MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Water Use Advisory Council

October 11, 2022

WUAC Chair Order for 10/11/22

- Laura Campbell, Senior Conservation & Regulatory Relations Specialist
  Michigan Farm Bureau (Items 1-7)

- Brian Eggers, Principal (Items 8-13)
  AKT Peerless Environmental

Water Use Advisory Council (WUAC) Meeting

Hosted by the Department of Environment, Great Lakes, and Energy (EGLE)

Tuesday, October 11, 2022
1:00 p.m.- 4:00 p.m.
Con Con Conference Rooms A and B, South Atrium, Constitution Hall
525 West Allegan, Lansing, MI 48933

Remote Option Available Via Teams
Click here to join the meeting

Or call in (audio only)

+1 248-509-0316,,339602559# United States, Pontiac

Phone Conference ID: 339 602 559#

AGENDA

1. Welcome
2. Roll Call
3. Approval of Agenda-Roll Call Vote
4. Approval of Minutes-Roll Call Vote (June, August, and September)
5. Public Comment (Three Minute Limit)
6. Legislative Update
   A. EGLE Funding Update
7. New Technical Advisor Application
8. Committee Chairs Reports
   A. Data Collection Committee
   B. Models Committee
   C. New Topics Committee
   D. Conservation and Efficiency Committee
      - Consensus on previous recommendation
   E. Implementation Committee
9. 2022 WUAC Report Update: Content, Logistics and Timeline
10. EGLE Update
11. Future
    A. Remaining 2022 Meeting Dates
       - November 10 (Thursday)
       - December 5 (Monday)
    B. Quorum
12. Open Comments (Three Minute Limit)
13. Motion to Adjourn

