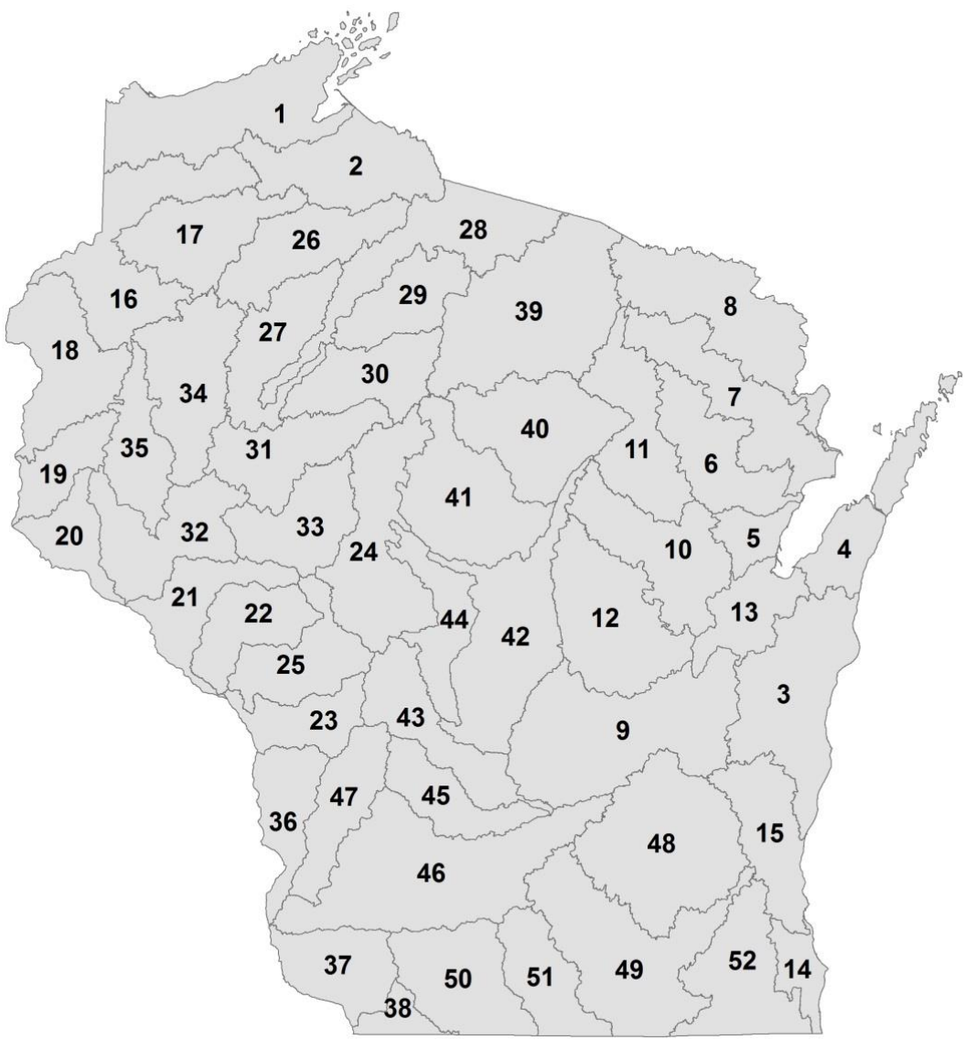
Targeted Watershed Site Selection Tool (TWSST)

TWSST watershed summary reports

Click on a name or map location to jump to the summary report for that watershed.

1 Beartrap-Nemadji-St Louis Rivers
2 Bad-Montreal Rivers
3 Manitowoc-Sheboygan Rivers
4 Door-Kewaunee Rivers
5 Pensaukee River
6 Oconto River
7 Peshtigo River
8 Menominee-Brule River
9 Upper Fox River-Lake Winnebago
10 Wolf River Central
11 Wolf River North
12 Wolf River South
13 Lower Fox River
14 Pike-Root Rivers
15 Milwaukee River
16 Upper St. Croix River
17 Namekagon River
18 Lower St. Croix River North
19 Lower St. Croix River South
20 Rush River
21 Buffalo River
22 Trempealeau River
23 La Crosse River
24 Black River North
25 Black River South
26 Upper Chippewa River North
27 Upper Chippewa River South
28 Flambeau-Presque Isle-Ontonagon Rivers
29 South Fork Flambeau River
30 Jump River
31 Lower Chippewa River East
32 Lower Chippewa River West
33 Eau Claire River
34 Red Cedar River East
35 Red Cedar River West
36 Coon-Bad Axe Rivers
37 Grant-Platte Rivers
38 Galena River
39 Upper Wisconsin River
40 Lake Dubay North
41 Lake Dubay South
42 Castle Rock East (Wisconsin River)
43 Castle Rock South (Lemonweir River)
44 Castle Rock West (Yellow River)
45 Baraboo River
46 Lower Wisconsin River
47 Kickapoo River
48 Upper Rock River
49 Lower Rock-Yahara Rivers
50 Pecatonica River
51 Sugar River
52 Upper Fox-Kishwaukee-Des Plaines Rivers



Targeted Watershed Site Selection Tool

Beartrap, Nemadji, and St. Louis Rivers

TWSST watershed ID: 04010301
HUC 8's included: 04010201, 04010301
DNR District: Northern
Area: 1723 square miles
Total stream length: 2872 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	3.4	0.07	19.9	0.15
Water temperature (°C)	19.3	19.3	21.7	21.8
Slope (degrees)	2.9	2.6	4.0	2.6
Percent agriculture	10	3	43	45
Percent developed	5	4	6	4
Percent forest	78	83	45	42
Percent wetlands/lakes	1.1	0.0	3.6	0.6
Percent soil clay content	23	19	15	14
Percent soil organic matter content	5	2	4	2
Soil permeability (in/hour * 100)	250	90	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

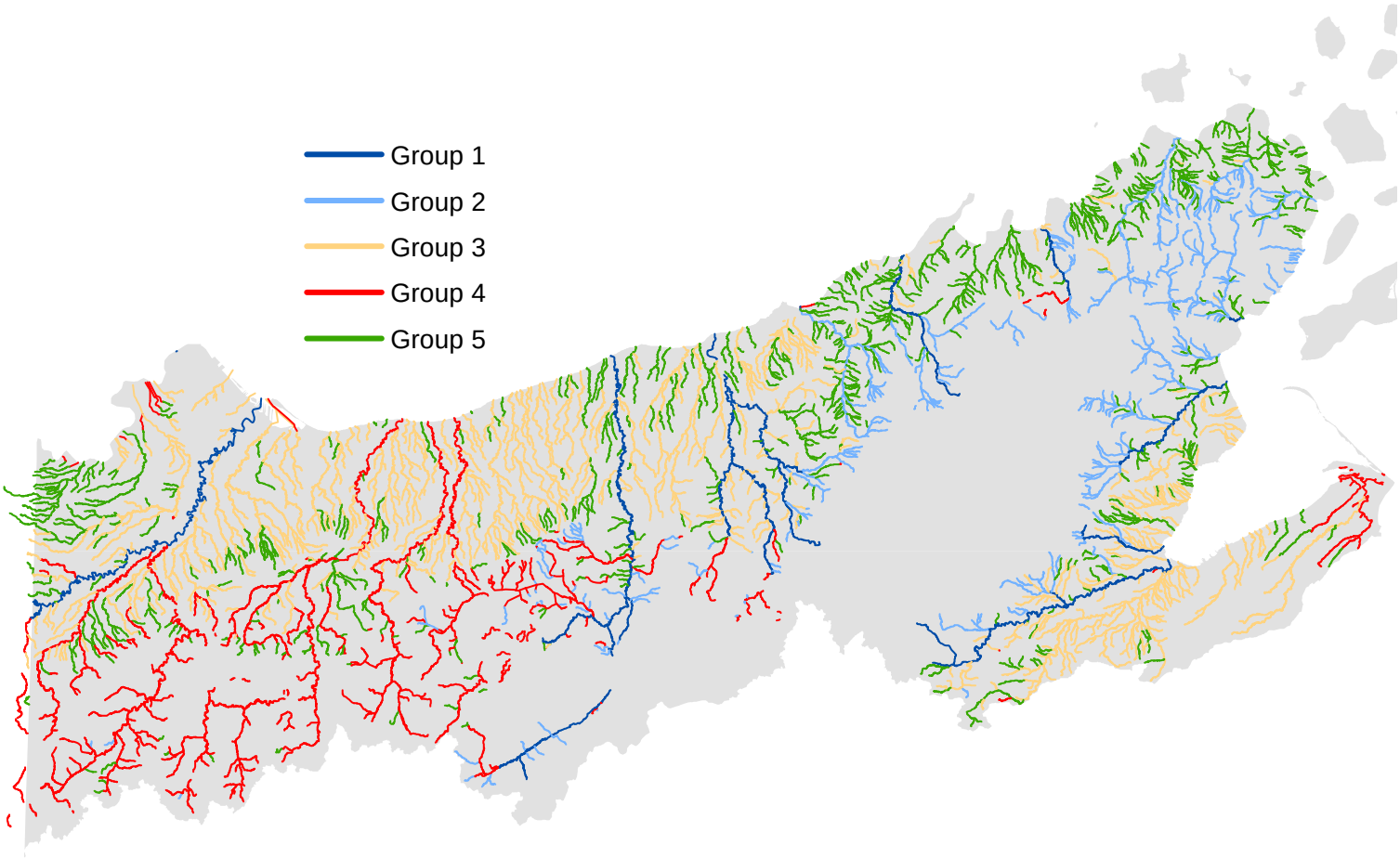
Group 1: Highest flow in the watershed. Water temperature ranges from cold to cool. Mostly forested with wetlands/lakes present. Low clay and moderate organic matter soil content for the watershed.

Group 2: Moderate flow for the watershed with water temperature ranging from cold to cool. Mostly forested without wetlands/lakes. Moderate soil clay and organic matter content.

Group 3: Low flow for the watershed. Water temperature ranges from cold to cool, but overall warmer than groups 1 and 2. Only group containing less than 70% forest: highest levels of agriculture and developed land cover in the watershed. Highest soil clay content, generally greater than 30%. Impermeable soils with low organic matter content.

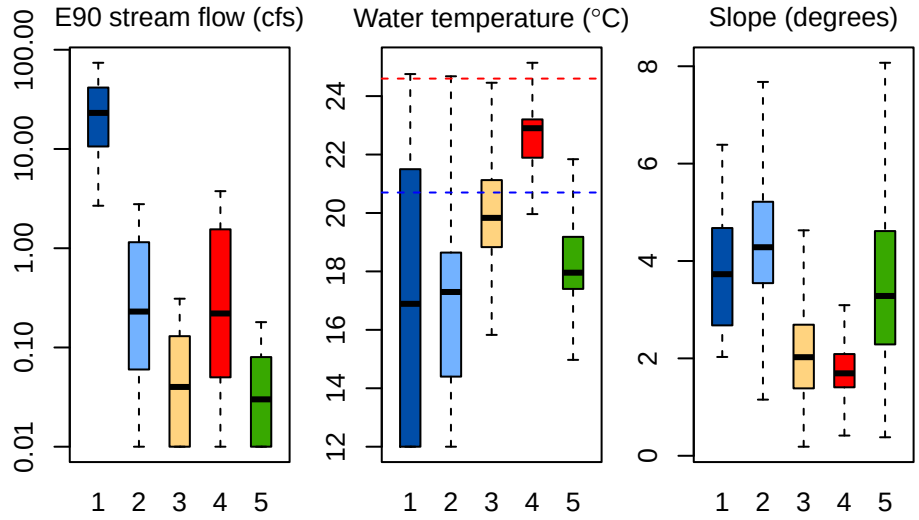
Group 4: Moderate flow for the watershed. Warmest water temperatures in the watershed, up to 25°C. Mostly forest with highest amount of wetlands/lakes, up to 10%. Lowest slopes found in the watershed, less than 3%. Highest soil organic matter found in the watershed. Low clay content with moderate permeability.

Group 5: Low flow for the watershed with water temperature ranging from cold to cool. Mostly forested without wetlands/lakes. Variable slopes with impermeable soils, low organic matter content and moderate clay content.



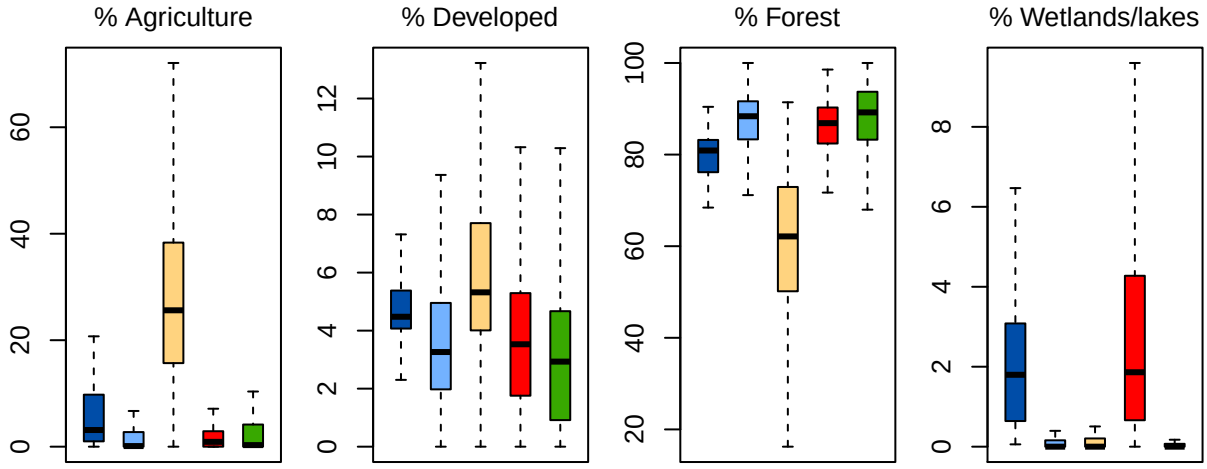
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.

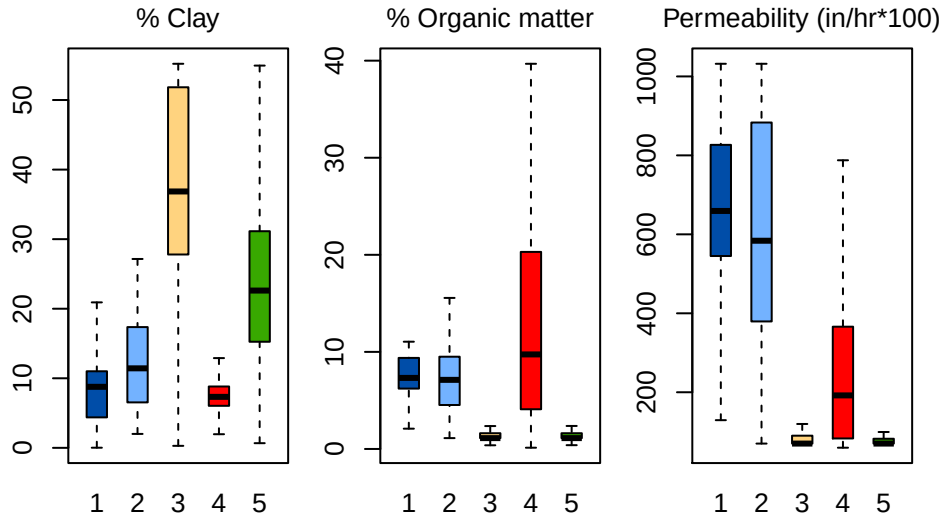


Stream group #

Boxplot colors correspond to stream group colors on the map.



Stream group #



Stream group #

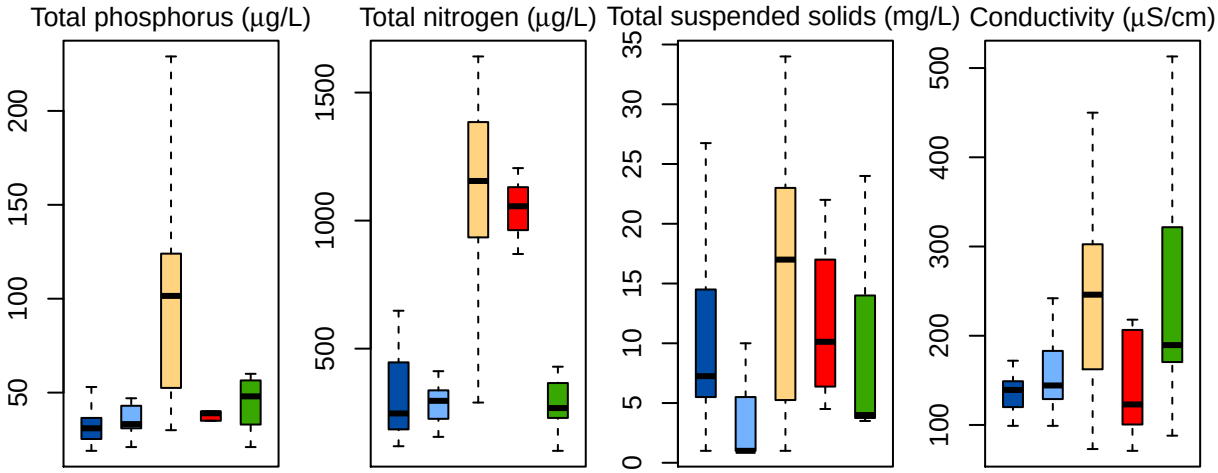
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

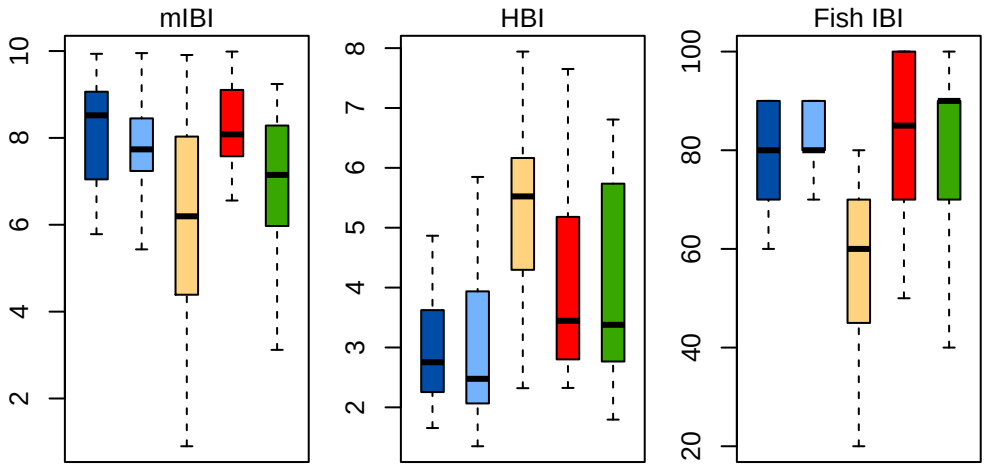
Data are provided for general reference only.
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
# of stations with data	23	12	28	5	17	15	8	20	3	11	8	3	19	4	3	22	12	27	7	15

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
# of stations with data	22	16	43	17	14	22	16	43	17	14	14	15	6	16	14

Targeted Watershed Site Selection Tool

Bad, Montreal, and White Rivers

TWSST watershed ID: 04010302
HUC 8's included: 04010302
DNR District: Northern
Area: 1202 square miles
Total stream length: 2023 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	5.6	0.08	19.9	0.15
Water temperature (°C)	20.3	20.8	21.7	21.8
Slope (degrees)	3.4	3.2	4.0	2.6
Percent agriculture	6	0	43	45
Percent developed	3	3	6	4
Percent forest	86	90	45	42
Percent wetlands/lakes	1.8	0.6	3.6	0.6
Percent soil clay content	11	6	15	14
Percent soil organic matter content	6	7	4	2
Soil permeability (in/hour * 100)	202	174	353	241

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Explore TWSST with DNR's Water Condition Viewer

TWSST

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with cold to cool water temperatures. Wetlands/lakes present up to 12%. Low to moderate soil clay content and moderate to high organic matter content, up to 12%. Includes some highly permeable soils.

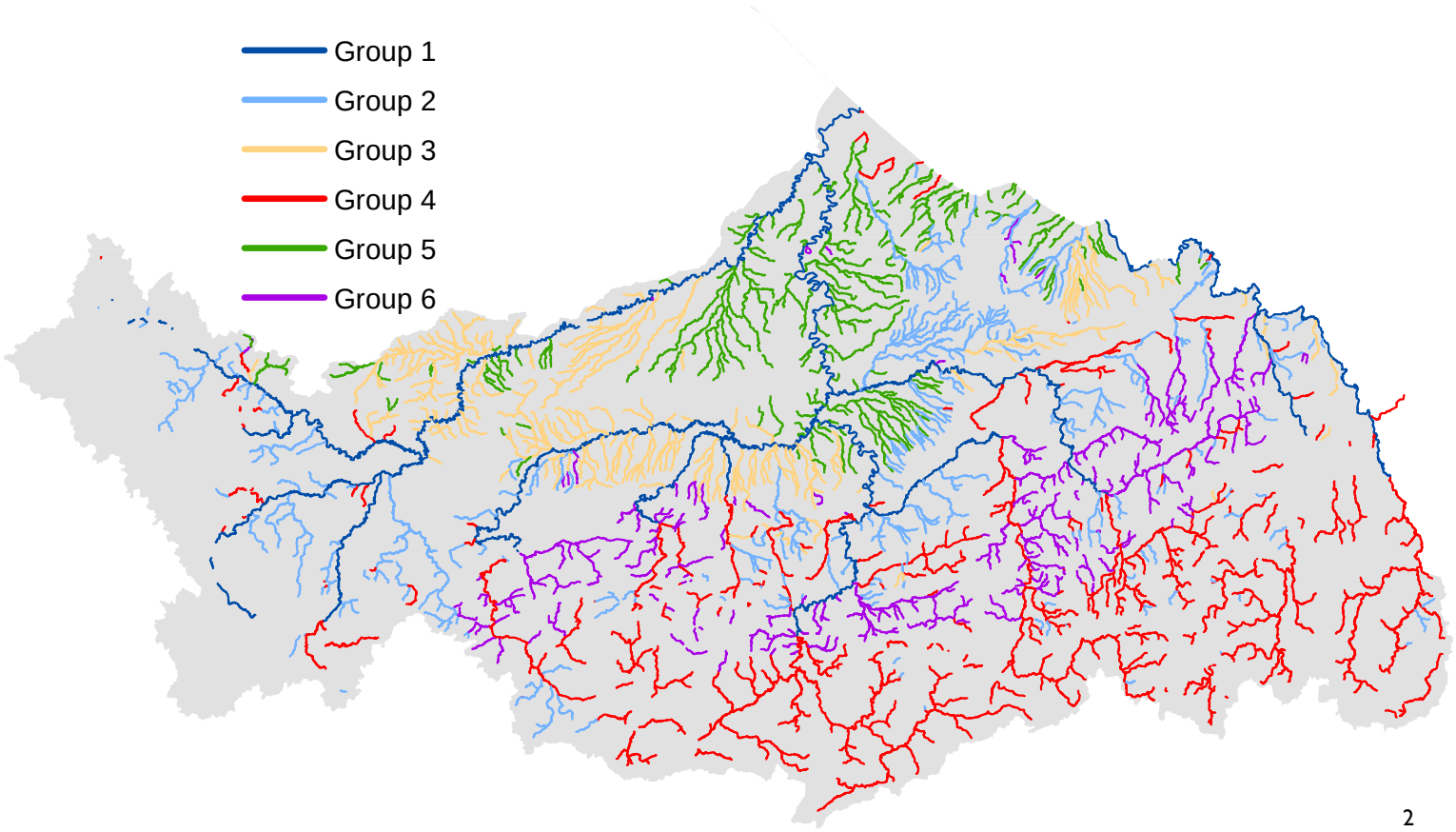
Group 2: Low to moderate flow for the watershed. Predominantly cold water temperatures, overall coldest in the watershed. Low to moderate soil clay content and moderate organic matter content. Includes some highly permeable soils.

Group 3: Low to moderate flow for the watershed with cold to cool water temperatures. Relatively high impacts from land use as this is the only group with less than 75% forest and greater than 10% agriculture. Highest developed land cover, up to 12%. High soil clay content and low to moderate organic matter content with low soil permeability.

Group 4: Low to moderate flow for the watershed. Cool water temperatures, but overall warmest in the watershed. Wetlands/lakes present up to 12%. Low soil clay and moderate organic matter content.

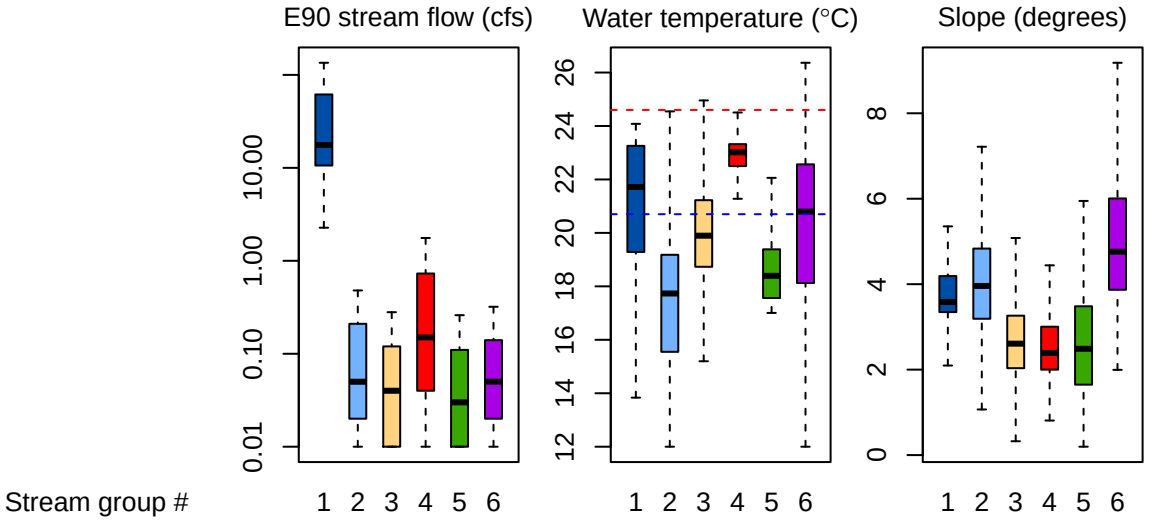
Group 5: Low to moderate flow for the watershed with predominantly cold water temperatures. Highest soil clay content in the watershed, up to 35%, low permeability and lower slopes differentiate from **Group 2**.

Group 6: Low to moderate flow for the watershed with cold to cool water temperatures. Low soil clay and organic matter content, and lowest permeability in the watershed. Some of the highest slopes in this watershed are found in this group.

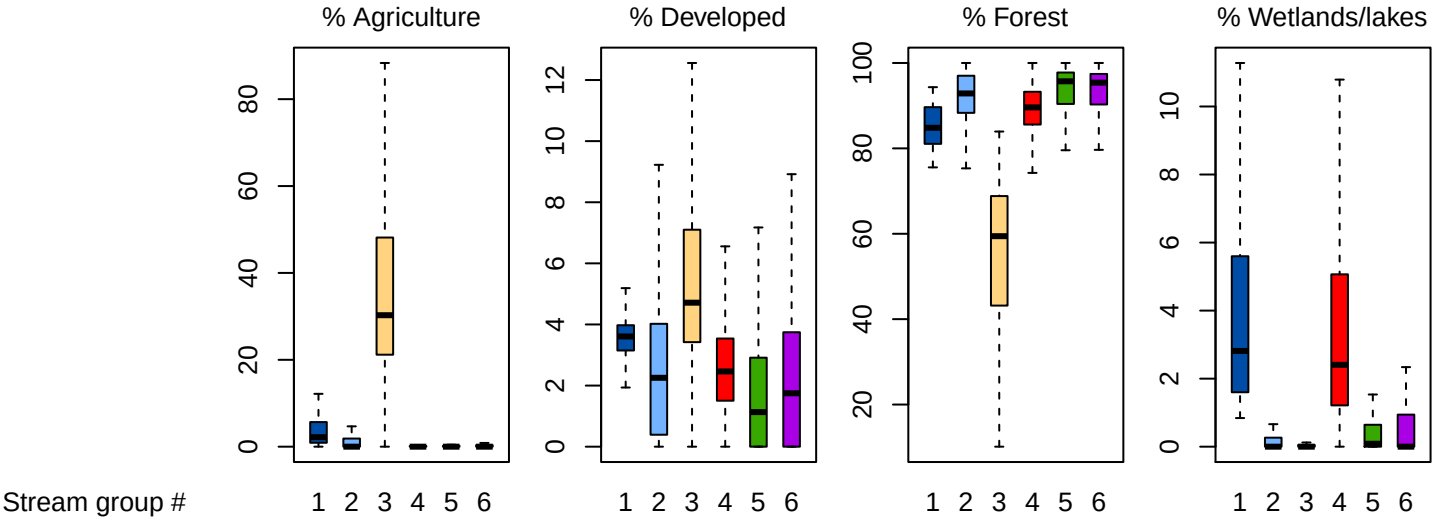


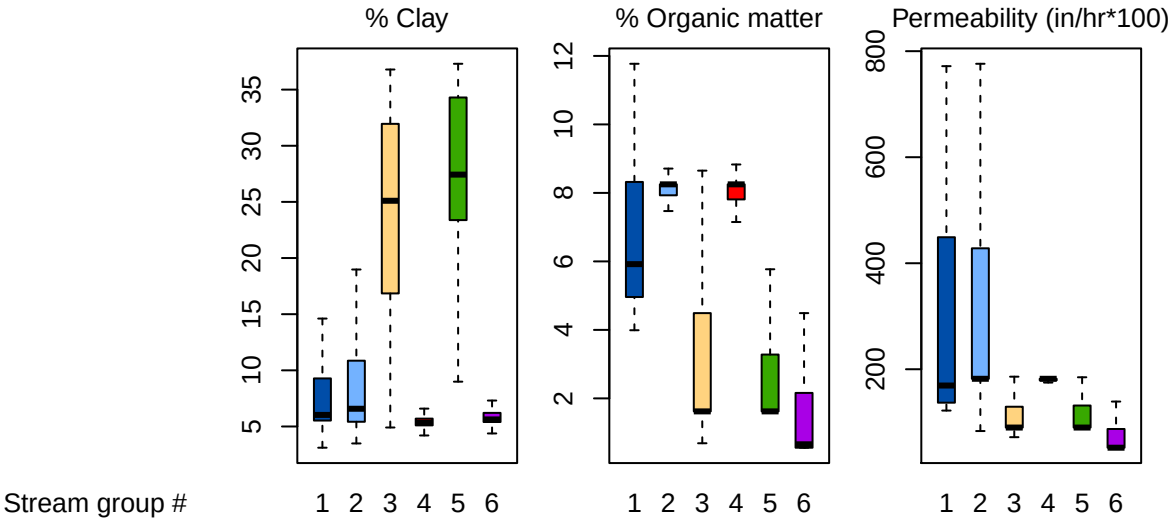
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





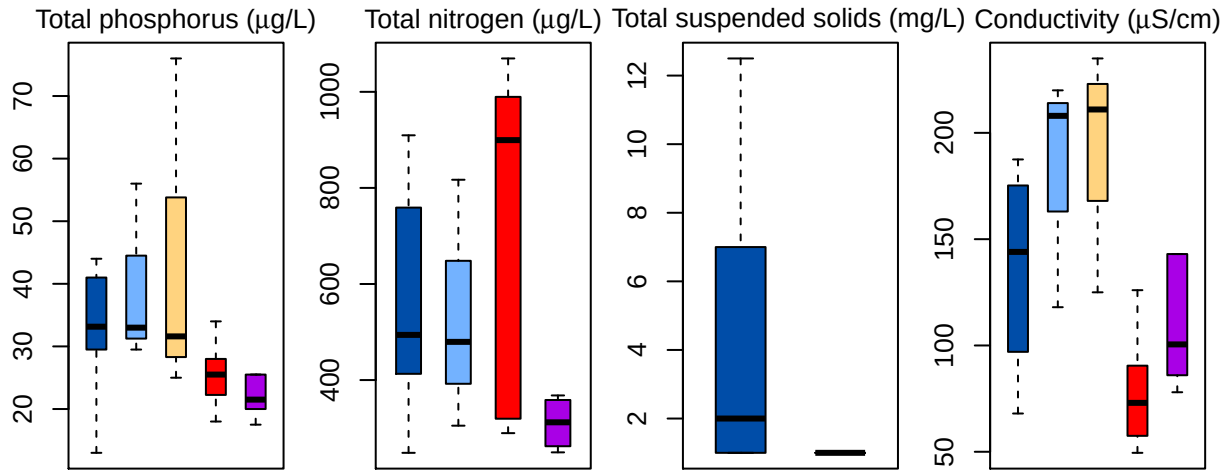
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

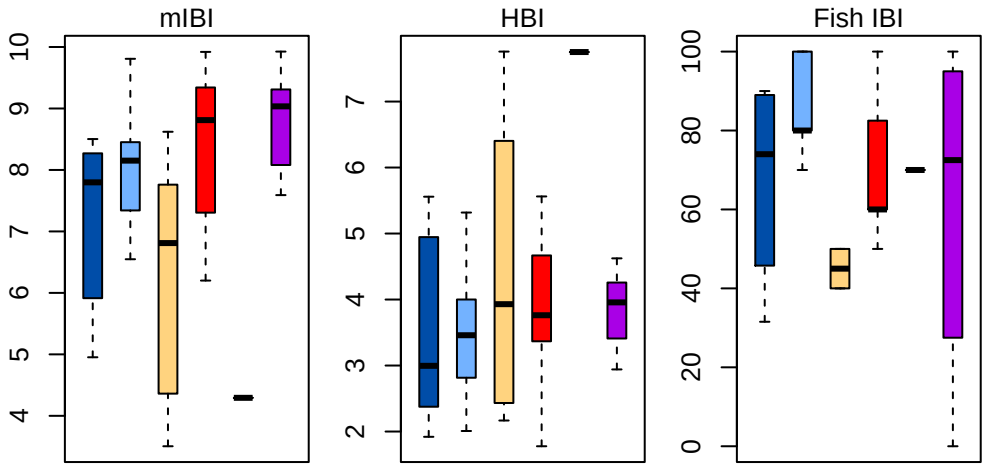
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	6		1	2	4	6		1	4		1	2	3	4	6	
# of stations with data	14	3	3	8	6		10	3	6	4		9	5		15	3	3	11	6	

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	6		1	2	3	4	5	6		1	2	3	4	5	6
# of stations with data	10	11	8	11	1	7		10	11	8	11	1	7		4	8	2	7	1	4

Targeted Watershed Site Selection Tool

Manitowoc and Sheboygan Rivers

TWSST watershed ID: 04030101
HUC 8's included: 04030101
DNR District: Northeast, Southeast
Area: 1629 square miles
Total stream length: 2273 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	1.5	0.06	19.9	0.15
Water temperature (°C)	23.0	23.1	21.7	21.8
Slope (degrees)	1.9	1.7	4.0	2.6
Percent agriculture	74	76	43	45
Percent developed	8	6	6	4
Percent forest	14	12	45	42
Percent wetlands/lakes	2.1	0.6	3.6	0.6
Percent soil clay content	25	24	15	14
Percent soil organic matter content	4	3	4	2
Soil permeability (in/hour * 100)	178	117	353	241

WISCONSIN DEPT. OF NATURAL RESOURCES

Explore TWSST with DNR's Water Condition Viewer

TWSST

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with cool to warm water temperatures.

Group 2: Low to moderate flow for the watershed with cold to cool water temperatures, including the coldest in the watershed. A mix of agriculture and forested land cover, and the only group with relatively high slopes, generally greater than 3 degrees.

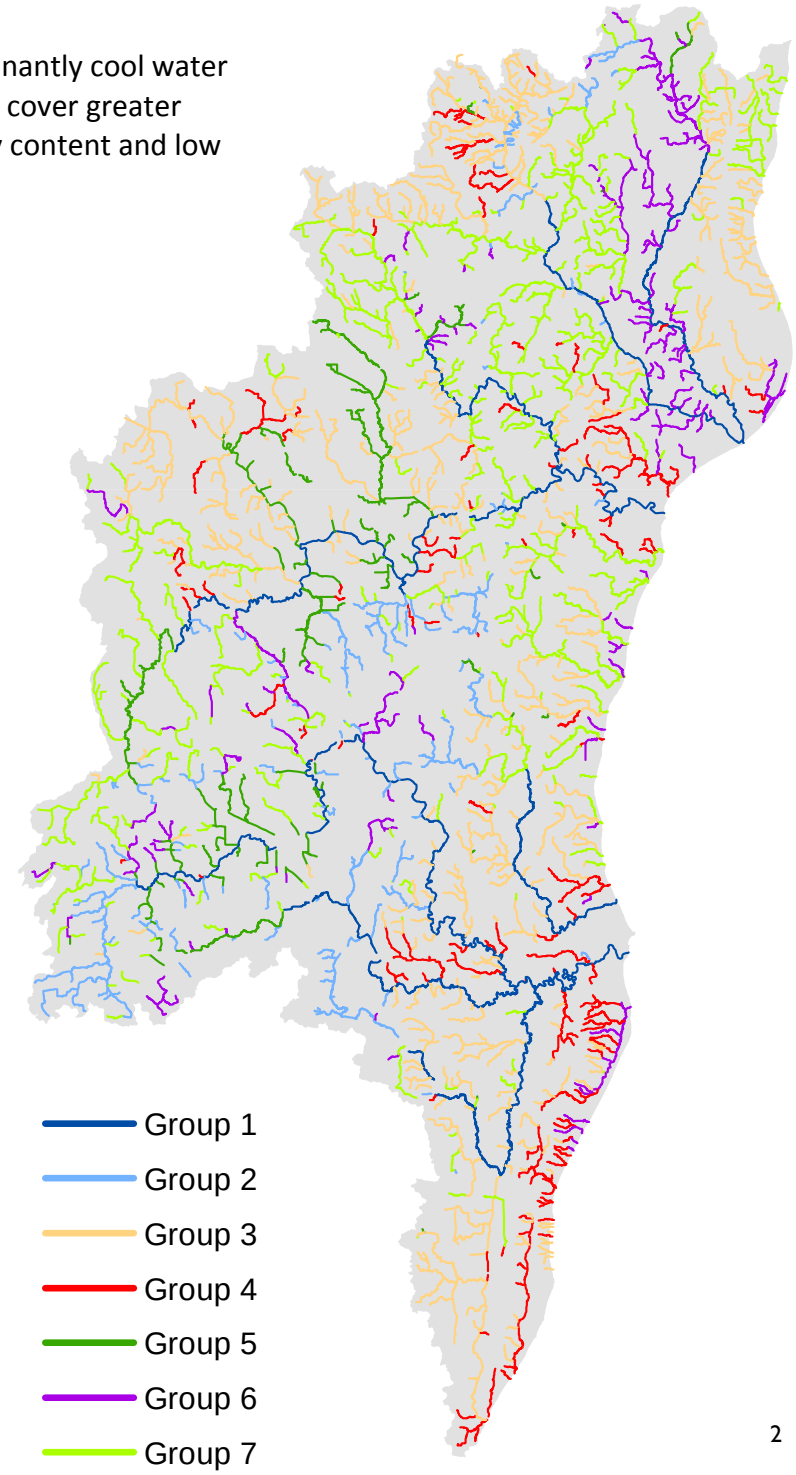
Group 3: Low flow for the watershed with predominantly cool water temperatures. Highest agriculture in the watershed, generally greater than 80%. Highest soil clay content, between 30-40%, and the lowest permeability in the watershed.

Group 4: Low flow for the watershed with predominantly cool water temperatures. The only group with developed land cover greater than 15%, with values as high as 70%. High soil clay content and low permeability.

Group 5: Moderate flow for the watershed with cool to warm water temperatures. A mix of agriculture and forested land cover, and wetlands/lakes present up to 20%. Variable soil clay content but highest organic matter content, generally between 5-15%.

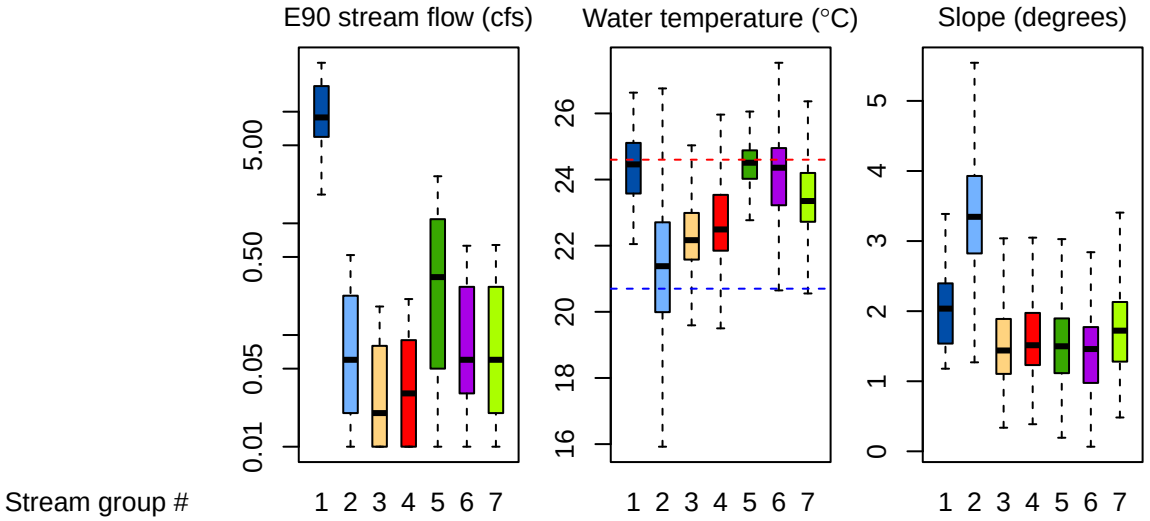
Group 6: Low to moderate flow for the watershed with cool to warm water temperatures. A mix of agriculture and forested land cover, with some wetlands/ lakes. Lowest soil clay content in the watershed, generally less than 20%, and by far the highest permeability.

Group 7: Low to moderate flow for the watershed with predominantly cool water temperatures. High agriculture for the watershed. Moderate soil clay content and low permeability.

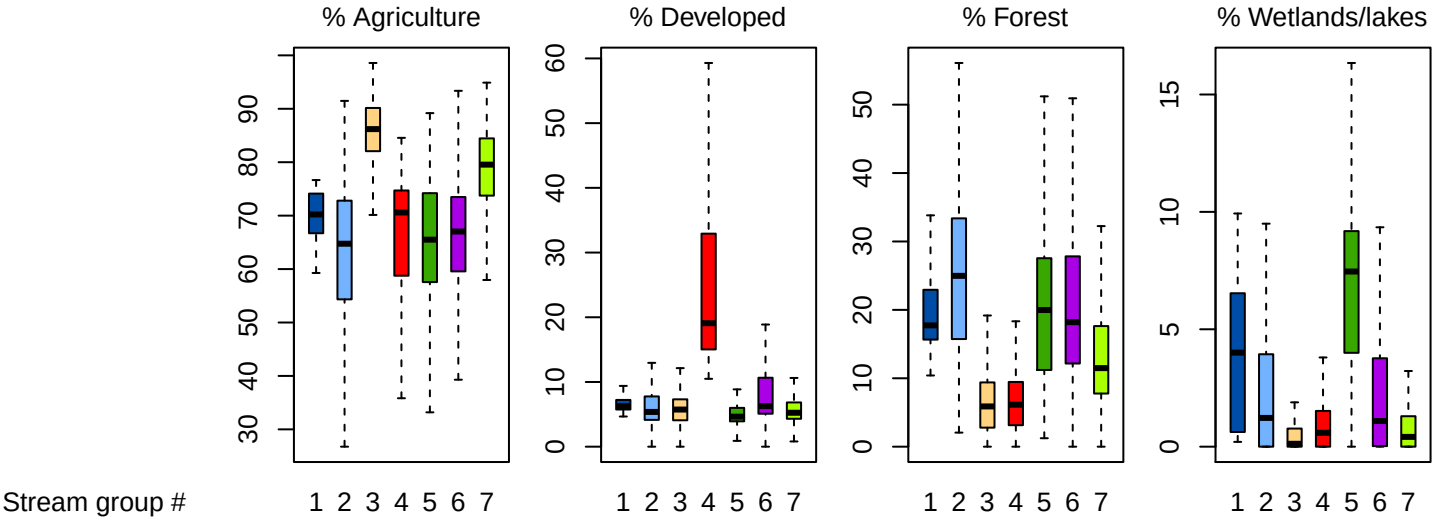


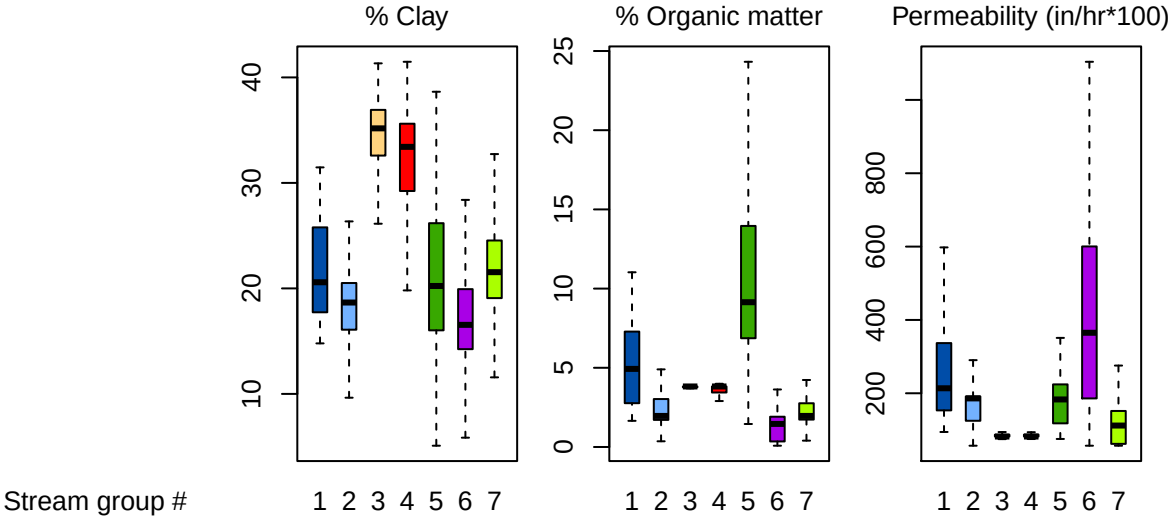
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





Land cover data are from NLCD 2006.

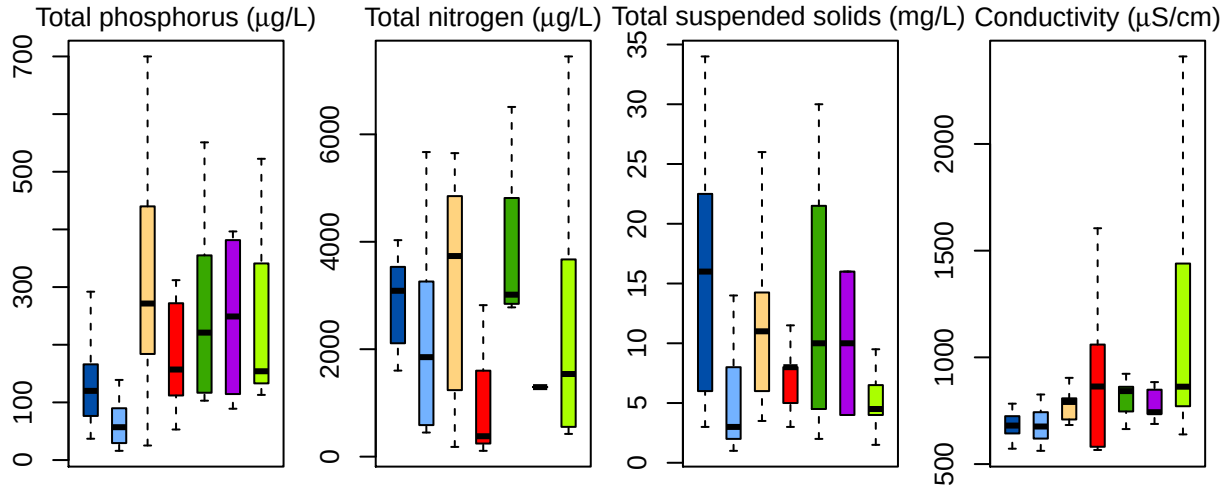
Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

Data are provided for general reference only.

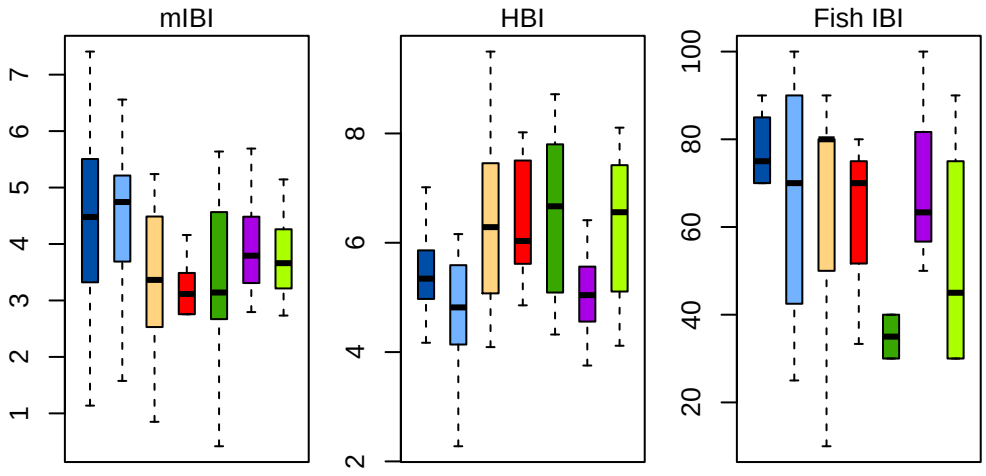
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5	6	7
# of stations with data (Total phosphorus)	29	11	18	9	6	6	14
# of stations with data (Total nitrogen)	16	6	10	3	4	1	10
# of stations with data (Total suspended solids)	19	5	11	5	4	2	11
# of stations with data (Conductivity)	27	15	10	6	5	7	6

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	6	7
# of stations with data (mIBI)	46	30	23	17	7	13	23
# of stations with data (HBI)	46	30	23	17	7	13	23
# of stations with data (Fish IBI)	4	12	11	3	2	3	4

Targeted Watershed Site Selection Tool

Kewaunee River

TWSST watershed ID: 04030102
HUC 8's included: 04030102
DNR District: Northeast,
Area: 765 square miles
Total stream length: 656 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	0.7	0.07	19.9	0.15
Water temperature (°C)	23.3	23.4	21.7	21.8
Slope (degrees)	1.5	1.3	4.0	2.6
Percent agriculture	77	81	43	45
Percent developed	6	6	6	4
Percent forest	16	12	45	42
Percent wetlands/lakes	0.4	0.1	3.6	0.6
Percent soil clay content	23	21	15	14
Percent soil organic matter content	3	2	4	2
Soil permeability (in/hour * 100)	166	143	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

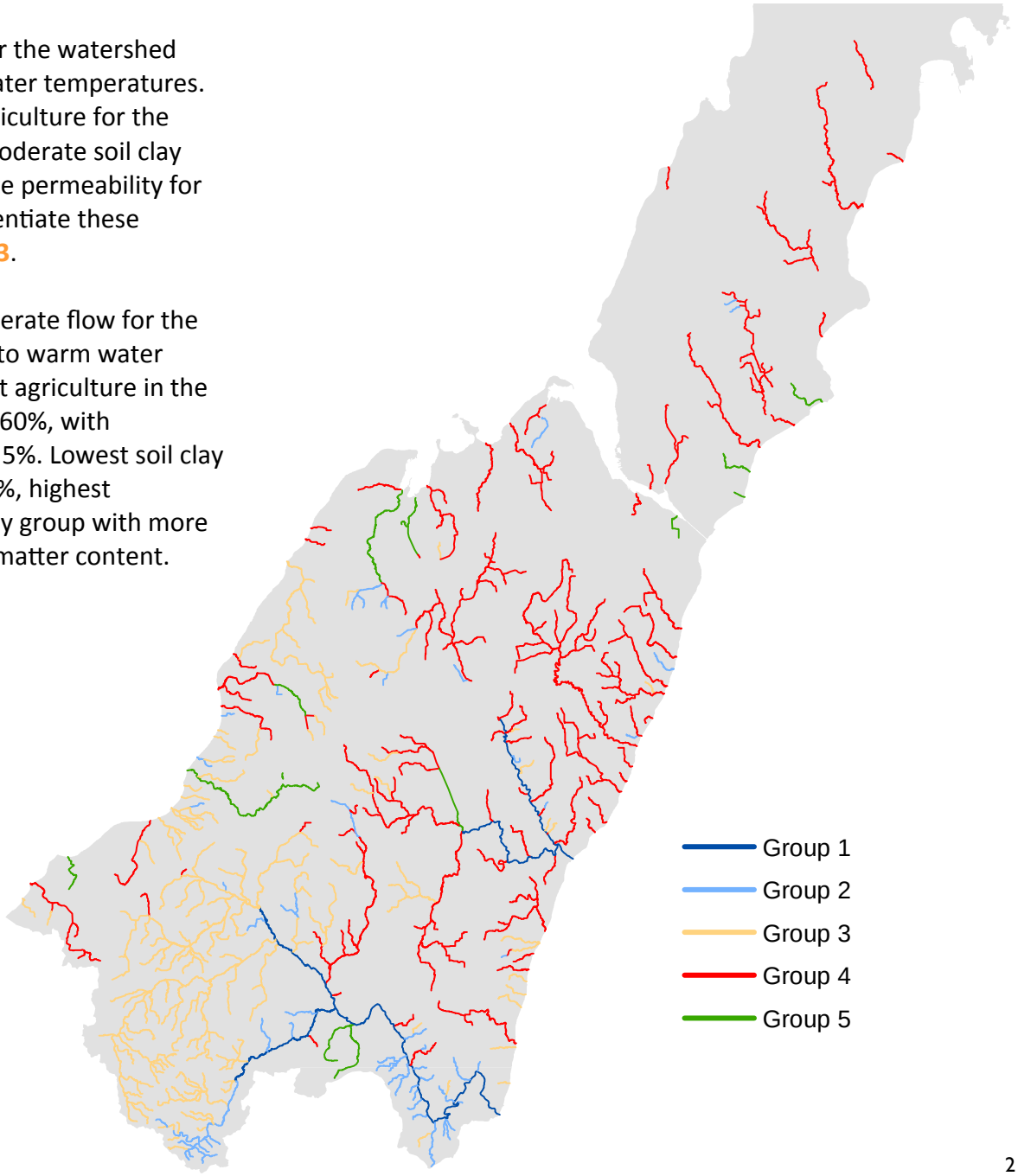
Group 1: Highest flow in the watershed although streams only reach 2-5 baseflow cfs. Cool to warm water temperatures.

Group 2: Lowest flow in the watershed, less than 0.05 cfs at baseflow: may not be perennial streams. Cold to cool water temperatures, overall the coldest in the watershed. High agriculture and highest slopes in the watershed, generally greater than 2 degrees.

Group 3: Low flow for the watershed with predominantly cool water temperatures. Highest agriculture in the watershed, greater than 75% throughout. Highest soil clay content, generally greater than 30%, and lowest permeability.

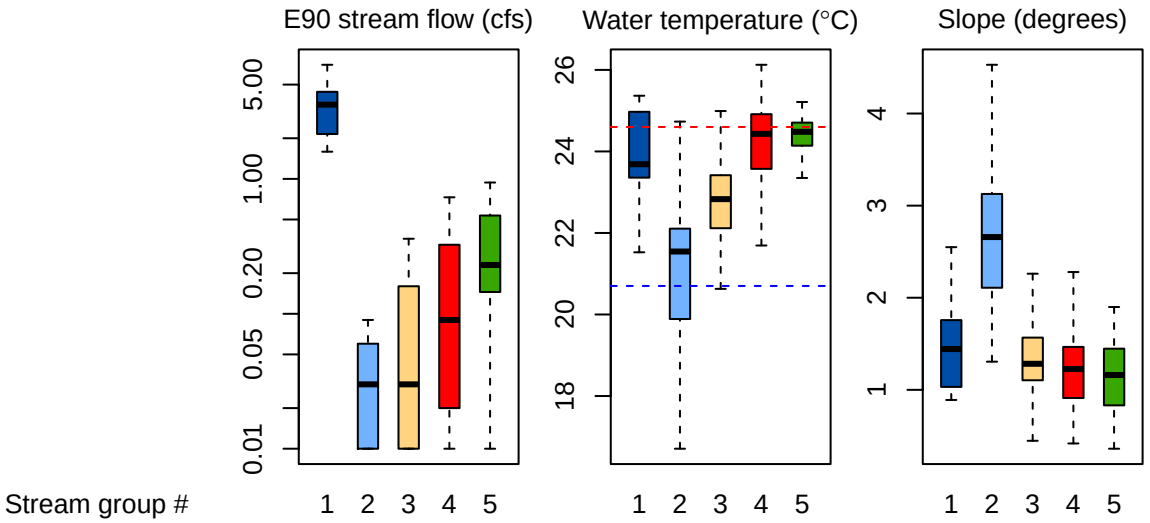
Group 4: Low flow for the watershed with cool to warm water temperatures. Moderate to high agriculture for the watershed. Low to moderate soil clay content and moderate permeability for the watershed differentiate these streams from **Group 3**.

Group 5: Low to moderate flow for the watershed with cool to warm water temperatures. Lowest agriculture in the watershed, less than 60%, with wetlands/lakes up to 5%. Lowest soil clay content, less than 20%, highest permeability, and only group with more than 5% soil organic matter content.

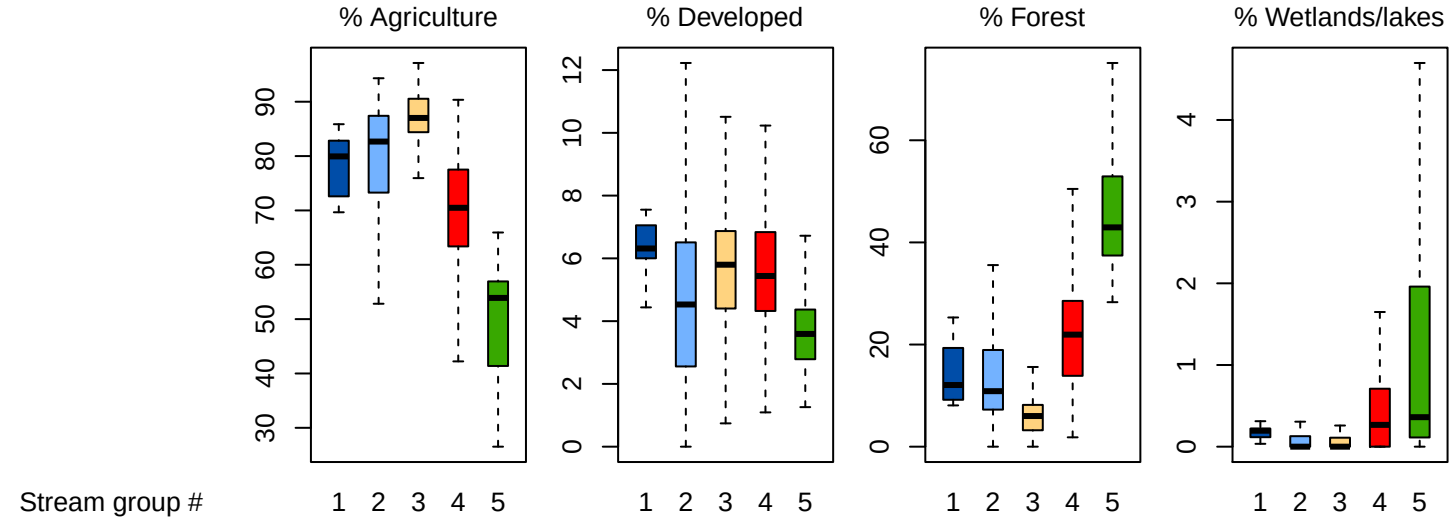


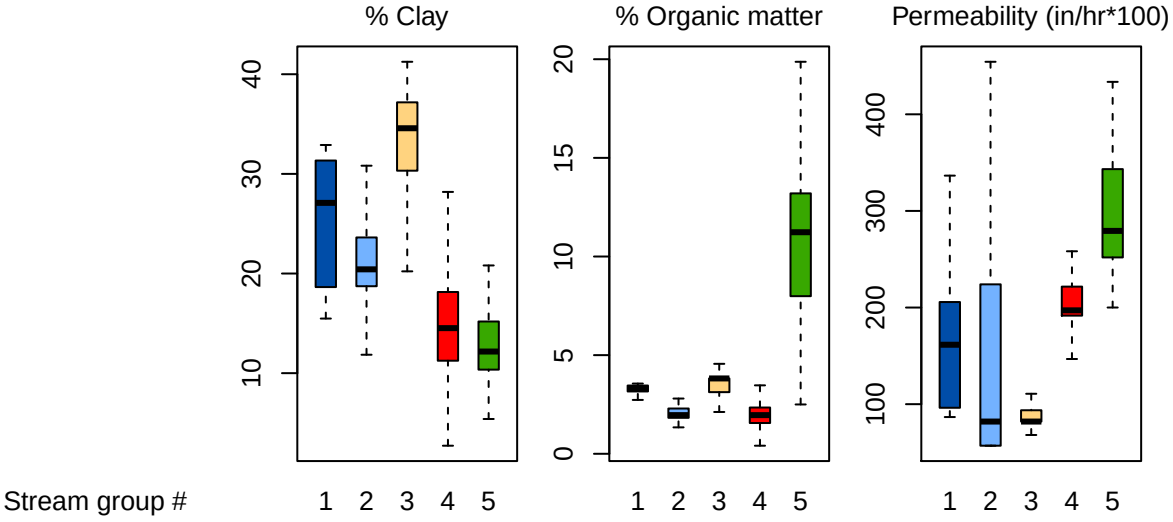
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





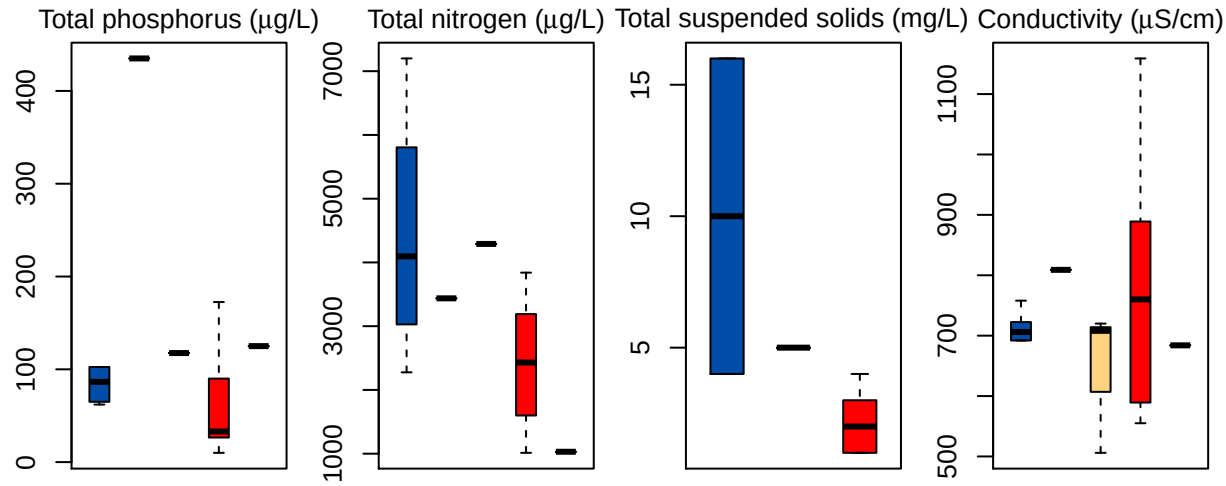
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

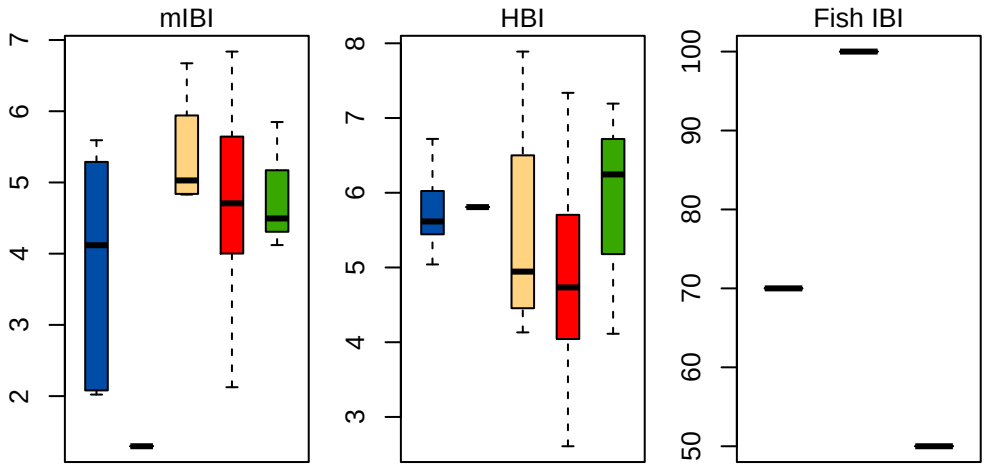
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5	1	2	3	4	5	1	3	4	1	2	3	4	5
# of stations with data	5	1	1	11	1	4	1	1	6	1	2	1	7	5	1	3	7	1

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	1	2	3	4	5	3	4	5
# of stations with data	6	1	4	20	3	6	1	4	20	3	2	1	1

Targeted Watershed Site Selection Tool

Pensaukee River

TWSST watershed ID: 04030103
HUC 8's included: 04030103
DNR District: Northeast
Area: 333 square miles
Total stream length: 552 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	0.8	0.08	19.9	0.15
Water temperature (°C)	22.8	22.8	21.7	21.8
Slope (degrees)	0.9	0.9	4.0	2.6
Percent agriculture	62	70	43	45
Percent developed	7	6	6	4
Percent forest	28	20	45	42
Percent wetlands/lakes	1.4	0.8	3.6	0.6
Percent soil clay content	13	14	15	14
Percent soil organic matter content	2	2	4	2
Soil permeability (in/hour * 100)	419	193	353	241

WISCONSIN DEPT. OF NATURAL RESOURCES

Explore TWSST with DNR's Water Condition Viewer

TWSST

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with cool water temperatures.

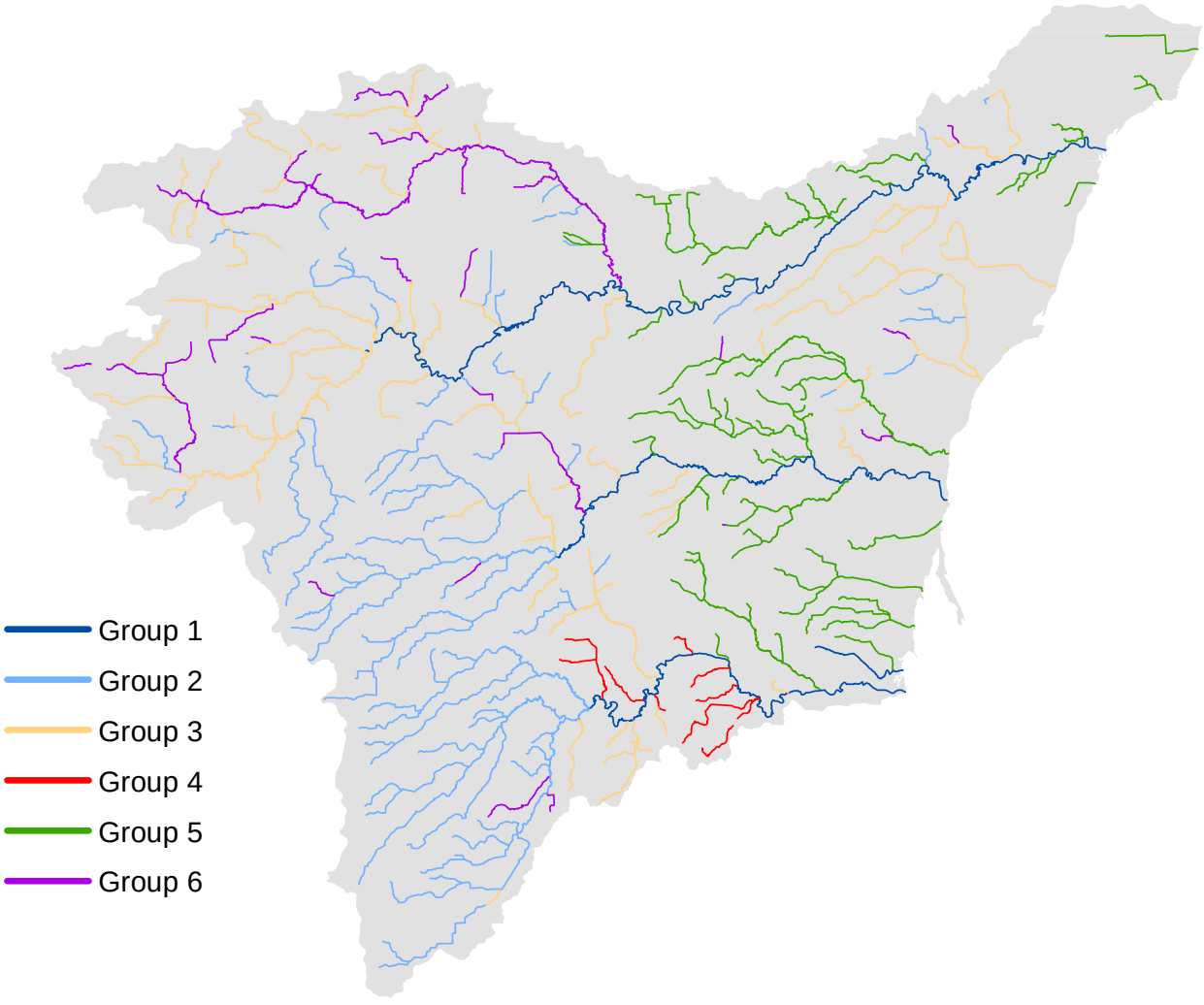
Group 2: Low flow for the watershed, less than 0.10 cfs at baseflow, with predominantly cool water temperatures. Highest agriculture in the watershed, generally greater than 80%, and moderate developed land cover. Highest soil clay content in the watershed, between 15-18%.

Group 3: Low flow in the watershed with cool water temperatures. A mix of agriculture and forest land cover. Along with **Group 2** and **Group 6**, the lowest permeability in the watershed.

Group 4: Low flow for the watershed with predominantly cool water temperatures. Mix of agriculture and forest, with overall highest levels of developed land cover, up to 25%. Only group with slopes greater than 2 degrees.

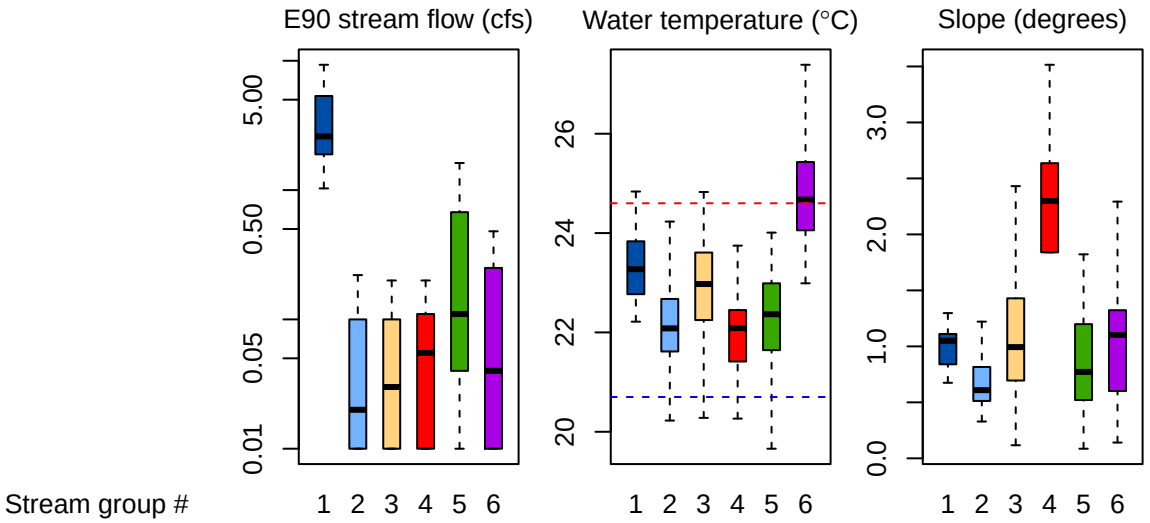
Group 5: Moderate flow for the watershed with cold to cool water temperatures. Highest forested land in the watershed, generally greater than 50%, and moderate developed land cover. Lowest soil clay content in the watershed, generally less than 8%, and by far the highest permeability.

Group 6: Low to moderate flow for the watershed with cool to warm water temperatures, overall the warmest in the watershed. Mix of agriculture and forests with more wetlands/lakes differentiating these streams from **Group 3**.

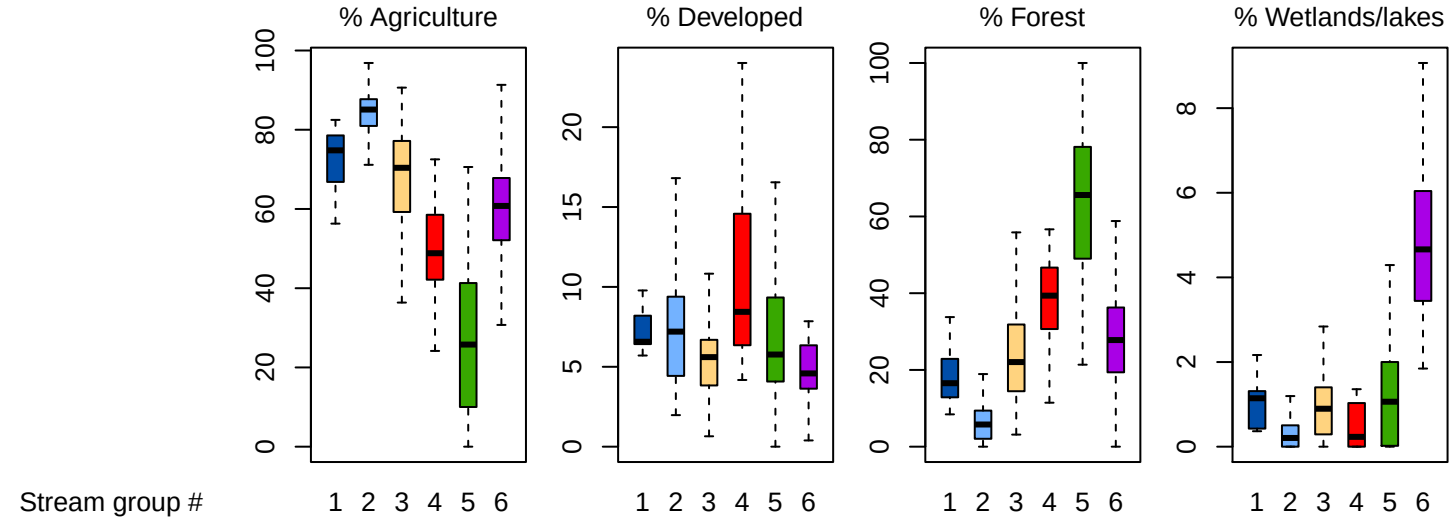


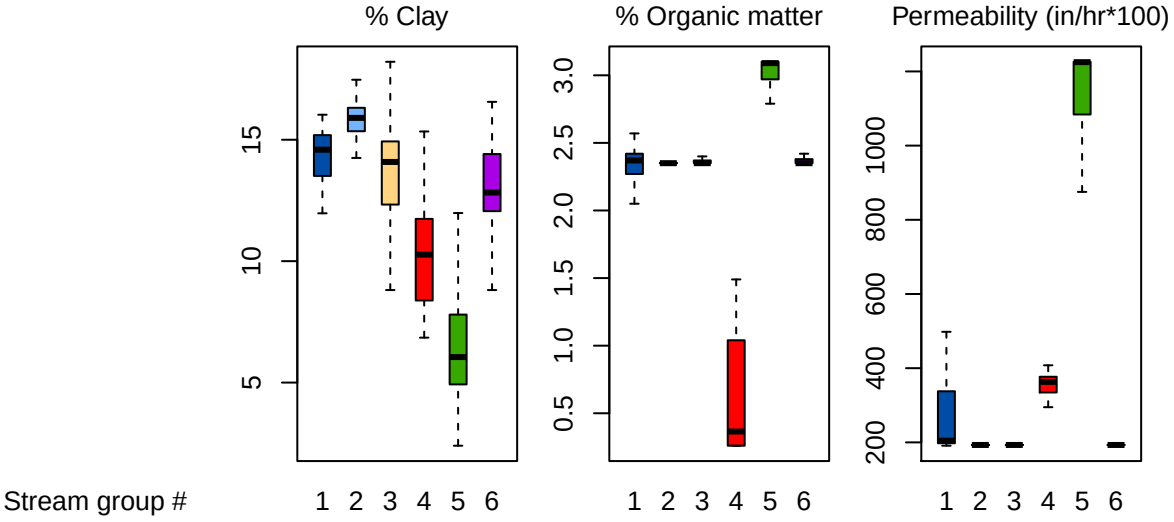
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





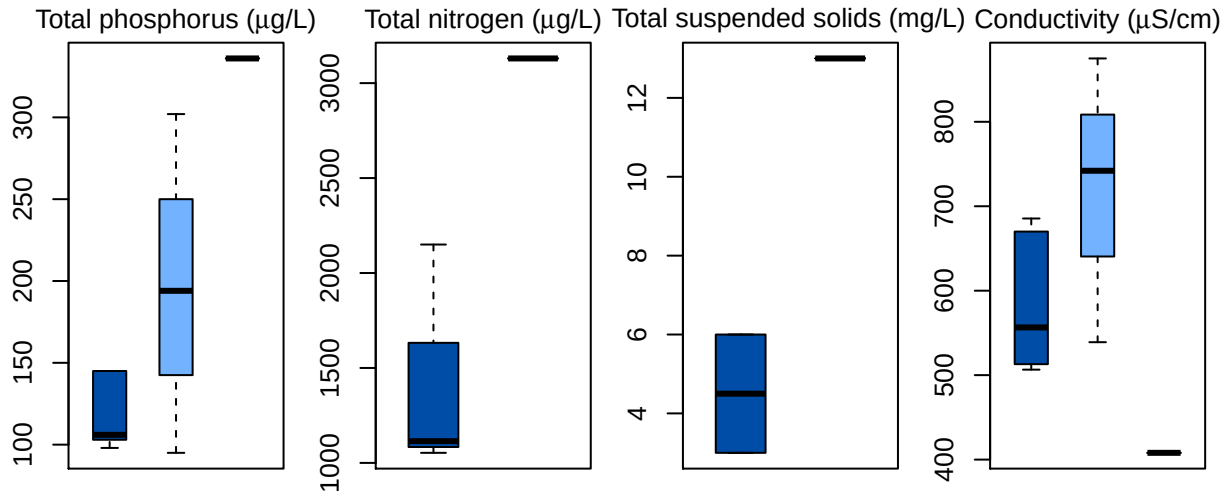
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

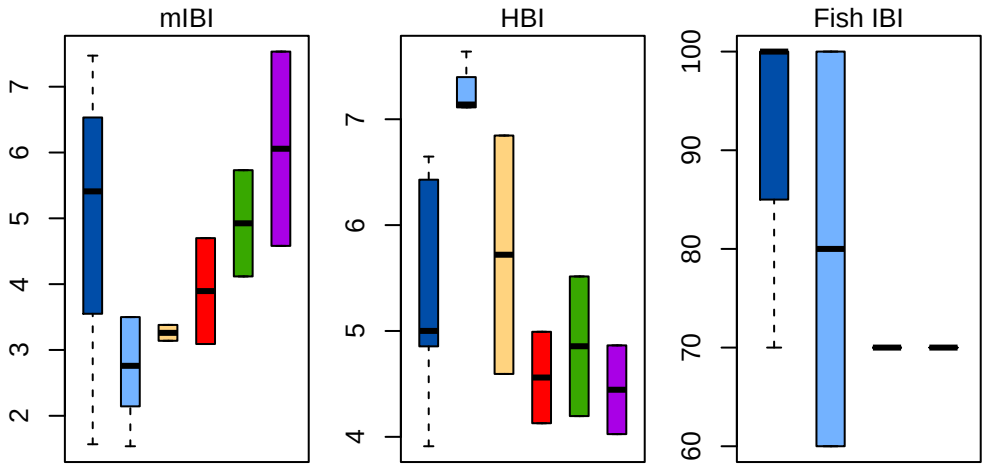
Data are provided for general reference only.
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	1	2	1	2	1	2	3
# of stations with data	5	4	1	3	1	2	1	5	3	1

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	5
# of stations with data	8	5	2	2	2	2	8	5	2	2	2	2	3	2	1	1

Targeted Watershed Site Selection Tool

Oconto River

TWSST watershed ID: 04030104
HUC 8's included: 04030104
DNR District: Northeast, Northern
Area: 960 square miles
Total stream length: 1112 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	19.2	0.2	19.9	0.15
Water temperature (°C)	22.5	22.9	21.7	21.8
Slope (degrees)	2.4	2.2	4.0	2.6
Percent agriculture	24	6	43	45
Percent developed	5	4	6	4
Percent forest	66	81	45	42
Percent wetlands/lakes	3.8	2.1	3.6	0.6
Percent soil clay content	8	7	15	14
Percent soil organic matter content	5	3	4	2
Soil permeability (in/hour * 100)	628	661	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

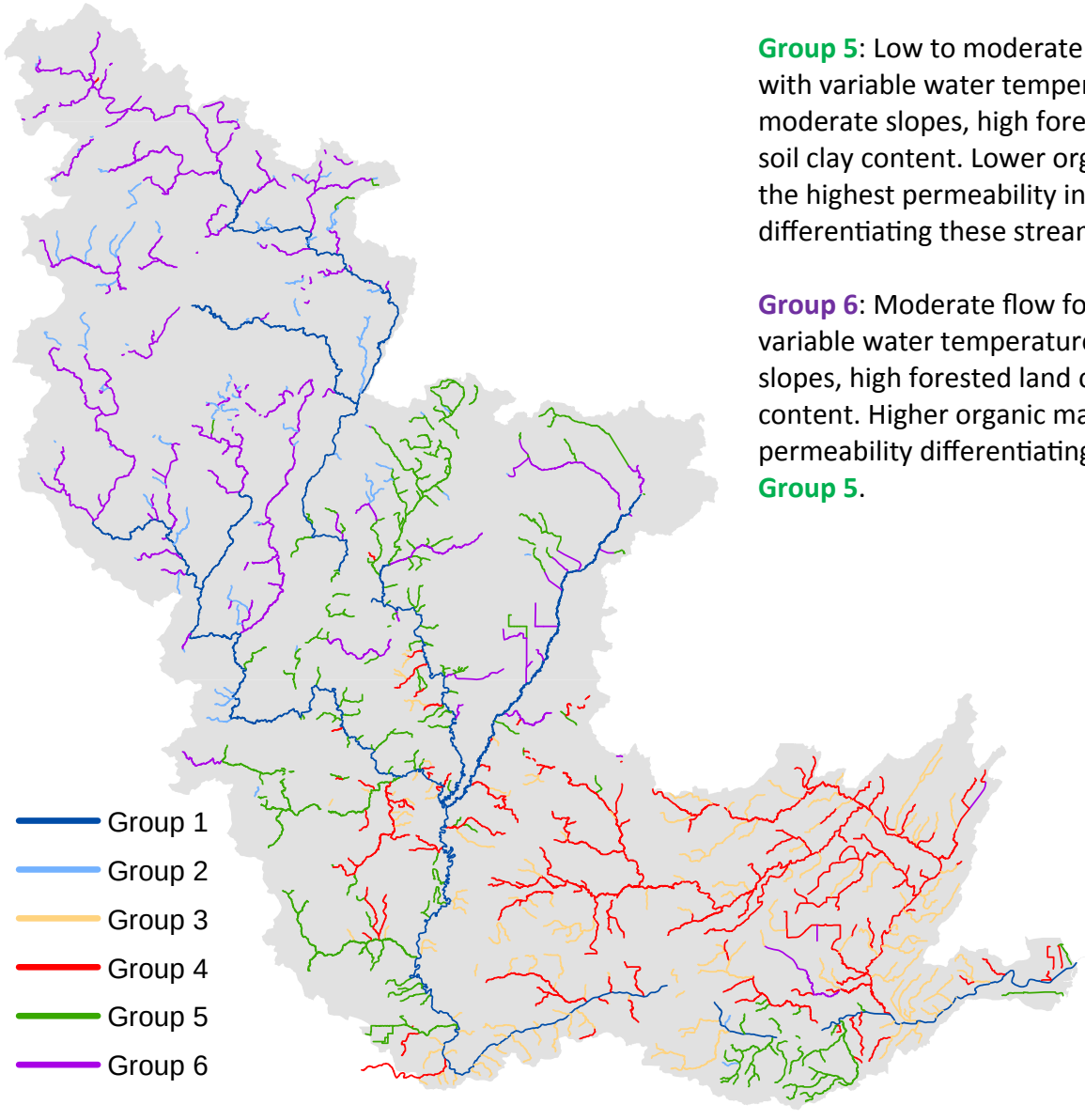
Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with cool water temperatures.

Group 2: Low flow for the watershed with predominantly cold water temperatures, the coldest in the watershed. Least impacted streams in the watershed, with agriculture virtually absent and the lowest developed land cover, generally less than 3%. Includes the highest slopes in the watershed up to 8 degrees.

Group 3: Lowest flow in the watershed, all less than 0.1 cfs baseflow, with predominantly cool water temperatures. Highest agriculture in the watershed, generally greater than 70%, and some of the highest developed land cover, up to 12%. Highest soil clay content, generally greater than13%, and lowest permeability in the watershed.

Group 4: Low to moderate flow for the watershed with cool to warm water temperatures, overall the warmest in the watershed. Mix of agriculture and forested land cover with the lowest slopes in the watershed, less than 2 degrees. Variable soil clay content and low to moderate permeability.high forested land cover, and low soil clay content. Lower organic matter content and the highest permeability in the watershed differentiating these

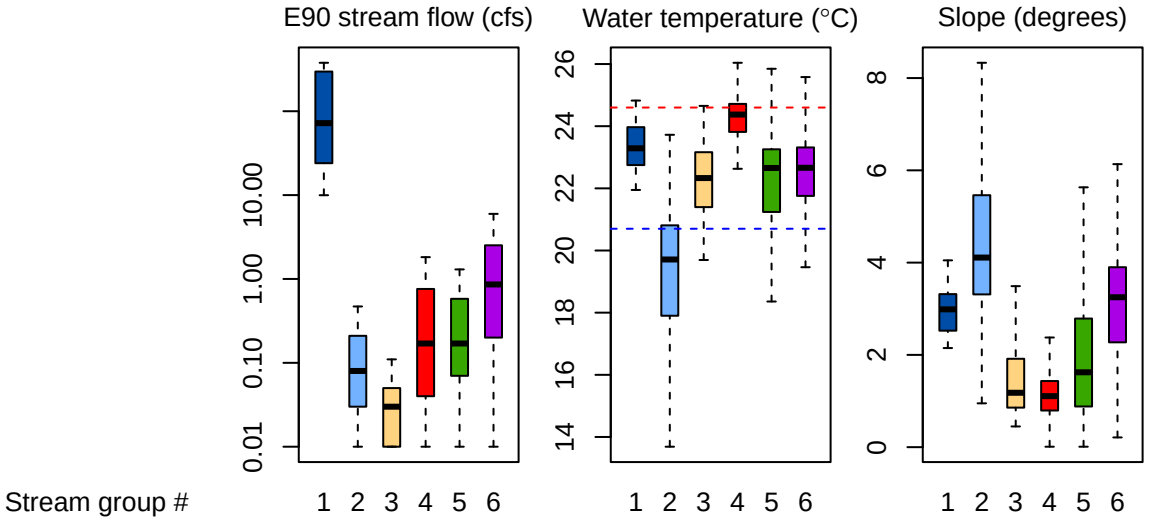


Group 5: Low to moderate flow for the watershed with variable water temperatures. Low to moderate slopes, high forested land cover, and low soil clay content. Lower organic matter content and the highest permeability in the watershed differentiating these streams from **Group 6**.

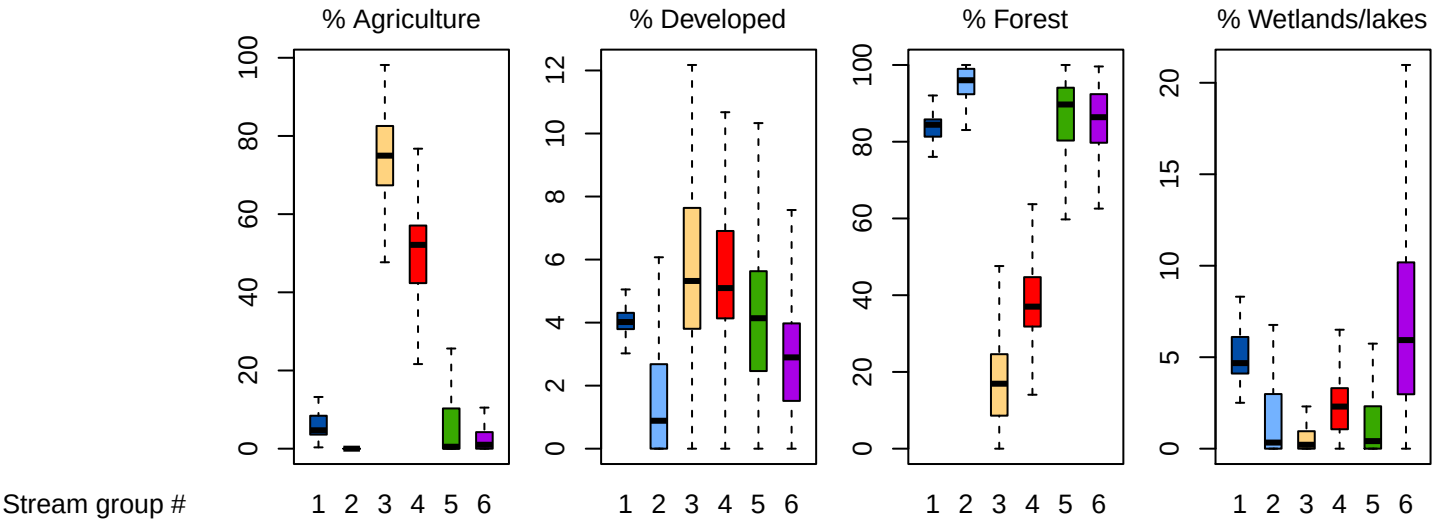
Group 6: Moderate flow for the watershed with variable water temperatures. Low to moderate slopes, high forested land cover, and low soil clay content. Higher organic matter content and lower permeability differentiating these streams from **Group 5**.

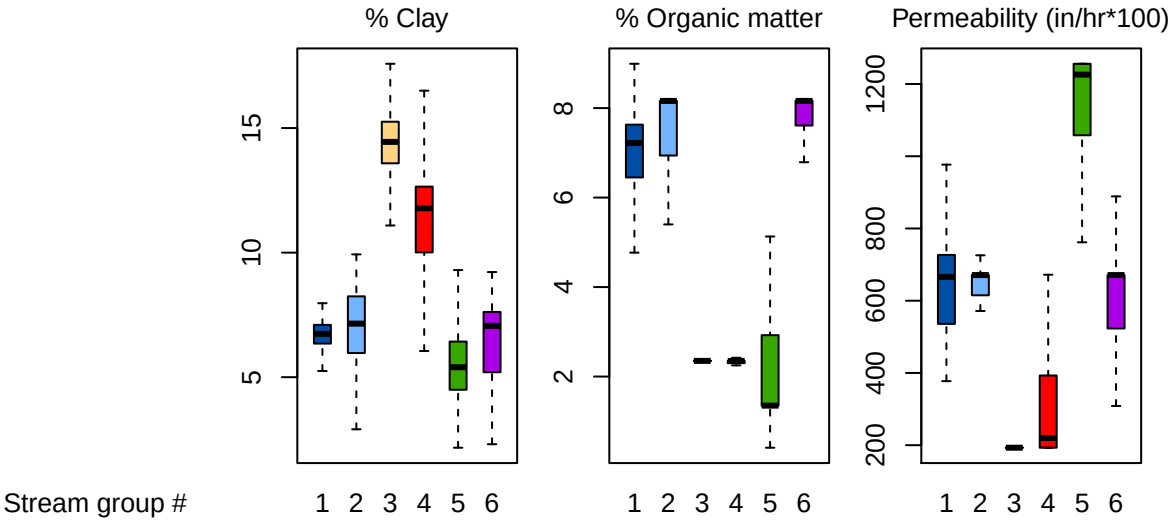
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





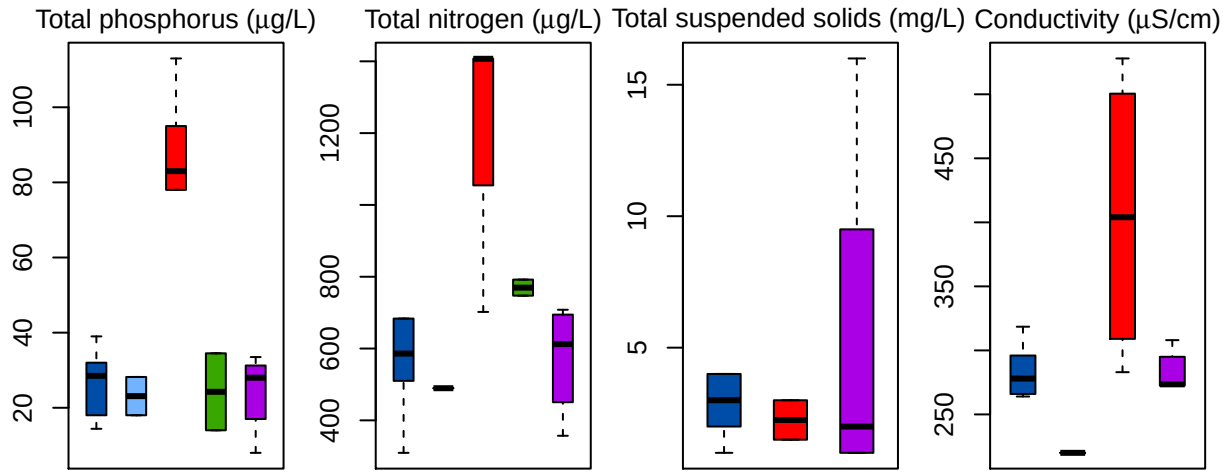
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

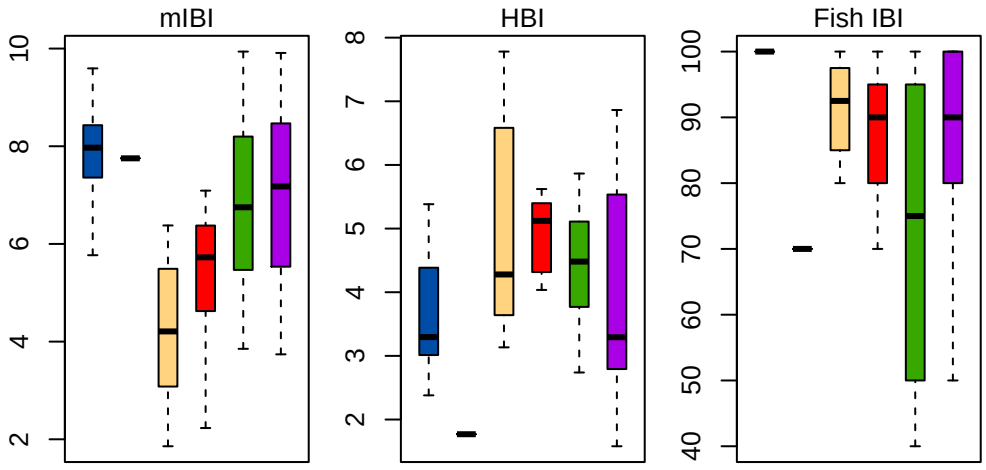
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	4	5	6	1	2	4	5	6	1	4	6	1	2	4	6
# of stations with data	10	2	5	2	7	6	1	3	2	4	5	2	4	9	1	4	6

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
# of stations with data	17	1	7	11	19	22	17	1	7	11	19	22	1	1	4	3	4	9

Targeted Watershed Site Selection Tool

Peshtigo River

TWSST watershed ID: 04030105
HUC 8's included: 04030105
DNR District: Northeast, Northern
Area: 1219 square miles
Total stream length: 1341 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	16.6	0.29	19.9	0.15
Water temperature (°C)	22.6	23.0	21.7	21.8
Slope (degrees)	2.1	2.1	4.0	2.6
Percent agriculture	16	5	43	45
Percent developed	5	4	6	4
Percent forest	73	81	45	42
Percent wetlands/lakes	3.8	2.5	3.6	0.6
Percent soil clay content	7	7	15	14
Percent soil organic matter content	8	7	4	2
Soil permeability (in/hour * 100)	684	659	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

TWSST

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

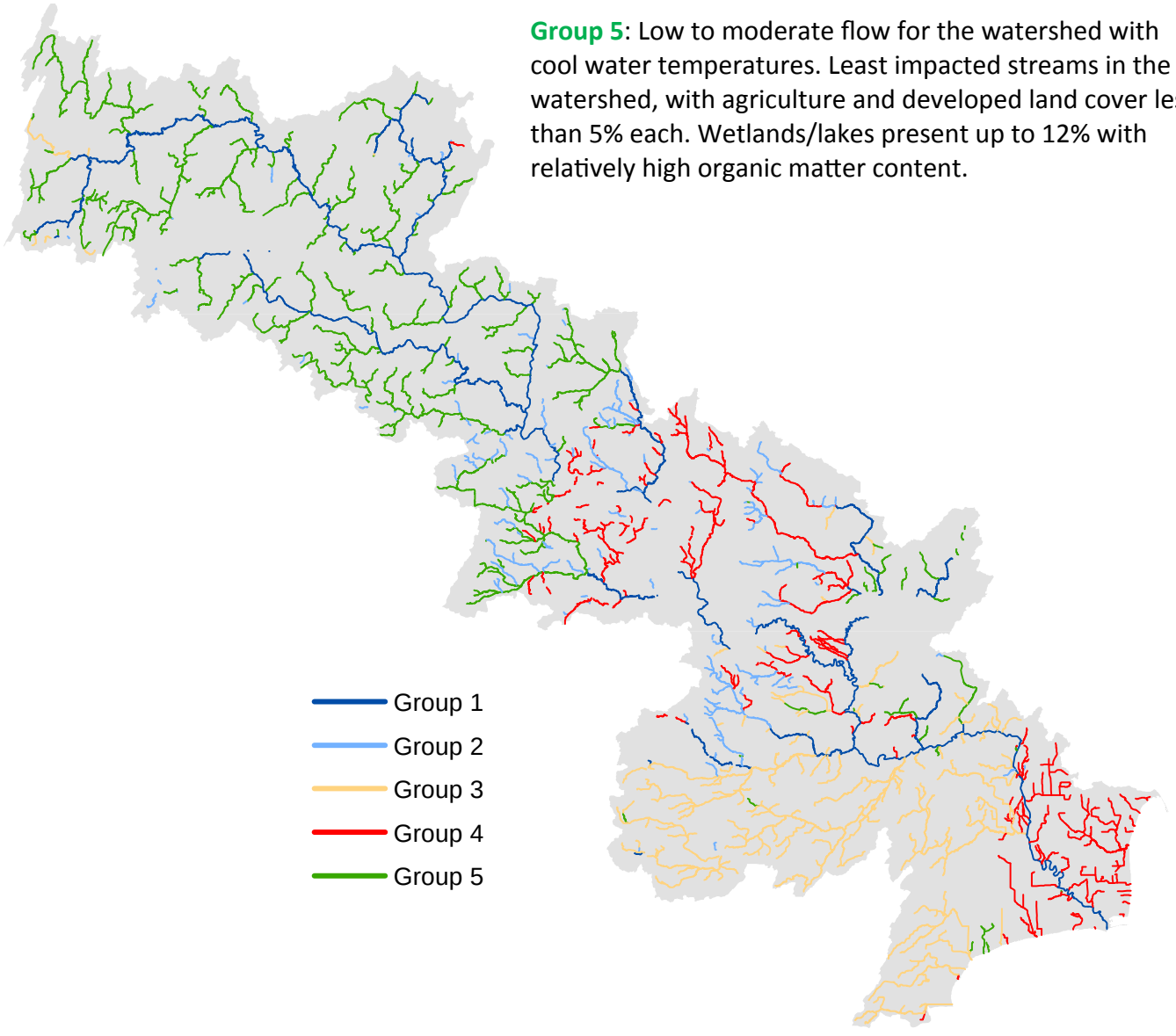
Group 1: Variable flow, though predominantly mainstems and overall the highest in the watershed, with cool water temperatures. High forested land cover with wetlands/lakes between 5-10% with highest soil organic matter content.

