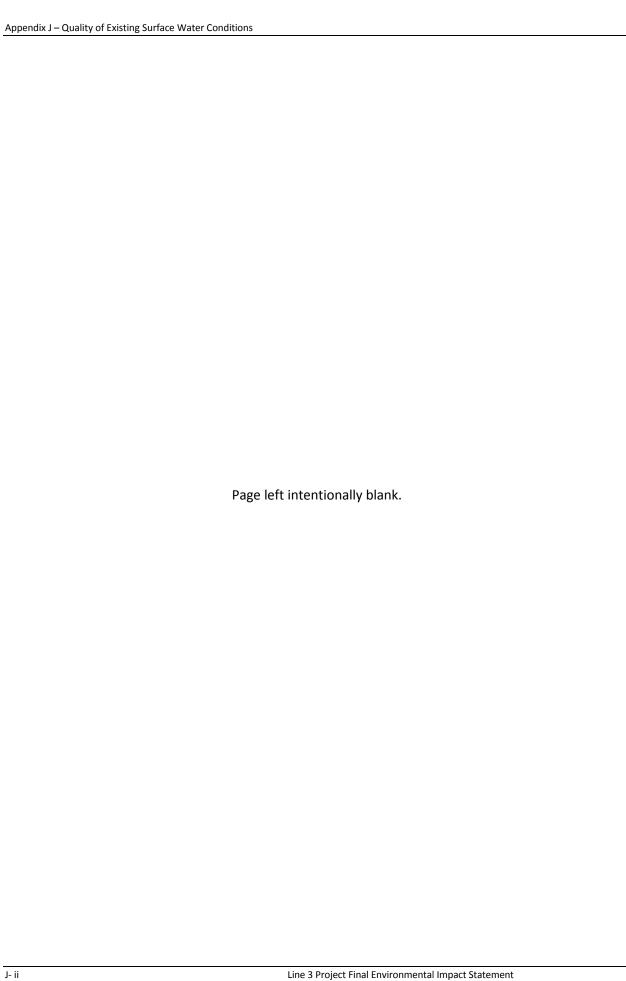
Appendix J
Appendix J
Quality of Existing Surface Water Conditions





Watershed Health Assessment Framework

"Managing for System Health"





Watershed Report Card: Pine River



People and Places:

Watershed Population: 2000 census - 13,589 2010 census - 15,170

Largest Cities - Population: Breezy Point - 2,346 Pine River - 944

Emily - 813 Jenkins - 430

Fifty Lakes - 387

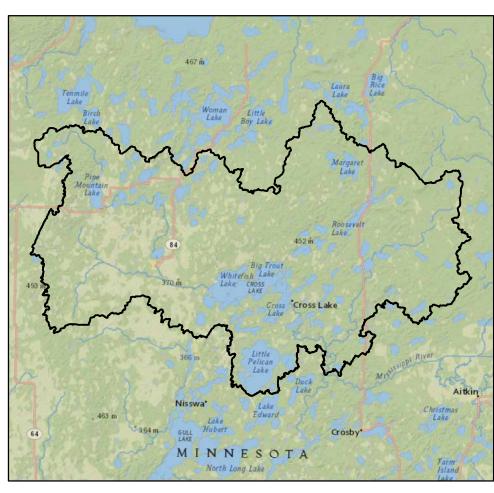
Counties - % of watershed:

Cass - 50 %

Crow Wing - 47 %

Aitkin - 2 %

Hubbard - 0 %



Watershed Area:

Watershed size: 500,887 acres 783 square miles

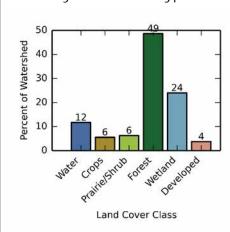
Watershed Surface Area: Percent Land - 88 % Percent Water - 12 %

HUC8 I D: 07010105

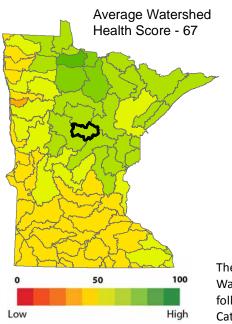
Basin Name: Mississippi Headwaters (0701)

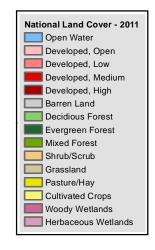
Land Use:

Percent of watershed area by land cover type:

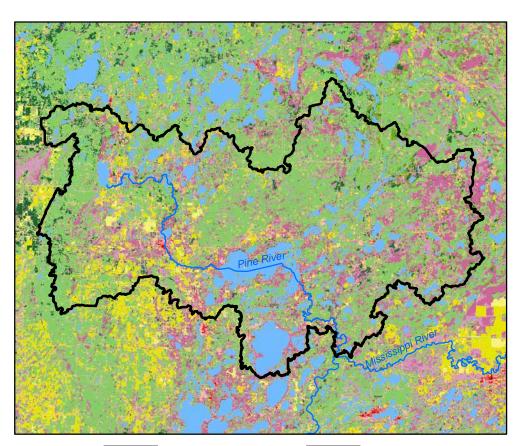


Watershed Health Report - Major Watershed Pine River





These health scores are calculated at the Major Watershed (HUC8) scale. Health score names followed by (*) are also calculated at the DNR Catchment scale (subdivided HUC12). Those results are reported on the following pages.





Hydrology

Component Health Score (index average) 91

Index Scores

Perennial Cover* 94
Impervious Cover* 86
Water Withdrawal* 99
Flow Variability 68
Hydrologic Storage 94
Sub-Scores
Altered Streams* 91
Surface Storage 98



Geomorphology

Component Health Score (index average) 59

Index Scores

Soil Erosion 75
Potential* 31

Climate Vulnerability 70



Biology

Component Health Score (index average) 43

Index Scores

Terrestrial Habitat Quality*

Stream Species 58
Quality*

Species Richness 54

At-Risk Species 38
Richness



Connectivity

Component Health Score (index average) 46

Index Scores

Terrestrial Habitat
Connectivity

Aquatic
Connectivity*

72

Riparian
Connectivity*

97



Water Quality

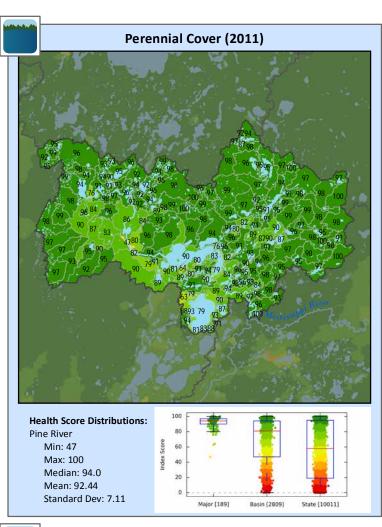
Component Health Score (index average) 95

