

Environmental Protection Agency: *West Coast Estuaries Initiative Grant*

Overview of Watershed Characterizations in Thurston County

Presented By:
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Purpose of Presentation

- Provide information on why the proposed work is important to Thurston County and Puget Sound
- Provide a Background of Watershed Characterizations
- Provide how the watershed characterization results can be used

EPA Grant:

Protecting Puget Sound Watersheds

Water Quality and Aquatic Resources from the Impacts of Growth

- Award allows continuation of work completed in Henderson Inlet in 2007
- Priority watersheds :
 - Totten and Eld Inlets (Completed 2009)
 - Deschutes River (Completed 2010)
 - Nisqually River (2011)
- Stormwater and non-point source pollution impacts
- Protect water quality from pathogens, toxics, and excess nutrients
- Protect habitat including riparian forests, shorelines, floodplains, wetlands, and marine waters
- Protect ecosystem biodiversity and recover threatened species

EPA Grant:

Protecting Puget Sound Watersheds

Water Quality and Aquatic Resources from the Impacts of Growth

Intent of Watershed Characterizations:

- Combine technology with accepted science to assist County decision-makers in the formulation of effective local land use and water quality policies
- To preserve, conserve, restore, and enhance the local region's natural resources

Accepted Science = Best Available Science?

- ◆ Peer Reviews (Booth and Horner, 2010)
 - Too complicated
 - Values used in the Matrix of Pathways and Indicators? Heat? Road crossings?
 - Watershed Condition Index?
 - Future Land-Use impervious values?
- ◆ Peer Reviews (Other)
 - Boundary delineations?
 - Land Cover values?

Goals of Watershed Characterization

- Assess the Current Condition of Ecological Processes in Thurston County's Watersheds
- Develop a Prioritized List of Natural Resource Sites (wetland, riparian, and floodplain)
- Identify Avoidance and Minimization, Preservation, Restoration, Mitigation, to restore Hydrologic Function
- A watershed based approach to water management?

