# Environmental Protection Agency:
## *West Coast Estuaries Initiative Grant*

Presented to
Deschutes TMDL Advisory Group
August 19th, 2010

Presented By:
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THURSTON COUNTY

Thurston GeoData Center

# Purpose of Presentation

- Provide information on why the proposed work is important to Thurston County and Puget Sound
- Provide a Foundation of Watershed Planning and Characterization
- Provide an Update on where we are with the Deschutes Watershed Characterization

# 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, and enhance the local region's natural resources

# EPA Grant:

*Protecting Puget Sound Watersheds*
*Water Quality and Aquatic Resources from the Impacts of Growth*

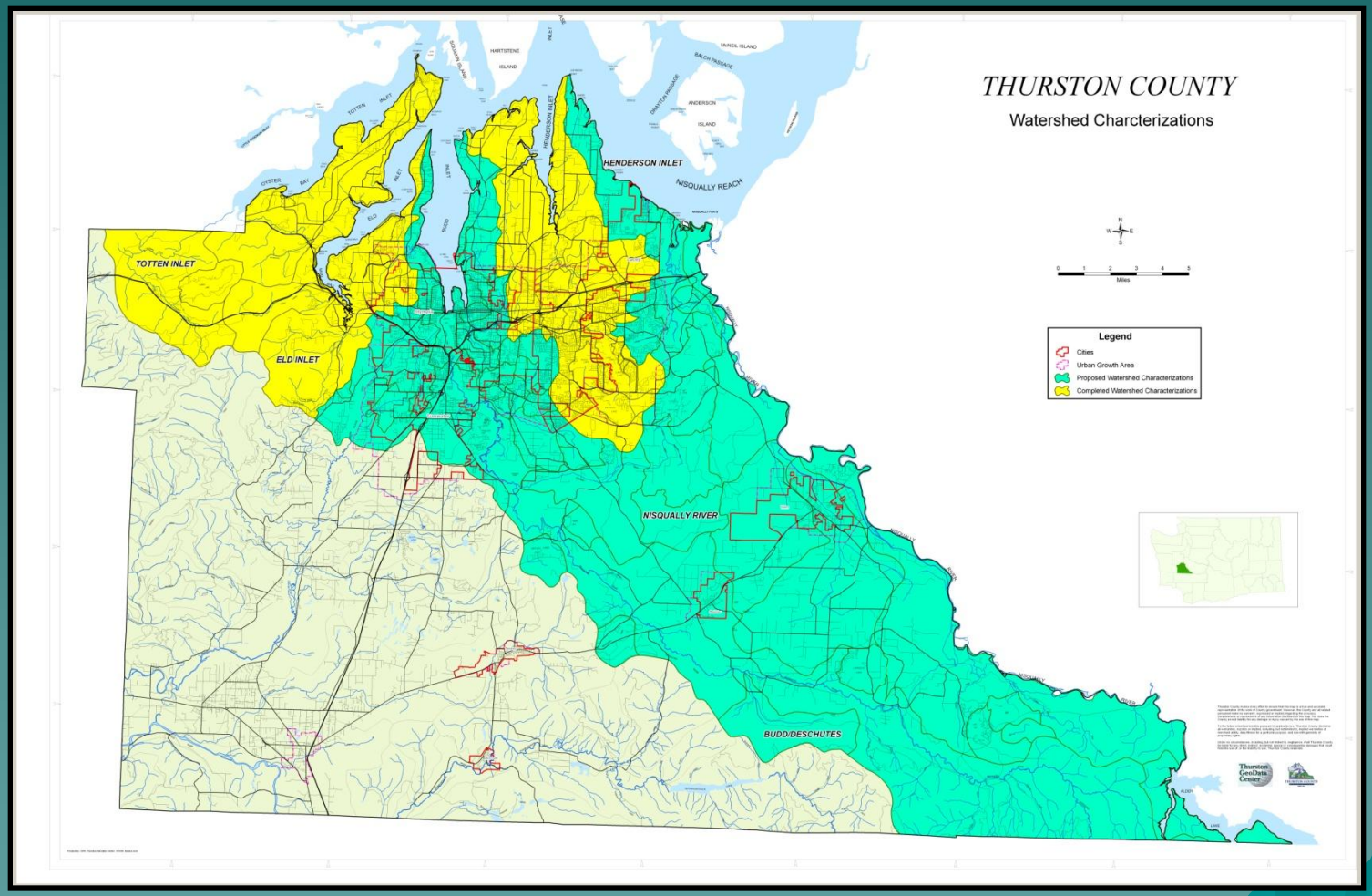
- $623,059 Grant funds awarded
- $930,804 Total Project cost
- $307,745 Match includes:
  - ✓ In-kind labor ($248,745) and an Ecology Grant ($59,000)
  - ✓ Grant timeline July 2008 to December 2011

# 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 and sub-watersheds:
  - Totten and Eld Inlets (Completed 2009)
  - Deschutes River (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 Project Watersheds



# Background

- Thurston County has multiple regulatory requirements
- Is there a better way to manage water related regulations?
- Puget Sound Action Team Grant
- Henderson Inlet Watershed Characterization was the Pilot for Thurston County
- Watershed based approach to water management (EPA Guidance 2003, updated 2007)

# Goals of Watershed Characterization

- Assess Current and Future 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, and restore Hydrologic Function
- A watershed based approach to water management?