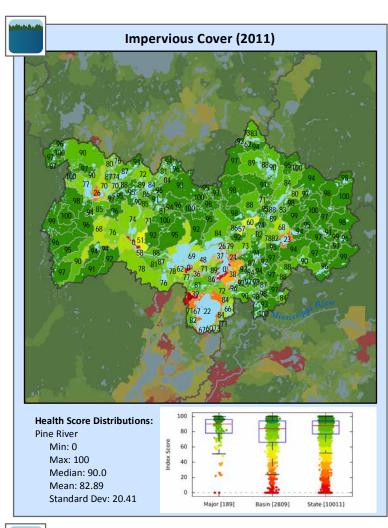
Non-Point Pollution Sources

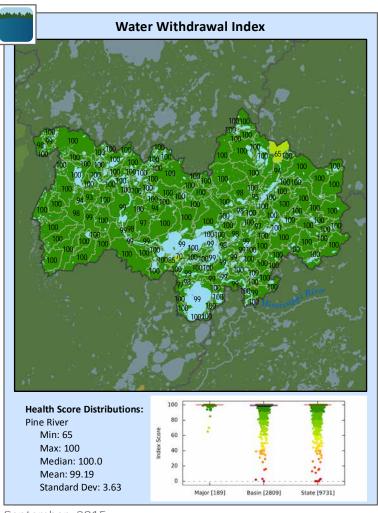
Sub-Score Phosphorus Risk* 87

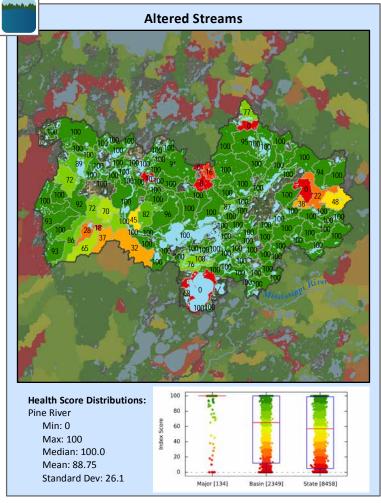
Localized Pollution Sources* 89

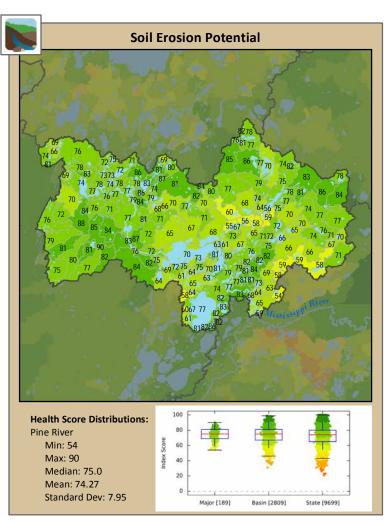
Assessments 95

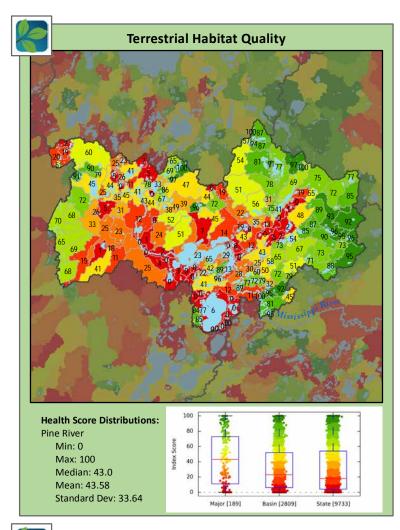


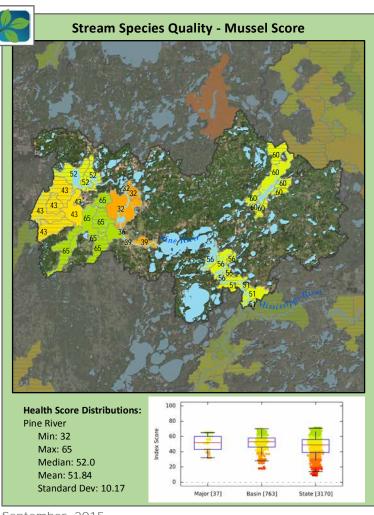


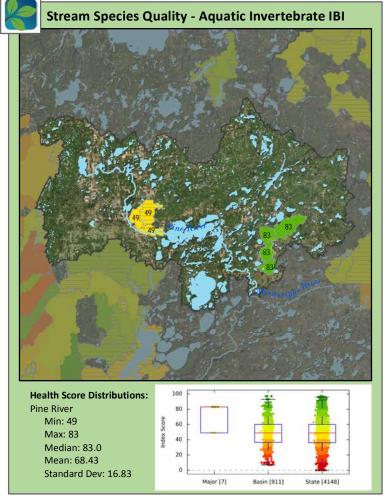


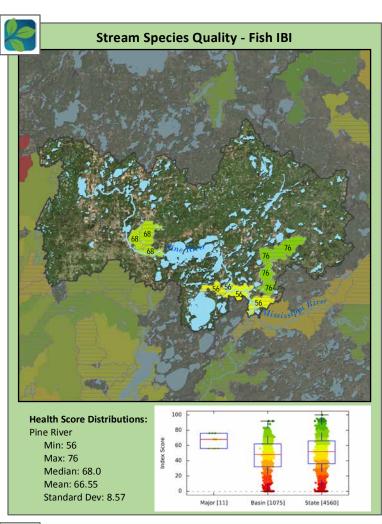


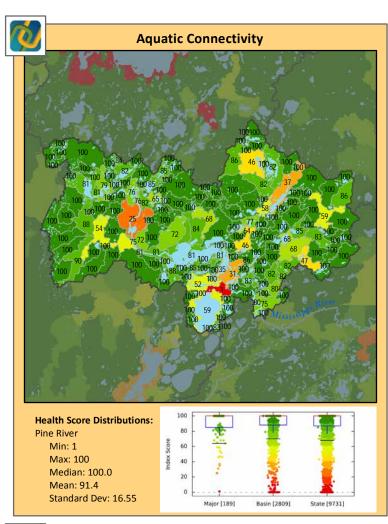


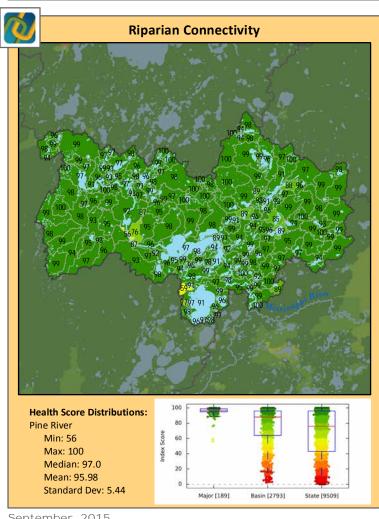


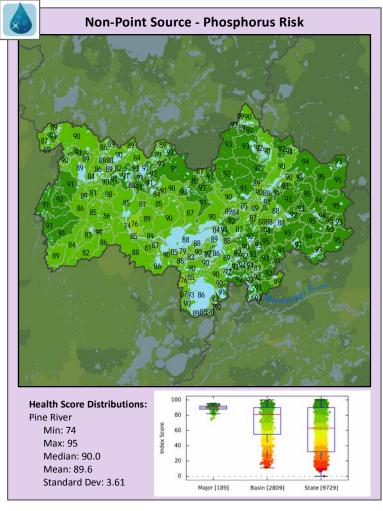


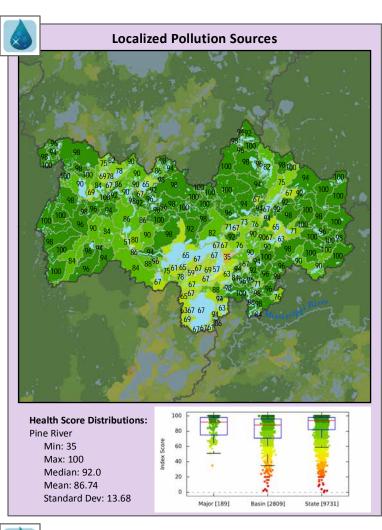


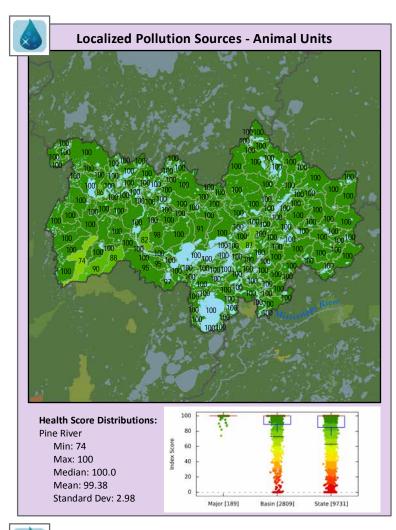


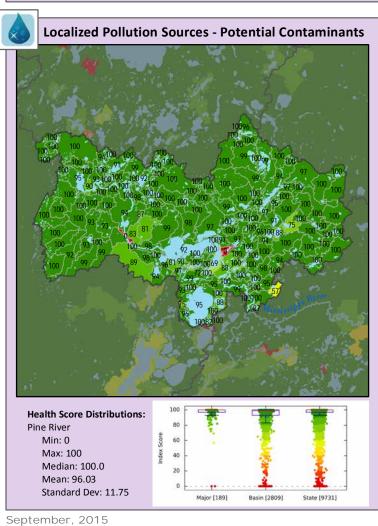


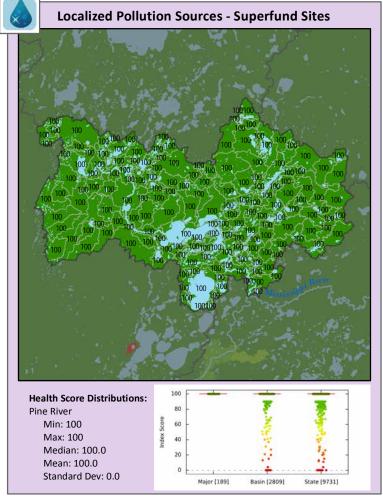


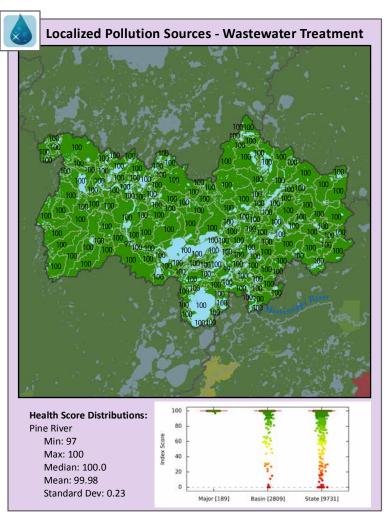


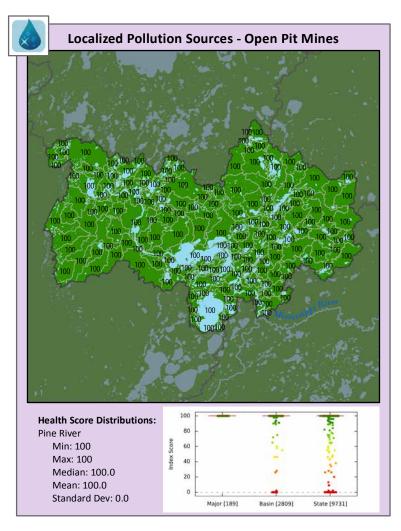


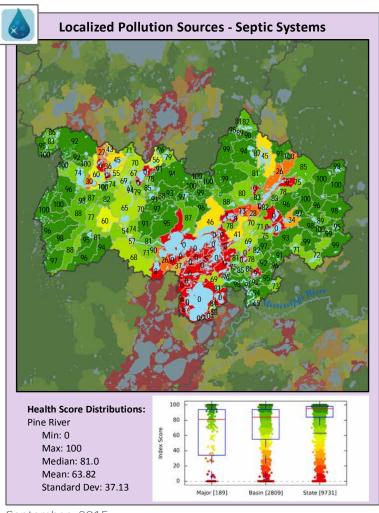














Watershed Health Assessment Framework

"Managing for System Health"





Watershed Report Card: Chippewa River



People and Places:

Watershed Population: 2000 census - 33,653