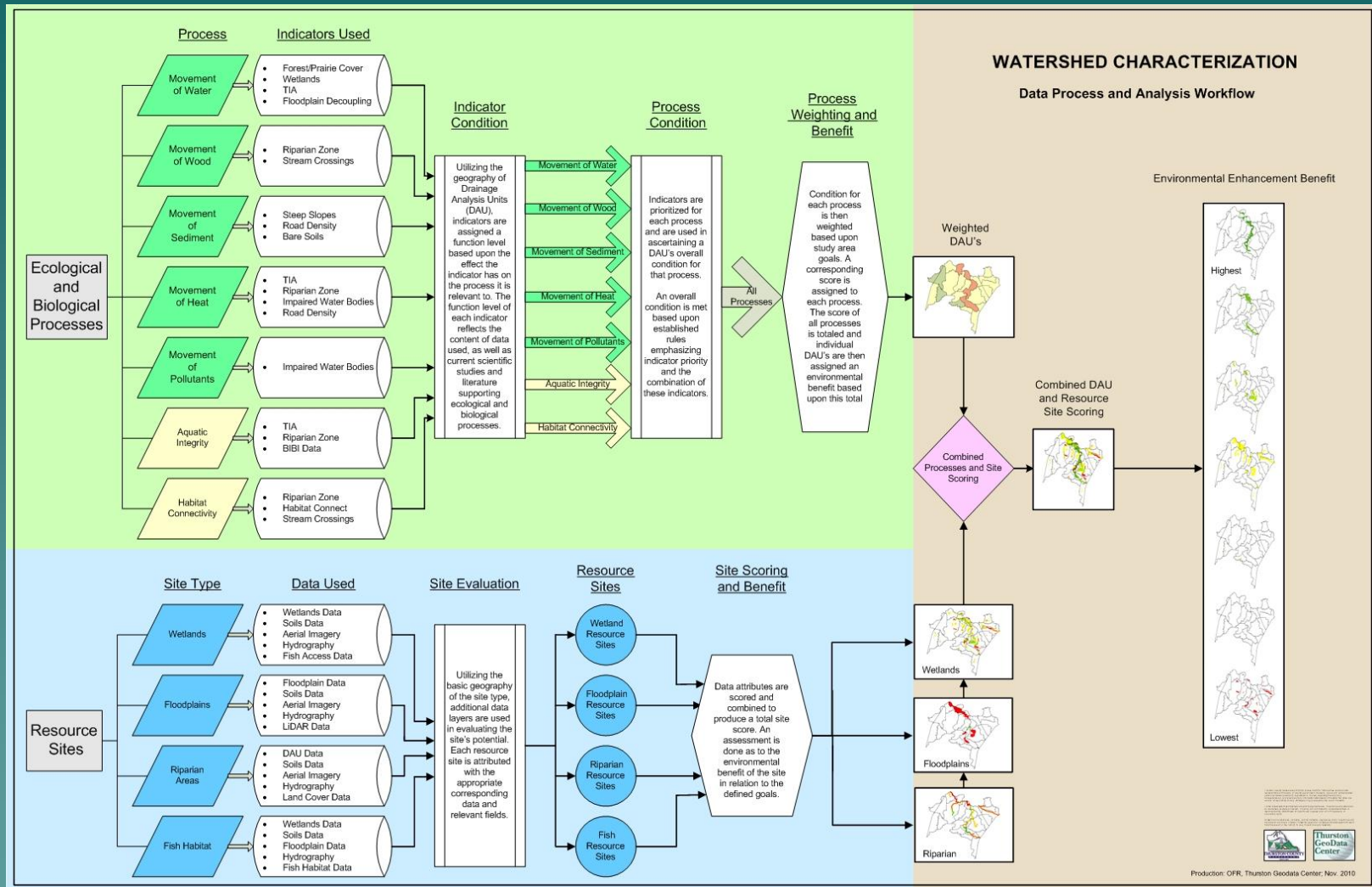
Water Resource Program Policy Goals

- Future land-use decisions that accommodate growth while protecting and restoring natural processes and functions
- Restore hydrologic function using natural resource sites vs. engineered infrastructure where feasible
- Protection and recovery of listed species
- Habitat Conservation Plans?
- Provide sites for compensatory mitigation options (In-lieu Fee and Wetland and Prairie Banks)
- Low Impact Development?

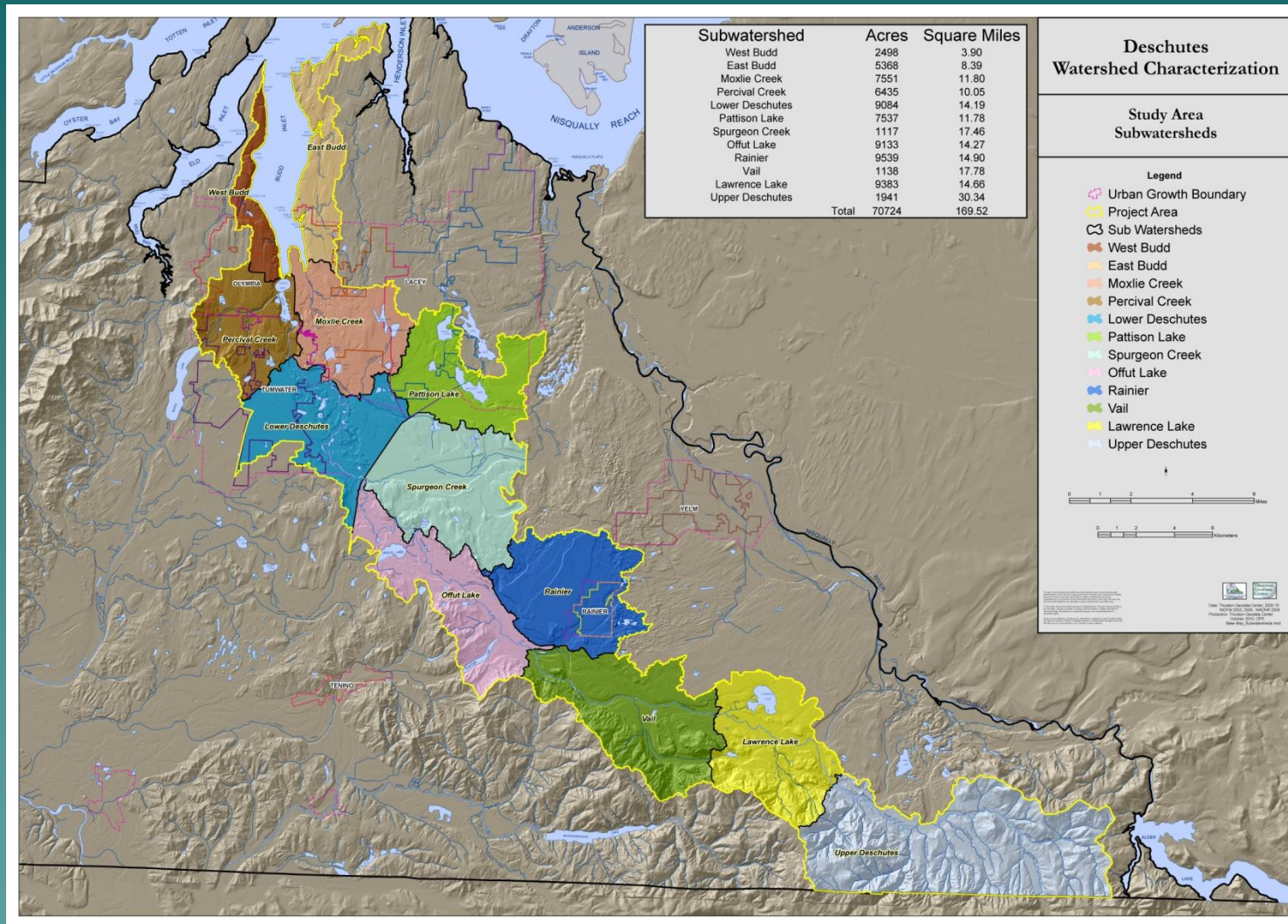
Science of Ecosystem Analysis

- Assessment of County Watersheds - “Health”
- Analyze Ecological Processes – “Diagnosis”
- Identify Areas of Opportunity for Restoration/Mitigation - “Prescriptive Treatment”
- Geographic Information System (GIS) – “Tools”

