

Water Quality Monitoring in Vancouver Lake

Ron Wierenga

Clark County Public Works
Water Resources Program



Presentation Outline

- Volunteer Monitoring in Vancouver Lake
- Summary of Results



Volunteer Monitoring in Vancouver Lake

- Initiated in 2003 with student monitoring projects
- Routine open-water monitoring in 2004 and 2005 by the county's volunteer team
 - June-October twice-monthly sampling of physical and chemical characteristics, and algae



Data Summary

- Temperature – The lake is too large and shallow to stratify; vertical gradients confined brief periods confined to calm weather; warm.
- Oxygen - Usually at acceptable levels but occasionally depleted during periods of calm weather; “supersaturated” during algal blooms; oxygen levels dipped lower in 2004 relative to 2005.
- pH- Very high at times due to heavy growth of algae; pH values lower in 2005 relative to 2004.

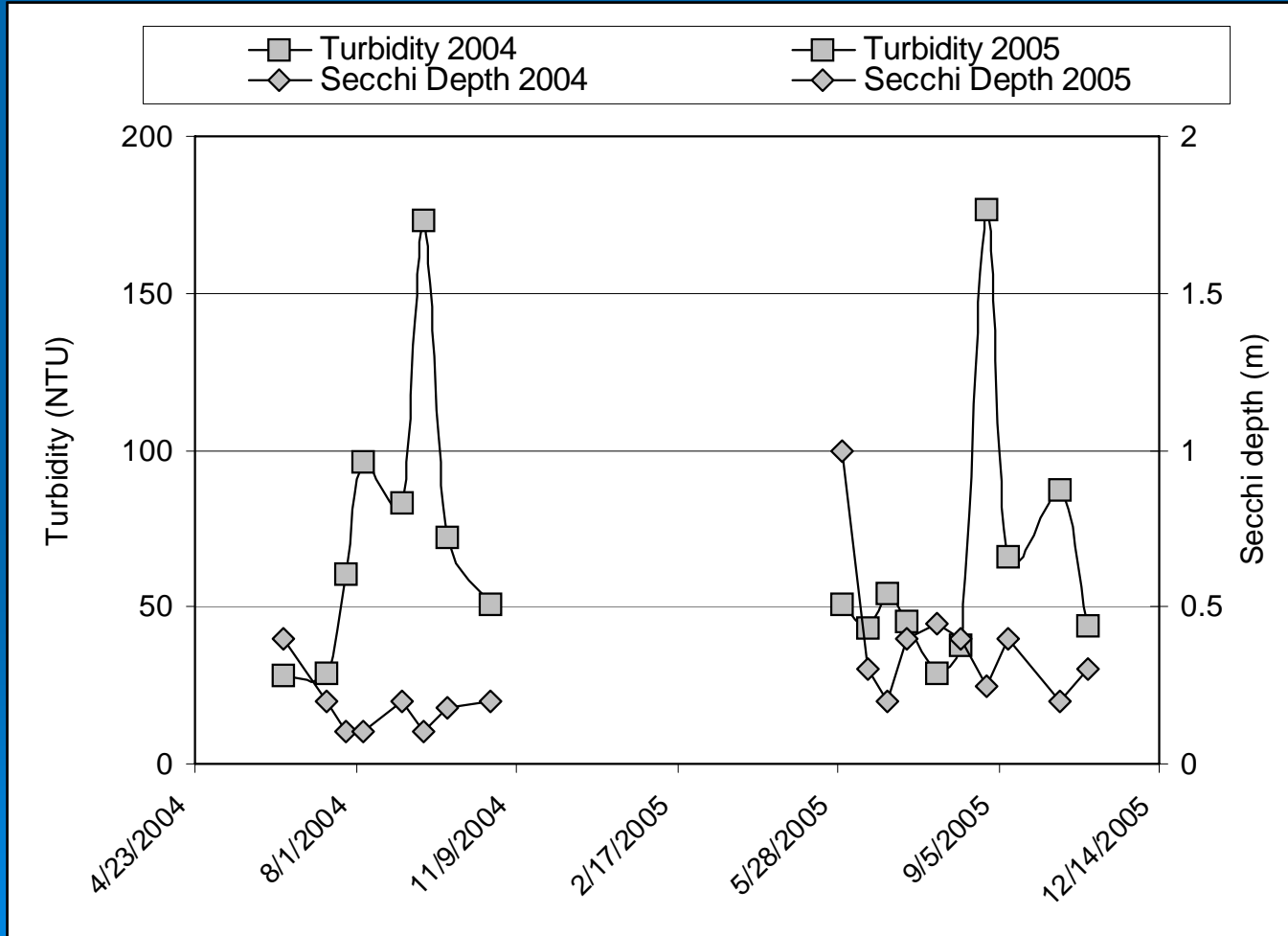
Data Summary

Transparency or water clarity – Secchi Disk



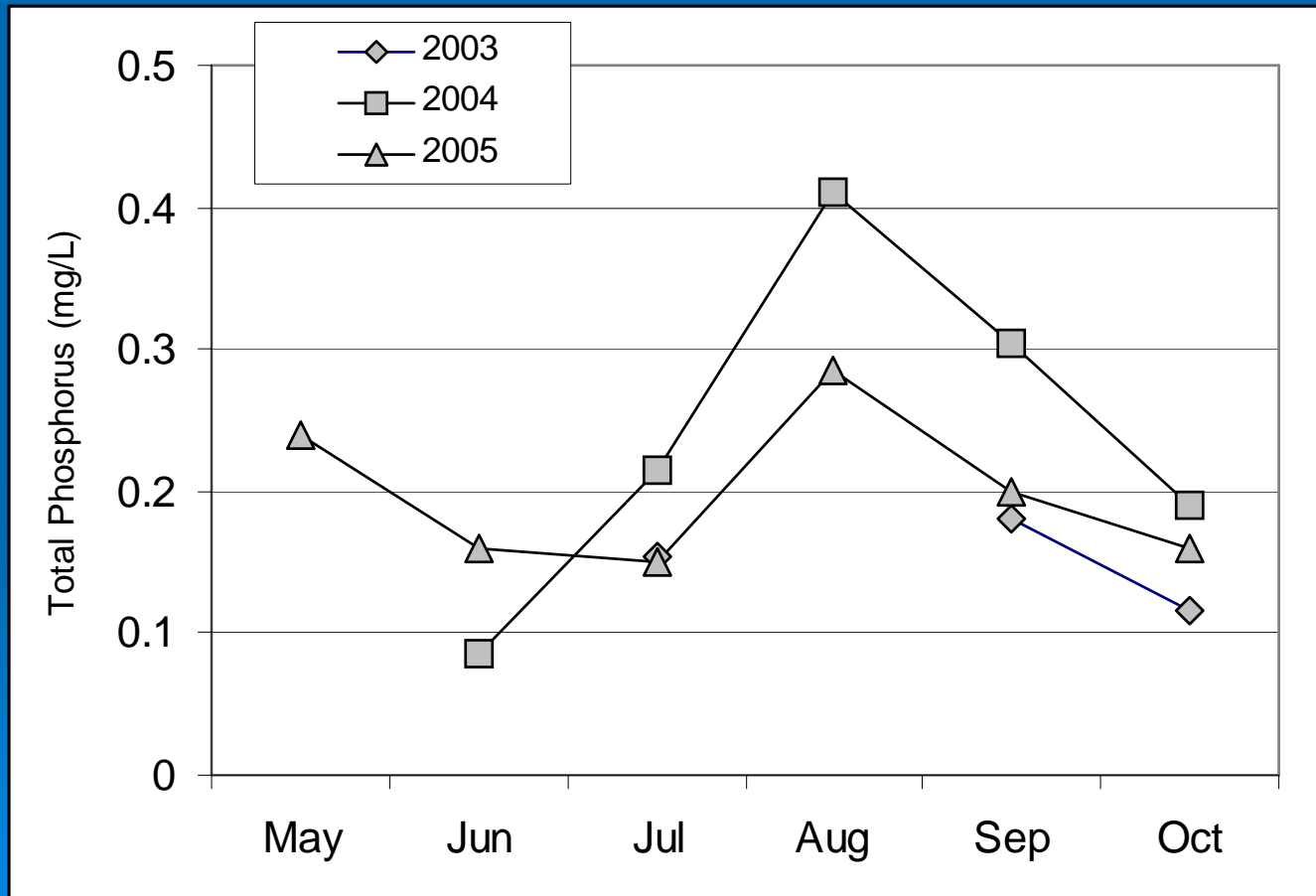
Data Summary

- Water Clarity or Transparency deteriorates through the summer and is generally considered to be poor



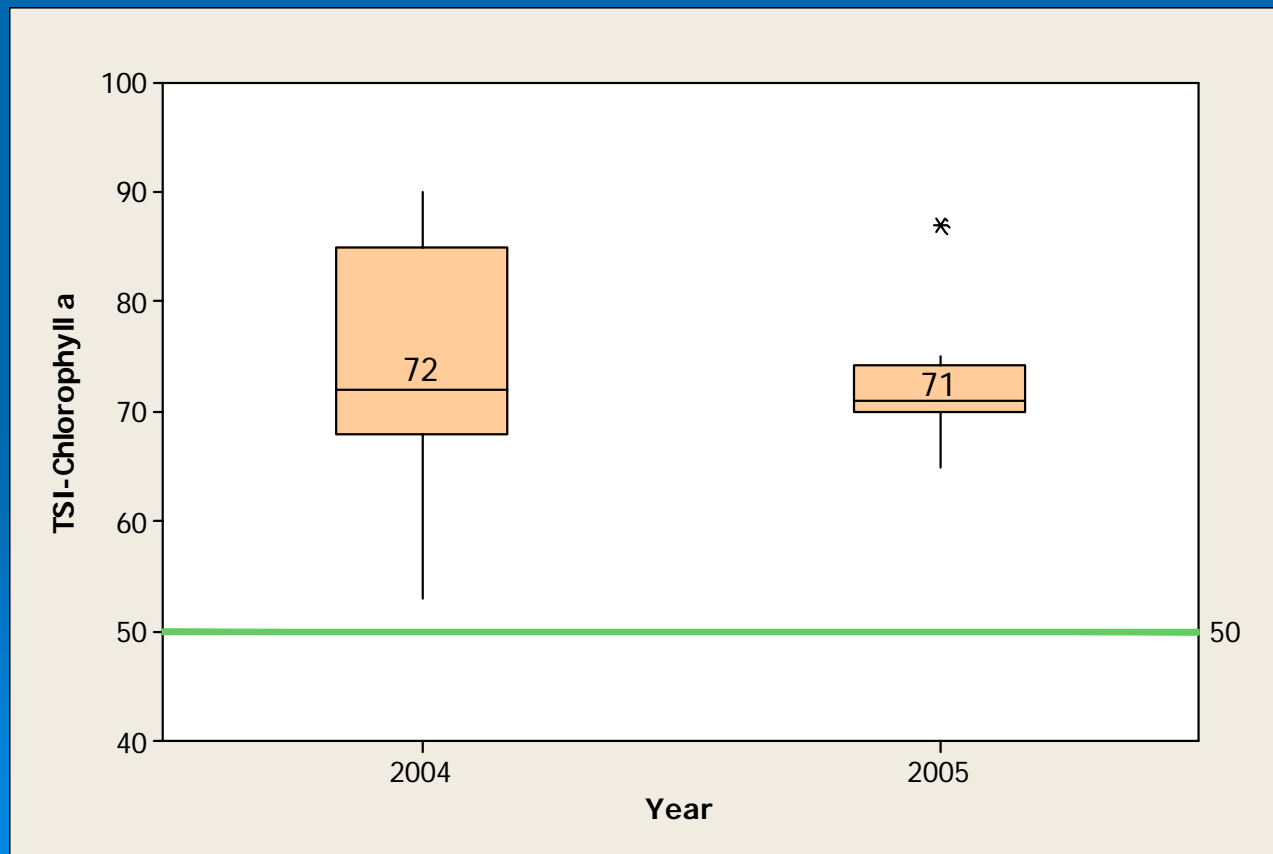
Data Summary

- Nutrients - elevated amounts can cause algal blooms and plant problems; much higher than recommended criteria of 0.025-0.030 mg/L for lakes.