1. Welcome

2. Roll Call

3. Approval of Agenda –Roll Call Vote

4. Approval of Minutes—Roll Call Vote

5. Public Comment

3 Minute Limit

6. Legislative Update

A. EGLE Funding Update

7. New Technical Advisor Application

Co-Chair Brian Eggers

Agenda Items 8-14

8. Committee Chair Reports

A. Data Collection Committee

Bryan Burroughs

B. Models Committee

Dave Hamilton

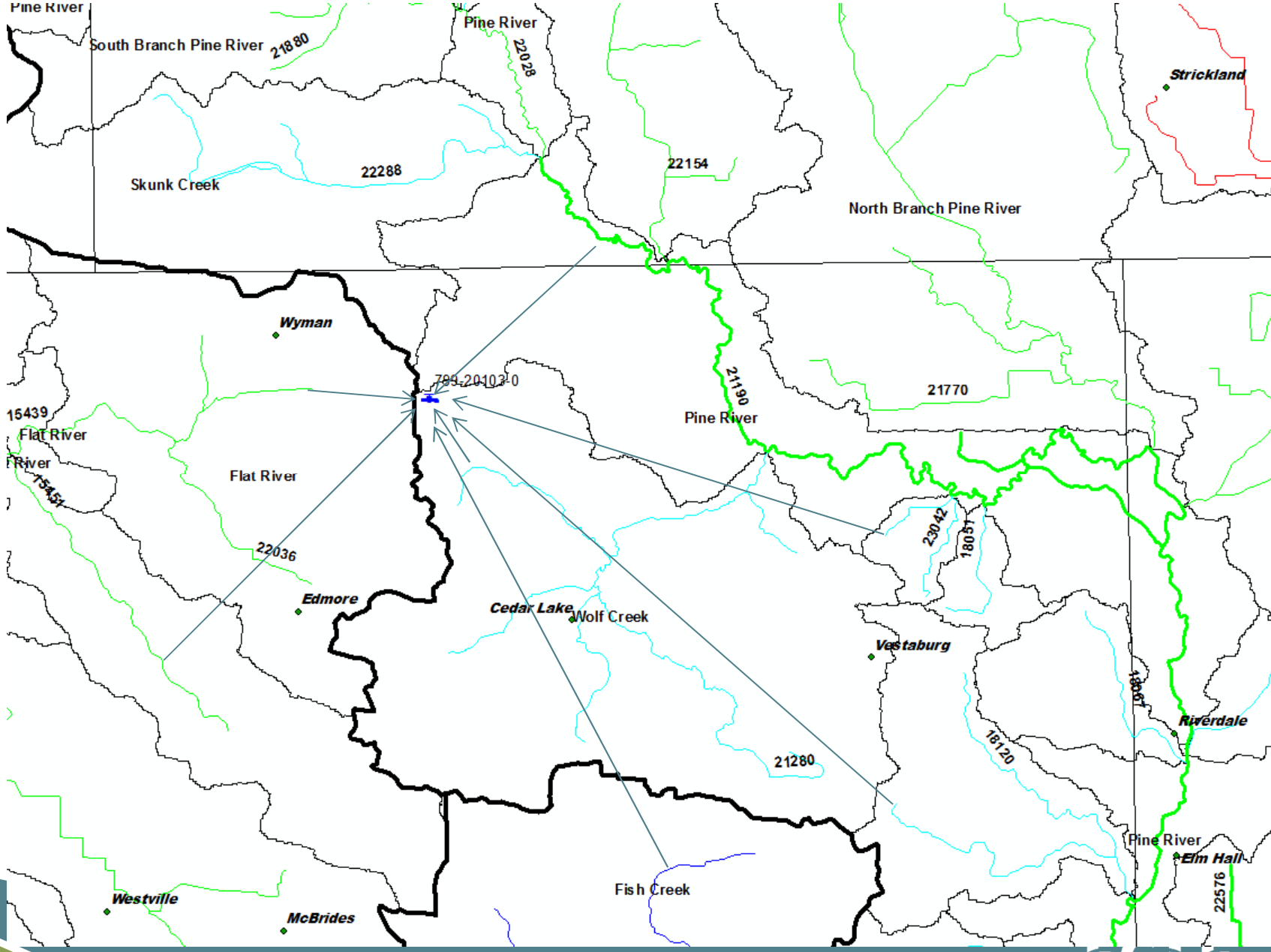
Jim Nicholas

Water Use Advisory Council Models Committee

Revisiting the “Half Max Rule”

Streamflow Depletion Apportionment

EGLE


Pine River
South Branch Pine River
21880
Pine River
22028
Strickland
Skunk Creek
22288
22154
North Branch Pine River
Wyman
799-20103-0
21190
21770
15439
Flat River
Pine River
Flat River
15451
22036
23042
18051
Edmore
Cedar Lake
Wolf Creek
Vestaburg
18067
Riverdale
18120
21280
Pine River
Elm Hall
Fish Creek
22576
Westville
McBrides

Depletions calculated by the WWAT

WMA ID #	DEPLETION	
21280	82.7	- max
22036	52.8	> ½ max
21190	21.6	
15451	10.2	
23042	6.0	
22136	5.1	
18120	3.4	

7* WMAs (*1 home + 6 adjacent*), *2 debited

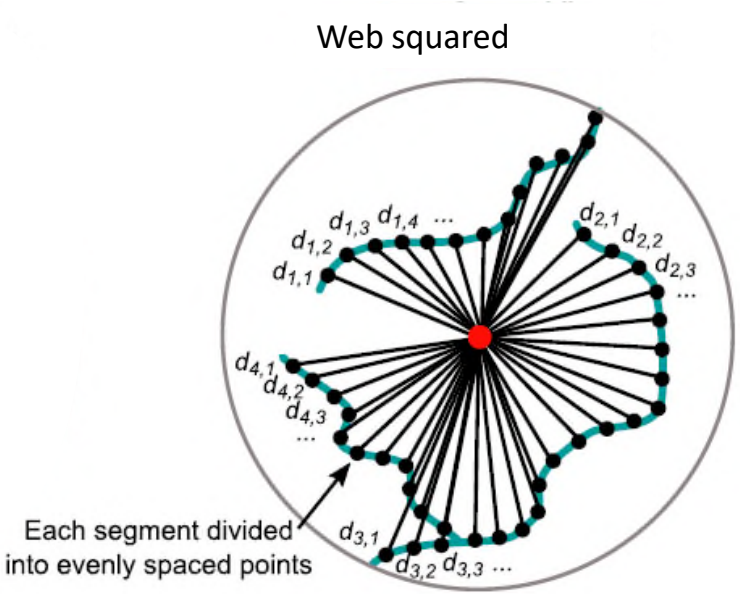
Rapid and Accurate Estimates of Streamflow Depletion Caused by Groundwater Pumping Using Analytical Depletion Functions

