

THE WATER MONITOR

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Texas Commission on Environmental Quality-Water Quality Planning Division

TCEQ's New Office of Water

By *TCEQ Media Relations*

The TCEQ recently announced the formation of a new Office of Water, effective December 1st, 2009. The new office encompasses the three existing major water divisions in the agency: Water Planning, Water Supply, and Water Quality.

L'Oreal Stepney will serve as deputy director of the new Office of Water. She has served with the TCEQ and predecessor agencies since 1992 in air permitting and wastewater permitting, as Water Quality Division director, and most recently as assistant deputy director for the Office of Permitting and Registration. She holds a master's degree in Environmental Engineering from the University of Texas.

"The new office is in recognition of the fact that the state's population is expected to double in the next 30 years, so the agency must put even more focus on water issues to ensure that there will be adequate water quality and quantity for future demand," said Chairman Bryan W. Shaw, Ph.D.

"Over the past several years, much of the state experienced a fierce drought," said Commissioner and

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former Rio Grande Watermaster Carlos Rubinstein. "Our agency's response to the people and communities that suffered from this event was extraordinary, and this new Office of Water will ensure that we provide an even higher and more focused level of response." "Water planning, water supply, and water quality are all issues that are important to the future of our state," said Commissioner Buddy Garcia. "This is an important step in our reorganization." ***The Office of Water is already up and running, with many important initiatives to watch in the near future.***

Updates from the SWQM Program

By *Andrew Sullivan, TCEQ, SWQM Program Team Leader*

In the past year my experience of overseeing the SWQM program has provided both challenges and rewards. I have been fortunate to be able to work with a team which possesses a level of experience and knowledge about Texas water quality that is surpassed by none. Much of this is the result of long standing relationships with TCEQ regional staff and partner agencies that have provided a basis for the success of the entire program. The coordination of monitoring efforts with the regional staff and the Clean Rivers Program has allowed for detailed assessments of site specific monitoring priorities and first hand knowledge of conditions within individual river basins.

The development of the 2010 Integrated Report has provided many challenges along the way. The ability and dedication of the team to work together and apply advanced tools to develop the assessment has certainly provided efficiencies that have allowed the process to move forward with minimal delays. We have been provided with additional resources to increase our capabilities with data management and GIS tasks. Although we are finishing the actual assessment work, there is still much that will need to be done to finalize the draft in addressing comments and revising assessments. The efforts conducted for the National

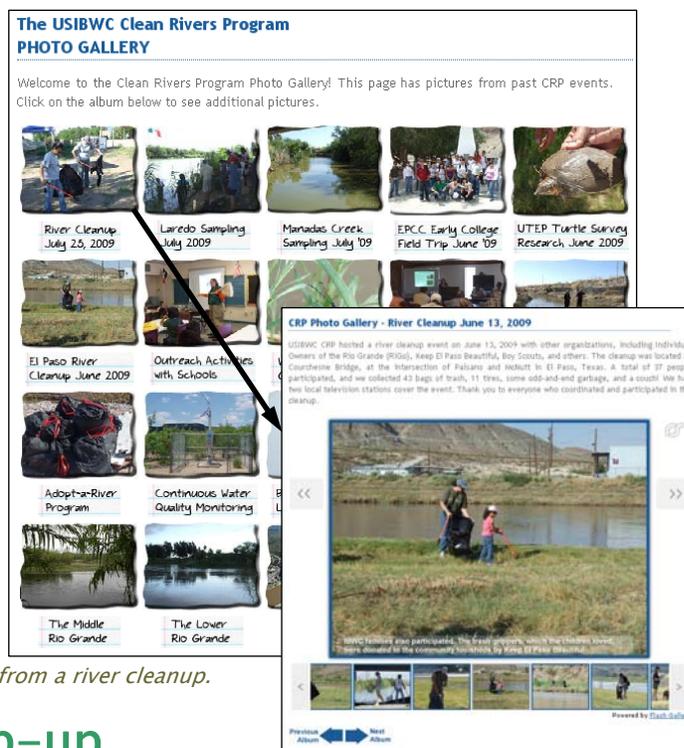
Updates from the SWQM Program continued on page 4

