Introduction to WVWRAM:
WV Wetland Rapid Assessment Method

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Jack Hopkins
John Wirts
Brian Bridgewater

Federal Register

Thursday,
April 10, 2008

Catalyst for developing WVWRAM:

2008 Mitigation Rule

- **Evaluate aquatic resource function**
- **“No Net Loss”**

Part II

Department of Defense

Department of the Army, Corps of Engineers
33 CFR Parts 325 and 332

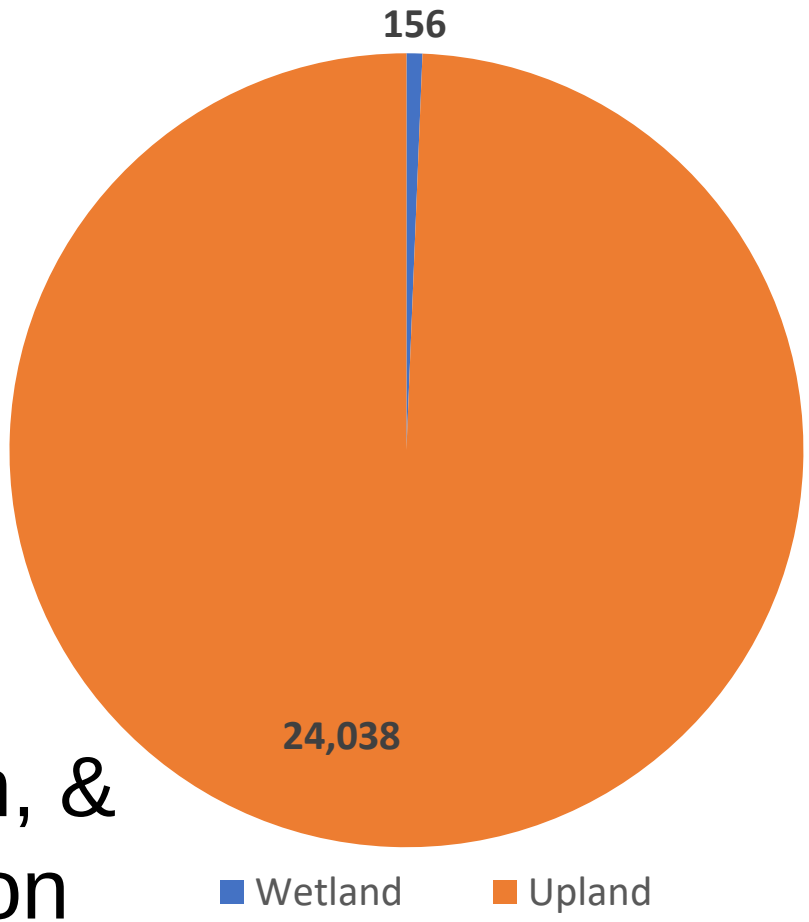
Environmental Protection Agency

40 CFR Part 230
Compensatory Mitigation for Losses of Aquatic Resources; Final Rule

Regulatory Protection of Wetlands

- Clean Water Act 1972
  - 2008 Mitigation Rule
- WV Water Pollution Control Act

Total Wetland Area in WV (in square miles)

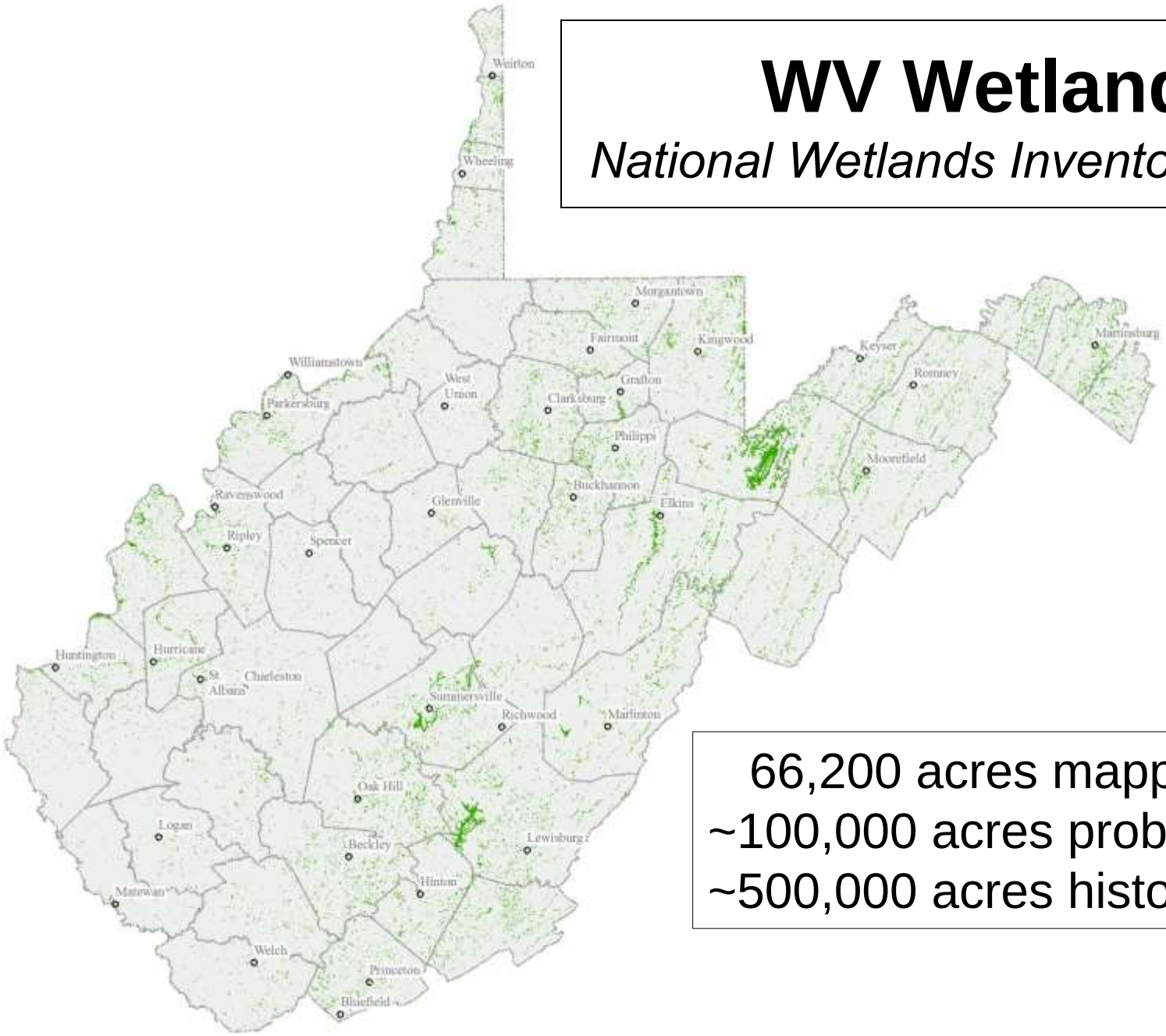


avoidance, minimization, & compensation

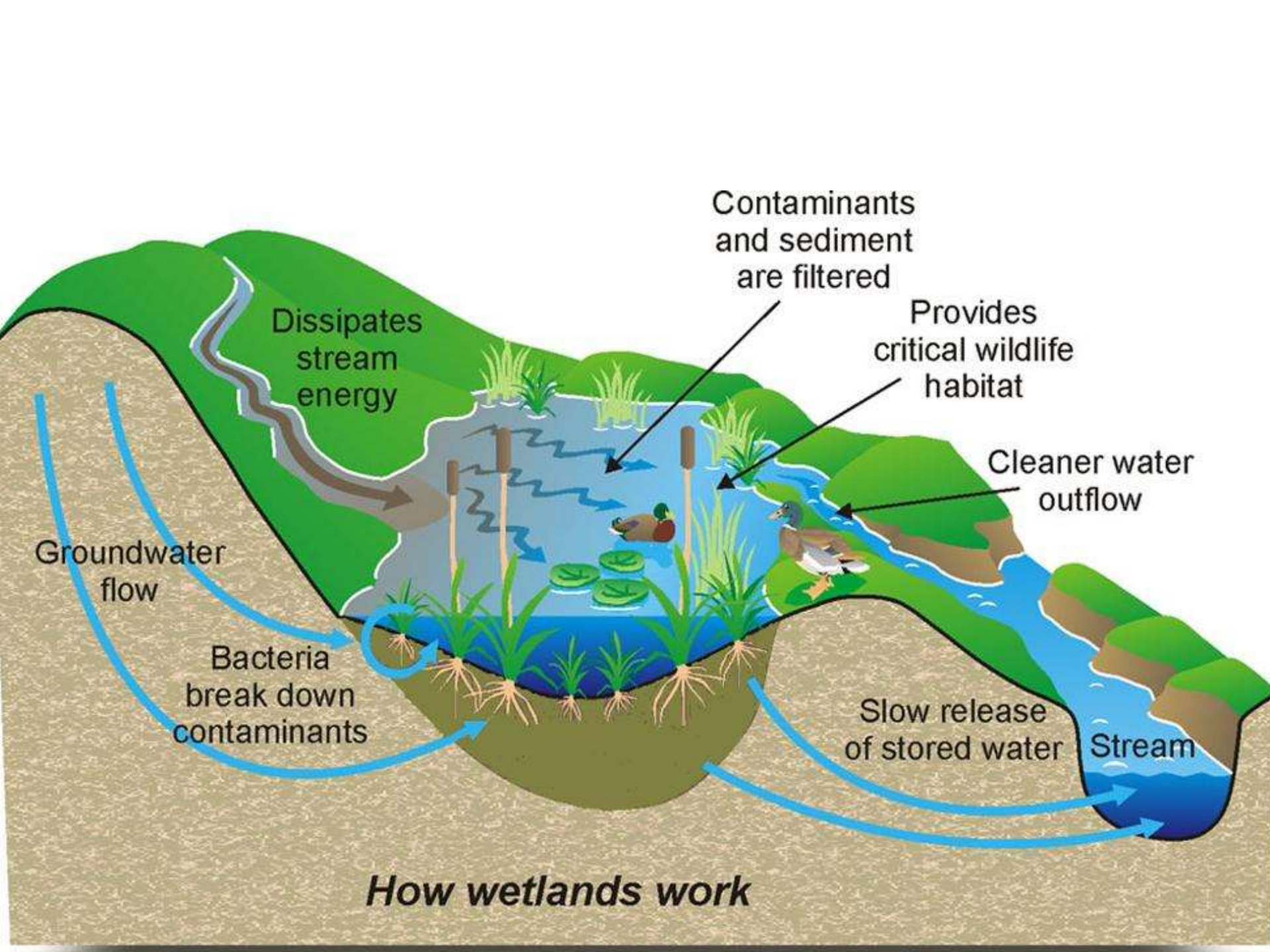
Financial support from:

WV Wetlands

National Wetlands Inventory (1980's)



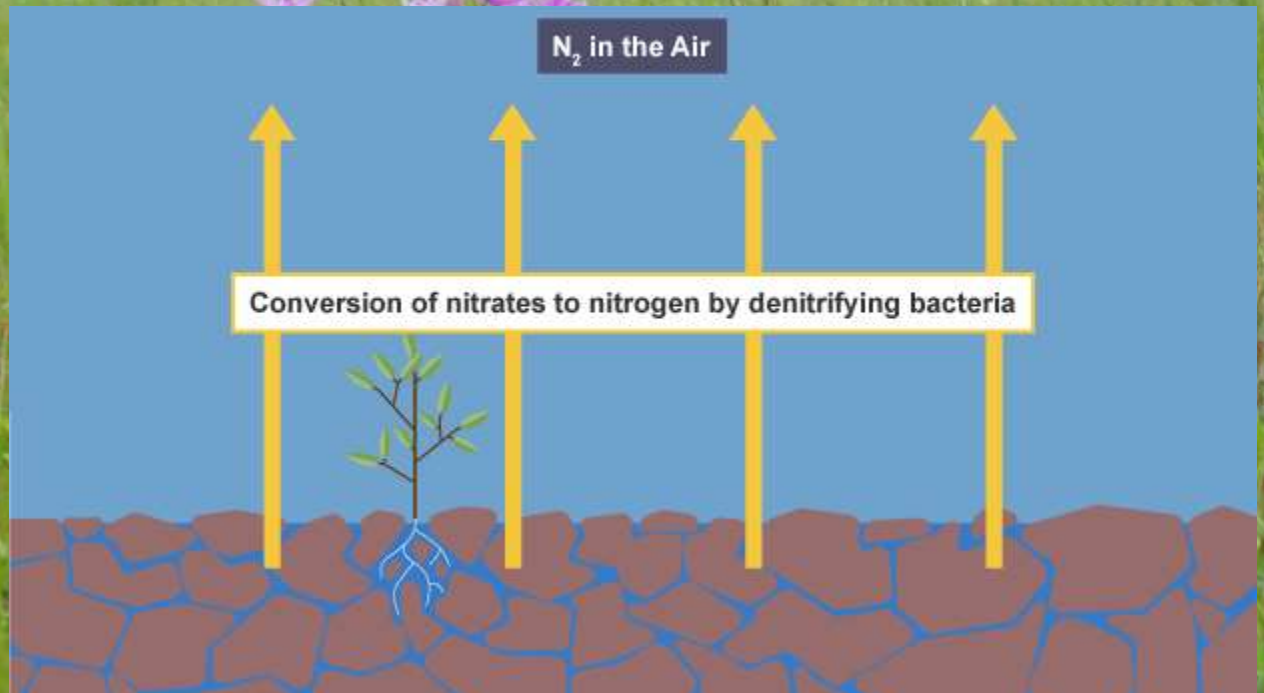
66,200 acres mapped
~100,000 acres probably exist
~500,000 acres historically