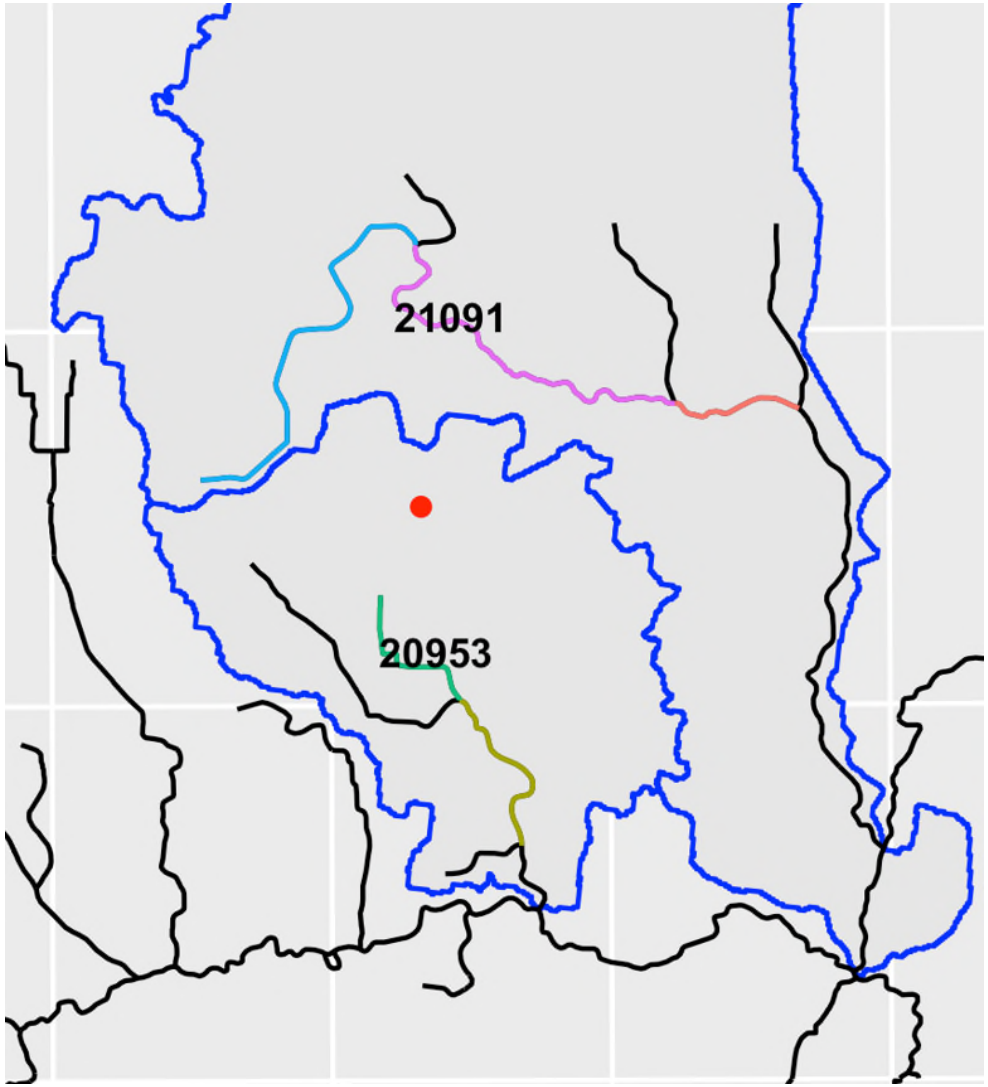
Samuel C. Zipper[1], Tom Gleeson[1], Ben Kerr[2], Jeanette K. Howard[3], Melissa M. Rohde[4], Jennifer Carah[3], and Julie Zimmerman[5]

Improved method to identify stream segments to be depleted:

Catchments adjacent
to well location

Improved method to apportion depletions:





Kalamazoo2

Kalamazoo2					Recalculate w/ 1/2 max	web2	inv dist
WELLID	VALLEYSEGMENT	H/N	EST_DEPLETION	%			
2228-201212-11	20953	H	46.0		63.7	25.6	37.8
2228-201212-11	21091	N	24.0		33.3	54.2	40.9
	Total "accounted"		70.0	82.2%	97.0		
2228-201212-11	22260	N	11.0				
2228-201212-11	20790	N	4.2				
	Total "not counted"		15.2	17.8%			
	Total Calc Depletion		85.2			79.8	78.7

