Upper Mississippi Forest Partnership

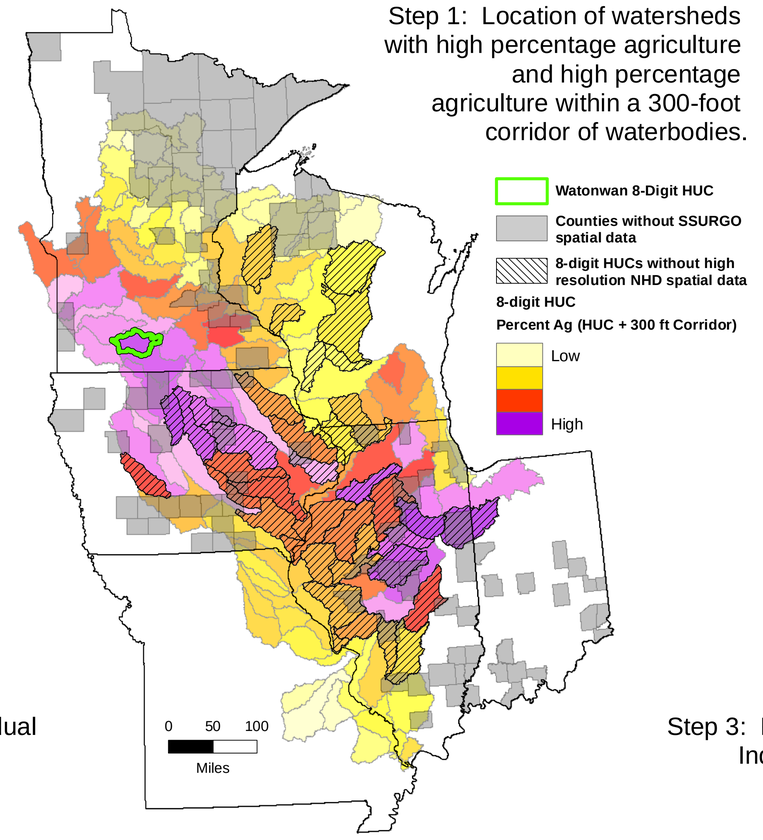
Preservation of Riparian Corridor Water Quality and Aquatic Habitat
Watonwan River Watershed Analysis

Riparian corridor afforestation priority model

National Land Cover Dataset (1992)	
Score	Description
0	Open Water
0	Low Intensity Residential
0	High Intensity Residential
0	Commerical/Industrial/Transp.
0	Bare Rock/Sand/Clay
0	Quarries
0	Transitional
0	Deciduous Forest
0	Evergreen Forest
0	Mixed Forest
0	Shrubland
2	Orchards/Vineyards
1	Grassland/Herbaceous
2	Pasture / Hay
10	Row Crops
5	Small Grains
0	Urban Recreational Grasses
0	Woody Wetlands
0	Emerg. Herbaceous Wetlands
40%	Model Influence

Step 2: Rank subwatersheds according to land use and erosive soils. Agricultural areas with erosive soils rank higher.

Land Capability Classification - Subclass "E"	
Score	Description
0	Not susceptible to erosion
1	0 – 1 (LCC Class)
2	1 - 2
3	2 - 3
4	3 - 4
6	4 - 5
8	5 - 6
10	6 - 7
60%	Model Influence



Step 1: Location of watersheds with high percentage agriculture and high percentage agriculture within a 300-foot corridor of waterbodies.

