

# Natural Resources Commission Meeting

NRC Policy Committee on  
Wildlife & Fisheries

January 15, 2015



# Proposed Orders

- NRC – For Information
  - Falconry and Raptor Capture Regulations (WCO Amendment No. 1 of 2015)



# NRC Policy Committee on Wildlife and Fisheries

- Fisheries Chief Update
- UP Walleye Management Review
- Bass Regulations Update
- Water Use Advisory Council  
Recommendations
- Wildlife Chief Update
- Elk Season Results
- Falconry and Raptor Capture Regulations





# Department of Natural Resources

# WATER

Jim Dexter, Fisheries Chief  
January 15, 2015

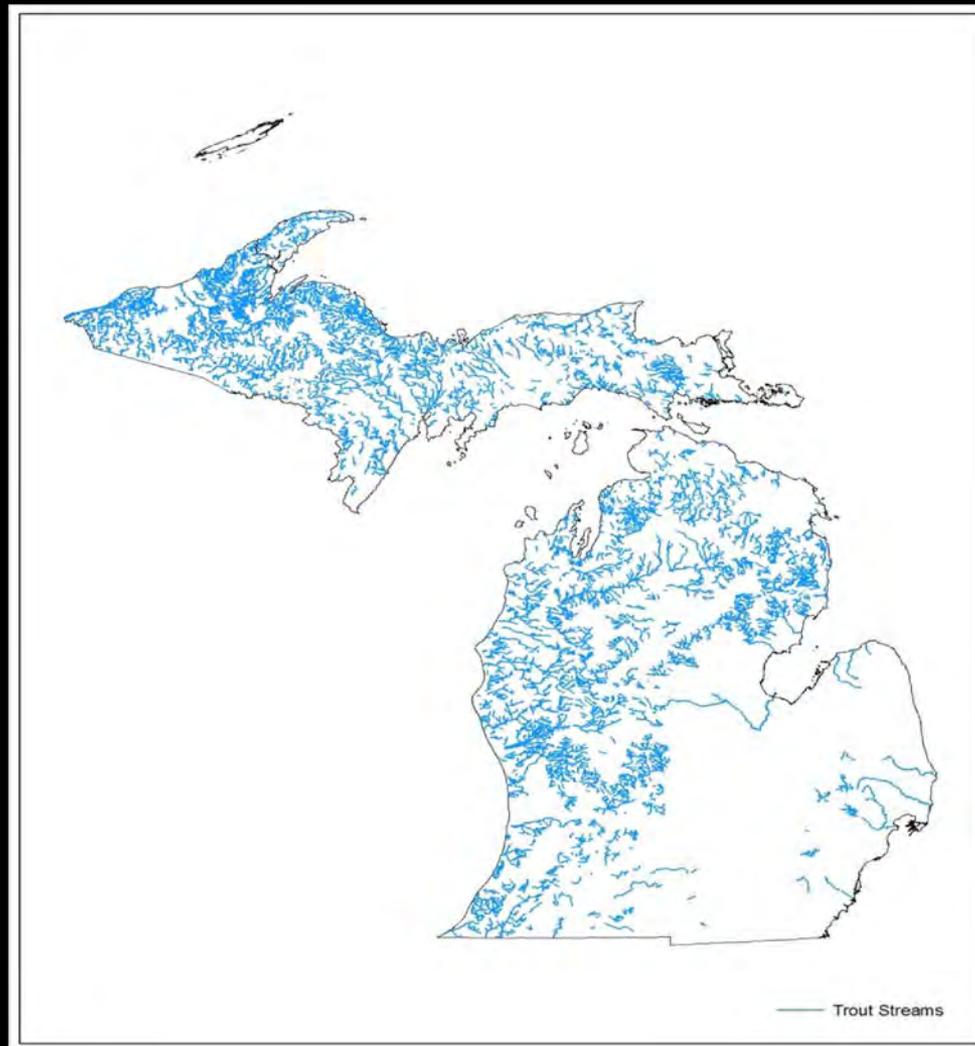
# World-Class Fisheries



# World-Class Wildlife



# Michigan's Trout Streams



# Thank you!

[www.michigan.gov/fishing](http://www.michigan.gov/fishing)





# Michigan's Water Use Program

Natural Resources Commission

January 15, 2015

**Bill Creal**

**Water Resources Division**

**Department of Environmental Quality**



# Outline

- **Great Lakes Compact & Part 327**
- **Water Withdrawal Assessment Process**
- **Exemptions**
- **Water Use Trends**
- **Program Improvement & Needs**



# Great Lakes Compact (2008)

- Federal law plus international agreement initiated by Great Lakes Basin states and provinces
- Prohibits diversions outside Great Lakes Basin
- Prohibits adverse impact from in-basin uses
- Specific regulations left up to states/provinces to set individually
- Implemented in Michigan via Part 327 of Natural Resources and Environmental Protection Act



# Part 327, Great Lakes Preservation

- New large quantity withdrawals (LQW, 70+ gallons per minute) must be authorized prior to use (2009)
- Authorization is granted/denied based on the impact to nearby stream flows, or to a lake if a direct lake withdrawal
- Authorization process begins with on-line Water Withdrawal Assessment Tool (WWAT)

# Water Withdrawal Assessment Process

- **WWAT is a stream flow depletion model based on years of research, best available input data for:**
  - **Stream flows**
  - **Hydrogeology**
  - **Fish Ecology**
- **Input data is estimated statewide from limited number of data collection points**
  - **Not expected to be exact for any given location**

# Water Withdrawal Assessment Process

- WWAT is a screening tool to expedite authorization of low-risk LQW, and to flag higher-risk LQW for further review by staff
- Tracks cumulative depletions of LQW by watershed
- Based on watershed accounting, LQW are graded using a “Zones” scale of increasing risk of adverse resource impact (ARI)

# Water Withdrawal Assessment Process

- Higher-risk LQW flagged by the WWAT are forwarded to program staff for review
- Reviews are completed using more site-specific data if available or when collected by the LQW applicant
- LQW determined not likely to cause ARI are authorized; those likely to cause ARI are denied



# Water Withdrawal Assessment Process

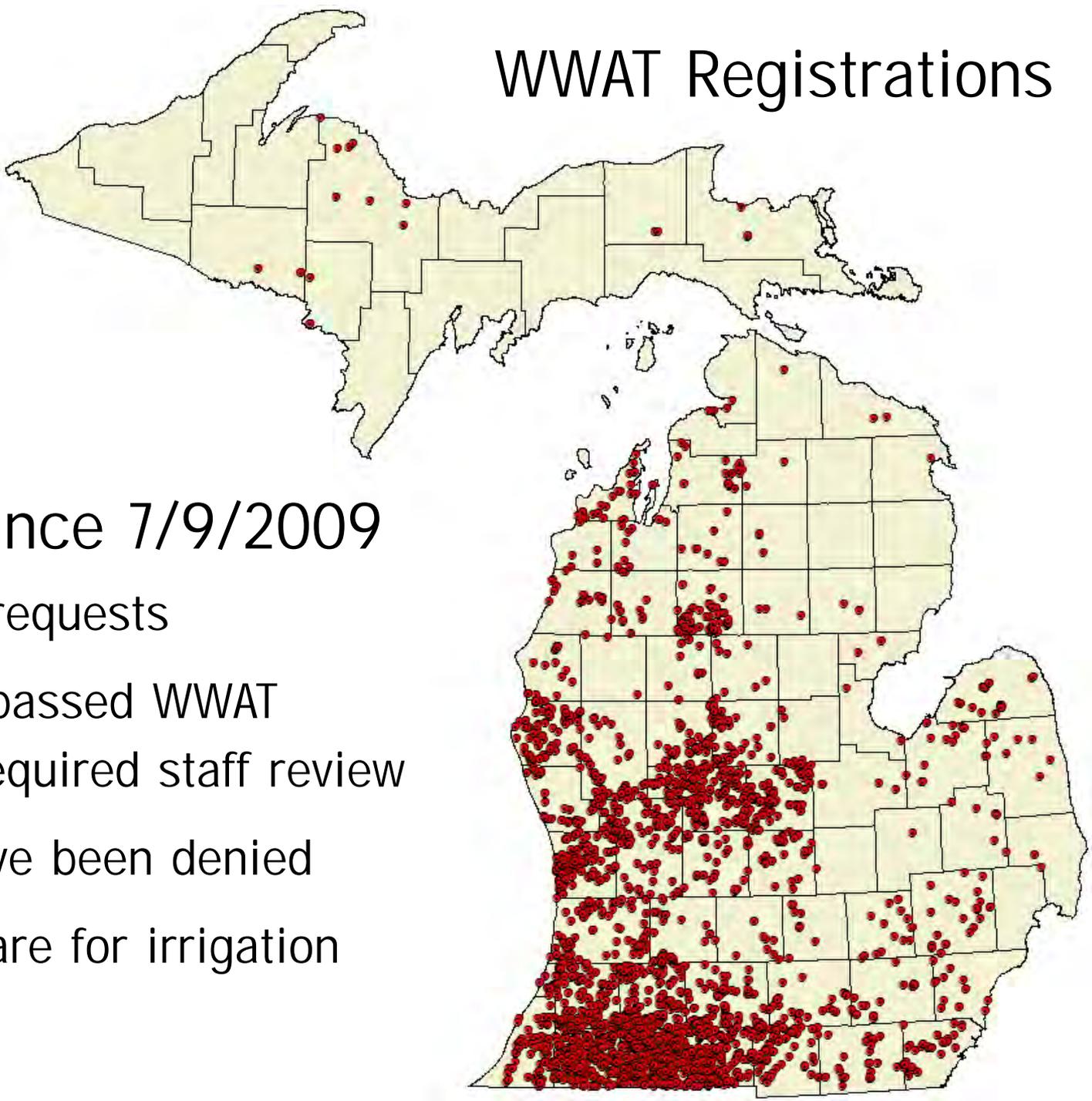
## Adverse Resource Impact (ARI)

- ARI is explicitly defined in Part 327; proportional reduction in a stream's flow that would result in a shift in its ecological classification
- Classifications based on size, temperature, and corresponding fish community
- Fish communities are used as the indicator for change in stream classification
- Bottom line: Part 327 preserves stream ecology

# Part 327 Exemptions

- Groundwater contamination cleanup programs
- Hydroelectric power generation
- Non-commercial well on residential property
- Oil & gas well activities – “Fracking” **...but :**
  - Supervisor of Wells Permitting Instructions now include using WWAT and adherence to Part 327
  - DEQ proposing administrative rule amendments to codify this requirement

# WWAT Registrations

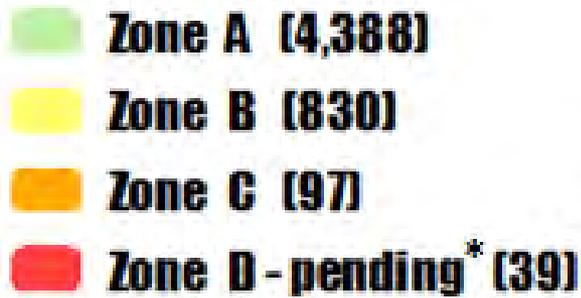


## LQW since 7/9/2009

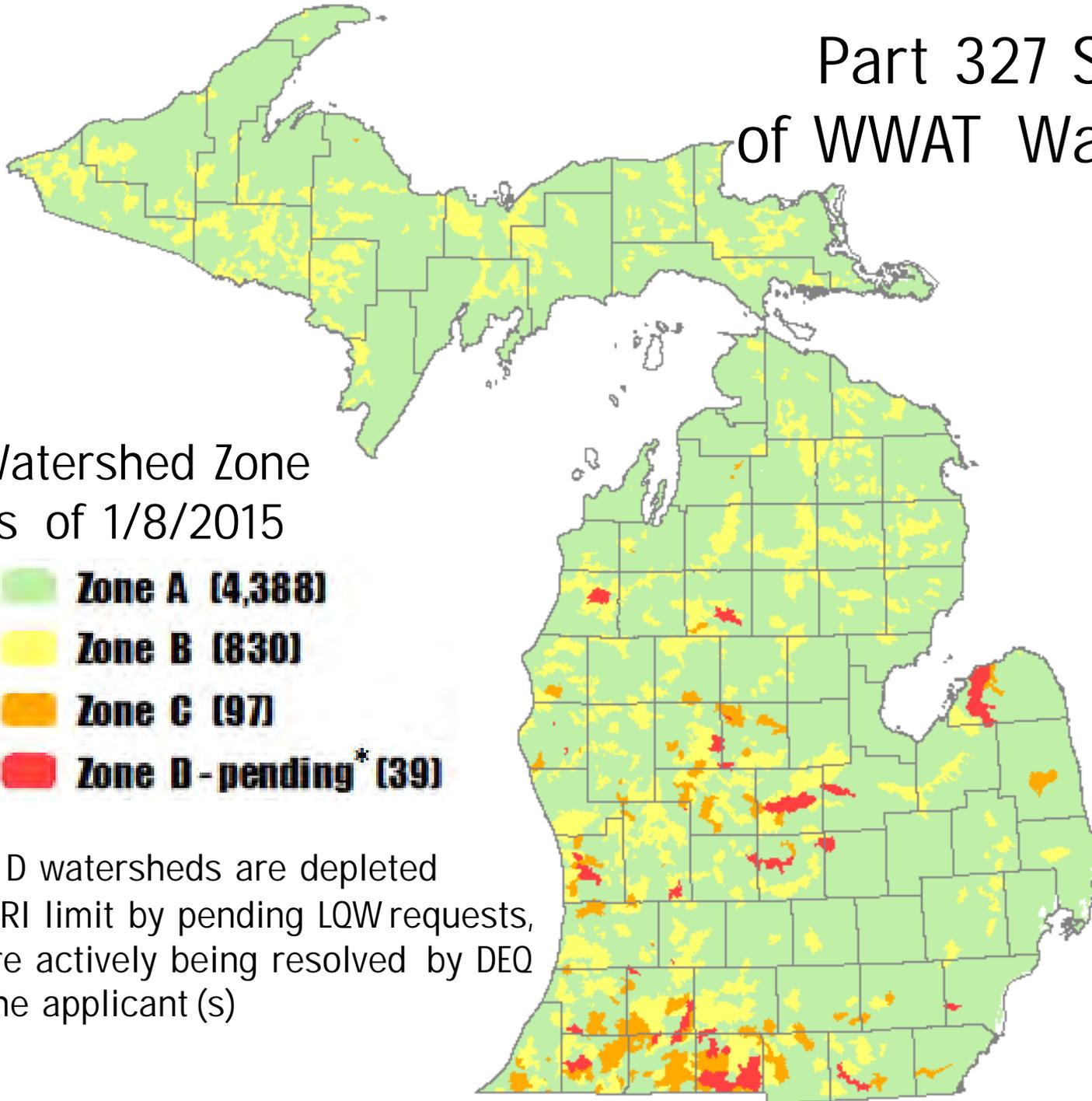
- 3,151 requests
- 2,172 passed WWAT
- 979 required staff review
- 15 have been denied
- 92% are for irrigation

