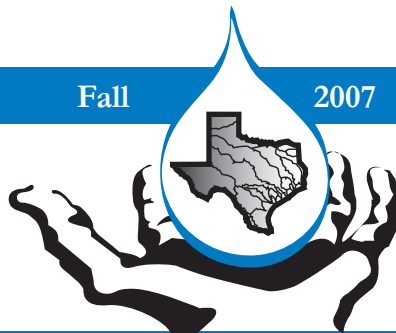


Texas Watch



River Systems Institute, Texas State University-San Marcos

EPA Region 6

TCEQ

Nonpetroleum Sheens on Water

Editor's note: This article is adapted with permission from the Minnesota Pollution Control Agency's Cleanup/Emergency Response fact sheet #4.07, August 2005. It is particularly relevant to the Texas Watch emphasis on monitoring for bacteria in our targeted Total Maximum Daily Load and Watershed Protection Project areas.

Each year, environmental regulatory agencies receive calls from concerned citizens who have discovered apparent color sheens on water in ditches, ponds, wetlands, lakes and other areas with stagnant, standing water. Often these sheens have an iridescent or rainbow-like appearance similar to what one sees when a small amount of oil, gasoline, or other petroleum product is spilled on water. In some cases, a reddish precipitate can be seen also in the water where these sheens occur.



If there is no obvious source of petroleum that could have been spilled, the sheen may be an organic nonpetroleum, or humic, sheen caused by bacteria.

Is it a bacterial or petroleum sheen?

A nonpetroleum sheen can usually be distinguished from a petroleum sheen by attempting to break up the sheen. When a stick is poked into a bacterial sheen or a stone is dropped into it, the sheen will typically break into small platelets. In contrast, a petroleum sheen will quickly try to reform after any disturbance. Another

(Continued on page 2)



Tell Us What You Think!

Help us to improve the Texas Watch newsletter by taking a brief, 5-question, online survey. Log onto the Texas Watch Web site at www.texaswatch.geo.txstate.edu and click on the link, "Take the Newsletter Survey!" It's that easy. We will collect your responses until December 31, 2007, so don't delay!

This is the first time that we are conducting this survey completely online. Help us to save resources and make it a success by pausing for a moment right now. Take this newsletter to your computer, log onto our website, and take the newsletter survey. Texas Watch thanks you!

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difference is odor; a sheen produced by bacteria usually has none, while a sheen caused by a spilled petroleum product may smell like gasoline or diesel fuel.

If you see a sheen on surface water or in a wet area, investigate the sheen if you can safely do so. If, after disturbing the sheen a bit, the sheen appears to be caused by spilled petroleum rather than bacteria, a pollution situation exists and should be reported to the State of Texas Spill-Reporting Hotline at 1-800-832-8224.

An exception to this would be sheens that result from the washing by rainfall of residual petroleum from road surfaces and parking lots. Should you find, within a day or two of a rain, a petroleum sheen on standing water that you know for certain is runoff from a nearby road or parking lot, you need not report your finding because the small amount of oil will evaporate or be degraded naturally by microbes. Of course, the owner of a suspected oily parking lot should act to clean the lot surface and prevent future contamination. Information about controlling stormwater runoff can be found at www.pca.state.mn.us/water/stormwater/index.html.

For information on spill prevention, cleanup and disposal, call the Texas Commission on Environmental Quality at (512) 239-1000 or go to www.tceq.state.tx.us/comm_exec/forms_pubs/pubs/rg/rg-290.html on the Internet. More information is also available on the Web site of the U.S. Environmental Protection Agency at www.epa.gov/oilspill/. •

Texas Watch TMDL Update

by Eric Mendelman, Texas Watch

Texas Watch's recent focus has been on conducting training sessions and planning watershed protection meetings in each of four TMDL (Total Maximum Daily Load) project areas.

Arroyo Colorado

Water Quality Monitoring Certification and planning for the Arroyo Colorado Watershed Protection Meeting highlighted activities for this quarter. In June, Jason Pinchback and Heidi Moltz conducted a Phase I-II *E. coli* training. Phase I took place at Texas State Technical College in Harlingen, Texas and Phase II took place at Ramsey Park World Birding Center in Harlingen, Texas. Fifteen people participated from South Texas College, University of Texas-Brownsville, IDEA Academy, and Texas State Technical College. Los Caminos Del Rio sponsored lunch for the training. Laura de la Garza, the Arroyo Colorado Watershed Coordinator, spoke at the training to give a local perspective on pollution problems in the area and to provide opportunities for volunteers to get involved. A Phase III training was also conducted for five Arroyo Colorado monitors who were certified on May 19, 2007.