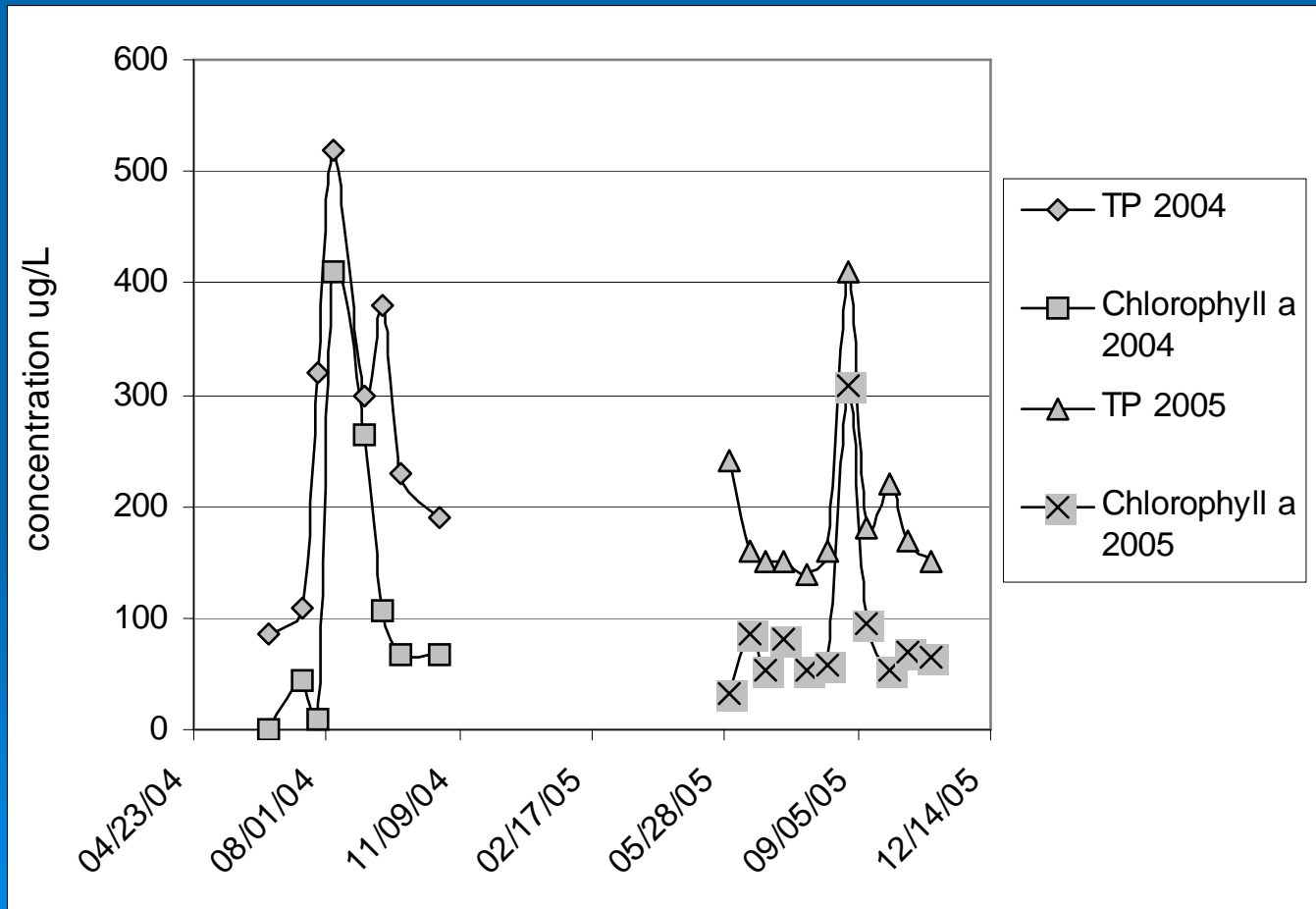
Data Summary

- Trophic State – an index that represents the amount of algae in the lake
 - Overall TSI is about 72 or Hyper-Eutrophic, meaning nuisance plants, algal scums, and low transparency may discourage swimming and boating.



