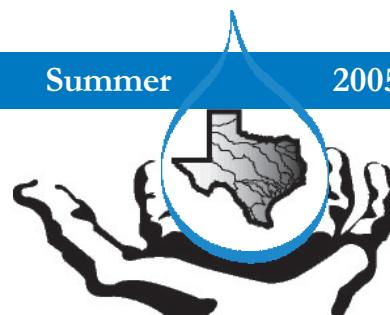


Texas Watch



Geography Department, Texas State University-San Marcos

EPA Region 6

TCEQ

Monitors Often Ask, "How Are You Using My Data?"

- Jason Pinchback, Texas Watch

Over the last nine years of working with volunteer monitors, I have recognized the need to provide better data analysis resources in the hope that people can transform the numbers into usable information. This can be a daunting task for Texas Watch monitors, professionals, and statisticians alike. This year, Texas Watch is placing additional emphasis on helping monitors develop a better understanding of their data by hosting data analysis workshops and providing data analysis reports to all qualifying monitors.

In alignment with Texas Watch's core mission, we attempt to collect data that can be used in decision-making to promote a healthier and safer environment for people and aquatic inhabitants. While many assume that 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 support numerous data use options.

Among these options, volunteer monitors can directly participate by communicating their data to various stakeholders.

(continued on Page 7)

Volunteer Spotlight: Watch That Water, Please!

- Gwen Brunet, Texas Watch

In January of 2005, it was our privilege to work with 23-year veteran teacher Judy Lee of Canyon Middle School (CMS) in New Braunfels, Texas. Prior to moving to New Braunfels, Judy wrote and received multiple grants and monitored estuaries with her students in Texas City. Last summer, Judy became a Master Teacher for the Texas Commission on Environmental Quality's Teaching Environmental Science (TES) course at Texas A&M-Galveston. The course is designed for teachers in grades K-8 to



Judy Lee assists a student in water monitoring training

increase their knowledge about environmental issues in their Texas region. Judy encouraged Dr. Tom Linton, the TES professor, to incorporate Texas Watch training into their two-week science teacher course.

In 2004, Judy moved to New Braunfels, where

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Grant Writing For Teachers

- Judy Behrens, Grosvenor Center for Geographic Education,
Texas State University-San Marcos

The following is the first in a series of three articles on grant writing resources and strategies for teachers. *Article 1: How to Get Started* addresses the factors that teachers need to consider as they plan to write grants in support of educational projects. *Article 2: How to Locate Grant Funding Sources* addresses the ways in which teachers can stay informed about grant opportunities at the federal, state, and local levels and suggests strategies for matching potential projects with appropriate funding sources. *Article 3: Tips for Writing a Successful Grant Proposal* outlines strategies for writing a successful grant proposal that will meet the needs of the proposed educational project, as well as matching the requirements laid out by the funding organization.

Grant Writing for Teachers: How to Get Started

There continues to be a lack of money to adequately fund public school education. Grant writing is a pro-active and creative strategy that can assist classroom educators and school districts in supplementing budgets to accomplish educational goals. But grant writing is a time-consuming and complex process, and a grant writer needs to devote sufficient time and energy to doing research about funding sources and proposal writing, in addition to laying out a careful and well informed writing plan. Approximately 80% of the time spent on grant writing goes into the research and planning stage. Doing your "homework" is the most crucial stage in the proposal process if you want to produce a successful grant proposal.

The first step in the grant writing process is to thoroughly define your proposed project by identifying your needs and being well informed on all aspects of them. What are your educational goals? What do you want to accomplish? How does this project support the educational goals of your school and your district? What are the anticipated results of this project? Have a clear idea of what you want to achieve and how you plan to achieve these goals with the grant funds that you are seeking. This project description will help you to successfully match up potential funding sources with the requirements of your project. Take time to discuss your plans in advance with department, campus, and district personnel. Some schools and districts are limited in the type and number of grants that they are allowed to submit, so ensure that you have the proper approvals from administrators before you invest a great deal of time in writing a particular grant proposal.

One of the best ways to prepare for writing a grant proposal is to spend time becoming familiar with all phases of the grant writing process. Grant writing classes and tutorials are often available through school districts, Education Service Centers, state agencies, and universities. A number of guides to funding and grantsmanship in specific areas have been published in recent years and are available at public or research libraries or through bookstores. The Internet offers access to comprehensive information about

(continued on Page 11)

TEXAS WATCH

2005, Vol. 6, No. 3

The mission of Texas Watch is to facilitate environmental stewardship by empowering a statewide network of concerned volunteers, partners, and institutions in a collaborative effort to promote a healthy and safe environment through environmental education, data collection, and community action.

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The purpose of the Texas Watch newsletter is to disseminate information about nonpoint source pollution and to encourage and facilitate the exchange of ideas and monitoring data between environmental monitors and supporting partners throughout the state of Texas. The newsletter is published three times a year. For a free subscription, call toll free at (877)506-1401 or send your e-mail request to texas_watch@geo.txstate.edu.

Contributions:

Contributions to the newsletter are welcomed and encouraged. Please send any articles, letters, or questions to Texas Watch at the postal address listed on the back cover or submit them via e-mail at texas_watch@geo.txstate.edu.