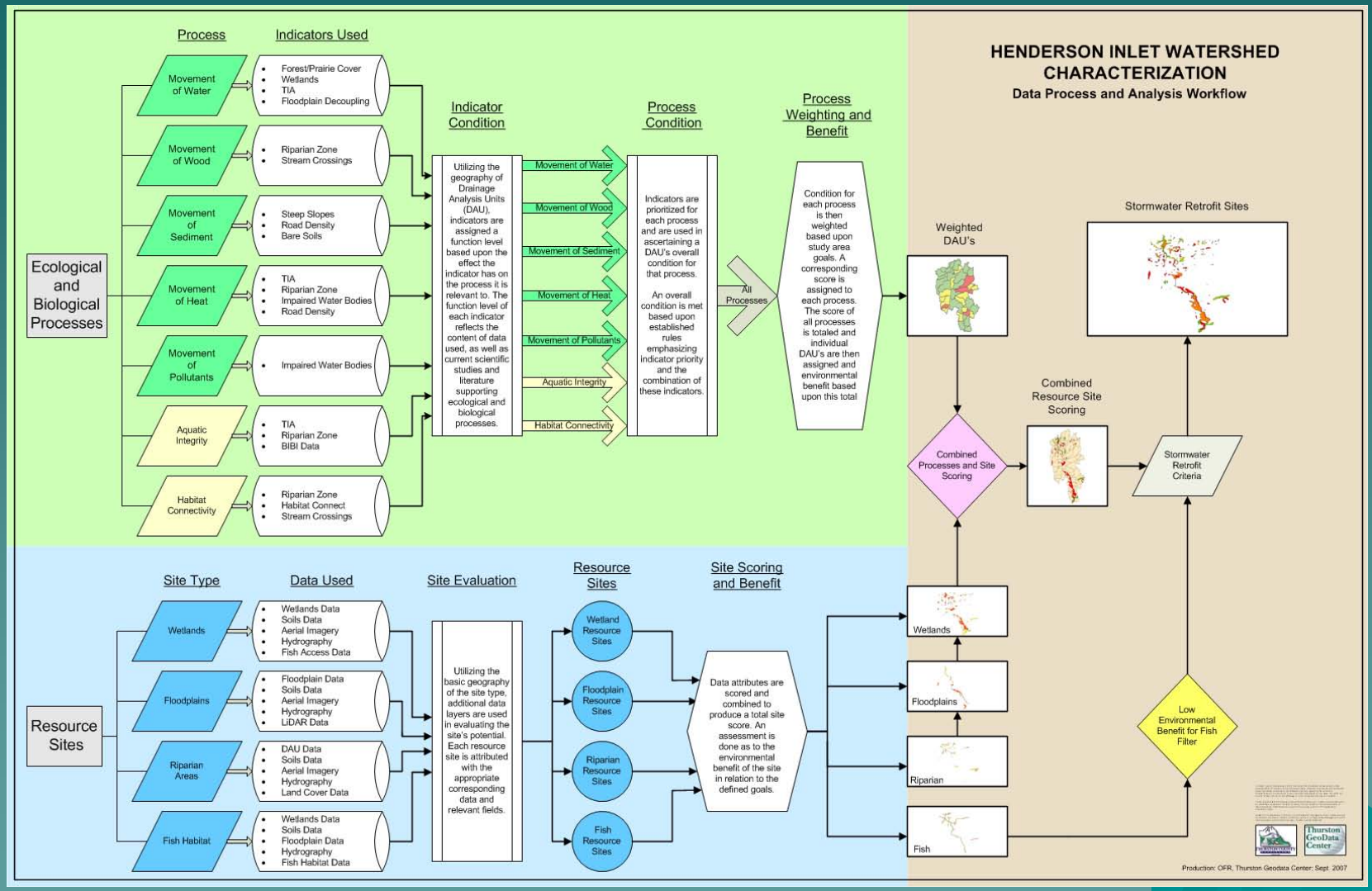
# Stormwater Program Policy Goals

- 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 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



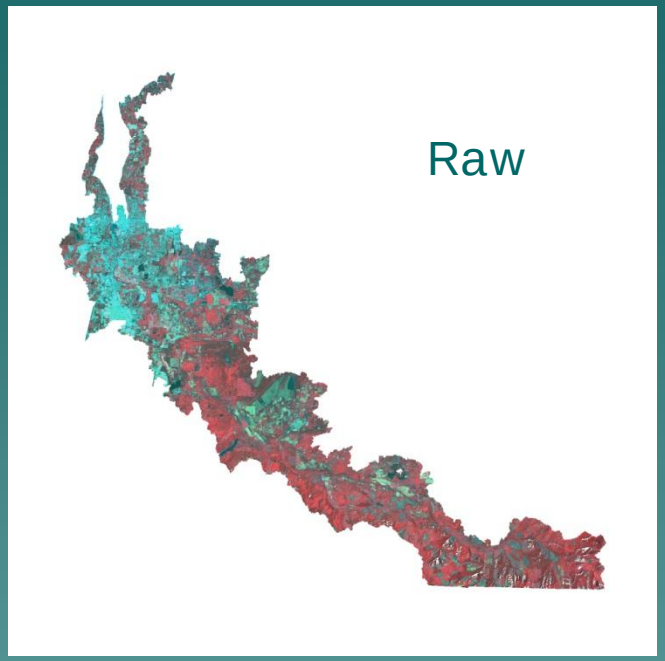
# Drainage Analysis Unit (DAU)

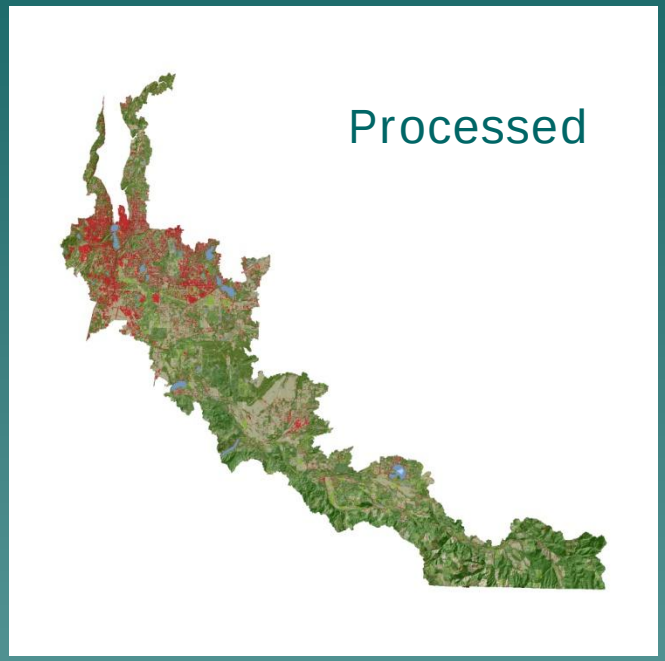
- Center for Watershed Protection Guidelines
- Typical Area is 0.25 square miles (160 acres)
- Impervious Cover has a strong influence
- Stormwater Management and Site Design Scale


