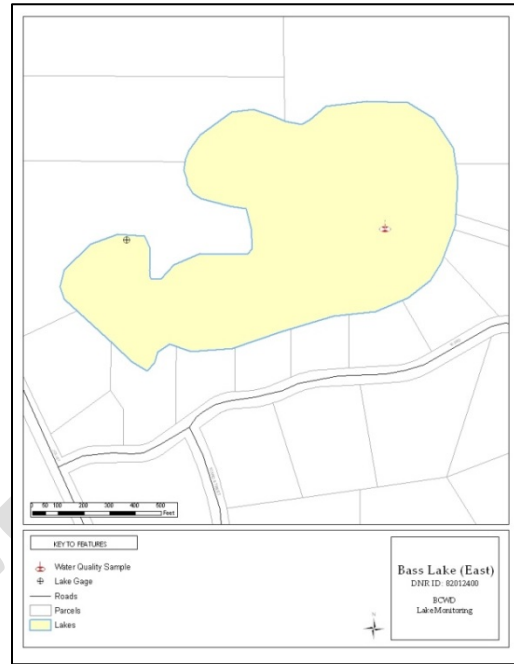


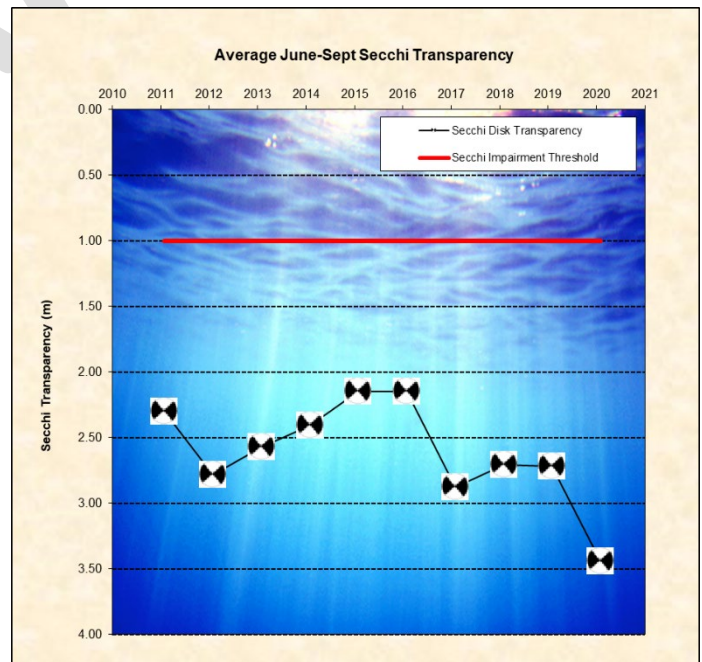
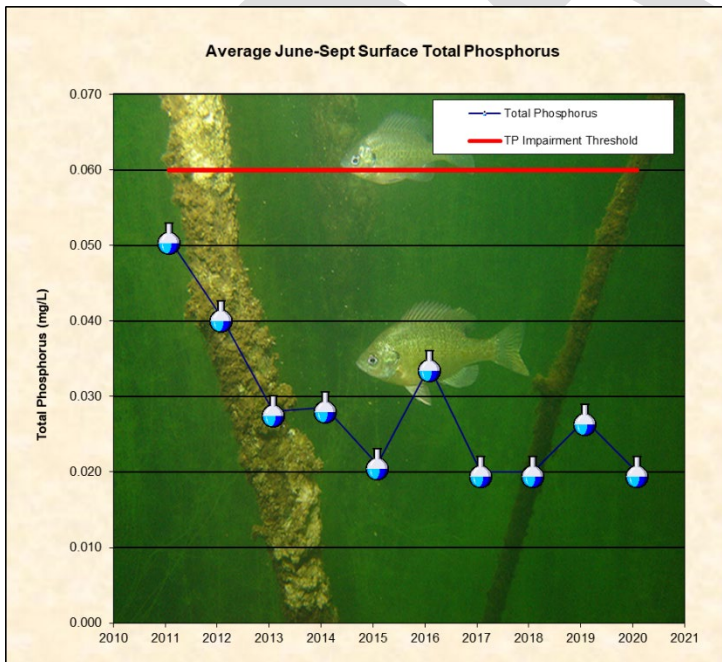
## Bass Lake (East) 2020 Lake Grade: A

- DNR ID #: 820124
  - Municipality: City of Grant
  - Location: Section 10, T30N-R21W
  - Lake Size: 29 Acres
  - Maximum Depth (2020): 21 ft
  - Ordinary High Water Mark: 960.20 ft
  - 100-Year High Water Level: 960.40 ft
  - 99% Littoral
- Note: Littoral area is the portion of the lake <15 ft and dominated by aquatic vegetation.

