

# Albeni Falls Wildlife Mitigation Project



Presented to:  
ISRP  
March 3, 2009



# Albeni Falls Wildlife Mitigation Project

Goal: Fully mitigate for the wildlife losses from the Albeni Falls Hydroelectric Project



## Replacement of Lost Habitat Units

Total mitigation debt:  
28,587 Habitat Units (HU)

As of January 4, 2008:  
33.9% mitigated  
Estimated 9,709 HU



# Albeni Falls Wildlife Mitigation Project

## **Biological Objective 1**

Protect 900 acres of wetland – riparian wildlife habitat by the end of FY 2013

## **Biological Objective 2**

Enhance up to 3,219 acres of riparian/wetland wildlife habitat by the end of FY 2013

## **Biological Objective 3**

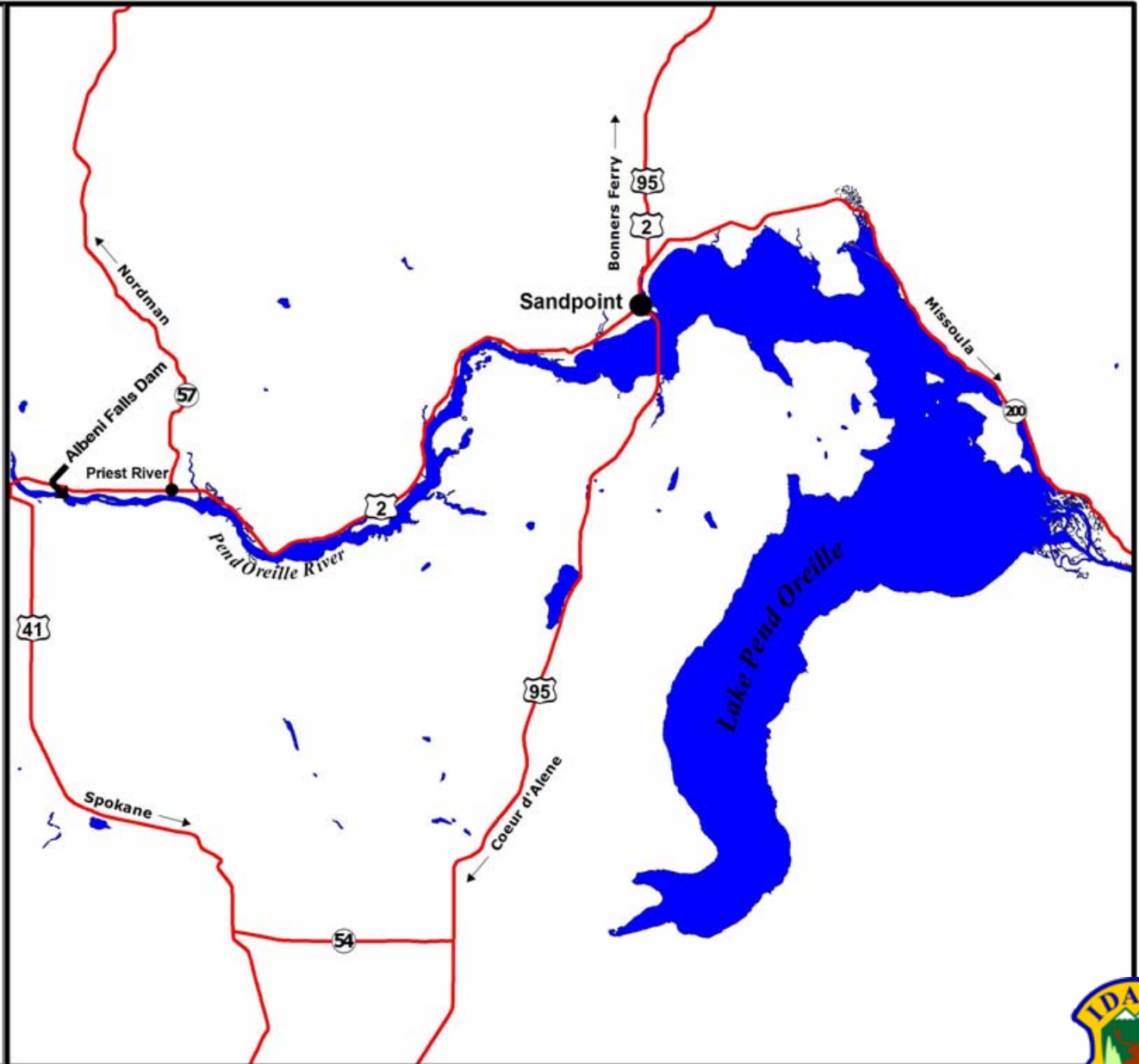
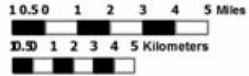
Maintain 3,715 acres (3,749 HU) through FY 2013

## **Biological Objective 4**

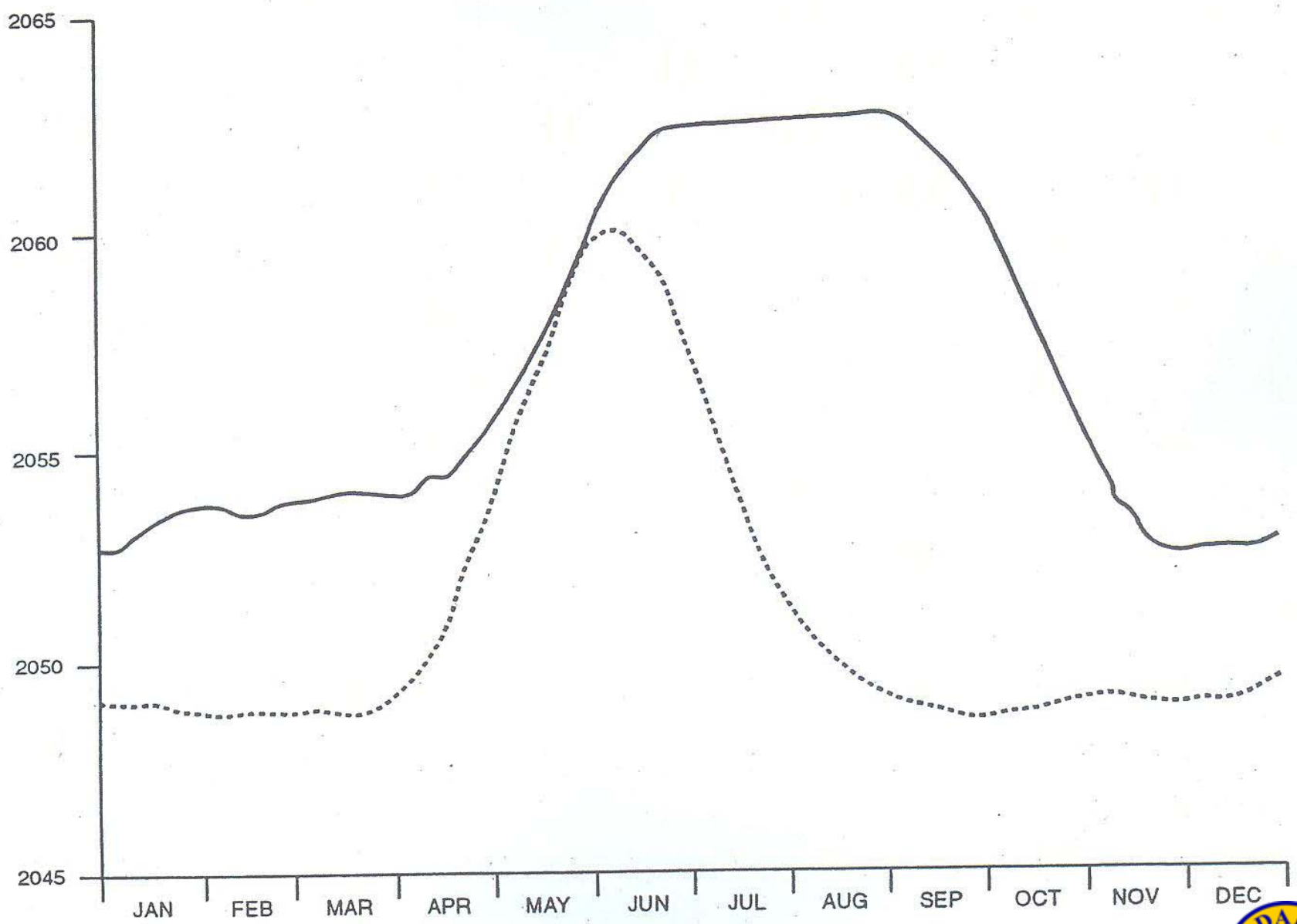
Monitor and evaluate wildlife habitat through FY 2013