Group 2: Low to moderate flow for the watershed with cold to cool water temperatures, overall the coldest in the watershed. Moderate to high forested and low to moderate agriculture and developed land cover with some of the highest slopes in the watershed, up to 7 degrees.

Group 3: Low to moderate flow for the watershed with cool to warm water temperatures, overall the warmest in the watershed. By far the highest agriculture in the watershed, generally greater than 40% and as high as 95%. Highest soil clay content, around 10%, low organic matter content, and lowest permeability in the watershed.

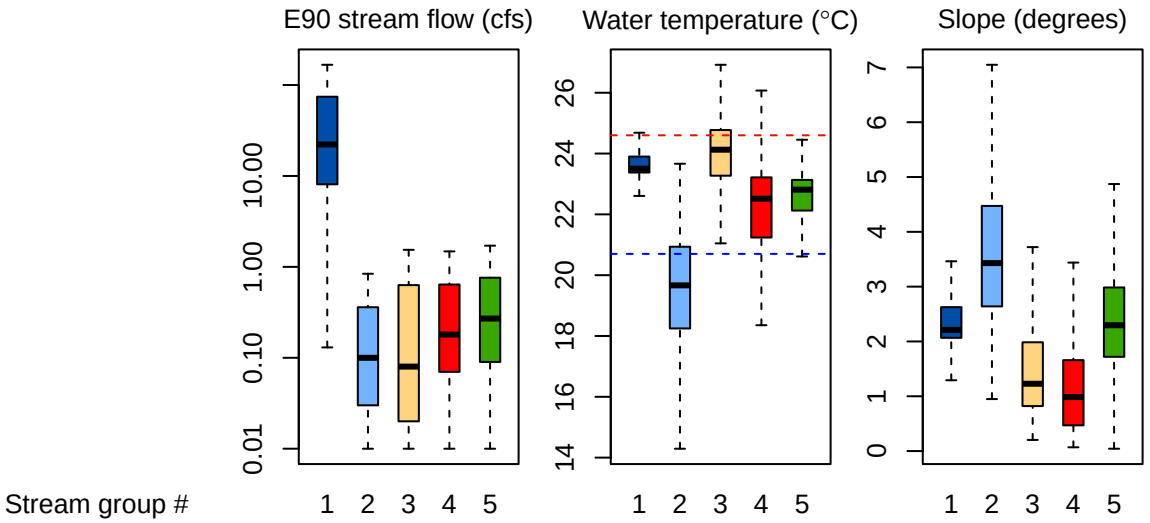
Group 4: Low to moderate flow for the watershed with variable water temperatures. A mix of all four land cover categories, including the highest levels of developed land, up to 15%. Lowest slopes in the watershed, generally less than 2 degrees. Lowest soil clay content, around 6%, low organic matter content, and highest permeability in the watershed.

Group 5: Low to moderate flow for the watershed with cool water temperatures. Least impacted streams in the watershed, with agriculture and developed land cover less than 5% each. Wetlands/lakes present up to 12% with relatively high organic matter content.

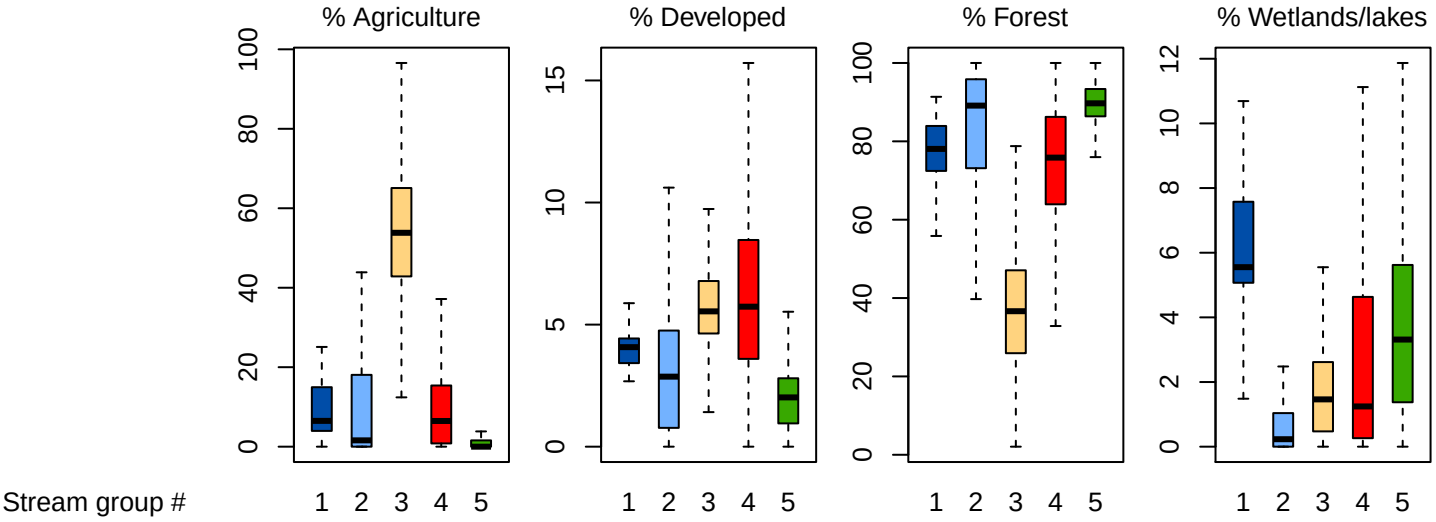


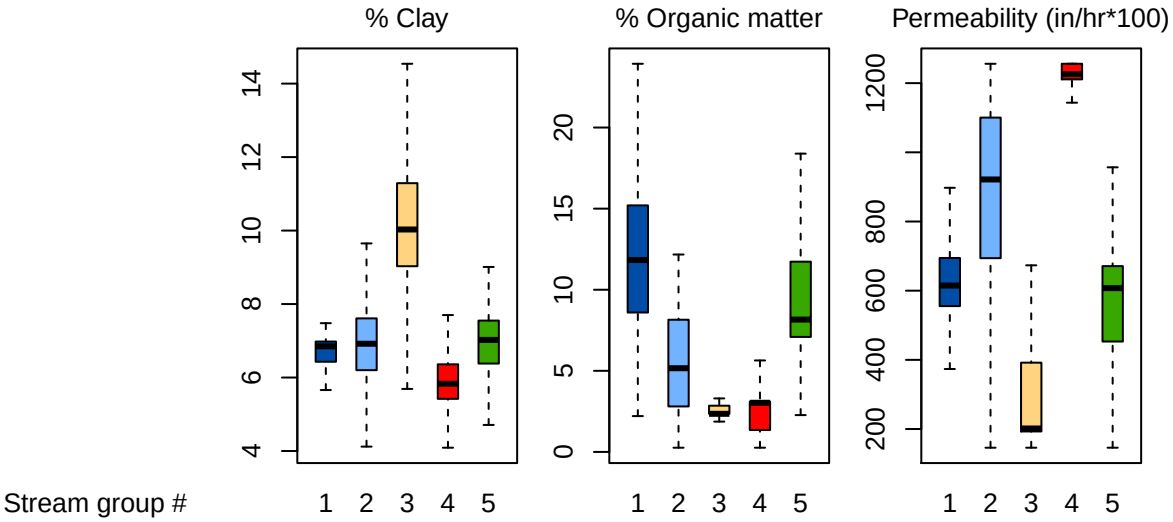
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





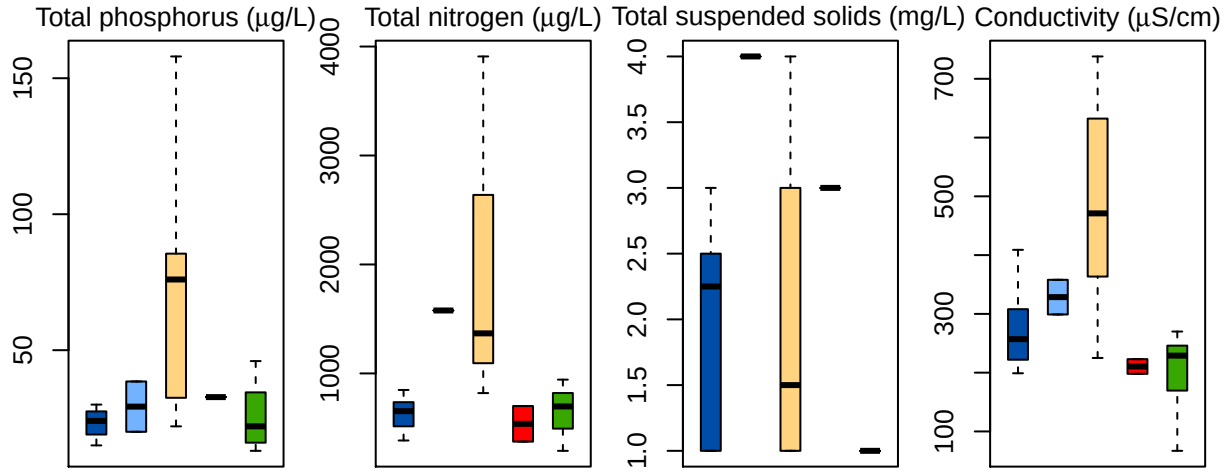
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

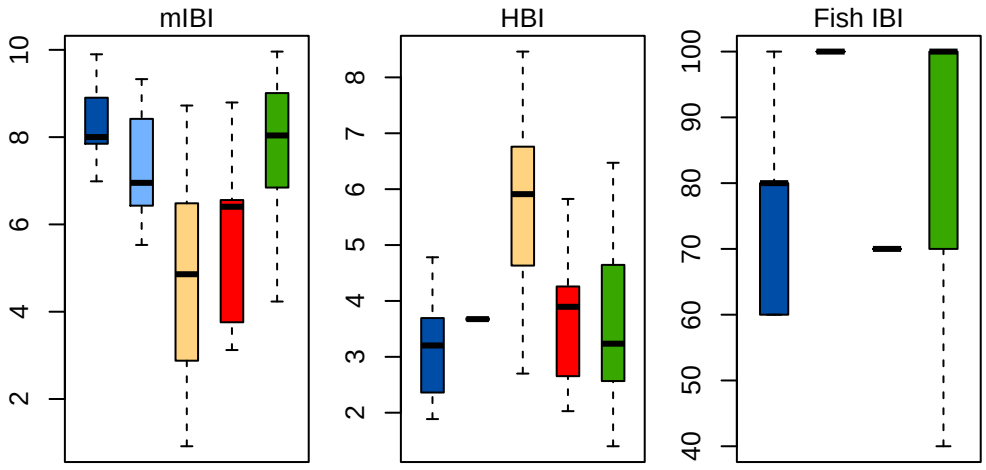
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



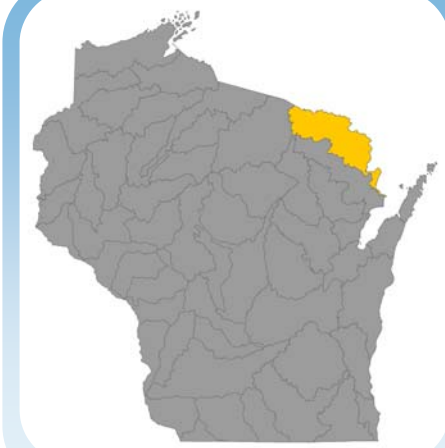
Stream group #	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
# of stations with data	9	2	7	1	8	7	1	3	2	3	6	1	4	1	6	9	2	7	2	7

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	1	2	3	4	5	1	2	4	5
# of stations with data	11	5	12	7	27	11	5	12	7	27	5	1	1	11



Targeted Watershed Site Selection Tool

Menominee, Brule, Pike, and Pine Rivers

TWSST watershed ID: 04030108
HUC 8's included: 04030106, 04030108
DNR District: Northeast, Northern
Area: 1531 square miles
Total stream length: 1594 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	7.4	0.32	19.9	0.15
Water temperature (°C)	22.5	22.9	21.7	21.8
Slope (degrees)	2.6	2.5	4.0	2.6
Percent agriculture	4	0	43	45
Percent developed	3	2	6	4
Percent forest	87	89	45	42
Percent wetlands/lakes	3.8	2.8	3.6	0.6
Percent soil clay content	7	7	15	14
Percent soil organic matter content	8	8	4	2
Soil permeability (in/hour * 100)	699	675	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

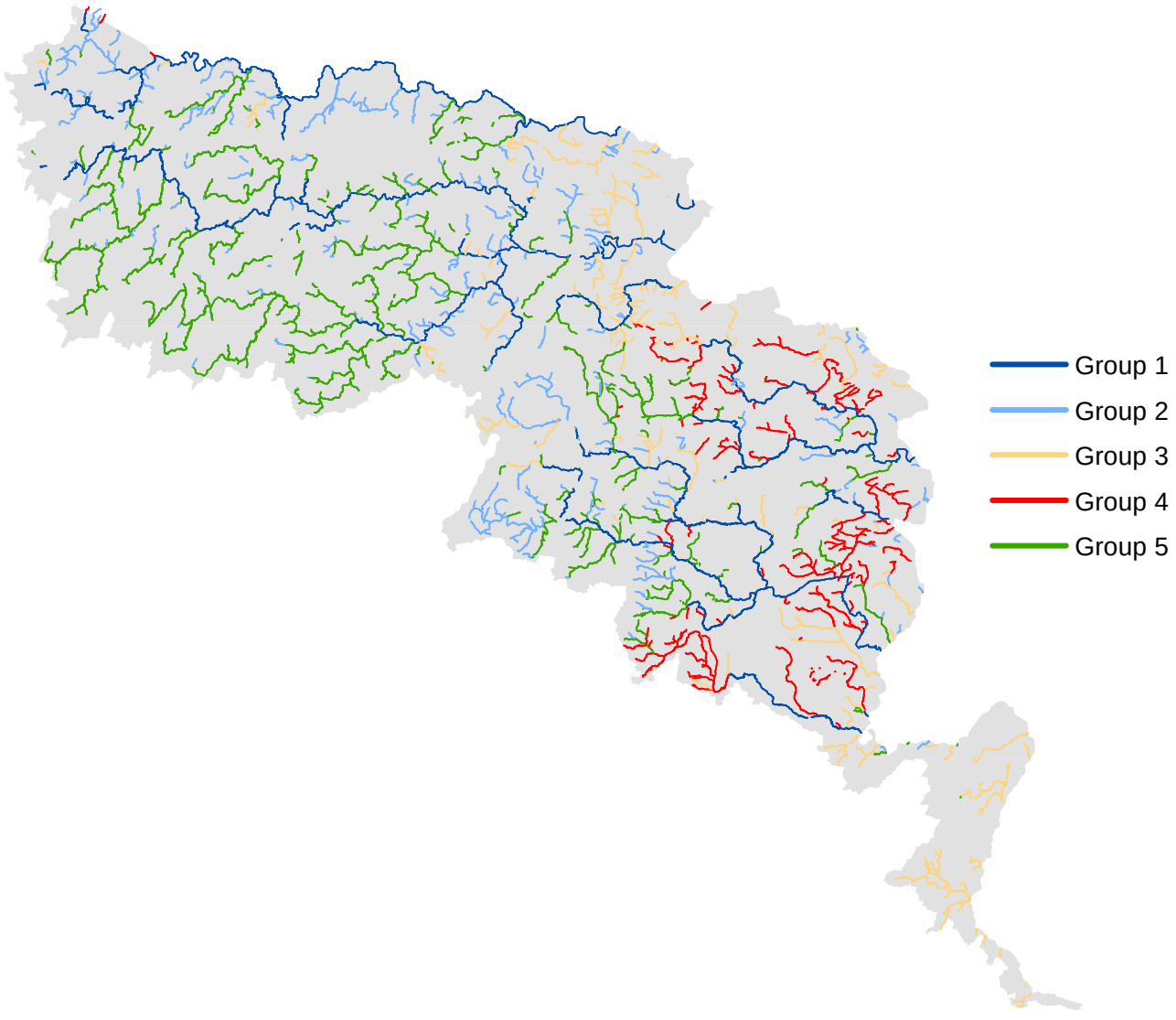
Group 1: Highest flow in the watershed and cool water temperatures.

Group 2: Low to moderate flow for the watershed and cold to cool water temperatures, overall the coldest in the watershed. Highest forested land cover in the watershed, generally greater than 90%, with minimal wetlands/ lakes.

Group 3: Low to moderate flow for the watershed and variable water temperatures. Only group with agriculture greater than 10%, generally between 10-30%. Highest developed land cover in the watershed, generally between 4-7%.

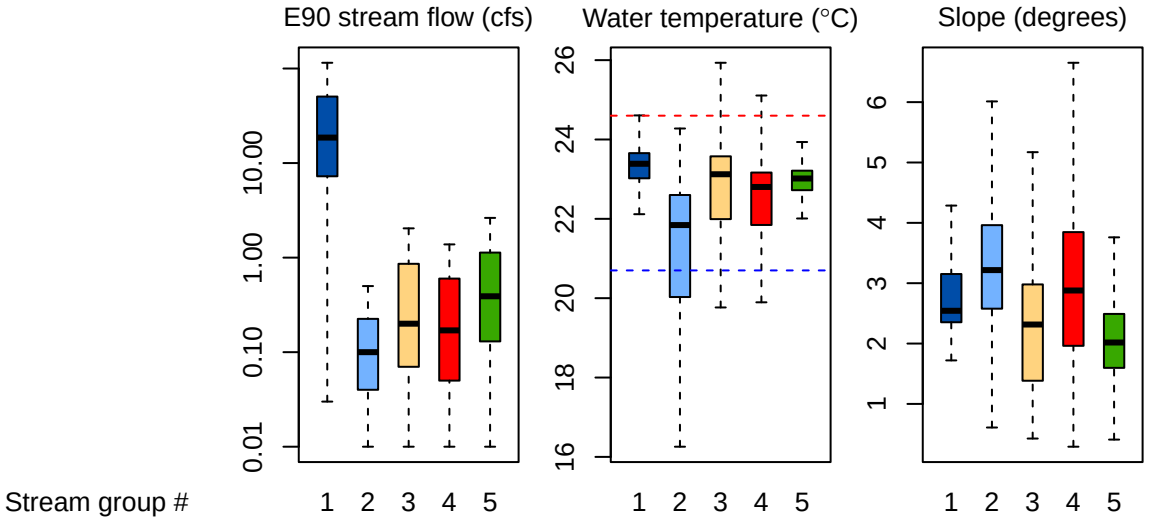
Group 4: Low to moderate flow for the watershed and variable water temperatures. High forested land cover with wetlands/lakes present up to 12%. Lower soil organic matter content and higher permeability differentiate these streams from **Group 5**.

Group 5: Low to moderate flow for the watershed and cool water temperatures. High forested land cover with wetlands/lakes present up to 12%. Higher soil organic matter content and lower permeability differentiate these streams from **Group 4**.

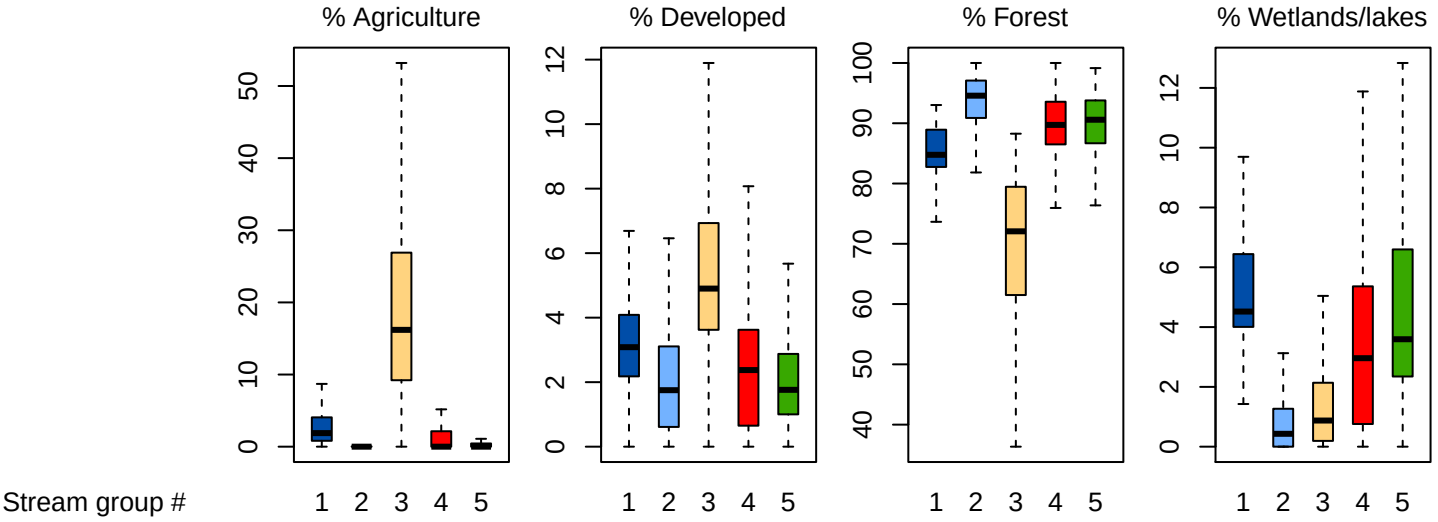


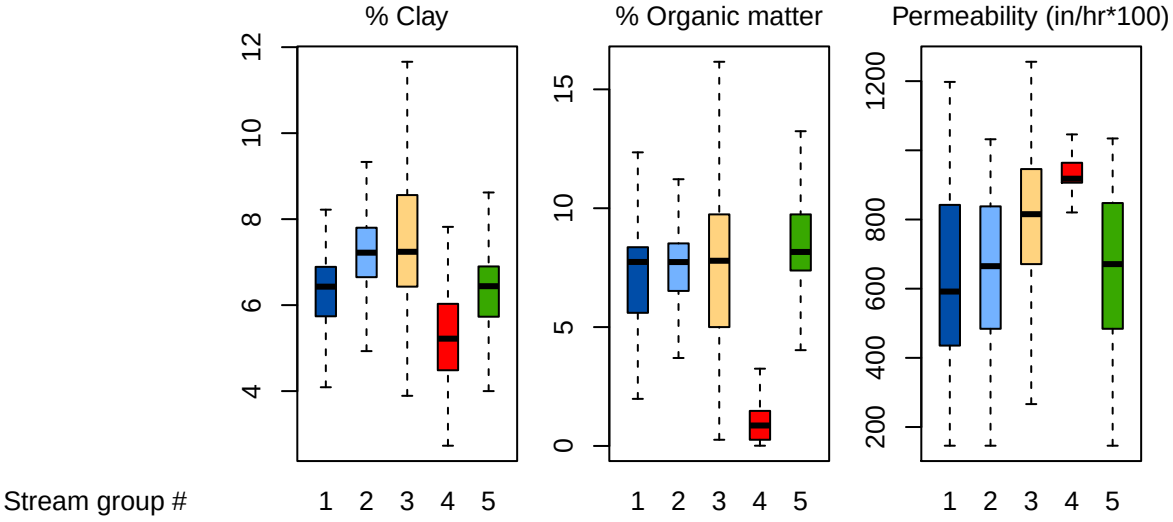
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





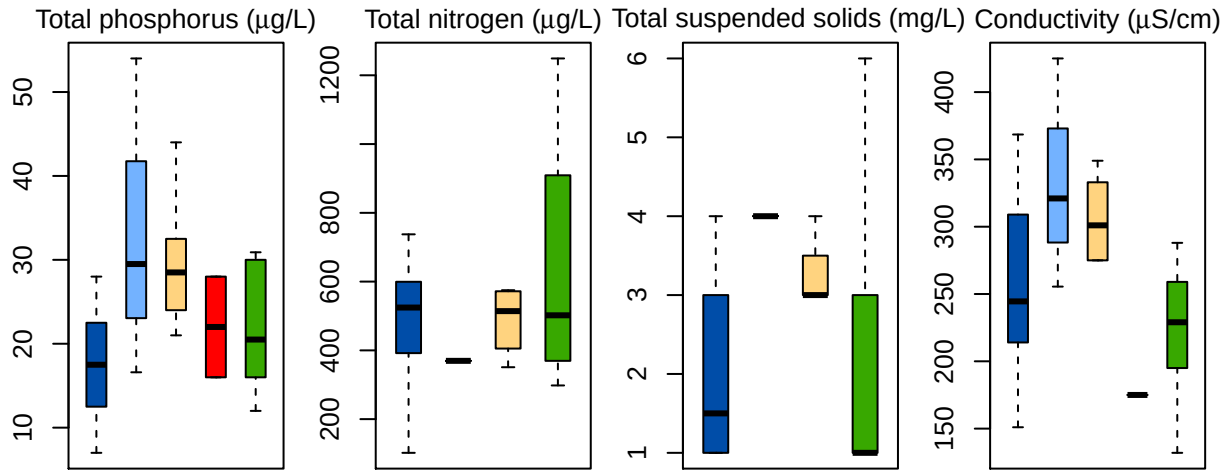
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

Data are provided for general reference only.
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5
# of stations with data	11	3	5	2	14

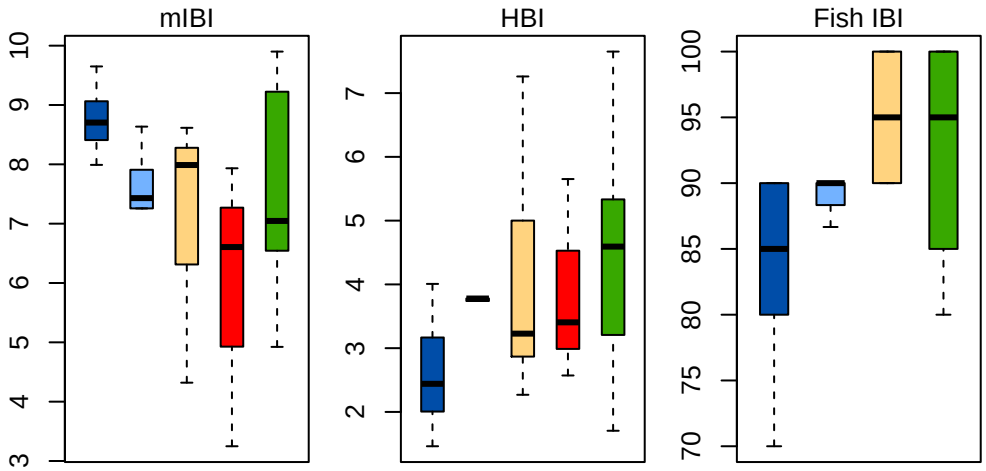
Stream group #	1	2	3	5
# of stations with data	10	1	4	7

Stream group #	1	2	3	5
# of stations with data	10	1	3	9

Stream group #	1	2	3	4	5
# of stations with data	15	3	5	1	13

Boxplot colors correspond to stream group colors on the map.

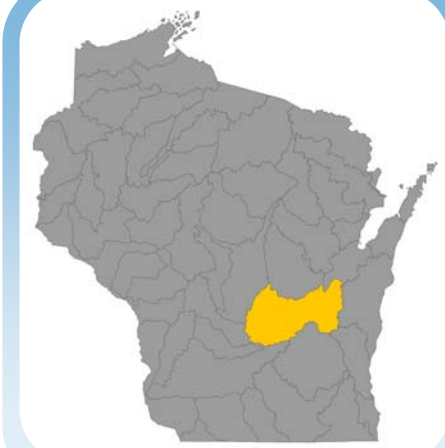
Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5
# of stations with data	11	5	11	3	21

Stream group #	1	2	3	4	5
# of stations with data	11	5	11	3	21

Stream group #	1	2	3	5
# of stations with data	10	4	2	16



Targeted Watershed Site Selection Tool

Upper Fox River and Lake Winnebago

TWSST watershed ID: 04030201
HUC 8's included: 04030201, 04030203
DNR District: Northeast, South Central, West Central
Area: 2191 square miles
Total stream length: 2368 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	17.3	0.13	19.9	0.15
Water temperature (°C)	22.8	23.2	21.7	21.8
Slope (degrees)	1.7	1.6	4.0	2.6
Percent agriculture	61	64	43	45
Percent developed	7	5	6	4
Percent forest	19	12	45	42
Percent wetlands/lakes	12	7	3.6	0.6
Percent soil clay content	17	16	15	14
Percent soil organic matter content	9	5	4	2
Soil permeability (in/hour * 100)	425	295	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with cool to warm water temperatures.

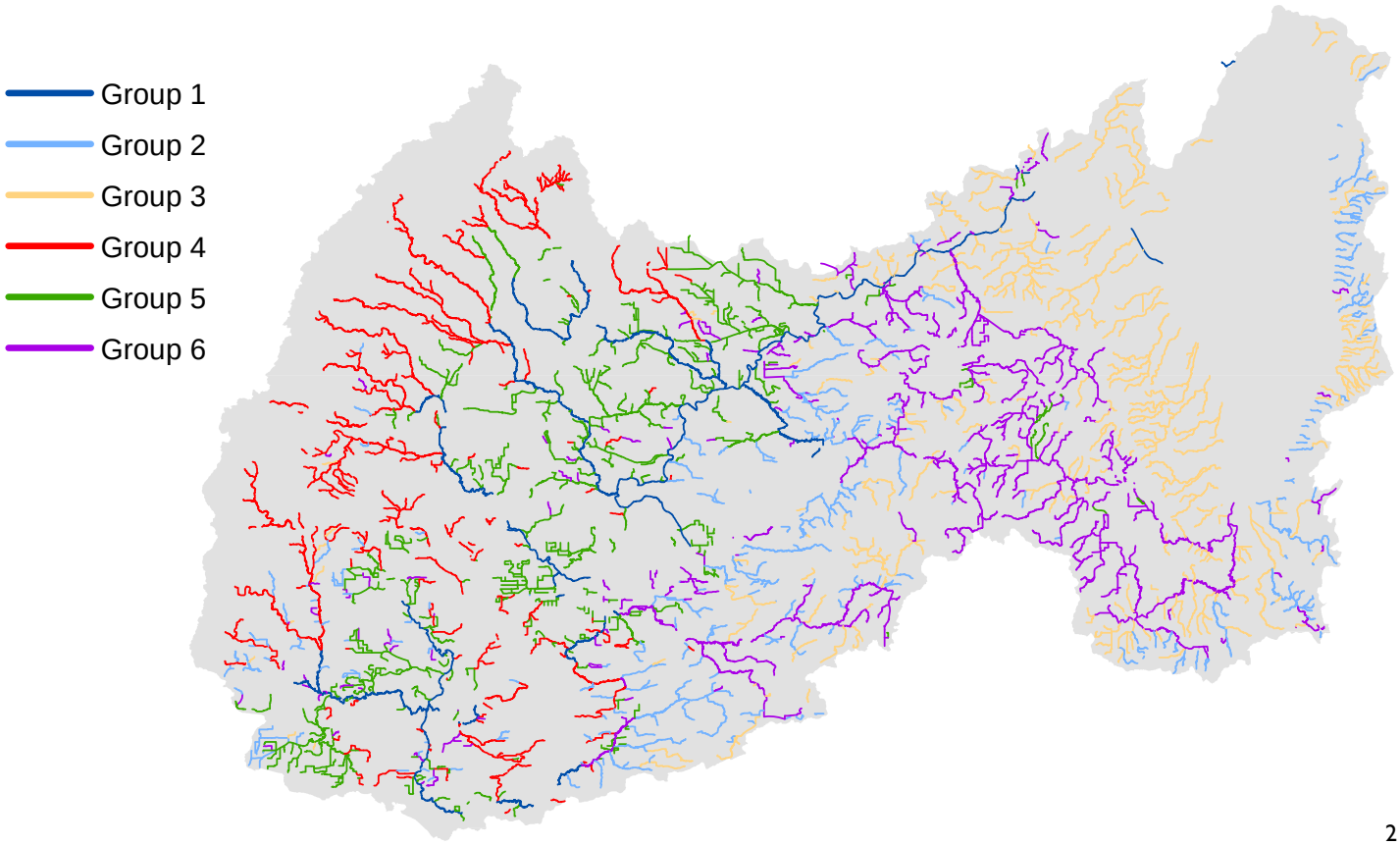
Group 2: Low flow for the watershed with variable water temperatures, though predominantly cold to cool. High agriculture and moderate developed land cover for the watershed, with colder water temperatures. Lower soil clay content, and slightly higher slopes differentiating these streams from **Group 3**.

Group 3: Low flow for the watershed with variable water temperatures, predominantly cool. Highest agriculture, generally greater than 80%, and highest developed land cover, greater than 5% and up to 20%, in the watershed. Highest soil clay content, generally greater than 25%, and lowest permeability in the watershed.

Group 4: Moderate flow for the watershed with variable water temperatures, predominantly cold to cool. Moderate agriculture land cover for the watershed, with relatively more forests, fewer wetlands/lakes, and higher permeability differentiating these streams from **Group 5**. Lowest soil clay content, generally less than 10%, and highest permeability in the watershed.

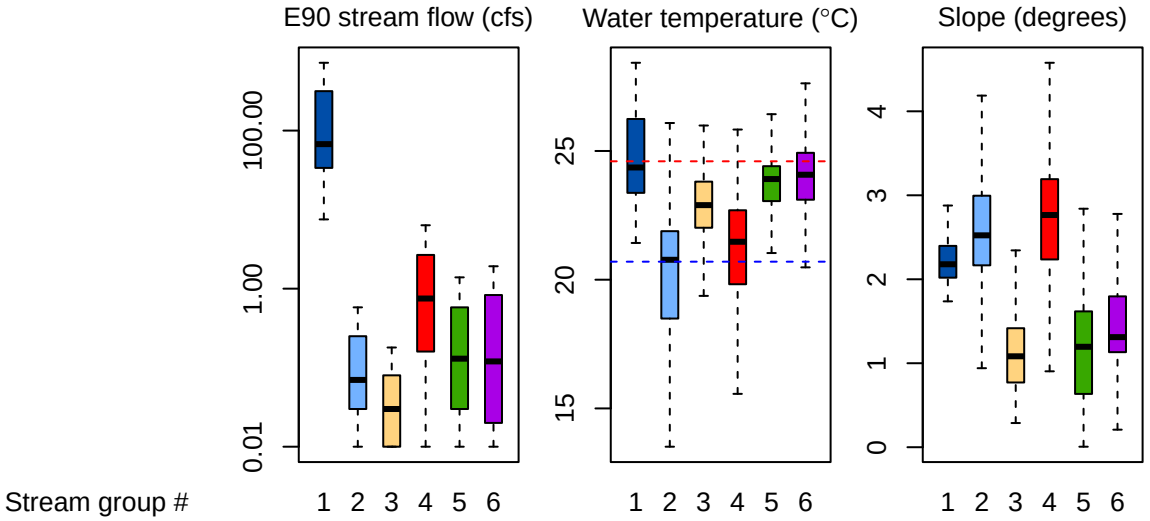
Group 5: Low to moderate flow for the watershed with predominantly cool water temperatures. Moderate agriculture land cover for the watershed, with relatively fewer forests and more wetlands/lakes differentiating these streams from **Group 4**. Lowest soil clay content, generally less than 10%, and highest organic matter content, generally between 15-30%, in the watershed.

Group 6: Low to moderate flow for the watershed with cool to warm water temperatures. A mix of agriculture and wetlands/lakes, with moderate soil clay content and low permeability. More wetlands and lower clay content soils differentiate these streams from **Group 3**.

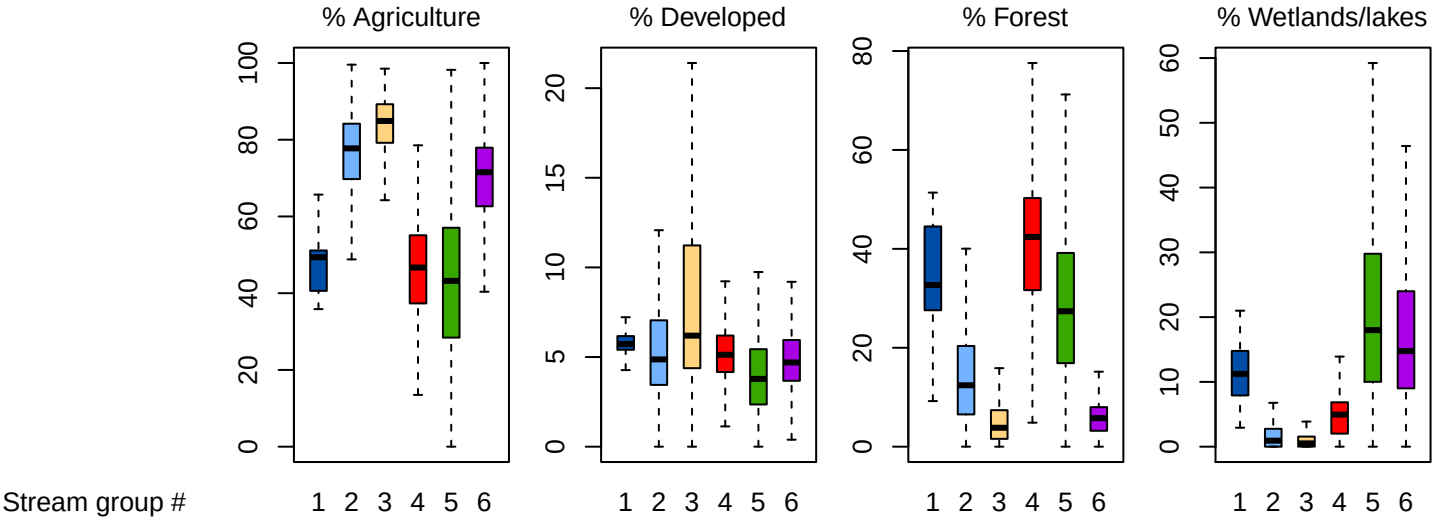


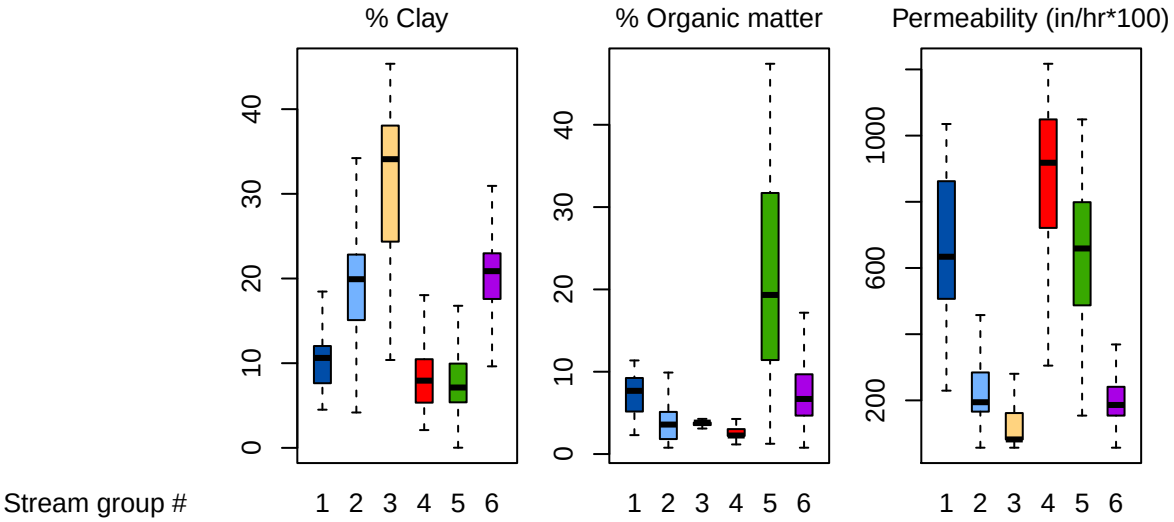
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





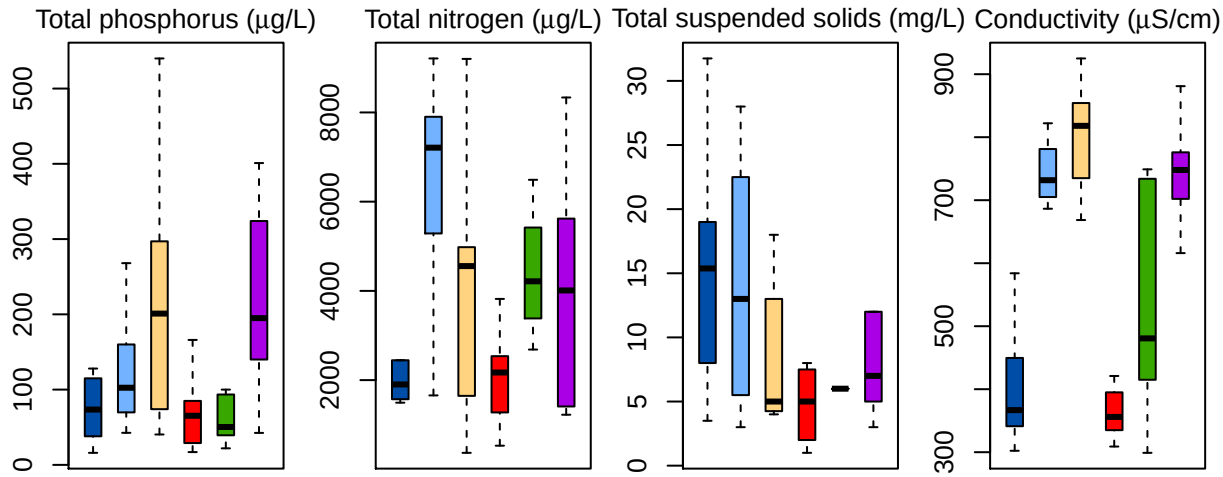
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

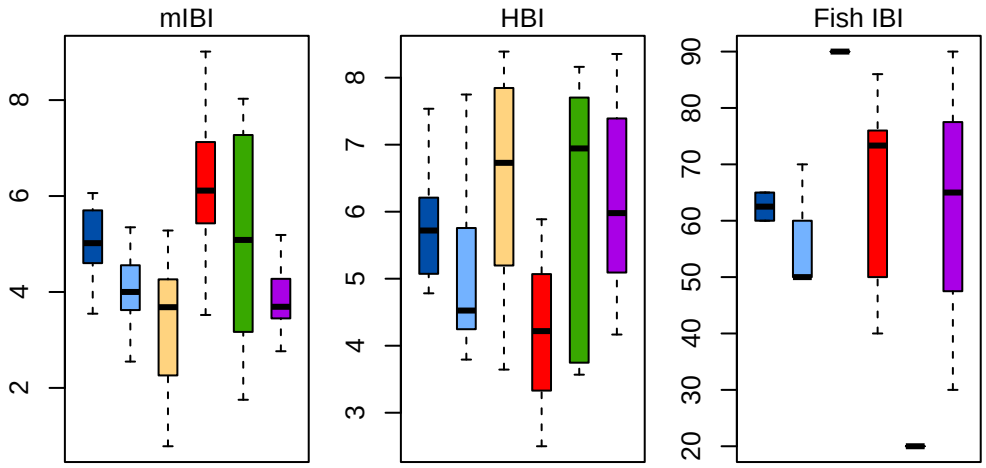
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5	6
# of stations with data	17	22	13	18	7	22
	10	12	6	12	4	13
	10	12	7	4	1	10
	16	20	12	18	6	19

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	6
# of stations with data	13	21	15	31	8	16
	13	21	15	31	8	16
	2	3	1	5	1	3

Targeted Watershed Site Selection Tool

Wolf and Embarrass Rivers

TWSST watershed ID: 04030202_C
HUC 8's included: 04030202 (Central)
DNR District: Northeast, West Central, Northern
Area: 1220 square miles
Total stream length: 1612 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	30.3	0.16	19.9	0.15
Water temperature (°C)	23.3	23.5	21.7	21.8
Slope (degrees)	1.4	1.3	4.0	2.6
Percent agriculture	50	50	43	45
Percent developed	6	5	6	4
Percent forest	38	33	45	42
Percent wetlands/lakes	5.4	1.2	3.6	0.6
Percent soil clay content	12	11	15	14
Percent soil organic matter content	6	3	4	2
Soil permeability (in/hour * 100)	416	392	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

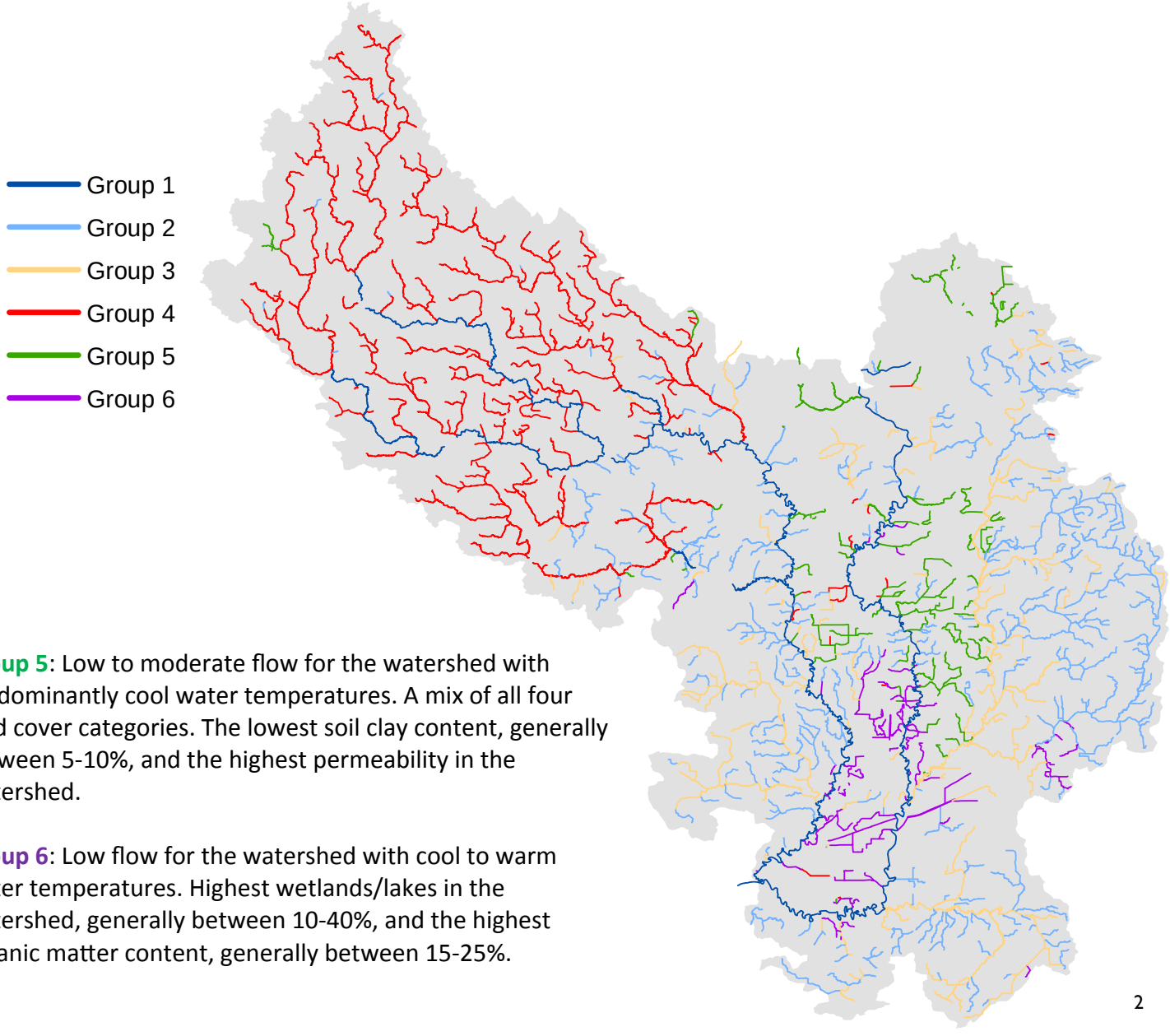
Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with cool to warm water temperatures.

Group 2: Low flow for the watershed with predominantly cool water temperatures, overall the coldest in the watershed. Highest agriculture in the watershed, generally greater than 70%. Relatively high soil clay content for the watershed, around 15%, and low organic matter content and permeability.

Group 3: Low to moderate flow for the watershed with cool to warm water temperatures. High agriculture for the watershed. Relatively high soil clay content for the watershed, around 15%, and low organic matter content and permeability.

Group 4: Low to moderate flow for the watershed with cool water temperatures. Highest forested land cover in the watershed, generally greater than 60%. Low soil clay content and moderate organic matter content and permeability.

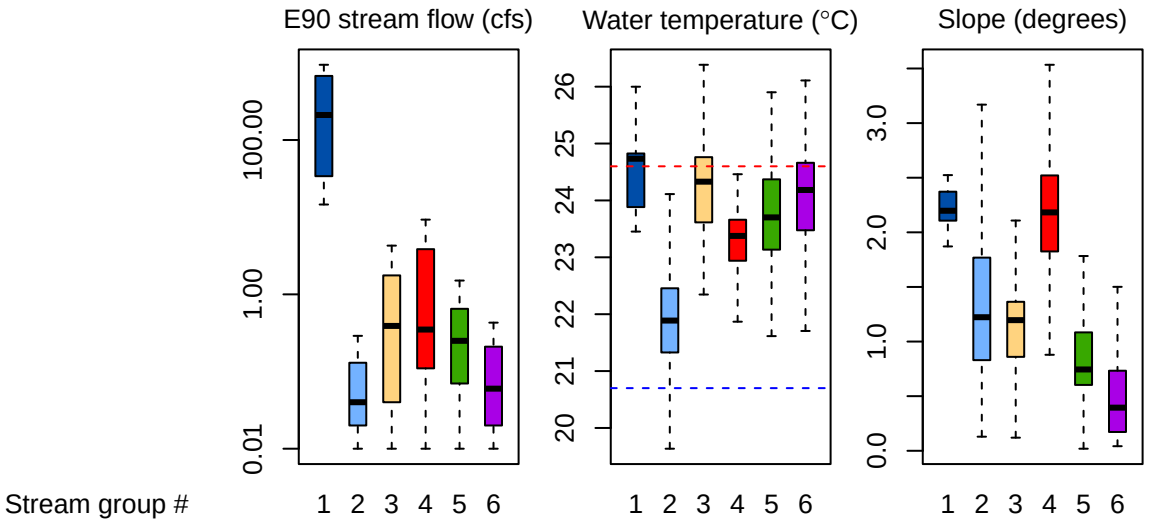


Group 5: Low to moderate flow for the watershed with predominantly cool water temperatures. A mix of all four land cover categories. The lowest soil clay content, generally between 5-10%, and the highest permeability in the watershed.

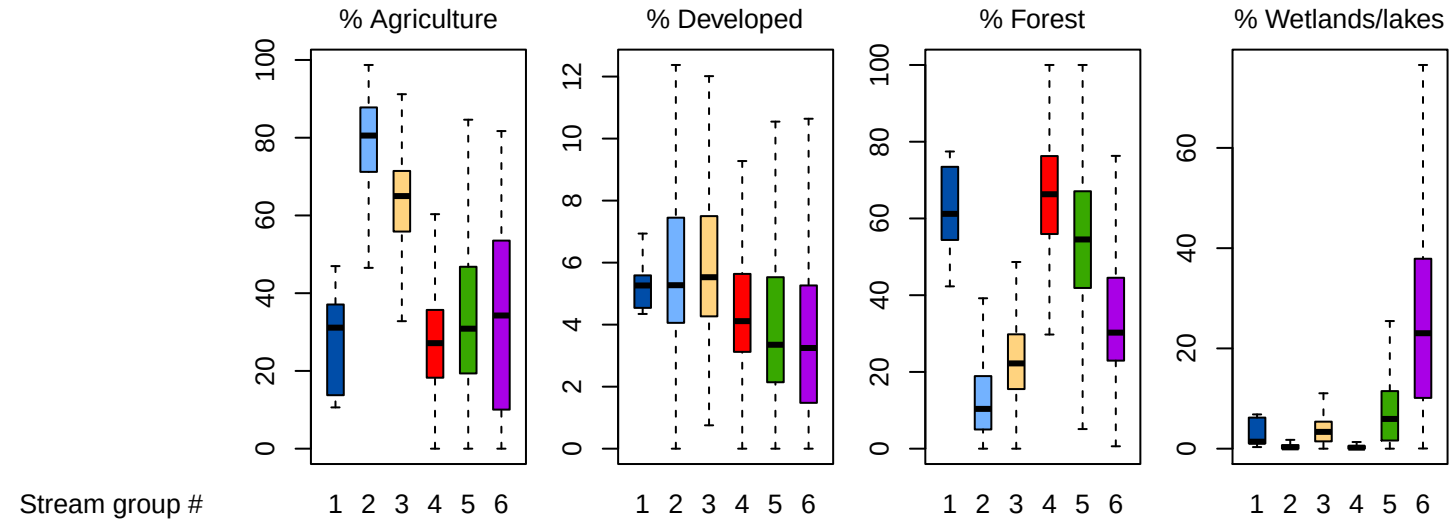
Group 6: Low flow for the watershed with cool to warm water temperatures. Highest wetlands/lakes in the watershed, generally between 10-40%, and the highest organic matter content, generally between 15-25%.

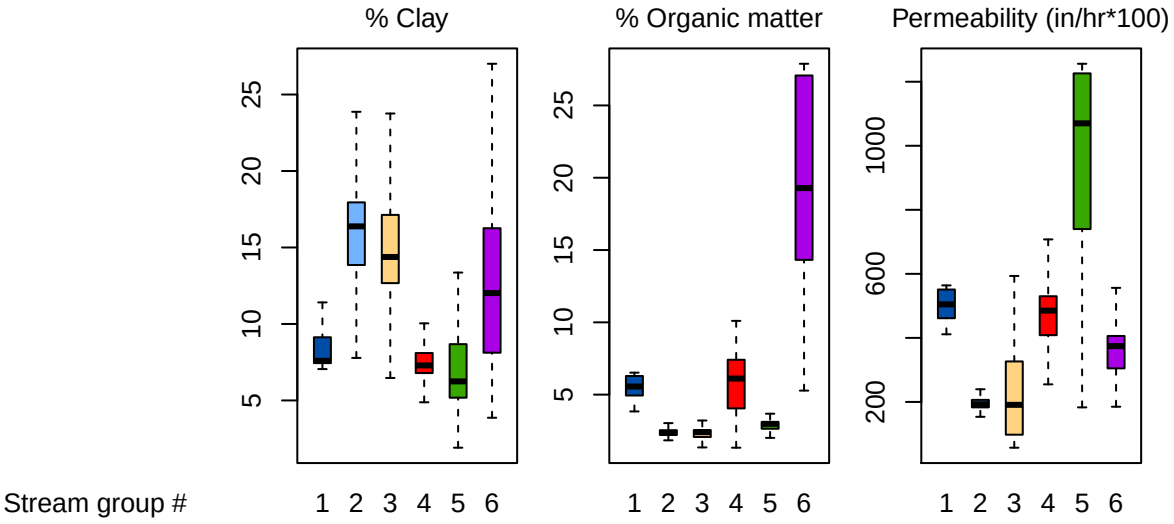
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





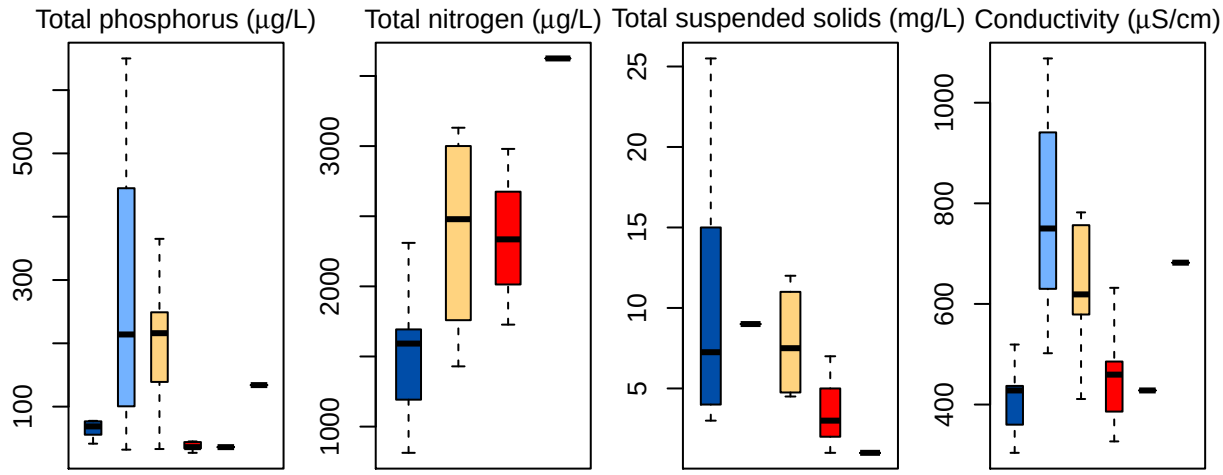
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

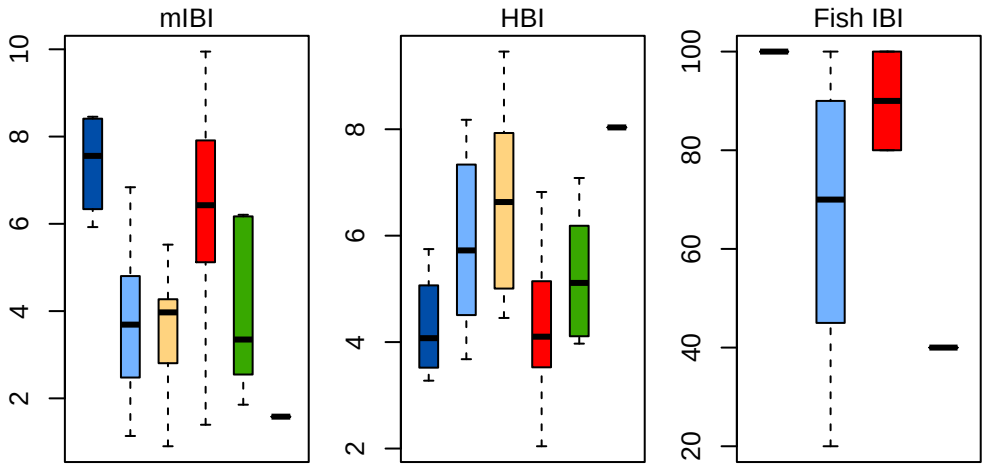
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5	6		1	3	4	5		1	2	3	4	5		1	2	3	4	5	6
# of stations with data	12	7	11	9	1	1		9	4	4	1		10	1	4	4	1		9	6	11	8	1	1

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	6		1	2	3	4	5	6		1	2	4	6				
# of stations with data	4	18	17	25	6	1		4	18	17	25	6	1		1	11	2	1				

Targeted Watershed Site Selection Tool

Wolf River

TWSST watershed ID: 04030202_N
HUC 8's included: 04030202 (North)
DNR District: Northern, Northeast
Area: 1055 square miles
Total stream length: 862 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	19.2	0.78	19.9	0.15
Water temperature (°C)	22.5	23.0	21.7	21.8
Slope (degrees)	2.8	2.7	4.0	2.6
Percent agriculture	10	3	43	45
Percent developed	4	4	6	4
Percent forest	80	83	45	42
Percent wetlands/lakes	4.7	2.4	3.6	0.6
Percent soil clay content	8	8	15	14
Percent soil organic matter content	7	7	4	2
Soil permeability (in/hour * 100)	495	516	353	241

WISCONSIN DEPT. OF NATURAL RESOURCES

Explore TWSST with DNR's Water Condition Viewer

TWSST

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

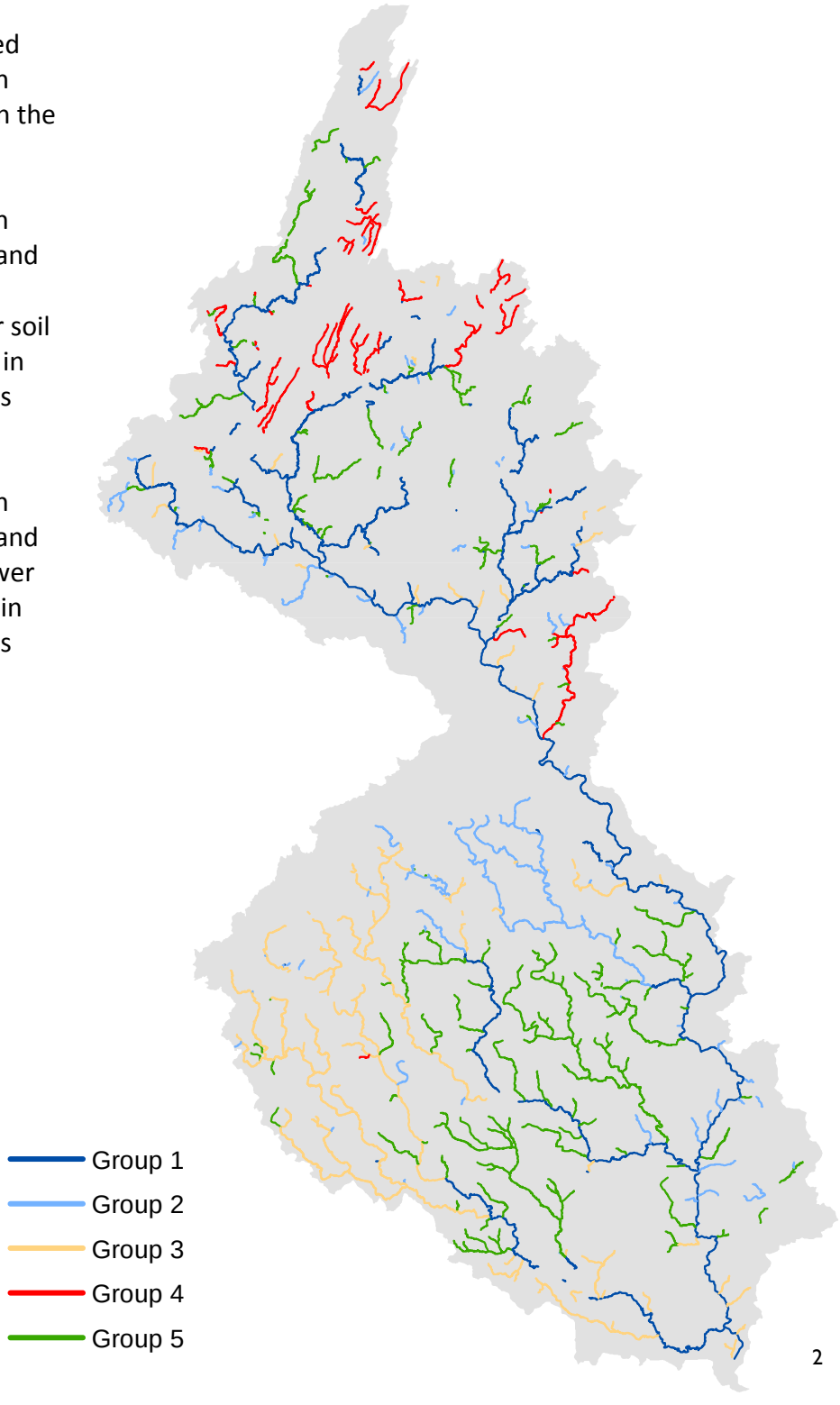
Group 1: Variable flow, overall the highest flow in the watershed, with predominantly cool water temperatures. Moderate agriculture and forests, and overall the highest wetlands/lakes in the watershed.

Group 2: Low flow for the watershed with cold to cool water temperatures, overall the coldest in the watershed. High forested land cover, generally greater than 85%, with fewer wetlands/lakes differentiating these streams from Groups 4 and 5. Includes the highest slopes in the watershed, generally greater than 3 degrees.

Group 3: Moderate flow for the watershed with variable water temperatures, though predominantly cool. Highest agriculture in the watershed, generally between 25-40%.

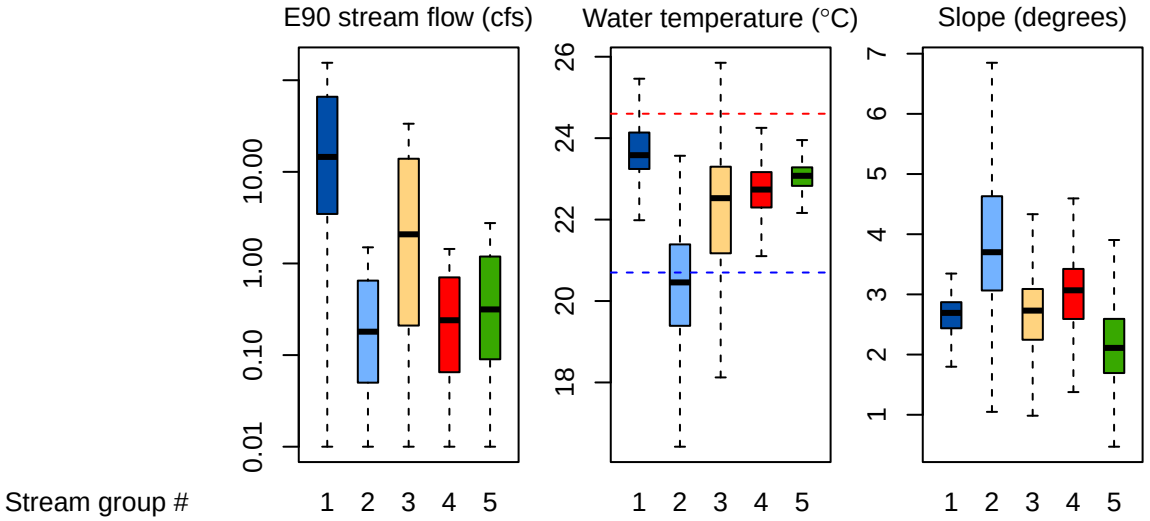
Group 4: Low flow for the watershed with cool water temperatures. High forested land cover with wetlands/lakes up to 15% differentiates these from **Group 3**. Higher soil clay content and the lowest permeability in the watershed differentiate these streams from **Group 5**.

Group 5: Low flow for the watershed with cool water temperatures. High forested land cover with wetlands/lakes up to 15%. Lower soil clay content and higher permeability in the watershed differentiate these streams from **Group 4**.

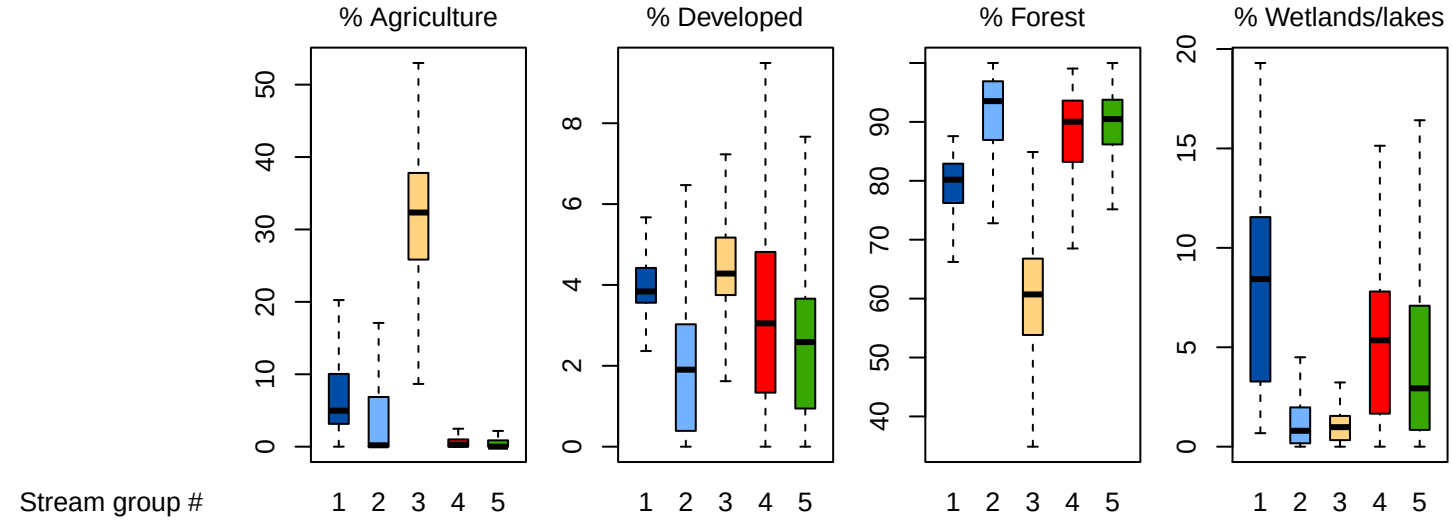


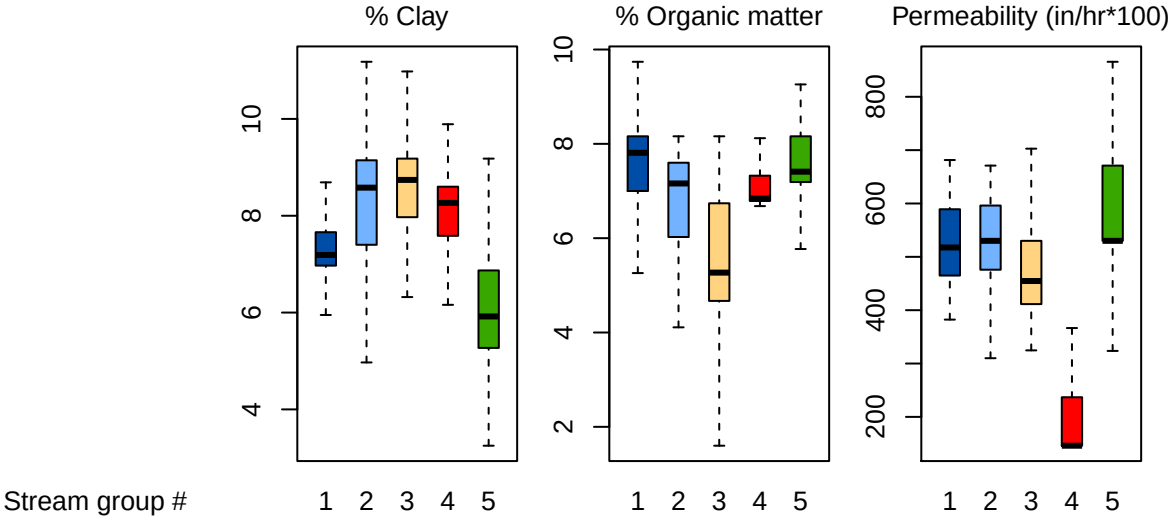
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





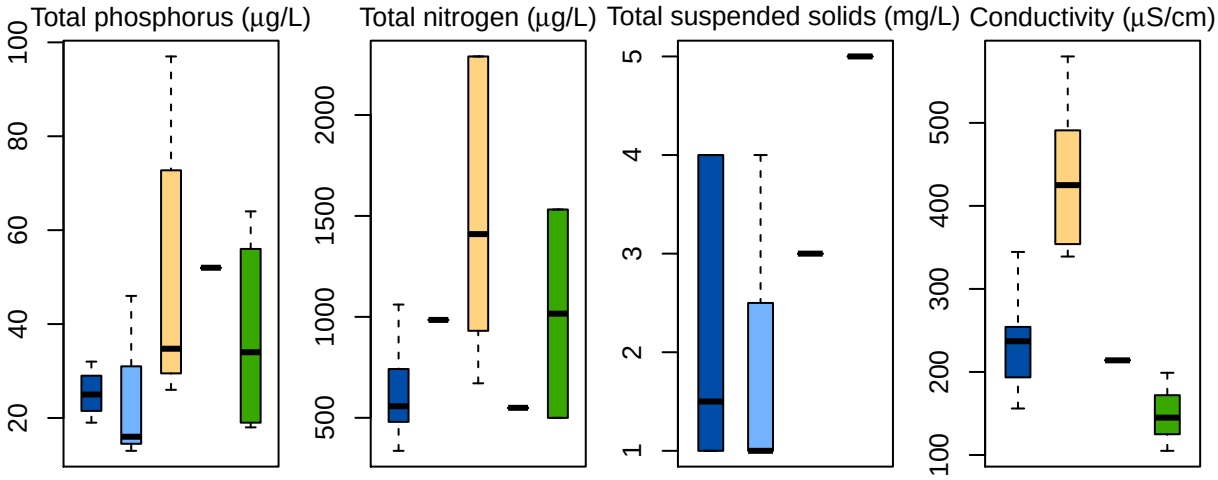
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5
# of stations with data	12	3	8	1	4

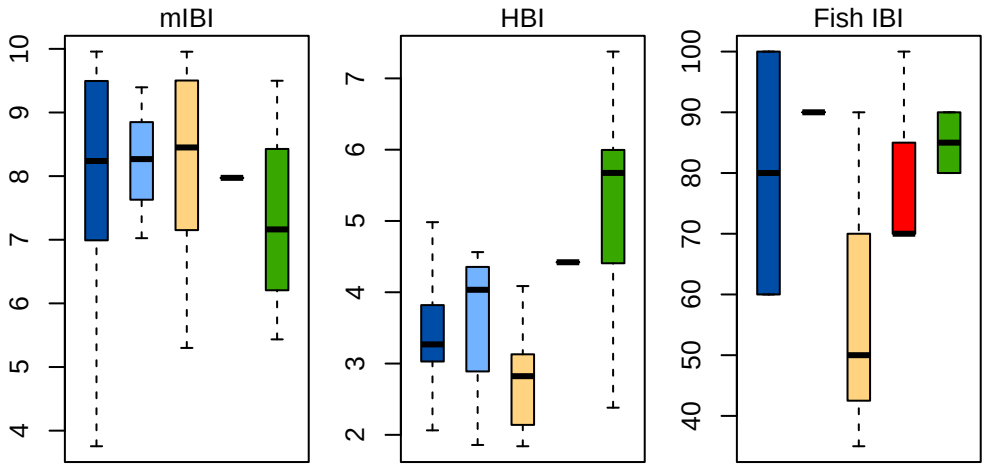
Stream group #	1	2	3	4	5
# of stations with data	8	1	6	1	2

Stream group #	1	2	3	4
# of stations with data	9	3	2	1

Stream group #	1	3	4	5
# of stations with data	11	6	1	3

Boxplot colors correspond to stream group colors on the map.

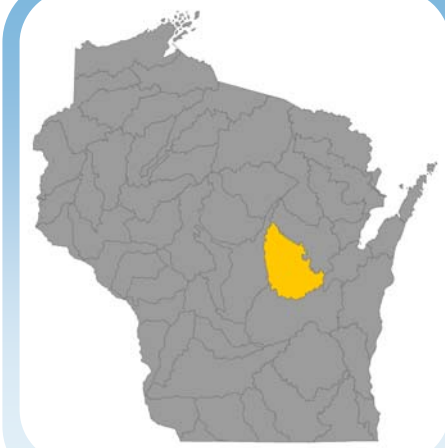
Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5
# of stations with data	20	4	11	1	8

Stream group #	1	2	3	4	5
# of stations with data	20	4	11	1	8

Stream group #	1	2	3	4	5
# of stations with data	2	2	3	3	2



Targeted Watershed Site Selection Tool

Wolf, Little Wolf, and Waupaca Rivers

TWSST watershed ID: 04030202_S
HUC 8's included: 04030202 (South)
DNR District: Northeast, West Central
Area: 1449 square miles
Total stream length: 1434 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	30.3	0.21	19.9	0.15
Water temperature (°C)	22.7	23.1	21.7	21.8
Slope (degrees)	1.9	1.9	4.0	2.6
Percent agriculture	51	50	43	45
Percent developed	6	5	6	4
Percent forest	38	38	45	42
Percent wetlands/lakes	5.7	2.0	3.6	0.6
Percent soil clay content	13	8	15	14
Percent soil organic matter content	7	6	4	2
Soil permeability (in/hour * 100)	515	481	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

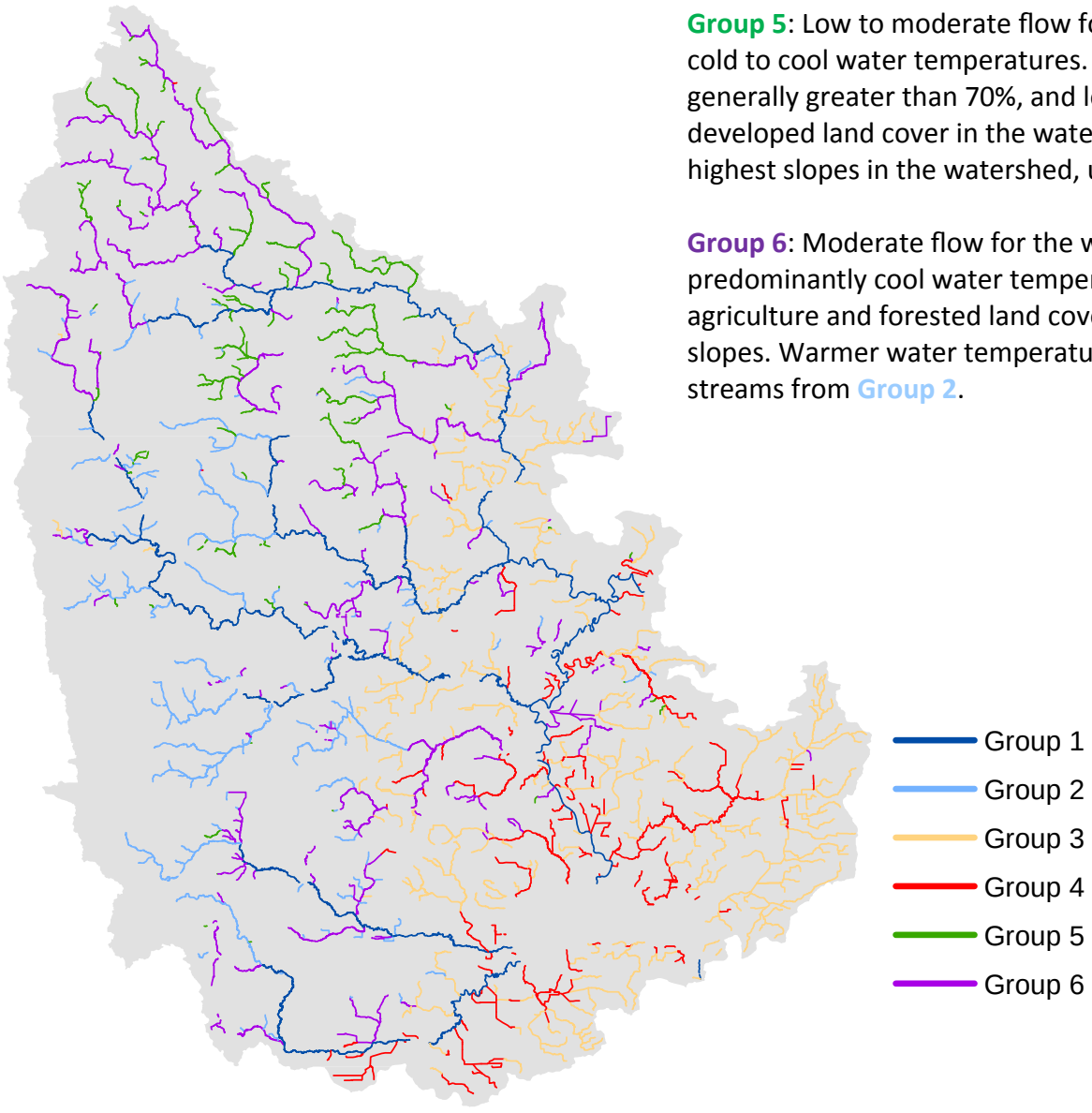
Narrative descriptions of stream groups

Group 1: Highest flow in the watershed and predominantly cool water temperatures.

Group 2: Moderate flow for the watershed with predominantly cold water temperatures, overall the coldest in the watershed. A mix of agriculture and forested land cover with moderate slopes. Lowest soil organic matter content and highest permeability in the watershed.

Group 3: Low flow for the watershed with variable water temperatures, though predominantly cool. Highest agriculture in the watershed, generally greater than 70%, and highest developed land cover, generally between 5-10%, with low slopes for the watershed. Greater than 10% soil clay content, with lower organic matter content and the lowest permeability in the watershed differentiate these streams from **Group 4**.

Group 4: Low flow for the watershed with cool to warm water temperatures. Moderate agriculture and developed land cover with the lowest slopes in the watershed, generally less than 1 degree. Highest wetlands/ lakes in the watershed, generally between 10-30%. Relatively high soil clay content and the highest organic matter content in the watershed, generally between 8-12%.

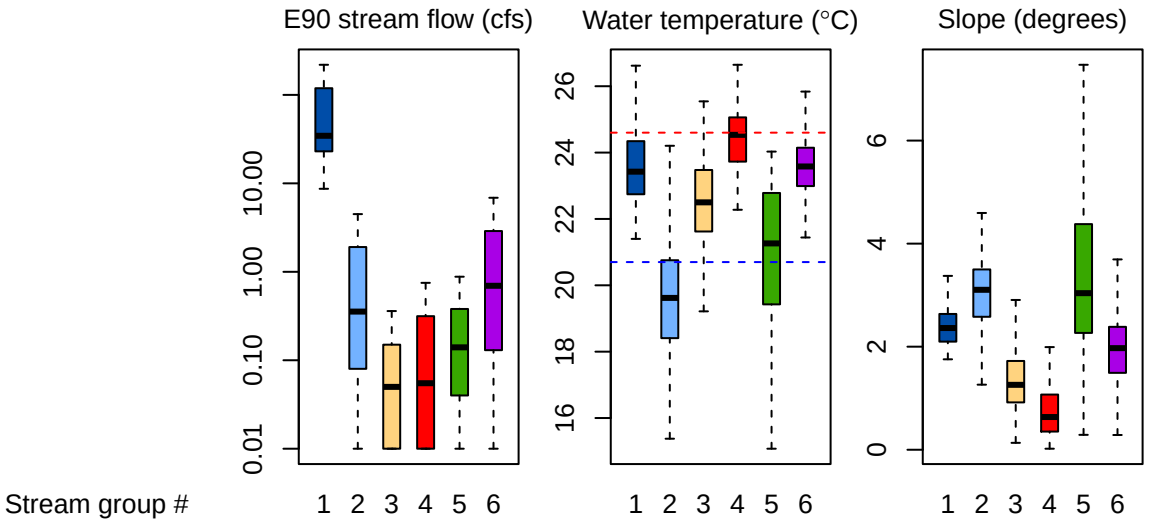


Group 5: Low to moderate flow for the watershed with cold to cool water temperatures. Highest forested, generally greater than 70%, and lowest agriculture and developed land cover in the watershed. Includes the highest slopes in the watershed, up to 7 degrees.

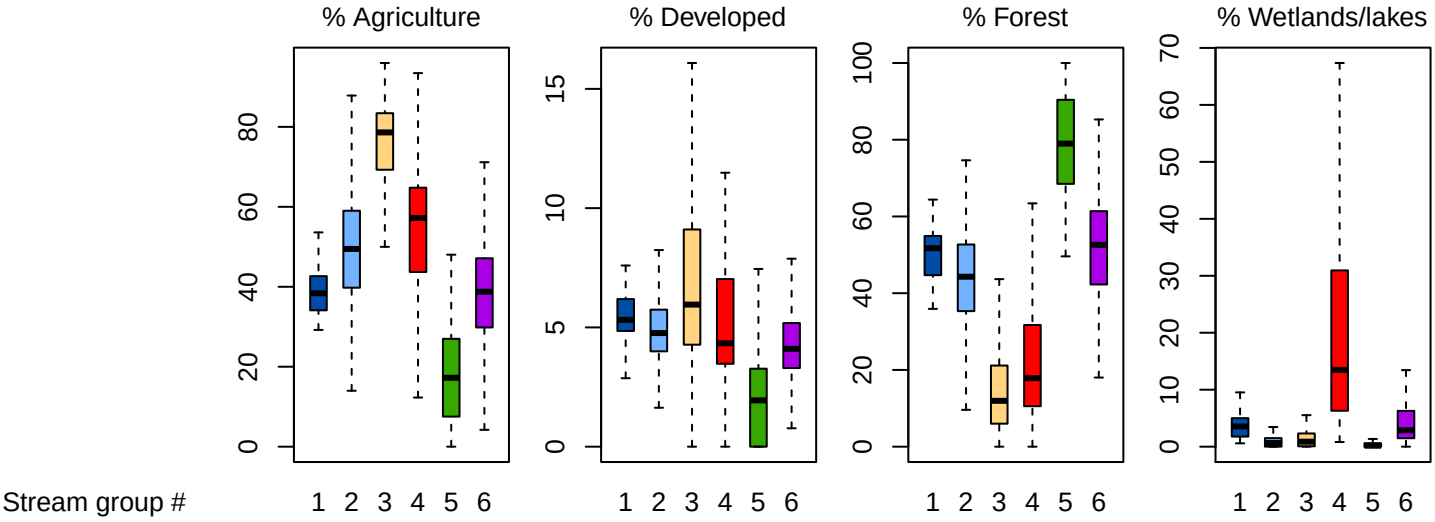
Group 6: Moderate flow for the watershed with predominantly cool water temperatures. A mix of agriculture and forested land cover with moderate slopes. Warmer water temperatures differentiate these streams from **Group 2**.

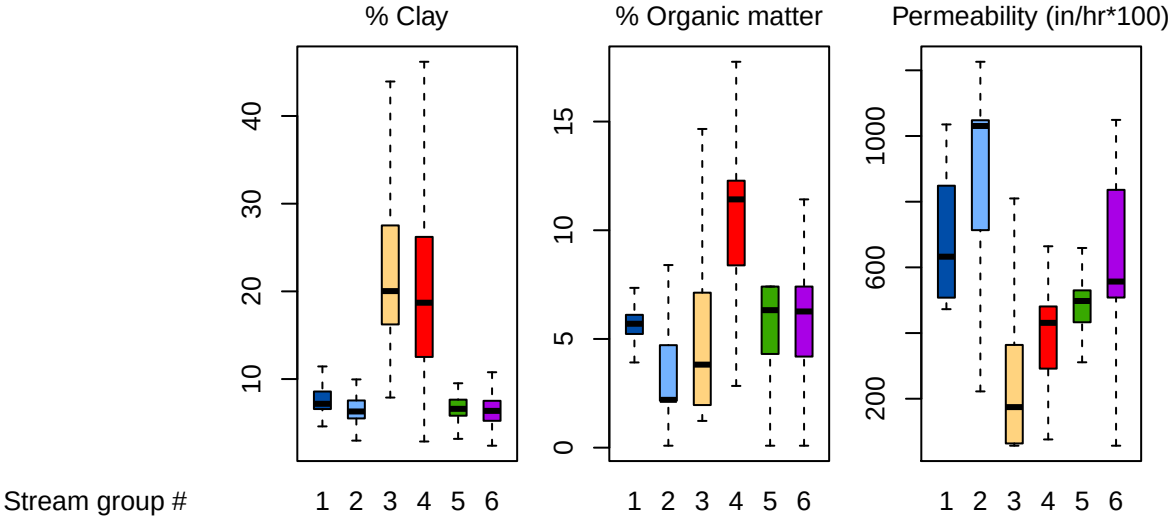
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





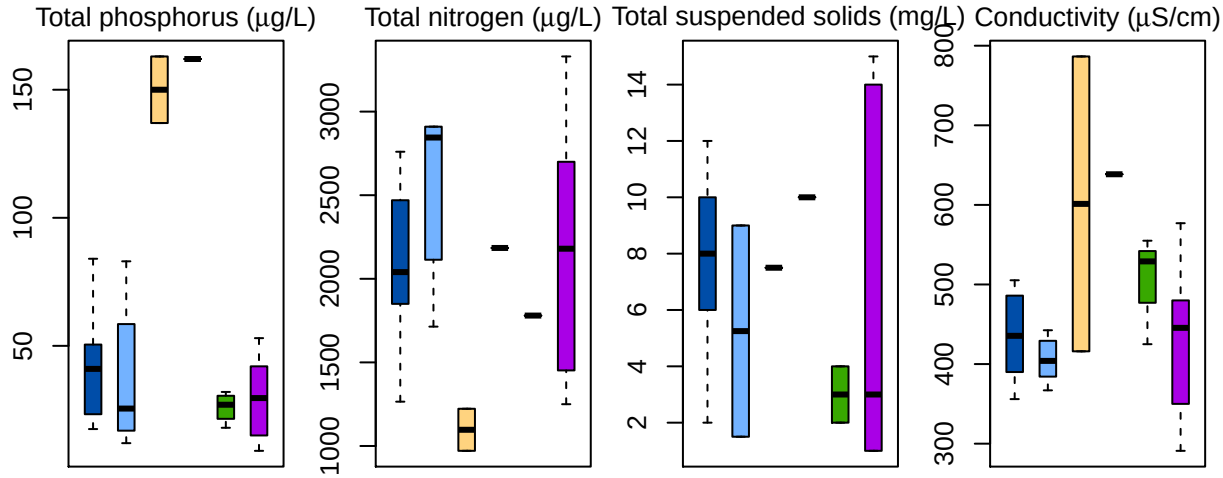
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5	6
# of stations with data	17	8	2	1	4	13

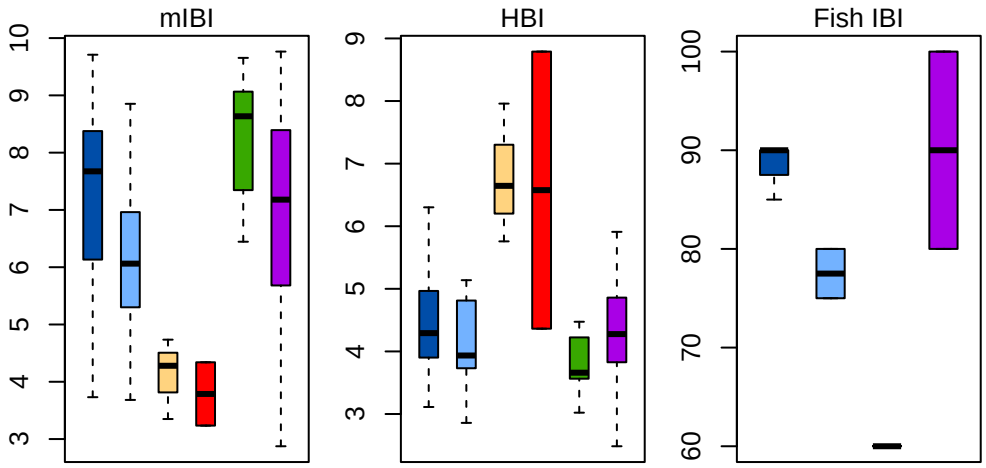
Stream group #	1	2	3	4	5	6
# of stations with data	9	6	2	1	1	6

Stream group #	1	2	3	4	5	6
# of stations with data	10	2	1	1	2	5

Stream group #	1	2	3	4	5	6
# of stations with data	16	8	2	1	3	14

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	6
# of stations with data	29	12	3	2	10	35

Stream group #	1	2	3	4	5	6
# of stations with data	29	12	3	2	10	35

Stream group #	1	2	5	6
# of stations with data	3	2	1	6

Targeted Watershed Site Selection Tool

Lower Fox River

TWSST watershed ID: 04030204
HUC 8's included: 04030204
DNR District: Northeast
Area: 647 square miles
Total stream length: 934 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	71.7	0.05	19.9	0.15
Water temperature (°C)	22.6	22.7	21.7	21.8
Slope (degrees)	1.3	1.1	4.0	2.6
Percent agriculture	62	72	43	45
Percent developed	23	9	6	4
Percent forest	13	9	45	42
Percent wetlands/lakes	1.3	0.3	3.6	0.6
Percent soil clay content	31	33	15	14
Percent soil organic matter content	4	4	4	2
Soil permeability (in/hour * 100)	150	82	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with warm water temperatures, greater than 27°C and the warmest in the watershed.

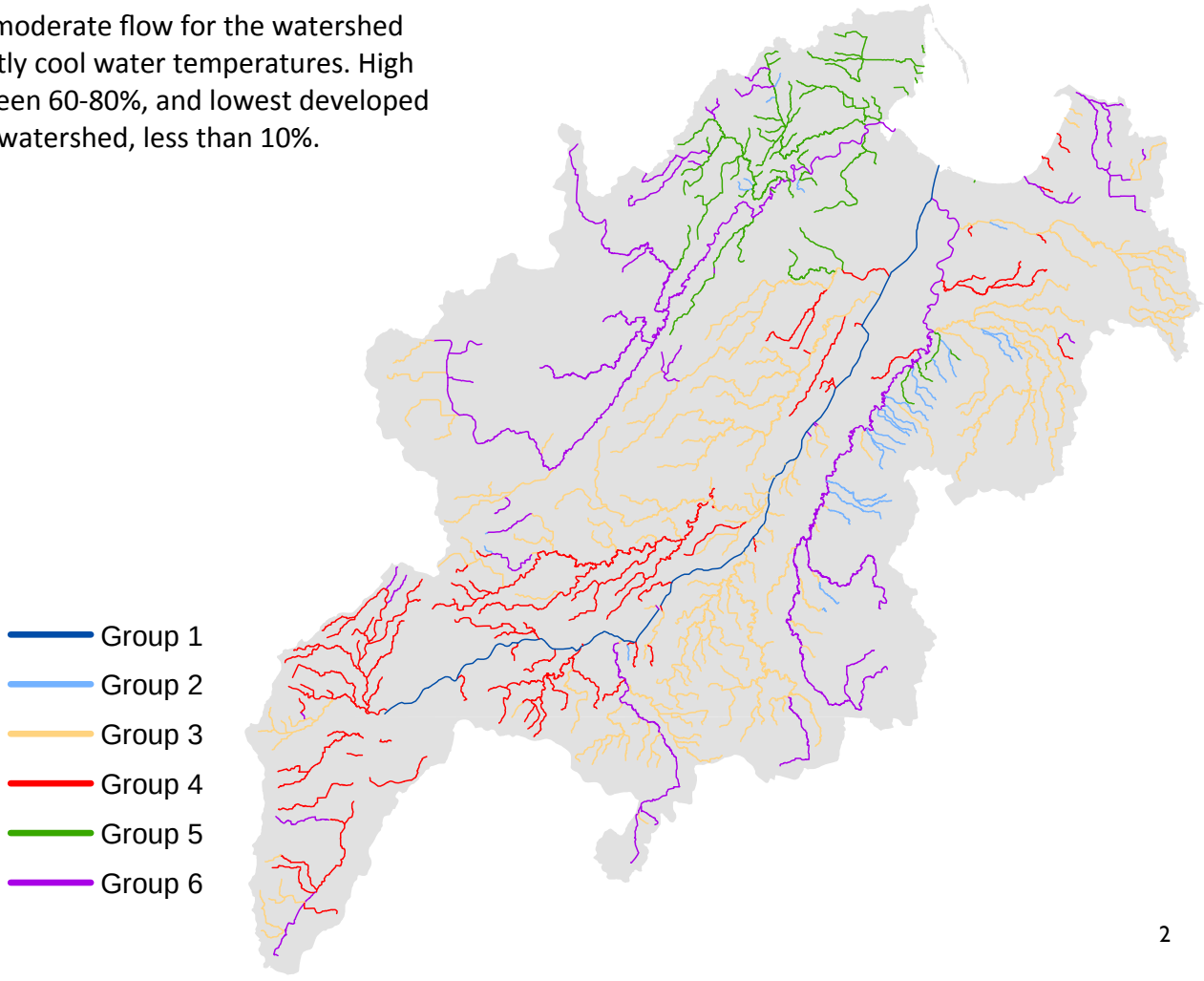
Group 2: Lowest flow in the watershed with predominantly cold water temperatures, overall the coldest in the watershed. Variable land cover with highest slopes in the watershed, generally greater than 3 degrees.

Group 3: Low to moderate flow for the watershed with predominantly cool water temperatures. Highest agriculture in the watershed, generally greater than 75%, with relatively low developed land cover, less than 20%. High soil clay content, greater than 30%, and very low permeability.

Group 4: Low to moderate flow for the watershed with predominantly cool water temperatures. Mix of agriculture and developed land cover, with minimal forests differentiating these streams from **Group 5**. High soil clay content, generally greater than 30%, including the highest clay content in the watershed around 50%, and very low permeability.

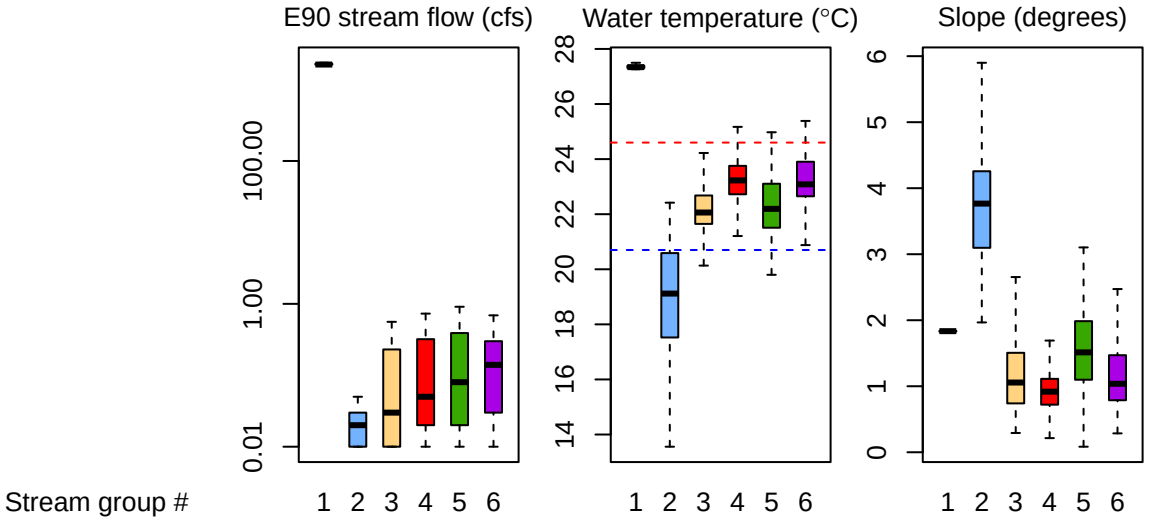
Group 5: Low to moderate flow for the watershed with predominantly cool water temperatures. Mix of agriculture, developed, and forested land cover, with forests generally between 20-40% differentiating these streams from minimal forested land cover in **Group 4**. Relatively low soil clay content for the watershed, generally less than 20%, with high permeability for the watershed.

Group 6: Low to moderate flow for the watershed with predominantly cool water temperatures. High agriculture, between 60-80%, and lowest developed land cover in the watershed, less than 10%.