US IBWC CRP Photo Gallery

By *Elizabeth Verdecchia, USIBWC CRP*

The US International Boundary and Water Commission (USIBWC) administers the largest Clean Rivers Program (CRP) watershed in Texas—the Rio Grande Basin—covering about 60,000 square miles in Texas alone. Because of the size of the basin, effective communication via the program website is extremely important. The USIBWC CRP has launched a photo gallery to document activities and improve outreach and river education. So far, 20 photo albums allow the public to share experiences with water quality monitoring, wildlife, outreach activities, and various parts of the basin. You can visit the photo gallery at www.ibwc.gov/CRP/gallery.htm.

The USIBWC CRP Photo Gallery page and example photo from a river cleanup.



Annual SWQM Workshop Wrap-up

By *Anne Roger, SWQM Team, TCEQ*

The twenty-third annual SWQM Workshop was held October 26–29, at the Canyon of the Eagles Lodge at Lake Buchanan, Texas. The workshop was another success according to the majority of evaluations. Highlights this year included a new and improved SWQM Challenge course that provided hands-on and challenging stations including “What’s Wrong with This Boat?,” a Coordinated Monitoring Schedule station devoted to navigating the web site to answer detailed questions about planning monitoring; and a station on limnological concepts and terms. There was also a fun game show-type session for audience members to test their knowledge of surface water issues.



Meeting participants at the “What’s Wrong With This Boat?” station during the SWQM Challenge.

At the risk of sounding like the workshop was all fun and games, there were also several excellent speakers who gave scientific presentations on a variety of topics, including:

- The state of the drought in Texas
- An update on the recent expansion of the zebra mussel into Texas
- A case study of a Texas Stream Team project using an intensive survey to help solve water quality problems on Gilleland Creek
- An overview of efforts to sustain spring flow in Jacob’s Well near Wimberley



Meeting participants soaking up knowledge during one of the scientific presentations.

Annual SWQM Workshop continued on page 5

Oso Bay Cleanup

By Rocky Freund, Nueces River Authority

On November 6, 2009 the TCEQ Region 14 Office and the Coastal Bend Council of Governments sponsored a cleanup of Oso Bay at the South Padre Island Drive (SH 358) turn around in Corpus Christi. TCEQ Region employees, along with volunteers from the Nueces River Authority, Texas General Land Office, National Park Service, Coastal Bend Bays and Estuaries Program (CBBEP), Coastal Bend Bays Foundation, and the Center for Water Supply Studies at Texas A&M University – Corpus Christi, participated in the cleanup.



Susan Clewis (background) and Travis Prater removing trash collected from Oso Bay.



Roger Bennett collecting from Oso Bay.

During the event, thirty-eight (38) volunteers removed 4,860 pounds (2.43 tons) of debris and 59 tires in a three hour period. Debris consisted of paper, plastic, glass, Styrofoam, fishing line, construction/ demolition debris, mattresses, and televisions.



Kelly Ruble (foreground) and Sonny Lopez handling the larger trash items collected from Oso Bay.

[Oso Bay Cleanup continued on page 3](#)

Oso Bay Water Quality

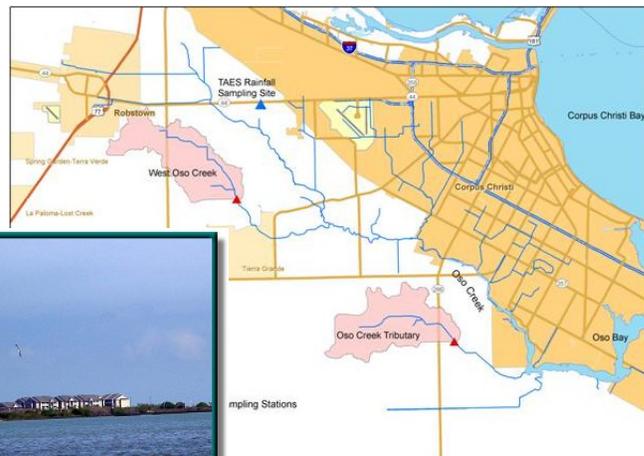
Source: TCEQ TMDL & TSSWCB NPS

Oso Bay is an enclosed, shallow body of water situated along the southern shore of Corpus Christi Bay, with a surface area of approximately seven square miles. The bay exchanges saltwater with Corpus Christi Bay and receives fresh water from Oso Creek, a stream whose flow is dominated by discharges subject to permit. Ecologically, Oso Bay provides habitat for many plants and animals, and plays an influential role in water purification and storm protection.