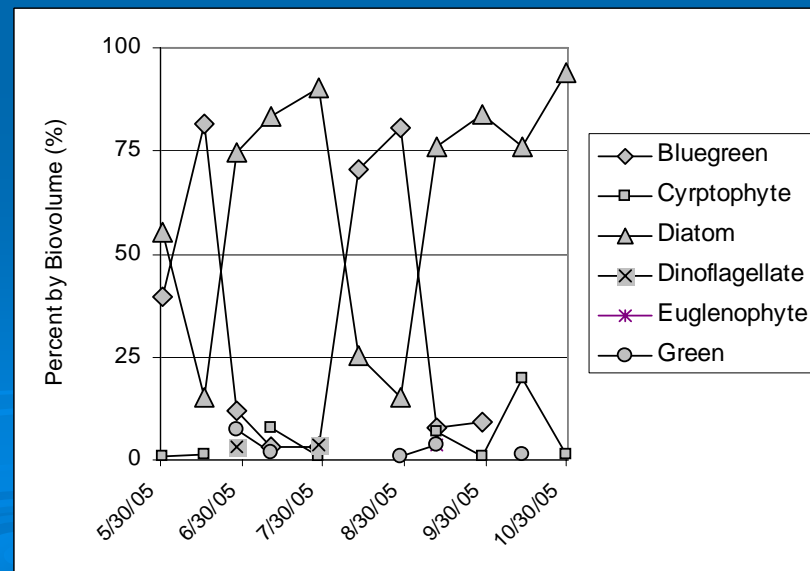
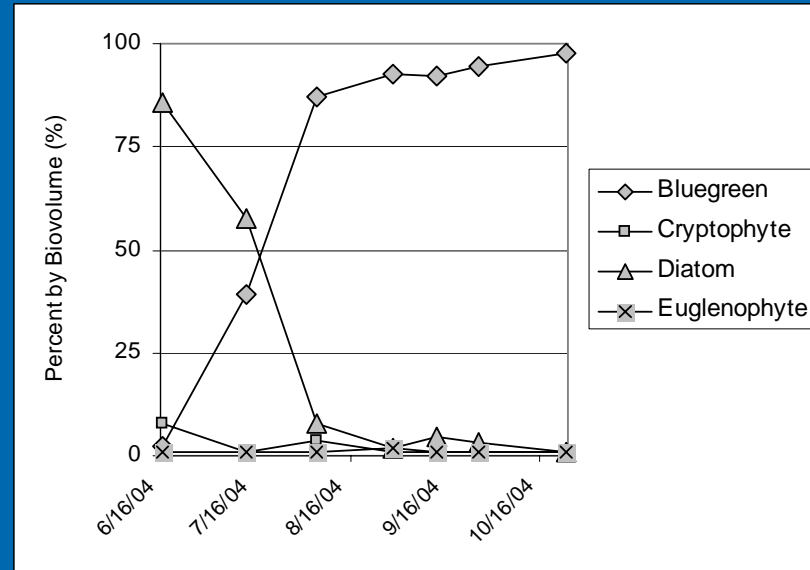
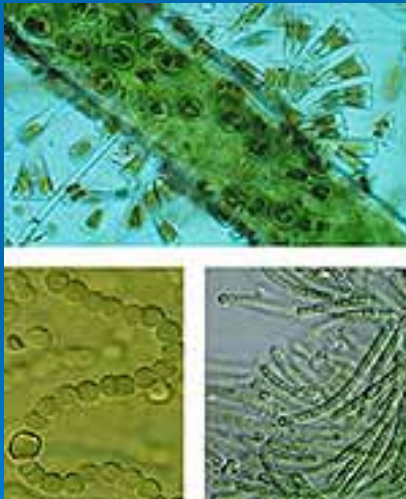
Data Summary

- Algae – excessive growth of algae generally follows nutrient levels; sharp increases in both characteristics were noted in August of both monitoring seasons.



