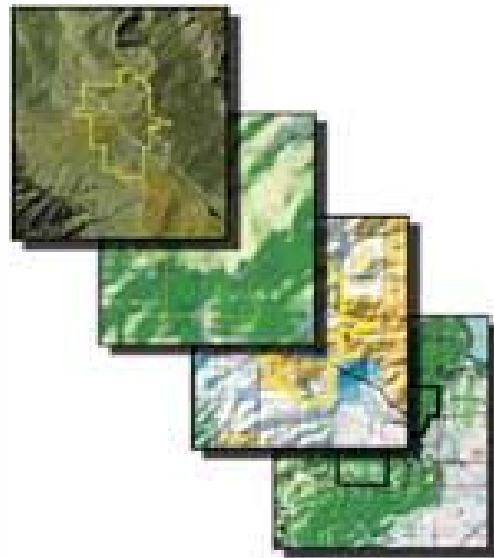


# Integrated Planning: Regional Ecosystem Framework

- Overlay of maps
- Partners define ecosystem
- Interaction of plans, uses

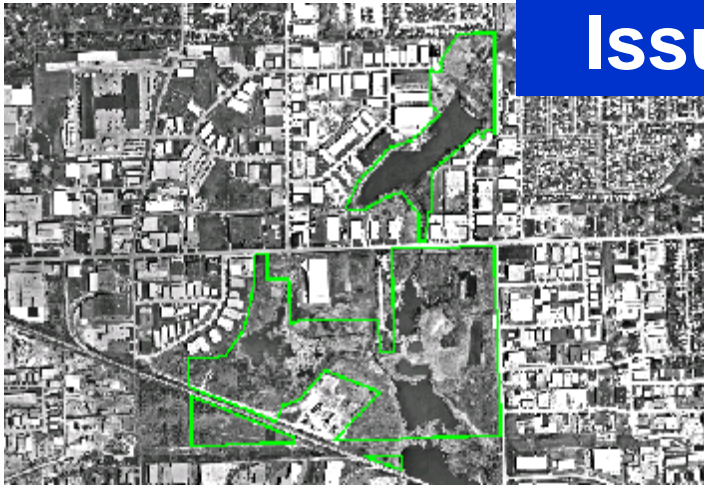


Natural resource, priority uses





## Issues/Stressors



**Habitat Fragmentation**



**Predator-Prey Imbalance**



**Hydrology & water  
quality alteration  