If you wish to reprint any material published in the Texas Watch newsletter, please notify the editor of your intentions and submit a copy of the final publication.

River Rangers Keep a Close Eye on the San Marcos River

- Jason Pinchback, Texas Watch

Currently, there are twenty-three active sites in the Guadalupe River basin. Volunteers monitored these sites one hundred and thirty-eight times in 2004. Since 2000, eight hundred and forty samples have been collected throughout the Texas Watch monitoring network in this basin. The most active groups include: San Marcos River Rangers, Master Naturalist Lindheimer Chapter, Blanco River Watch, Hays County Parks Department, Wimberley Valley Watershed Association, and Texas State Geography and Aquatic Biology undergraduate and graduate students.

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" to "high" to "intermediate" to "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 (*see previous article, "Monitors often ask, 'How are you using my data?'"*) are typically generated for sites with a minimum of 10 samples over the last five years. Despite the fact that numerous sites in the Guadalupe River watershed meet these criteria, this year's summary report for the Guadalupe River will feature San Marcos River Ranger (SMRR) data. Fifteen SMRR sites were sampled 598 times between January 2000 and December 2004. Two headwaters sites are monitored at Sink Creek and Spring Lake. Farther downstream, River Rangers sample locations in San Marcos, Martindale, Staples, and Prairie Lea.

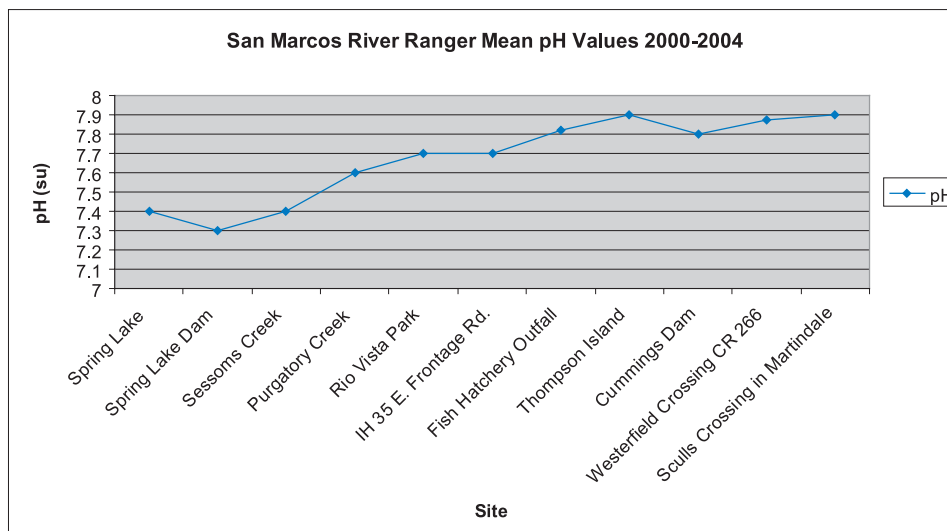
Key Water Quality Data Collected by the San Marcos River Rangers, 2000-2004

pH

In general, mean pH values are lowest at Spring Lake (7.3 su). As the San Marcos River flows downstream, mean pH values steadily increase to 8.14 su at Prairie Lea. A slight decrease in pH is observed at the Cummings Dam site. Many water chemistry variables fluctuate at this site. This may be due to the joining of the Blanco and San Marcos rivers 0.5 miles above this site and the lake-like environment of slower moving flow and temperature stratification that occurs above Cummings Dam.

Specific Conductance

As noted in other watersheds with predominant karst aquifer spring flow at the headwaters, specific conductance values steadily decrease as the San Marcos River runs downstream. Mean values range from 616 $\mu\text{S}/\text{cm}$ at Spring Lake to 511 $\mu\text{S}/\text{cm}$ in Prairie Lea. One exception to this trend is just below the fish hatchery effluent outfall at the San Marcos River at Thompson Island site, where specific conductance (SC) values increase slightly. (*continued on Page 8*)



A New Decade: Water for Life

- by Gwen Brunet, Texas Watch

Texas Watch water quality monitors are often well versed in local water issues that concern their adopted water bodies. This is as it should be, and while local issues should remain the focus of our volunteers, a fundamental knowledge of the state of water resources throughout the world is essential to gain a broader understanding of the needs of those people who are marginalized and living without access to clean drinking water and adequate sanitation. For this education, we look to the United Nations and their efforts to lead the world in reaching their Millennium Development Goals (MDGs).



World Water Day, March 22, 2005, was the official launch date for the United Nations resolution 58/217: the International Decade for Action, "Water for Life," for the period from 2005 to 2015. This Decade's approach to a focus on water issues was preceded by the United Nation's "International Drinking Water Supply and Sanitation Decade," which ran from 1981 to 1990. The Decade encourages countries to meet the MDG7, Target 10, which is designated to ensure environmental sustainability and to "halve by 2015 the proportion of people without sustainable access to safe drinking water." According to the UN, global coverage has improved, and 83% of the world's population now has access to clean drinking water, yet 1.1 billion remain without access to clean drinking water.