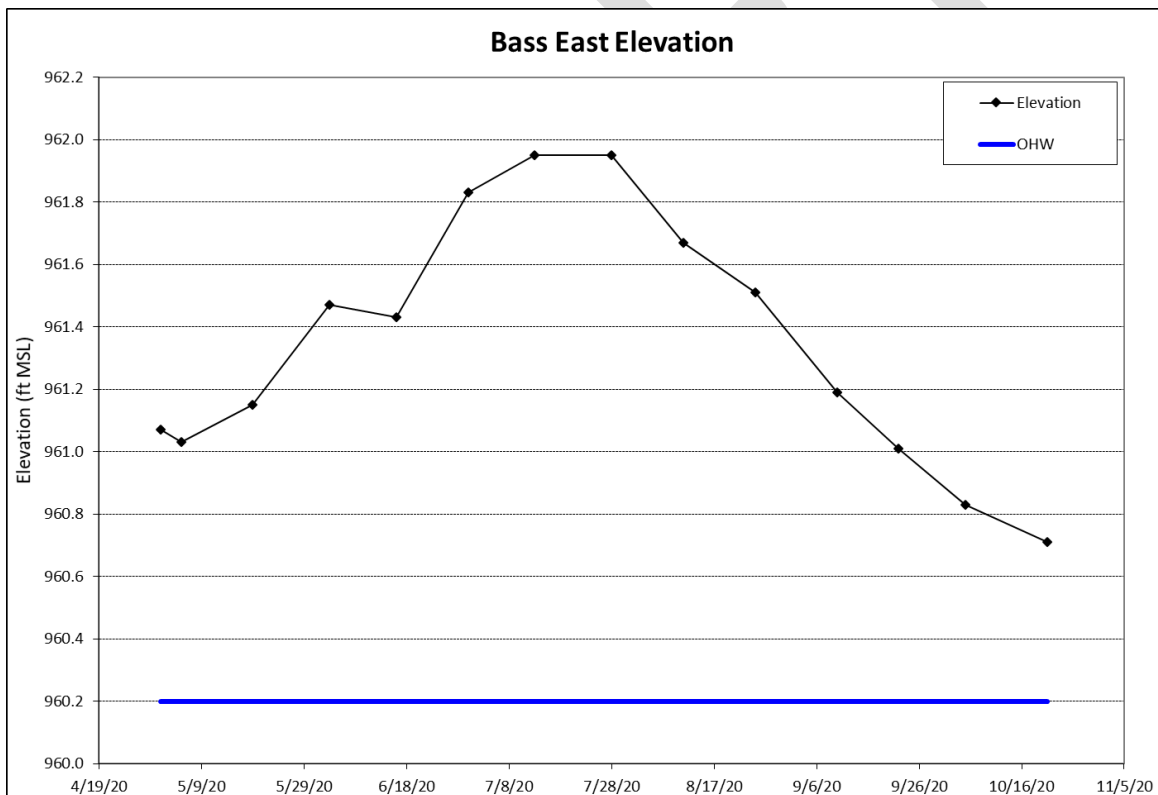


### Summary Points

- Based on chlorophyll- $\alpha$  data, the lake is classified as mesotrophic according to the Carlson Trophic State Index.
- Using the Kendall's Tau correlation test ( $p < 0.05$ ) there is a statistically significant **improving** trend for average total phosphorus and average chlorophyll- $\alpha$ , and the trend for the average Secchi transparency is skewed due to vegetation limiting the transparency.
- The major land use is rural/agricultural.
- The lake stratified in 2020 with a thermocline around 4 meters.
- This lake is categorized as shallow according to the Minnesota Pollution Control Agency's standards.



