



Nez Perce Tribe, Wetland Program

Rue Hewett Hoover



Nez Perce Nimiipuu



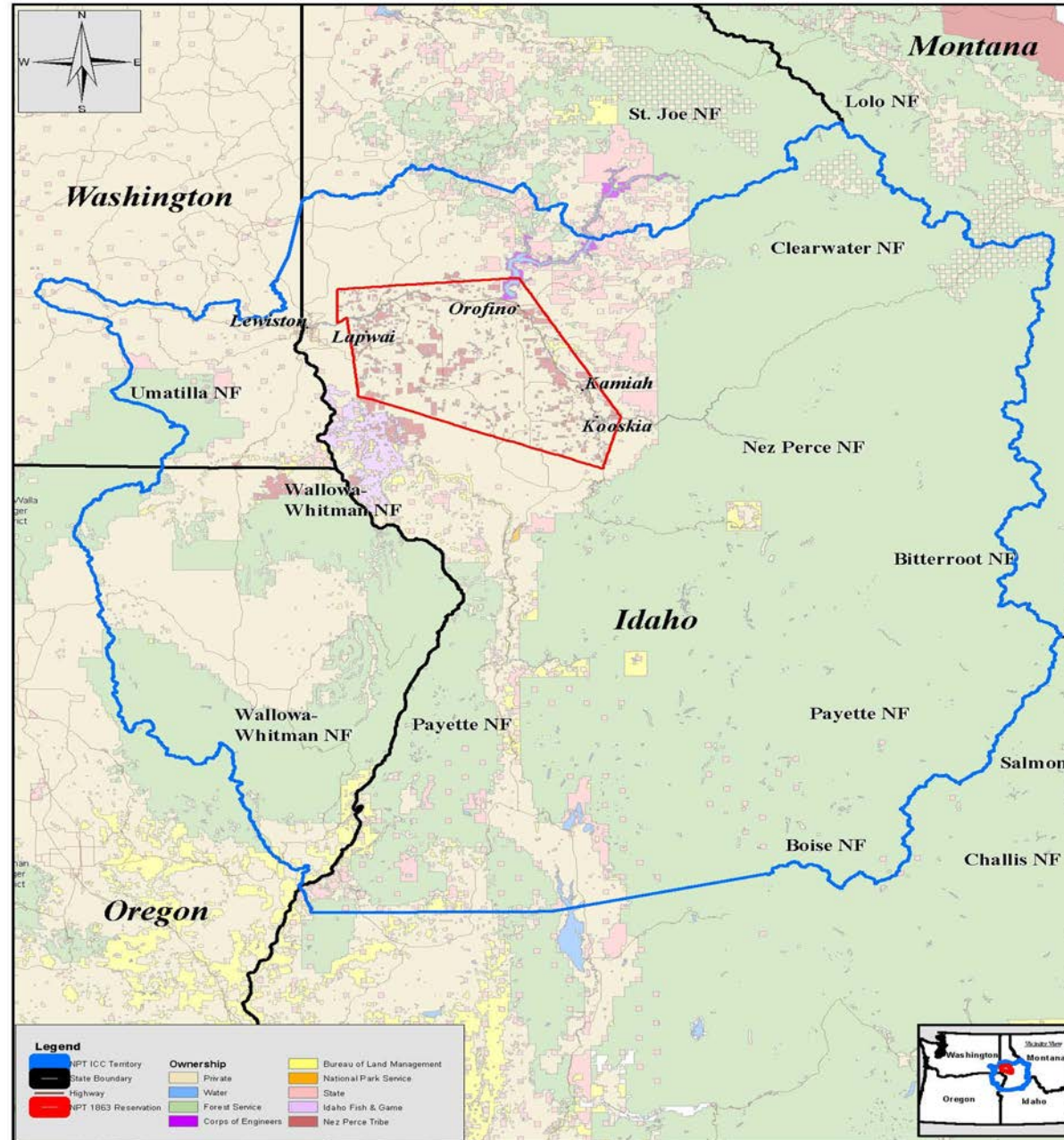
*Elizabeth Wilson at
Musselshell Meadows*

