

City of Chanhassen

2005 Lake Sampling Water Quality Report

Wenck File #1481-01

Prepared for:

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1.0 Introduction

Wenck Associates, Inc. was contracted by the City of Chanhassen to sample five lakes within the city in the summer of 2005. Lakes Ann, Lucy, Lotus, Susan, and Rice Marsh were each sampled twice a month from May to September. Locations of the lakes and sampling points are shown on Figure 1.

2.0 Methods

2.1 SAMPLING METHODS

Surface water samples were collected near the area of maximum depth of each lake for analysis of total phosphorus (TP) and chlorophyll-a. The sample to be analyzed for TP was collected at a depth of 0.5 meters with a Van Dorn bottle sampler. A 2-meter composite sample was collected for analysis of chlorophyll-a. The water samples were submitted to Braun Intertec for laboratory analysis. Secchi disc depth was measured and recorded on each sampling trip as well.

A complete summary of the 2005 sampling results, along with data in a graphical format for each lake, is displayed in Appendix A. The 2005 summer averages were calculated from the data collected from June 1-September 30. The data from the two sample events that occurred in May are displayed, but were not used in calculating the summer average.

Historical data was compiled from previous water quality reports for the five lakes sampled in 2005. The summer averages were calculated for surface total phosphorus, chlorophyll-a, and Secchi disc depth using data from June 1-September 30. Water quality data for months outside of June to September was not used in calculating the summer averages for these three parameters. In some cases, the historical summer averages used were calculated averages taken from the Riley-Purgatory-Bluff Creek Watershed District 1996 Water Management Plan. These values were calculated using data collected from June to September.

The historical data used to calculate the summer averages for each sampled year can be found in Appendix B. A summary of the historical data and historic trends in a graphical format for each lake is also found in Appendix B.

2.2 MPCA PROPOSED WATER QUALITY STANDARDS

The Minnesota Pollution Control Agency (MPCA) has proposed numeric standards for total phosphorus, chlorophyll-a, and Secchi depth. These standards are a measurement of indicators of eutrophication, which is the increase in biological productivity due to increased nutrient loading. These proposed standards are used for comparison against the 2005 and historical summer (June 1-September 30) averages for each sampled lake.

Since the characteristics of lakes differ throughout the state, proposed standards vary by ecoregion and lake morphometry. The lakes in the City of Chanhassen are in the North Central Hardwood Forest ecoregion of Minnesota. Lucy, Rice Marsh, and Susan are characterized as shallow lakes, which have a maximum depth of 15 feet, or more than 80% area less than 15 feet. Lakes Ann and Lotus are characterized as deep lakes, which have a maximum depth greater than 15 feet. The proposed standards to be used for the lakes in the North Central Hardwood Forest ecoregion are shown in Table 1.

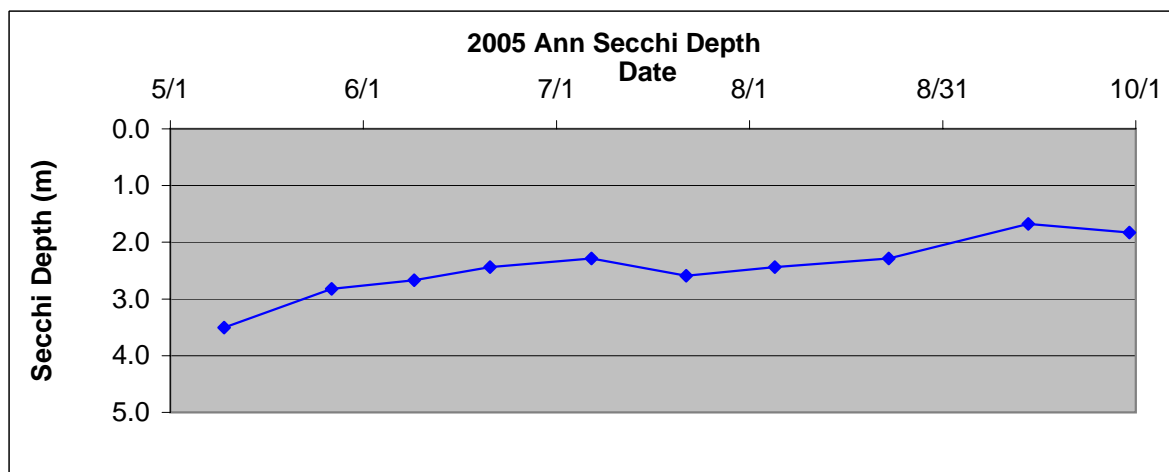
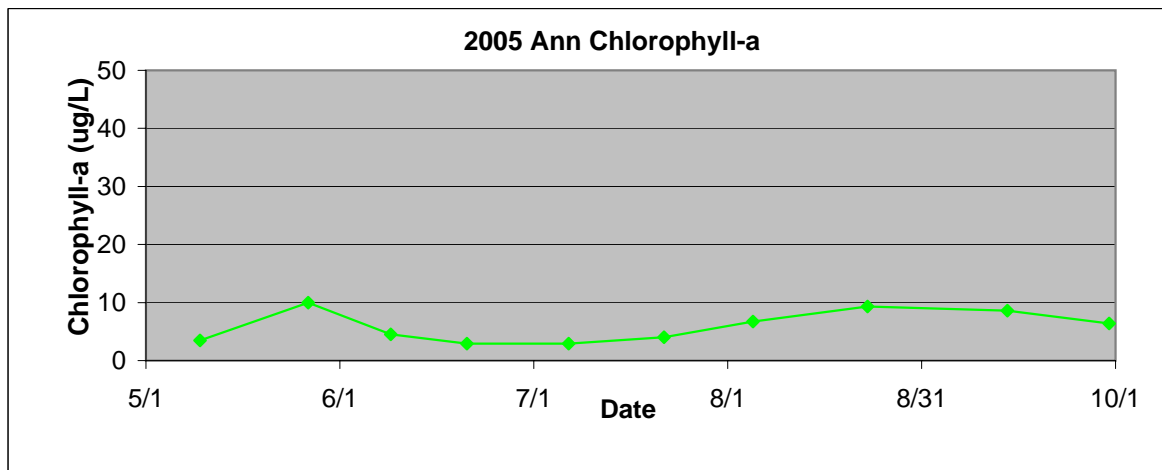
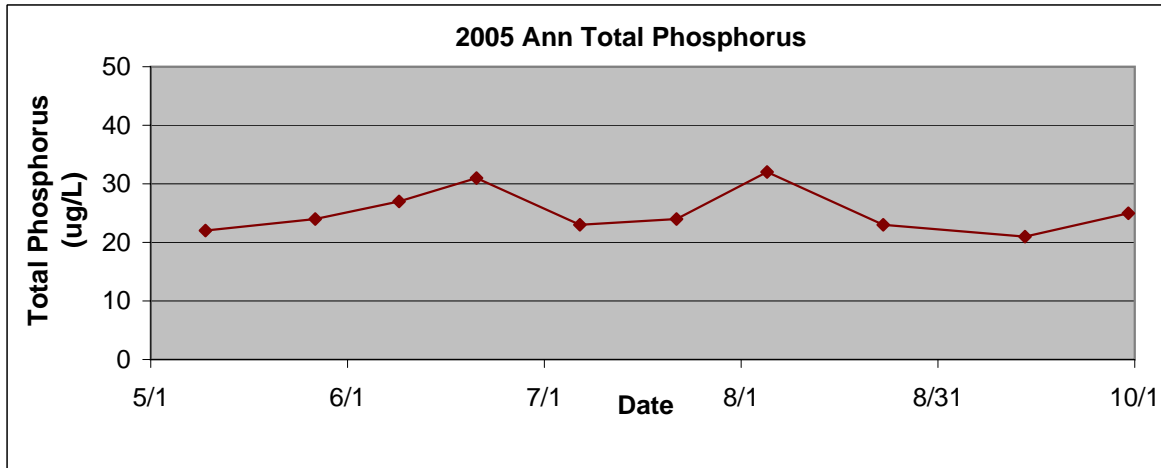
Table 1: MPCA Proposed Eutrophication Standards