-physical, chemical,  
biological**



**Invasive Plant and  
Animal Species**



**Habitat Destruction**

# Eco-Logical: What do you do if ... ?



1. If you don't have an integrated plan?
2. You don't have a Regional Ecosystem Framework?

## ANSWER:

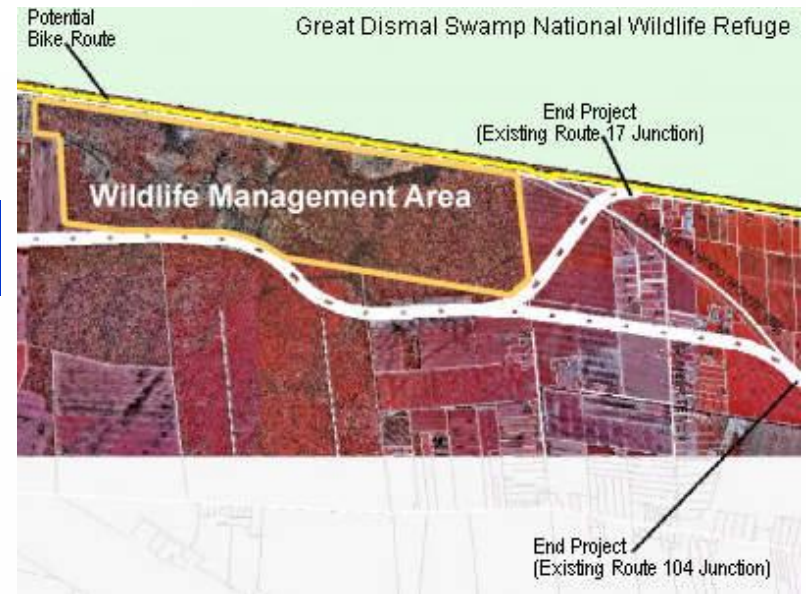
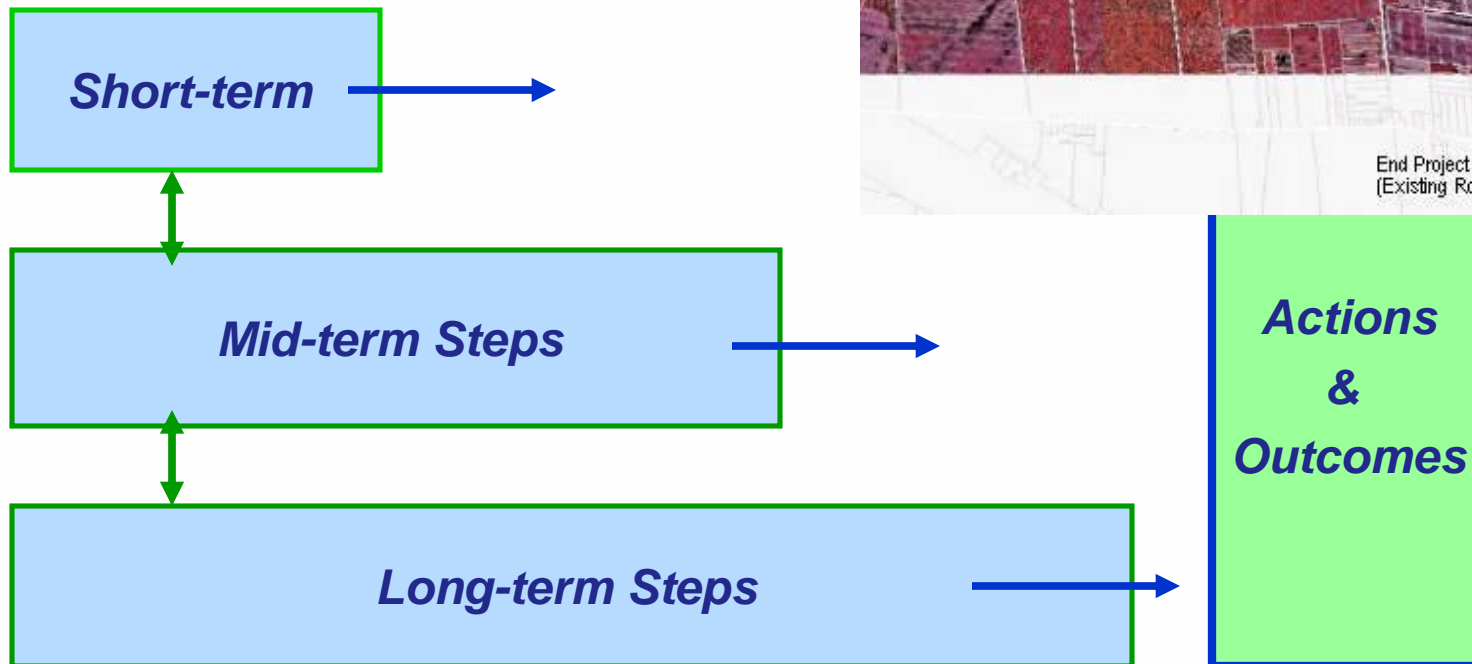
Arrange the pieces while moving forward