(Continued on Page 9)

TEXAS WATCH

2007, Vol. 9, No. 1

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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Subscriptions:

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 email request to texas_watch@geo.txstate.edu. To receive the newsletter by email, go to the Texas Watch website listed on the back cover and click on "Subscribe to Our Newsletter."

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 page or submit them via email 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.

Gardening to Reduce Your Nonpoint Source Pollution Footprint –

Managing Ants without Harming your Pets and Kids

by Jason Pinchback, Texas Watch

For anyone who is growing plants and managing pests at home, the issue of how to control pests safely while caring for the environment is an important one. I have been experimenting with organic gardening and landscaping at home for several years now and it has proven to be fun and challenging. Like many others, I have found much satisfaction in planting seeds or small plants and watching them grow into healthy, vigorous veggies. This is not written from the perspective of an expert or anyone who has formal training. Instead, the “trial, error, and success” method more or less serves as the perspective from which this is written.



Ants

Many parts of the state have been experiencing much rain this summer, and that seems to have resulted in a very active ant “season”. The fire ants and carpenter ants seem to be on a mission. Fire ant mounds have been popping up everywhere and the carpenter ants are feasting on the fence, one of the Mountain Cedars, and now the paneling of the house. Going organic is difficult if you go to a big box store, so I prefer some

of the smaller, local gardening stores. These local stores often feature organic methods while the larger stores seem to sell toxic products that promote the use of chemicals such as atrazine. My first trip and conversation with nursery staff led me to purchase a liquid product that has orange oil and molasses. Orange oil and molasses is known to keep ants and other pests away. I used this and it does work, but I found that it only moves the ants around from one place to another...so basically, the ants moved over five feet and continued their siege on my yard.

The Texas Two-step

During my next trip, I learned about the Texas two-step! The first part of this dance involves using a new organic product that contains spinosid (or bacillus thuringiensis). This is a granular bait-like substance that the ants take back to their mounds. Once in the mound, the spinosid promotes fungal growth that kills the ants and their eggs. The second part of the Texas two-step is to follow up with diatomaceous earth. Diatomaceous earth (DE) consists of fossilized remains of ancient hard-shelled algae (or diatoms). DE is a mechanical insecticide and can impact the unwanted and desirable insects.

The Texas two-step worked like magic. It was not instantaneous, like many powerful toxic insecticides, and it did take three separate applications. Now the yard and the exterior of my home seem ant free. The tree on the other hand, still has the carpenter ants...maybe I can get some more advice and move on to discover new, environmental friendly ways to manage pests and other nondesirables.

If you have some advice to share and want to contribute to the next newsletter, contact Texas Watch at JP30@txstate.edu. Remember, there are things we can do in our everyday activities, such as yard care, to prevent NPS. and keep ourselves safe. Putting these practices into place and telling our friends and neighbors is a good way to care for our water resources. ●

Texas Watch Supports STEM Initiatives

by Dr. Julie Tuason, Texas Watch

Since Texas Watch transferred to the River Systems Institute in 2006, the program has been working to develop partnerships with academic departments and other environmental education programs at Texas State University–San Marcos to provide support and to generate new initiatives that will enhance STEM (science, technology, engineering, and mathematics) education at Texas State and at the K-12 level.

STEM education is a national priority in the United States. According to the Tapping America's Potential (TAP) Coalition,

The United States is facing a critical talent gap in science, technology, engineering and math, and is not keeping pace with foreign competition. The demographic trends are sobering: baby boomer retirements will deplete the science and engineering workforce by 50 percent.... If America is to remain the world's primary source of innovation, we must develop the U.S. talent pipeline necessary for a highly skilled workforce. This is not only about producing more scientists and engineers; all students must have a strong foundation in math and science to succeed in the rapidly changing global economy. (http://www.tap2015.org/resource/tap_letters.html)

Since 1991, Texas Watch has built a statewide program of water quality monitoring, environmental education, and data analysis that promotes the hands-on teaching and learning of a wide range of scientific and mathematical concepts (see “STEM Concepts,” sidebar). Texas Watch has the materials, equipment, facilities, and staff expertise to support the incorporation of field-based water quality monitoring activities into preservice and inservice teacher education. This is just one example of many possible types of projects that are being developed with other STEM-related academic, research, and service programs on campus.

