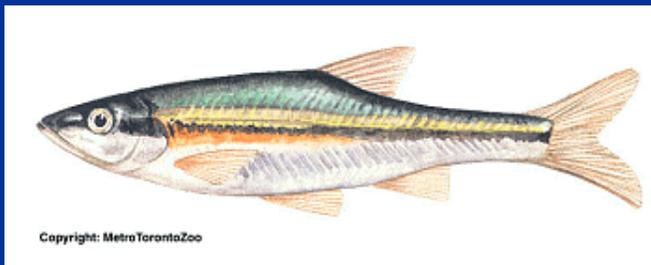
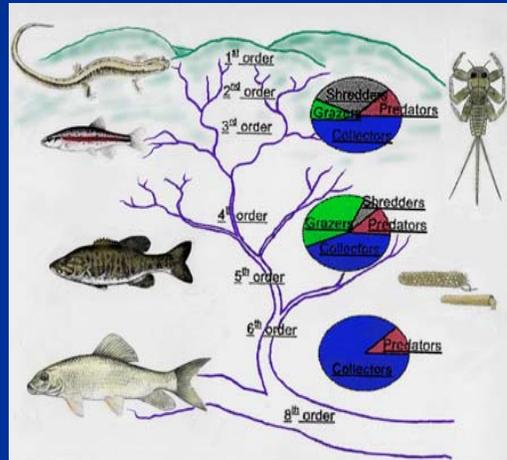
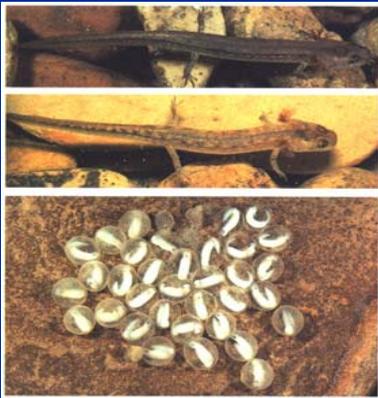