*Agnes Moses at
Musselshell Meadows*

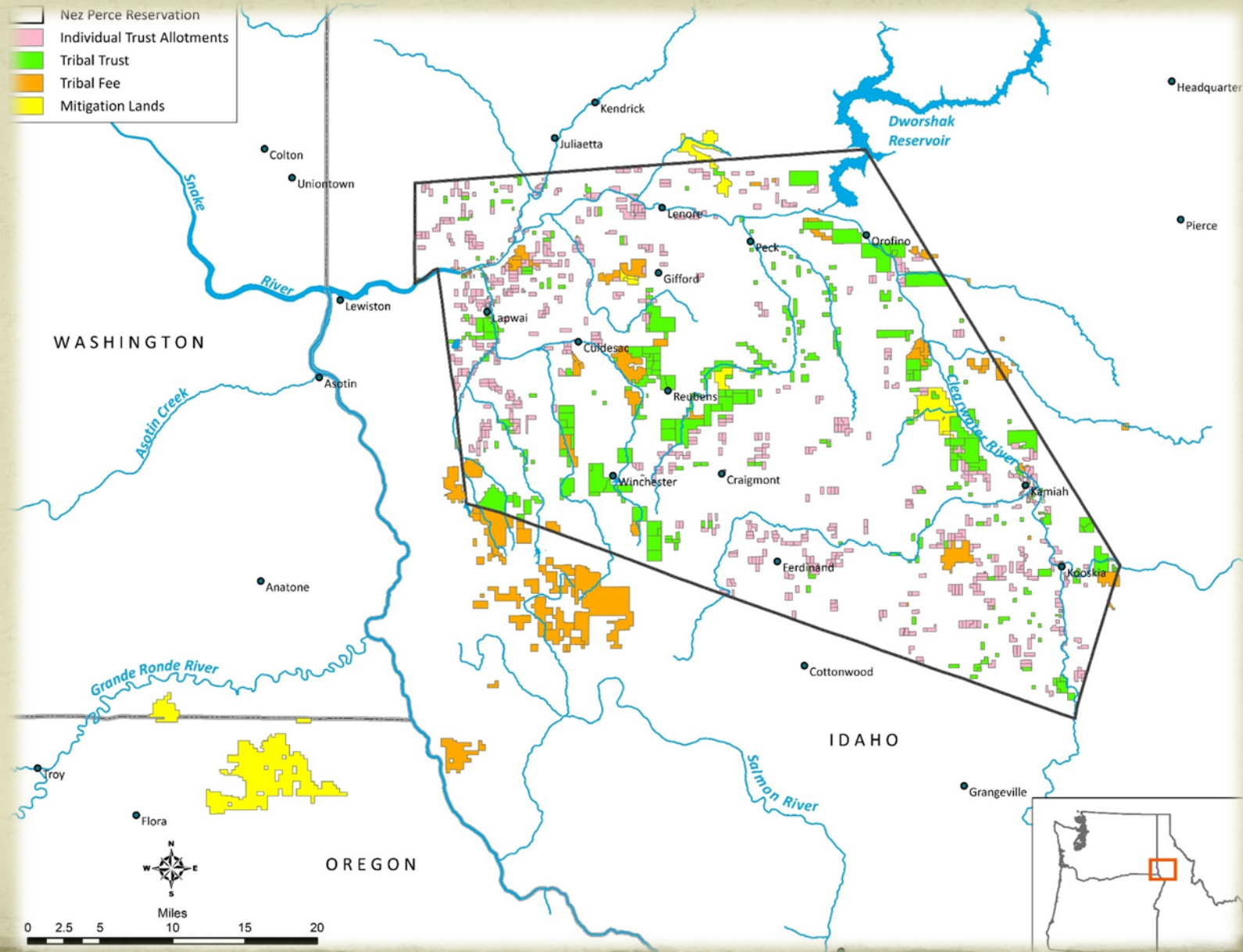


Nimiipuu Homeland

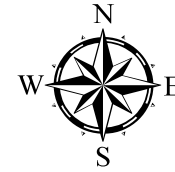
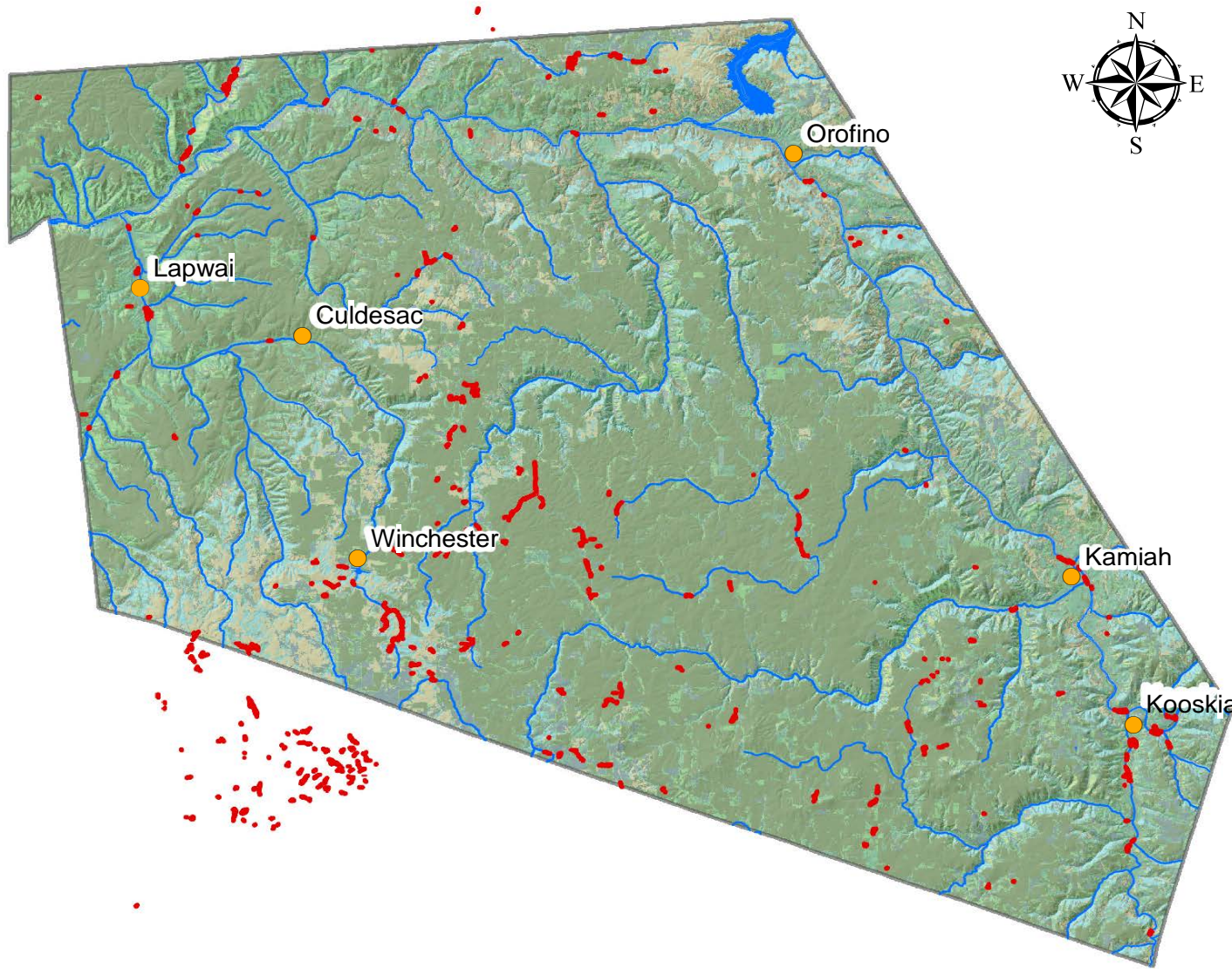
Indian Claims Commission - Territory of the Nez Perce Tribe



Nez Perce Land Ownership -- 2019

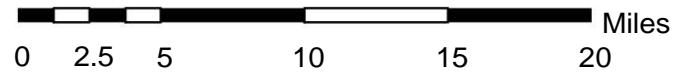


Wetlands on the Nez Perce Reservation



Legend

- Wetlands
- Cities
- Streams
- Reservation
- Boundary Landcover
 - Bare
 - Rock
 - Bare Soil
 - Brush
 - Deciduous Forest
 - Evergreen Forest
 - Grassland
 - Mixed Forest
 - Pasture/Hay/Alfalfa
 - Row Crop
 - Small Grains
 - Urban
 - Water



Nez Perce Tribe needed a tool to assess and prioritize wetlands.