Proposed Eutrophication Standards -- North Central Hardwood Forest Ecoregion			
	Total Phosphorus	Chlorophyll-a	Secchi Depth
Lake Category	µg/L	µg/L	Meters
Shallow Lakes	≤ 60	≤ 20	≥ 1
Deep Lakes	≤ 40	≤ 14	≥ 1.4
Source: Minnesota Pollution Control Agency			

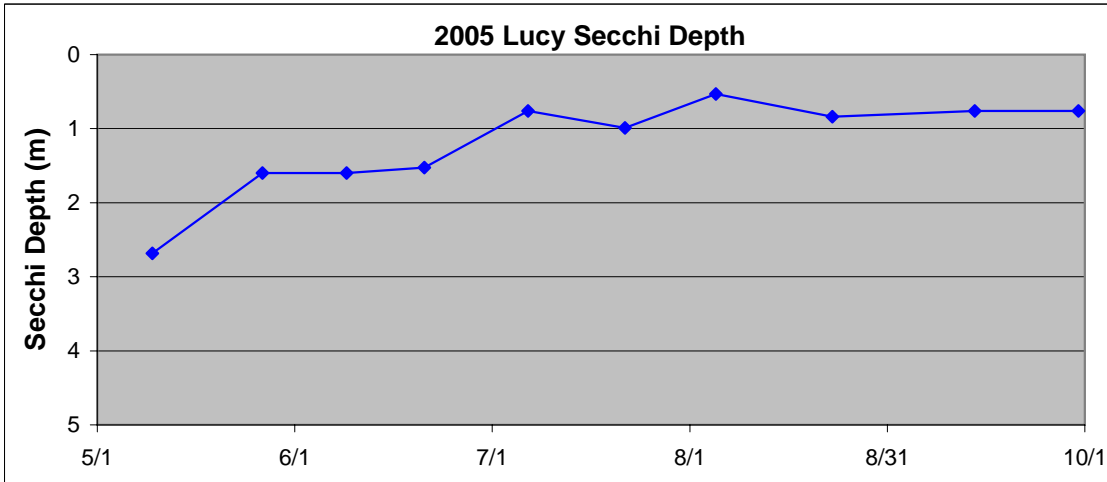
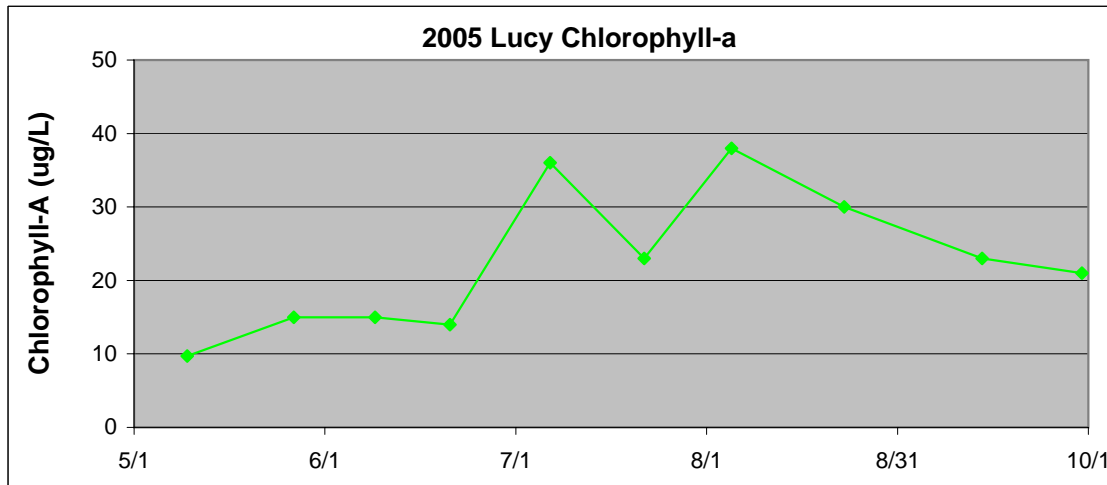
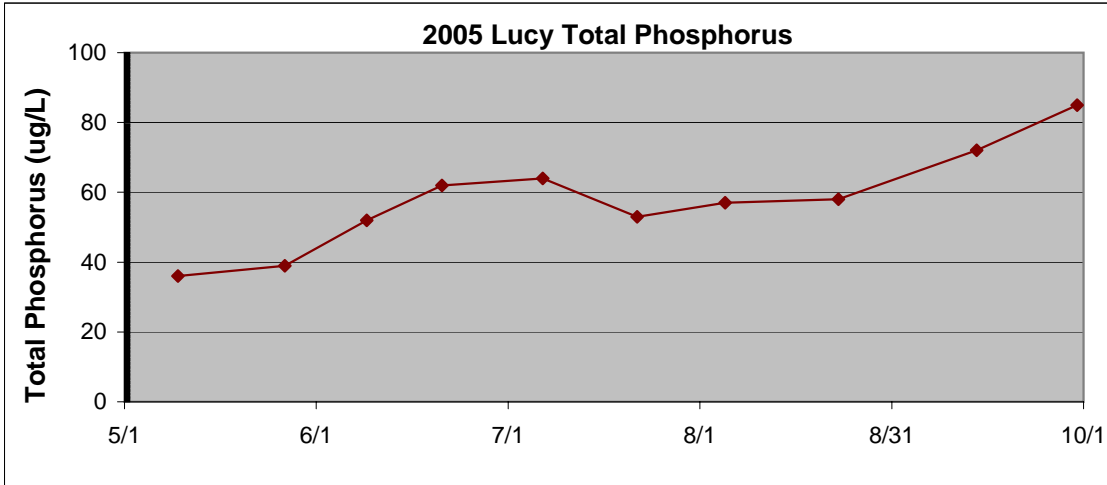
Appendix A