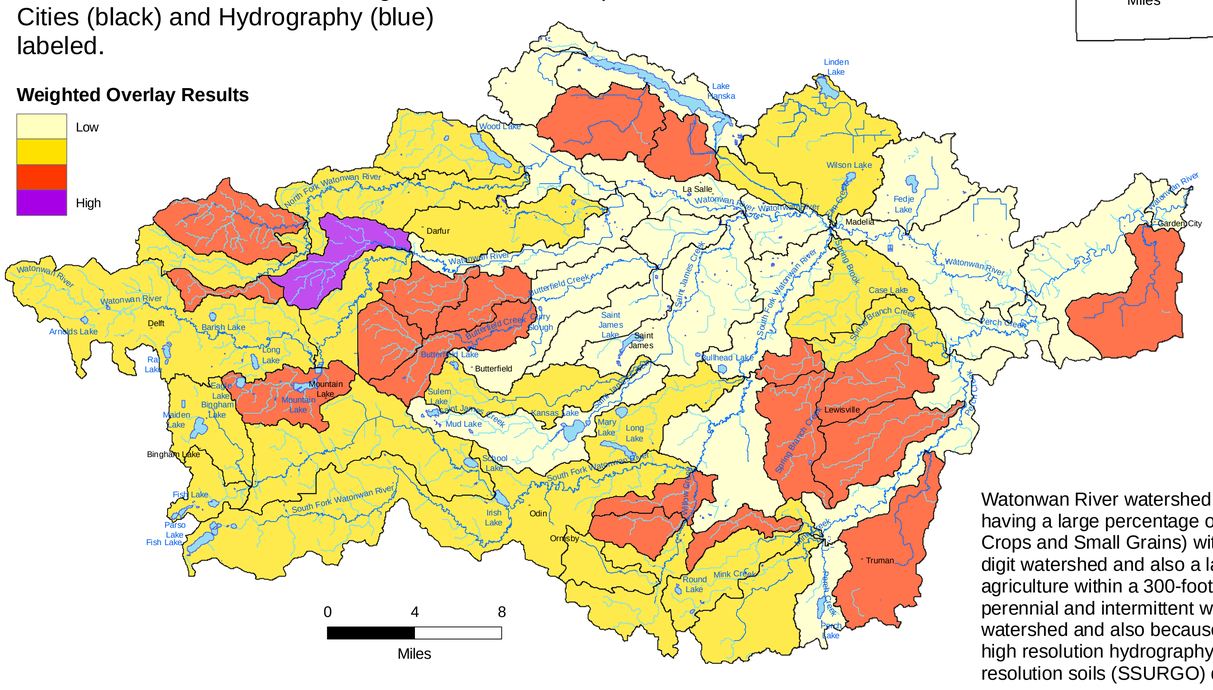
Riparian corridor forest conservation priority model

National Land Cover Dataset (1992)	
Score	Description
0	Open Water
0	Low Intensity Residential
0	High Intensity Residential
0	Commerical/Industrial/Transp.
0	Bare Rock/Sand/Clay
0	Quarries
0	Transitional
10	Deciduous Forest
10	Evergreen Forest
10	Mixed Forest
5	Shrubland
0	Orchards/Vineyards
0	Grassland/Herbaceous
0	Pasture / Hay
0	Row Crops
0	Small Grains
0	Urban Recreational Grasses
10	Woody Wetlands
0	Emerg. Herbaceous Wetlands
40%	Model Influence