**OhioEPA**  
Division of Surface Water

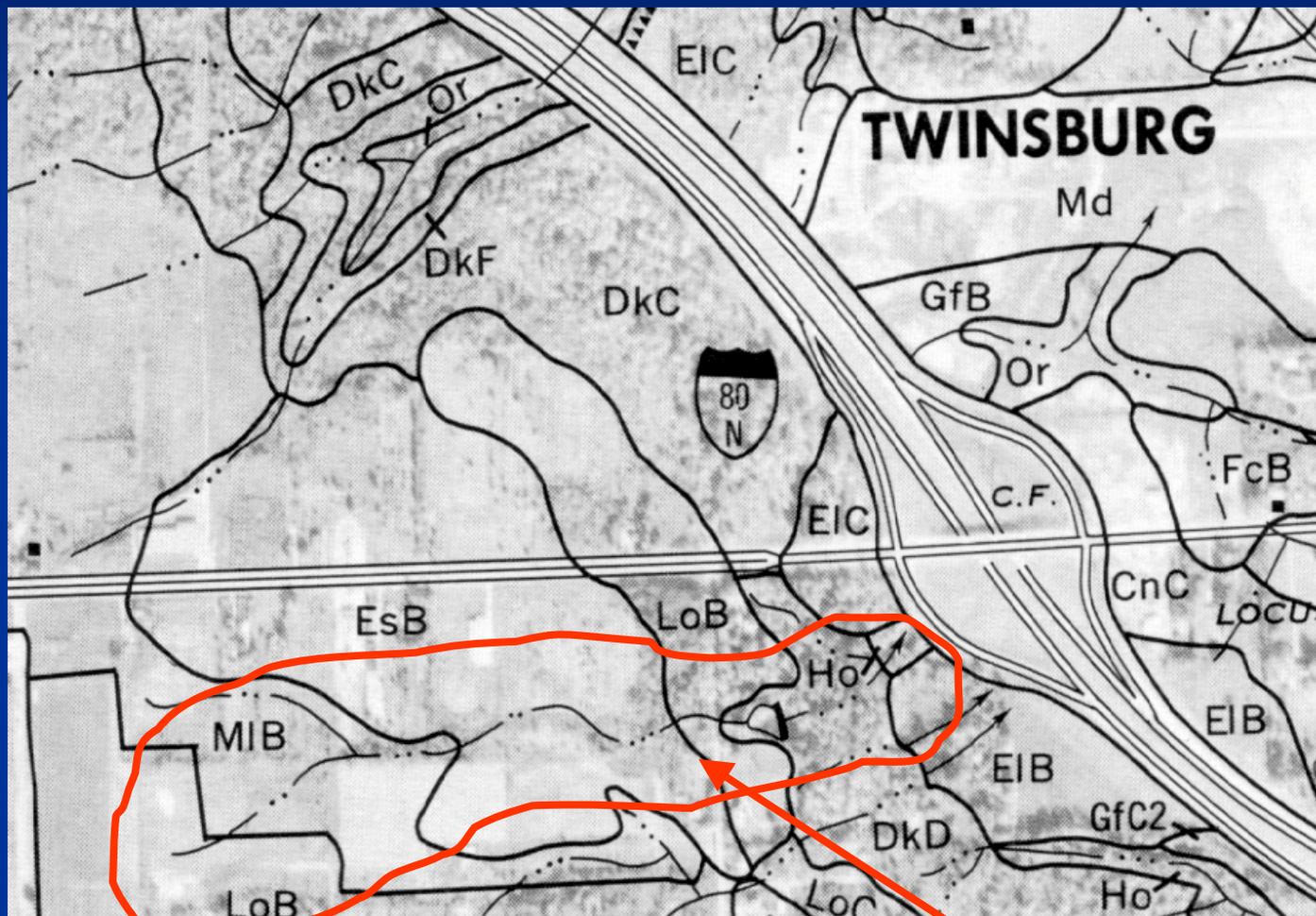
# Primary Headwater Stream Initiative



# The Basics - What is a **Primary Headwater Stream?**

- A surface watercourse with a defined Bed and Bank
- Either continuous or periodical flowing water
- A watershed generally less than one square mile and deepest pools < 40cm
- Widely divergent communities based upon instream biology

