

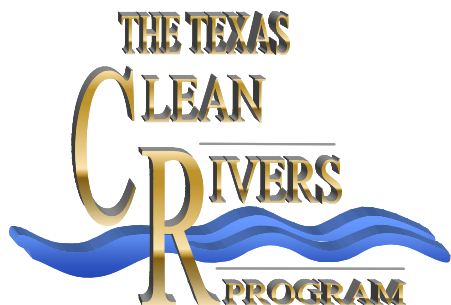
2009

BASIN HIGHLIGHTS REPORT



Lower Neches Valley Authority

Lower Neches River Basin
Neches-Trinity Coastal Basin



Prepared in cooperation with the
Texas Commission on Environmental Quality
under the authorization of the
Texas Clean Rivers Act

Lower Neches Basin Highlights

Continuous Water Quality Monitoring Station on Pine Island Bayou

The Continuous Water Quality Monitoring (CWOM) station on Pine Island Bayou was installed by the TCEQ on June 10, 2008. The CWOM station (CAMS 749) is operated and maintained by the Lower Neches Valley Authority (LNVA). It is located at the



The Pine Island Bayou CWOMN Station (CAMS 749) became operational on June 11, 2008. LNVA proposed the station in 2006 and is responsible for maintaining the station.

This data is accessible 24-hours a day on the TCEQ website at the following web address: http://www.tceq.state.tx.us/cgi-bin/compliance/monops/water_site_photo.pl?cams=749

TCEQ Metals in Water Analysis

A special study to address a significant data gap for metals in water in the Neches River basin was initiated in January 2008. LNVA is collecting total and dissolved metals samples at 13 routine stations on a quarterly basis using sampling kits provided by the TCEQ. The samples are shipped to the TCEQ Houston Laboratory for analysis. This special project was developed by CRP and the Surface Water Quality Monitoring (SWQM) Program upon removal of the dissolved metals in water data used in the draft 2006 305(b) Assessment Report. Preliminary results indicate a significant decrease in the dissolved aluminum values at all monitoring stations (see graph on page 3).

LNVA Pump Station on Pine Island Bayou just upstream of the Hwy. 69 bridge crossing. This location provides a secure area with an existing structure that provides easy access to all of the monitoring and communication equipment needed for the CWOM station.

The real-time data is collected using YSI 6600 multi-probe sondes equipped with Depth, pH, Temperature, Dissolved Oxygen, Conductivity, and Turbidity sensors.

Laboratory Accreditation (NELAP)

LNVA's Environmental Laboratory received primary NELAP accreditation from the TCEQ on July 30, 2008. The laboratory's on-site assessment was completed in April 2008. A significant amount of time and resources were devoted to achieving this accreditation.

The National Environmental Laboratory Accreditation Program (NELAP) was adopted by the TCEQ to accredit all laboratories in Texas. The accreditation process includes developing Standard Operating Procedures for all laboratory functions, documenting all aspects of the laboratory operation in a QA Manual, and satisfactorily completing two proficiency testing (PT) studies per year.

Hurricane Ike hits Southeast Texas

The second major hurricane since 2005 to devastate Southeast Texas and the Neches River basin occurred on September 13, 2008. Hurricane Ike made landfall at Galveston Island as a Category 2 hurricane with winds of 110 mph. Ike was the fifth hurricane of the 2008 season, and it was the third most destructive hurricane to ever make landfall in the United States. In the U.S., 112 people were killed, and 34 are still reported missing. Damages from Ike in US coastal and inland areas are estimated at \$24 billion making it the third costliest U.S. hurricane of all time.