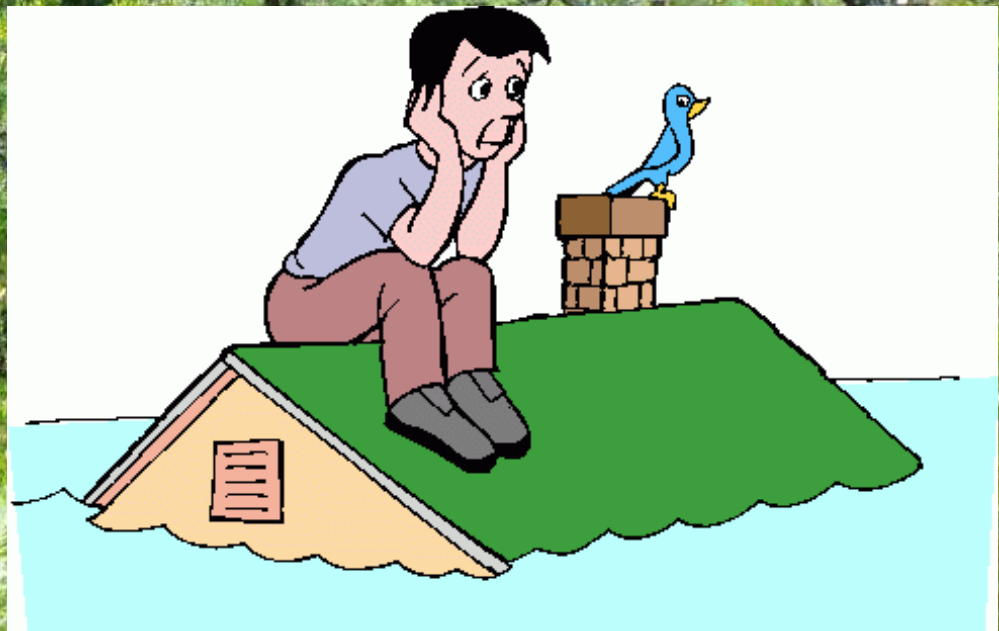
How wetlands work

Fish & wildlife, rich biodiversity, productivity

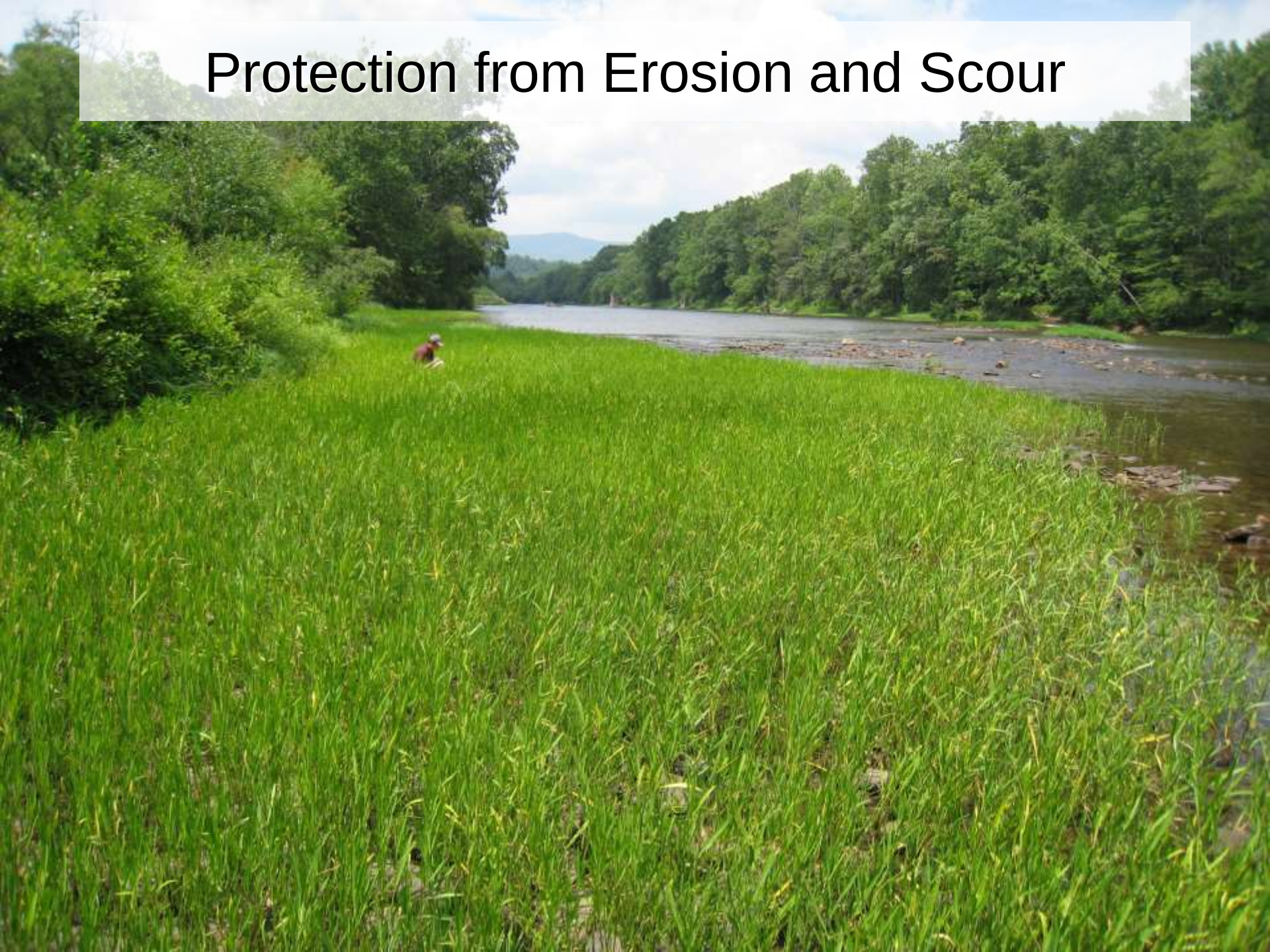
Kidneys of the Landscape



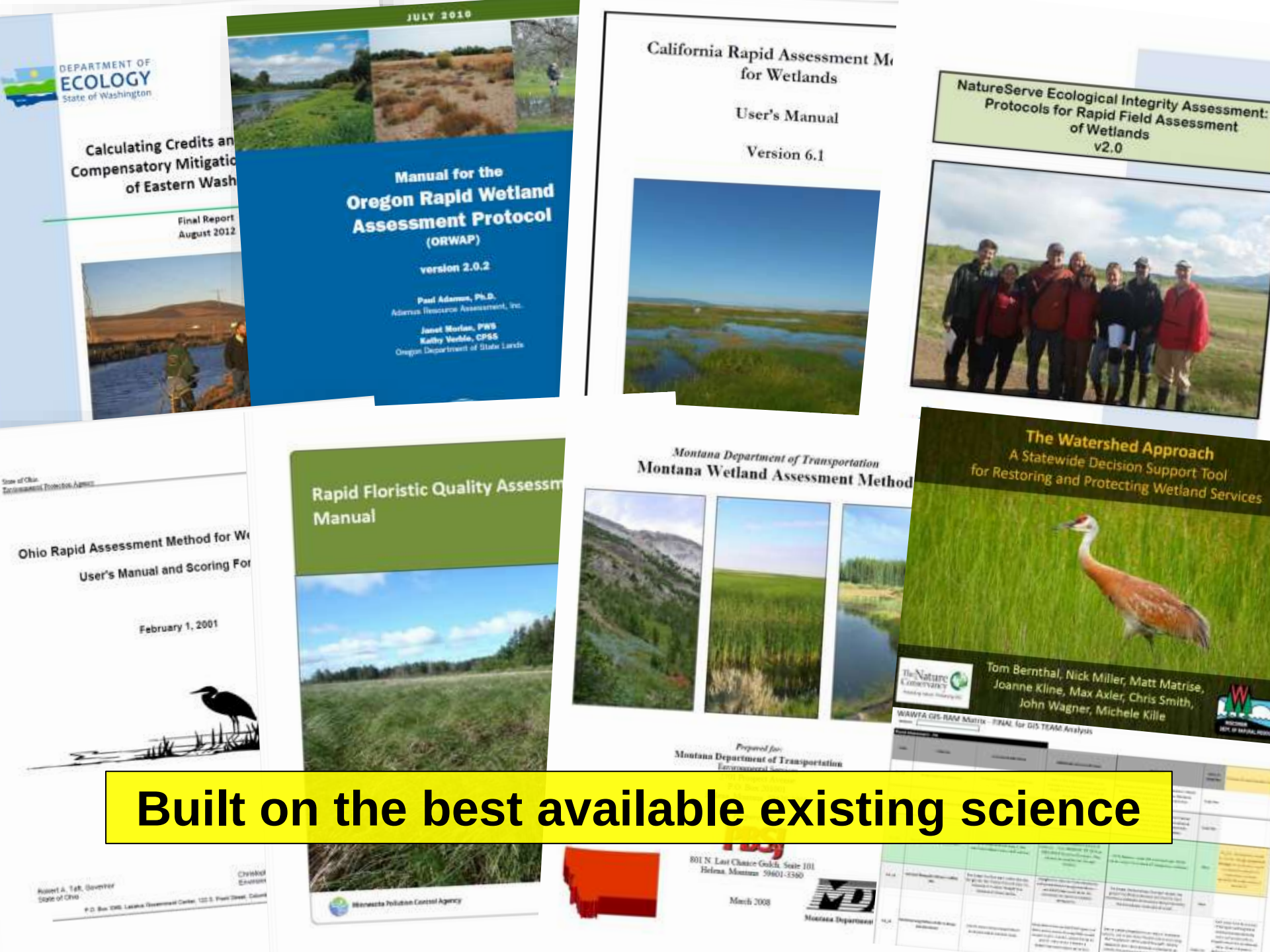
Stabilize Water Supply



Protection from Erosion and Scour



2015-16 Develop tool for functional assessment of wetlands


DEPARTMENT OF ECOLOGY
State of Washington
Calculating Credits an
Compensatory Mitigatio
of Eastern Wash
Final Report
August 2012
JULY 2010
Manual for the
Oregon Rapid Wetland
Assessment Protocol
(ORWAP)
version 2.0.2
Paul Adamus, Ph.D.
Janet Morlan, PWS
Kathy Verble, CPSS
Oregon Department of State Lands
California Rapid Assessment M
for Wetlands
User's Manual
Version 6.1
NatureServe Ecological Integrity Assessment:
Protocols for Rapid Field Assessment
of Wetlands
v2.0
Ohio Rapid Assessment Method for W
User's Manual and Scoring For
February 1, 2001
Rapid Floristic Quality Assessm
Manual
Minnesota Pollution Control Agency
Montana Department of Transportation
Montana Wetland Assessment Method
Prepared for:
Montana Department of Transportation
801 N. Last Chance Gulch, Suite 101
Helena, Montana 59601-3380
March 2008
The Watershed Approach
A Statewide Decision Support Tool
for Restoring and Protecting Wetland Services
Tom Bernthal, Nick Miller, Matt Matrise,
Joanne Kline, Max Axler, Chris Smith,
John Wagner, Michele Kille
The Nature Conservancy
WAWFA GIS-RAM Matrix - FINAL for GIS TEAM Analysis
Built on the best available existing science

…DEP looked only at tested, validated methods & metrics

2017-18 Field-testing: 69 stakeholders from 22 organizations

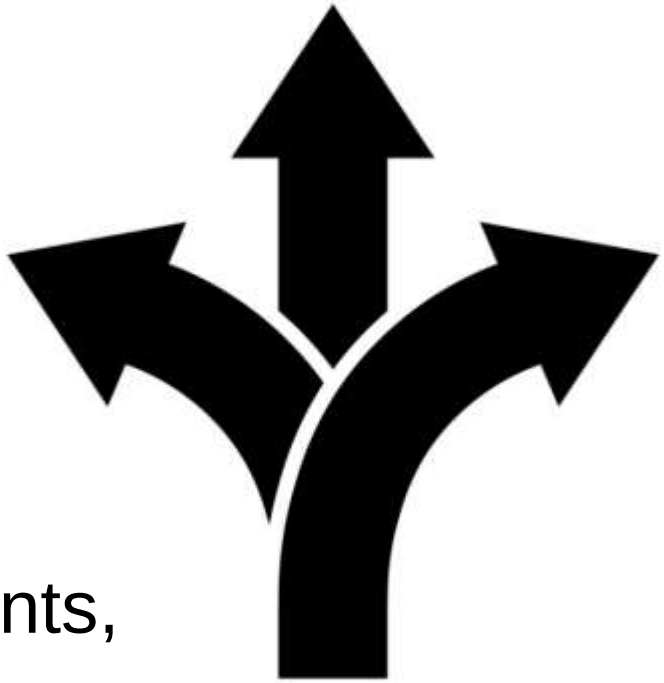
2019 Training:

112 stakeholders from 40 organizations

2020

public notice
and **moving**
toward agency
adoption

Ecological integrity & wildlife habitat



Water quality: sediment, nutrients, pollutants

Flood attenuation

3 composite functions

65 metrics in 6 categories (regulatory)

	Intrinsic Potential	Landscape Opportunity	Value to Society
Water Quality	vegetation, soil, hydrology	50 m buffer, contributing watershed	public use, planning
Flood Attenuation	vegetation, soil, hydrology	50 m buffer, contributing watershed	economic risk
Habitat/ Ecological Integrity	vegetation, soil, hydrology	perimeter, 300 m / 1 km buffer, contrib. watershed	investment, public use, access

Roll-up of metrics into stakeholder-requested scores:

- **Regulatory Score: physical, chemical & biological**
- Full function (all metrics)
- State lands acquisition
- Condition assessment

GIS plus rapid field assessment:
the best of landscape-level assessment +
metrics that must be obtained in the field

