Swift 11-0133-00

MN Lake ID:	11-0133-00
County:	Cass
Ecoregion:	Northern Lakes and Forests
Major Drainage Basin:	Upper Mississippi River
Latitude/Longitude:	N/A
Water Body Type:	Public Waters
Monitored Sites (Primary):	201
Monitored Sites (Secondary):	202

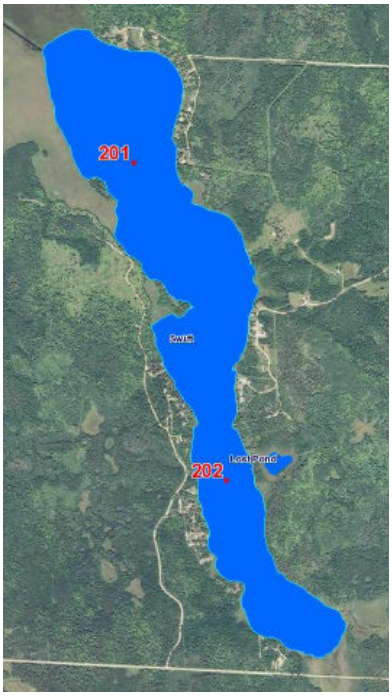
Physical Characteristics

Surface area (acres):	352		
Littoral area (acres):	187		
% Littoral area:	53%		
Max depth (ft):	52	(m):	15.8
Mean depth (ft):	N/A	(m):	N/A
Watershed size (acres):	N/A		

Water Quality Characteristics - Historical Means

Years monitored: 2007-2009

Parameters	Primary Site 201
Total Phosphorus Mean:	21.3
Total Phosphorus Min:	13
Total Phosphorus Max:	34
Number of Observations:	12
Chlorophyll-a Mean:	8.8
Chlorophyll-a Min:	3
Chlorophyll-a Max:	19
Number of Observations:	12
Secchi Depth Mean:	9
Secchi Depth Min:	5.2
Secchi Depth Max:	13.5
Number of Observations:	11
Trophic State Index Mean:	47.8
Trophic State:	Mesotrophic

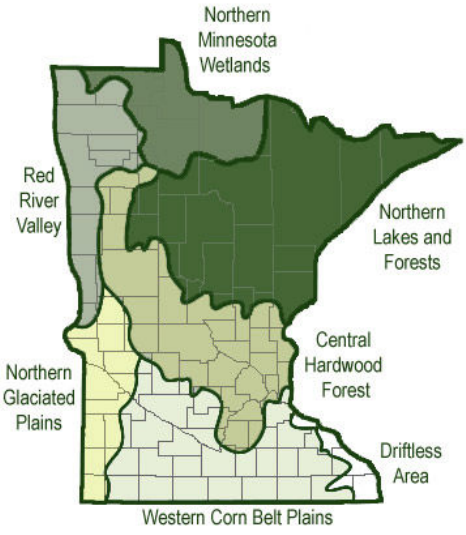


Ecoregion Comparisons

Minnesota is divided into 7 ecoregions based on land use, vegetation, precipitation and geology. The MPCA has developed a way to determine the "average range" of water quality expected for lakes in each ecoregion.

From 1985-1988, the MPCA evaluated the lake water quality for chosen reference lakes. These reference lakes are not considered pristine, but are considered to have little human impact and therefore are representative of the typical lakes within the ecoregion. The "average range" refers to the 25th - 75th percentile range for data within each ecoregion.

Cass County is in the Northern Lakes and Forests Ecoregion.
Swift Lake compares to the ecoregion average ranges as indicated below:



Total Phosphorus:	Within expected range, which indicates expected water quality for the area
Chlorophyll-a:	Within expected range, which indicates expected water quality for the area
Secchi Depth:	Within expected range, which indicates expected water quality for the area

Individual Lake Data Summary

County	MN Lake ID	Lake	Site	Date Range	Data Source
Cass	11-0133-00	Swift	201 (Primary)	08-01-2007 - 09-30-2009	RMB Lab

Historical Mean						**21.3**	**8.8**	**9**	**47**	**50**	**45**	**47**
Date	Time	Site	Sampler	Lab Code	Data Source	TP ug/L	ChlA ug/L	Secchi Ft.	TSI Phos.	TSI ChlAL	TSI Secchi Ft.	TSI Avg.
8/19/2007	2:40 PM	201	Moore/Downham	66998	RMB Lab	20	7	5.2	47	50	53	50
9/16/2007	9:00 AM	201	Moore/Downham	68584	RMB Lab	32	17	6.5	54	58	50	54
Annual Mean						**26**	**12**	**5.8**	**50**	**54**	**51**	**52**
Date	Time	Site	Sampler	Lab Code	Data Source	TP ug/L	ChlA ug/L	Secchi Ft.	TSI Phos.	TSI ChlAL	TSI Secchi Ft.	TSI Avg.
6/4/2008	6:25 PM	201	Moore/Downham	78448	RMB Lab	18	5	N/A	46	46	N/A	46
6/25/2008	6:15 AM	201	Robert A. Kueckenmeister	80744	RMB Lab	18	3	9	46	41	45	44
7/27/2008	9:30 AM	201	Robert A. Kueckenmeister	83597	RMB Lab	15	7	9	43	50	45	46
8/17/2008	9:15 AM	201	Robert A. Kueckenmeister	85404	RMB Lab	18	7	10	46	50	44	47
9/6/2008	1:30 PM	201	Robert A. Kueckenmeister	86964	RMB Lab	34	16	7	55	58	49	54
Annual Mean						**20.6**	**7.6**	**8.8**	**47**	**49**	**45**	**47**
Date	Time	Site	Sampler	Lab Code	Data Source	TP ug/L	ChlA ug/L	Secchi Ft.	TSI Phos.	TSI ChlAL	TSI Secchi Ft.	TSI Avg.
5/30/2009	5:40 PM	201	Robert A. Kueckenmeister	98197	RMB Lab	24	6	11.6	50	48	42	47
6/18/2009	9:30 AM	201	Robert A. Kueckenmeister	101091	RMB Lab	13	4	13.5	41	44	40	42
7/12/2009	11:00 AM	201	Robert A. Kueckenmeister	103467	RMB Lab	16	4	11.5	44	44	42	43
8/9/2009	11:05 AM	201	Robert A. Kueckenmeister	107096	RMB Lab	23	10	9	49	53	45	49
9/13/2009	10:50 AM	201	Robert A. Kueckenmeister	110774	RMB Lab	25	19	7	51	59	49	53
Annual Mean						**20.2**	**8.6**	**10.5**	**47**	**49**	**43**	**46**

Trend Analysis Report

For detecting trends, a minimum of 8-10 years of data with 4 or more readings per season are recommended. Minimum confidence accepted by the MPCA is 90%. This means that there is a 90% chance that the data are showing a true trend and a 10% chance that the trend is a random result of the data. Only short-term trends can be determined with just a few years of data, because there can be different wet years and dry years, water levels, weather, etc., that affect the water quality naturally.

There is not enough historical data to perform trend analysis for total phosphorus, chlorophyll *a*, or Secchi depth on Swift Lake.

Report prepared by RMB Environmental Laboratories, Inc.
218-846-1465, lakes.rmbel@eot.com