

LNRA Volunteer Water Quality Monitoring Data Summary Report compiled by Texas Watch

All data collected by Mr. Ken Barton and Students 2000 to 2004

This data summary report includes general basin volunteer monitoring activity, general water quality descriptive statistics, tables and graphs, and comparisons to stream standards as related to “aquatic life use” criteria. All sites, which have been sampled more than nine times between 2000 and 2004, are included in this report.

In alignment with Texas Watch’s core mission, monitors attempt to collect data that can be used in decision-making processes, to promote a healthier and safer environment for people and aquatic inhabitants. While many assume it is the responsibility of Texas Watch to serve as the main advocate for volunteer monitor data use, it has become increasingly important for monitors to be accountable for their monitoring information and how it can be infused into the decision-making process, from “backyard” concerns to state or regional issues. To assist with this effort, Texas Watch is coordinating with monitoring groups and government agencies to propagate numerous data use options.

Among these options, volunteer monitors can directly participate by communicating their data to various stakeholders. Some options include: participating in the Clean Rivers Program (CRP) Steering Committee Process (see box insert on this page); providing information during “public comment” periods; attending city council and advisory panel meetings; developing relations with local Texas Commission on Environmental Quality (TCEQ) and river authority water specialists; if necessary, filing complaints with environmental agencies; contacting elected representatives and media; or starting organizing local efforts to address areas of concern.

The Texas Clean Rivers Act established a way for the citizens of Texas to participate in building the foundation for effective statewide watershed planning activities. Each CRP partner agency has established a steering committee to set priorities within its basin. These committees bring together the diverse interests in each basin and watershed. Steering committee participants include representatives from the public, government, industry, business, agriculture, and environmental groups. The steering committee is designed to allow local concerns to be addressed and regional solutions are recommended. For more information about participating in these steering committee meetings and to contribute your views about water quality, contact the appropriate CRP partner agency for your river basin at: <http://www.tnrcc.state.tx.us/water/quality/data/wmt/contract.html>.

Currently, Texas Watch is working with various public and private organizations to facilitate data and information sharing. One component of this process includes interacting with watershed stakeholders at CRP steering committee meetings. A major function of these meetings is to discuss water quality issues and to obtain input from the general public. While participation in this process may not bring about instantaneous results, it is a good place to begin making institutional connections and to learn how to “work” the assessment and protection system that Texas agencies use to keep water resources healthy and sustainable.

In general, Texas Watch efforts to use volunteer data may include the following:

1. Assist monitors with data analysis and interpretation
2. Analyze watershed-level or site-by-site data for monitors and partners
3. Screen all data annually for values outside expected ranges
4. Network with monitors and pertinent agencies to communicate data
5. Attend meetings and conferences to communicate data
6. Participate in CRP stakeholder meetings
7. Provide a data viewing forum via the Texas Watch Data Viewer
8. Participate in professional coordinated monitoring processes to raise awareness of areas of concern

Data Summary

INTRODUCTION – Ken Barton regularly conducted the Texas Watch volunteer water quality sampling program with his Edna Junior High students from January 2000 to July 2004. Mr. Barton typically had one or two students on-hand to assist with the fifty-eight consistently collected samples at the Lake Texana at Simon Cove Dock site. While many Texas Watch monitors sample with such regularity, very few exhibit the obvious dedication to thorough documentation, consistency with sample time, or exactness with meeting data quality objectives and prescribed methods. Furthermore, the high caliber field notes highlight aquatic vegetation issues at this site and enable data users to gain substantially increased insight to the conditions of the lake. Mr. Barton should be recognized for his exemplary efforts.