**Deschutes Geography**

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

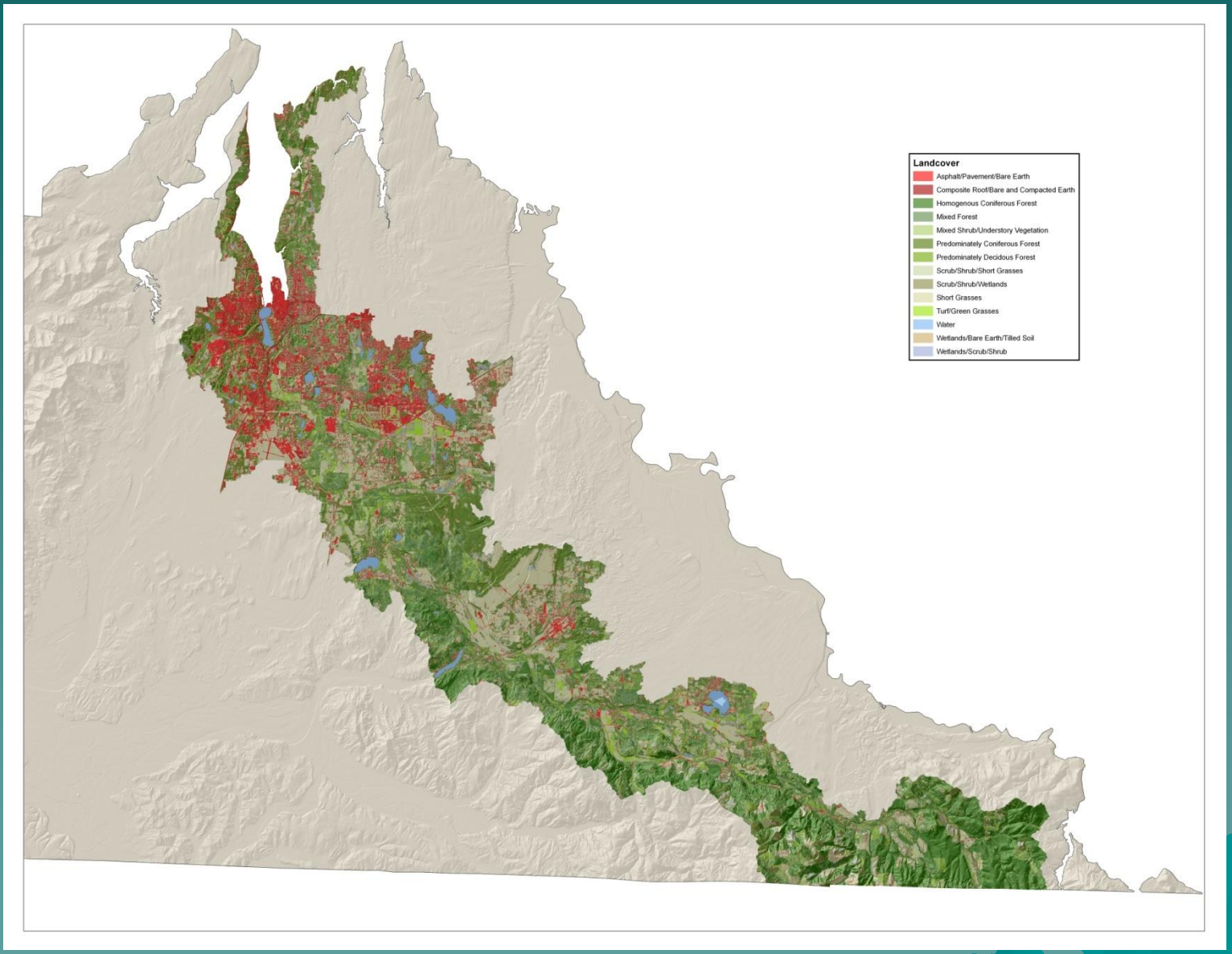
# Imagery:
## Foundation for a Watershed Characterization