+

= **Regulatory score**

Rapid Field Assessment

Level of effort: 2 technicians x half-day

Skill level: wetland delineation

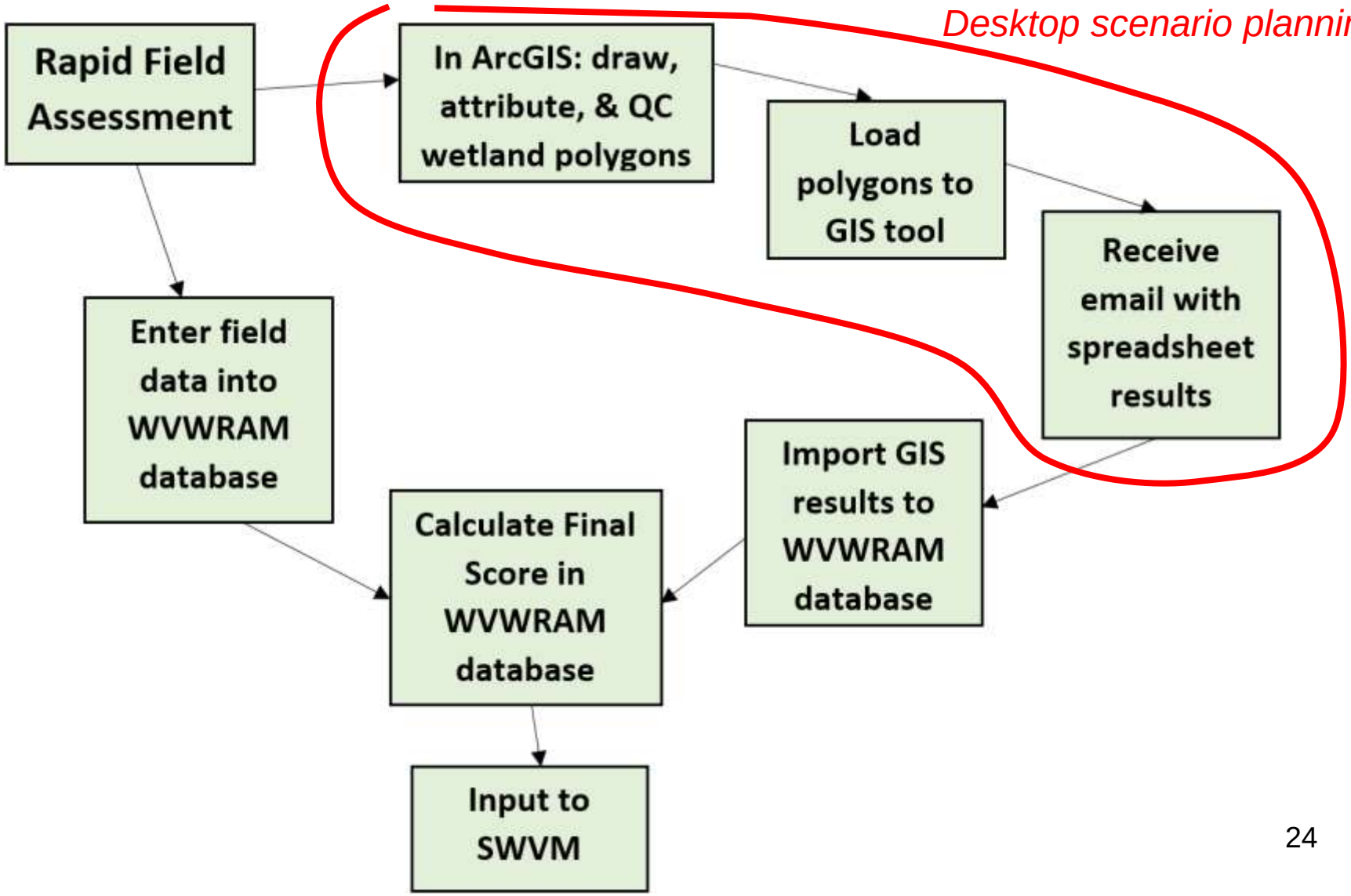
plus 2-day training

- Vegetation, Soils, Hydrology, Buffer, Stressors

62 statewide GIS datasets

- Biodiversity
- Ecosystems
- Elevation
- Geology
- Hydrology
- Imagery
- Infrastructure
- Jurisdiction
- Landcover
- Landform
- Soils
- Stressors

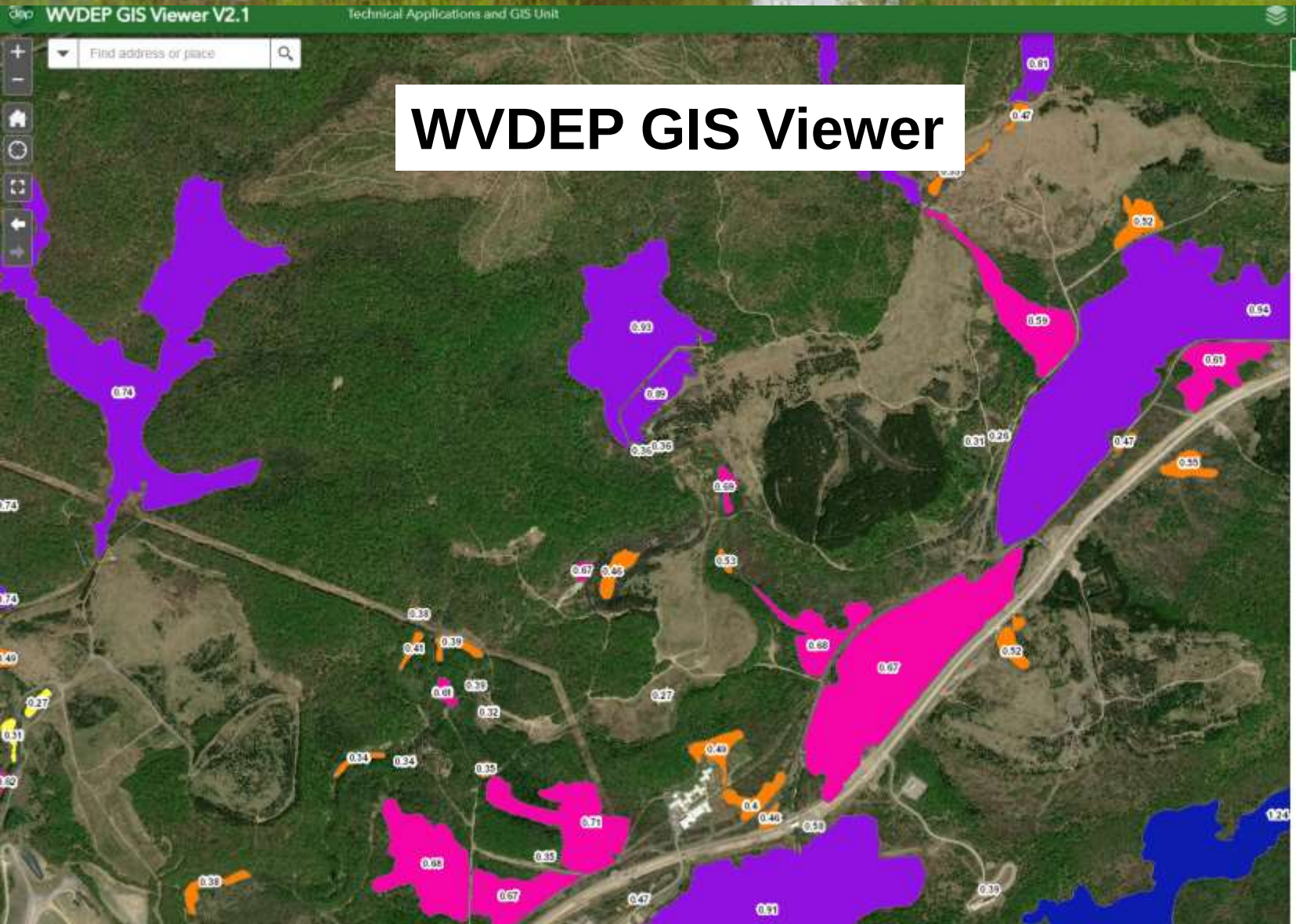
WVWRAM Work Flow



WVWRAM Allows Scenario Planning

- GIS-based desktop planning supported
- Predict mitigation costs of different sites or corridors
- Compare potential mitigation credits at different sites prior to land acquisition

Preliminary GIS Score for every mapped wetland in WV



Watershed Map
Water Quality Monitoring
Biological Monitoring
Water Quality and Impaired Streams
Total Maximum Daily Loads (TMDL)
Reports
Special Studies
Nonpoint Source Program
Water Quality Standards
Algae
Watershed Improvement Branch
Wetland Assessment
WVWRAM

WVWRAM

The Watershed Assessment Branch of DEP has developed a standardized method for rapidly assessing some of the important natural functions of all types of wetlands present in West Virginia. It is called the West Virginia Wetland Rapid Assessment Method (WVWRAM). WVWRAM uses on-site observations and off-site spatial data. This is a regulatory assessment tool for agency staff and environmental professionals. It requires a knowledge of Geographic Information Systems (GIS), wetland soils, plants, hydrology, and stressors.

WVWRAM has two components: (1) GIS tool for preliminary scoring and off-site metrics, and (2) rapid field method for final scoring. Both components are required for regulatory use, but the GIS tool can be used as a stand-alone for planning purposes.