2010 census - 32,465

Largest Cities - Population:

Montevideo - 5,383

Benson - 3,240

Glenwood - 2,564

Starbuck - 1,302

Hancock - 765

Counties - % of watershed:

Pope - 30 %

Swift - 28 %

Douglas - 14 %

Chippewa - 13 %

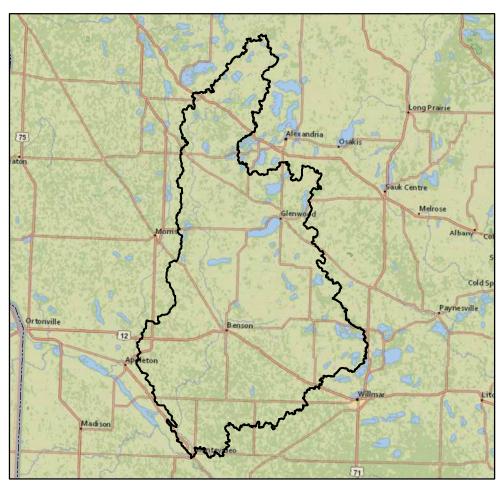
Kandiyohi - 7 %

Stevens - 4 %

Grant - 2 %

Otter Tail - 1 %

Stearns - 0 %



Watershed Area:

Watershed size:

1,330,152 acres

2,078 square miles

Watershed Surface Area: Percent Land - 94 %

Percent Water - 6 %

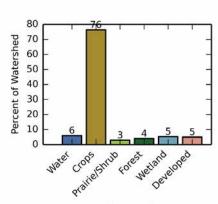
HUC8 ID:

07020005

Basin Name: Minnesota (0702)

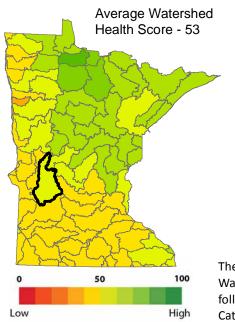
Land Use:

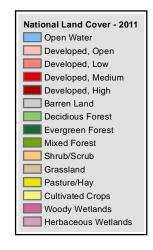
Percent of watershed area by land cover type:



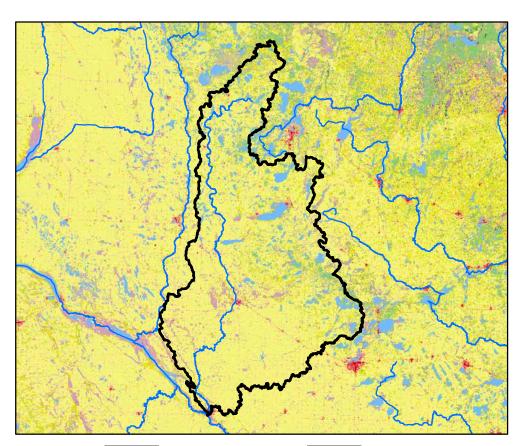
Land Cover Class

Watershed Health Report - Major Watershed Chippewa River





These health scores are calculated at the Major Watershed (HUC8) scale. Health score names followed by (*) are also calculated at the DNR Catchment scale (subdivided HUC12). Those results are reported on the following pages.