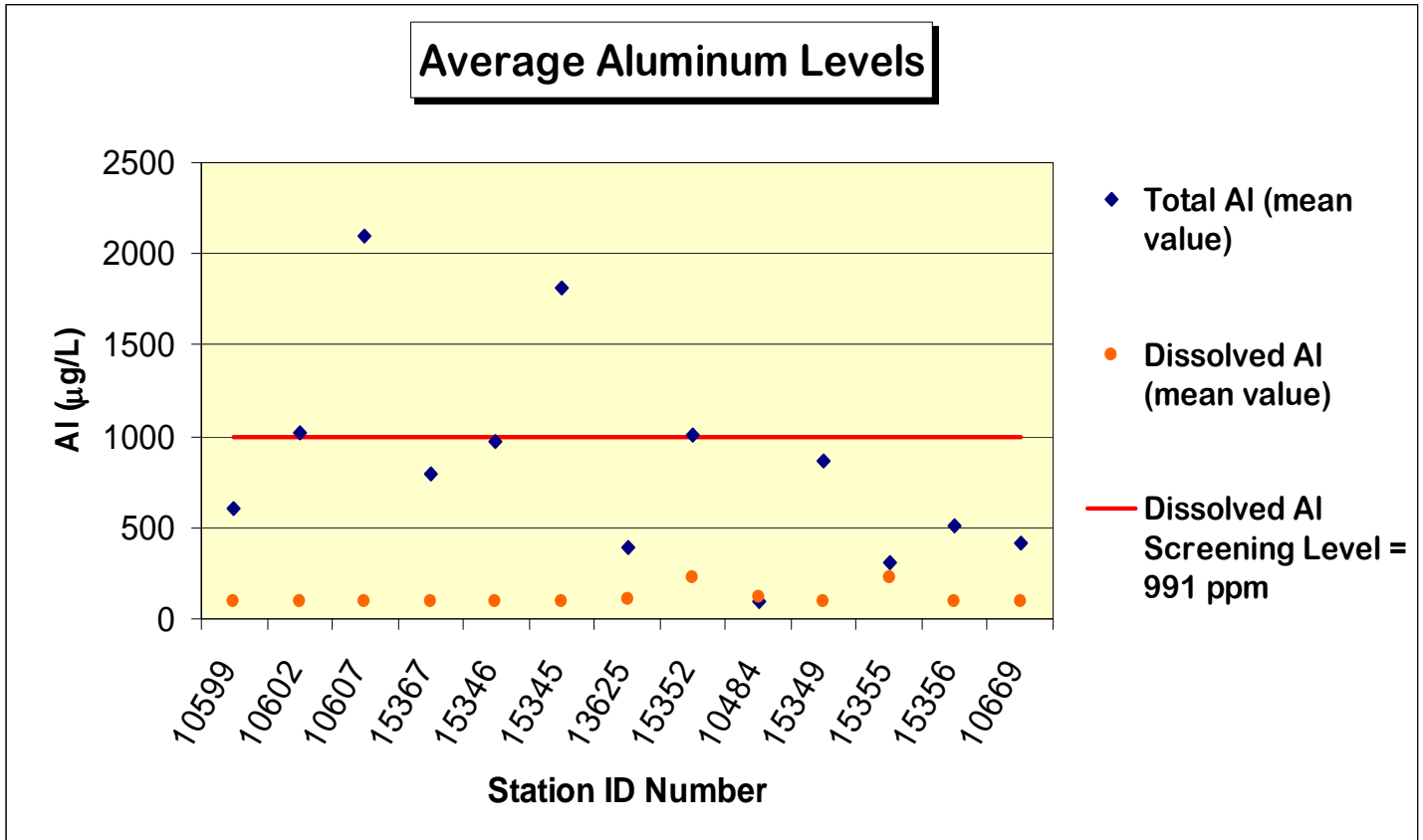
In the lower Neches River and Neches-Trinity Coastal Basins, the impacts from the hurricane were severe. A storm surge exceeding 12 feet was recorded at Sabine Pass North. The levee system in Port Arthur protected the city, but many areas outside of the levees were flooded. In Beaumont, flooding along the Neches River was severe, and the wind damage was moderate compared to



Hurricane Ike made landfall at the upper Texas coast on Sept. 13, 2008 causing widespread damage to southeast Texas.

(Continued on page 3)

Lower Neches Basin Highlights



Aluminum data was collected by LNVA using TCEQ metals kits from Jan. to Aug. 2008. Mean values include three quarterly datasets.

(Continued from page 2)

Hurricane Rita. The storm surge inundated a large industrial complex in Beaumont, shutting down refineries and chemical plants. The LNVA North Regional Treatment Plant located in the middle of this industrial complex was severely damaged by the flood waters.

The immediate impacts to water quality in the basin were due to saltwater intrusion from the storm surge and the oil spills and hazardous materials washed into waterways by flooding. The saltwater intrusion threatened freshwater intakes on the Neches River and flooded freshwater lakes and wetlands. Flooded acreage along the coast and near inland waterways suffered saltwater “burn” top-killing grasses and other plants. Low dissolved oxygen levels persisted for weeks in many waterbodies, including Pine Island Bayou. The new CWQM station on Pine Island recorded anoxic conditions from Sept. 19th to Oct. 16th. Dead fish were observed in the bayou and the oxygen depleted “black water” that is often left behind after a major flood event or hurricane due to the decaying organic matter was apparent in the bayou.



The Rollover Pass bridge on Hwy. 87 was severely damaged by Hurricane Ike’s storm surge estimated at 12 to 16 feet on the Bolivar Peninsula in Southeast Texas.

Water Quality Monitoring Programs

LNVA FY 2009 Monitoring Program

LNVA's current FY 2009 monitoring schedule includes 30 routine stations which provide adequate coverage in the basin (see maps on pgs. 6-7). The data is collected on a quarterly basis and it is used to identify long-term trends and assess the overall water quality conditions in the basin.

