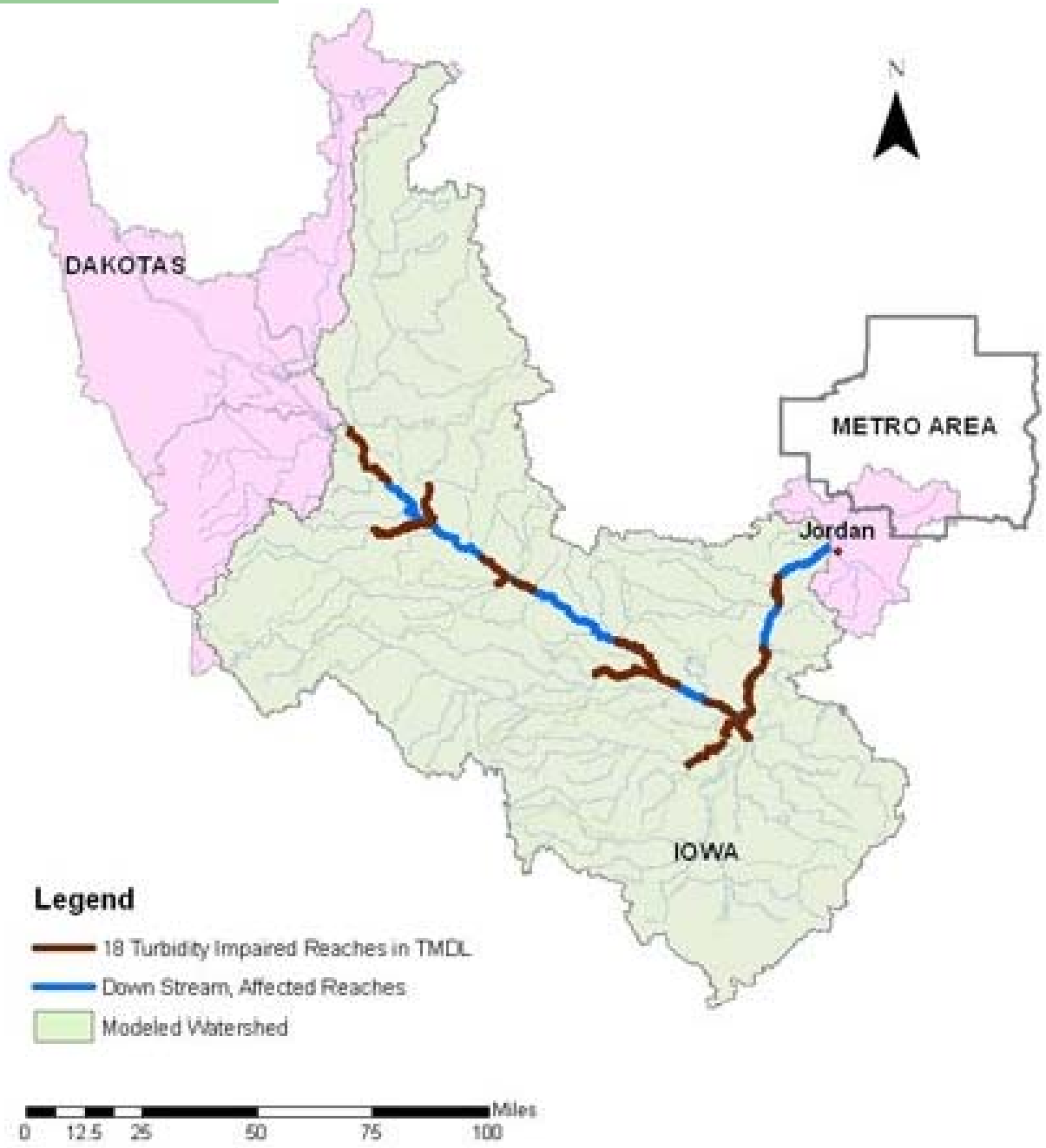
Redwood River

Total Maximum Daily Load Study:
Turbidity

Open House meeting
Wednesday 20th, 2009
Marshall Minnesota


N
DAKOTAS
METRO AREA
Jordan
IOWA
Legend
18 Turbidity Impaired Reaches in TMDL
Down Stream, Affected Reaches
Modeled Watershed
0
12.5
25
50
75
100
Miles

The Minnesota River Turbidity TMDL

- The MN river TMDL uses the HSPF model.
- This model works to estimate the impact from hydrologic changes, and the effectiveness of potential changes.
- The TMDL is still in draft form
  - Public meeting at New Ulm at the 27th of August.