Download the WVWRAM Datasheets

Download the WVWRAM User Manual

Download the WVWRAM Reference Manual

View information about our WVWRAM Trainings 2019

Download the WVWRAM Database

WVWRAM GIS Tool Website

Type “WVWRAM” into your search engine

WVWRAM Manuals

User Manual for the West Virginia Wetland Rapid Assessment Method (WVWRAM)

May 31, 2019 Version 0.52

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Watershed Assessment Branch
Division of Water and Wastewater Management
WV Department of Environmental Protection

Reference Manual for theWest Virginia Wetland Rapid Assessment Method (WVWRAM)

April 10, 2019 Version 0.5

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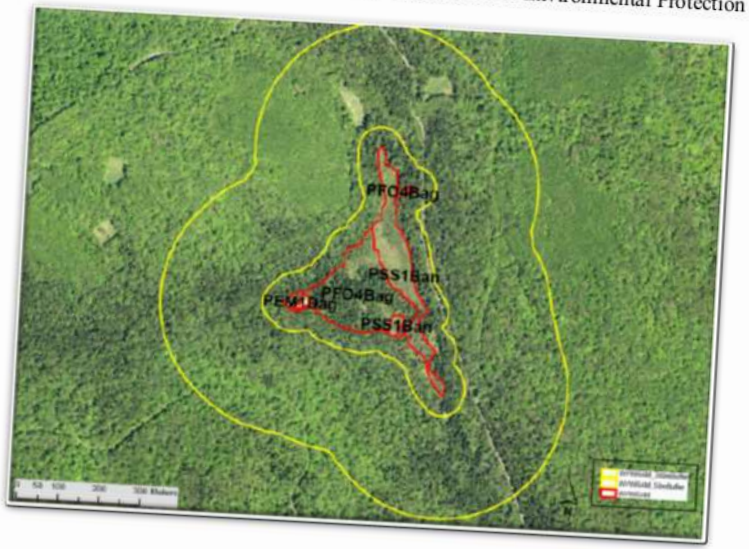
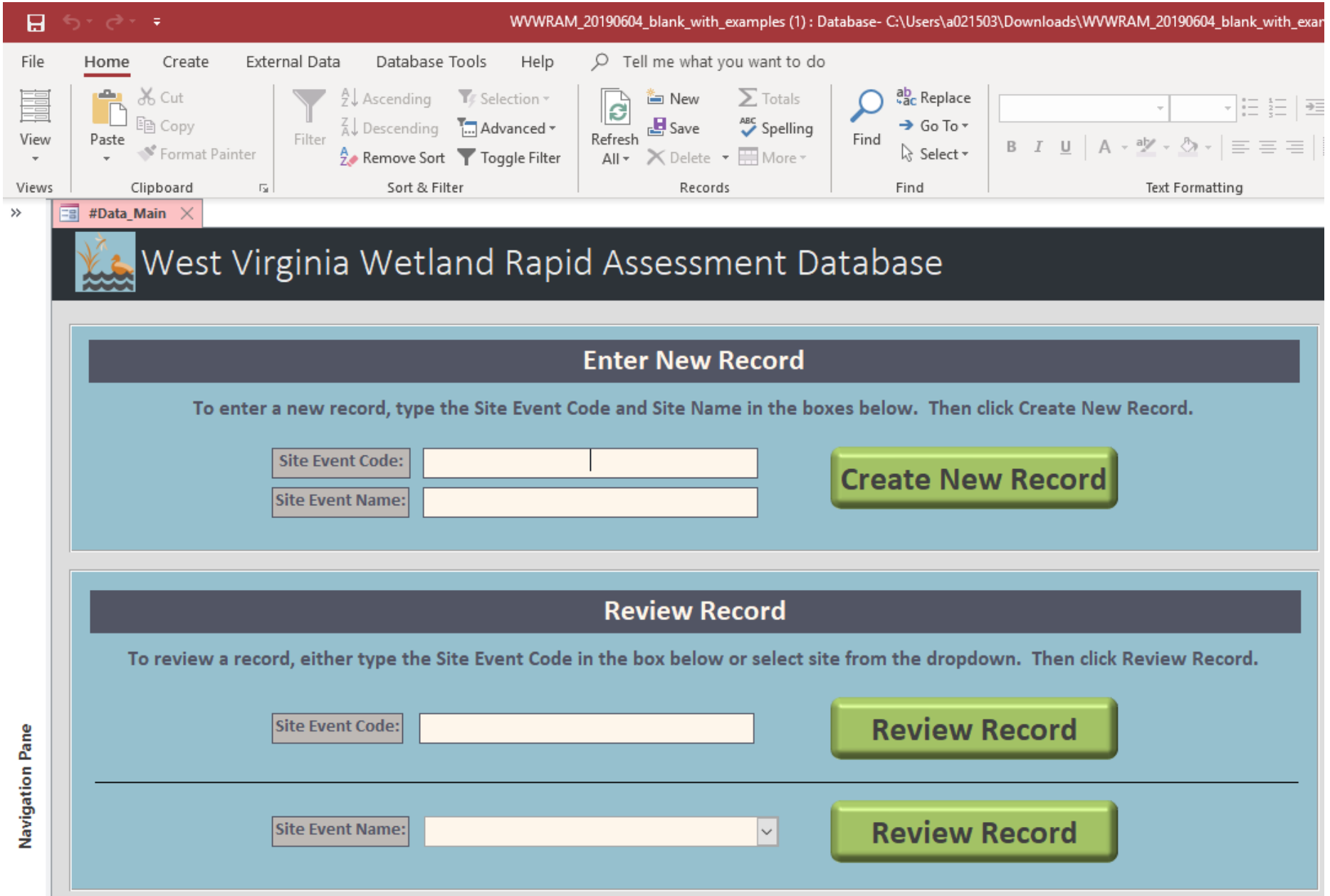
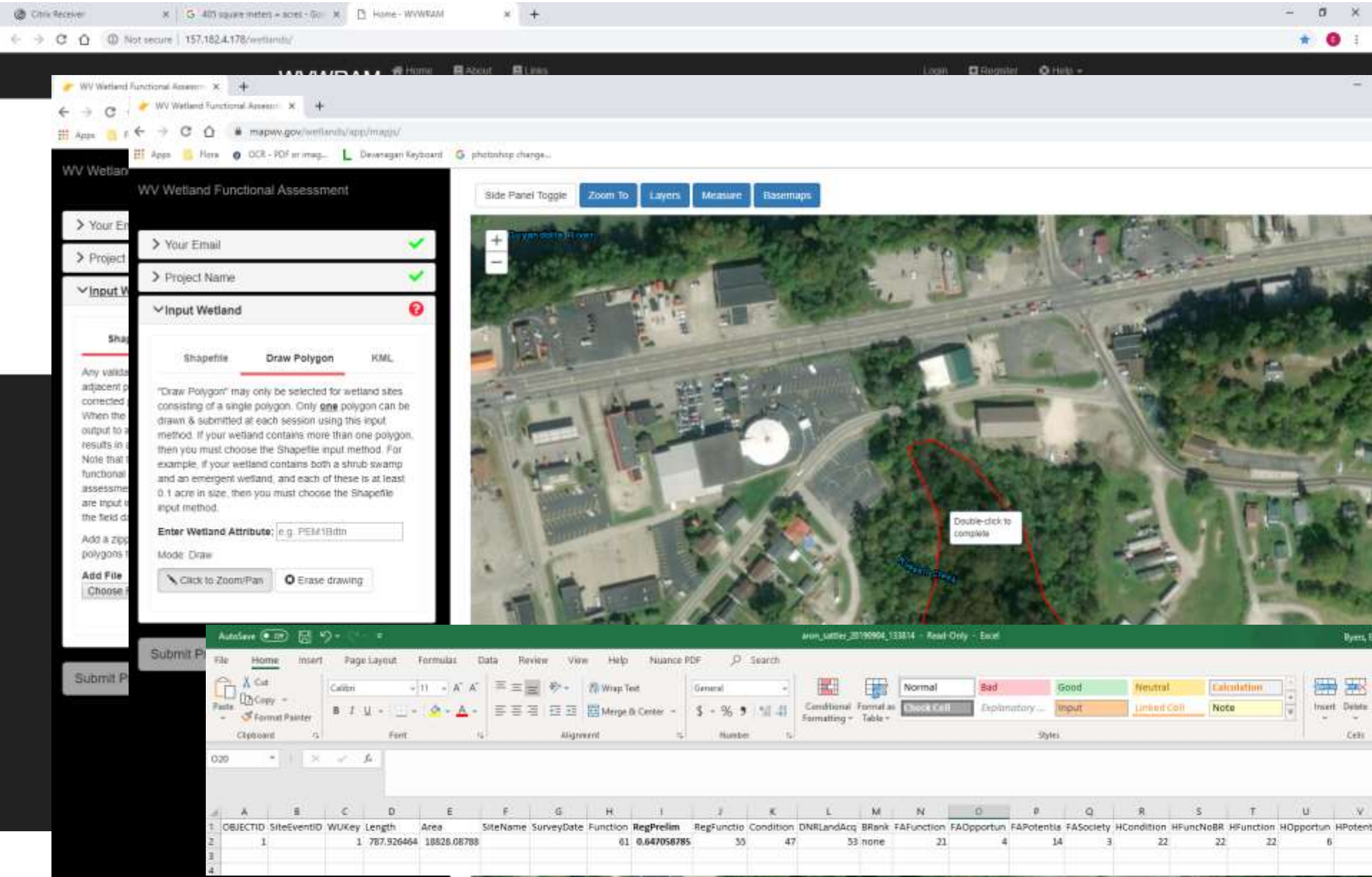
Division of Water and Wastewater Management
WV Department of Environmental Protection