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

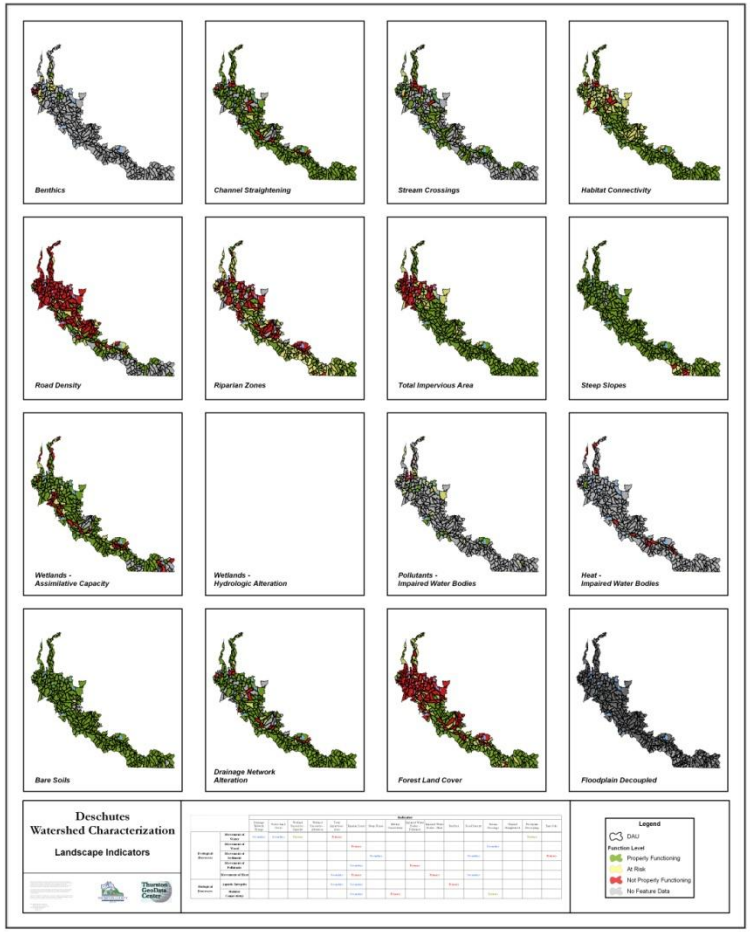
# Land Cover Classification



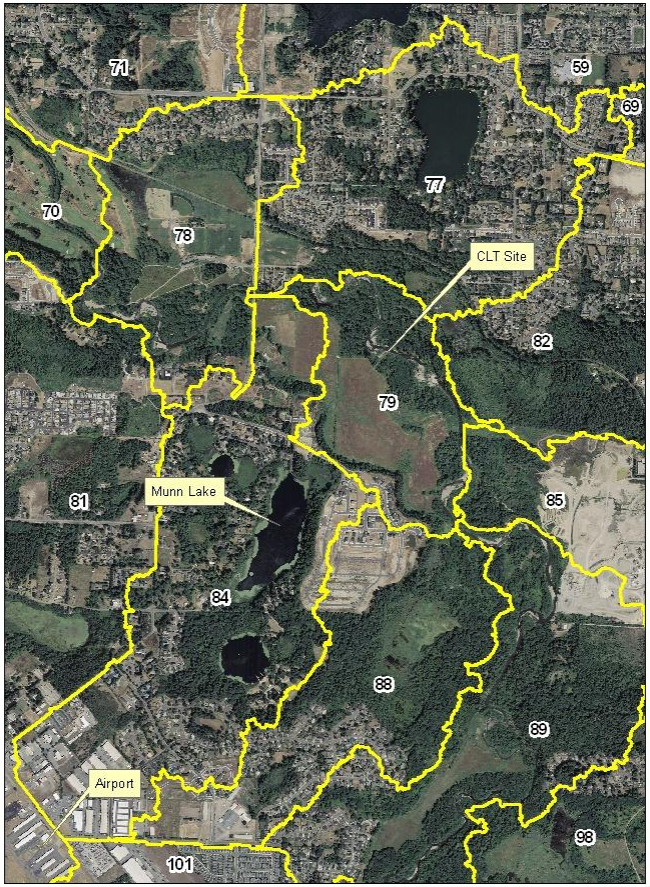
# Landscape Indicators

- 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

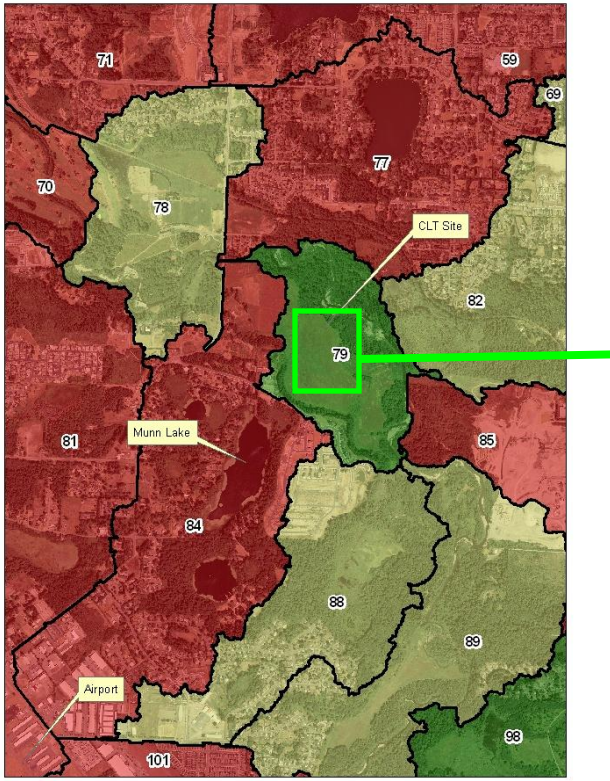
# Landscape Indicators



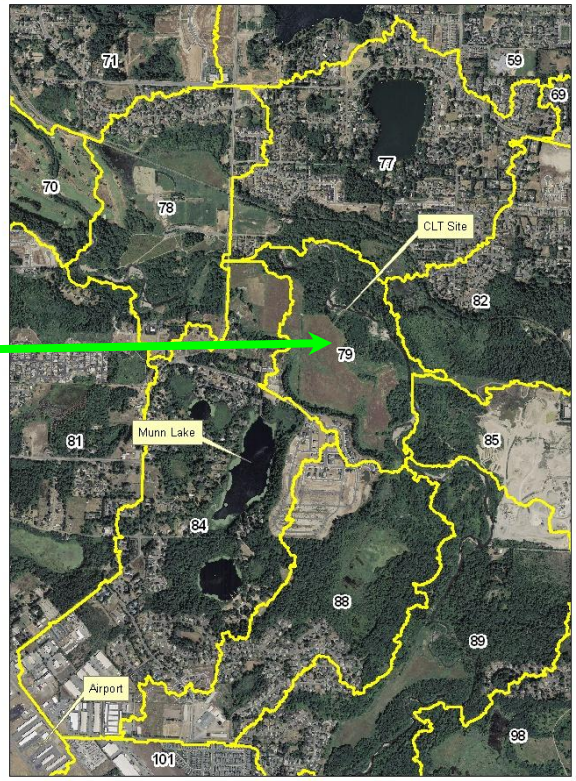
# Capitol Land Trust – Deschutes River Site
# In Lieu of Fee: Preservation and Restoration



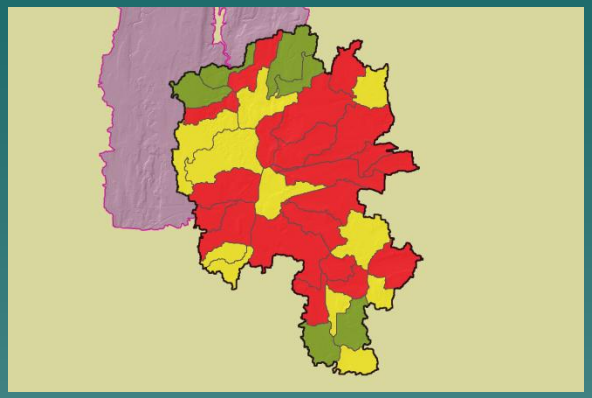
# One Landscape Indicator – Total Impervious Area (TIA)



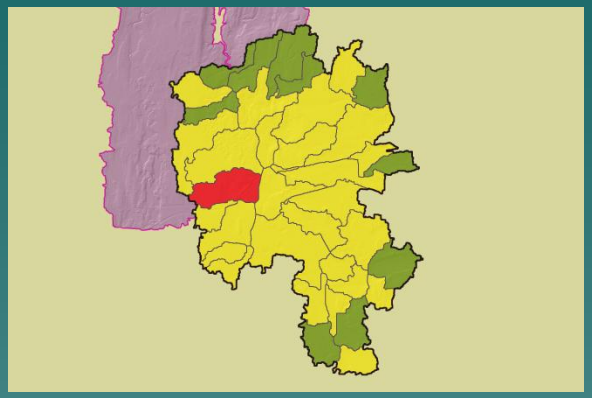

Ecological Process: Total Impervious Area  DAU Id 79 Function Level = Properly Functioning