# Seattle District Albeni Falls Dam

## Lake Pend Oreille



ELEVATION IN FEET



# Background

- **1985 working group formed to develop impact assessment to determine the wildlife impacts associated with the construction of the Albeni Falls hydroelectric project.**
- **1988 publication of the Final Report Albeni Falls Wildlife Protection, Mitigation and Enhancement Plan**
- **1992 first mitigation project completed**
- **1998 working group adopted a set of Operating Guidelines to address mitigation implementation**
- **During the past two project solicitation periods four members have received funding under the Program**



# Albeni Falls Wildlife Protection, Mitigation and Enhancement Plan

(Martin *et al.* 1988)

## Plan Objectives:

1. Estimate the net effects on wildlife resulting from hydroelectric development.
2. Select target wildlife species and identify the current status, management goals and plans for the target species.
3. Develop protection, mitigation and enhancement goals and objectives for the target wildlife species.
4. Develop management plans (recommended actions) for the protection, mitigation and enhancement of the target species.



# Albeni Falls Wildlife Protection, Mitigation and Enhancement Plan

Target Species	Cover Type	Habitat Units
Mallard	Herbaceous Wetland	5,985
Muskrat		1,756
Canada Goose		4,699
Redhead	Open Water	3,379
Yellow Warbler	Scrub-shrub Wetland	-71
White-tailed Deer	Scrub-shrub Wetland Forested Wetland Forested Upland	1,680
Bald Eagle	Forested Wetland	8,873
Black-capped Chickadee	Forested Upland	2,286
<b>Total</b>		<b>28,587</b>