DATA – Fifty - eight samples were collected between 2000 and 2004. All data were collected within prescribed quality assurance project plan specifications. Sample results are intended to be used for education and research, baseline establishment, local decision-making, problem identification, and others uses deemed appropriate by the data user. Graphs one through five were compiled to assist the data user in obtaining information from the collected data. For all graphs, “time” is located on the “x” or horizontal axis and is chronologically listed from oldest to most recent sampling. The “y1” or “y2” axes contain the constituent(s) of interest. Data collected by Texas Watch monitors include: pH, specific conductivity, water and air temperature, dissolved oxygen, flow severity,

days since last precipitation, total depth, sample depth, Secchi depth, field observations, and other parameters. Field observations for Lake Texana at Simon Cove Dock are attached in a separate document.

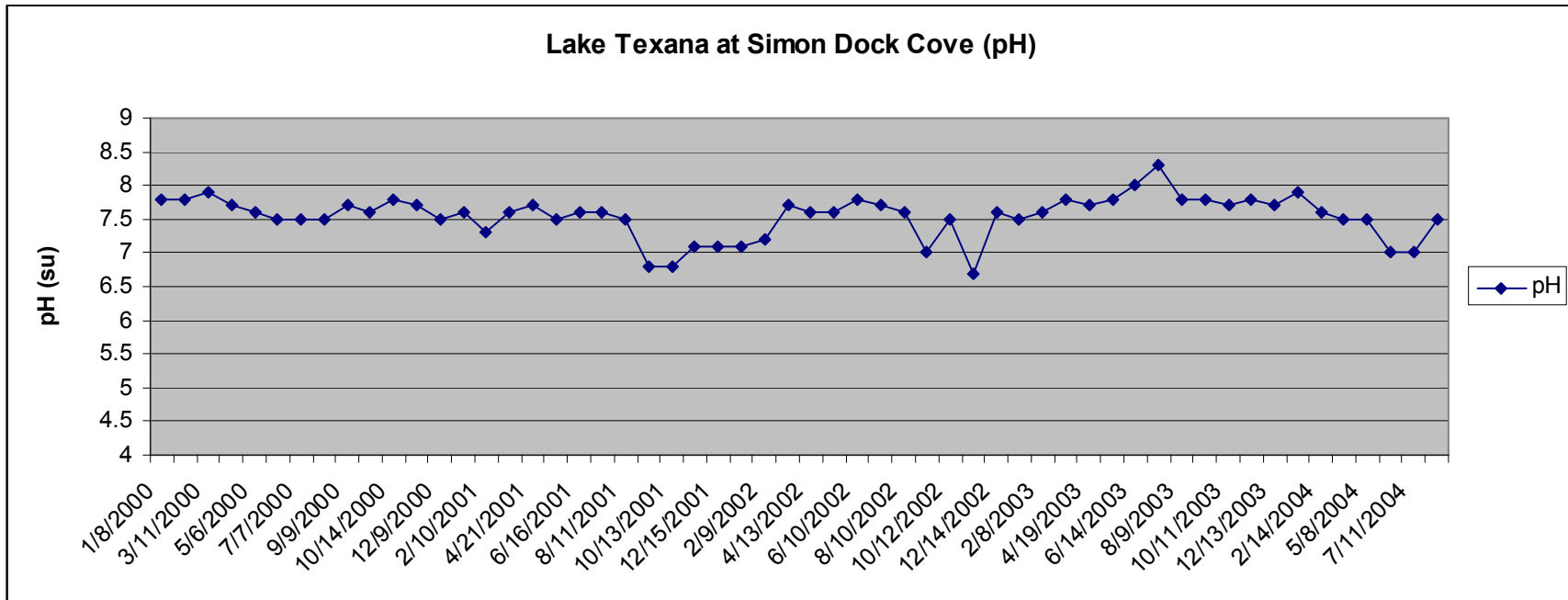
All pH values were within standard numeric criteria and expected ranges. The pH average is 7.5 su with a median value of 7.6 su. The pH values from 2000 to 2004 remain relatively stable, with values ranging from 6.7 su to 8.3 su. (See Graph 1.)