| Date/Time   | Total Phosphorus (mg/L) | Trichromatic Uncorrected Chlorophyll-a (ug/L) | Pheophytin-Corrected Chlorophyll-a (ug/L) | Total Kjeldahl Nitrogen (mg/L) | Secchi Disk Depth (m) | Surface Temperature (Celsius) | Surface Dissolved Oxygen (mg/L) |
|---|-------------------------|---|---|--------------------------------|-----------------------|-------------------------------|---------------------------------|
| 5/5/2020 14:59  | 0.021                   | 1.7   | 1.5                                       | 0.47                           | 3.66                  | 15.8                          | 10.54                           |
| 5/19/2020 14:03   | 0.018                   | 1.9   | 1.0                                       | 0.44                           | 2.74                  | 15.9                          | 9.79                            |
| 6/3/2020 9:02   | 0.020                   | 1.8   | 1.0                                       | 0.50                           | 5.64                  | 23.1                          | 8.53                            |
| 6/16/2020 13:38   | 0.022                   | 4.3   | 4.0                                       | 0.54                           | 3.35                  | 24.3                          | 9.94                            |
| 6/30/2020 8:36  | 0.015                   | 2.8   | 2.5                                       | 0.46                           | 3.35                  | 25.3                          | 7.40                            |
| 7/13/2020 14:27   | 0.018                   | 7.7   | 5.7                                       | 0.52                           | 3.20                  | 29.2                          | 7.93                            |
| 7/28/2020 10:00   | 0.034                   | 5.4   | 4.9                                       | 1.00                           | 2.90                  | 26.8                          | 6.84                            |
| 8/11/2020 11:38   | 0.023                   | 2.7   | 2.2                                       | 0.68                           | 2.90                  | 25.3                          | 6.42                            |
| 8/25/2020 8:54  | 0.017                   | 2.1   | 1.3                                       | 0.56                           | 2.74                  | 27.0                          | 7.52                            |
| 9/10/2020 13:42   | 0.020                   | 6.1   | 4.4                                       | 0.48                           | 3.51                  | 19.6                          | 7.86                            |
| 9/22/2020 9:56  | 0.015                   | 4.2   | 3.7                                       | 0.53                           | 3.35                  | 17.8                          | 8.66                            |
| 10/5/2020 14:55   | 0.021                   | 4.9   | 4.1                                       | 0.59                           | 3.20                  | 14.5                          | 7.27                            |
| <b>2020 Average</b>   | 0.020                   | 3.8   | 3.0                                       | 0.56                           | 3.38                  | 22.1                          | 8.23                            |
| <b>2020 Summer Average</b>  | 0.020                   | 4.1   | 3.3                                       | 0.59                           | 3.44                  | 24.3                          | 7.90                            |
| Water quality thresholds are 0.04 mg/L TP, 14 µg/L CL-a, 1.4 m Secchi depth*  |                         |   |   |                                |                       |                               |                                 |
| Shallow lake water quality thresholds are 0.06 mg/L TP, 20 µg/L CL-a, 1.0 m Secchi depth*   |                         |   |   |                                |                       |                               |                                 |
| <b>2020 Elevation (ft)</b>  | <b>High</b>             | <b>High Date</b>                              | <b>Low</b>                                | <b>Low Date</b>                | <b>Average</b>        |                               |                                 |
|   | 961.95                  | 7/13/2020                                     | 960.71                                    | 10/21/2020                     | 961.34                |                               |                                 |
| *Data requirements and determinations of use assessment according to the MPCA's Guidance Manual for Assessing the Quality of Minnesota Surface Waters: "Samples must be collected over a minimum of 2 years and data used for assessments must be collected from June to September. Typically, a minimum of 8 individual data points for TP, corrected chlorophyll-a (chl-a corrected for pheophytin), and Secchi are required. Data used for phosphorus and chlorophyll-a calculations are limited to those collected from the upper most 3 meters of the water column (surface). If more than one sample is collected in a lake per day, these values are averaged to yield a daily average value. Following this step, all June to September data for the 10-year assessment window are averaged to determine summer-mean values for TP, corrected chl-a, and Secchi depth. These values are then compared to the standards and the assessment is made." |                         |   |   |                                |                       |                               |                                 |



| Lake Water Quality Summary |                        |           |           |           |          |           |           |           |          |           |
|----------------------------|------------------------|-----------|-----------|-----------|----------|-----------|-----------|-----------|----------|-----------|
|                            | Lake Grades (May-Sept) |           |           |           |          |           |           |           |          |           |
|                            | 2020                   | 2019      | 2018      | 2017      | 2016     | 2015      | 2014      | 2013      | 2012     | 2011      |
| Total Phosphorus (mg/l)    | A                      | B         | A         | A         | C        | A         | B         | B         | C        | C         |
| Chlorophyll-a (ug/l)       | A                      | A         | A         | A         | A        | A         | A         | A         | A        | B         |
| Secchi depth (ft)          | A                      | B         | B         | B         | B        | C         | B         | B         | B        | B         |
| <b>Overall</b>             | <b>A</b>               | <b>B+</b> | <b>A-</b> | <b>A-</b> | <b>B</b> | <b>B+</b> | <b>B+</b> | <b>B+</b> | <b>B</b> | <b>B-</b> |