

Minnesota Department of Natural Resources

Division of Waters

Hydrologic Conditions Report

October 2009

This is the fourth and last installment of the monthly Hydrologic Conditions Report for 2009. For comparative purposes please reference the previous 2009 reports at:

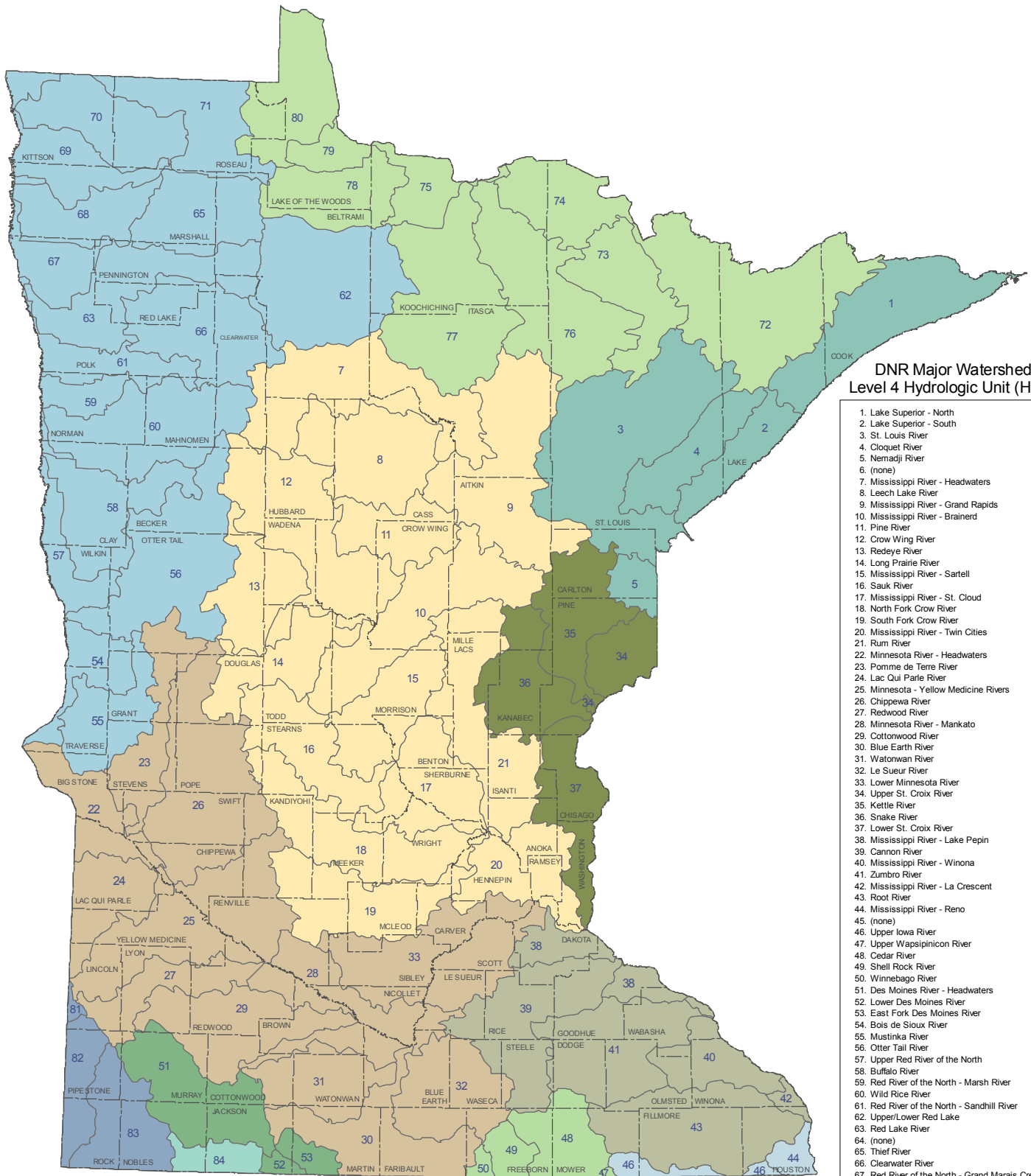
http://mndnr.gov/current_conditions/hydro_conditions.html

