

Ada 11-0250-00

MN Lake ID: 11-0250-00
 County: Cass
 Ecoregion: Northern Lakes and Forests
 Major Drainage Basin: Upper Mississippi River
 Latitude/Longitude: 46.82944444 / -94.35000000
 Water Body Type: Public Waters
 Monitored Sites (Primary): 205
 Monitored Sites (Secondary): 203

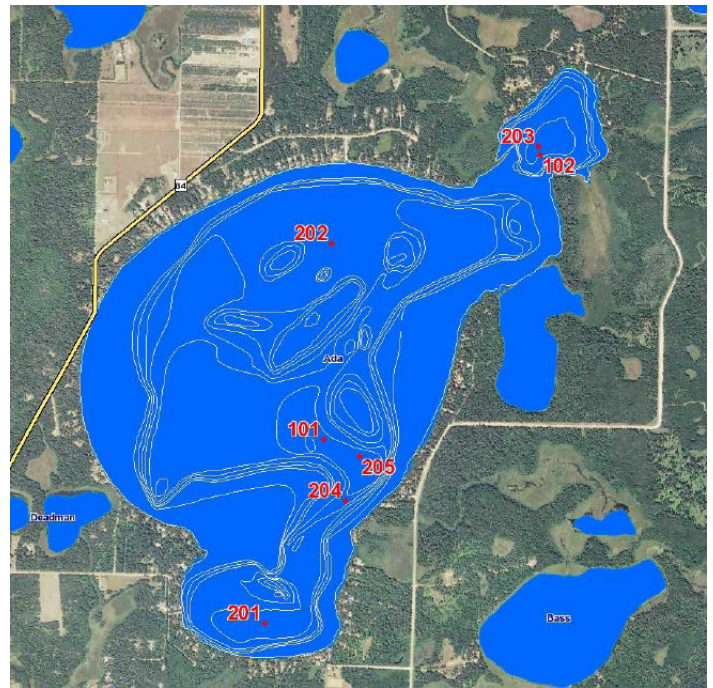
Physical Characteristics

Surface area (acres): 983
 Littoral area (acres): 424
 % Littoral area: 43%
 Max depth (ft): 60 (m): 18.3
 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 205	Site 203
Total Phosphorus Mean:	14.1	12.2
Total Phosphorus Min:	9	6
Total Phosphorus Max:	28	25
Number of Observations:	14	9
Chlorophyll-a Mean:	4.9	3.8
Chlorophyll-a Min:	1	2
Chlorophyll-a Max:	9	9
Number of Observations:	14	9
Secchi Depth Mean:	14	14
Secchi Depth Min:	12	11
Secchi Depth Max:	17.5	17
Number of Observations:	14	9
Trophic State Index Mean (Primary Site):	41.3	
Trophic State:	Mesotrophic	



Ecoregion Comparisons

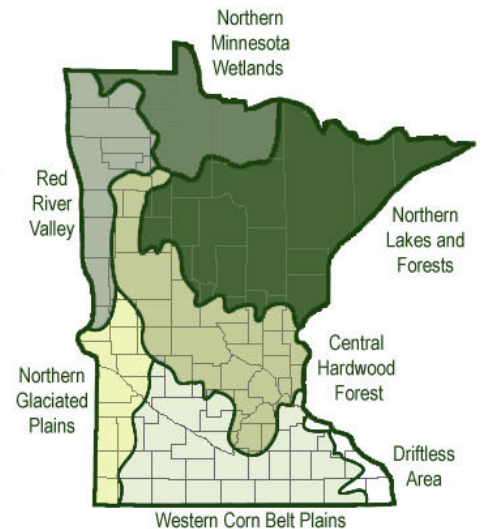
Minnesota is divided into 7 ecoregions based on land use, vegetation, precipitation and geology. The MPCA has developed a way to determine the "average range" of water quality expected for lakes in each ecoregion.

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.