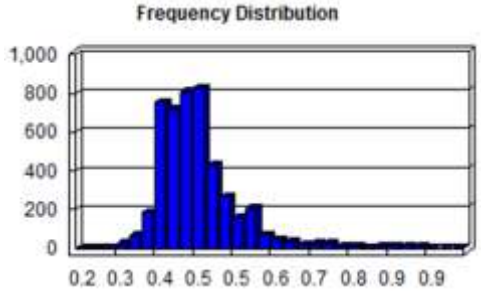
WVWRAM Database



GIS Tool: https://mapwv.gov/wetlands/



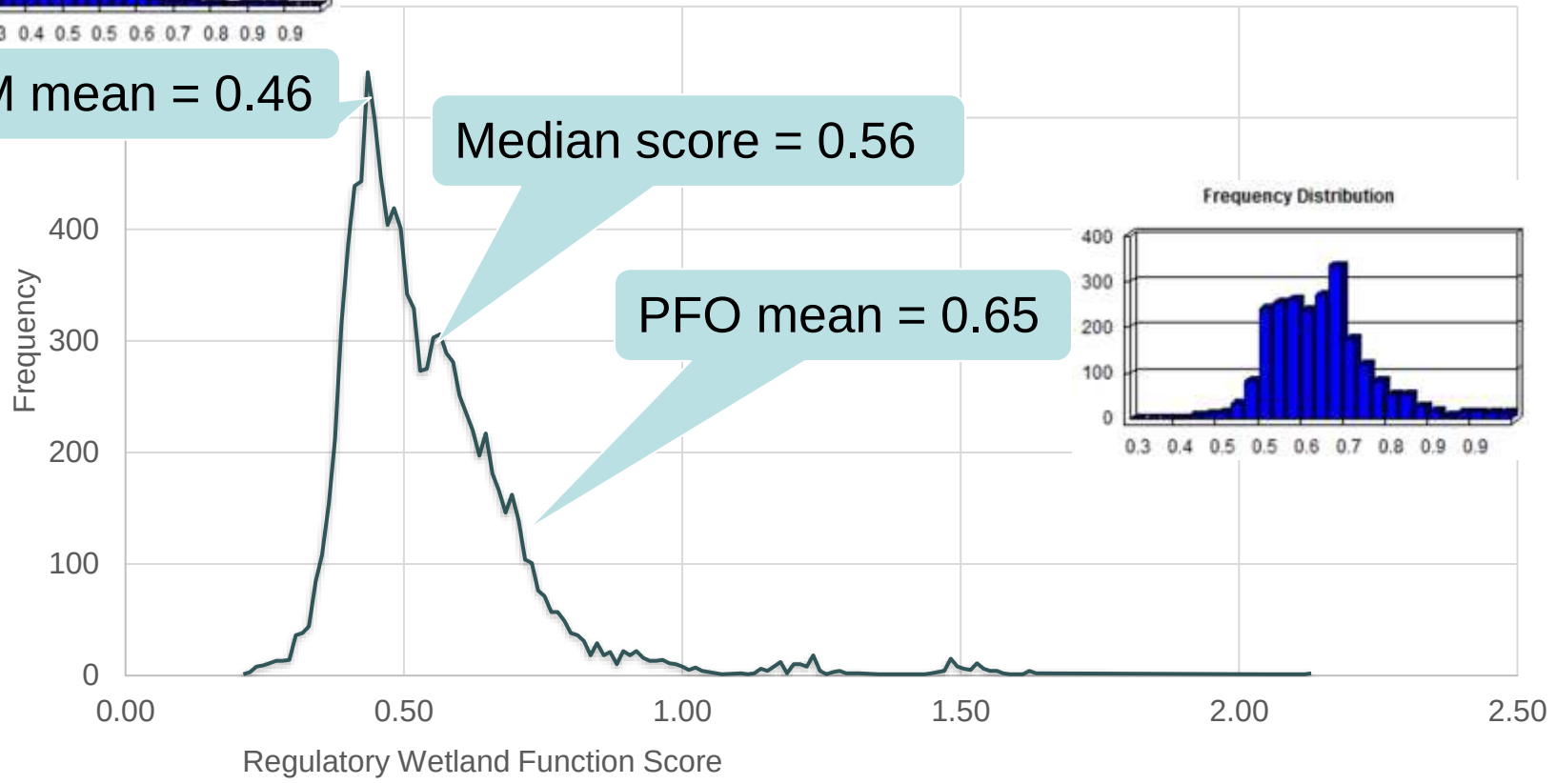
Preliminary Regulatory Scores (GIS only)