- Significant improvements to Minnesota's drought situation were observed in October. By late October, the U.S. Drought Monitor placed 12% of Minnesota's landscape in the "Moderate" or "Severe" drought categories compared to 30% of Minnesota's in "Moderate", "Severe", or "Extreme" drought as of late September.
- October 2009 precipitation was very heavy across most of Minnesota. October 2009 precipitation totals in the southern two-thirds of the state ranged from five to eight inches, topping historical October averages by three to five inches. On a statewide basis, October 2009 will rank among the wettest Octobers ever.
- Stream flows in October increased to above normal and into high flow conditions through much of the west and southern part of the state. Flows in the northeast remained below normal, with flows at some indicator gages below the 10th percentile when compared to historical flows for October.
- Indicator lakes remained below the 10th percentile and below normal in the metro counties, central and eastern Minnesota. Water levels were generally high in the northwest and in the normal range in the southwest part of the state.
- Ground water indicator wells generally show increasing water levels throughout the state compared to September readings. Water levels in wells in northern Washington, Scott and Jackson counties remained low compared to historical levels.

The information in this report is provided by DNR through long term programs committed to recording and tracking the long term status of our water resources. The current conditions of precipitation, stream flows, lake levels and ground water levels in this report provide valuable information for natural and economic resource management on a state, county and watershed level.

If you have questions on the content of this report please contact Greg Spoden: 651-296-4214, greg.spoden@state.mn.us













Minnesota Counties and Major Watershed Index



DNR Major Watershed - Level 4 Hydrologic Unit (HUC8)

1. Lake Superior - North
2. Lake Superior - South
3. St. Louis River
4. Cloquet River
5. Nemadji River
6. (none)
7. Mississippi River - Headwaters
8. Leech Lake River
9. Mississippi River - Grand Rapids
10. Mississippi River - Brainerd
11. Pine River
12. Crow Wing River
13. Redeye River
14. Long Prairie River
15. Mississippi River - Sartell
16. Sauk River
17. Mississippi River - St. Cloud
18. North Fork Crow River
19. South Fork Crow River
20. Mississippi River - Twin Cities
21. Rum River
22. Minnesota River - Headwaters
23. Pomme de Terre River
24. Lac Qui Parle River
25. Minnesota - Yellow Medicine Rivers
26. Chippewa River
27. Redwood River
28. Minnesota River - Mankato
29. Cottonwood River
30. Blue Earth River
31. Watonwan River
32. Le Sueur River
33. Lower Minnesota River
34. Upper St. Croix River
35. Kettle River
36. Snake River
37. Lower St. Croix River
38. Mississippi River - Lake Pepin
39. Cannon River
40. Mississippi River - Winona
41. Zumbro River
42. Mississippi River - La Crescent
43. Root River
44. Mississippi River - Reno
45. (none)
46. Upper Iowa River
47. Upper Wapsipicon River
48. Cedar River
49. Shell Rock River
50. Winnebago River
51. Des Moines River - Headwaters
52. Lower Des Moines River
53. East Fork Des Moines River
54. Bois de Sioux River
55. Mustinka River
56. Otter Tail River
57. Upper Red River of the North
58. Buffalo River
59. Red River of the North - Marsh River
60. Wild Rice River
61. Red River of the North - Sandhill River
62. Upper/Lower Red Lake
63. Red Lake River
64. (none)
65. Thief River
66. Clearwater River
67. Red River of the North - Grand Marais Creek
68. Snake River
69. Red River of the North - Tamarac River
70. Two Rivers
71. Roseau River
72. Rainy River - Headwaters
73. Vermilion River
74. Rainy River - Rainy Lake
75. Rainy River - Black River
76. Little Fork River
77. Big Fork River
78. Rapid River
79. Rainy River - Baudette
80. Lake of the Woods
81. Upper Big Sioux River
82. Lower Big Sioux River
83. Rock River
84. Little Sioux River