Water quality testing found elevated concentrations of bacteria in both the bay and the creek, which may pose a risk to people who swim or wade in them. Swimming and wading are called “contact recreation” in the state’s standards for water quality; the term refers to all recreation in which people come in direct contact with the water.

[Oso Bay Water Quality continued on page 4](#)

Water quality testing also found dissolved oxygen concentrations that are sometimes lower than the criterion established to assure a healthy aquatic ecosystem.



Updates from the SWQM Program from page 1

Rivers and Streams Assessment during the summer of 2009 exemplified the capabilities of the SWQM program to conduct logistically complex monitoring projects in remote areas.

This effort required coordination at all levels to accomplish the goals over the past two years. The contributions of regional sampling entities as well as other state agencies allowed for the program to meet the sampling commitments for the national effort. Throughout the past year we have instituted several changes that will improve the way we monitor water quality and conduct assessments. We have limited the number of new continuous monitoring deployments and initiated evaluations of existing sites. We anticipate that this will allow us to evaluate the value of each site and ensure the maximum quality and utility of the data

Oso Bay Water Quality continued from page 3

Both the TCEQ TMDL Program and the TSSWCB have projects to evaluate water quality issues in Oso Creek and Oso Bay. Detailed project information is available online.

Oso Bay and Oso Creek: A TMDL Project for Bacteria
<<http://www.tceq.state.tx.us/implementation/water/tmdl/67-osobaybacteria.html>>

<<http://www.tceq.state.tx.us/assets/public/implementation/water/tmdl/67osobaybacteria/67-osobaybacteria.pdf>>

Oso Bay and the Laguna Madre: Assessing the Aquatic Life Use

<<http://www.tceq.state.tx.us/implementation/water/tmdl/24-osobayoxygen.html>>

<<http://www.tceq.state.tx.us/assets/public/implementation/water/tmdl/24osolagunado/24-osobay.pdf>>

Assessment of Nonpoint Source Pollution from Cropland in the Oso Bay Watershed

<<http://www.tsswcb.state.tx.us/es/managementprogram/osoll>>



collected at each site. We will be providing recommendations on how to improve the overall network and increase the chances of using the resource to its fullest capacity.

For 2010 we will be working on several priorities for improving our monitoring and assessment capabilities.

- Completing the 2010 Draft Assessment
- Initiating the National Coastal Assessment
- Evaluating and Enhancing of the CWQM Network
- Developing GIS and Database Tools

I look forward to the challenges to come in addressing these tasks. I have confidence in the capabilities of the SWQM Team, the TCEQ Regional SWQM staff, and our partners to be able to address these tasks and meet the overall goals for the program.

Oso Bay Cleanup continued from page 3

The City of Corpus Christi Solid Waste Department donated the trash containers and waived the tipping fee for disposal of the waste at the landfill. In addition to all of the debris and tires removed, a young stray cat was found at the cleanup site. The cat was rescued by TCEQ Corpus Christi Region Investigator Stephanie Zaruba. According to Stephanie, the cat has adjusted very well to his new home and is already spoiled. The cat's name is Oso. The cleanup event is just one of several activities that are taking place to protect the Oso Watershed. The TCEQ Region office plans to make this a semi-annual event.



Matthew Nerren, Melissa Macias, Phyllis Cunningham, Isis Gain, Barbara Beynon, and Susan Clewis (foreground) removing trash collected from the shore of Oso Bay.