Comparision original WWAT, WWAT w/total calc depletion, and web2						
Example	**WWAT**		**WWAT w/total calc depl**		**web2**	
	Depletion (gpm)	#WMAs Depleted	Depletion (gpm)	#WMAs Depleted	Depletion (gpm)	#WMAs Depleted
Montcalm1	202.6	1	203.4	7	204.3	3
Berrien1	5.4	1	7.3	9	9.4	3
Tuscola1	23.5	1	25.8	7	29.2	1
Montcalm2	135.5	2	181.9	7	92	5
St. Joseph1	76.7	1	98.2	7	96.3	2
St. Joseph2	147.4	2	184.5	4	183.8	4
Gratiot1	97.6	1	116.7	6	93.4	2
Calhoun2	101.4	1	128.1	18	145	2
Gratiot2	44	1	45.8	7	39.5	2
Iron1	33.4	2	42.5	6	48.1	3
Leelanau1	1.6	1	3	5	3.3	4
Oceana1	94	3	134.6	11	157.5	4
Ottawa1	26.7	1	29.1	11	26.3	4
Kalamazoo1	131.7	1	168.8	7	192.9	2
Kalamazoo2	70	2	85.2	4	79.8	2
Barry1	267.5	1	501	6	552.5	3
St. Joseph3	165	1	197.9	6	208.7	2
Cass1	56.9	2	71.9	5	73.3	3
Oceana2	1.1	1	2.1	6	2.3	3

Comparision original WWAT, WWAT w/total calc depletion, and web2						
Example	**WWAT**		**WWAT w/total calc depl**		**web2**	
	Depletion (gpm)	#WMAs Depleted	Depletion (gpm)	#WMAs Depleted	Depletion (gpm)	#WMAs Depleted
Calhoun1	628.1	1	982.8	18	1127.6	1
Cass2	17.1	1	30	9	34	4
StJoseph4	175.8	1	228.9	9	220.1	3
VanBuren1	2	1	2.8	5	3.2	2
Kalkaska1	15.1	1	26.4	7	30.3	4
Livingston1	1.5	2	1.6	10	1.4	2
Hillsdale1	265.5	2	415.6	7	457.6	3
Newago1	29.3	1	59.4	9	58.5	3
Berrien2	40.9	2	63.2	5	67.6	3
Newago2	151.3	1	187.2	9	267.3	1
St Joseph5	303.6	1	492.1	9	602.2	2

Recommendations to: Improve WWAT streamflow depletion allocations between WMAs

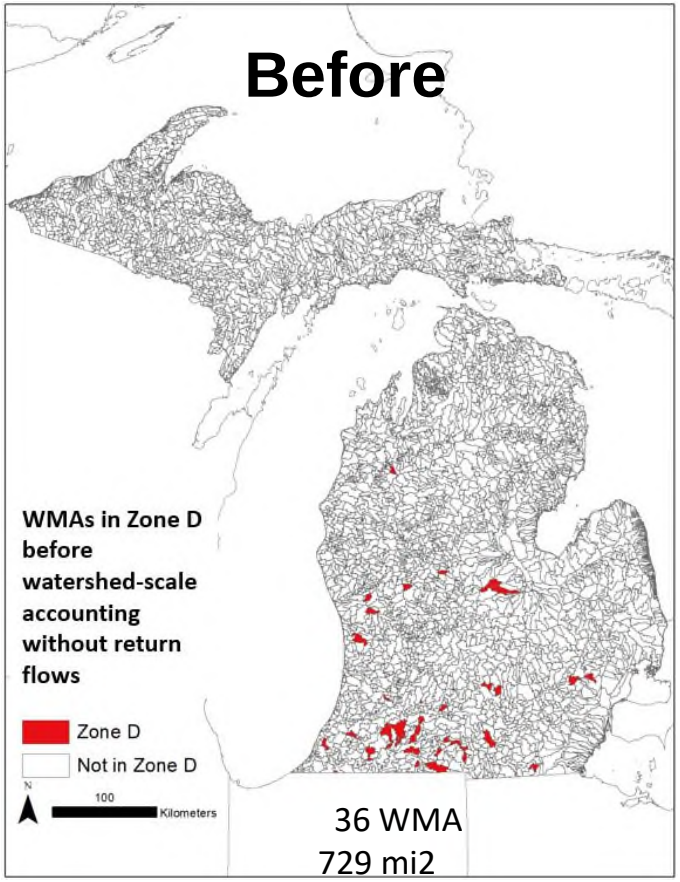
1. Determine the feasibility of using the revised methodology in the screening tool. Develop techniques that will allow timely calculations in the online use of the tool. And determine the feasibility of conducting a field investigation to show improvement of the revised methodology versus the half max rule.