Hydrology

Component Health Score (index average) 69

Index Scores

Perennial Cover* 22
Impervious Cover* 83
Water Withdrawal* 93
Flow Variability 66
Hydrologic Storage 69
Sub-Scores
Altered Streams* 100
Surface Storage 39



Geomorphology

Component Health Score (index average) 62

Index Scores

Soil Erosion 71

Potential* 51

Climate Vulnerability 63



Biology

Component Health Score (index average) 42

Index Scores

Terrestrial Habitat Quality* 4

Stream Species 69
Quality*

Species Richness 63

At-Risk Species 34

Richness



Connectivity

Component Health Score (index average) 27

Index Scores

Terrestrial Habitat Connectivity 6

Aquatic Connectivity* 37

Riparian
Connectivity* 61



Water Quality

Component Health Score (index average) 64

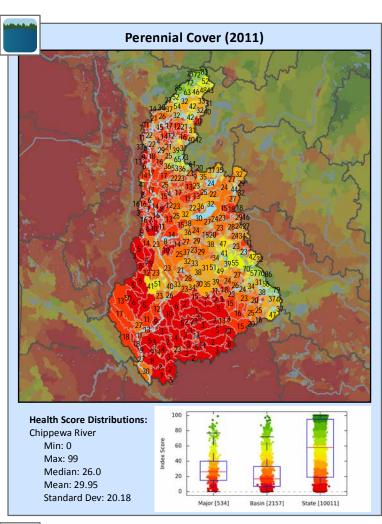
Index Scores

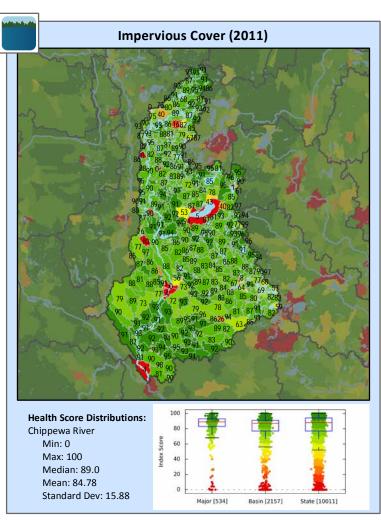
Non-Point Pollution
Sources

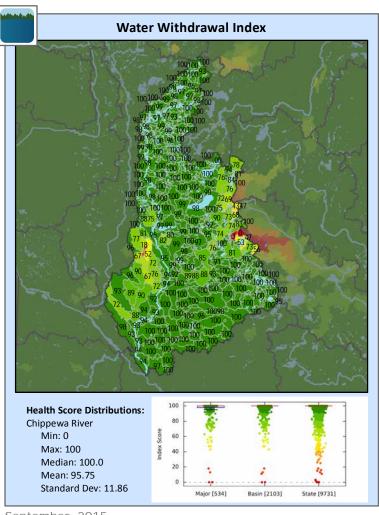
sub-Score
Phosphorus Risk* 19
Localized Pollution
Sources*