Methodology



Deschutes Watershed

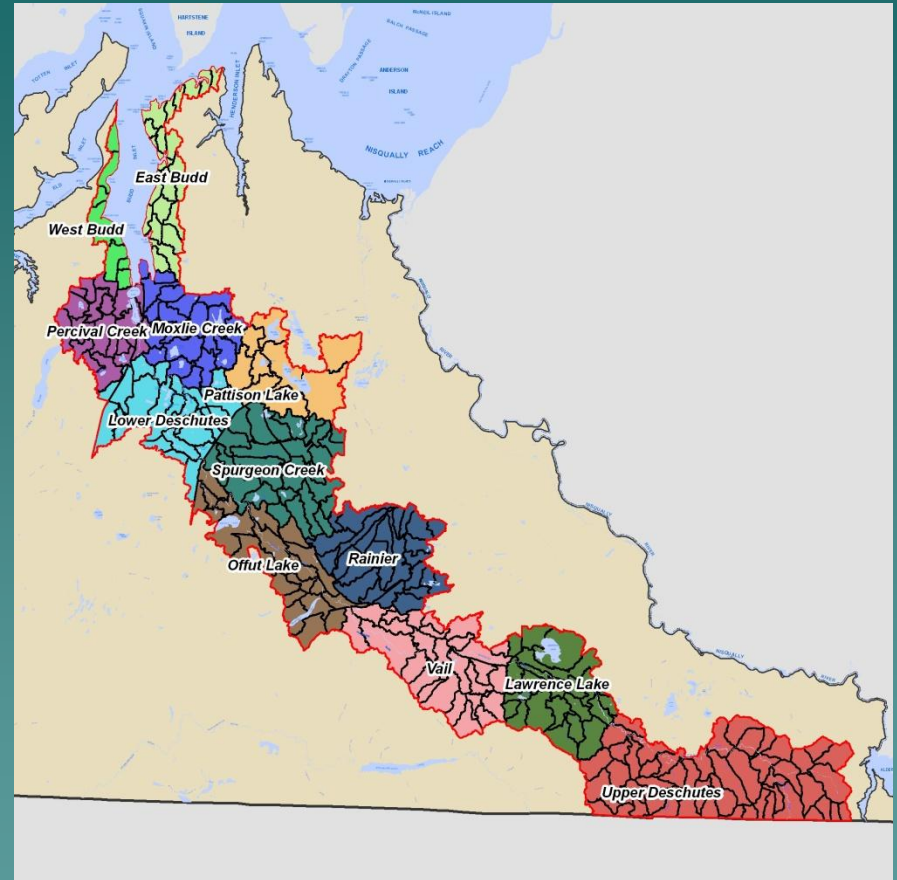


Scale of Analysis?

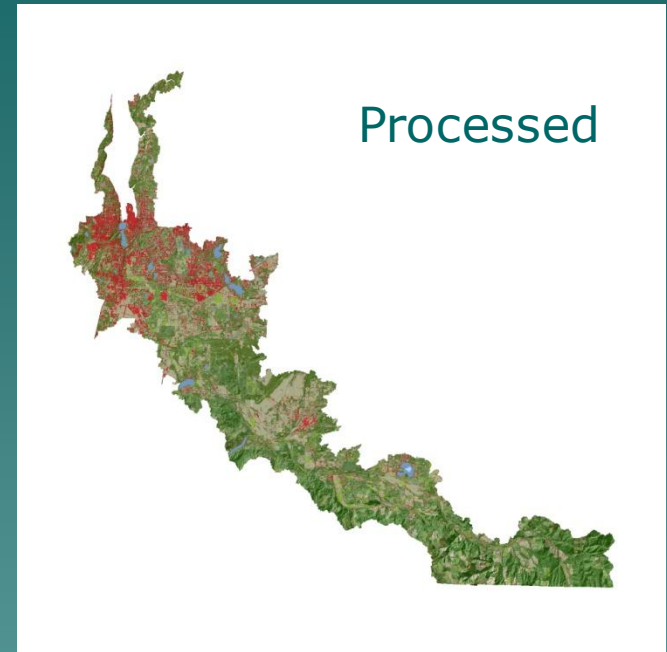
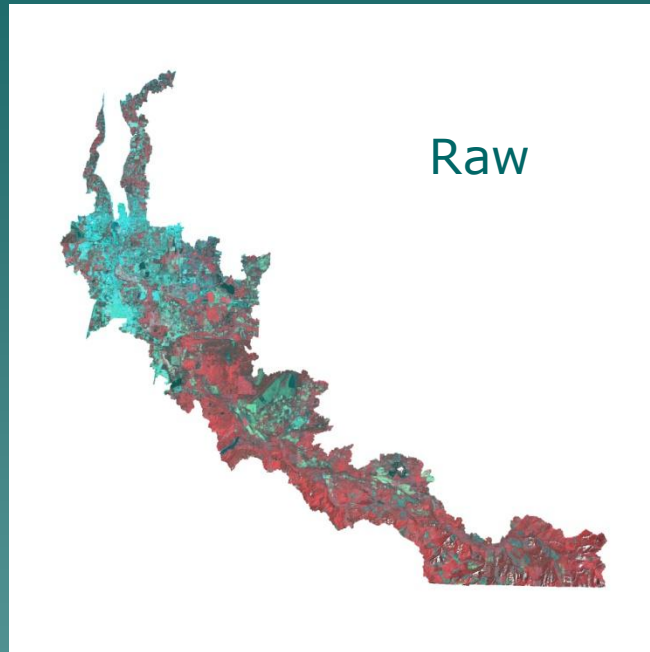
- Center for Watershed Protection Guidelines
- Typical Area is 0.25 square miles (160 acres)
- Impervious Cover has a strong influence
- Stormwater Management and Site Design Scale