Specific conductivity values are within expected ranges for this region. Specific conductivity (SC) values average 195 $\mu\text{S}/\text{cm}$ with a median of 200 $\mu\text{S}/\text{cm}$. There is slight decreasing trend from 2000 to 2004, with values ranging from 60 $\mu\text{S}/\text{cm}$ to 290 $\mu\text{S}/\text{cm}$. (See Graph 2.)

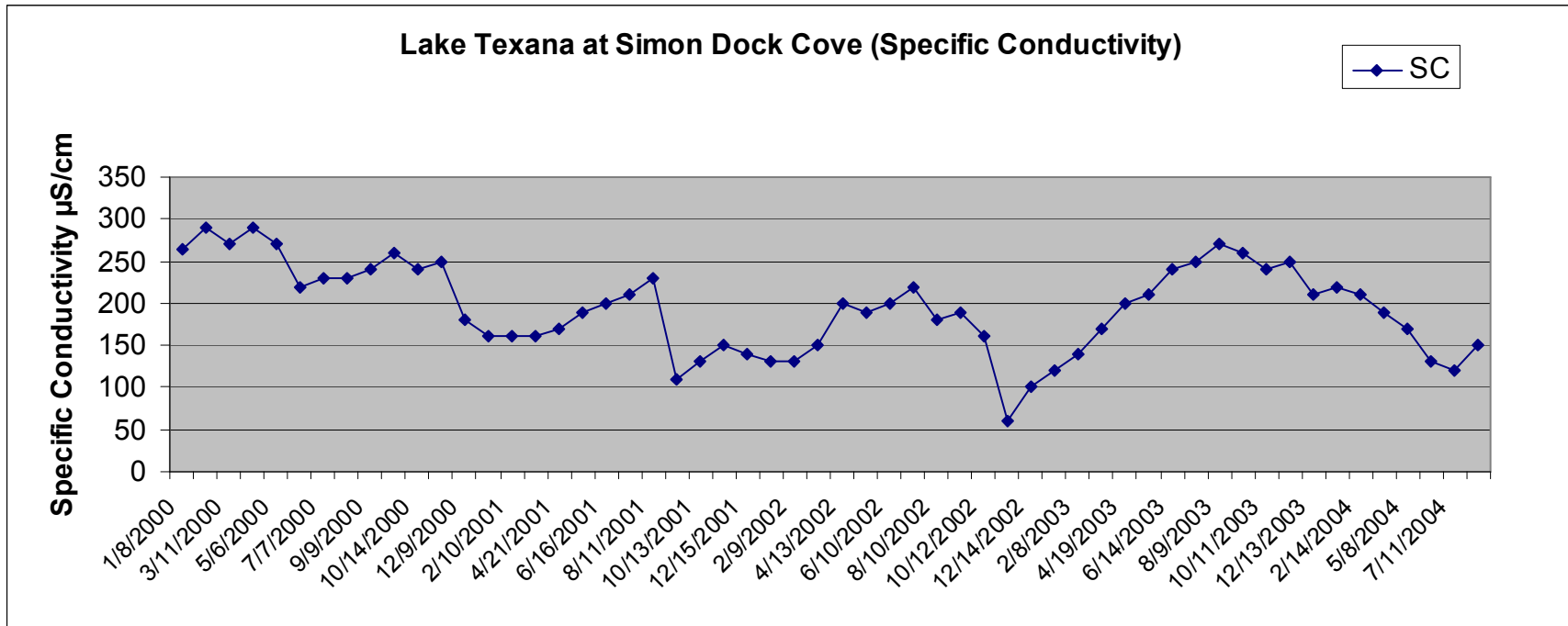
Dissolved oxygen values average 7.12 mg/L with a median of 6.8 mg/L. Eighteen of fifty-eight samples were less than the “exceptional” numeric criterion of 6.0 mg/L, resulting in thirty-one percent of the samples exceeding this aquatic life use standard. There is a slight decreasing trend from 2000 to 2004, with overall values ranging from 2.9 mg/L to 10.6 mg/L. The correlation coefficient, or the r^2 value, appears to show that water temperature influences dissolved oxygen fluctuations. Water temperature and dissolved oxygen clearly show an inverse relationship. Typically, these influences are more dominant in shallow water bodies with slow flow or movement. (See Graph 3 and Graph 4.)