# Part 327 Status of WWAT Watersheds

Watershed Zone  
as of 1/8/2015



\* Zone D watersheds are depleted over ARI limit by pending LQW requests, and are actively being resolved by DEQ with the applicant (s)





# Water Use Program

## Current & Future Needs

- Additional data for stream flows, groundwater levels, fish communities, glacial geology, lake levels, hydrogeology, etc.
- Refinement of models and WWAT input data
- Water User Committee participation for self-driven conflict resolution
- Develop guidance and procedures documentation
- Continued stakeholder involvement after the Water Use Advisory Council

# Questions?

Bill Creal

517-284-5470

[crealw@michigan.gov](mailto:crealw@michigan.gov)

# Evaluation of Streamflow in the Upper Manistee and Au Sable Watersheds & Predictive Hydrologic Models

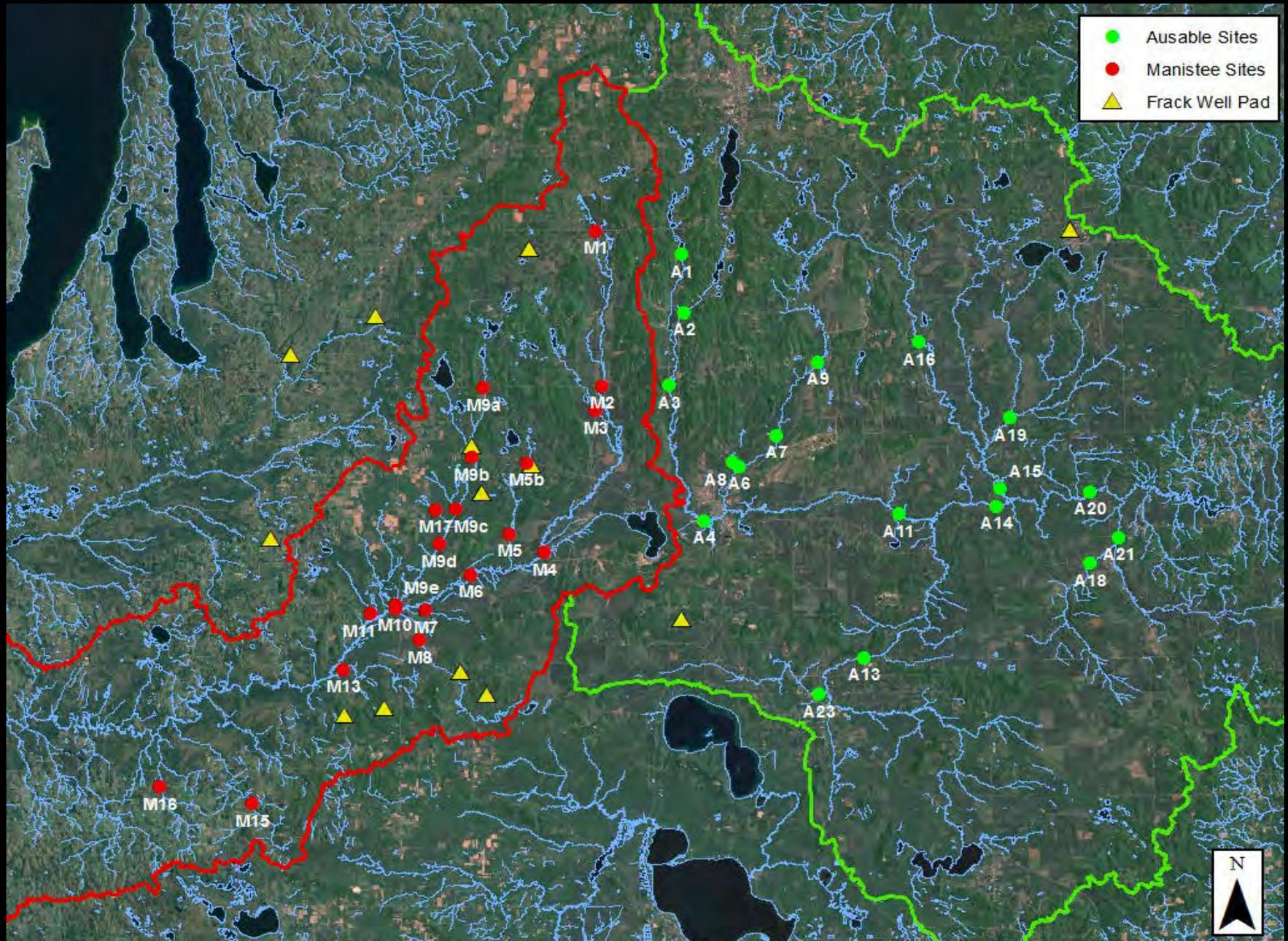
**David Hyndman**

**Michigan State University**

# Motivation for a Gage Network in Headwaters

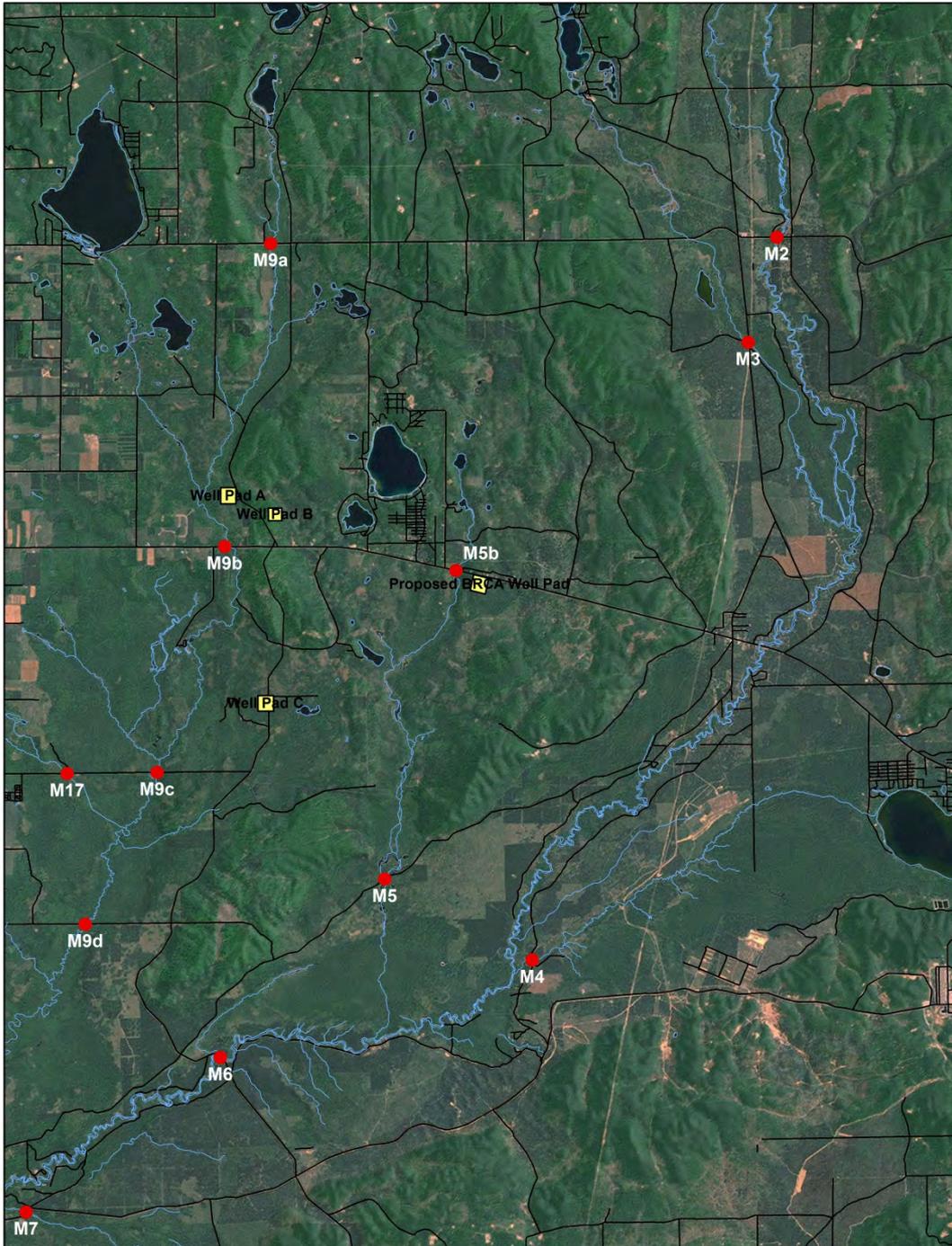
- Streams are most sensitive to changes in headwaters
  - Most USGS gages are well downstream
- Existing methods to assess potential impacts of pumping (e.g., WWAT) are based on gage data
- High volume pumping has the potential to dramatically reduce streamflow in headwaters
- Climate change is likely to cause significant impacts to flows and temperatures in Michigan Streams
  - more study is needed
  - More pumping – switch from dryland to irrigated Agriculture

# 38 Stream Gages Installed in 2011



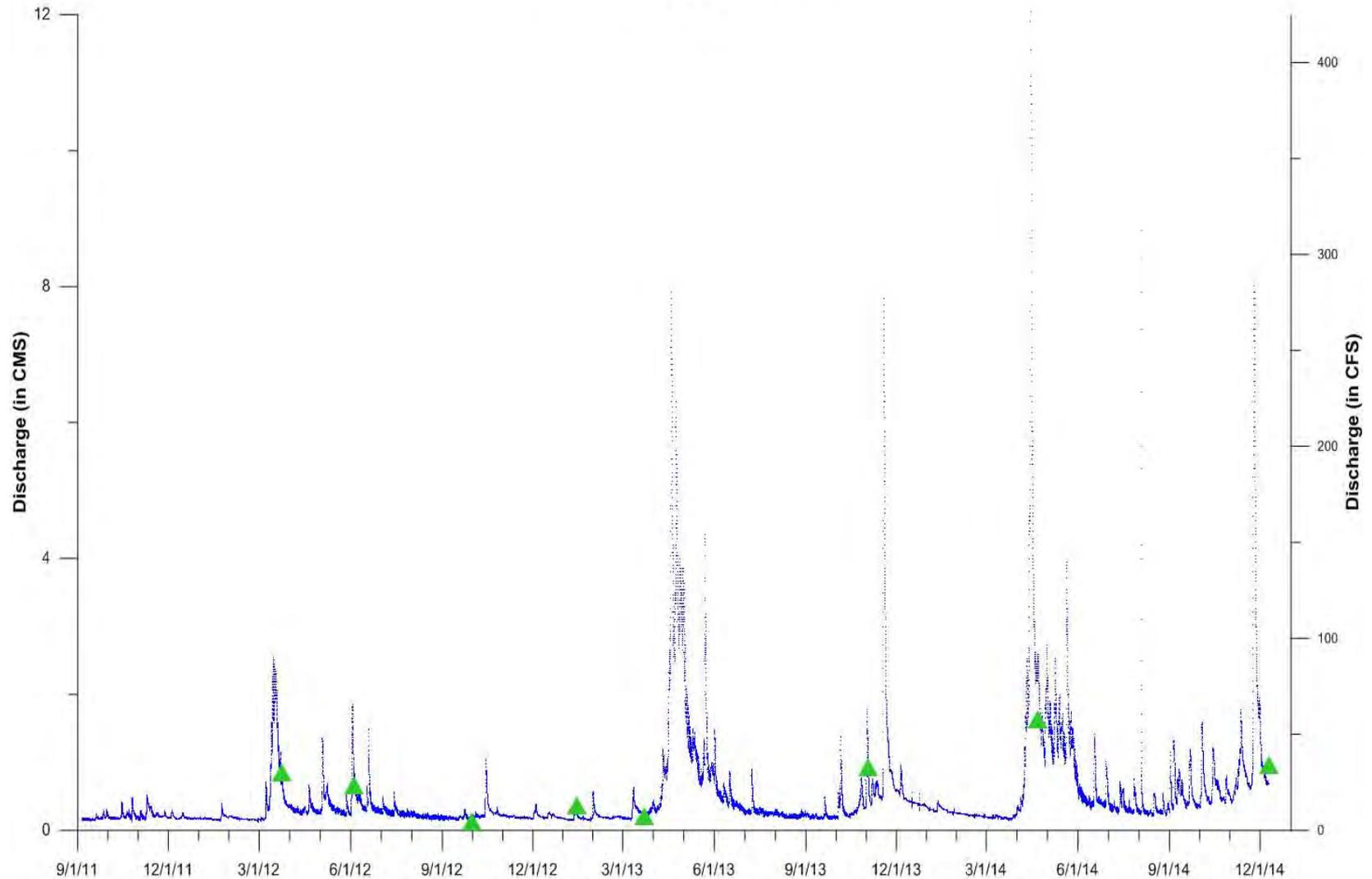
# Gages Near Current & Proposed High volume extraction sites