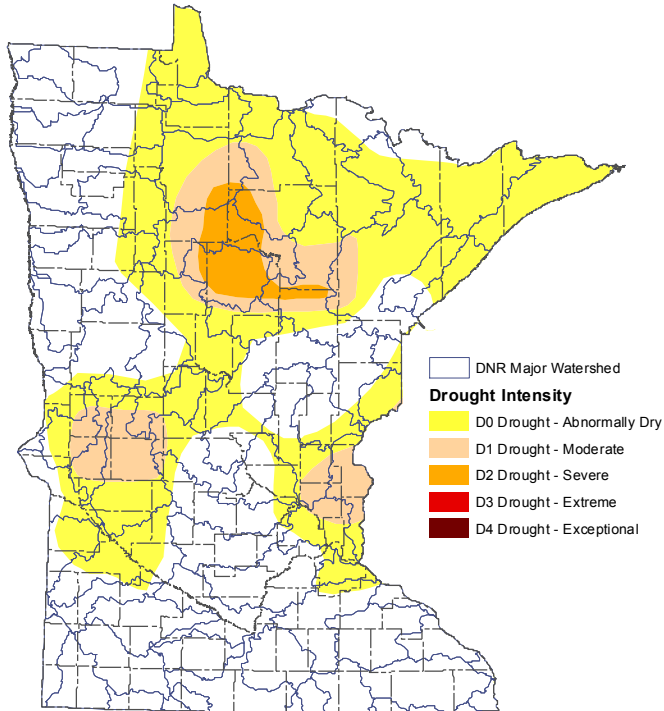
Level 2 Hydrologic Unit (HUC4)

- | | |
|---|--|
|  Cedar River |  Missouri - Big Sioux Rivers |
|  Des Moines River |  Missouri - Little Sioux Rivers |
|  Lower Mississippi River |  Rainy River |
|  Minnesota River |  Red River of the North |
|  Mississippi - Upper Iowa Rivers |  St. Croix River |
|  Mississippi River - Headwaters |  Western Lake Superior |