2005 Water Quality Sampling Results

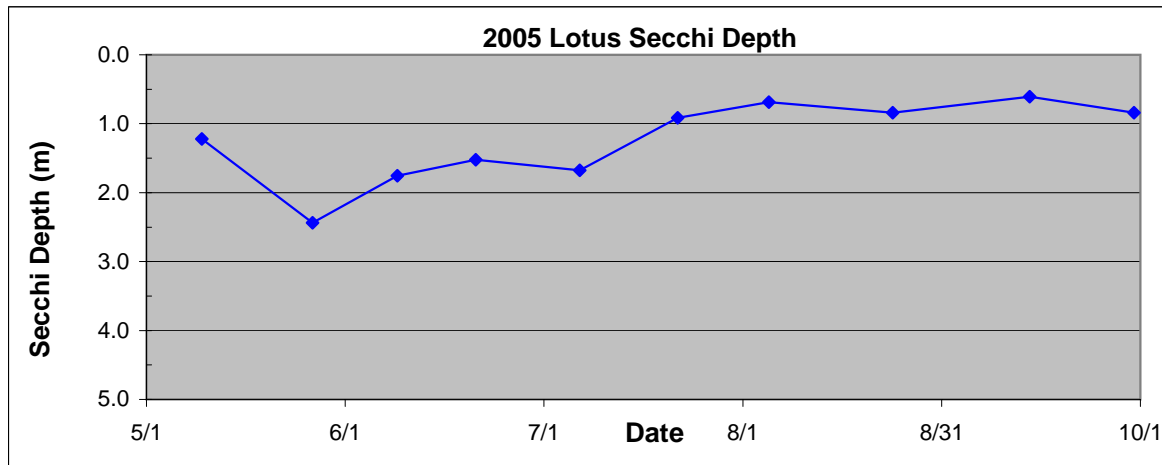
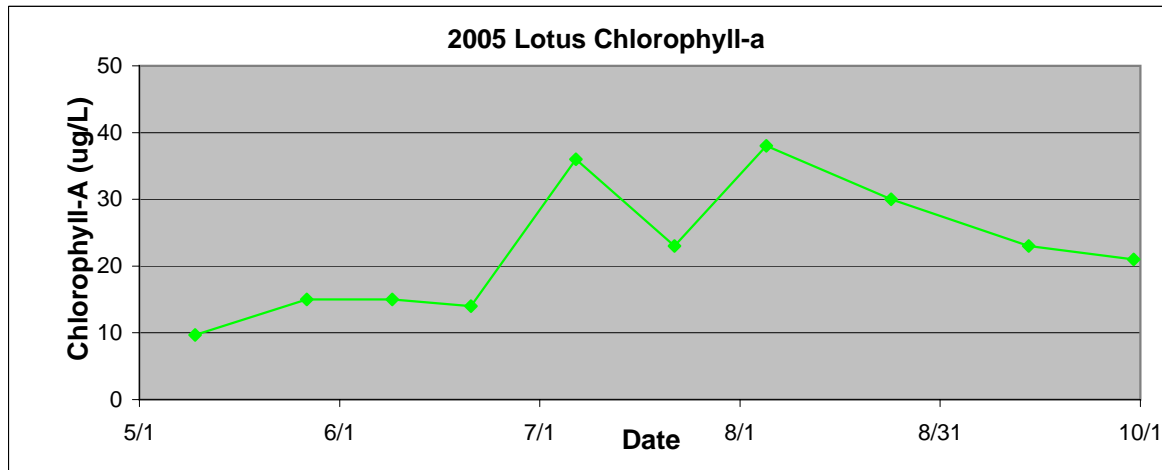
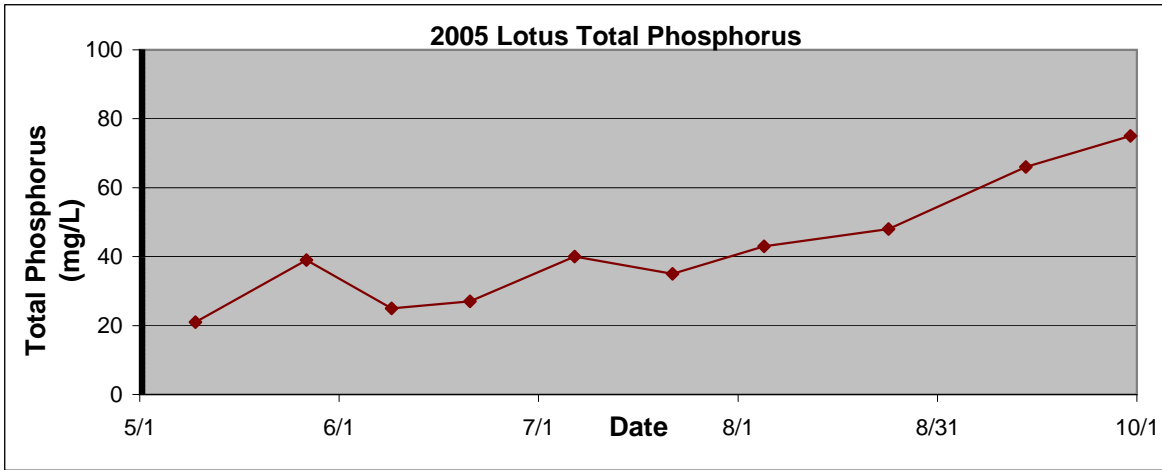
Ann 2005 Sampling Results