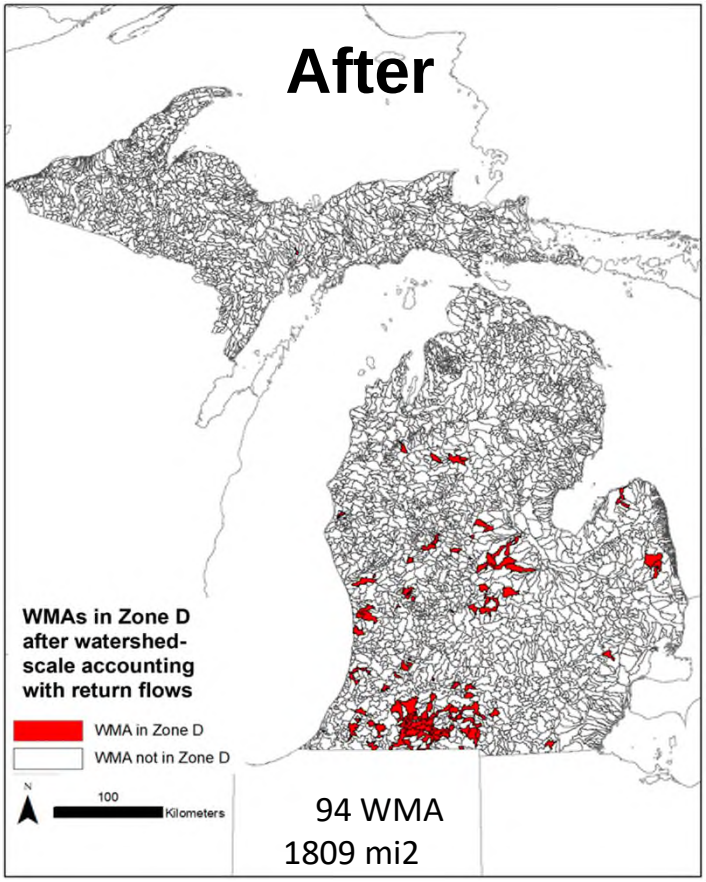
2. Determine the results of applying the revised methodology to the entire data base of registered large quantity withdrawals. Evaluate what, if any, impacts there would be of water availability and potential ARIs. Identify possible measures to mitigate impacts on registered users while avoiding ARIs.

3. Prepare recommendations for the Water Use Advisory Council regarding the implementation of the revised methodology and any new or revised policies necessary for successful implementation.