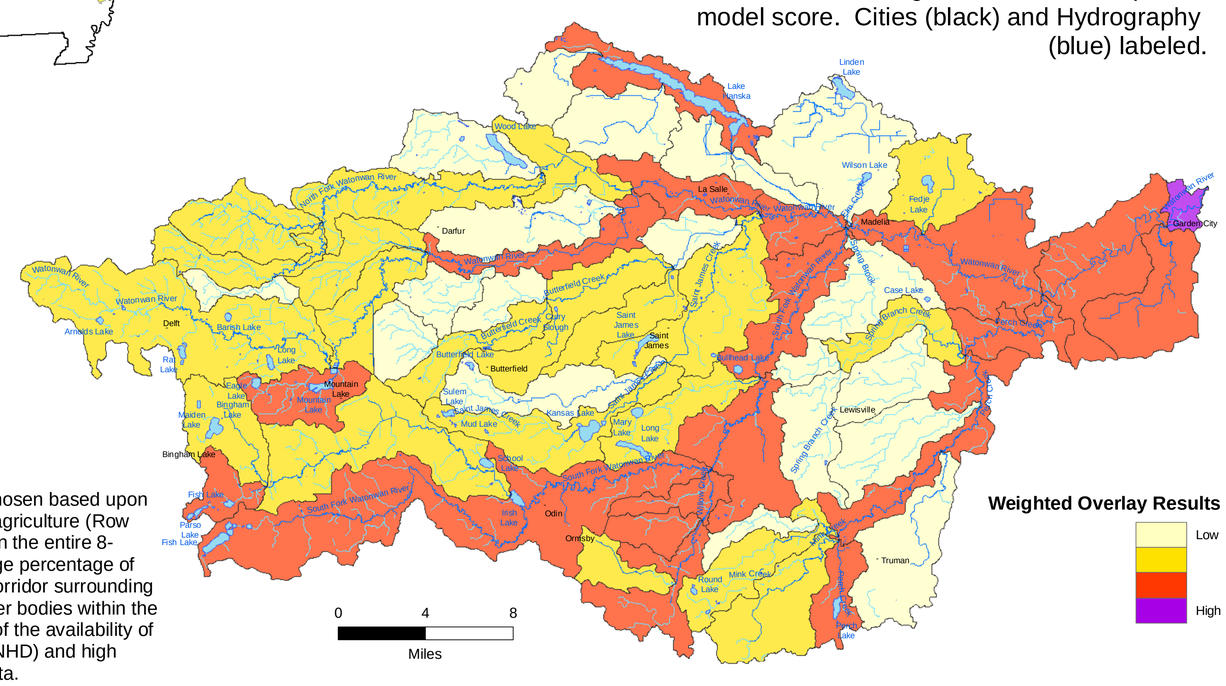
Step 2: Rank subwatersheds according to land use and erosive soils. Forested areas with erosive soils rank higher.

Land Capability Classification - Subclass "E"	
Score	Description
0	Not susceptible to erosion
1	0 – 1 (LCC Class)
2	1 - 2
3	2 - 3
4	3 - 4
6	4 - 5
8	5 - 6
10	6 - 7
60%	Model Influence

Step 3: Afforestation priority model results for Watonwan River watershed. Individual subwatersheds shaded according to their mean composite model score. Cities (black) and Hydrography (blue) labeled.



Step 3: Forest conservation model results for Watonwan River watershed. Individual subwatersheds shaded according to their mean composite model score. Cities (black) and Hydrography (blue) labeled.



Watonwan River watershed chosen based upon having a large percentage of agriculture (Row Crops and Small Grains) within the entire 8-digit watershed and also a large percentage of agriculture within a 300-foot corridor surrounding perennial and intermittent water bodies within the watershed and also because of the availability of high resolution hydrography (NHD) and high resolution soils (SSURGO) data.

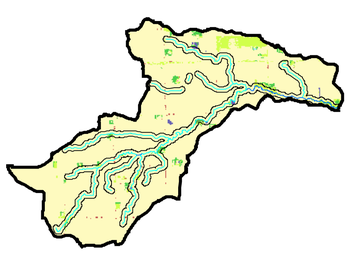
Afforestation and forest conservation models were individually run on land area within a 300 foot corridor surrounding perennial and intermittent water bodies within the Watonwan River watershed as delineated by the National Hydrography Dataset (NHD). These results were then averaged by subwatershed boundary (MN DNR) and are displayed in the map layers to the left and right.

Step 4: Delineating areas in agriculture with potentially erosive soils within 300 feet of a water body.

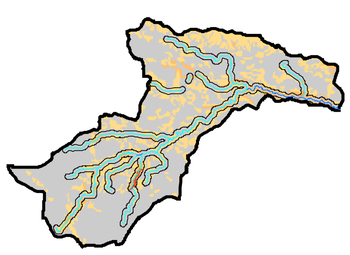
Example subwatershed (shaded in purple in map above) depicting NLCD, Land Capability Class, and weighted overlay results. Example subwatershed chosen based on highest mean afforestation priority model score.

Step 4: Delineating forested areas with potentially erosive soils within 300 feet of a water body.

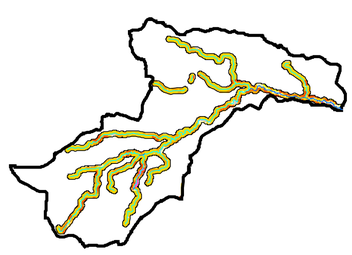
Example subwatershed (shaded in purple in map above) depicting NLCD, Land Capability Class, and weighted overlay results. Example subwatershed chosen based on highest mean forest conservation priority model score.