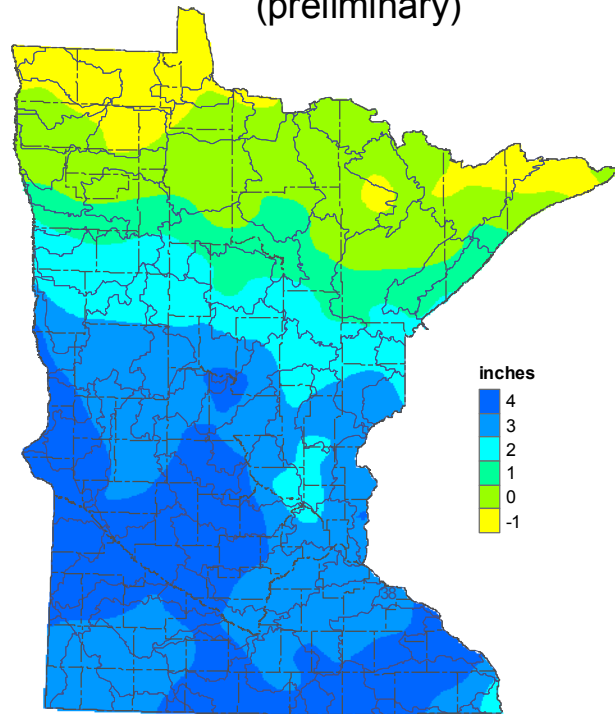


Climatology

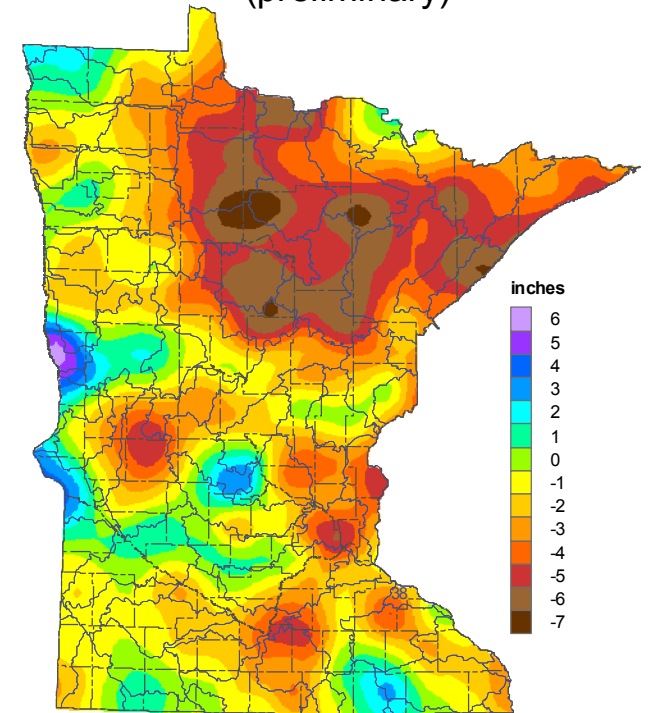
U.S. Drought Monitor
October 27, 2009



Total Precipitation
Departure from Normal
October 2009
(preliminary)

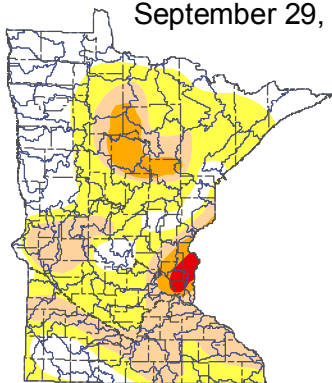