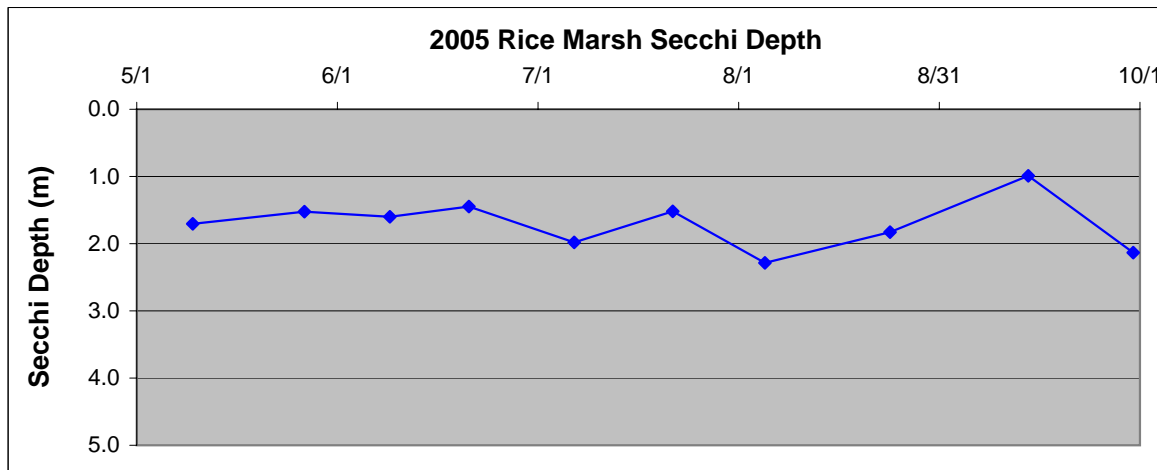
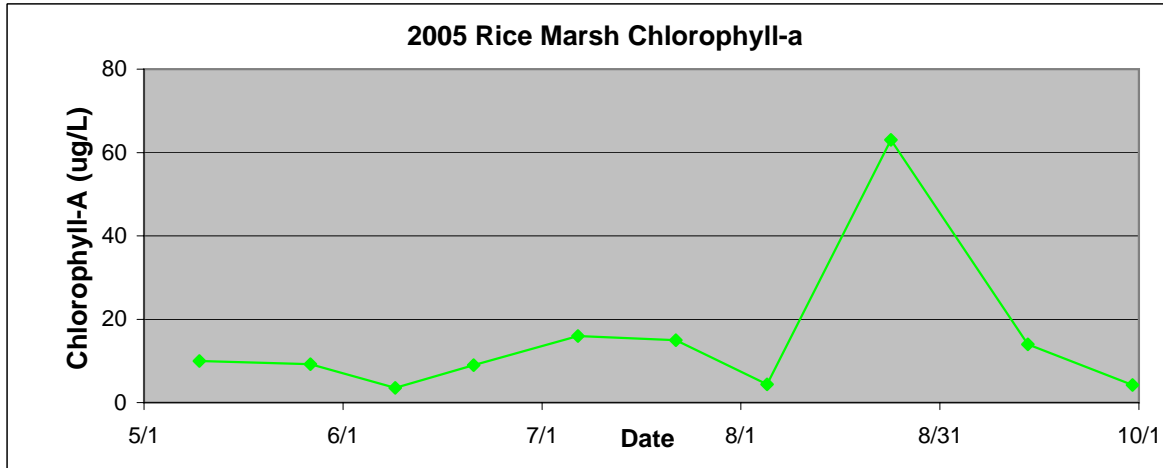
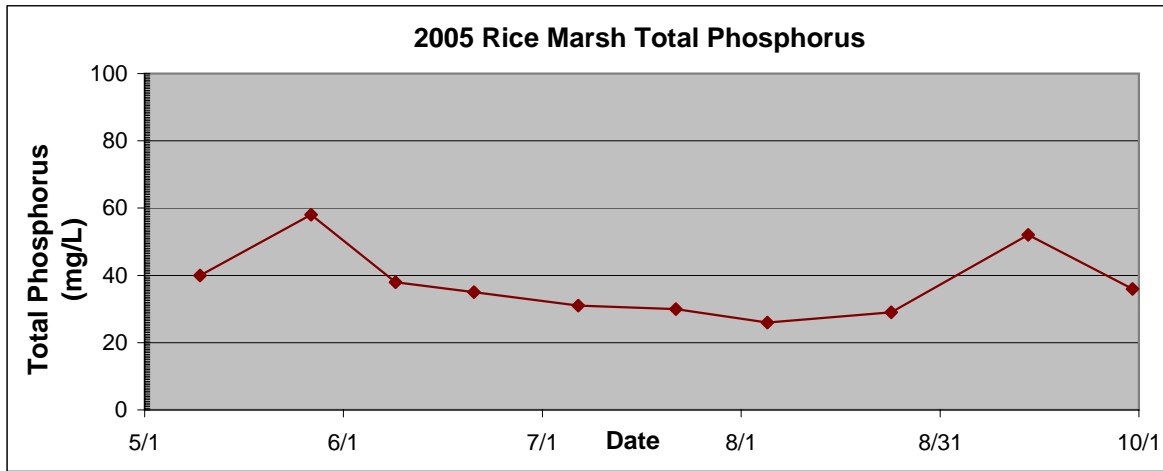
Lucy 2005 Sampling Results