Lake Ada (Site 205) 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



Minnesota Ecoregion Map

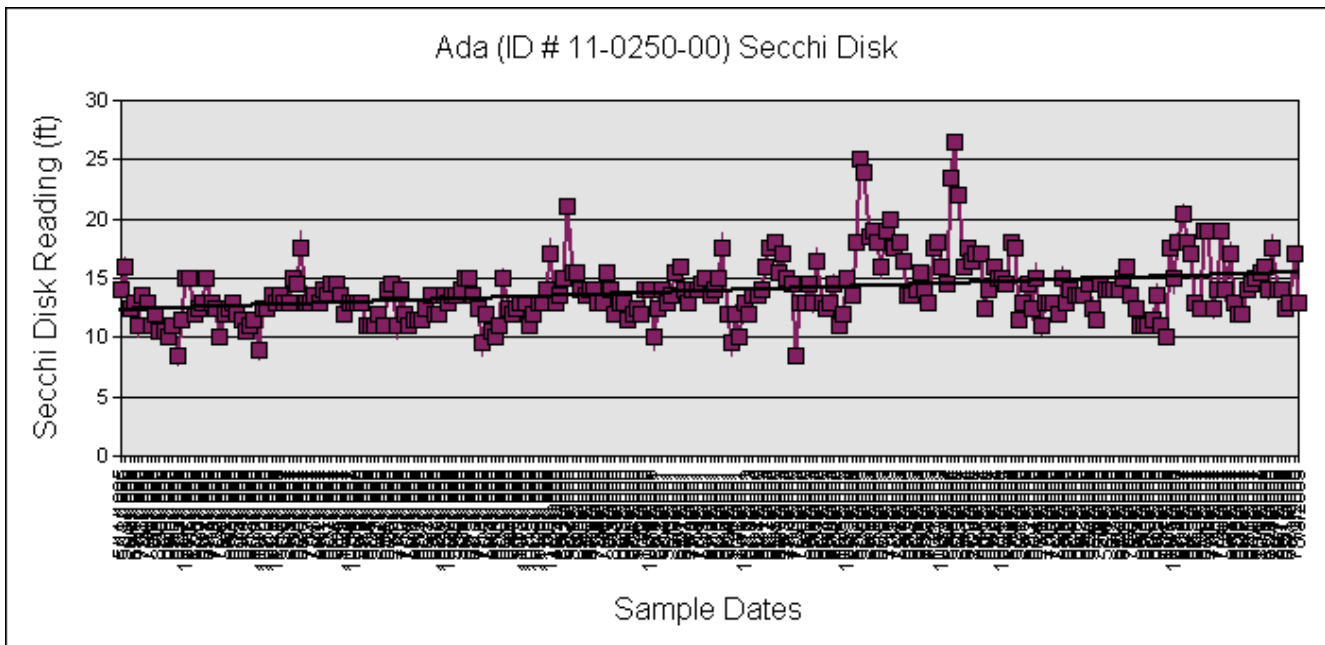
Trend Analysis Report

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 or chlorophyll *a* on Lake Ada. Site 205 had enough transparency data to perform a long-term Secchi depth trend analysis. The data was analyzed using the Mann Kendall Trend Analysis.

County	MN Lake ID	Lake	Site	Data Evaluated	Date Range	Data Source
Cass	11-0250-00	Ada	205 (Primary)	Secchi Disk	05-01-1995 - 08-31-2009	All Historical

**The probability that a true significant trend exists is 99.9%
Secchi Disk is increasing, which indicates improving water quality.**



Individual Lake Data Summary

County	MN Lake ID	Lake	Site	Date Range	Data Source
Cass	11-0250-00	Ada	205 (Primary)	06-01-2007 - 09-30-2009	RMB Lab