- M9 gages on the N. Branch of the Manistee River
  - Excelsior Pad
- M5 gages on Black Creek
  - Proposed BRCA Pad



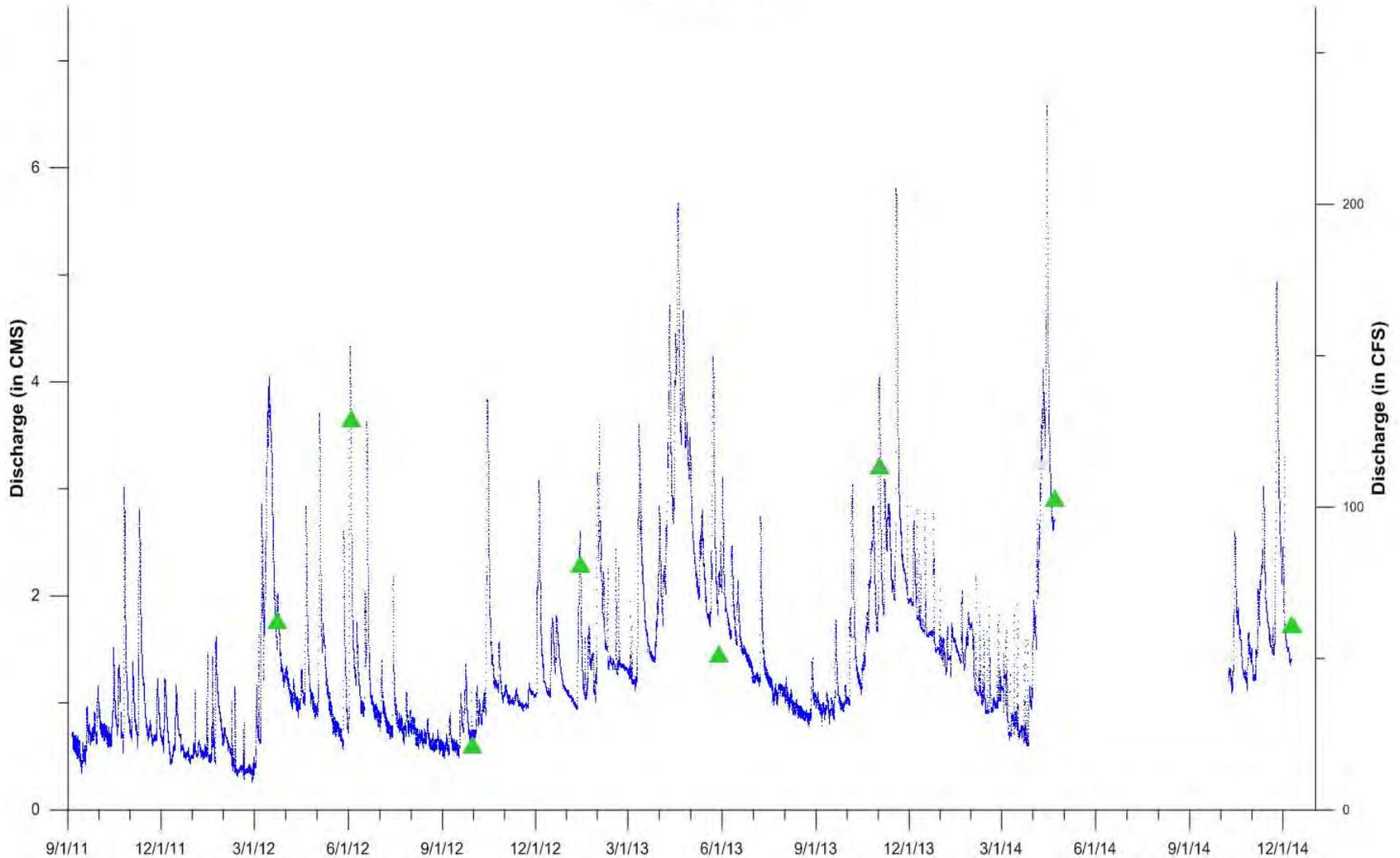
# Streamflow on N. Branch of Manistee

M9B N. Branch Manistee River  
(@ M-72)



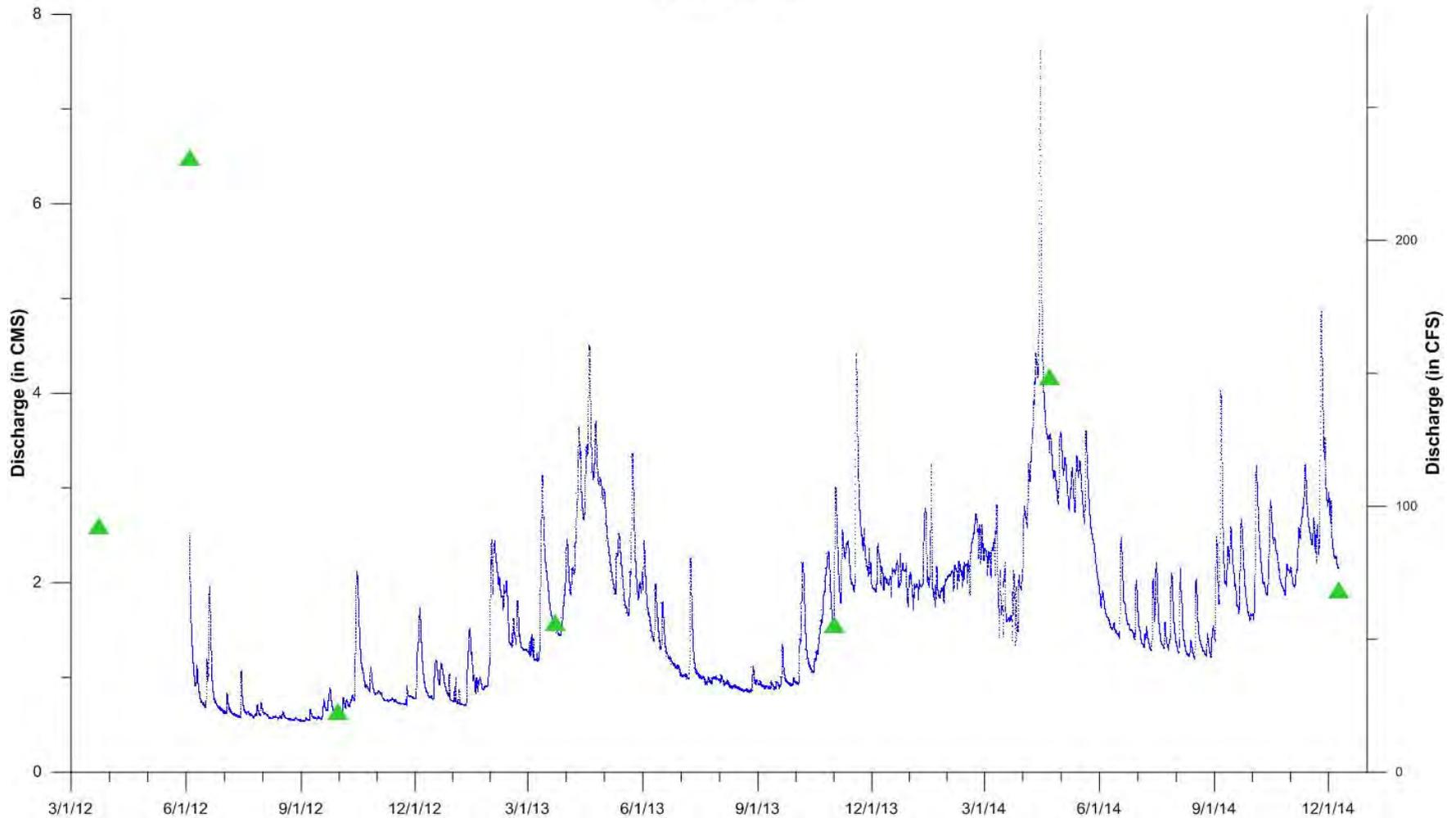
# Streamflow on N. Branch of Manistee

M9C N. Branch Manistee River  
(@ Kniss Rd)



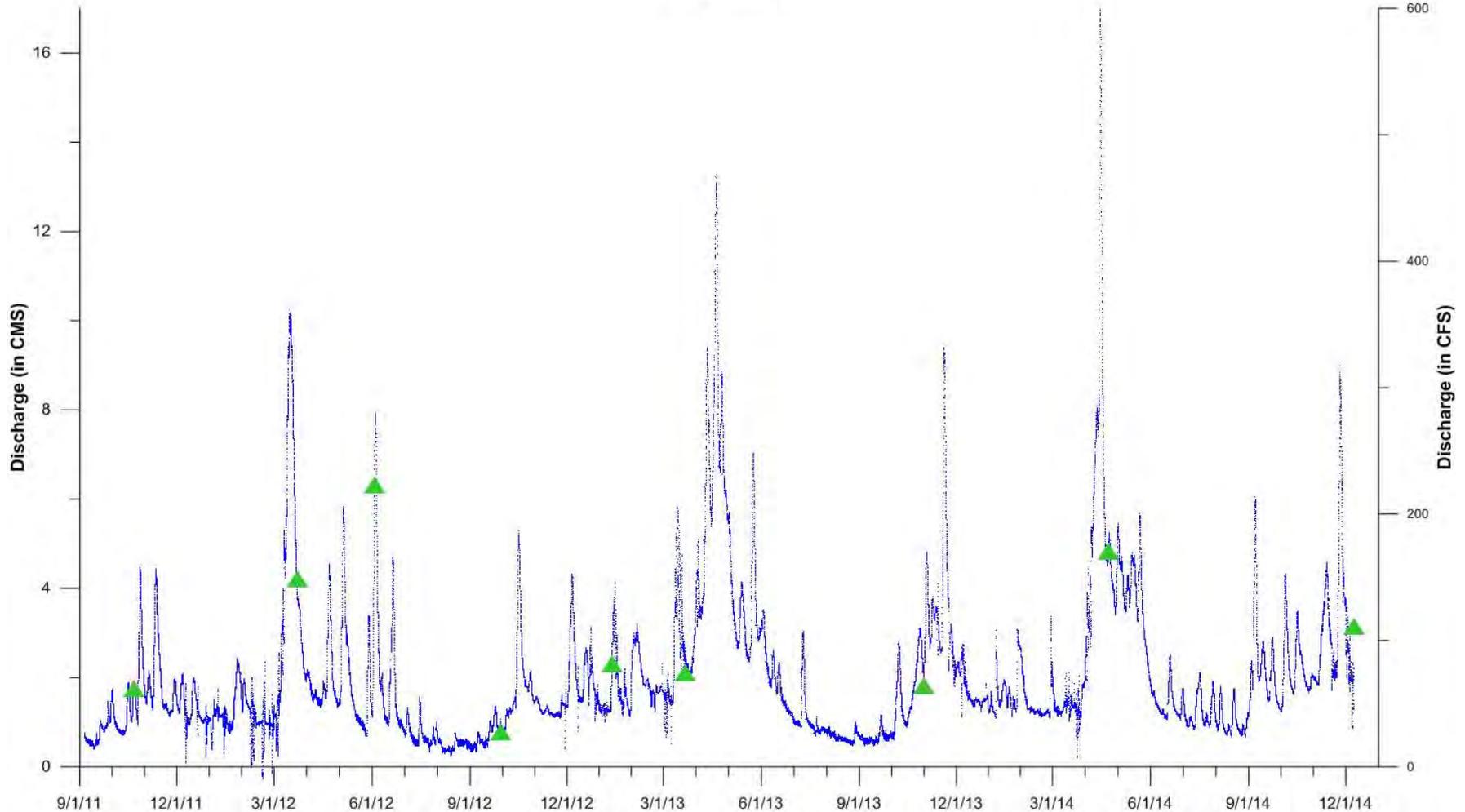
# Streamflow on N. Branch of Manistee

M9D N. Branch Manistee River  
(@ Mecum Rd)