**Legend**

-  IDFG Wildlife Mitigation Acquisitions
-  Subbasins
-  Idaho Counties



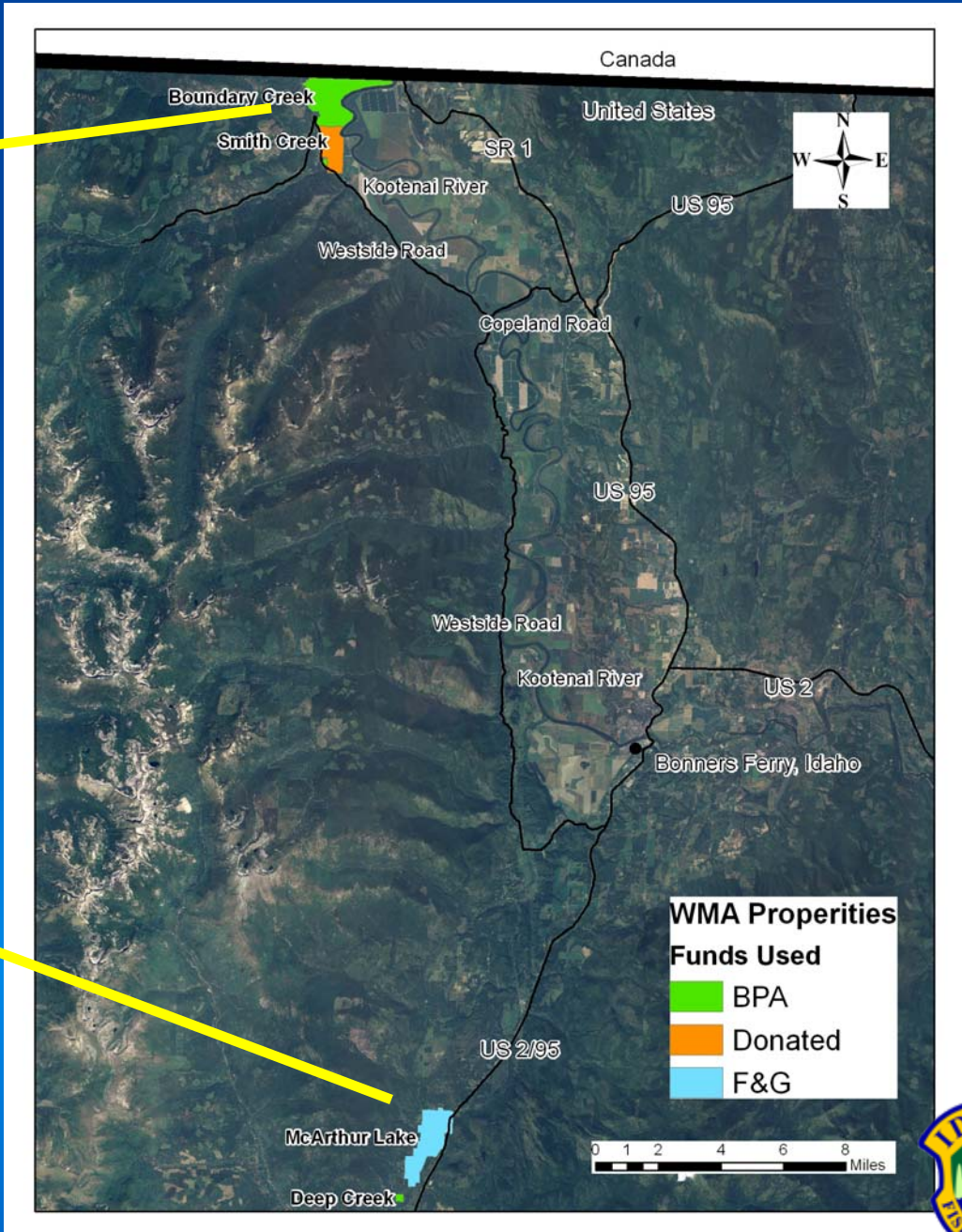
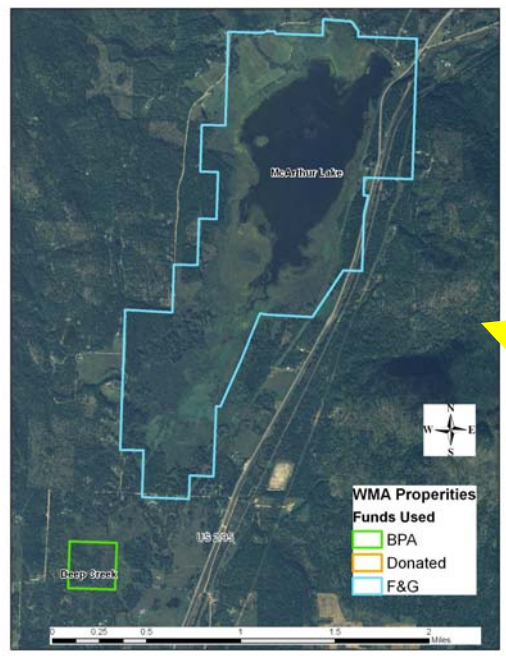
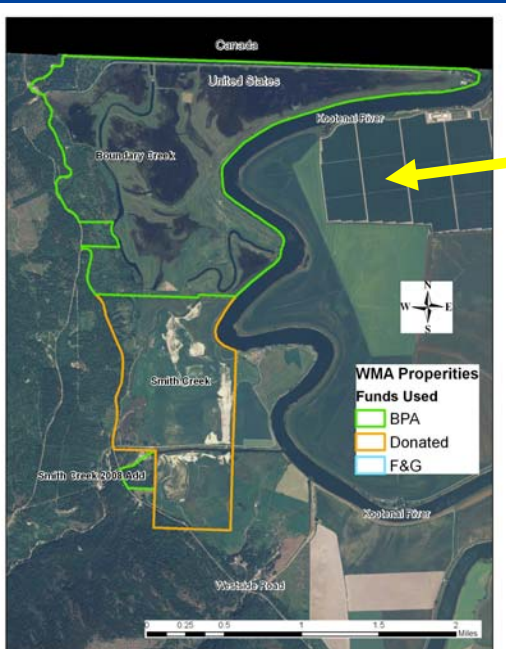
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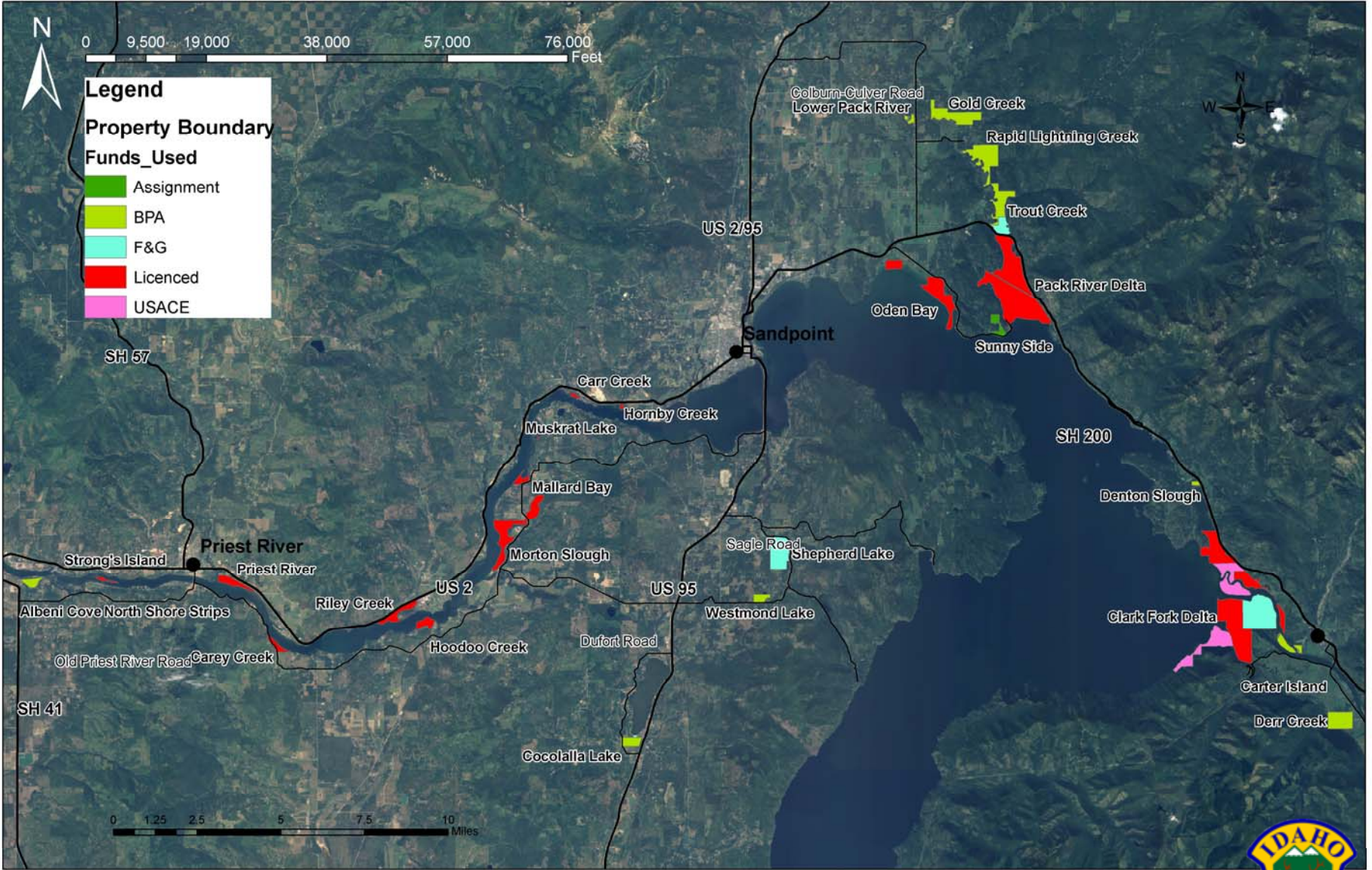


# IDFG Wildlife Mitigation Implementation

Project	Year Acquired	Acres	Protection Credits	Enhance Credits	Total Credits
<b>Kootenai Subbasin</b>					
Boundary Creek WMA	June 1, 1999	1,405	295.00	311.96	606.96
Deep Creek	July 19, 2005	40	77.53	--	77.53
Smith Creek WMA	January 2007 & July 2008	644	110.00	--	110.00
<b>Totals</b>		<b>2,089</b>	<b>482.53</b>	<b>311.96</b>	<b>794.49</b>
<b>Pend Oreille Subbasin</b>					
Pend Oreille WMA • consists of 10 parcels	1997 – present	1,564	2,177.07	691.07	2,868.14
<b>Coeur d'Alene Subbasin</b>					
Coeur d'Alene WMA • Lower St. Joe	March 9, 2007	62	86.45	--	86.45
<b>Overall Totals</b>		<b>3,715</b>	<b>2,746.05</b>	<b>1,003.03</b>	<b>3,749.08</b>