REDWOOD TMDL

- The data collected by the RCRCA is used to calculate the loading in the rivers.
  - Using the specific flow and sample data we can calculate the best data.

With the sample and watershed data established, what is next?

- Review flow data
  - Determine the TSS “surrogate” value.
- Establish flow and loading curves
- Calculate loads from each impaired area

Turbidity and TSS

- Turbidity is the measurement of light scattered in a water column.
  - Water quality standard is 25 NTU
- Total Suspended Solids (TSS) is the measurement of mass in the water column in Mg/L.
  - Water quality standard varies by area due to the different soil types and other materials.

Calculating the surrogate value

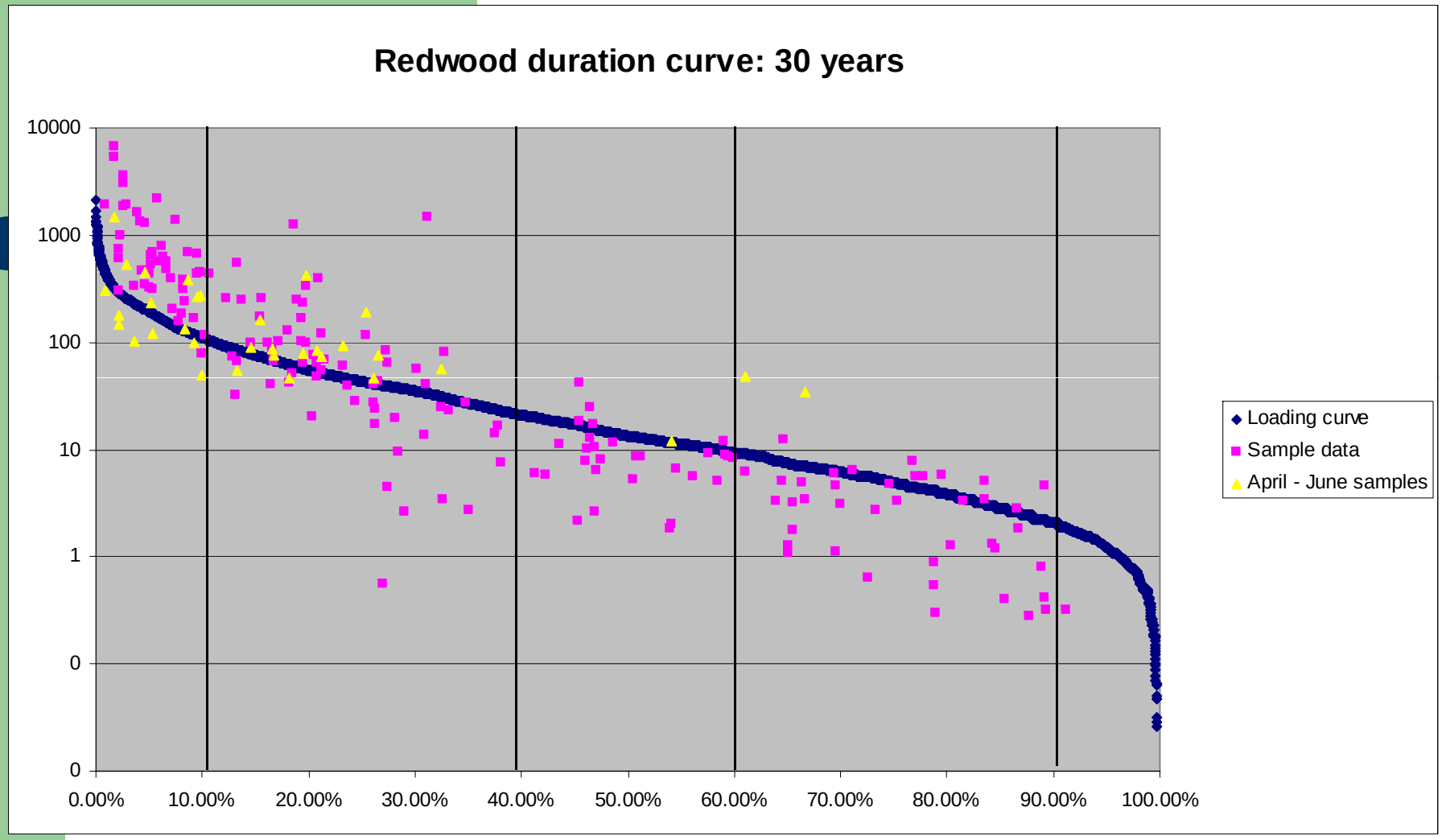
- All areas across the Minnesota river basin were calculated using existing paired sample data.