# Desktop PHWH-Stream Identification



**NRCS Soil  
Map  
including  
hydro-layer**

Scale Range =  
1:15,000 to  
1:20,000

Watershed area = 0.68 sq mi

# Why Worry About the Small Stuff?

Shouldn't we first devote time and resources to cleaning and protecting the BIG rivers?



# Watershed level impacts over time -

Where have the streams gone?



# Death by a 1000 thousand cuts

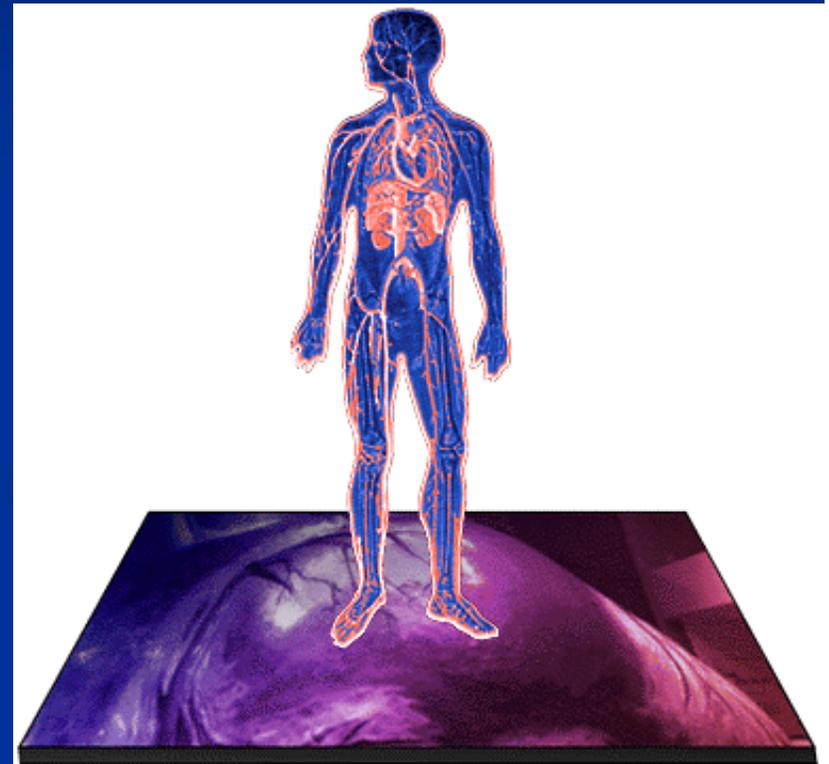
Where have the streams gone?