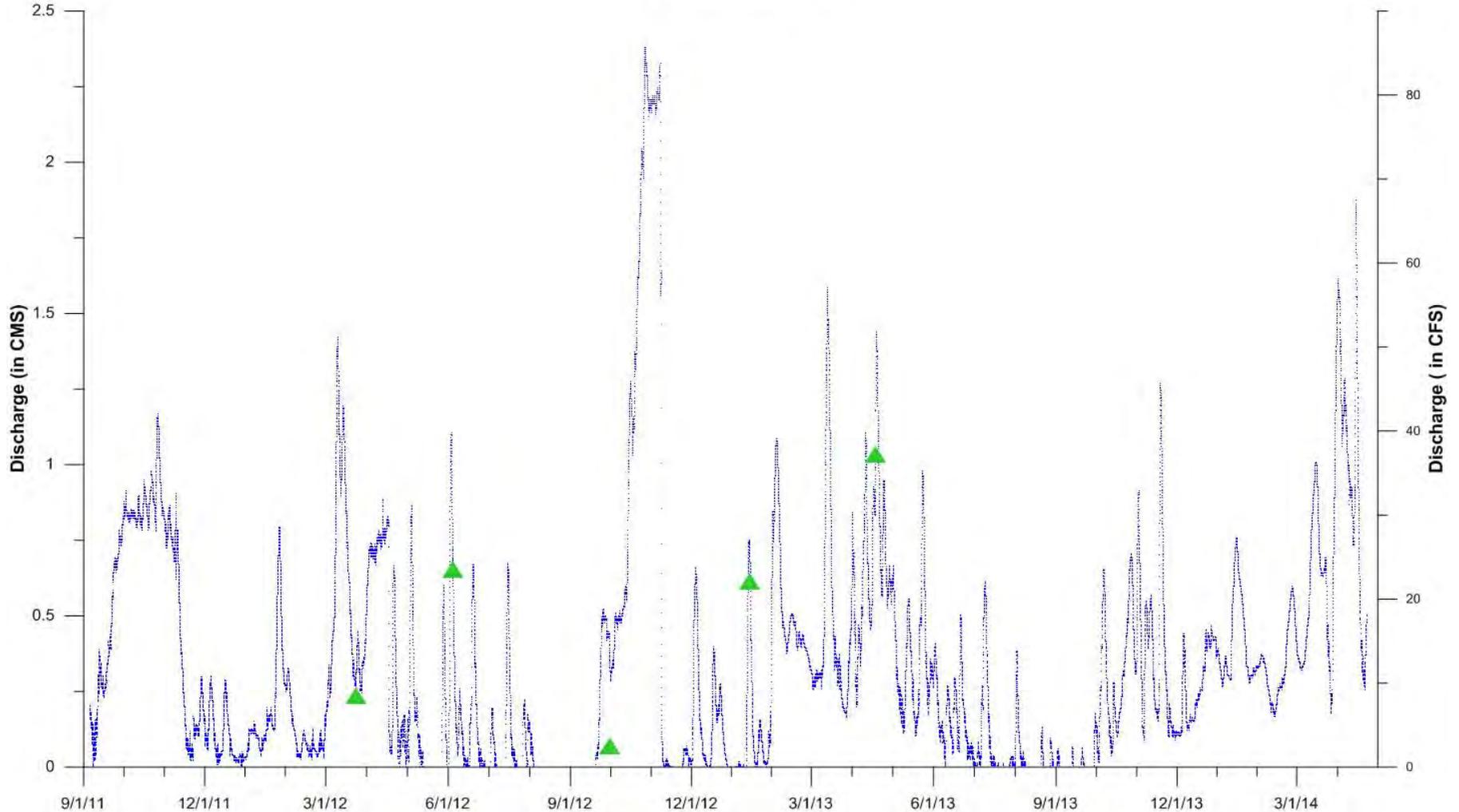
# Streamflow on N. Branch of Manistee

M9E N. Branch Manistee River  
(@ CR 571 )



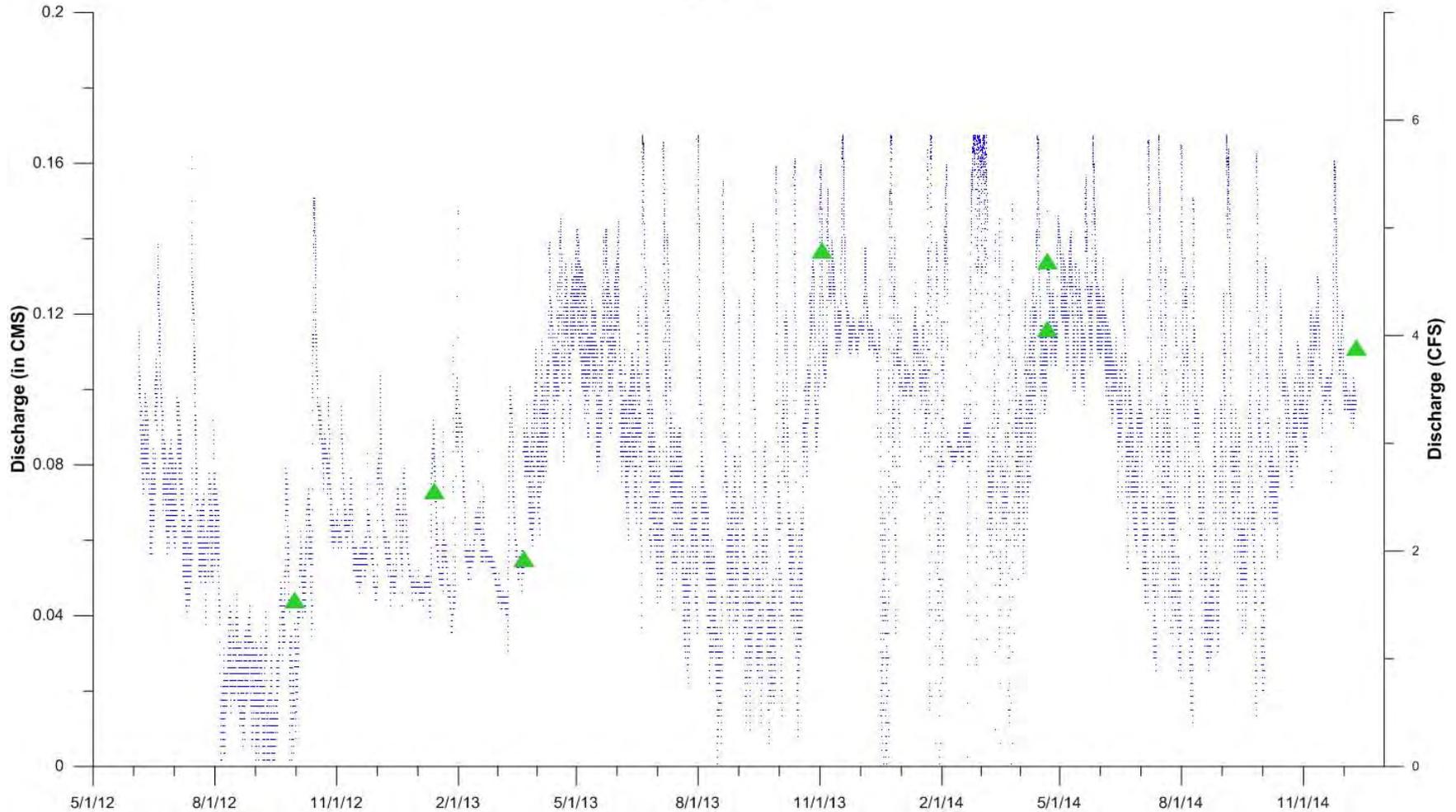
# Streamflow on Black Creek

M5 Black Creek  
(@ RiverView Rd)

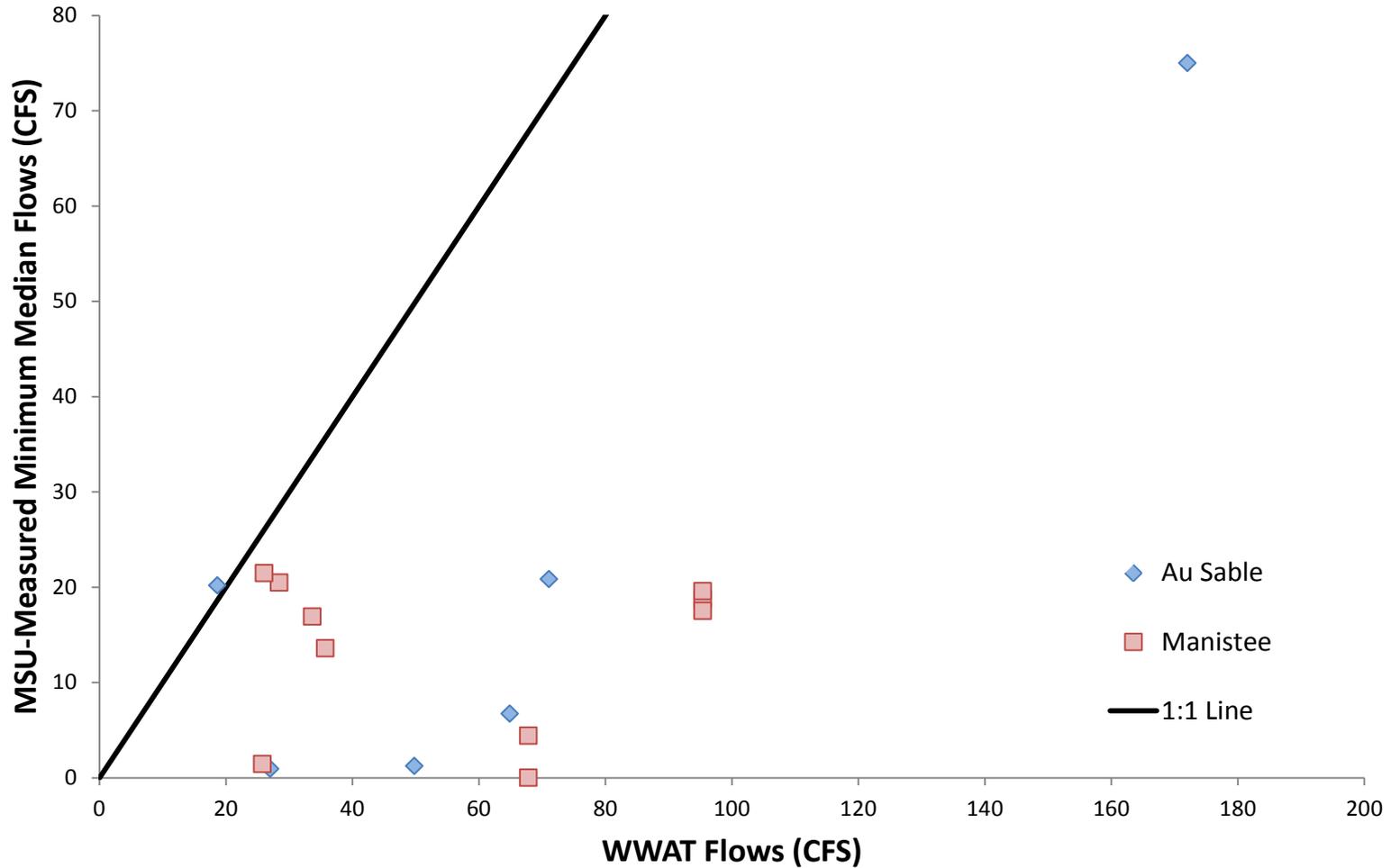


# Streamflow on Black Creek

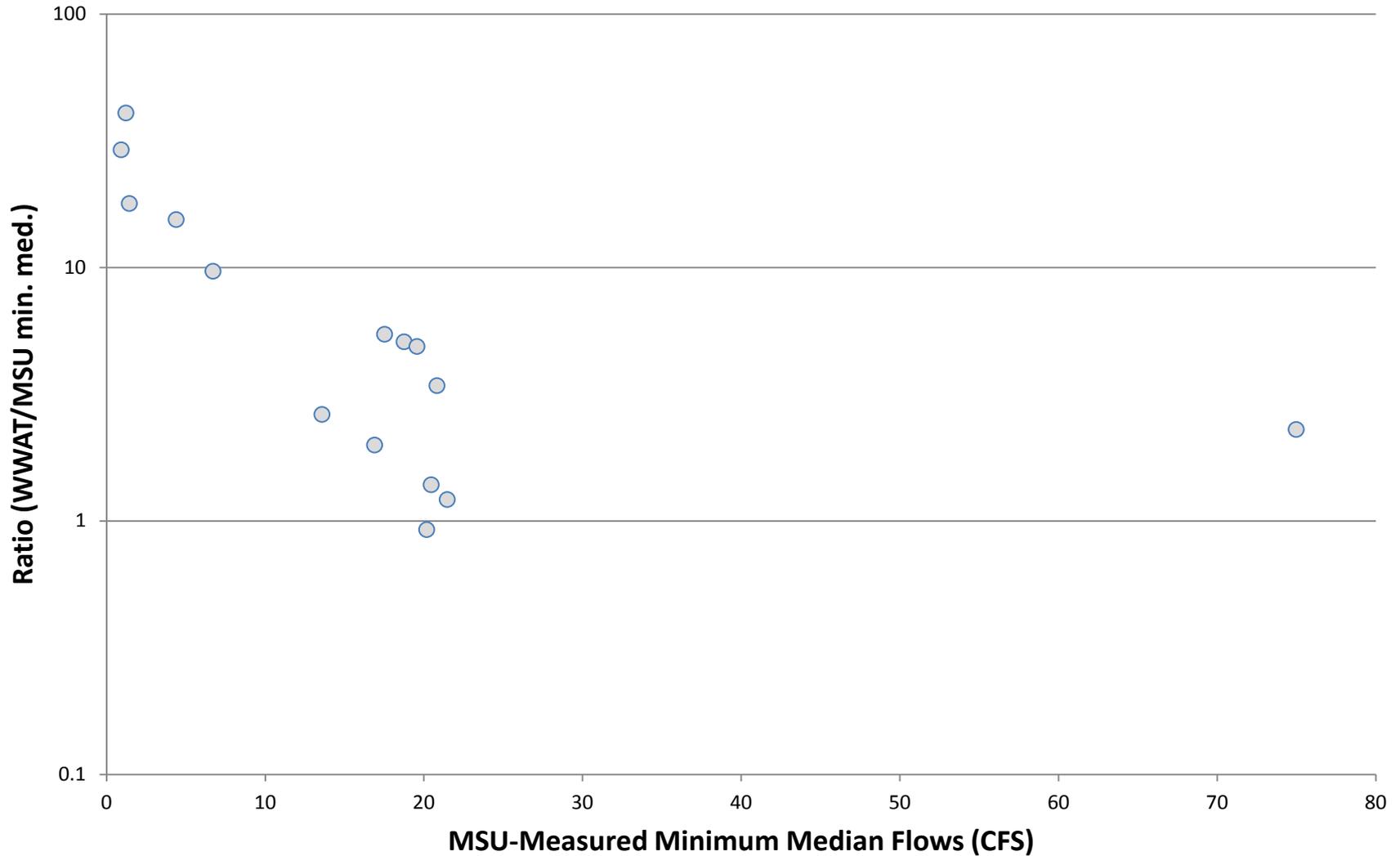
M5B Black Creek  
(@ M-72)