  - **25 NTU = 70 Mg/L**

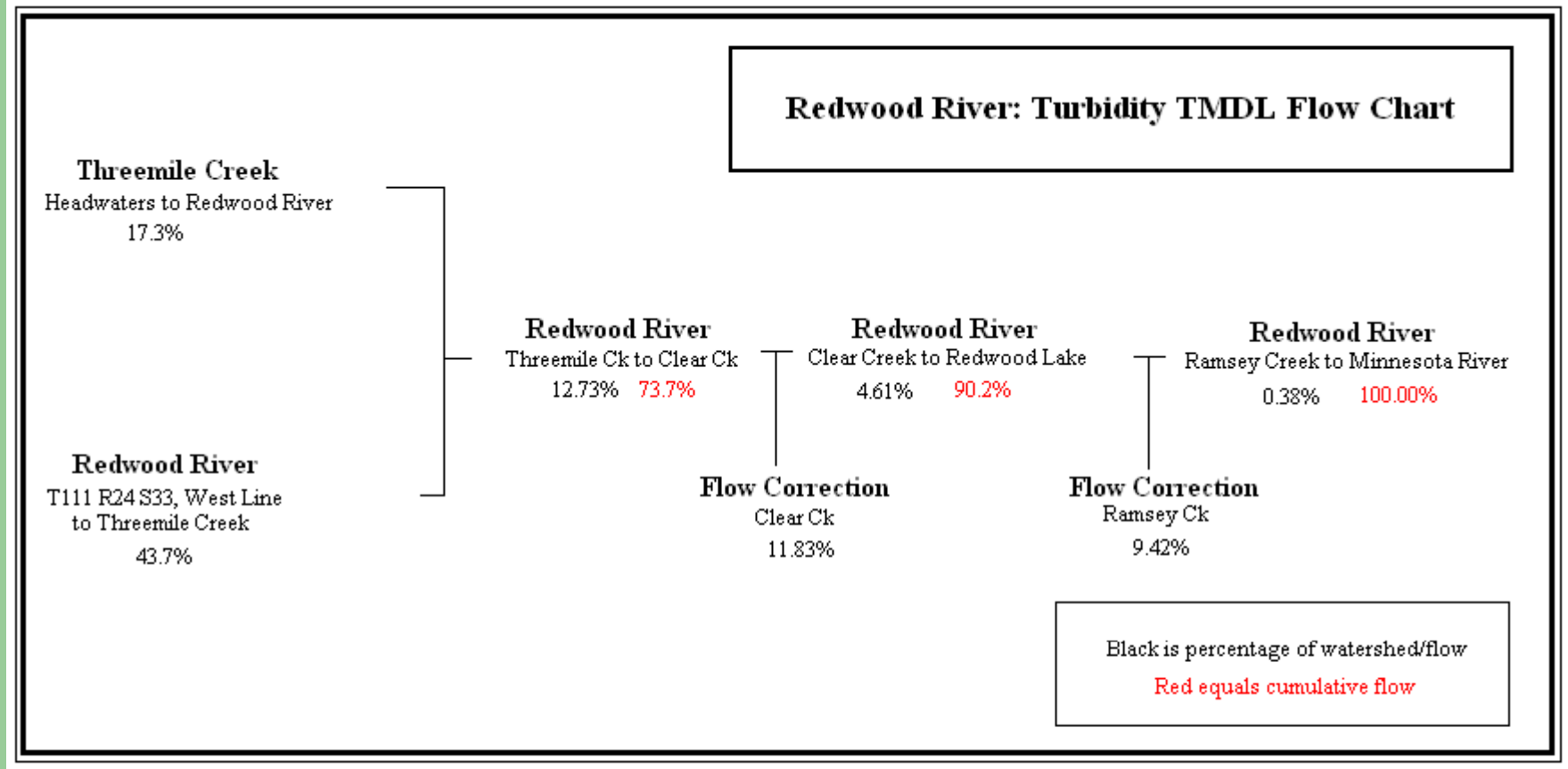
Calculating the flows and loads:

- Once you have the surrogate value and the flow data, you can begin to calculate the load data.

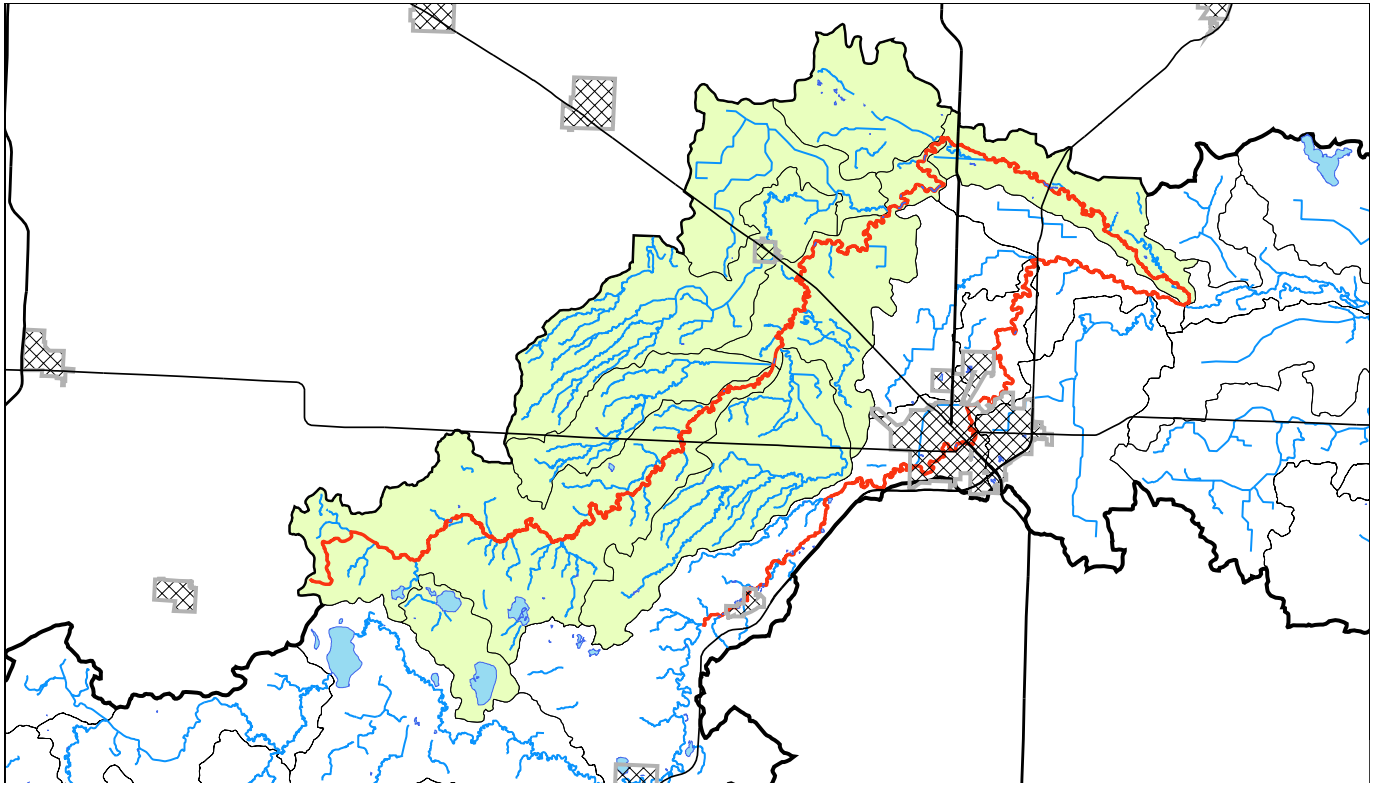
- Since the load data is dependant on flow, the levels are best shown in a chart, known as a load duration curve.