Texas Watch has four professional staff members, two of whom hold advanced degrees in Environmental Geography. An on-site training facility at Aquarena accommodates groups of up to 25 people who become

- Certified Water Quality Monitors upon completion of an intensive, six-hour training session. Texas Watch also has a set of TEKS-correlated curriculum that is tied to monitoring, data analysis, and watershed education.

- Texas Watch offers Texas State University students internships, graduate assistantships, and opportunities to gain valuable certification in a U.S. Environmental Protection Agency-approved field-science activity, as well as preprofessional experience in environmental assessment and education. Faculty, graduate students, and undergraduate leaders can also become Certified Trainers to conduct monitoring training events for their own groups.



- In addition, Texas Watch has a trained a seasoned network of volunteers that includes teachers and students in school districts around the state. Approximately 40 percent of Texas Watch monitoring groups are teachers and their students. These school-based volunteers are enthusiastic and dedicated, and they offer to new partners at Texas State a stable and mobilizable resource for assistance in roll-out, testing, and research.

- Texas Watch activities support concepts in the fields of general science, biology, chemistry, environmental science, geography, mathematics, and technology. For a comprehensive list of STEM concepts found in Texas Watch water quality monitoring and environmental education, visit our Web site at www.texaswatch.geo.txstate.edu and click on the Educators' page. ●

AQUARENA

TEXAS RIVERS CENTER • SAN MARCOS, TEXAS

All the Lake's a Stage for Ethan Chappell

"Aquarena Man" Lives on in the Real World

by Ashley Landis, reprinted with permission from the San Marcos Daily Record

Ethan Chappell never guessed that he would end up like a character from his own play. Born up the road in Kyle, Chappell was always interested in acting. After finishing elementary school in Buda and high school in Wimberley, he studied acting at McLennan Community College in Waco and moved on to Dell Arte International School of Physical Theatre in California.

But then, much to his dismay, a blown transmission in

his car left Chappell stranded in Houston and he never finished his degree. Instead, he ended up back in Central Texas at Aquarena Center.

Chappell had heard about the legendary underwater show and was disappointed to hear that it was long gone. He took a job in the gift shop and soon became involved in every aspect of Aquarena.

"I always had a strange fascination with this place," Chappell said. After becoming a certified diver and getting involved with the preservation of Spring Lake, Chappell decided to go back to his theatre roots and write a children's play called "Aquarena Man" for visitors one summer. "It's about a super hero who gets his power from wild rice, but the wild rice was almost gone," Chappell said. "But he still had a job to do."

Aquarena man protected endangered species in the river, which also became Chappell's main agenda. "I kind of became that guy," he said.

Chappell is now working as an aquatic maintenance worker for Texas State University and has worked to remove non-native plants from the San Marcos River and Spring Lake with the help of master naturalists and the San Marcos River Foundation. He hopes to become a certified dive safety officer and lake manager so he can train other divers in research and data collection techniques.

"You just never really know what you're going to do in life," Chappell said. •

For information about Aquarena Center's activities and program offerings, please visit <http://www.aquarena.txstate.edu>.



Ethan Chappell raises the dive flag to indicate the presence of divers in the water.

Colorado River near Wharton and Bay City –

A Summary of Data Collected at Two Sites from 2002 to 2006

Editor's note: Most of this article was written by Texas State University student, Elizabeth Stockhorst. She completed this data summary report as a part of her participation in the Geography Department's Water Quality Monitoring and Assessment class. Data used in the report was gathered by Lower Colorado River Authority's Colorado River Watch Network volunteer water quality monitors. The area covered by this data summary is on the Colorado River near Bay City and Wharton, Texas.

The Colorado River is the longest river that is completely contained within Texas borders. The 862 mile long river forms in southeast Dawson County and crosses through the cities of Marble Falls, Austin, Bastrop, La Grange, Columbus, and Bay City before merging into the Gulf of Mexico at Matagorda Bay. The watershed for the Colorado River encompasses 39,900 square miles. (TSHC, 2001)

The Colorado River is an important source of water for farming, municipalities, environmental flows, and power production for many in Texas. There are 11 major reservoirs along the river and numerous minor reservoirs. Flood control and use of the river is managed by the Lower Colorado River Authority.