Total Precipitation
Departure from Normal
April 1, 2009 - November 2, 2009
(preliminary)



State Climatology Office - DNR Waters

September 29, 2009

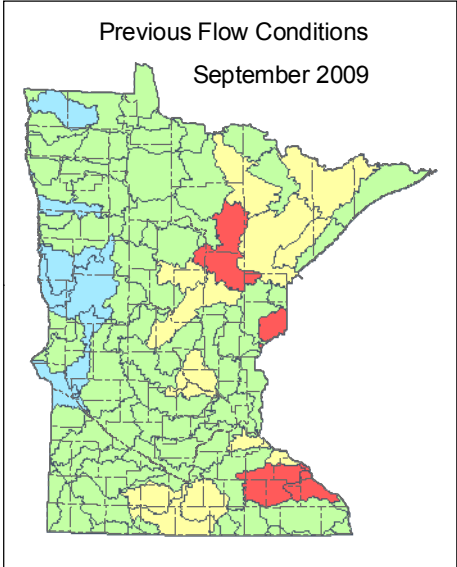
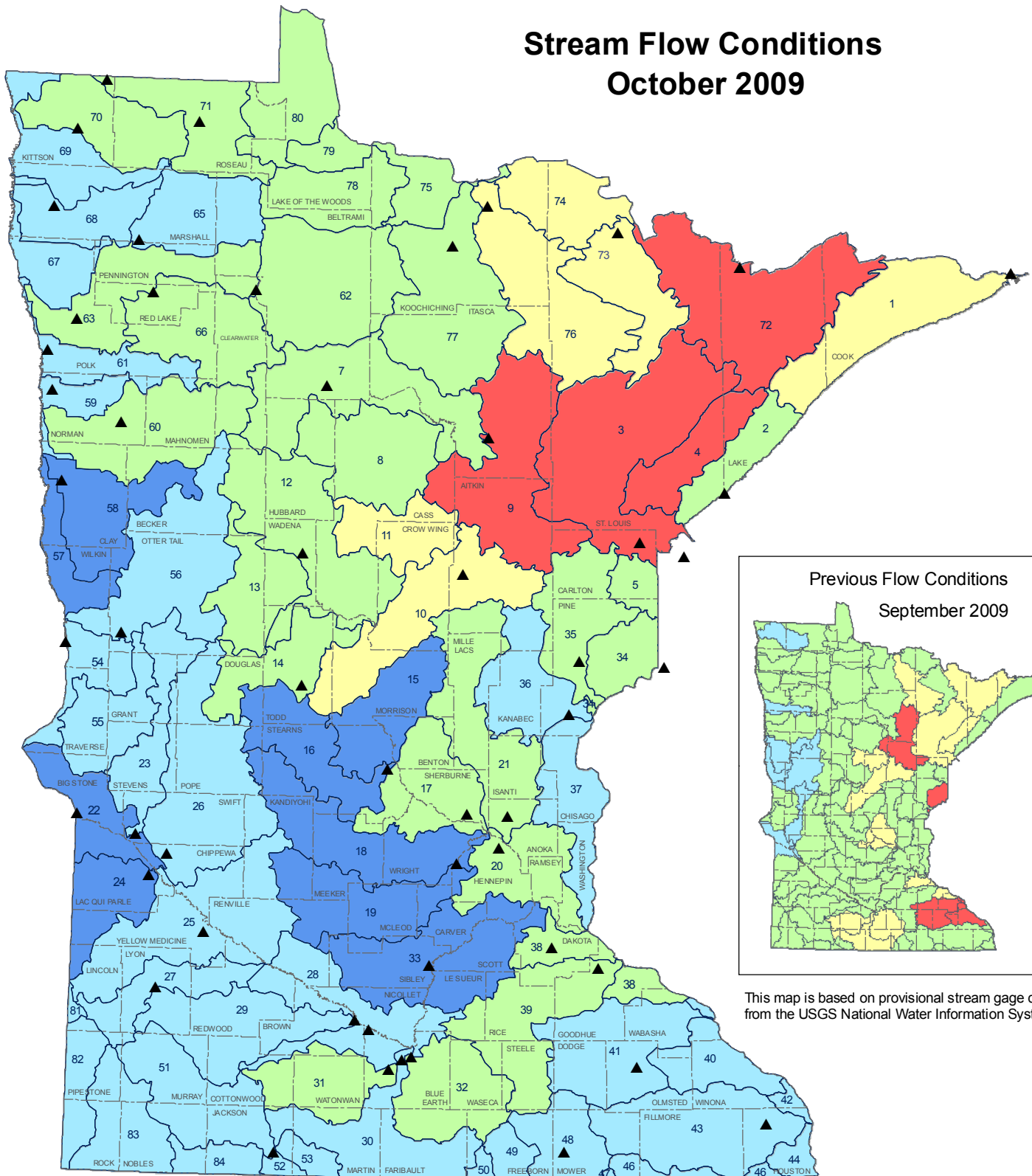