A special project to collect metals in water at 13 routine stations began in Jan. 2008. Clean metals sampling kits are provided by the TCEQ Houston Laboratory and the samples are shipped to this laboratory for total and dissolved metals analysis.

The following stations are included in this special project:

- Station 10484: Sandy Creek at FM 777
- Station 10599: Pine Island Bayou at LNVA Lower Pump Station
- Station 10602: Pine Island Bayou at US 69/96/287
- Station 10607: Pine Island Bayou at Old Sour Lake Road
- Station 15367: Pine Island Bayou at FM 770/SH 105
- Station 15346: Little Pine Island Bayou at FM 326
- Station 15345: Willow Creek
- Station 13625: Village Creek at FM 418
- Station 15355: Beech Creek at FM 1943
- Station 15352: Cypress Creek at US 69/287
- Station 15349: Hickory Creek at US 69
- Station 15356: Turkey Creek at FM 1013
- Station 10669: Taylor Bayou at Labelle Road

TCEQ FY 2009 Monitoring Program

During FY 2009, the Region 10 office in Beaumont is monitoring 20 stations in the basin. The Aquatic Life Assessment (ALA) for depressed dissolved oxygen at Shallow Prong Lake (segment 0701) was suspended in 2008. However, fish tissue, routine chemical, and metals in water sampling will continue in 2009. Fish tissue samples will also be collected on Hillebrandt Bayou at Humble Rd. (10686). Metals in sediment will be collected on the Neches River tidal (segment 0601) quarterly at five stations. Metals in water will be collected quarterly on the Neches River (10580) and Village Creek (10609). In addition, 24-hour dissolved oxygen (DO) measurements will be collected at Willow Creek (6), Boggy Creek (1) and Cypress Creek (1) to address the listings for depressed DO.

For more information on the current (FY 2009) monitoring schedule, please visit the Clean Rivers Program statewide coordinated monitoring schedule at <http://cms.lcra.org/>.



The 2008 Coordinated Monitoring Meeting was held at the Rayburn Country Resort near Jasper. Dr. Paul Boothe with Albion Environmental made a presentation to the group about dissolved metals in water sampling and analysis procedures.

Station ID	Monitoring Type	Station Description
10581	RT	NECHES RIVER AT FM 1013 EAST OF SPURGER
15343	RT	NECHES RIVER NEAR LAKEVIEW, 14.5 KM UPSTREAM OF PINE ISLAND BAYOU CONFLUENCE
10484	RT	SANDY CREEK AT FM 777 SOUTHWEST OF JASPER
15344	RT	WOLF CREEK AT FM 256, 6.1 KM UPSTREAM OF B.A. STEINHAGEN RESERVOIR
10599	RT	PINE ISLAND BAYOU AT LNVA LOWER PUMP STATION 6.6 KM UPSTREAM OF NECHES RIVER CONFLUENCE
10602	RT & BS	PINE ISLAND BAYOU AT US 69 /US 96/US 287 AT VOTH
20069	BS	LITTLE PINE ISLAND BAYOU AT WOODWAY BLVD. IN PINWOOD ESTATES
10607	RT & BS	PINE ISLAND BAYOU AT OLD SOUR LAKE ROAD 5.1 SE OF SOUR LAKE
15345	RT	WILLOW CREEK AT UNNAMED RD NORTH OF NOME, 4.3 KM UPSTREAM OF PINE ISLAND BAYOU
15346	RT & BS	LITTLE PINE ISLAND BAYOU AT FM 326 NORTH OF SOUR LAKE
15367	RT & BS	PINE ISLAND BAYOU AT FM 770/SH105 NEAR BATSON