- What will work and what will not?
- Went to trainings for two different assessment tools, also reviewed other assessment tools that were being used in other states.
- How to relate a value for wetlands to the public and the Tribal NPTEC committee.
- How do we show the cultural importance of wetlands?
- Chose the Wetland Ecosystem Services Protocol tool (WESP) - by Dr. Paul Adamus



What Is WESP?

- **Standardized protocol** (functional assessment tool) for rapidly assessing wetlands
- An **Excel-based logics model** that provides scores (0-10) for 17 things that a wetland can do (functions) and their likely benefits (values or benefits).
 - to assess **relative importance** of a particular wetland.
- **Data forms** contain questions you must answer for the spreadsheet to operate. Answers based on two components:
 - **Offsite (desktop) evaluation information**
 - Provides landscape level context for subject wetland
 - Review of secondary data sources (spatial and non-spatial data)
 - Facilitated greatly by GIS
 - **Onsite (field) observations**
 - Survey of wetland and adjacent buffer
 - Soils, hydrology ,vegetation, disturbance, and land use.



Why Perform Functional Assessment(FA)?

- Functional Assessment (FA) provides a science-based and landscape-level view of a wetland's various ecological services
- All wetlands are important, but not all are equal - FA enables distinction between wetlands on a functional basis, based on both the effectiveness and value of each function
- FA results can be used a decision-making tool
 - For regulators, in wetlands regulatory approvals process
 - For proponents, in project planning and design
- Tool for determining compensation requirements for wetland alterations
- Tool for evaluating wetland restoration success



WESP – Functions

WESP addresses 17 specific functions, not all of which are applicable in each individual wetland:

- Water storage and delay(W_S)
- Thermoregulation(S_{FT})
- Sediment retention and stabilization(S_R)
- Phosphorous retention(P_R)
- Nitrate removal and retention(N_R)
- Carbon sequestration(C_S)
- Organic nutrient export(O_E)
- Aquatic invertebrate habitat(I_{NV})
- Fish habitat(F_A)
- Amphibian and reptile habitat(A_M)
- Water bird habitat(W_B)
- Songbird, raptor and mammal habitat(S_{BM})
- Pollinator habitat(P_{OL})
- Native plant diversity(P_D)
- Cultural significance(C_{RI})*
- Wetland sensitivity(S_{ens})
- Wetland stress(S_{TR})

***In addition to adapting and calibrating this model to our ecosystems (Reservation and Ceded Lands), we have added a cultural importance function that has never been included before.**

WESP – Grouped Functions

The specific functions are distilled down to 6 ‘grouped functions’:

- Hydrologic group
- Water quality group
- Fish support group
- Aquatic support group
- Terrestrial support group
- Cultural importance group