Deschutes Geography

- 170 square miles
- 275 DAUs
- 12 Sub-watersheds

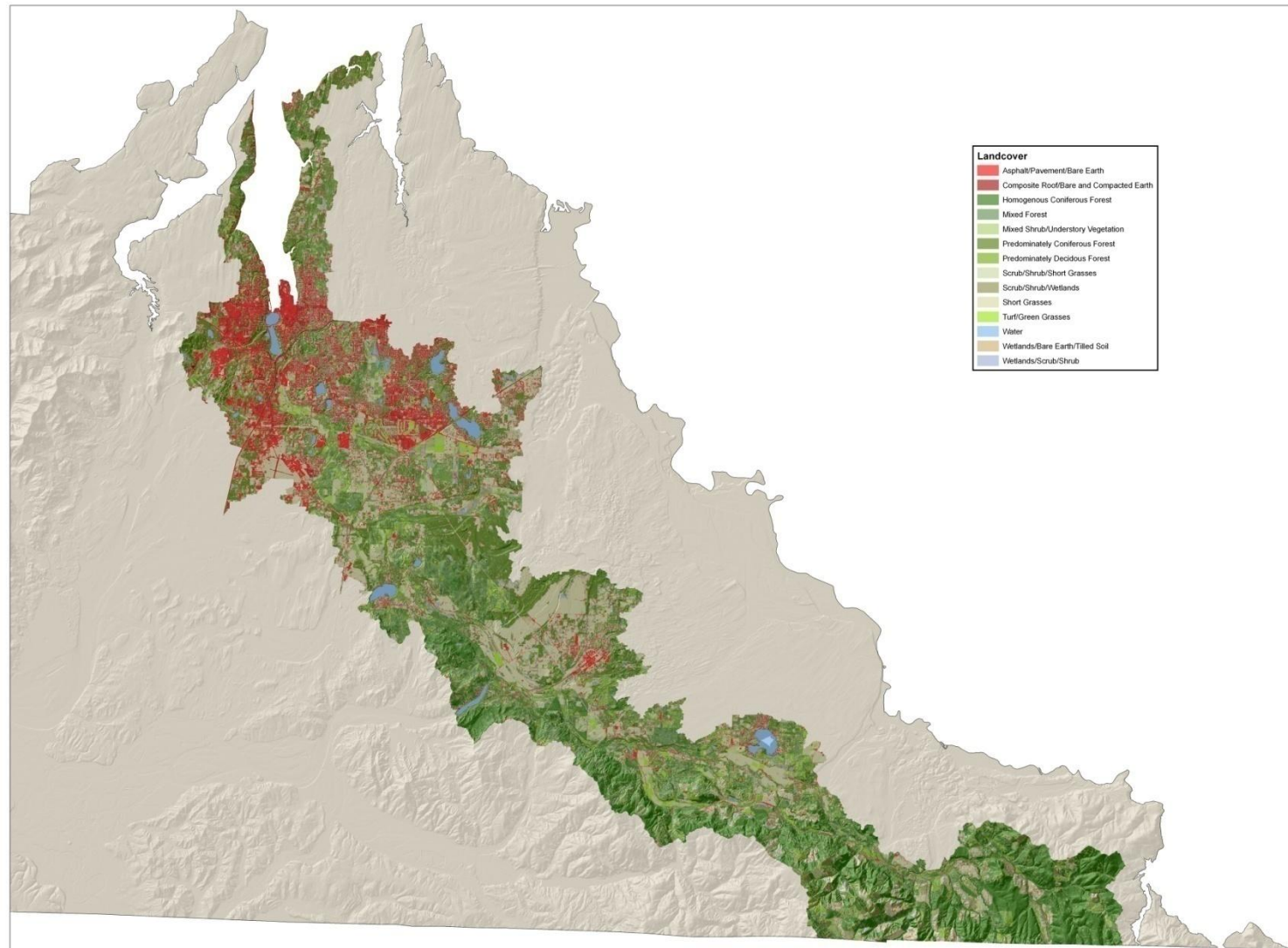


Imagery: Foundation for a Watershed Characterization



- SPOT 10 meter Multi-spectral Image
- Acquired July 2009
- Ground Truth with July 2009 Aerials
- Recently acquired 2010 imagery for Nisqually Watershed Characterization