The Secchi depth average value is 0.21 meters with a median value of 0.17 meters. There is a slight increasing trend from 2000 to 2004, with values ranging from 0.1 meters to 0.71 meters. This seems to mimic total depth trends. There is an increasing trend from 2000 to 2004, with total depth values ranging from 0.15 meters to 1.01 meters, respectively. (See Graph 5.)

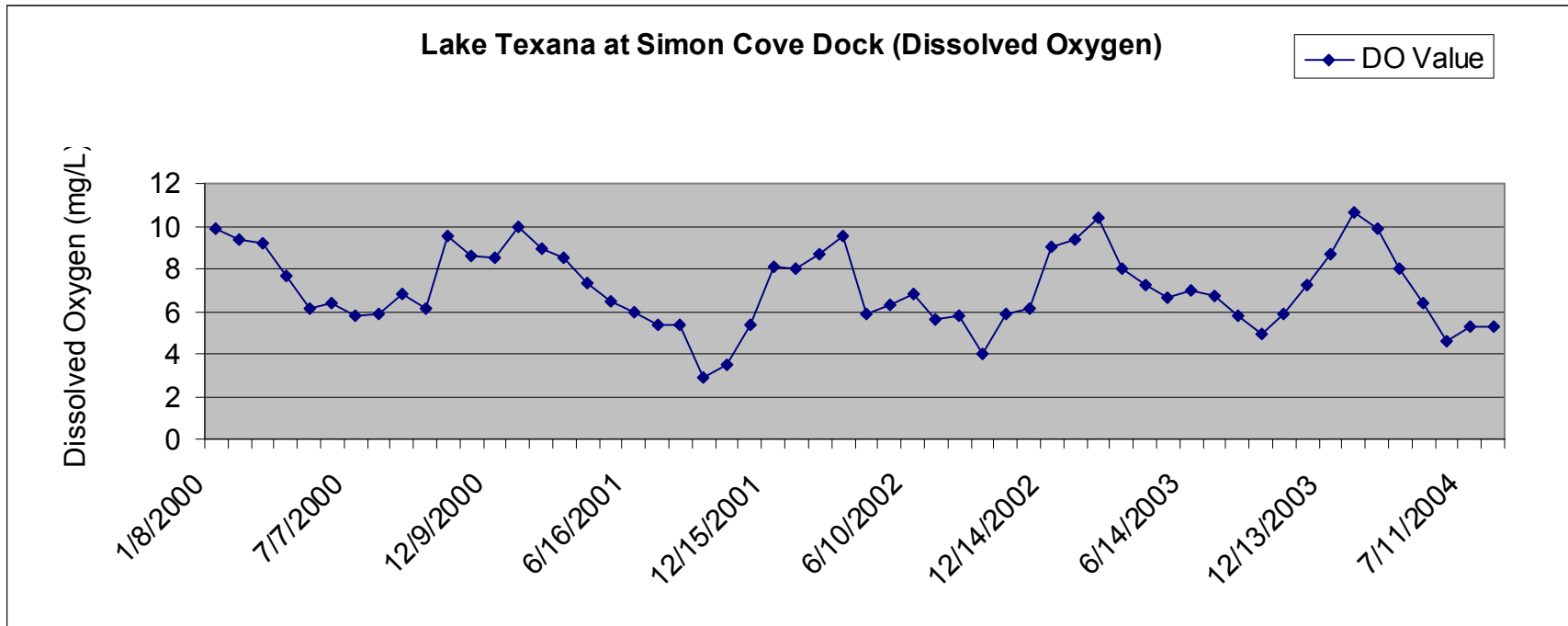
Graph 1 : pH



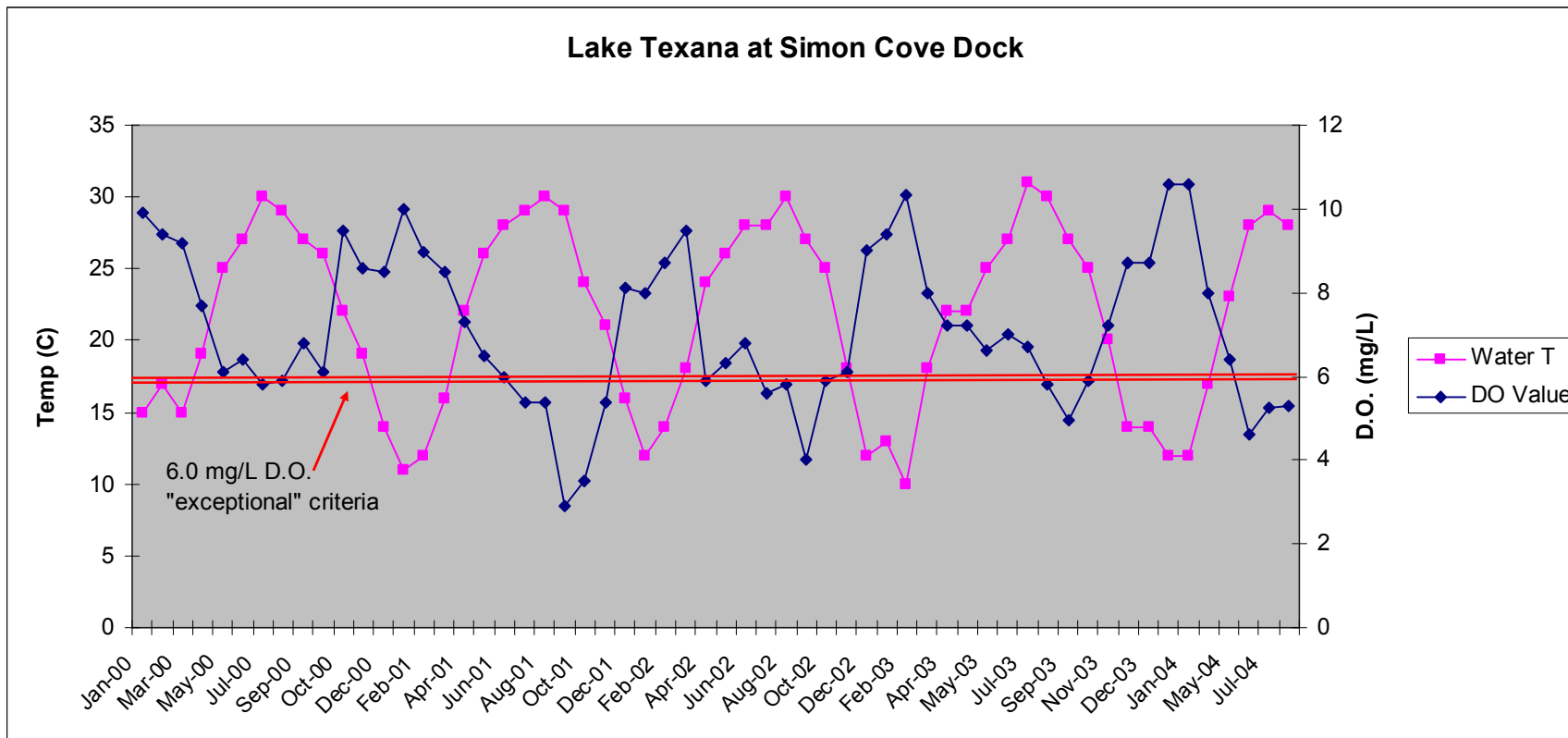