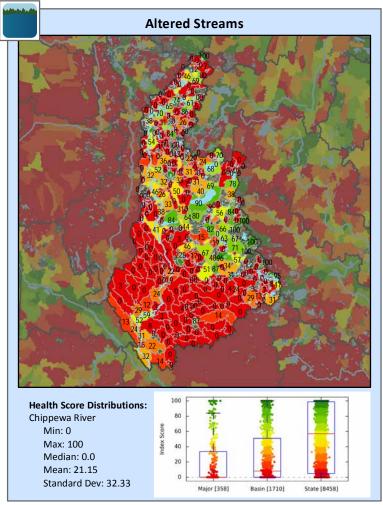
Assessments

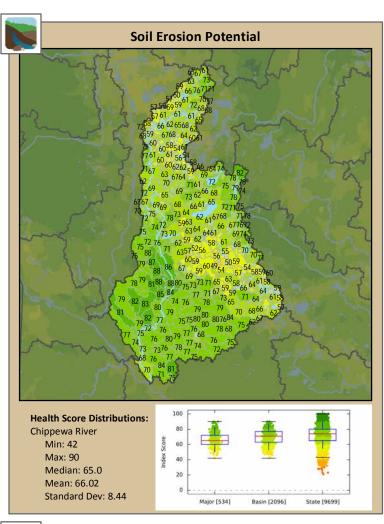
56

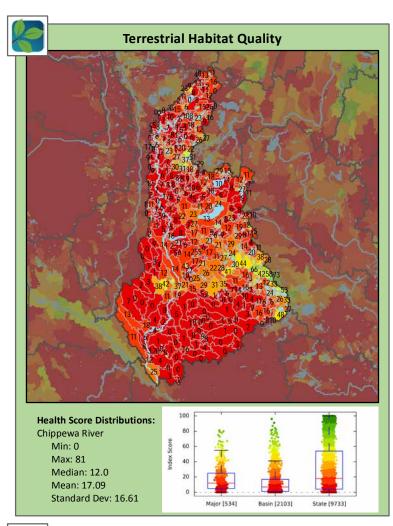


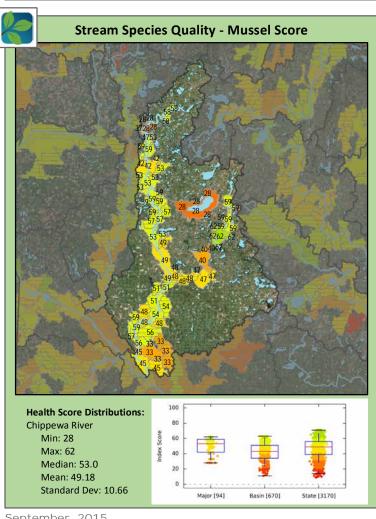


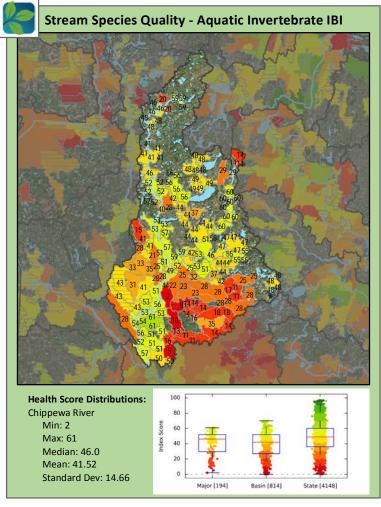


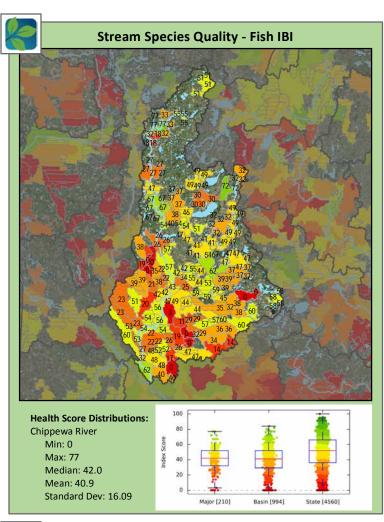


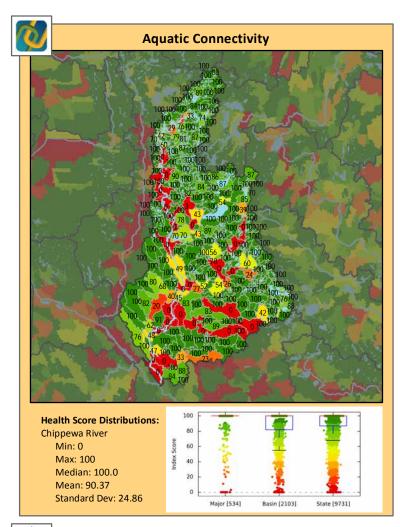


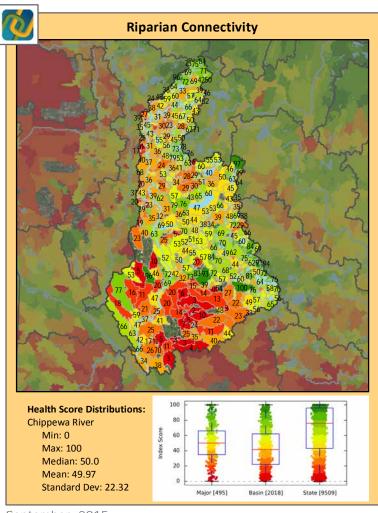


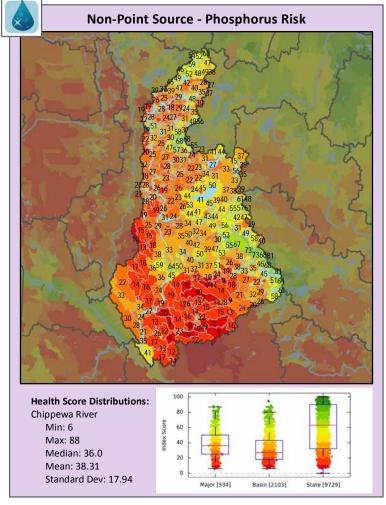


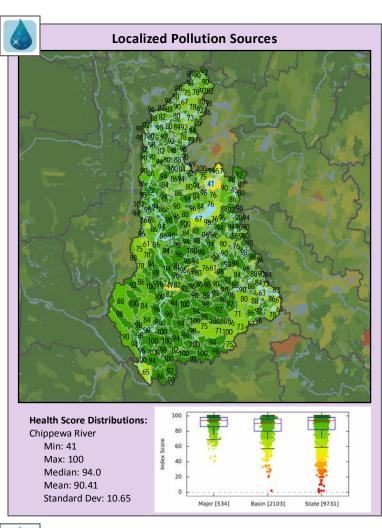


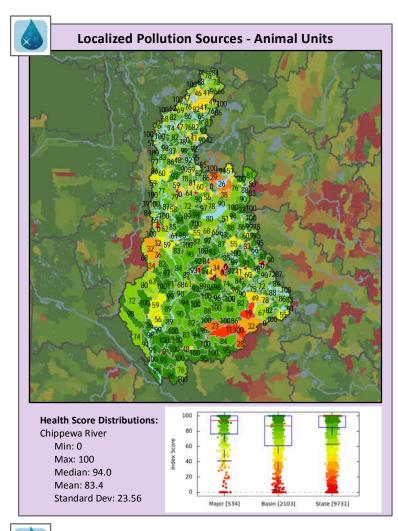


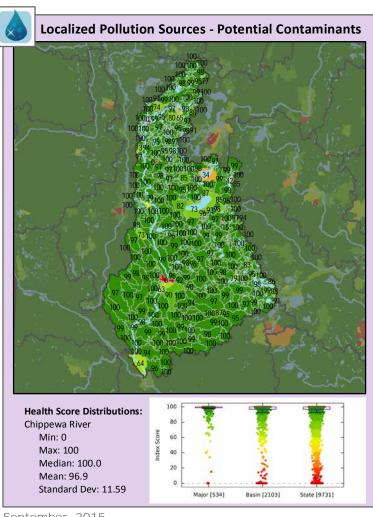


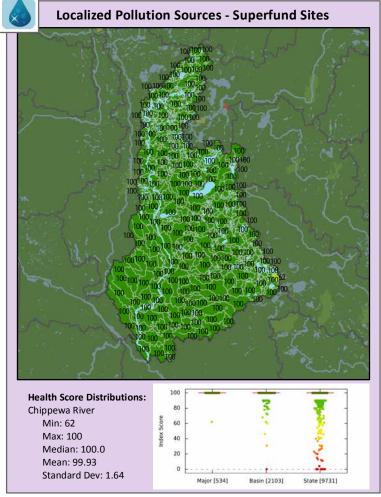


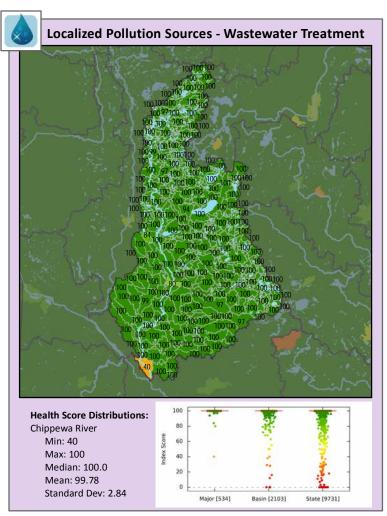


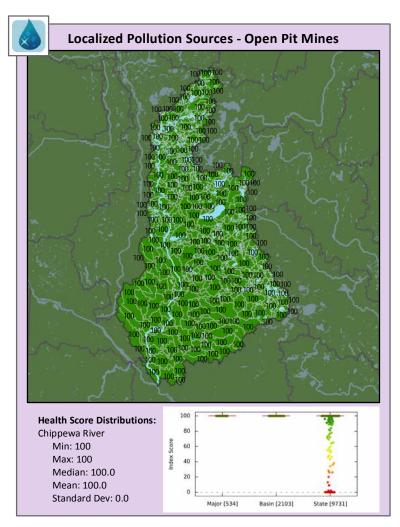


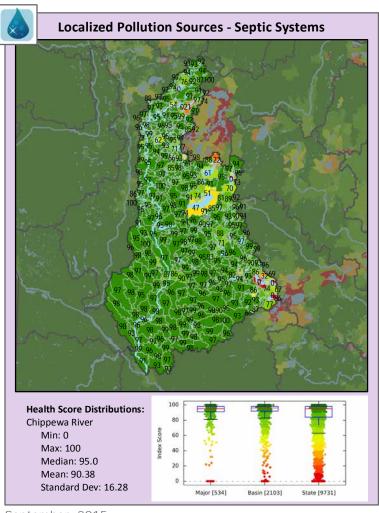














Watershed Health Assessment Framework

"Managing for System Health"





Watershed Report Card:

Le Sueur River



People and Places:

Watershed Population: 2000 census - 33,099 2010 census - 34,412

Largest Cities - Population:

Eagle Lake - 2,422 Wells - 2,343 Janesville - 2,256 Mapleton - 1,756 New Richland - 1,203

Counties - % of watershed:

Blue Earth - 33 %
Waseca - 32 %
Faribault - 22 %
Freeborn - 10 %
Steele - 3 %
Le Sueur - 0 %



Watershed Area:

Watershed size: 711,115 acres 1,111 square miles

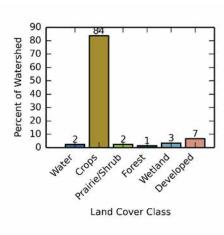
Watershed Surface Area: Percent Land - 98 % Percent Water - 2 %

HUC8 ID: 07020011

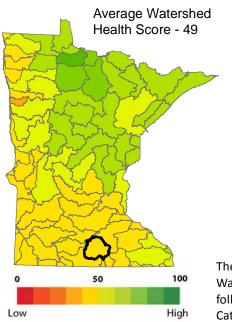
Basin Name: Minnesota (0702)

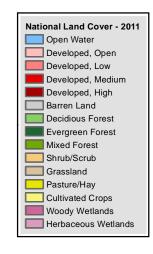
Land Use:

Percent of watershed area by land cover type:

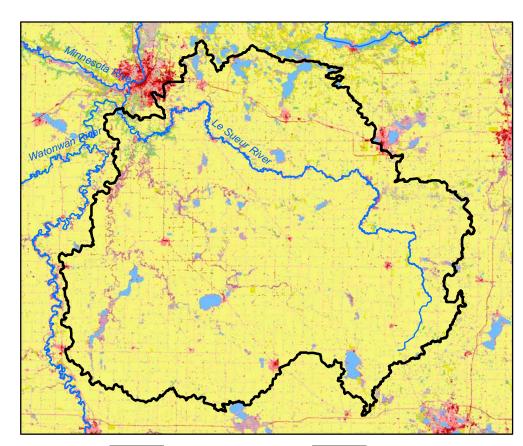


Watershed Health Report - Major Watershed Le Sueur River





These health scores are calculated at the Major Watershed (HUC8) scale. Health score names followed by (*) are also calculated at the DNR Catchment scale (subdivided HUC12). Those results are reported on the following pages.