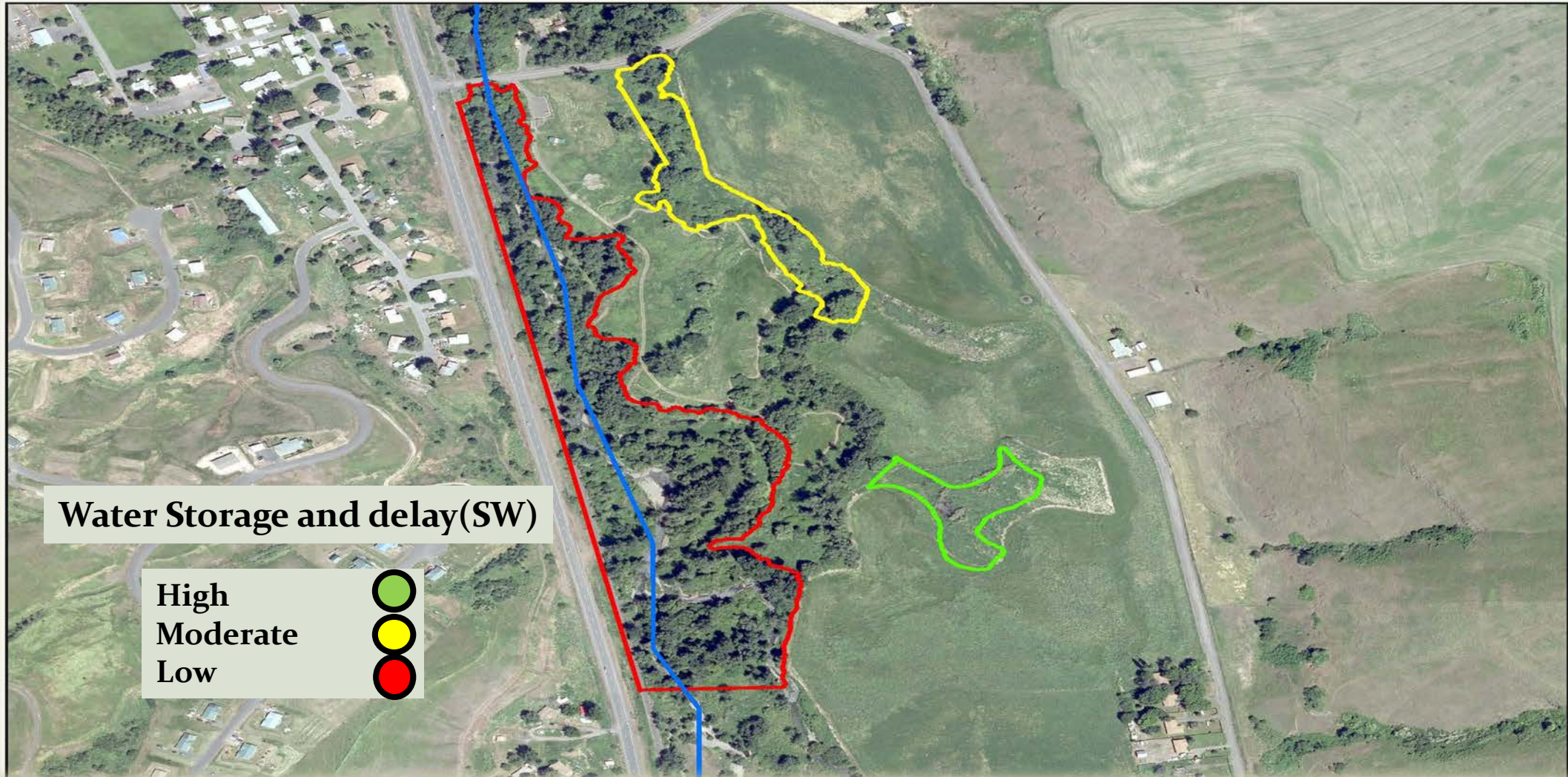


Sample Output

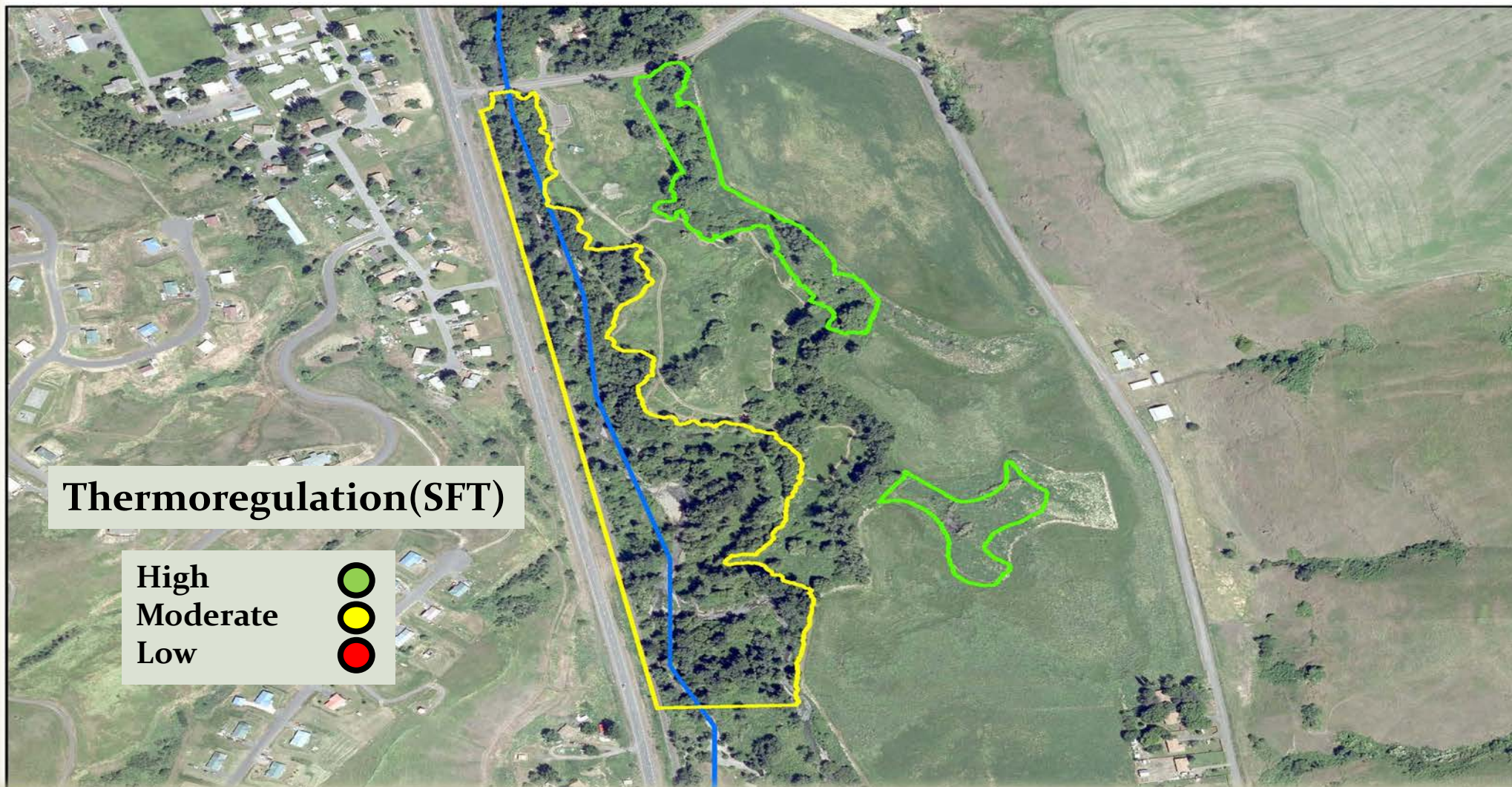
| Wetland C-01 | | |
|--|--|---------------------------------|
| SPECIFIC FUNCTIONS | Relative Effectiveness of the Function | Relative Values of the Function |
| Water Storage & Delay (WS) | 0.33 | 3.83 |
| Sediment Retention & Stabilization (SR) | 8.33 | 4.69 |
| Phosphorus Retention (PR) | 6.79 | 4.74 |
| Nitrate Removal & Retention (NR) | 6.33 | 5.29 |
| Thermoregulation (T) | 0.00 | 0.00 |
| Carbon Sequestration (CS) | 5.82 | |
| Organic Matter Export (OE) | 0.00 | |
| Aquatic Invertebrate Habitat (INV) | 7.00 | |
| Anadromous Fish Habitat (FA) | 0.00 | 2.17 |
| Non-anadromous Fish Habitat (FR) | 1.67 | 1.08 |
| Amphibian & Reptile Habitat (AM) | 6.82 | 4.67 |
| Waterbird Feeding Habitat (WBF) | 2.17 | 5.00 |
| Waterbird Nesting Habitat (WBN) | | 3.50 |
| Songbird, Raptor, & Mammal Habitat (SBM) | 6.39 | 4.67 |
| Pollinator Habitat (POL) | 7.58 | 0.00 |
| Native Plant Diversity (PD) | 5.48 | 7.00 |
| GROUPED FUNCTIONS | Group Scores (functions) | Group Scores (values) |
| Hydrologic Function (WS) | 0.33 | 3.83 |
| Water Quality Group (WQ) | 8.33 | 5.29 |
| Carbon Sequestration (CS) | 5.82 | |
| Fish Support Group (FISH) | 1.67 | 2.17 |
| Aquatic Support Group (AQ) | | 5.00 |
| Terrestrial Support Group (TERR) | 7.58 | 7.00 |
| Public Use & Recognition (PU) | | 0.56 |
| Provisioning Services (PS) | | 0.00 |