SWQM Workshop continued from page 2

The evening session on “Getting the Most from Excel” was also a big hit and many folks came away with a much better understanding of how to use this valuable software. Quality assurance and data management were also a focus in both the Monday SWQM session and the main sessions the following days. In all, 111 participants attended the workshop. The evaluations received indicated an overwhelming preference for keeping the workshop going every year rather than biannually. There was also some preference toward shortening the workshop to two full days rather than extending it for three days.

As always, there were great networking opportunities, in-depth conversations about projects around the state in the café lines, and a genuine feeling of camaraderie among the various entities collecting water quality data for the State. For those unable to attend the workshop this year, copies of all presentations will be placed on the SWQM Web page soon. If you have ideas for next year’s workshop please forward them to Anne Rogers, at [<anrogers@tceq.state.tx.us>](mailto:anrogers@tceq.state.tx.us); 512-239-4597.



A rare moment captured by Art Crowe as a female tarantula hawk wasp carries off her prey.

The sting is among the most painful in the insect world, near the top of the Schmidt Sting Pain Index. The sting has been described (by humans) as being immediate, an excruciating pain that simply shuts down one’s ability to do anything, expect perhaps scream. The tarantula hawk is the state insect of New Mexico.

(Source: http://en.wikipedia.org/wiki/Tarantula_hawk)

The Circle of Life

By Art Crowe, TCEQ Region 5, Tyler

During the annual SWQM training at The Canyon of the Eagles a few people got to observe “The Circle of Life” in action. For those that didn’t, here’s a picture of a tarantula hawk carrying off its prey to an underground burrow where it will lay a single egg. The tarantula will remain alive at least until the larvae grows to a size where it plunges into the spider’s body and begins to feed voraciously. The larva tries to avoid vital organs so as to keep the spider fresh for as long as possible. The tarantula hawk can reach approximately 50 mm in length and has a stinger that can be up to 7 mm long.

Master Plan for the Oso Bay Watershed

By Rocky Freund, Nueces River Authority

In 2004 a stakeholder group was formed to develop a master plan for trails, parks, and a greenbelt along Oso Creek and around Oso Bay. The impetus behind the formation of the group was twofold: development and water quality. With grants and guidance from the National Park Service National Rivers, Trails, and Conservation Assistance Program, the plan, in the form of a generalized map, has been completed. The goals of the plan are to (1) protect the natural resources and improve water quality and (2) provide increased and improved recreational opportunities. Much of the farmland along the creek and bay is

being sold and platted for development. Many of these plans include development right down to the water, leaving little to no riparian buffer. In addition, Oso Creek and Oso Bay are on the State’s 303(d) list of impaired water bodies for bacteria for contact recreation. Oso Bay is also on the list for low dissolved oxygen for aquatic life use. There are ongoing TMDLs for both of these impairments.

Many studies, some completed and some ongoing, have been conducted to try and determine the source of the impairments. Instead of waiting for all the study results and targeting specific possible causes



Oso Creek



Master Plan continued on page 7

Should You Test for Chlorine Residual in the Field?

By Todd Running, Clean Rivers Program Manager, H-GAC

The Houston-Galveston Area Council (H-GAC) and our professional ambient water monitoring agency partners did not consider chlorine to play a significant role in the bacteria levels of regional water bodies. TCEQ's current procedure does not require testing for chlorine presence in the field; however NELAC accredited labs are required to test for residual chlorine prior to bacteria analysis. Over the past eighteen months, two events have raised some red flags, causing us to consider including testing for the presence/absence of chlorine as part of our standard bacteria monitoring in the field.

The first event was during the summer of 2008, when a volunteer water monitor with the Texas Stream Team noticed aquatic life had disappeared at his monitoring station. Thanks to his diligence, a Houston representative from the TCEQ investigated and discovered that excessive amounts of chlorine were being discharged by two wastewater treatment plants less than a mile from his monitoring site (see the Summer 2009 Issue).

Bacteria sample bottles used by local partners include a sodium thiosulfate tablet to remove chlorine from individual samples. According to the manufacturer, the tablets should remove up to 10 parts per million in samples, so in most cases that's sufficient to remove any residual chlorine from the samples. If the sample to be analyzed for bacteria arrives at the lab with a chlorine residual, then the sample will not be analyzed. In those few cases when residual chlorine remains, there's a real problem with the amount of chlorine in the water.