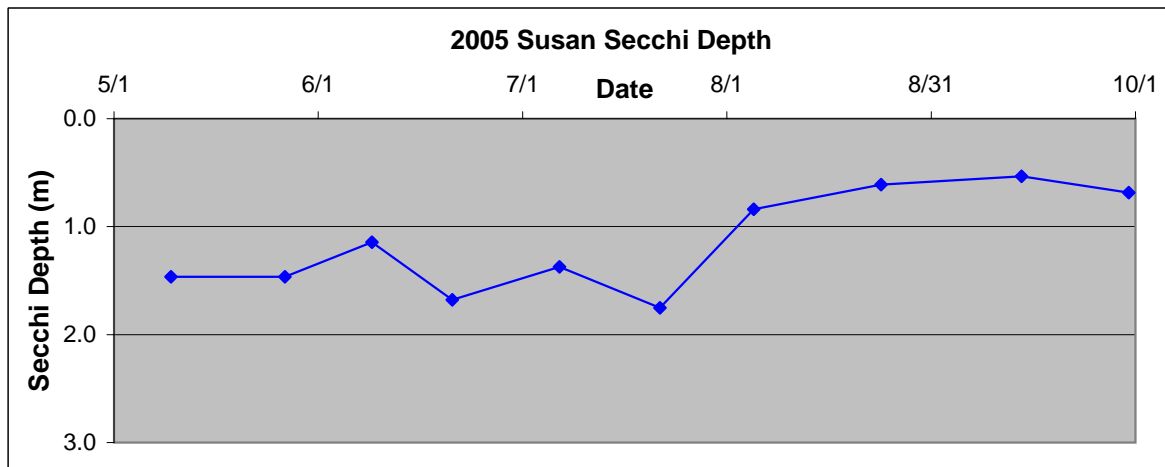
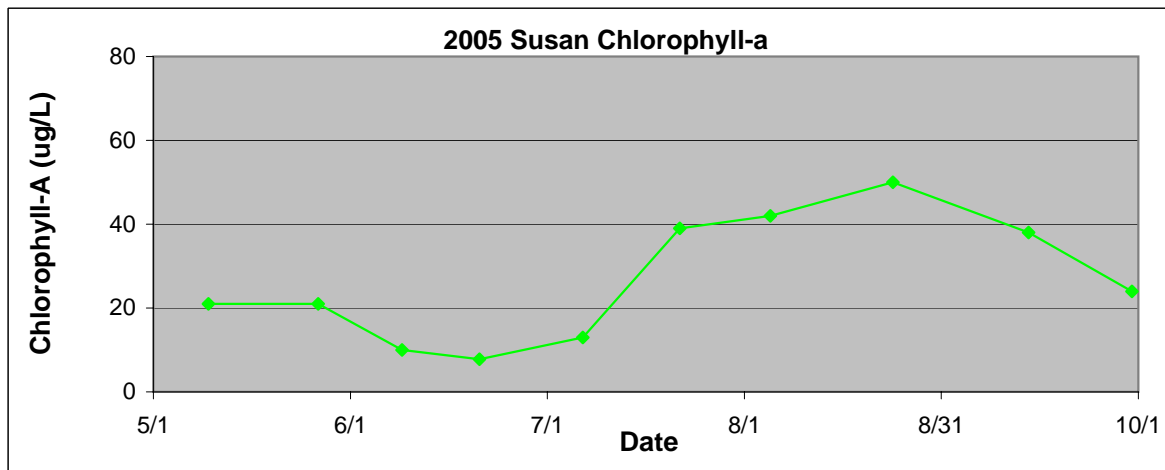
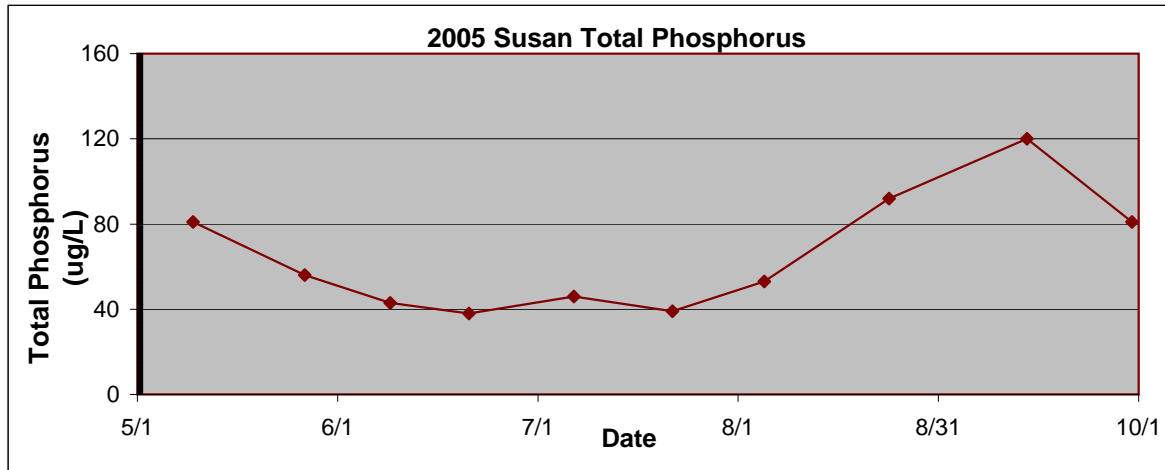
Lotus 2005 Sampling Results