Hydrology

Component Health Score (index average) 60

Index Scores

Perennial Cover* 9
Impervious Cover* 71
Water Withdrawal* 99
Flow Variability 65
Hydrologic Storage 35
Sub-Scores
Altered Streams* 53
Surface Storage 18



Geomorphology

Component Health Score (index average) 74

Index Scores

Soil Erosion 76

Potential* 76

Groundwater 55

Climate 92

Vulnerability 92



Biology

Component Health Score (index average) 38

Index Scores

Terrestrial Habitat Quality*

Stream Species 76
Quality*

Species Richness 56

At-Risk Species 18

Richness



Connectivity

Component Health Score (index average) 19

Index Scores

Terrestrial Habitat 2
Connectivity

Aquatic

Connectivity*

Riparian
Connectivity*



Water Quality

Component Health Score (index average) 52

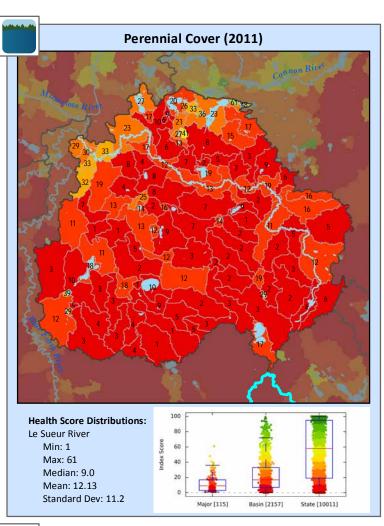
Index Scores

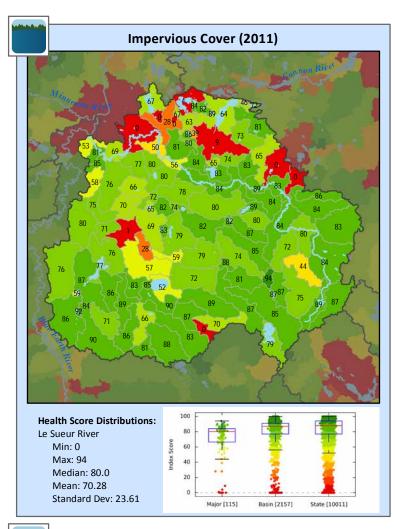
Non-Point Pollution
Sources
Sub-Score
Phosphorus Risk* 5