# Comparison Between Data and WWAT



# Ratio of WWAT to Measured Q

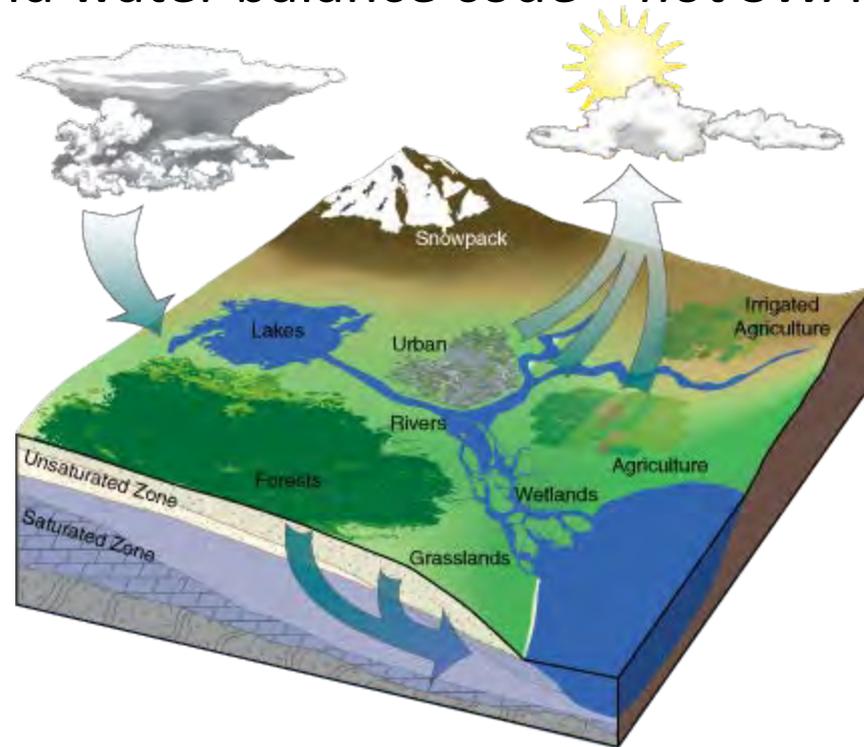


# Comparison of Pumping to Measured Q

Well Pad	Proposed Withdrawal (Gal)	Assume 1 Month Pumping	Median Q for Lowest month (cfs)
Pad A: 1-13	5,840,000	194,666 gpd (0.3 cfs)	3.91 @ M9b
Pad C: 2-25 & 3-25	33,704,290	1,123,476 gpd (1.7 cfs)	18.75 @ M9c
Pad C: 1-25	8,481,625	282,720 gpd (0.4 cfs)	18.75@ M9c
Pad BRCA (2 Wells)	35,280,000 per Well	1,176,000 gpd (1.8 cfs)	1.44 @ M5b

# Integrated Landscape Hydrology Model (ILHM)

- Full energy and water balance code – *not* SWAT

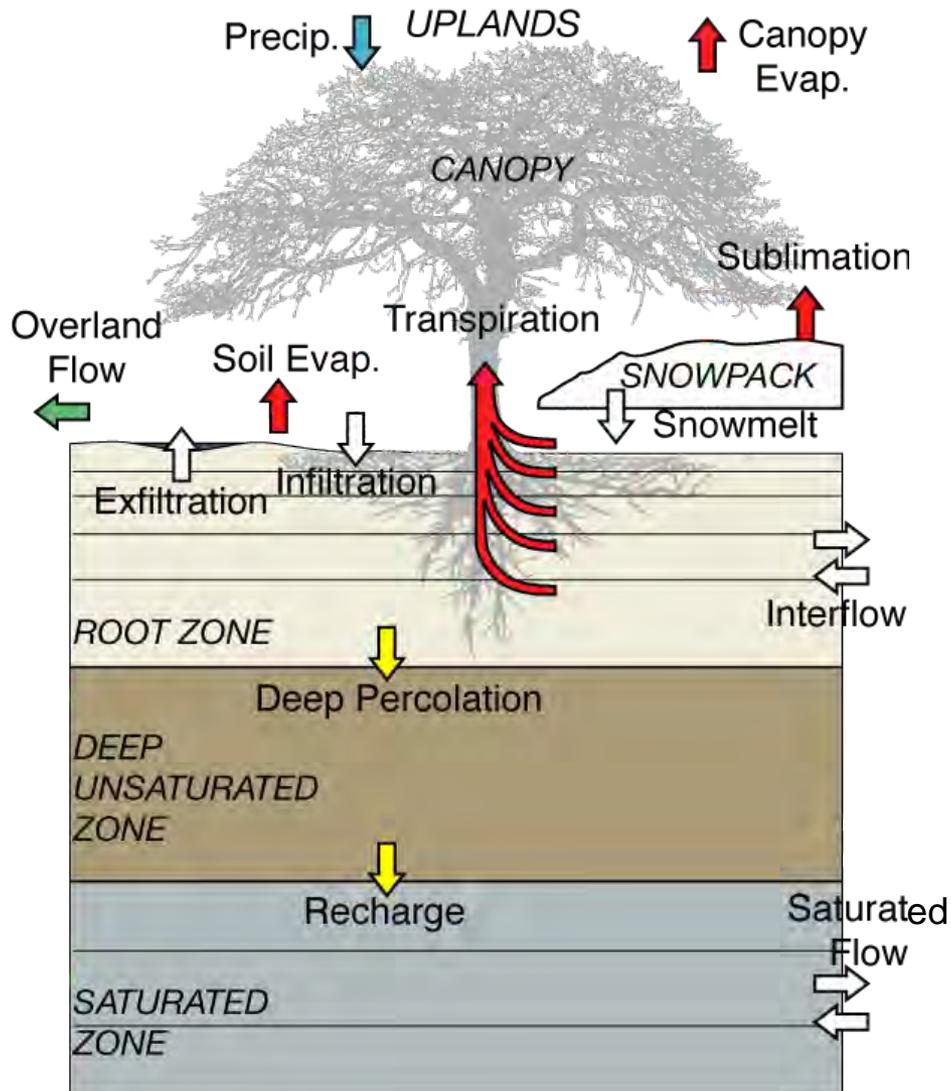


Hydrologic Zone	Flux Dimensions
SURFACE ROUTING	
ROOT ZONE	
DEEP UNSATURATED ZONE	
SATURATED ZONE	

Full Support  
 Partial Support

- Large-scale fine-resolution simulations
- Modular code, readily expandable
- Readily incorporates GIS, remote sensing inputs

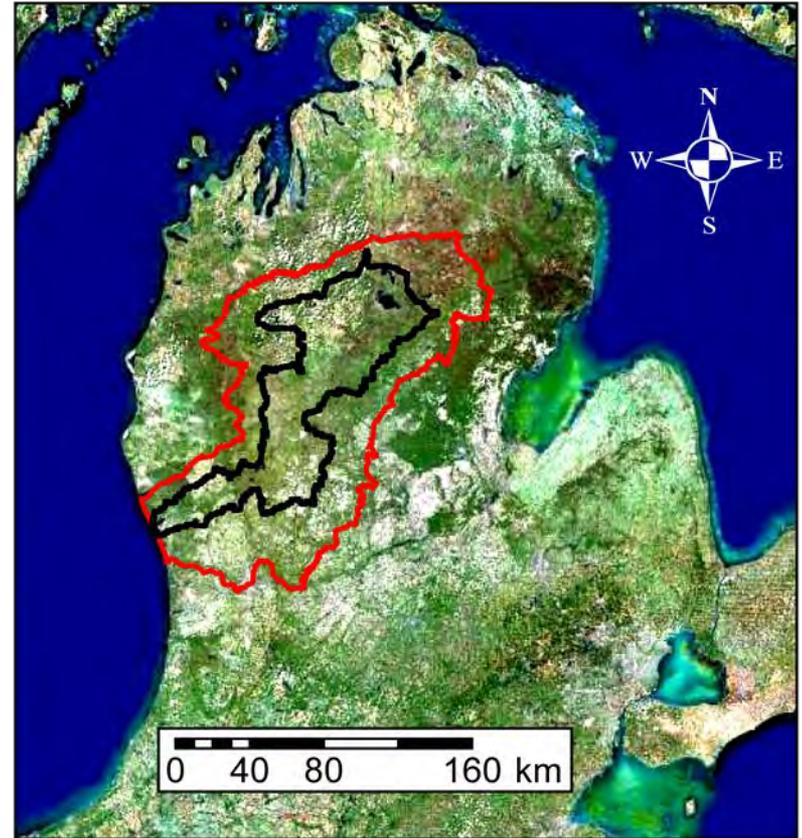
# Simulates the Landscape Water Cycle



- Canopy & Litter intercept P
- Snow pack stores water
- Root Zone
  - Variable root mass with depth
  - Dynamic moisture zone
- Water percolates through rest of unsaturated zone
- Groundwater flow model for saturated zone flow
  - MODFLOW

# Example Model Domain

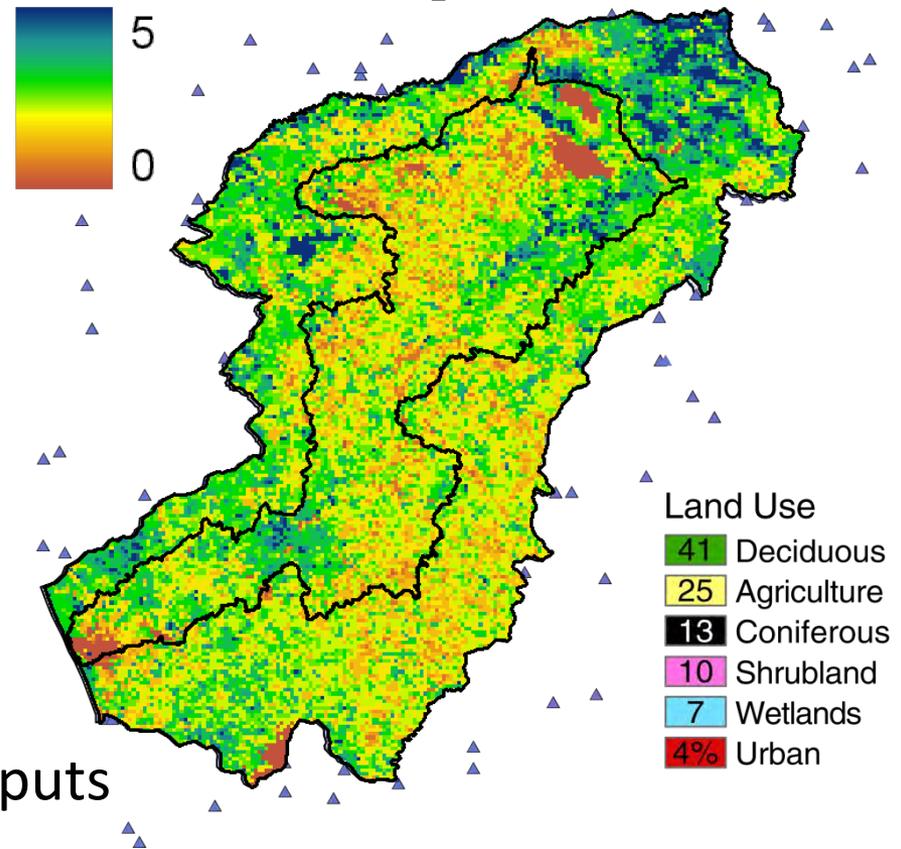
- 43,000 km<sup>2</sup>
  - 100 to 400m grid cells
- 28-year simulation
  - 1980 – 2007
  - Hourly timesteps
- Now running a model of entire Lower Peninsula



