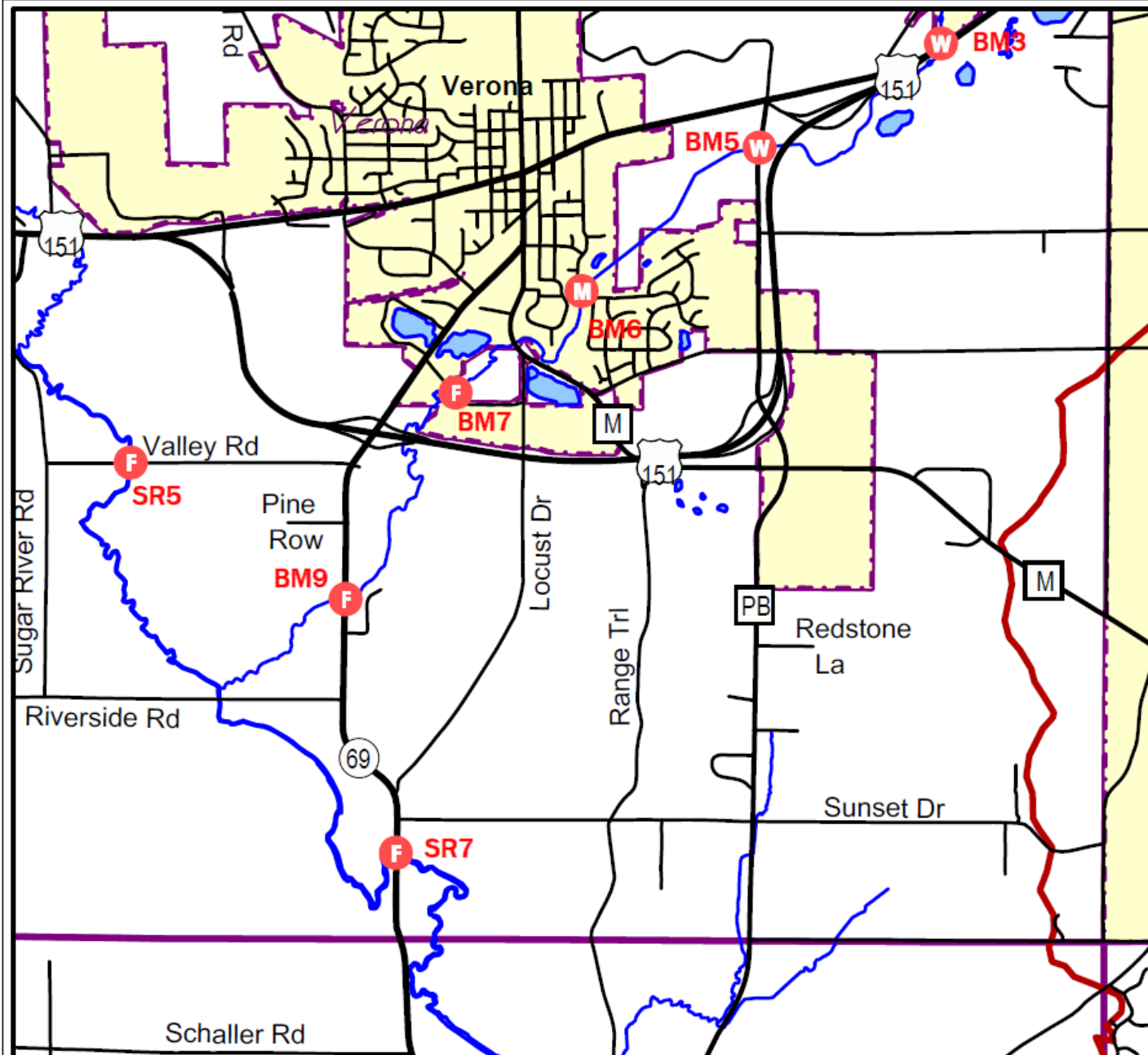# Badger Mill Creek Data

Mike Sorge

Water Resources Supervisor, South Central Region

November 15, 2023

Sampling Locations in the Upper Sugar River Watershed

Key:

W Water Chemical Analysis

M Water Chemical Analysis & Aquatic Macroinvertebrate Collection

F Water Chemical Analysis &

MMSD Total Phosphorus Data (mg/L)

		BM3- US of effluent SRW Badger Mill Creek Highway 18-151 Sample at Hwy 18-151 TP (ug/L)	BM5 SRW Badger Mill Creek Highway PB Sample at Highway PB TP (ug/L)	BM6 SRW Badger Mill Creek Lincoln St Sample at Lincoln Street TP (ug/L)	BM7 SRW Badger Mill Creek Bruce Street Sample at Bruce St. TP (ug/L)	BM9 SRW Badger Mill Creek Highway 69 Sample at Highway 69 TP (ug/L)	SR5- Us of BMC confluence SRW Sugar River Valley Road Sample at Valley Road TP (ug/L)	SR7 SRW Sugar River Highway 69 Sample at Highway 69 TP (ug/L)
2013	Average	0.172	0.200	0.165	0.160	0.152	0.067	0.090
Growing Season	Median	**0.150**	**0.185**	**0.140**	**0.130**	**0.115**	**0.055**	**0.085**
2014	Average	0.164	0.310	0.220	0.210	0.178	0.063	0.116
Growing Season	Median	**0.180**	**0.320**	**0.210**	**0.210**	**0.180**	**0.055**	**0.120**
2015	Average	0.213	0.383	0.280	0.290	0.268	0.103	0.137
Growing Season	Median	**0.230**	**0.345**	**0.265**	**0.265**	**0.235**	**0.100**	**0.135**
2016	Average	0.146	0.260	0.198	0.210	0.226	0.062	0.098
Growing Season	Median	**0.130**	**0.230**	**0.220**	**0.180**	**0.170**	**0.070**	**0.090**
2017	Average	0.200	0.242	0.187	0.185	0.170	0.123	0.192
Growing Season	Median	**0.200**	**0.200**	**0.135**	**0.140**	**0.115**	**0.105**	**0.090**
2018	Average	0.203	0.247	0.187	0.177	0.167	0.163	0.170
Growing Season	Median	**0.200**	**0.245**	**0.185**	**0.180**	**0.155**	**0.170**	**0.175**
2019	Average	0.152	0.217	0.220	0.237	0.200	0.170	0.195
Growing Season	Median	**0.130**	**0.220**	**0.180**	**0.175**	**0.165**	**0.150**	**0.180**
7 Year TOTAL	Average	0.180	0.265	0.208	0.210	0.194	0.109	0.144
2013-2019	**Median**	**0.155**	**0.240**	**0.210**	**0.180**	**0.160**	**0.090**	**0.120**
5 Year Total	Average	0.184	0.270	0.215	0.220	0.206	0.127	0.160
2015-2019	**Median**	**0.160**	**0.240**	**0.210**	**0.180**	**0.160**	**0.100**	**0.130**