Colorado River Watch Network (CRWN) volunteer monitors collect water data for Secchi depth transparency, specific conductivity, air and water temperatures, dissolved oxygen, pH, field observations, and other monitoring parameters.

The first site, "Colorado River at Riverfront Park" is near Wharton, Texas. Riverfront Park is a 17-acre parcel of land located near the Highway 59 bridge. The park's primary use is for recreational purposes, such as boating, biking, walking, picnicking and fishing. (Wharton Chamber of Commerce, 2007) The second site, "Colorado River at State Highway 35 Bridge" is near Bay City, Texas. This site is on the outskirts of town and is known for fishing and accessing the river.

The following tables include the mean, minimum, and maximum values for all the data collected between February 2002 and March 2006. *(Text continued on page 8)*

Colorado River at Riverfront Park Wharton Site #12285

	N	% Complete	Mean	Min	Max
Sample Time (Central)	21	100	11:11	8:30	15:40
Secchi Depth (Meters)	17	80.95*	0.64	0.1	2.5
Specific Conductivity (S/cm)	16	76.19*	570	400	660
Air Temperature (°C)	21	100	22.55	9	34
Water Temperature (°C)	21	100	8.91	12.5	30
Dissolved Oxygen (mg/L)	21	100	8.28	5.2	13.3
pH (su)	21	100	7.92	7	8.8

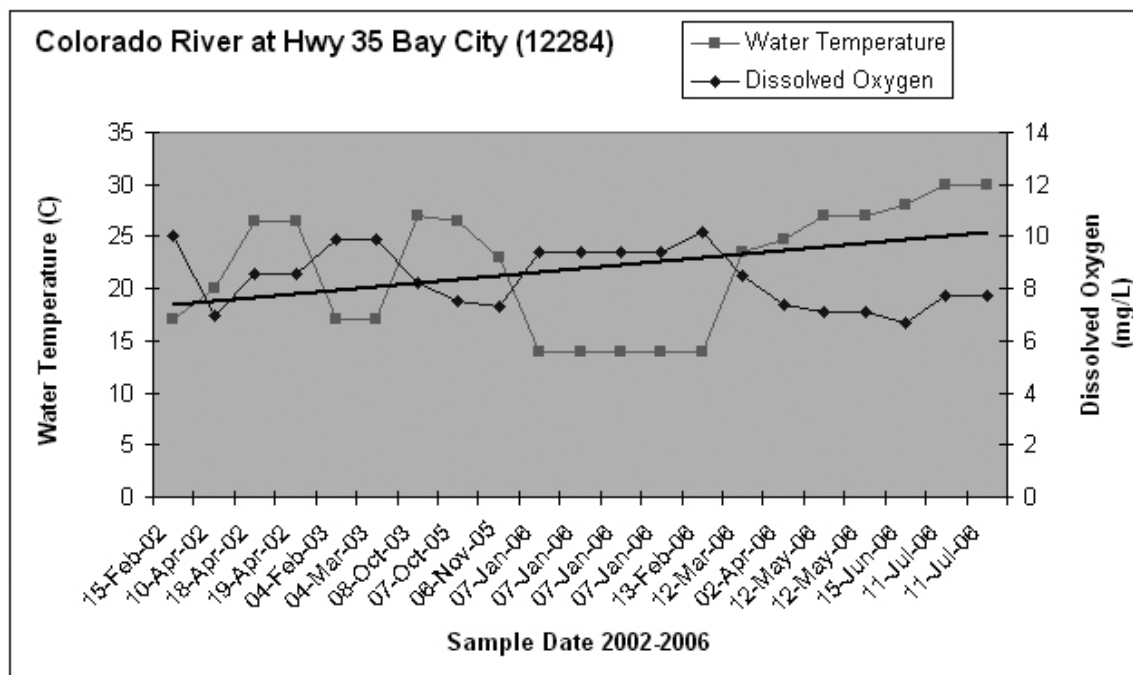
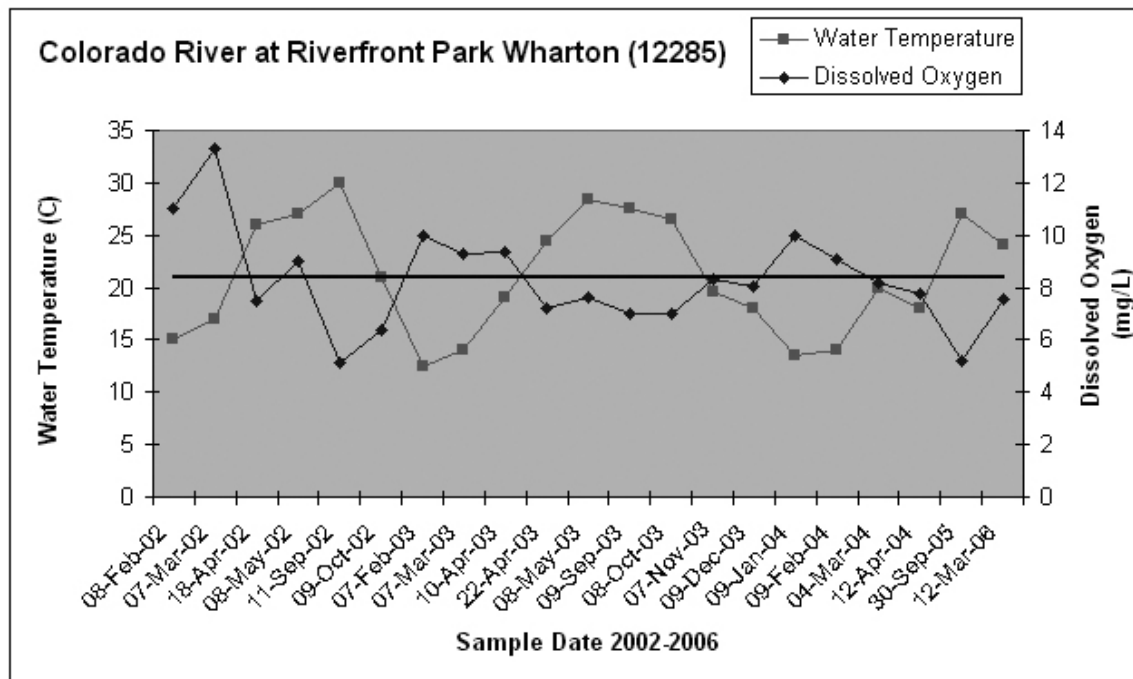
Dissolved Oxygen Exceedance (DO < 6.0 mg/L): 2 out of 21 = 9.52%