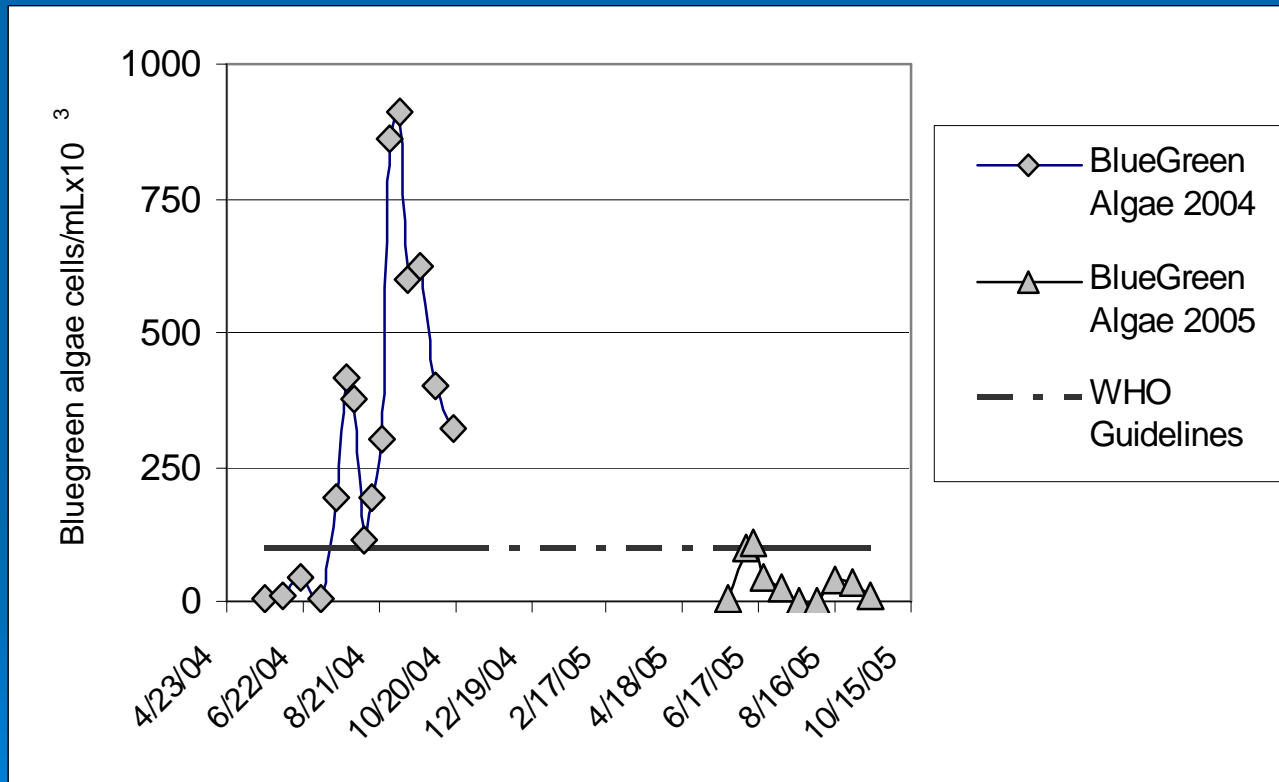
Data Summary

- Algae – excessive growth of certain types of algae, primarily Bluegreen algae, limit biological diversity