Sites with Associated TP (2015-2019 Medians in mg/L)
Both Sugar River and BMC on 303d list for TP
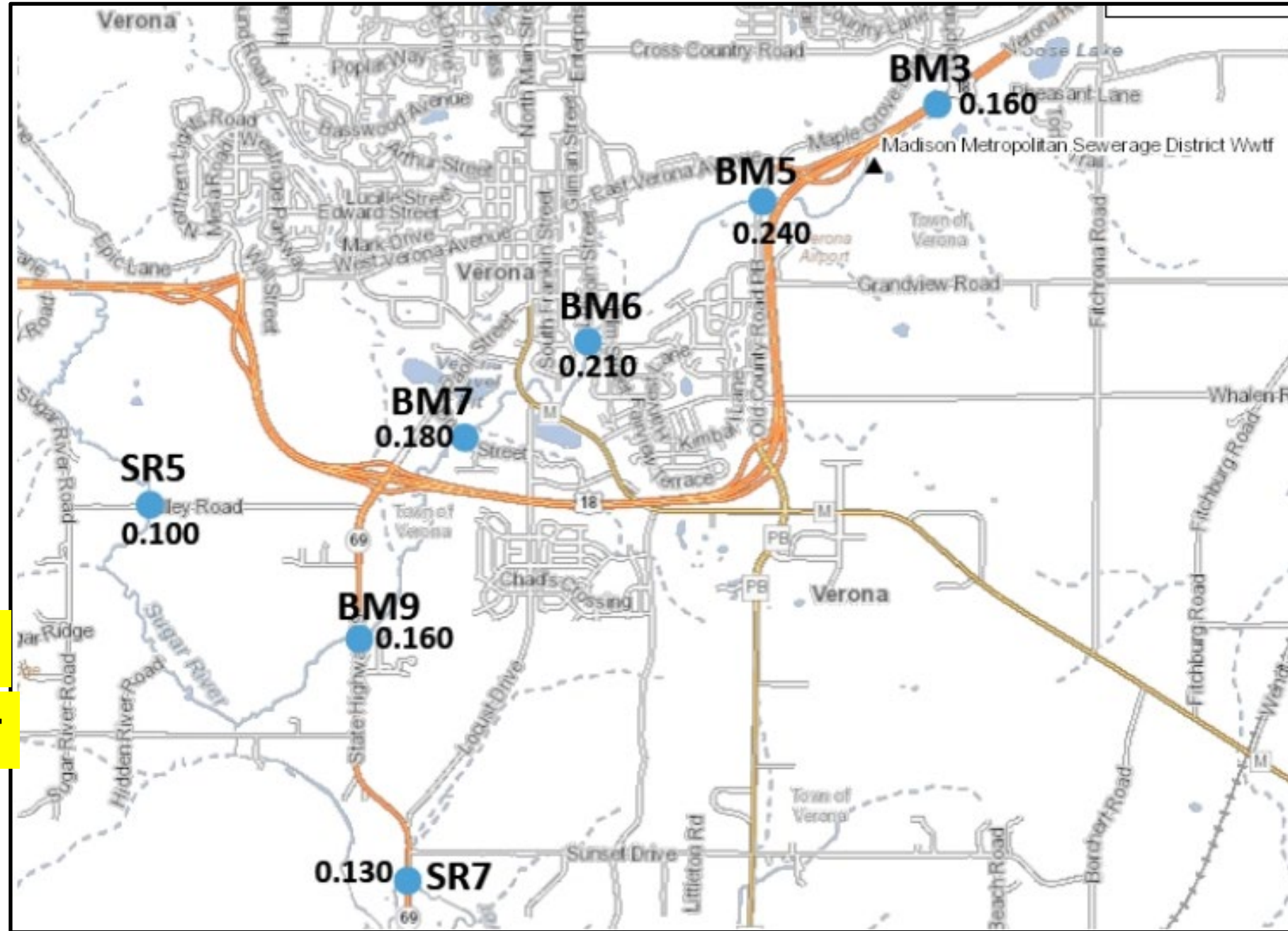
MMSD Macroinvertebrate Data

Badger Mill Creek & Sugar River m-IBI Sites					
Year	BM-6	BM-7	BM-9	SR-5	SR-7
2013	2.9	4	3.2	6.5	5.7
2014			4.9		
2015	4.3	3	4.6	6.9	5.4
2016			3.9		
2017	4.7	3.8	4.5	6.5	6.9

Condition category thresholds for wadeable stream macroinvertebrate index of biotic integrity.