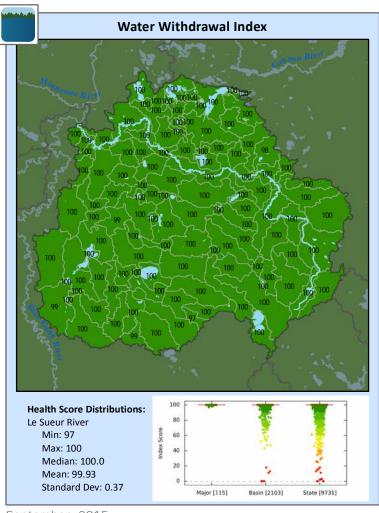
Phosphorus Risk*

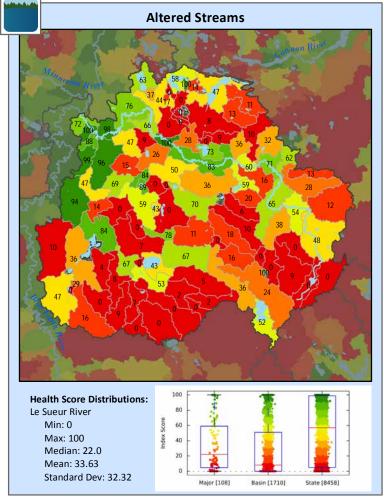
Localized Pollution Sources* 81

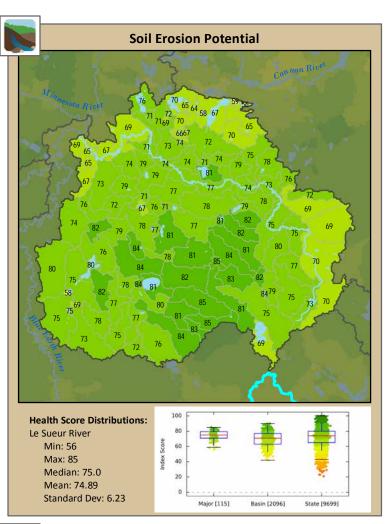
Assessments 39

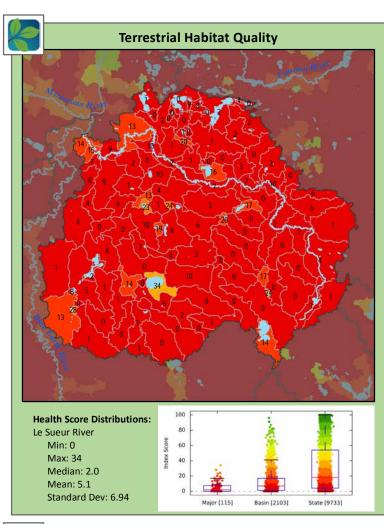


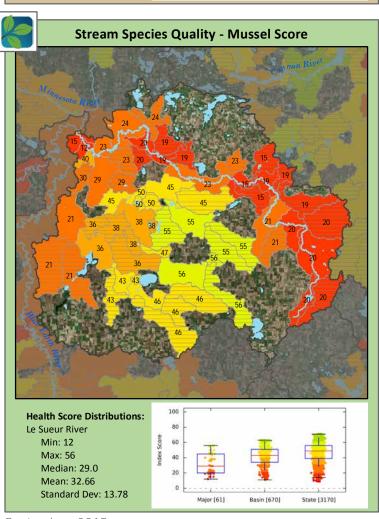


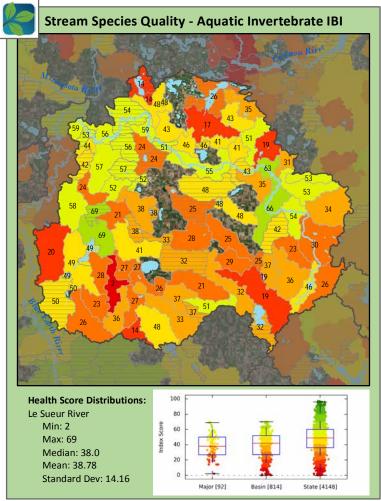


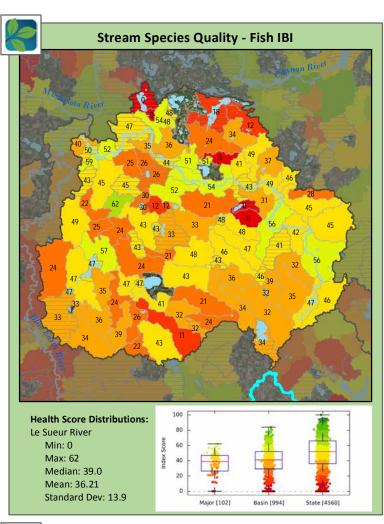


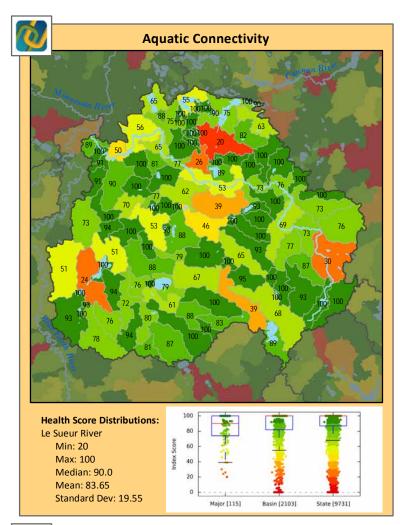


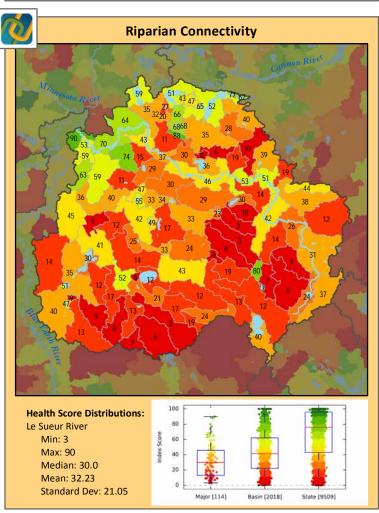


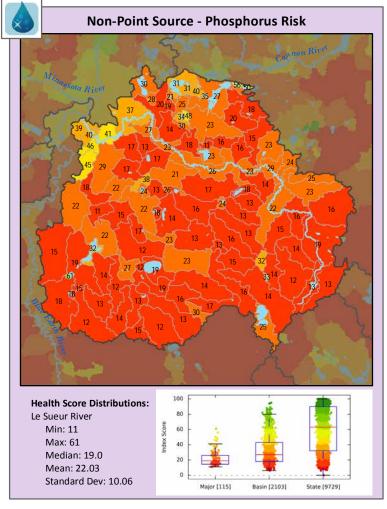


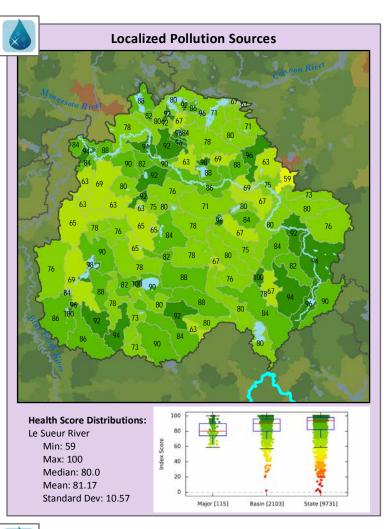


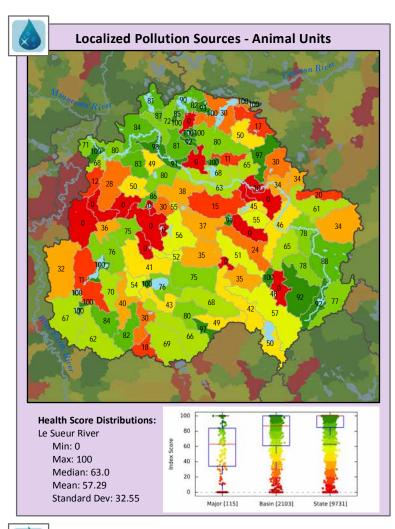


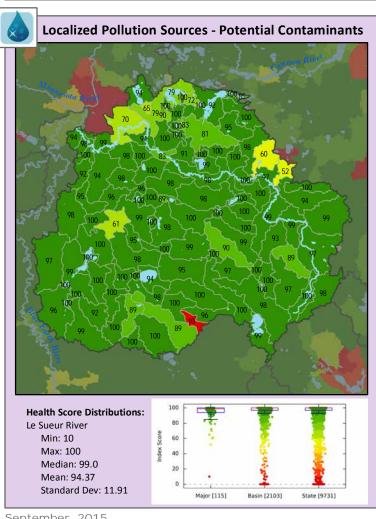


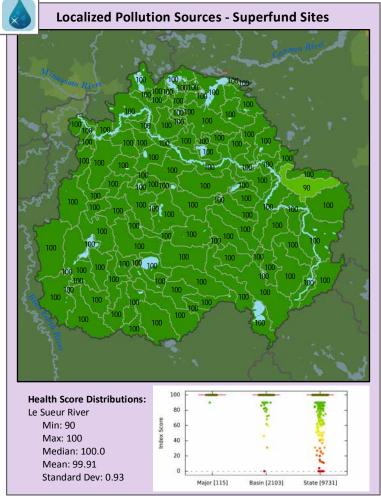


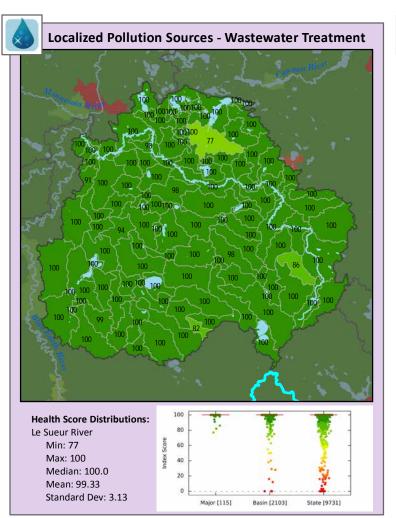


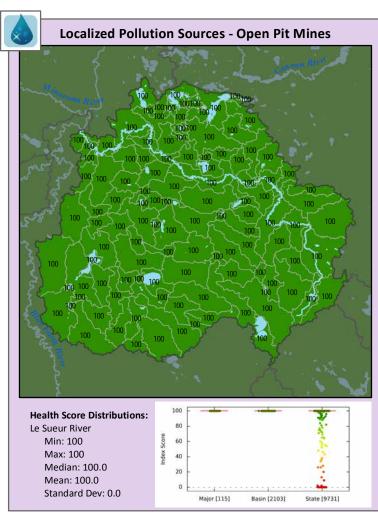


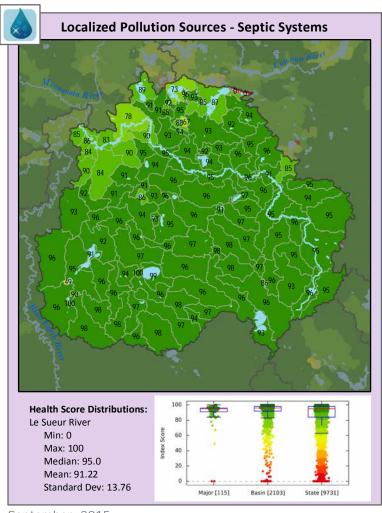




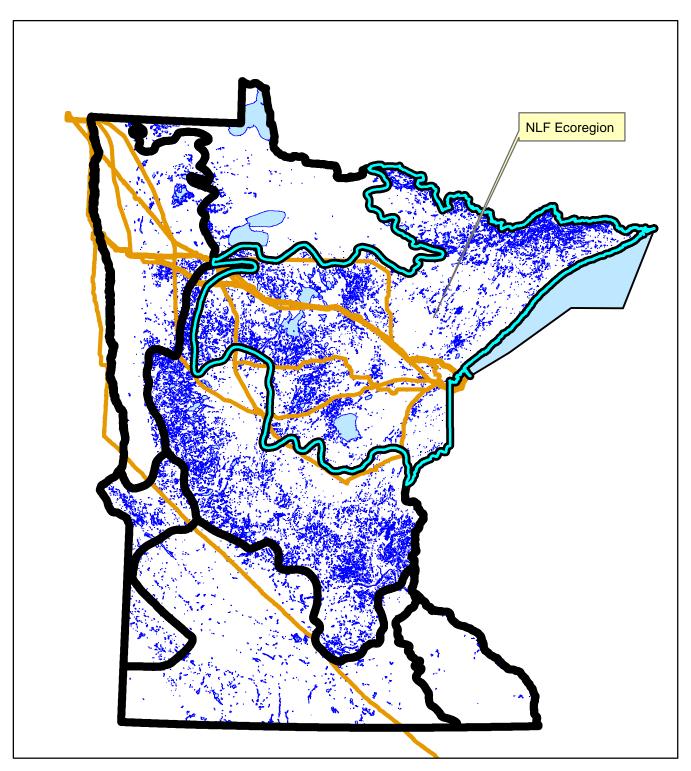