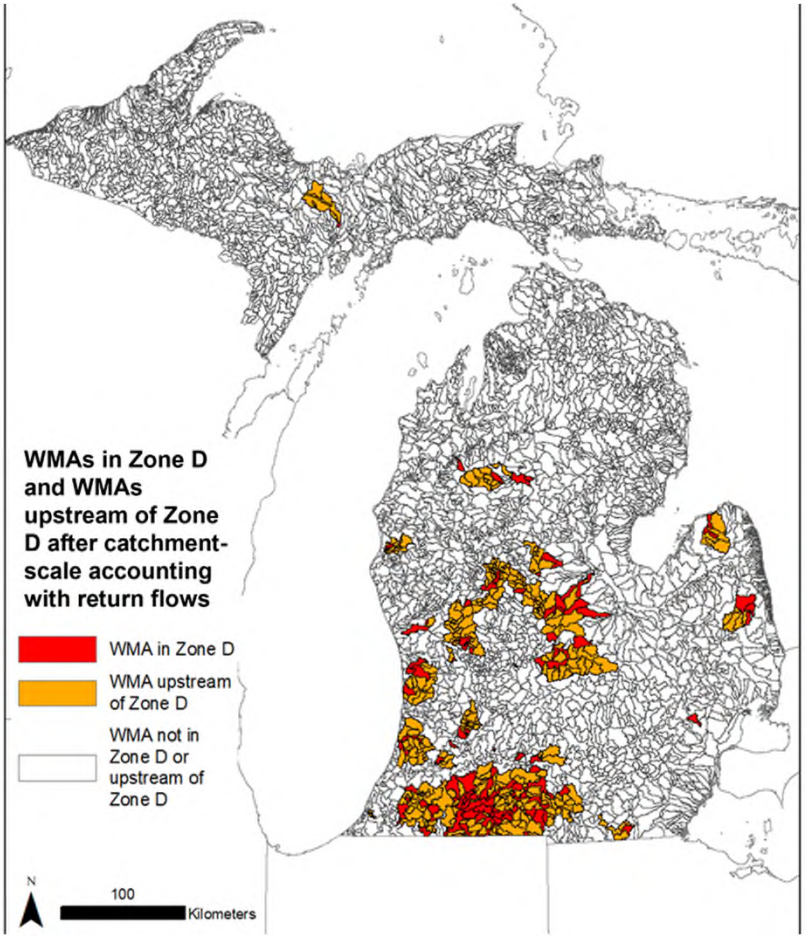
Downstream Accounting with Return Flows

Potential Zone D WMAs before vs after watershed accounting & return flows





Potentially-contributing WMAs upstream of Zone D WMAs are in orange



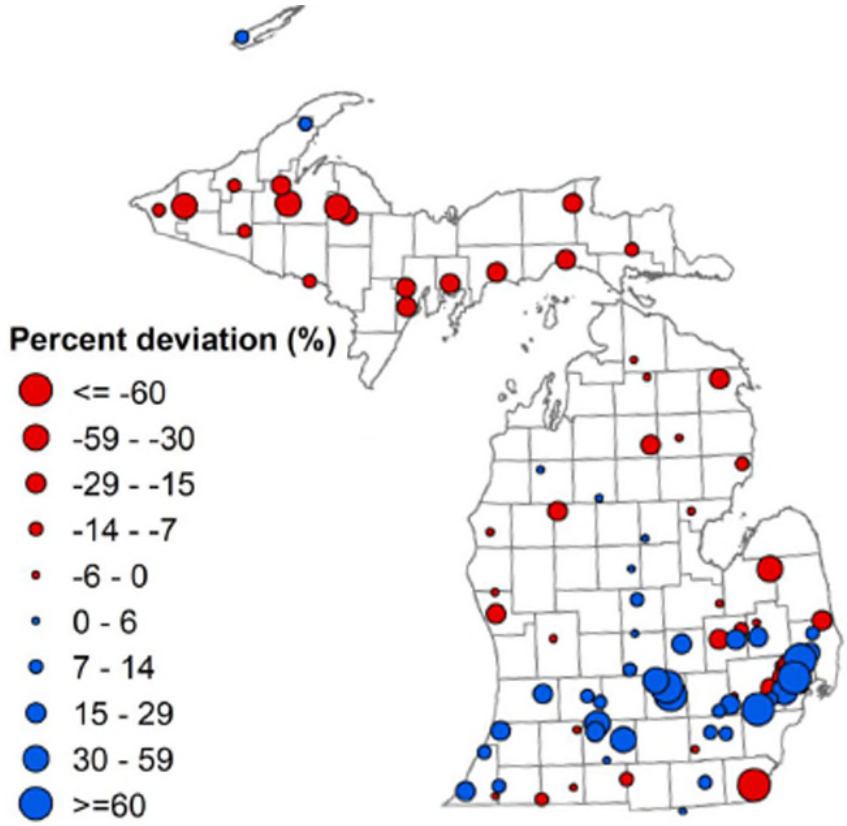


Figure 1. Percent deviation of Index Flow for 2010-2019 from Index Flow calculated for 1971-2000. Modified from Zorn et al. (2022), Figure 9.

	Net Area (sqmi)	WMA #	TYPE	Curr Zone	Zone w/ d/s acct	WWAT DEPLETION (cfs)	Net depletion w/ return flow (cfs)	IF (cfs)	gage record extended thru 2018
S Br Kalamazoo River	75.6	12873	Cold transitional s	B	D	1.0	2.1	43.0	
S Br Kalamazoo River	151.3	10535	Cool small river	A	A	0.6	6.7	54.0	
N Br Kalamazoo River	103.8	10213	Warm small river	A	B	0.2	6.3	55.0	
Kalamazoo @ Battle Cr	539.5	10745	Warm large river	A	B	2.7	28.2	260.0	
Battle Creek River	280.4	15156	Warm small river	A	A	1.4	0.7	76.7	
Battle Creek @ BC	**274.0**	**gage 1050**						**70**	**73**
Kalamazoo @ Gun R	1364.9	15161	Warm large river	A	A	0.4	43.5	497.0	
Kalamazoo @ mouth	2018.2	3138	Warm large river	A	A	0.0	60.0	796.0	
St Joseph @ Burlington	**201**	**gage 964.05**						**61**	**65**
St Joseph nr Burlington	229.7	20988	Warm small river	A	D	5.6	13.6	76.0	
St Joseph nr Colon	704.5	20795	Warm large river	A	C	1.5	51.0	280.0	
St Joseph @Three Rivers	1179	23229	Warm large river	C	D	71.6	120.3	396.9	
St Joseph u/s Pigeon	1756	21151	Warm large river	A	D	11.2	204.3	679.9	
St Joseph @ Mottville	**1880**	**gage 990**						**850**	**865**

Downstream Accounting Research Recommendations:

1. Complete an exhaustive literature review of existing research on observed or modeled downstream propagation of streamflow depletions.
2. Examine relationships between long-term changes in index flows and index flow yield relative to climatic conditions at gaged streams throughout Michigan.
3. Conduct literature review and empirical analyses to identify and provide underlying support for the appropriate spatial scale for totaling cumulative withdrawals that potentially affect the index flow of each WMA.