Wadeable Stream M-IBI Thresholds	Condition Category				
> 7.5	Excellent				
5.0-7.4	Good				
2.5-4.9	Fair				
< 2.5	Poor				
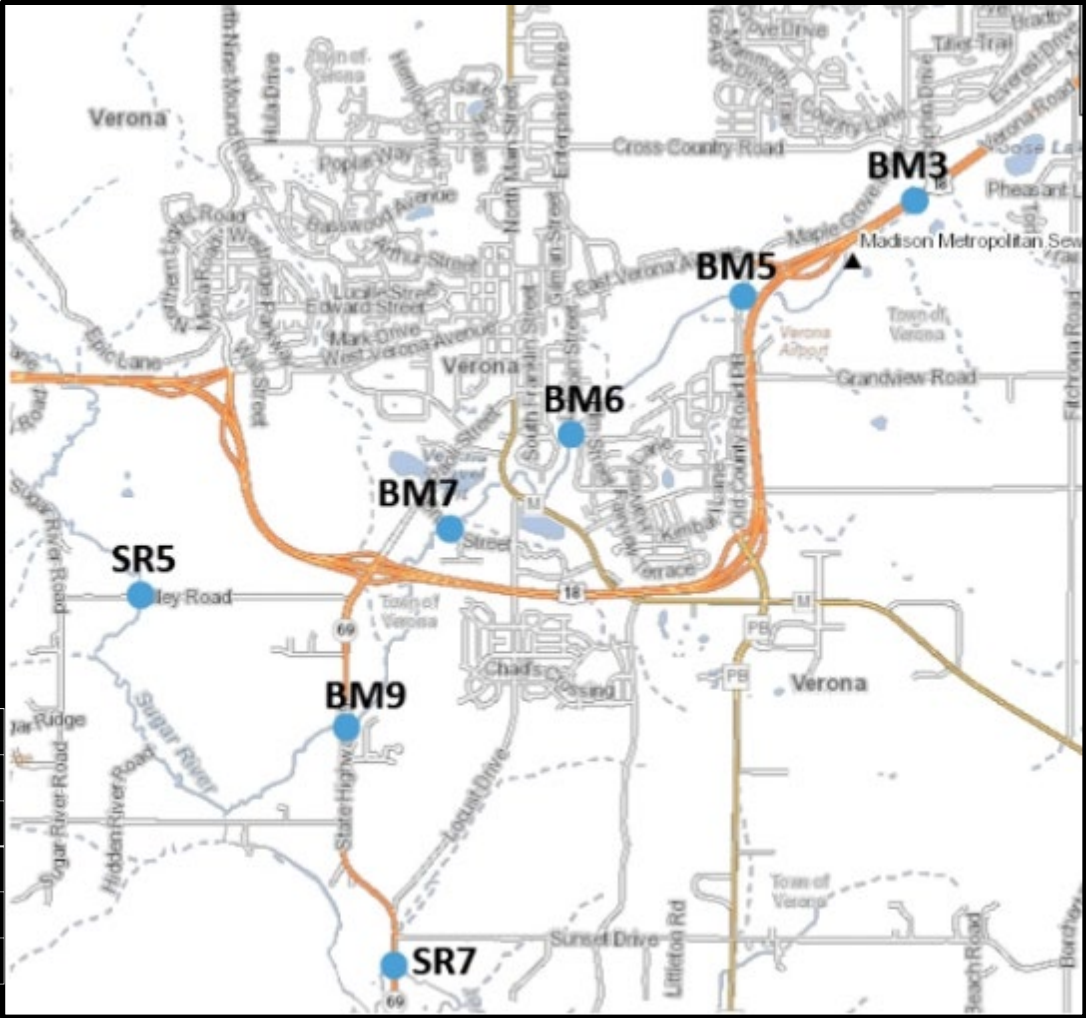
*"2018 and 2019 were high flow years and the sites were not sampled"

WDNR HBI-Hilsenhoff Biotic Integrity Historical Macroinvertebrate Data
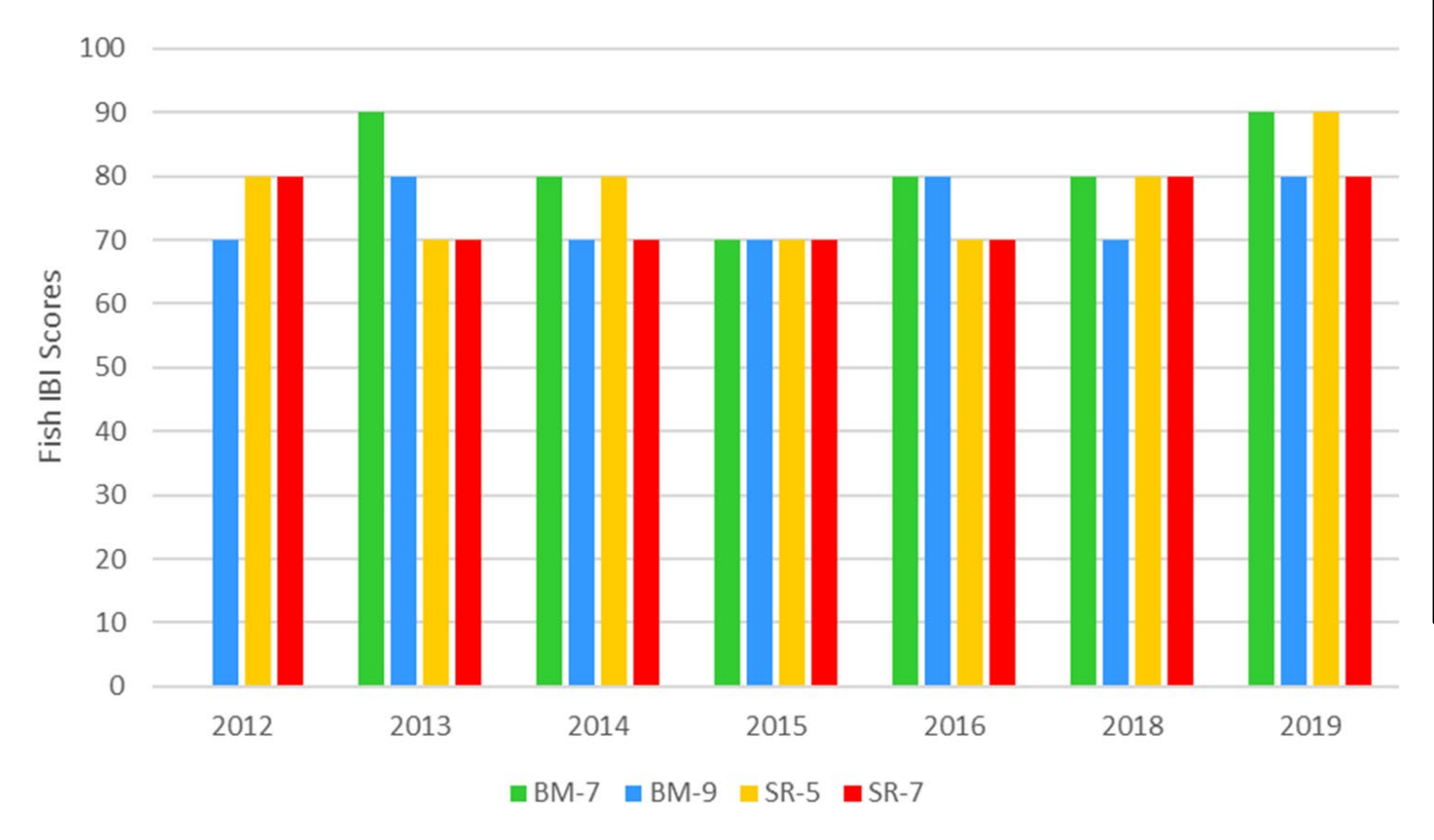
HBI Scores