0 0.2 0.4 0.8 1.2 1.6 Miles



Lower Pack River  
Habitat Segment

Rapid Lightning Creek  
Habitat Segment

Trout Creek  
Habitat Segment

2004

Pack River Delta



0 0.2 0.4 0.8 1.2 1.6 Miles



Gold Creek  
Habitat Segment

Lower Pack River  
Habitat Segment

Rapid Lightning Creek  
Habitat Segment

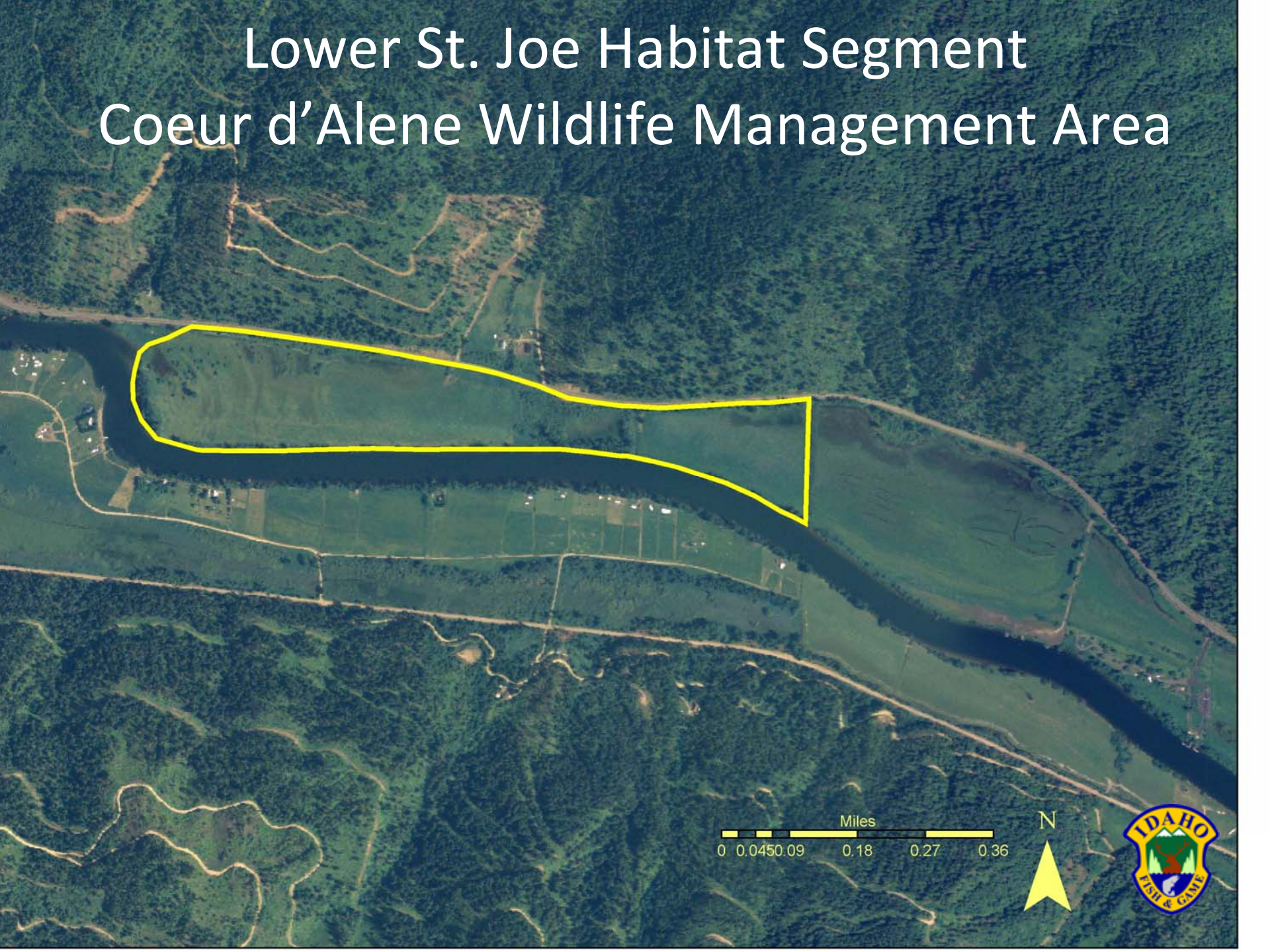
2008

Trout Creek  
Habitat Segment

Pack River Delta



# Lower St. Joe Habitat Segment Coeur d'Alene Wildlife Management Area



# Pend Oreille Wildlife Management Area



Idaho Department of Fish and Game  
Management Plan  
2008





# Management Plan Structure



- Long Range Management Plan with Major Goals and Activities
- Appendix of Parcel Specific Modules



# Provide Habitat for Breeding, Migrating, and Wintering Waterfowl



# General Land Management



# Provide Wildlife-Related Access and Maintain Opportunity for Public Hunting, Trapping, Fishing, Education and Observation



Provide wildlife observation and scientific values related to wildlife conservation



# Public Use Survey 2003-2004

## Pend Oreille WMA

- > 20,000 Visitor Days
- > \$650,000 in Economic Impact
- Fishing, Camping, Swimming, Boating, Wildlife Viewing, Hunting
- 85% Repeat Visitors
- 93.4% Support for IDFG Land Ownership
- 93.6% Support Additional Acquisition



# Monitoring and Evaluation Plan for Idaho Wildlife Mitigation Projects

(Unnasch *et al.*, 2003)

## Plan Objectives

1. Track progress toward full mitigation of the HU losses identified in hydroelectric project impact assessments.
2. Evaluate the success or failure of management activities.
3. Ensure that all monitoring data collected are sufficient to detect a 2.5% annual change over the span of ten years with a statistical power of 80%. This annual rate of change equates to a total change of 20% from starting conditions after the ten-year period.
4. Adopt standardized monitoring methodologies that are compatible with monitoring at larger scales and the scientific literature. This will maximize the usefulness of the data collected within the NWPPC Fish and Wildlife Program as well as at regional or national scales.



# Partner with the HEP Regional Team to collect data and standardize methods



# Vegetation Monitoring Results (2007)

## Boundary Creek WMA Top 12 Species

Common name	Technical name	Observed hits	Estimated coverage
creeping bentgrass	<i>Agrostis stolonifera</i>	3,008	22.89
orchardgrass	<i>Dactylis glomerata</i>	2,037	15.50
intermediate wheatgrass	<i>Thinopyrum intermedium</i>	1,360	10.35
needle spikerush	<i>Eleocharis acicularis</i>	1,174	8.93
broadleaf cattail	<i>Typha latifolia</i>	1,119	8.51
reed canarygrass	<i>Phalaris arundinacea</i>	1,083	8.24
quackgrass	<i>Elymus repens</i>	763	5.81
narrowleaf cattail	<i>Typha angustifolia</i>	565	4.30
Canada thistle	<i>Cirsium arvense</i>	545	4.15
western red cedar	<i>Thuja plicata</i>	532	4.05
Douglas-fir	<i>Pseudotsuga menziesii</i>	483	3.67
oceanspray	<i>Holodiscus discolor</i>	412	3.13