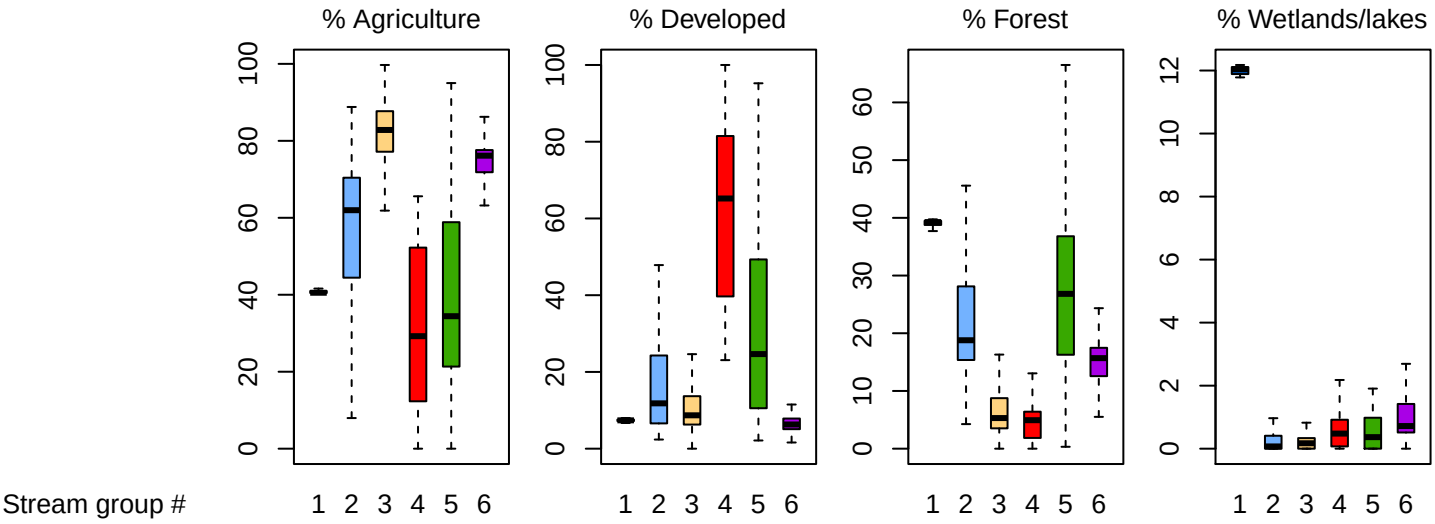


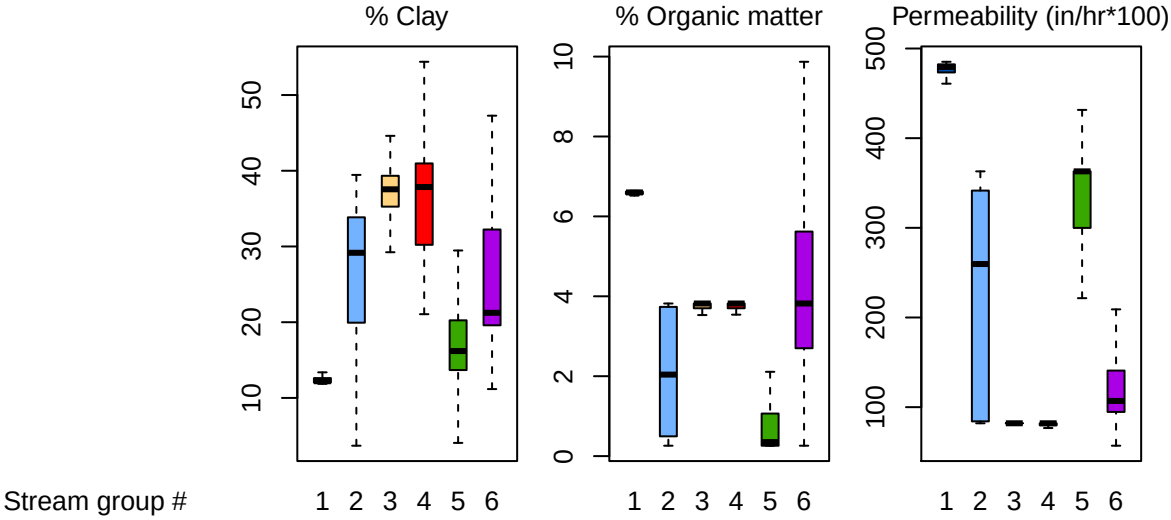
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





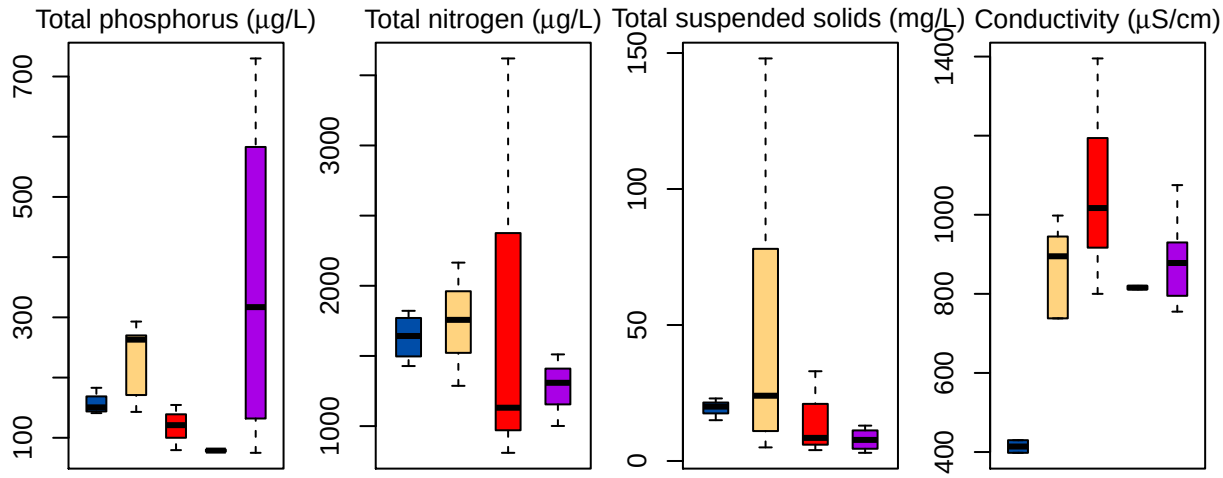
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

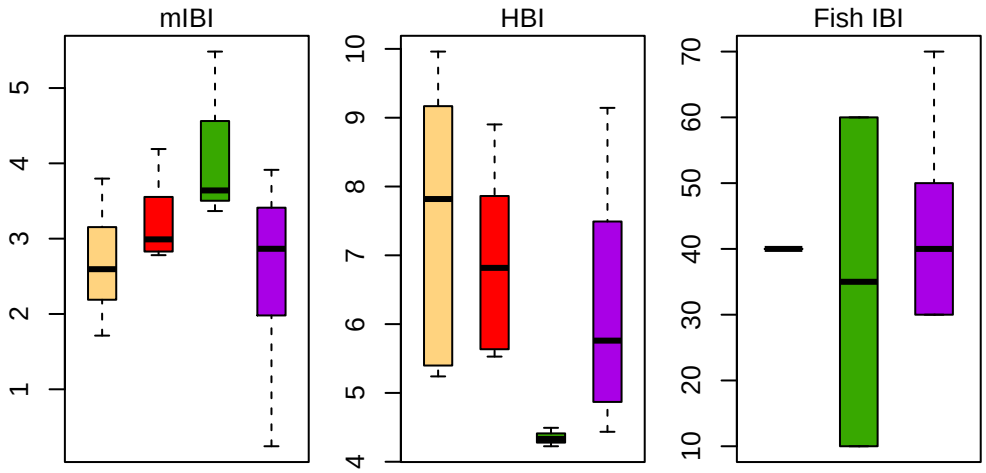
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	3	4	5	6		1	3	4	6		1	3	4	6		1	3	4	5	6
# of stations with data	4	5	6	2	6		4	3	3	3		3	5	4	4		2	6	7	2	9

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	3	4	5	6		3	4	5	6		3	5	6							
# of stations with data	6	8	3	11		6	8	3	11		1	2	5							

Targeted Watershed Site Selection Tool

Pike and Root Rivers

TWSST watershed ID: 04040002
HUC 8's included: 04040002
DNR District: Southeast
Area: 334 square miles
Total stream length: 428 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	1.1	0.05	19.9	0.15
Water temperature (°C)	22.1	21.9	21.7	21.8
Slope (degrees)	1.7	1.7	4.0	2.6
Percent agriculture	38	35	43	45
Percent developed	43	38	6	4
Percent forest	14	13	45	42
Percent wetlands/lakes	0.9	0.3	3.6	0.6
Percent soil clay content	30	32	15	14
Percent soil organic matter content	4	3	4	2
Soil permeability (in/hour * 100)	93	64	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

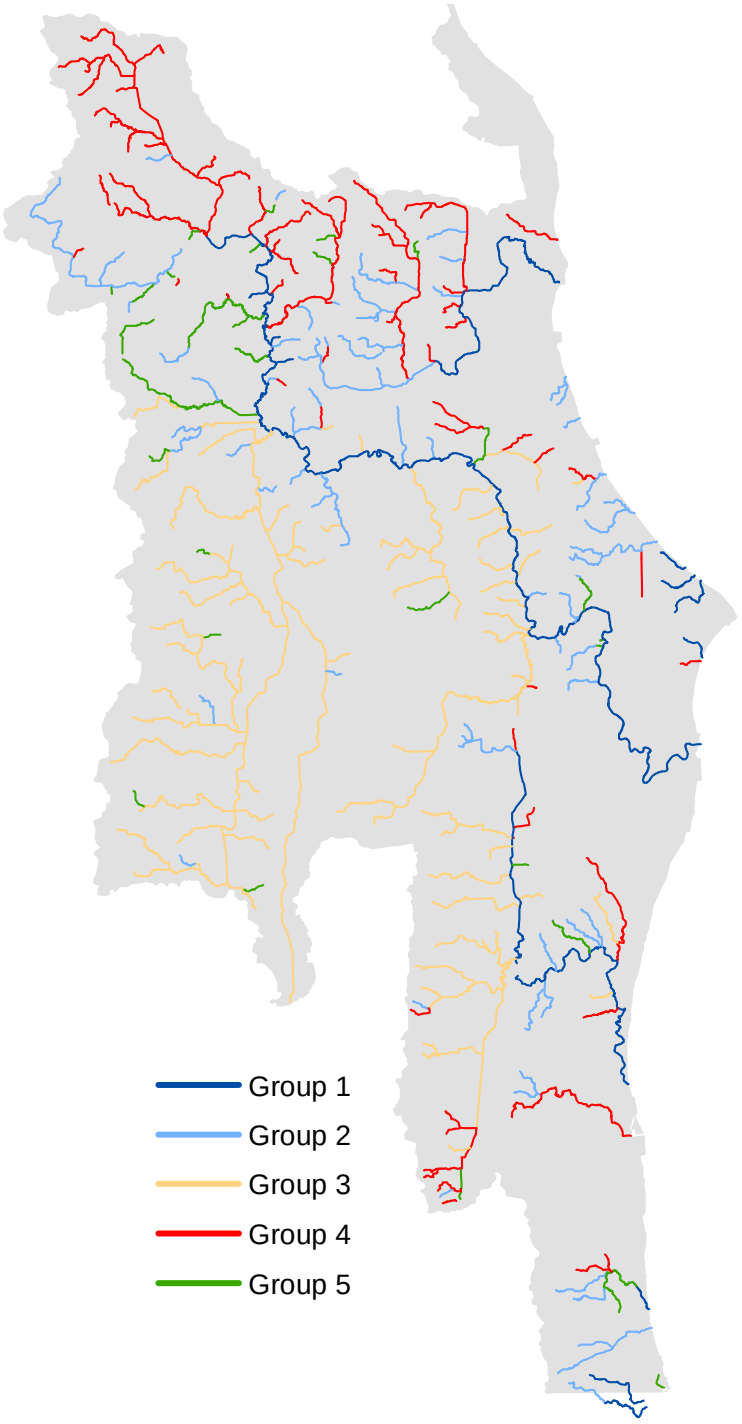
Group 1: Variable flow, though overall the highest in the watershed, with predominantly cool water temperatures.

Group 2: Low flow for the watershed, less than 0.10 cfs at baseflow, with cold to cool water temperatures, overall the coldest in the watershed.

Group 3: Low to moderate flow for the watershed with cold to cool water temperatures. Highest agriculture in the watershed, generally greater than 70%.

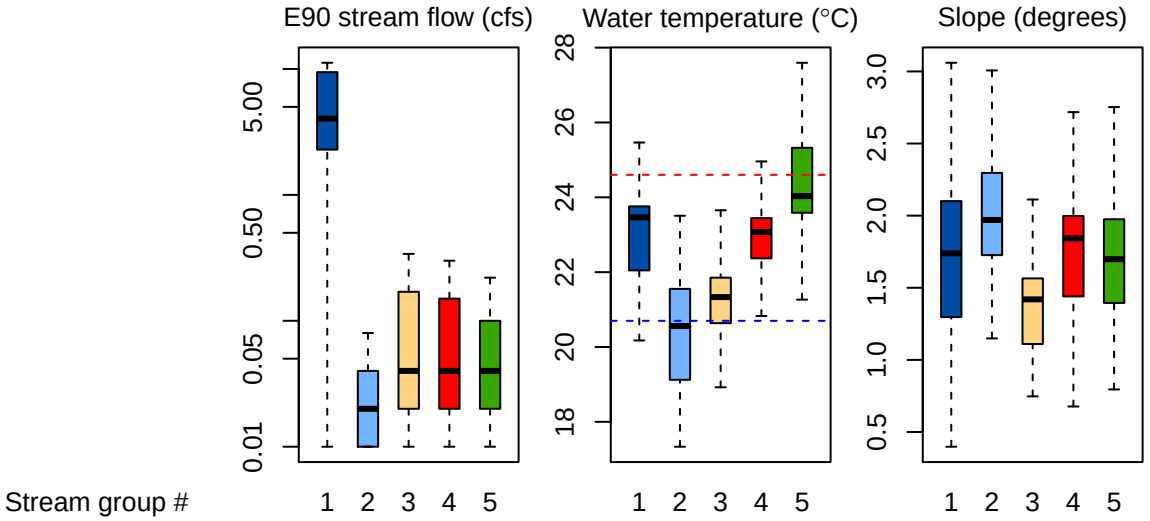
Group 4: Low to moderate flow for the watershed with cool water temperatures. Highest developed land cover in the watershed, generally greater than 70%.

Group 5: Low to moderate flow for the watershed with cool to warm water temperatures. Only group with wetlands/lakes present greater than 2%.

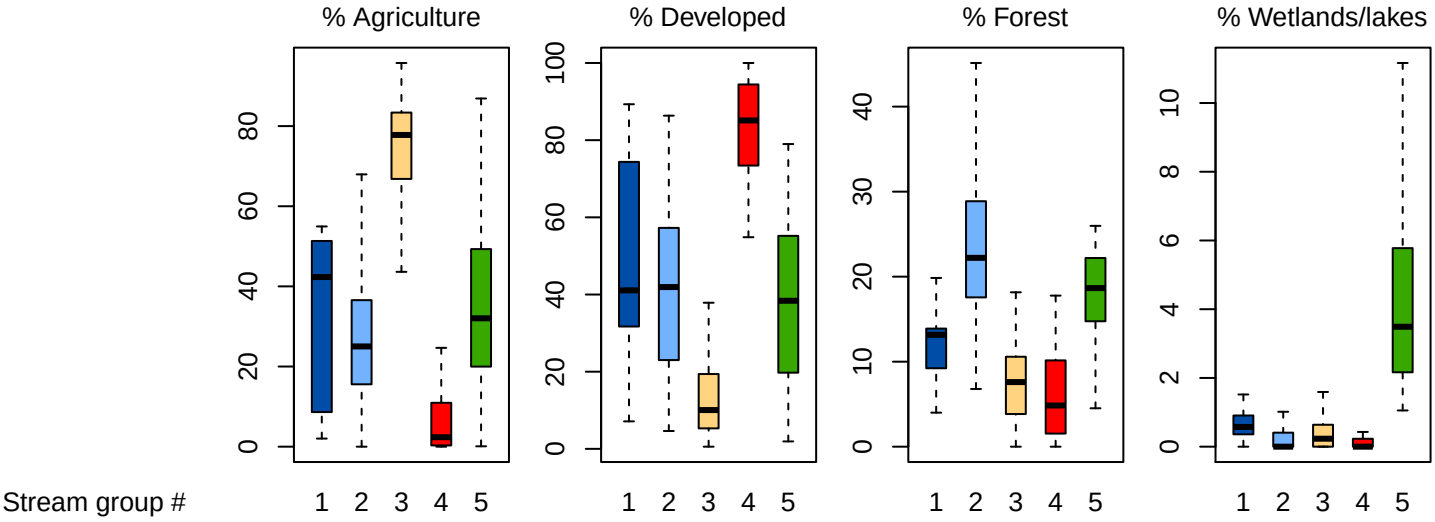


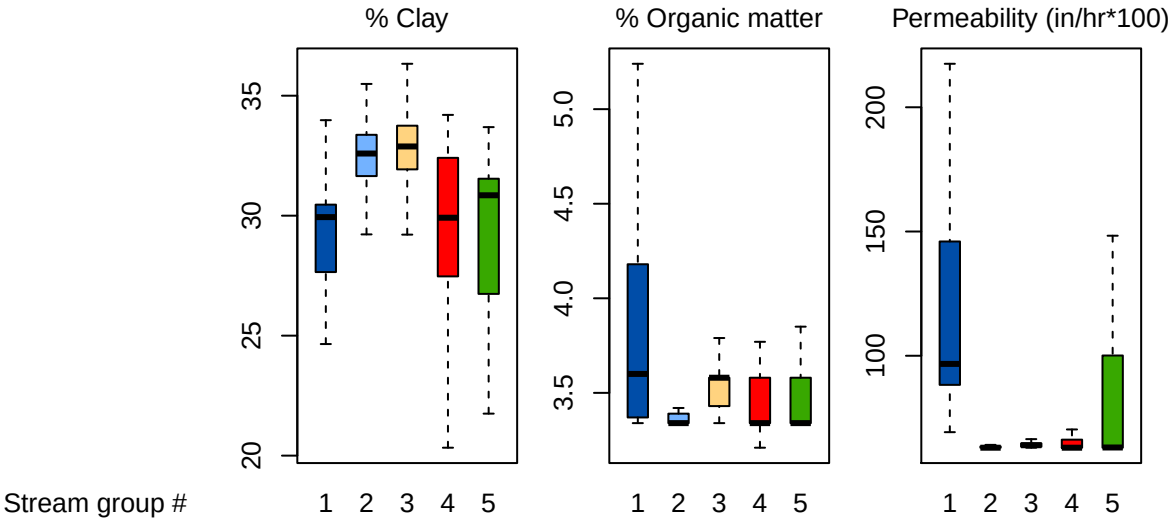
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





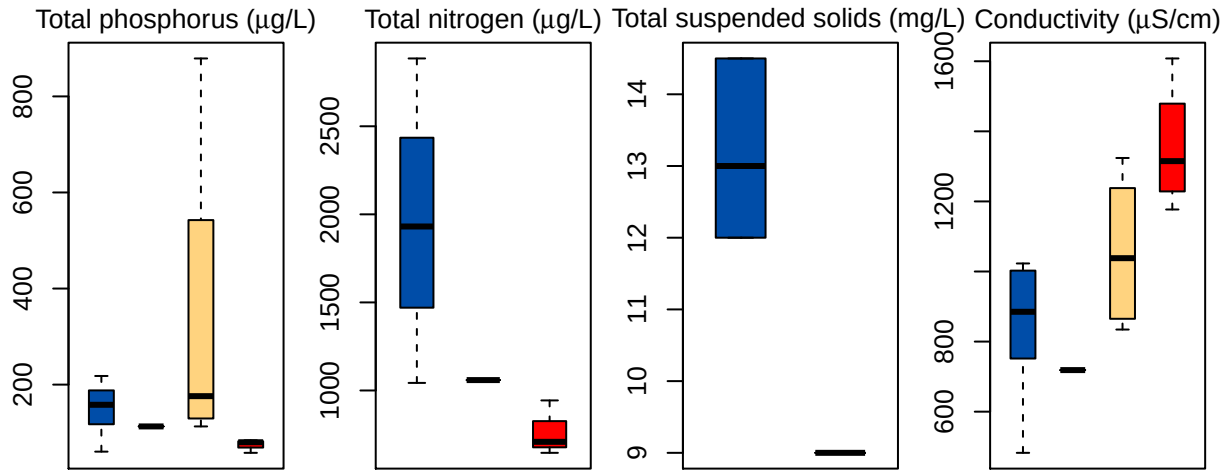
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

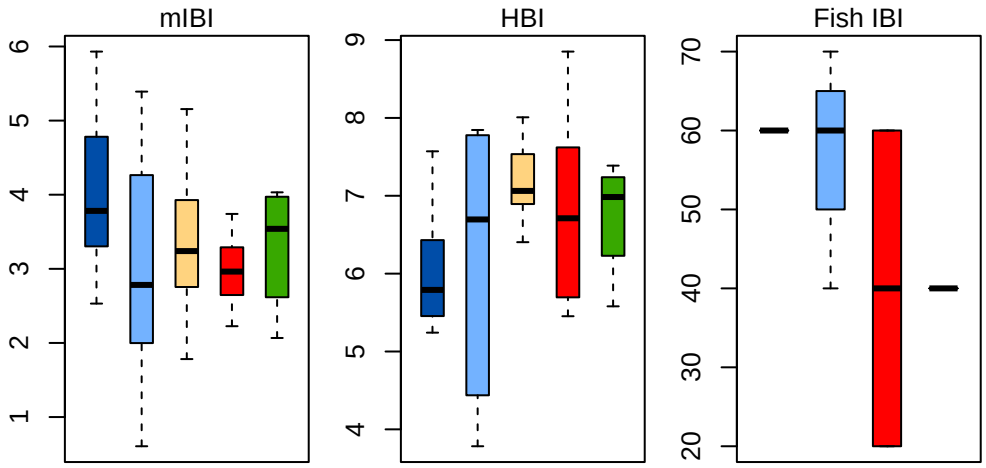
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



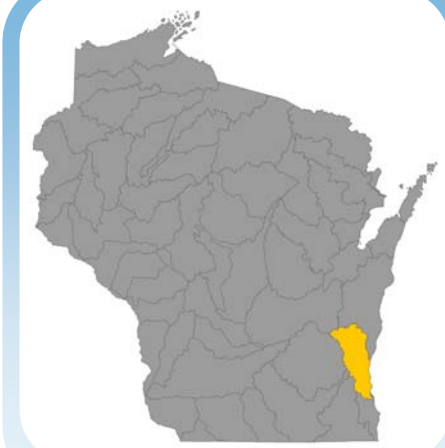
Stream group #	1	2	3	4		1	2	4		1	2		1	2	3	4
# of stations with data	11	1	4	3		7	1	3		5	1		11	1	5	4

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5		1	2	3	4	5		1	2	4	5
# of stations with data	17	7	13	8	4		17	7	13	8	4		1	3	2	1



Targeted Watershed Site Selection Tool

Milwaukee and Kinnickinnic Rivers

TWSST watershed ID: 04040003
HUC 8's included: 04040003
DNR District: Southeast
Area: 878 square miles
Total stream length: 1000 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	6.0	0.18	19.9	0.15
Water temperature (°C)	22.9	23.4	21.7	21.8
Slope (degrees)	2.4	2.3	4.0	2.6
Percent agriculture	51	57	43	45
Percent developed	22	8	6	4
Percent forest	22	21	45	42
Percent wetlands/lakes	3.1	1.7	3.6	0.6
Percent soil clay content	20	18	15	14
Percent soil organic matter content	5	4	4	2
Soil permeability (in/hour * 100)	344	296	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

TWSST

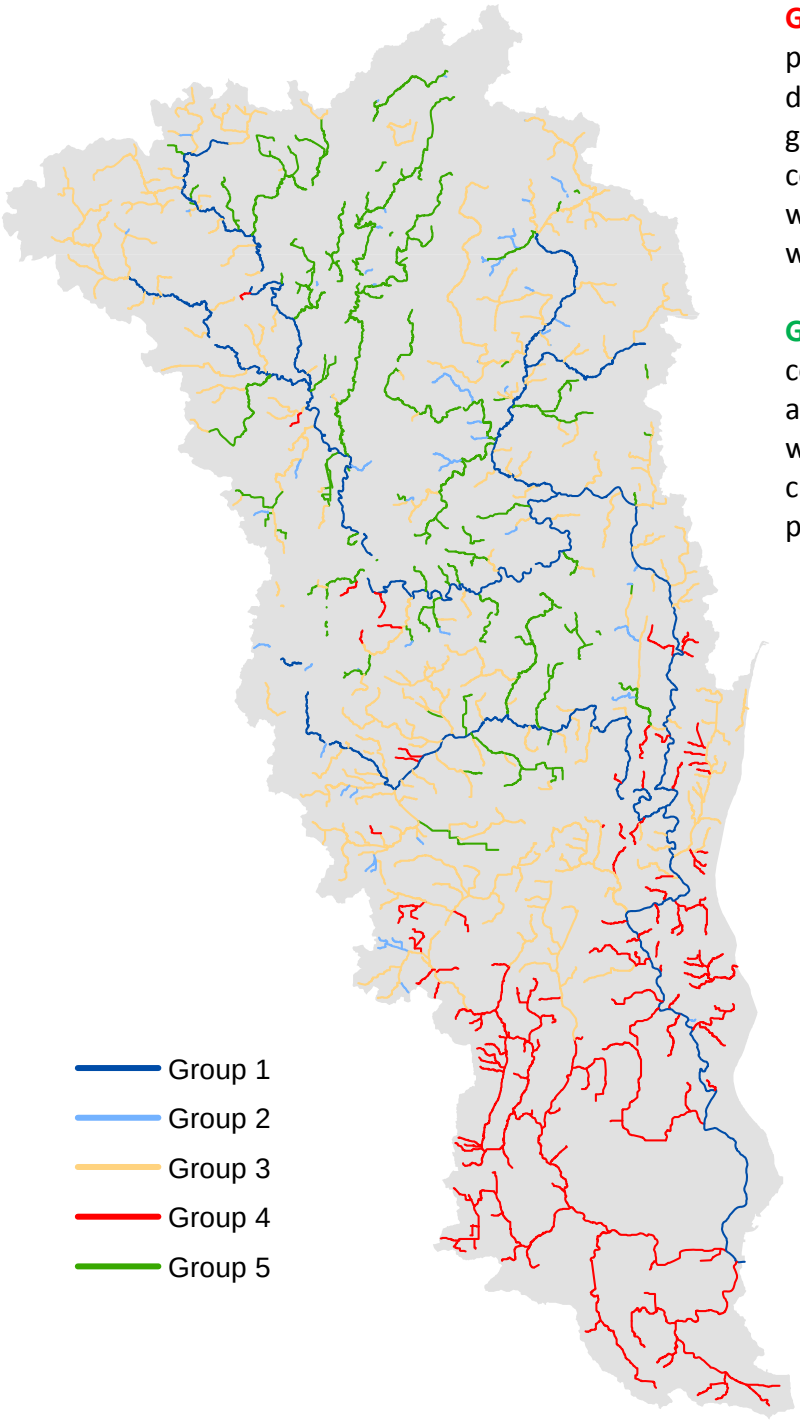
Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with cool to warm water temperatures.

Group 2: Low flow for the watershed and cold water temperatures, the coldest in the watershed. A mix of agriculture and forested land cover with the highest slopes in the area, generally greater than 3 degrees.

Group 3: Low flow for the watershed and variable water temperatures. Highest agriculture in the watershed, generally greater than 60%. Moderate soil clay content with relatively low organic matter content and permeability.

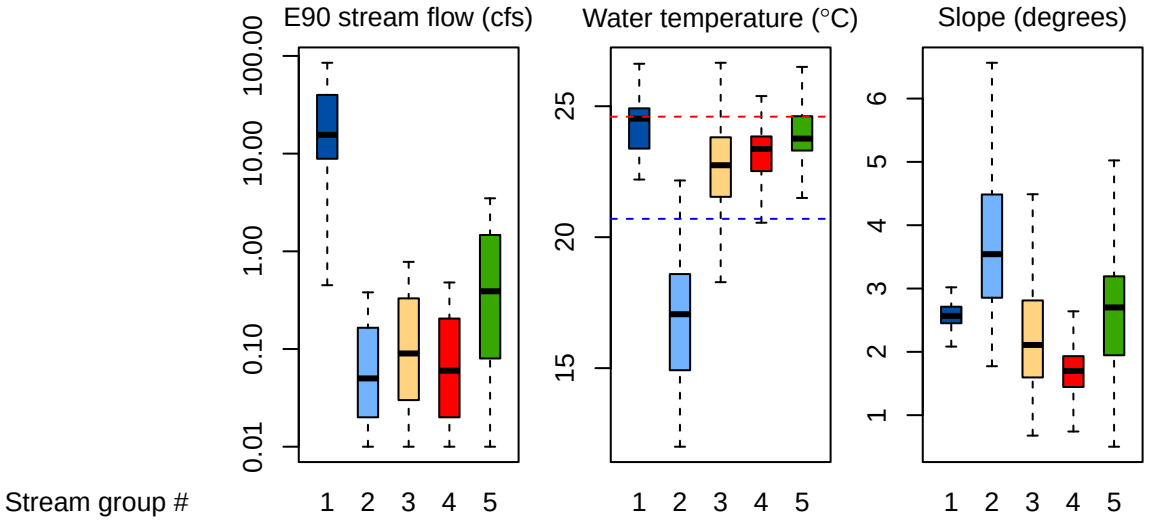


Group 4: Low flow for the watershed and predominantly cool water temperatures. Highest developed land cover in the watershed, generally greater than 60%, up to 100%. Variable soil clay content, but includes the highest in the watershed, up to 40%. Lowest permeability in the watershed.

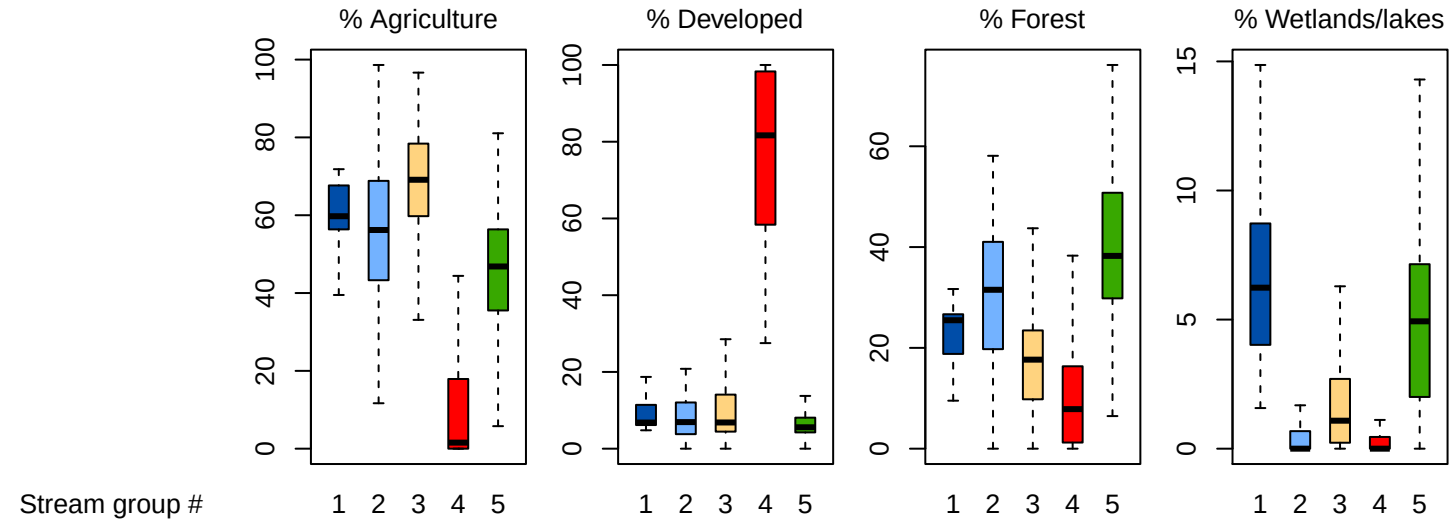
Group 5: Moderate flow for the watershed and cool to warm water temperatures. A mix of agriculture and forested land cover, with wetlands/lakes present up to 15%. Lowest soil clay content, less than 20%, and the highest permeability in the watershed.

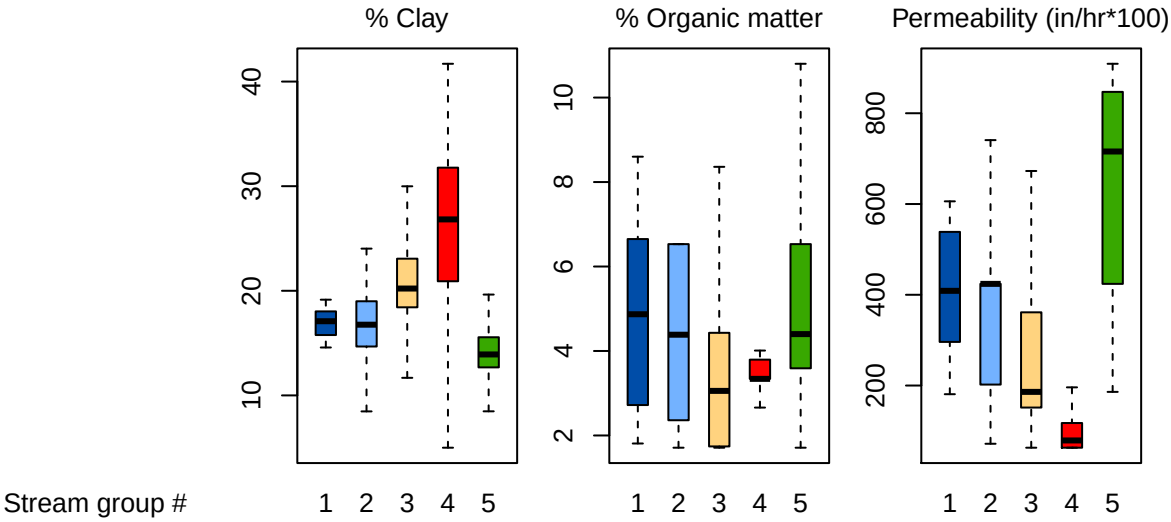
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





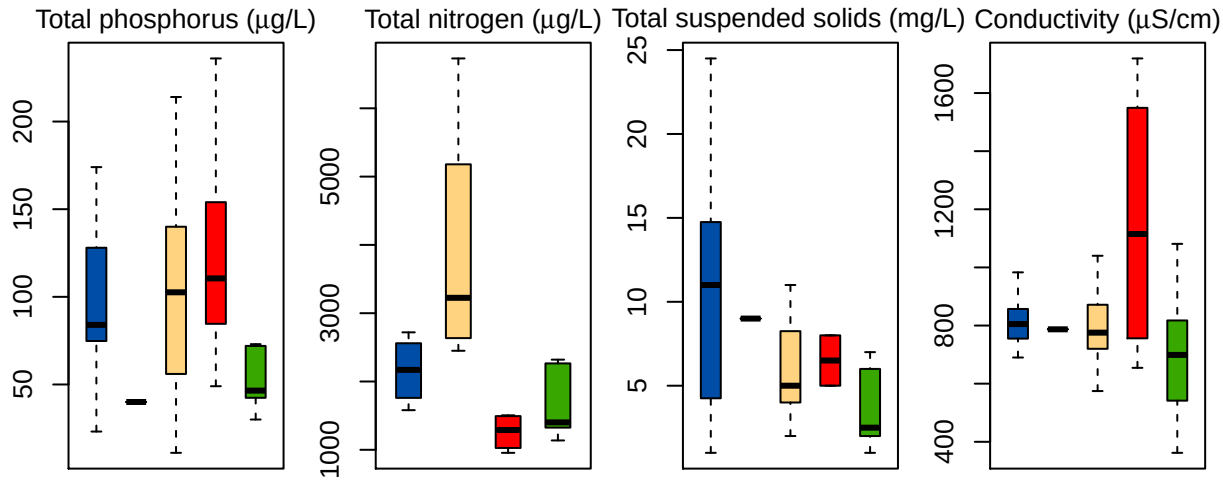
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

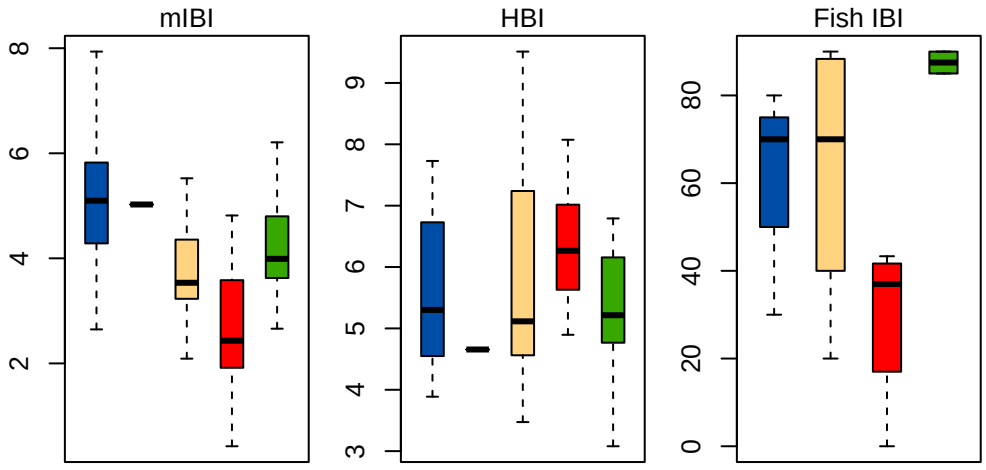
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5		1	3	4	5		1	2	3	4	5		1	2	3	4	5
# of stations with data	25	1	22	28	17		4	4	4	5		11	1	11	6	6		14	1	12	13	12

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5		1	2	3	4	5		1	3	4	5
# of stations with data	21	1	18	17	12		21	1	18	17	12		3	8	4	2

Targeted Watershed Site Selection Tool

Upper St. Croix, Clam, and Yellow Rivers

TWSST watershed ID: 07030001
HUC 8's included: 07030001
DNR District: Northern
Area: 1482 square miles
Total stream length: 1086 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	13.9	0.32	19.9	0.15
Water temperature (°C)	21.6	22.5	21.7	21.8
Slope (degrees)	2.3	2.1	4.0	2.6
Percent agriculture	13	4	43	45
Percent developed	4	4	6	4
Percent forest	73	76	45	42
Percent wetlands/lakes	4.3	2.8	3.6	0.6
Percent soil clay content	7	8	15	14
Percent soil organic matter content	7	4	4	2
Soil permeability (in/hour * 100)	497	397	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

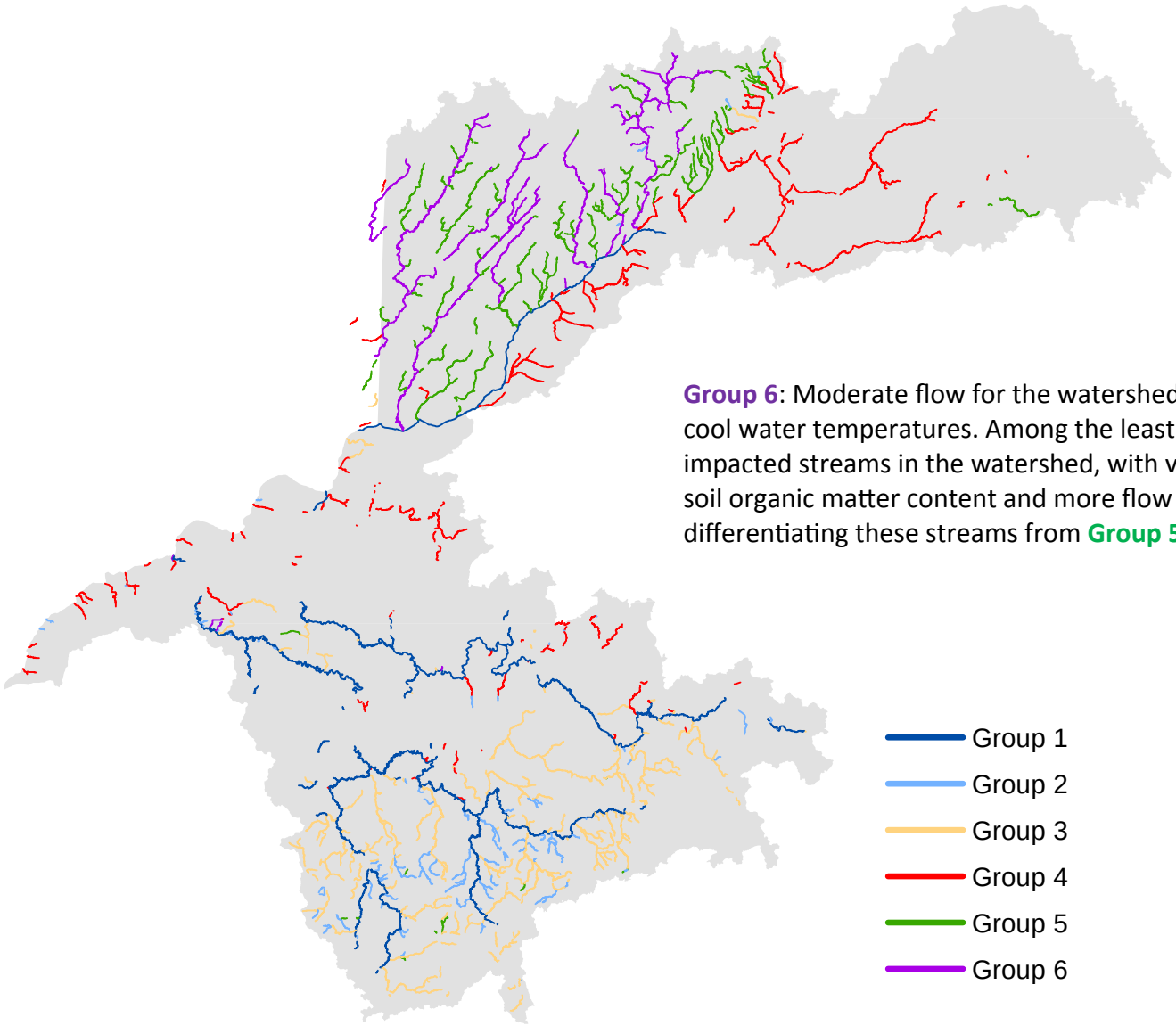
Group 1: Moderate to high flow for the watershed with cool to warm water temperatures. Highest wetlands/ lakes, generally between 5-10%.

Group 2: Low flow for the watershed with cold water temperatures, by far the coldest in the watershed. Moderate to high forests and the highest slopes in the watershed, up to 8 degrees. Highly variable soil permeability.

Group 3: Low to moderate flow for the watershed with variable water temperatures. Highest agriculture in the watershed, generally between 20-45%. Highest soil clay content in the watershed, though only up to 12%, and minimal organic matter content.

Group 4: Moderate flow for the watershed with variable water temperatures. Moderate to high forests and wetlands/lakes. Lowest soil clay content in the watershed, around 4%, and highest permeability.

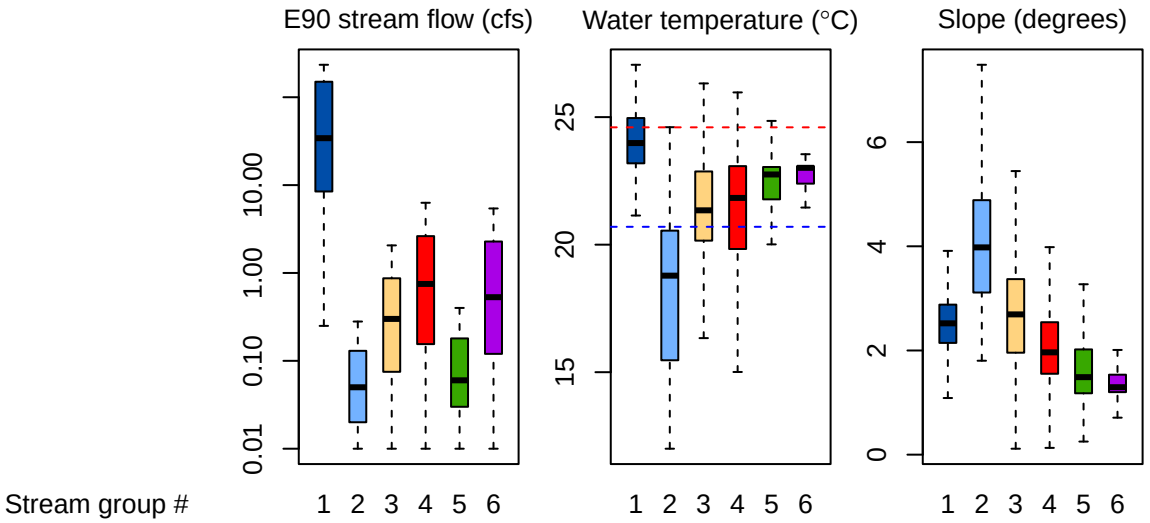
Group 5: Low flow for the watershed with predominantly cool water temperatures. Along with **Group 6**, the least impacted streams in the watershed, with forests and wetlands/lakes accounting for 95% of land cover. The lowest permeability in the watershed.



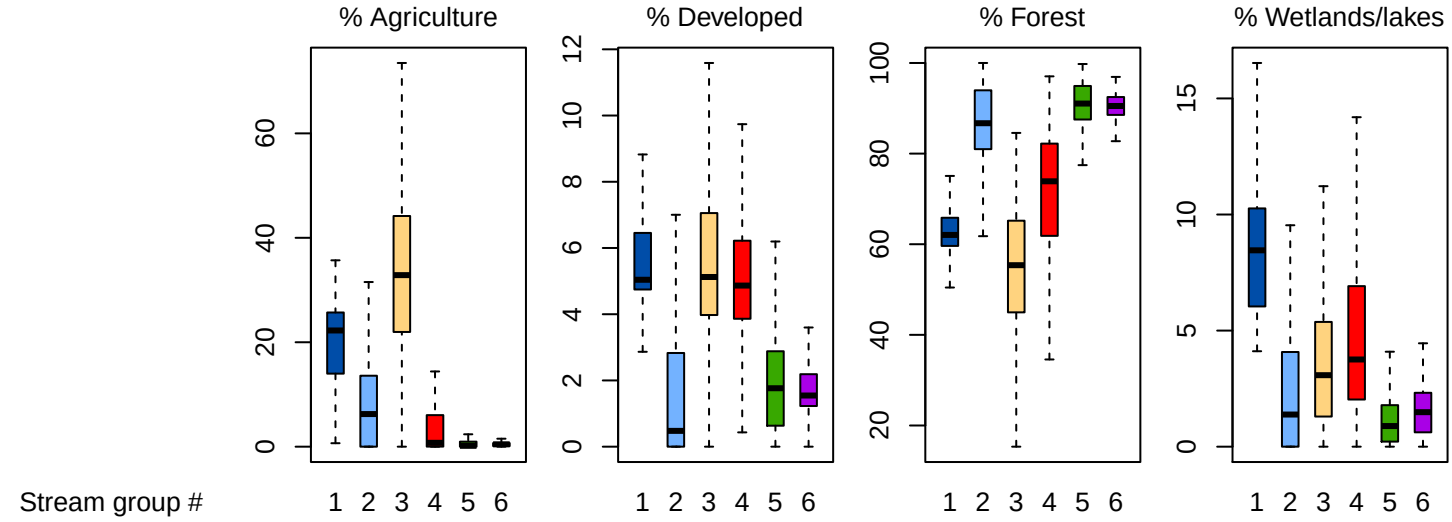
Group 6: Moderate flow for the watershed with cool water temperatures. Among the least impacted streams in the watershed, with very high soil organic matter content and more flow differentiating these streams from **Group 5**.

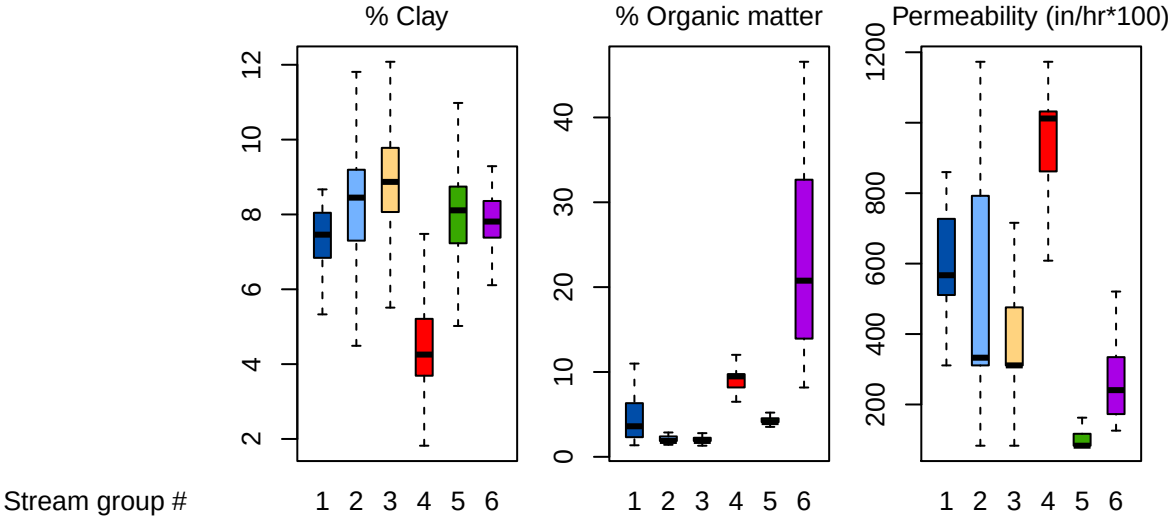
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





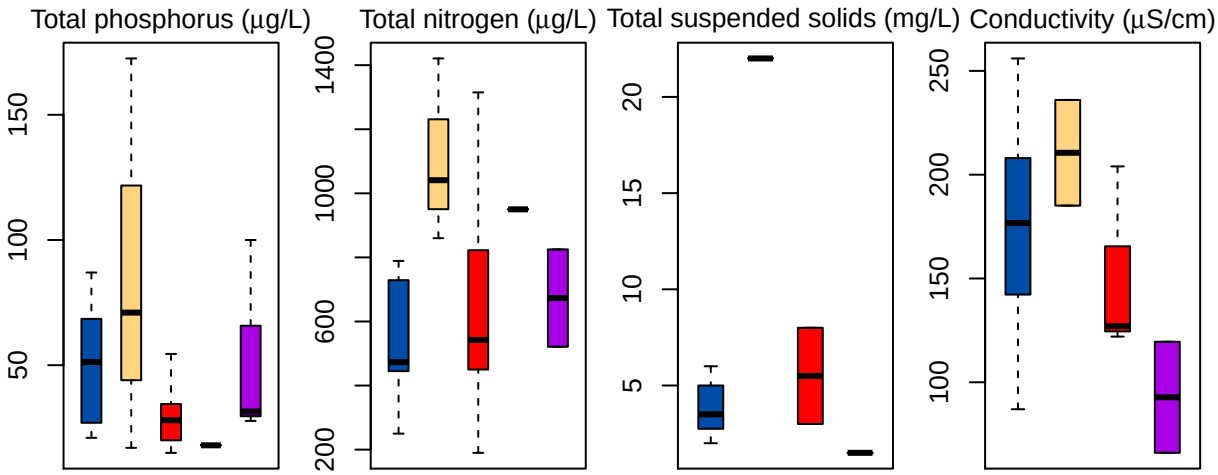
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

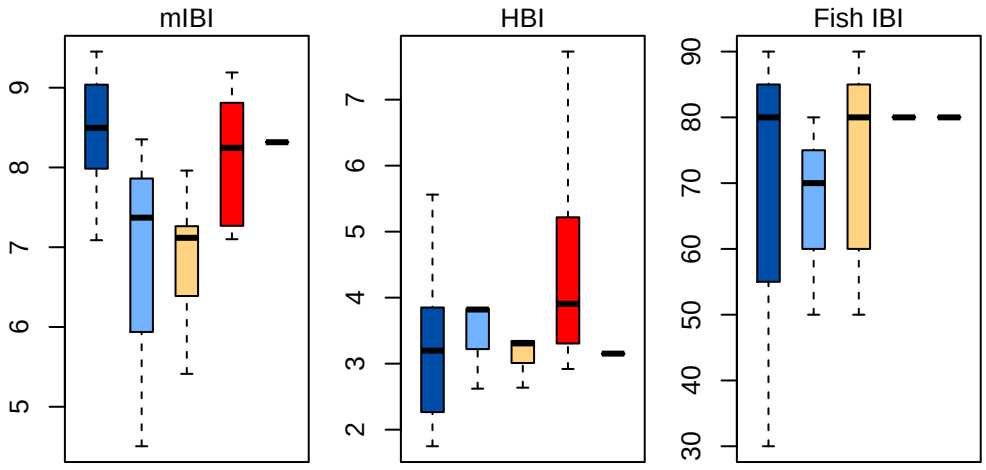
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	3	4	5	6	1	3	4	5	6	1	3	4	6	1	3	4	6
# of stations with data	12	3	27	1	3	11	3	26	1	2	7	1	2	1	11	2	3	2

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	6	1	2	3	4	6	1	2	3	4	5
# of stations with data	8	3	5	8	1	8	3	5	8	1	3	3	6	1	1

Targeted Watershed Site Selection Tool

Namekagon and Totagatic Rivers

TWSST watershed ID: 07030002
HUC 8's included: 07030002
DNR District: Northern
Area: 1018 square miles
Total stream length: 661 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	18.0	0.86	19.9	0.15
Water temperature (°C)	21.1	21.7	21.7	21.8
Slope (degrees)	2.8	2.7	4.0	2.6
Percent agriculture	4	1	43	45
Percent developed	4	3	6	4
Percent forest	85	87	45	42
Percent wetlands/lakes	4.1	2.2	3.6	0.6
Percent soil clay content	6	6	15	14
Percent soil organic matter content	8	8	4	2
Soil permeability (in/hour * 100)	590	515	353	241

WISCONSIN DEPT. OF NATURAL RESOURCES

Explore TWSST with DNR's Water Condition Viewer

TWSST

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

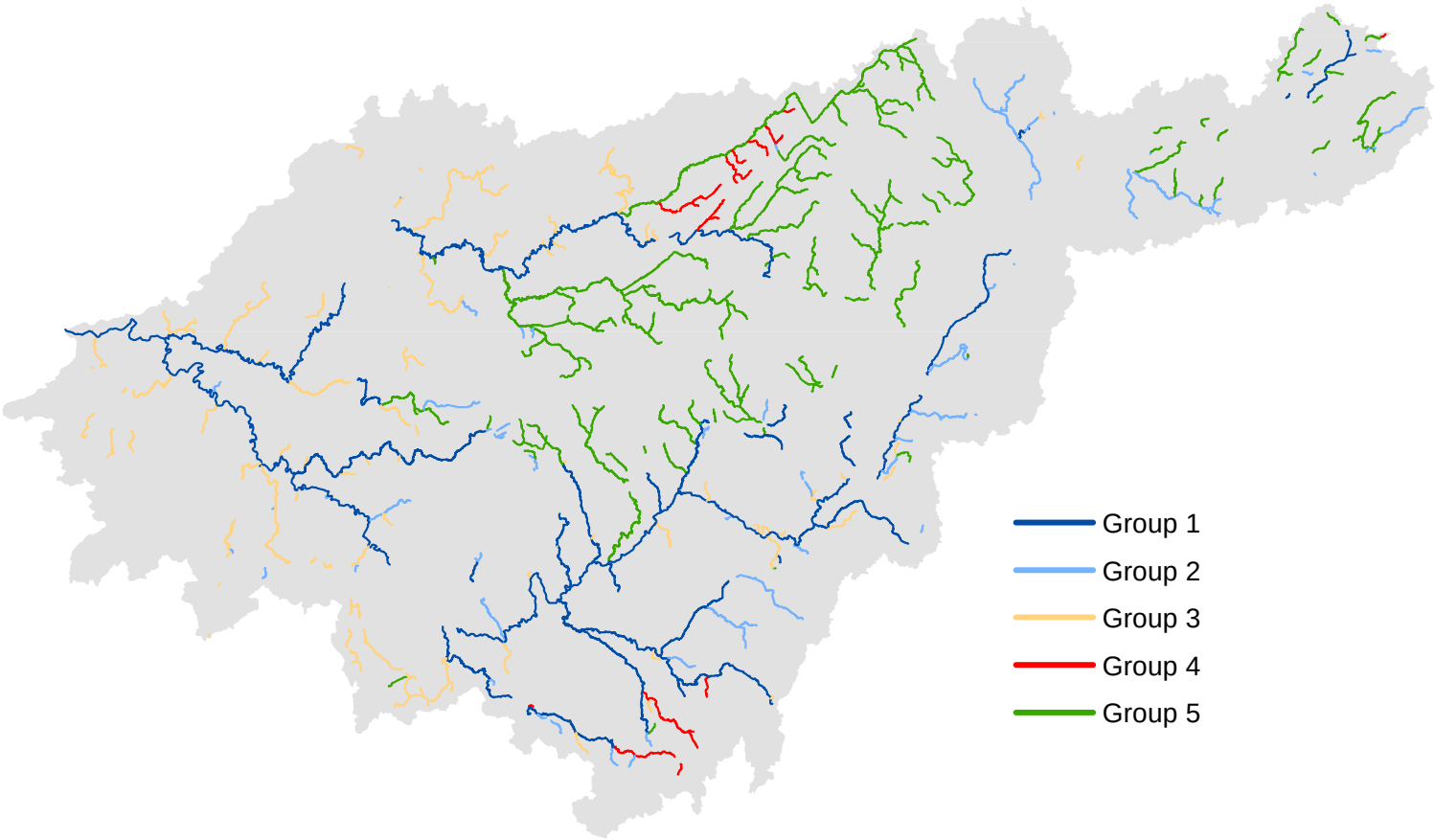
Group 1: Highest flow in the watershed with variable water temperatures.

Group 2: Low to moderate flow for the watershed with predominantly cold water temperatures, the coldest in the watershed. Includes the highest slopes in the watershed, up to 8 degrees.

Group 3: Low to moderate flow for the watershed with variable water temperatures. A mix of all four land cover categories including the highest amounts of agriculture, developed land, and wetlands/lakes. Lowest soil clay content in the watershed, generally less than 5%, highest organic matter content and highest permeability.

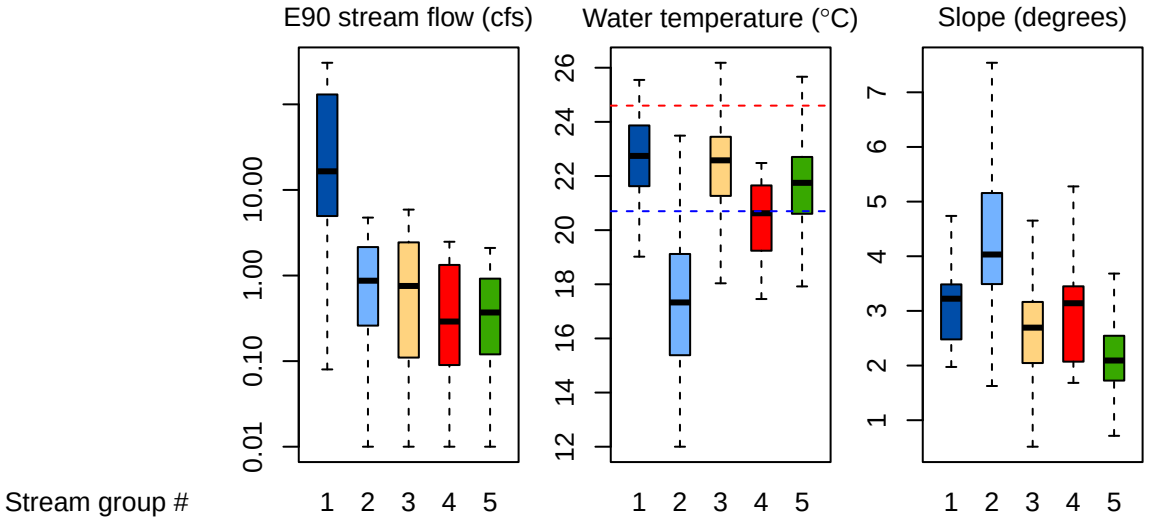
Group 4: Low to moderate flow for the watershed with cold to cool water temperatures. High forested land cover, greater than 80%. Includes the highest soil clay content in the watershed at 10%, the lowest organic matter content and the lowest permeability.

Group 5: Low to moderate flow for the watershed with variable water temperatures. Highest forested land cover, generally greater than 90%, and the lowest slopes in the watershed, generally less than 3 degrees. Relatively high soil clay content for the watershed, between 6-8%, with uniform organic matter content and permeability among reaches.

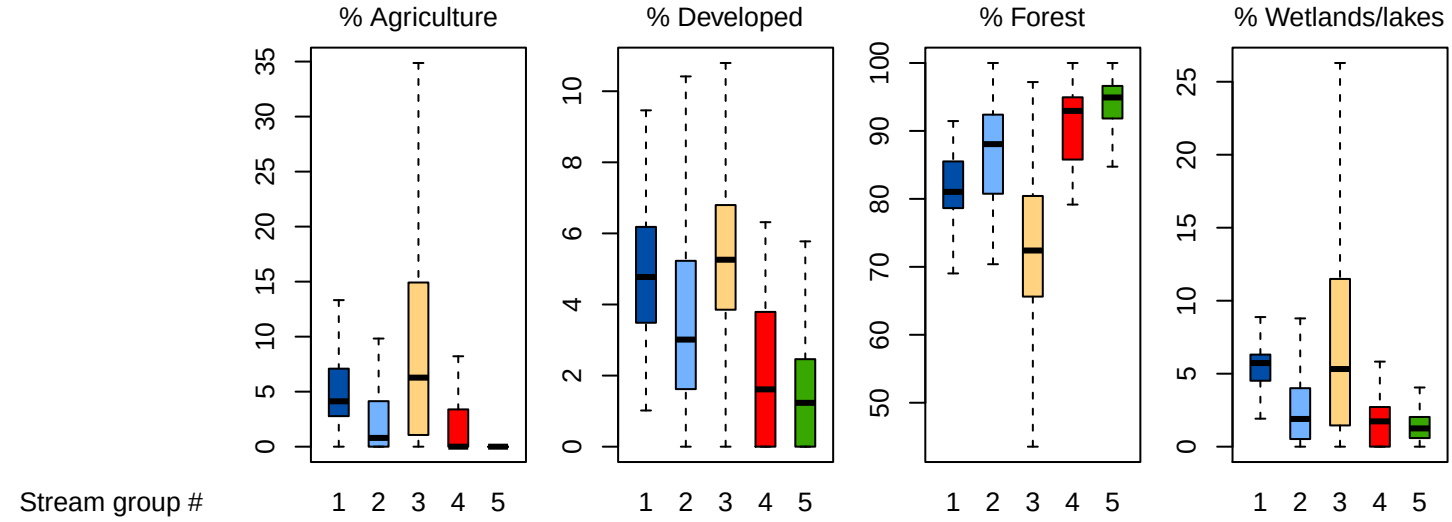


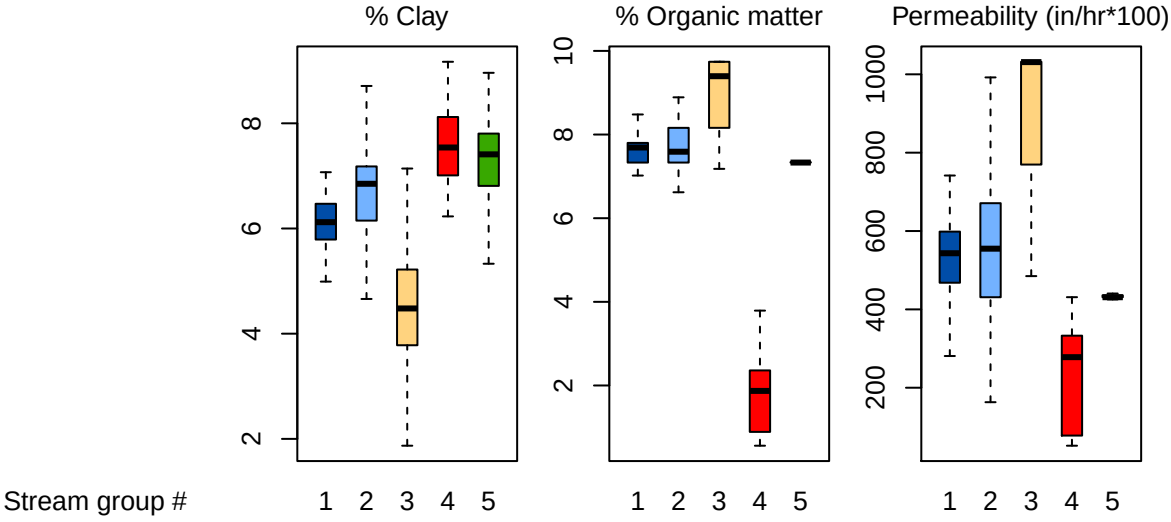
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





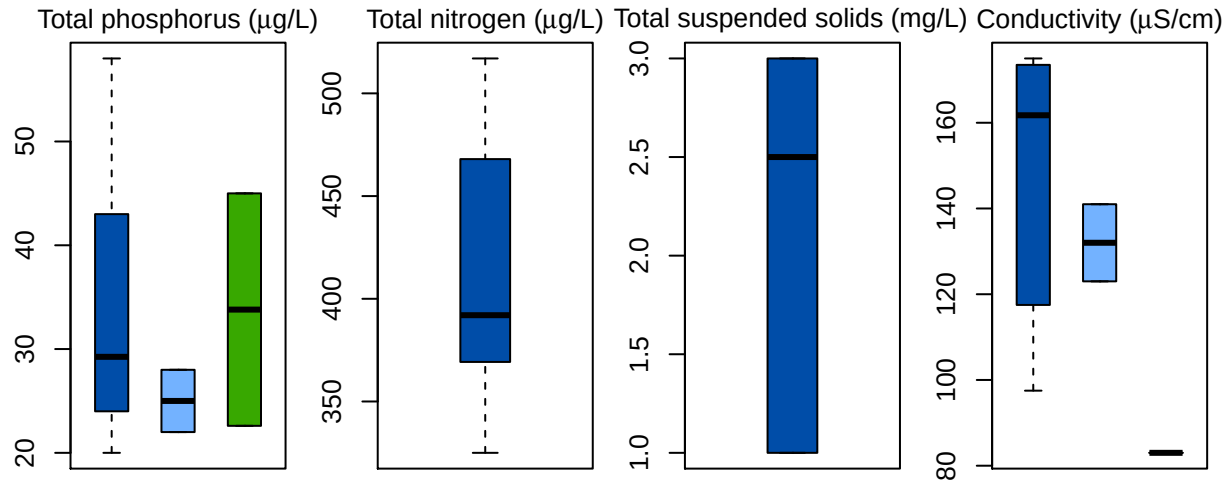
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

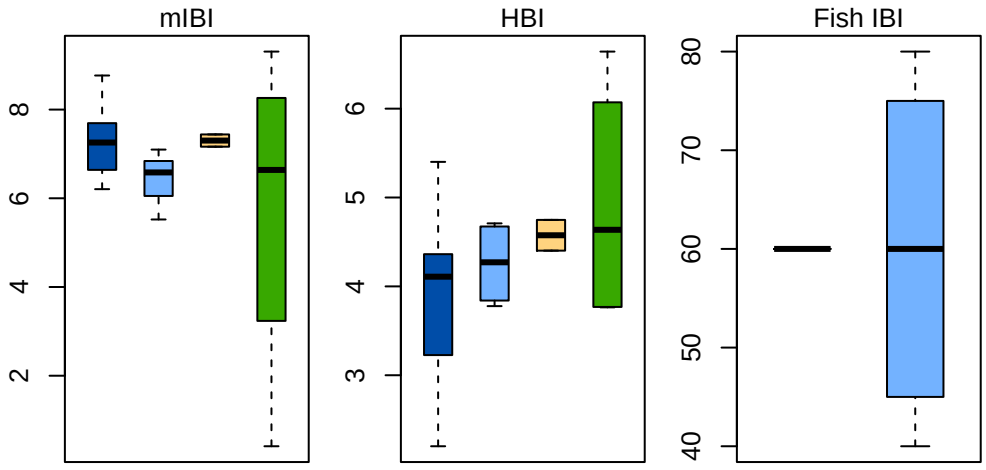
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	5	1	1	1	2	5
# of stations with data	10	2	2	7	7	6	2	1

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	5	1	2	3	5	1	2
# of stations with data	11	4	2	4	11	4	2	4	2	4

Targeted Watershed Site Selection Tool

Lower St. Croix and Apple Rivers

TWSST watershed ID: 07030005_N
HUC 8's included: 07030005 (North)
DNR District: Northern, West Central
Area: 1172 square miles
Total stream length: 719 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	10.3	0.41	19.9	0.15
Water temperature (°C)	22.0	22.4	21.7	21.8
Slope (degrees)	2.7	2.5	4.0	2.6
Percent agriculture	37	39	43	45
Percent developed	5	5	6	4
Percent forest	44	42	45	42
Percent wetlands/lakes	9.8	6.4	3.6	0.6
Percent soil clay content	10	9	15	14
Percent soil organic matter content	3	2	4	2
Soil permeability (in/hour * 100)	532	472	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

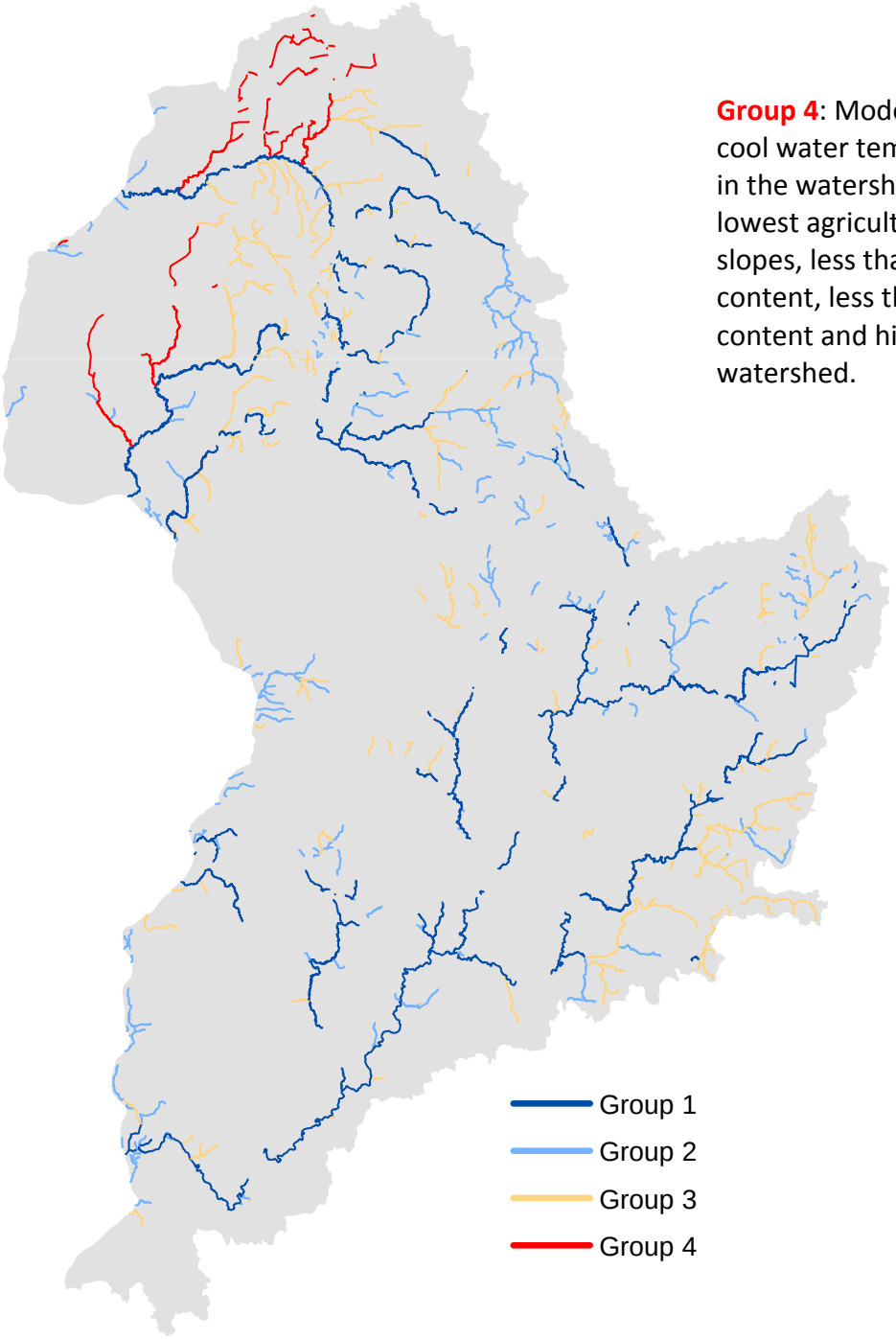
Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with cool to warm water temperatures, the warmest in the watershed.

Group 2: Low flow for the watershed and variable water temperatures. Highest forested land cover in the watershed, generally greater than 50%. Soil clay content generally between 5-10% and low organic matter content.

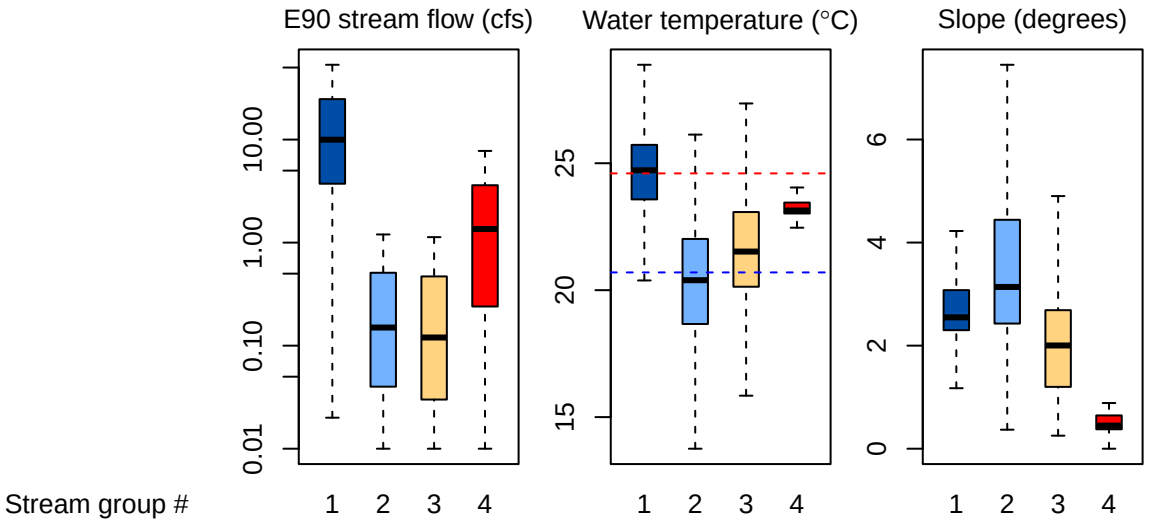
Group 3: Low flow for the watershed and variable water temperatures. Highest agriculture land cover in the watershed, generally greater than 50%. Includes the highest soil clay content and lowest permeability in the watershed, though both are variable.



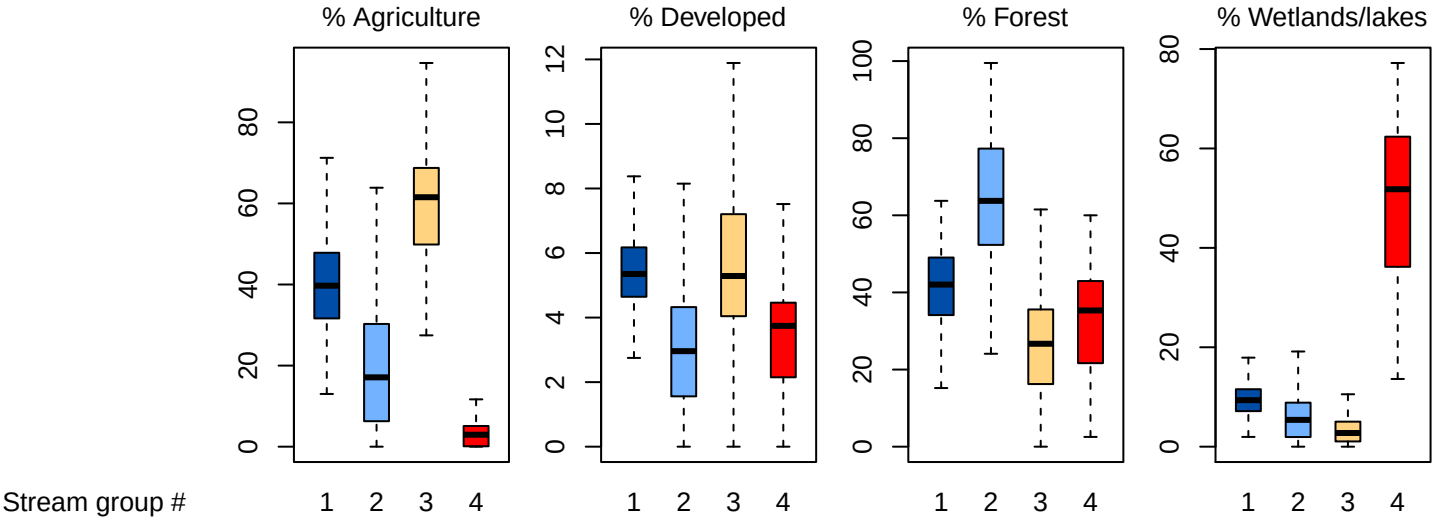
Group 4: Moderate flow for the watershed and cool water temperatures. Highest wetlands/lakes in the watershed, generally greater than 40%, lowest agriculture, less than 10%, and lowest slopes, less than 1 degree. Lowest soil clay content, less than 5%, highest organic matter content and highest permeability in the watershed.

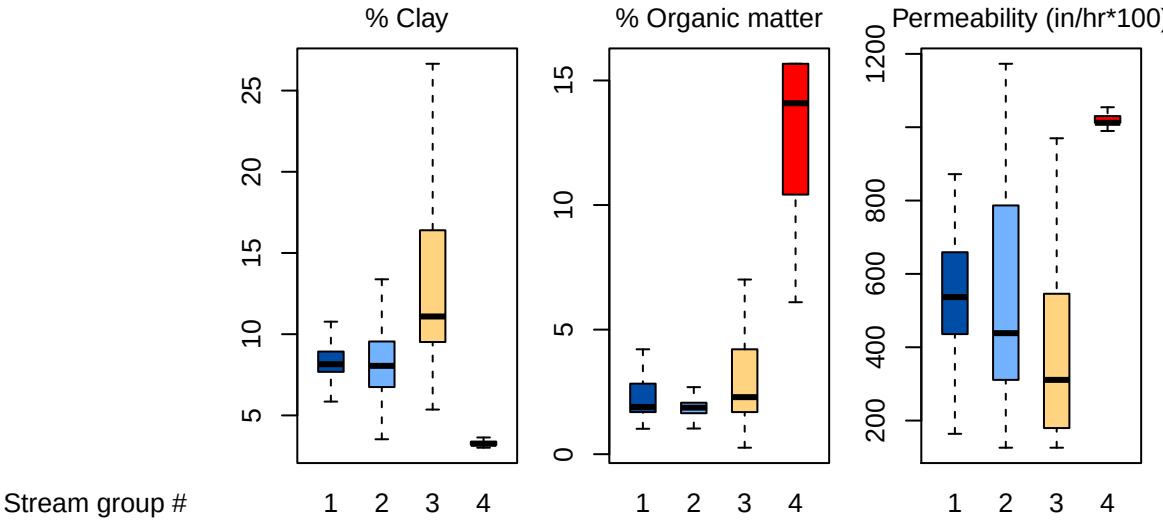
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





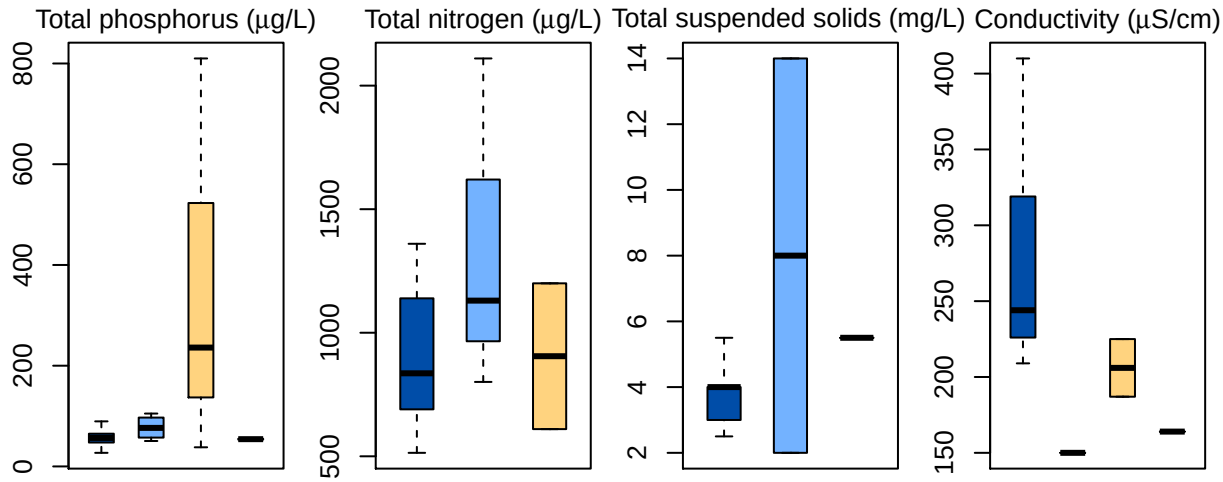
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

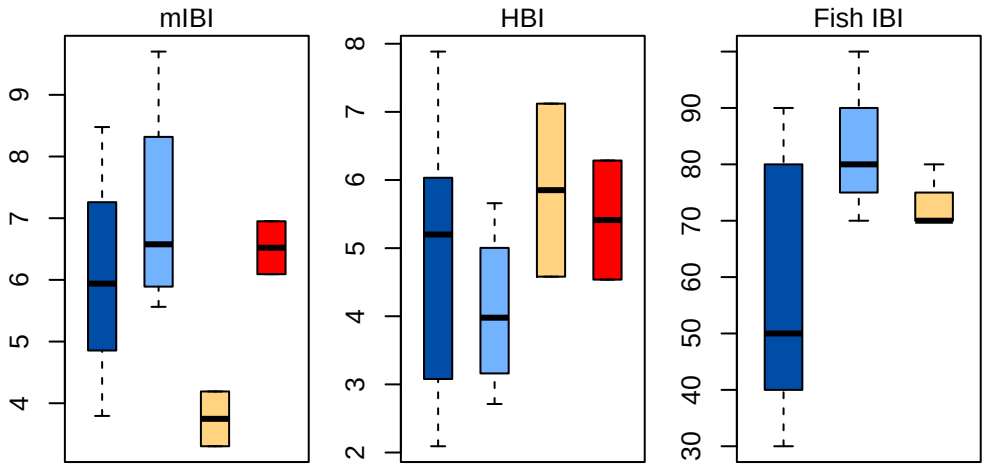
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



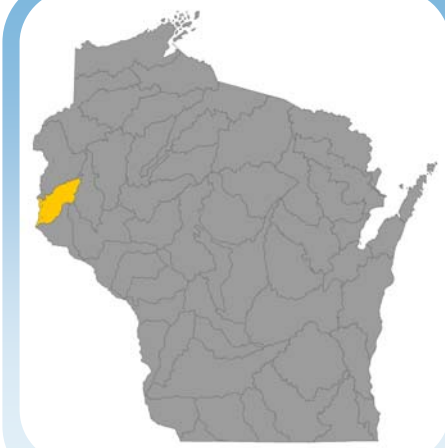
Stream group #	1	2	3	4	1	2	3	1	2	3	1	2	3	4
# of stations with data	18	4	3	2	12	3	2	9	2	1	13	1	2	1

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores correspond to modeled Natural Communities.



Stream group #	1	2	3	4	1	2	3	4	1	2	3
# of stations with data	14	4	2	2	14	4	2	2	6	4	3



Targeted Watershed Site Selection Tool

Lower St. Croix River

TWSST watershed ID: 07030005_S
HUC 8's included: 07030005 (South)
DNR District: West Central, Northern
Area: 529 square miles
Total stream length: 613 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	6.8	0.17	19.9	0.15
Water temperature (°C)	21.3	21.4	21.7	21.8
Slope (degrees)	2.5	2.2	4.0	2.6
Percent agriculture	72	74	43	45
Percent developed	6	5	6	4
Percent forest	19	17	45	42
Percent wetlands/lakes	1.4	0.8	3.6	0.6
Percent soil clay content	13	13	15	14
Percent soil organic matter content	1	0	4	2
Soil permeability (in/hour * 100)	266	179	353	241

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Explore TWSST with DNR's Water Condition Viewer

TWSST

Bureau of Water Quality, June 2015

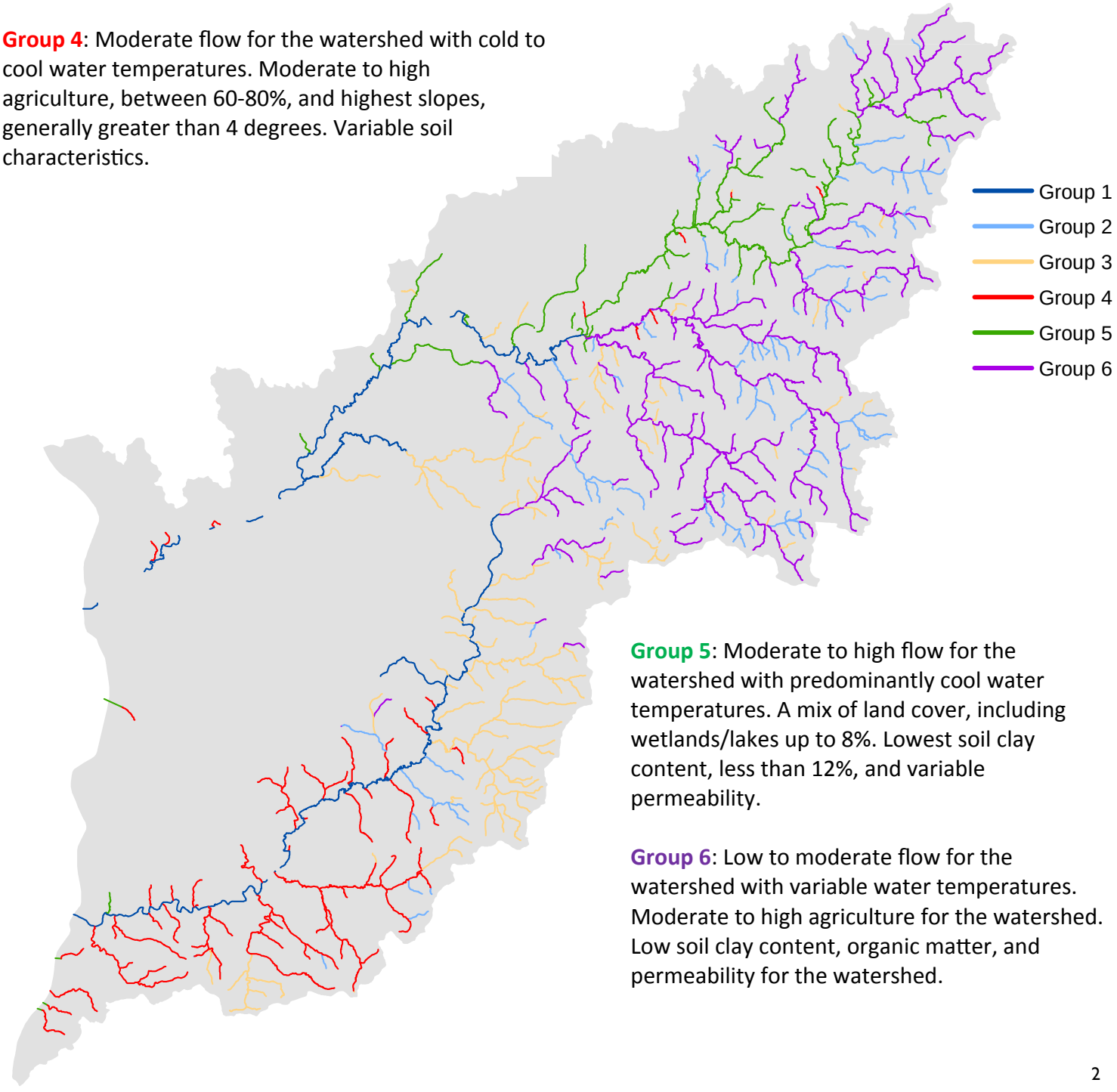
Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with cool water temperatures.

Group 2: Lowest flow in the watershed with cold to cool water temperatures. Includes some of the least impacted streams in the watershed in terms of agriculture and developed land cover. Low to moderate soil clay content for the watershed, but very low permeability.

Group 3: Low to moderate flow for the watershed with cold to cool water temperatures. Highest agriculture in the watershed, greater than 80%. High soil clay content for the watershed, generally greater than 15%.

Group 4: Moderate flow for the watershed with cold to cool water temperatures. Moderate to high agriculture, between 60-80%, and highest slopes, generally greater than 4 degrees. Variable soil characteristics.

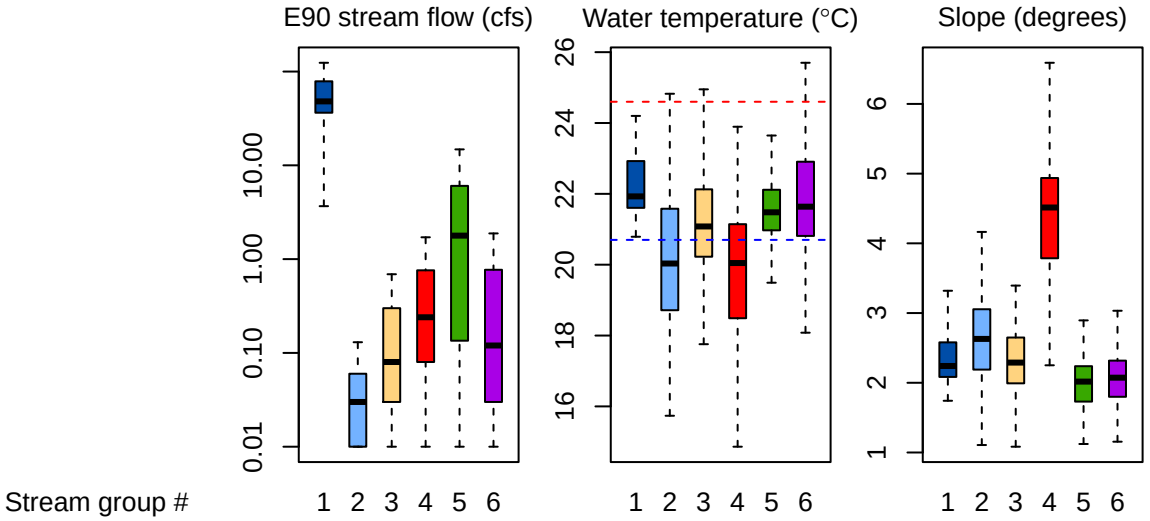


Group 5: Moderate to high flow for the watershed with predominantly cool water temperatures. A mix of land cover, including wetlands/lakes up to 8%. Lowest soil clay content, less than 12%, and variable permeability.

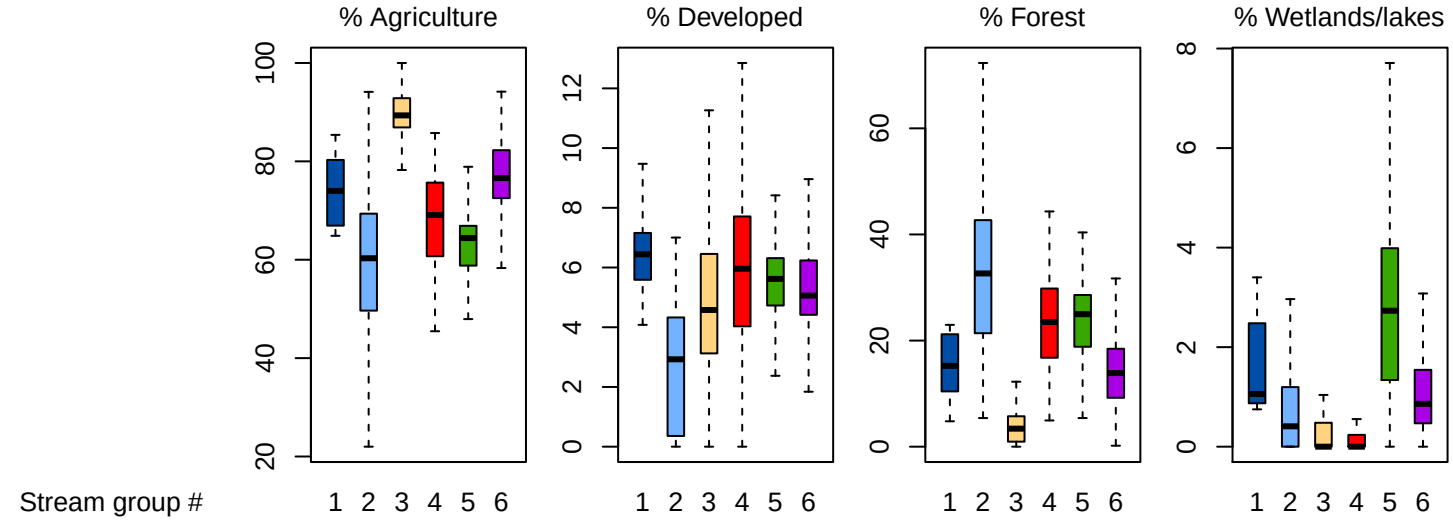
Group 6: Low to moderate flow for the watershed with variable water temperatures. Moderate to high agriculture for the watershed. Low soil clay content, organic matter, and permeability for the watershed.

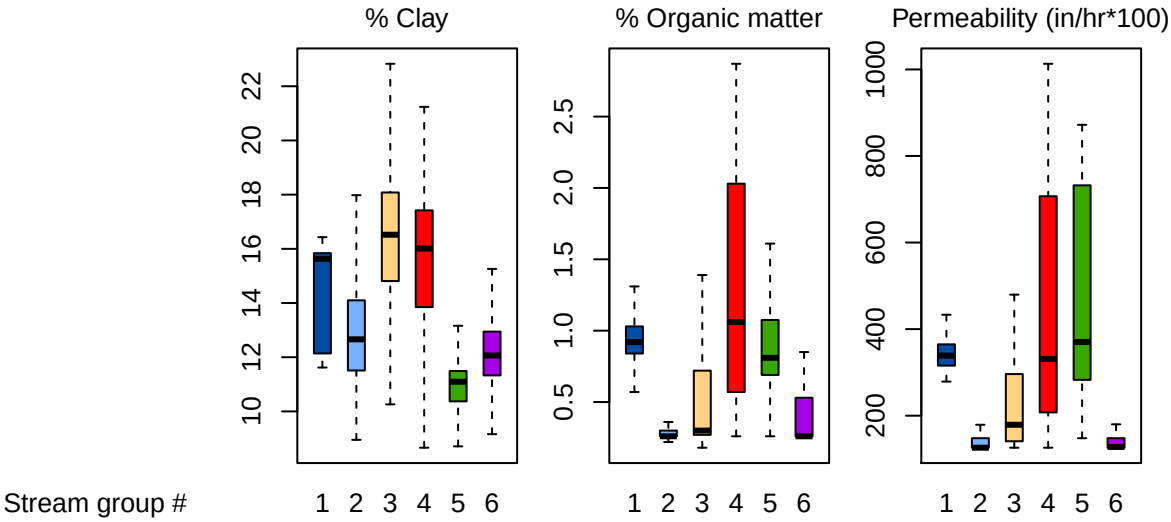
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





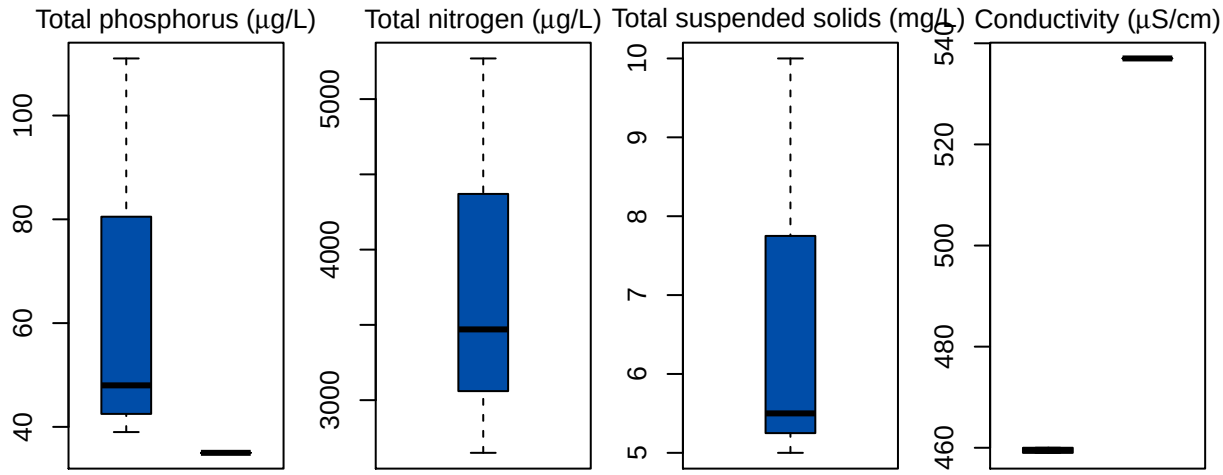
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

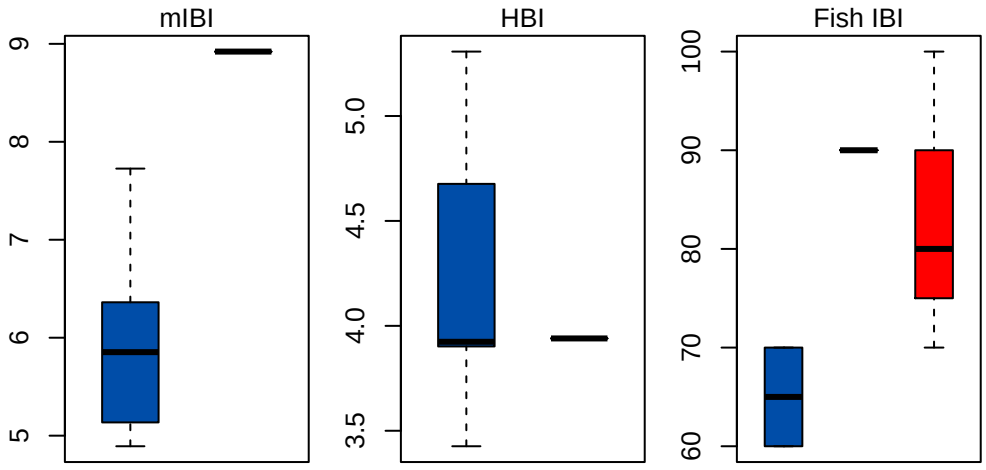
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	4	1	1	1	4
# of stations with data	4	1	3	3	2	1

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	1	2	1	2	4
# of stations with data	7	1	7	1	2	1	3

Targeted Watershed Site Selection Tool

Rush River

TWSST watershed ID: 07040001
HUC 8's included: 07040001
DNR District: West Central
Area: 514 square miles
Total stream length: 992 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	3.5	0.13	19.9	0.15
Water temperature (°C)	20.7	20.7	21.7	21.8
Slope (degrees)	4.9	4.3	4.0	2.6
Percent agriculture	70	74	43	45
Percent developed	6	6	6	4
Percent forest	22	19	45	42
Percent wetlands/lakes	0.5	0.0	3.6	0.6
Percent soil clay content	18	18	15	14
Percent soil organic matter content	0	0	4	2
Soil permeability (in/hour * 100)	222	207	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

TWSST

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

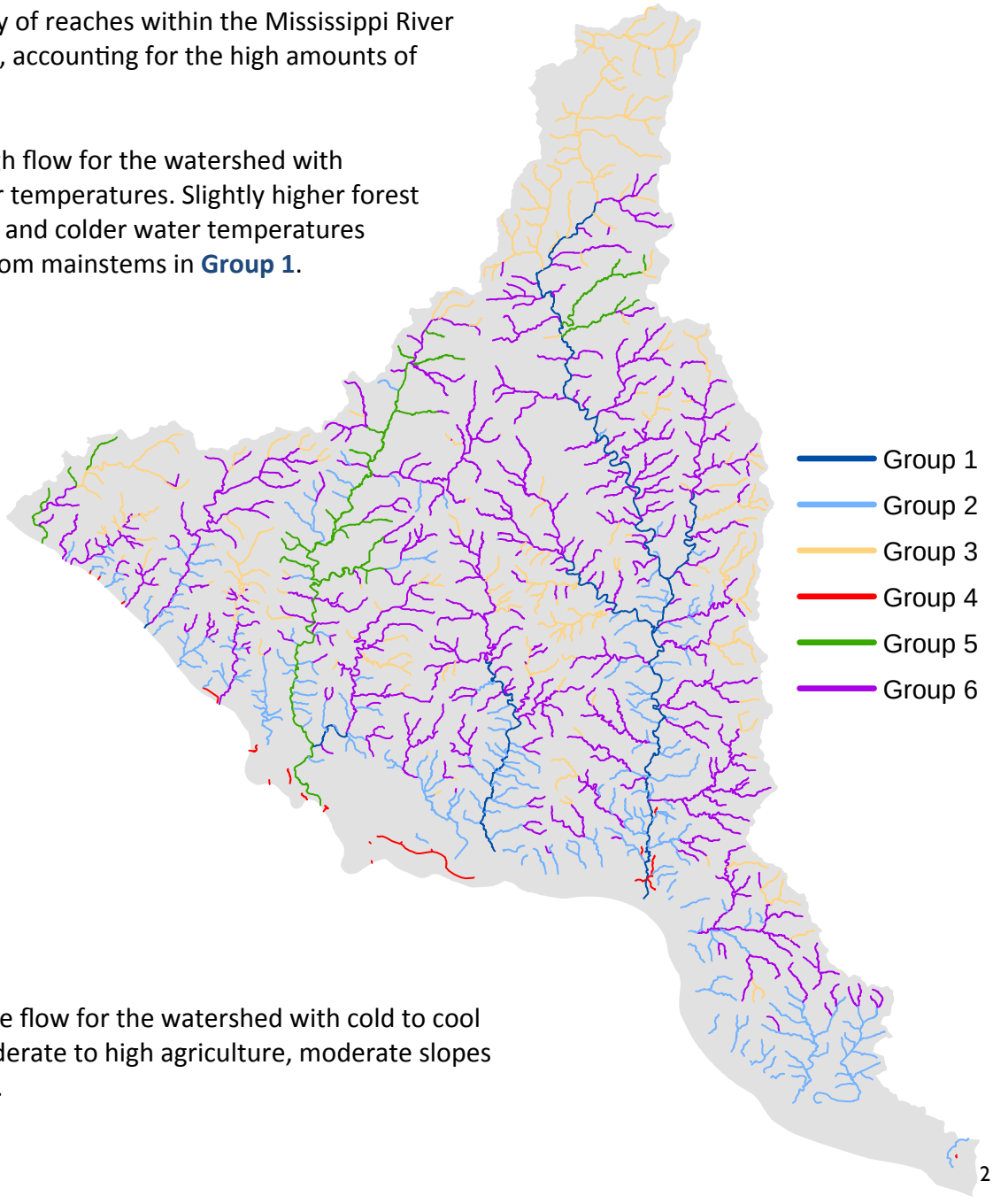
Group 1: Highest flow in the watershed with cold to cool water temperatures. Slightly higher agriculture land cover, lower slopes, and warmer water temperatures differentiate this group from mainstems in **Group 5**.