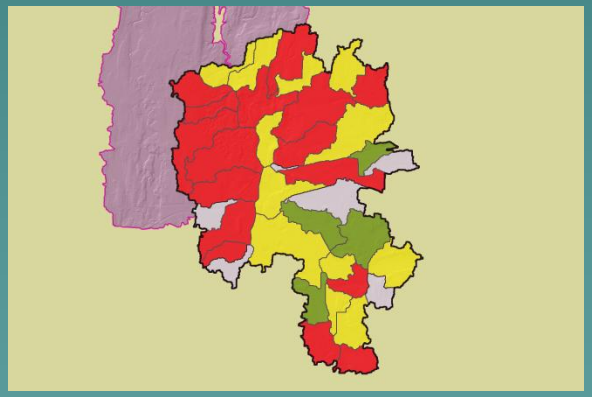
# Indicators for One Ecological Process: Movement of Water



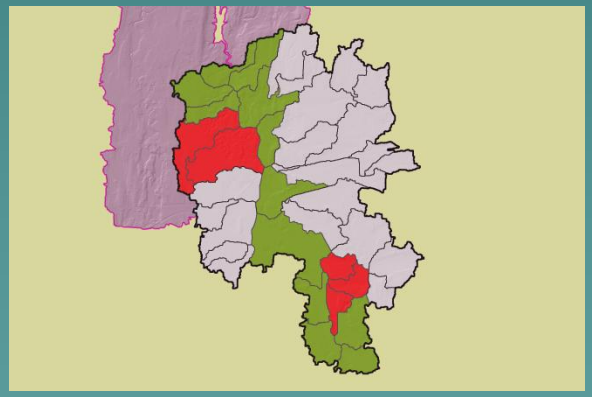
**Forest Cover**



**Impervious Area**



**Wetlands**

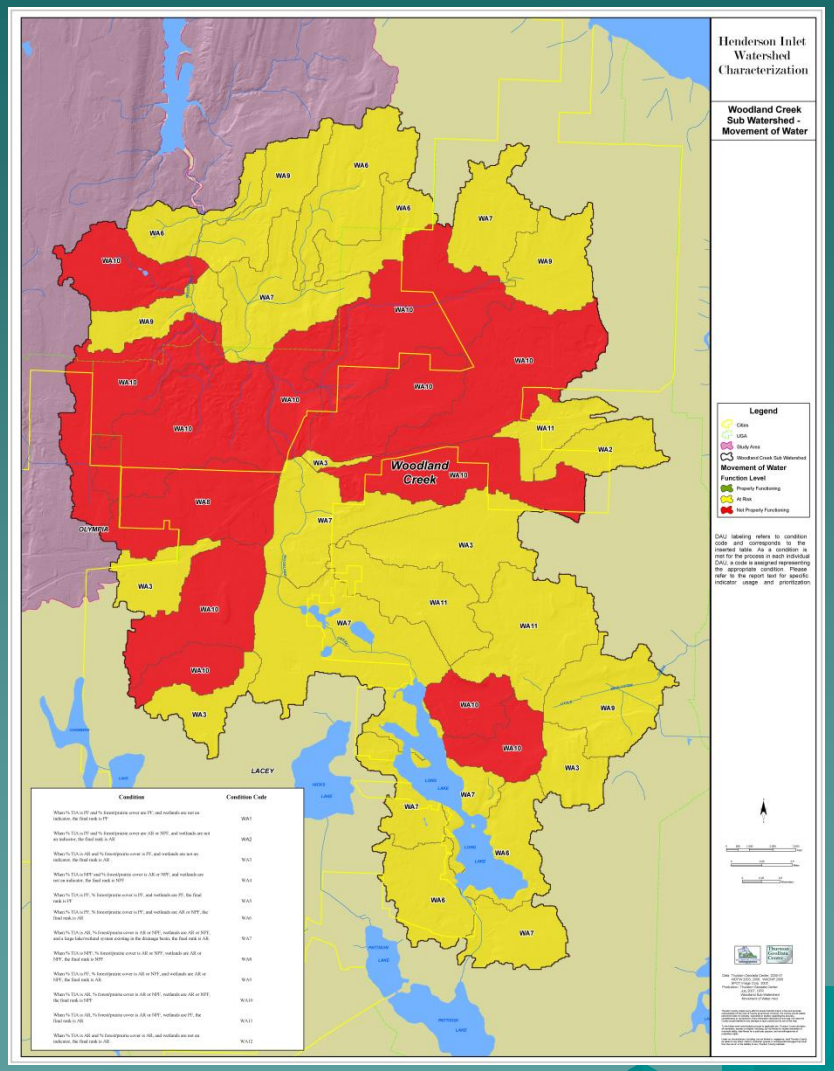


**Floodplain Decoupling**

# Movement of Water – Final Result

Four Indicators:

- Forest Cover
- Impervious Cover
- Wetlands
- Floodplain Alterations



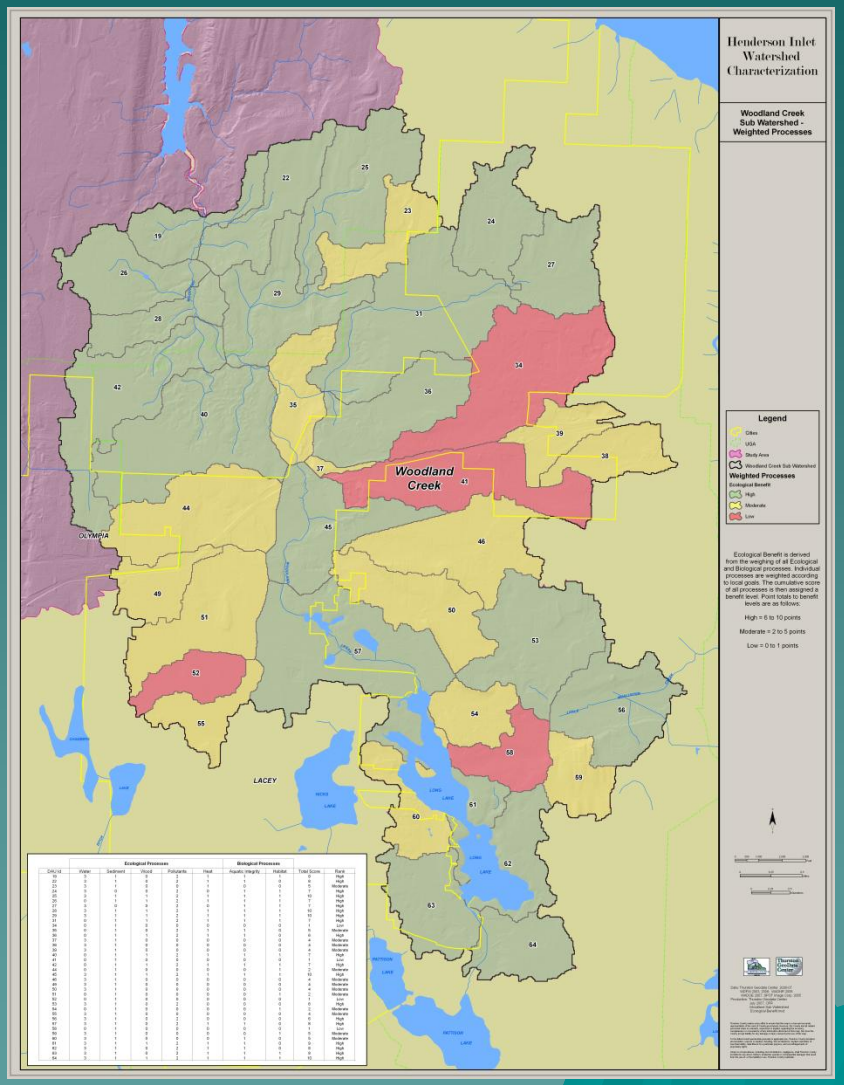
# Ecological Processes Combined

## Ecological Processes

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

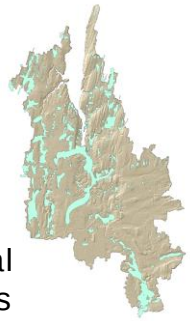
## Biological Indicators

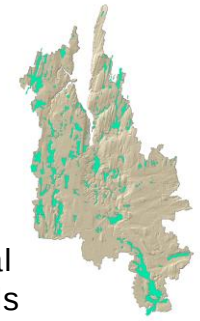
- Aquatic Integrity
- Habitat Connectivity