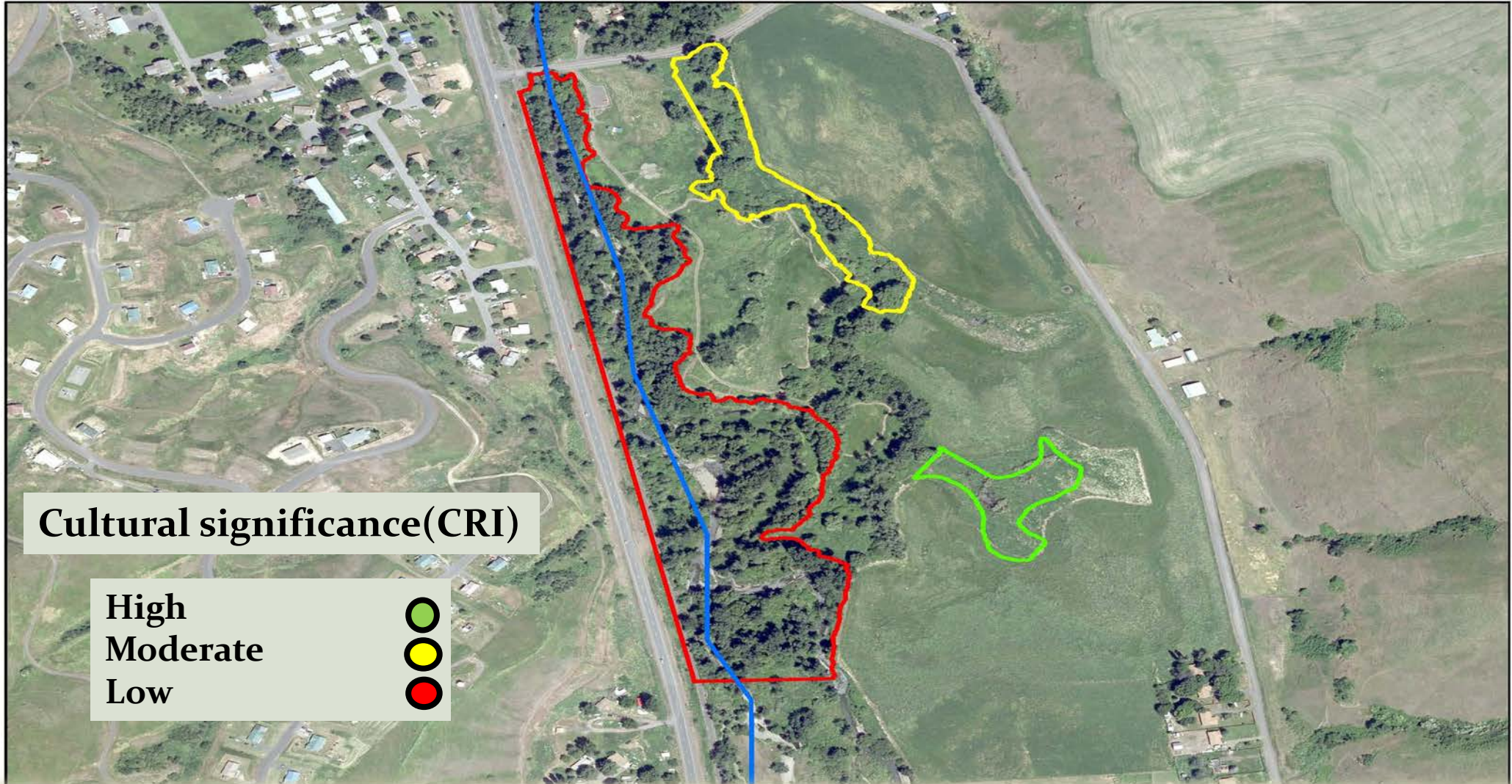
Different Wetlands are More Important for Different Things