Group 2: Low to moderate flow for the watershed and predominantly cold water temperatures, overall the coldest in the watershed. Lowest agriculture (excluding **Group 4**), generally less than 60%, and highest slopes in the watershed, generally between 7-10 degrees.

Group 3: Low flow for the watershed with variable water temperatures. Highest agriculture, greater than 80%, and lowest slopes in the watershed, generally less than 4 degrees.

Group 4: Low flow for the watershed with variable water temperatures, though overall the warmest in the watershed. This group is comprised mostly of reaches within the Mississippi River channel or its backwaters, accounting for the high amounts of wetlands/lakes.

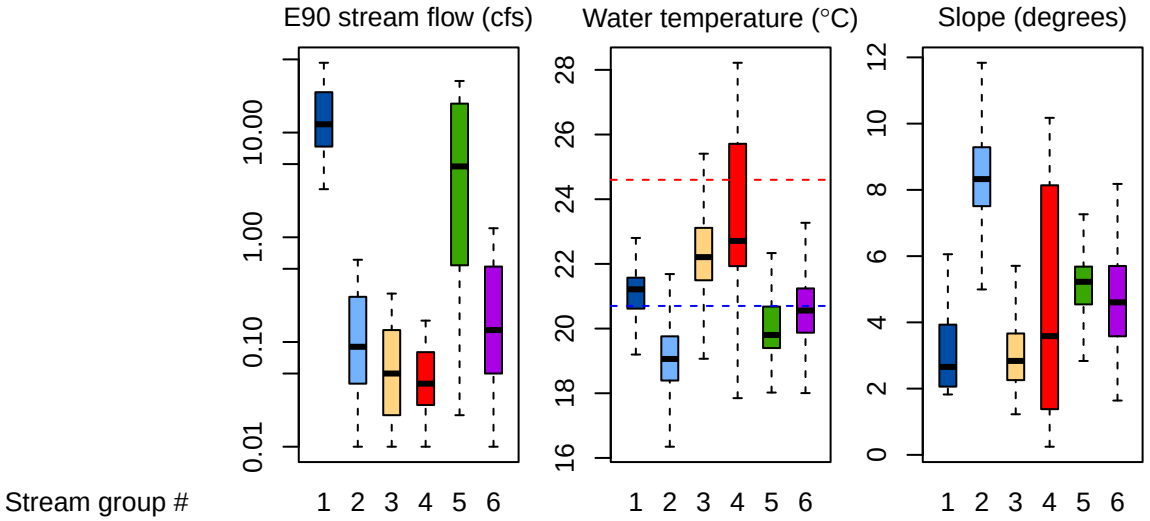
Group 5: Moderate to high flow for the watershed with predominantly cold water temperatures. Slightly higher forest land cover, higher slopes, and colder water temperatures differentiate this group from mainstems in **Group 1**.



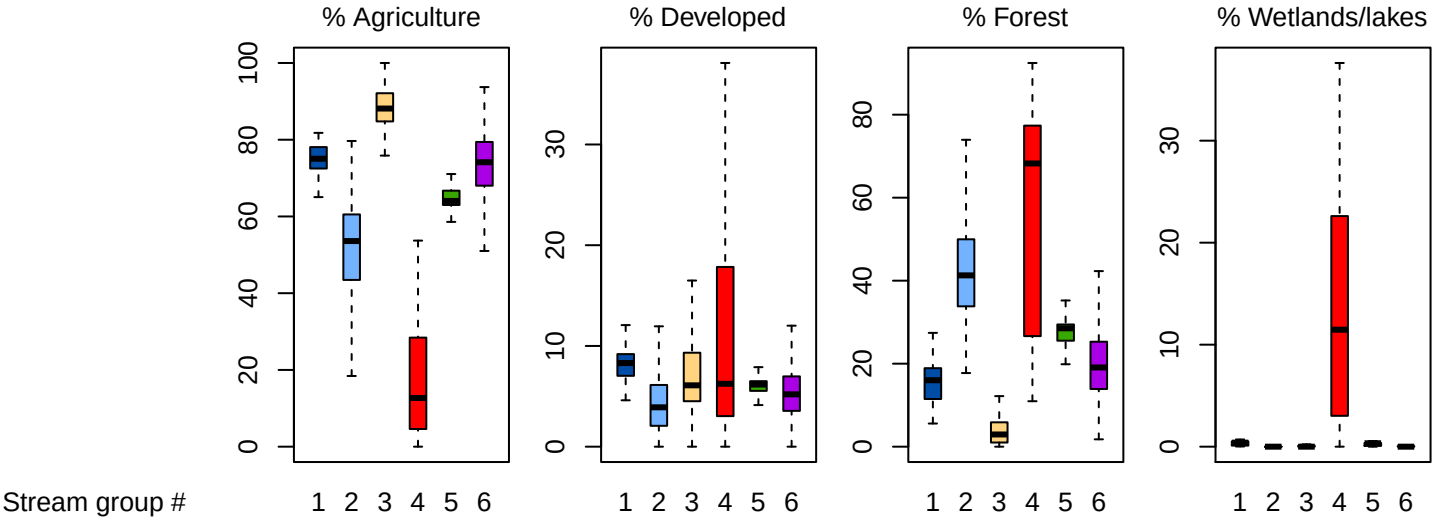
Group 6: Low to moderate flow for the watershed with cold to cool water temperatures. Moderate to high agriculture, moderate slopes and low soil permeability.

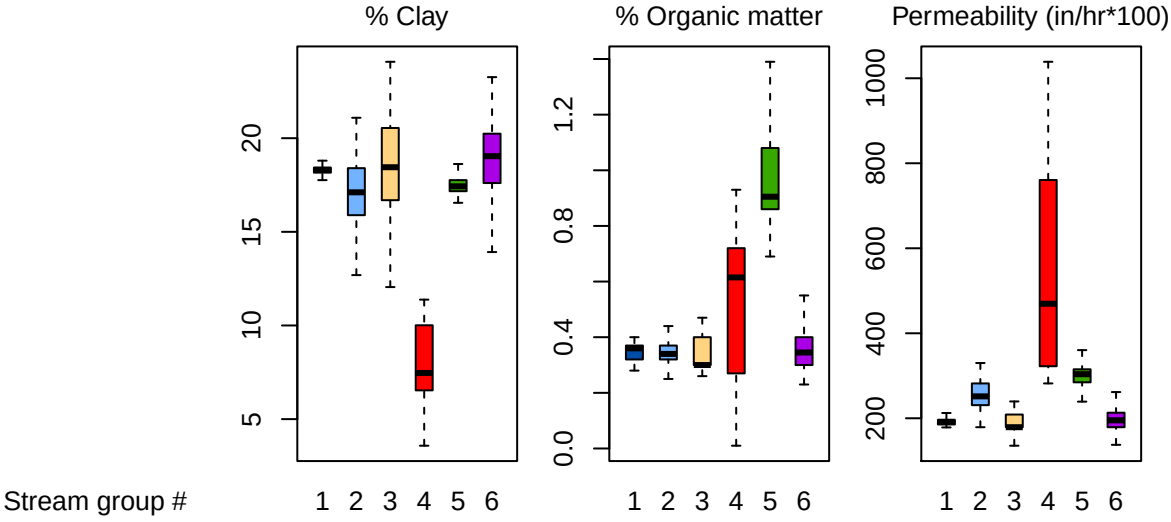
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





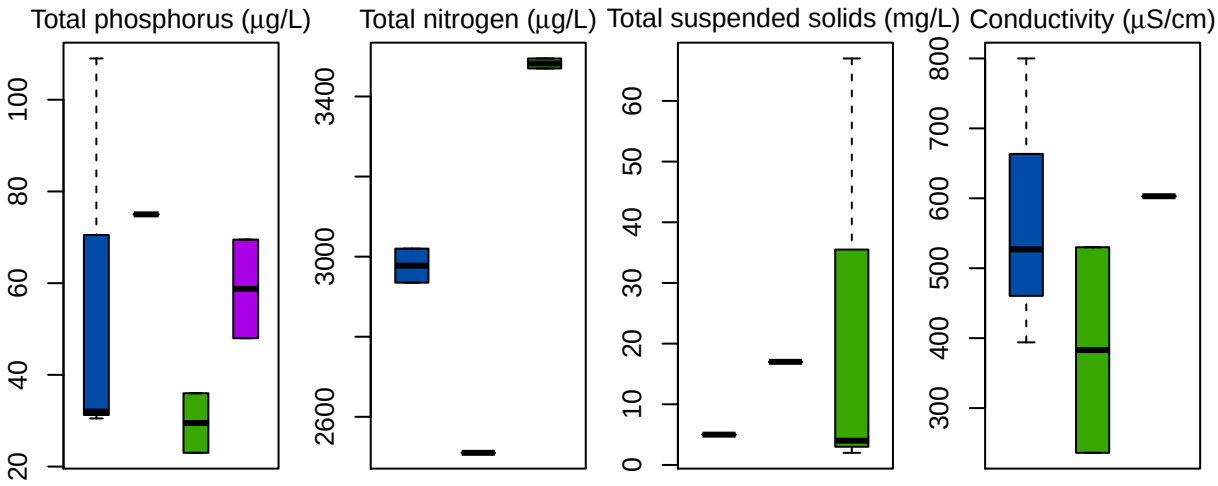
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

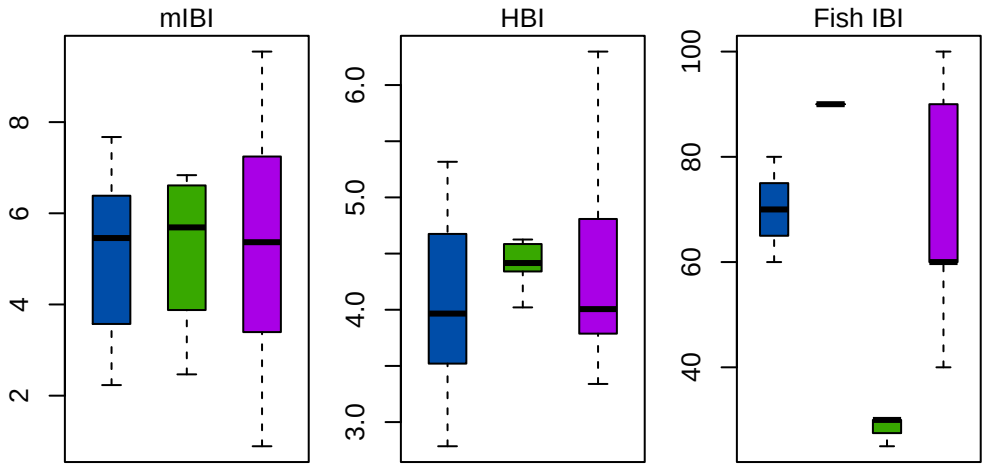
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	5	6	1	2	5	1	2	5	1	5	6
# of stations with data	3	1	2	2	2	1	2	1	1	3	3	2	1

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	5	6	1	5	6	1	2	5	6
# of stations with data	11	6	8	11	6	8	4	2	4	5

Targeted Watershed Site Selection Tool

Buffalo River and Waumandee Creek

TWSST watershed ID: 07040003
HUC 8's included: 07040003
DNR District: West Central
Area: 737 square miles
Total stream length: 1519 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	8.3	0.17	19.9	0.15
Water temperature (°C)	20.5	20.8	21.7	21.8
Slope (degrees)	10.1	10.7	4.0	2.6
Percent agriculture	42	41	43	45
Percent developed	4	3	6	4
Percent forest	51	53	45	42
Percent wetlands/lakes	1.2	0.0	3.6	0.6
Percent soil clay content	13	13	15	14
Percent soil organic matter content	1	0	4	2
Soil permeability (in/hour * 100)	349	332	353	241

WISCONSIN DEPT. OF NATURAL RESOURCES

Explore TWSST with DNR's Water Condition Viewer

TWSST

Bureau of Water Quality, June 2015

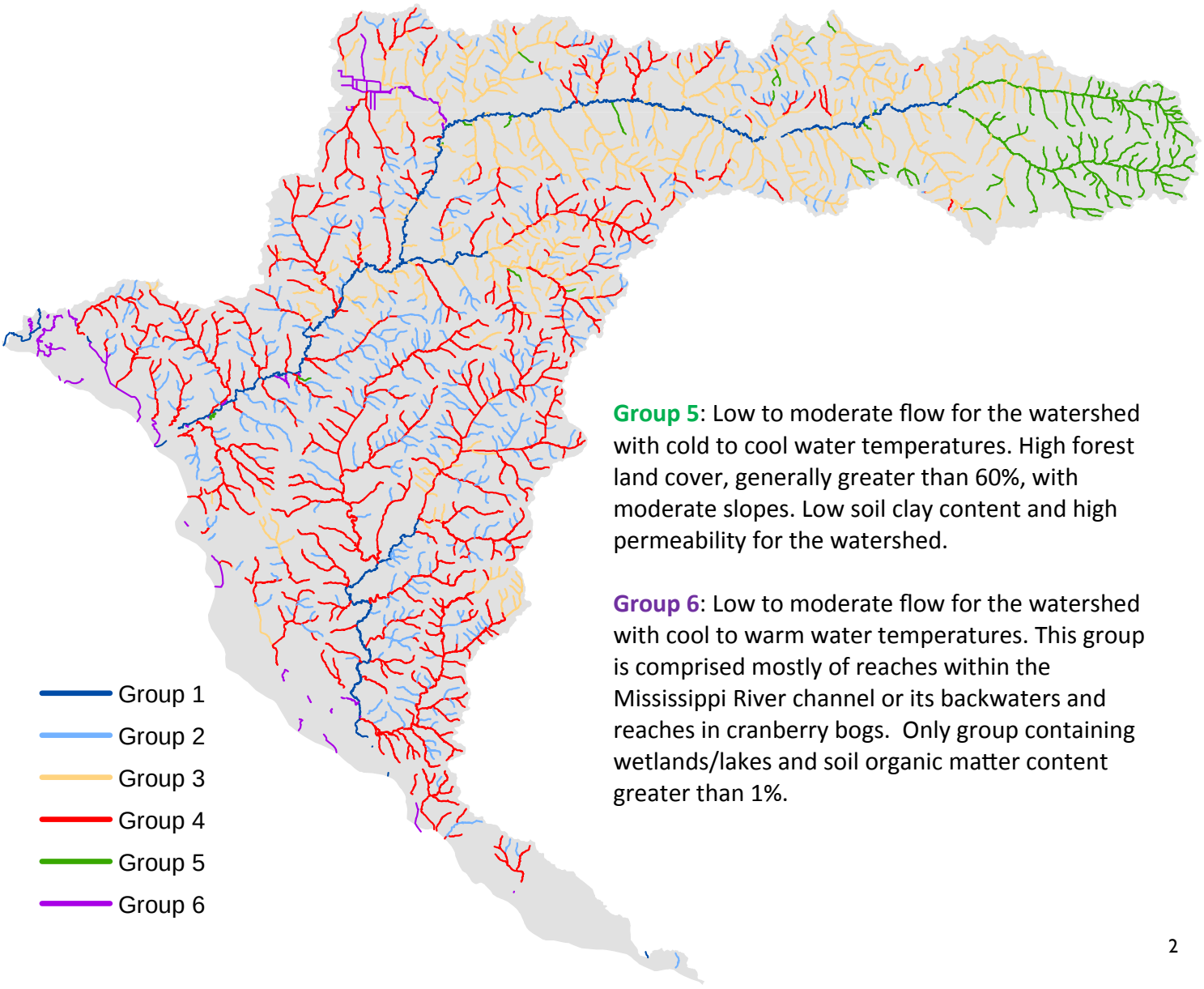
Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with cool to warm water temperatures. Heterogeneous land cover.

Group 2: Lowest flow in the watershed with predominantly cold water temperatures, and coldest in the watershed. Highest slopes in the watershed. High forest land cover, generally greater than 60%. Only group with less than 2% developed land cover throughout. Moderate to high clay content at 10-20% and low permeability for the watershed.

Group 3: Low to moderate flow for the watershed with cold to cool water temperatures. Highest agriculture in the watershed, greater than 50%, with moderate slopes. Moderate to high clay content and moderate permeability for the watershed.

Group 4: Moderate flow for the watershed with cold to cool water temperatures. A mix of agricultural, urban and forested land cover with high slopes for the watershed. Moderate to high clay content and low permeability for the watershed.

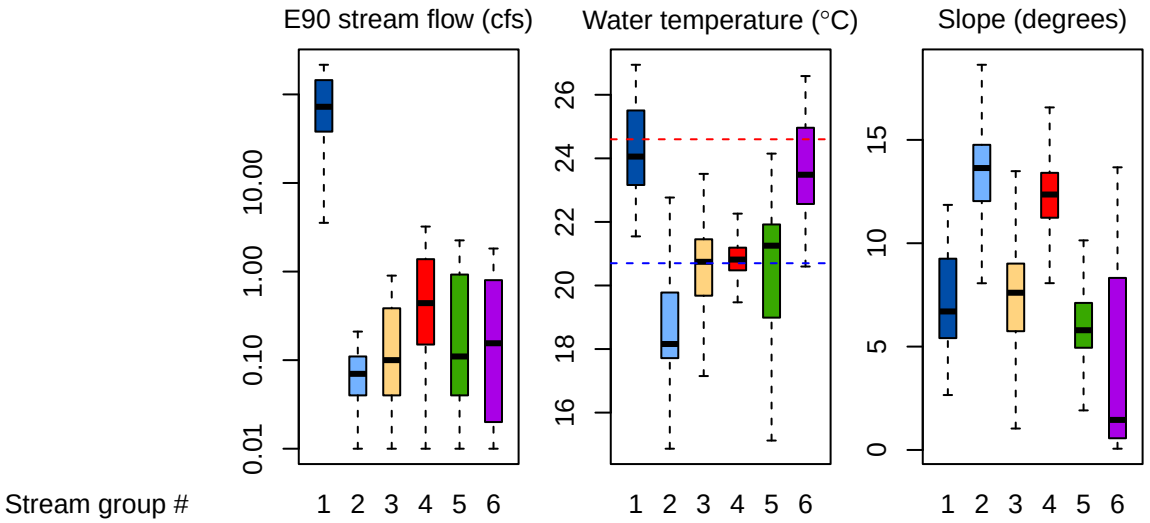


Group 5: Low to moderate flow for the watershed with cold to cool water temperatures. High forest land cover, generally greater than 60%, with moderate slopes. Low soil clay content and high permeability for the watershed.

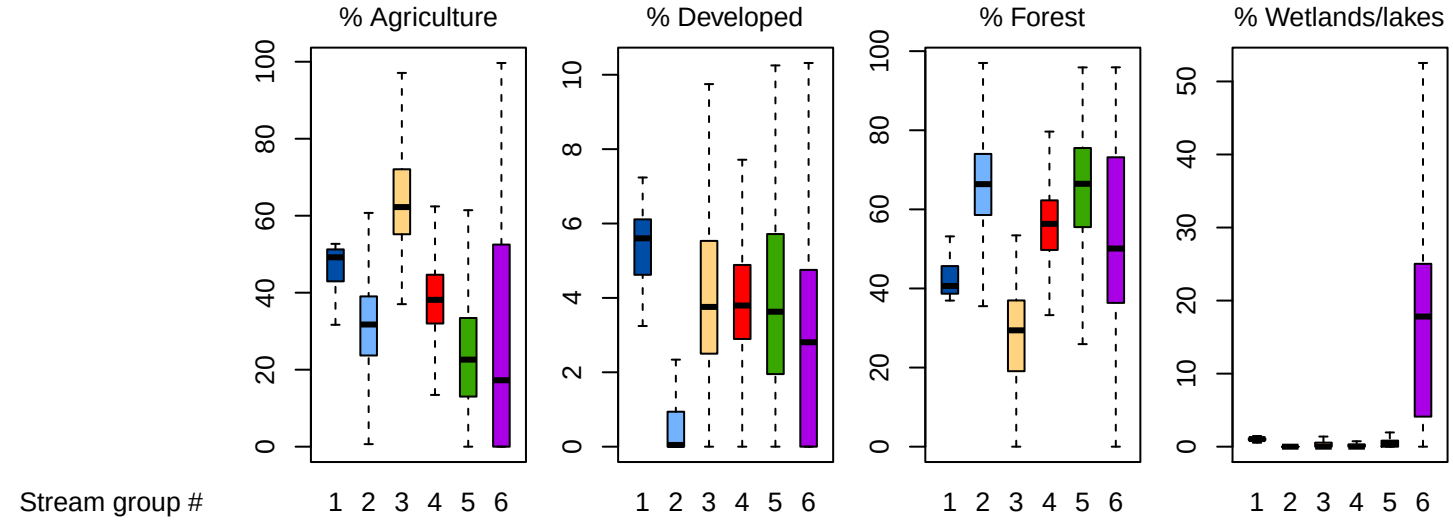
Group 6: Low to moderate flow for the watershed with cool to warm water temperatures. This group is comprised mostly of reaches within the Mississippi River channel or its backwaters and reaches in cranberry bogs. Only group containing wetlands/lakes and soil organic matter content greater than 1%.

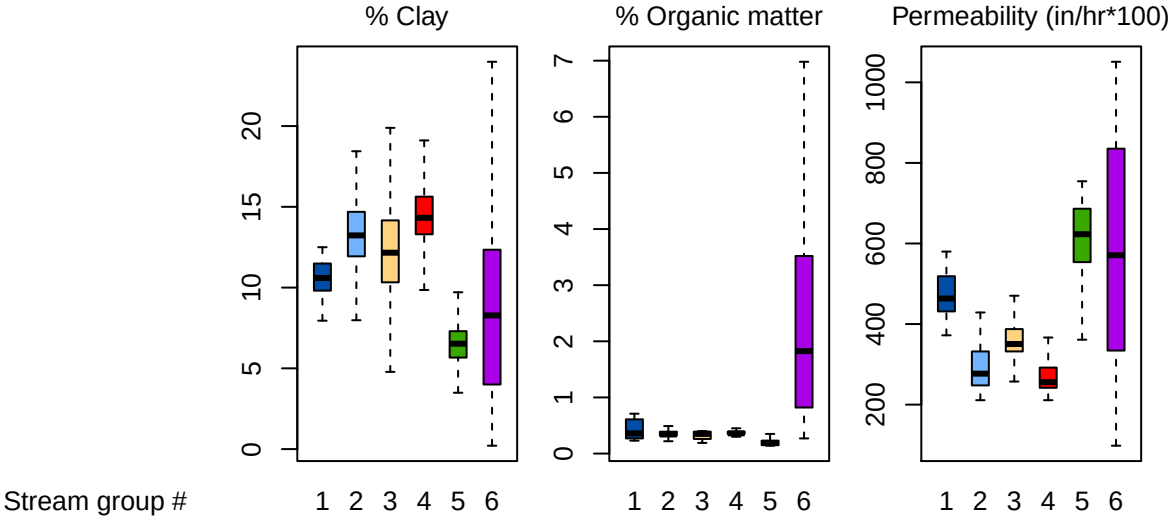
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





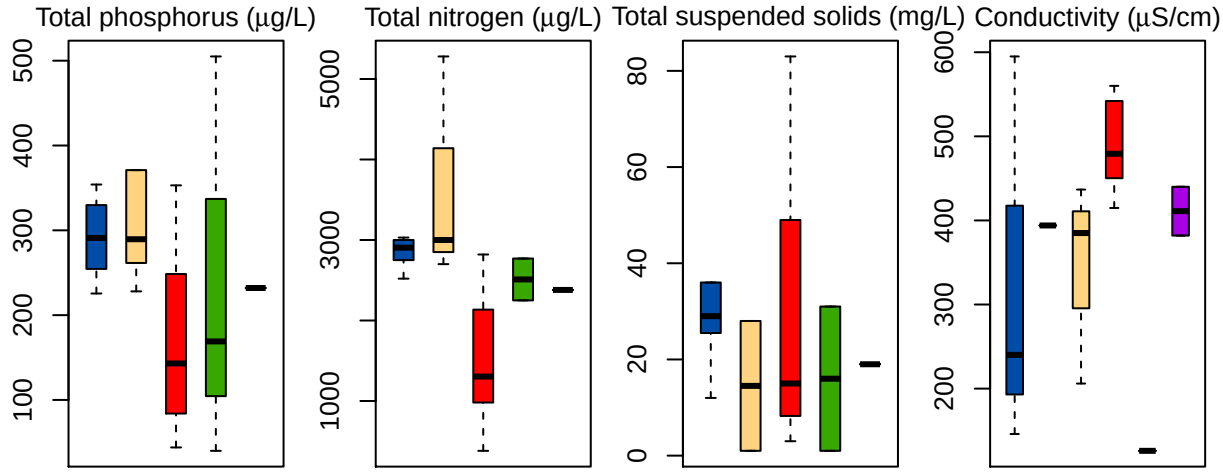
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

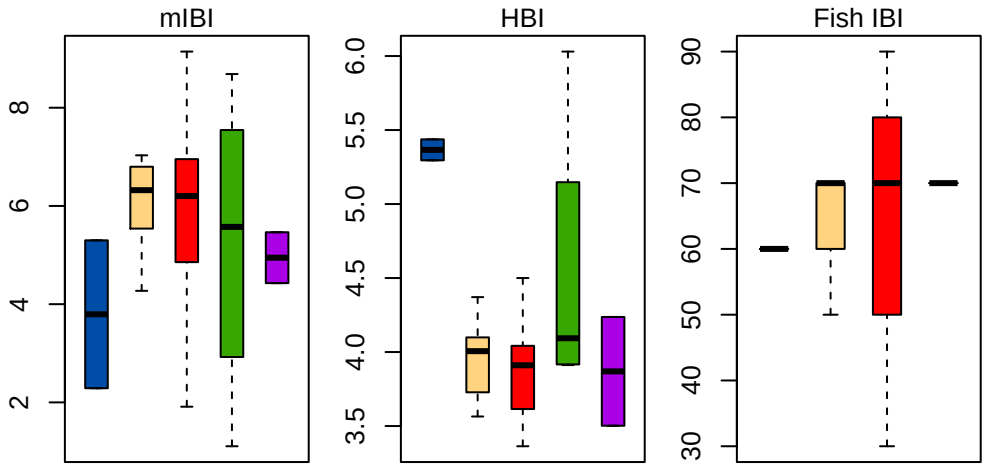
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	3	4	5	6	1	3	4	5	6	1	3	4	5	6	1	2	3	4	5	6
# of stations with data	6	5	16	3	1	6	3	11	2	1	5	2	7	2	1	3	1	3	8	1	2

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	3	4	5	6	1	3	4	5	6	1	3	4	6
# of stations with data	2	10	34	4	2	2	10	34	4	2	1	3	6	1

Targeted Watershed Site Selection Tool

Trempealeau River

TWSST watershed ID: 07040005
HUC 8's included: 07040005
DNR District: West Central
Area: 729 square miles
Total stream length: 1579 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	6.8	0.13	19.9	0.15
Water temperature (°C)	20.4	20.8	21.7	21.8
Slope (degrees)	10.0	10.3	4.0	2.6
Percent agriculture	43	43	43	45
Percent developed	4	3	6	4
Percent forest	49	49	45	42
Percent wetlands/lakes	0.5	0.0	3.6	0.6
Percent soil clay content	12	13	15	14
Percent soil organic matter content	0	0	4	2
Soil permeability (in/hour * 100)	357	332	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

TWSST

Bureau of Water Quality, June 2015

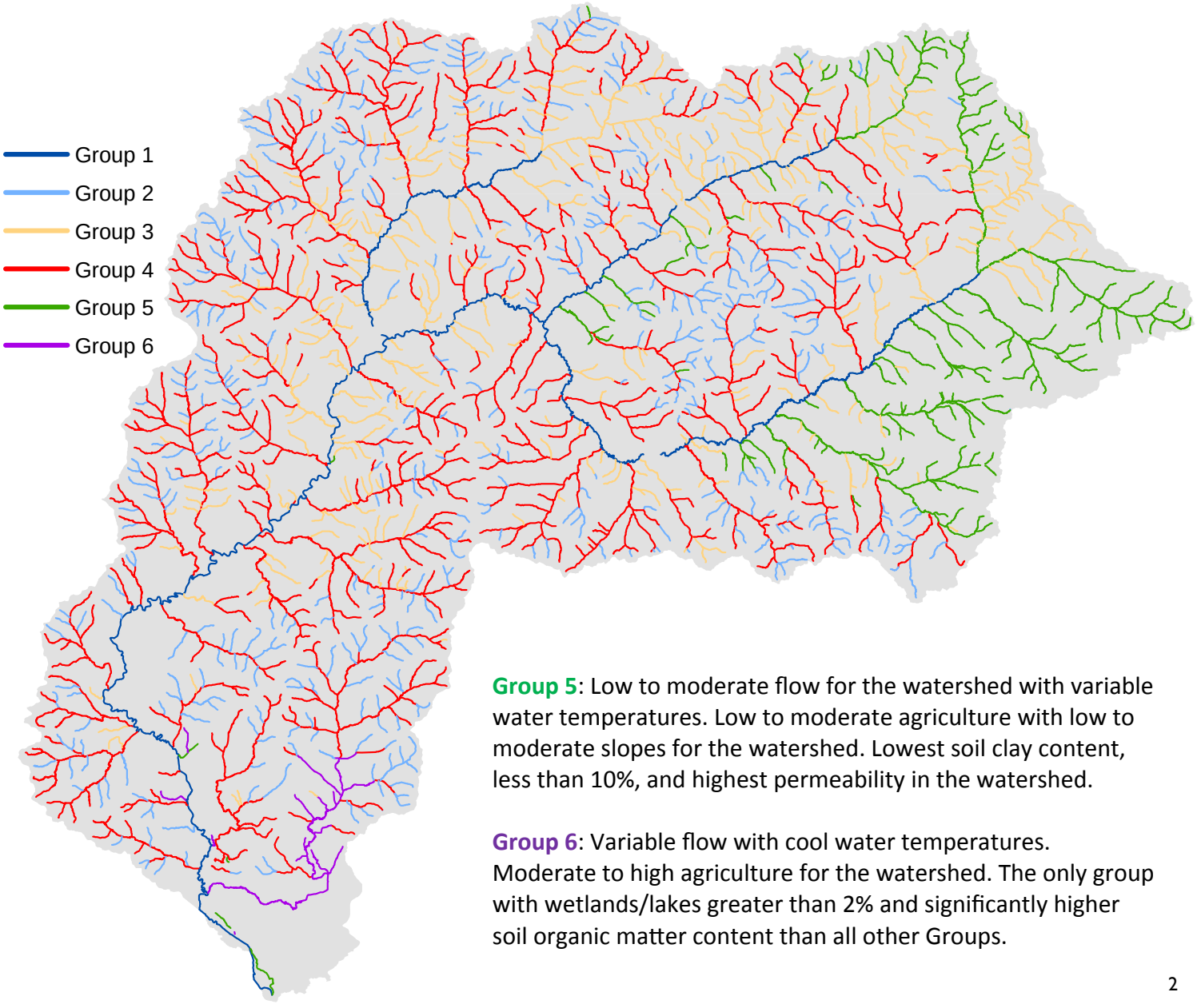
Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with cool to warm water temperatures, overall the warmest in the watershed.

Group 2: Low flow for the watershed with cold water temperatures, overall the coldest in the watershed. Includes the least impacted streams in the watershed, with agriculture generally less than 40% and developed land cover generally less than 2%. Highest slopes in the watershed, generally greater than 11 degrees, and low permeability.

Group 3: Low flow for the watershed with cold to cool water temperatures. Highest agriculture in the watershed, generally greater than 60% with low to moderate slopes, typically between 5-10 degrees.

Group 4: Low to moderate flow for the watershed with cold to cool water temperatures. Variable land cover with moderate to high slopes and low permeability for the watershed.

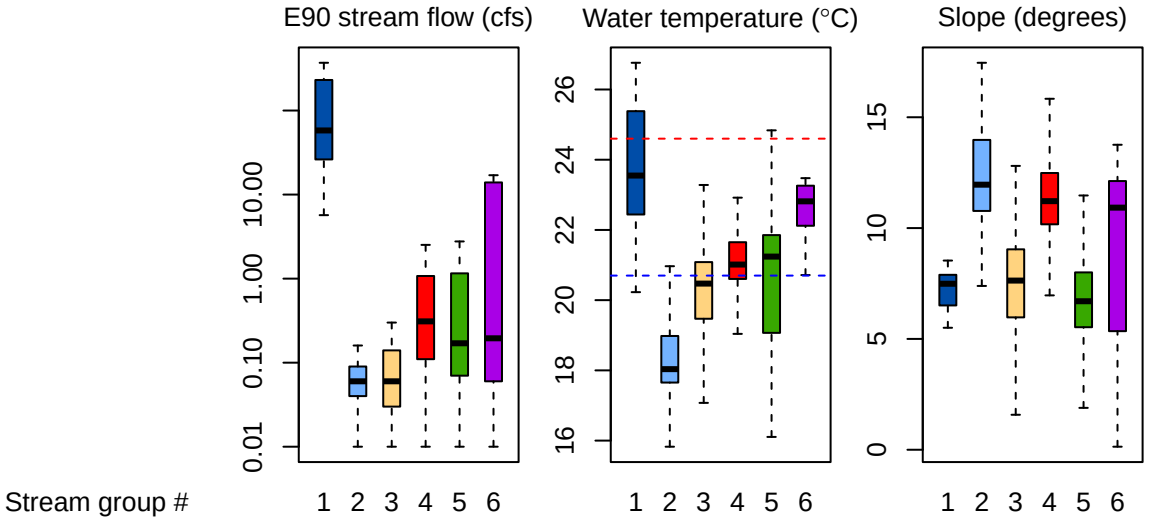


Group 5: Low to moderate flow for the watershed with variable water temperatures. Low to moderate agriculture with low to moderate slopes for the watershed. Lowest soil clay content, less than 10%, and highest permeability in the watershed.

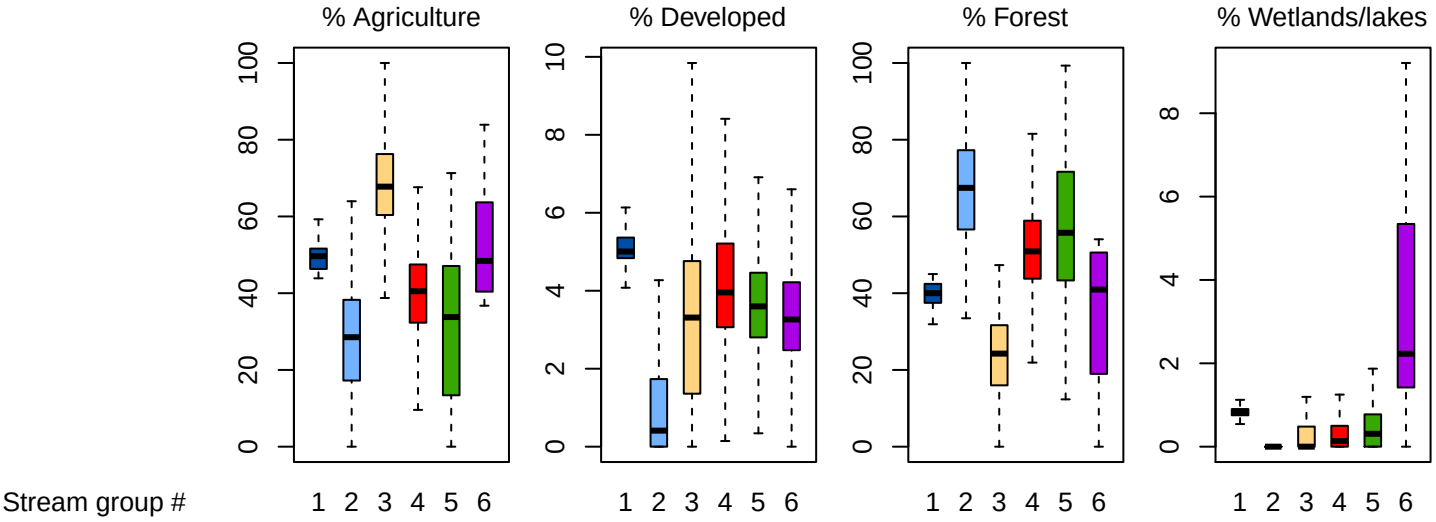
Group 6: Variable flow with cool water temperatures. Moderate to high agriculture for the watershed. The only group with wetlands/lakes greater than 2% and significantly higher soil organic matter content than all other Groups.

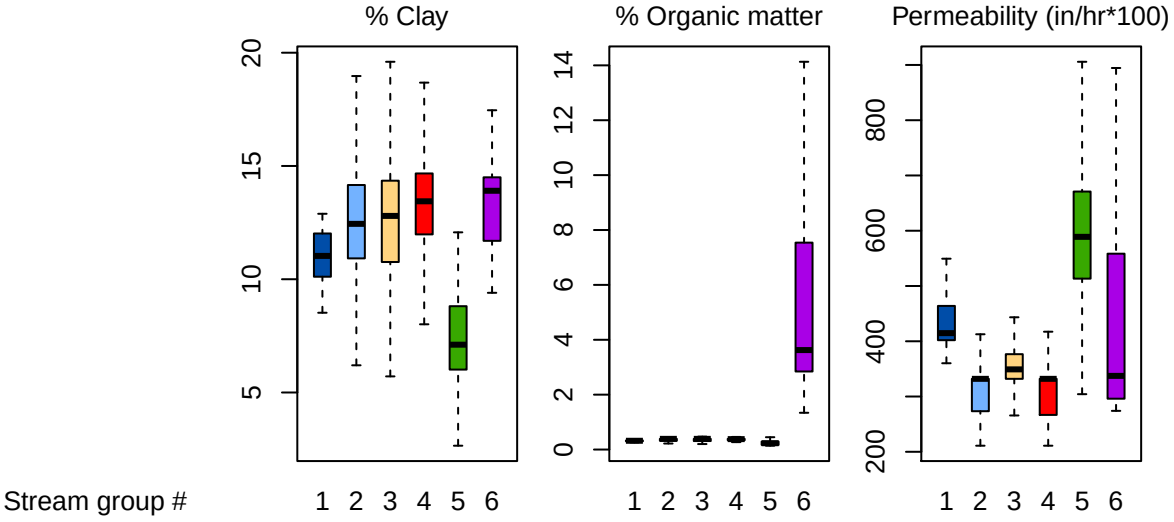
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





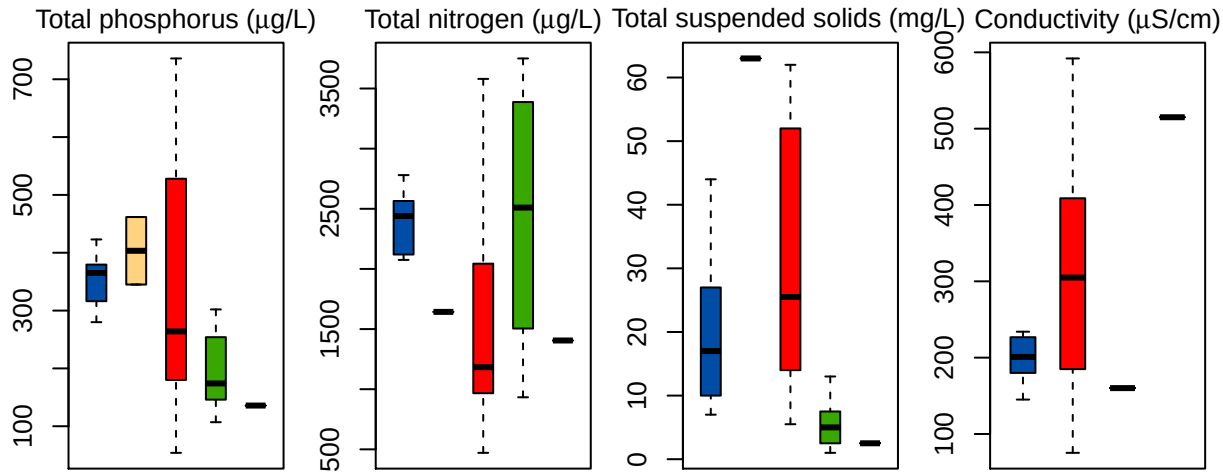
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

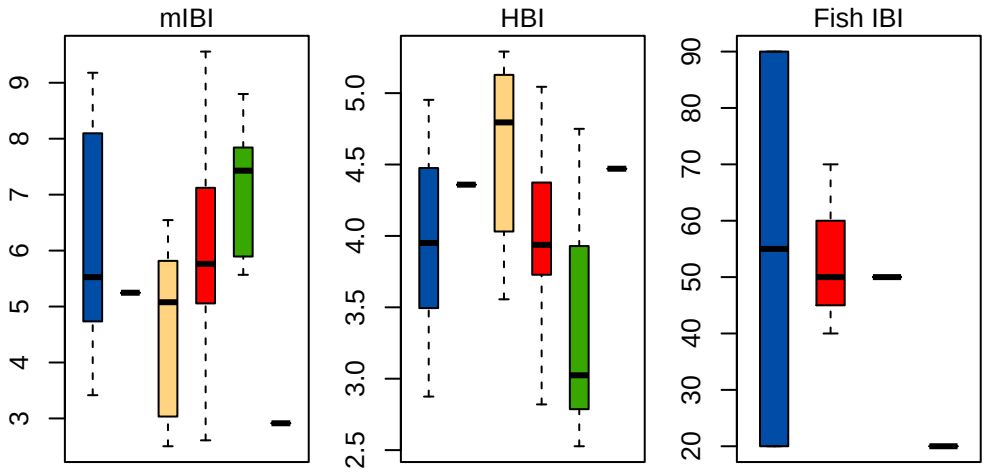
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	3	4	5	6	1	3	4	5	6	1	3	4	5	6	1	4	5	6
# of stations with data	11	2	19	10	1	9	1	15	7	1	9	1	14	7	1	9	13	1	1

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	6	1	2	3	4	5	6	1	4	5	6
# of stations with data	12	1	5	46	9	1	12	1	5	46	9	1	2	7	1	1

Targeted Watershed Site Selection Tool

La Crosse River

TWSST watershed ID: 07040006
HUC 8's included: 07040006
DNR District: West Central
Area: 600 square miles
Total stream length: 930 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	20.2	0.31	19.9	0.15
Water temperature (°C)	20.6	20.8	21.7	21.8
Slope (degrees)	10.4	11.4	4.0	2.6
Percent agriculture	33	34	43	45
Percent developed	5	3	6	4
Percent forest	56	56	45	42
Percent wetlands/lakes	2.5	0.0	3.6	0.6
Percent soil clay content	15	15	15	14
Percent soil organic matter content	0	0	4	2
Soil permeability (in/hour * 100)	353	217	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

TWSST

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

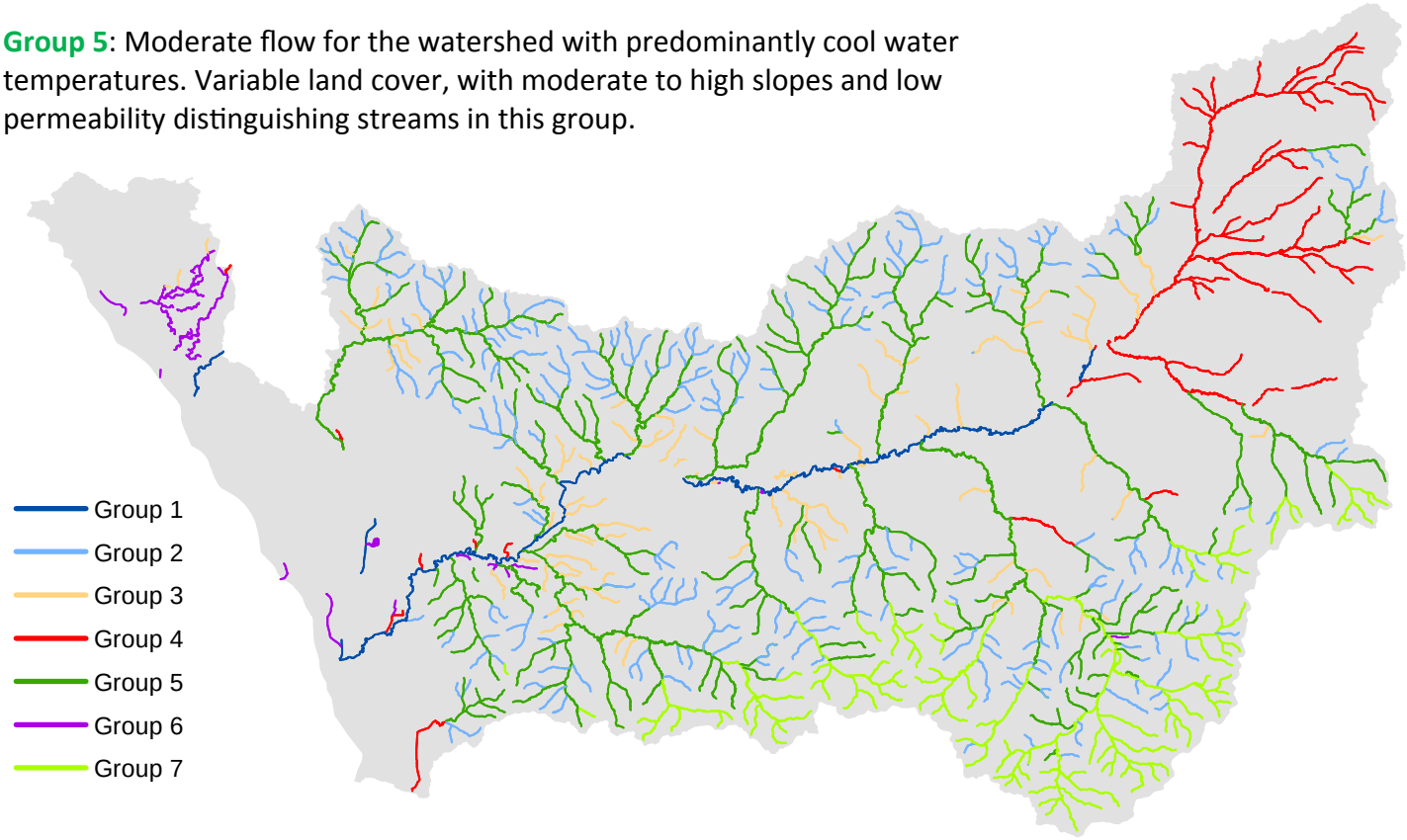
Group 1: Highest flow in the watershed with predominantly warm water temperatures, overall the warmest in the watershed.

Group 2: Low flow for the watershed and predominantly cold water temperatures, overall the coldest in the watershed. Highest forested, generally greater than 70%, and lowest developed land cover, generally less than 2%, with the highest slopes in the watershed, generally greater than 13 degrees.

Group 3: Low for the watershed with cold to cool water temperatures. Highest agriculture, generally greater than 60%, and moderate to high developed land cover, with low to moderate slopes for the watershed.

Group 4: Moderate flow for the watershed with cold to cool water temperatures. Most reaches in this group located in the Fort McCoy barrens, accounting for lowest levels of agriculture and highest levels of developed land cover. Low to moderate slopes. Lowest soil clay content, less than 10%, and highest permeability in the watershed (excluding **Group 6**).

Group 5: Moderate flow for the watershed with predominantly cool water temperatures. Variable land cover, with moderate to high slopes and low permeability distinguishing streams in this group.

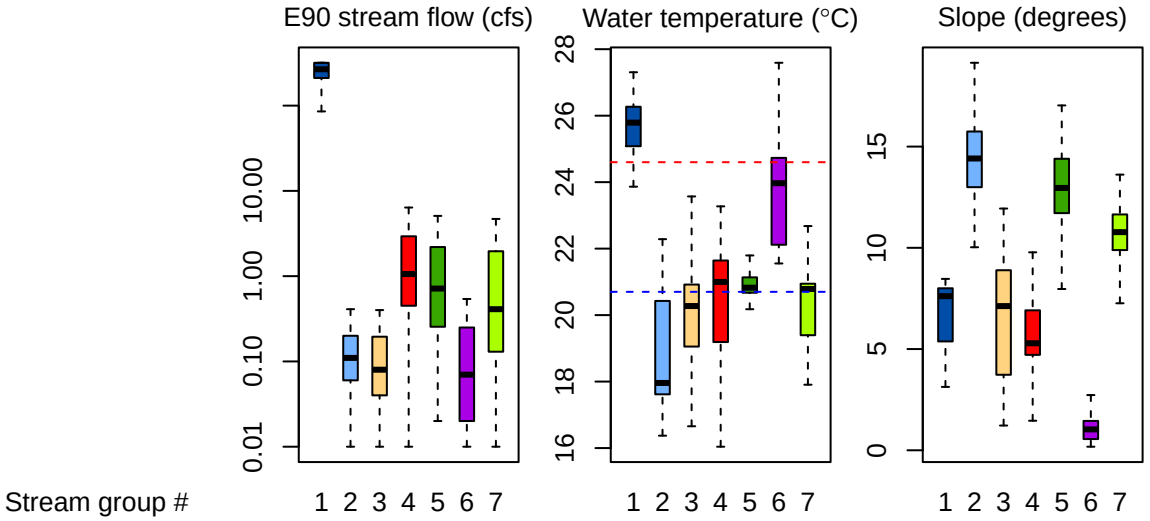


Group 6: Low flow for the watershed with cool to warm water temperatures. Most streams in this group are Mississippi River backwaters with high wetlands land cover and the lowest slopes in the watershed. Most are spatially and hydrologically associated more with the Black River than the La Crosse River.

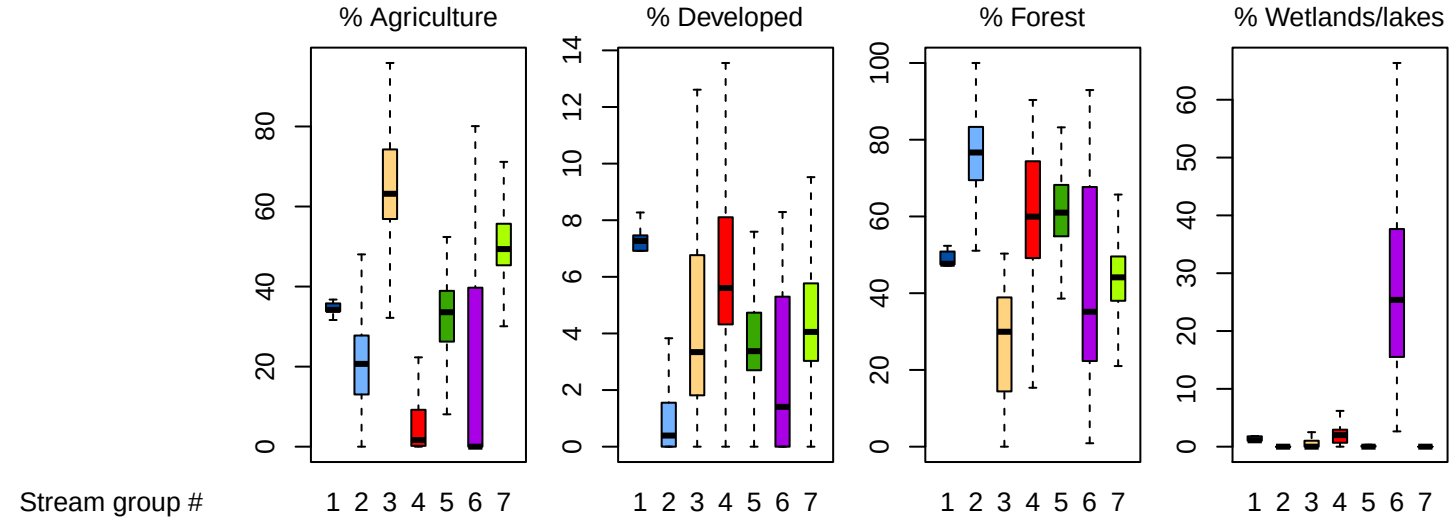
Group 7: Moderate flow for the watershed with cold to cool water temperatures. Variable land cover with moderate to high slopes for the watershed. Highest soil clay content, between 20-30% and lowest permeability in the watershed differentiate streams in this group.

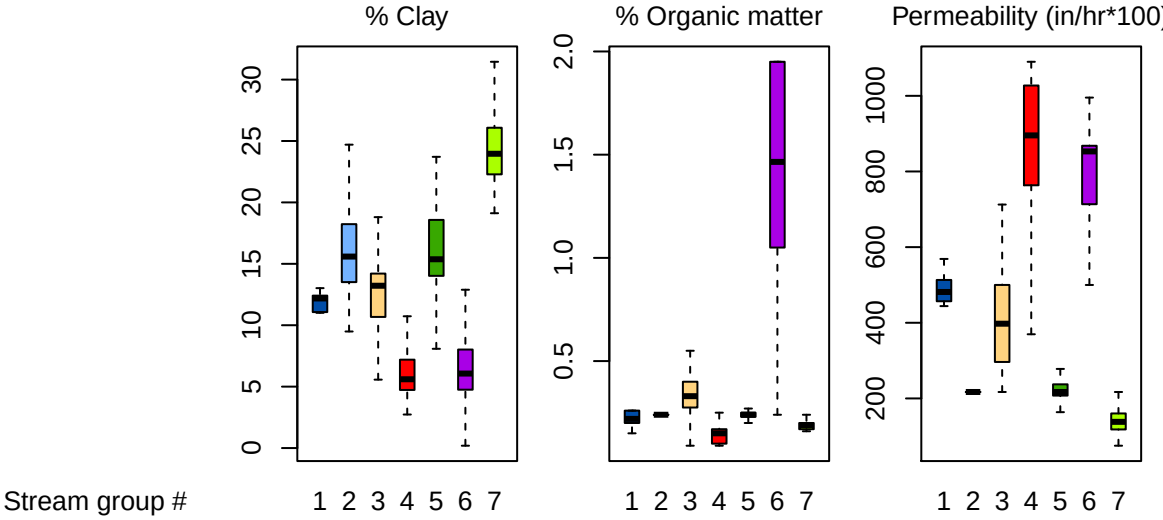
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





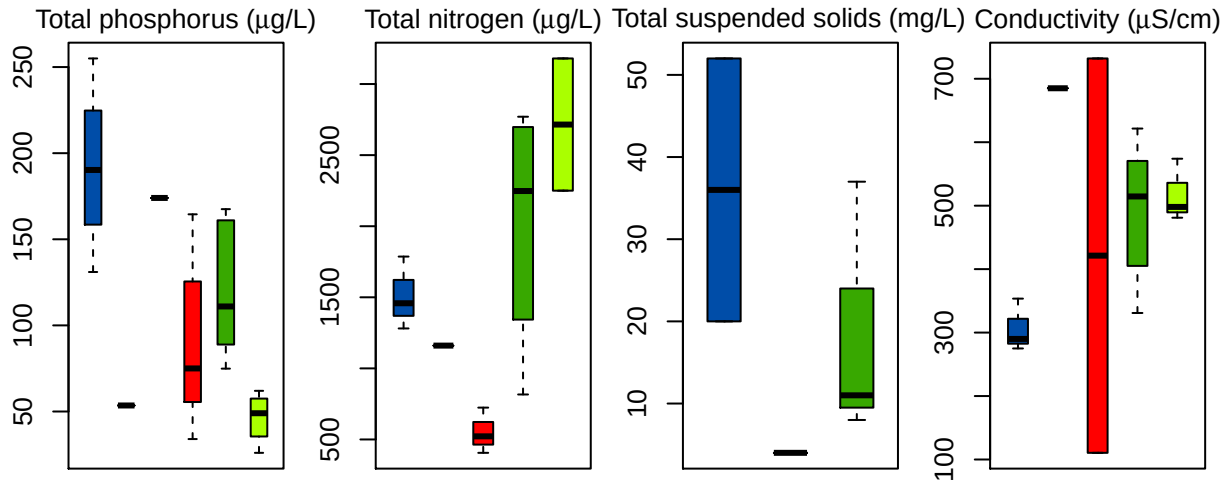
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5	7
# of stations with data	4	1	1	5	8	4

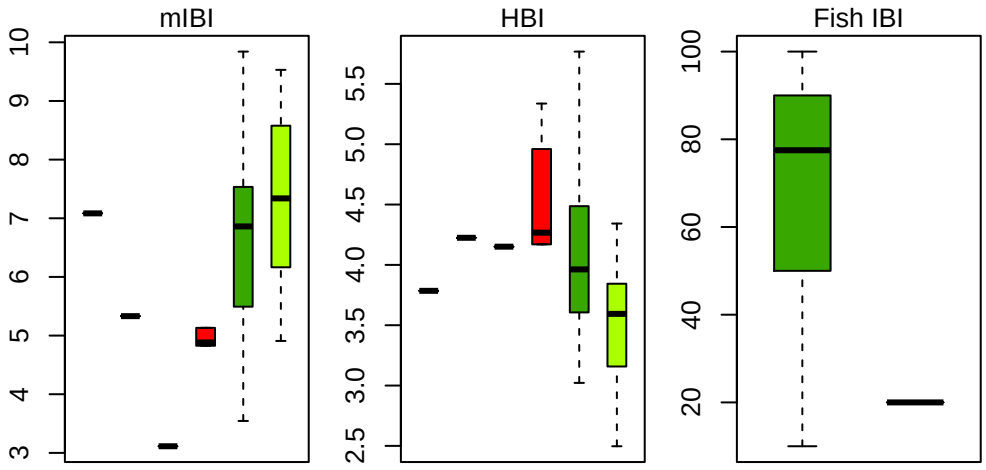
Stream group #	1	2	4	5	7
# of stations with data	3	1	3	4	2

Stream group #	1	4	5
# of stations with data	2	1	3

Stream group #	1	3	4	5	7
# of stations with data	3	1	2	8	3

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	7
# of stations with data	1	1	1	5	32	9

Stream group #	1	2	3	4	5	7
# of stations with data	1	1	1	5	32	9

Stream group #	5	7
# of stations with data	8	1

Targeted Watershed Site Selection Tool

Black River

TWSST watershed ID: 07040007_N
HUC 8's included: 07040007 (North)
DNR District: West Central, Northern
Area: 1439 square miles
Total stream length: 2254 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	2.6	0.09	19.9	0.15
Water temperature (°C)	21.8	22.0	21.7	21.8
Slope (degrees)	1.5	1.3	4.0	2.6
Percent agriculture	39	35	43	45
Percent developed	4	4	6	4
Percent forest	47	50	45	42
Percent wetlands/lakes	4.4	0.8	3.6	0.6
Percent soil clay content	13	14	15	14
Percent soil organic matter content	3	2	4	2
Soil permeability (in/hour * 100)	310	218	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with cool to warm water temperatures. Heterogeneous land cover. Moderate soil organic matter content for the watershed.

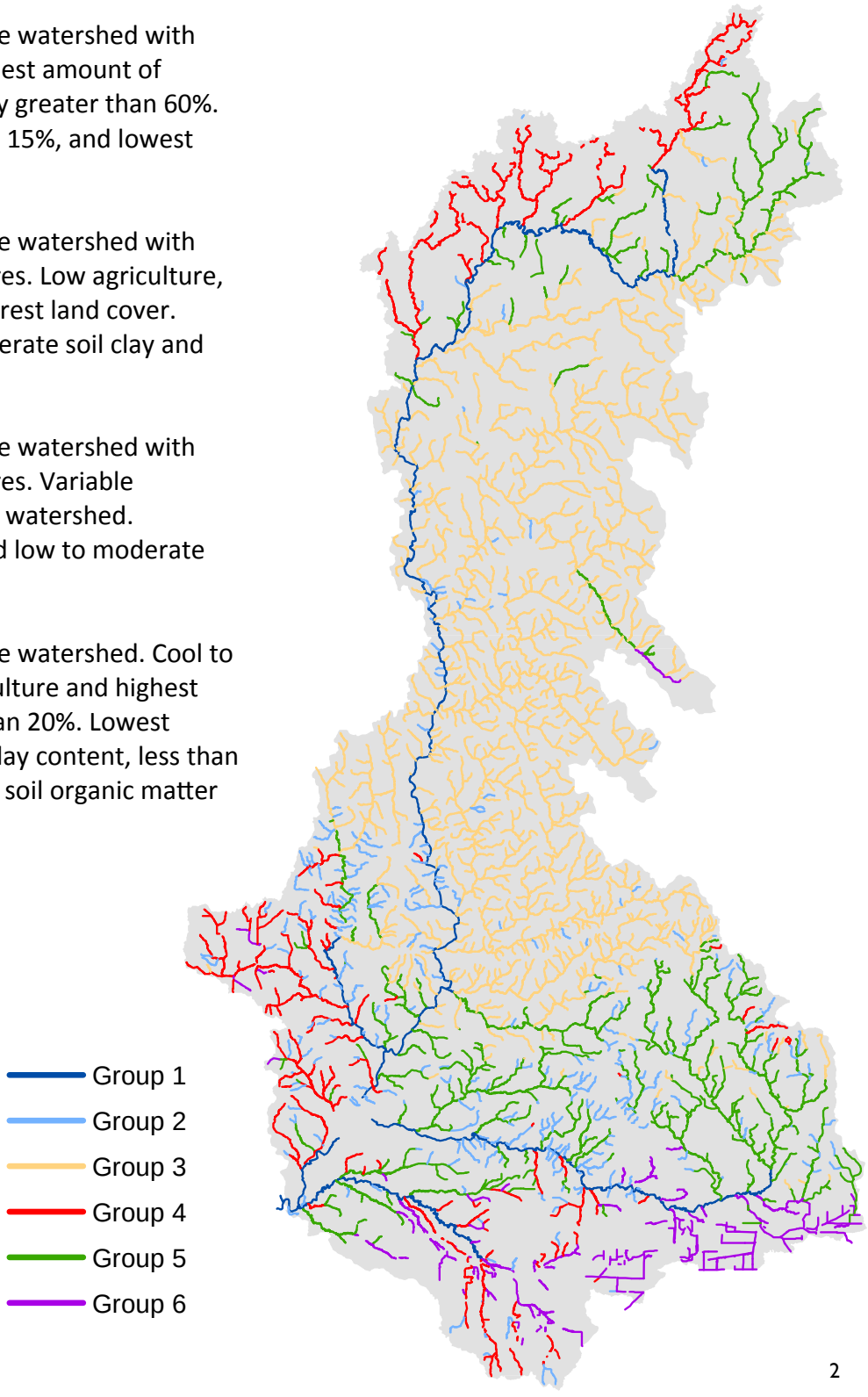
Group 2: Lowest flow in the watershed. Cold water temperatures and coldest in the watershed. Highest amount of forest in the watershed, generally greater than 70%.

Group 3: Low to moderate flow for the watershed with cold to cool water temperatures. Highest amount of agriculture in the watershed, generally greater than 60%. Highest soil clay content, greater than 15%, and lowest permeability.

Group 4: Low to moderate flow for the watershed with predominantly cool water temperatures. Low agriculture, moderate wetlands/lakes, and high forest land cover. Highest slopes in the watershed. Moderate soil clay and organic matter content.

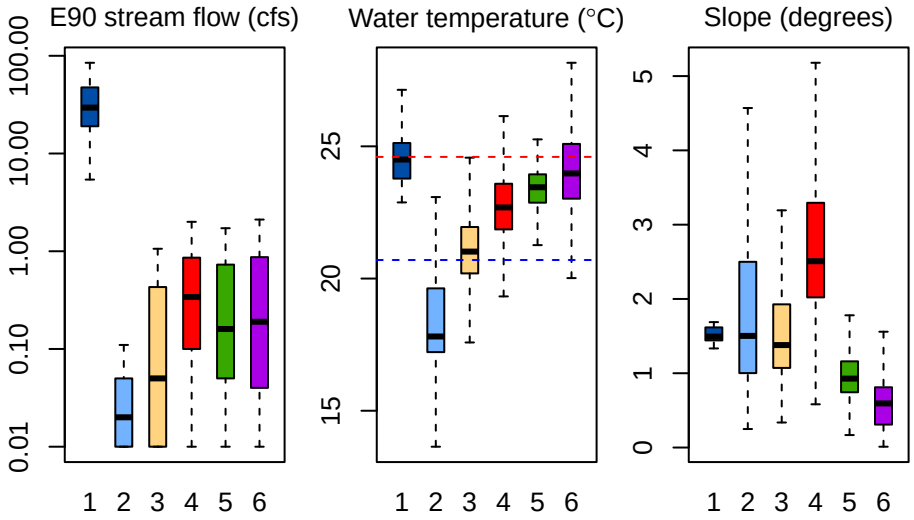
Group 5: Low to moderate flow for the watershed with predominantly cool water temperatures. Variable agriculture and urban land uses in the watershed. Moderate to high soil clay content and low to moderate permeability.

Group 6: Low to moderate flow for the watershed. Cool to warm water temperatures. Low agriculture and highest amount of wetlands/lakes, greater than 20%. Lowest slopes in the watershed. Lowest soil clay content, less than 5%, and highest permeability. Highest soil organic matter content, greater than 10%.



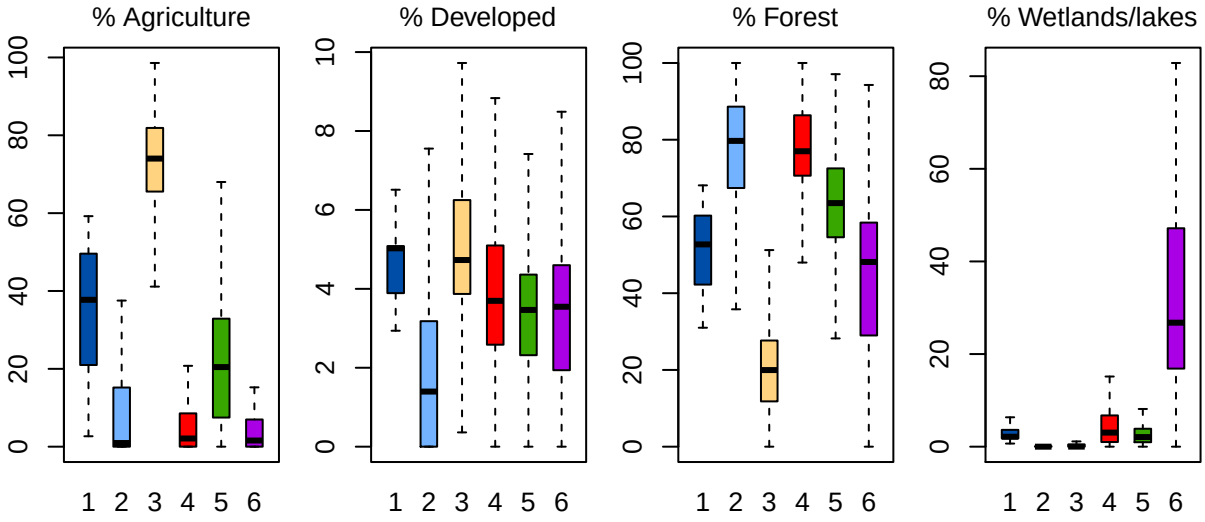
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.

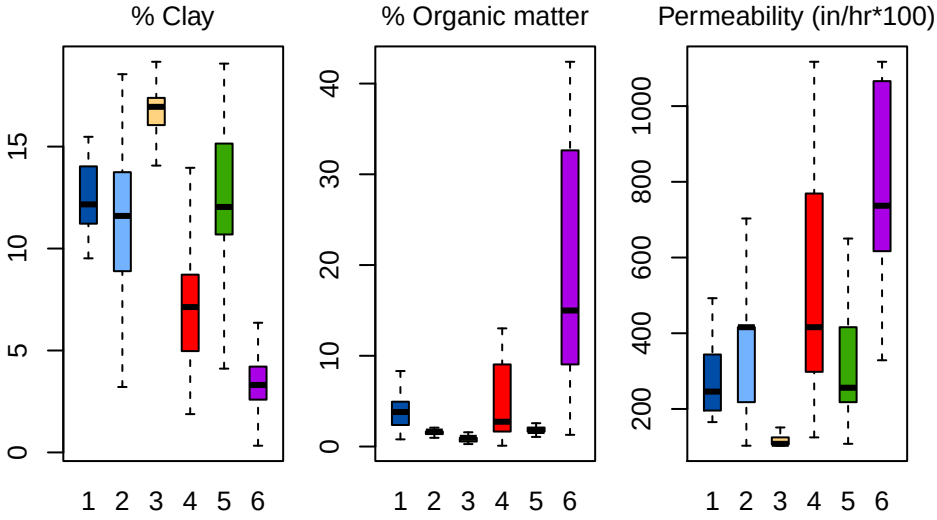


Stream group #

Boxplot colors correspond to stream group colors on the map.



Stream group #



Stream group #

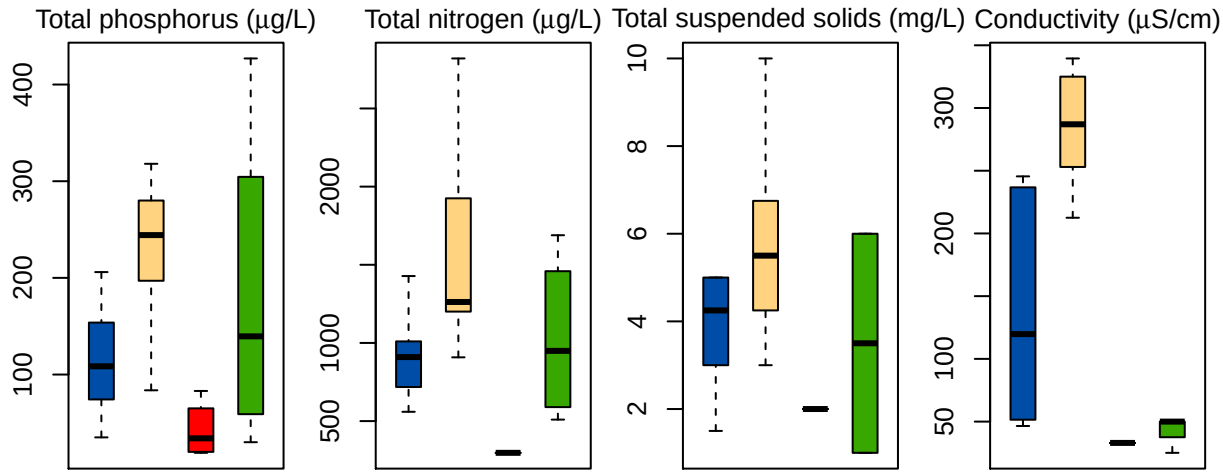
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

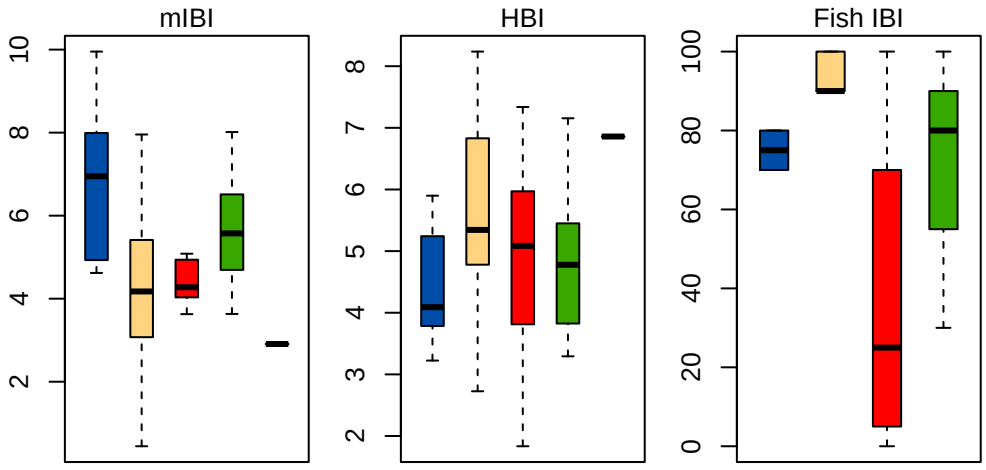
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	3	4	5	1	3	4	5	1	3	4	5	1	3	4	5
# of stations with data	16	18	4	8	13	8	1	4	10	7	1	2	8	9	2	3

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	3	4	5	6	1	3	4	5	6	1	3	4	5
# of stations with data	10	67	7	15	1	10	67	7	15	1	2	14	4	3

Targeted Watershed Site Selection Tool

Black River

TWSST watershed ID: 07040007_S
HUC 8's included: 07040007 (South)
DNR District: West Central
Area: 836 square miles
Total stream length: 1481 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	23.7	0.19	19.9	0.15
Water temperature (°C)	20.9	21.0	21.7	21.8
Slope (degrees)	7.3	7.1	4.0	2.6
Percent agriculture	28	29	43	45
Percent developed	4	4	6	4
Percent forest	60	61	45	42
Percent wetlands/lakes	2	0.1	3.6	0.6
Percent soil clay content	10	11	15	14
Percent soil organic matter content	1	0	4	2
Soil permeability (in/hour * 100)	577	439	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

TWSST

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow and warmest water temperatures in the watershed, greater than 26°C.

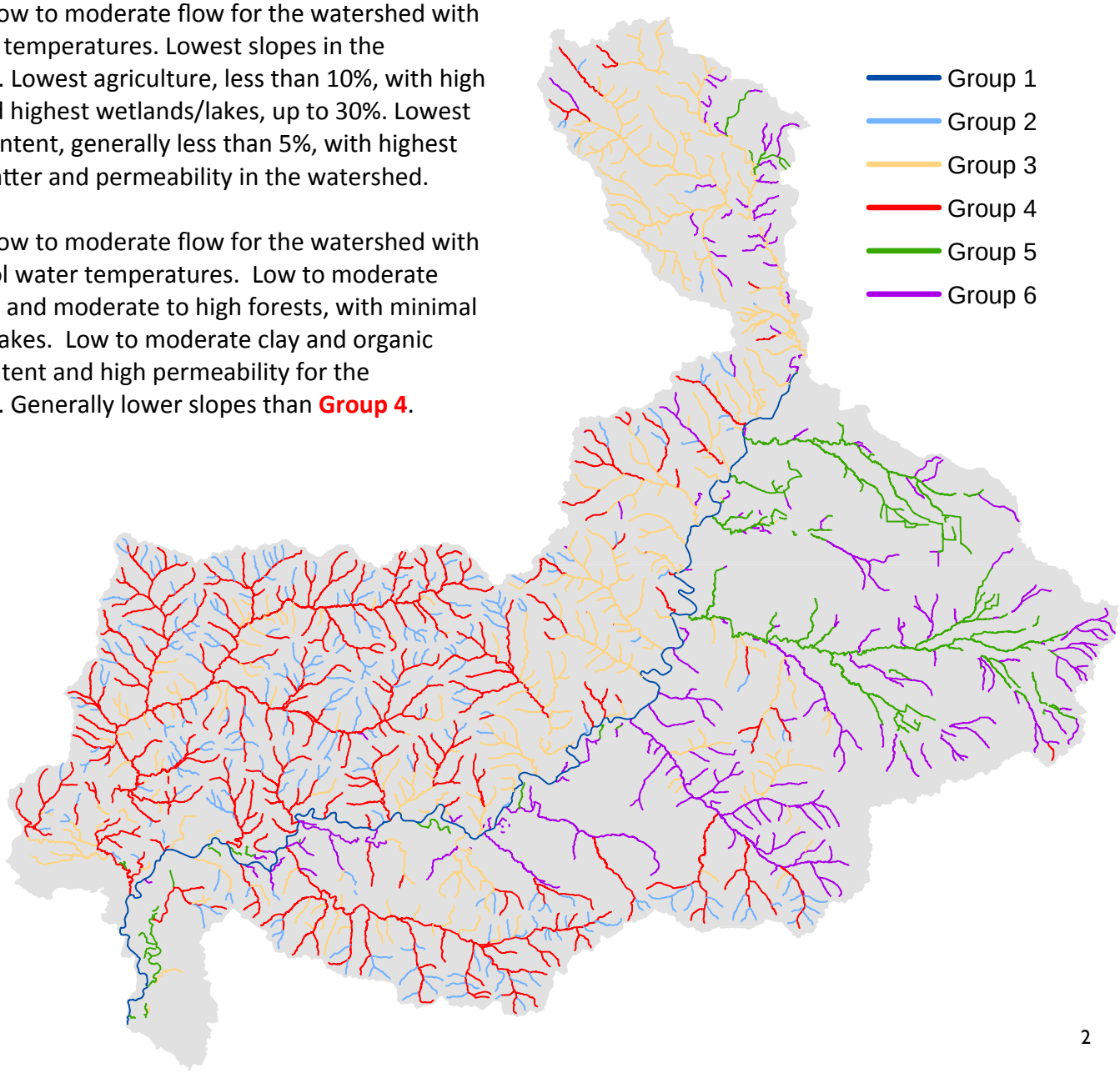
Group 2: Lowest flow and coldest water temperatures in the watershed. Low to moderate agriculture and highest slopes in the watershed. Highest forest land cover for the watershed, generally greater than 65%. Moderate to high clay content and low organic matter and permeability.

Group 3: Low to moderate flow for the watershed with cold to cool water temperatures. Highest agriculture in the watershed, greater than 40%, with moderate slopes. Includes highest soil clay content in the watershed at 10-20%.

Group 4: Low to moderate flow for the watershed with cold to cool water temperatures. Low to moderate agriculture and high slopes. Moderate to high clay content and low organic matter and permeability.

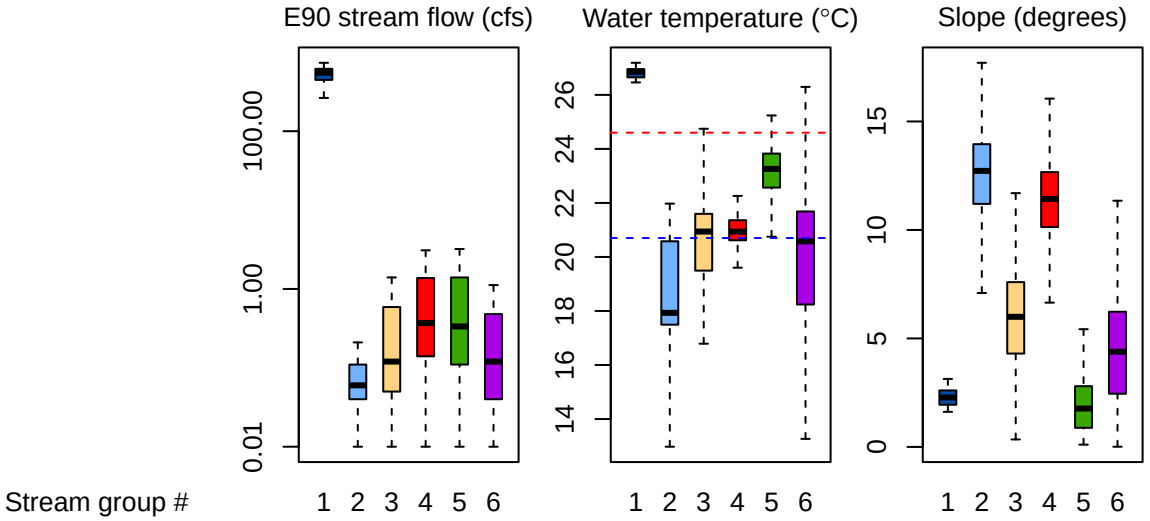
Group 5: Low to moderate flow for the watershed with cool water temperatures. Lowest slopes in the watershed. Lowest agriculture, less than 10%, with high forests and highest wetlands/lakes, up to 30%. Lowest soil clay content, generally less than 5%, with highest organic matter and permeability in the watershed.

Group 6: Low to moderate flow for the watershed with cold to cool water temperatures. Low to moderate agriculture and moderate to high forests, with minimal wetlands/lakes. Low to moderate clay and organic matter content and high permeability for the watershed. Generally lower slopes than **Group 4**.

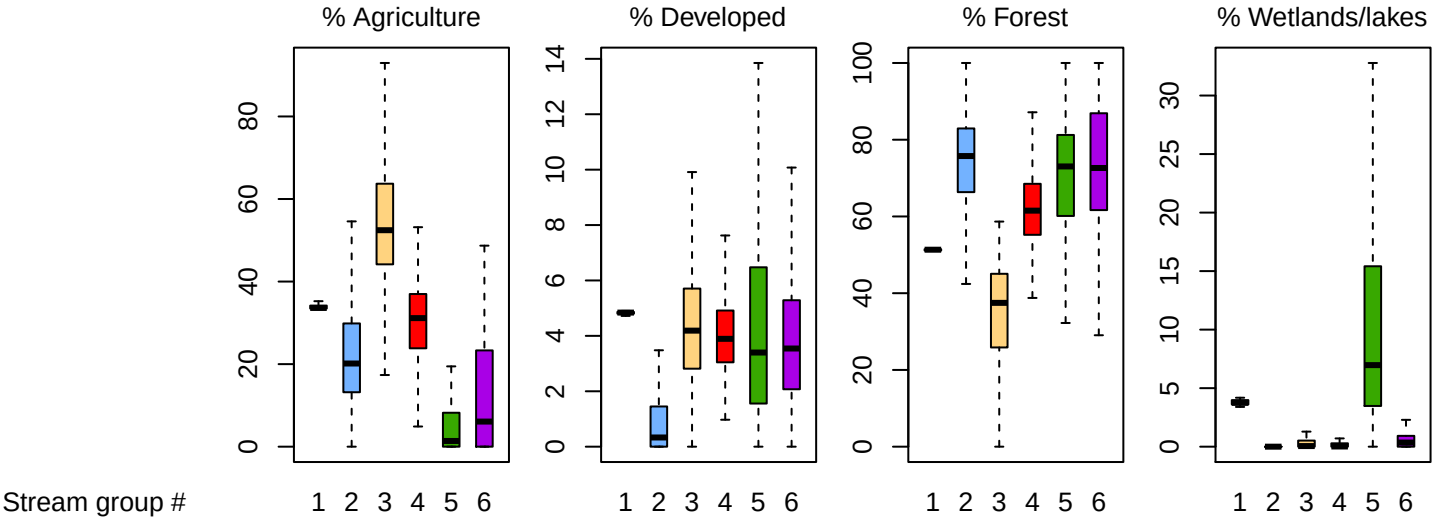


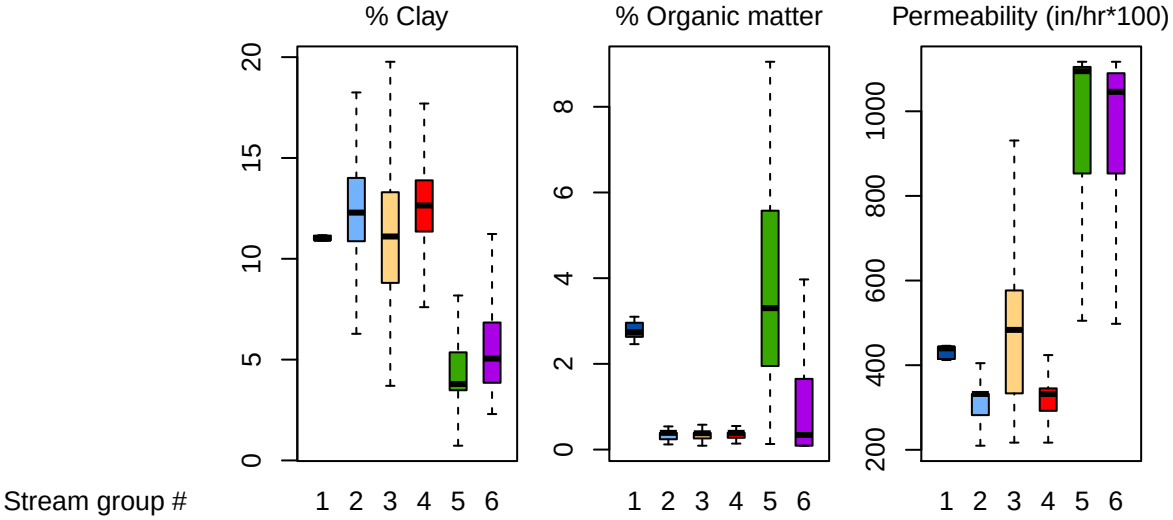
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





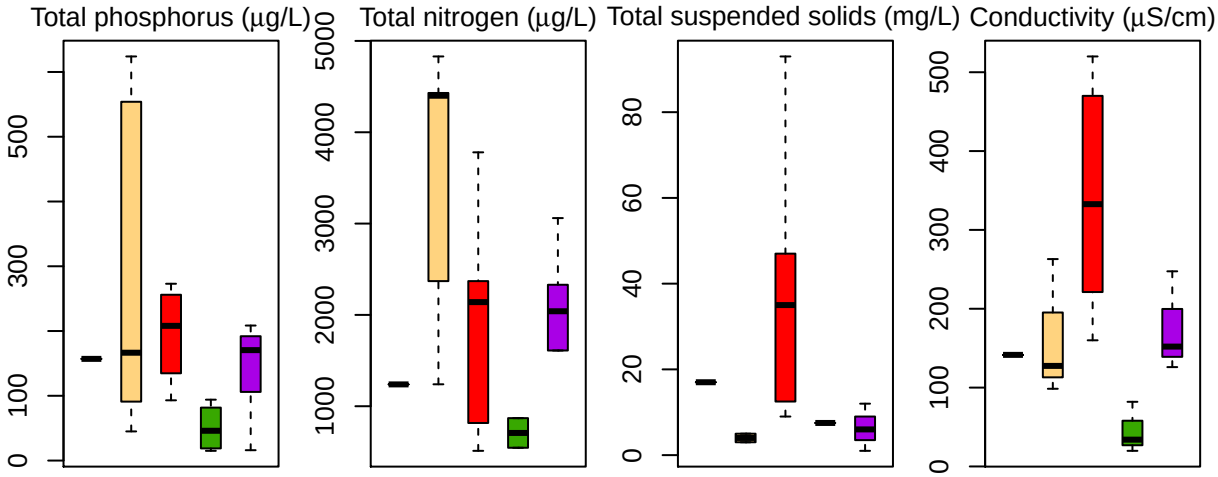
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

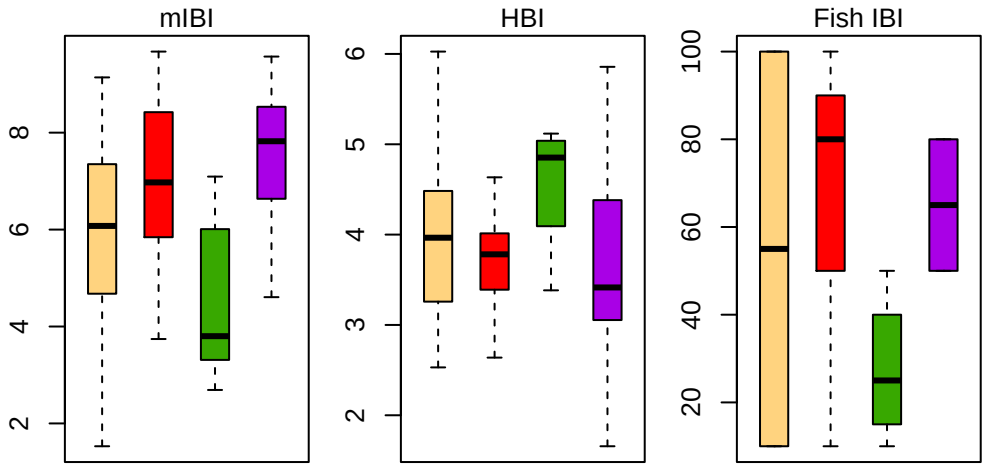
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	3	4	5	6	1	3	4	5	6	1	3	4	5	6	1	3	4	5	6
# of stations with data	1	6	18	4	5	1	5	13	2	5	1	2	13	1	3	1	3	10	3	3

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	3	4	5	6	3	4	5	6	3	4	5	6
# of stations with data	18	44	8	7	18	44	8	7	2	5	4	2

Targeted Watershed Site Selection Tool

Upper and West Fork Chippewa Rivers

TWSST watershed ID: 07050001_N
HUC 8's included: 07050001 (North)
DNR District: Northern
Area: 982 square miles
Total stream length: 738 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	4.0	0.31	19.9	0.15
Water temperature (°C)	22.2	22.9	21.7	21.8
Slope (degrees)	2.1	1.9	4.0	2.6
Percent agriculture	2	0	43	45
Percent developed	3	2	6	4
Percent forest	87	89	45	42
Percent wetlands/lakes	3.9	2.2	3.6	0.6
Percent soil clay content	7	6	15	14
Percent soil organic matter content	8	8	4	2
Soil permeability (in/hour * 100)	336	292	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

TWSST

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: High flow for the watershed. Cool water temperatures, more forests, and fewer wetlands/lakes differentiate this group from **Group 4**.

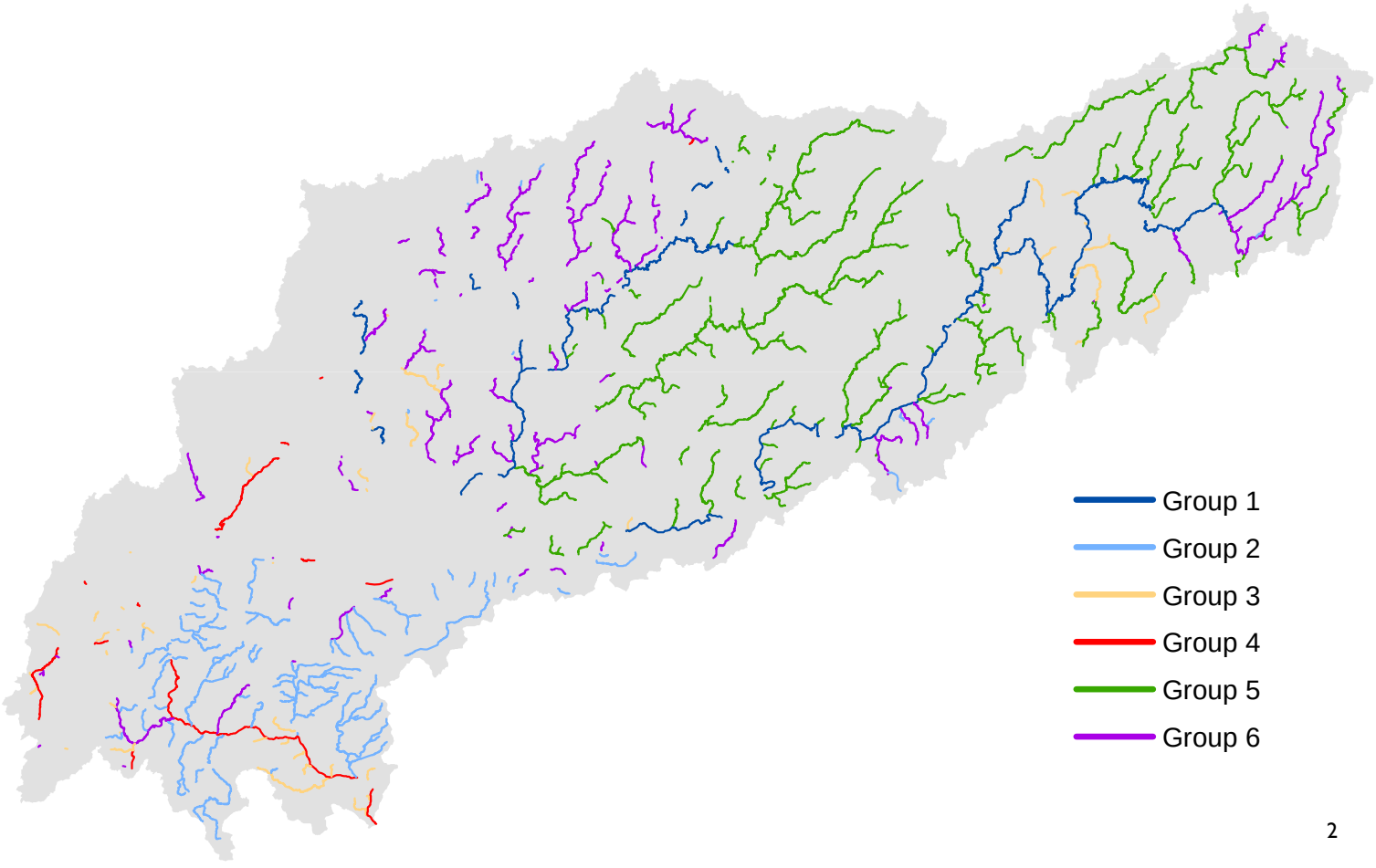
Group 2: Low to moderate flow for the watershed with cold to cool water temperatures, overall the coldest in the watershed. Highest forested land cover in the watershed, generally greater than 90%. Highest soil clay content, around 10%, lowest organic matter content, around 2%, and lowest permeability in the watershed.

Group 3: Low to moderate flow for the watershed with cold to cool water temperatures. Highest levels of agriculture, generally between 5-15%, and developed land cover, up to 15%, in the watershed. Variable soil characteristics.

Group 4: High flow for the watershed with warm water temperatures, the warmest in the watershed. Relatively high agriculture and developed land cover for the watershed, with fewer forests and more wetlands/lakes, between 15-35%, differentiating these streams from **Group 3**.

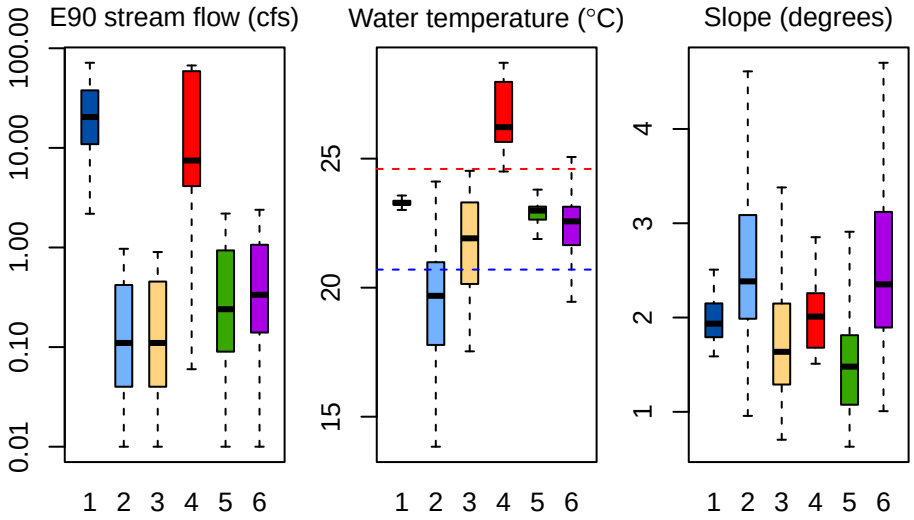
Group 5: Low to moderate flow for the watershed with cool water temperatures. High forested land cover, greater than 80%. Highest soil organic matter content in the watershed, around 12%, makes this group of streams unique.

Group 6: Low to moderate flow for the watershed with predominantly cool water temperatures. High forested land cover with moderate wetlands/lakes and relatively high slopes for the watershed.

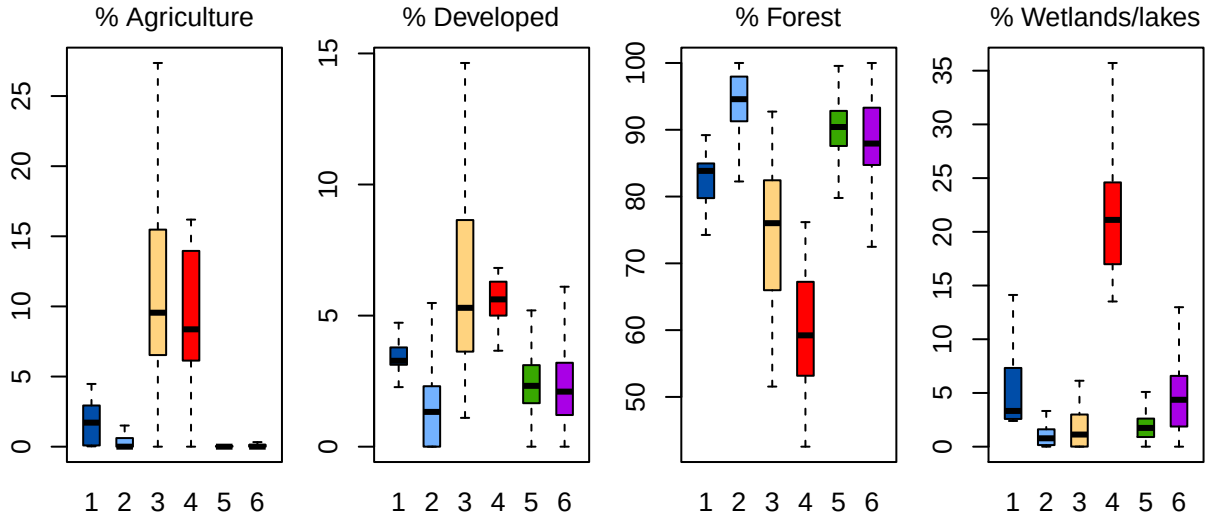


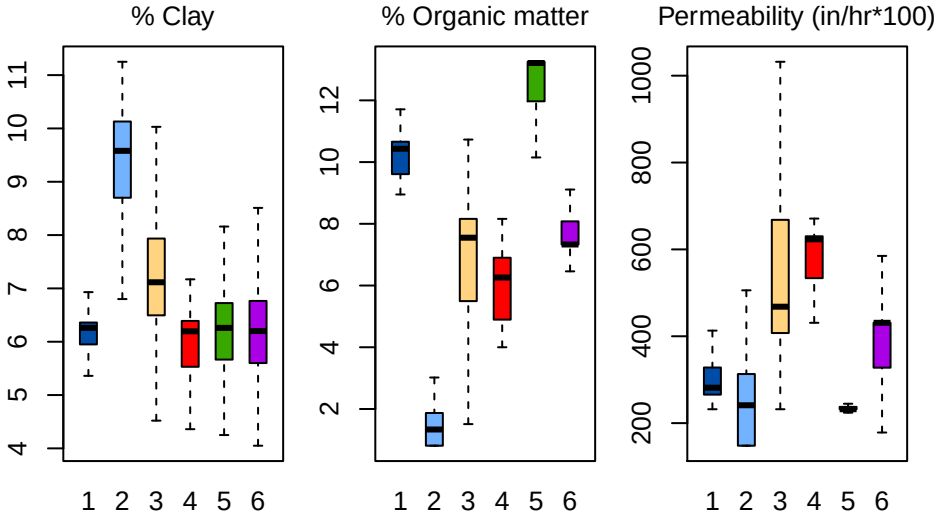
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





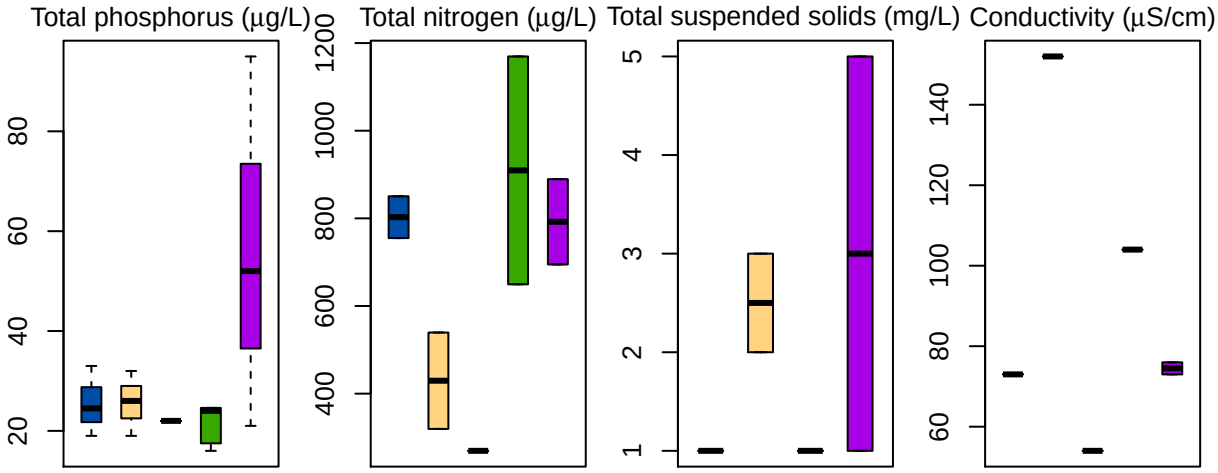
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

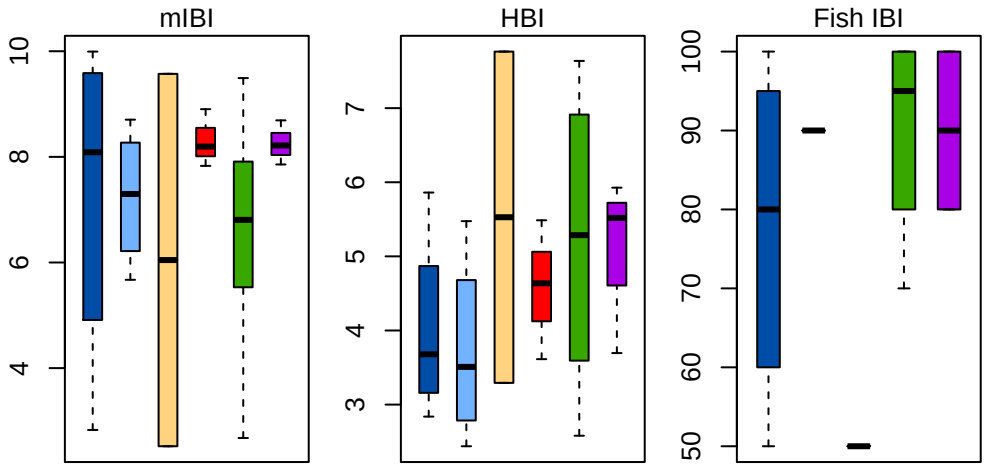
Data are provided for general reference only.
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	3	4	5	6	1	3	4	5	6	1	3	5	6	1	2	3	5	6
# of stations with data	3	3	1	5	3	2	2	1	2	2	2	2	2	2	1	1	1	1	2

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	5	6
# of stations with data	4	4	2	3	14	3	4	4	2	3	14	3	4	1	1	5	2

Targeted Watershed Site Selection Tool

Upper Chippewa River

TWSST watershed ID: 07050001_S
HUC 8's included: 07050001 (South)
DNR District: Northern, West Central
Area: 948 square miles
Total stream length: 1146 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	20.3	0.15	19.9	0.15
Water temperature (°C)	22.1	22.8	21.7	21.8
Slope (degrees)	2.6	2.0	4.0	2.6
Percent agriculture	10	4	43	45
Percent developed	3	3	6	4
Percent forest	79	84	45	42
Percent wetlands/lakes	4.3	2.9	3.6	0.6
Percent soil clay content	9	9	15	14
Percent soil organic matter content	2	2	4	2
Soil permeability (in/hour * 100)	282	216	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

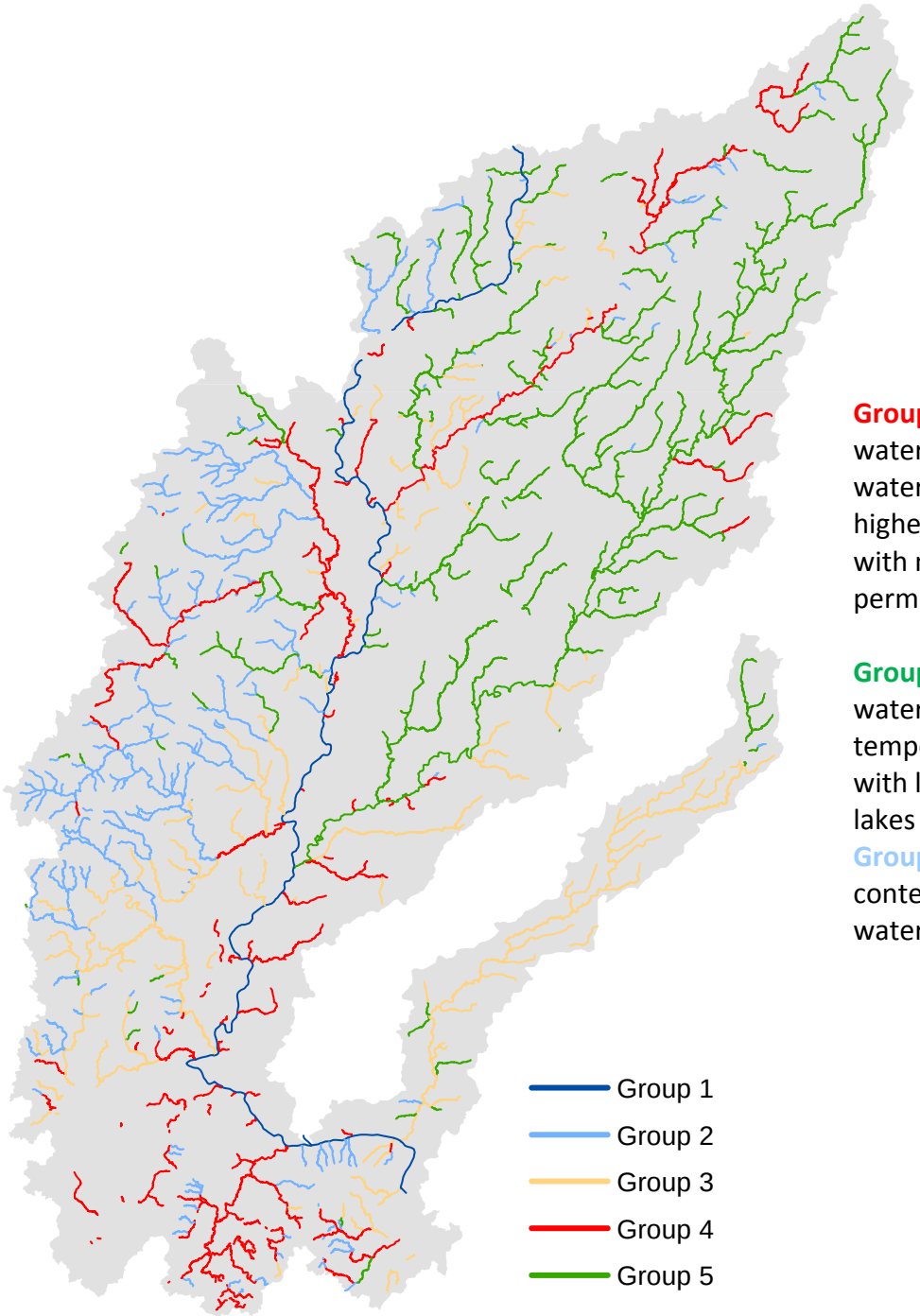
Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with predominantly warm water temperatures. Lowest soil clay content and highest organic matter content in the watershed.