**Some data were not included in this report if certain documentation was incorrect or not available. This could include the errors in the calibration log; not meeting data quality objectives; or missing data.*

Colorado River at Highway 35 Site #12284

	N	% Complete	Mean	Min	Max
Sample Time (Central)	22	100	14:25	9:00	18:30
Total Depth (Meters)	21	95.45*	3.53	0.3	9.7
Specific Conductivity (S/cm)	12	57.14*	519.16	280	700
Air Temperature (°C)	22	100	22.5	16	32
Water Temperature (°C)	22	100	20.95	14	30
Dissolved Oxygen (mg/L)	22	100	8.05	6.7	10.2
pH (su)	21	95.45	7.04	7	8.4

Dissolved Oxygen Exceedance (DO < 6.0 mg/L): 0 out of 22 = 0%



(Continued from Page 6)

Data Summary

The site near Wharton had a mean pH of 7.92 su and a range of 7.0 to 8.8 su. Graphing the data shows a fairly steady slight fluctuation in pH that could be attributed to weather since the pH is lower in colder months and higher in warm. The site near Bay City had a mean of 7.04 su and a range of 7.0 to 8.4 su. The graph for pH at this site shows that pH levels from the start of the assessment in February 2002 through November 2005 were fluctuating and a little higher than later tests. After November 2005 all pH levels were tested at 7.0 su even. The lack of fluctuations later on in the study in pH could be due to the fact that almost all the tests were done around the same time. It could also be due to human error. The fact that pH is fairly steady for both sites is a good indicator that the river here is healthy and able to support a variety of aquatic life.