Flow Rate Attenuation Study

Hypotheses:

1. Streamflow changes are difficult to see in downstream streamgage records because of the magnitude of flow at these gages, relative magnitude of estimated upstream withdrawals, and natural variability in flow; but the peak stream depletion response is present.
2. Hydraulics of flow in the channel and stream network attenuate the stream depletion response leading to lower peak rates over longer periods such that, although mass is conserved, the peak depletion rate is not observed.
3. Exchange of water with groundwater allows the stream to access additional storage. This storage attenuates the peak depletion while lengthening the response time in the system. The mass removed is conserved, but peak rates are not observed.

Flow Rate Attenuation Study

- **Recommendation:**
- **Conduct a series of modeling analysis to test mechanisms that would lead to attenuation of the stream depletion.** These will test hypotheses 2 and 3. By isolating the mechanisms, key features of the surface-water/groundwater system that help propagate or attenuate upstream depletion response can be identified. By better understanding these features, we may identify stream networks that are more susceptible to upstream withdrawal and those that may be more buffered from upstream withdrawals. Identification of potential mechanisms also can help inform analysis of existing data or design of future data collection.

EGLE

C. New Topics Committee

Pat Staskiewicz

Jason Walther

D. Conservation and Efficiency Committee

Emily Finnell

Kelly Turner

Water Conservation and Efficiency Committee

- Met monthly and continued work on recommendations and new funding
  - 2020 Recommendation 1. Advance Michigan's Water Conservation and Efficiency Efforts through State Climate, Energy, and Water Infrastructure Initiatives.
    - Continued discussions on funding review and update of water sector BMPs with focus on how climate migration/climate change may impact water sectors and how they are planning to mitigate and adapt
      - WCEC will form a subgroup to fully develop the concept with background and connections to current Ag related Committee recommended projects
      - EGLE Material Management Division is reviewing 2020-2021 Water Energy Nexus project to determine if is additional research needed on water energy savings
      - EGLE planning to restart the RETAP (Retired Engineer Technical Assistance Program (RETAP) for retired engineers to provide sustainability audits/assessments for businesses

Water Conservation and Efficiency Committee

- 2022 Recommendations Development
  - Ready to address any comments gathered at this WUAC meeting

- Other committee business
  - Revisit the speaker series to educate WCEC about water conservation technological advancements or innovation within water sectors, other WUAC Committee recommendations or topics that complement work on WCE BMP project that is under development

E. Implementation Committee

Laura Campbell

Doug Needham

9. 2022 WUAC Report Update

Content, Logistics, and Timeline

MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

Program Update

Water Use Advisory Council

October 11, 2022

Outline

- WUAU Personnel Update
- Escalated Enforcement Update
- Contested Case Filing
- AquaBounty Update
- WMA Depletion Status Map
- Questions

WUAU Personnel Update

- Jill Van Dyke is back!

Escalated Enforcement Referral

- November 2019 6 Part 327 violations were identified
  - 1 withdrawal large quantity withdrawal (LQW) was installed and operated differently than authorized
  - 5 unregistered LQWs
- February 2020 EGLE met with the property owner and their consultant
- May 2021 the case was referred to the Escalated Enforcement Team
- April 2022 EGLE and the property owner/their representatives signed a settlement agreement which included a civil fine of $30,000
- 5 SSRs and 1 amended registration were part of settlement