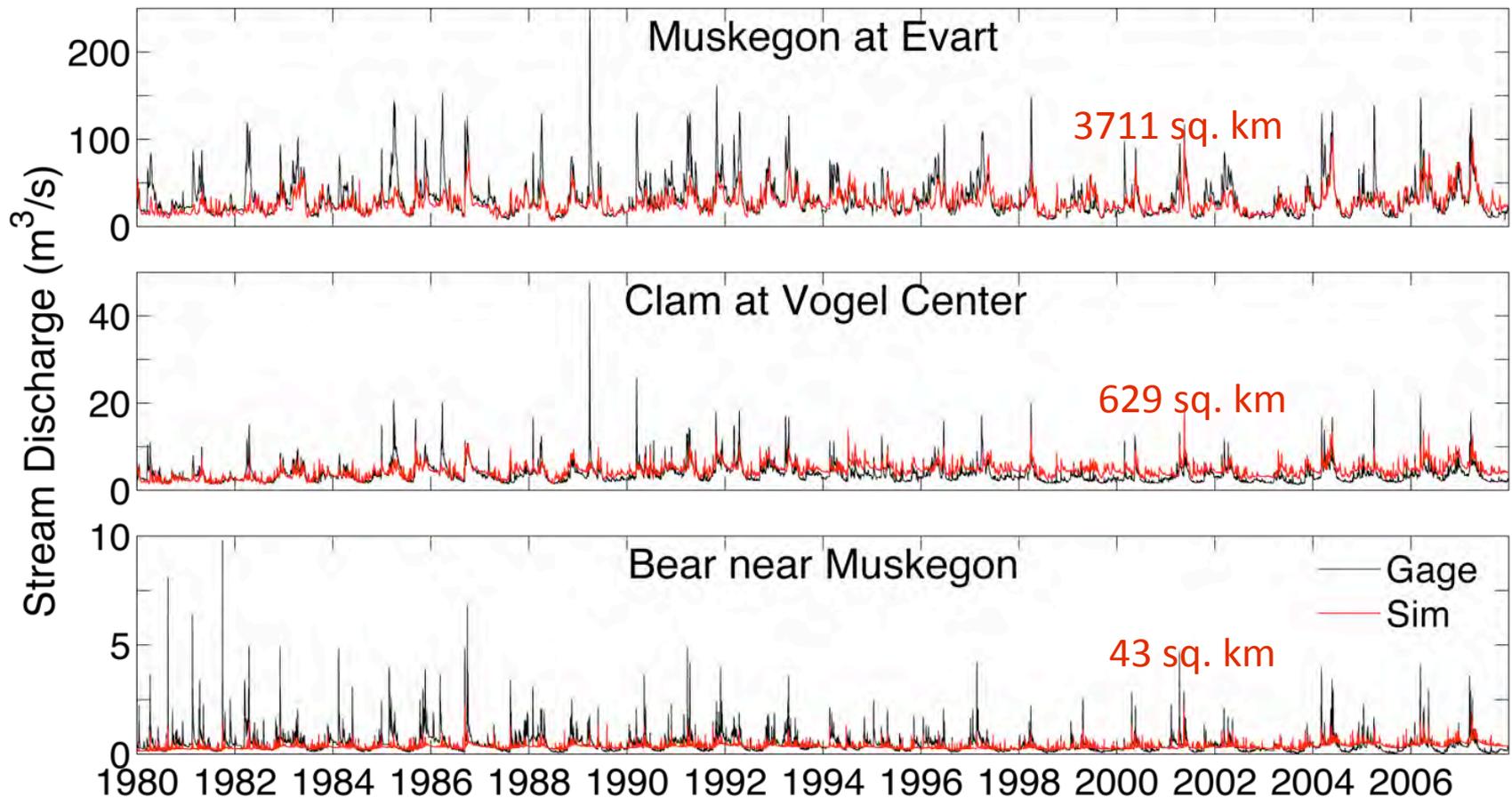
# Select Input Data Types

- GIS Inputs
  - Land use
  - Soil texture
  - Subsurface geologic maps
  - Elevation map
- Gage climate data
  - Precipitation
  - Solar radiation
  - Windspeed
  - Relative humidity
  - Air/soil temperatures
- Distributed remotely sensed inputs
  - NEXRAD precipitation
  - Satellite Leaf Area Index (LAI)

MODIS LAI (2008/4/22)



# Uncalibrated Streamflow Predictions



- Baseflow accurately simulated, across a wide range of scales
  - Total discharge error less than 6% of annual precipitation
- Process based code that can be used to predict impacts of changes in climate & land use

Thank you!

# TU: Water Use & Fish Conservation

- TU Involvement with MI Water Use
- Why is this important to Coldwater Fisheries?
- WUAC Overview
- TU's Streamflow Monitoring
- MI Fisheries Management & Water Use Expansion



# TU's Involvement with Water Use Policy

- 2007, member of the GWCAC
  - Groundwater Conservation Advisory Council
- 2007 - 2008, legislative workgroup participant
  - For Part 327 & GL Compact
- 2009, Gov. Appointment to WRCAC
  - Water Resources Conservation Advisory Council
- 2014, member of WUAC
  - Water Use Advisory Council
  - Tri-Chair, & workgroup co-chair



# Coldwater Fish Sensitivity to Water Use

- Coldwater fish = trout, salmon, and steelhead
- Thermal tolerance limits
  - Can't survive high water temps ( $>\sim 72^{\circ}$  F) or
  - Low dissolved oxygen levels (dependent on water temp)
- Rely on specific stream habitats for spawning, growth and survival. These habitats are dependent on streamflow, water depth, water velocities.



# WUAC Overview

- Statute called for an ongoing “Water Council” to steward the program.

Sec. 32803.(*Excerpts*) “The water resources conservation advisory council is created within the department of natural resources.” - “Study and make recommendations regarding the development and refinement of the assessment tool.”

- Granholm “Merger” E.O., did away with it.
- Dir. Wyant, reformed it as the WUAC, with 2 year term
- Diverse set of stakeholders present
- Final recommendations report posted online at DEQ website
- Had a long list of charges and issues needing to be addressed.



# WUAC Overview

- Broke topics into 5 workgroup areas:
  - Technical Underpinnings, Environmental Monitoring, Water Conservation, Water User Conflicts, and Inland Lakes.
- Workgroups: researched and developed recommendations
- Full Council: discussed, modified, and “voted”
- Consensus recommendations sought
  - Consensus reached on most of recommendations
  - Some were consensus minus 1-3 votes (out of ~30 members)
- 69 final recommendations provided
- These 69 rec’s DO NOT cover all charges or issues that need to be addressed.
- WUAC Rec. #1 – Continuation of the water council needed.



# WUAC Recommendations

- Many of interest to DNR & NRC
- 1 relevant to NRC process, and DNR Director Action
  - Tech.Underpin. 4.3.
  - Consistent with statute, E.O., and WRCAC report.

“The DEQ/DNR should use Table T.U.-1 as a guide to determine what level of approval is needed to make modifications within the Water Withdrawal Assessment Process.”

- Revisions to River Segment boundaries and classification types
- Revisions in methodologies for considering water temp, hydrology, and stream flows

These types of changes should be reviewed by a “water council”, presented to NRC through its public process, and acted on by the DNR Director.

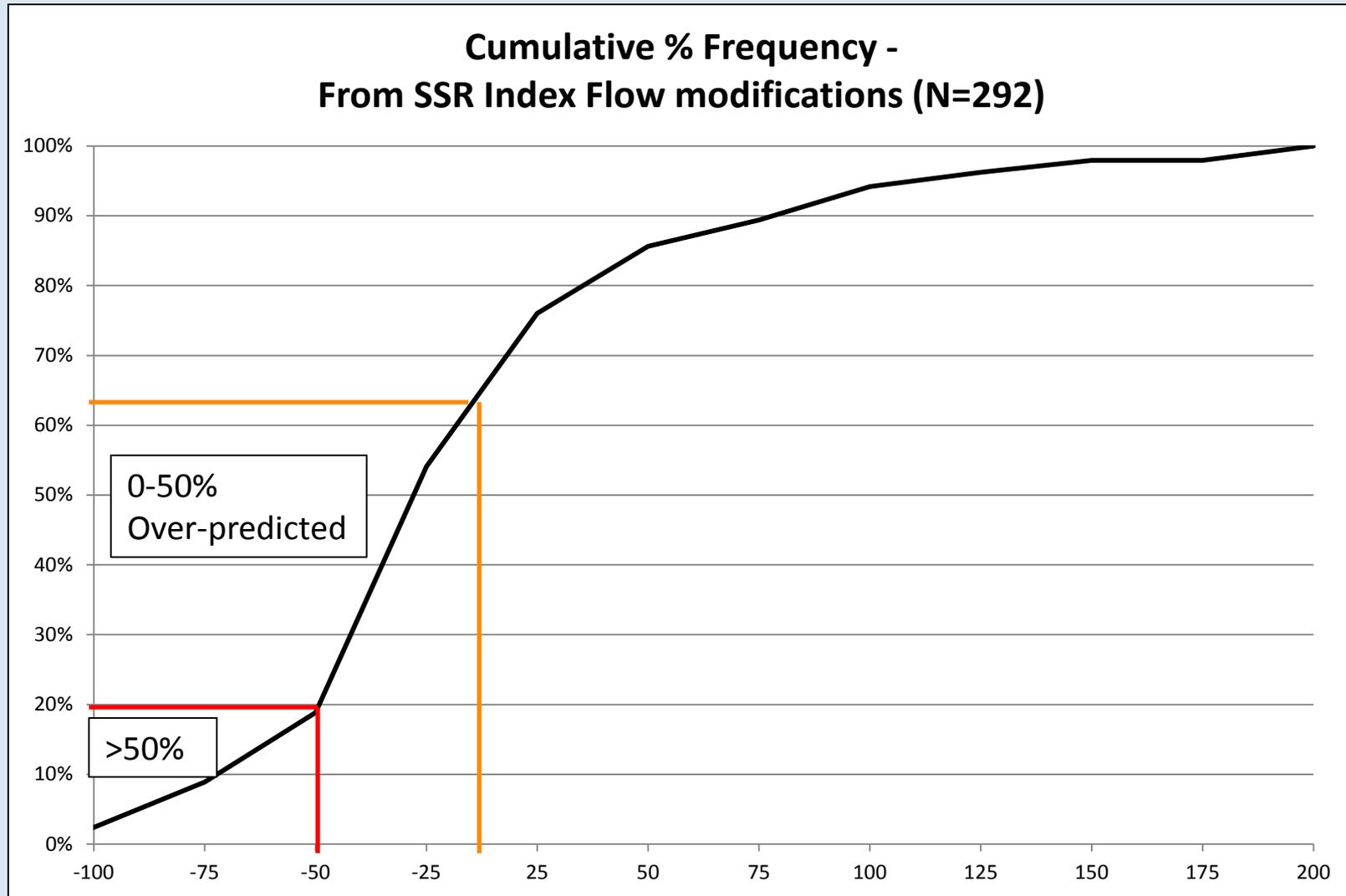


# TU's Streamflow Monitoring Program

- Importance of Streamflow prediction “index flows”
  - MI streams broken into thousands (>4,000) of unique segments
    - By water temperature and size (streams, small rivers, large rivers)
  - Each has a predicted summer base flow, aka: index flow
  - Predictions modeled, using ~140 USGS gaging stations
    - These are on small and large rivers – not streams (largest group)
    - Accuracy of these predictions not well known
  - Expected by designers of program, that ~10% might be more than 50% over-predicted
  - WWAT screening tool, starts with a 50% flow reduction safety factor for online registrations (removed for Site specific reviews)
  - If streams have significantly less water than predicted, then the allowed withdrawal impacts can be greater than allowable by statute.



# Over-predicted Flow Occurrence



# TU's Streamflow Monitoring Program

- Started in 2009, TU wanted a way to find the worst cases of over-predicted stream flows, and correct them.
- Piloted, evaluated, and developed a program for measuring stream flows in MI.
- Tiered Approach
  - trained volunteers/interns measure larger #, “screen”
  - Staff, with USGS training and approved equipment follow up on worst cases. Work with DEQ to correct afterwards.



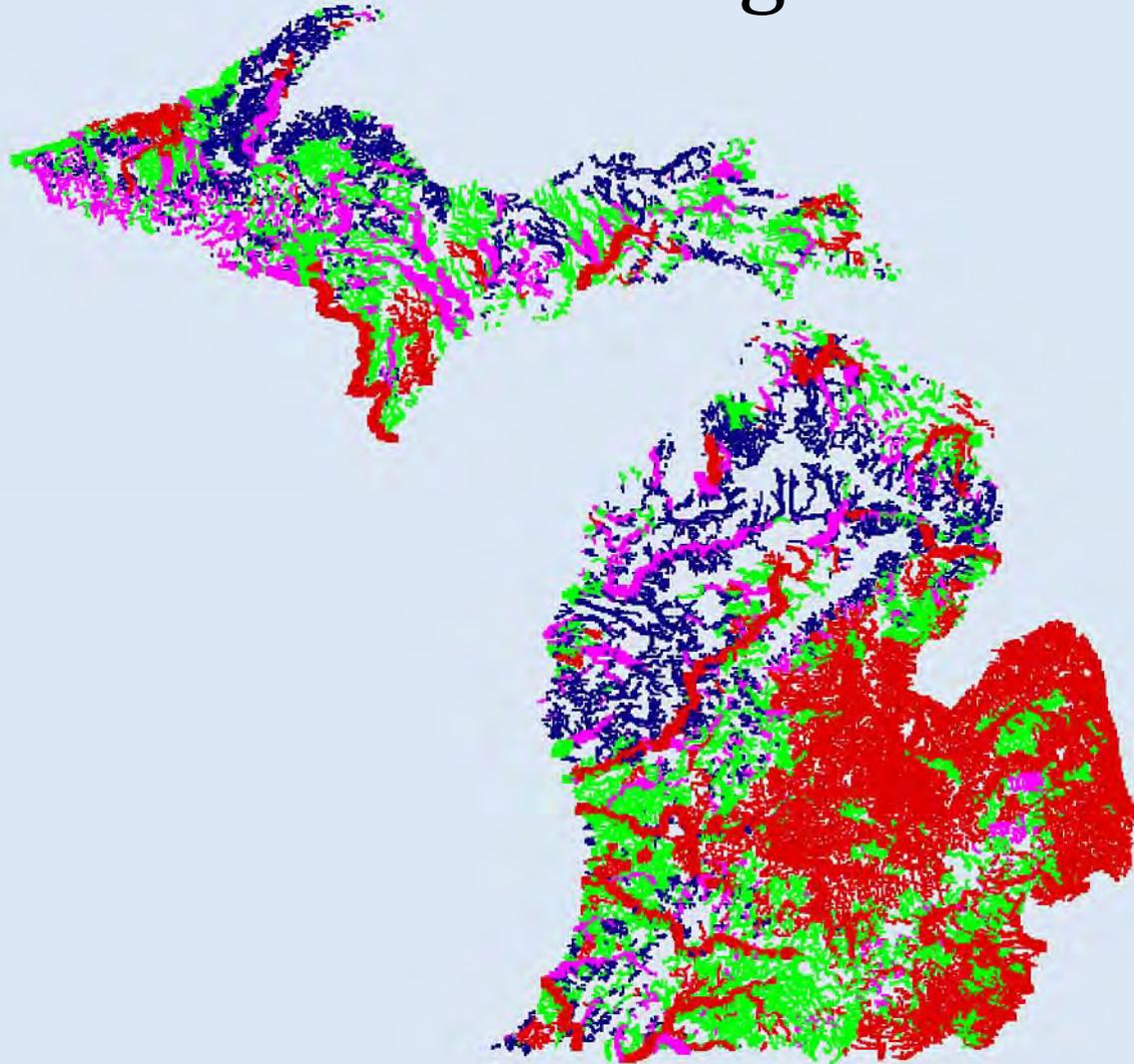
Research Reports posted at [www.michigantu.org](http://www.michigantu.org)