The hardest data set to get a clear picture from is for Specific Conductivity. The data for conductivity from the site near Wharton is only 76% complete, and the site near Bay City is 57% complete. Despite the missing information one can still make valuable inferences from the data. The conductivity for the site near Wharton has a mean of 570 S/cm and a range of 400 to 660 S/cm. The pattern seems to rise and fall fairly steadily. The site near Bay City has a mean of approximately 519 S/cm and a range from 280 to 700 S/cm. Since the conductivity data for this site is barely more than half complete, it is harder to make inferences from the graph. However, it does appear that the conductivity does follow a pattern of rises and falls like the site near Wharton, but with a wider range. The low of 280 S/cm could result from heavy rainfall and increases in flow in the area.

Water Temperature and Dissolved Oxygen (DO) have an inverse relationship as can be seen on the graphs. When water temperature rises, DO drops and when water temperature falls, DO rises. Water temperature follows a natural pattern for both of these sites, rising in summer and cooling down in winter. On the graphs for both sites, DO mirrors the pattern of water temperature. For the site near Wharton the mean for DO is 8.28 mg/L with a range of 5.2 to 13.3 mg/L. The site has a DO exceedance of below 6.0 (mg/L) for 2 out of 21 records, which is about a 9.5% occurrence. The two drops occurred in 2002 and 2005 in September. The drop below 6.0 mg/L may have been due to higher water temperatures that often occur during late summer in Texas. The trend line in the graph shows that the DO and water temperature for the site near Wharton have maintained fairly constant levels of DO and water temperature. The site near Bay City had a mean DO of 8.05 mg/L and a range of 6.7 to 10.2 mg/L. There were no instances of DO dropping below 6.0 mg/L. The trend line for the graph does show a steady rise in DO and water temperature between February 2002 and July 2006.

Overall, the data from both monitoring sites on the Colorado show the river to be in a good state. ●

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TMDL Update

(Continued from Page 2)

In July, the Pinchback-Moltz team conducted another Phase III training on the South Alamo Floodway in South Alamo, Texas for 12 Arroyo Colorado monitors who had completed their Phase I and IIs in either May or June.

Also in July, Texas Watch conducted a Texas Watch certification at the Teaching Environmental Sciences (TES) Course in Edinburg. This event targeted teachers in the Arroyo Colorado Watershed and resulted in 10 teachers receiving information about the Arroyo Colorado Partnership as well as Texas Watch resources for use in the classroom. Patty Gandy, from Hidalgo High School and an Arroyo Colorado monitor who attended the Phase I and II in May was certified by Julie Tuason as a Texas Watch trainer in conjunction with this workshop (see photo).

On September 22, Texas Watch hosted the Arroyo Colorado Watershed Protection Meeting, which was received enthusiastically by meeting coordinators and participants.

Petronila/Oso Bay/Oso Creek

In conjunction with the TES course at Texas A&M Corpus Christi, the program conducted an extended 3-day NPS education session with a concentration on bacteria. The field component included training on day one, applying the knowledge during an Oso Creek watershed tour the next day, and reading *E.coli* results on the third. This extended training was designed to support the need for additional outreach in TMDL Project Areas.

The Texas Watch Watershed Protection Meeting which was scheduled for August in Corpus Christi was rescheduled for November 10, 2007, with a focus on bacteria and solid waste in the Oso Bay, Oso Creek, and Petronila Creek watersheds. Texas Watch staff also toured one of the colonias in conjunction with the August planning session and confirmed that standing water in these communities may be a water quality concern that the program may want to address.

- Several partners helped to promote the meeting and identify speakers. The August meeting established key contacts for Texas Watch at the Coastal Bend Bays and Estuaries Program, the Coastal Bend Bays Foundation, and the Harte Research Institute for Gulf of Mexico Studies.



Patty Gandy demonstrates field testing techniques at the Edinburg main water supply canal during U.T. Pan American's "Teaching Environmental Science" course.

• Orange County

- The program conducted a Texas Watch training in July at Lamar University in Beaumont. Twelve teachers attended this training with two identified as teaching in Orange, Texas. Texas Watch staff stayed a second day to attend a field trip at Shangri La Botanical Gardens and Nature Center. In the afternoon, staff conducted an extended phase III training based upon teacher request.

- The loss of Shangri La as a training center this year due to previous hurricane damage and ongoing construction was a significant setback. Fortunately, Shangri La will be opening its doors in October, although only to education programs and not to the general public. This turn of events has resulted in two key workshops being scheduled in the fall.