Historical Mean	14.1	4.9	14	41	45	39	42
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Date	Time	Site	Sampler	Lab Code	Data Source	TP ug/L	ChIA ug/L	Secchi Ft.	TSI Phos.	TSI ChIAL	TSI Secchi Ft.	TSI Avg.
6/18/2007	11:30 AM	205	Bormann/Hansen	63201	RMB Lab	12	7	13	40	50	40	43
7/15/2007	12:45 PM	205	Stan Bormann	65133	RMB Lab	12	4	12.5	40	44	41	42
8/20/2007	9:45 AM	205	Stan Bormann	67018	RMB Lab	14	5	12	42	46	41	43
9/16/2007	2:15 PM	205	Stan Bormann	68581	RMB Lab	15	4	13.5	43	44	40	42
Annual Mean						13.2	5	12.8	41	46	40	42

Date	Time	Site	Sampler	Lab Code	Data Source	TP ug/L	ChIA ug/L	Secchi Ft.	TSI Phos.	TSI ChIAL	TSI Secchi Ft.	TSI Avg.
6/8/2008	3:00 PM	205	Jon Hansen	78417	RMB Lab	15	9	16	43	52	37	44
6/29/2008	3:00 PM	205	Jon Hansen	80721	RMB Lab	13	4	14	41	44	39	41
7/27/2008	3:00 PM	205	Jon Hansen	83565	RMB Lab	11	3	17.5	39	41	36	39
8/17/2008	3:15 PM	205	Jon Hansen	85380	RMB Lab	12	4	14	40	44	39	41
9/7/2008	4:00 PM	205	Jon Hansen	86940	RMB Lab	14	7	14	42	50	39	44
Annual Mean						13	5.4	15.1	41	46	38	41

Date	Time	Site	Sampler	Lab Code	Data Source	TP ug/L	ChIA ug/L	Secchi Ft.	TSI Phos.	TSI ChIAL	TSI Secchi Ft.	TSI Avg.
5/31/2009	3:30 PM	205	Jon Hansen	98175	RMB Lab	28	7	12.5	52	50	41	48
6/21/2009	3:15 PM	205	Jon Hansen	101116	RMB Lab	9	4	13	36	44	40	40
7/12/2009	4:20 PM	205	Dave Sohn	103451	RMB Lab	11	1	17	39	31	36	35
8/9/2009	3:00 PM	205	Hanson/Sohn	107120	RMB Lab	15	5	13	43	46	40	43
9/13/2009	3:15 PM	205	Jon Hansen	110771	RMB Lab	17	4	14	45	44	39	43
Annual Mean						16	4.2	13.9	43	43	39	41

Individual Lake Data Summary

County	MN Lake ID	Lake	Site	Date Range	Data Source
Cass	11-0250-00	Ada	203	06-01-2008 - 09-30-2009	RMB Lab

Historical Mean	12.2	3.8	14	39	42	39	40
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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.
6/29/2008	3:15 PM	203	Jon Hansen	80722	RMB Lab	13	3	13.5	41	41	40	41
7/27/2008	3:15 PM	203	Jon Hansen	83566	RMB Lab	9	2	15.5	36	37	38	37
8/17/2008	3:30 PM	203	Jon Hansen	85381	RMB Lab	6	3	15	30	41	38	36
9/7/2008	3:30 PM	203	Jon Hansen	86945	RMB Lab	11	3	15	39	41	38	39
Annual Mean						9.8	2.8	14.8	36	40	38	38

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.
5/31/2009	3:40 PM	203	Jon Hansen	98174	RMB Lab	25	5	11	51	46	43	47
6/21/2009	3:30 PM	203	Jon Hansen	101115	RMB Lab	15	3	13	43	41	40	41
7/12/2009	4:35 PM	203	Dave Sohn	103452	RMB Lab	10	2	15	37	37	38	37
8/9/2009	3:15 PM	203	Hanson/Sohn	107121	RMB Lab	11	9	11	39	52	43	45
9/13/2009	3:30 PM	203	Jon Hansen	110770	RMB Lab	10	4	17	37	44	36	39
Annual Mean						14.2	4.6	13.4	41	44	40	41