Site	1988	1996	1997	1998	1999	2021	2022
Badger Mill Creek - Bruce St. To Cty. Rd. M		5.672		5.267	5.476		
Badger Mill Creek - Sth. 69 Upstream To Fenceline In Pasture	4.417					6.252	6.188
Badger Mill Creek at Hwy 69		4.804		4.744	5.424		
Badger Mill Creek Below Cth M 600' Lng		4.716			5.524		
Badger Mill Creek at Lincoln Street	4.104			5.308/4.094	5.594		
Badger Mill Creek at old Hwy. PB bridge				4.072			
Badger Mill Creek at Verona Stp.Rd Bruce St			4.393				

Hilsenhoff Biotic Index score range	Water-quality-evaluation rating	Degree of organic pollution
0.00 – 3.50	Excellent	No apparent organic pollution
3.51 – 4.50	Very good	Possible slight organic pollution
4.51 – 5.50	Good	Some organic pollution
5.51 – 6.50	Fair	Fairly significant organic pollution
6.51 – 7.50	Fairly poor	Significant organic pollution
7.51 – 8.50	Poor	Very significant organic pollution
8.51 – 10.00	Very poor	Severe organic pollution

- Most historical scores ranged from "**Fair to Very Good**"

- NZMS- New Zealand Mudsnail's- 2016-presence and influences on benthic community and community structure.

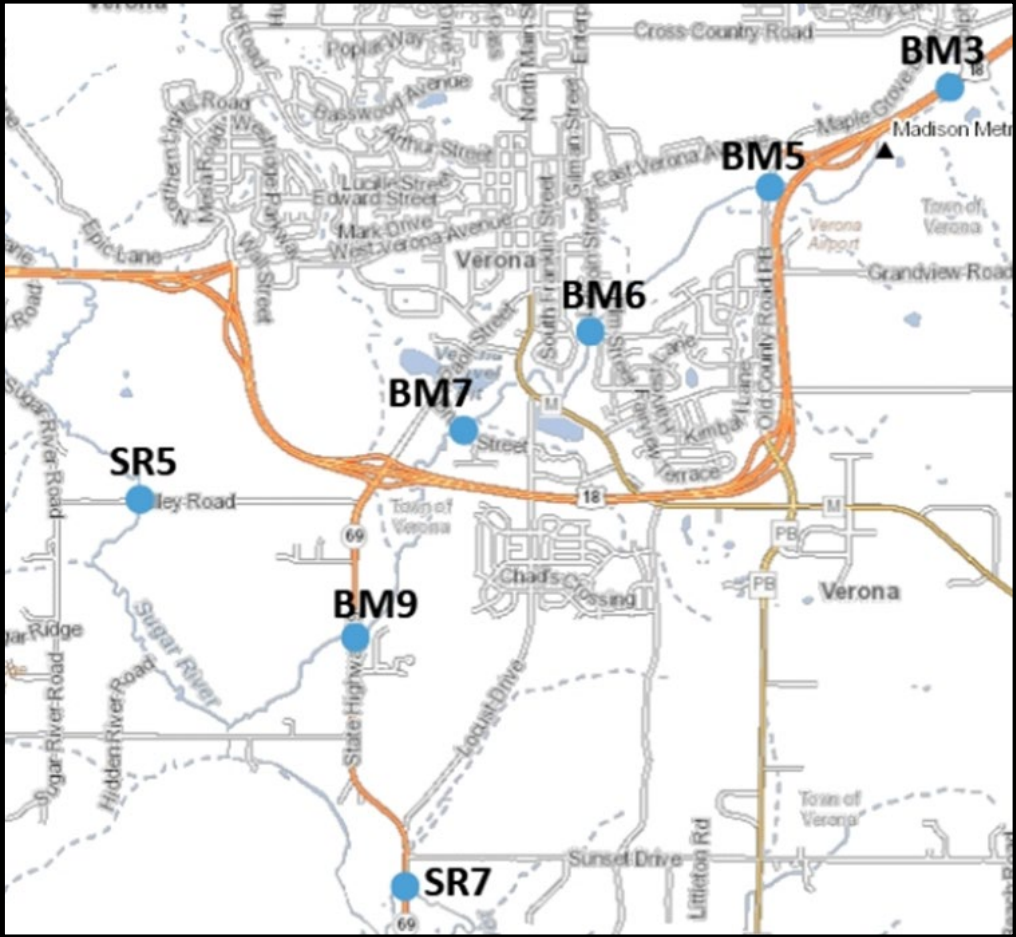- Kim Kuber's- MS thesis work will be looking at some of these food web dynamics and species interactions.

MMSD Fish Data

Cool-Cold Transitional IBI Scores

- All fish scores are good to excellent
- *2017 not sampled due to persistent high water