The second event was this year, when H-GAC's Bacteria Implementation Group (BIG) began a mapping project to identify water bodies in the region designated as impaired on the TCEQ 303(d) list. Using the corresponding 305b report, delineating all of the stream segments and sub-segments, we discovered an anomaly.

One sub-segment of a stream was not designated as impaired for bacteria, while the adjacent sub-segments, both upstream and downstream, are considered impaired. It is unlikely that this single sub-segment is actually not impaired, and further investigation is needed to determine the cause of the discrepancy. However, we speculate residual chlorine is to blame because a small wastewater treatment plant discharge site is approximately 100 feet from one of the monitoring stations. Since this inconsistency was found during the initial project mapping efforts, this evaluation has not been extended to other areas of the region, but it will be.

Some field staff may not use the sodium thiosulfate tablets if they believe chlorine will not be present, as in rural sites. In the ever changing landscape, chlorine may be found in unlikely areas. A simple presence/absence test for chlorine would quickly indicate the need for the addition of sodium thiosulfate, and would help minimize data loss at the lab because of the presence of chlorine.

These events highlighted the need to communicate with the field staff frequently about changes in their monitoring sites, and to evaluate lab notes about data loss because of chlorine residual detected at the lab. The presence of unknown and excessive chlorine sources, has led us to consider testing for the presence of residual chlorine to our standard sampling in the field. We extend our concern for residual chlorine testing to other monitoring agencies across the state and ask you to ask yourselves if you are getting the true picture. Are you addressing problems with chlorine in your basins by testing for residual presence in your bacteria samples? And have you done your due diligence by reviewing your data for areas that are not designated as impaired to ensure chlorine is not affecting your results?



Some things are timeless...

"When the well's dry, we know the worth of water."

— Benjamin Franklin, (1706–1790), *Poor Richard's Almanac*.

Oso Creek Watershed Master Plan continued from page 5

identified in the studies, the stakeholder group elected to develop a brochure to promote the need for protection of the entire watershed. The brochure addresses the HEART of the Oso: **H**₂**O**, **E**nvironment, **A**griculture, **R**ecreation, and **T**ourism. The goal is to promote stewardship and personal responsibility of the community. With input from the stakeholder group, the Corpus Christi Metropolitan Planning Organization donated their resources for the brochure design and CBBEP paid for the printing of 20,000 copies. The brochures will be distributed during special events such as Earth Day/Bay Day.

Additional activities include land purchases by the City of Corpus Christi and CBBEP for conservation easements and parks. In October 2009, the City of Corpus Christi held a groundbreaking for the Oso Bay Learning Center and Wetland Preserve. The stakeholder group is very optimistic that Oso Creek and Oso Bay will begin to see improvements as these and future projects are implemented.



*Top: Sunset over Oso Bay
Bottom: A heron rests along the shore of Oso Bay at the 72 acre Suter Wildlife Refuge*

Addressing Bacteria Issues on the Rio Grande

By *Elizabeth Verdecchia, USIBWC CRP*

Segment 2302_01 is a 20-mile meandering section of the Rio Grande near Brownsville, Texas, where *E. coli* bacteria levels exceed both the single sample and geometric mean (geomean) water quality standards for the segment. Although this segment has been listed as impaired since 1996, the binational nature of the river creates challenges in implementing either a TMDL or a watershed protection plan. TCEQ and EPA are collaborating with local, state, and federal entities in both the U.S. and Mexico in a unique binational watershed approach, focusing on the Lower Rio Grande as a pilot project. The University of Texas at Brownsville and the U.S. Section, International Boundary and Water Commission's Clean Rivers Program (USIBWC CRP) will conduct a special study this coming fiscal year to understand the bacteria contamination in this small section of the river.

This special study will accomplish two goals: a) evaluate and identify possible sources of bacteria contamination, and b) characterize the bacteria contamination. The information and data collected from the special study will provide the information necessary to begin steps to reduce pollutant loads and ultimately delist the impairment.