Rice Marsh 2005 Sampling Results



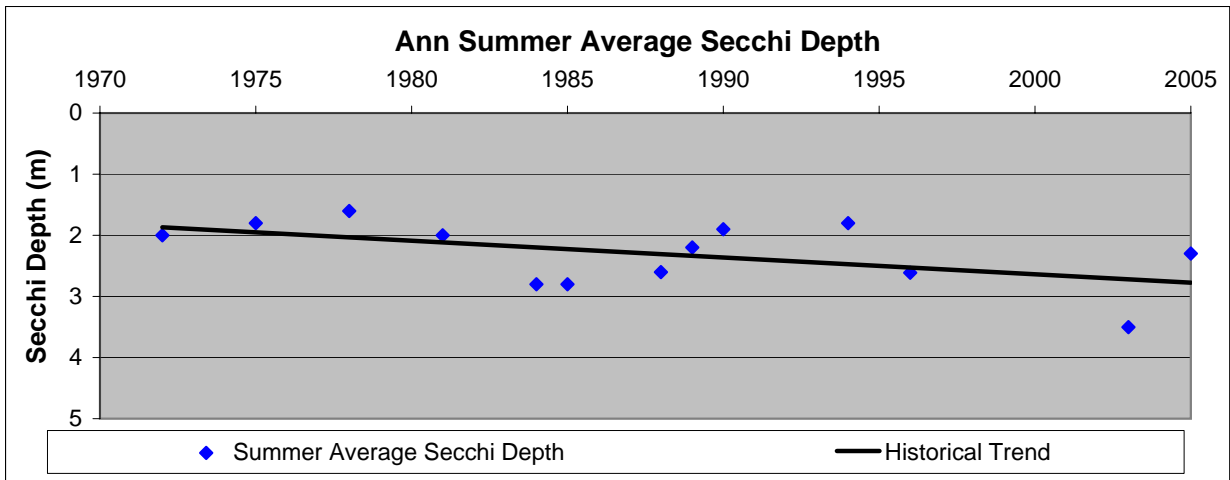
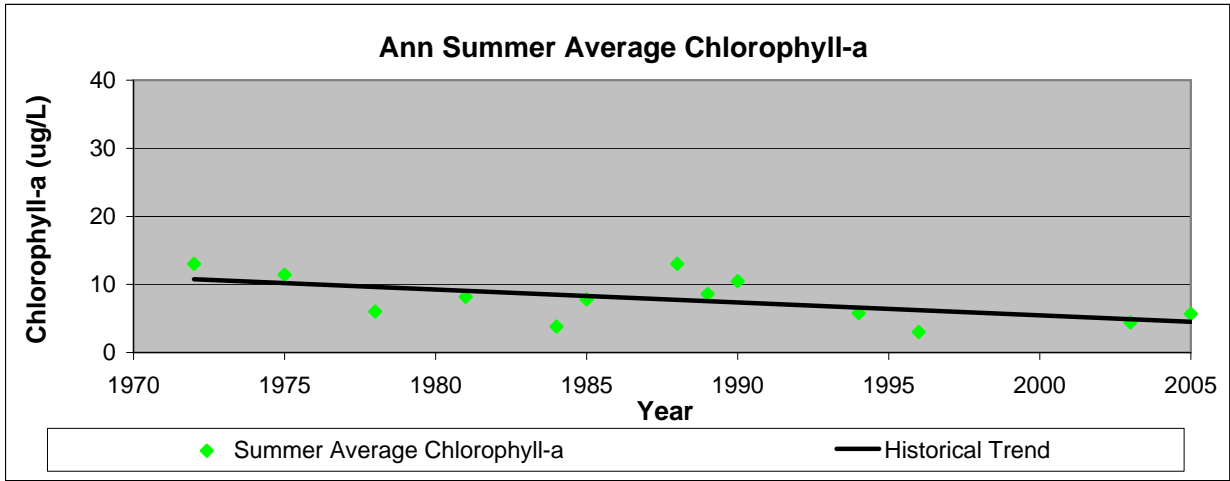
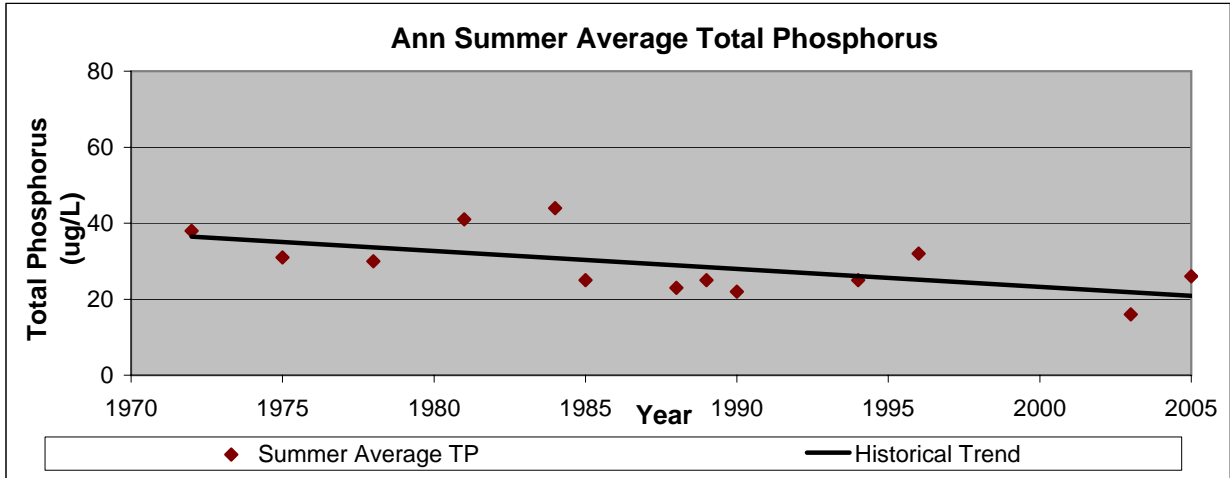
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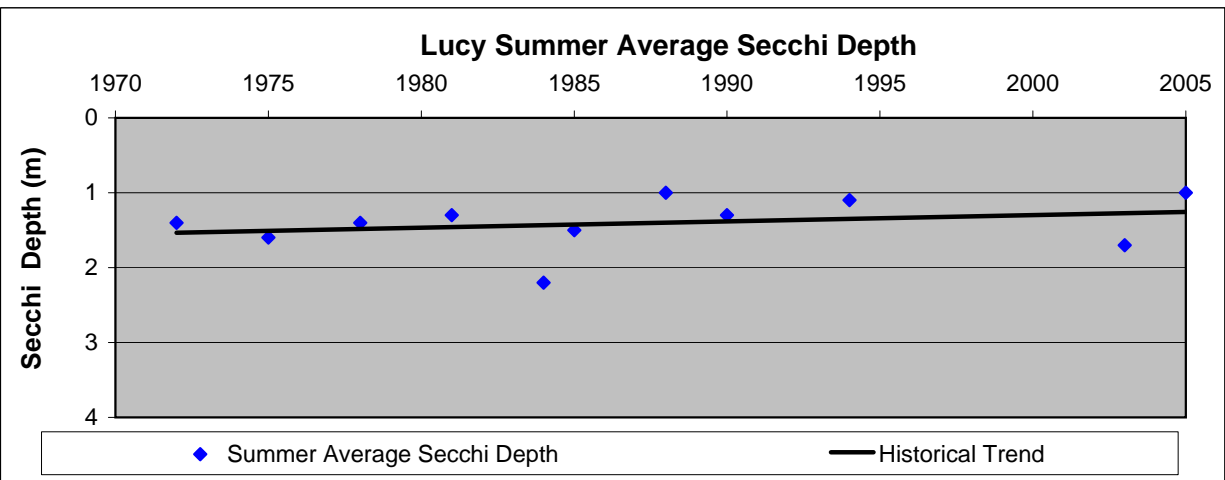
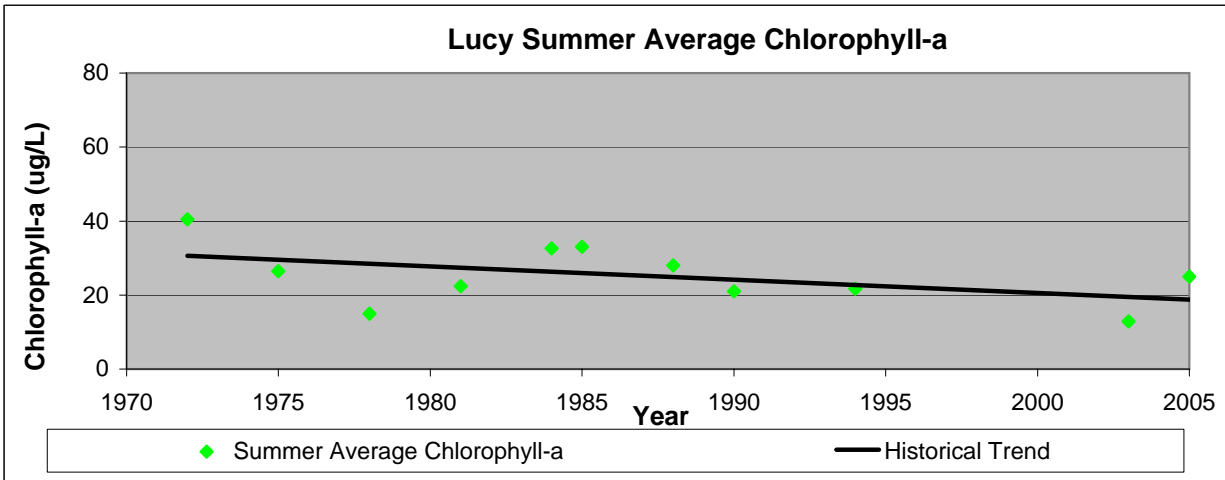
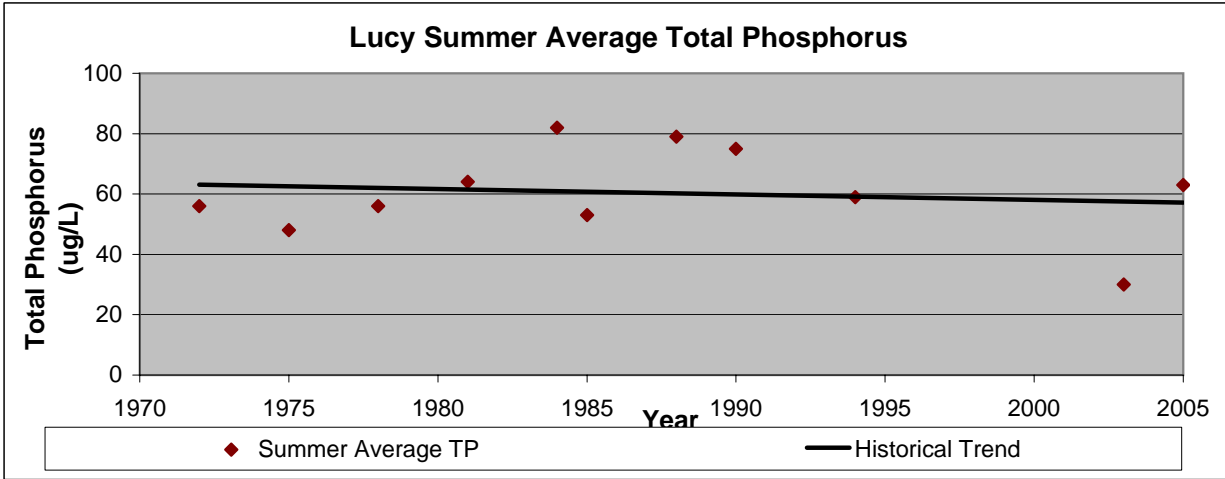
Appendix B