Cool-Cold Transitional IBI Scores: 0-20= Poor, 21-40= Fair, 41-60= Good, 61-100= Excellent
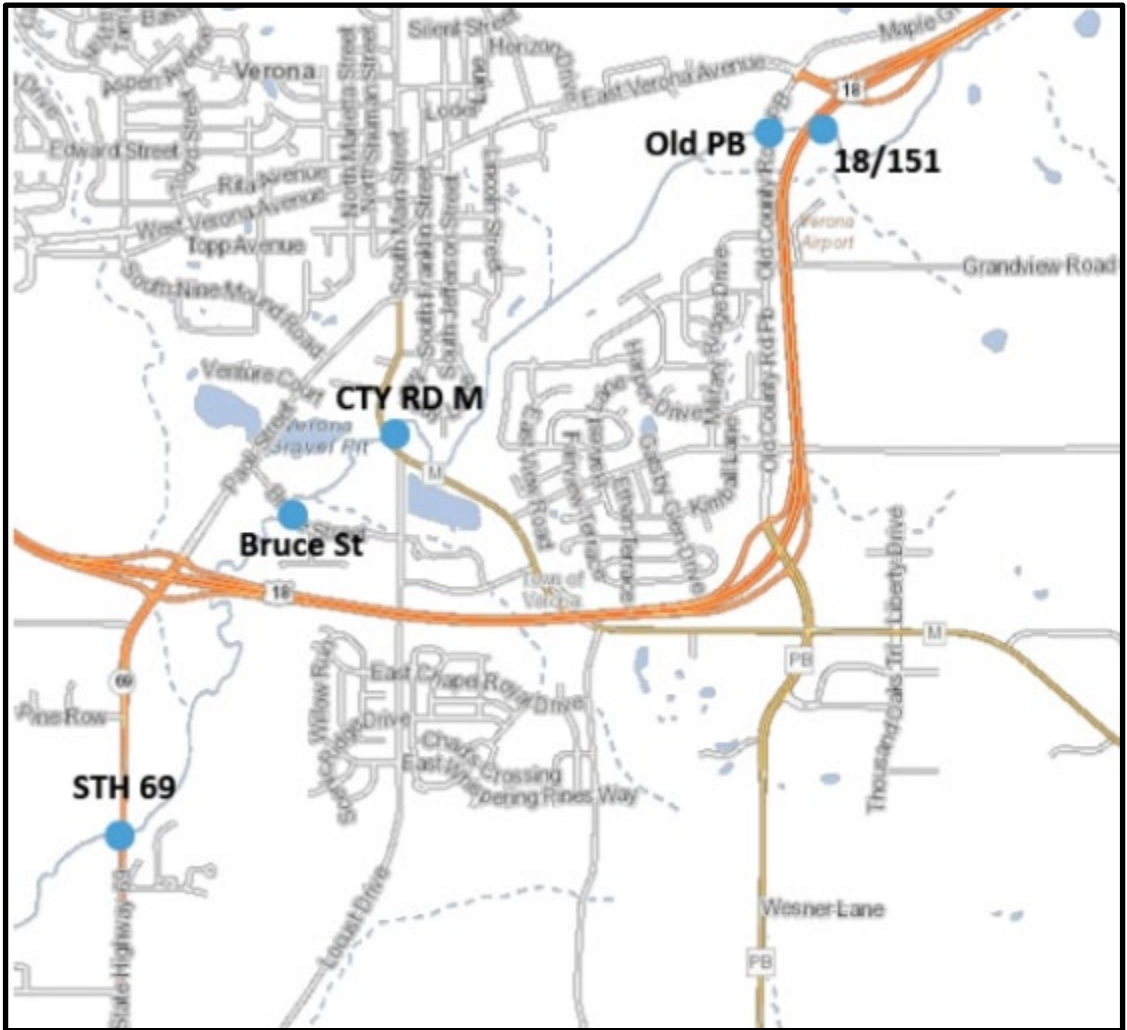
MMSD Fish Data

Coldwater IBI Scores