U.N. SECRETARY-GENERAL, KOFI ANNAN STATES:

Water is essential for life. Yet many millions of people around the world face water shortages. Many millions of children die every year from water-borne diseases. And drought regularly afflicts some of the world's poorest countries. The world needs to respond much better. We need to increase water efficiency, especially in agriculture. We need to free women and girls from the daily chore of hauling water, often over great distances. We must involve them in decision-making on water management. We need to make sanitation a priority. This is where progress is lagging most. And we must show that water resources need not be a source of conflict. Instead, they can be a catalyst for cooperation. Significant gains have been made. But a major effort is still required. That is why this year marks the beginning of the "Water for Life" Decade. Our goal is to meet the internationally agreed targets for water and sanitation by 2015, and to build the foundation for further progress in the years beyond.

This is an urgent matter of human development, and human dignity. Together, we can provide safe, clean water to all the world's people. The world's water resources are our lifeline for survival, and for sustainable development in the 21st century. Together, we must manage them better.

Kofi A. Annan

While many of these concepts on which UN Secretary-General Kofi Annan speaks (*see box at left*) may seem far removed from our own situation, we are not far from marginalized communities that do not have access to clean, safe drinking water. Colonias along the US-Mexico border exist quietly, in need of improved access to clean, sustainable water and proper sanitation. A colonia is defined by the Texas Department of Housing and Community Affairs, Office of Colonia Initiatives, as "an unincorporated community located within 150 miles of the Texas-Mexico border, or a city or town within said 150 mile region with a population of less than 10,000 according to the latest U.S. Census, that has a majority population composed of individuals and families of low and very low income, who lack safe, sanitary and sound housing, together with

basic services such as potable water, adequate sewage systems, drainage, streets and utilities.” In Texas, approximately 400,000 residents populate the colonias along the border, and this region is the poorest and most undeveloped region in the United States.

There are several complications hindering improvement of the quality of life for the colonia residents. Typically, the border counties lack sufficient tax bases to provide basic services to colonias. Where infrastructure is available, however, most of the houses are not up to state building codes and therefore not eligible to directly access potable water and sanitation in their homes. Also, about 232,000 people are in need of wastewater treatment plants along the border, which are inadequate or non-existent. Where infrastructure does not exist, wastewater is directed to septic tanks that often overflow during heavy rain events, or cesspools. Outhouses are used by approximately 7.4 percent of the residents. 81,000 colonia residents need access to potable water. Many must buy water by the bucket or drum to meet their daily needs. Some use wells that could be contaminated.

The lack of wastewater infrastructure and potable water, as well as the topography of the colonias, poses serious public health risks. According to the Texas Department of Health, there are increased rates of several viral diseases in the colonias, including hepatitis A, hepatitis unspecified, salmonellosis, shigellosis, and tuberculosis, and a lack of medical services to the colonias complicates the health problems further.

The Water for Life Decade should be a great incentive to propel efforts by federal, state, and local governments

and independent organizations to substantially increase living standards for those marginalized communities that exist in the United States and specifically, Texas. Texans can help reach the United Nation’s Millennium Development Goal 7, Target 10, by reducing the number of people without access to safe drinking water by at least 50%. Texans can take the development goals further by increasing wastewater treatment facilities in the colonias and helping families gain access to much needed home improvements to bring dwellings up to code.

Many organizations are working toward these goals, and information about borderland projects is available at the Borderlands Information Center’s Border Activity Tracker online at www.bic.state.tx.us/bat/reports.

More information about colonias and the United Nations “Water for Life” Decade is provided on the websites listed below.

Information about the colonias comes from the Federal Reserve Bank of Dallas Office of Community Affairs’ publication,

“Texas Colonias: A Thumbnail Sketch of Conditions, Issues, Challenges and Opportunities.” Available online at: <http://www.dallasfed.org/ca/pubs/colonias.pdf>

For more information:

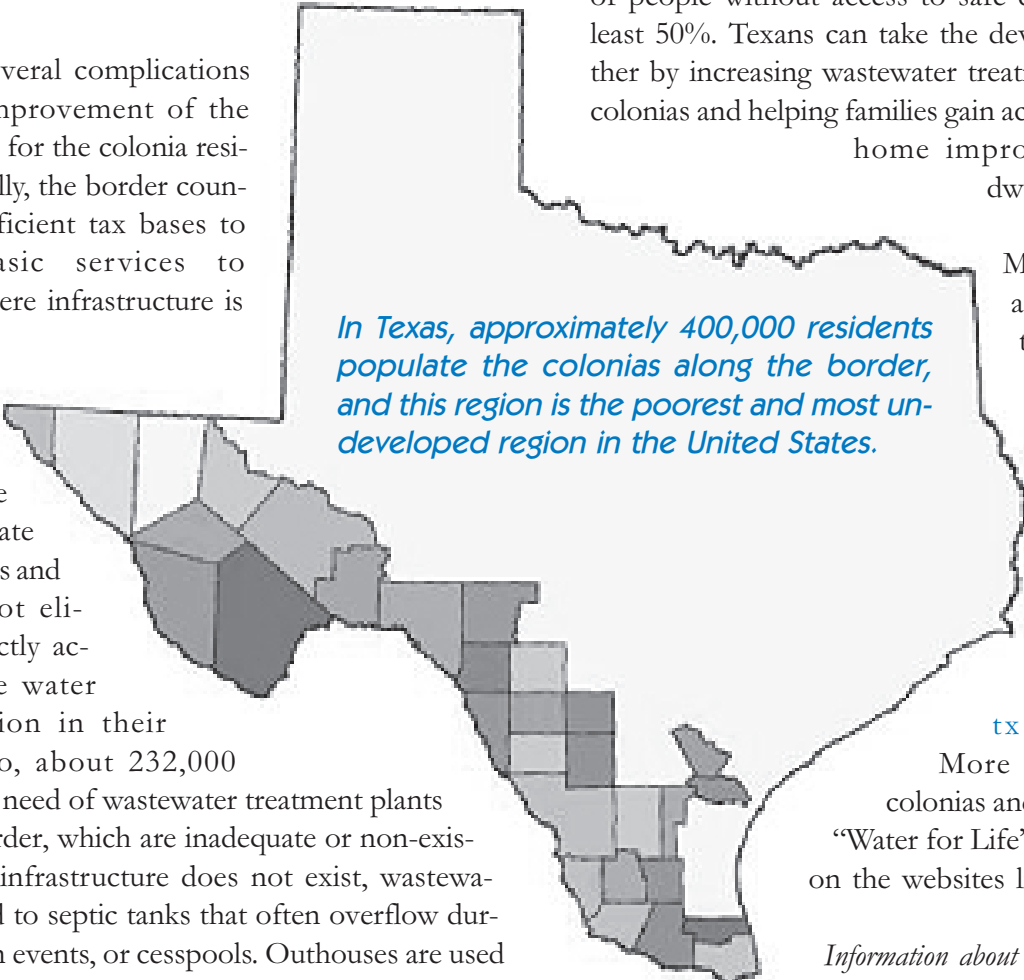
United Nations Water for Life Decade: <http://www.un.org/waterforlifedecade/>

Information about colonias:

<http://www.sos.state.tx.us/border/colonias/faqs.shtml>

<http://www.bic.state.tx.us/colonias.html>

<http://www.tdhca.state.tx.us/oci/index.jsp>



In Texas, approximately 400,000 residents populate the colonias along the border, and this region is the poorest and most undeveloped region in the United States.

Volunteer Monitoring Update on Nueces River Basin Activities

- Jason Pinchback, Texas Watch. Reprinted from the Nueces River Authority Basin Highlights Report.

Texas Watch activities in the Nueces River basin focus on watershed education and volunteer monitoring. Watershed education activities are centered on a nonpoint source pollution theme that ties land use activities with water quality and natural resources. Active Texas Watch partners operating in the Nueces River basin in 2004 and 2005 include the Nueces River Authority, the Texas State Aquarium Sea Center, City of Rockport, and the Texas Commission on Environmental Quality's Corpus Christi regional office. Since 2000, Texas Watch monitors have documented more than 275 monitoring events from nine sampling sites in this basin. In 2004, twenty-six samples were collected from three sites.



The Water Quality Monitoring curriculum is designed for high school and middle school science teachers. For use as a companion to the Texas Watch Water Quality Monitoring Manual, this curriculum covers the key environmental and scientific concepts associated with Texas Watch's core water quality variables. This curriculum provides lessons, exercises, evaluation materials, and TEKS correlations. Texas Watch hopes this curriculum will facilitate the presentation of Texas Watch concepts in the classroom and field. The following curricula are also available: Intermediate Student Guide to Water Quality Monitoring, Understanding Nonpoint Source Pollution, and Conducting a Watershed Survey.

Texas Watch staff (left) discusses nonpoint source pollution during an annual Earth Day outreach event in Port Aransas.

working with teachers, interest groups, and the general public. The Aquarium's Sea Center continues to serve as a regional hub where monitoring kits are available to area teachers for classroom and field monitoring exercises. Texas Watch also continues to provide teaching materials such as the Water Quality Monitoring curriculum to interested educators (see box at left).

The majority of these samples were collected in and around Rockport, Texas. The Little Bay Sentinels Texas Watch monitoring group, which was established in 2000, continues to operate within the City of Rockport's Water Quality Committee. Their main purpose is to test and document the water quality of Little Bay, a small, estuarine water body located approximately 30 miles north of Corpus Christi. A veteran Texas Watch monitor, Michael Proctor, continues to lead the monitoring efforts and serve as the chair of the committee. Rockport's beaches continue to meet all requirements for the Blue Wave designation as certified by the Clean Beaches Council. A Blue Wave designation indicates a clean and safe destination that is managed with consideration for its users and the environment.

Aside from the Little Bay monitoring activities, Texas Watch and its partners focus on watershed education by

Mark Your Calendar! The Great North American Secchi Dip-In June 25–July 17, 2005

We invite your volunteer monitoring group's participation in the 12th year of the Great North American Secchi Dip-In. If you or your group has not participated in the past, this is a great time to begin. Anyone in the world, on any kind of water body, can participate. To register for this year, visit the Secchi Dip-In Web site at <http://dipin.kent.edu>.