Notes:

- October 2009 was one of the wettest and coldest Octobers in the modern record.
- October precipitation exceeded historical averages by three or more inches across most of the southern two-thirds of Minnesota.
- By late October, 12% of Minnesota's landscape was placed in "Moderate" or "Severe" by the U.S. Drought Monitor. This compares with 30% of Minnesota's total area in "Moderate", "Severe", or "Extreme" drought in late September.
- April through October precipitation totals fell short of average by four or more inches in many north central and northeast Minnesota locales.



Stream Flow Conditions October 2009



This map is based on provisional stream gage data from the USGS National Water Information System

* Percentile ranking based on mean daily flows for the current month averaged and ranked with all historical mean daily flows for that month.

A watershed ranked at zero means that the present month flow is the lowest in the period of record; a ranking of 100 indicates the highest in the period of record.

A ranking at the 50th percentile (median) specifies that the present-month flow is in the middle of the historical distribution.

Data are current through 10/31/2009.

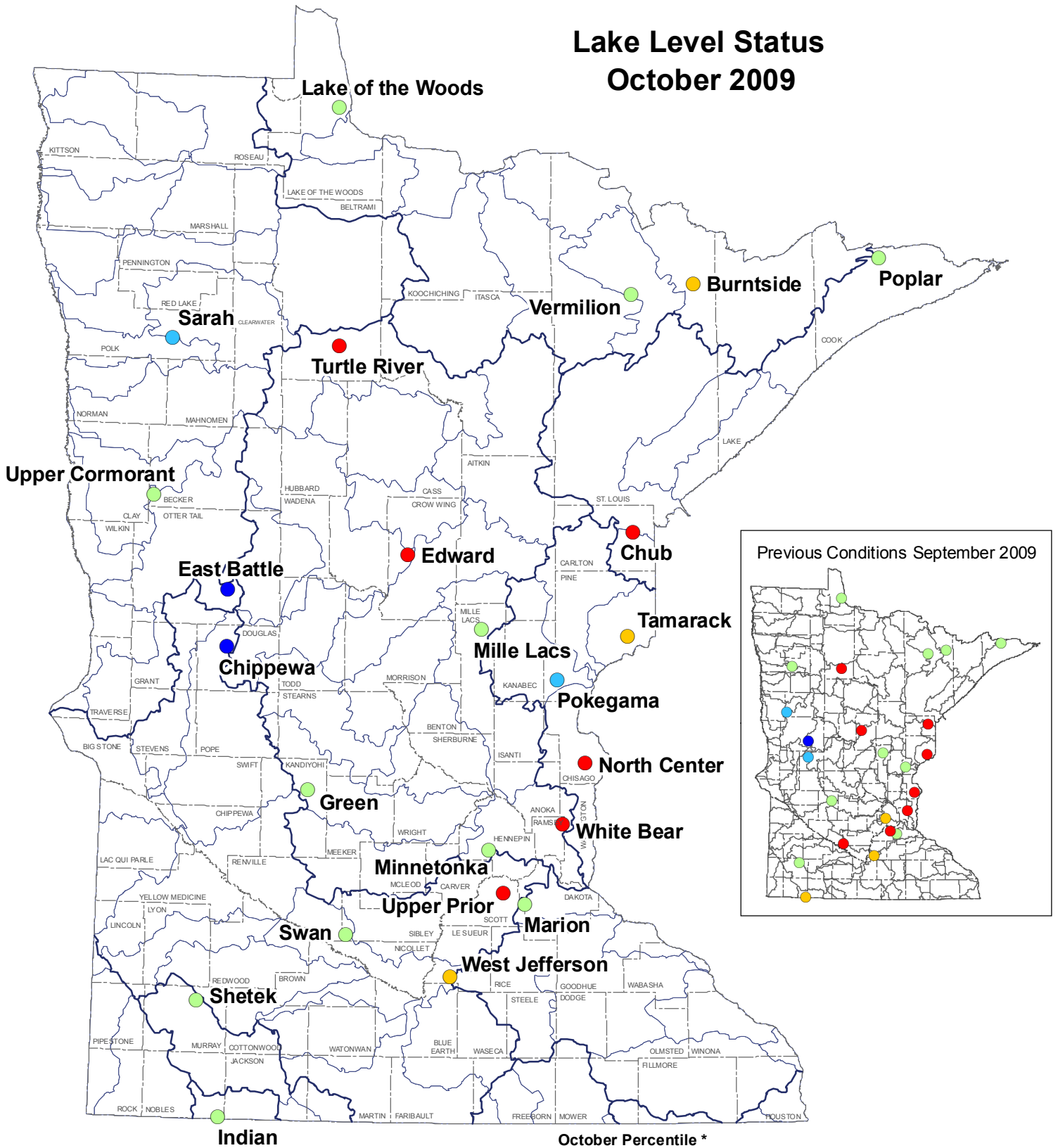
▲ Designated major watershed gage

October Percentile *

- High Flows (>90th percentile)
- Above Normal Flows (75 - 90th percentile)
- Normal Flows (25 - 75th percentile)
- Below Normal Flows (10 - 25th percentile)
- Low Flows (<= 10th percentile)



Lake Level Status October 2009



* Percentile ranking based on last reported reading for the current month compared to all historical reported levels for that month. A lake ranked at zero means that the present reported level is the lowest in the period of record; a ranking of 100 indicates the highest in the period of record. A ranking at the 50th percentile (median) specifies that the present-month reported lake level is in the middle of the historical distribution.

Data are current through 10/31/2009.