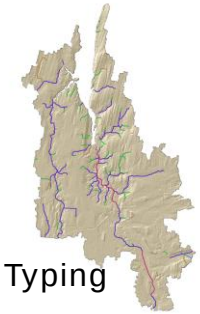


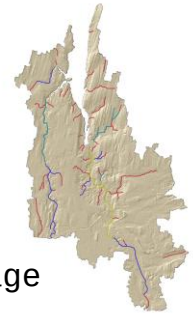
# Resource Site Analysis


Current Wetlands


Historical Wetlands

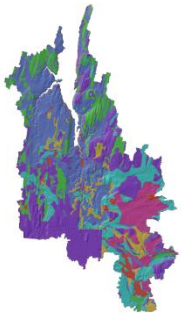

Potential Wetlands


Stream Typing


Fish Usage


Floodplains

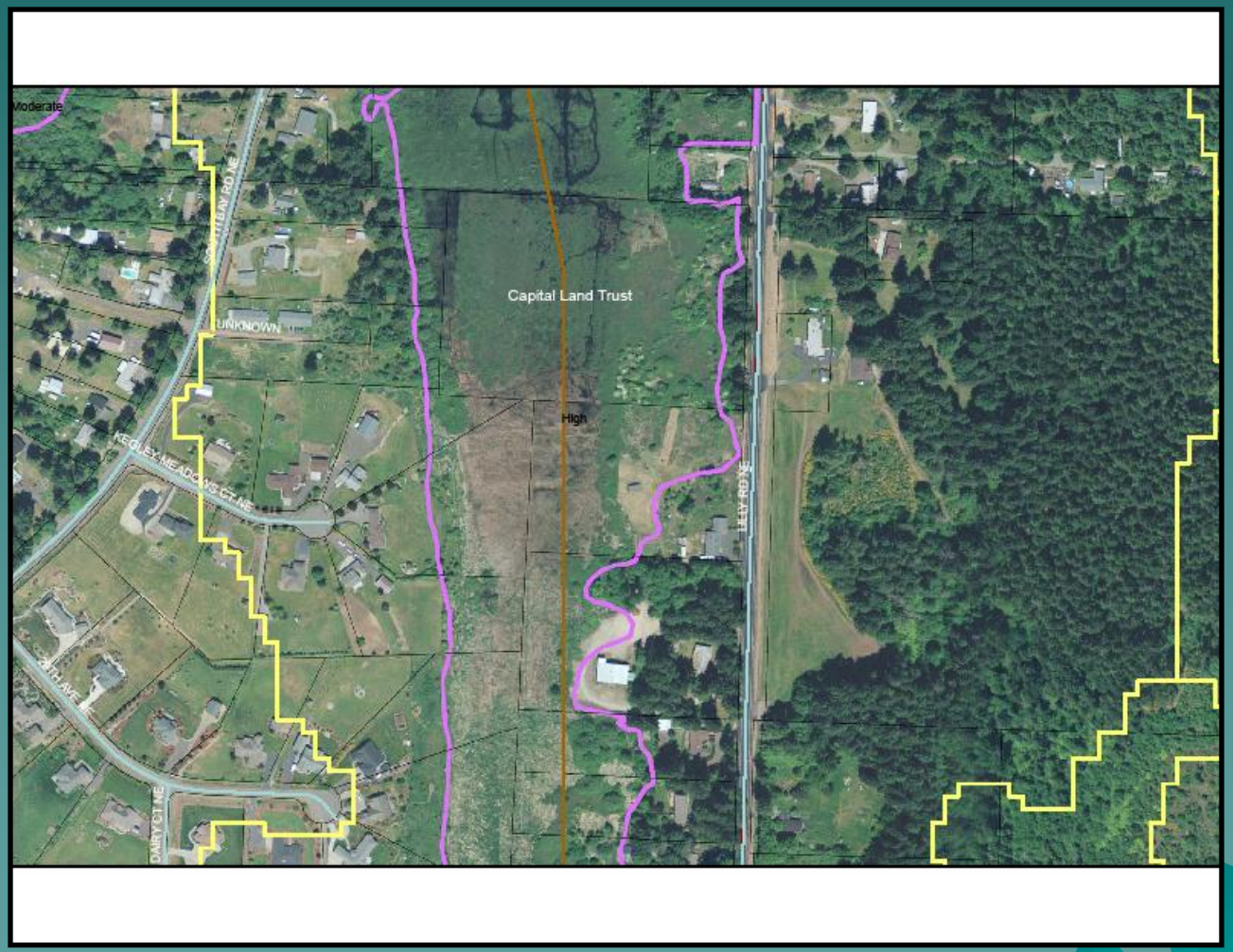

Geology


Soils


Forested Areas

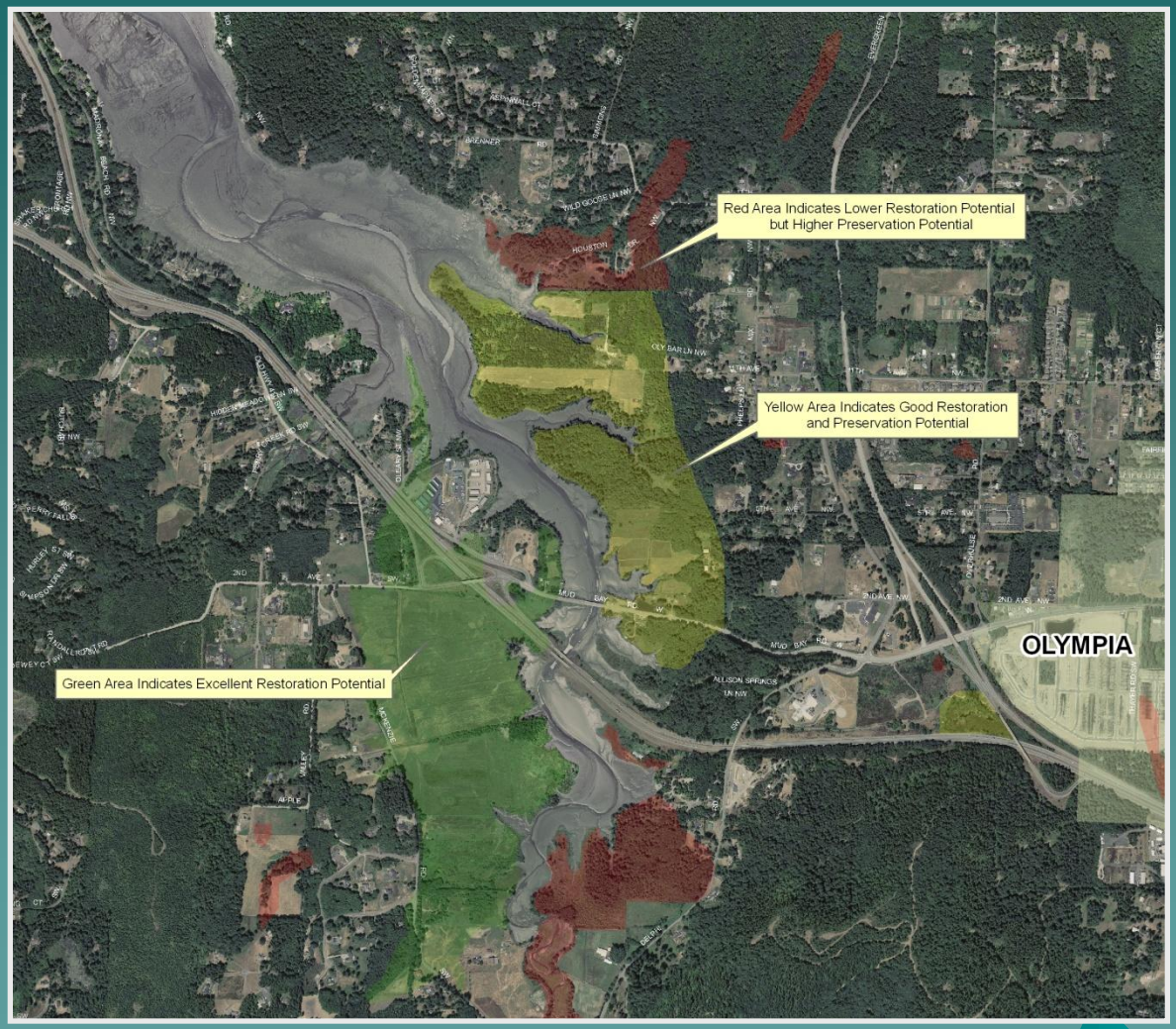
# Results in Henderson Inlet

- Wetland site identified high for restoration



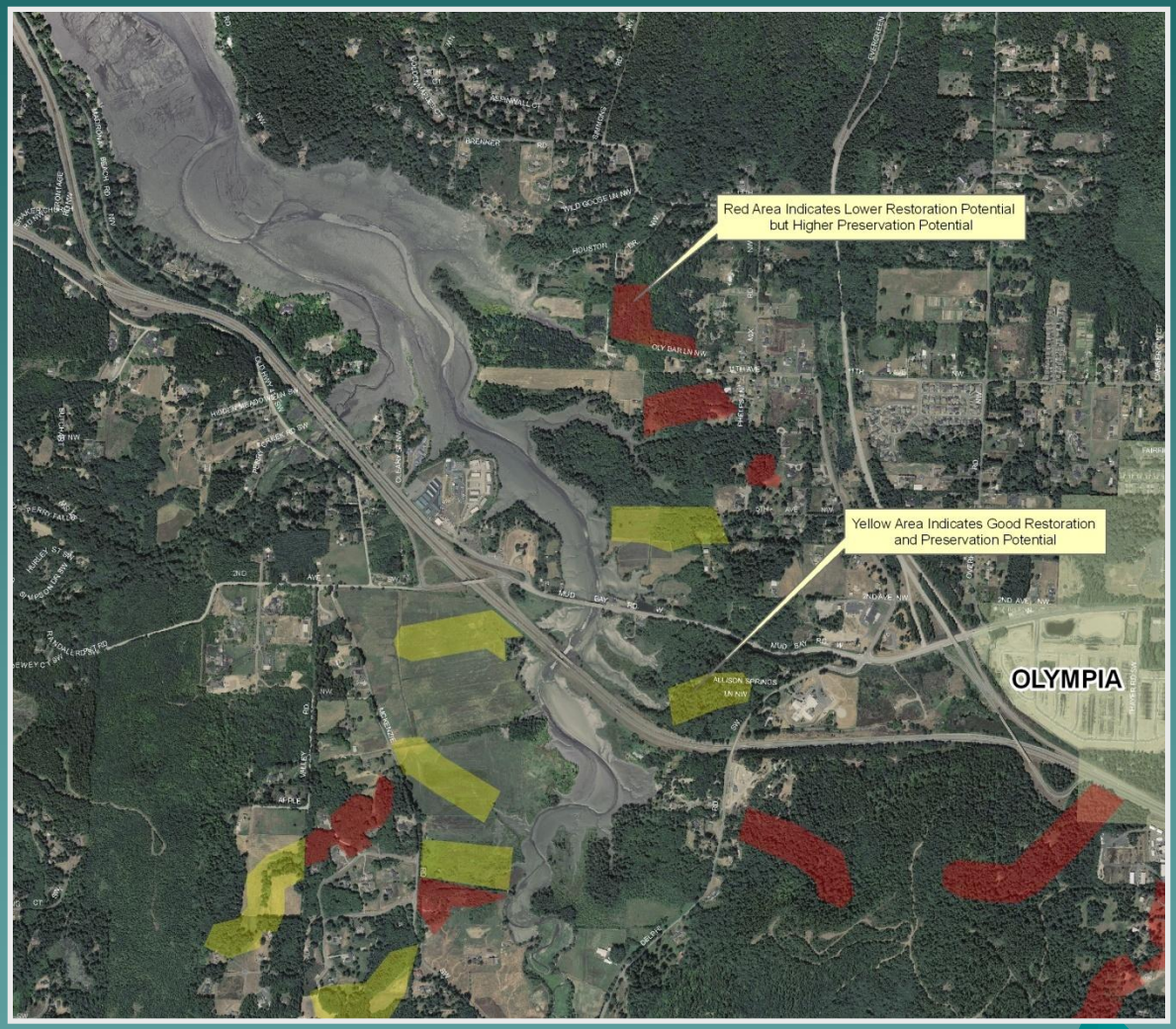
# Results in Eld Inlet

- Sites identified for wetland restoration



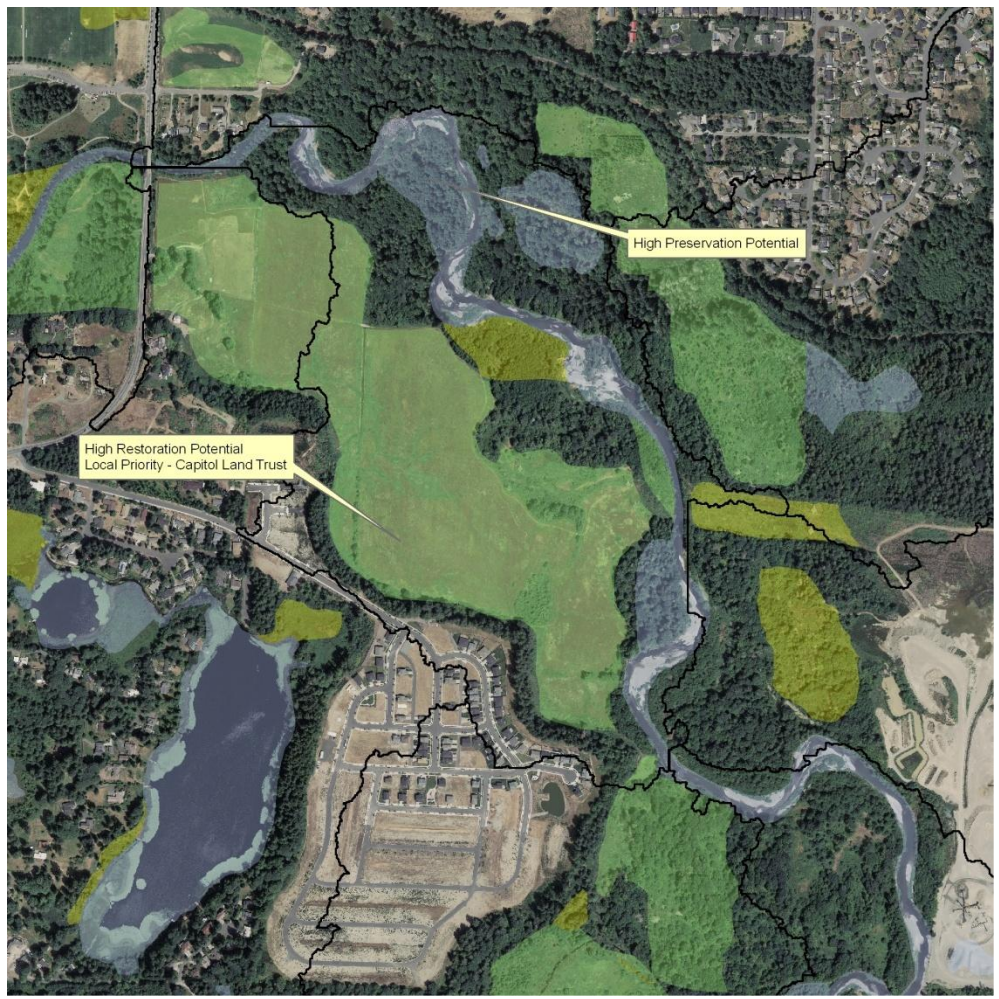
# Results in Eld Inlet

- Sites identified for riparian restoration



# Preliminary Results in Deschutes

- Wetland sites identified high for restoration/preservation



# 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 Banks)
- Baseline Data for Infrastructure Design
- 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: Green Cove and Salmon Creek basins have special 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

# Next Steps

- Thurston County Strategic Planning has been awarded a $885,461 EPA grant
- Strategic Planning, Thurston Regional Planning Council, and other Thurston County staff will incorporate watershed characterization science into policy over the next two and half years
- Sub-area Planning resulting from hydrological modeling of current and future land-use scenarios?

# Thank You !
# Questions/Comments

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