(continued from Page 1)

How Are You Using My Data?

Some options include: participating in the Clean Rivers Program (CRP) Steering Committee process (*see box at right*); 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 and contacting elected representatives and media; or starting your own coalition to address areas of concern.

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 great place to begin making institutional connections and to learn how to “work” the assessment and

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 Clean Rivers Program (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>.

protection system that Texas agencies use to keep water resources healthy and sustainable.

As a part of this process, Texas Watch plans by August 2005 to provide data summary reports to CRP partners, TCEQ, volunteers, and other interested parties. The 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 that have been sampled more than nine times between 2000 and 2004 will be included in the reports. Some of the highlights from these reports will be included in future issues of the Texas Watch newsletter.

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
9. Assist partners with quality assurance information for data used for problem identification and local decision-making capacity building
10. Provide data to researchers

*The Texas Watch volunteer monitoring network uses a defined strategy that helps data users define accuracy, representativeness, and comparability standards. This strategy (or the quality assurance project plan) is approved by the TCEQ and the U.S. Environmental Protection Agency. This plan identifies the following specific data uses: research and education, problem identification, local decision-making, and baseline data.

Additional resources to learn more about water quality data, stream standards, and the TCEQ Clean Rivers Program:

1. Clean Rivers Program
<http://www.tnrcc.state.tx.us/water/quality/data/wmt/index.html>
2. Stream Water Quality Standards
<http://www.tnrcc.state.tx.us/permitting/waterperm/wqstand/index.html>
3. Volunteer Monitor Newsletter data article
<http://www.epa.gov/owow/monitoring/volunteer/newsletter/volmon17no1.pdf>
4. National Council for Science and the Environment
<http://www.ncseonline.org/nle/index.cfm?&CFID=1621254&CFTOKEN=38012918>
5. EPA Nonpoint Source Pollution homepage
<http://www.epa.gov/owow/nps/>
6. Clean Water Act
<http://www.epa.gov/region5/water/pdf/ecwa.pdf>
7. Nutrients data analysis
http://www.riverwatch.ab.ca/how_to_monitor/p_test.cfm
8. Texas Watch Data Viewer
<http://www.texaswatch.geo.swt.edu/>

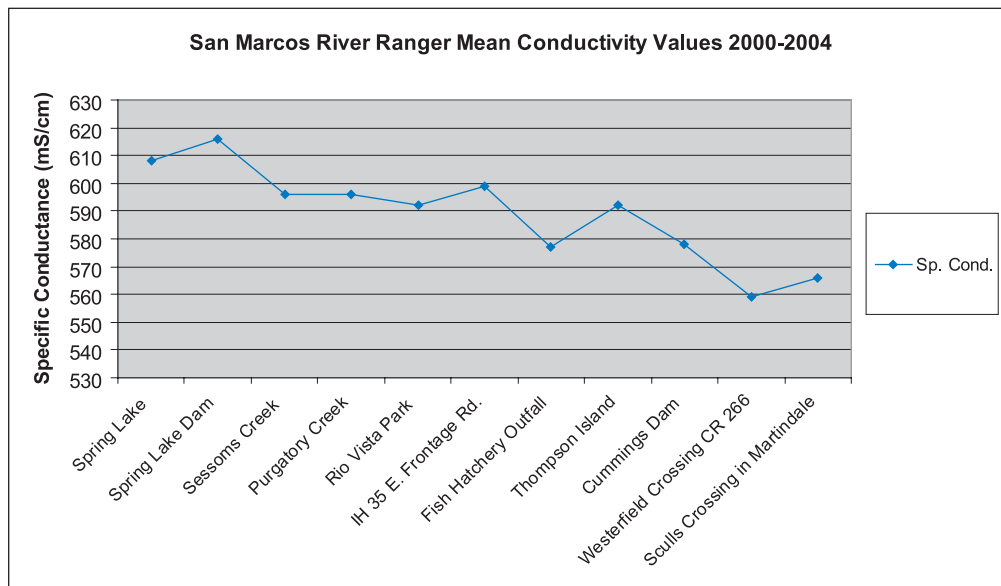
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San Marcos River Rangers

When looking at individual site values and trends, one site in particular demonstrates interesting characteristics. The San Marcos River at Sessoms Creek site is located 50 meters downstream of the Spring Lake outfall (and the beginning of the San Marcos River) at the confluence with Sessoms Creek. From 2000 to 2004, SC values reveal a steadily increasing trend through out this period. Further investigations, by assessing an entire ten-year data set, show a steadily decreasing trend from 1995 to 1999.

This watershed is under intense development and land use change, and there are documented past violations from illicit discharges. Sampling bias is also a factor to consider. While anthropogenic influences may be the cause, it is also possible that changes in rainfall and spring flow could directly relate to changes in SC values. In karst

systems, SC values have been known to positively correlate with rainfall and spring flow. Fortunately, the highest documented SC values range around 660 $\mu\text{S}/\text{cm}$. Local biologists have informed Texas Watch that values above 750 $\mu\text{S}/\text{cm}$ might begin to stress Sessoms Creek aquatic inhabitants.