Working with DEQ to build into the MICorps





# Fish Management & Water Use

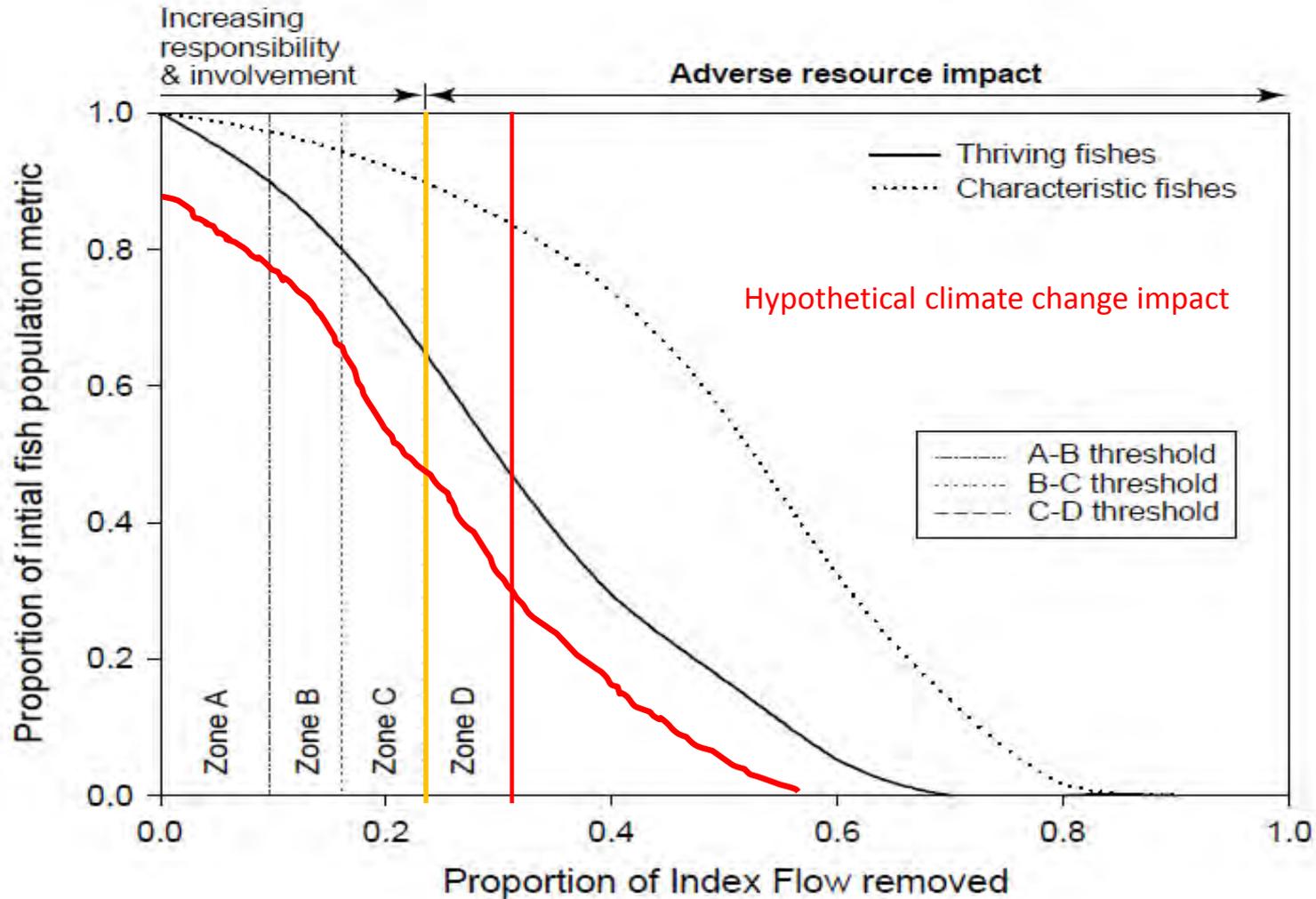


Groundwater\_vsec\_statewide\_6\_14\_07.shp

-  Cold small river
-  Cold stream
-  Cool large river
-  Cool small river
-  Cool stream
-  Transitional large river
-  Transitional small river
-  Transitional stream
-  Warm large river
-  Warm small river
-  Warm stream



# Fish Management & Water Use



# Fish Management & Water Use

- Climate Change predictions – warmer & precipitation change
- Large-quantity water use expansion in Michigan
  - Current: Southern MI Agricultural Irrigation (increasing seed crop contracts)
  - Predicted: agricultural irrigation expansion northward & oil/gas production
    - More groundwater withdrawals, in traditional coldwater fish watersheds
    - More drain tiling
      - Less groundwater recharge
      - More flooding and wider shallower streams in summer



# Fish Management & Water Use

- What does all this mean for our fisheries?
  - If we do nothing, we are looking at:
    - Loss of many “marginal” trout fisheries
    - Diminished quality of remaining fisheries
    - Decreased angler use & economic benefit
    - Increased reliance on stocking for many
- What can and should we do?
  - Develop plan to explicitly manage and maintain water temperatures and streamflows for fisheries quality
  - Research and monitoring
  - Work creatively with water users to reduce their impacts to fisheries
  - Improve index flow estimates
  - Dam removals (they improve water temperatures)



**Thank you!**

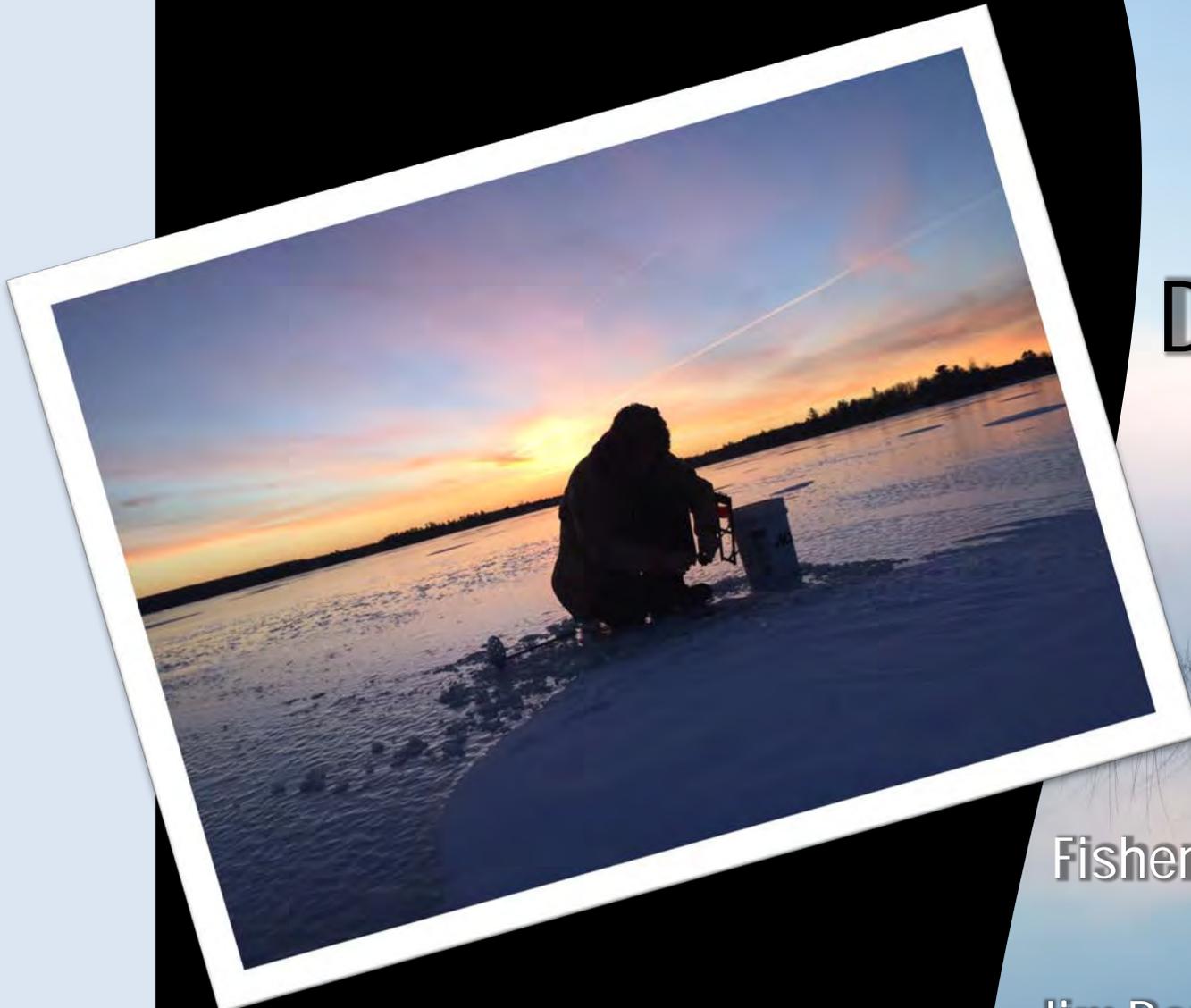


# Department of Natural Resources

Fisheries Division Update

Jim Dexter, Fisheries Chief

January 15, 2015



# Family Friendly Fishing Waters

- 239 locations
- 27,000 unique visitors
- Alger, Grand Traverse, Kent, Mackinac, Macomb, Marquette, Oakland, Ontonagon, Schoolcraft, Wayne



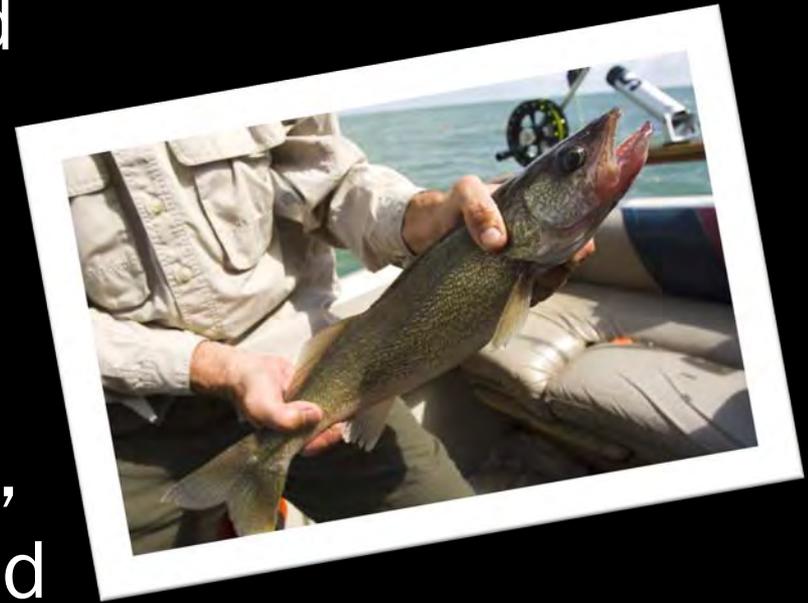
# Walleye Management Review West U.P.