Redwood duration curve: 30 years
10000
1000
100
10
1
0
0
0.00%
10.00%
20.00%
30.00%
40.00%
50.00%
60.00%
70.00%
80.00%
90.00%
100.00%
Loading curve
Sample data
April - June samples

Loads at the impaired reaches



Loads at the impaired reaches – Three Mile Creek



Loads at the impaired reaches

- Point source vs non-point source
- Permit data
  - Construction & Industrial stormwater
  - Waste Water treatment.
  - Municipal separate storm sewer system (MS4) permits.

Redwood River – Outlet data

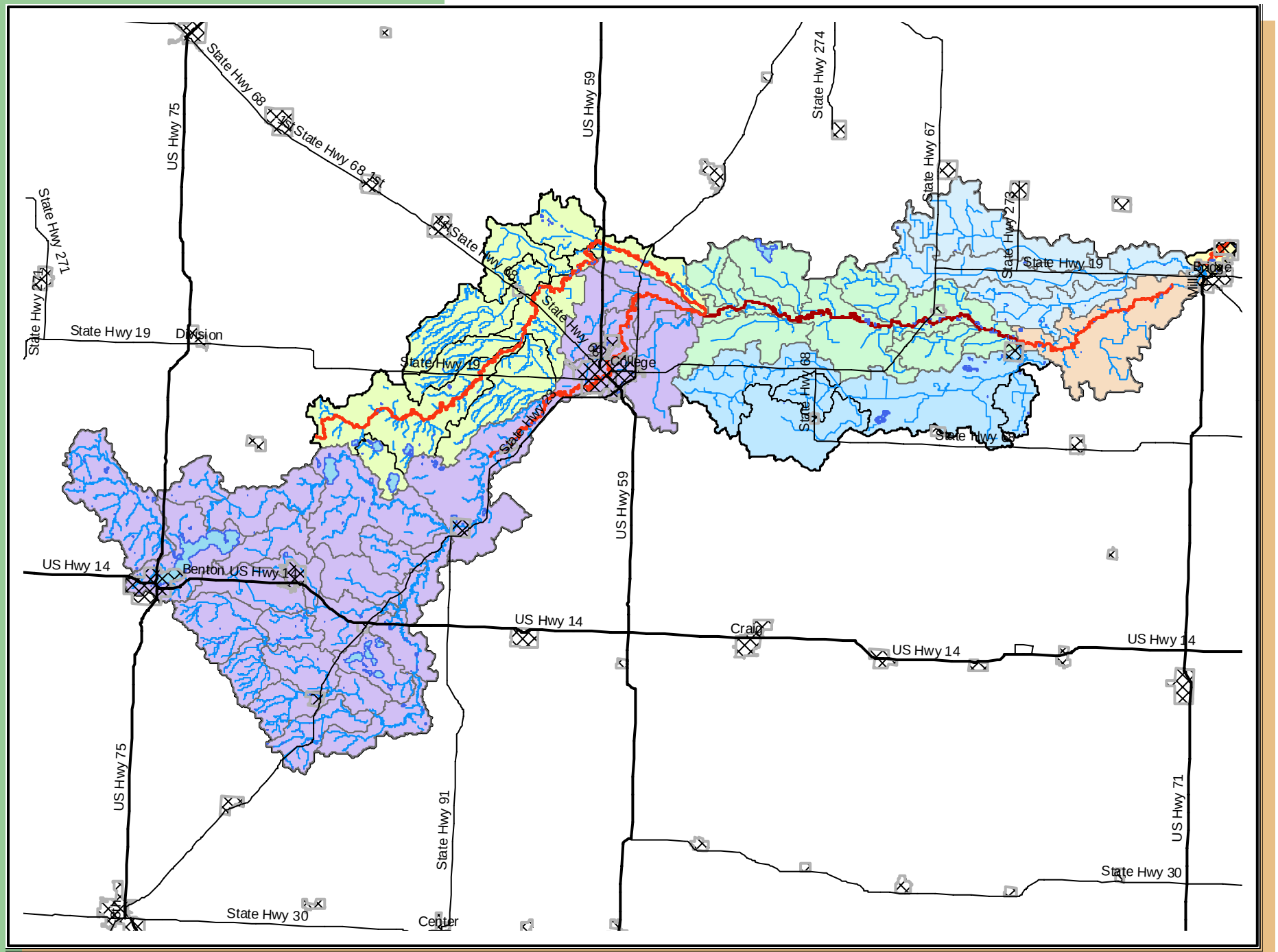
	Flow Zone				
	High	Moist	Mid	Dry	Low
Total Daily Loading Capacity	215	48	15	5	1
	Tons/day				
Waste Load Allocation					
Permitted Wastewater Treatment Facilities	1.76	1.76	1.76	1.76	
Communities Subject to MS4 NPDES Requirements	4.28	0.96	0.30	0.10	0.02
Construction and Industrial Stormwater	0.26	0.06	0.02	0.01	0.01
Load Allocation	187.19	40.42	11.42	2.63	
Margin of Safety	21.50	4.80	1.50	0.50	0.10