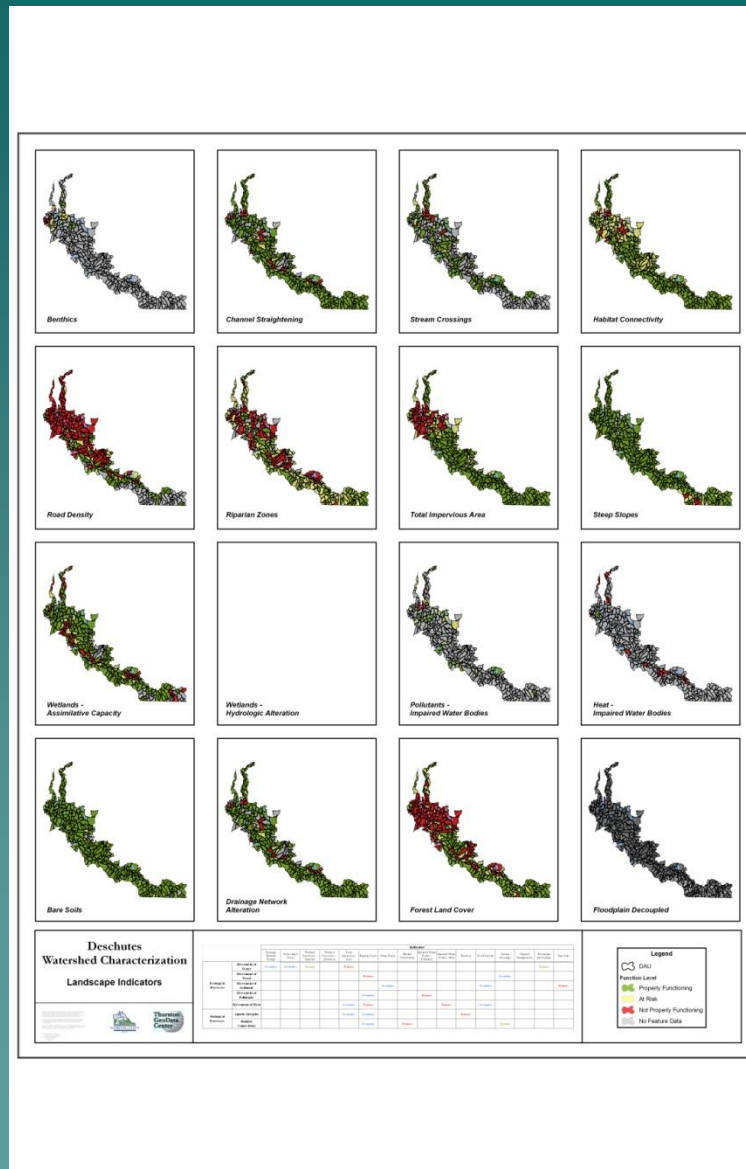
Land Cover Classification



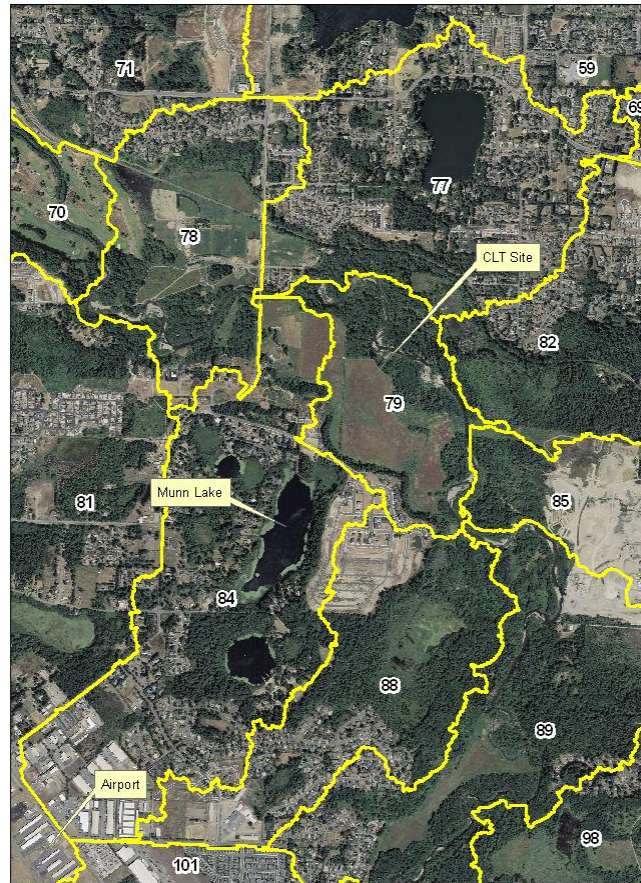
Landscape Indicators

- Total Impervious Area (TIA)
- Forest Cover
- Prairie Cover
- Wetlands
- Floodplains
- Riparian Zones
- Stream Channel Straightening
- Index of Biotic Integrity
- Road Density
- Habitat Connectivity
- Stream Crossings
- Bare Soils
- Impaired Water Quality
- Steep Slopes