Group 2: Low flow for the watershed with cold to cool water temperatures, the coldest in the watershed. High forested land cover, generally greater than 80%, with moderate to high slopes for the watershed and fewer wetlands/lakes differentiating these streams from **Group 5**.

Group 3: Low flow for the watershed with variable water temperatures. Variable land cover with low slopes, but includes the highest levels of agriculture, generally between 20-40%, and developed land cover in the watershed.

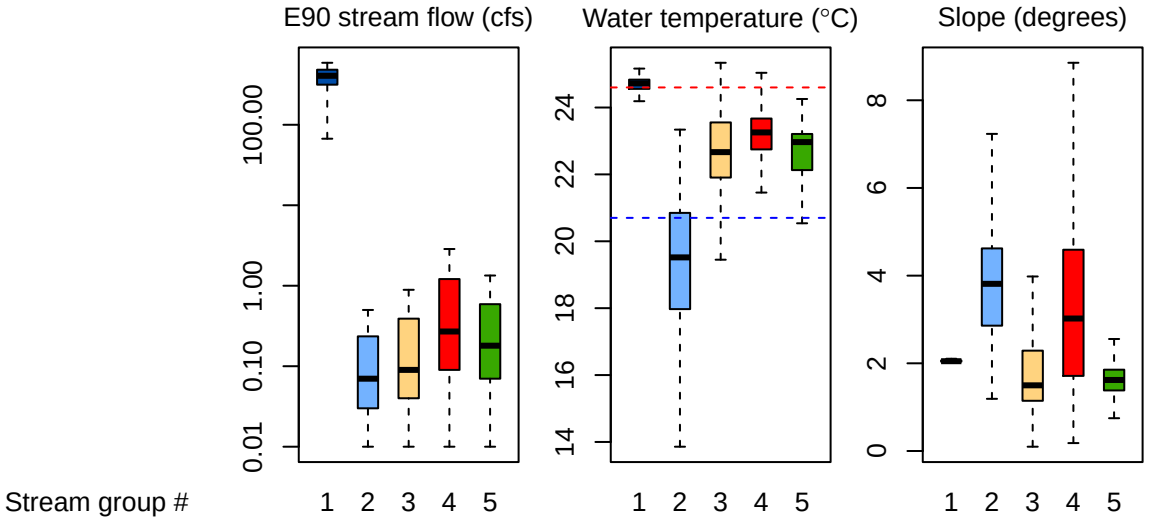


Group 4: Low to moderate flow for the watershed with predominantly cool water temperatures. Mix of forests and highest percentage of wetlands/lakes with moderate to high slopes. Highest permeability in the watershed.

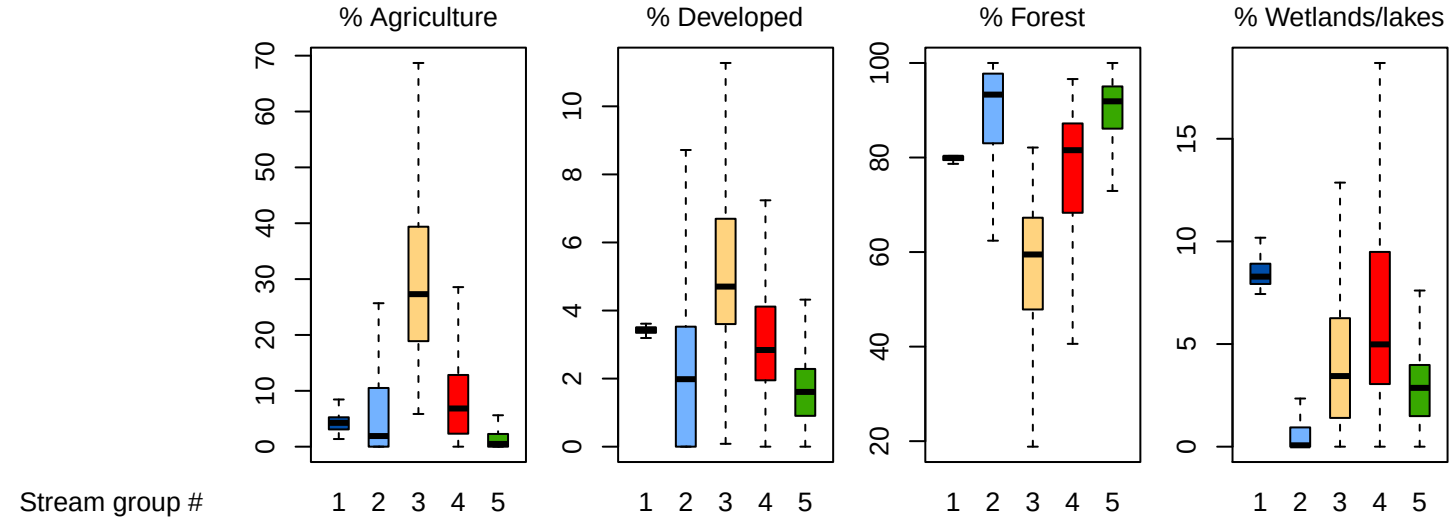
Group 5: Low to moderate flow for the watershed with cool water temperatures. High forested land cover with lower slopes and more wetlands/ lakes differentiating these streams from **Group 2**. Lowest soil organic matter content and permeability in the watershed.

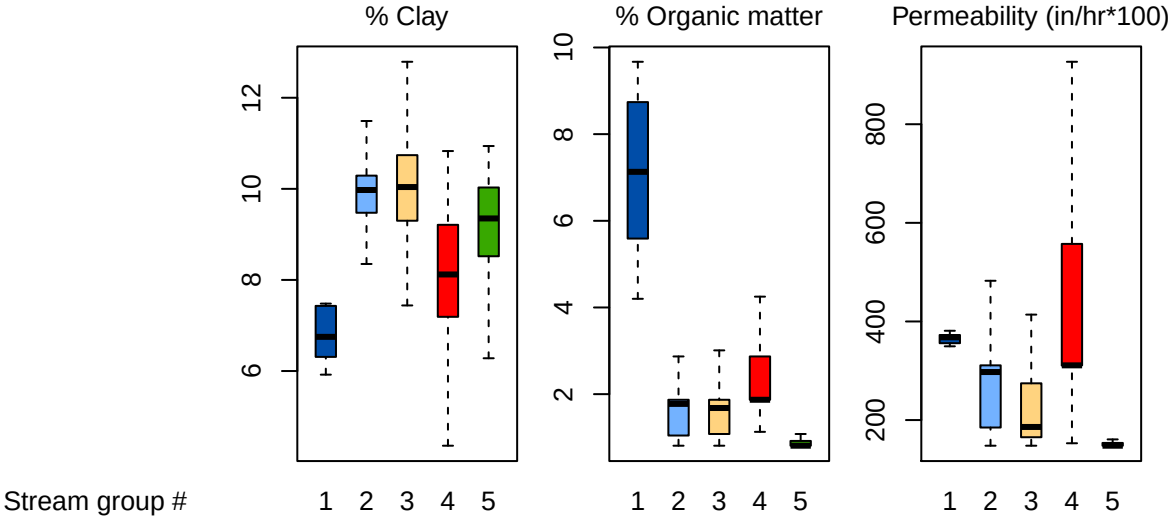
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





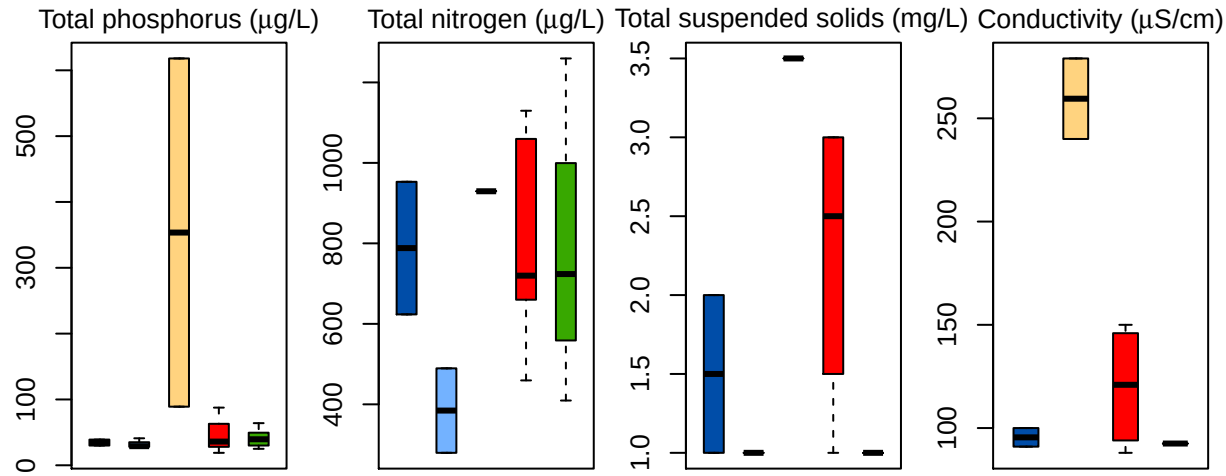
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

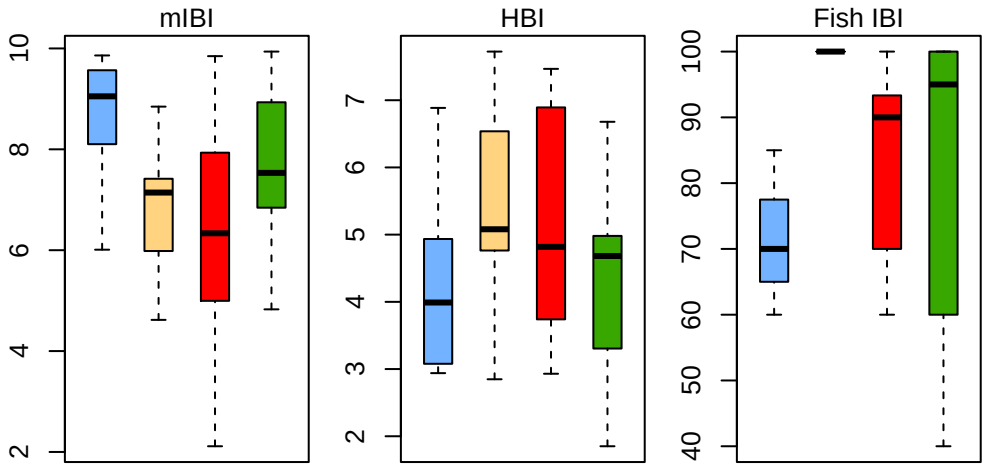
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	3	4	5
# of stations with data	2	3	2	9	6	2	2	1	6	4	2	1	1	4	4	2	2	4	1

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	2	3	4	5	2	3	4	5	2	3	4	5
# of stations with data	8	12	11	11	8	12	11	11	3	2	9	8

Targeted Watershed Site Selection Tool

Flambeau, Manitowish, Presque Isle, and Ontonagon Rivers

TWSST watershed ID: 07050002
HUC 8's included: 04020101, 04020102, 07050002
DNR District: Northern
Area: 1293 square miles
Total stream length: 1008 miles

Summary statistics for the physical characteristics used in the stream classification. Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	15.6	0.28	19.9	0.15
Water temperature (°C)	23.2	23.3	21.7	21.8
Slope (degrees)	2.2	2.0	4.0	2.6
Percent agriculture	3	0	43	45
Percent developed	3	3	6	4
Percent forest	81	84	45	42
Percent wetlands/lakes	9.1	6.5	3.6	0.6
Percent soil clay content	5	5	15	14
Percent soil organic matter content	8	8	4	2
Soil permeability (in/hour * 100)	442	257	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

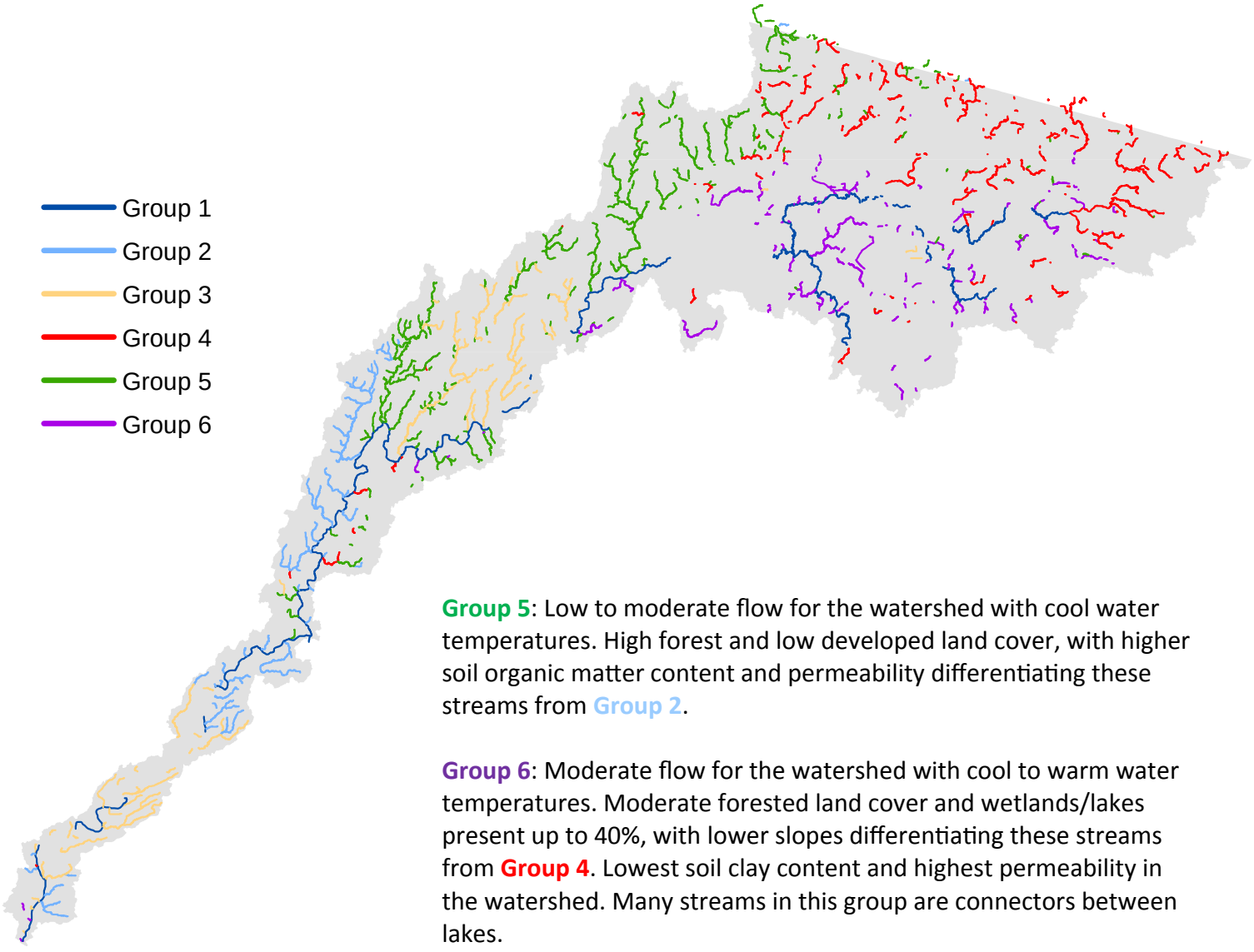
Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with minimal variability in water temperatures, between 24-25°C. Wetlands/lakes present at around 15% and high permeability.

Group 2: Lowest flow in the watershed with predominantly cool water temperatures, overall the coldest in the watershed. Highest forested land cover, generally greater than 90%, and lowest developed land cover, less than 2%. Lowest soil organic matter content and permeability in the watershed.

Group 3: Low to moderate flow for the watershed with predominantly cool water temperatures. Only group with agriculture land cover present, generally between 10-25%. Includes highest soil clay content, up to 15%, and highest organic matter content, up to 30%, found in the watershed, though both are variable.

Group 4: Low to moderate flow for the watershed with cool to warm water temperatures. Moderate to high forested land cover and wetlands/lakes present between 10-25%. Includes the highest slopes in the watershed. Highly variable permeability and the only group without soil organic matter content. Many streams in this group are connectors between lakes.

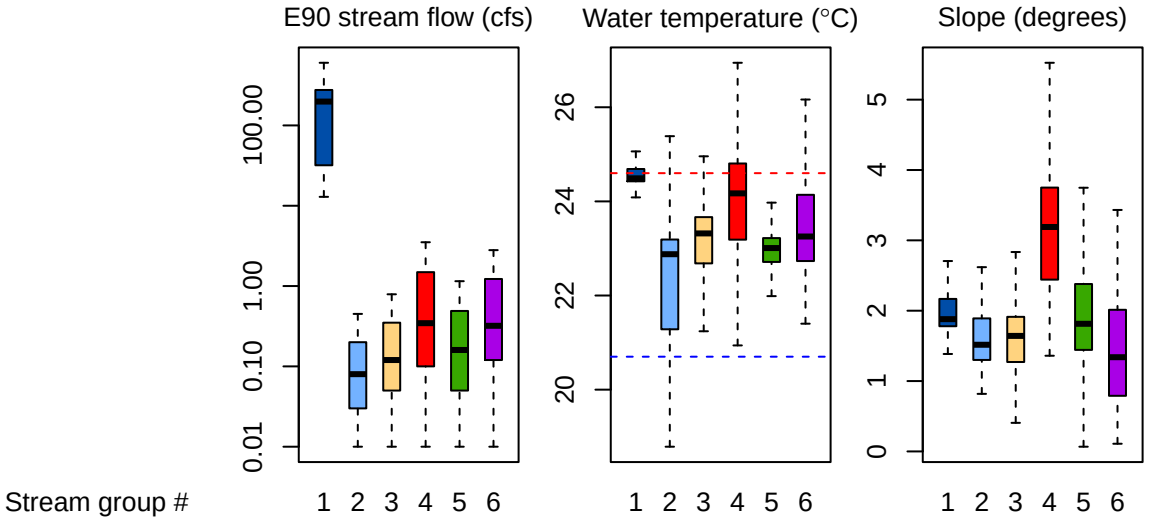


Group 5: Low to moderate flow for the watershed with cool water temperatures. High forest and low developed land cover, with higher soil organic matter content and permeability differentiating these streams from **Group 2**.

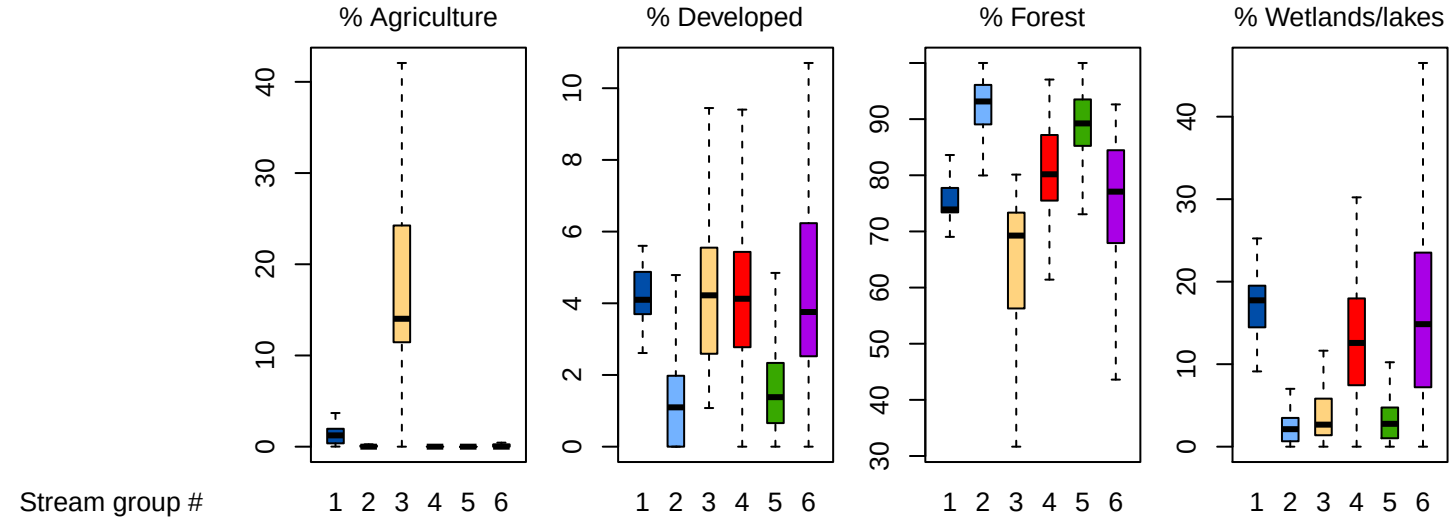
Group 6: Moderate flow for the watershed with cool to warm water temperatures. Moderate forested land cover and wetlands/lakes present up to 40%, with lower slopes differentiating these streams from **Group 4**. Lowest soil clay content and highest permeability in the watershed. Many streams in this group are connectors between lakes.

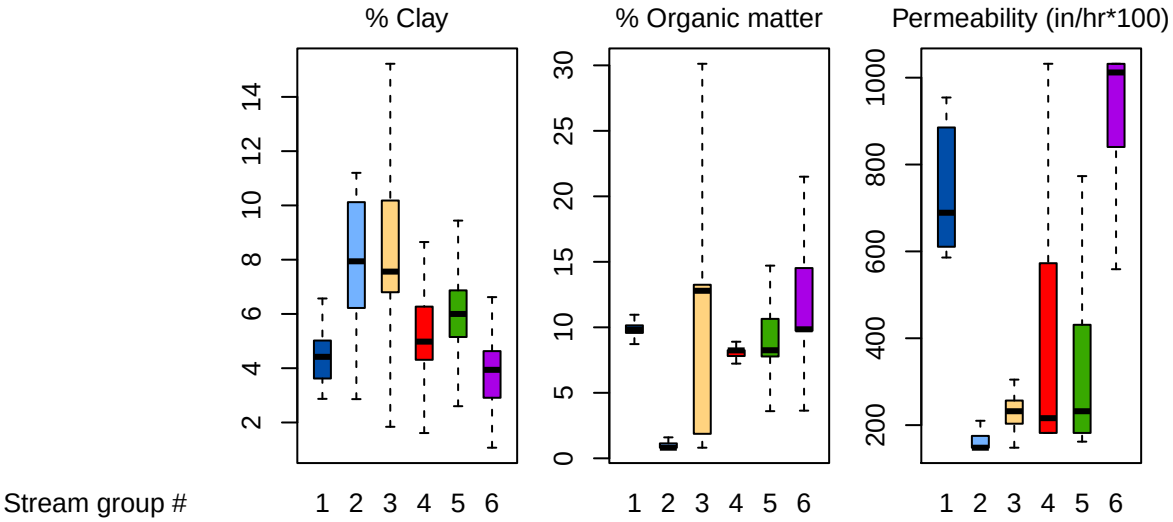
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





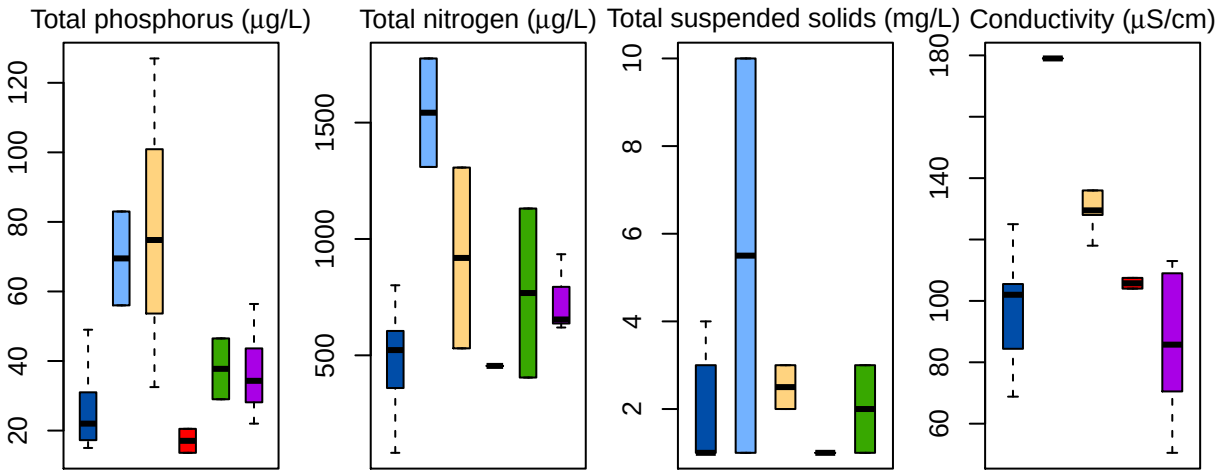
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

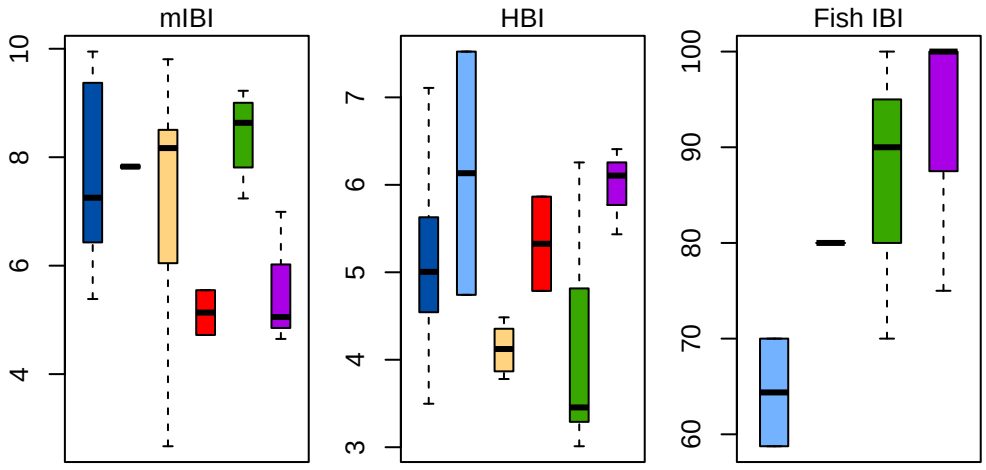
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



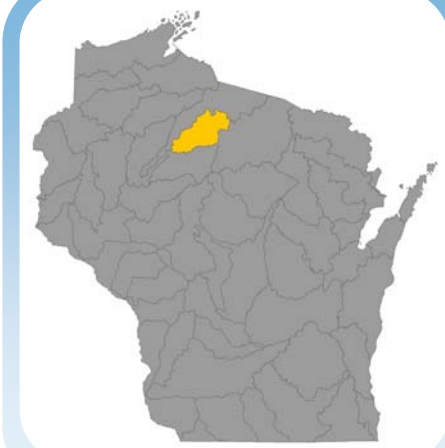
Stream group #	1	2	3	4	5	6
# of stations with data (Total phosphorus)	11	2	3	2	2	7
# of stations with data (Total nitrogen)	11	2	2	1	2	3
# of stations with data (Total suspended solids)	9	2	2	1	2	
# of stations with data (Conductivity)	7	1	5	2	6	

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	6
# of stations with data (mIBI)	9	2	7	2	7	3
# of stations with data (HBI)	9	2	7	2	7	3
# of stations with data (Fish IBI)		2	1	3		3



Targeted Watershed Site Selection Tool

South Fork Flambeau River

TWSST watershed ID: 07050003
HUC 8's included: 07050003
DNR District: Northern
Area: 739 square miles
Total stream length: 629 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	7.0	0.31	19.9	0.15
Water temperature (°C)	23.0	23.1	21.7	21.8
Slope (degrees)	1.5	1.4	4.0	2.6
Percent agriculture	5	0	43	45
Percent developed	2	2	6	4
Percent forest	82	84	45	42
Percent wetlands/lakes	9.8	6.2	3.6	0.6
Percent soil clay content	6	6	15	14
Percent soil organic matter content	13	10	4	2
Soil permeability (in/hour * 100)	593	553	353	241

WISCONSIN DEPT. OF NATURAL RESOURCES

Explore TWSST with DNR's Water Condition Viewer

TWSST

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

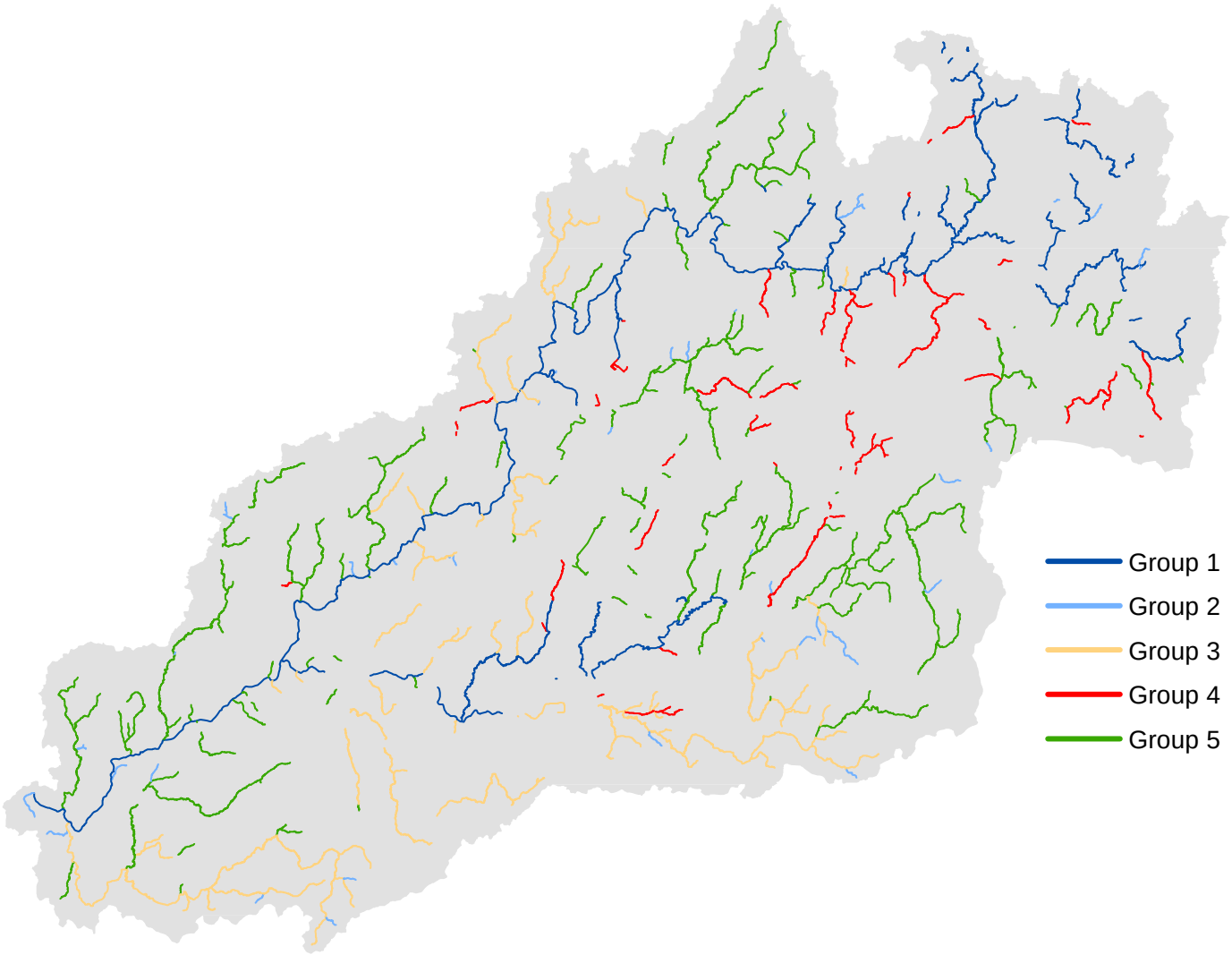
Group 1: Highest flow in the watershed and cool water temperatures. Wetlands/lakes present, generally between 10-15%.

Group 2: Lowest flow in the watershed and cold to cool water temperatures, the coldest in the watershed. High forested land cover, greater than 80%, with the highest slopes in the watershed, generally between 2-4 degrees and low soil organic matter content.

Group 3: Low to moderate flow for the watershed and cool water temperatures. Only group with agriculture land cover greater than 5%, with values up to 40%. Highest soil clay content, up to 12%, and lowest permeability in the watershed.

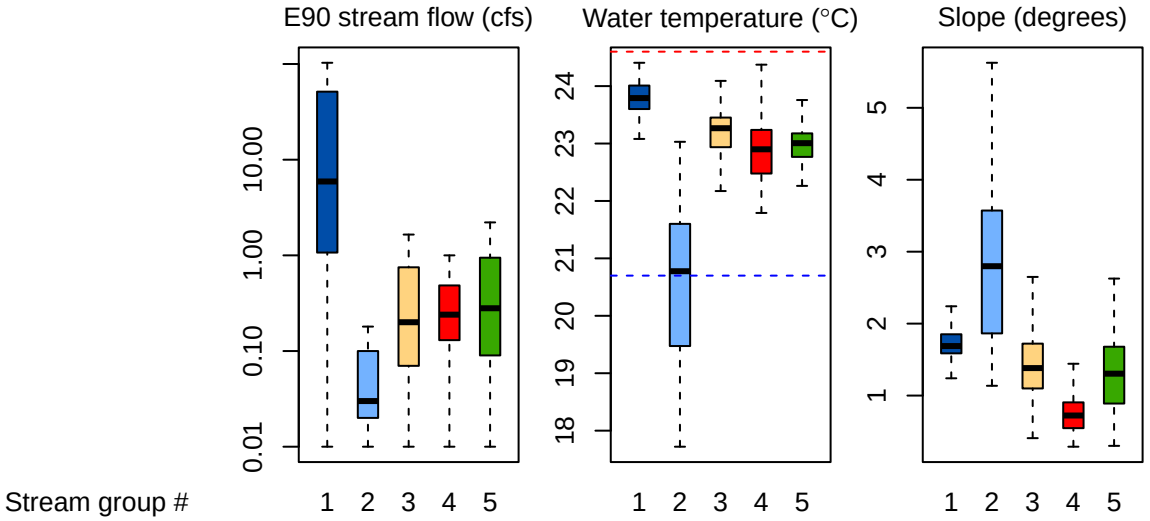
Group 4: Low to moderate flow for the watershed and cool water temperatures. Highest wetlands/lakes in the watershed, generally between 15-35%, with the lowest slopes in the watershed, less than 1 degree. Low soil clay, less than 6%, and highest organic matter content, generally greater than 20%.

Group 5: Low to moderate flow for the watershed and cool water temperatures. High forested land cover, greater than 80%, with lower slopes, slightly higher wetlands/lakes, and higher soil organic matter content differentiating these streams from **Group 2**.

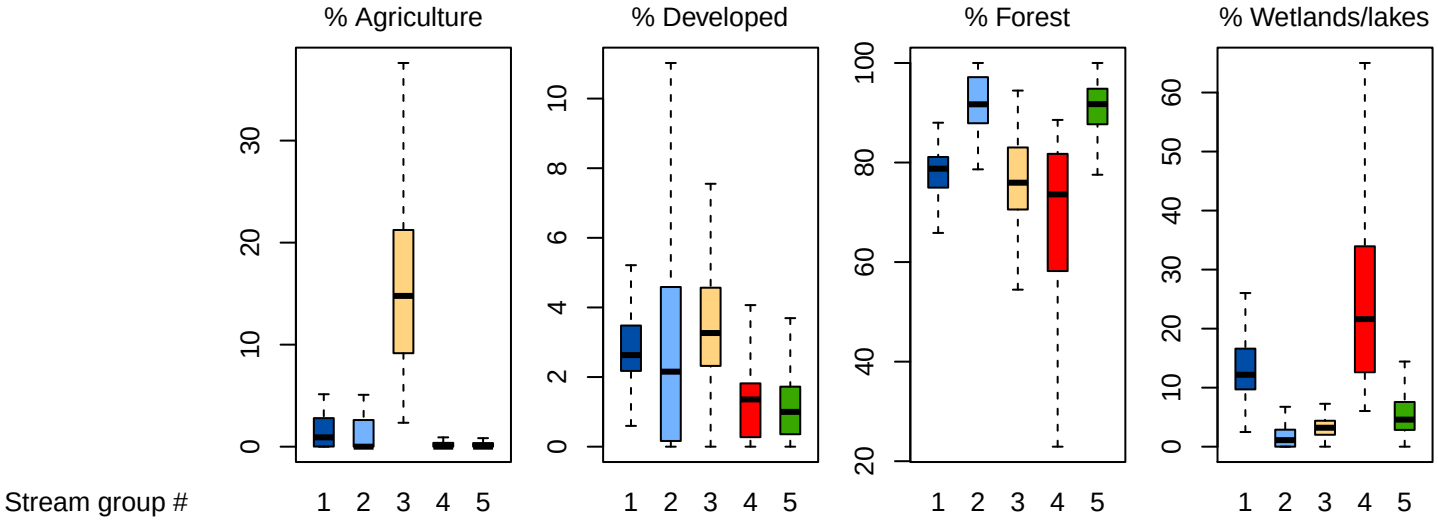


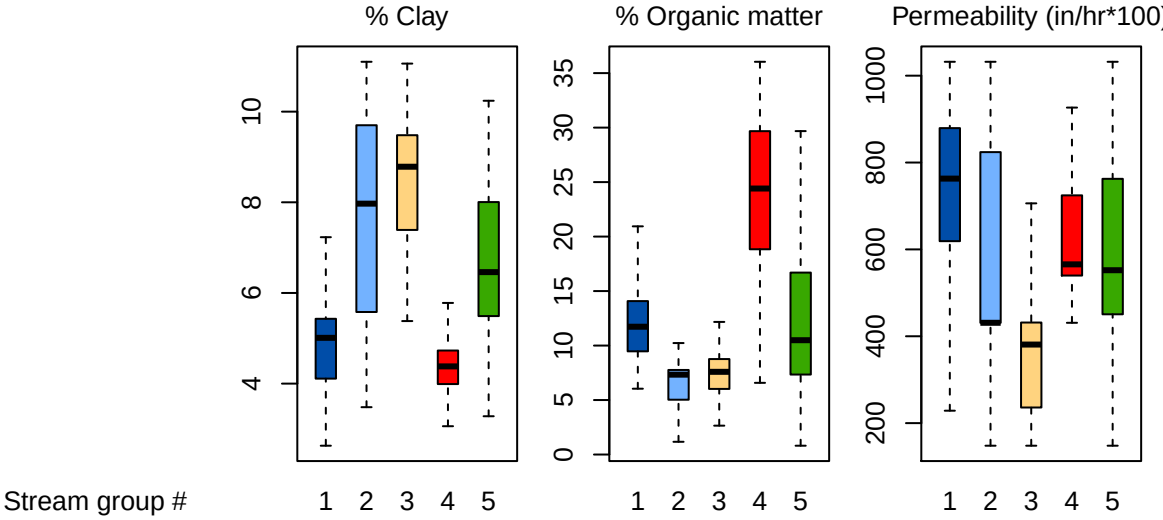
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





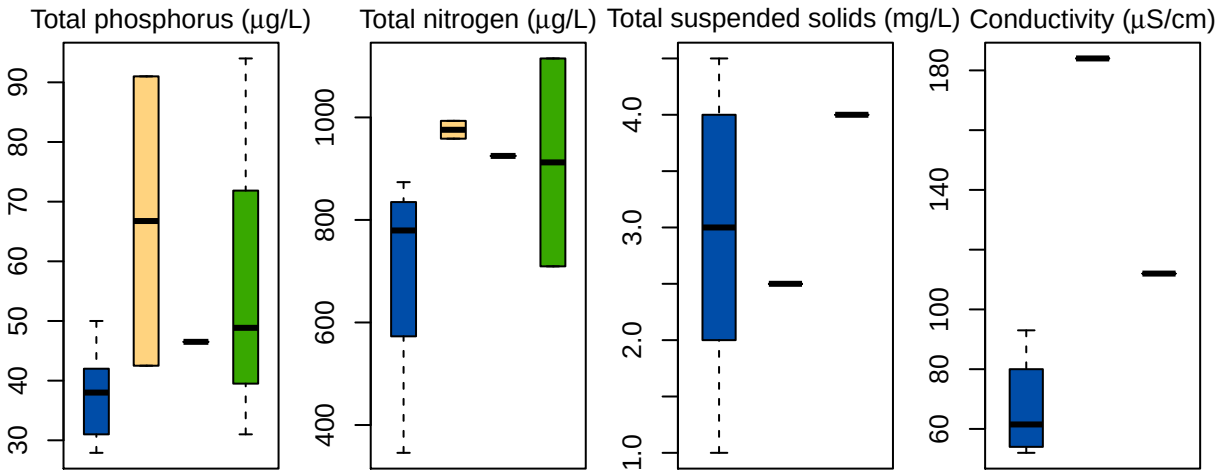
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

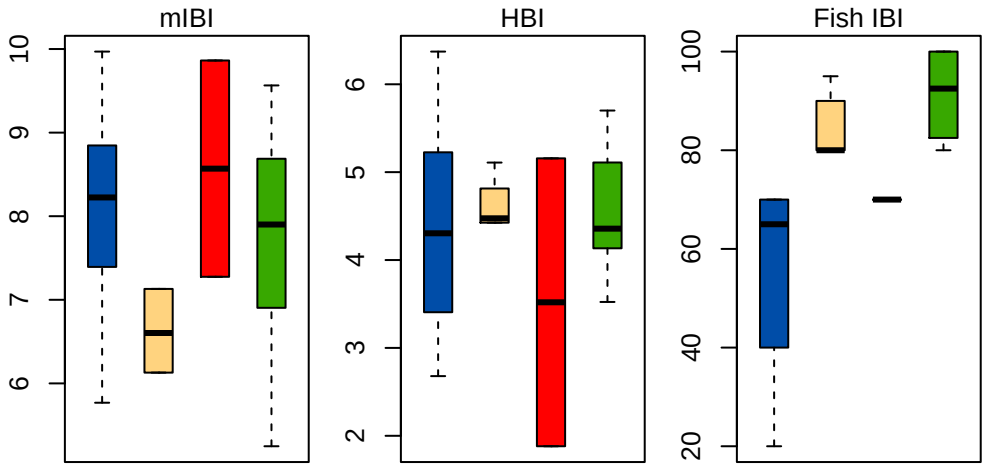
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	3	4	5	1	3	4	5	1	3	5	1	3	5
# of stations with data	14	2	1	4	11	2	1	2	9	1	1	4	1	1

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	3	4	5	1	3	4	5	1	3	4	5
# of stations with data	16	9	2	9	16	9	2	9	4	5	1	4

Targeted Watershed Site Selection Tool

Jump River

TWSST watershed ID: 07050004
HUC 8's included: 07050004
DNR District: Northern, West Central
Area: 854 square miles
Total stream length: 1046 miles

Summary statistics for the physical characteristics used in the stream classification. Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	2.4	0.10	19.9	0.15
Water temperature (°C)	22.5	23.0	21.7	21.8
Slope (degrees)	1.7	1.2	4.0	2.6
Percent agriculture	13	8	43	45
Percent developed	3	3	6	4
Percent forest	77	81	45	42
Percent wetlands/lakes	4.4	3.6	3.6	0.6
Percent soil clay content	10	10	15	14
Percent soil organic matter content	7	8	4	2
Soil permeability (in/hour * 100)	258	236	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

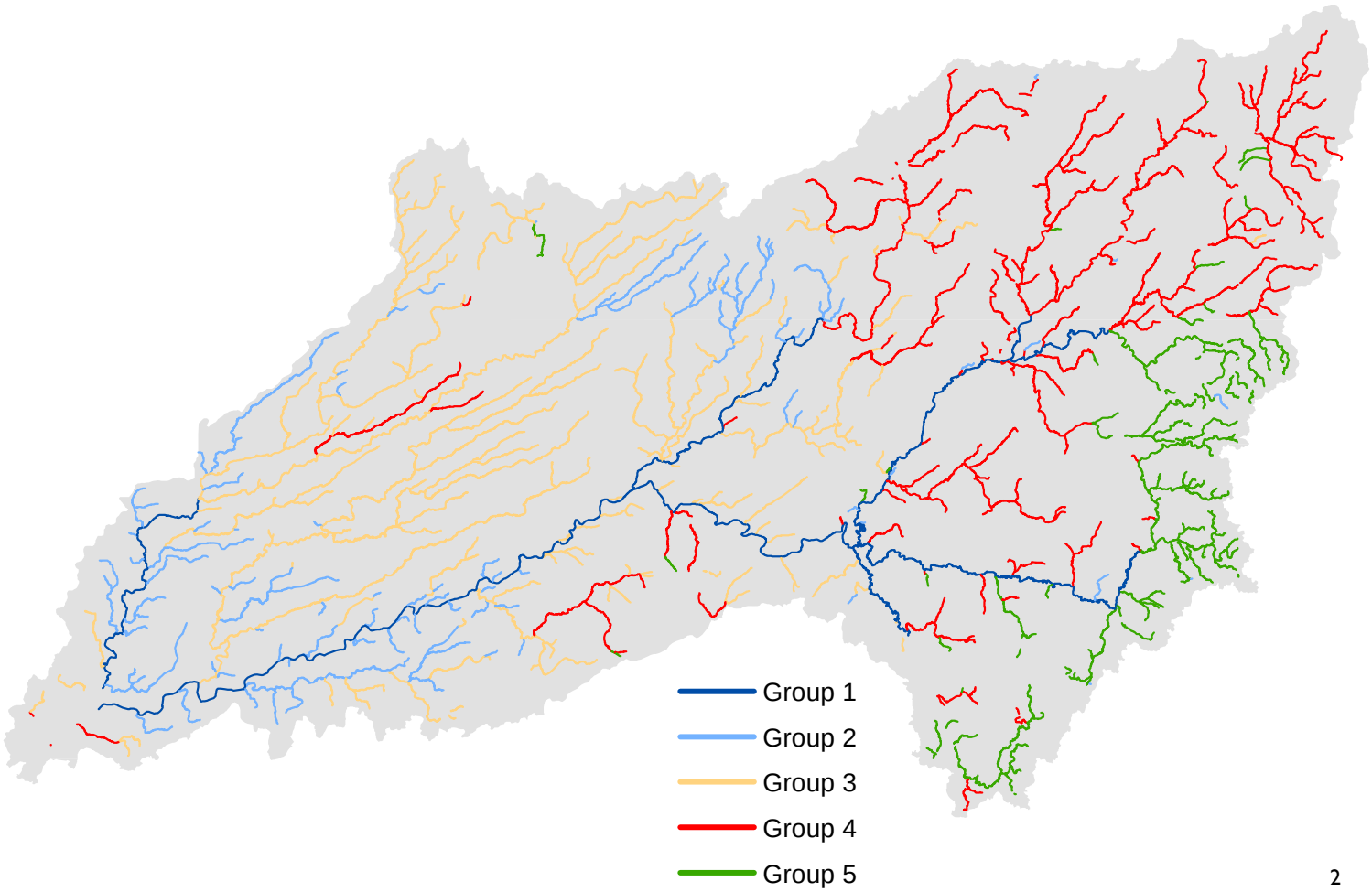
Group 1: Highest flow in the watershed with cool water temperatures.

Group 2: Lowest flow in the watershed, less than 0.10 cfs at baseflow, with cold to cool water temperatures, overall the coldest group. Most impacted group in the watershed, with agriculture generally greater than 35% and developed land up to 10%.

Group 3: Low to moderate flow for the watershed, with cool water temperatures. Moderate to high forested land cover. Low soil organic matter content and low permeability differentiate these streams from **Group 4**.

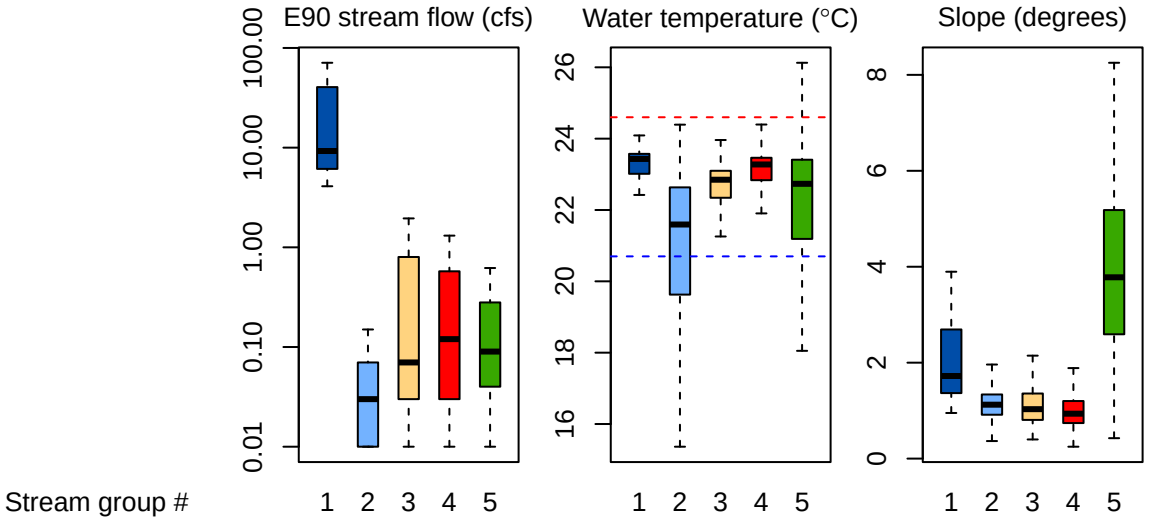
Group 4: Low to moderate flow for the watershed, with cool water temperatures. Moderate to high forested land cover. High soil organic matter content and moderate permeability differentiate these streams from **Group 3**.

Group 5: Low to moderate flow for the watershed, with variable water temperatures. Overall the least impacted group, with forest generally greater than 80% and the highest amount of wetlands/lakes. Relatively high slopes, generally greater than 3 degrees. Lowest soil clay content, less than 10%, highest organic matter content, around 10%, and overall the highest permeability in the watershed.

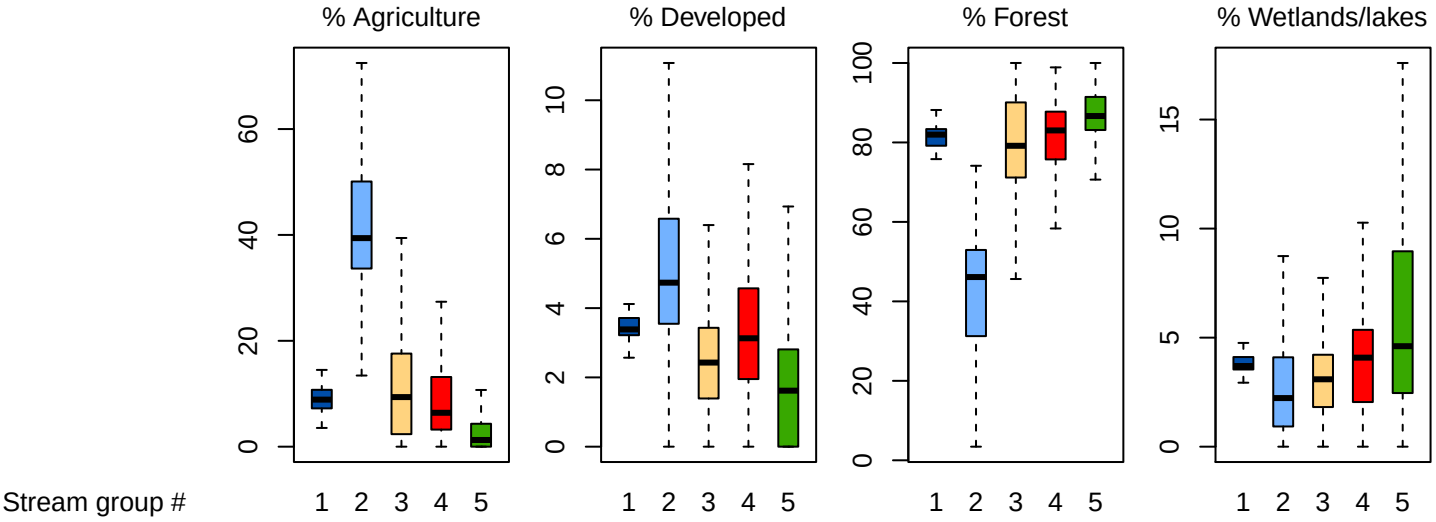


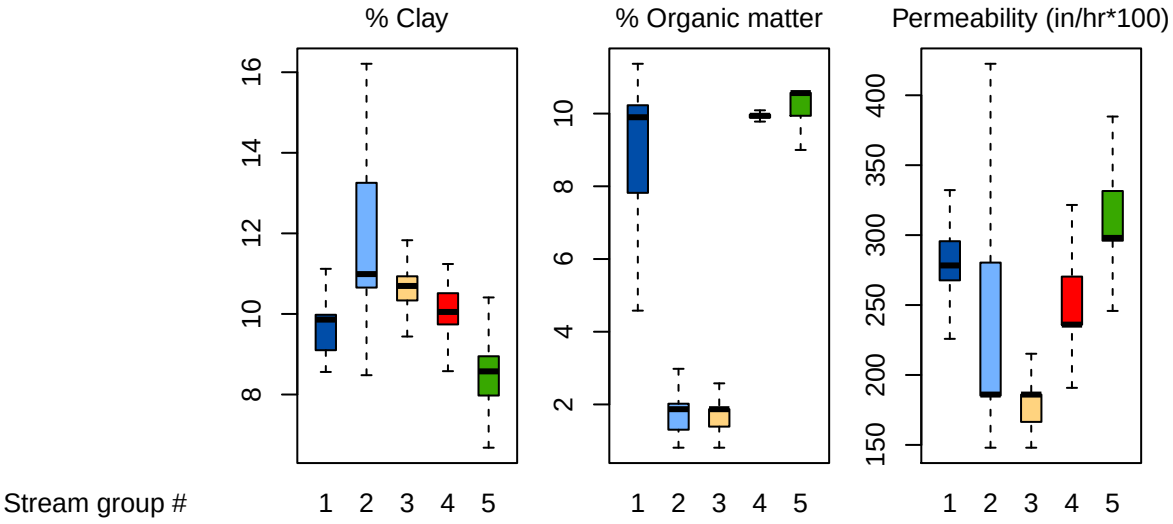
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





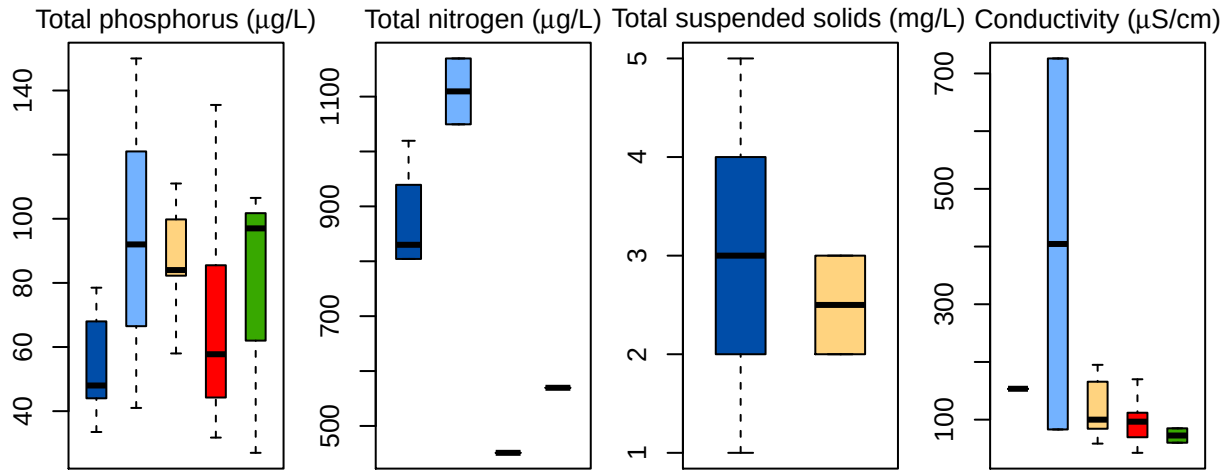
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

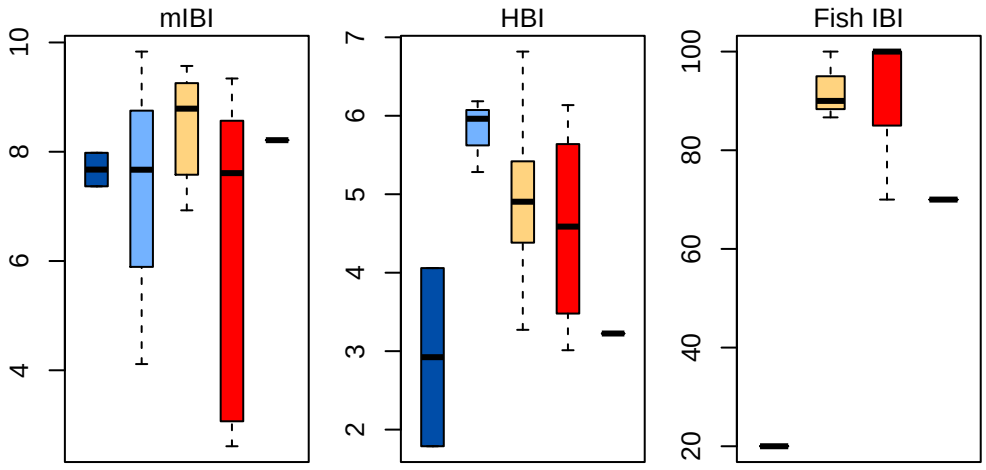
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5	1	2	4	5	1	3	1	2	3	4	5
# of stations with data	5	3	7	8	3	5	2	1	1	4	2	1	2	7	9	2

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	1	2	3	4	5	2	3	4	5
# of stations with data	2	3	11	6	1	2	3	11	6	1	1	3	3	1

Targeted Watershed Site Selection Tool

Lower Chippewa River

TWSST watershed ID: 07050005_E
HUC 8's included: 07050005 (East)
DNR District: West Central, Northern
Area: 959 square miles
Total stream length: 1259 miles

Summary statistics for the physical characteristics used in the stream classification. Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	12.6	0.09	19.9	0.15
Water temperature (°C)	21.6	22.1	21.7	21.8
Slope (degrees)	2.4	2.1	4.0	2.6
Percent agriculture	39	37	43	45
Percent developed	4	3	6	4
Percent forest	51	53	45	42
Percent wetlands/lakes	3.3	1.8	3.6	0.6
Percent soil clay content	11	11	15	14
Percent soil organic matter content	3	1	4	2
Soil permeability (in/hour * 100)	265	225	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

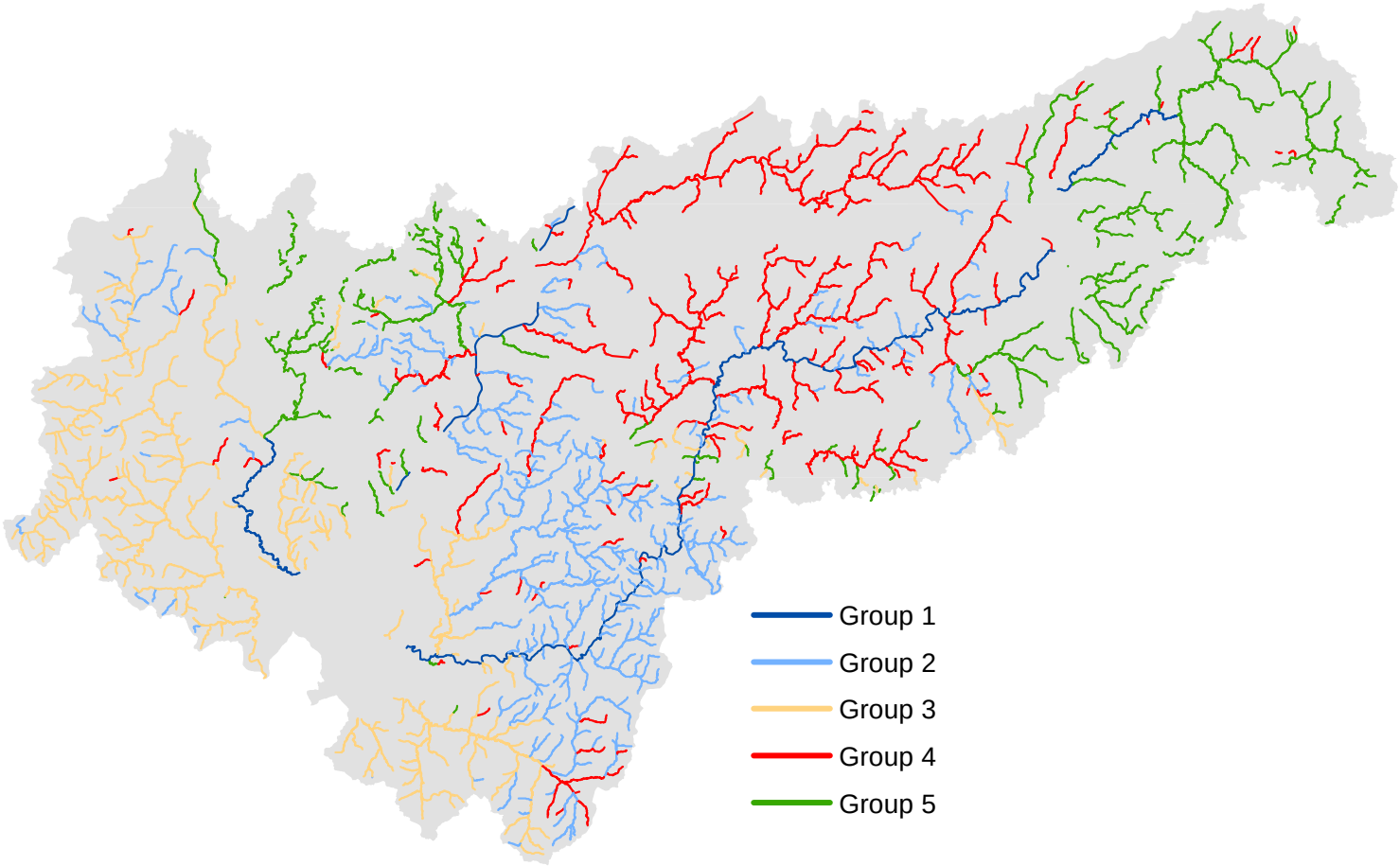
Group 1: Highest flow in the watershed with cool water temperatures.

Group 2: Lowest flow in the watershed with variable water temperatures, predominantly cold to cool. Along with **Group 3**, highest agriculture and developed land cover in the watershed. The highest soil clay content, up to 18%, and the lowest permeability in the watershed differentiate these streams from **Group 3**.

Group 3: Low to moderate flow for the watershed with variable water temperatures, predominantly cold to cool. Along with **Group 2**, highest agriculture and developed land cover in the watershed. Lower soil clay content and the highest permeability in the watershed differentiate these streams from **Group 2**.

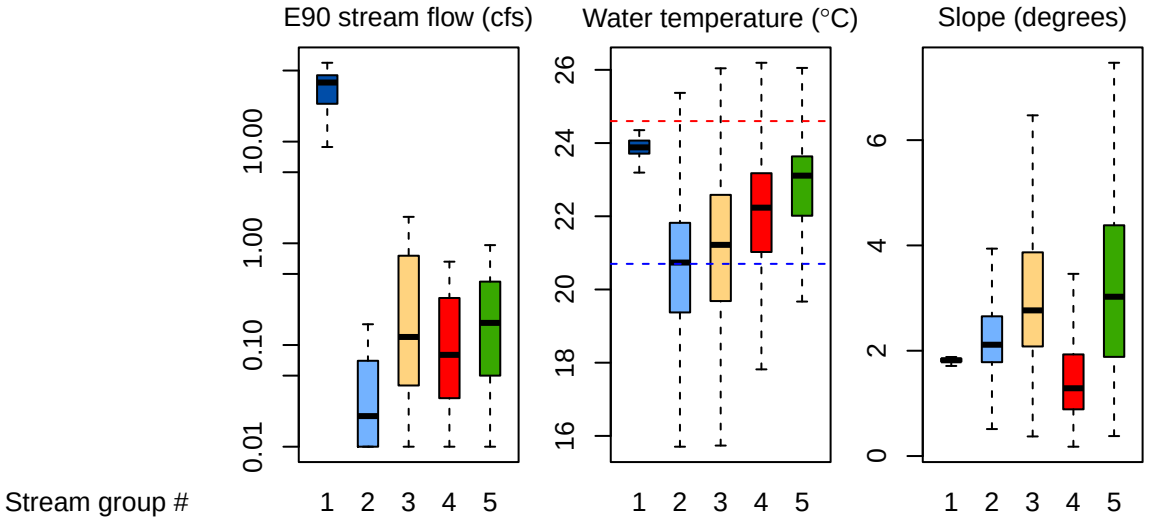
Group 4: Low to moderate flow for the watershed with variable water temperatures, predominantly cool. Moderate levels of agriculture, forest, and wetlands/lakes, with the lowest slopes in the watershed, generally less than 2 degrees.

Group 5: Low to moderate flow for the watershed with variable water temperatures, predominantly cool. Highest forested land cover, generally greater than 75%, with wetlands/lakes present up to 20%. Includes highest slopes in the watershed, up to 7 degrees. This group includes the lowest soil clay content and highest organic matter content, up to 20%.

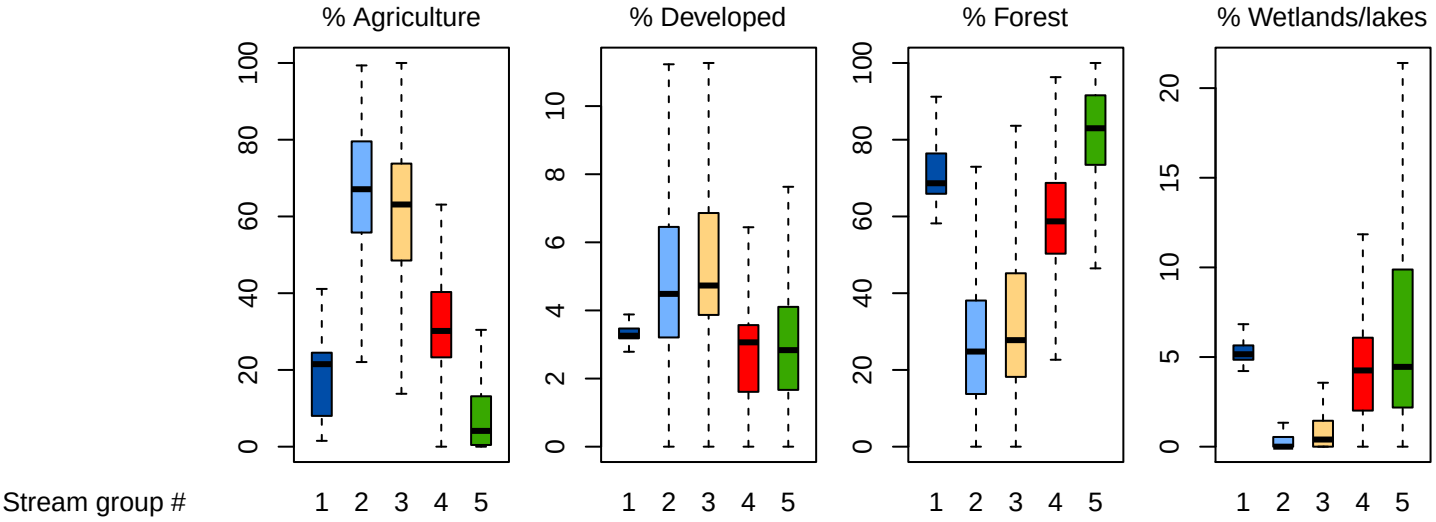


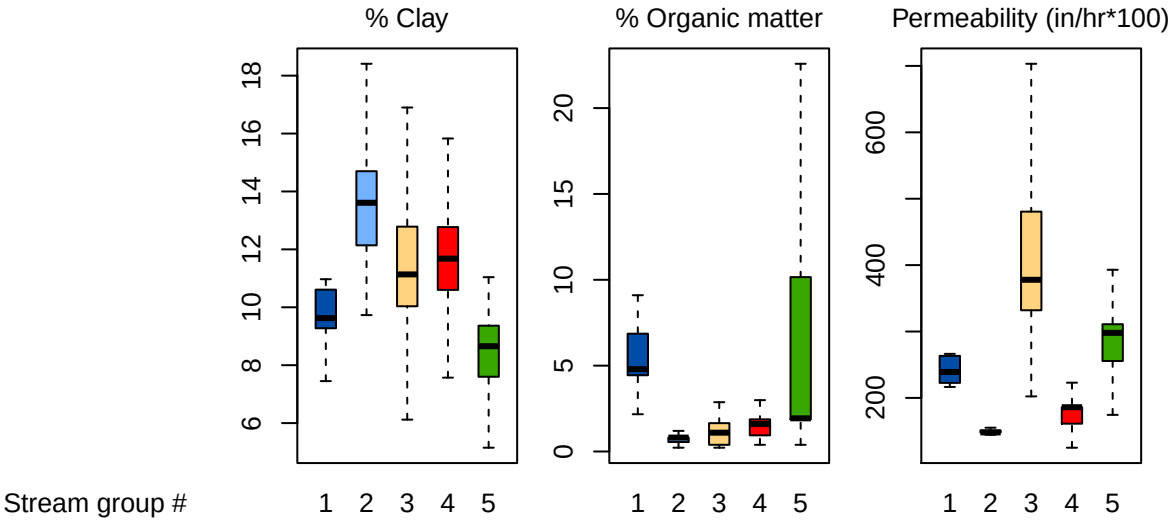
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





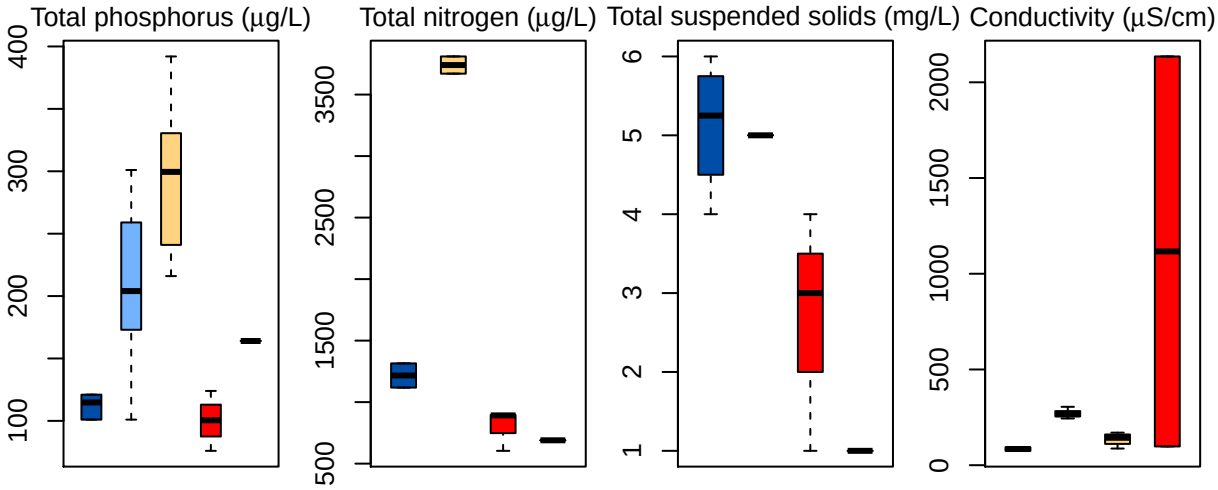
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

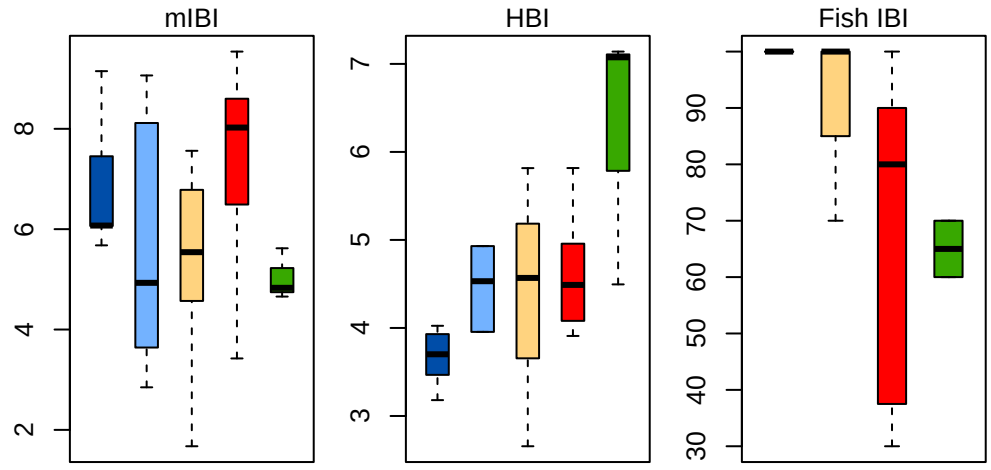
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5		1	3	4	5		1	3	4	5		1	2	3	4
# of stations with data	6	8	6	4	1		2	2	3	1		4	1	3	1		2	8	4	2

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5		1	2	3	4	5		2	3	4	5		
# of stations with data	5	6	13	7	3		5	6	13	7	3		1	3	6	2		

Targeted Watershed Site Selection Tool

Lower Chippewa River

TWSST watershed ID: 07050005_W
HUC 8's included: 07050005 (West)
DNR District: West Central
Area: 1100 square miles
Total stream length: 1806 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	83.4	0.15	19.9	0.15
Water temperature (°C)	21.0	21.0	21.7	21.8
Slope (degrees)	5.9	5.0	4.0	2.6
Percent agriculture	52	55	43	45
Percent developed	5	4	6	4
Percent forest	38	35	45	42
Percent wetlands/lakes	2.2	0.4	3.6	0.6
Percent soil clay content	13	12	15	14
Percent soil organic matter content	1	0	4	2
Soil permeability (in/hour * 100)	399	350	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

TWSST

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with warm water temperatures, greater than 26°C and the warmest in the watershed. Only group with soil organic matter greater than 4%.

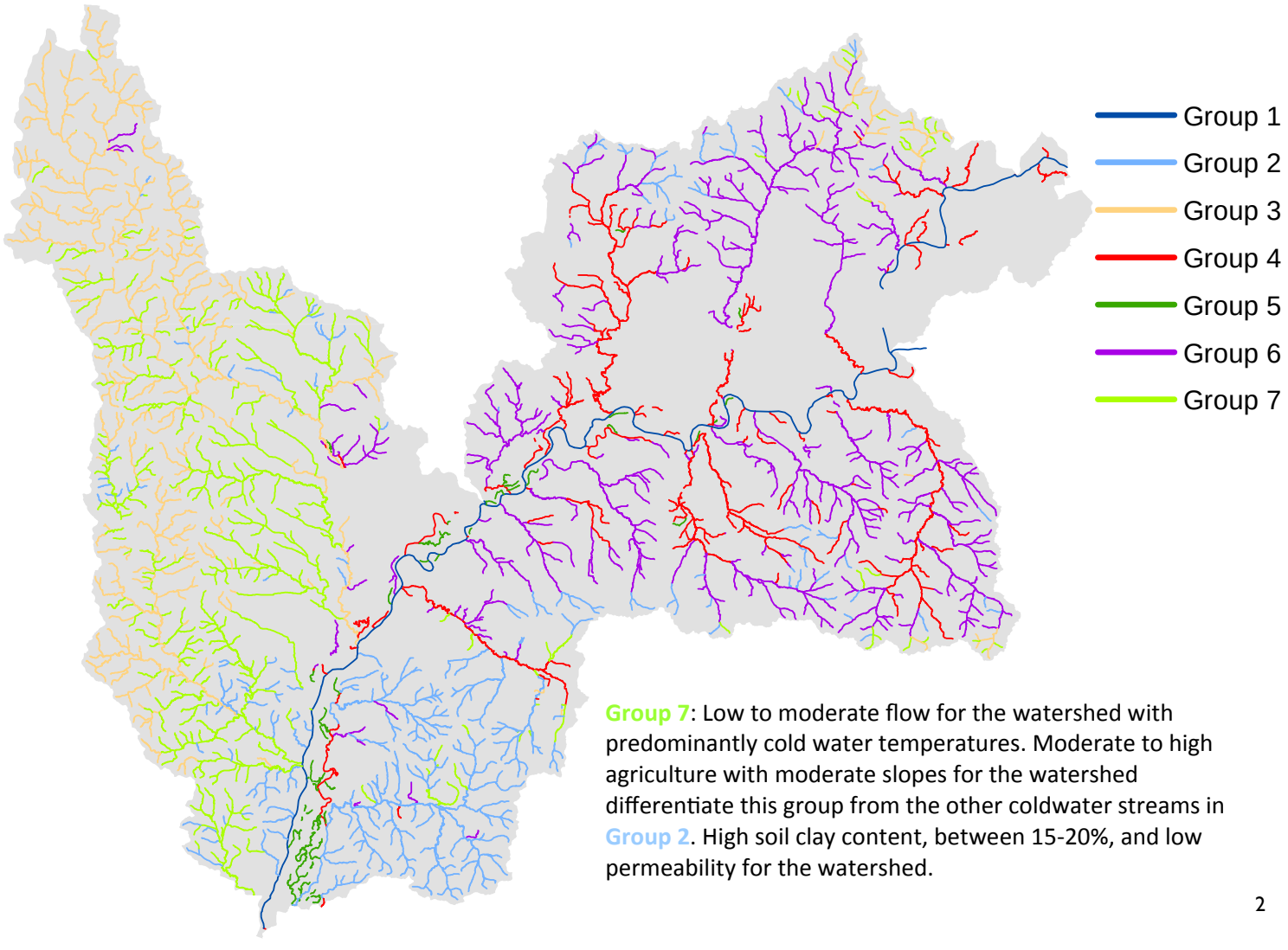
Group 2: Low to moderate flow for the watershed with cold to cool water temperatures. Least impacted streams in the watershed (excluding **Group 5**), with comparatively low agriculture and developed land cover. Highest slopes in the watershed, generally between 10-13 degrees.

Group 3: Low to moderate flow for the watershed with predominantly cool water temperatures. Highest agriculture in the watershed, generally greater than 70%, with low to moderate slopes. High soil clay content, between 15-20%, and low permeability for the watershed.

Group 4: Moderate flow for the watershed with predominantly cool water temperatures. Low to moderate slopes. Variable land cover, including some wetlands/lakes, with relatively low soil clay content and the highest permeability in the watershed differentiating this group.

Group 5: Lowest flow in the watershed with cool water temperatures. Most reaches in this group are in the Chippewa River floodplain, accounting for the lowest agriculture, most wetlands, and lowest slopes in the watershed.

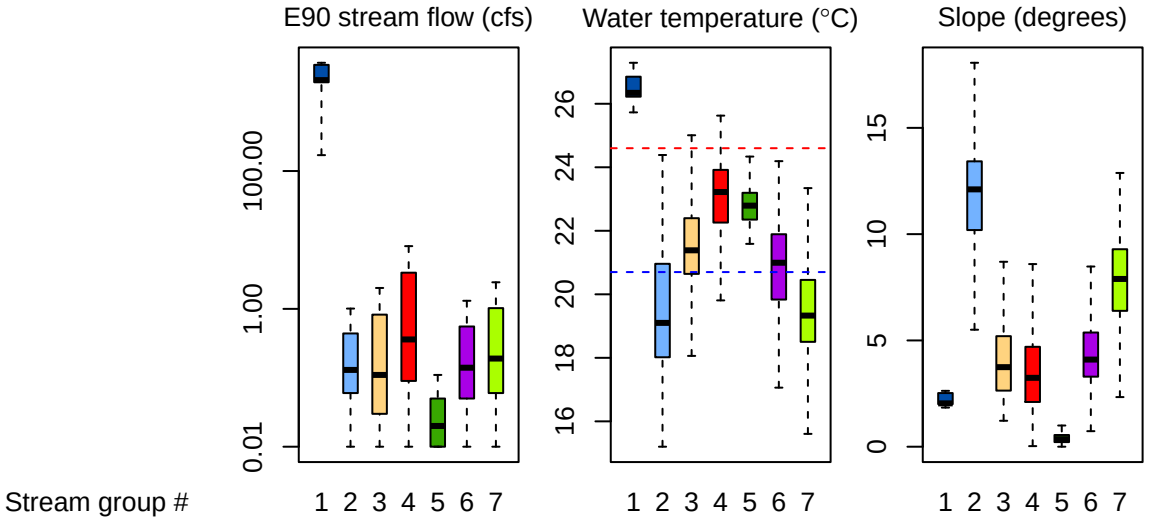
Group 6: Low to moderate flow for the watershed with cold to cool water temperatures. Moderate to high agriculture with low to moderate slopes. Low soil clay content, generally less than 10%, and moderate to high permeability.



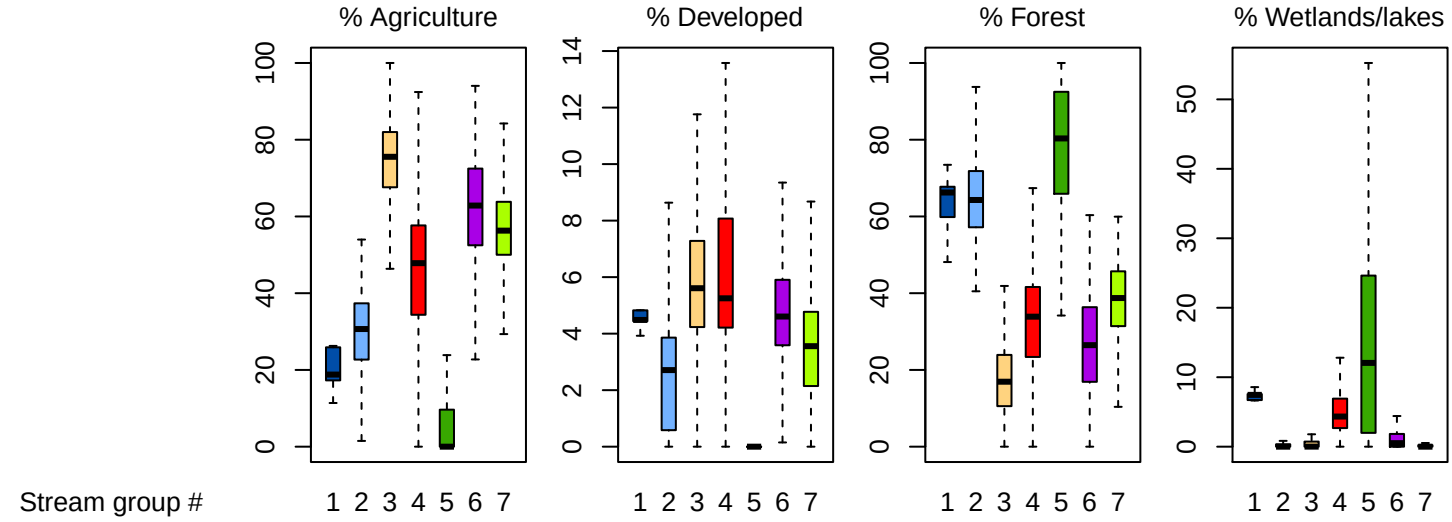
Group 7: Low to moderate flow for the watershed with predominantly cold water temperatures. Moderate to high agriculture with moderate slopes for the watershed differentiate this group from the other coldwater streams in **Group 2**. High soil clay content, between 15-20%, and low permeability for the watershed.

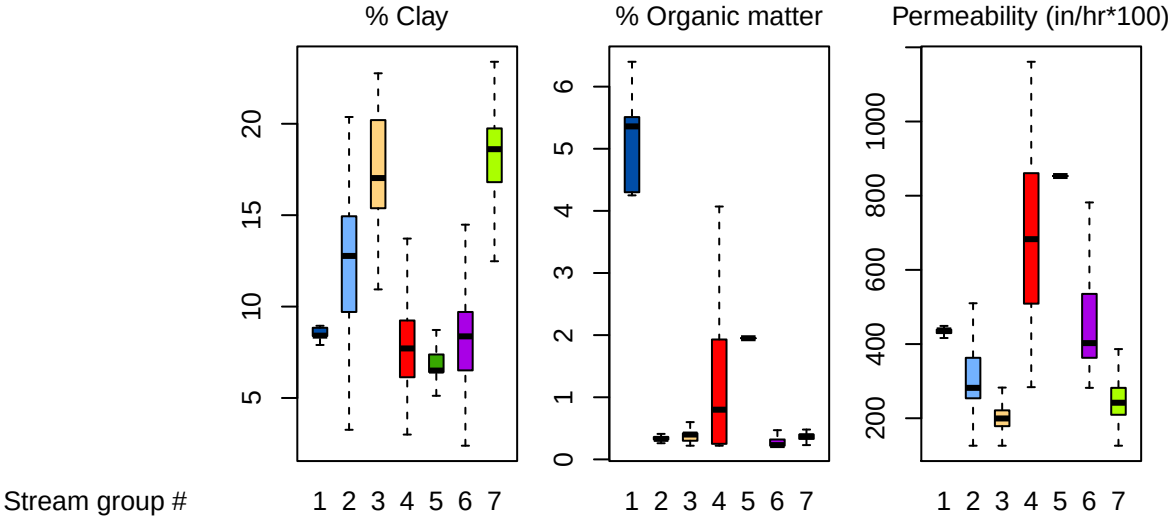
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





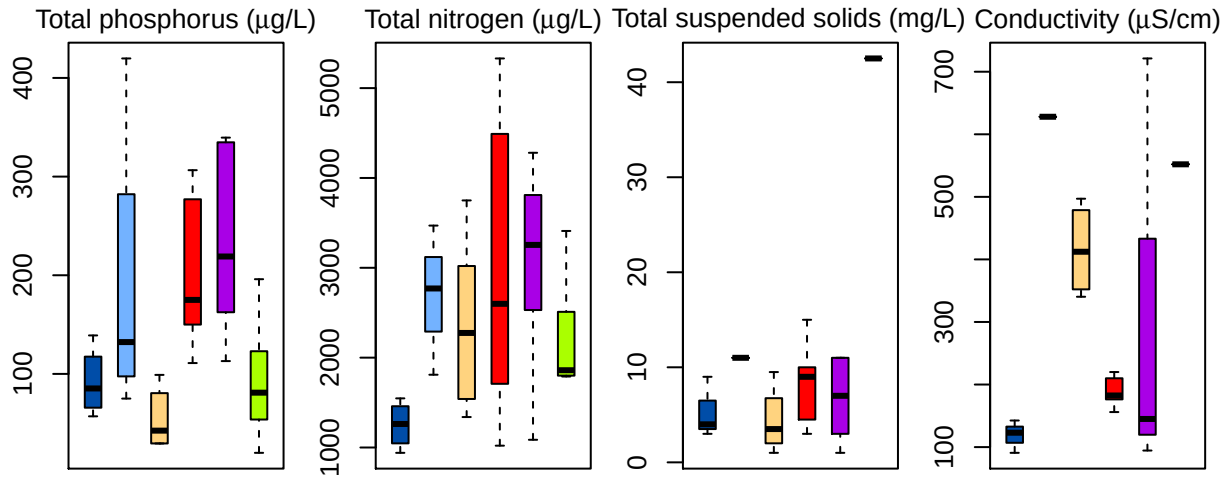
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	6	7
# of stations with data	4	4	6	7	7	7

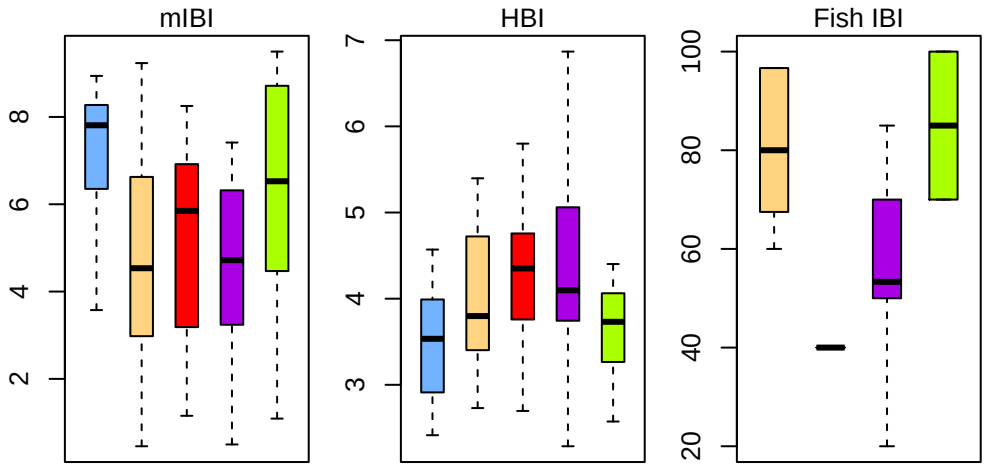
Stream group #	1	2	3	4	6	7
# of stations with data	4	3	6	8	6	5

Stream group #	1	2	3	4	6	7
# of stations with data	3	1	4	7	6	1

Stream group #	1	2	3	4	6	7
# of stations with data	3	1	4	7	3	1

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	2	3	4	6	7
# of stations with data	13	11	14	14	11

Stream group #	2	3	4	6	7
# of stations with data	13	11	14	14	11

Stream group #	3	4	6	7
# of stations with data	6	1	5	2

Targeted Watershed Site Selection Tool

Eau Claire River

TWSST watershed ID: 07050006
HUC 8's included: 07050006
DNR District: West Central, Northern
Area: 883 square miles
Total stream length: 1589 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	2.6	0.10	19.9	0.15
Water temperature (°C)	21.2	21.4	21.7	21.8
Slope (degrees)	2.8	2.2	4.0	2.6
Percent agriculture	48	53	43	45
Percent developed	4	4	6	4
Percent forest	44	38	45	42
Percent wetlands/lakes	1.9	0.5	3.6	0.6
Percent soil clay content	12	12	15	14
Percent soil organic matter content	1	1	4	2
Soil permeability (in/hour * 100)	329	332	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with cool to warm water temperatures, overall the warmest in the watershed.

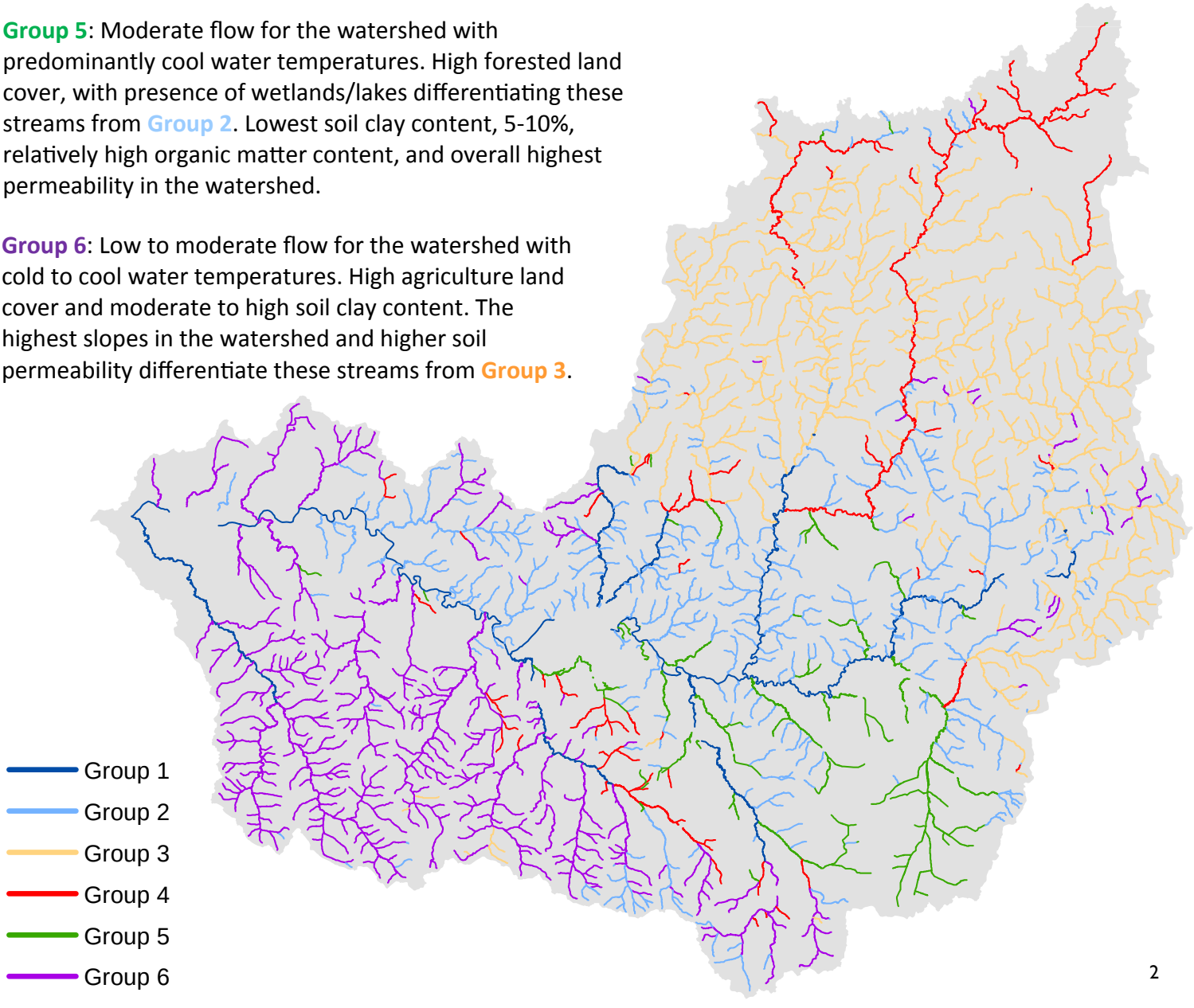
Group 2: Lowest flow in the watershed with cold to cool water temperatures, overall the coldest in the watershed. Highest forested land cover, generally greater than 70%.

Group 3: Low to moderate flow for the watershed with cold to cool water temperatures. Highest agriculture in the watershed, generally greater than 70%. Highest soil clay content, up to 20%, and lowest permeability in the watershed.

Group 4: Moderate flow for the watershed with predominantly cool water temperatures. Variable land cover. Intermediate flow levels plus relatively high soil organic matter content and low permeability distinguish the group from the others.

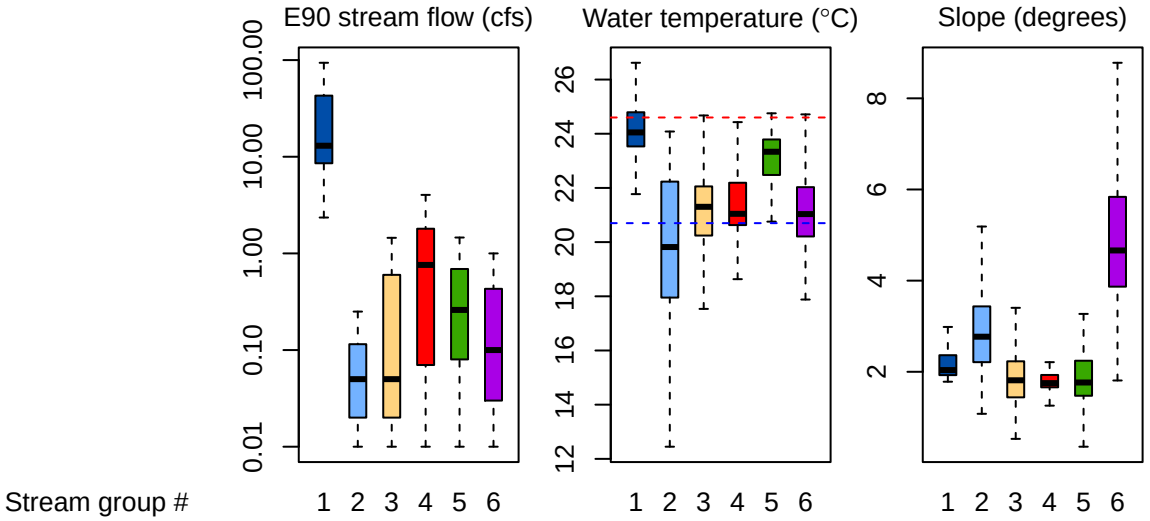
Group 5: Moderate flow for the watershed with predominantly cool water temperatures. High forested land cover, with presence of wetlands/lakes differentiating these streams from **Group 2**. Lowest soil clay content, 5-10%, relatively high organic matter content, and overall highest permeability in the watershed.