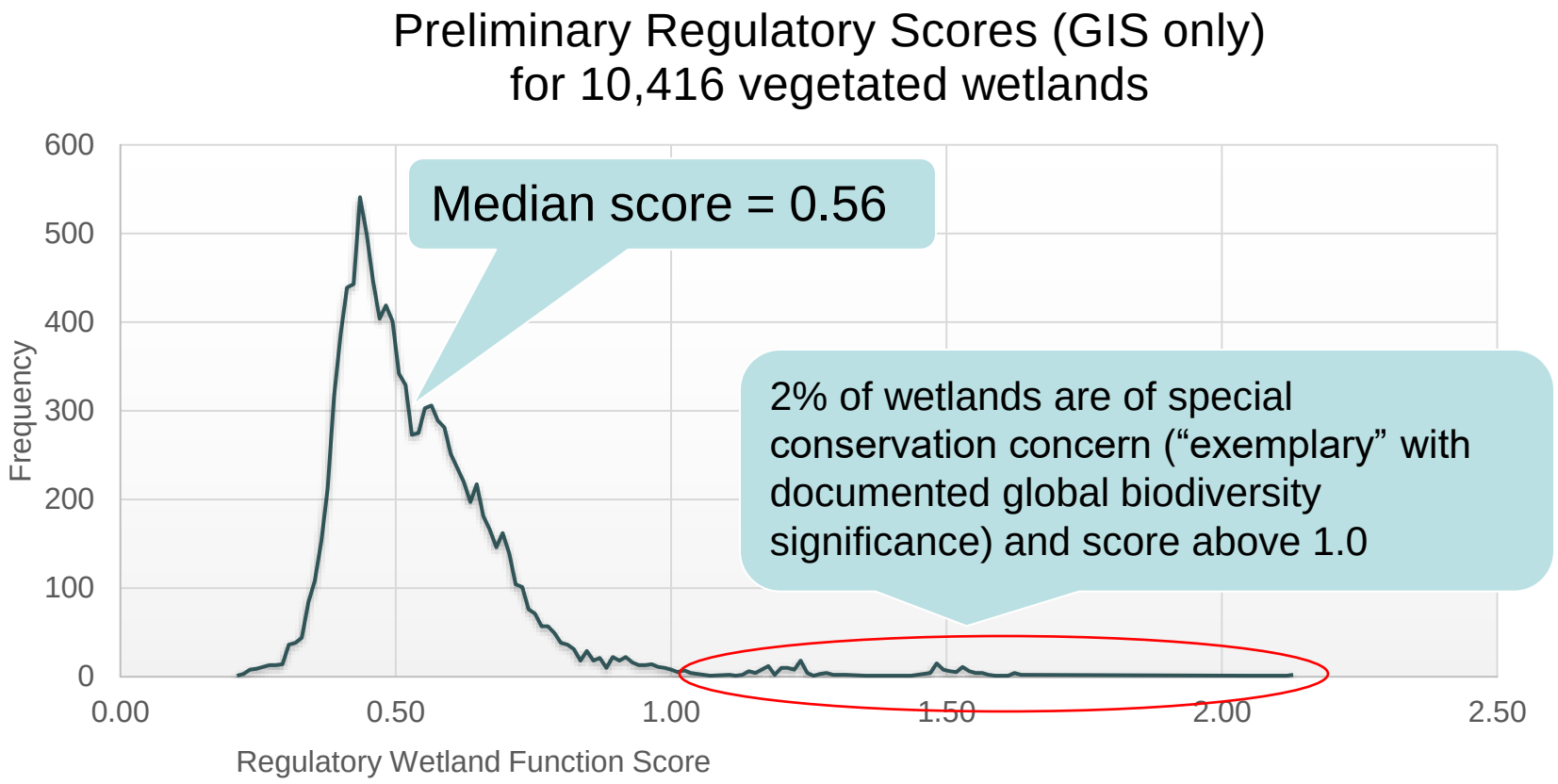
PEM mean = 0.46

Median score = 0.56

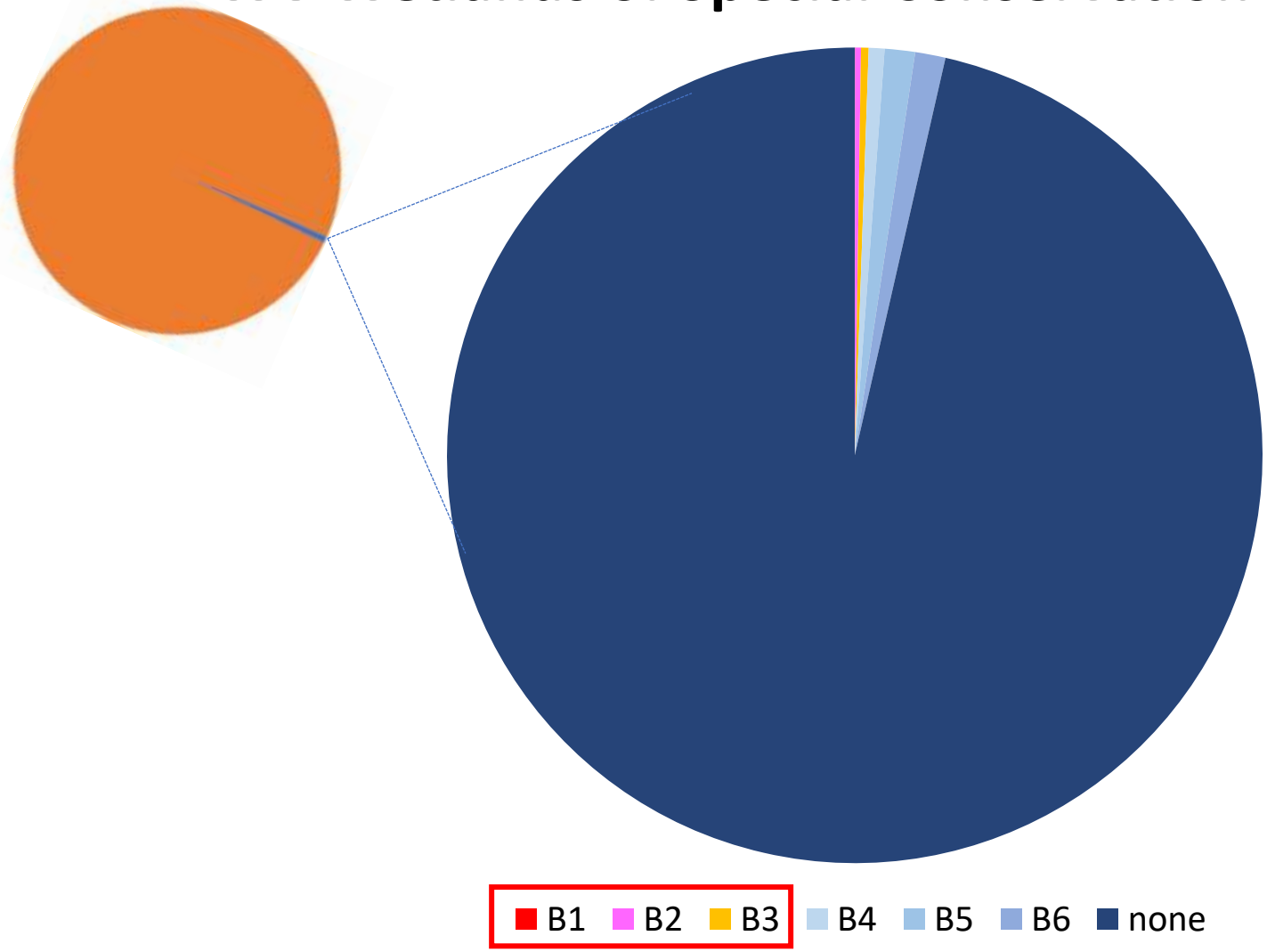
PFO mean = 0.65



Avoiding High-Functioning Wetlands

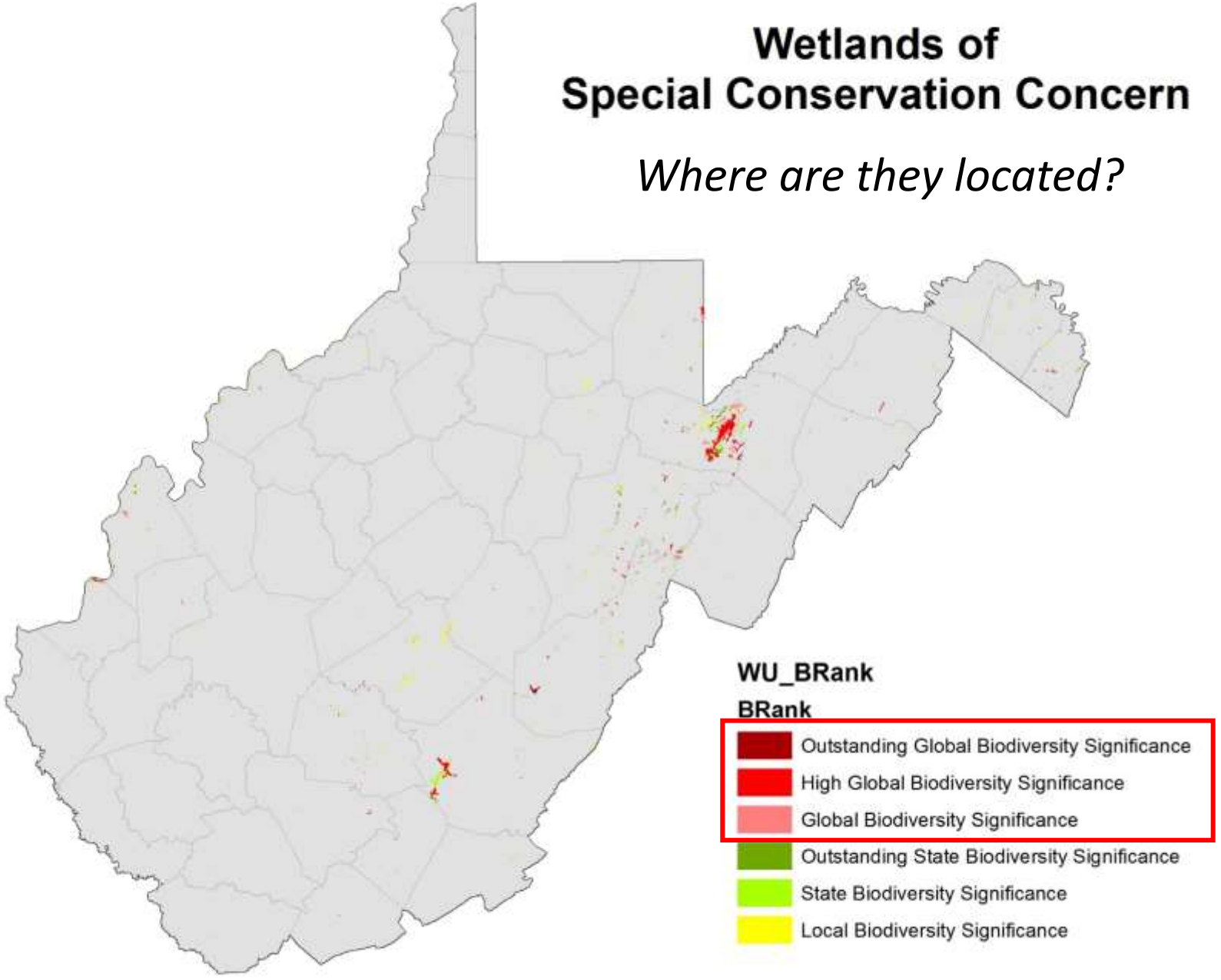


WV Wetlands of Special Conservation Concern



Wetlands of Special Conservation Concern

Where are they located?



WVWRAM Credits/Debits are Cost-Neutral

- Average amount of mitigation required statewide will not change due to WVWRAM
- However, individual projects will see changes
- Low-functioning wetlands will require less mitigation than under the current system
- High-functioning wetlands will require more mitigation than under the current system

Compliance with the 2008 Mitigation Rule

- WV is currently in compliance with the mitigation rule for streams, but NOT for wetlands
- WVWRAM was developed at the request of the Inter-Agency Review Team.
- WVWRAM as part of SWVM offers simple & streamlined permitting, predictable costs

WVWRAM will be required when:

- There will be permanent impacts to wetlands, which includes conversion from PSS/PFO to PEM.
- Section 404/401 permitting is triggered

WVWRAM will NOT be required for projects when:

- wetlands are avoided or temporarily impacted (< 1 year) and Section 404/401 NOT triggered

WVWRAM score will be an input to SWVM

Representative Sampling

- Wetlands that are < 1 acre in size AND with preliminary GIS scores varying < 10% from one another may be considered as a comparable assessment group.
- Field assessments of a randomly selected 10% of these wetlands will be accepted as representative of the whole group.

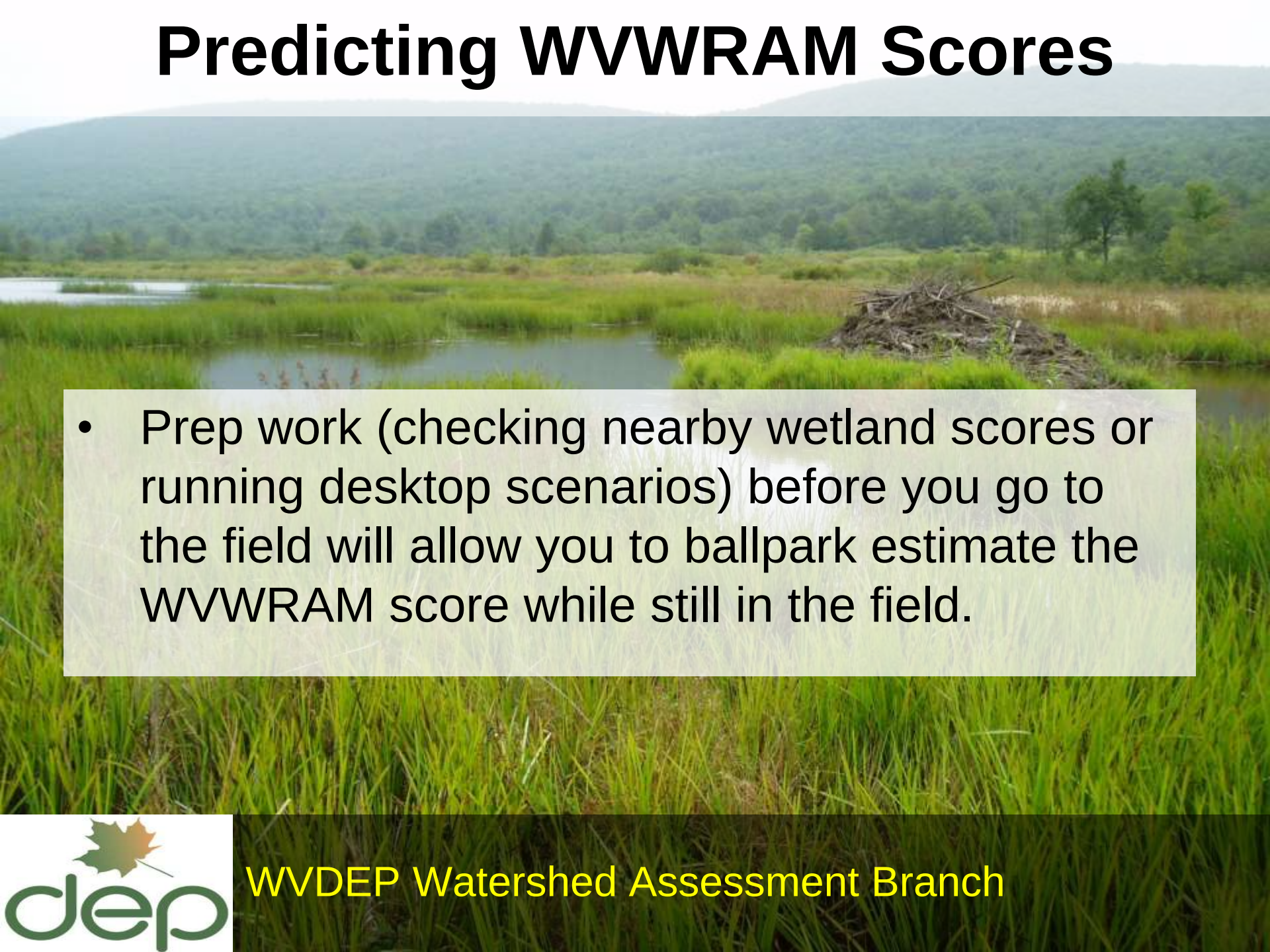
Year-round Assessment

- WVWRAM is designed to produce robust, repeatable results during the growing season. Assessors are strongly encouraged to perform the assessment during the months of May-September (June-September for elevations above 3000 feet).
- Outside this period, the maximum score for the Rapid Floristic Quality metric will be assigned to debits.

