

## **Texas Watch Volunteer Water Quality Monitoring Program Data Summary - 2006 Selected Sites in the Galveston Bay Watershed**

The Houston-Galveston Council of Governments (HGAC) and the Galveston Bay Foundation have been long-term Texas Watch partners. While monitoring activity in the Galveston Bay area has decreased in recent years, volunteer monitors continue to sample several locations in the vicinity. Two Texas Watch volunteer monitors are actively collecting environmental information on Clear Creek at FM 1959. Since 1999, the monitoring team has conducted forty sampling events at this location in the Galveston Bay watershed. On-site volunteer monitor support is coordinated through Gayla Stock at the (HGAC). 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 exceptional “aquatic life use” criteria.

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. From “backyard” concerns to state or regional issues, 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. 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

Information collected by Texas Watch volunteers utilizes a TCEQ and EPA approved quality assurance project plan (QAPP) to ensure data are correct and accurately reflects the environmental conditions being monitored. All data are screened for completeness, precision and accuracy where applicable, and scrutinized with data quality objective and data validation screening techniques. Sample results are intended to be used for education and research, baseline, local decision making, problem identification, and others uses deemed appropriate by the data user. Graphs are compiled and situated to assist the data user in obtaining information from the collected data. Where applicable, “time” is located on the “x” or horizontal axis and is chronologically listed from oldest to most recent sampling (left to right respectively). The “y1” or “y2” axes contain the constituent(s) of interest and these scales may be different. 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 others. Note: pH values were not transformed for graphing purposes or for developing mean statistics; data collection events may not be evenly distributed over time (through seasons and years); sampling events may occur at different times of the day; sample collection and results documentation may have been completed by different monitors over time at each site; data collected by school groups should undergo additional scrutiny before use; data summary information is subject to change.

When assessing any surface water quality data, it is important to clarify the segment’s official “designated and aquatic life use” categories. The “aquatic life use” designation, which ranges from “exceptional and high to intermediate or limited,” sets the standards for aquatic inhabitants of the water body. For instance, an “exceptional” aquatic life use designation for a stream segment establishes a dissolved oxygen standard of 6.0 mg/L. A “high” designation for dissolved oxygen is 5.0 mg/L. Similar standards are set for pH, chlorides, dissolved solids, bacteria, temperature, and so on. These

standards are important when calculating point source effluent discharge permit limitations for nutrients and other key constituents that are released into surface waters.

Data summary reports are typically generated for sites with a minimum of 9 samples over the last five years. For more information about data summary reports please read the Texas Watch Summer 2005 issue and look for the article entitled, "Monitors often ask, 'How are you using my data?'".

## DATA

Each parameter will have series of corresponding graphs and charts. There are two sets of graphs. For all graphs, site name or sample date is located on the "x" or horizontal axis and is shown moving from upstream to downstream or 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, field observations, and others.

The Galveston Bay Foundation group has sampled Clear Creek at FM 1959 forty times since March 1999. These veteran monitors demonstrate excellent sampling techniques and follow prescribed documentation protocols. Conductivity values reflect the site is at a tidally influenced portion of the creek with values ranging from 396 ( $\mu\text{S}$ ) to 2246 ( $\mu\text{S}$ ), with an average value of 1154 ( $\mu\text{S}$ ) since 1999. While the pH average value of 7.8 su is expected, the pH range seems high with values ranging from 6.7 su to 8.9 su. There appears to be a slightly increasing trend of pH values from 1999 to 2006. Dissolved oxygen values range from 4.4 mg/L to 14.6 mg/L. The average dissolved oxygen value is 8.4 mg/L. Nine of the forty samples, or twenty-three percent, were below the exceptional aquatic life use numeric criteria of 6.0 mg/L. There is not a significant relationship between oxygen and temperature.

<b>Clear Creek at FM 1959</b>					
<b>Site ID # 14229</b>	<b>N</b>	<b>% complete</b>	<b>min</b>	<b>mean</b>	<b>max</b>
Sample Time	37	93%	15:00		17:45
Sample Depth (m)	40	100%	0.2	0.34	1.92
Total Depth (m)	40	100%	0.53	0.94	1.92
Secchi Disk (m)	40	100%	0.16	0.31	0.51
Conductivity ( $\mu\text{S}$ )	40	100%	396	1154	2246
Air Temperature ( $^{\circ}\text{C}$ )	38	95%	14	27.8	49
Water Temp. ( $^{\circ}\text{C}$ )	40	100%	10.2	24.1	33.8
Dissolved Oxygen (mg/l)	40	100%	4.4	8.4	14.6
pH	40	100%	6.7	7.8	8.9
<b>DO exceedence (&lt;6 mg/L)</b>		<b>23%</b>			