Group 6: Low to moderate flow for the watershed with cold to cool water temperatures. High agriculture land cover and moderate to high soil clay content. The highest slopes in the watershed and higher soil permeability differentiate these streams from **Group 3**.

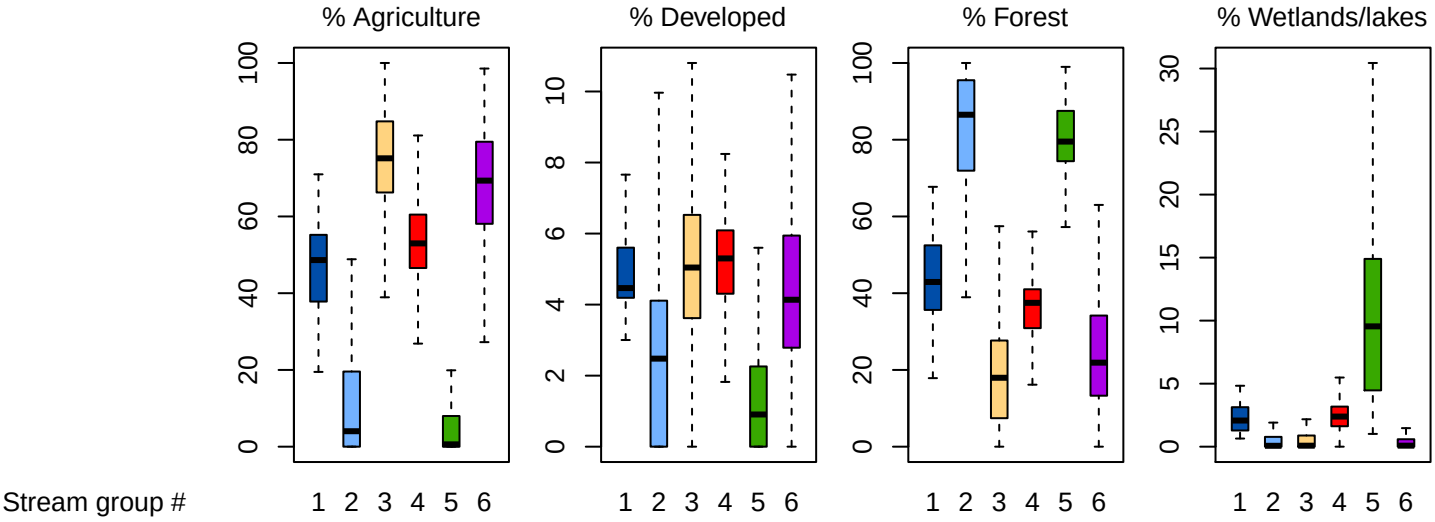


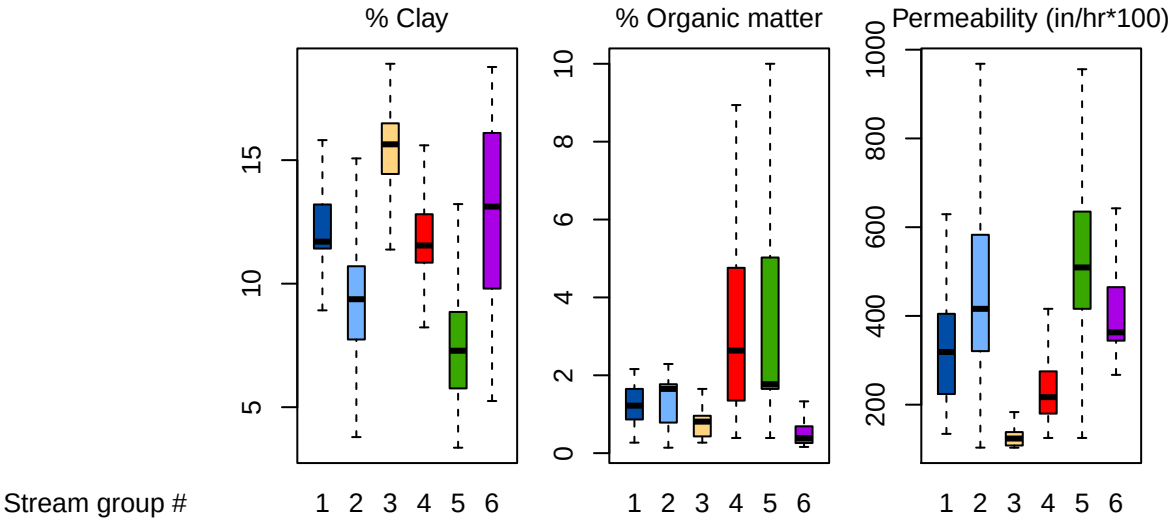
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





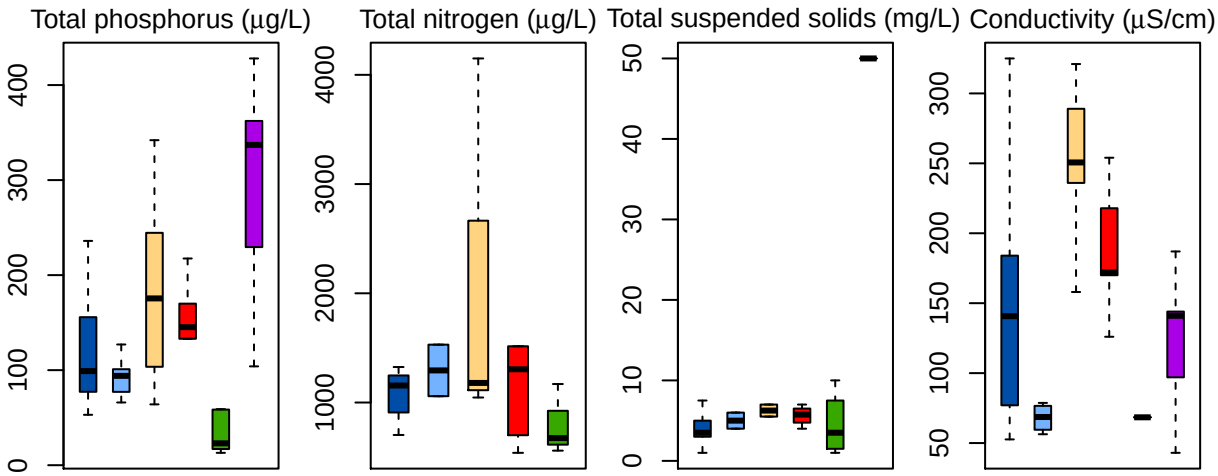
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

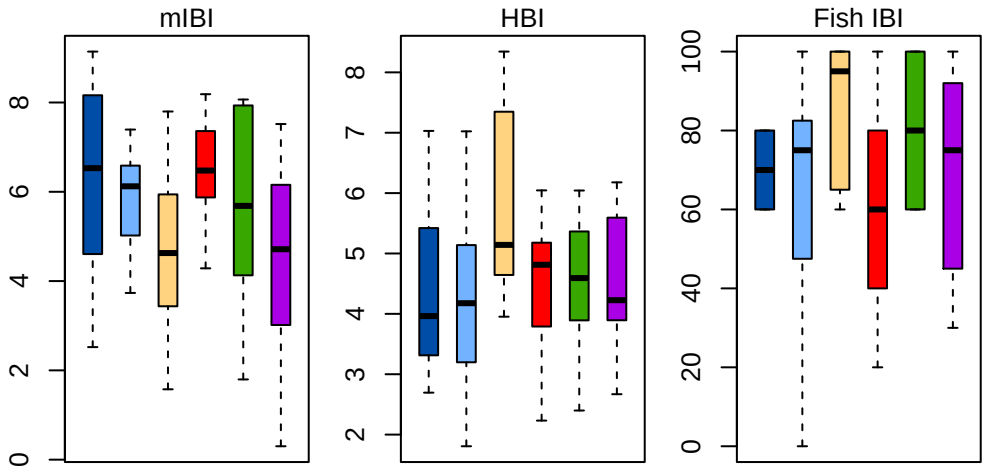
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5	6		1	2	3	4	5		1	2	3	4	5	6		1	2	3	4	5	6
# of stations with data	11	5	12	6	5	7		8	2	3	6	4		9	2	2	4	4	1		6	4	10	5	1	6

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	6		1	2	3	4	5	6		1	2	3	4	5	6		
# of stations with data	12	13	21	11	6	20		12	13	21	11	6	20		2	11	5	3	2	12		

Targeted Watershed Site Selection Tool

Red Cedar River

TWSST watershed ID: 07050007_E
HUC 8's included: 07050007 (East)
DNR District: Northern, West Central
Area: 1194 square miles
Total stream length: 1522 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	15.0	0.19	19.9	0.15
Water temperature (°C)	21.2	21.1	21.7	21.8
Slope (degrees)	3.7	3.2	4.0	2.6
Percent agriculture	43	46	43	45
Percent developed	5	4	6	4
Percent forest	48	46	45	42
Percent wetlands/lakes	2.7	0.7	3.6	0.6
Percent soil clay content	10	10	15	14
Percent soil organic matter content	1	1	4	2
Soil permeability (in/hour * 100)	371	335	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

TWSST

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

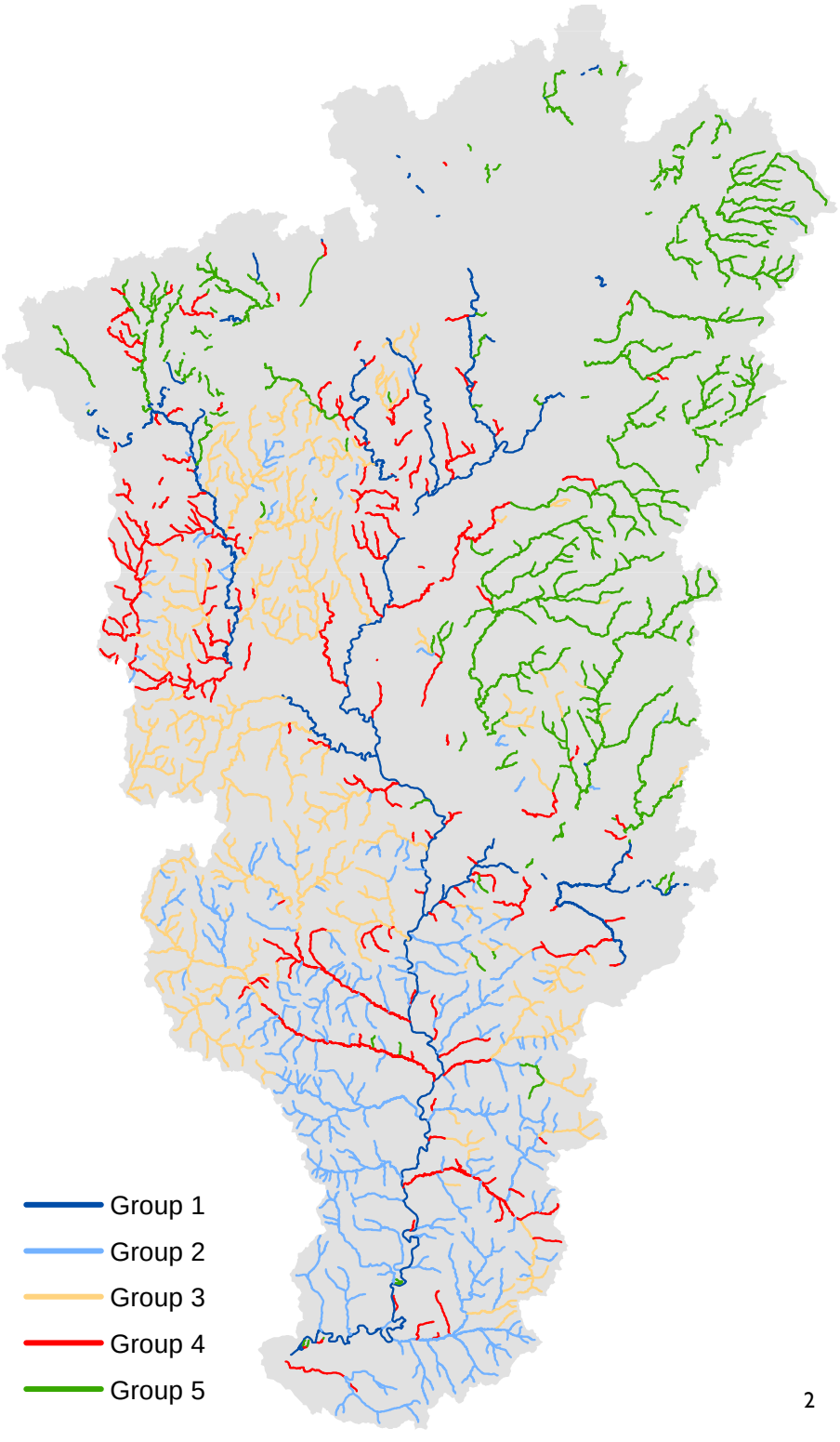
Group 1: Highest flow in the watershed with cool to warm water temperatures, overall the warmest in the watershed. Highest amount of wetlands/lakes in the watershed, between 5-20%.

Group 2: Low to moderate flow for the watershed with predominantly cold water temperatures, overall the coldest in the watershed. Mix of agriculture and forested land cover, with the highest slopes in the watershed, generally greater than 5 degrees. Lowest amount of wetlands/lakes in the watershed.

Group 3: Low to moderate flow for the watershed with cold to cool water temperatures. Highest agriculture land cover, generally greater than 60%, and highest soil clay content in the watershed, generally between 10-15%. Fewer wetlands/lakes and lower permeability differentiate these streams from **Group 4**.

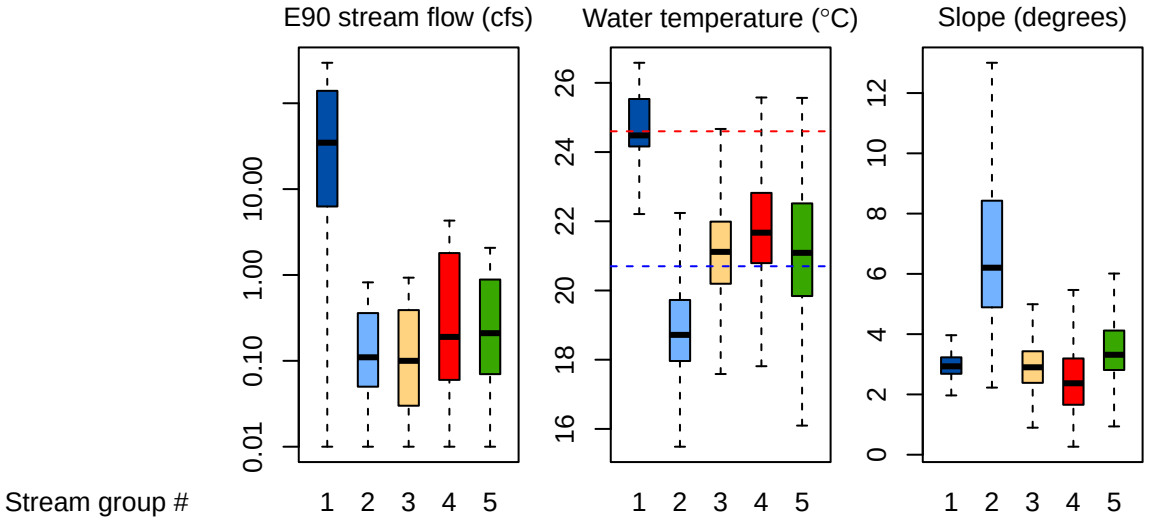
Group 4: Low to moderate flow for the watershed with variable water temperatures. High agriculture land cover and moderate to high soil clay content. More wetlands/lakes and higher permeability differentiate these streams from **Group 3**.

Group 5: Low to moderate flow for the watershed with variable water temperatures. Least impacted streams in the watershed, with lowest levels of agriculture, generally less than 20%, and developed land cover. Wetlands/ lakes present up to 10%.

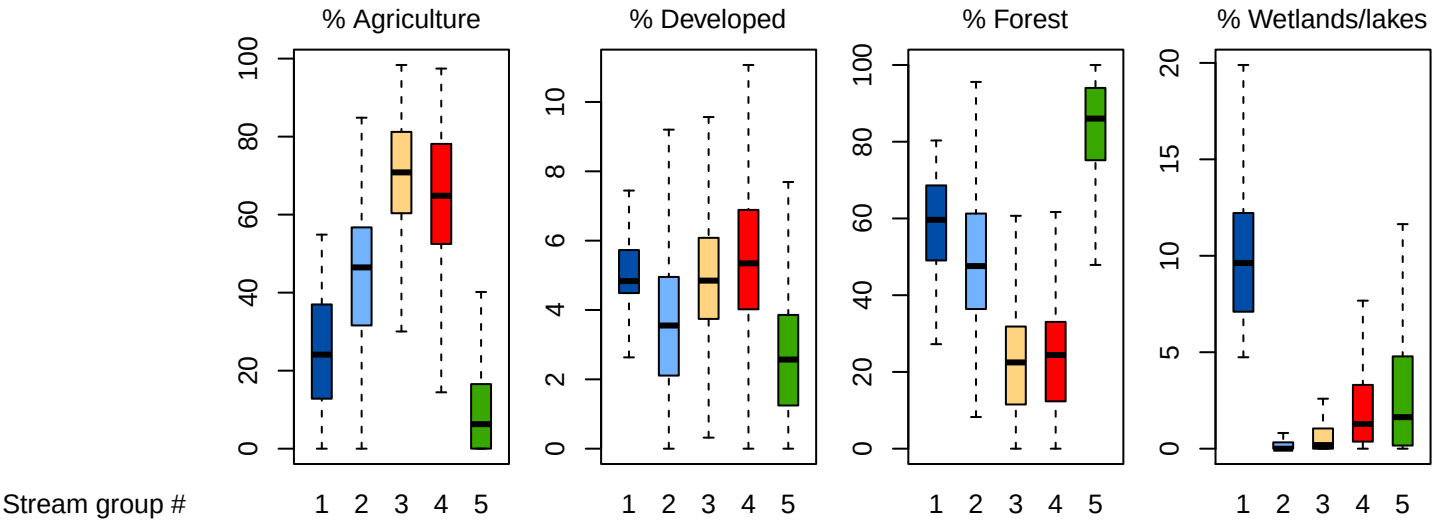


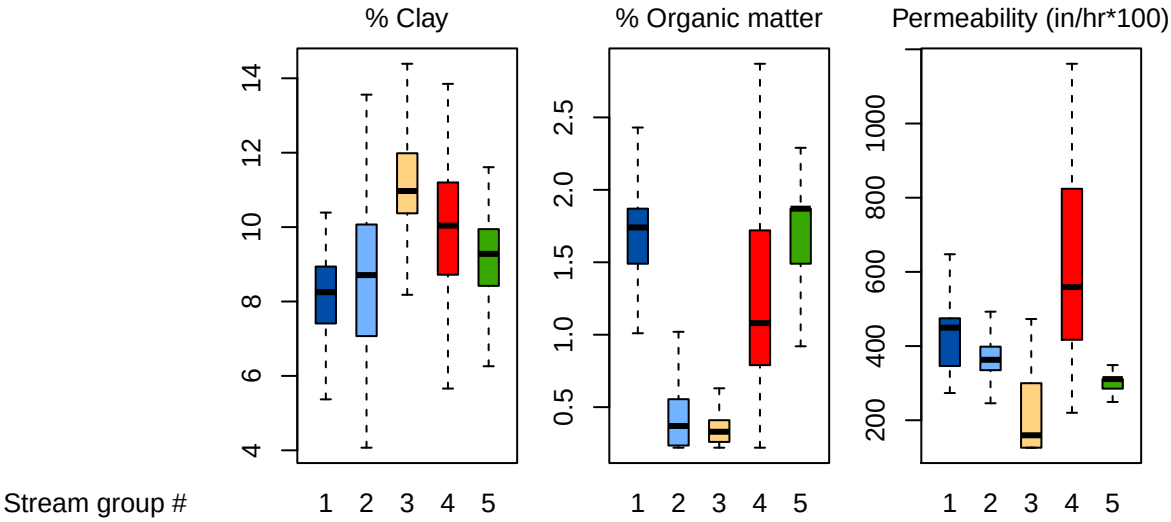
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





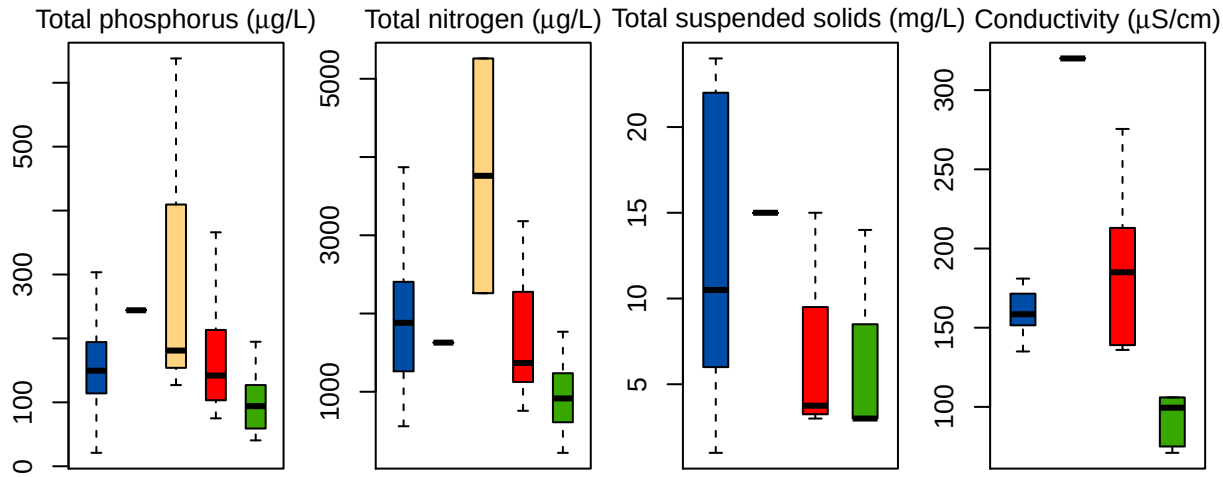
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

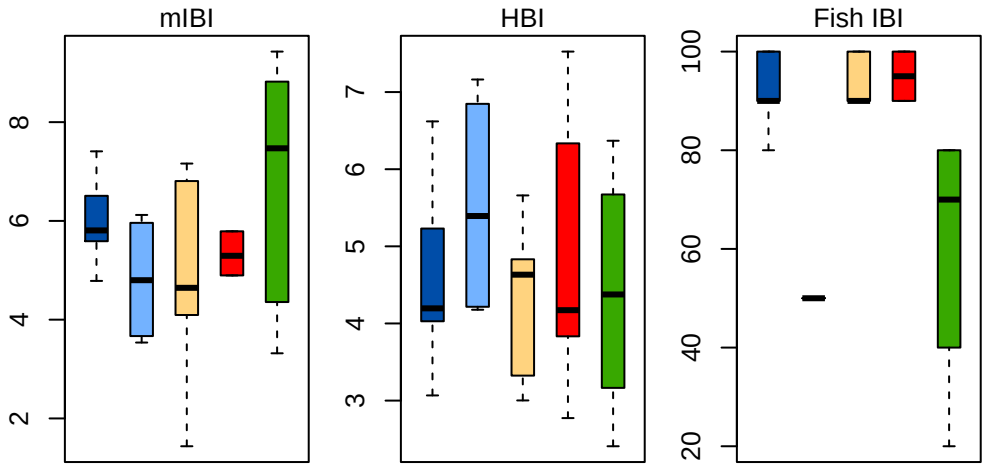
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5	1	2	3	4	5	1	2	4	5	1	3	4	5
# of stations with data	15	1	3	12	21	15	1	2	7	19	10	1	4	3	8	1	5	6

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
# of stations with data	15	4	6	6	12	15	4	6	6	12	5	1	6	2	4

Targeted Watershed Site Selection Tool

Red Cedar and Hay Rivers

TWSST watershed ID: 07050007_W
HUC 8's included: 07050007 (West)
DNR District: West Central, Northern
Area: 697 square miles
Total stream length: 1251 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	14.9	0.13	19.9	0.15
Water temperature (°C)	20.5	20.3	21.7	21.8
Slope (degrees)	5.1	4.8	4.0	2.6
Percent agriculture	58	59	43	45
Percent developed	5	5	6	4
Percent forest	34	32	45	42
Percent wetlands/lakes	1.3	0.2	3.6	0.6
Percent soil clay content	12	11	15	14
Percent soil organic matter content	1	0	4	2
Soil permeability (in/hour * 100)	290	270	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

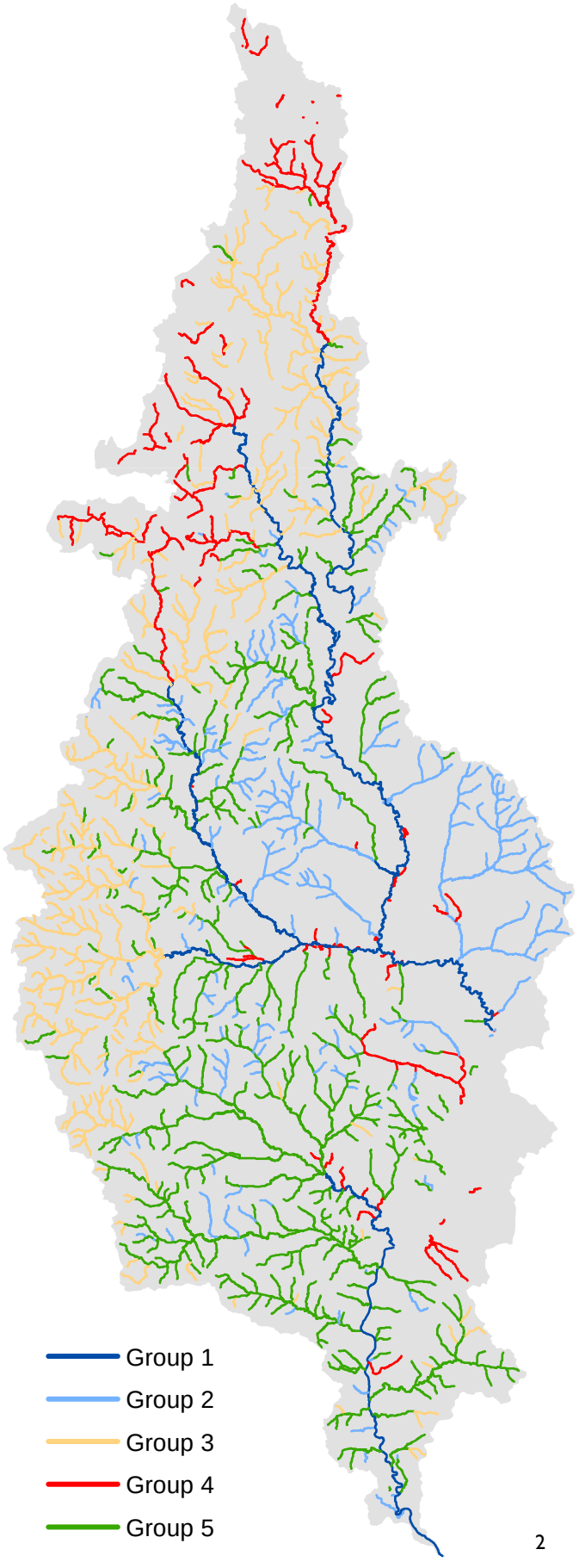
Group 1: Highest flow in the watershed with variable water temperatures. Moderate to high wetlands/lakes, up to 10%.

Group 2: Low flow for the watershed with cold water temperatures, overall the coldest in the watershed. Least impacted streams in the watershed, with agriculture generally less than 40% and developed land cover generally less than 4%. Highest slopes in the watershed, generally greater than 8 degrees.

Group 3: Low flow for the watershed with variable water temperatures, though cooler than **Group 1**. Highest agriculture in the watershed, generally greater than 70%, with low to moderate slopes. High soil clay content for the watershed, generally between 10-15%, with lower permeability than **Group 5**.

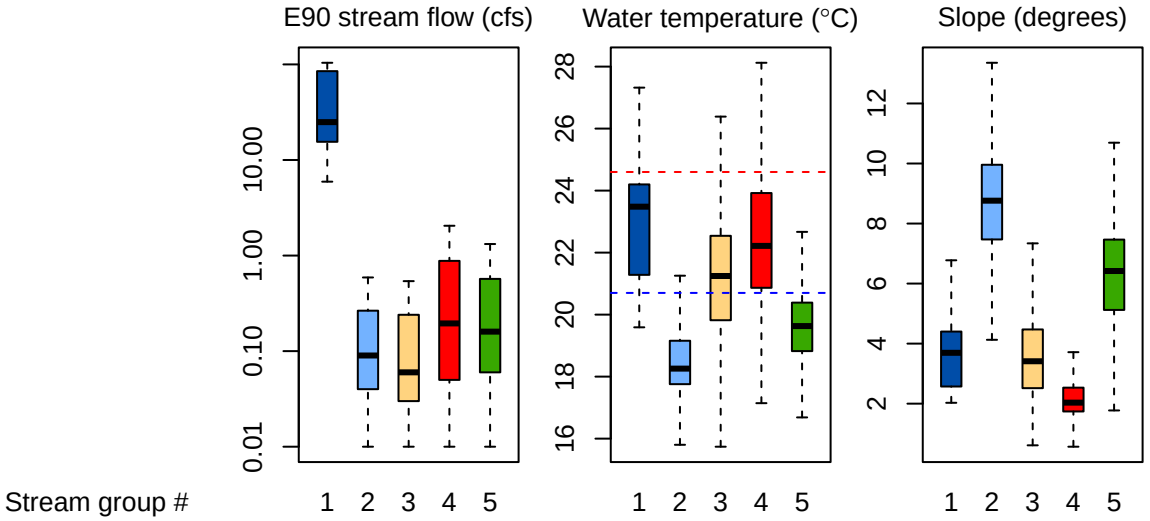
Group 4: Low to moderate flow for the watershed with variable water temperatures. Lowest slopes in the watershed, less than 4 degrees. A mix of agriculture, forest, and developed land cover, with wetlands/lakes present up to 15%. Highly variable permeability and the only group with soil organic matter content greater than 1%.

Group 5: Low to moderate flow for the watershed with predominantly cold water temperatures. A mix of agriculture, forest, and developed land cover, with minimal wetlands/lakes. Variable slopes. Highest soil clay content in the watershed, generally between 10-15%, with higher permeability than **Group 3**.

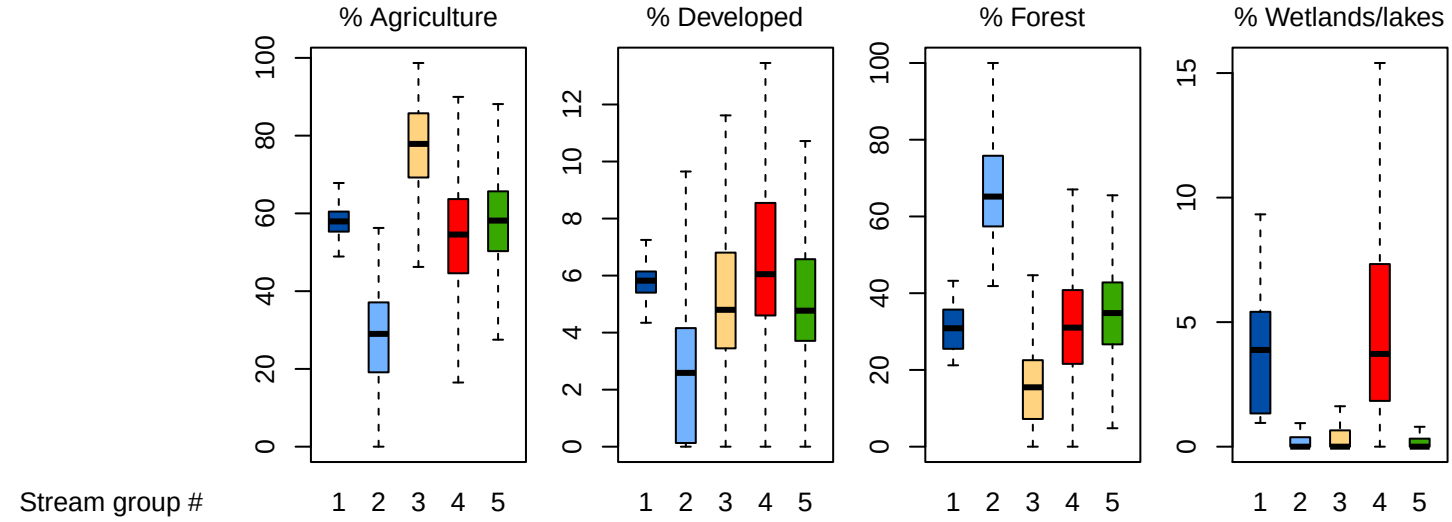


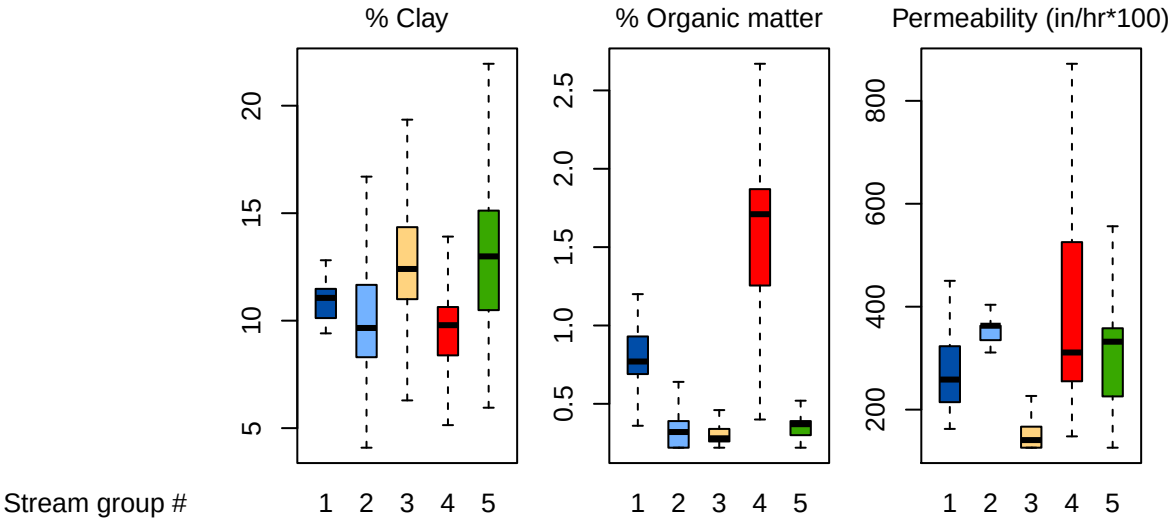
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

<u>Data are provided for general reference only.</u>
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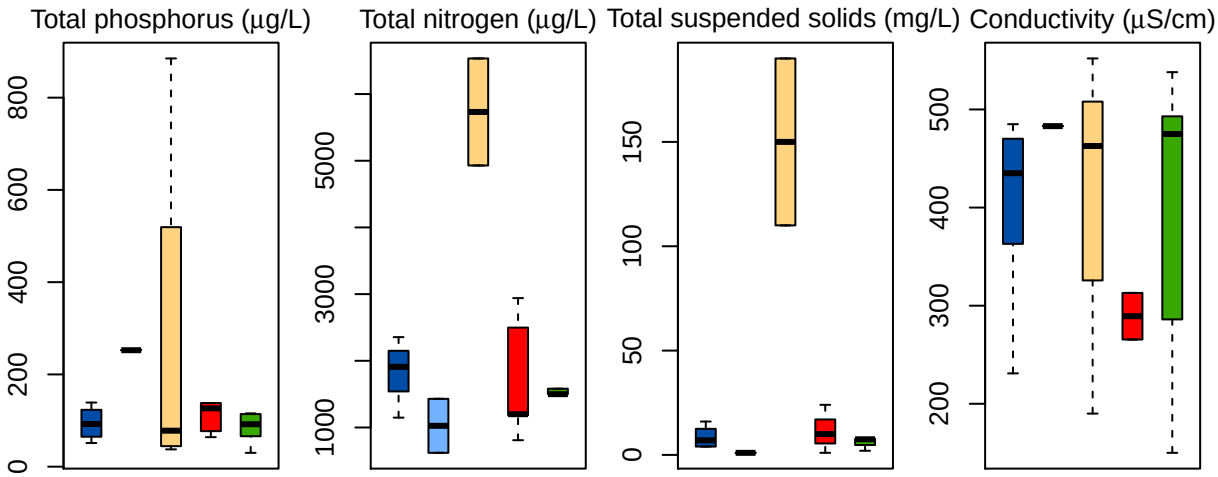
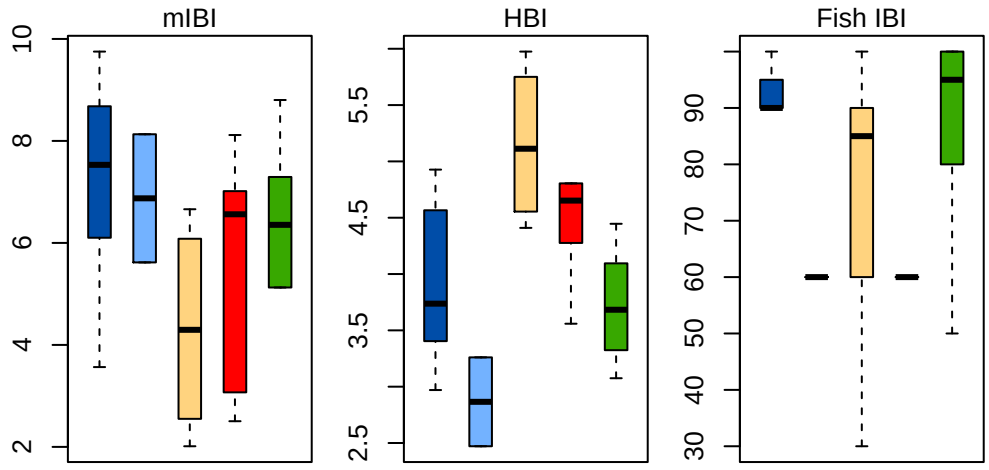


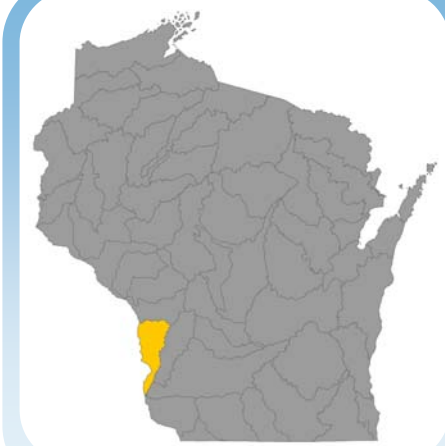
Stream group #	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
# of stations with data	8	1	7	5	11	7	2	2	5	5	7	1	2	3	3	7	1	4	2	7

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
# of stations with data	11	2	4	5	14	11	2	4	5	14	7	1	10	1	18					



Targeted Watershed Site Selection Tool

Coon and Bad Axe Rivers

TWSST watershed ID: 07060001
HUC 8's included: 07060001
DNR District: West Central
Area: 674 square miles
Total stream length: 1492 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	4.3	0.20	19.9	0.15
Water temperature (°C)	20.5	20.8	21.7	21.8
Slope (degrees)	10.5	10.8	4.0	2.6
Percent agriculture	53	51	43	45
Percent developed	5	5	6	4
Percent forest	40	43	45	42
Percent wetlands/lakes	1.4	0	3.6	0.6
Percent soil clay content	17	17	15	14
Percent soil organic matter content	0	0	4	2
Soil permeability (in/hour * 100)	166	151	353	241

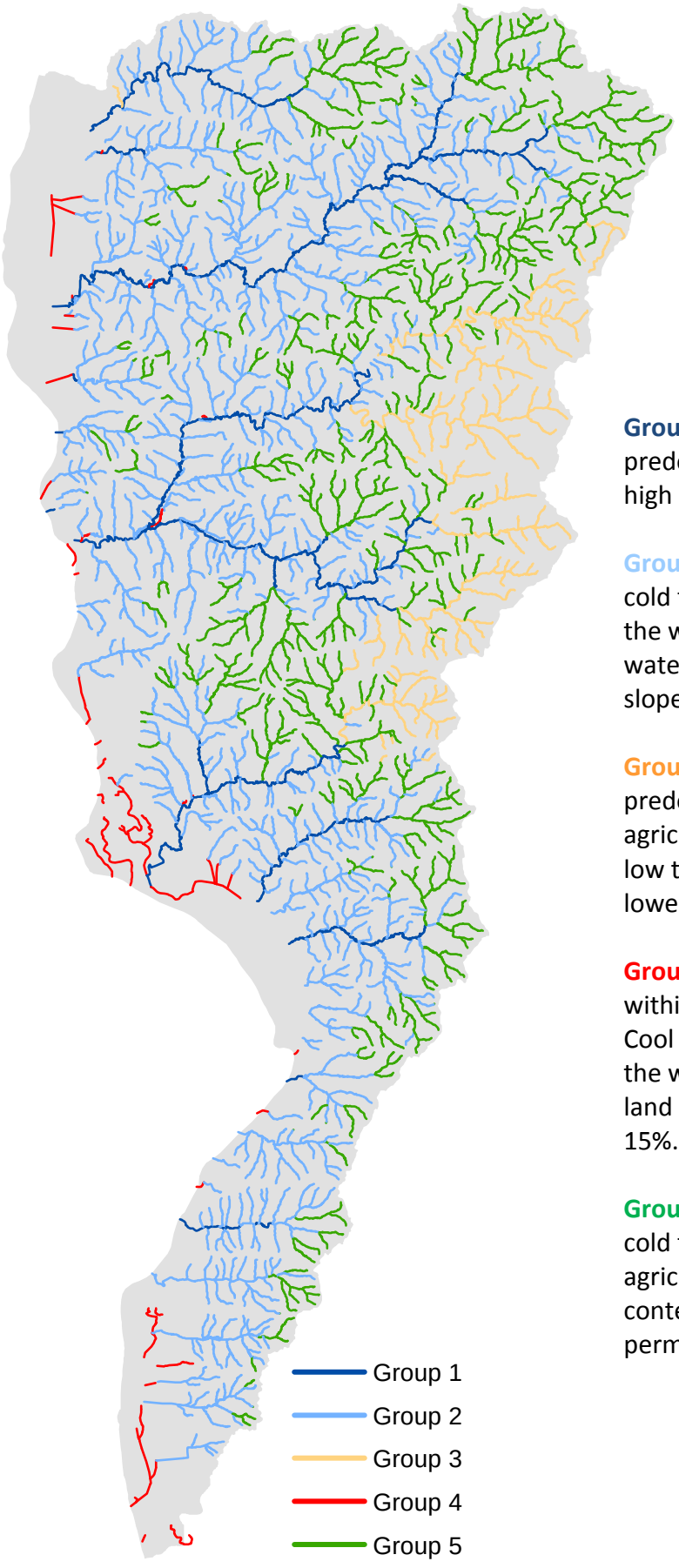
Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

TWSST

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups



Group 1: Highest flow in the watershed with predominantly cool water temperatures. Moderate to high slopes for the watershed.

Group 2: Low to moderate flow for the watershed with cold to cool water temperatures, overall the coldest in the watershed. Highest forest land cover in the watershed, generally greater than 50%, and highest slopes, greater than 10 degrees.

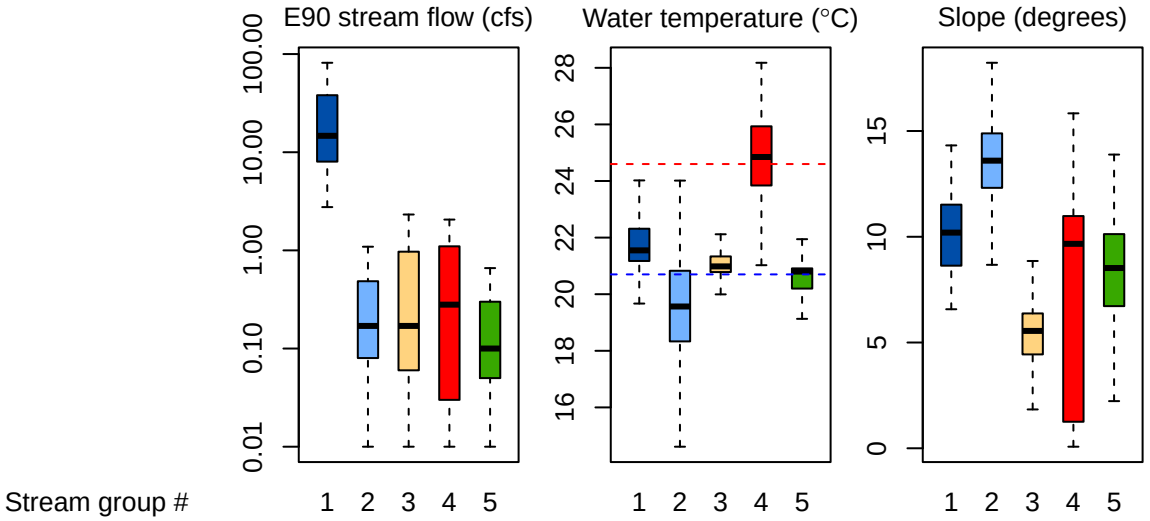
Group 3: Low to moderate flow for the watershed with predominantly cool water temperatures. Highest agriculture and developed land use in the watershed and low to moderate slopes. Moderate soil clay content and lowest permeability.

Group 4: This group is comprised mostly of reaches within the Mississippi River channel or its backwaters. Cool to warm water temperatures, overall the warmest in the watershed. Only group containing wetlands/lakes land cover. Only group with soil clay content less than 15%.

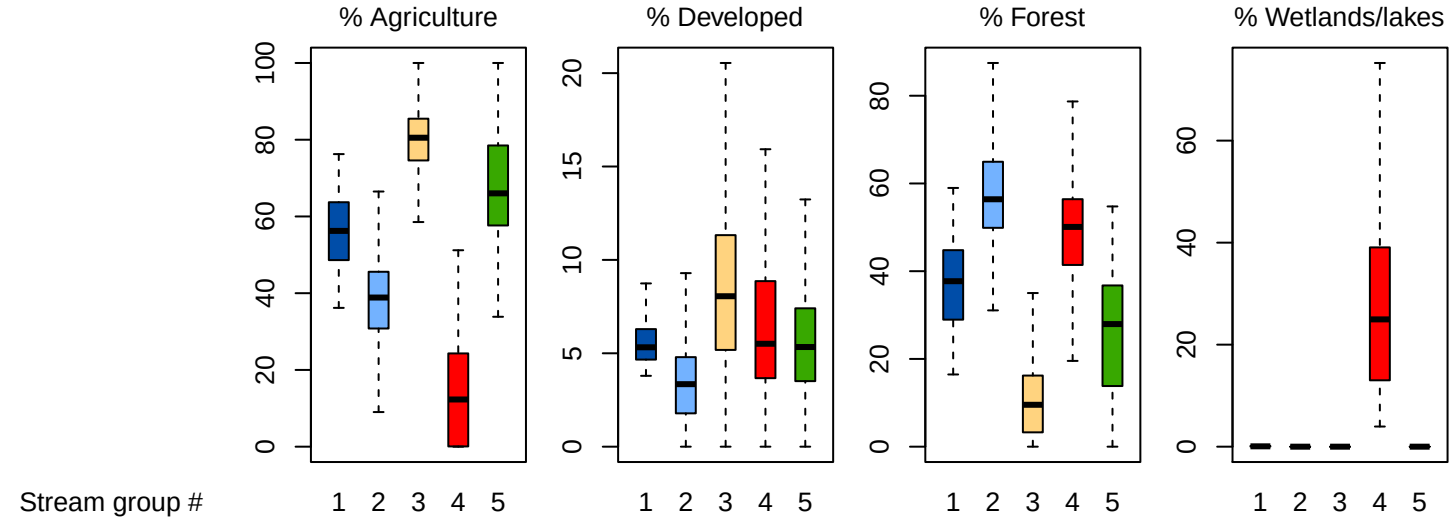
Group 5: Low to moderate flow for the watershed with cold to cool water temperatures. Moderate to high agriculture with moderate to high slopes. High soil clay content for the watershed, greater than 15%, and low permeability.

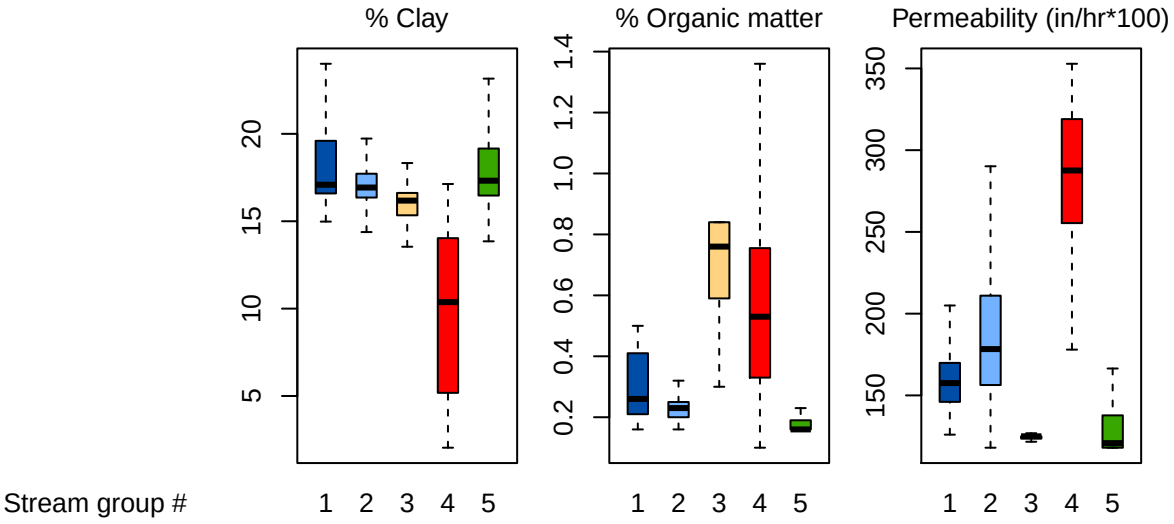
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





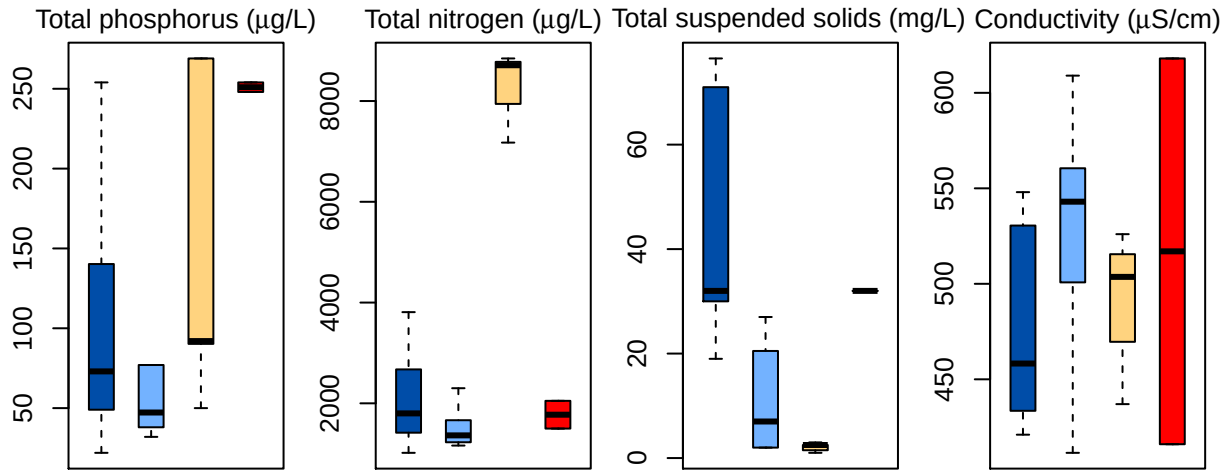
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

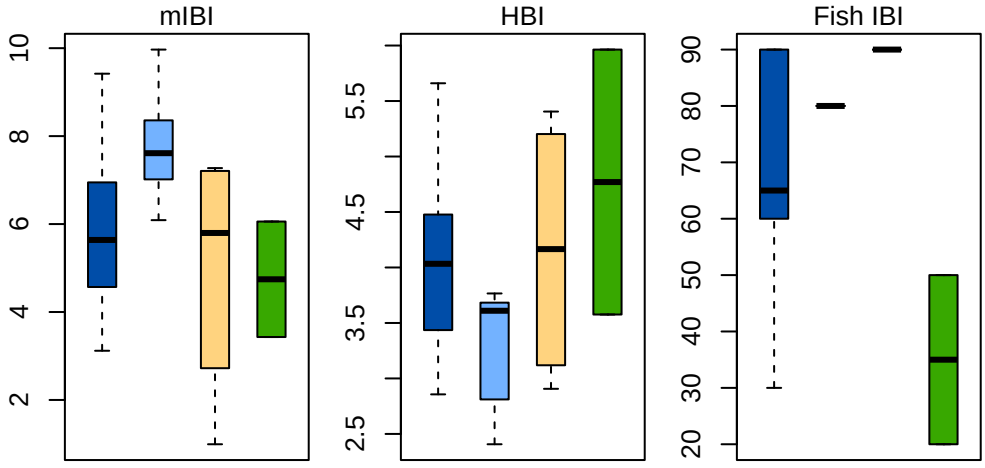
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
# of stations with data	9	9	5	2	7	8	3	2	5	6	5	1	6	7	4	2

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	5	1	2	3	5	1	2	3	5
# of stations with data	14	9	4	2	14	9	4	2	10	2	1	2

Targeted Watershed Site Selection Tool

Grant and Platte Rivers

TWSST watershed ID: 07060003
HUC 8's included: 07060003
DNR District: South Central
Area: 793 square miles
Total stream length: 1869 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	4.4	0.13	19.9	0.15
Water temperature (°C)	20.9	21.2	21.7	21.8
Slope (degrees)	6.2	6	4.0	2.6
Percent agriculture	78	82	43	45
Percent developed	6	5	6	4
Percent forest	15	10	45	42
Percent wetlands/lakes	0.6	0	3.6	0.6
Percent soil clay content	25	26	15	14
Percent soil organic matter content	0	0	4	2
Soil permeability (in/hour * 100)	138	128	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

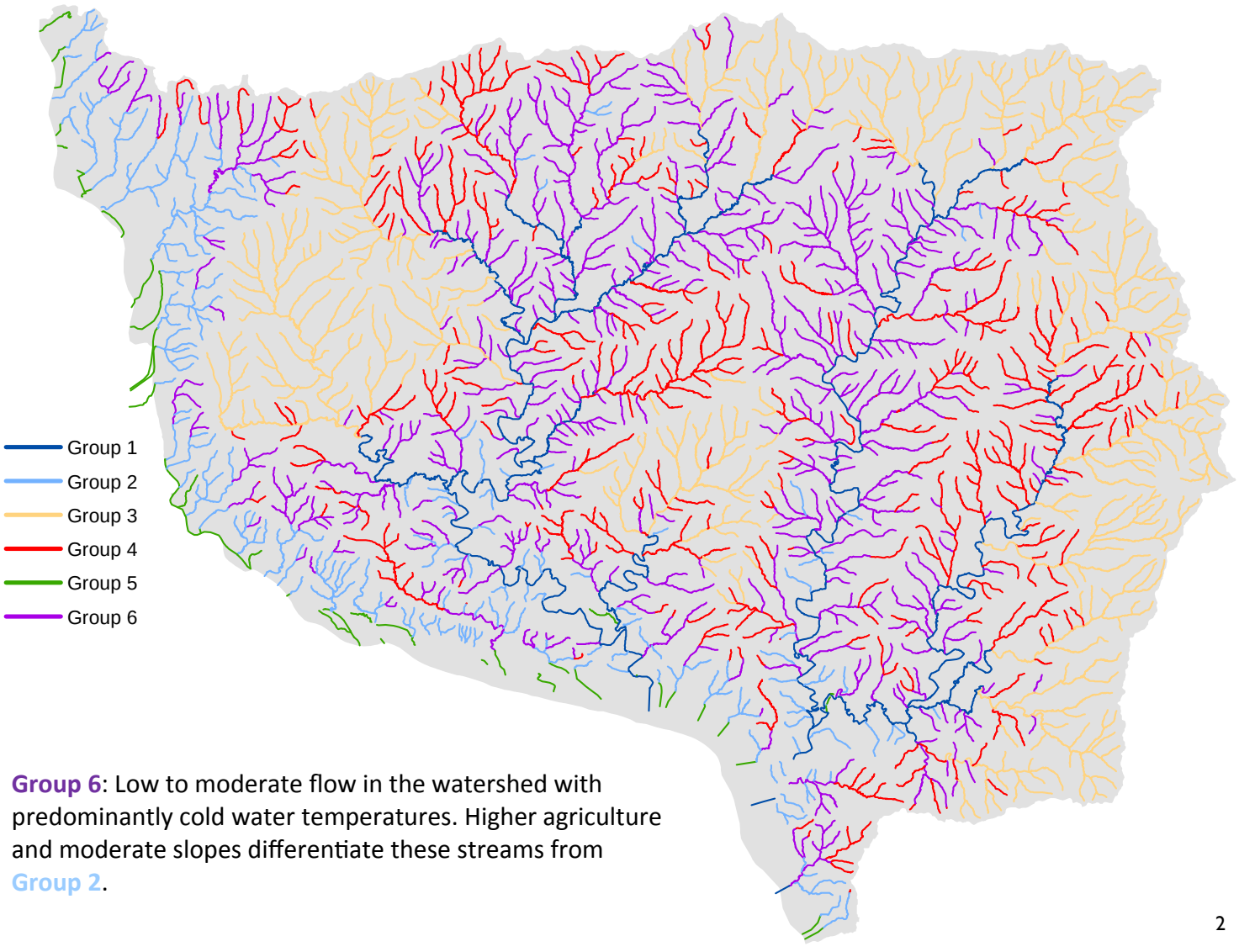
Group 1: Highest flow in the watershed with cool water temperatures.

Group 2: Low to moderate flow for the watershed with cold water temperatures, overall the coldest in the watershed. One of two relatively least impacted groups in the watershed, with agriculture generally less than 60%. Highest slopes in the watershed, generally greater than 9 degrees. Lowest soil clay content and highest permeability in the watershed (excluding Mississippi River reaches in **Group 5**).

Group 3: Low to moderate flow in the watershed with cool water temperatures. Highest agriculture in the watershed, greater than 80% throughout. Lowest slopes in the watershed, generally less than 5 degrees. High soil clay content and low permeability.

Group 4: Low to moderate flow in the watershed with cool water temperatures. High agriculture for the watershed and highest developed land cover, generally between 5-10%. Low to moderate slopes. Highest soil clay content in the watershed, generally between 25-30%, and low permeability.

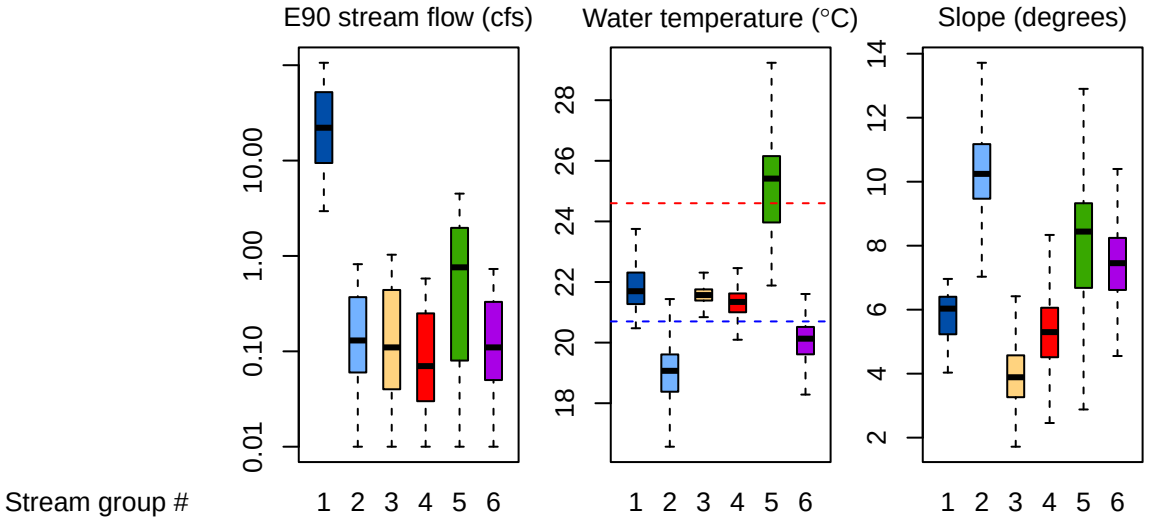
Group 5: Moderate flow for the watershed with cool to warm water temperatures, overall the warmest in the watershed. This group is comprised mostly of reaches within the Mississippi River channel or its backwaters.



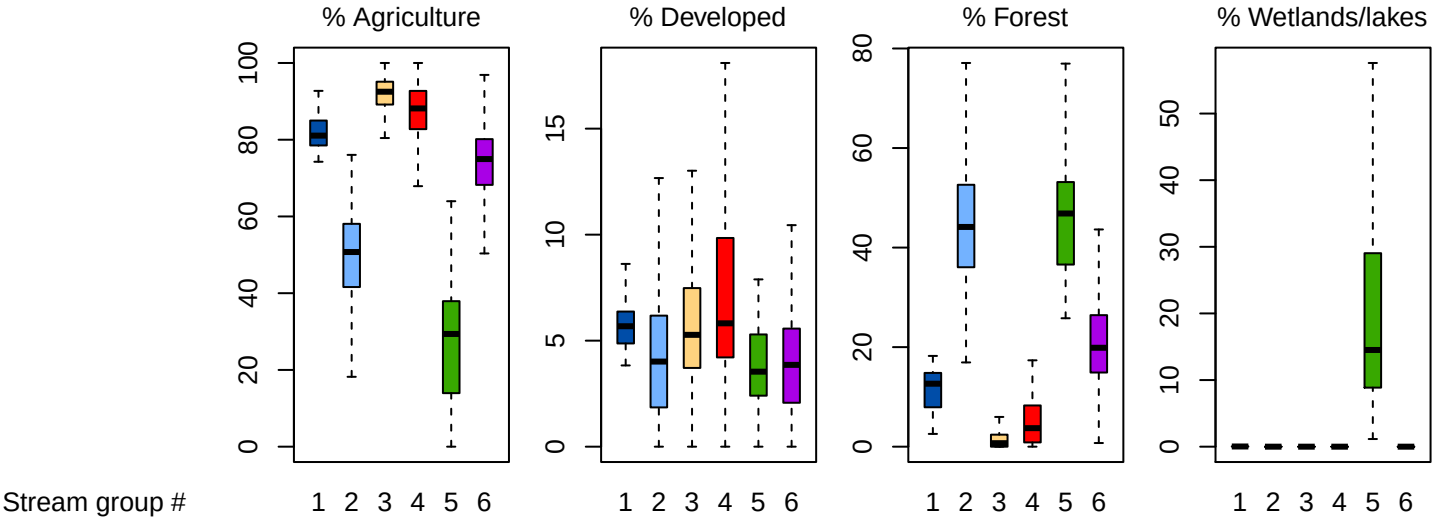
Group 6: Low to moderate flow in the watershed with predominantly cold water temperatures. Higher agriculture and moderate slopes differentiate these streams from **Group 2**.

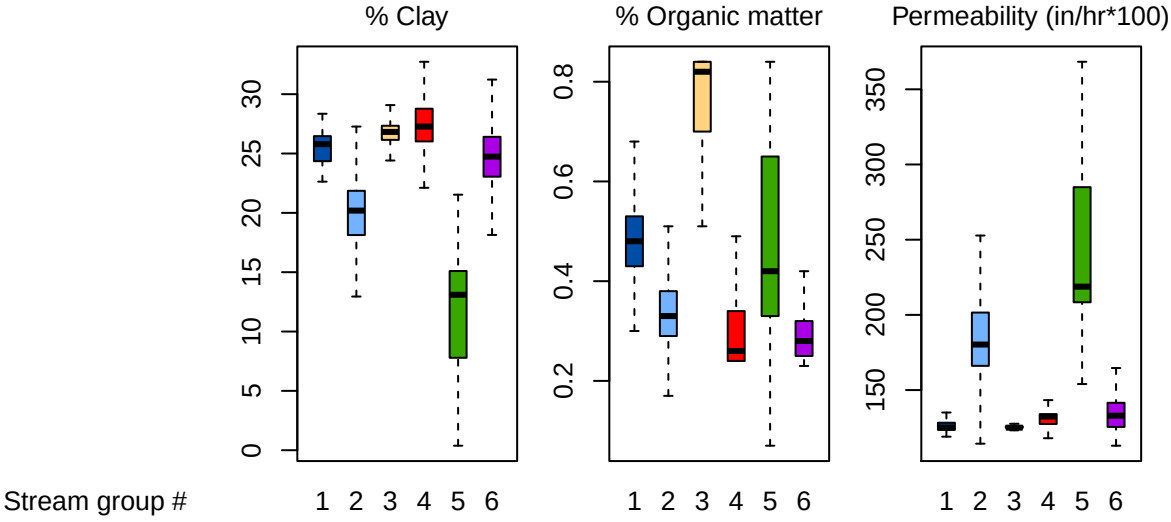
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





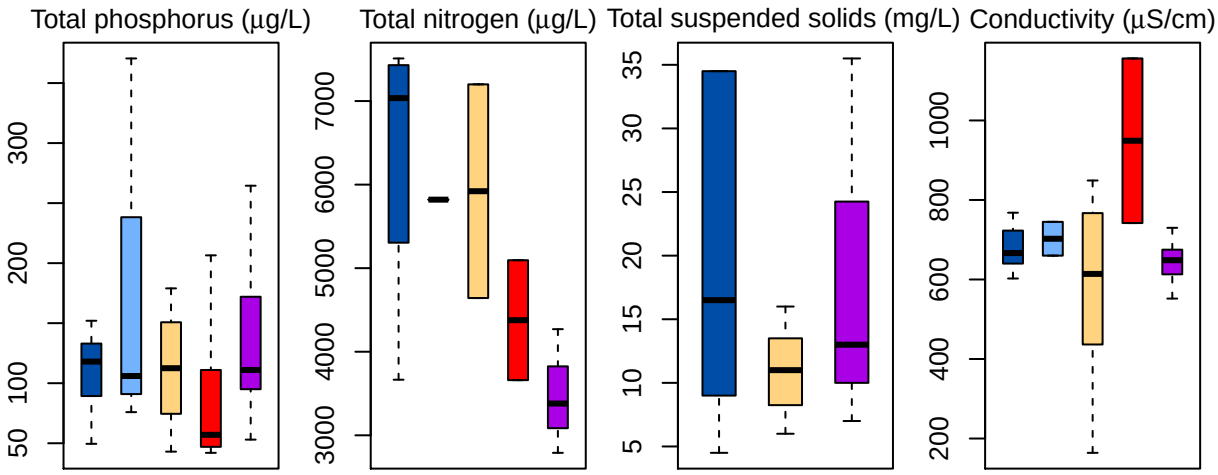
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

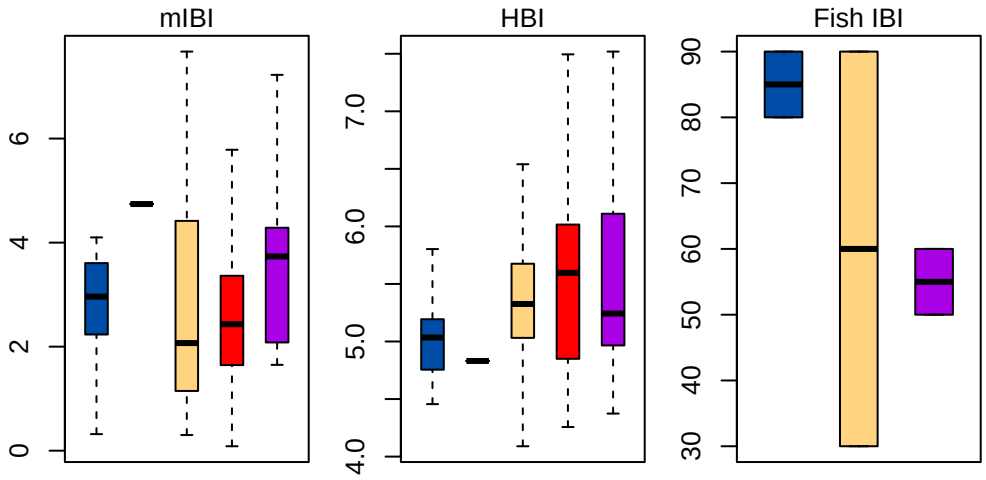
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	6	1	2	3	4	6	1	3	6	1	2	3	4	6		
# of stations with data	13	3	15	5	7	8	1	2	2	3	9	7	3	9	2	7	2	6		

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	6	1	2	3	4	6	1	3	6							
# of stations with data	24	1	43	16	10	24	1	43	16	10	2	2	2							

Targeted Watershed Site Selection Tool

Galena River

TWSST watershed ID: 07060005
HUC 8's included: 07060005
DNR District: South Central
Area: 232 square miles
Total stream length: 592 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	2.5	0.13	19.9	0.15
Water temperature (°C)	21.5	21.6	21.7	21.8
Slope (degrees)	3.8	3.6	4.0	2.6
Percent agriculture	90	93	43	45
Percent developed	6	5	6	4
Percent forest	3	1	45	42
Percent wetlands/lakes	0.1	0	3.6	0.6
Percent soil clay content	25	26	15	14
Percent soil organic matter content	1	1	4	2
Soil permeability (in/hour * 100)	123	127	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow in the watershed. Cool water temperatures, but relatively some of the warmer streams in the watershed. High agriculture and moderate slope.

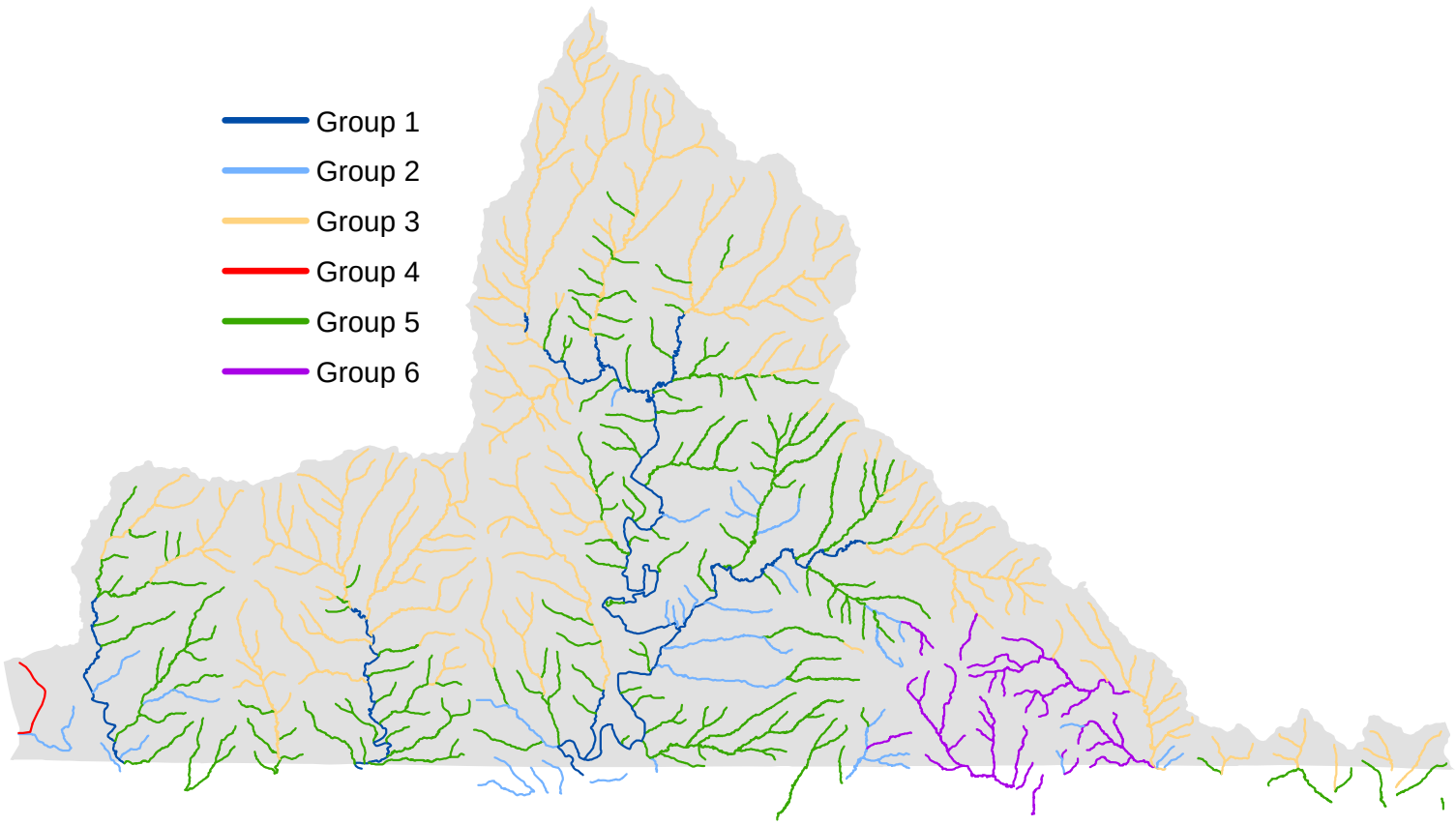
Group 2: Low to moderate flow for the watershed. Predominantly cold water temperatures along with highest slopes in the watershed. Relatively least impacted streams as this is the only group with less than 80% agriculture and greater than 10% forest. Only group with soil clay content below 25%.

Group 3: Low to moderate flow for the watershed with cool water temperatures. High agriculture and low to moderate slopes.

Group 4: Contains two reaches within the Mississippi River channel.

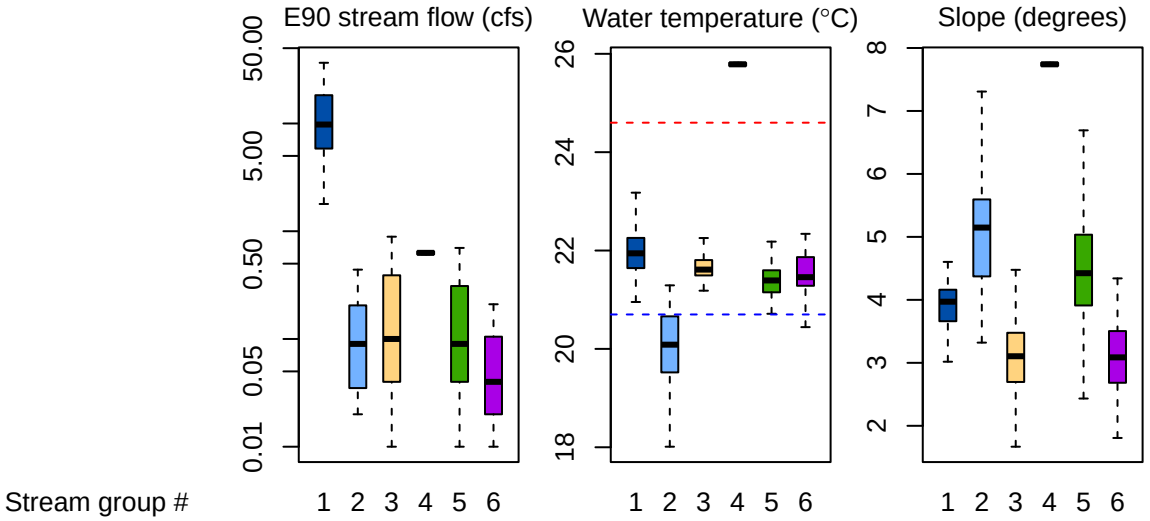
Group 5: Low to moderate flow for the watershed with cool water temperatures. High agriculture but moderate to high slopes differentiate these streams from **Group 3**.

Group 6: Lowest flow in the watershed with cool water temperatures. High agriculture and low to moderate slopes. Lowest soil permeability in the watershed differentiates these streams from **Group 3**.

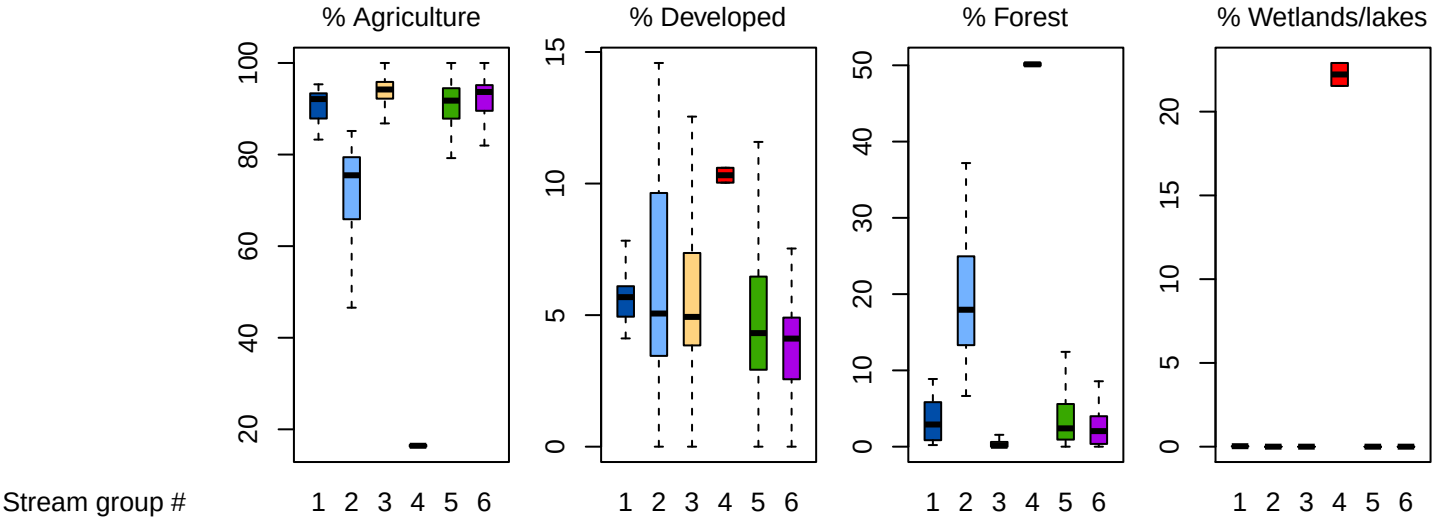


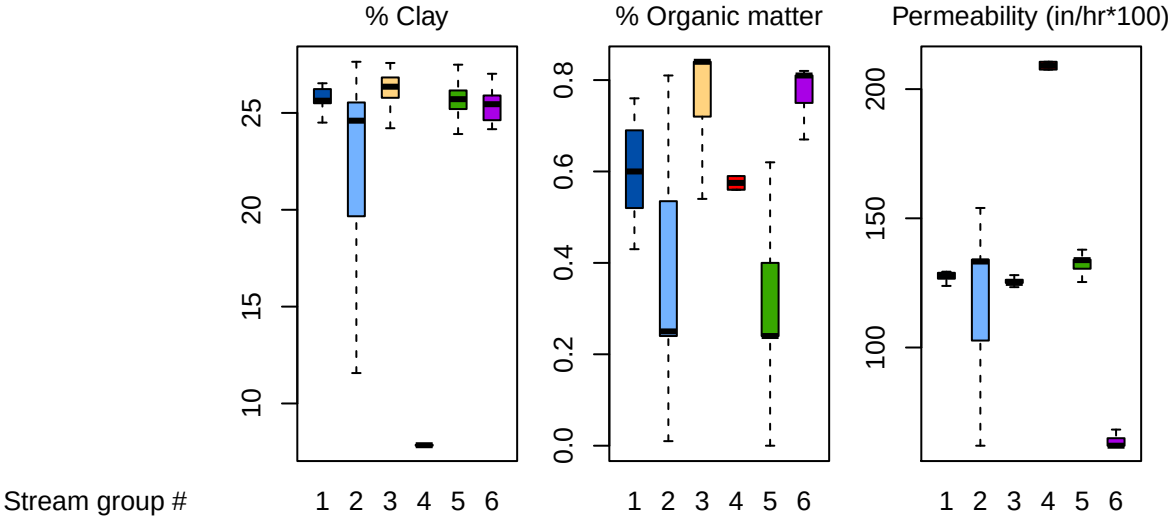
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





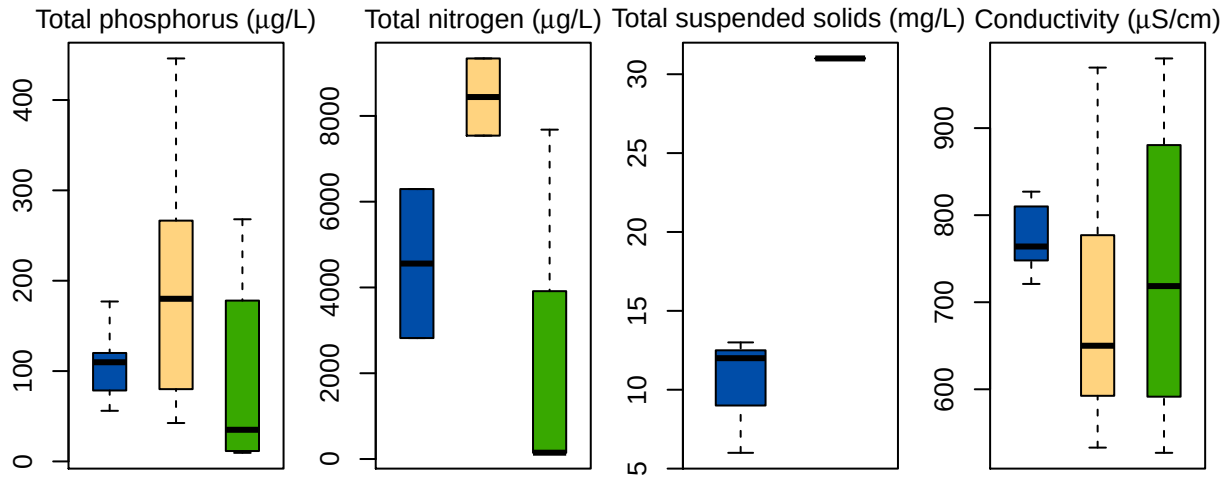
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

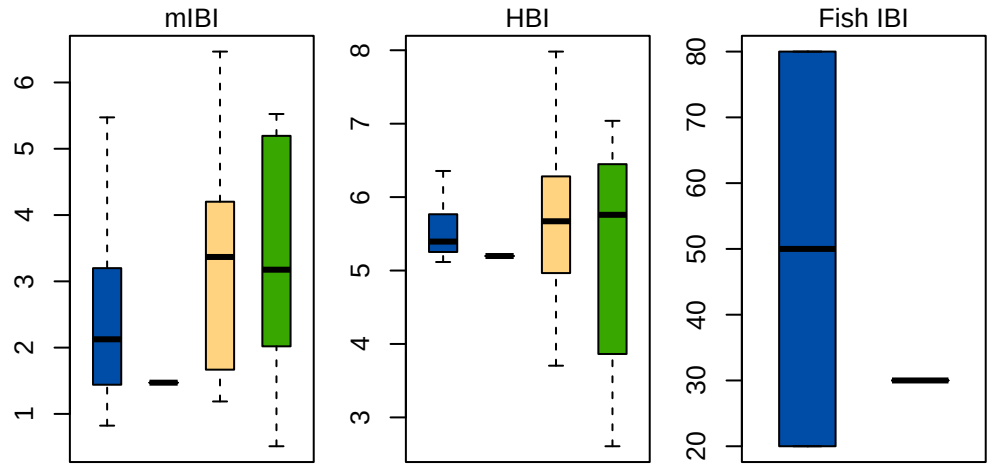
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	3	5	1	3	5	1	5	1	3	5	
# of stations with data	6	7	6	2	2	3	3	1	5	7	4	

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	5	1	2	3	5	1	3		
# of stations with data	12	1	12	8	12	1	12	8	2	1		

Targeted Watershed Site Selection Tool

Upper Wisconsin, Eagle, and Tomahawk Rivers

TWSST watershed ID: 07070001
HUC 8's included: 07070001
DNR District: Northern
Area: 2136 square miles
Total stream length: 1536 miles

Summary statistics for the physical characteristics used in the stream classification. Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	9.5	0.38	19.9	0.15
Water temperature (°C)	23.1	23.1	21.7	21.8
Slope (degrees)	2.4	2.0	4.0	2.6
Percent agriculture	3	0	43	45
Percent developed	4	3	6	4
Percent forest	81	84	45	42
Percent wetlands/lakes	9.7	8.1	3.6	0.6
Percent soil clay content	5	5	15	14
Percent soil organic matter content	9	9	4	2
Soil permeability (in/hour * 100)	611	643	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

TWSST

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with cool to warm water temperatures.

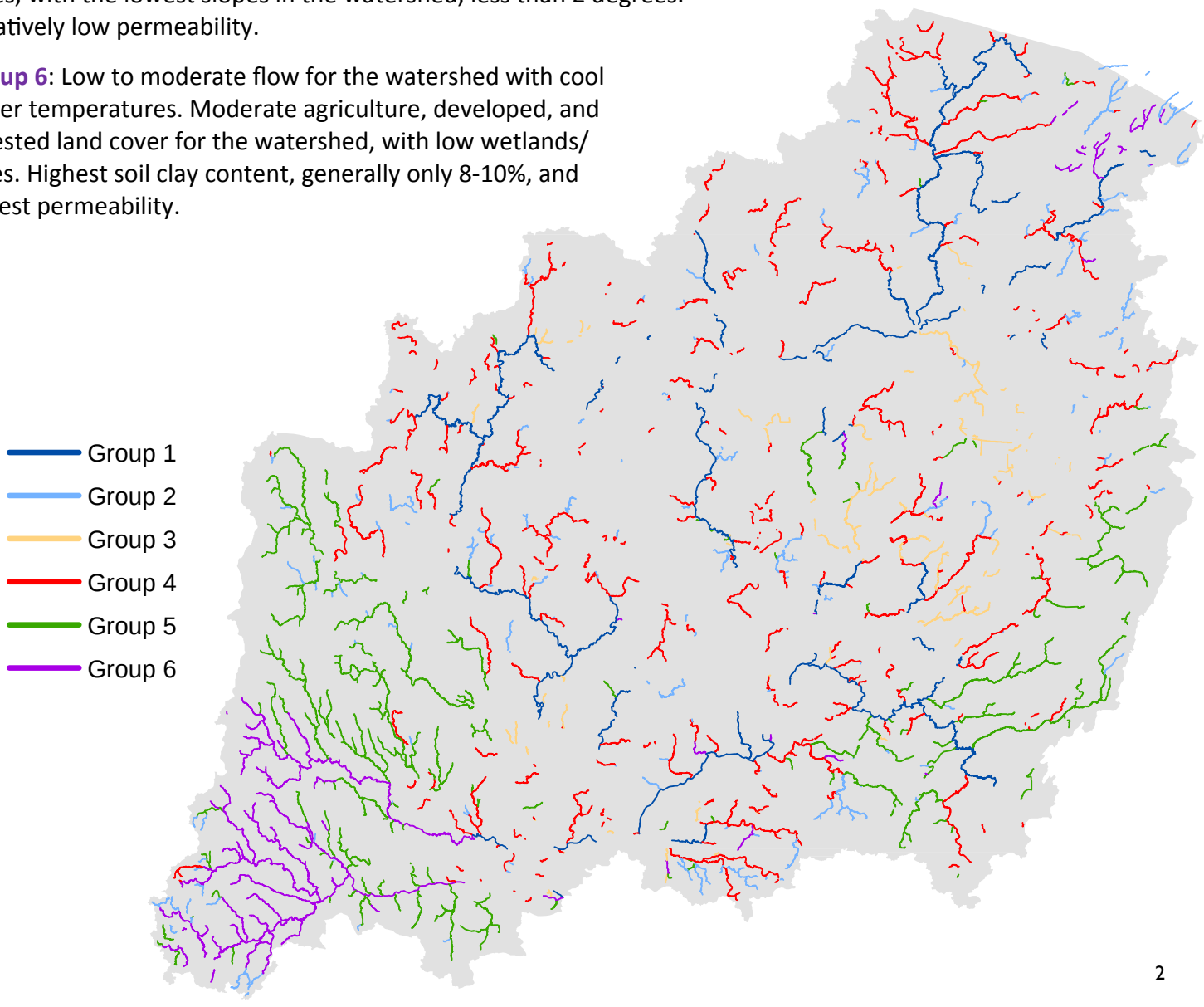
Group 2: Lowest flow in the watershed with cold to cool water temperatures, overall the coldest in the watershed. Highest forested land cover in the watershed, generally greater than 90%, with few wetlands/lakes.

Group 3: Low to moderate flow for the watershed with predominantly cool water temperatures. Lowest forest in the watershed, generally less than 65%, with variable amounts of agriculture, developed, and wetlands/lakes constituting the remaining land cover. Variable soil organic matter content, but includes the highest levels in the watershed, up to 20%.

Group 4: Moderate flow for the watershed with predominantly cool water temperatures. Moderate developed, forested, and wetlands/lakes land cover for the watershed, with low agriculture.

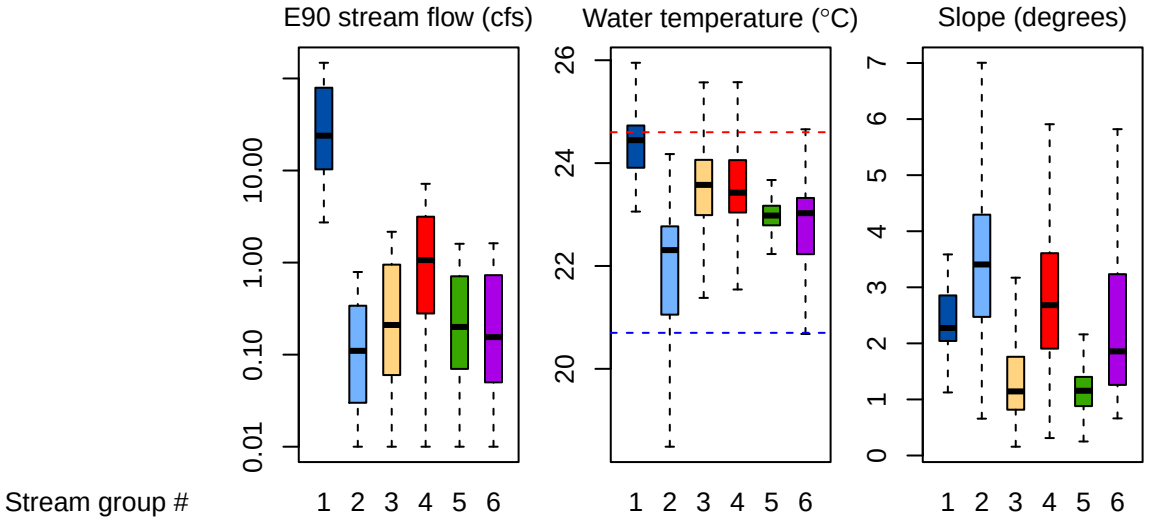
Group 5: Low to moderate flow for the watershed with cool water temperatures. High forested land cover and moderate wetlands/ lakes, with the lowest slopes in the watershed, less than 2 degrees. Relatively low permeability.

Group 6: Low to moderate flow for the watershed with cool water temperatures. Moderate agriculture, developed, and forested land cover for the watershed, with low wetlands/ lakes. Highest soil clay content, generally only 8-10%, and lowest permeability.

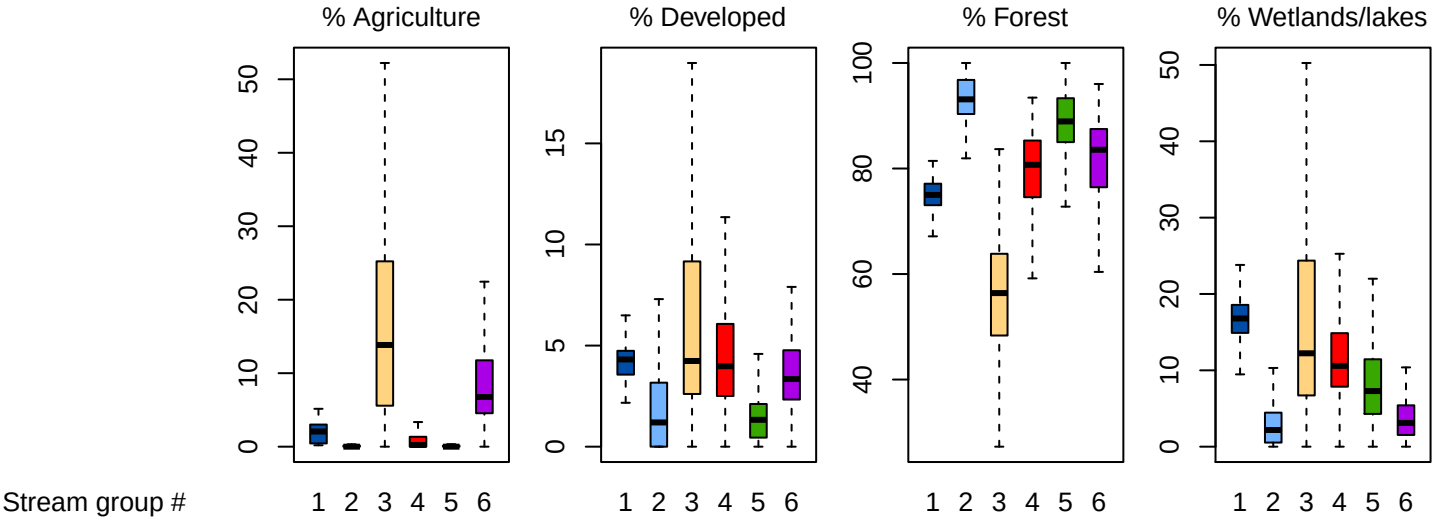


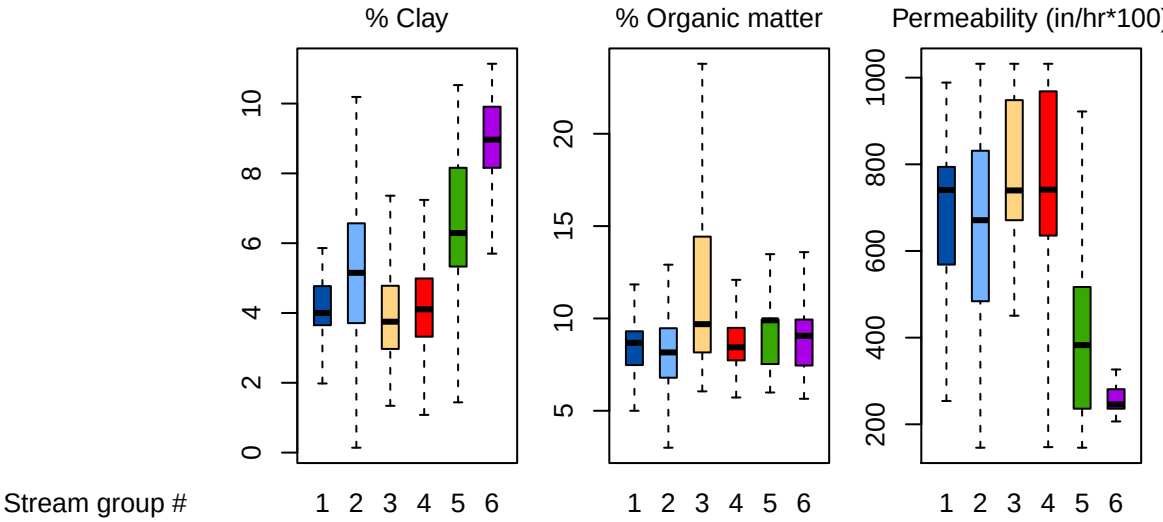
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





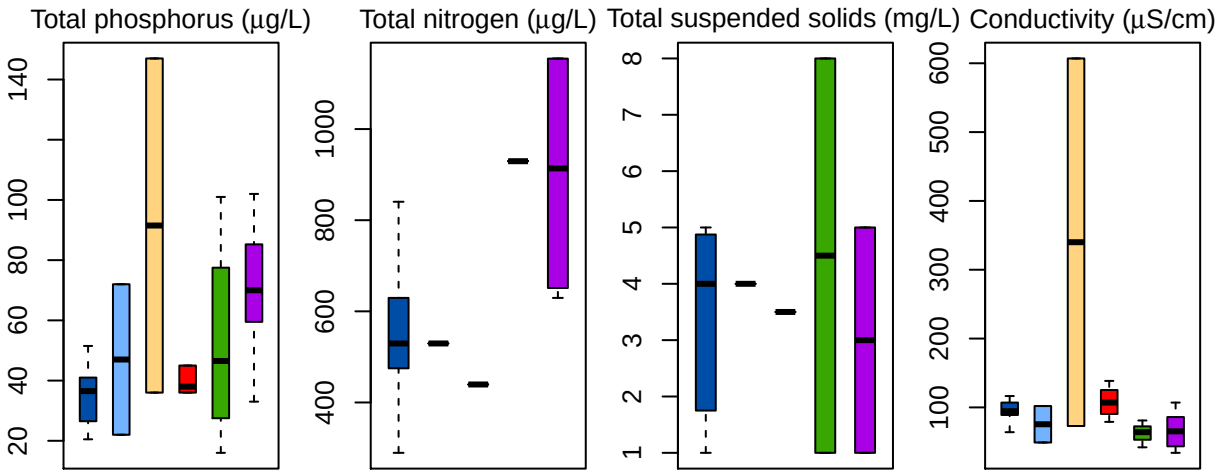
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

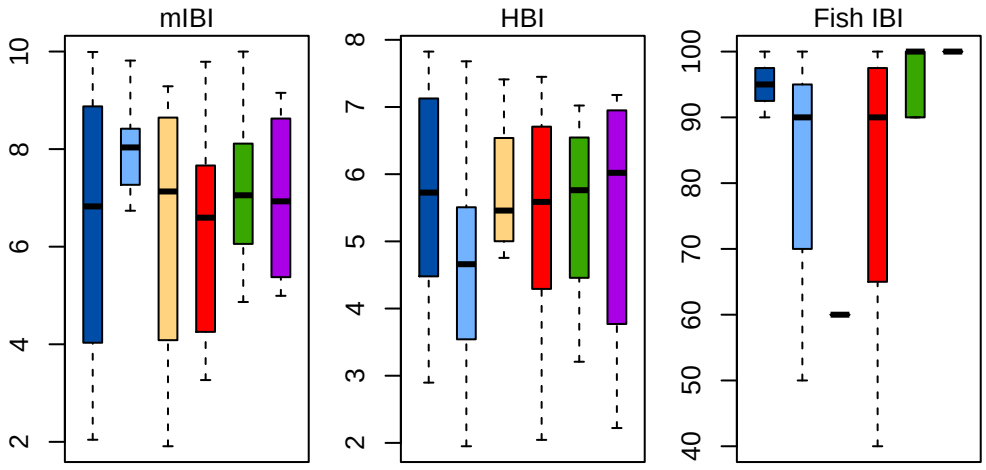
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5	6	1	3	4	5	6	1	2	4	5	6	1	2	3	4	5	6
# of stations with data	18	2	2	5	4	11	17	1	1	1	4	15	1	1	2	2	17	2	2	4	3	10

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
# of stations with data	17	11	4	36	14	4	17	11	4	36	14	4	3	7	1	16	14	2						

Targeted Watershed Site Selection Tool

Wisconsin and Eau Claire Rivers

TWSST watershed ID: 07070002_N
HUC 8's included: 07070002 (North)
DNR District: Northern, West Central
Area: 1344 square miles
Total stream length: 1698 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	27.5	0.11	19.9	0.15
Water temperature (°C)	21.8	22.2	21.7	21.8
Slope (degrees)	2.0	1.8	4.0	2.6
Percent agriculture	24	15	43	45
Percent developed	5	4	6	4
Percent forest	67	75	45	42
Percent wetlands/lakes	2.6	1.0	3.6	0.6
Percent soil clay content	10	10	15	14
Percent soil organic matter content	4	1	4	2
Soil permeability (in/hour * 100)	330	282	353	241

WISCONSIN DEPT. OF NATURAL RESOURCES

Explore TWSST with DNR's Water Condition Viewer

TWSST

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with cool to warm water temperatures, overall the warmest in the watershed.