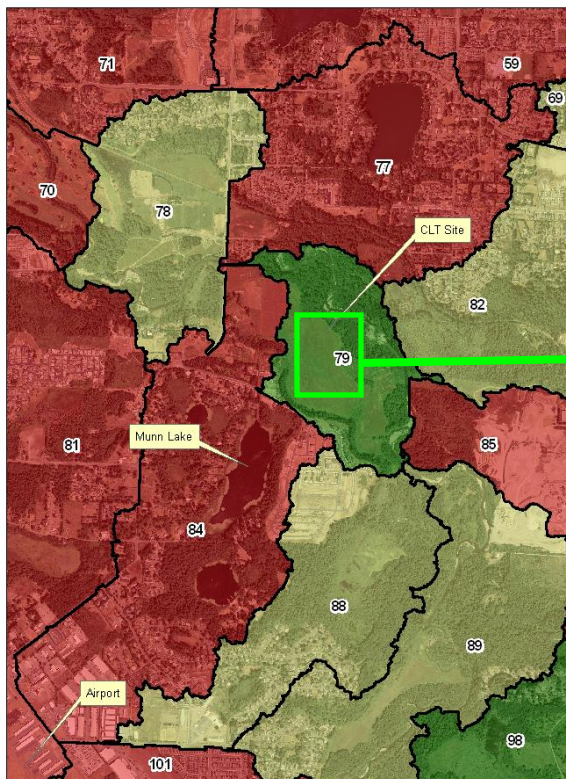
Landscape Indicators



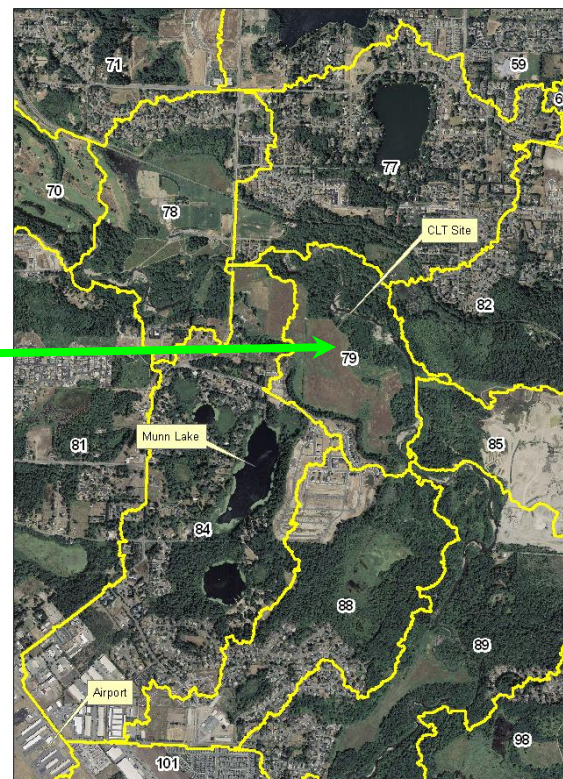
Capitol Land Trust – Deschutes River Site In Lieu of Fee: Preservation and Restoration



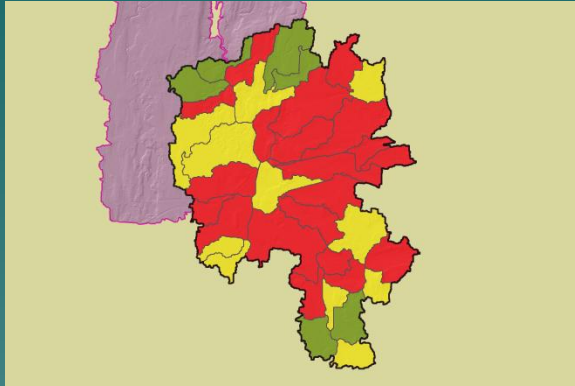
One Landscape Indicator – Total Impervious Area (TIA)



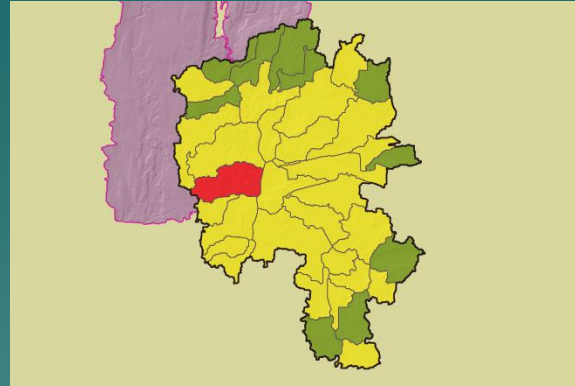
Ecological Process: Total Impervious Area DAU Id 79 Function Level = Properly Functioning



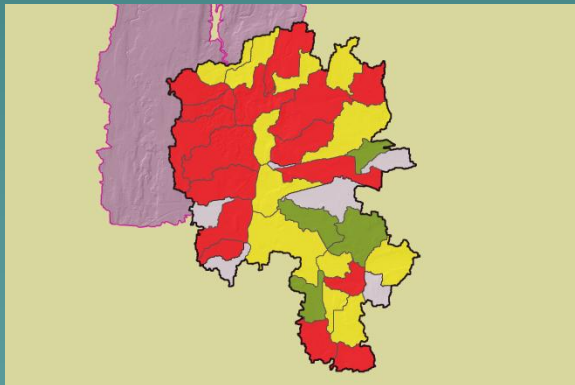
Indicators for One Ecological Process: Movement of Water