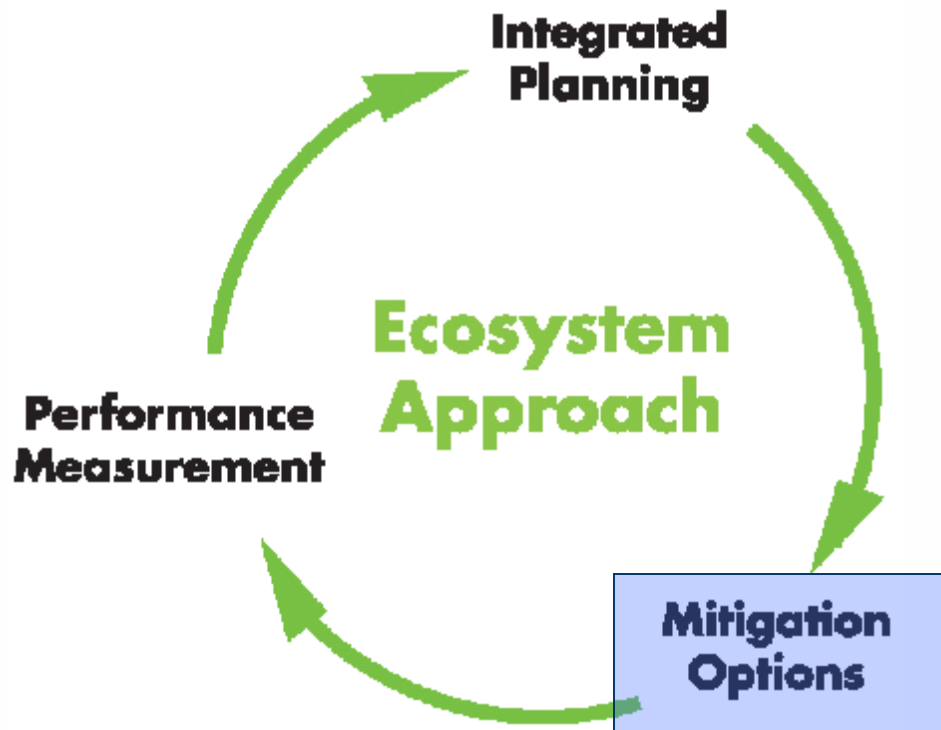


# Eco-Logical: Steps to Move Forward

## Integrated Planning Activities



# Ecosystem Approach



# Mitigation: Background

Mitigation helps ensure that ecosystems, habitats, and species populations remain sustainable and productive over time.



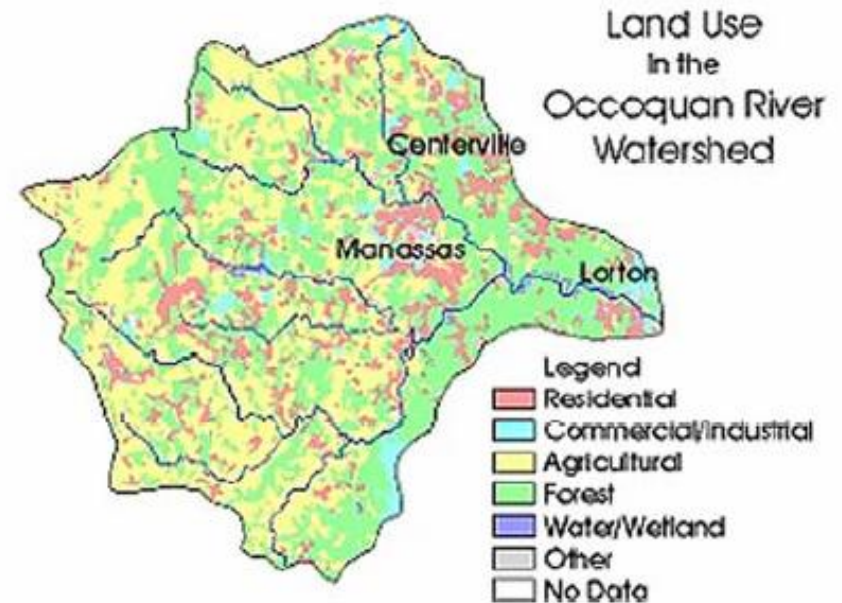
Ecosystem definition: humans too

# Ecosystem-based: Mitigation Options and Insights

## Why?

Individual or Multiple  
Projects, Uses, Efforts

- Compatible land uses and benefits
- Avoid, minimize, compensate for adverse impacts