Different Wetlands are More Important for Different Things



Different Wetlands are More Important for Different Things



WESP - Interpretation

Effectiveness and Values of functions should be considered independently of one another.



Effectiveness of Function Value of Function Potential Action

| | | |
|------|------|--------------------|
| HIGH | HIGH | Avoid / Preserve |
| LOW | HIGH | Restore or Enhance |
| HIGH | LOW | Maintain as is |
| LOW | LOW | Develop? |

Why standardize functional assessment?

Few people can predict all wetland functions.

- Few can instantly recall all indicators of functions.
- Different people mentally assign different weights to indicators.
- Reduces arbitrariness → increased public confidence.
- “Paper trail” -- legal reasons.



Why use WESP over other assessment methods?

- Field component is quite rapid and efficiently executed
- Repeatability (Consistency) of scores has been found to be within ± 0.6 point or less on a 0 to 10 scoring scale
- Numeric scores facilitate:
 - Inter-wetland comparison
 - Ecological ranking of wetlands
 - Change over time analysis (i.e., pre and post alteration, or restoration/enhancement)
- Can analyze results in terms of individual functions (e.g. nitrate removal), or grouped functions (e.g. terrestrial support)



Calibrate WESP

- Identify statewide **spatial layers** needed to define population from which calibration wetlands will be selected.
- With GIS do wetland “joins” and conduct queries of additional layers to characterize all known wetlands, i.e., **create database**.
- For field visits, from the database **select ~100 wetlands** covering all hydrologic regions, ecoregions, NWI classes, inlets/outlets, altitudes, human disturbance gradients, etc. With few exceptions, limit to public lands within 300 ft. of a road.
- Modify ORWAP **questions** as needed to better address Nez Perce Reservation wetlands. Finalize data forms for field use.
- **train & test** them (3-5 days).
- Plan field work **logistics**; visit & assess 100 wetlands as needed for model calibration (1 full-time crew x 10 weeks?).
- Simultaneously, GIS person conducts multiple queries. Upload key layers to Idaho Open Data Portal or similar, for interactive mapping.
- Peer review. Then modify ORWAP **models and cell formulas** to better address Nez Perce Reservation conditions adding cultural importance. Document assumptions using Idaho and Reservation literature.
- Enter all data in spreadsheet (computes scores).

Funded by EPA Region 10 Wetland Program Development Grant

Final products:

- a regionally-calibrated wetland functional assessment tool

Potential anticipated uses for tool:

- identifying functions, benefits, & values of individual wetlands
- prioritizing wetlands restoration and protection
- evaluating restoration results
- monitoring the long-term effects of wetland restoration
- predicting and evaluating impacts from climate change
- incorporating cultural value into evaluation of wetlands



Lessons Learned

- Cultural sensitivity is very important and hard to do.
- Allow more time to calibrate tool. Or get more people to work with you on project.
- Needed more money and staff.
- Hard to do when you are the only one working for the program.
- Weather unpredictable
- GIS skills very important
- Very important to collaborate with tool developer (Dr. Paul Adamus)



Nez Perce Tribe's Musselshell Meadows



Upcoming projects for the Nez Perce Tribe Wetland Program:

- Collecting baseline wetland data for Musselshell Meadows, a historical gathering spot for the Nez Perce Tribe camas.
- Developing a wetland native and cultural plant identification guide for restoration.
- Developing a camas monitoring method for culturally important Musselshell Meadow.
- Conducting baseline monitoring of camas on Musselshell Meadows.



Thank you!!



**This project was funded by an EPA Region 10
Wetland Development Program Grant.
Rue Hewett Hoover; rueh@nezperce.org**