Loads at the impaired reaches – Three Mile Creek

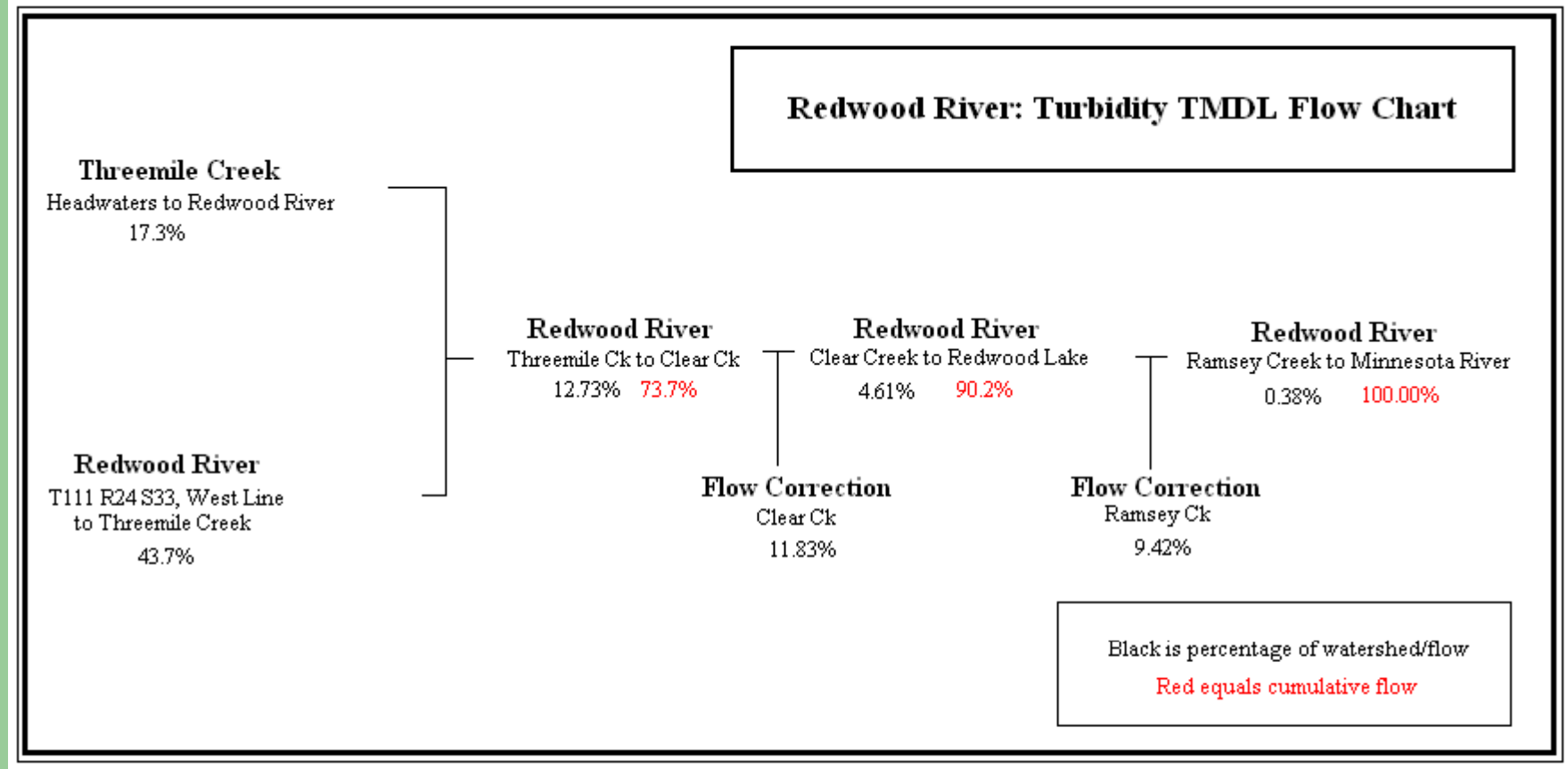
Threemile Creek	**33.3**	**7.5**	**2.3**	**0.8**	**0.2**
Total Daily Loading Capacity					
Wasteload allocation					
Wastewater Treatment and Industrial	0.00	0.01	0.00	0.00	0.00
MS4 Communities	0.00	0.00	0.00	0.00	0.00
Industrial Stormwater(NPDES)	0.00	0.00	0.00	0.00	0.00
Construction stormwater	0.00	0.00	0.00	0.00	0.00
Wasteload allocation Total	0.00	0.01	0.00	0.00	0.00
Load Allocation	**19.16**	**3.62**	**1.63**	**0.36**	**0.00**

Remaining load allocations:

- Typically broken down into:
  - Upland (field, forest, grass lands)
  - Ravines
  - Stream bank/bluff
- Based on the MN river model, each value is about 30% of the load.
  - We will examine the impaired reaches, and see if the breakdowns should be refined.


State Hwy 68
State Hwy 68 1st
State Hwy 68 1st
US Hwy 75
US Hwy 59
State Hwy 274
State Hwy 67
State Hwy 273
State Hwy 271
State Hwy 271
State Hwy 19
Division
State Hwy 19
College
State Hwy 19
Bridge
Mill
State Hwy 68
State Hwy 68
State Hwy 23
US Hwy 59
US Hwy 14
Benton
US Hwy 14
US Hwy 14
Craig
US Hwy 14
US Hwy 14
US Hwy 75
State Hwy 91
US Hwy 71
State Hwy 30
State Hwy 30
Center

Loads at the impaired reaches



Next steps…

- Calculate the reductions necessary
- Write the TMDL
- Develop an implementation plan to address the impairment

Thank you.

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What can I do?

- Individual
  - If you agree or disagree, get informed on the issues as much as you can.
  - Write letters, talk leaders in your communities (from local to federal).
  - Attend local, county, state and other meetings.
  - Attend the TMDL workgroup meetings.
  - Prepare well thought out, researched opinions and ideas.

- Group
  - Talk to you local group representative, or work to become one yourself.
  - Inform the groups you are associated with of the study.
  - Make sure a representative is present at all the meetings to record what was discussed, where things are headed, and express the ideas and opinions of the group.

What can I do?

- STAY INVOLVED