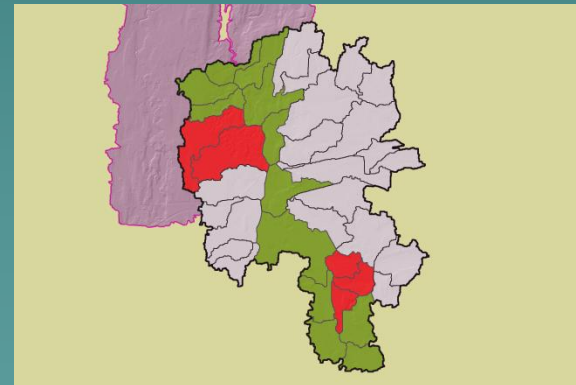
Forest Cover



Impervious Area



Wetlands



Floodplain Decoupling

Four Indicators:

- Forest Cover
- Impervious Cover
- Wetlands
- Floodplain Alterations



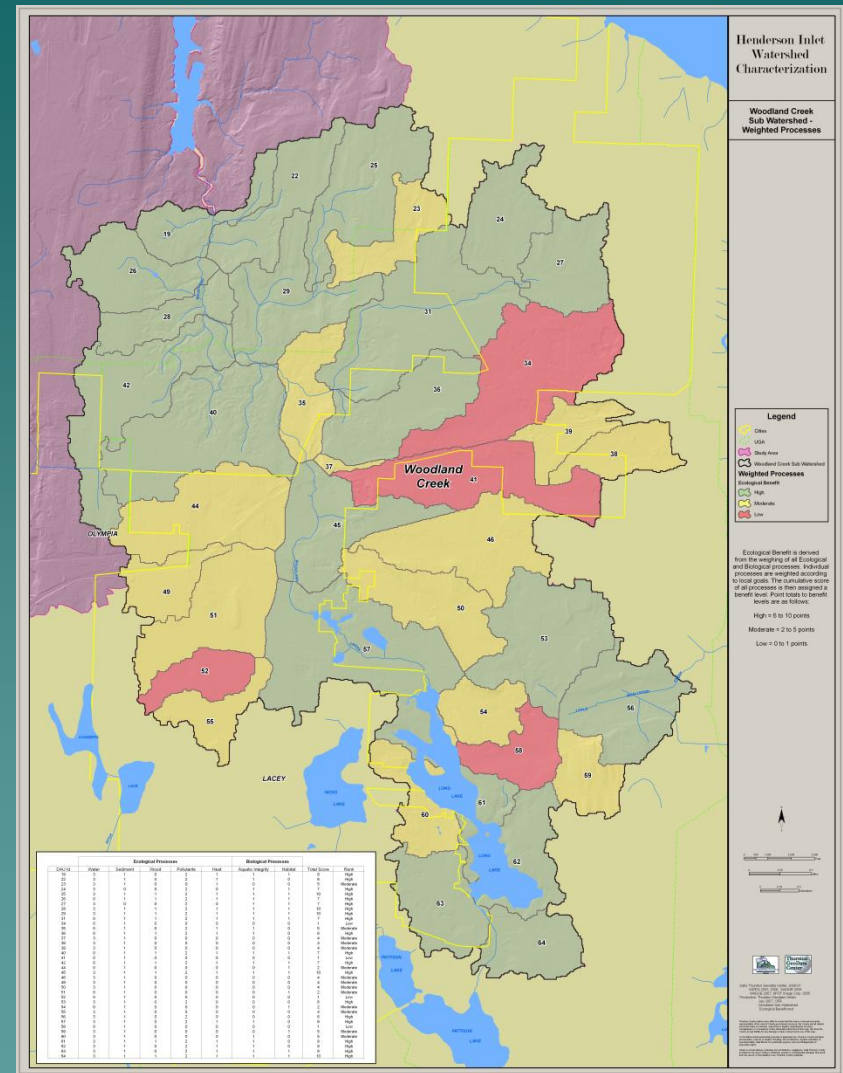
Ecological Processes Combined

Ecological Processes

- Movement of Water
- Movement of Wood
- Movement of Sediment
- Movement of Heat
- Movement of Pollutants