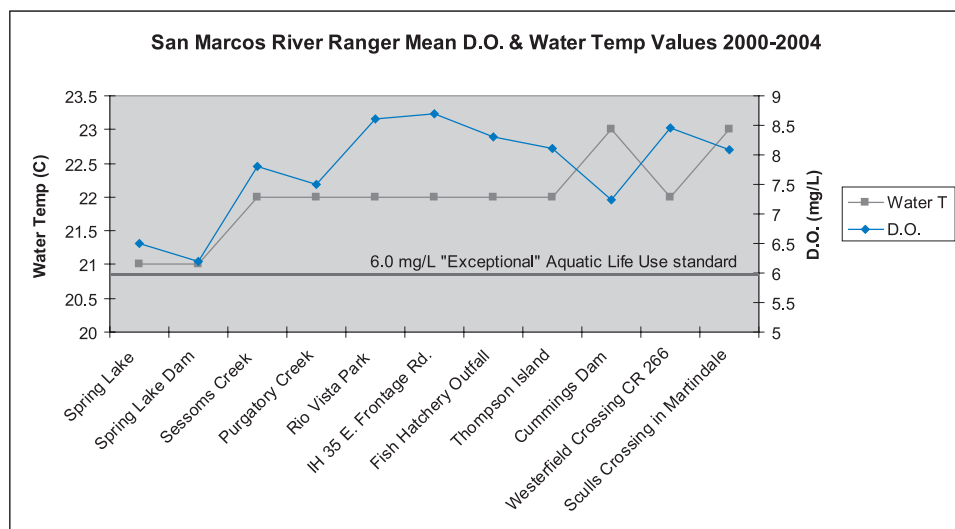


Water Temperature

The mean water temperature from the Spring Lake Dam site registers 21°C, then remains steady at 22°C until the San Marcos River at Cummins Dam site records a mean of 23°C. Interestingly enough, river water temperatures dip to 21.8°C in Staples 21.35°C at SH20, and increase to 23.7°C at Prairie Lea.

Dissolved Oxygen

Similar to pH trends, dissolved oxygen (DO) values are lower at the headwaters and steadily increase as San Marcos River waters move through the watershed. Since there is little chance for photosynthesis or mixing with atmospheric oxygen, low dissolved oxygen levels are often observed in waters with predominant spring flow influences.



low dissolved oxygen levels are often observed in waters with predominant spring flow influences. This observation holds true at the first San Marcos River site, which is around 120 meters downstream from the main springs of Spring Lake. Here at the San Marcos River headwaters, DO average values ranged from an average of 6.2 mg/L to minimums of around 3.2 mg/L. Thirty-seven percent of the sixty-two samples were less than the “exceptional” aquatic life use designated standard of 6.0 mg/L.

At the IH 35 site, the river flows quickly under thick canopy cover. From 2000 to 2004, the DO values here averaged 8.6 mg/L. Out of character with typical DO increases in summer months, DO levels dramatically declined in June 2004 to a rare low of 5.1 mg/L in September 2004. This was not observed in the previous four years. With the swift moving waters and thick canopy in this area, it is unlikely that water temperatures are a strong influencing force on DO. IH 35 bridge construction, local nonpoint source pollution, or sampling bias could have caused the decreases.

DO values peak at the Rio Vista Park and Thompson Island sites with averages around 8.7 mg/L. Values decrease somewhat farther downstream near Cummings Dam, where higher water temperatures due to the lack of canopy cover, less water movement, and the lake-like environment may explain the lower DO values. Despite this slight decline, DO values remain above aquatic life use standards. The Cummings Dam site is downstream of two effluent discharge sources from the San Marcos wastewater treatment plant and the Texas Parks and Wildlife Department fish hatchery. While River Rangers report apparent degradation in aesthetics, water clarity, and the quality of their river experience, wa-

Texas Watch would like to thank the SMRR volunteers:
Rachel Sanborn, Coordinator

Pat Stroka	Hanna Sanborn
Ann Bourlon	Kathy Navarrete
Deborah Lane	Chance Navarrete
Beth Trout	Louise Mullins
Paul Bain	Sandy Goynes
Alana Carpenter-Moore	Joe Piazza
Mary Rocamora	Liz La Rue
Eileen Trainor	Thomas Uzzell
Steve Boles	Rebecca Shively
Carolyn C. Kelly	Jon Cradit

ter quality conditions are quite remarkable given the quantity of effluent that is discharged upstream.

The excellent efforts of the SMRR and their supporting organization, the San Marcos River Foundation, must be recognized as one of the highest caliber volunteer monitoring organizations with consistent protection and assessment efforts at basin-wide perspective for over ten years. This is of utmost importance since federal and state assessment and mitigation resources often go to water bodies previously identified with concerns or impairments. In San Marcos and in over three hundred other locations in Texas, volunteer monitors are providing an important public service by acting as the eyes and ears and the early warning system for streams, beaches, and lakes...and all of their visitors.