Historical Water Quality Sampling Results

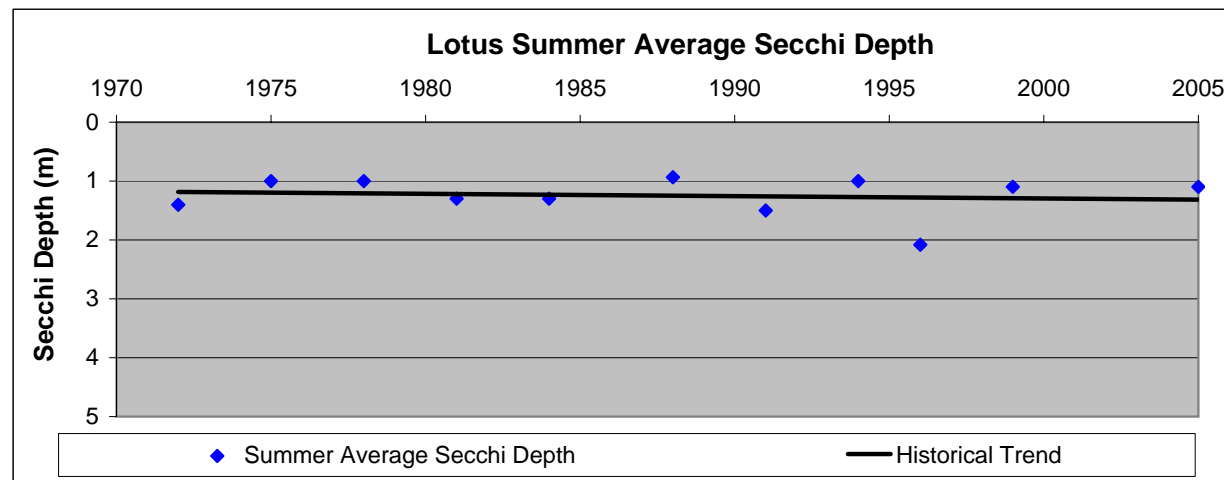
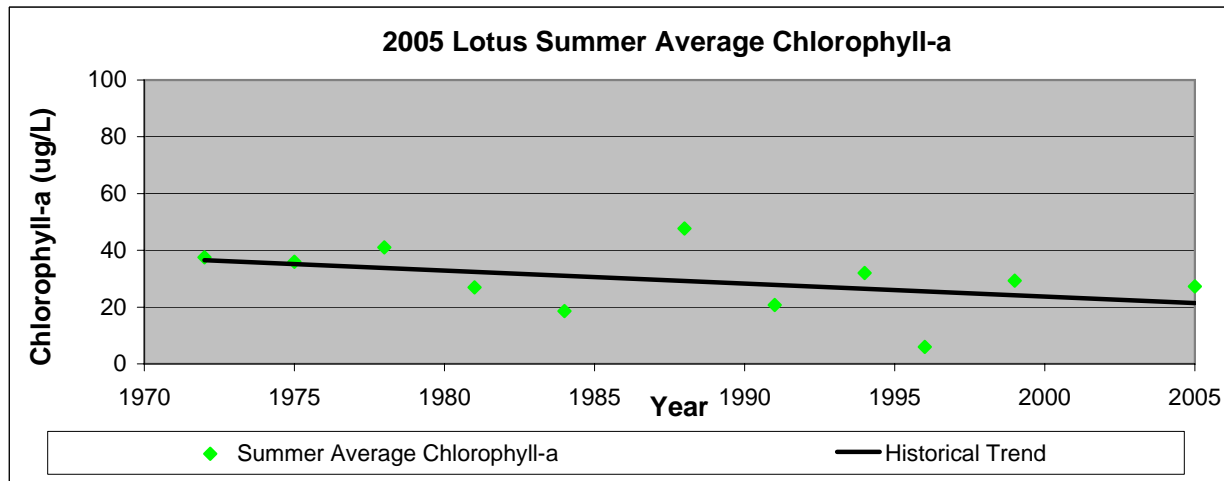
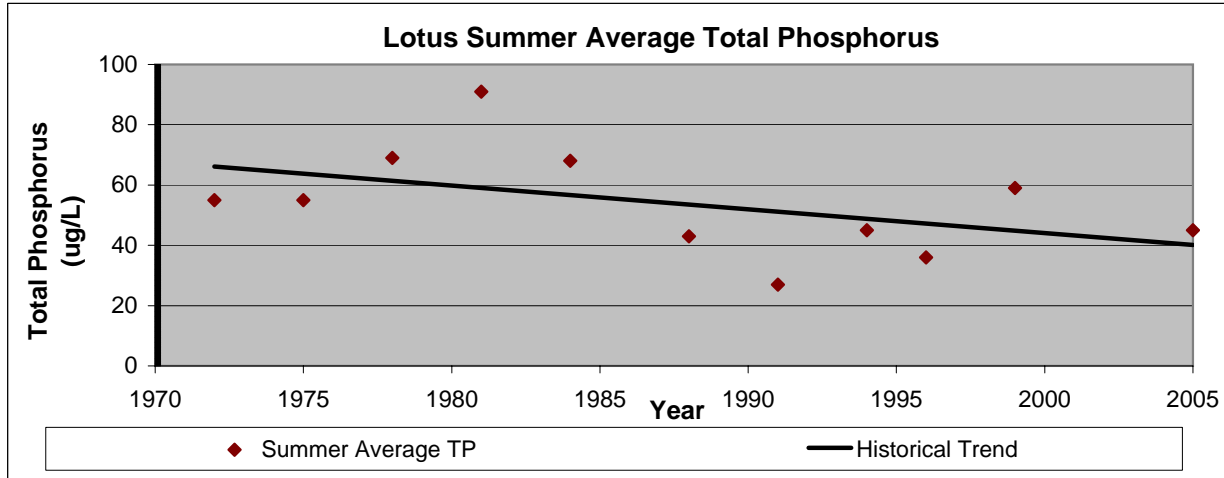
Ann Historical Summer Average Water Quality Results