Source: Cuyahoga SWCD

Mill Creek  
Present Day

Small structures often have large effects that are disproportionate to their size—primary headwater streams fit well this view of nature

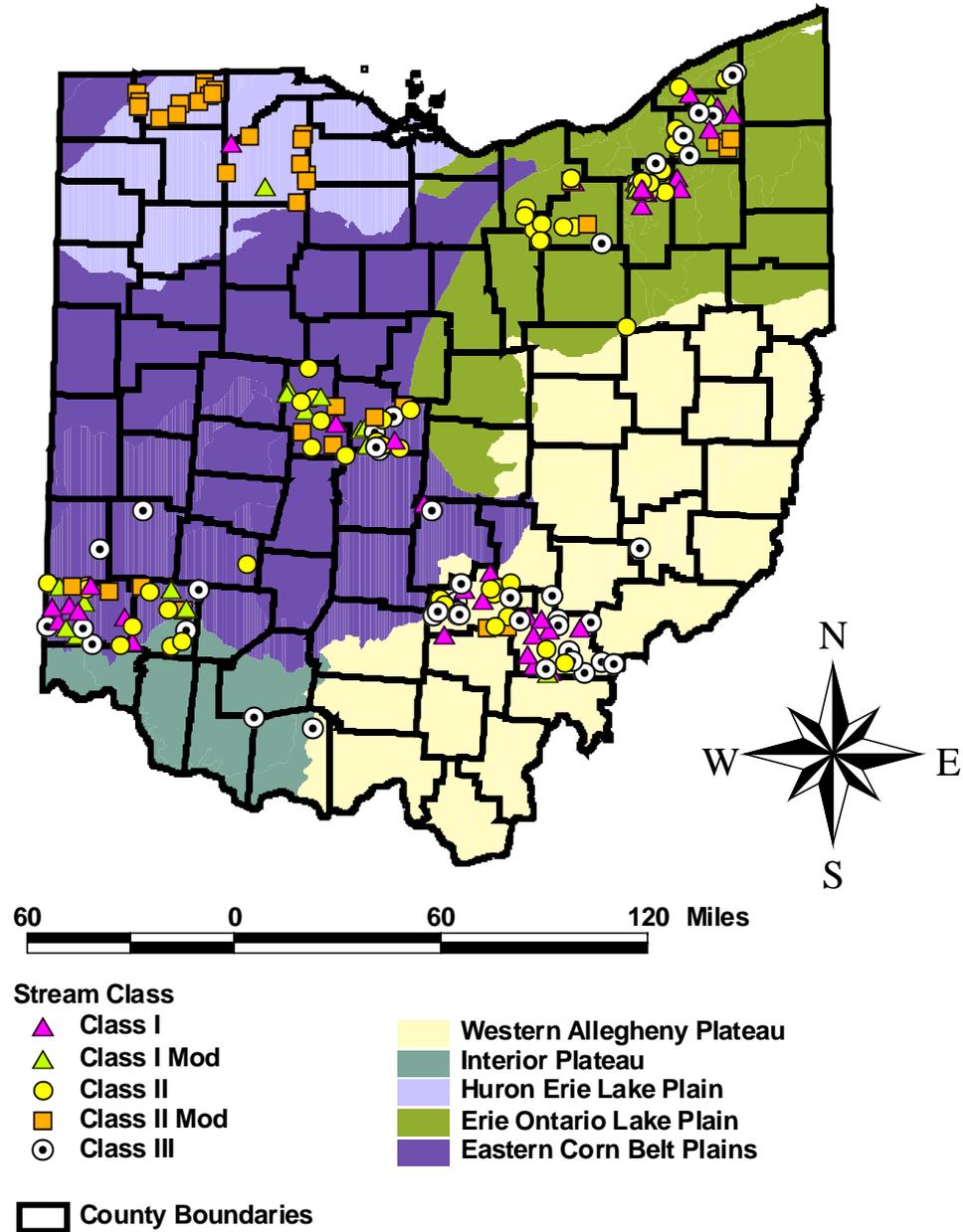


# What are the consequences of not recognizing headwater streams?



Local and downstream impacts are “clear”

# Figure 2. Ohio EPA PHWH Survey Sites 1999-2000



# Study Design: Field Evaluation

## ■ **Biology:**

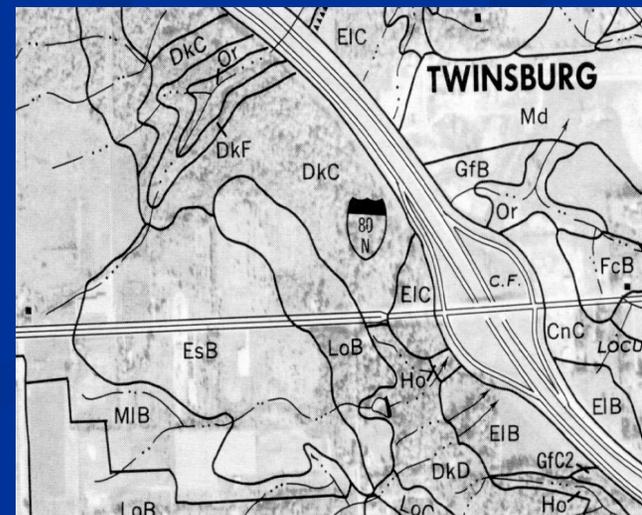
- Fish
- Macroinvertebrates
- Amphibians

## ■ **Water Quality:**

- Field measures  
(DO, pH, Temp., Conductivity)