# Vegetation Monitoring Results (2007)

## Pend Oreille WMA Top 12 Species

Common name	Technical name	Observed hits	Estimated coverage
reed canarygrass	<i>Phalaris arundinacea</i>	1,743	11.24
red fescue	<i>Festuca rubra</i>	1,488	9.60
paper birch	<i>Betula papyrifera</i>	1,391	8.97
common snowberry	<i>Symphoricarpos albus</i>	1,242	8.01
grand fir	<i>Abies grandis</i>	1,229	7.93
Douglas-fir	<i>Pseudotsuga menziesii</i>	1,075	6.93
western red cedar	<i>Thuja plicata</i>	921	5.94
rose spirea	<i>Spiraea douglasii</i>	846	5.46
quackgrass	<i>Elymus repens</i>	749	4.83
gray alder	<i>Alnus incana</i>	714	4.60
black cottonwood	<i>Populus balsamifera</i> ssp. <i>trichocarpa</i>	708	4.57
creeping bentgrass	<i>Agrostis stolonifera</i>	689	4.44



# Vegetation Monitoring Results (2007)

## Noxious Weeds

Common name	Technical name	POWMA coverage	BCWMA coverage
spotted knapweed	<i>Centaurea stoebe</i>	1.37	--
rush skeletonweed	<i>Chondrilla juncea</i>	0.01	--
Canada thistle	<i>Cirsium arvense</i>	0.31	4.15
gypsyflower	<i>Cynoglossum officinale</i>	0.01	0.01
scouringrush horsetail	<i>Equisetum hyemale</i>	<0.01	--
orange hawkweed	<i>Hieracium aurantiacum</i>	0.28	--
meadow hawkweed	<i>Hieracium caespitosum</i>	0.02	0.15
common St. Johnswort	<i>Hypericum perforatum</i>	0.23	0.00
oxeye daisy	<i>Leucanthemum vulgare</i>	0.84	0.02
butter and eggs	<i>Linaria vulgaris</i>	<0.01	--
Eurasian watermilfoil	<i>Myriophyllum spicatum</i>	<0.01	--
field sowthistle	<i>Sonchus arvensis</i>	--	1.14
common tansy	<i>Tanacetum vulgare</i>	1.59	--



# Vegetation Monitoring Results (2007)

## Rare/Sensitive Plants

Property	Technical Name	Common Name	Hits
Boundary Creek	<i>Asplenium trichomanes</i>	maidenhair spleenwort	+
Carter Island	<i>Carex hendersonii</i>	Henderson's sedge	2
Gold Creek	<i>Carex leptalea</i>	bristlystalked sedge	+
	<i>Salix candida</i>	sageleaf willow	53
	<i>Sanicula marilandica</i>	Maryland sanicle	3
Lower Pack River	<i>Salix candida</i>	sageleaf willow	13
	<i>Sanicula marilandica</i>	Maryland sanicle	+
Rapid Lightning Creek	<i>Sanicula marilandica</i>	Maryland sanicle	+
Trout Creek	<i>Salix candida</i>	sageleaf willow	+



# Vegetation Monitoring Trends

## Boundary Creek WMA—2004 to 2007

- Marsh vegetation encroached into open water and meadow
- Reed canarygrass has increased rapidly
- Cattails have increased
- Species richness of meadows has declined
- Douglas-fir and oceanspray increased in conifer forests
- Woody species increased on floodplain
- Sedge species increased on floodplain



# Vegetation Monitoring Trends Pend Oreille WMA—2004 to 2007

- Deciduous forested wetlands remained stable
- Dominate species of meadows were a bit volatile
- Coniferous forests remain quite stable
  - One sample area was reclassified from pasture to forest
- Dominate species of scrub-shrub wetlands were quite volatile
- Common tansy increased within the sample areas on Rapid Lightning Creek





# Investigating Habitat Value

- Understanding ecological roles of wildlife and plant species is important for understanding the consequences of changes and management actions on ecosystems.
- **IBIS - Interactive Biodiversity Information System**
  - Utilizes a hierarchical classification system to prioritize habitats and to describe the ecological interactions of organisms within these habitats.

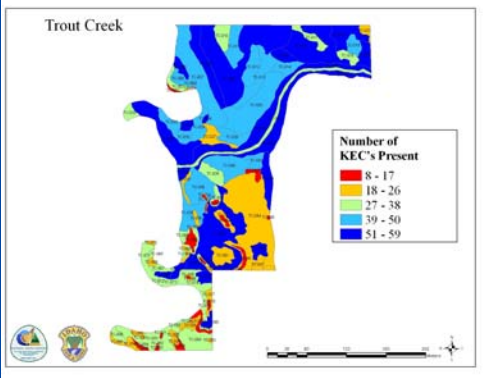
## Key Ecological Functions (KEF)

- the major ecological roles that species play in their ecosystem and influence the environment.

## Key Environmental Correlates (KEC)

- environmental influences on the distribution and abundance of organisms.





# Calculating Baseline Habitat Value

## Field Work:

- Habitat types
- Structural Conditions
- KECs
- Invasive Species

Species Lists

List of KECs

Weighted Value for Each KEF =  
 (# of species) x (% of total acreage)