Graph 2 : Specific conductivity



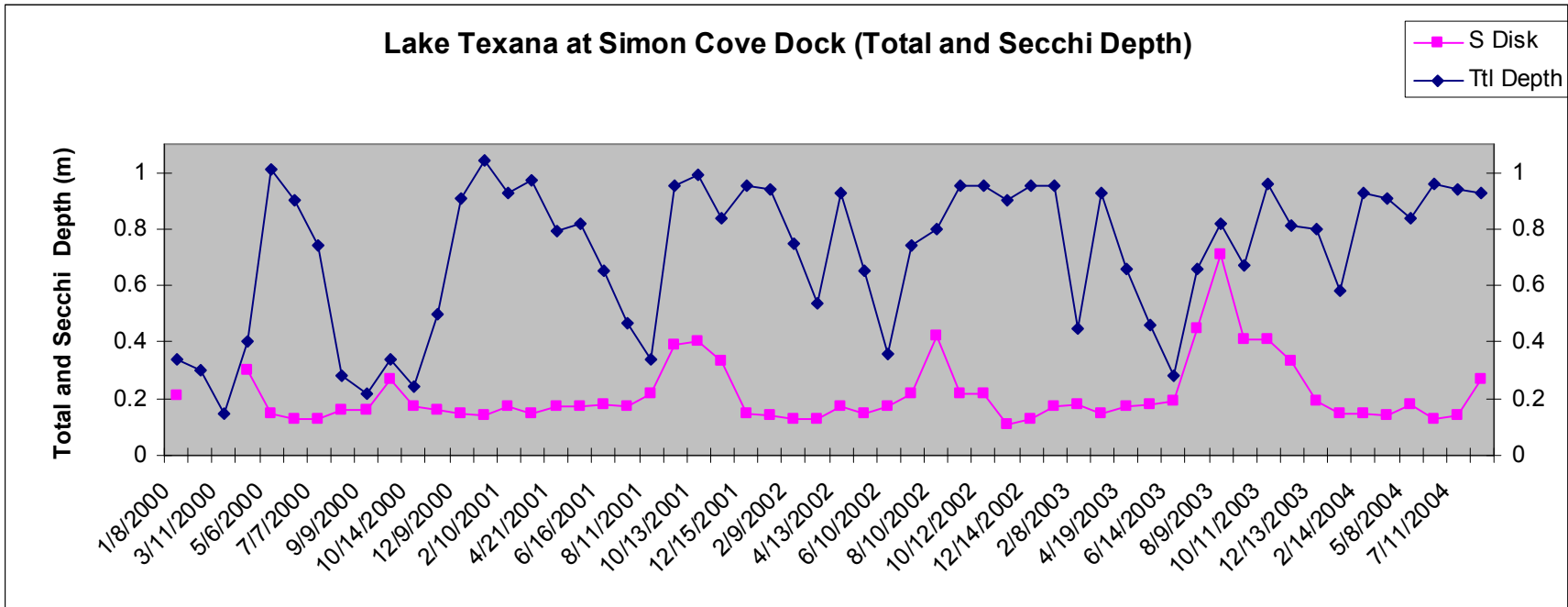
Graph 3 : Dissolved oxygen



Graph 4 : Dissolved oxygen and temperature



Graph 5 : Secchi depth and total depth



This table summarizes the water quality data for Lake Texana at Simon's Cove Dock. If a numeric criterion exists for the water quality parameter of interest, this standard is listed and any applicable exceedence information is listed.

LAKE TAXANA AT SIMON'S COVE DOCK (station ID # 15774)	N	% Complete	MIN	MEAN	MAX	MEDIAN
Sample TIME	58	97	9:00	9:00	9:10	
Total Depth (m)	58	100	0.2	0.7	1.0	.8m
SC μ S/cm	58	100	60.0	192.0	270.0	200
Water T (C)	58	100	10.0	21.6	31.0	19
DO (mg/L)	58	96	2.9	7.1	10.4	6.8
pH (su)	58	100	6.7	7.5	7.9	7.6
Secchi Depth (m)	58	92	0.1	0.2	0.7	0.17
DO exceedence [$<$ 6.0 mg/L]						
18 of 58 are less than 6.0mg/L = 31% of samples are below the "exceptional" standard						