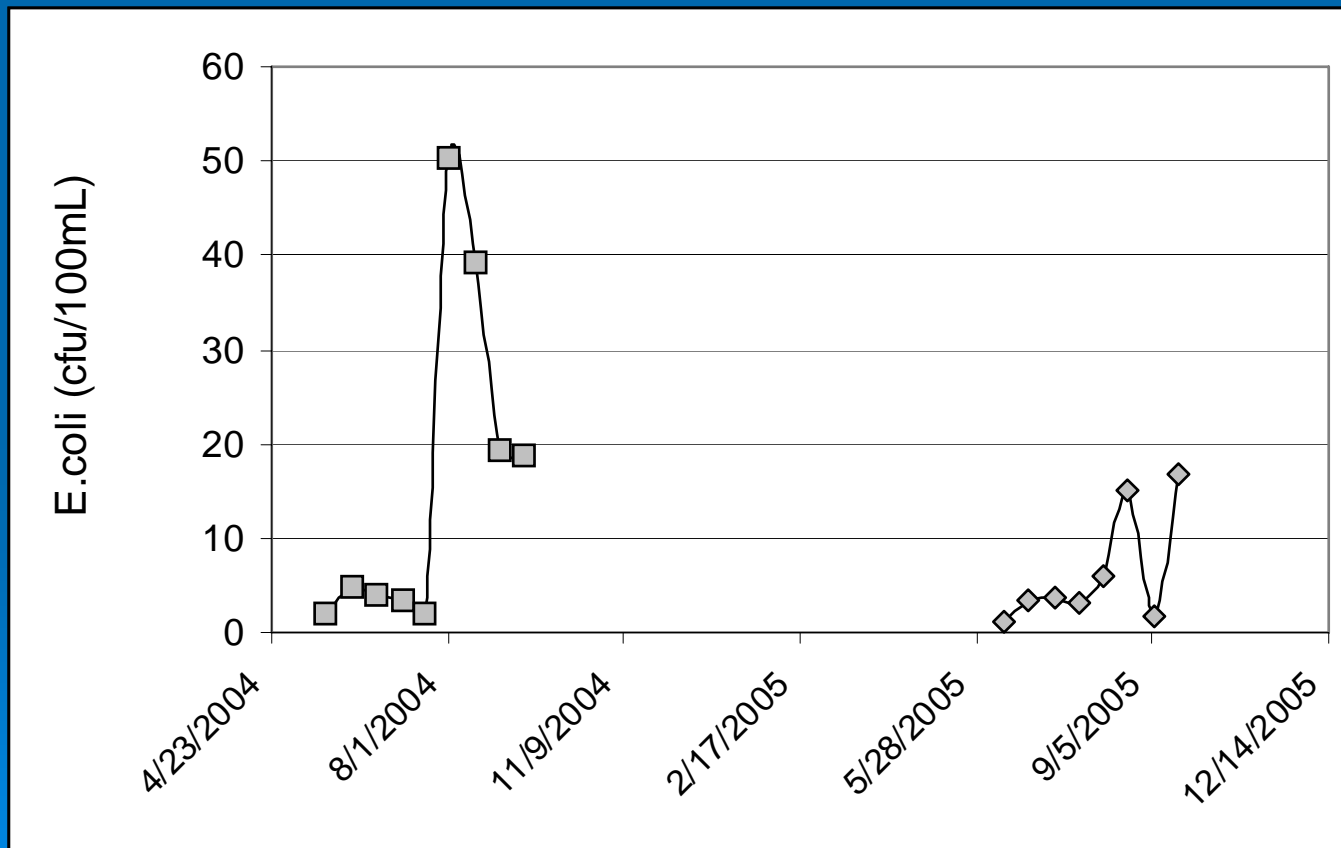
Data Summary

- Algae – excessive growth of algae may restrict recreational use; potential toxin producers can dominate during the late summer.



Data Summary

- Bacteria and pathogens - EPA bathing water standards considers samples higher than 236 bacteria per 100 mL unsafe for swimming



What's Next?



- Nearly 20 volunteers trained in May 2006
- Volunteer monitoring started in late May 2006
- Integrate volunteer monitoring results in other lake studies, e.g. WSU plankton research.