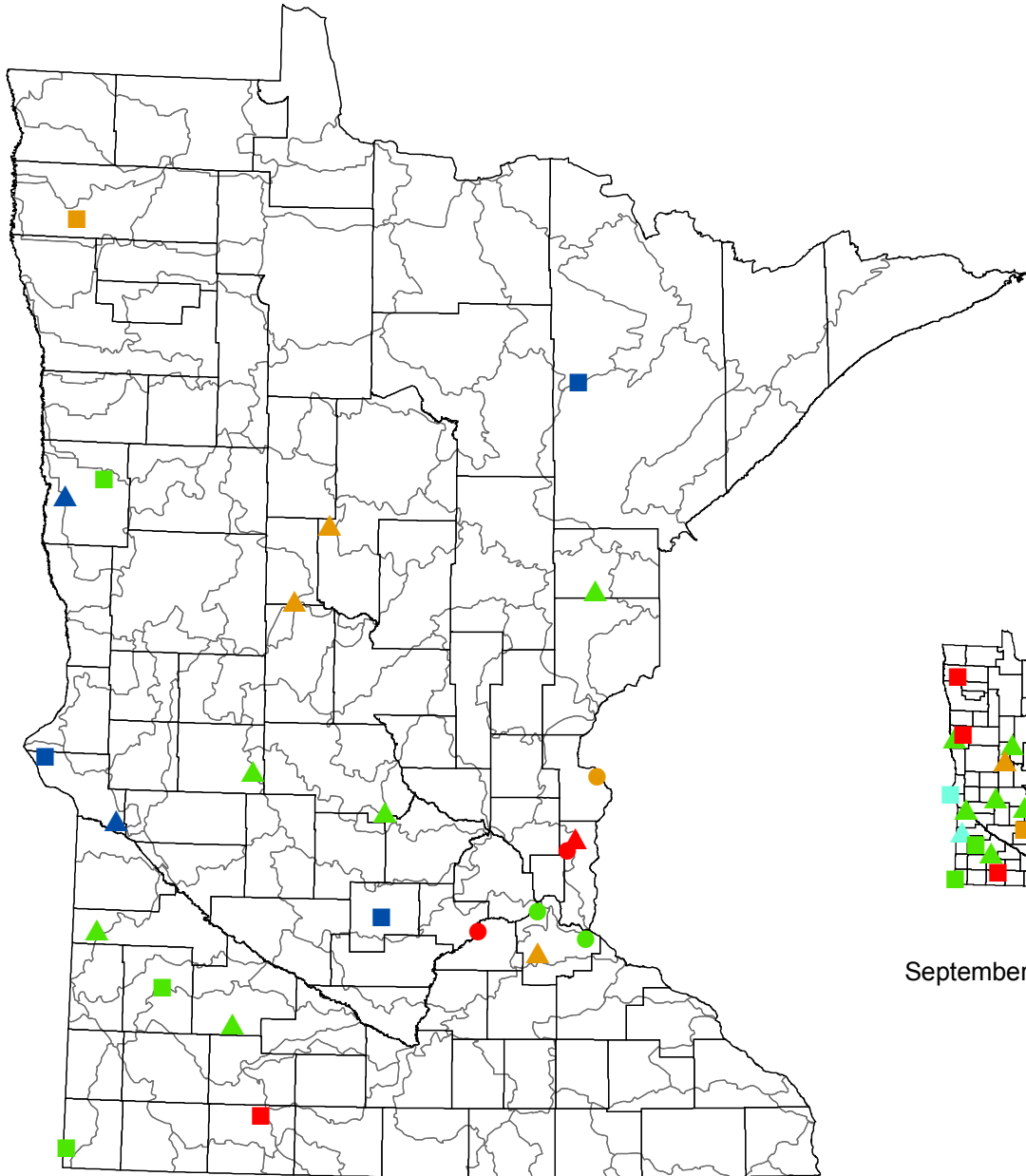
Source data from: MN DNR Waters Lake Level Minnesota Monitoring Program

October Percentile *

- Low Water Levels (\leq 10th percentile)
- Below Normal Water Levels (10 - 25th percentile)
- Normal Water Levels (25 - 75th percentile)
- Above Normal Water Levels (75 - 90th percentile)
- High Water Levels ($>$ 90th percentile)
- Level 2 Hydrologic Unit
- DNR Major Watershed



Ground Water Level Historical Rankings October 2009



September 2009 Indicator Wells

Aquifer

- △ Water Table
- Buried Artesian
- Bedrock

Water Level

- High Water Levels (> 90% percentile)
- Above Normal Water Levels (75% - 90% percentile)
- Normal Water Levels (25% - 75% percentile)
- Below Normal Water Levels (10% - 25% percentile)
- Low Water Levels (< 10% percentile)

* Percentile ranking based on last reported reading for the current month compared to all historical reported levels for that month. A water level ranked at zero means that the present reported level is the lowest in the period of record; a ranking of 100 indicates the highest in the period of record.
A ranking at the 50th percentile (median) specifies that the present-month reported water level level is in the middle of the historical distribution.

Source data from: MN DNR Ground Water Level Monitoring Program