## ■ **Physical and Habitat Features:**

(200 ft) zone



# Three Classes of PHWH Stream in Ohio

## **CLASS I-PHWH Stream**

Ephemeral flow

Poor biotic diversity

## **CLASS II-PHWH Stream**

Permanent to intermittent flow

Fair-good biotic diversity

Warm water in summer

## **CLASS III-PHWH Stream**

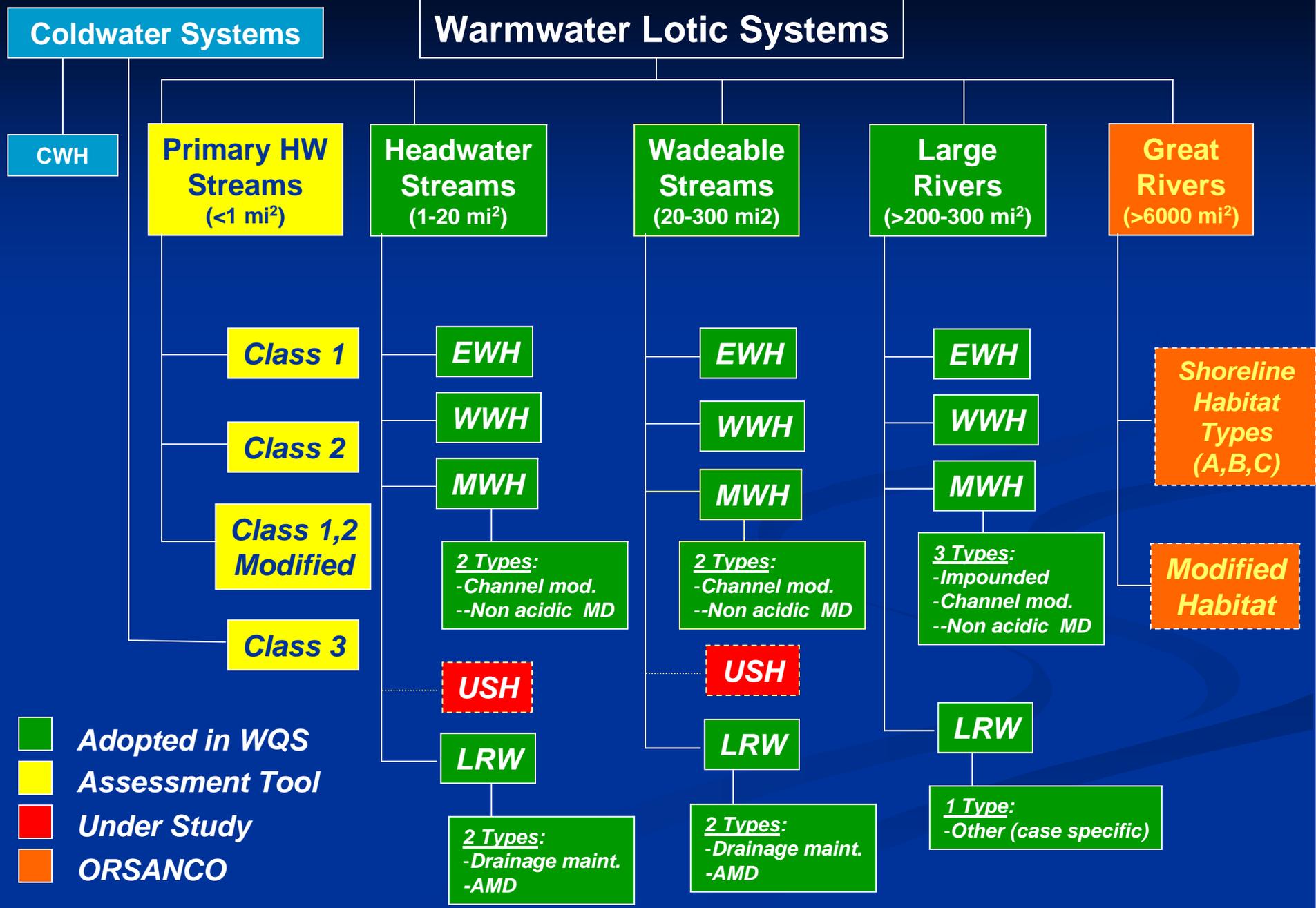
Permanent (interstitial) flow

Good-excellent biotic diversity

Cold to cool water in summer

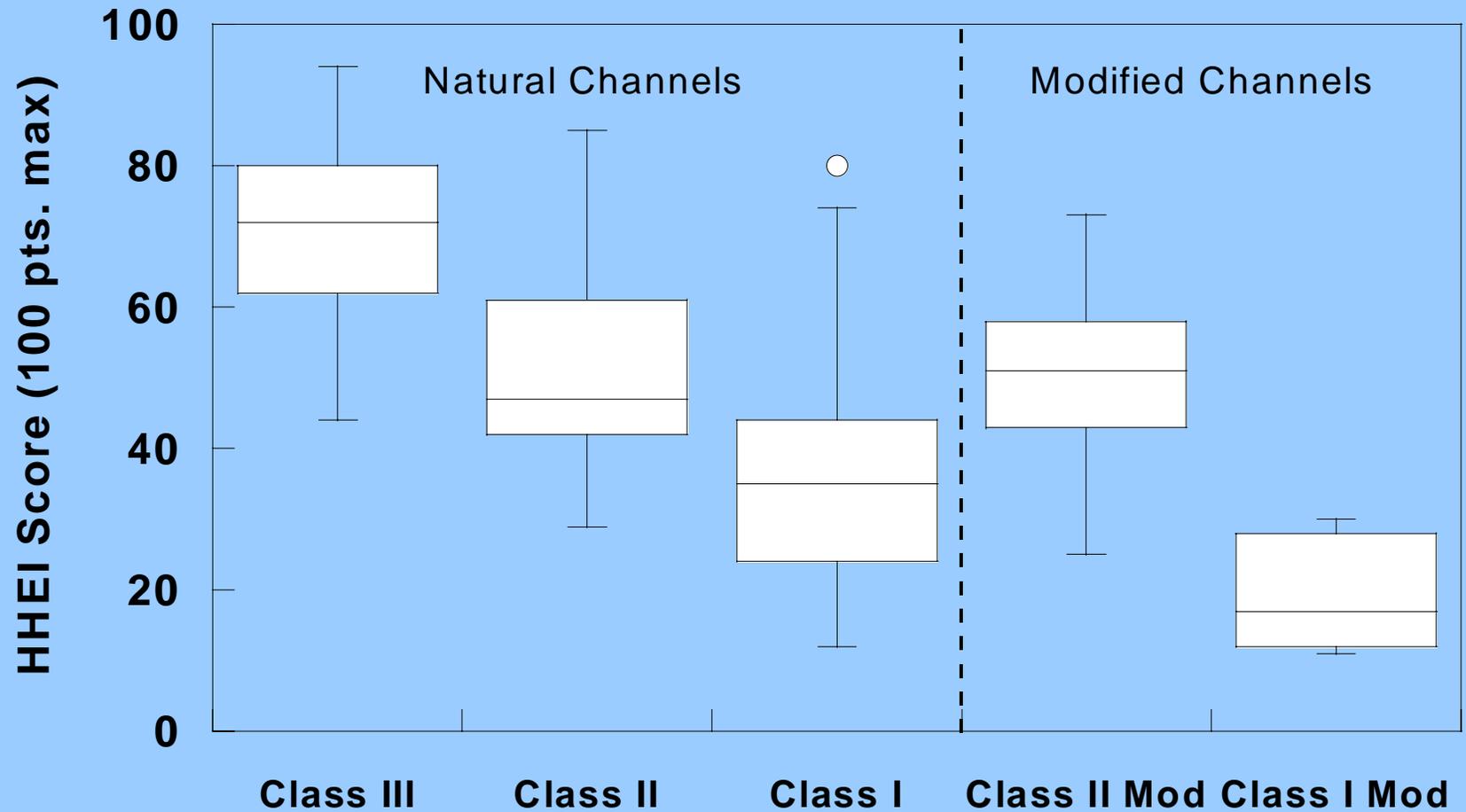


# OHIO SPECIFIC TEMPLATE FOR STRATIFICATION

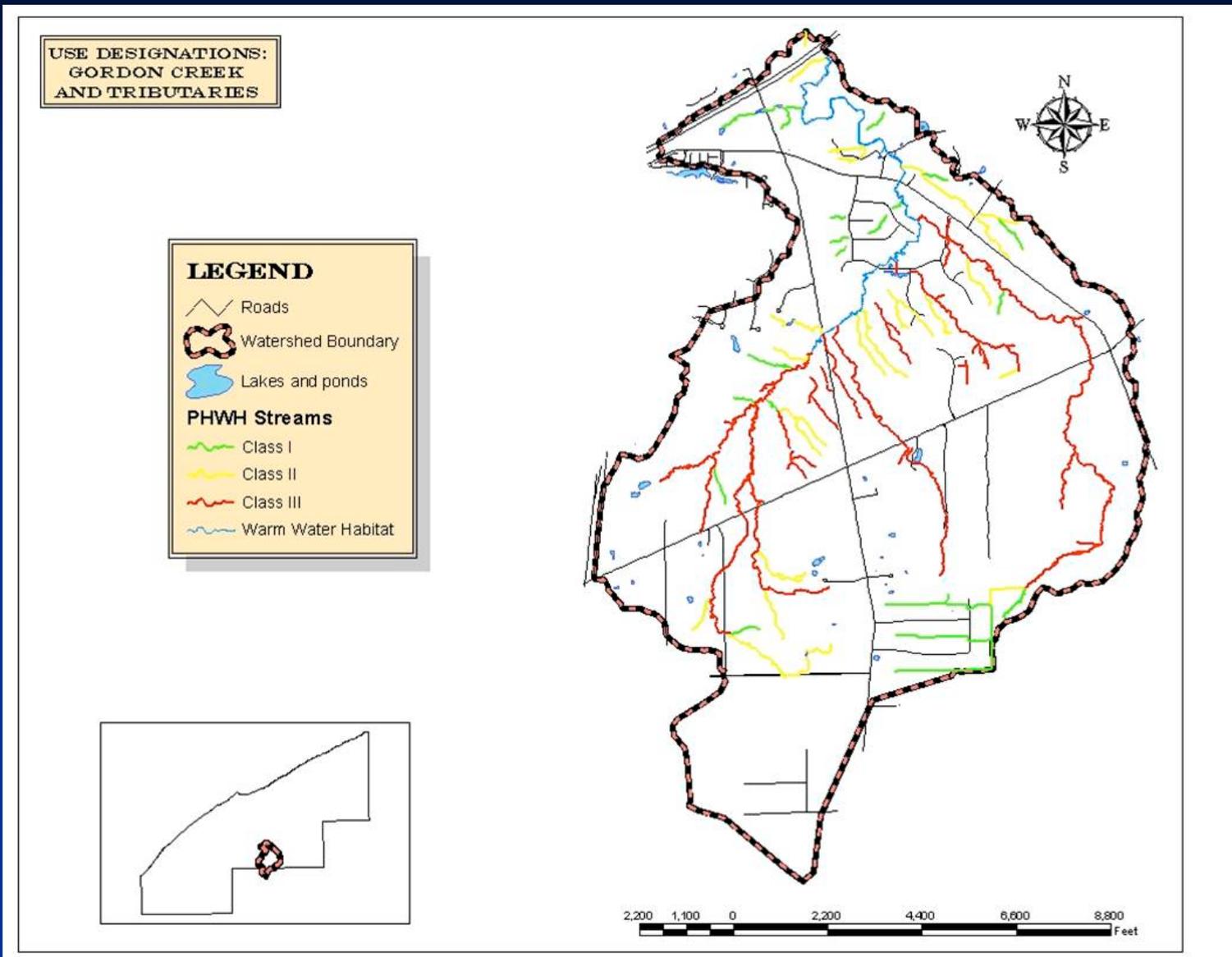


# Ohio EPA Headwater Habitat Evaluation Index (HHEI)

## Total HHEI Scores



# Lake County SWCD Application of the Ohio EPA Primary Headwater Methods



# Now On DSW Web Page

- 4 new fact sheets
- 4 technical project report documents:
  - Assessment Manual (2002)- rapid biological and HHEI habitat assessment protocol
  - Fish and Amphibian report
  - Macroinvertebrate report
  - Data compendium
- Internet address is :
  - [www.epa.state.oh.us/dsw/wqs/headwaters/index.html](http://www.epa.state.oh.us/dsw/wqs/headwaters/index.html)

# Future Direction for Ohio EPA

## Concerning Primary Headwater Streams

- Network with county SWCD and local governments for adoption in land use plans and zoning ordinances
- Training for environmental consultants (and others) that conduct Army Corps Section 404/401 surveys
- General education about importance of primary headwater streams. OEPA web page:  
<http://www.epa.state.oh.us/dsw/wqs/headwaters/index>
- Potential adoption of PHWH aquatic life uses into Ohio surface water regulations (OAC 3745-1). Requires public review from regulated community, environmental groups, local governments, etc