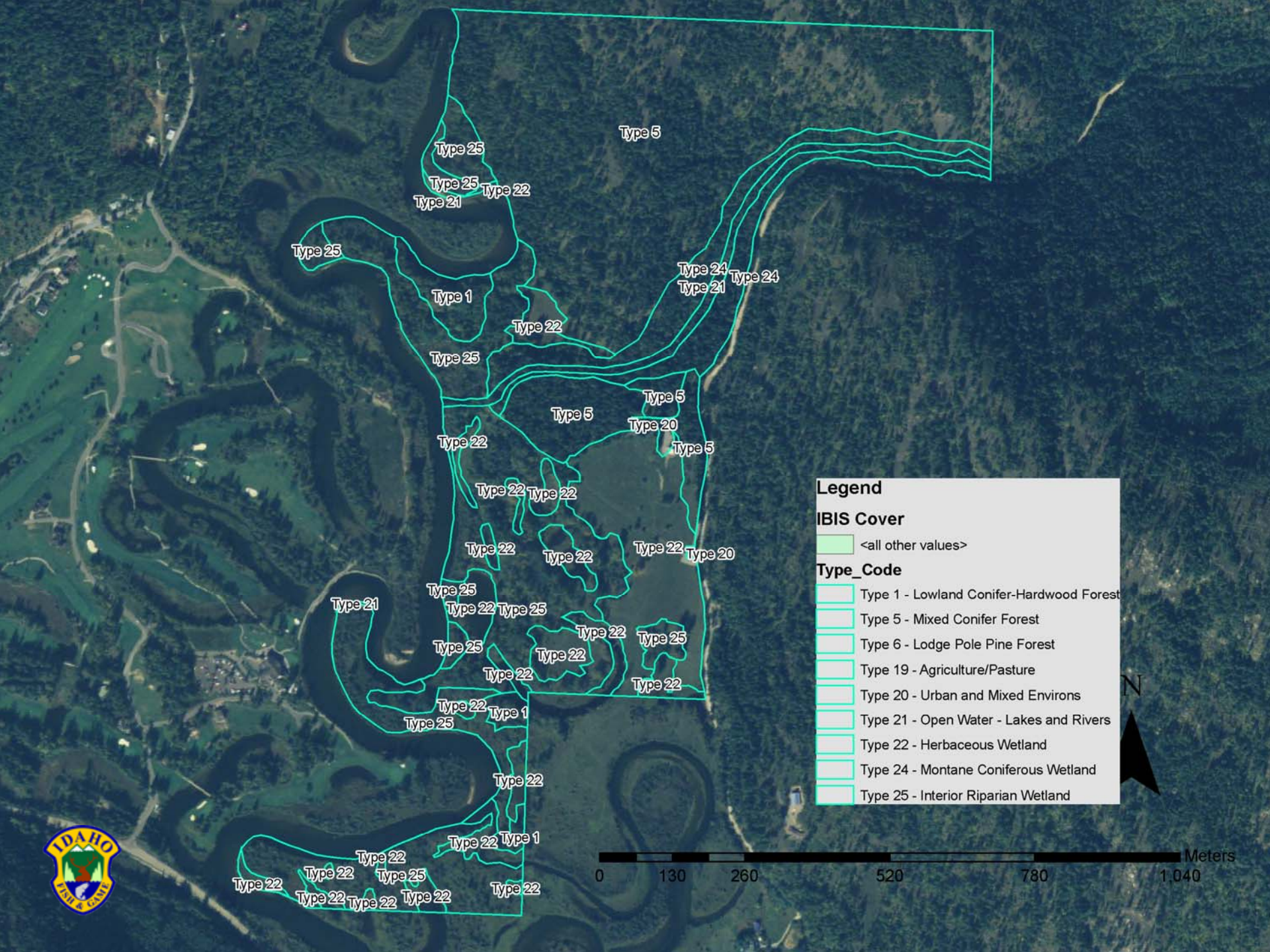
Multivalue for each Habitat Type =  
 Sum of Weighted Values

Discrete Weighted Area Average Value (DWAAV)  
 for each Habitat Type = multivalue/# of KEFs

Potential Habitat Value for each Habitat Type

$$V_H = (DWAAV \times A_H) / (A_H / A_S)$$





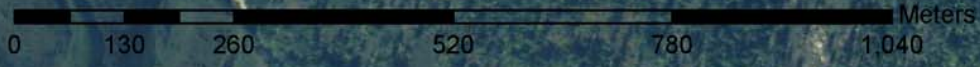
**Legend**

**IBIS Cover**

<all other values>

**Type\_Code**

- Type 1 - Lowland Conifer-Hardwood Forest
- Type 5 - Mixed Conifer Forest
- Type 6 - Lodge Pole Pine Forest
- Type 19 - Agriculture/Pasture
- Type 20 - Urban and Mixed Environs
- Type 21 - Open Water - Lakes and Rivers
- Type 22 - Herbaceous Wetland
- Type 24 - Montane Coniferous Wetland
- Type 25 - Interior Riparian Wetland