Monitoring will include several boat trips during which the field crew will collect bacteria samples every half-mile as well as conduct a spatial and observational survey of point sources and river characteristics. This study is the first phase in understanding and characterizing the cause and source of the bacteria contamination. The data collected from this study will in turn assist the binational efforts to address complex contamination issues on an internationally shared water body.

This highly publicized study received an array of media attention during the planning phase. Brownsville's Channel 5 news highlighted the story on the evening broadcast in mid-October of 2008 and further reporting continued, including coverage at USIBWC CRP's Basin Advisory meeting for the Lower Rio Grande in the summer of 2009. Additionally, the study made front page news in various papers in the Lower Rio Grande Valley, including the Brownsville Herald, the Monitor, the Rio Hondo News, the La Feria News, and the Los Fresnos News.



Critter of the Quarter Paddlefish (*Polyodon spathula*)

Paddlefish are the oldest surviving animal species in North America. Fossil records indicate that they are older than dinosaurs (300 million years). Females may spawn only once every four to seven years. The State of Texas has protected the paddlefish since 1977 and it is listed as a threatened species. It is unlawful to catch, kill or harm paddlefish in Texas.

Paddlefish face a number of problems in Texas. They need large amounts of flowing water in order to reproduce. The construction of dams and reservoirs on Texas rivers has decreased flow and interrupted spawning. Paddlefish like to live in slow moving water of large rivers or reservoirs, usually in water deeper than four feet.



Illustrations © TPWD

Historically in Texas, paddlefish lived in the Sulphur River, Big Cypress Bayou, Sabine River, Neches River, Angelina River, Trinity River, San Jacinto River, and tributaries of the Red River.

Paddlefish grow to over seven feet long and weigh up to 200 pounds, but most are usually between 10–15 pounds. Paddlefish have a gray, shark-like body with a deeply forked tail, and a long, flat blade-like snout that makes up about one third of its body length. Paddlefish resemble sharks not only by shape, but by their skeletons as well. Paddlefish, like sharks, have skeletons made of cartilage, not bone. Paddlefish have no scales.

Paddlefish have no teeth and eat by swimming through the water with their mouths held wide open, scooping up plankton that are filtered by their gill rakers.

Details on the paddlefish can be found on the Texas Parks and Wildlife web site at

<http://www.tpwd.state.tx.us/huntwild/wild/species/pad/>

Environmental Toxicology and Chemistry— Volume 28 Issue 12 (December 2009)

This is a special issue with open access to articles on Pharmaceuticals and Personal Care Products. Examples of articles in this issue include,

–*Pharmaceuticals and Personal Care Products: Research Needs for the Next Decade*

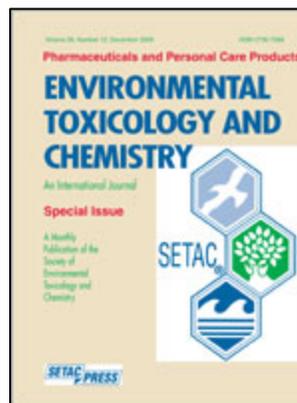
–*Pharmaceutical Metabolites in the Environment: Analytical Challenges and Ecological Risks*

–*Chemicals from the Practice of Healthcare: Challenges and Unknowns Posed by Residues in the Environment*

–*Occurrence of Pharmaceuticals and Personal Care Products in Fish: Results of a National Pilot Study in the United States*

To access these and other articles related to Pharmaceuticals and Personal Care Products go to,

<http://www.setacjournals.org/perlserv/?request=index-html>



To sign-up for automatic notification of when new issues of the “The Water Monitor” online newsletter are posted, go to <www.tceq.state.tx.us>, click on the “sign up for e-mail updates” icon and follow the instructions.

Previous issues are also available on the web at,

<http://www.tceq.state.tx.us/compliance/monitoring/water/newsletter.html>

EPA Releases First-Ever Baseline Study of U.S. Lakes

The U.S. Environmental Protection Agency (EPA) released its most comprehensive study of the nation's lakes to date. The draft report, which rated the condition of 56 percent of the lakes in the United States as good and the remainder as fair or poor, marked the first time EPA and its partners used a nationally consistent approach to survey the ecological and water quality of lakes. A total of 1,028 lakes were randomly sampled during 2007 by states, tribes and EPA.