- Questions regarding tactics
- Specific to Iron and Dickinson Counties
- 3<sup>rd</sup> party review suggested
- American Fisheries Society NCD Walleye Committee
- Wisconsin walleye biologists volunteered



# Walleye Management Review West U.P.

- “Reasonable and science-based plan”
- Evaluation methods sound
- Strong caution regarding supplemental stocking
- Further review suggested for estimating populations, evaluating recruitment, and determining stocking need



# Bass Regulations Update



# Bass Regulations Update

- 2013 – MI BASS Nation: Year round CIR fishing statewide, extend harvest season on L. St. Clair, St. Clair River, Detroit R. to the Sat. before Memorial Day. [Currently 3<sup>rd</sup> Sat. in June]
- External Review
  - Warmwater Committee, opinion polls
- Internal Review
  - FD Biologists
  - Internal Workgroup



# Bass Regulations Update

- October 2014
  - Informal Recommendation
  - Catch and immediate release year round statewide
  - Extend harvest 2 weeks on LSCDR system
- Public input since October
  - Public appearances
  - Email communications
- Natural Resources Commission
  - DNR should review options

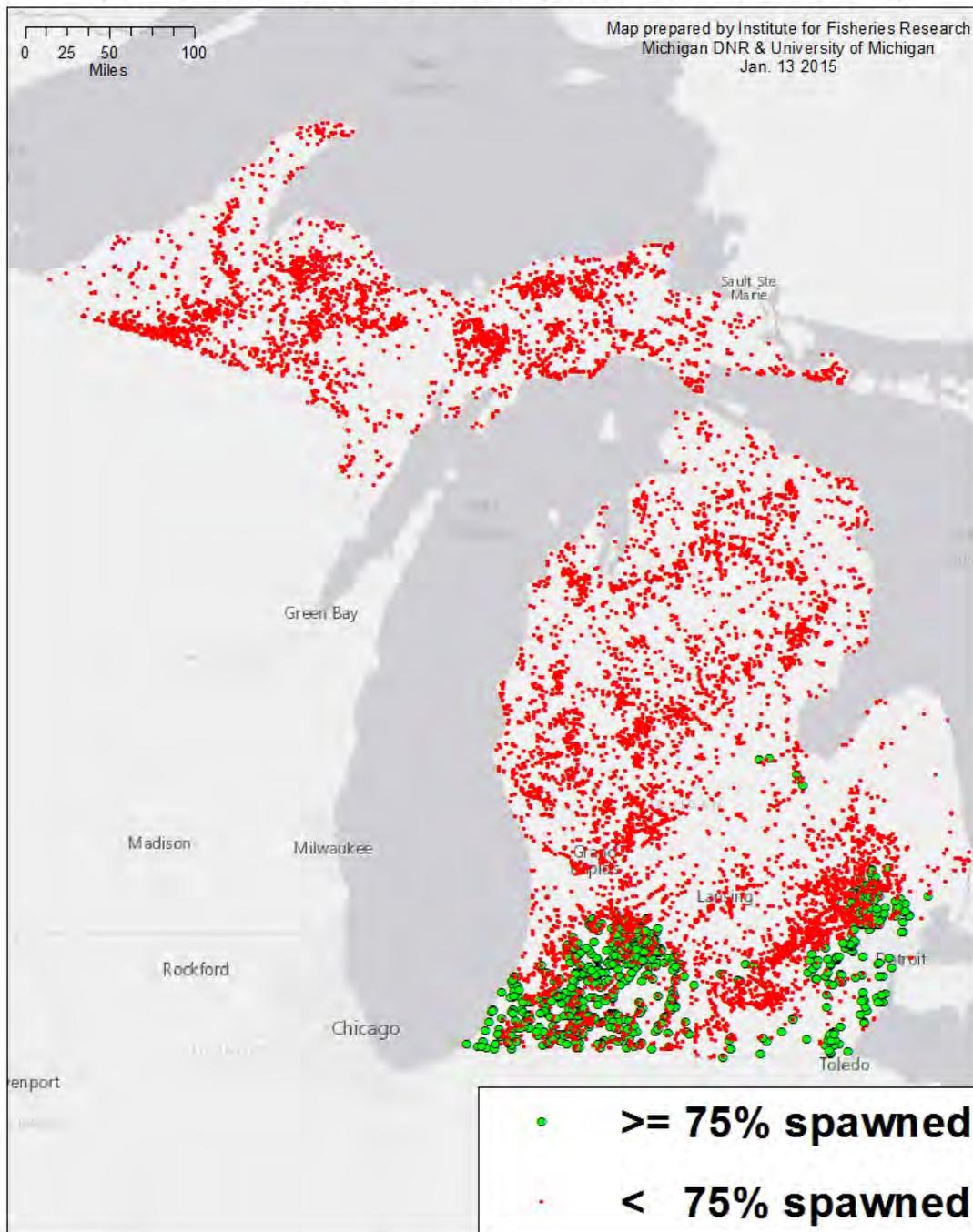


# Bass Regulations Update

- Internal Bass working group
- Assessments with staff
- Important points
  - 90% of respondents indicate good or great bass fishing
  - Excellent support for catch and release
  - Near 50:50 on additional harvest opportunities
  - Parental nesters
  - Compromise nests but lack of clarity around populations



# Spawned Smallmouth Bass on average harvest season starting day



# Bass Regulations Update

- December B.A.S.S. Nation document
- Perspective on Option 4
- “Majority support” for Option 4
- DNR informal recommendation limits tournaments
- Being one of four holdout states
- More information desired



# Thank you!

[www.michigan.gov/fishing](http://www.michigan.gov/fishing)



# Wildlife Chief Update

Russ Mason, Chief  
Wildlife Division  
January 15, 2015



# Target Shooting at Middleville SGA

- Two shooting locations are closed by an order of the director:
  - Public safety issue, damage to trees and wildlife habitat, destruction of signs, litter
- Redirection efforts:
  - Signs were destroyed
  - Plowed ground but foot traffic continued
- Hunting will continue as usual
- Location at Barry SGA to remain open
  - Upgrades planned



# UP Habitat Workgroup

- Goal to improve deer wintering habitat
- Productive December meeting
- New member – county forester, Marquette
- Next Meeting: February 3



# Thank You

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[www.michigan.gov/elk](http://www.michigan.gov/elk)



# Elk Season Results



Chad Stewart  
Deer Management Specialist

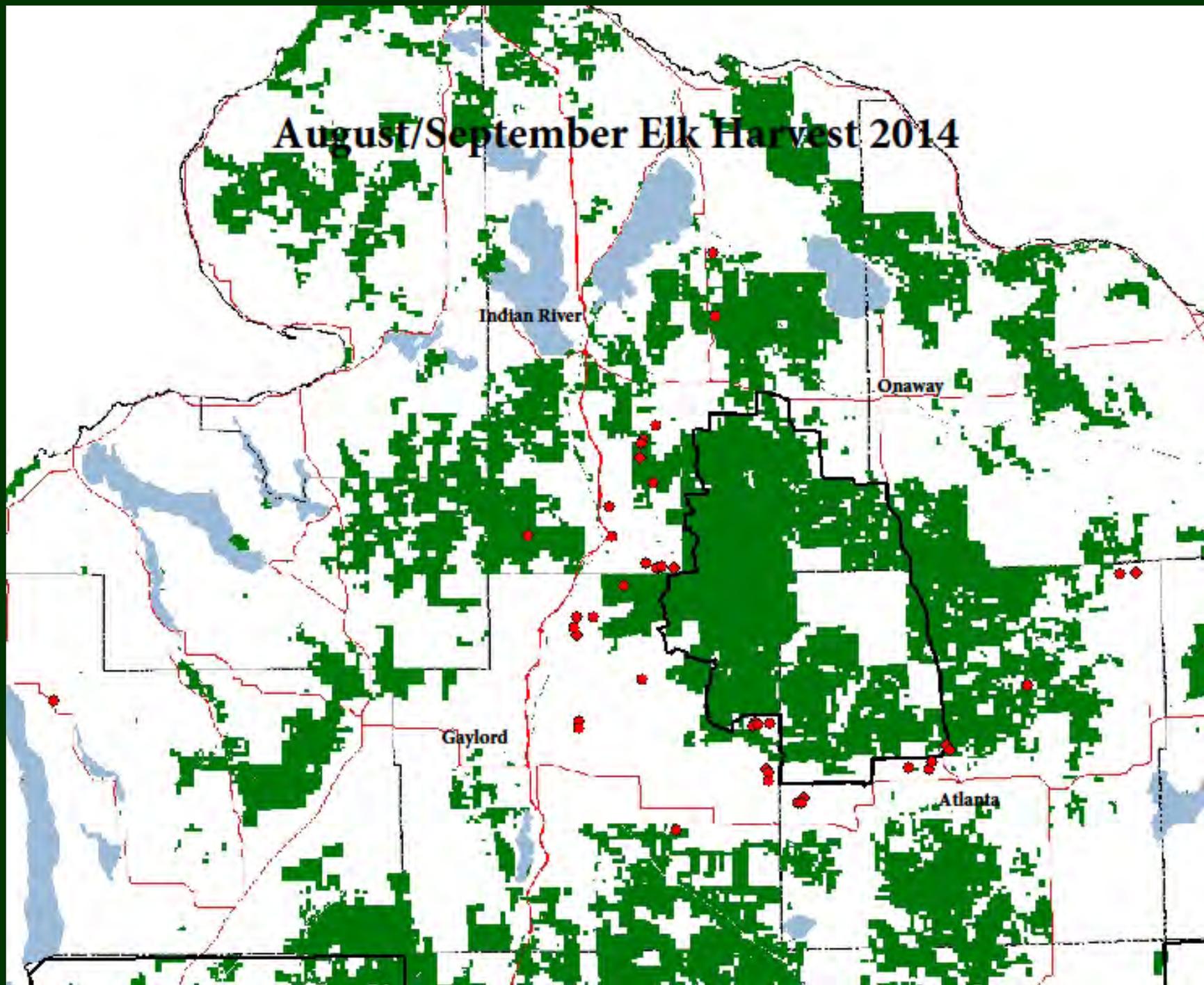


# 2014 Elk Season Summary

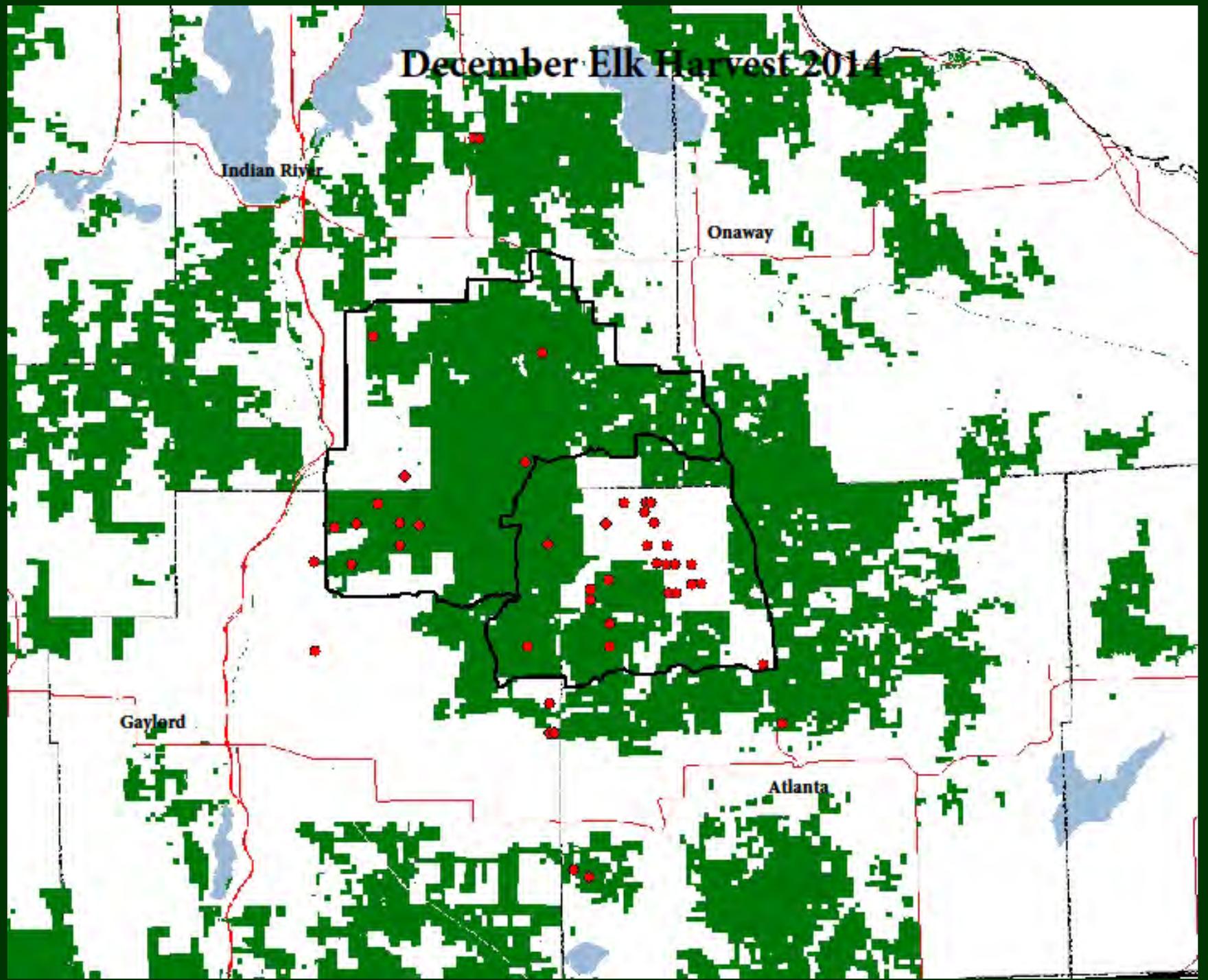
- Objective:
  - License Quota: 100
  - Expected State Harvest: 85
  - Expected Total Harvest (state/tribal): 96
- Results: 89 Legally + 3 Illegally Harvested
  - 77 by state quota hunters
  - 3 by Pure Michigan hunters
  - 9 by tribal hunters



# August/September Elk Harvest 2014



# December Elk Harvest 2014



# Thank You

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[www.michigan.gov/elk](http://www.michigan.gov/elk)



# Falconry and Raptor Capture Regulations



Karen Cleveland  
All Bird Biologist  
January 15, 2015



# Background

- Falconry regulations are set on a three year cycle, beginning in 2009
- Discussions with Michigan Hawking Club and Michigan Audubon Society



# Recommendation



Photo credit: Maria Pettitt



Photo credit: Maxwell Hamilton

- Clarify definition of “raptor”
  - Only native species of hawks, falcons, and owls
- Clarify conditions for transfer of falconry birds
  - Healthy wild birds may be released into the wild or transferred to a falconer or raptor propagator
  - Captive-bred or unreleasable birds may be transferred to a falconer, propagator, wildlife educator, or zoo
  - Wildlife Division notified of all transfers



# Recommendation



- Extend spring season for capture of raptors
  - Current: 1 February – 19 July
  - Recommended: 1 January – 19 July
- Increase cap on nonresident capture of goshawks
  - No more than 2 by nonresidents
  - No more than 4 total (no change)



# Recommendation

- Capture restrictions on national lakeshores, national recreation areas, state parks and recreation areas
  - Only in areas where trapping is allowed in state parks and recreation areas
- Must comply with recreational trespass statute when capturing raptors for falconry
- Must provide notification when falconry birds are in the temporary care of a nonfalconer



# Thank You

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[www.michigan.gov/dnr](http://www.michigan.gov/dnr)