Contested Case Filing

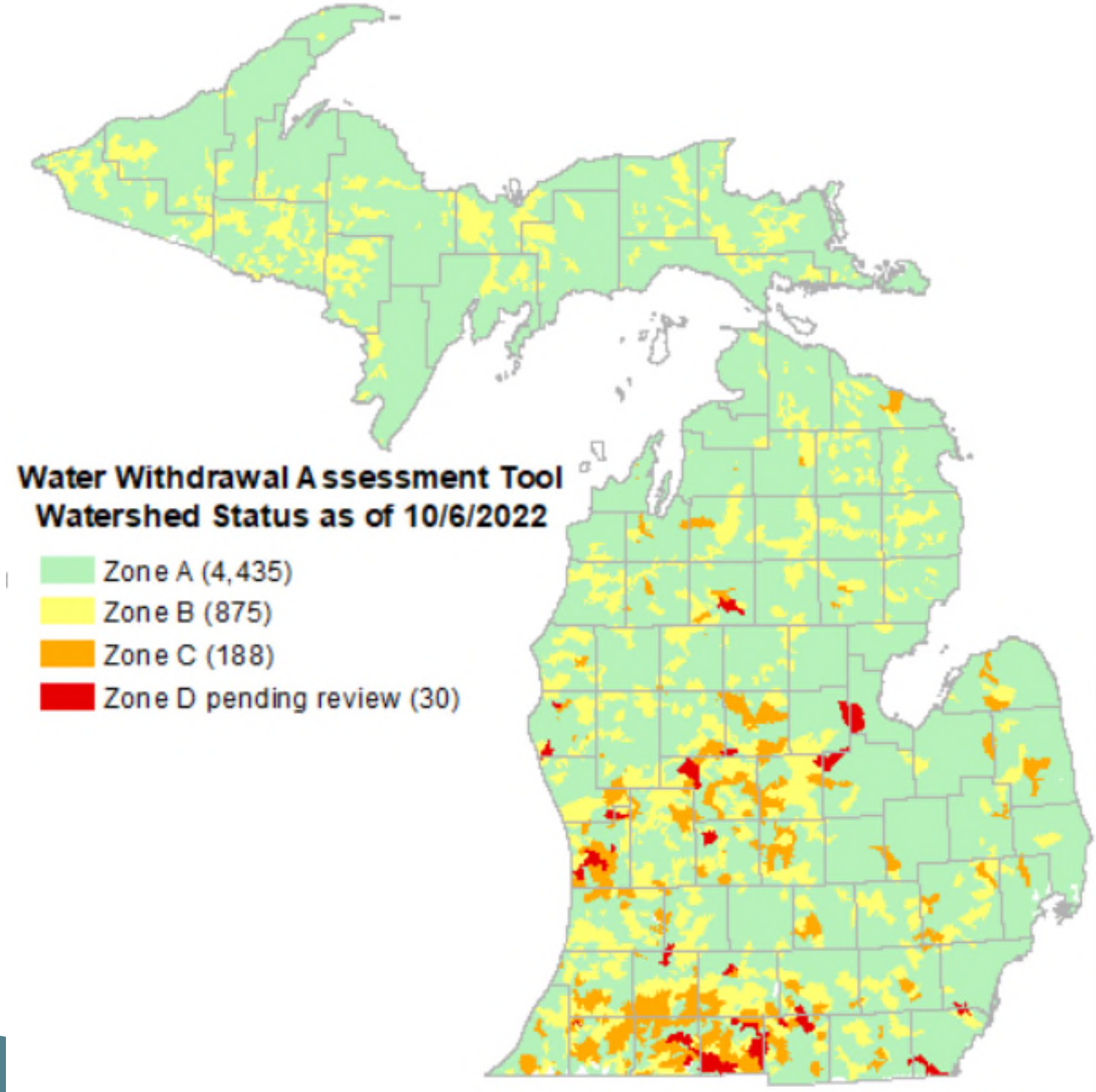
- Administrative appeal rights for permits
  - (New or increased withdrawals > 2MGD)
- 1st contested case hearing filing for Consumers Energy Jackson permit
- EGLE will set up a meeting with petitioner

AquaBounty, Part 1

- Aquaculture to raise salmon
- Pioneer, OH, near MI/OH border
- EGLE PN Comments & Technical Review Memos
- Groundwater model files not provided to EGLE

AquaBounty, Part 2

- OH DNR issued permit for 5.25 MGD well field
- Wells pumping in deeper Michindoh Aquifer
- Treated discharge to E. Branch St. Joseph River (Lake Erie tributary)
- AquaBounty to submit monitoring plan
- WRD requesting follow up meeting w/ OH DNR


Water Withdrawal Assessment Tool
Watershed Status as of 10/6/2022
Zone A (4,435)
Zone B (875)
Zone C (188)
Zone D pending review (30)
EGLE Water Use Program

Questions?

Jim Milne
Water Use Assessment Unit
EGLE Water Resources Division
517-285-3253
milnej@michigan.gov

Michigan Department of

Environment, Great Lakes, and Energy

800-662-9278

Michigan.gov/EGLE

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11. Future

a. Remaining Meeting Date
   - November 10 (Thursday)
   - December 5 (Monday)

b. Quorum

12. Open Comments

3 Minute Limit

13. Motion to Adjourn