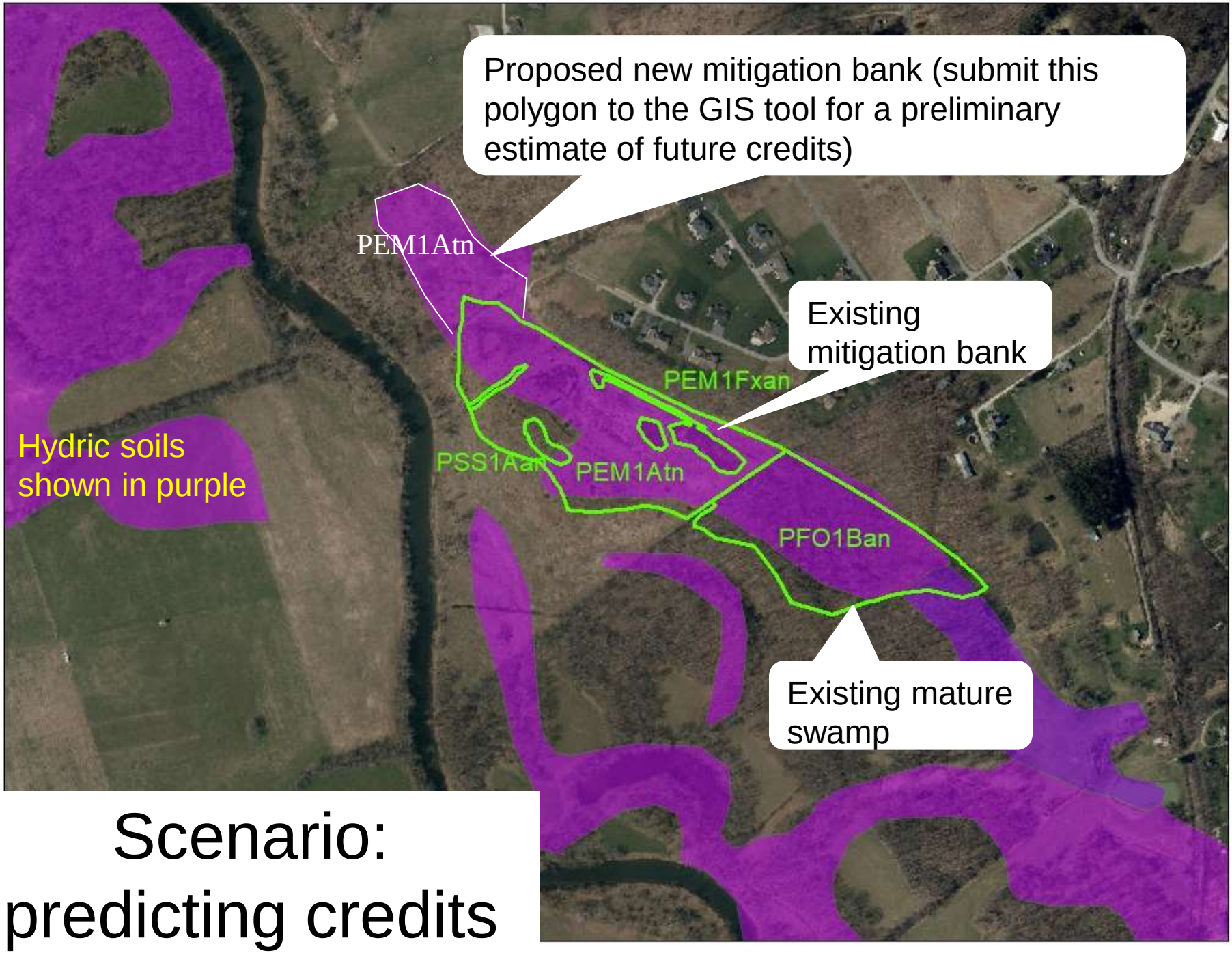
WVWRAM
Mitigation Banking, In-Lieu Fee, PRM

- WVWRAM will become part of the baseline and monitoring requirements for credit release
- WVWRAM will be an input to SWVM calculation of credits for restoration, enhancement, and preservation

Predicting WVWRAM Scores

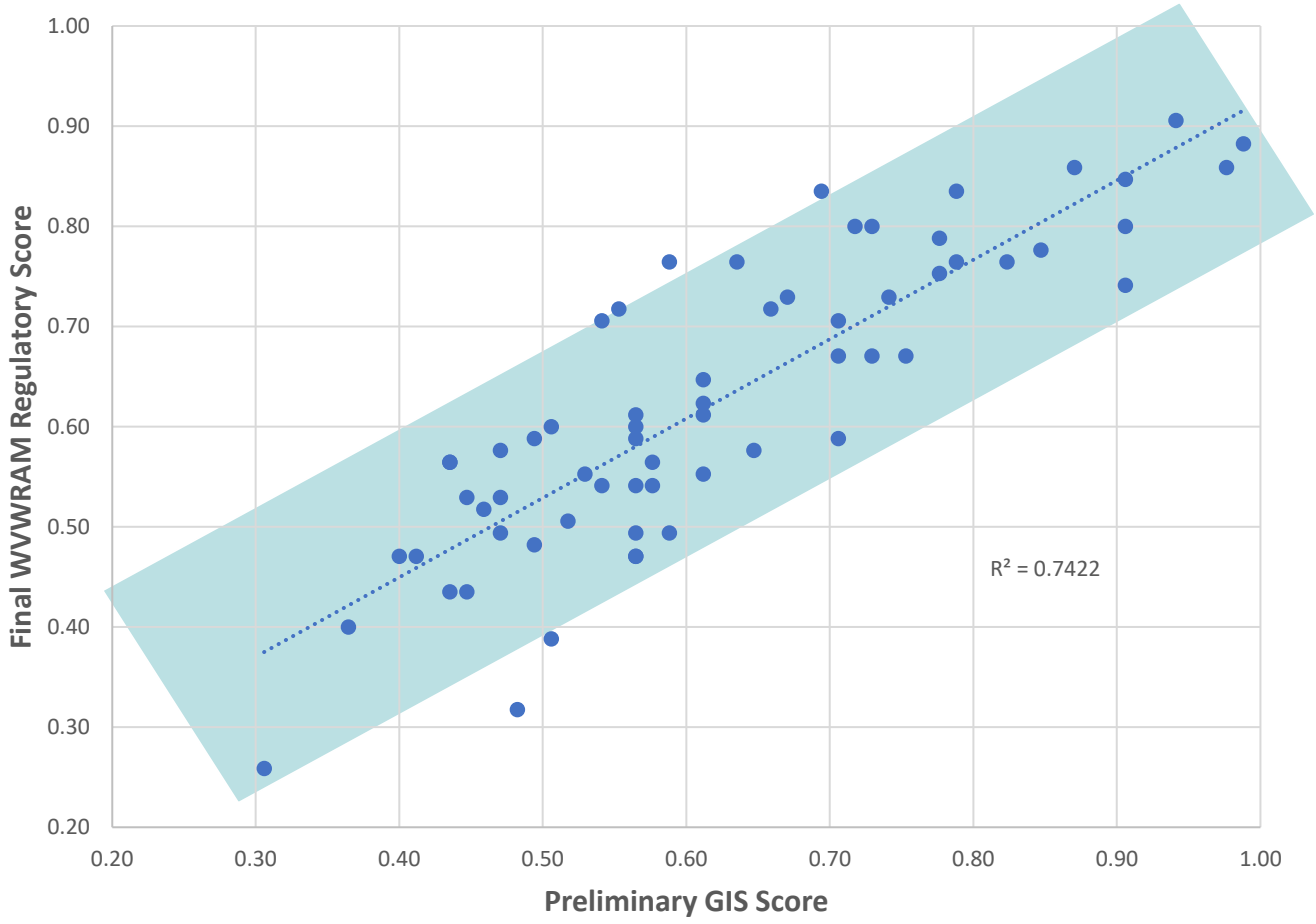


- Prep work (checking nearby wetland scores or running desktop scenarios) before you go to the field will allow you to ballpark estimate the WVWRAM score while still in the field.



Scenario: predicting credits

Preliminary GIS Score vs. Final Score



Thank you

Brian.L.Bridgewater@wv.gov, Elizabeth.A.Byers@wv.gov,
Sara.Miller@wv.gov, John.C.Wirts@wv.gov