Group 2: Lowest flow in the watershed with predominantly cold water temperatures, overall the coldest in the watershed. Among the least impacted groups, with agriculture and developed land cover each less than 5%.

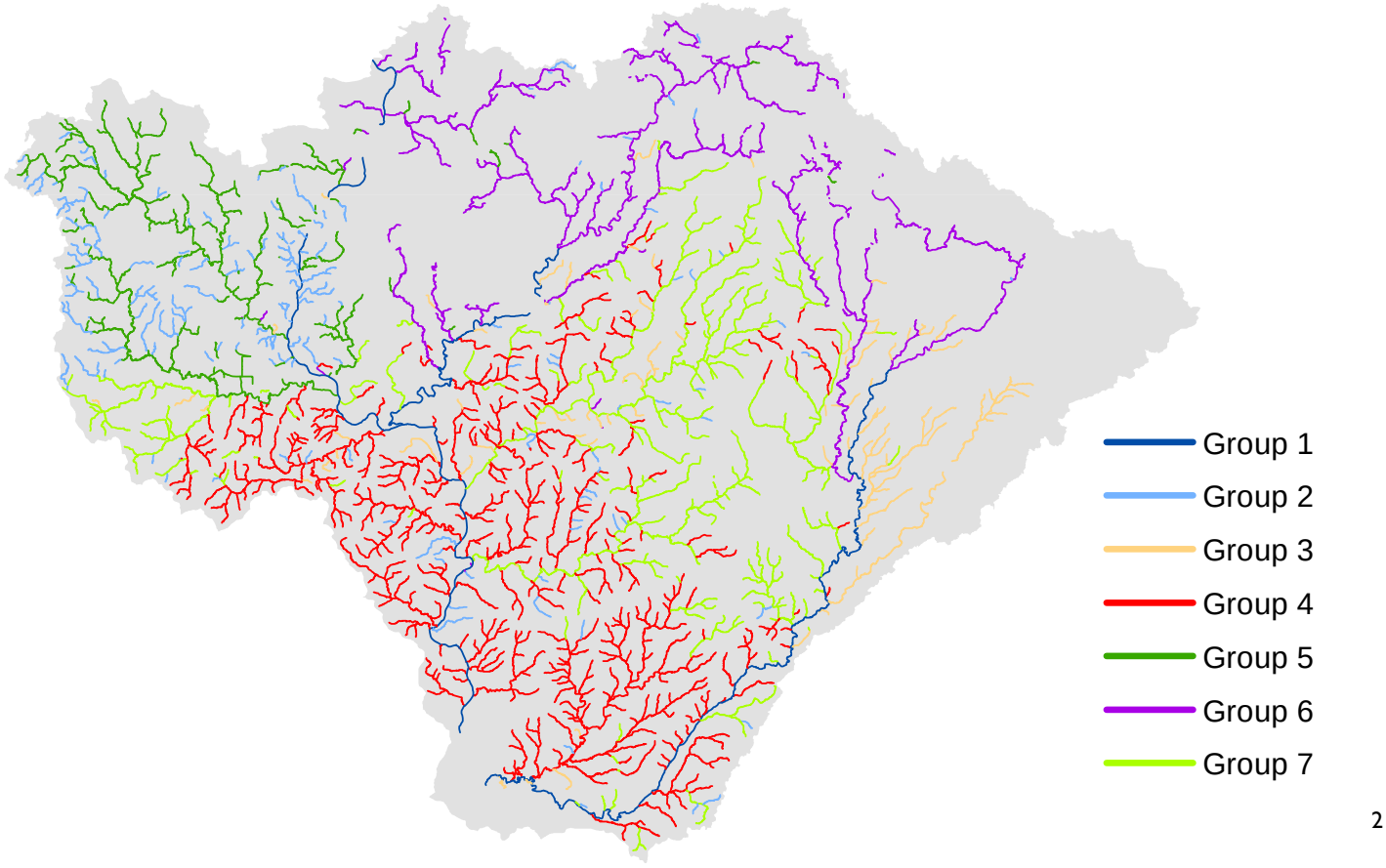
Group 3: Low flow for the watershed with variable water temperatures. Along with **Group 4**, highest agriculture and developed land cover in the watershed. Relatively low soil clay content and the highest permeability in the watershed differentiate these streams from **Group 4**.

Group 4: Low flow for the watershed with cold to cool water temperatures. Along with **Group 3**, highest agriculture and developed land cover in the watershed. Highest soil clay content in the watershed and relatively low permeability differentiate these streams from **Group 3**.

Group 5: Low to moderate flow for the watershed with cool water temperatures. Among the least impacted groups, with agriculture and developed land cover each less than 5%. Higher soil clay and organic matter content, and lower permeability differentiate these streams from **Group 6**.

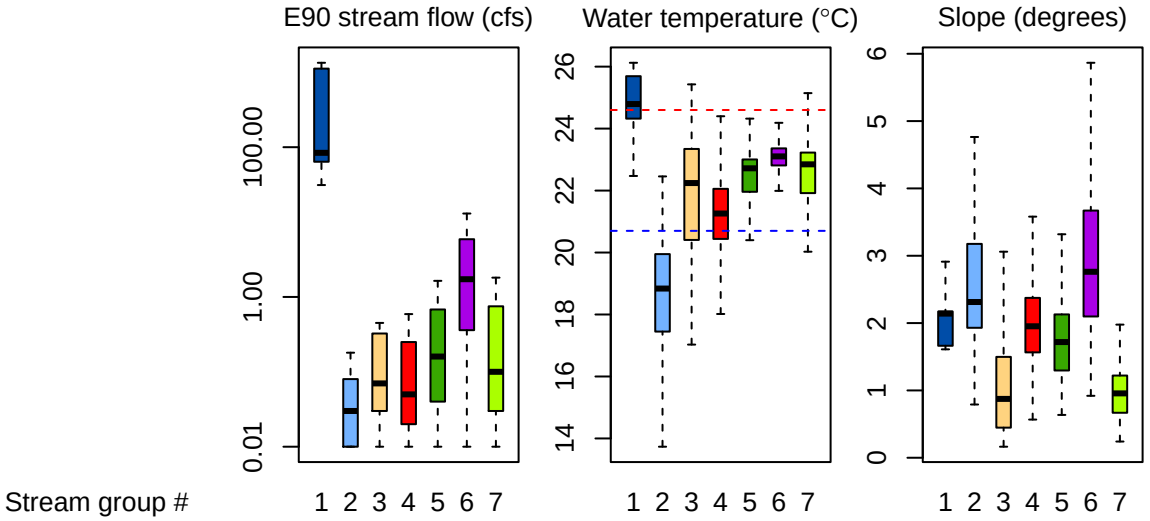
Group 6: Moderate flow for the watershed with cool water temperatures. wide range of slopes, but includes the highest found in the watershed, up to 6 degrees. Among the least impacted groups, with agriculture and developed land cover each less than 5%. More wetlands/lakes, lower soil clay and organic matter content, and higher permeability differentiate these streams from **Group 5**.

Group 7: Low to moderate flow for the watershed with predominantly cool water temperatures. Greater forested land use and lowest slopes for the watershed, less than 2 degrees, differentiate these streams from **Group 3**. Low soil organic matter content, less than 2%.

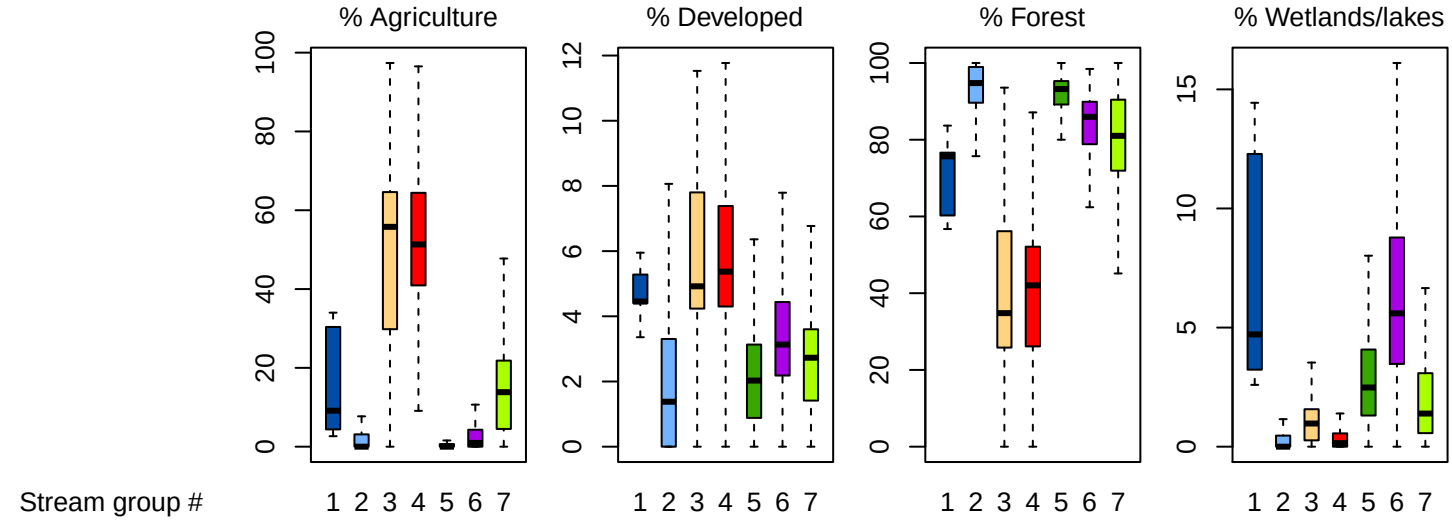


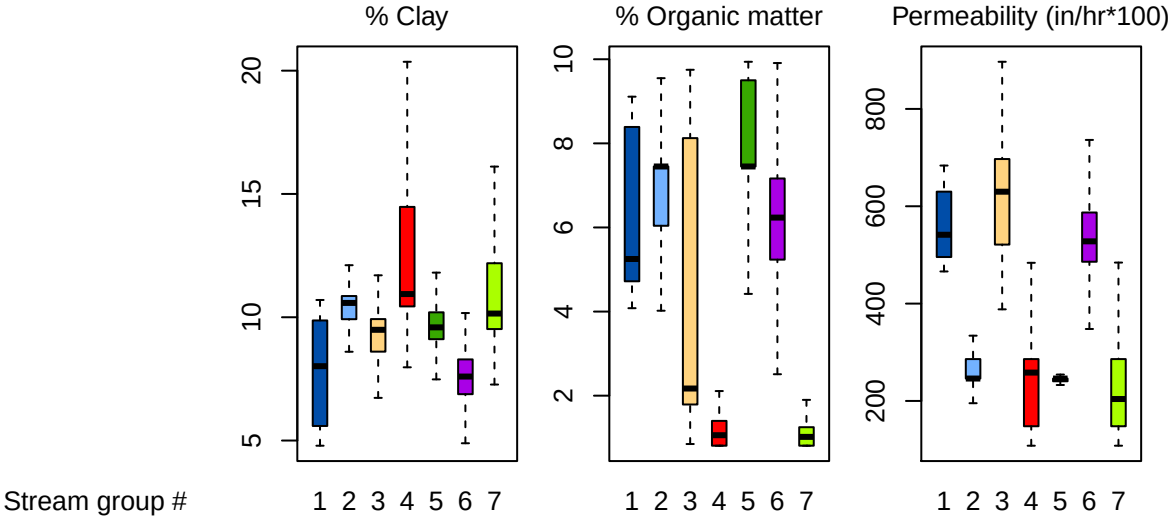
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

<u>Data are provided for general reference only.</u>
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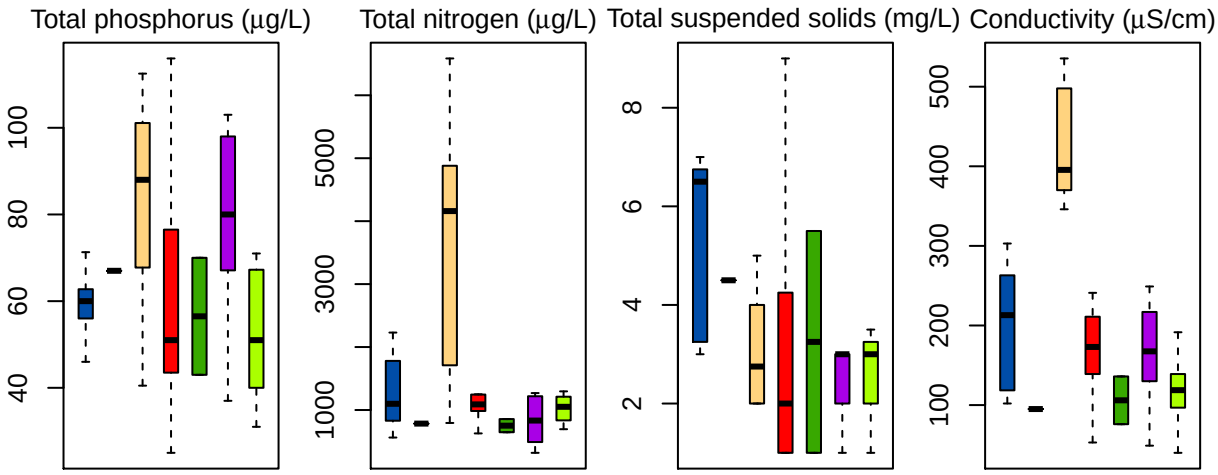
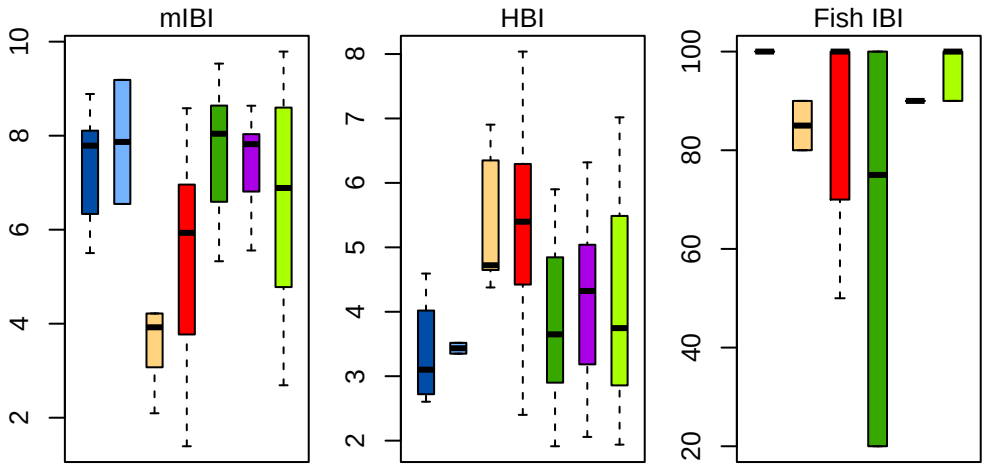


Stream group #	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7	1 2 3 4 5 6 7
# of stations with data	13 1 7 19 2 8 9	10 1 5 13 2 5 4	7 1 5 12 2 3 3	12 1 7 13 2 6 8

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1 2 3 4 5 6 7	1 2 3 4 5 6 7	2 3 4 5 6 7
# of stations with data	8 2 6 30 18 17 28	8 2 6 30 18 17 28	1 2 14 6 6 9

Targeted Watershed Site Selection Tool

Wisconsin River

TWSST watershed ID: 07070002_S
HUC 8's included: 07070002 (South)
DNR District: West Central, Northern
Area: 1374 square miles
Total stream length: 2222 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	4.5	0.06	19.9	0.15
Water temperature (°C)	21.8	21.8	21.7	21.8
Slope (degrees)	1.7	1.5	4.0	2.6
Percent agriculture	55	64	43	45
Percent developed	6	5	6	4
Percent forest	37	28	45	42
Percent wetlands/lakes	1.2	0.2	3.6	0.6
Percent soil clay content	14	15	15	14
Percent soil organic matter content	2	1	4	2
Soil permeability (in/hour * 100)	238	233	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

TWSST

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with cool to warm water temperatures, overall the warmest in the watershed.

Group 2: Lowest flow in the watershed, less than 0.10 cfs at baseflow, with cold to cool water temperatures, overall the coldest in the watershed. Variable land cover, but includes highest forested and lowest developed land cover found in the watershed.

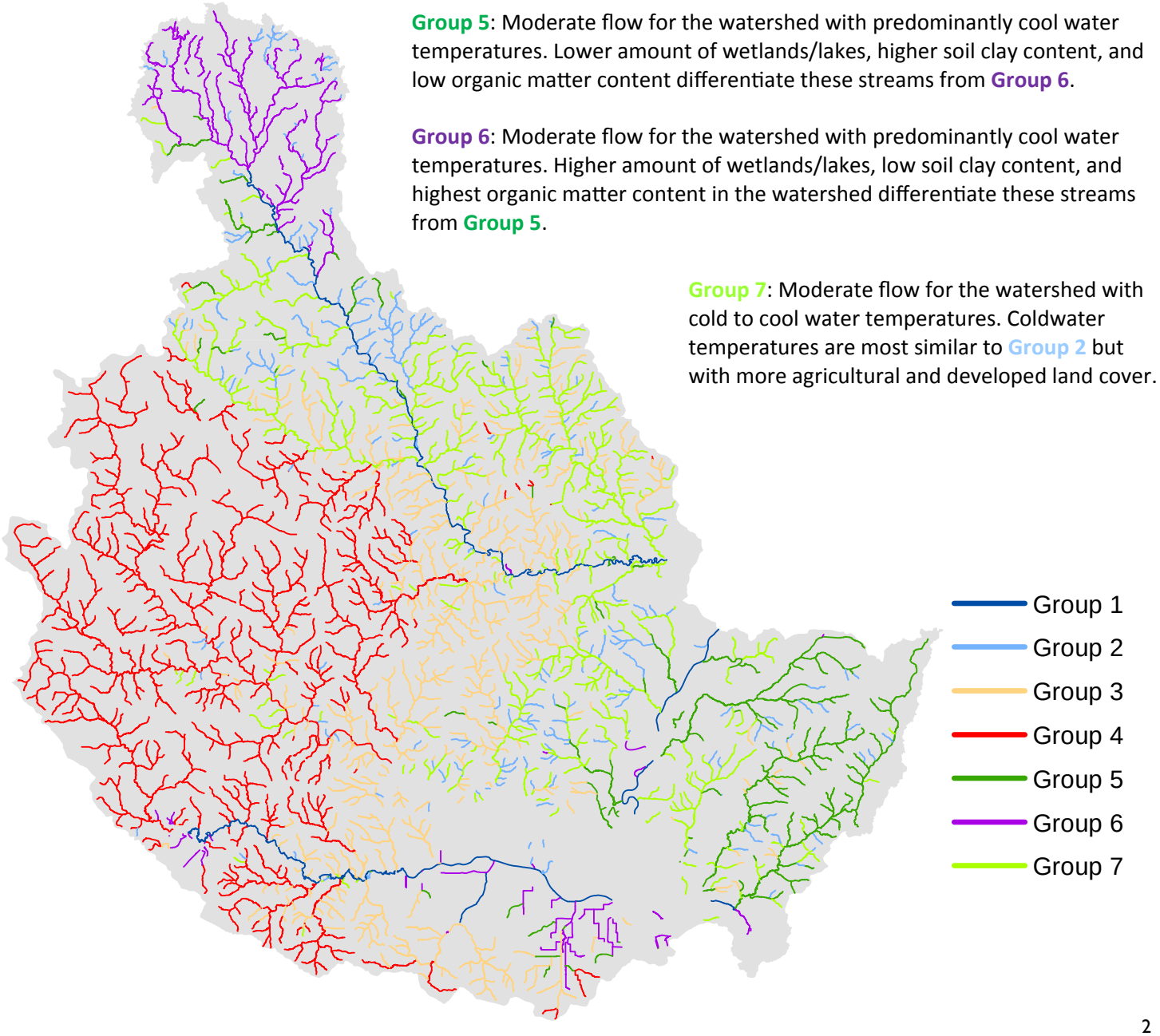
Group 3: Low flow for the watershed, less than 0.10 cfs at baseflow, with predominantly cool water temperatures. Along with **Group 4**, highest agriculture in the watershed, generally greater than 70%. Lower soil clay content and higher permeability differentiate these streams from **Group 4**.

Group 4: Low to moderate flow for the watershed with predominantly cool water temperatures. Along with **Group 3**, highest agriculture in the watershed, generally greater than 70%. Highest soil clay content, around 18%, and lowest permeability in the watershed.

Group 5: Moderate flow for the watershed with predominantly cool water temperatures. Lower amount of wetlands/lakes, higher soil clay content, and low organic matter content differentiate these streams from **Group 6**.

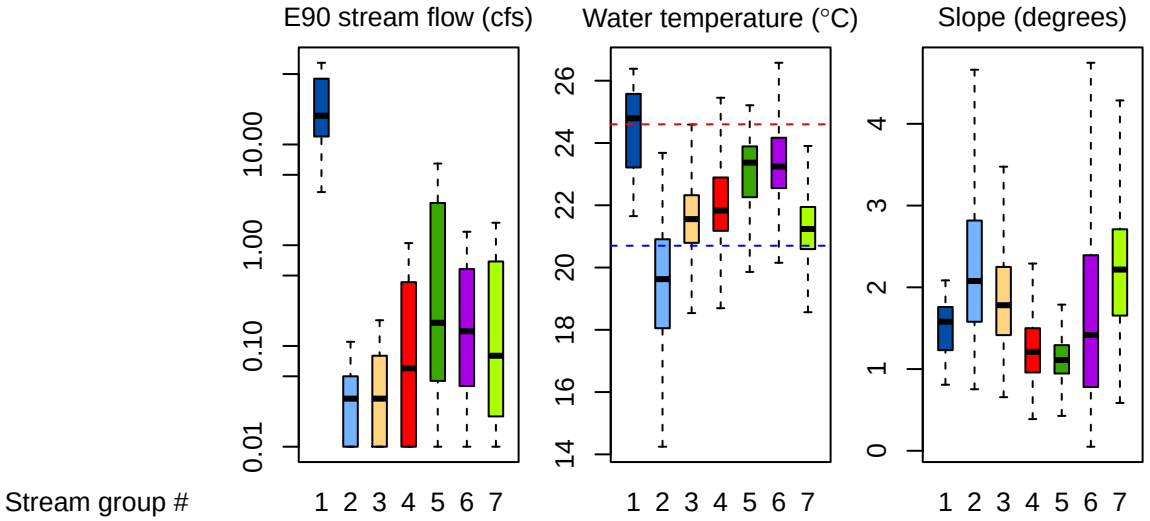
Group 6: Moderate flow for the watershed with predominantly cool water temperatures. Higher amount of wetlands/lakes, low soil clay content, and highest organic matter content in the watershed differentiate these streams from **Group 5**.

Group 7: Moderate flow for the watershed with cold to cool water temperatures. Coldwater temperatures are most similar to **Group 2** but with more agricultural and developed land cover.

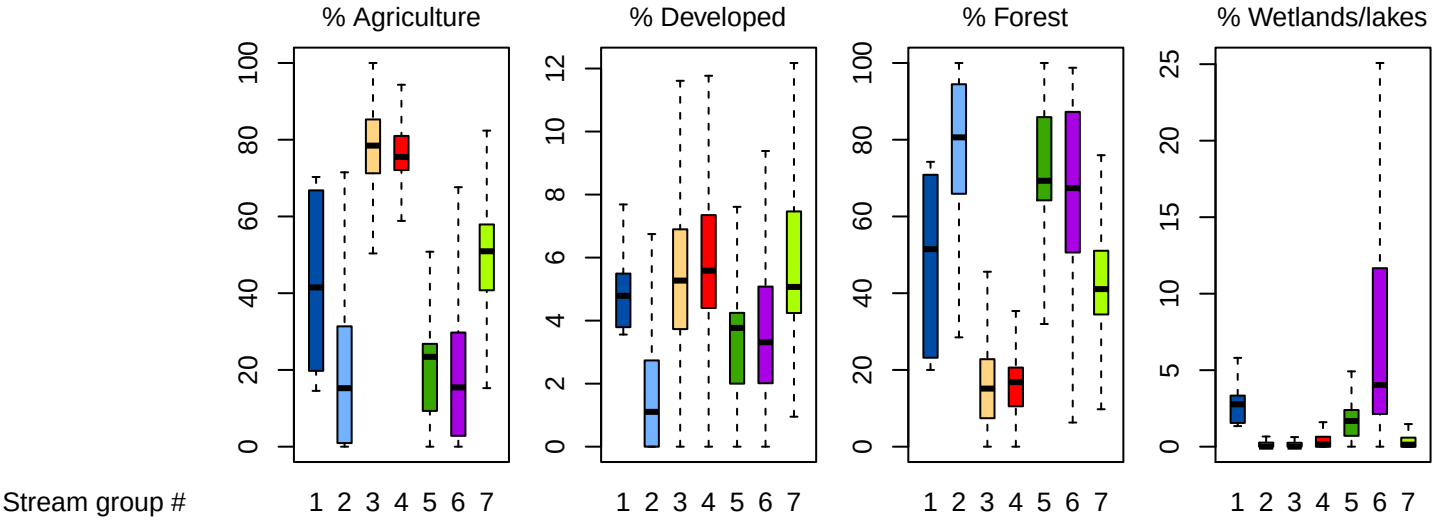


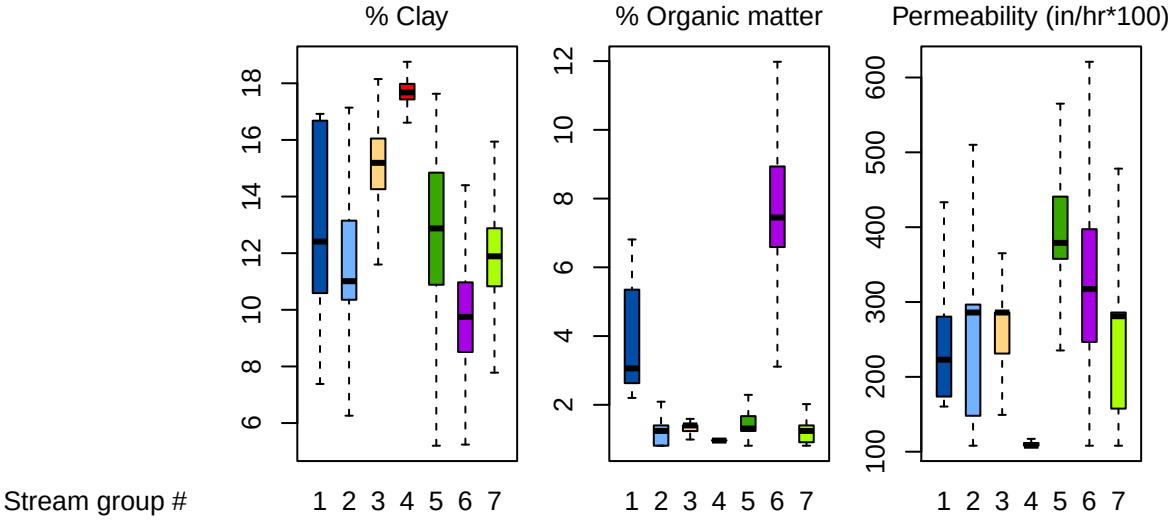
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





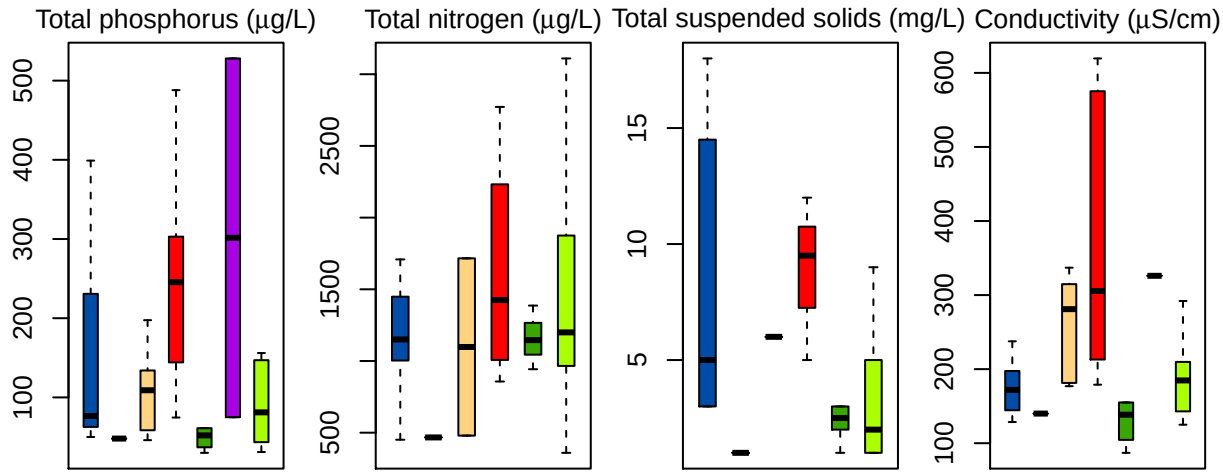
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5	6	7
# of stations with data	12	1	7	16	5	2	16

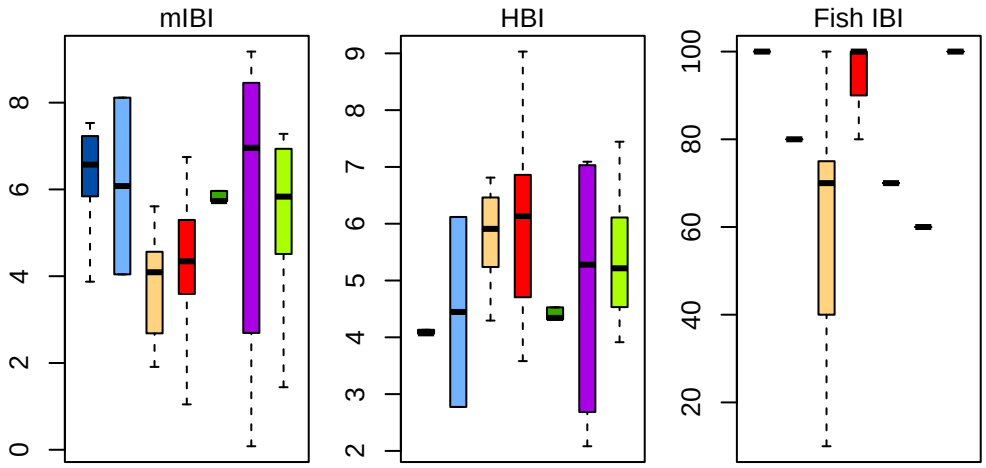
Stream group #	1	2	3	4	5	7
# of stations with data	8	1	2	4	3	11

Stream group #	1	2	3	4	5	7
# of stations with data	5	1	1	3	5	10

Stream group #	1	2	3	4	5	6	7
# of stations with data	9	1	7	16	4	1	12

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	6	7
# of stations with data	5	2	9	28	5	6	18

Stream group #	1	2	3	4	5	6	7
# of stations with data	5	2	9	28	5	6	18

Stream group #	1	2	3	4	5	6	7
# of stations with data	2	1	5	7	1	1	5

Targeted Watershed Site Selection Tool

Wisconsin River

TWSST watershed ID: 07070003_E
HUC 8's included: 07070003 (East)
DNR District: West Central, Northeast, Northern
Area: 1646 square miles
Total stream length: 1453 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	73.1	0.32	19.9	0.15
Water temperature (°C)	22.1	22.6	21.7	21.8
Slope (degrees)	0.9	0.7	4.0	2.6
Percent agriculture	41	38	43	45
Percent developed	7	5	6	4
Percent forest	42	43	45	42
Percent wetlands/lakes	4.7	1.7	3.6	0.6
Percent soil clay content	9	6	15	14
Percent soil organic matter content	4	2	4	2
Soil permeability (in/hour * 100)	768	884	353	241

WISCONSIN DEPT. OF NATURAL RESOURCES

Explore TWSST with DNR's Water Condition Viewer

TWSST

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

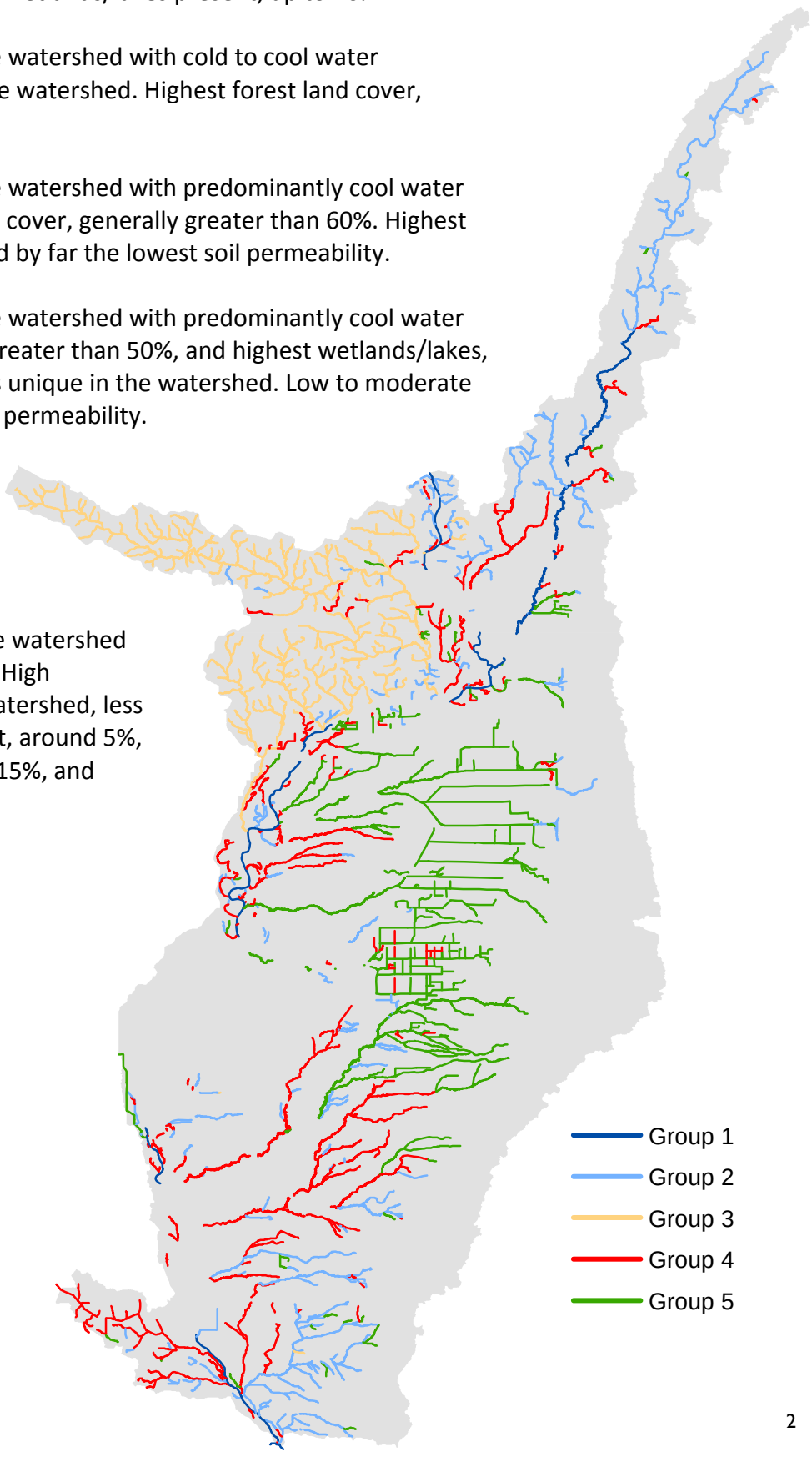
Group 1: Highest flow in the watershed with cool to warm water temperatures, overall the warmest in the watershed. Wetlands/lakes present, up to 10%.

Group 2: Low to moderate flow for the watershed with cold to cool water temperatures, overall the coldest in the watershed. Highest forest land cover, generally greater than 50%.

Group 3: Low to moderate flow for the watershed with predominantly cool water temperatures. Highest agriculture land cover, generally greater than 60%. Highest soil clay content, greater than 15%, and by far the lowest soil permeability.

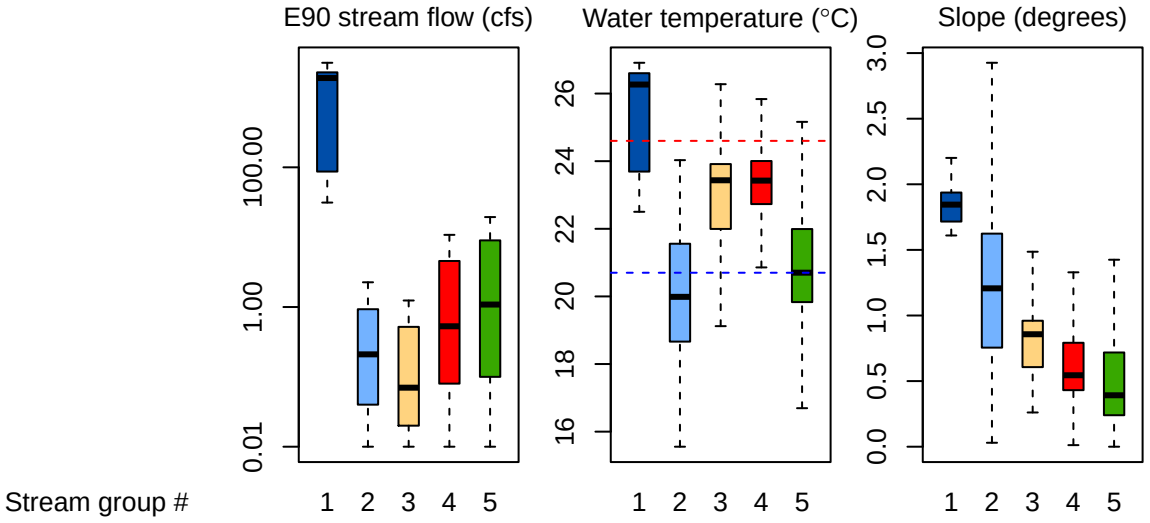
Group 4: Low to moderate flow for the watershed with predominantly cool water temperatures. High forest, generally greater than 50%, and highest wetlands/lakes, up to 30% makes this group of streams unique in the watershed. Low to moderate soil clay content and moderate to high permeability.

Group 5: Low to moderate flow for the watershed with cold to cool water temperatures. High agriculture and lowest slopes in the watershed, less than 1 degree. Lowest soil clay content, around 5%, highest organic matter content, up to 15%, and overall highest permeability.

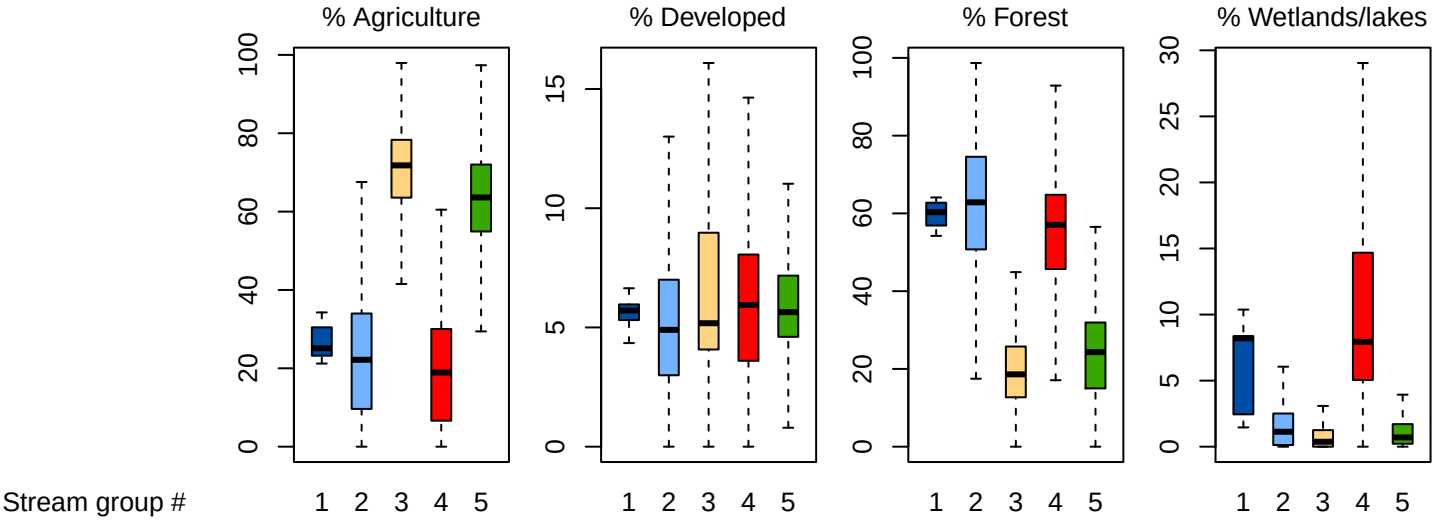


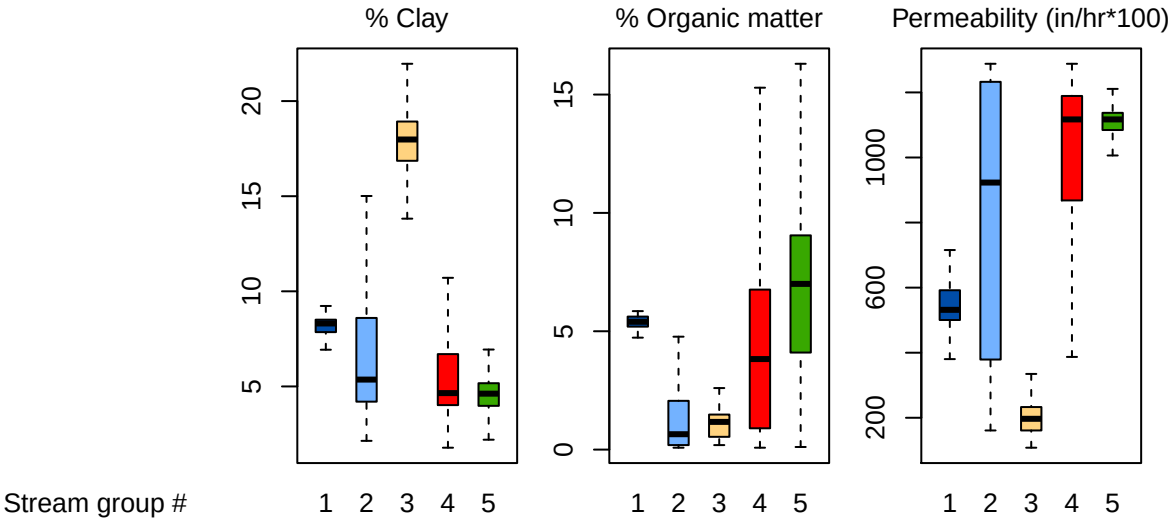
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





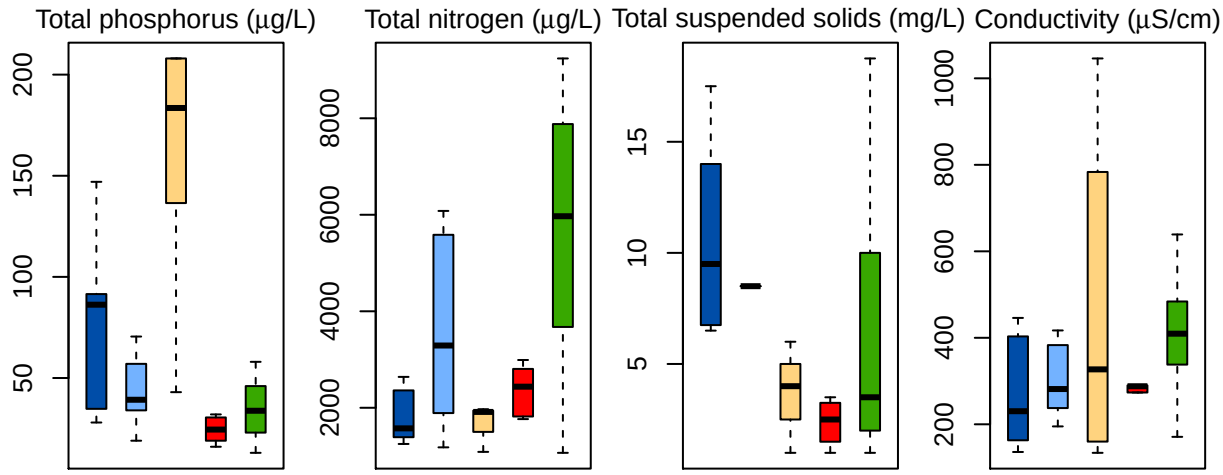
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

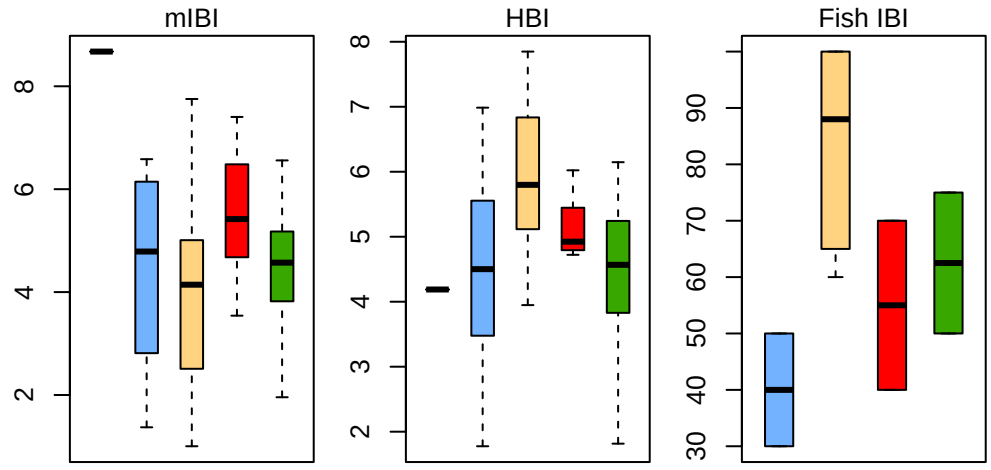
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



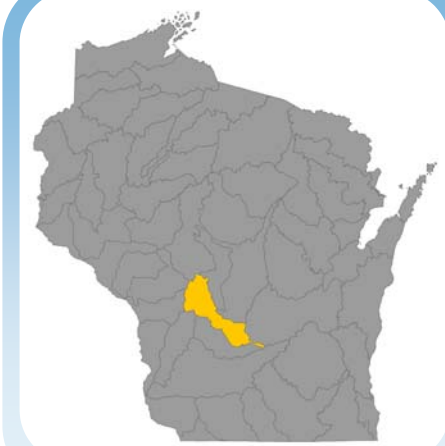
Stream group #	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
# of stations with data	11	6	10	6	18	10	7	3	6	10	6	1	3	4	5	10	8	9	5	14

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	1	2	3	4	5	2	3	4	5
# of stations with data	1	8	18	11	15	1	8	18	11	15	2	5	2	2



Targeted Watershed Site Selection Tool

Lemonweir River

TWSST watershed ID: 07070003_S
HUC 8's included: 07070003 (South)
DNR District: West Central, South Central
Area: 923 square miles
Total stream length: 1547 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	53.6	0.17	19.9	0.15
Water temperature (°C)	22.0	22.0	21.7	21.8
Slope (degrees)	3.6	2.3	4.0	2.6
Percent agriculture	32	31	43	45
Percent developed	6	5	6	4
Percent forest	46	45	45	42
Percent wetlands/lakes	9.9	1.5	3.6	0.6
Percent soil clay content	9	8	15	14
Percent soil organic matter content	5	1	4	2
Soil permeability (in/hour * 100)	678	697	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

TWSST

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

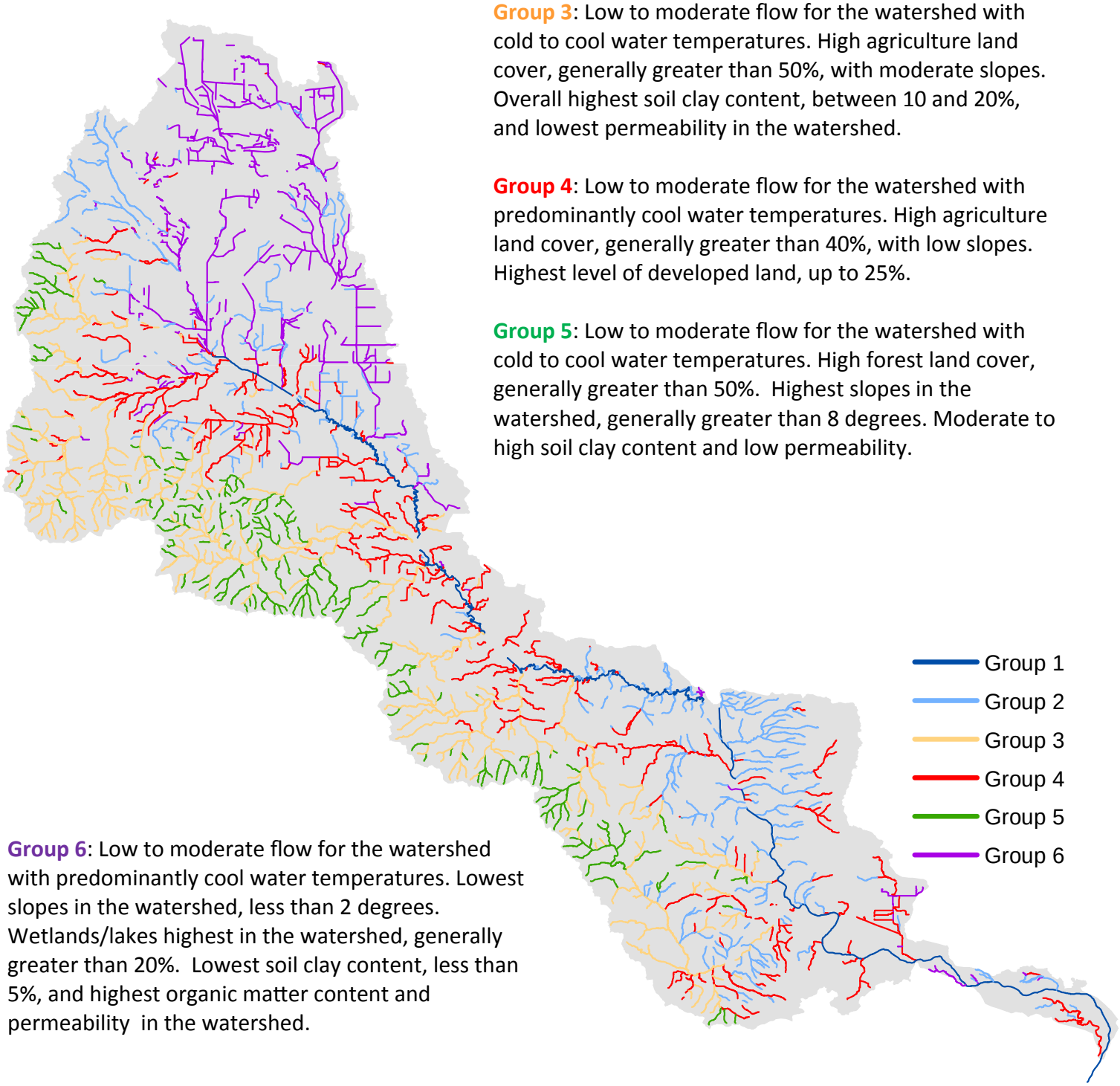
Group 1: Highest flow in the watershed. Warm water temperatures, and warmest in the watershed. Moderate amount of wetlands/lakes.

Group 2: Low to moderate flow for the watershed with predominantly cold to cool water temperatures. High forest land cover, generally greater than 50%, and low slopes. Generally low soil clay content and high permeability.

Group 3: Low to moderate flow for the watershed with cold to cool water temperatures. High agriculture land cover, generally greater than 50%, with moderate slopes. Overall highest soil clay content, between 10 and 20%, and lowest permeability in the watershed.

Group 4: Low to moderate flow for the watershed with predominantly cool water temperatures. High agriculture land cover, generally greater than 40%, with low slopes. Highest level of developed land, up to 25%.

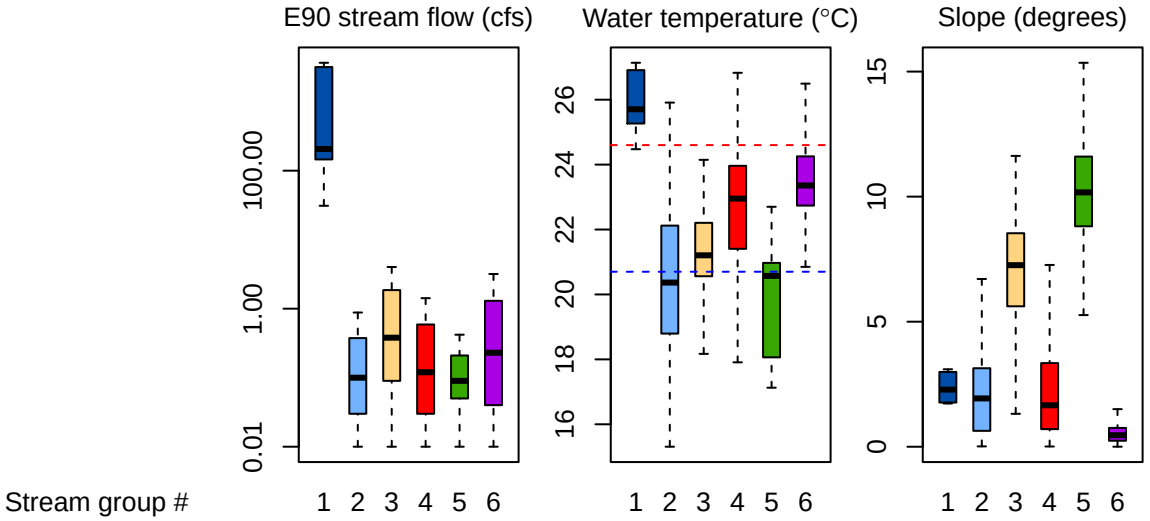
Group 5: Low to moderate flow for the watershed with cold to cool water temperatures. High forest land cover, generally greater than 50%. Highest slopes in the watershed, generally greater than 8 degrees. Moderate to high soil clay content and low permeability.



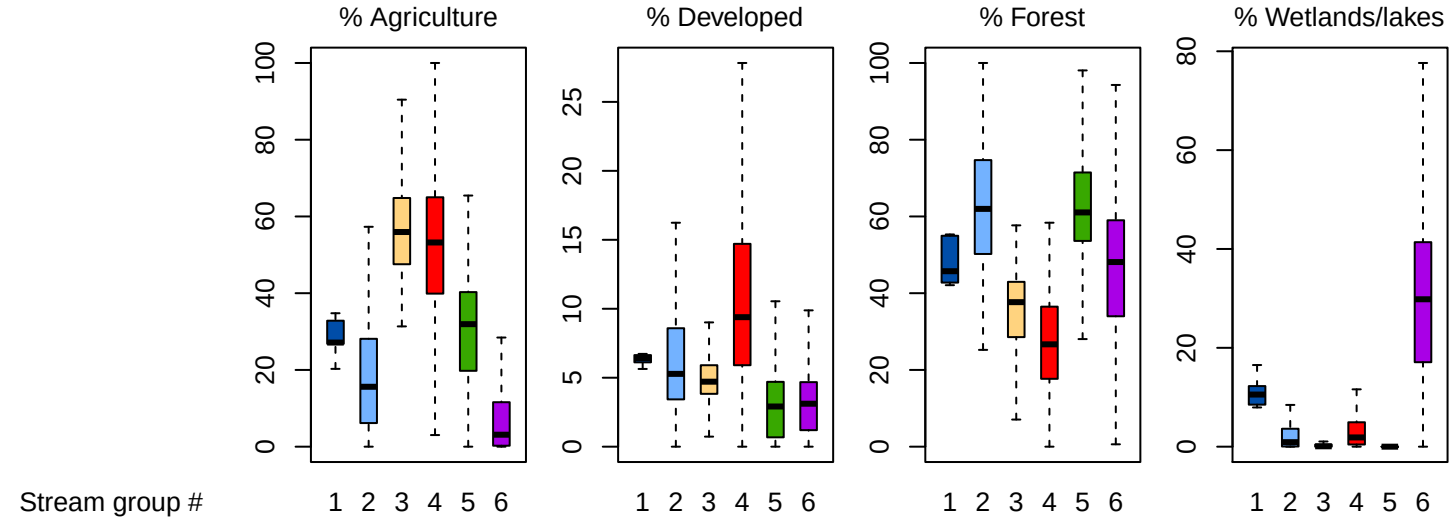
Group 6: Low to moderate flow for the watershed with predominantly cool water temperatures. Lowest slopes in the watershed, less than 2 degrees. Wetlands/lakes highest in the watershed, generally greater than 20%. Lowest soil clay content, less than 5%, and highest organic matter content and permeability in the watershed.

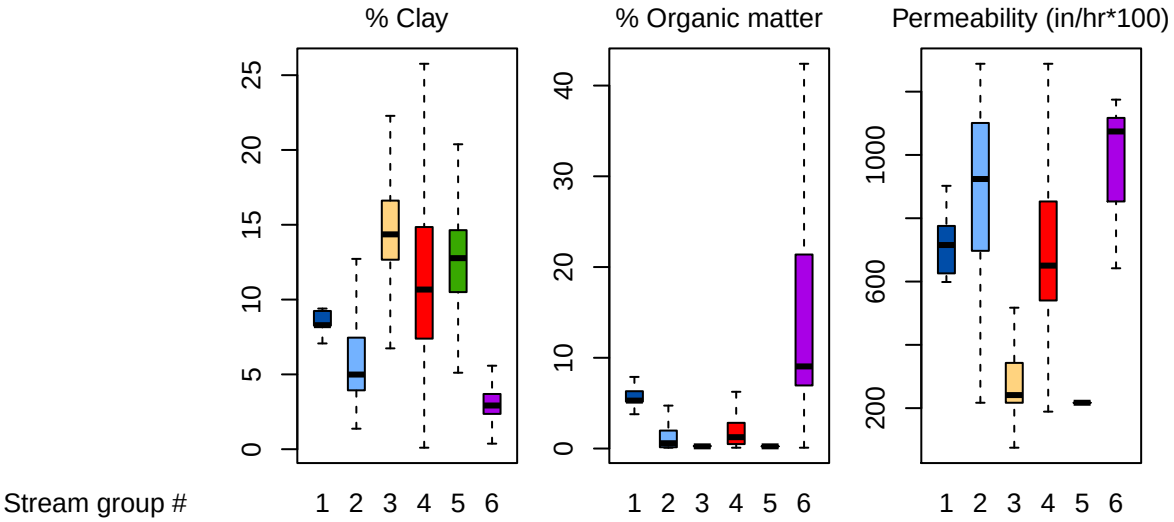
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





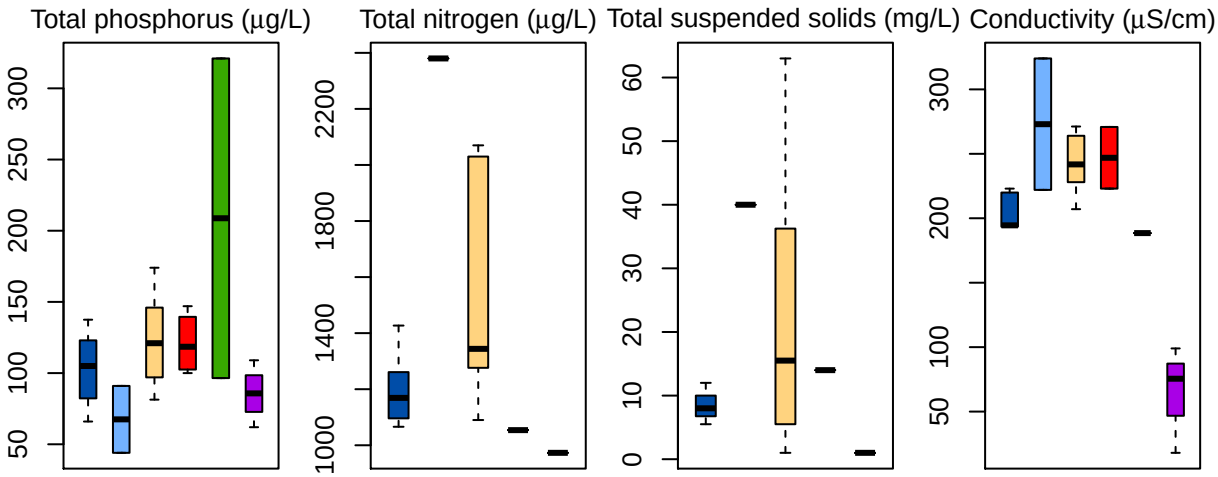
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5	6
# of stations with data	7	2	18	4	2	4

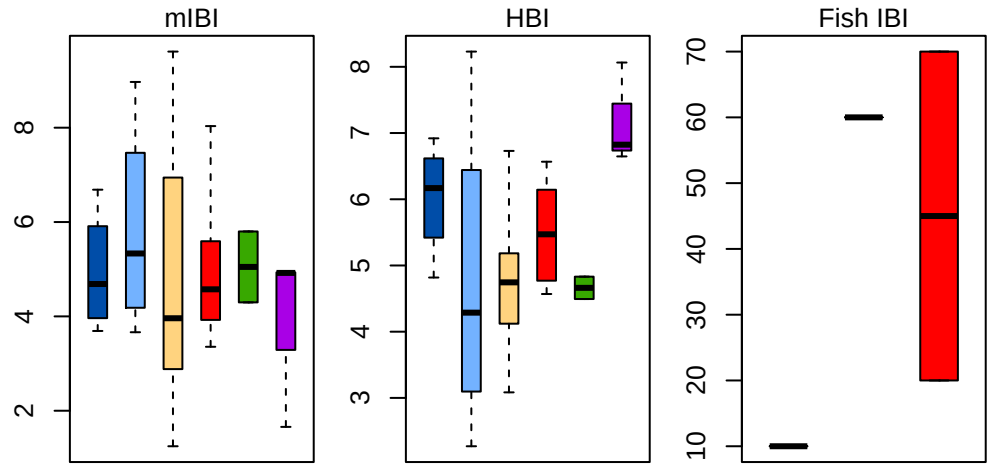
Stream group #	1	2	3	5	6
# of stations with data	5	1	7	1	1

Stream group #	1	2	3	5	6
# of stations with data	3	1	8	1	1

Stream group #	1	2	3	4	5	6
# of stations with data	6	2	13	2	1	3

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	6
# of stations with data	4	4	23	8	2	3

Stream group #	1	2	3	4	5	6
# of stations with data	4	4	23	8	2	3

Stream group #	2	3	4
# of stations with data	1	5	2

Targeted Watershed Site Selection Tool

Yellow River

TWSST watershed ID: 07070003_W
HUC 8's included: 07070003 (West)
DNR District: West Central
Area: 677 square miles
Total stream length: 1063 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	3.8	0.09	19.9	0.15
Water temperature (°C)	22.9	23.1	21.7	21.8
Slope (degrees)	0.7	0.6	4.0	2.6
Percent agriculture	36	37	43	45
Percent developed	5	5	6	4
Percent forest	44	40	45	42
Percent wetlands/lakes	9.4	1.3	3.6	0.6
Percent soil clay content	11	9	15	14
Percent soil organic matter content	8	4	4	2
Soil permeability (in/hour * 100)	617	626	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow in the watershed. Cool to warm water temperatures, overall the warmest in the watershed.

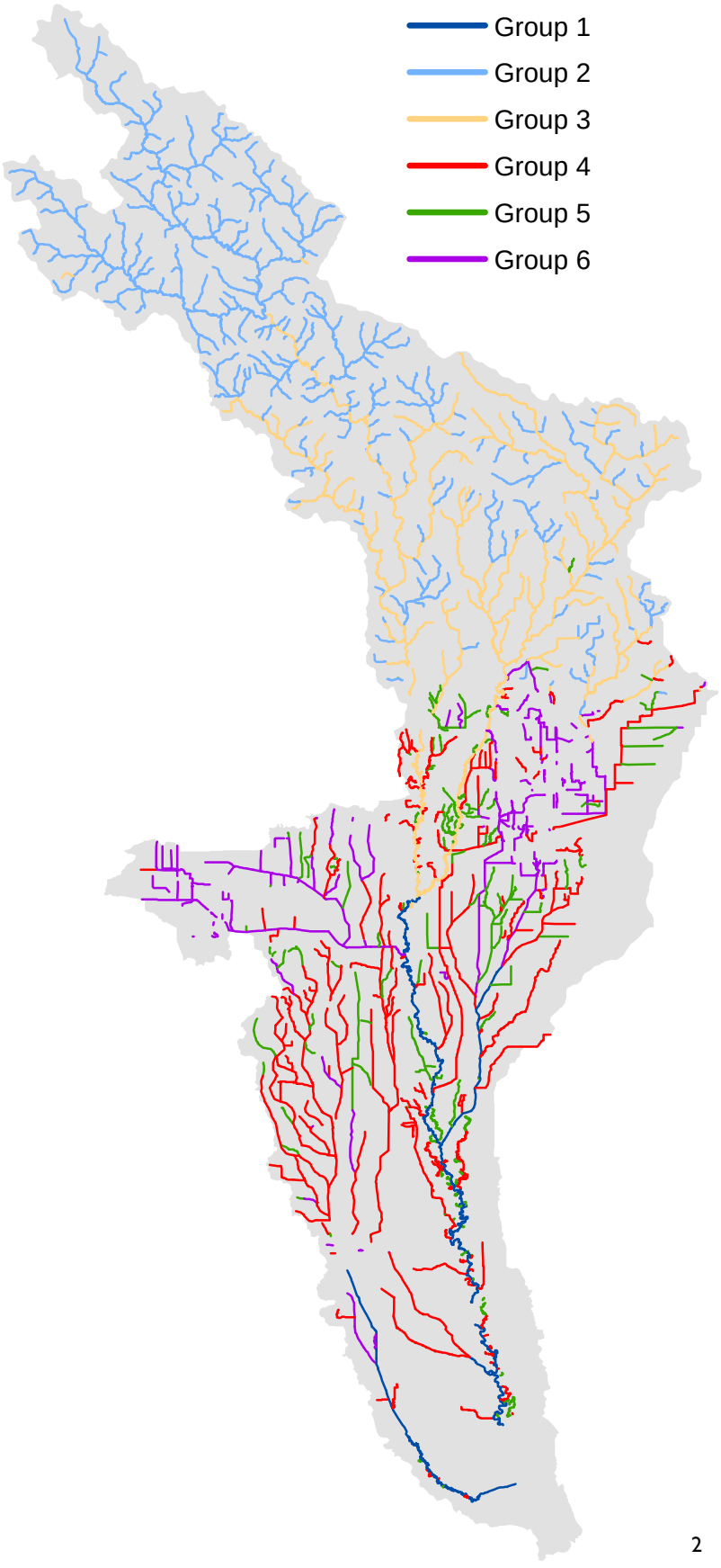
Group 2: Low to moderate flow for the watershed with cold to cool water temperatures, overall the coldest in the watershed. Highest agriculture in the watershed, generally greater than 70%. Highest soil clay content, up to 20%, and lowest organic matter content and permeability.

Group 3: Low to high flow for the watershed withy cool to warm water temperatures. Moderate to high agriculture land cover but higher forested land cover than **Group 2**. High soil clay content for the watershed, low organic matter, and low permeability.

Group 4: Low to moderate flow for the watershed with predominantly cool water temperatures. Moderate to high forest land cover with wetlands/lakes up to 20% with low slopes. Low soil clay content and high permeability.

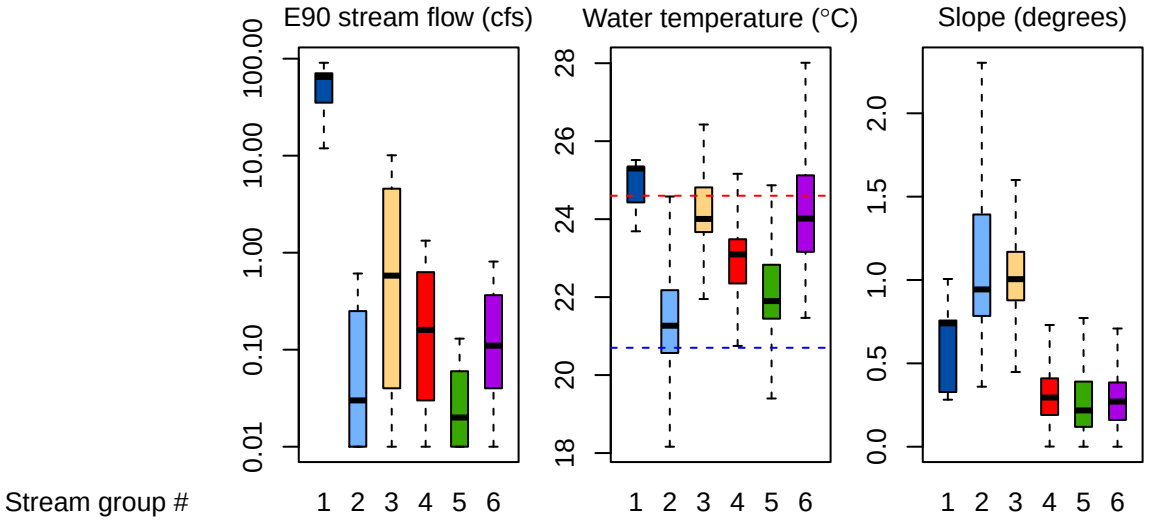
Group 5: Low flow for the watershed usually less than 0.1 cfs with predominantly cool water temperatures. Highest forest land cover in the watershed, generally greater than 60% with wetlands/lakes up to 20%. Lowest developed land cover, less than 4%, and agriculture, less than 10%.

Group 6: Low to moderate flow for the watershed with cool to warm water temperatures. Includes highest amounts of wetlands/lakes, up to 80%, but land cover is overall variable. Lowest soil clay content, less than 5%, by far the highest organic matter content, up to 40%.

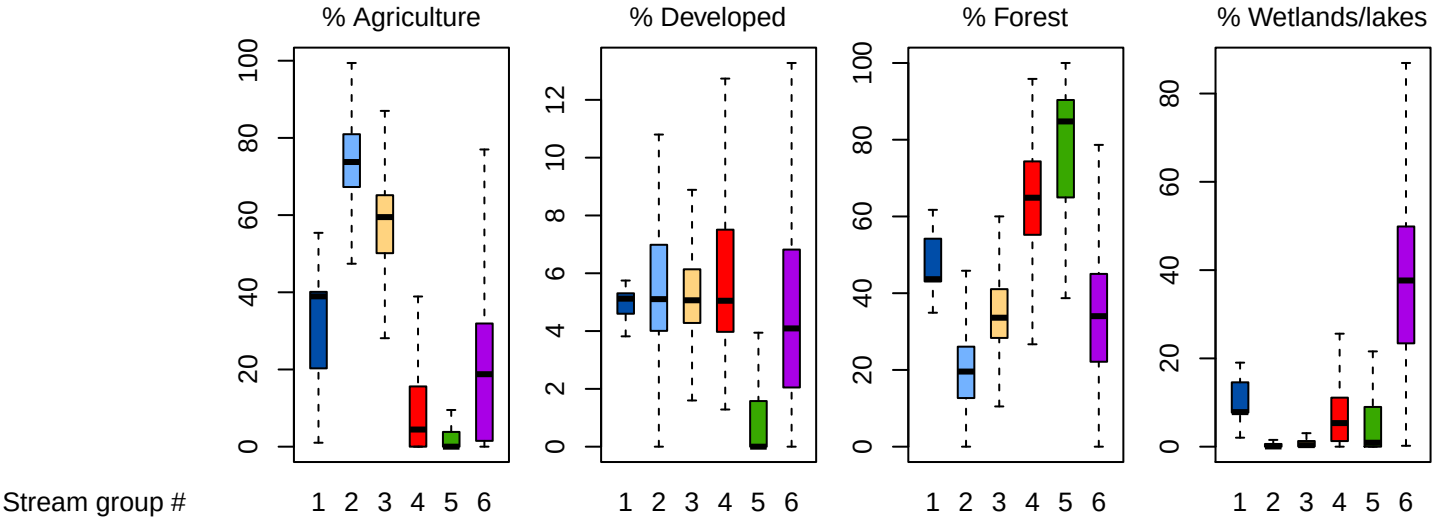


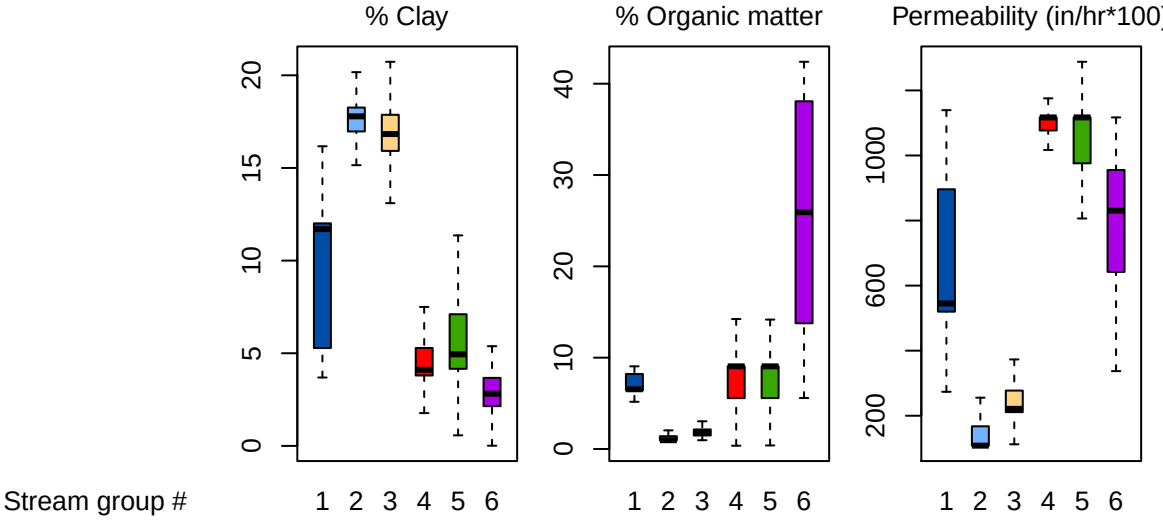
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





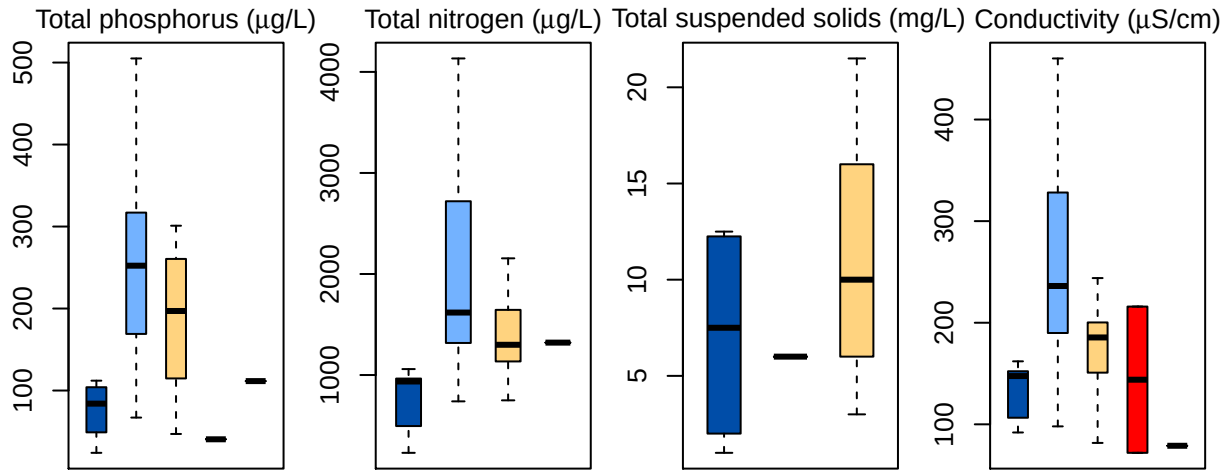
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

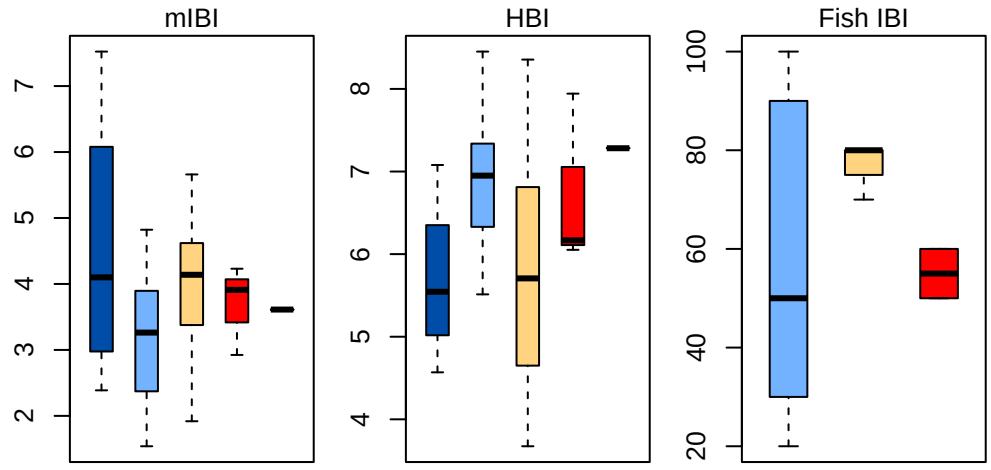
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5	1	2	3	5	1	2	3	1	2	3	4	5
# of stations with data	5	36	31	1	1	5	30	22	1	4	1	5	5	37	31	2	1

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	6	1	2	3	4	6	2	3	4
# of stations with data	4	37	30	3	1	4	37	30	3	1	15	10	2

Targeted Watershed Site Selection Tool

Baraboo River

TWSST watershed ID: 07070004
HUC 8's included: 07070004
DNR District: South Central, West Central
Area: 655 square miles
Total stream length: 1363 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	10.3	0.11	19.9	0.15
Water temperature (°C)	21.1	21.0	21.7	21.8
Slope (degrees)	7.0	7.2	4.0	2.6
Percent agriculture	59	61	43	45
Percent developed	5	5	6	4
Percent forest	34	32	45	42
Percent wetlands/lakes	0.8	0.0	3.6	0.6
Percent soil clay content	18	17	15	14
Percent soil organic matter content	0	0	4	2
Soil permeability (in/hour * 100)	215	216	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

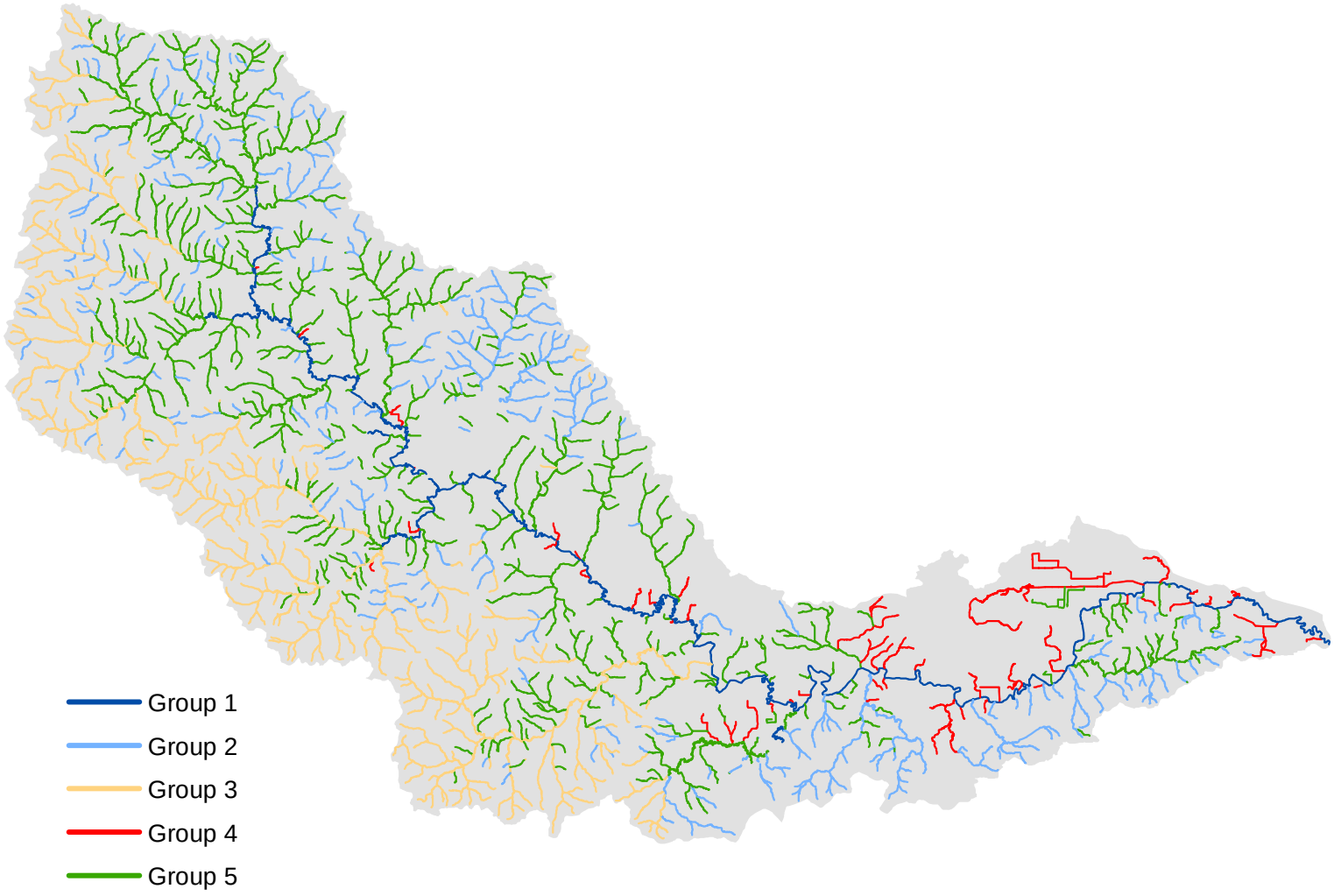
Group 1: Highest flow in the watershed. Predominantly warm water temperatures and warmest in the watershed.

Group 2: Lowest flow in the watershed. Predominantly cold water temperatures and coldest in the watershed. Highest slopes in the watershed, up to 12%. Highest levels of forest, greater than 50%, and lowest levels of agriculture.

Group 3: Low to moderate flow for the watershed with predominantly cool water temperatures. Highest agriculture land use, greater than 60%. Highest soil clay content, greater than 20%, and lowest permeability.

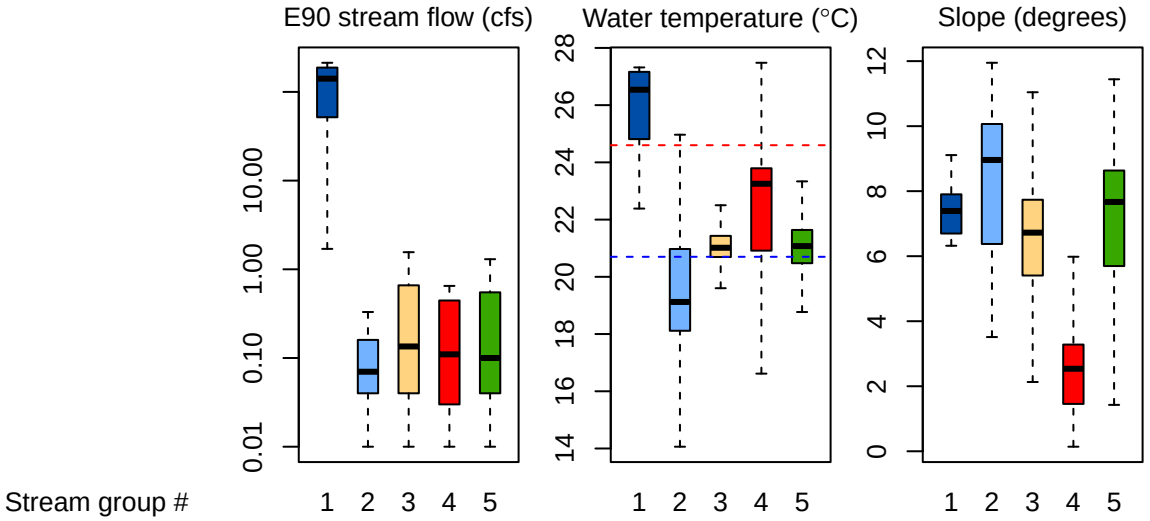
Group 4: Low to moderate flow for the watershed with cold to warm water temperatures. Lowest slopes in the watershed. Highest levels of developed land cover, up to 20%. Only group with wetlands/lakes, up to 25%. Only group with soil organic matter greater than 1% and with high permeability.

Group 5: Low to moderate flow for the watershed. Predominantly cool water temperatures. High agriculture land use. Lower clay content soils and higher permeability differentiate these streams from **Group 3**.

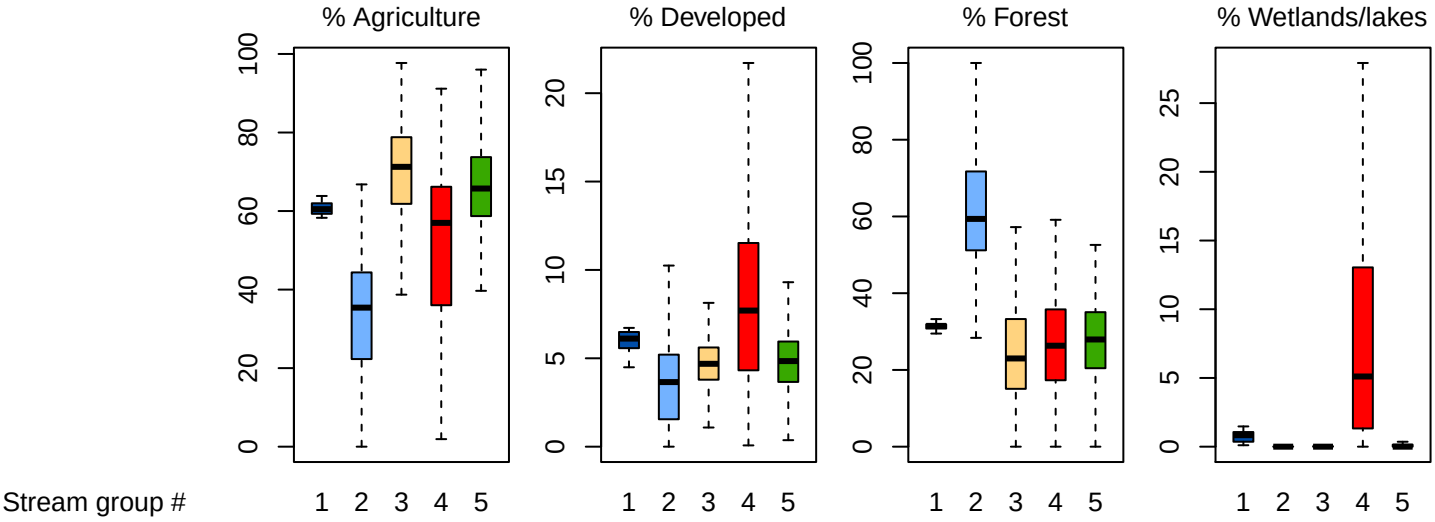


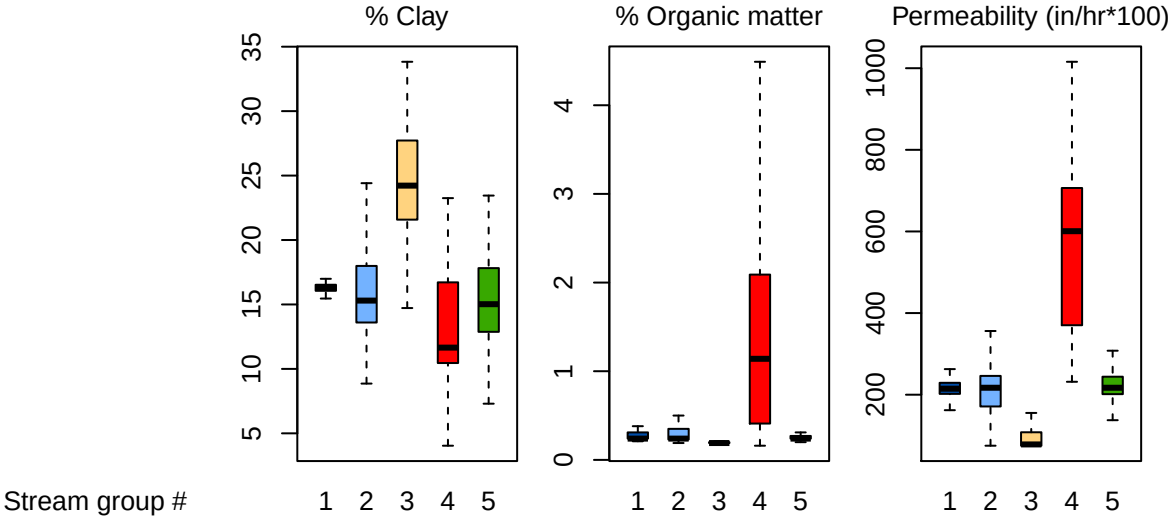
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





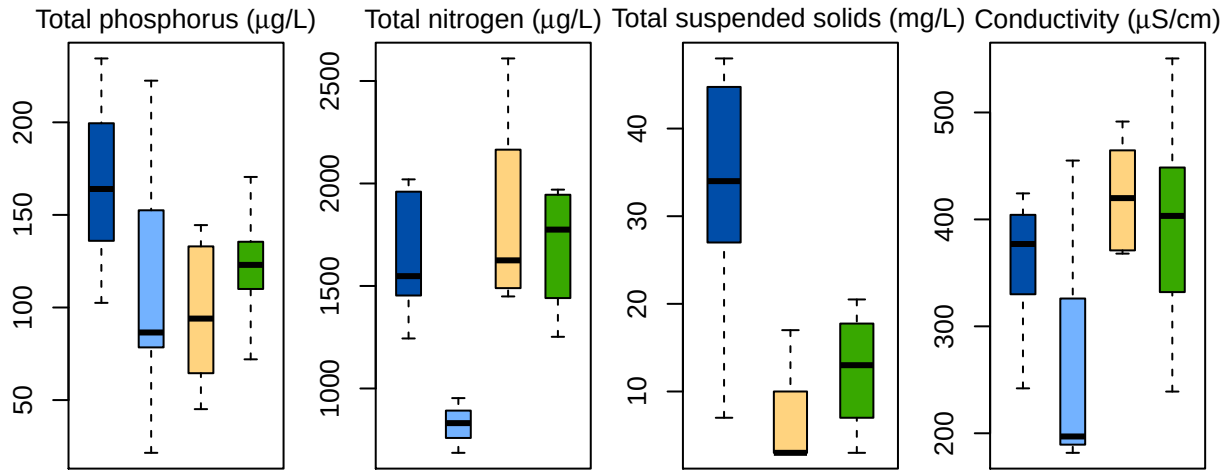
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

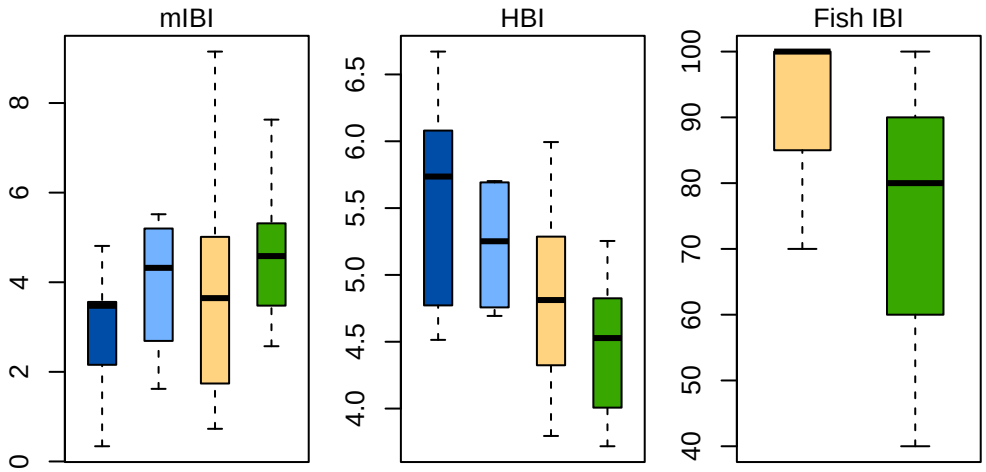
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	5		1	2	3	5		1	3	5		1	2	3	5
# of stations with data	9	8	13	21		6	3	4	4		7	3	7		9	3	9	22

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	5		1	2	3	5		3	5
# of stations with data	5	4	16	20		5	4	16	20		4	9

Targeted Watershed Site Selection Tool

Lower Wisconsin, Pine, and Blue Rivers

TWSST watershed ID: 07070005
HUC 8's included: 07070005
DNR District: South Central, West Central
Area: 2360 square miles
Total stream length: 4581 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	97.5	0.22	19.9	0.15
Water temperature (°C)	20.6	20.8	21.7	21.8
Slope (degrees)	8.9	9.5	4.0	2.6
Percent agriculture	47	47	43	45
Percent developed	5	4	6	4
Percent forest	45	46	45	42
Percent wetlands/lakes	1.4	0.0	3.6	0.6
Percent soil clay content	19	19	15	14
Percent soil organic matter content	1	0	4	2
Soil permeability (in/hour * 100)	226	171	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with warm water temperatures, around 27°C, the warmest in the watershed.

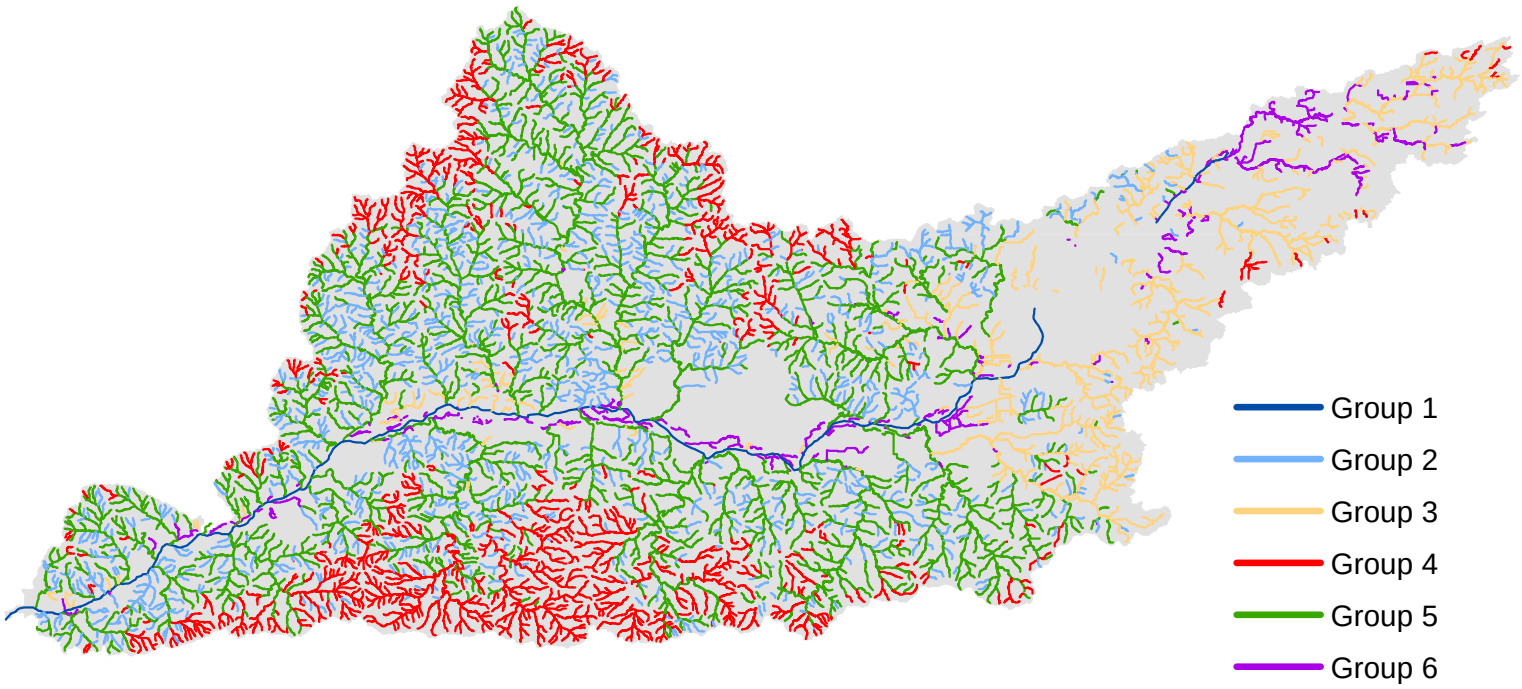
Group 2: Low flow for the watershed with predominantly cold water temperatures. Highest forested land cover in the watershed, generally greater than 60%, and highest slopes, generally greater than 11 degrees. Moderate soil clay content and low permeability.

Group 3: Low to moderate flow for the watershed with variable water temperatures. Low to moderate slopes. High agriculture for the watershed, generally greater than 60%.Highest organic matter content, up to 10%, and moderate to high permeability differentiate these streams from Groups 2 and 5.

Group 4: Low to moderate flow for the watershed with cold to cool water temperatures. Moderate slopes. High agriculture for the watershed, generally greater than 60%. Highest soil clay content, generally greater than 23%, and lowest permeability in the watershed differentiate these streams from **Group 3**.

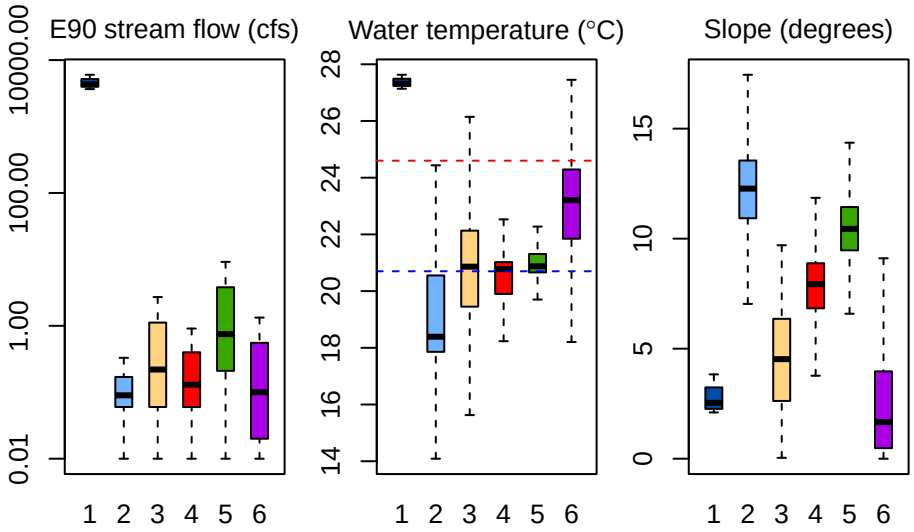
Group 5: Moderate flow for the watershed with predominantly cool water temperatures. A mix of agriculture and forested land cover with high slopes. Moderate soil clay content and low permeability.

Group 6: Low to moderate flow for the watershed with variable water temperatures, though overall warmer than **Group 3**. Highest wetlands/lakes in the watershed, generally between 5-15% with some streams up to 35%, and the lowest slopes, generally less than 4 degrees. Lowest soil clay content, generally less than 10%, and highest permeability.



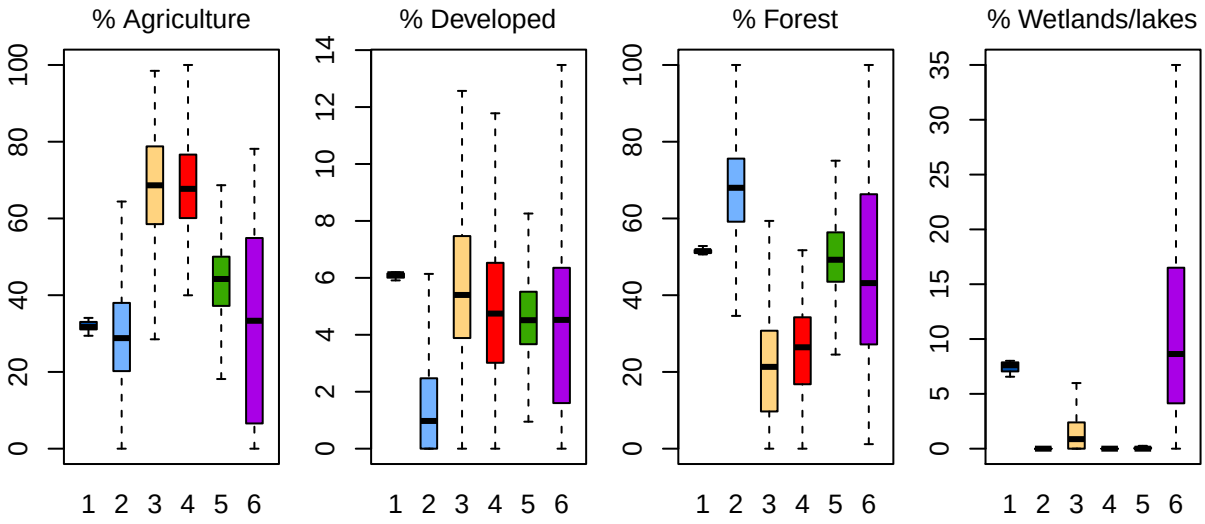
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.