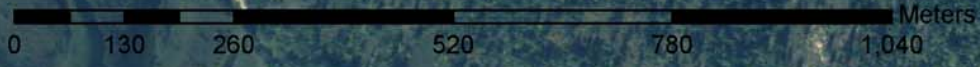


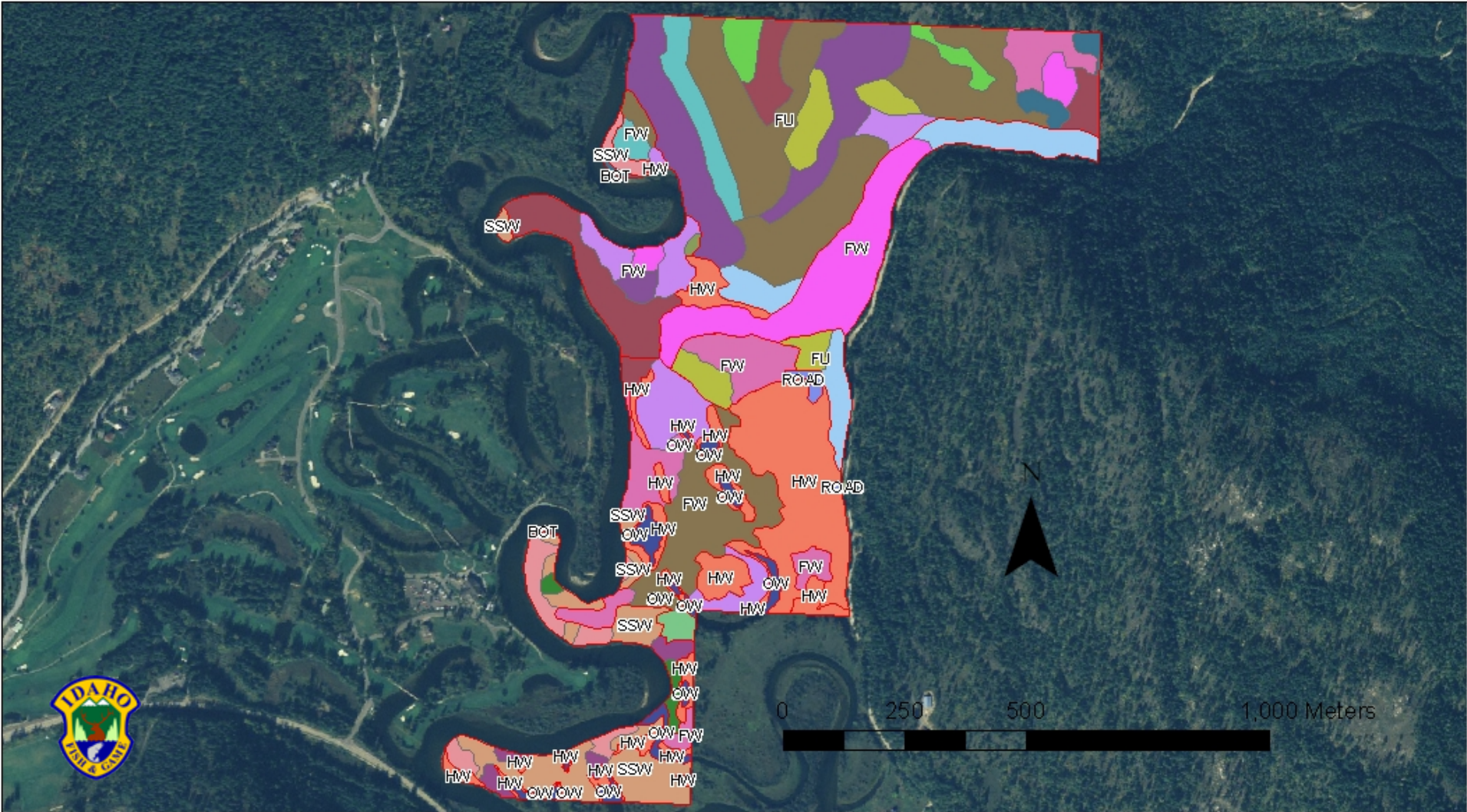




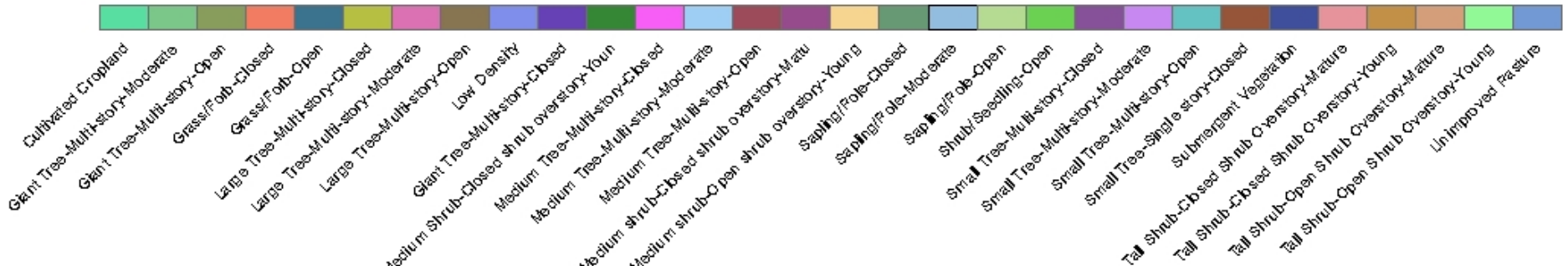
**Legend**

- <all other values>
- BOT - Unconsolidated River Beach
- CROP - Food Plot
- FU - Forested Upland
- FW - Forested Wetland
- HW - Herbaceous Wetland
- ORC - Orchard/Plantation
- OW - Open Water (HW)
- PAS Old Field/Pasture
- RIV
- ROAD - Roads/Buildings
- SSW - Scrub-Shrub Wetland