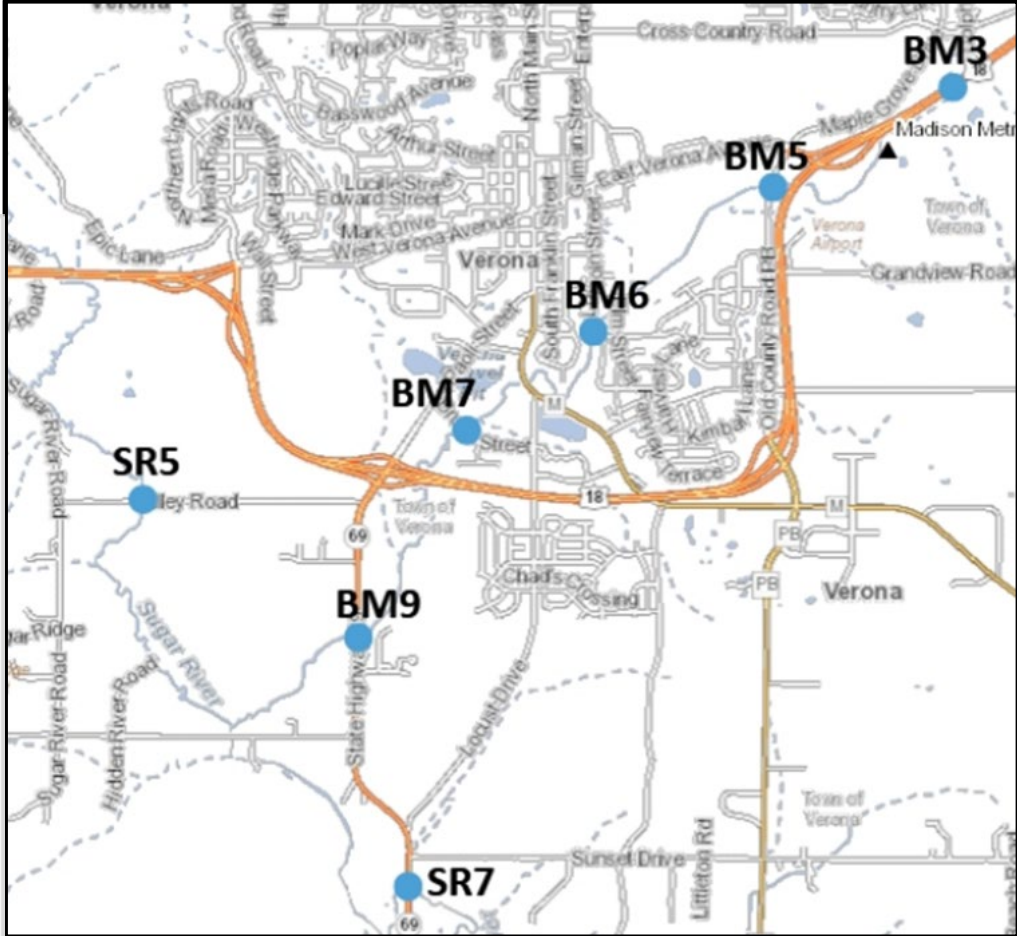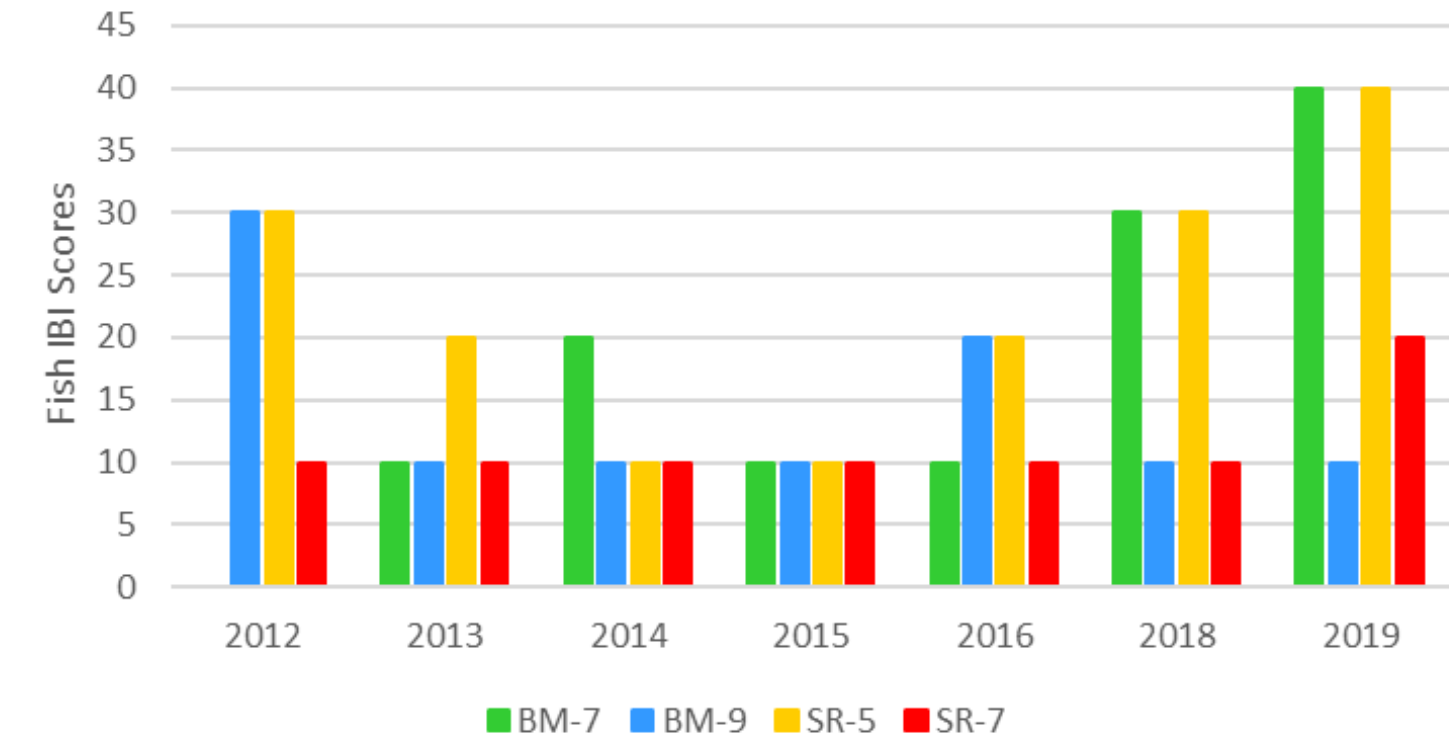
- All fish scores are poor to fair
- *2017 not sampled due to persistent high water