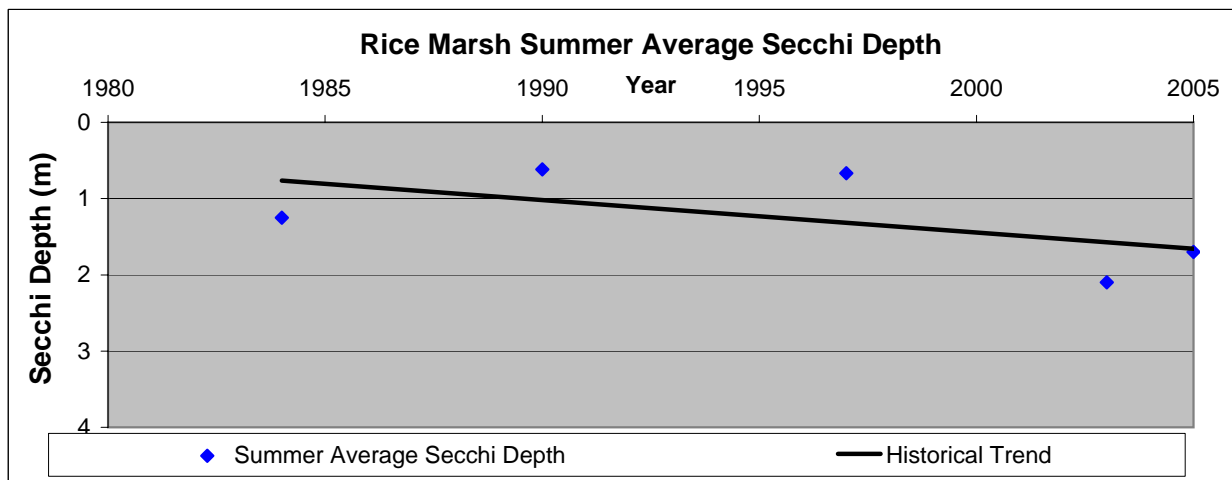
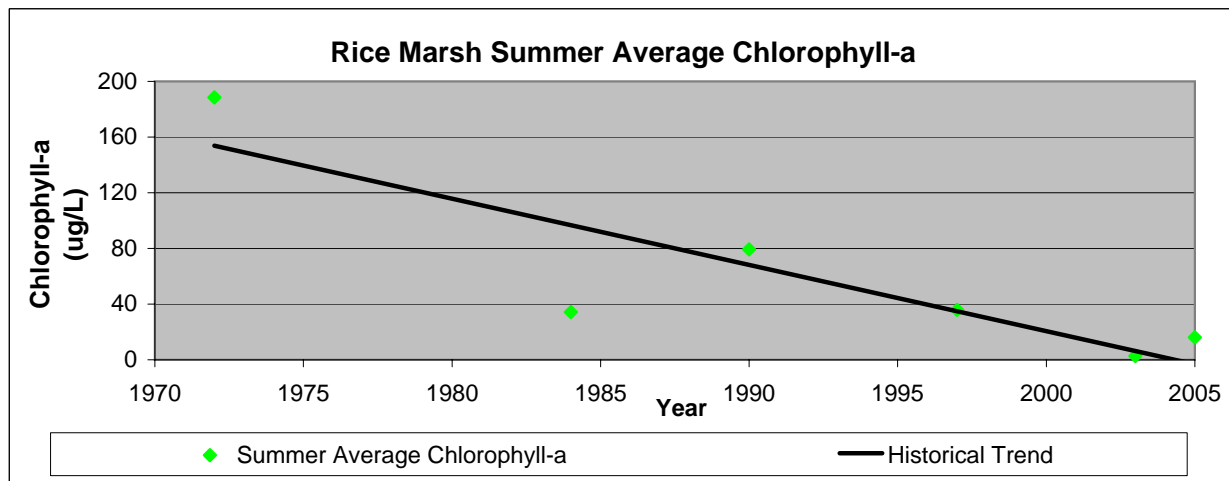
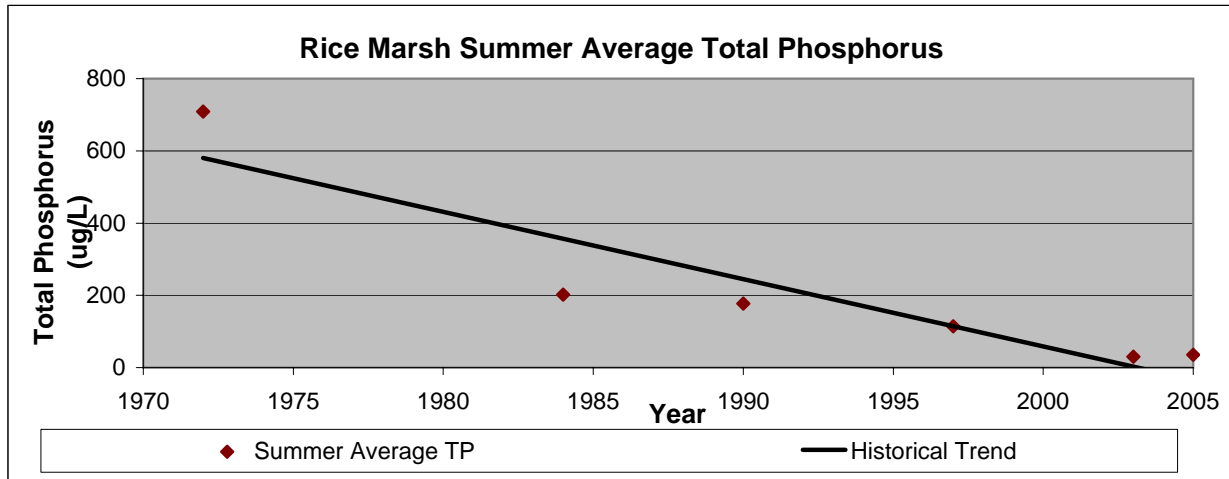
Lucy Historical Summer Average Water Quality Results



Lotus Historical Summer Average Water Quality Results



Rice Marsh Historical Summer Average Water Quality Results



Susan Historical Summer Average Water Quality Results