Data Collected at San Marcos River Sites, 2000-2004 (596 samples total)

Site	Water T.			D.O.			pH			S.C.		
	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.
Spring Lake	14	21	29	1.9	6.5	13.3	7	7.4	8	500	608	980
Spring Lake Dam	18	21	24	3.6	6.2	8.15	7.1	7.3	7.6	480	616	750
Sessoms Creek	2.5	22	26	6.5	7.8	8.9	5.3	7.4	8	530	596	660
Purgatory Creek	1.5	22	26	3.3	7.5	10.2	7	7.6	8	290	596	770
Rio Vista Park	17	22	26	7.2	8.6	10.1	7.5	7.7	8.5	490	592	670
IH 35 E. Frontage Rd.	18	22	25	5.1	8.7	10	7.1	7.7	8	530	599	680
Fish Hatchery Outfall	18	22	24	6.8	8.3	10.2	7.5	7.82	8	310	577	630
Thompson Island	17	22	27	6.6	8.1	9.3	7.7	7.9	8	460	592	640
Cummings Dam	12	23	35	6.2	7.24	9	7.5	7.8	8	520	578	630
Westerfield Crossing CR 266	17	22	26	7.3	8.45	9.8	7.3	7.87	8.3	460	559	620
Sculls Crossing in Martindale	13.5	23	28.9	5.8	8.08	11.8	7.7	7.9	8.5	490	566	630
Below falls in Martindale	13	22	26	6.9	8.27	10.35	7.75	7.77	7.9	280	515	600
FM 1977 Staples	14	22	28	6.3	7.84	9.8	7.6	7.83	7.9	340	542	590
SH 20	11	21	28	6.3	8.19	11.5	8	8	8	470	546	600
Prairie Lea	14.5	24	30	6.9	8.54	10.1	7.9	8.14	8.5	400	511	550
2000 to 2004 Mean Value	13.4	22	27	5.78	7.89	10.17	7.33	7.74	8.08	405	573	667

Min. = minimum value; Mean = average value; Max. = maximum value

(continued from Page 1)

Watch That Water, Please!

she teaches science and math at CMS. Recently, she was awarded the community's "Comal Public School Foundation Grant." Although this was Judy's first year at Canyon Middle School, she was informed about the grant and pursued it at the beginning of the 2004-2005 school year. In October 2004, she was awarded the grant, which has a completion date of May 15, 2005.

The grant, entitled "Watch That Water, Please," increases students' awareness of the past, present, and future of water resources, how humans depend upon the

water, and how lucky we are to have abundant, high quality sources of water in our region. Using a cross-curricular, inquiry-based field study that utilizes Texas Watch water quality education and training as its science foundation, the grant includes Texas Watch training for the students and teachers, funding for kits, and several home and field-testing events throughout the semester.

The core activity of the project involved comparing results of tests on drinking water with data collected from area rivers, aquifers, and Canyon Lake. The students tested their home tap water for pH, nitrates, phosphorus, and temperature using a kit produced by Earth Force. Water sources for drinking water were color-coded on a watershed map, and the drinking water results were compared to sampling results from field events.

Finally, maps and a PowerPoint presentation were developed to report student findings, and the media was invited to their final presentations to district seventh graders and the grant committee. Participation by the

students increased for each field test, and several parents called Judy for information on how to get their child involved. Judy remarked, "Doing the water test trip has become a status symbol of sorts."

The team of teachers that contributed to the overall success of the project included: field study partners Ron Rychel and Burney Anderson; Dawn Mizell and Richard Strachan, who helped with the analysis portion including producing the graphs and charts; Sheri Lukemeyer, who helped with background information on the water resources; and Linda Dreibrodt, who helped the students with the mapping project. Finally, Laurel Schumacher helped produce the website and helped with the editing.

In addition to increasing their awareness about water resources, Judy Lee also

wanted her students to understand how weather affects lakes, rivers, streams, and springs and how the soils, rocks, and other geographic and geologic factors affect the presence or lack of water. She emphasized to her students that only 1% of the Earth's water is considered fresh and suitable for drinking, how to conserve

and protect the aquifers in and around their watershed, and where people should and should not build in order to protect their water resources. Judy states, "The

overall ranking goal is that the water must be protected as though it were liquid gold, a Texas Treasure, that is passed on from generation to generation. Enjoy it, drink it, but most of all respect and protect it." The particular aspects of Texas Watch that most interested Judy was "being able to get out in the field with students, for conservation has more of an impact if you see, feel, and touch the resource."

"Watch That Water, Please" increases students' awareness of the past, present, and future of water resources, how humans depend upon the water, and how lucky we are to have abundant, high quality sources of water in our region.

"The overall ranking goal is that the water must be protected as though it were liquid gold, a Texas Treasure, that is passed on from generation to generation. Enjoy it, drink it, but most of all respect and protect it."

Welcome Julie Tuason!

In April, Dr. Julie A. Tuason joined Texas Watch as its newest staff member. Dr. Tuason holds a Ph.D. in geography from Rutgers University. She has taught courses in conservation and environmental management while on faculty at the University of Texas at Austin and at Southwest Texas State University. She has two decades of experience with geographic education reform initiatives and has served as a consultant to the National Geographic Society's Geography Education Program and the National Council for Geographic Education.