Coldwater IBI Scores: 0= Very Poor, 10-20= Poor, 30-50= Fair, 60-80= Good, 90-100= Excellent
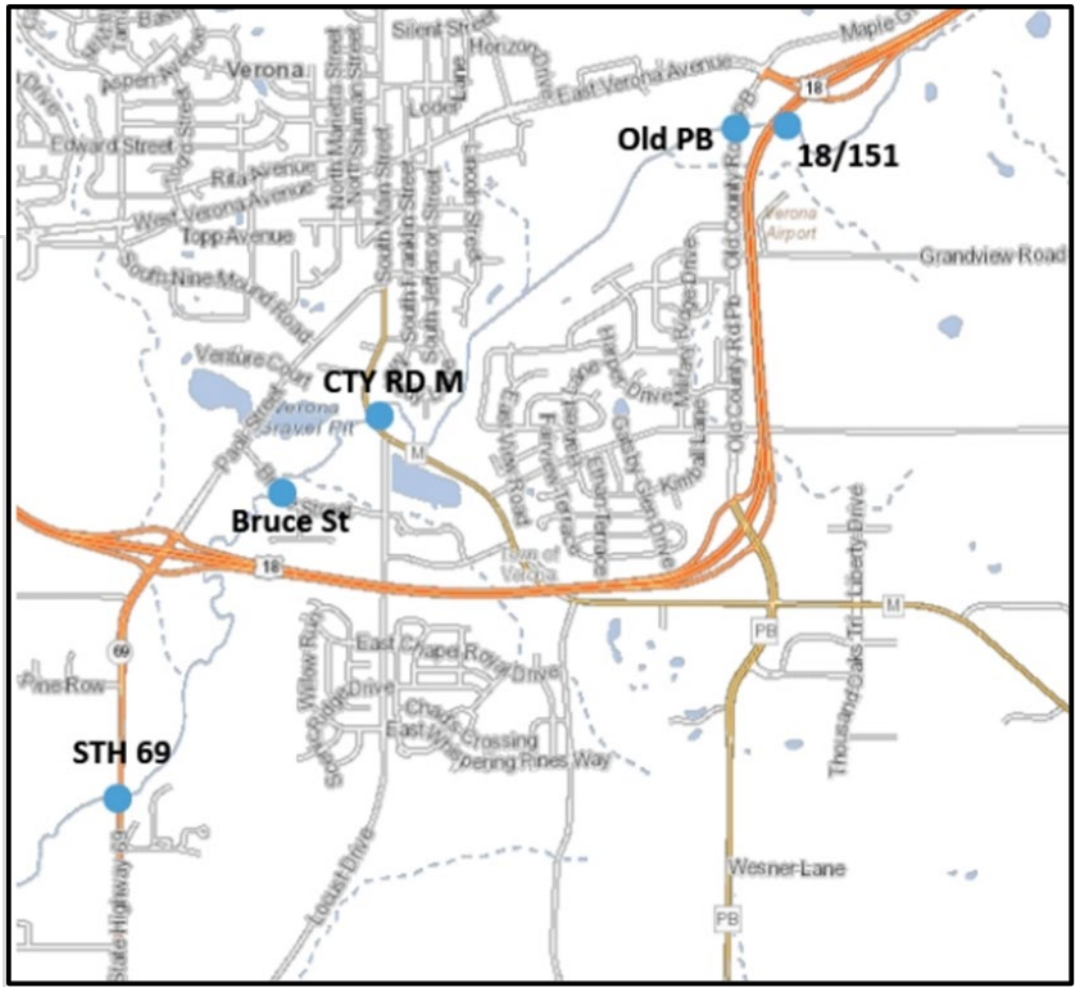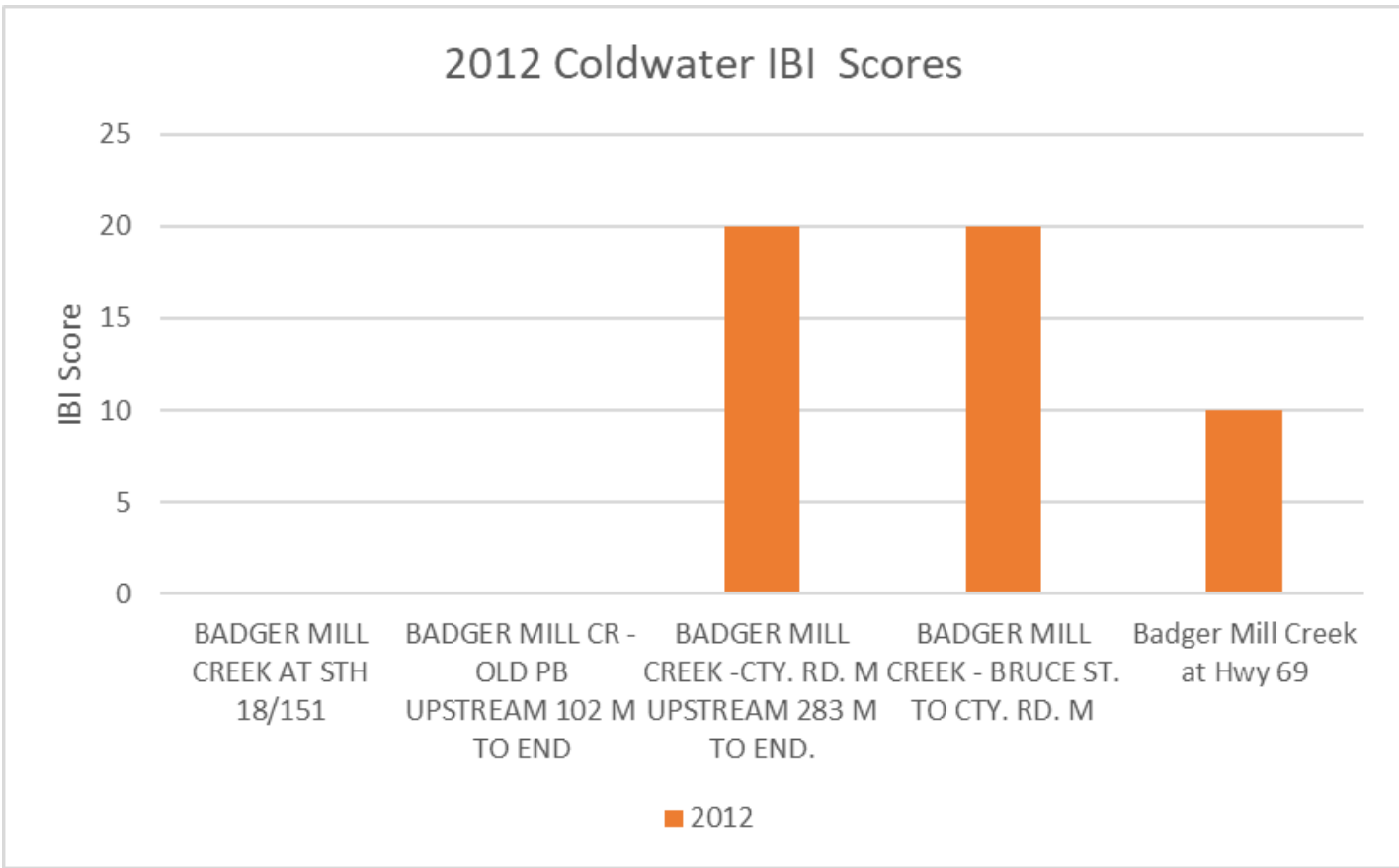
WNDR Fish Data