Lake Distribution Among Ecoregions-Routes

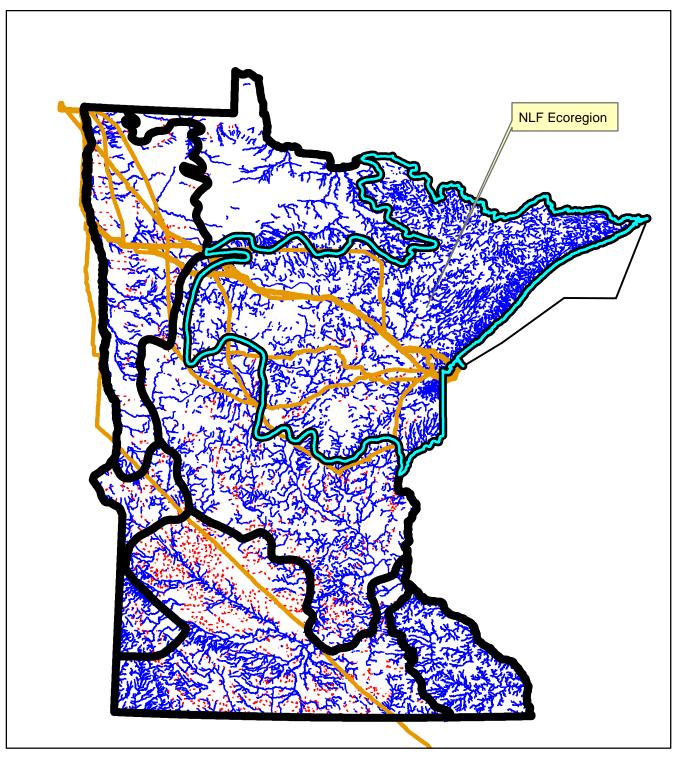


Legend





Stream Distribution Among Ecoregions-Routes



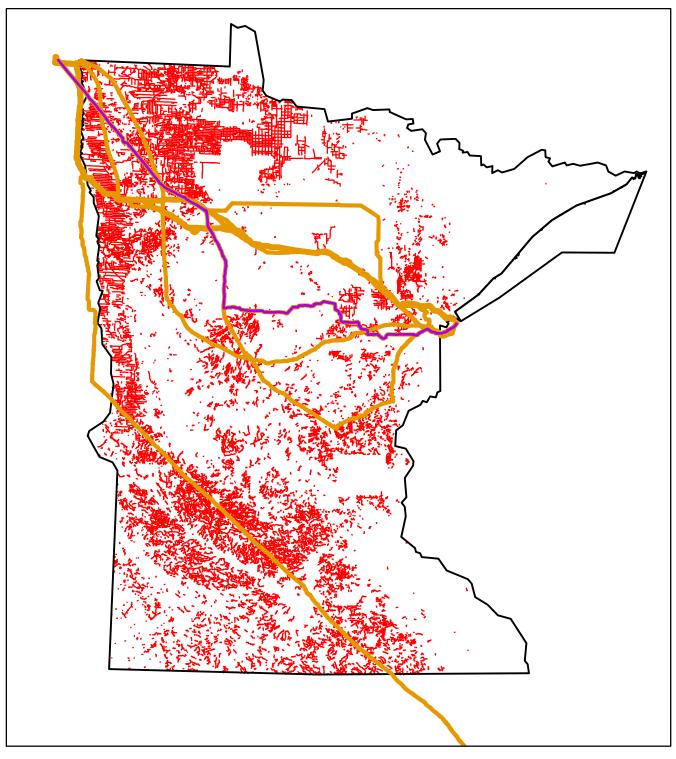
Legend



Public Ditch/Altered Natural Watercourse



Distribution of MN Ditches (Source DOT)

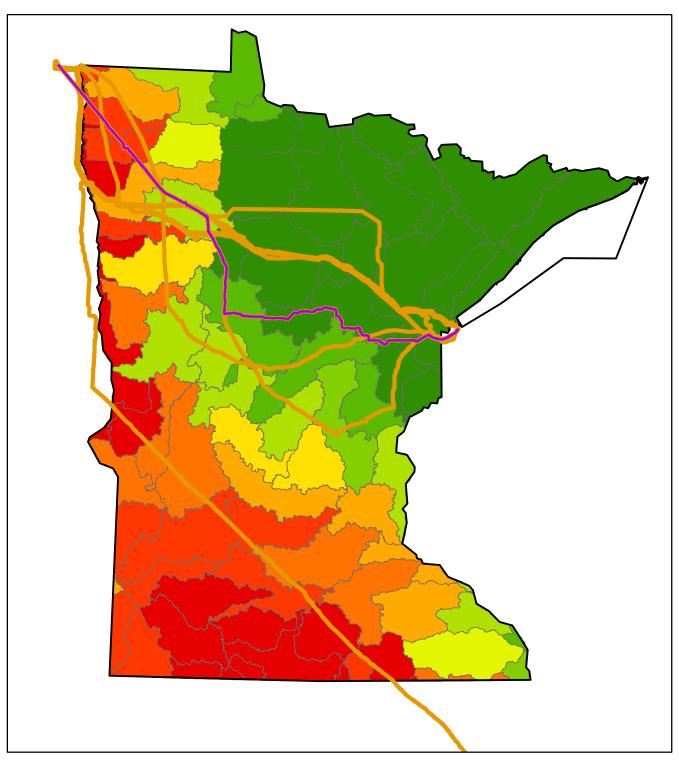


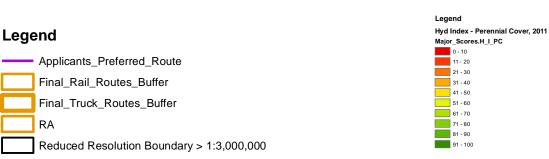
Legend

Applicants_Preferred_Route
Final_Rail_Routes_Buffer
Final_Truck_Routes_Buffer
RA
Reduced Resolution Boundary > 1:3,000,000
Drainage Ditches



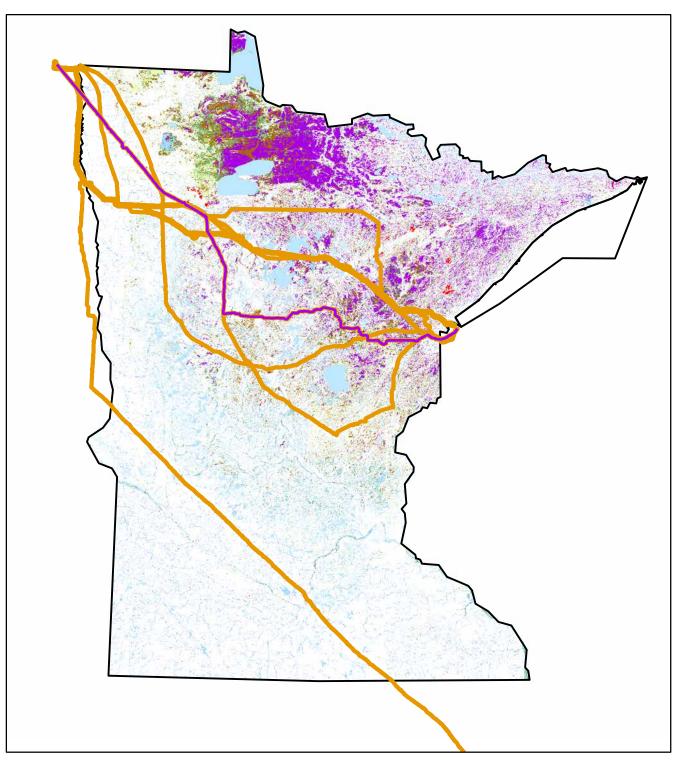
Distribution of MN Ditches (Source DOT)







Wetland Distribution Circular 39



Legend Applicants_Preferred_Route Final_Rail_Routes_Buffer Final_Truck_Routes_Buffer RA Reduced Resolution Boundary > 1:3,000,000





Loss of Hydrologic Storage, Wetland Loss