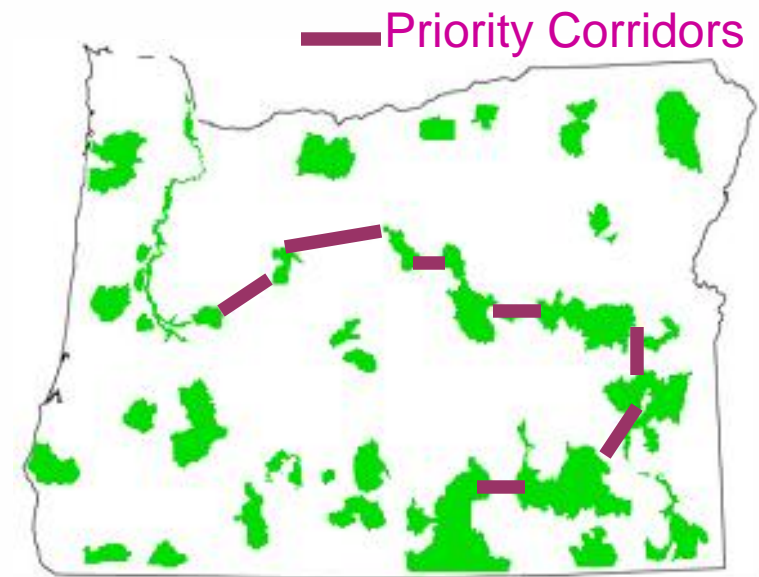


# Eco-Logical: Mitigation

## A blend of options:

- | Project-Specific Mitigation
- | Multiple-Project Mitigation
- | Ecosystem-Based Mitigation
- | Mitigation Banking  
(focus: aquatic resources)
- | Conservation Banking  
(focus: protected species/habitats)
- | In-Lieu Fee