National Land Cover Dataset



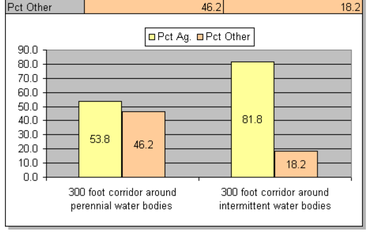
Land Capability Class - Erodible Soils



Weighted Overlay

0 1 2
Miles

	300 foot corridor around perennial water bodies	300 foot corridor around intermittent water bodies
Acres of Ag.	20836.8	36866.7
Acres of Other	17875.1	8187.7
Total Acres	38711.9	45054.3
Pct Ag.	53.8	81.8
Pct Other	46.2	18.2



Summary of agricultural classes surrounding perennial and intermittent water bodies

Legend

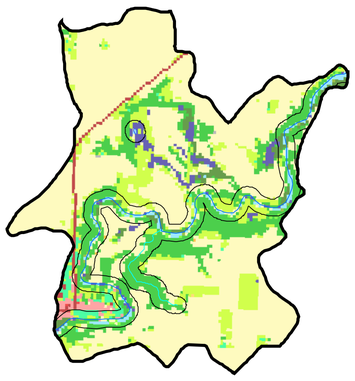
Subwatershed Boundary
300-Foot Corridor

NHD Hydrography
Intermittent (Lines)
Perennial (Lines)
Perennial (Polys)

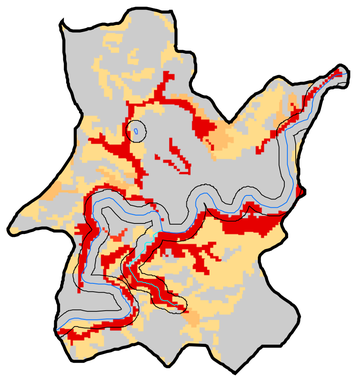
Weighted Overlay Results
Low
High

SSURGO Land Capability Class Subclass "E"
Not susceptible to erosion
Low Erodibility
High Erodibility

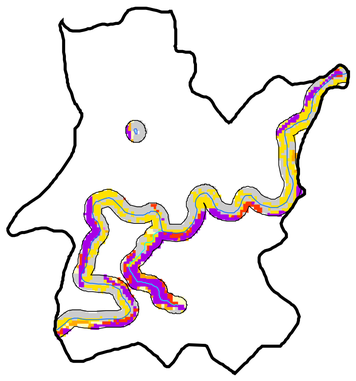
National Land Cover Dataset (NLCD 1992)
11 - Open Water
21 - Low Intensity Residential
22 - High Intensity Residential
23 - Commercial/Industrial/ Transportation
31 - Bare Rock/Sand/Clay
32 - Quarries/Strip Mines/Gravel Pits
33 - Transitional
41 - Deciduous Forest
42 - Evergreen Forest
43 - Mixed Forest
51 - Shrubland
61 - Orchards/Vineyards
71 - Grasslands/Herbaceous
81 - Pasture/Hay
82 - Row Crops
83 - Small Grains
85 - Urban/Recreational Grasses
91 - Woody Wetlands
92 - Emergent Herbaceous Wetlands



National Land Cover Dataset



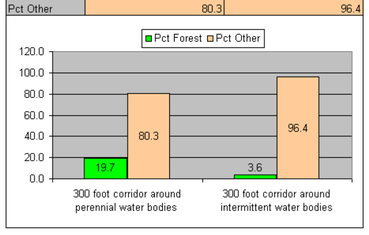
Land Capability Class - Erodible Soils



Weighted Overlay

0 0.5 1
Miles

	300 foot corridor around perennial water bodies	300 foot corridor around intermittent water bodies
Acres of Forest	7626.1	1629.7
Acres of Other	31085.8	43424.6
Total Acres	38711.9	45054.3
Pct Forest	19.7	3.6
Pct Other	80.3	96.4



Summary of forested classes surrounding perennial and intermittent water bodies

Map Date: November 2, 2006

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