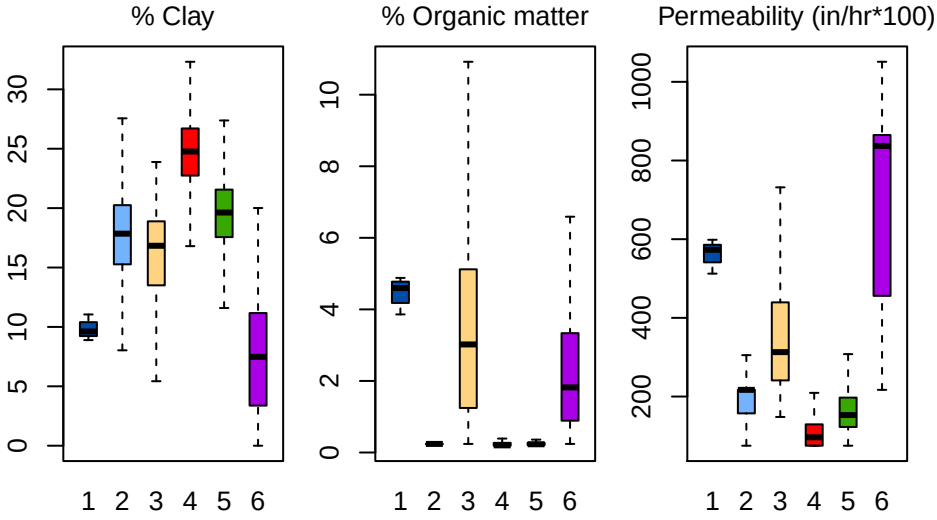


Stream group #

Boxplot colors correspond to stream group colors on the map.



Stream group #



Stream group #

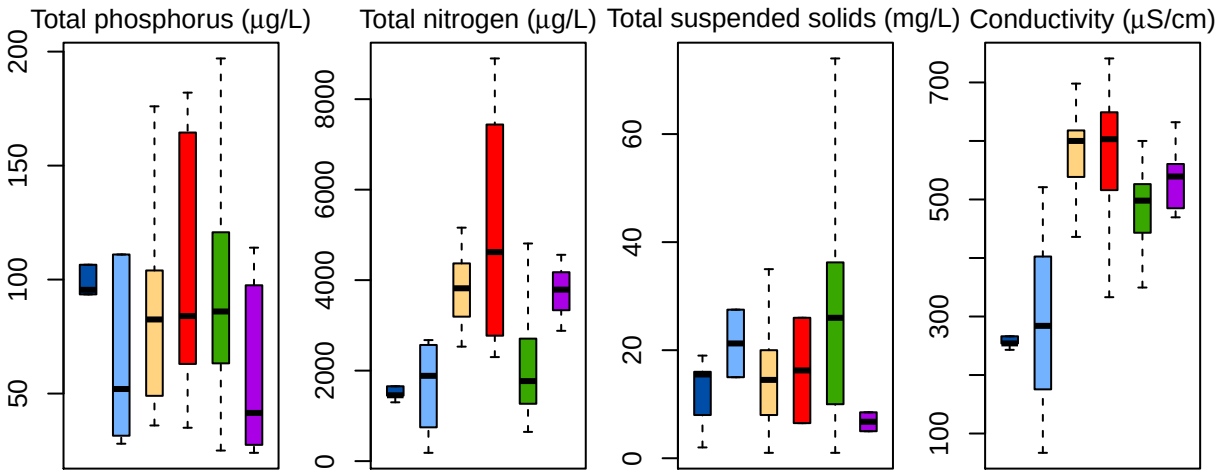
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

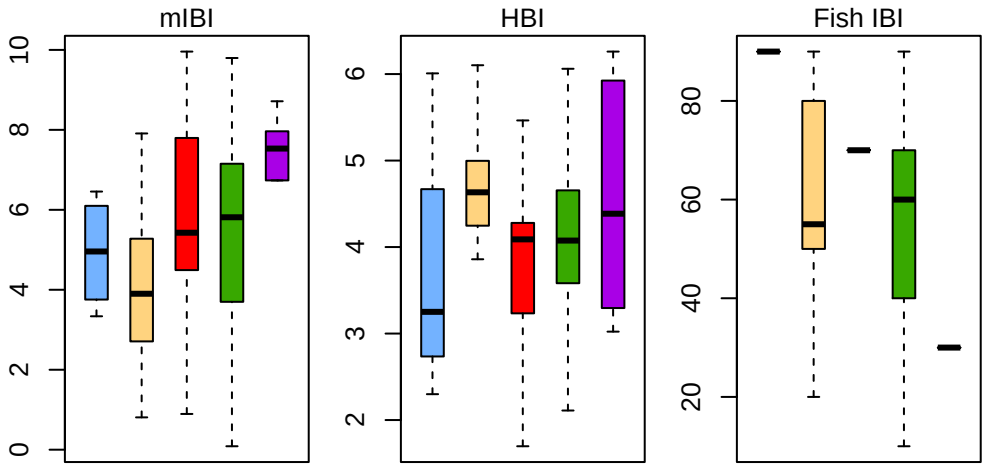
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
# of stations with data	5	5	22	15	69	6	5	4	16	6	44	3	5	2	10	2	31	2	5	3	19	9	48	6

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	2	3	4	5	6	2	3	4	5	6	2	3	4	5	6
# of stations with data	4	27	27	91	6	4	27	27	91	6	1	11	4	29	1

Targeted Watershed Site Selection Tool

Kickapoo River

TWSST watershed ID: 07070006
HUC 8's included: 07070006
DNR District: West Central, South Central
Area: 767 square miles
Total stream length: 1834 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	14.9	0.14	19.9	0.15
Water temperature (°C)	20.5	20.8	21.7	21.8
Slope (degrees)	10.1	10.3	4.0	2.6
Percent agriculture	52	52	43	45
Percent developed	5	4	6	4
Percent forest	42	43	45	42
Percent wetlands/lakes	0.2	0.0	3.6	0.6
Percent soil clay content	20	19	15	14
Percent soil organic matter content	0	0	4	2
Soil permeability (in/hour * 100)	149	137	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

TWSST

Bureau of Water Quality, June 2015

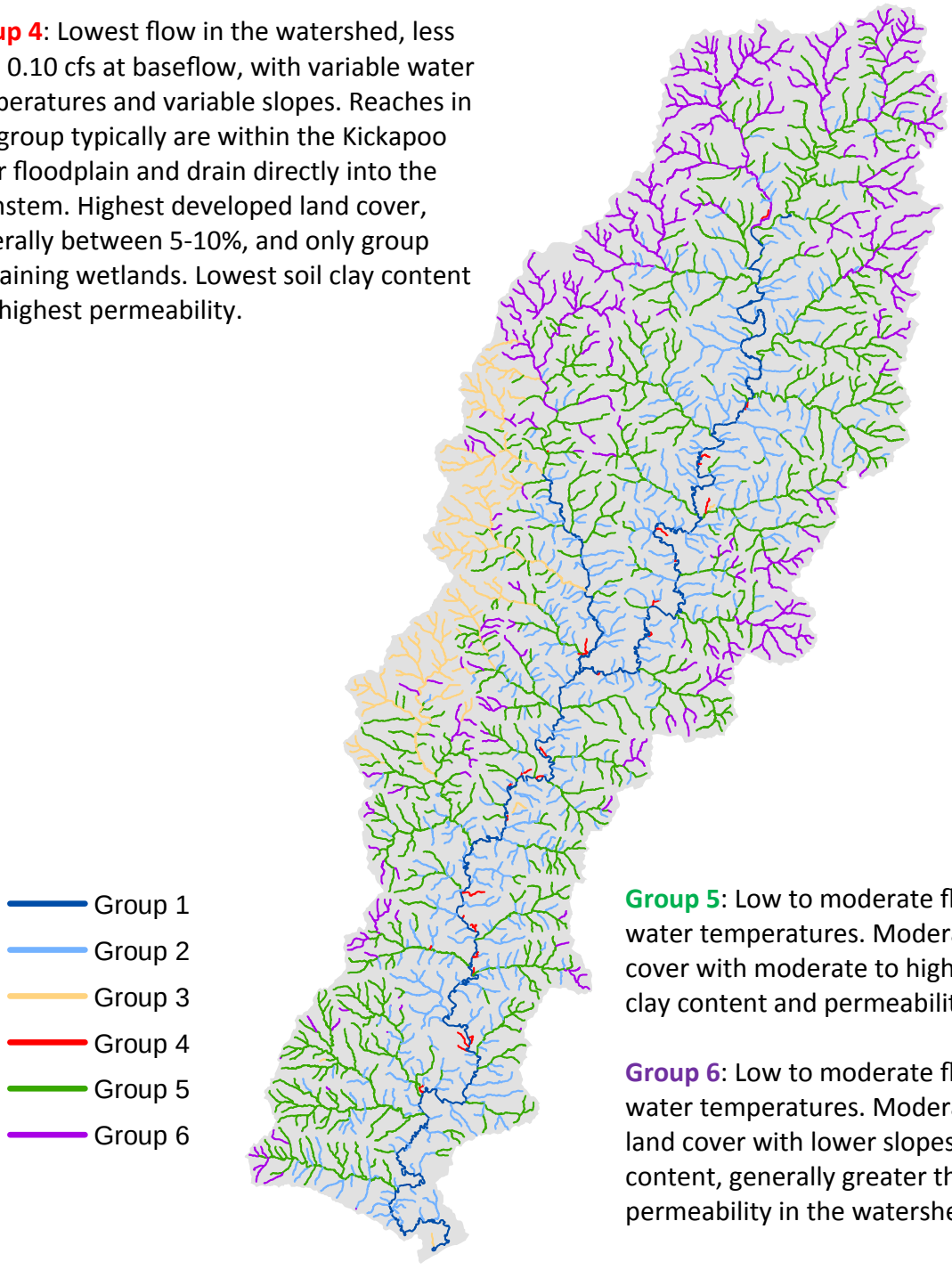
Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with predominantly warm water temperatures, overall the warmest in the watershed.

Group 2: Low flow and predominantly cold water temperatures, overall the coldest in the watershed. Least impacted group in the watershed, with lowest agriculture, generally less than 40%, and lowest developed land cover, generally less than 5%. Highest slopes in the watershed, greater than 10 degrees.

Group 3: Low to moderate flow with predominantly cool water temperatures. Highest agricultural land cover, greater than 60%, and lowest slopes in the watershed, usually between 5-7 degrees.

Group 4: Lowest flow in the watershed, less than 0.10 cfs at baseflow, with variable water temperatures and variable slopes. Reaches in this group typically are within the Kickapoo River floodplain and drain directly into the mainstem. Highest developed land cover, generally between 5-10%, and only group containing wetlands. Lowest soil clay content and highest permeability.

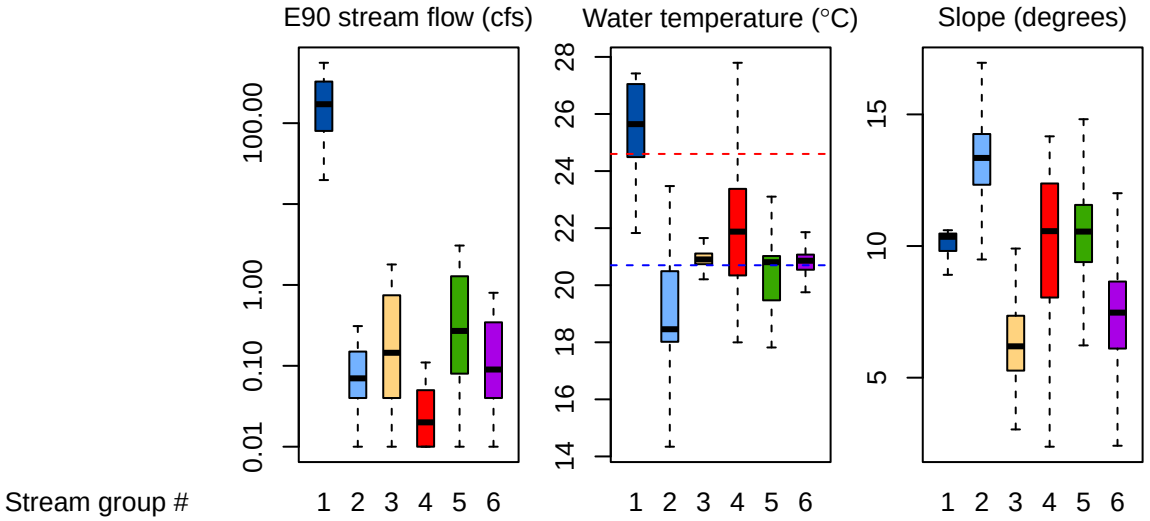


Group 5: Low to moderate flow with cold to cool water temperatures. Moderate agriculture land cover with moderate to high slopes. Moderate soil clay content and permeability.

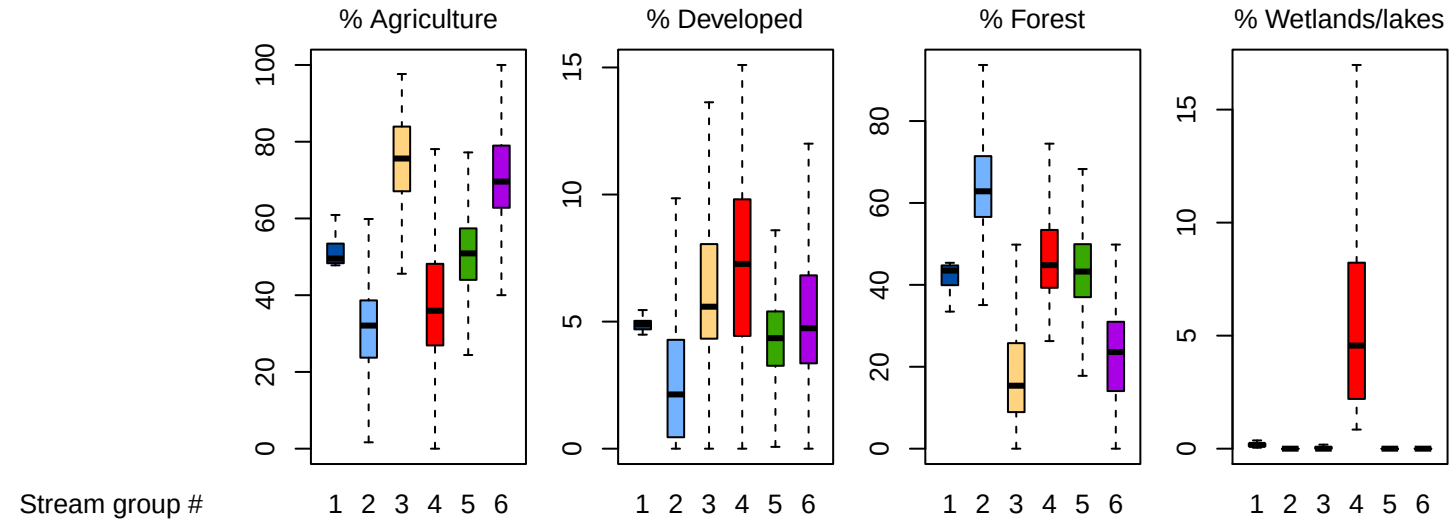
Group 6: Low to moderate flow with cold to cool water temperatures. Moderate to high agriculture land cover with lower slopes. Highest soil clay content, generally greater than 20% and lowest permeability in the watershed.

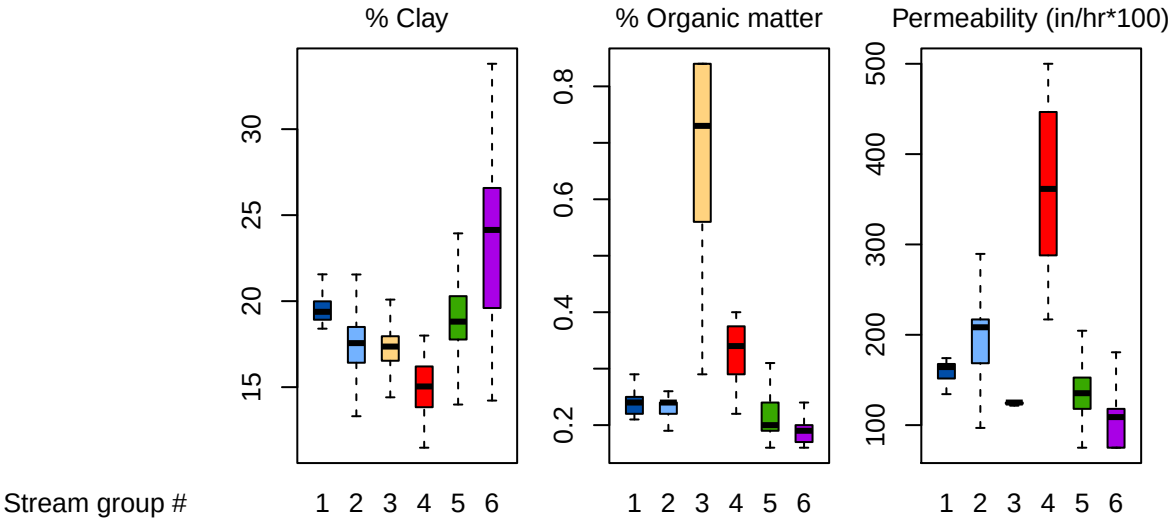
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





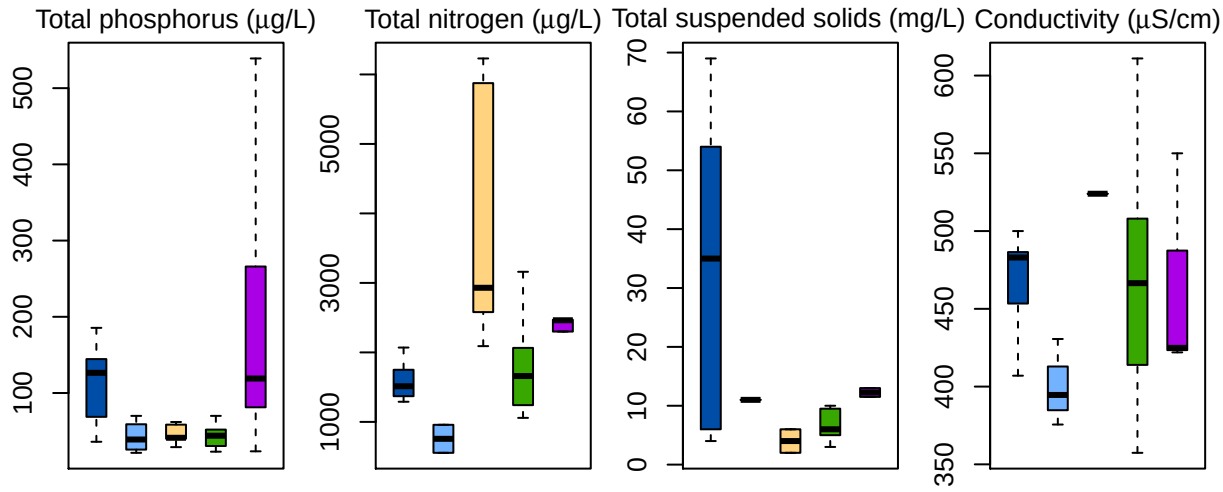
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

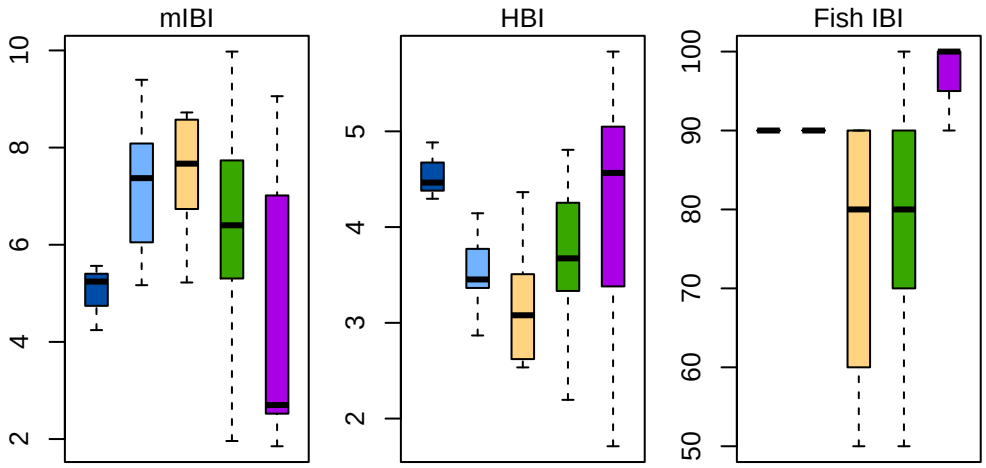
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



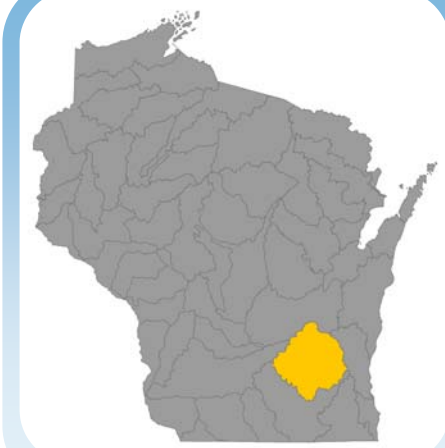
Stream group #	1	2	3	5	6	1	2	3	5	6	1	2	3	5	6	1	2	3	5	6
# of stations with data	6	4	6	24	7	6	2	6	16	6	5	1	2	8	2	5	4	1	18	3

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	5	6	1	2	3	5	6	1	2	3	5	6
# of stations with data	3	7	6	33	11	3	7	6	33	11	1	1	5	17	3



Targeted Watershed Site Selection Tool

Upper Rock and Crawfish Rivers

TWSST watershed ID: 07090001
HUC 8's included: 07090001
DNR District: South Central, Southeast, Northeast
Area: 1892 square miles
Total stream length: 2685 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	4.4	0.09	19.9	0.15
Water temperature (°C)	23.2	23.4	21.7	21.8
Slope (degrees)	2.1	1.9	4.0	2.6
Percent agriculture	74	78	43	45
Percent developed	7	6	6	4
Percent forest	10	7	45	42
Percent wetlands/lakes	8.6	5.3	3.6	0.6
Percent soil clay content	19	20	15	14
Percent soil organic matter content	7	5	4	2
Soil permeability (in/hour * 100)	277	241	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with cool to warm temperatures.

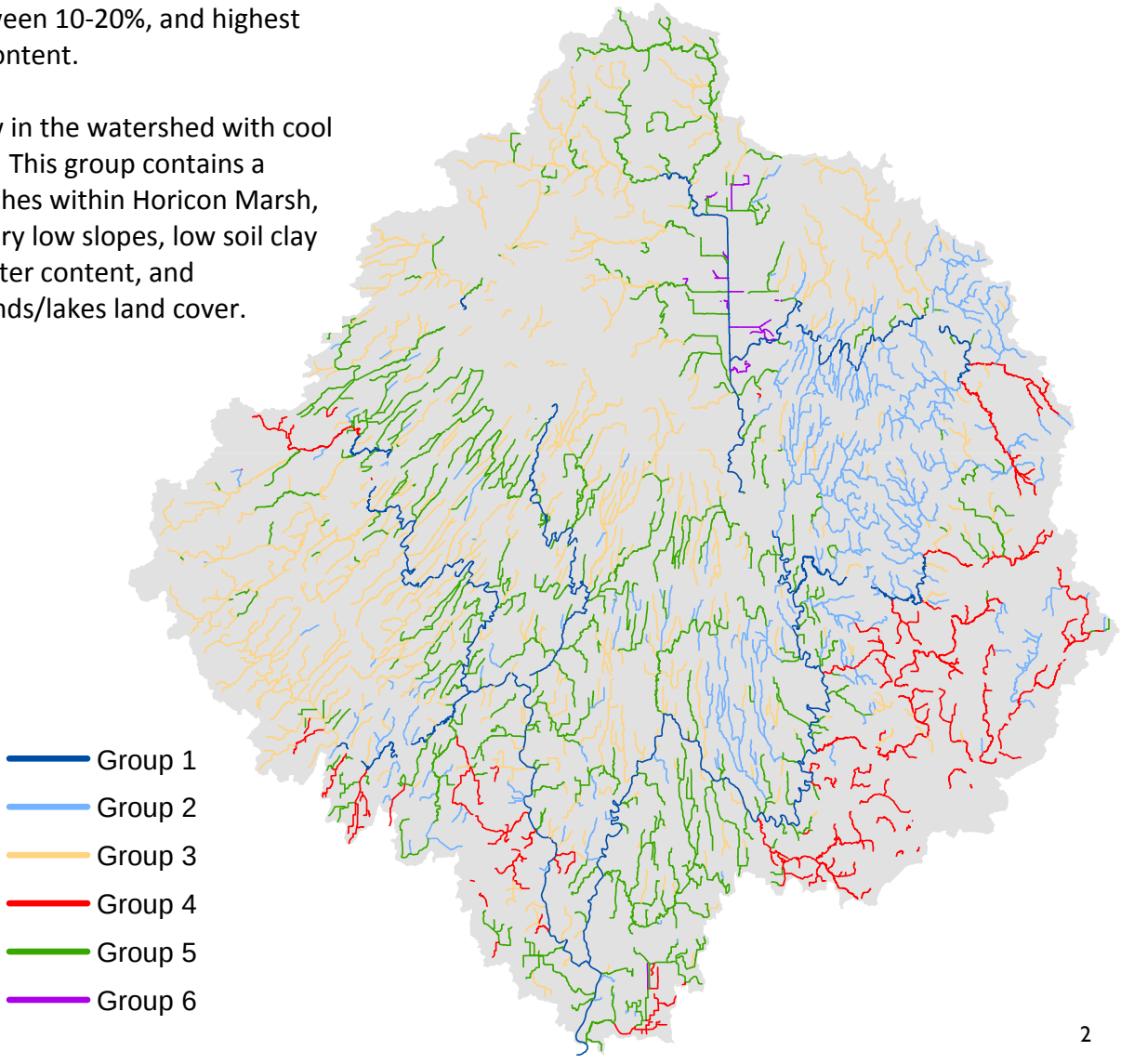
Group 2: Low flow for the watershed with variable water temperatures, though predominantly cold to cool. High agriculture with highest slopes in the watershed, generally greater than 3 degrees.

Group 3: Low flow for the watershed with variable water temperatures, though predominantly cool. Highest agriculture in the watershed, greater than 80%. Highest soil clay content in the watershed, between 20-25%, and low permeability.

Group 4: Moderate flow for the watershed with variable water temperatures, though predominantly cool to warm. Highest levels of developed, generally between 5-15%, and forested land cover, generally between 15-25%. Relatively low soil clay content and the highest permeability in the watershed.

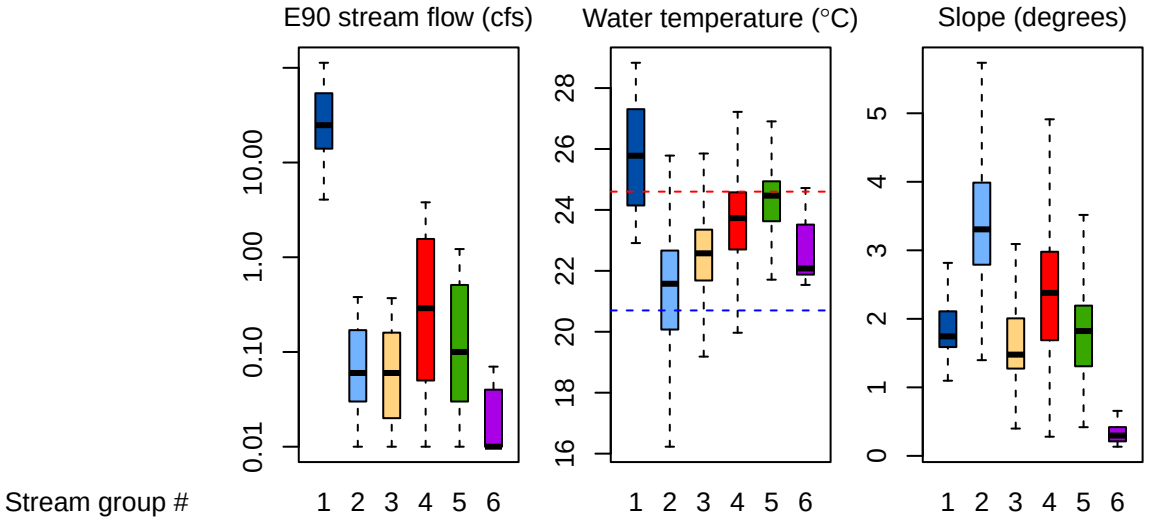
Group 5: Low to moderate flow for the watershed with cool to warm water temperatures. Moderate to high agriculture. Excluding **Group 6**, the highest levels of wetlands/lakes, between 10-20%, and highest soil organic matter content.

Group 6: Lowest flow in the watershed with cool water temperatures. This group contains a small number of reaches within Horicon Marsh, accounting for the very low slopes, low soil clay and high organic matter content, and homogeneous wetlands/lakes land cover.

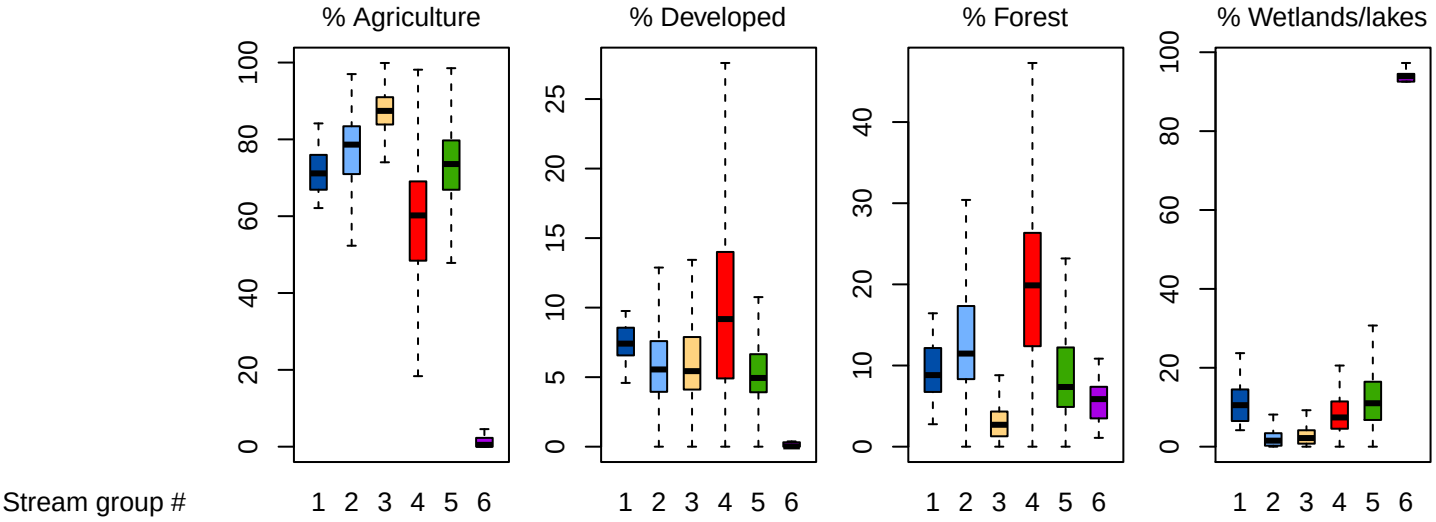


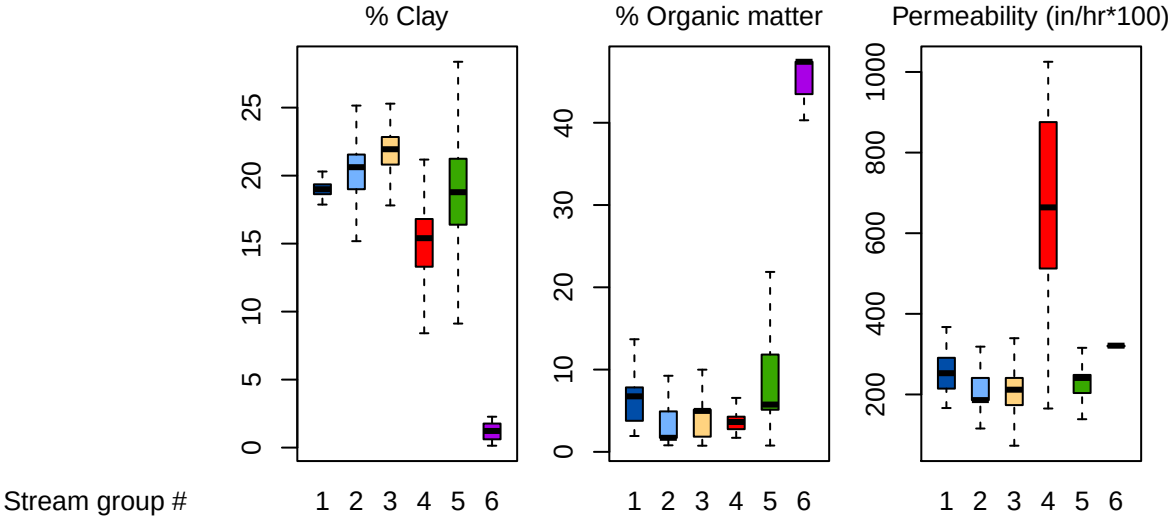
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





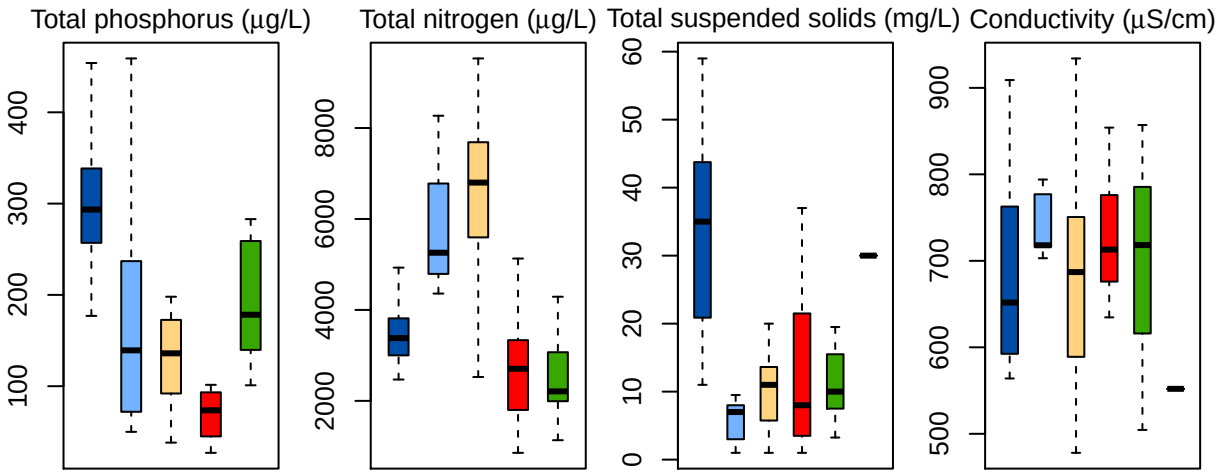
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

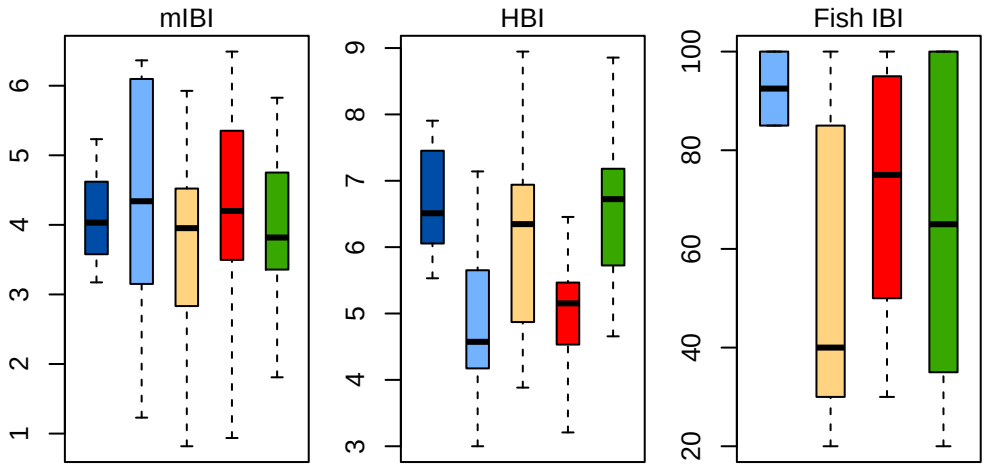
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5		1	2	3	4	5		1	2	3	4	5	6		1	2	3	4	5	6
# of stations with data	17	10	35	15	22		15	4	19	8	12		16	9	20	12	11	1		16	9	25	13	21	1

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5		1	2	3	4	5		2	3	4	5
# of stations with data	7	14	23	18	24		7	14	23	18	24		2	9	8	8

Targeted Watershed Site Selection Tool

Lower Rock and Yahara Rivers

TWSST watershed ID: 07090002
HUC 8's included: 07090002, 07090005
DNR District: South Central, Southeast
Area: 1833 square miles
Total stream length: 1973 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	15.1	0.17	19.9	0.15
Water temperature (°C)	22.6	22.7	21.7	21.8
Slope (degrees)	2.2	2.1	4.0	2.6
Percent agriculture	68	74	43	45
Percent developed	12	6	6	4
Percent forest	13	9	45	42
Percent wetlands/lakes	5.9	2.7	3.6	0.6
Percent soil clay content	18	19	15	14
Percent soil organic matter content	5	4	4	2
Soil permeability (in/hour * 100)	421	358	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

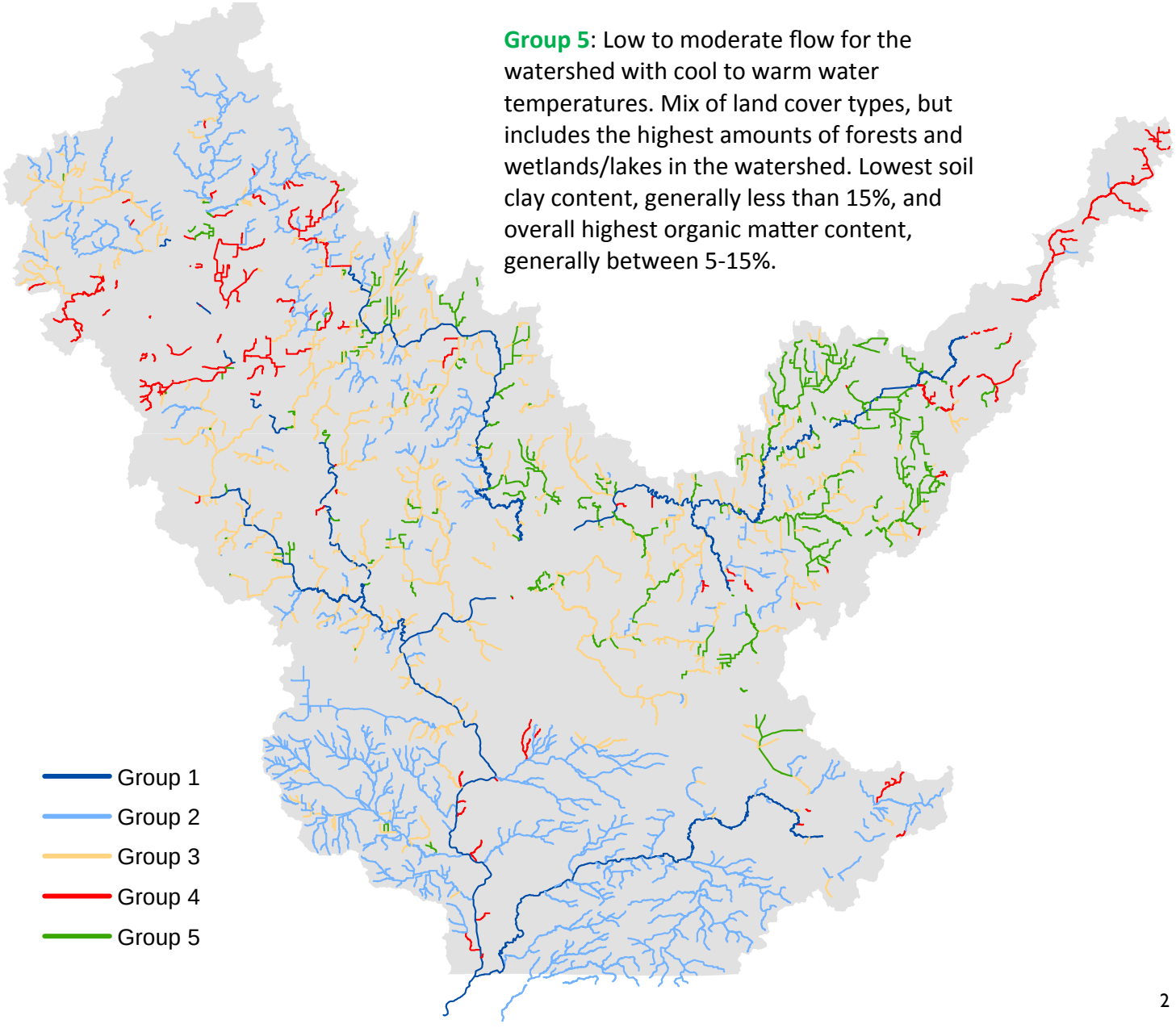
Group 1: Highest flow in the watershed with predominantly warm water temperatures, the warmest in the watershed.

Group 2: Low to moderate flow for the watershed with cold to cool water temperatures. Highest agriculture in the watershed, generally greater than 80%, with minimal forests and wetlands/lakes. Highest soil clay content, generally greater than 20%, and lowest permeability in the watershed.

Group 3: Low to moderate flow for the watershed with variable water temperatures. Moderate to high agriculture, with more forests and wetlands/lakes than **Group 2**.

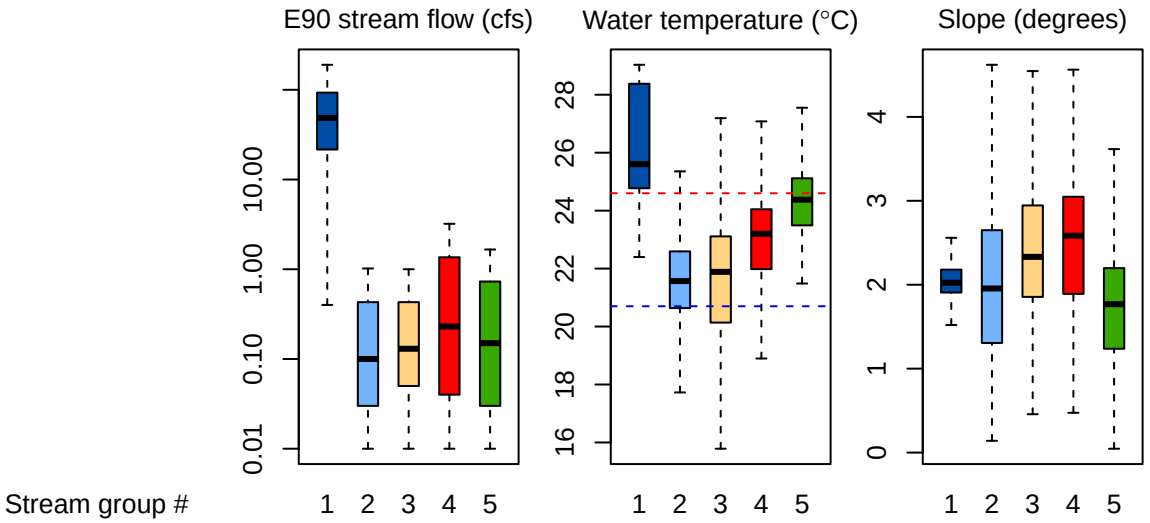
Group 4: Low to moderate flow for the watershed with variable water temperatures. Mix of all four land cover types, but includes by far the highest amounts of developed land cover, most streams 30-70%, and lowest levels of agricultural land cover in the watershed.

Group 5: Low to moderate flow for the watershed with cool to warm water temperatures. Mix of land cover types, but includes the highest amounts of forests and wetlands/lakes in the watershed. Lowest soil clay content, generally less than 15%, and overall highest organic matter content, generally between 5-15%.

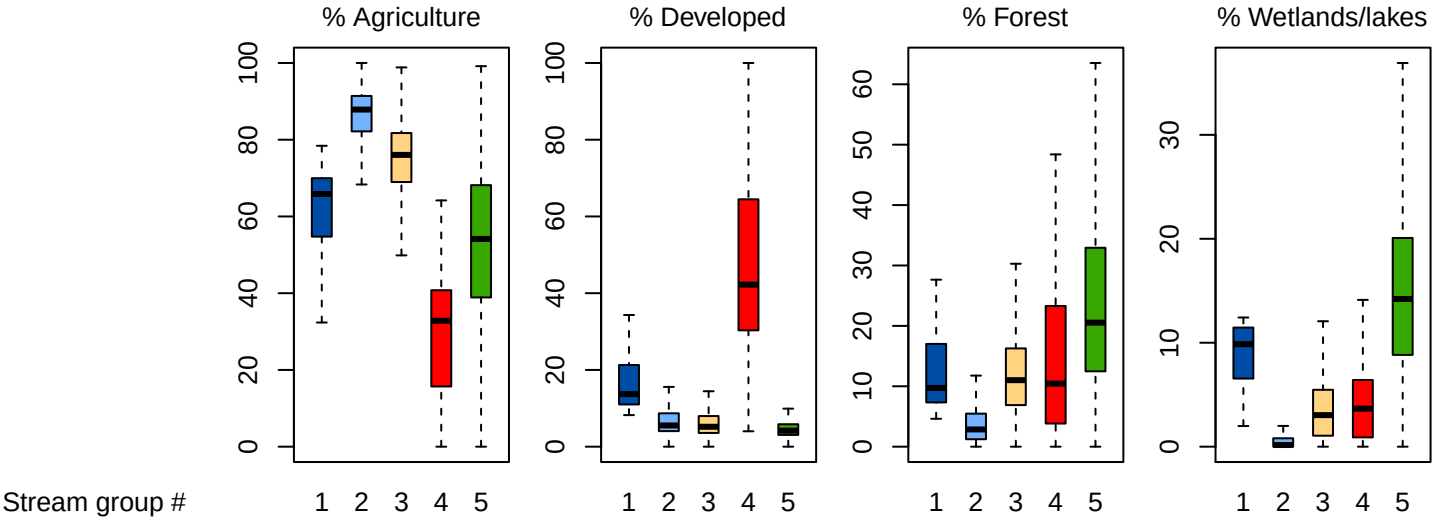


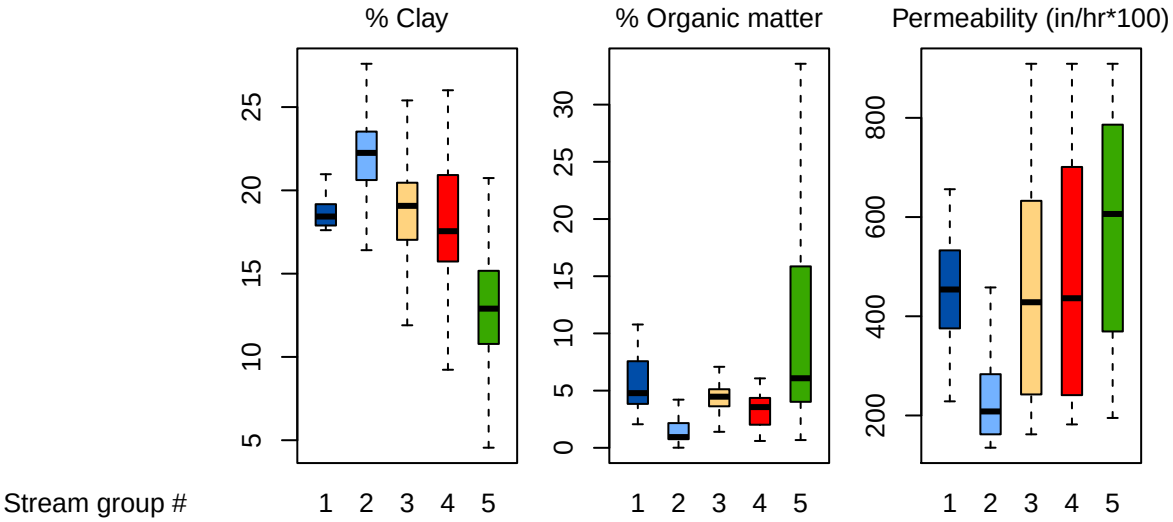
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

<u>Data are provided for general reference only.</u>
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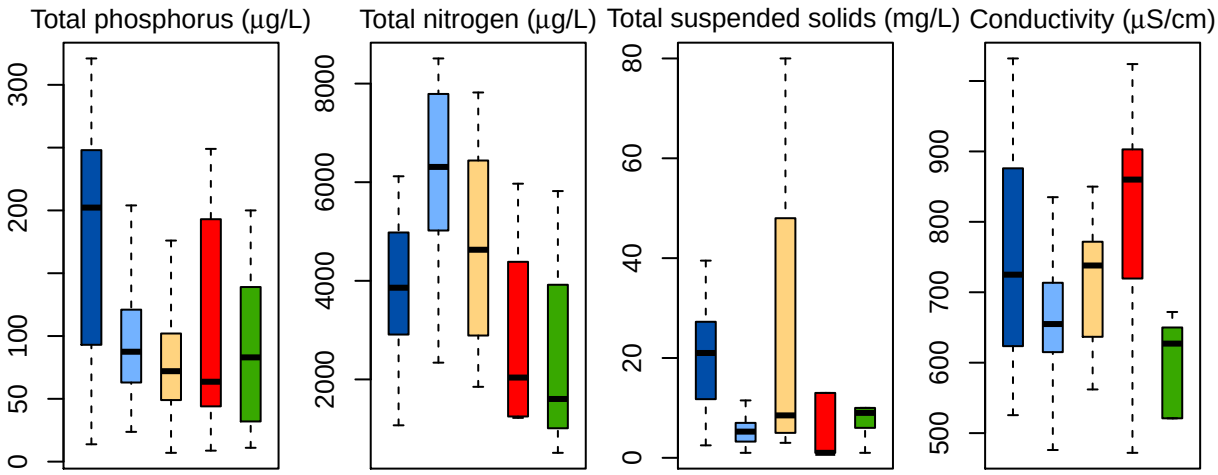
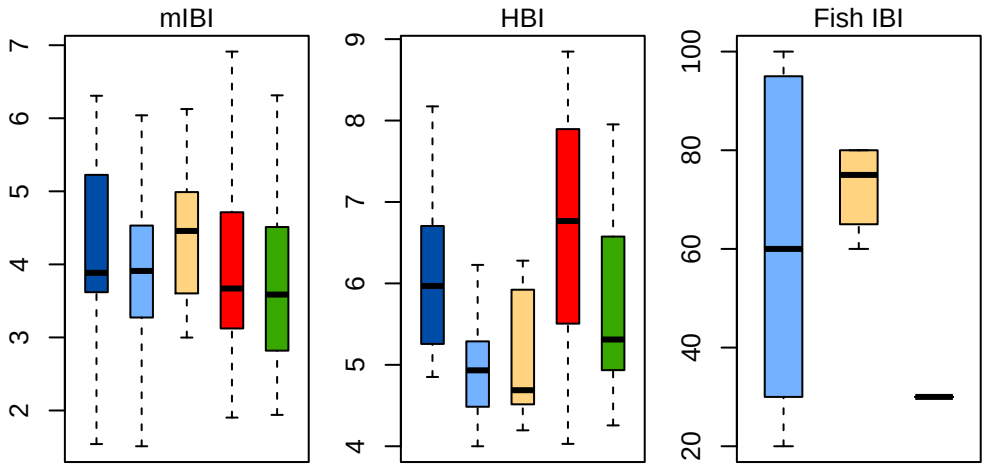


Stream group #	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
# of stations with data	22	34	17	10	9	16	9	9	4	6	15	16	9	5	5	21	26	11	11	9

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	1	2	3	4	5	2	3	4
# of stations with data	16	33	18	10	15	16	33	18	10	15	6	4	1

Targeted Watershed Site Selection Tool

Pecatonica River

TWSST watershed ID: 07090003
HUC 8's included: 07090003
DNR District: South Central
Area: 1098 square miles
Total stream length: 2855 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	6.8	0.12	19.9	0.15
Water temperature (°C)	21.2	21.3	21.7	21.8
Slope (degrees)	5.5	5.6	4.0	2.6
Percent agriculture	82	85	43	45
Percent developed	6	5	6	4
Percent forest	11	7	45	42
Percent wetlands/lakes	0.1	0.0	3.6	0.6
Percent soil clay content	25	25	15	14
Percent soil organic matter content	1	1	4	2
Soil permeability (in/hour * 100)	118	113	353	241

Explore TWSST wih DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with variable water temperatures.

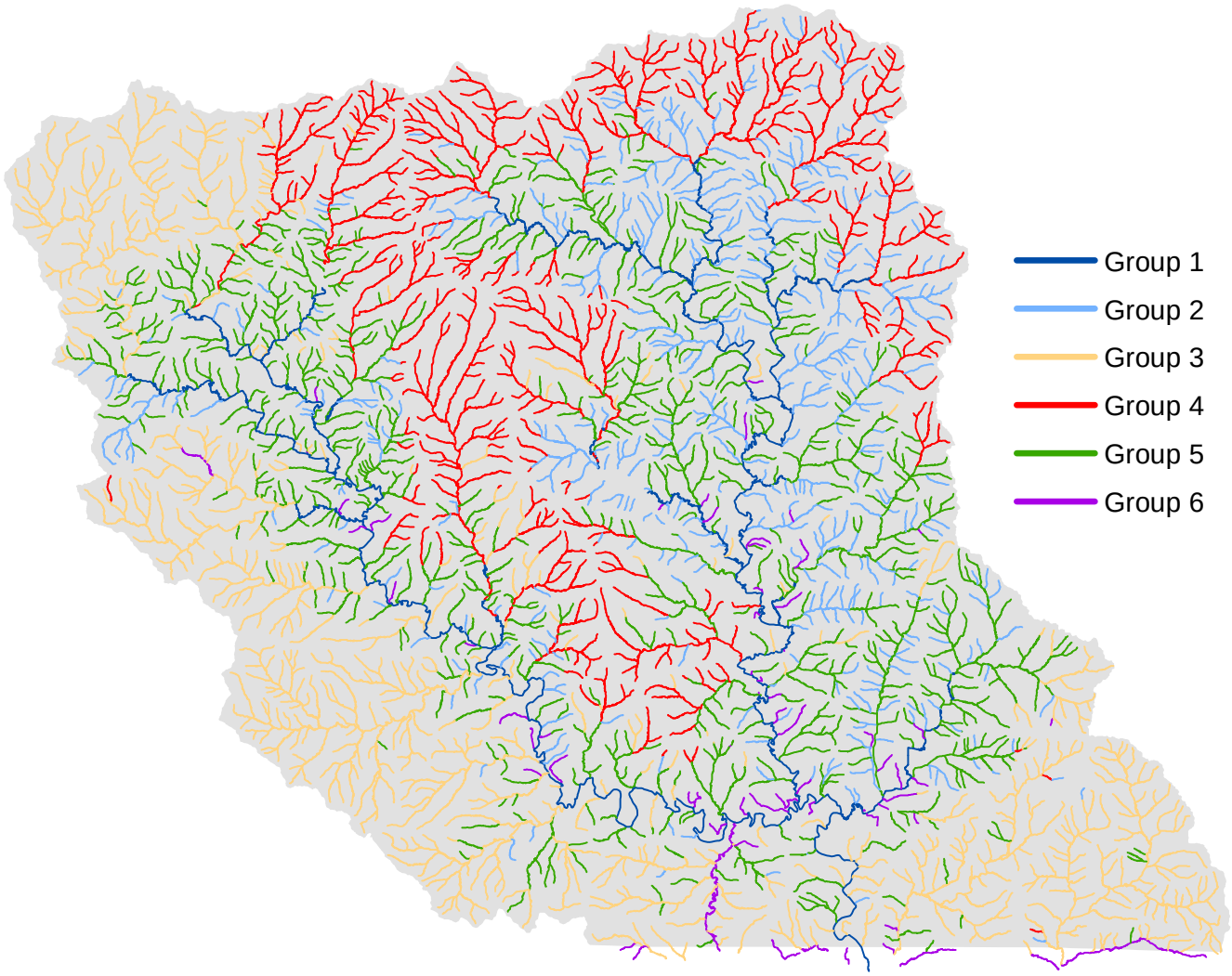
Group 2: Low flow for the watershed with predominantly cold water temperatures. Highest slopes in the watershed, generally greater than 6 degrees. A mix of agriculture and forested land cover and soil clay content between 20-30%.

Group 3: Low to moderate flow with cool water temperatures. Highest agriculture in the watershed, greater than 90%, and lowest slopes in the watershed, less than 4 degrees. Similar soil clay content but relatively higher permeability compared to **Group 4** .

Group 4: Low to moderate flow for the watershed with predominantly cool water temperatures. Relatively high agriculture and developed land cover for the watershed, but more forests than **Group 3**. High soil clay content and lowest permeability in the watershed.

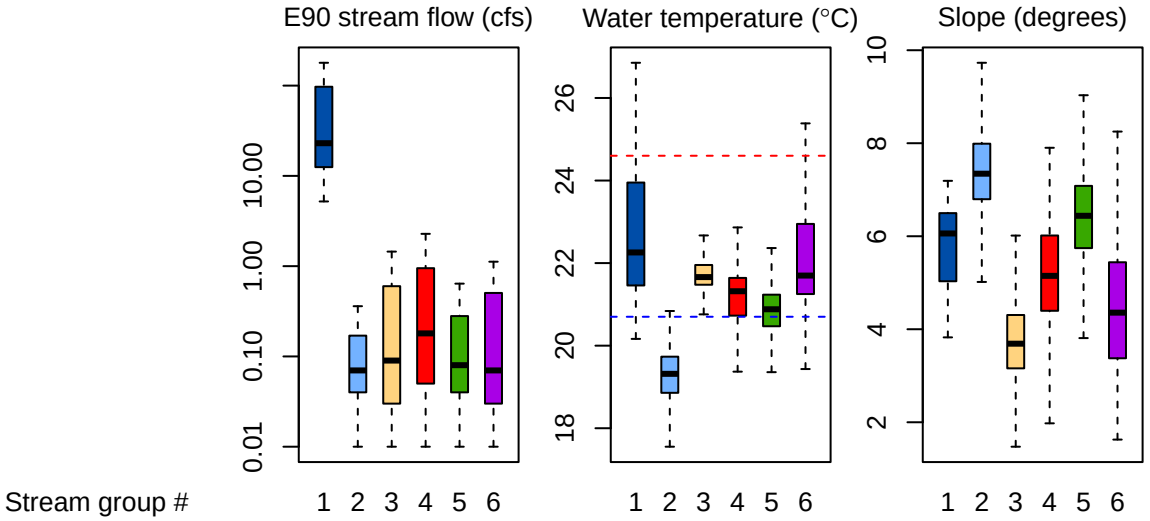
Group 5: Low to moderate flow and cold to cool water temperatures. Moderate to high slopes for the watershed. A mix of land cover with relatively higher permeability differentiating these streams from **Group 4**.

Group 6: Low to moderate flow with variable water temperatures. A mix of all four land cover categories, but the only group with wetlands/lakes present, up to 6%. Lowest soil clay content and the highest permeability in the watershed.

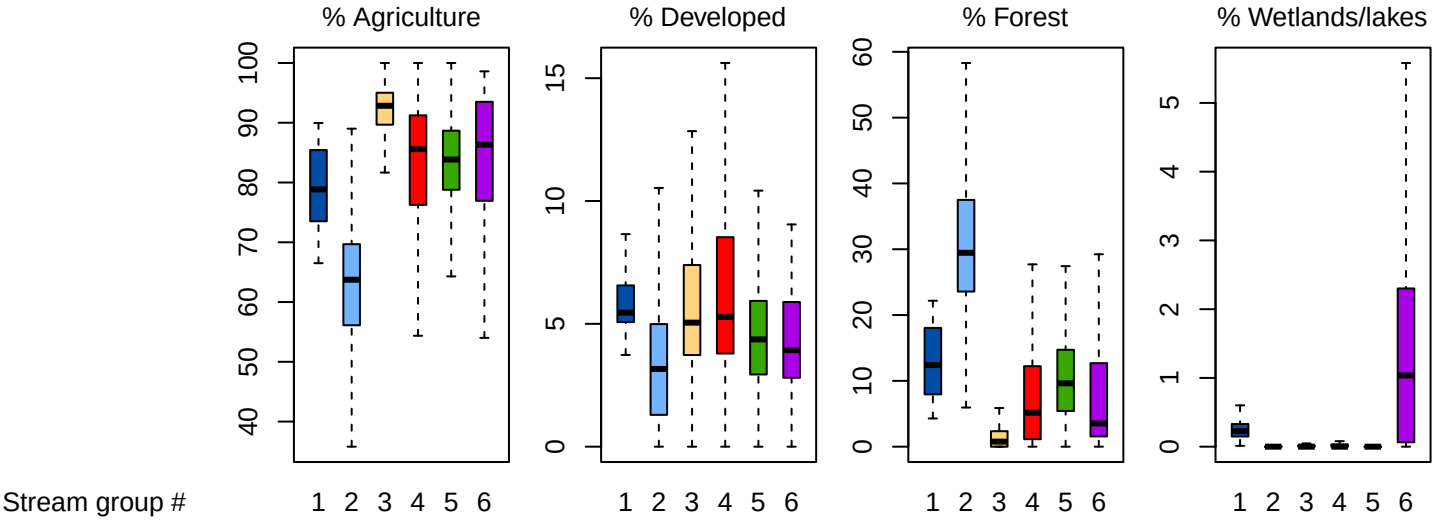


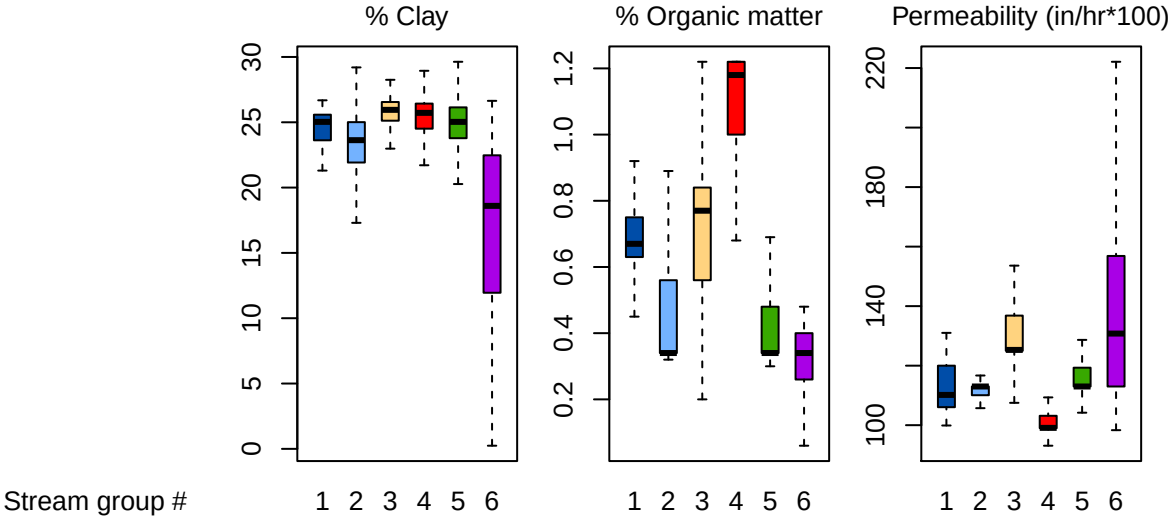
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





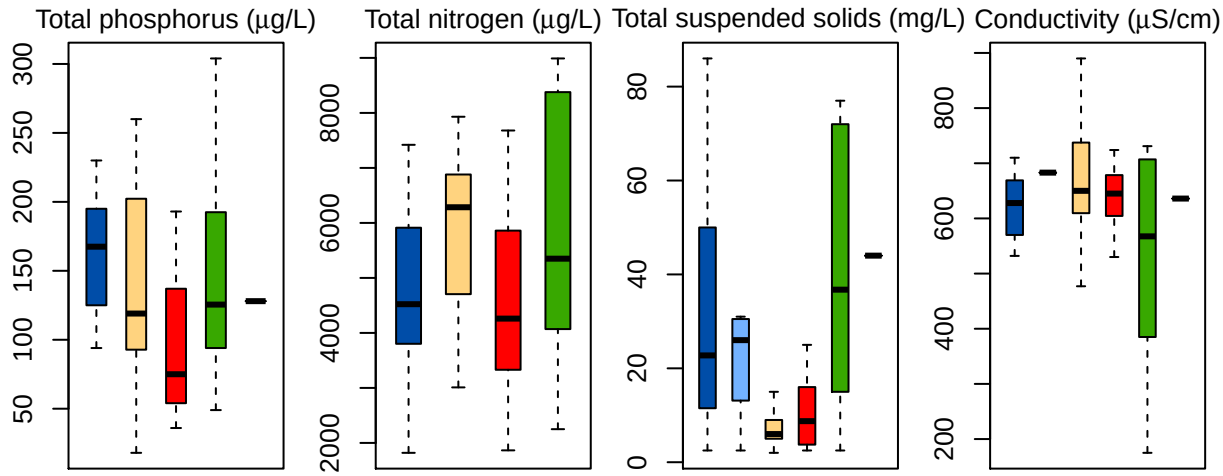
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

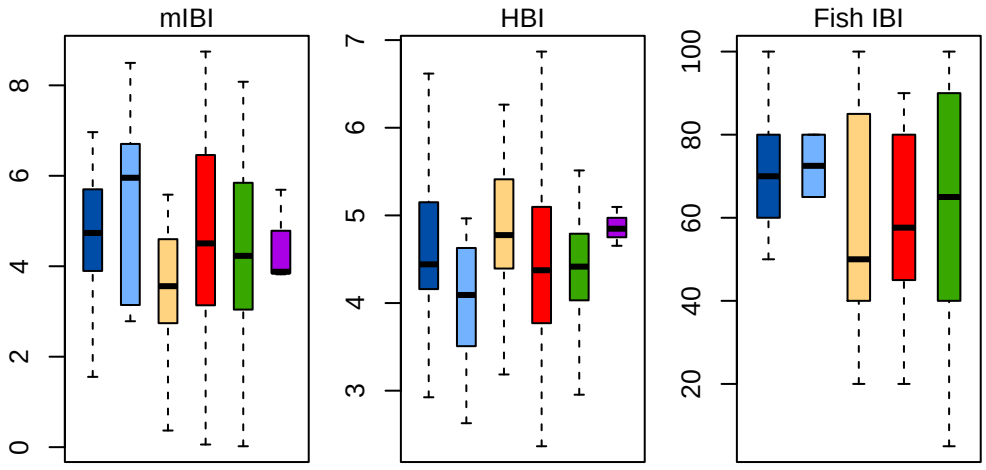
<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	3	4	5	6		1	3	4	5		1	2	3	4	5	6		1	2	3	4	5	6
# of stations with data	18	16	21	16	1		16	5	9	11		32	7	5	36	12	1		16	1	15	11	10	1

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	6		1	2	3	4	5	6		1	2	3	4	5			
# of stations with data	34	13	39	58	54	3		34	13	39	58	54	3		5	2	8	22	14			

Targeted Watershed Site Selection Tool

Sugar River

TWSST watershed ID: 07090004
HUC 8's included: 07090003, 07090004
DNR District: South Central
Area: 736 square miles
Total stream length: 1501 miles

Summary statistics for the physical characteristics used in the stream classification.
Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	6.9	0.17	19.9	0.15
Water temperature (°C)	21.0	21.0	21.7	21.8
Slope (degrees)	4.5	4.6	4.0	2.6
Percent agriculture	77	78	43	45
Percent developed	6	5	6	4
Percent forest	14	12	45	42
Percent wetlands/lakes	1.0	0.3	3.6	0.6
Percent soil clay content	21	21	15	14
Percent soil organic matter content	1	1	4	2
Soil permeability (in/hour * 100)	212	161	353	241

WISCONSIN DEPT. OF NATURAL RESOURCES

Explore TWSST with DNR's Water Condition Viewer

TWSST

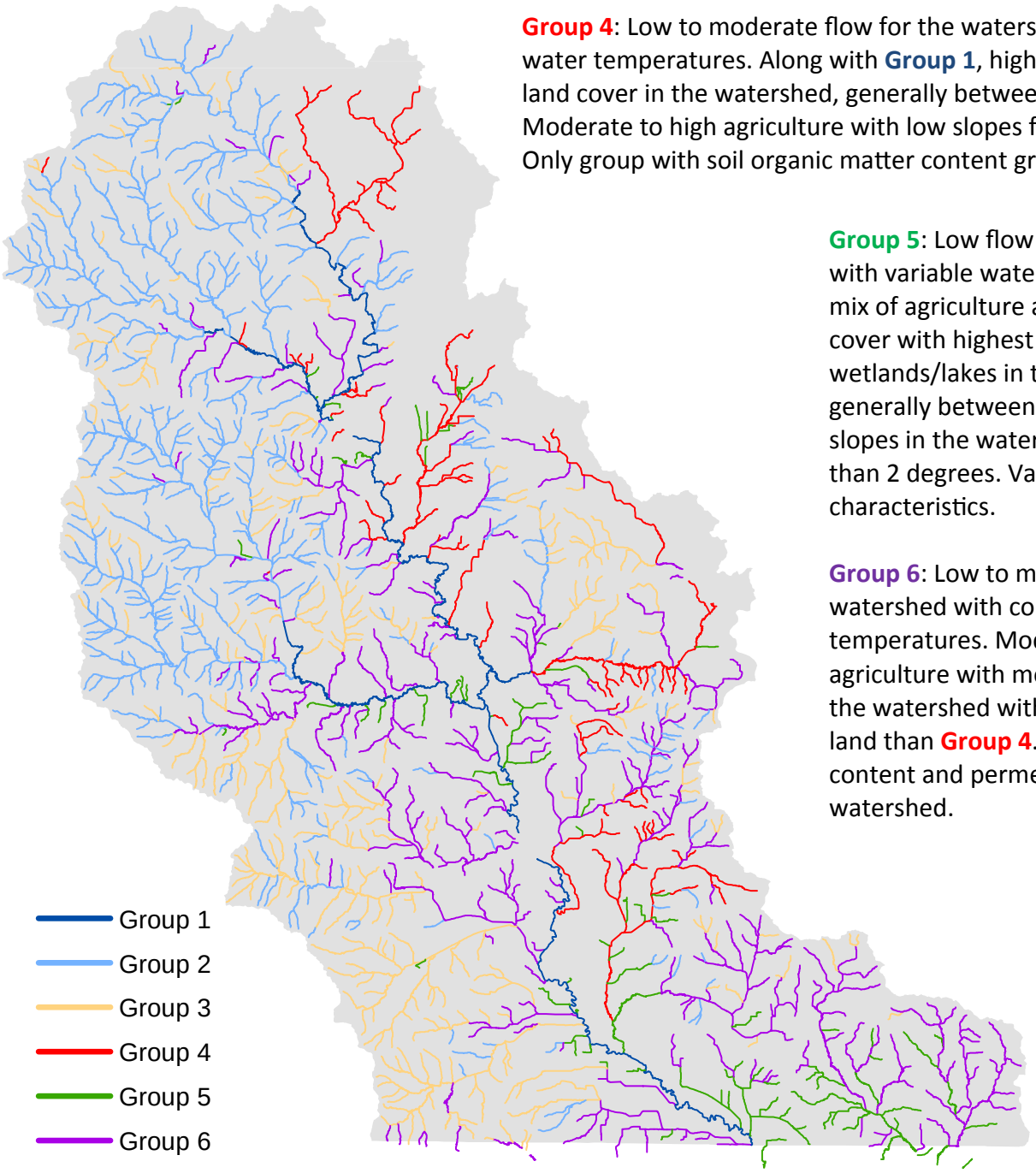
Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

Group 1: Highest flow in the watershed with cool to warm water temperatures.

Group 2: Low to moderate flow for the watershed with predominantly cold water temperatures. A mix of agriculture and forested land cover with minimal wetlands/lakes. Highest slopes in the watershed, generally around 6 degrees. High soil clay content, generally between 20-25%, and the lowest permeability in the watershed.

Group 3: Low flow for the watershed with predominantly cool water temperatures. Highest agriculture in the watershed, greater than 80%, with moderate slopes. Highest soil clay content, generally between 20-25%, and low permeability for the watershed.



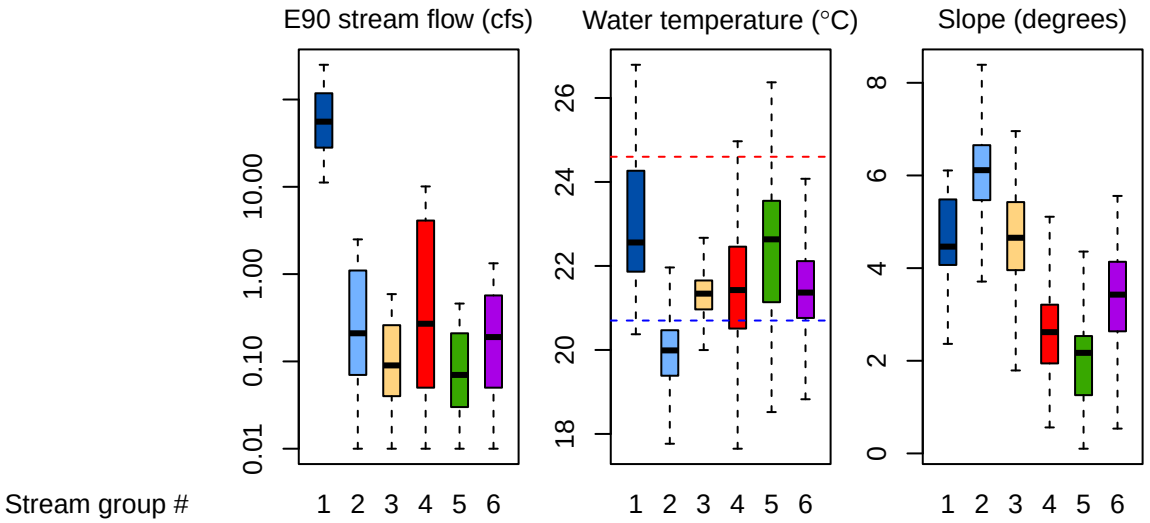
Group 4: Low to moderate flow for the watershed with variable water temperatures. Along with **Group 1**, highest developed land cover in the watershed, generally between 5-10%. Moderate to high agriculture with low slopes for the watershed. Only group with soil organic matter content greater than 2%.

Group 5: Low flow for the watershed with variable water temperatures. A mix of agriculture and forested land cover with highest amount of wetlands/lakes in the watershed, generally between 4-8%. Lowest slopes in the watershed, generally less than 2 degrees. Variable soil characteristics.

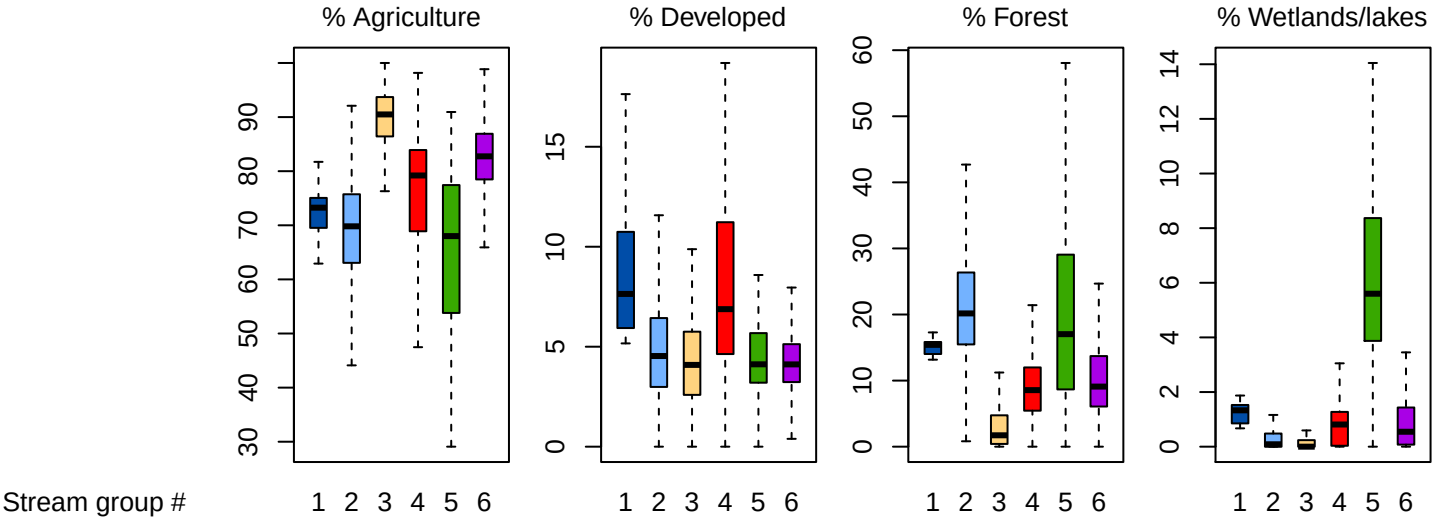
Group 6: Low to moderate flow for the watershed with cold to cool water temperatures. Moderate to high agriculture with moderate slopes for the watershed with less developed land than **Group 4**. Moderate soil clay content and permeability for the watershed.

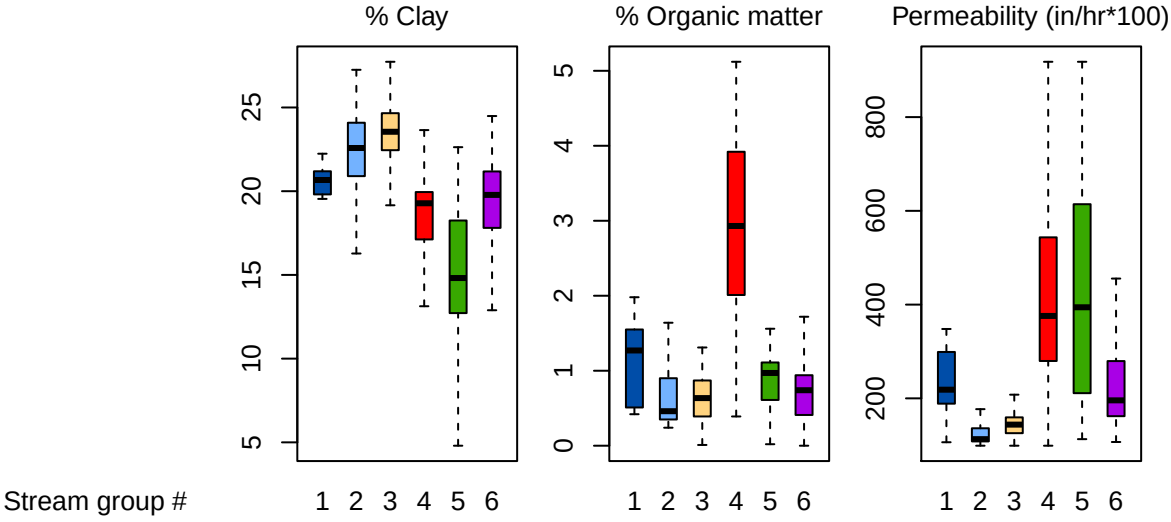
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





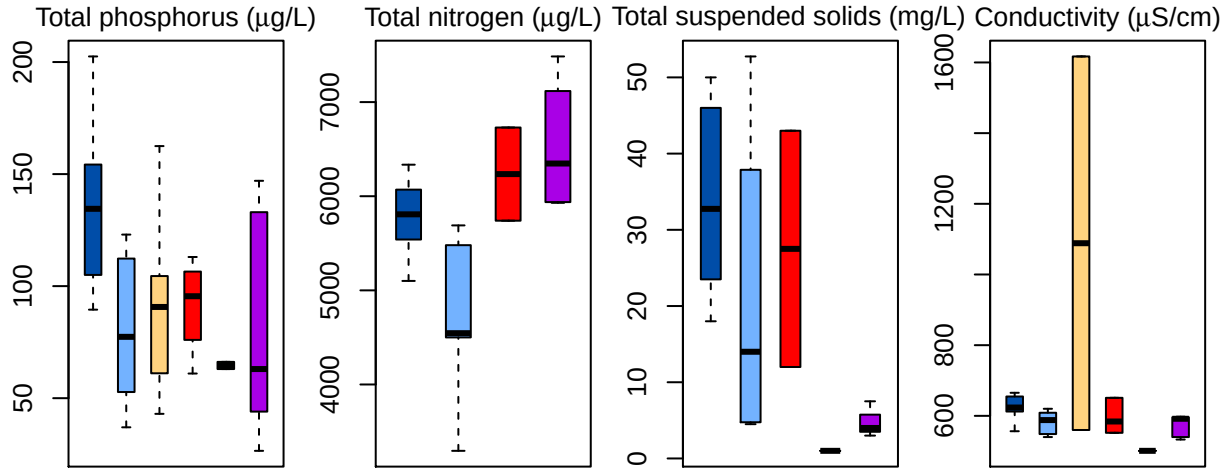
Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

<u>Data are provided for general reference only.</u>
Refer to the report for details on data inclusion criteria and quality control performed.



Stream group #	1	2	3	4	5	6
# of stations with data	7	8	5	4	2	10

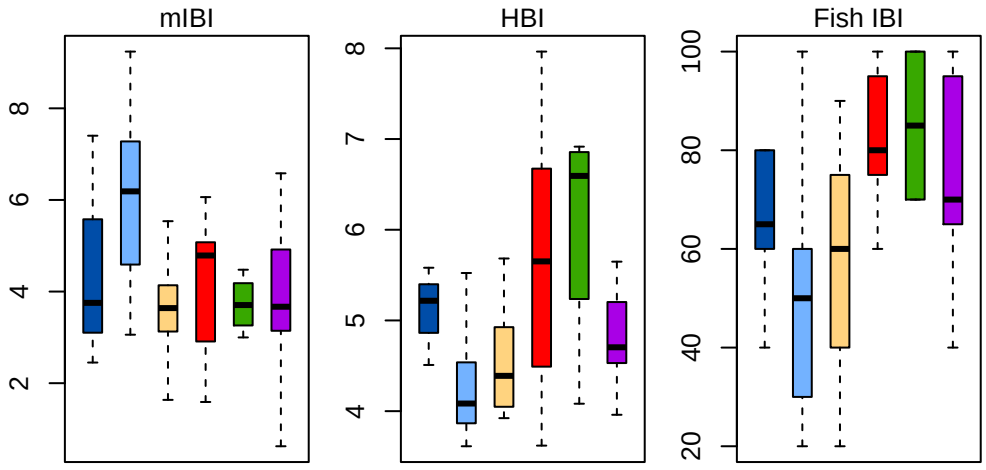
Stream group #	1	2	4	6
# of stations with data	6	5	2	4

Stream group #	1	2	4	5	6
# of stations with data	6	4	2	1	3

Stream group #	1	2	3	4	5	6
# of stations with data	7	7	2	6	1	6

Boxplot colors correspond to stream group colors on the map.

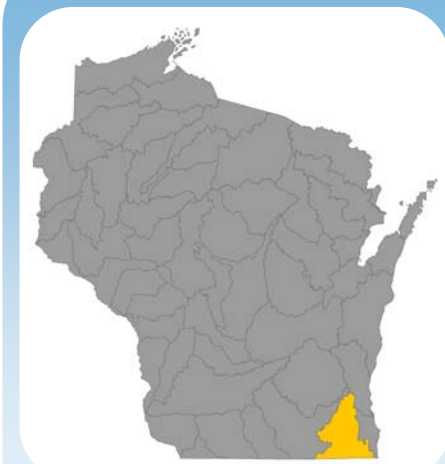
Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5	6
# of stations with data	3	22	17	7	4	23

Stream group #	1	2	3	4	5	6
# of stations with data	3	22	17	7	4	23

Stream group #	1	2	3	4	5	6
# of stations with data	5	21	4	7	2	7



Targeted Watershed Site Selection Tool

Upper Fox (IL), Kishwaukee, and Des Plaines Rivers

TWSST watershed ID: 07120006
HUC 8's included: 07090006, 07120004, 07120006
DNR District: Southeast
Area: 1092 square miles
Total stream length: 1253 miles

Summary statistics for the physical characteristics used in the stream classification. Data are from DNR's Wisconsin Hydrography Dataset (WHD)

	TWSST watershed		Statewide	
Physical characteristic from WHD	Mean	Median	Mean	Median
E90 stream flow (cfs)	5.2	0.11	19.9	0.15
Water temperature (°C)	22.4	22.4	21.7	21.8
Slope (degrees)	2.1	1.9	4.0	2.6
Percent agriculture	54	55	43	45
Percent developed	19	11	6	4
Percent forest	20	17	45	42
Percent wetlands/lakes	3.8	1.4	3.6	0.6
Percent soil clay content	21	19	15	14
Percent soil organic matter content	5	4	4	2
Soil permeability (in/hour * 100)	299	191	353	241

Explore TWSST with DNR's Water Condition Viewer

WISCONSIN DEPT. OF NATURAL RESOURCES

TWSST

Bureau of Water Quality, June 2015

Narrative descriptions of stream groups

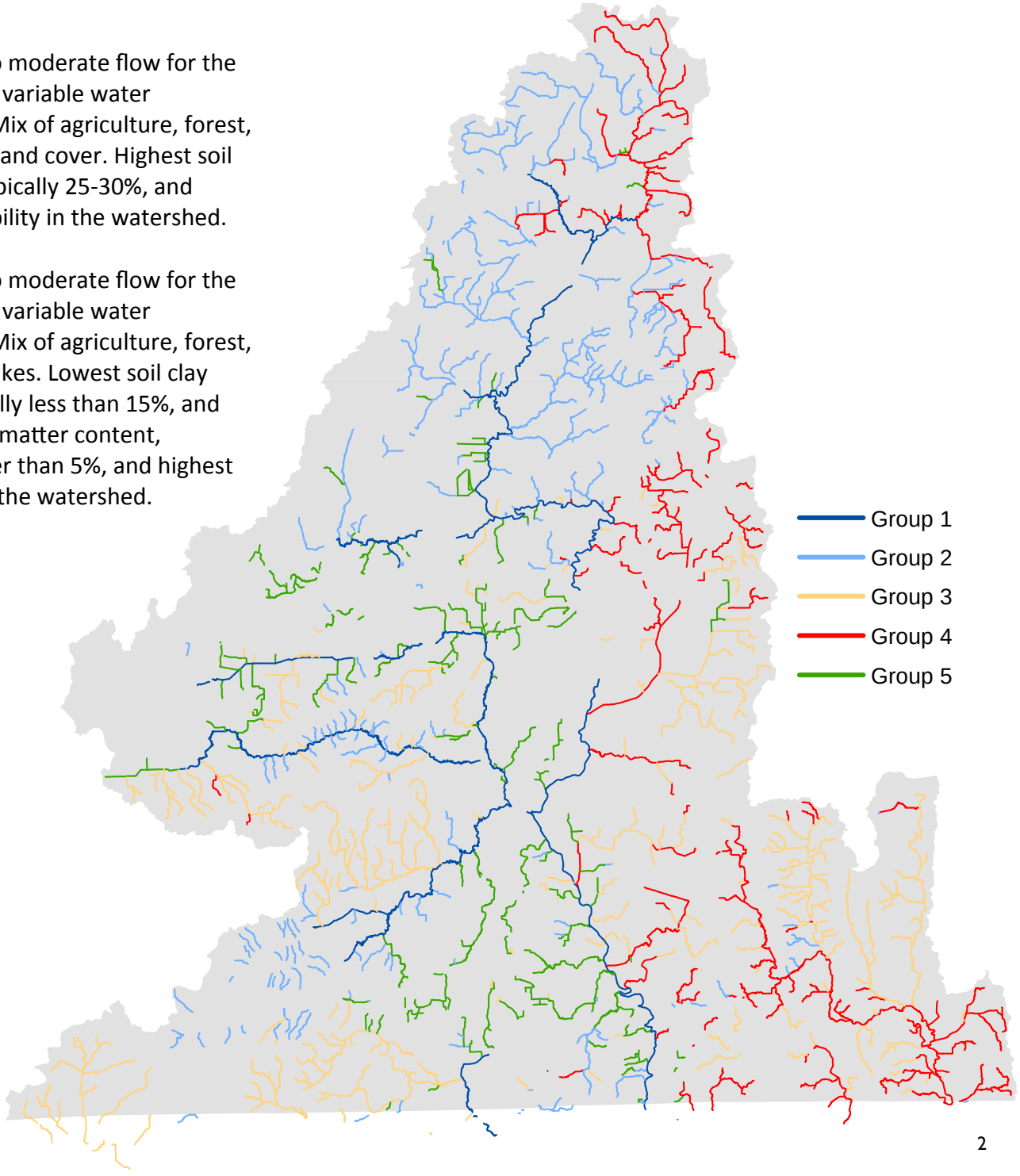
Group 1: Highest flow in the watershed with cool to warm water temperatures.

Group 2: Low to moderate flow for the watershed with variable water temperatures, though overall colder than Groups 4 and 5. Mix of agriculture, forest, and developed land cover. Cooler water temperatures, higher slopes, and lower soil clay content differentiate these streams from **Group 4**.

Group 3: Low to moderate flow for the watershed with cold to cool water temperatures. Highest agriculture in the watershed, generally greater than 80%. Moderate to high soil clay content with relatively low permeability.

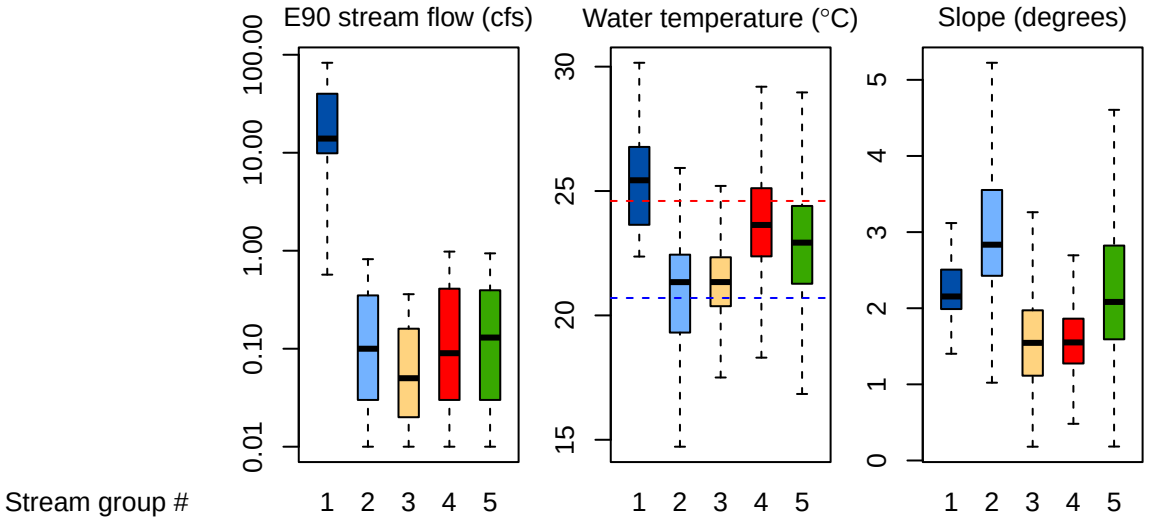
Group 4: Low to moderate flow for the watershed with variable water temperatures. Mix of agriculture, forest, and developed land cover. Highest soil clay content, typically 25-30%, and lowest permeability in the watershed.

Group 5: Low to moderate flow for the watershed with variable water temperatures. Mix of agriculture, forest, and wetlands/lakes. Lowest soil clay content, generally less than 15%, and highest organic matter content, generally greater than 5%, and highest permeability in the watershed.

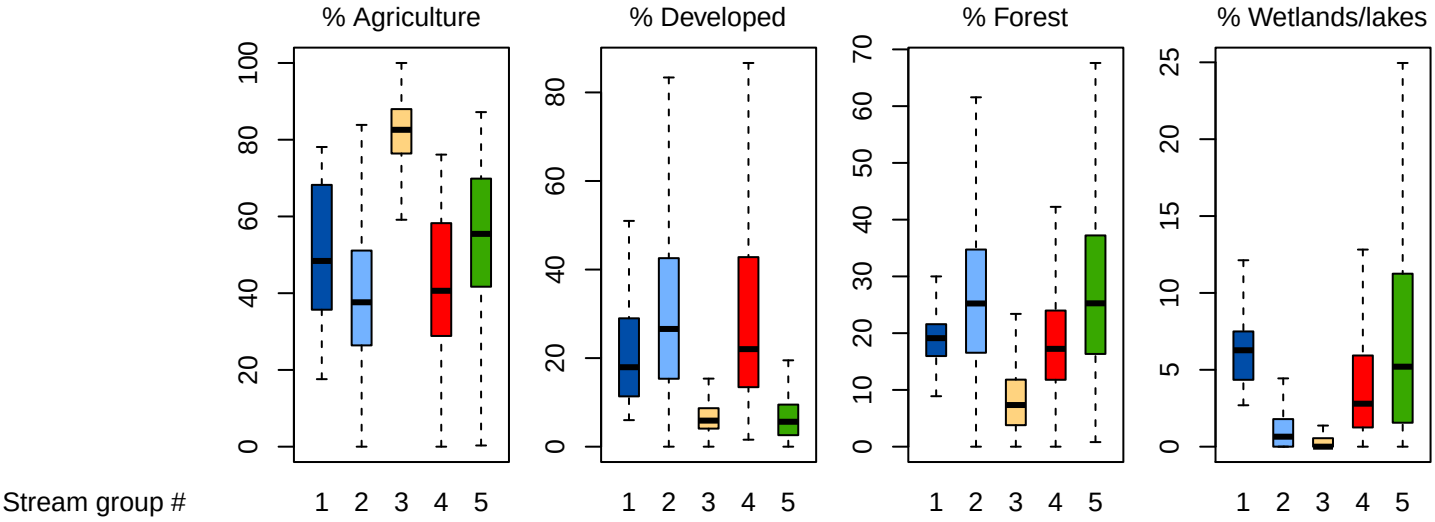


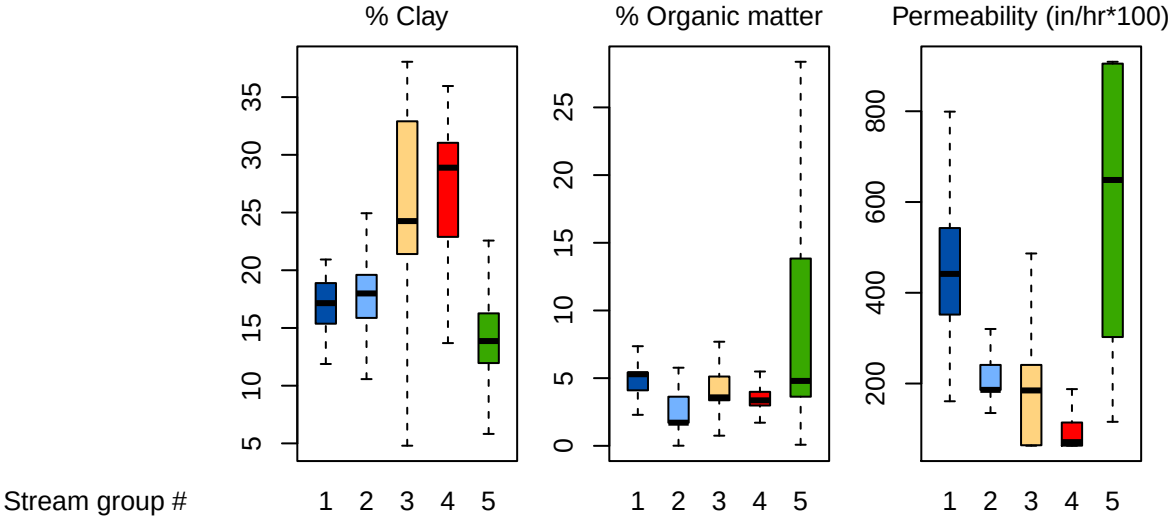
Stream group boxplots: Physical characteristics

- Physical characteristics are from DNR's Wisconsin Hydrography Dataset (WHD).
- Stream flow volume (as 90% probability of exceedance) and water temperature are modeled values.



Boxplot colors correspond to stream group colors on the map.





Land cover data are from NLCD 2006.

Soils data are from NRCS soil surveys.

Stream group boxplots: water chemistry and biology

- Data are from DNR's SWIMS and Fisheries Management databases.
- Values are medians for water chemistry parameters and means for biology metrics for 2003-2013.

<u>Data are provided for general reference only.</u>
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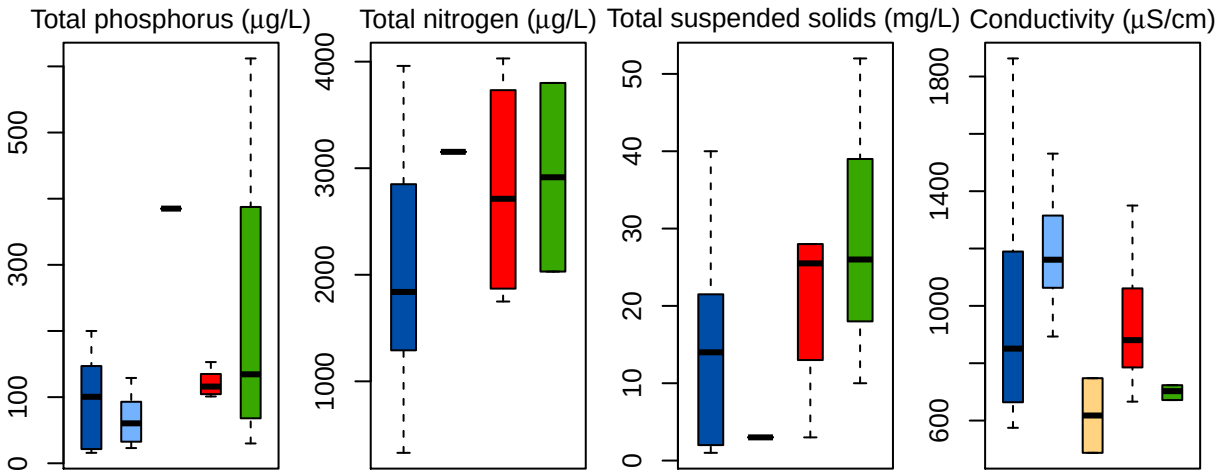
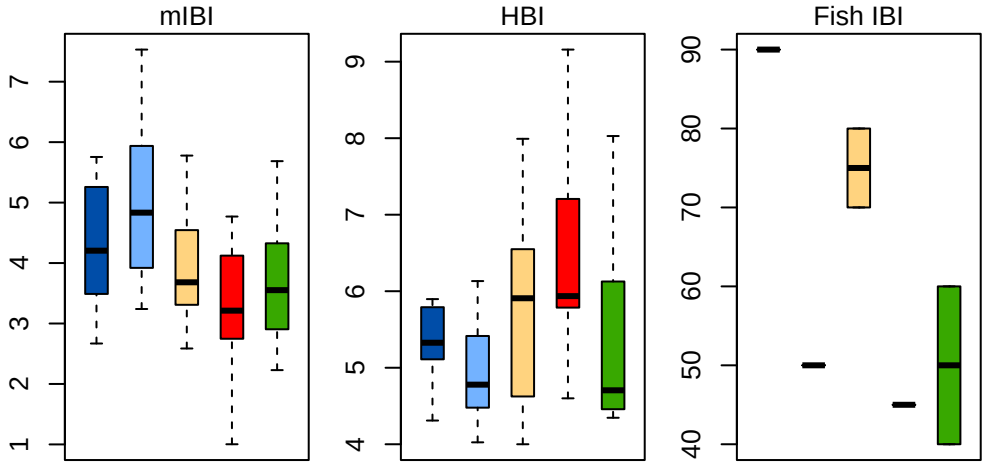


Stream group #	1	2	3	4	5		1	3	4	5		1	3	4	5		1	2	3	4	5
# of stations with data	13	7	1	7	4		10	1	4	2		8	1	4	3		12	8	2	9	6

Boxplot colors correspond to stream group colors on the map.

Fish IBI scores are for streams where observed assemblages support the modeled Natural Community.



Stream group #	1	2	3	4	5		1	2	3	4	5		1	2	3	4	5			
# of stations with data	14	13	15	11	9		14	13	15	11	9		1	1	2	1	2			