- In planning for its fall Watershed Protection Meeting, the program anticipated that it would hold an event in

(Continued on Page 10)

TMDL Update

(Continued from Page 2)

partnership with the Orange Lions Club Fall Festival. This quarter the Lions Club Board informed Texas Watch that it would not be able to accommodate Texas Watch due to space limitations at the festival. In response to this, Texas Watch scheduled the meeting for November 10 at the West Orange Community Center. The meeting venue was split between West Orange and Shangri La. Shangri La hosted a bayou boat tour and additional speakers were invited to speak at the Shangri La education outposts. ●

Some Web Sites We've Noticed...

The Blue Planet Run Foundation - <http://blueplanetrun.org>

National Science Foundation: The Chemistry of Water
http://www.nsf.gov/news/special_reports/water/index.jsp

Water Partners International - <http://www.water.org/>

"Dos Laredos" Welcomes New Project Coordinator

The sister border cities of Laredo, Texas, and Nuevo Laredo, Tamaulipas, Mexico, along with the Texas Watch program, welcome Selina Figueroa to their Watershed Monitoring Volunteer Program.

Selina is a biology student at Texas A&M International University, and is currently employed with the City of Laredo as the coordinator for "Dos Laredos: Integrating Monitoring, Watershed Education, and Litter Cleanup," a U.S. Environmental Protection Agency Border 2012 grant-funded project. ●



Selina Figueroa

Texas Watch Joins EPA in Student Forum

by Amadee Madril, EPA Region 6



Students at Austin High School in Houston participate in an EnviroScape watershed model demonstration as Miguel Flores (center), director of EPA's Water Quality Protection Division, looks on.

In support of Houston Independent School District's efforts to create a "college-bound culture" in its schools, the U.S. Environmental Protection Agency, National Aeronautics and Space Administration, U.S. Department of Health and Human Services, City of Houston Department of Health, Houston Health Museum, Texas Watch, and M.D. Anderson Cancer Center, hosted a Student Day Forum for 220 students attending Stephen F. Austin and Charles H. Milby high schools, both of which have predominantly Hispanic student populations.

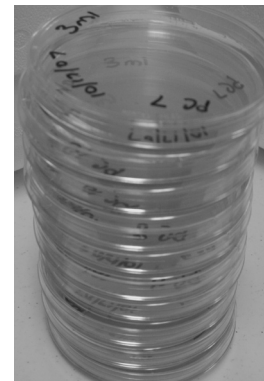
The forum consisted of seven speakers who talked to the students about their walk into their present profession, their education, the need for future scientists and engineers and reiterated the importance of setting goals and pursuing them for their successful future. The speakers were followed by interactive activities, including Texas Watch's demonstration of the EnviroScape watershed model, which went extremely well with much interest and questions from the students.

The hard work and planning from all involved in such a successful event was rewarded by outstanding feedback from students, schools and participants. The culmination of this project will be a guide that can be utilized by other school districts for planning similar events. ●



World Water Monitoring Day / Common Experience – San Marcos River Bacteria Survey

by Julie Tuason, Texas Watch



On October 17-18, 2007, Texas Watch conducted a bacteria survey of the San Marcos River and several of its tributaries. The event drew student volunteers from Texas State University-San Marcos as part of the Common Experience program, apropos of this year's theme, "The Water Planet: A River Runs Through Us."

Activities centered around Texas Watch's *E. coli* testing method and helped to instill a better understand of nonpoint source pollution and its contributing factors.

The event was sponsored by Texas Watch, the River Systems Institute, the Texas Commission on Environmental Quality, and the U.S. Environmental Protection Agency, with additional support from the San Marcos River Foundation, City of San Marcos Water and Wastewater Utilities, CH2M Hill-OMI, Texas State's Common Experience Program and Outdoor Recreation Program, and TG's Canoe Livery. ●



Congratulations to Our New Water Quality Monitors!

Gary Aalen
Brittney Abbott
Robert Archer
Ludivina Avila
Diann Ballesterus
Carolyn Barnes
Erin Bieberbach
Lorraine Bonsall
Heather Burbrink
Luis Canales
Andres Cardenos
Cindy Carillo
Calvester Carter
Frances Casteel
Alyssa Chapa
Ethan Chappell
Jessica Chih
Christina Chonka
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