2012 Cool-Cold Transitional IBI Scores

- All fish scores are fair to excellent

Cool-Cold Transitional IBI Scores: 0-20= Poor, 21-40= Fair, 41-60= Good, 61-100= Excellent
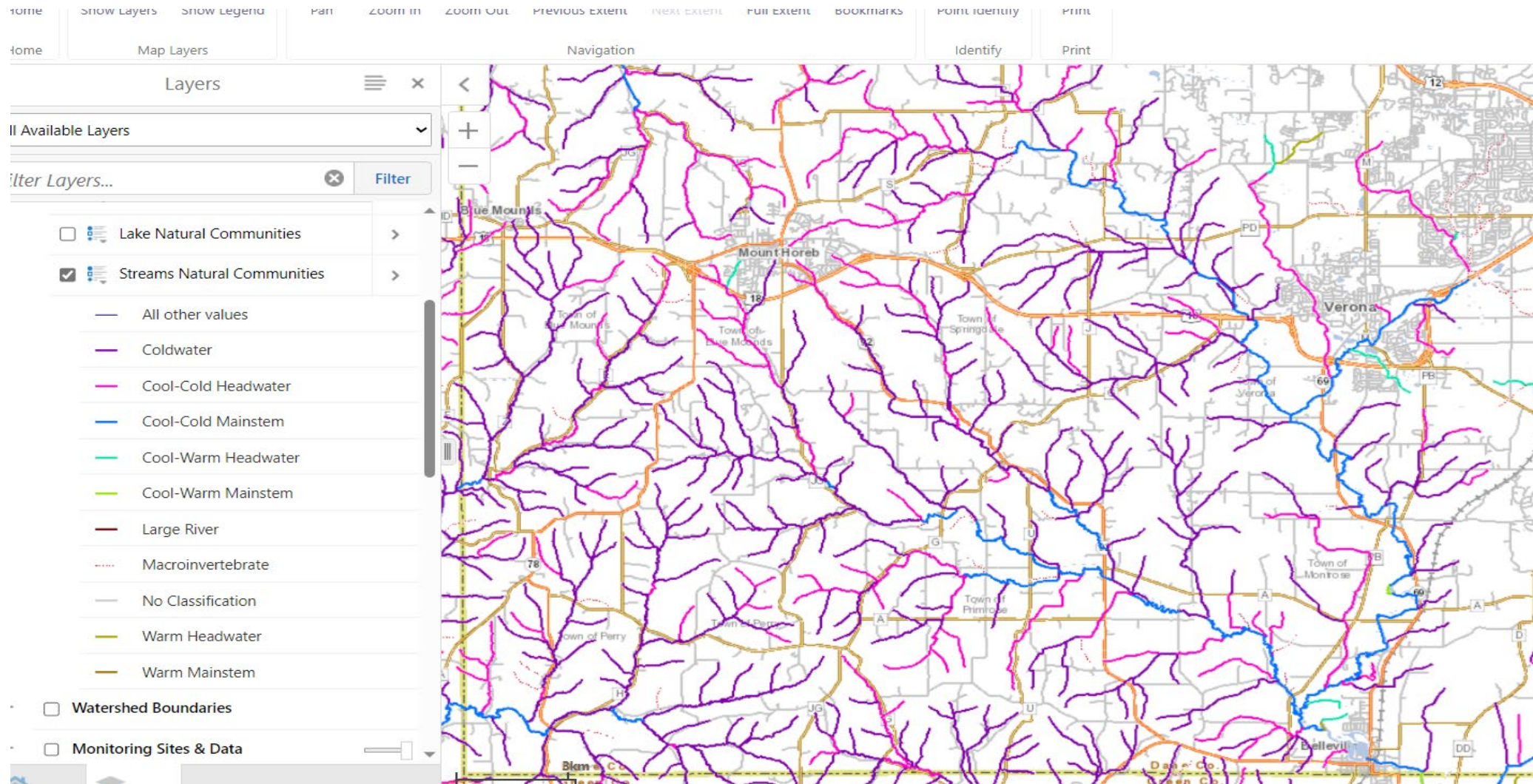
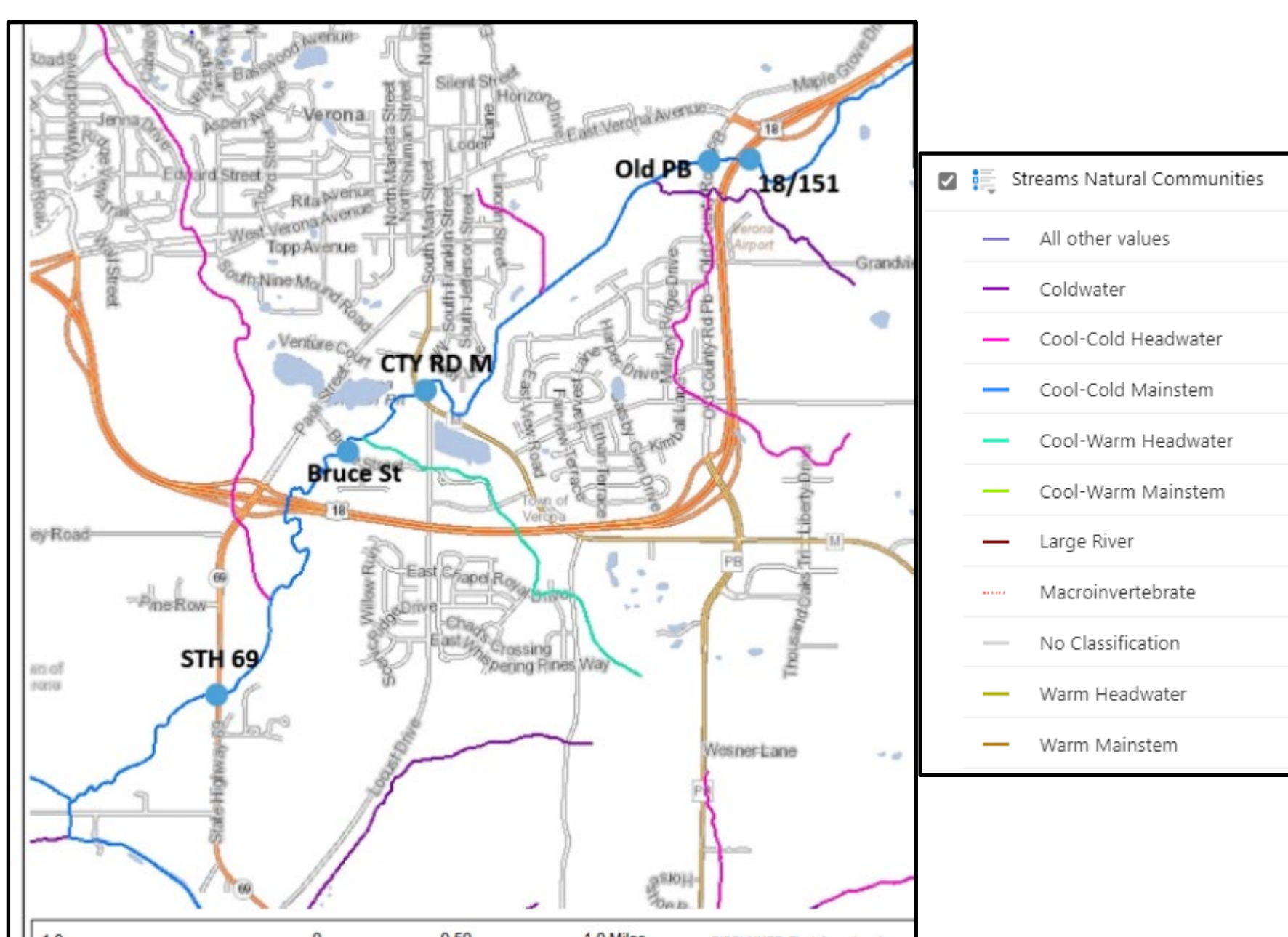# WDNR Fish Data

2012 Coldwater IBI Scores

- All Coldwater IBI fish scores are very poor to poor
- STH 18/151 and Old PB had IBI scores of "0"

Coldwater IBI Scores: 0= Very Poor, 10-20= Poor, 30-50= Fair, 60-80= Good, 90-100= Excellent

Modeled Natural Communities

Badger Mill Creek is a Class 2 Trout Stream, but modeled and verified to be Cool-Cold Transitional Mainstem

CONNECT WITH US

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OFF THE RECORD"