Biological Elements

- Aquatic Integrity
- Habitat Connectivity



Resource Site Analysis

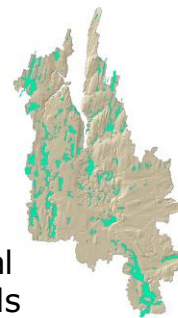
Current
Wetlands



Historical
Wetlands



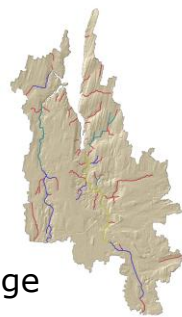
Potential
Wetlands



Stream Typing



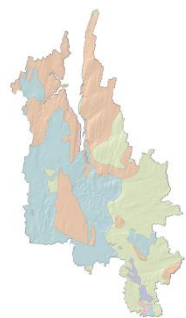
Fish Usage



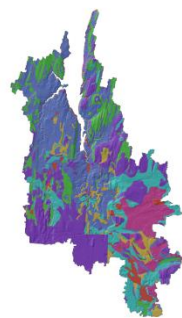
Floodplains



Geology



Soils

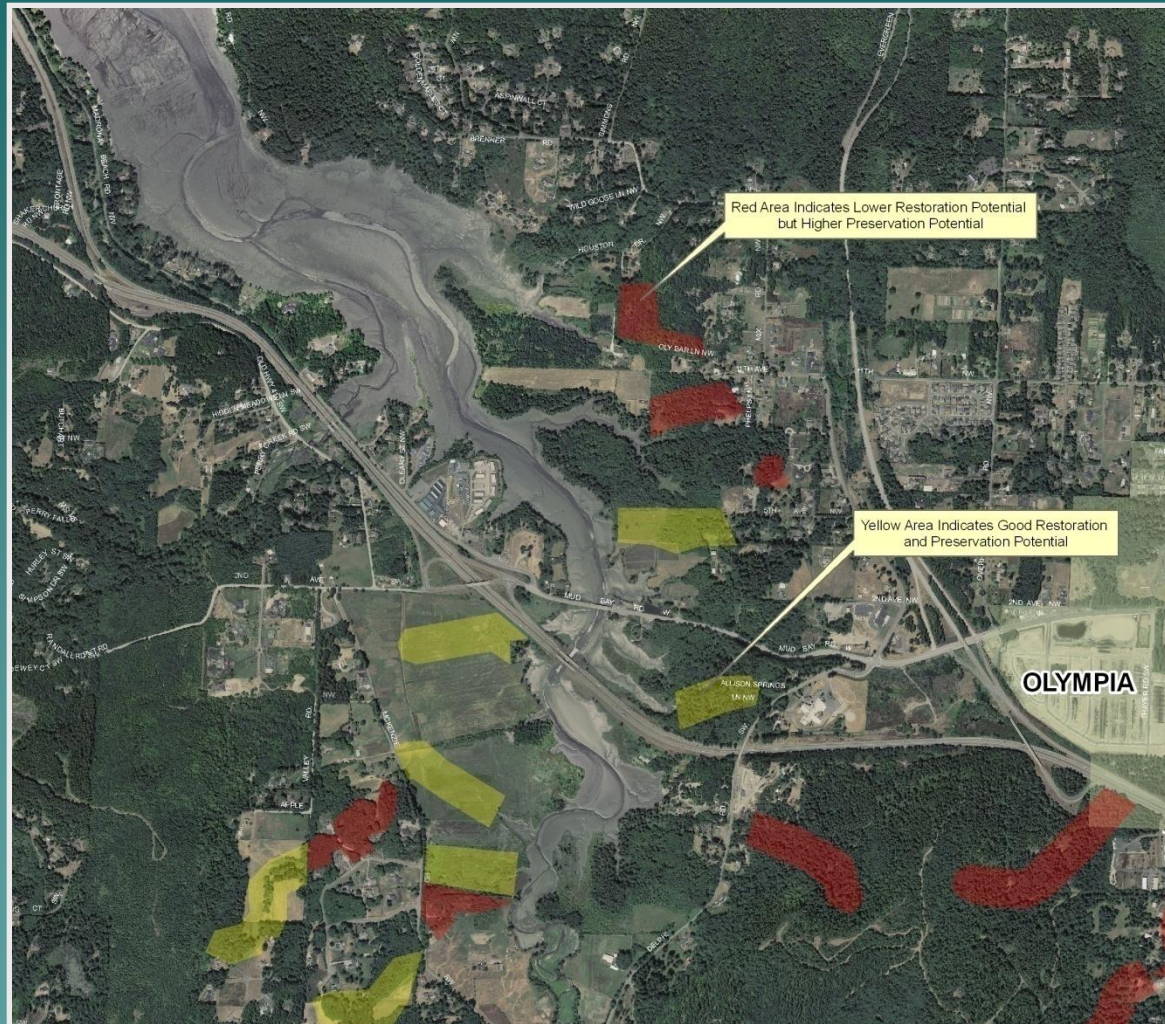


Forested Areas



Results in Eld Inlet

- Sites identified for riparian restoration



Preliminary Results in Deschutes

- Riparian sites identified high for restoration



Why is the Data Valuable?

- Identifies appropriate places to accommodate future growth while protecting natural resources
- Potential On-site and Off-site Mitigation Opportunities
- Compensatory Mitigation (In-Lieu Fee and Wetland and Prairie Banks)
- Incorporate results in Capital Facility Planning and Conservation Futures
- Update of completed Basin Plans

Policy Impacts

County Codes may need updating to allow:

- Mechanisms for Compensatory Mitigation
 - Permittee-Responsible Mitigation
 - Mitigation Banking (“off-site”)
 - In-Lieu Fee Mitigation (“off-site”)

Policy Impacts, con't.

- Opportunity to focus Conservation Futures funding to purchase priority sites
- Continued evaluation of the Thurston County's Drainage manual
 - Example: Sub-Area specific development regulations
- Asset Management System to deliver new data to Current and Strategic Planners

Recap

- The purpose of this project is to complete a spatially-explicit landscape characterization of priority sub-watersheds
 - Outputs (Deliverables) include:
 - ✓ Updated inventory of land cover
 - ✓ Prioritized list of natural resource sites (wetlands, riparian and floodplain sites)
 - ✓ Scientific database for preservation, restoration, and mitigation opportunities
 - ✓ Completed report of each study area
 - Outcomes include:
 - ✓ Scientific basis for decision making, amending and updating County plans and land-use codes
 - ✓ Capital facility planning and conservation acquisitions

Thank You !

Questions/Comments

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