The National Lakes Assessment (NLA) reveals that the remaining lakes are in fair or poor condition. Degraded lakeshore habitat, rated "poor" in 36 percent of lakes, was the most significant of the problems assessed. Removal of trees and shrubs and construction of docks, marinas, homes and other structures along shorelines all contribute to degraded lakeshore habitat.

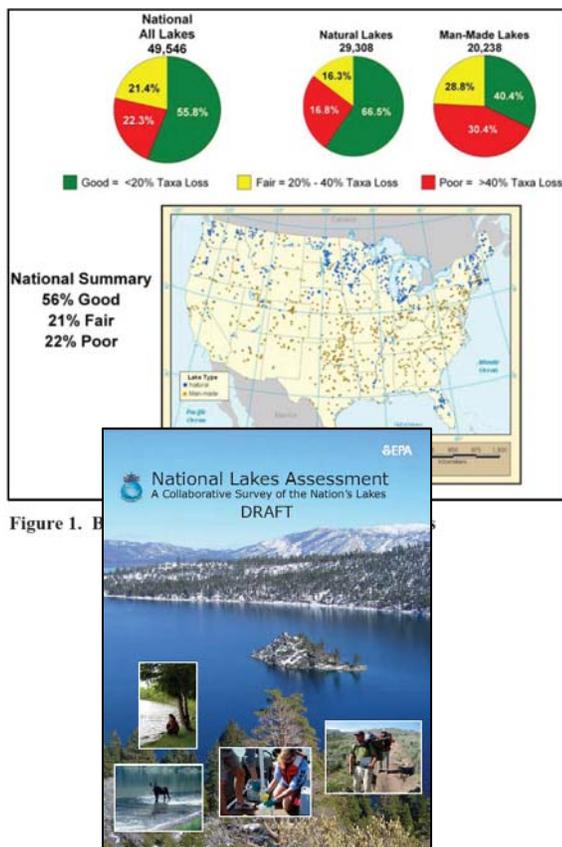


Figure 1. B

The draft report is located online at <http://www.epa.gov/lakessurvey>

Nitrogen and phosphorous are found at high levels in 20 percent of lakes. Excess levels of these nutrients contribute to algal blooms, weed growth, reduced water clarity, and other lake problems. EPA is very concerned about the adverse impacts of nutrients on aquatic life, drinking water and recreation. The agency will continue to work with states to address water quality issues through effective nutrient management. The results of this study describe the target population of the nation's lakes as a whole and are not applicable to a particular lake.

The survey included a comparison to a subset of lakes with wastewater impacts that were sampled in the 1970s. It finds that 75 percent show either improvements or no change in phosphorus levels. This suggests that the nation's investments in wastewater treatment and other pollution control activities are working despite population increases across the country.

Texas collected data at a total of 54 sites during the NLA in order to complete a statewide probabilistic assessment of state water bodies. Evaluation of this dataset is underway.

For additional information contact Bill Harrison at bharris@tceq.state.tx.us or Anne Rogers at anrogers@tceq.state.tx.us



Left to right, Pat Bohannon and Bill Harrison filtering a bacteria sample in the field at Lake Coleman.

Photo Gallery



Dave Cowan from LCRA explains the task to be completed at the Coordinated Monitoring Schedule station.



Rob Cook, TCEQ DFW, had to be creative at his Secchi Disk station with no water in Lake Buchanan.

Surface Water Quality Monitoring Challenge 2009



Robbie Ozment, TCEQ Waco, leads his team through the Mussel Identification station.



The effects of extended drought left Lake Buchanan and the SWQM Challenge high and dry. Photos by Billy Miller, LCRA. A gallery of Lake Buchanan drought photos can be seen online at <http://www.lcra.org/newsletter/currents/droughtissue/drought_update_7_2009.htm>



Photo on left; Michele Blair (TCEQ) waits for the next group at the sediment station. Photo on right from left to right: Tabitha Kirkland (TCEQ), Todd Running (H-GAC), and Jean Wright (H-GAC) tackle the sediment station.