(continued from Page 2)

Grant Writing

the practice of grant writing, including online tutorials and writing guidance offered by organizations like the Corporation for Public Broadcasting (www.cpb.org/grants/grantwriting.html) and the U.S. Environmental Protection Agency (www.epa.gov). Granting establishments like the Texas Education Agency (www.tea.state.tx.us/opge/grantdev/process.html) offer educators, parents, and professionals the opportunity to serve as a volunteer reader of grant proposals, which is an excellent way to review both good and bad examples of grant writing done by other people. Time invested in learning about the grant writing process will not be wasted—that knowledge will help ensure success as you write your own grant proposal.

Once you have gained a firm understanding of the grant writing process, the next step is to identify possible funding sources and to determine which of these potential sources has granting requirements that match well with your project goals. Educational grants are available from a variety of federal and state agencies, businesses and corporations, and private foundations. Each of these granting entities has its own specifications for the type of projects that they will fund and who is eligible to apply for this support. A proposal that does not meet all of the guidelines laid out by a

Lake Palestine Regional Meeting

Texas Watch wishes to thank all the participants who attended the Lake Palestine Regional Meeting in Chandler, TX, on April 9, 2005. The meeting focused on analysis of water quality data collected on Lake Palestine by monitors volunteering for the Greater Lake Palestine Council. In addition to examining water quality sampling results, the meeting provided helpful information about the waters that feed Lake Palestine and about long-term management initiatives such as the TCEQ's Source Water Assessment Program. Texas Watch wishes to thank the Greater Lake Palestine Council, Art Crowe, TCEQ, Angelina and Neches River Authority, Chavonne Bell, PBSJ, and Joanne Howard, H2O Partners, for their contribution to a successful meeting.

- granting organization will not be considered for grant funding. Take time to review the projects that have received grants from each prospective funding source in recent years to gain a better understanding of what characteristics they are looking for. The more you understand the audience who will be judging the merits of your grant proposal, the stronger your chances are of being successful in securing funds to support your educational project.

The Gilbert M. Grosvenor Center sponsors, coordinates, and facilitates research and activities in such areas as (1) teaching methods, (2) student and public learning of geography, (3) curriculum, (4) assessment, (5) cognitive mapping, and (6) the uses of technology. Special attention is paid to geographic education issues at the university level. The Center's efforts also serve to influence changes in public policy that elevate the importance of geography in societies throughout the world.

- Look for additional articles in this series, Grant Writing for Teachers, in upcoming issues of the Texas Watch newsletter, including "How to Locate Grant Funding Sources" and "Tips for Writing a Successful Grant Proposal."

To learn more about the Grosvenor Center, visit their Web site at <http://www.geo.txstate.edu/grosvenor/about.html> or contact Judy Behrens at (512)245-1823 or jb42@txstate.edu.

Congratulations to our New Water Quality Monitors!


Anne Adams	Lisa Cummings	Marianne Head	Thomas McReynolds	Clinton Smith	Patricia Villareal
Ana Aita-Cherry	Savannah Curbelo-	Tom Heath	Remigio Mejia	Russell Smith	LaTonya Walker
Amber Allred	Lemley	Toni Herrin	Teresa L. Miller	Graham Staniforth	Matt Ward
Dave Ames	J.L. Danenberg	Sarah Hillier	Billy Mills	Justin Steinhilber	Bobby Watkins
Crystal A. Baker	Eric Dedden	Laure Hoffman	Melody Mullen	Tammy Stubbs	Lisa Watson
Ursula Barnhill	Michael Deloach	Kornelius Holmes	Cherrie-Lee Phillip	Mike Swope	Elizabeth Watts
Jeff Bauknecht	Lacretia Dickerson	Maureen Hurst	Kaya Pinchback	Joshua Sykes	Mark Webb
Kendall Bell	Christine Dickson	Kye Johnson	Amber Powell	Christina Taylor	Joseph Whitaker
Mel Bernstein	David Duncan	Cecilia Kelley	Jason Price	Heather Teer	Keith Wicker
Larry Bippert	Keli Eatmon	Brooke Kervin	Drew Ramped	Marcie Thiessen	Gordon Williams
Landon Bippert	Steffany Edmonds	Frank Korman	James Ray	Patrick Thomas	Justine Williams
Randi Born	Mark Enders	Lisa Elena Korth	Rolando Raymond, Jr.	Pauletta Thompson	David Willis
Kristal Bradford	Elise Esmiol	Mike Kramer	Joanne Rhone	Julie Tuason	Ryan Young
Rusty Brandon	Diana Fielding	Kelly Latham	Maria Richards	Becky Underwood	Kate Yow
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Greg Busselman	Larry Finigan	Christine Lerios	Susan Romanella		
Valerie Busselman	Jeanne R. Finigan	Apostolos Lerios	Geraldine Schwartz		
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John E. Cassidy	Wanda Gabriel	Monique Long			
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Mason Clem	Melissa Gray	Hiral Mathur			
Christian Cope	Richard W. Griffin	Heather McAnelly			
Elizabeth Courtney	Ryan Hands	Danny L. McBride			
Marion Couvillion	Nikki Hardemon	Diane McDonald			

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