Examples: Connecting Corridors,  
Site selection for mitigation





# Eco-Logical Mitigation Options— with the “Why” in mind:

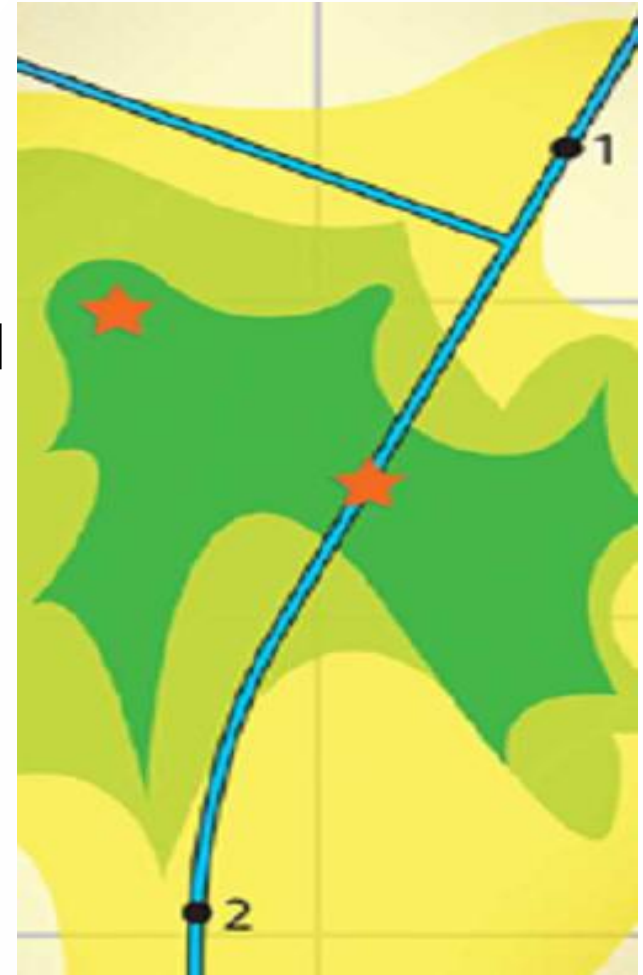
Where: On-site or off-site

How much: Based on why, assessed impacts, agreed upon credits

When: In-advance or concurrently

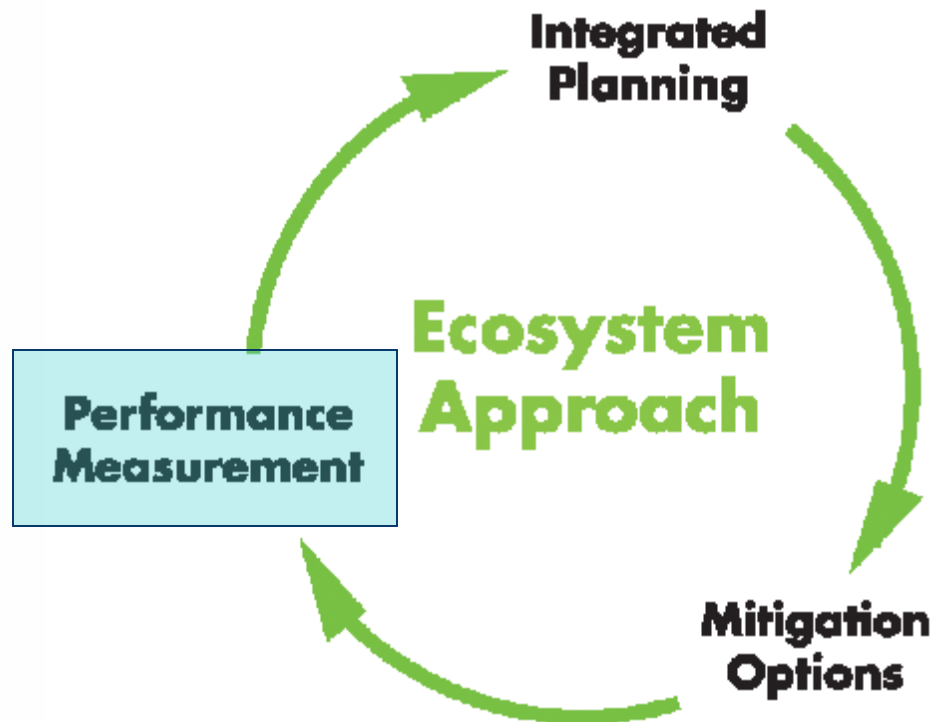
Who: Public/private sector

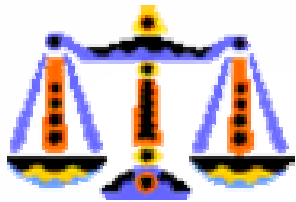
What: In-kind, out-of-kind





# Ecosystem Approach





# Performance Measurement

Can include steps to:

- **Define outcomes and commitments**
- **Match measures to outcomes**
- **Measure initial baseline and monitor**



# Performance Measurement (continued)



## Can include steps:

- **Sustain with adaptive management**  
*(adapt to conditions, lessons learned, uncertainties, unexpected changes)*
- **Allocate agreed upon credits**
- **Document completion of commitments & outcomes**



**Prescribe burn as  
adaptive management**

# Eco-Logical Products & Implementation

Written multi-agency guide with signatures:

*“Eco-Logical: An Ecosystem Approach  
to Developing  
Infrastructure Projects”*

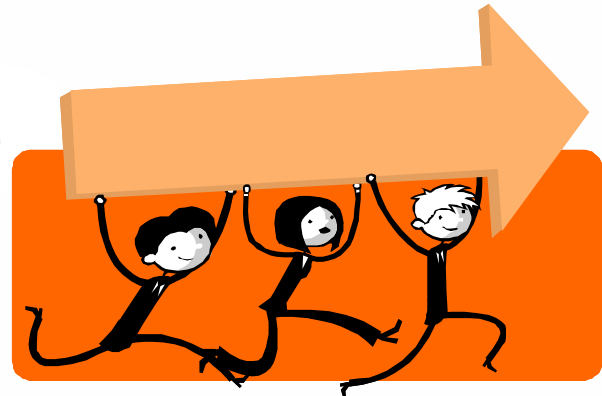
Available online at web site:

<http://www.environment.fhwa.dot.gov>

Multi-agency  
and multi-level implementation



## Future Efforts/Next Steps



- Engage participants – federal, tribal, state, regional, county/parish, local levels - **both public & private**
- Any time during long-range planning & project delivery CYCLES

# Eco-Logical Framework

Questions?