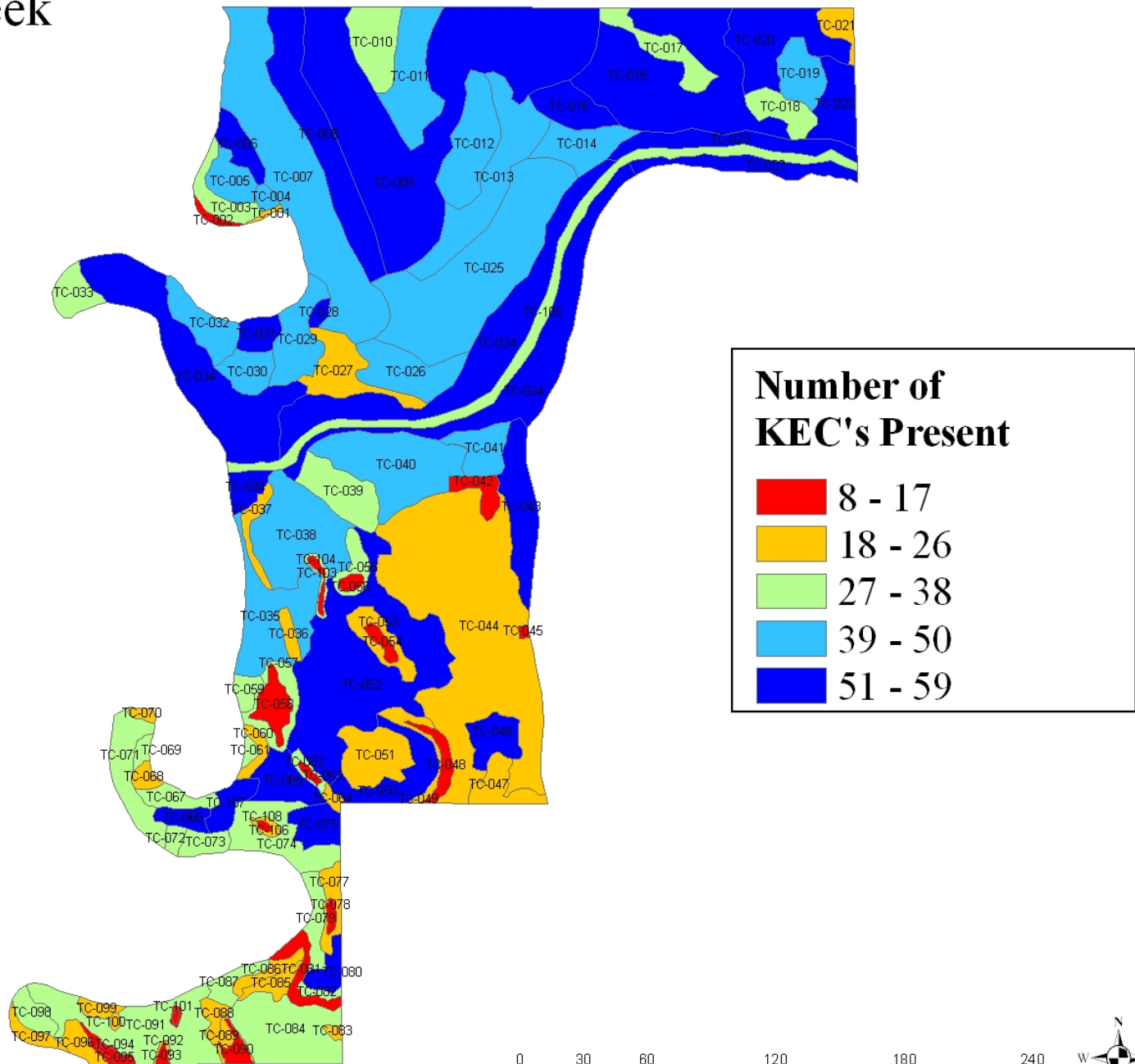




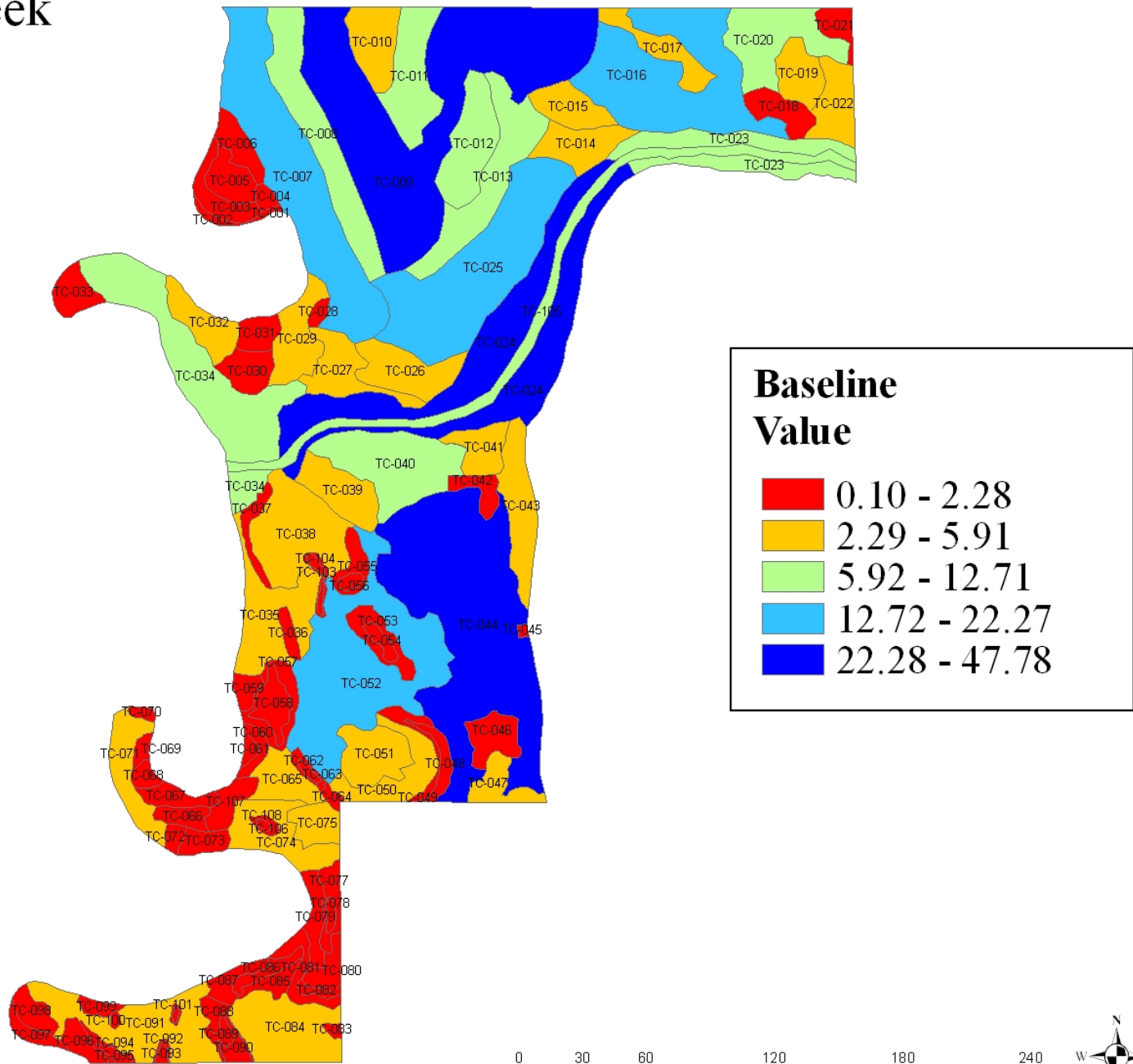
Trout Creek HS Structural Conditions



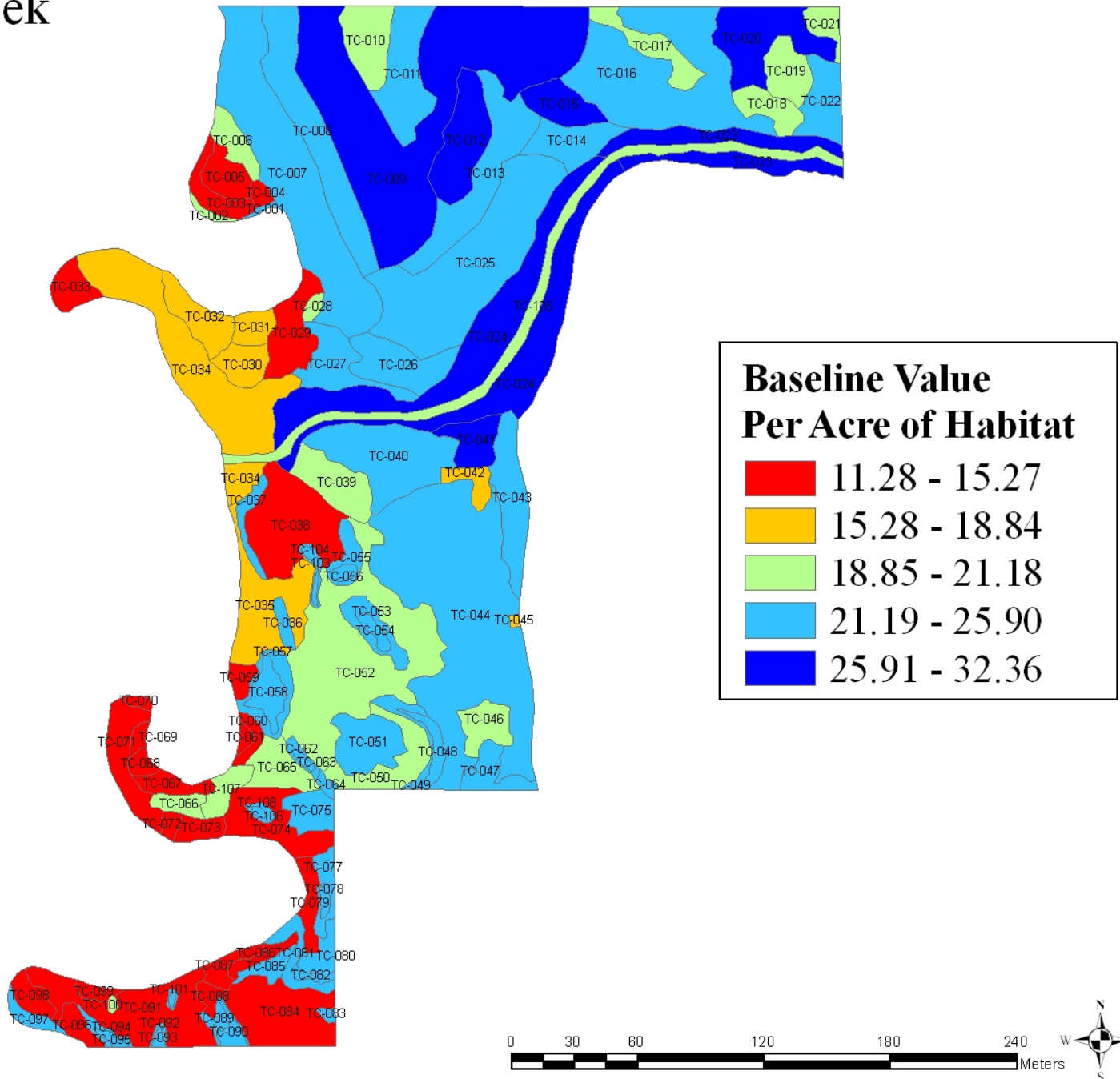
# Trout Creek



# Trout Creek



# Trout Creek



# Project Limitations and Needs

- Slow implementation of mitigation:

Dam constructed in 1952; implementation of mitigation began 1992;  
33.9% mitigated as of January 2009

- Review timeframe and process of time sensitive acquisitions requirements:  
Appraisals

- BPA limitations on monitoring:  
Wildlife-based surveys

- Increased cost per acre of sensitive habitat types:  
Especially for Forested Riparian, Forested Wetlands, etc.

- BPA Capitol and expense requirements:  
> \$1,000,000 or pooled with other acquisitions within same FY



Idaho Fish and Game Commission directed staff to pursue settlement for the wildlife losses associated with the construction and operation of the Albeni Falls Hydroelectric Project with the Bonneville Power Administration.