LNVA Water Quality Monitoring Stations

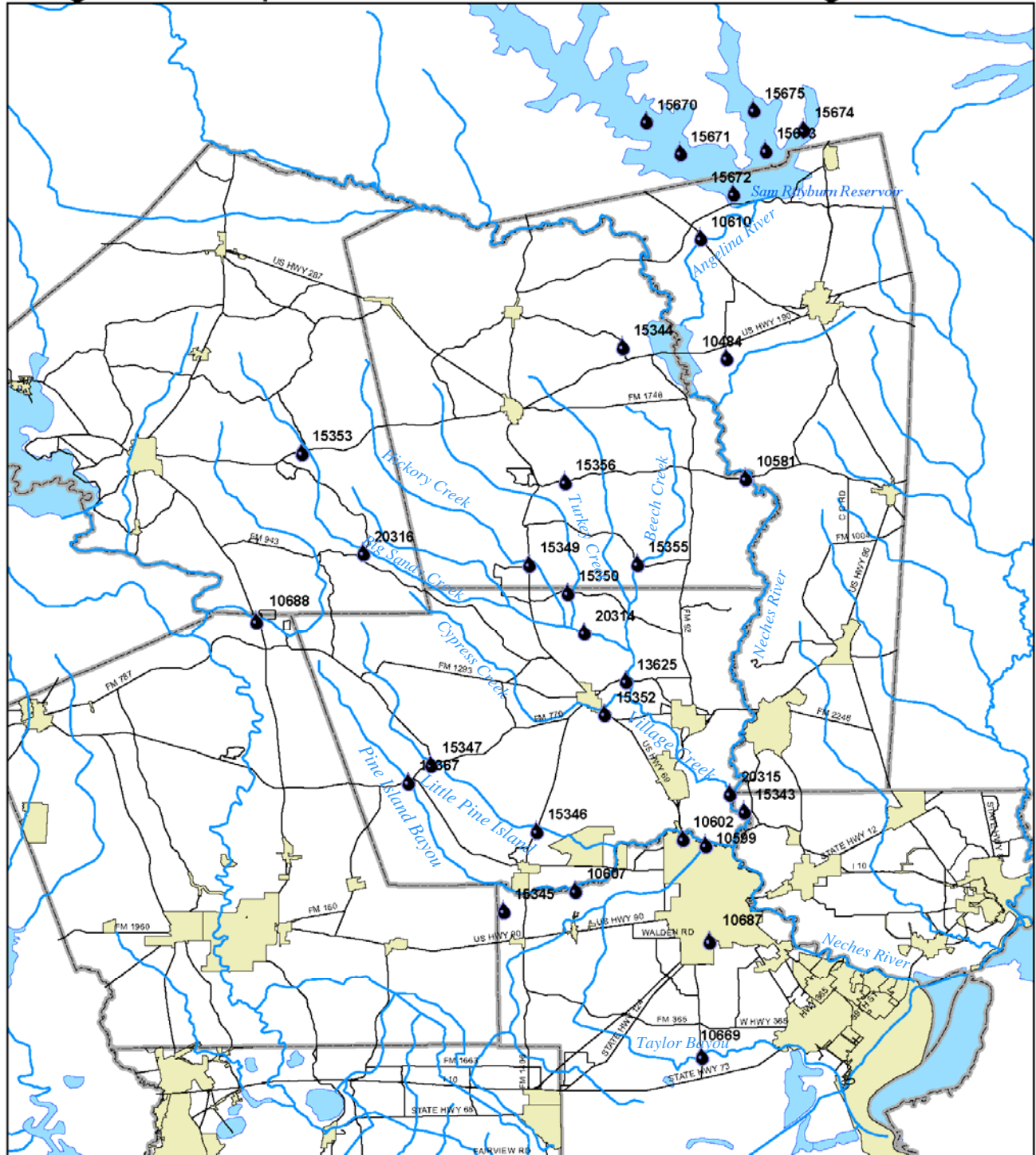
Station ID	Monitoring Type	Station Description
15347	RT	LITTLE PINE ISLAND BAYOU AT FM 770 WEST OF SARATOGA
13625	RT	VILLAGE CREEK AT FM 418, 3.4 MI. NE OF KOUNTZE
20314	RT	VILLAGE CREEK AT MCNEELY ROAD, 4.0 MI. EAST OF HWY 69
20315	RT	VILLAGE CREEK UPSTREAM OF THE NECHES RIVER CONFLUENCE IN HARDIN CO.
15349	RT	HICKORY CREEK AT US 69 SOUTH OF WARREN
15352	RT	CYPRESS CREEK AT US 69 (US 287) SE OF KOUNTZE
15353	RT	BIG SANDY CREEK AT US 190 IN ALABAMA COUSHATTA INDIAN RESERVATION
20316	RT	BIG SANDY CREEK AT FM 1276, 3.8 MI. SOUTH OF DALLARDSVILLE
15355	RT	BEECH CREEK AT FM 1943, WEST OF FRED
15356	RT	TURKEY CREEK AT FM 1013, EAST OF HILLISTER
15350	RT	TURKEY CREEK AT GORE STORE ROAD, 3.7 MI. EAST OF HWY 69
10610	RT	ANGELINA RIVER AT SH 63 NORTH OF JASPER
15670	RT	SAM RAYBURN RESERVOIR USGS SITE GC
15671	RT	SAM RAYBURN RESERVOIR USGS SITE FC
15672	RT	SAM RAYBURN RESERVOIR USGS SITE CC
15673	RT	SAM RAYBURN RESERVOIR USGS SITE AC
15674	RT	SAM RAYBURN RESERVOIR USGS SITE LC
15675	RT	SAM RAYBURN RESERVOIR USGS SITE MC
10669	RT	TAYLOR BAYOU AT LABELLE ROAD
10687	RT	HILLEBRANDT BAYOU AT SH 124
10688	RT	MENARD CREEK AT SH 146 SE OF LIBERTY

RT—Routine: Monitoring not intentionally targeted toward any environmental condition or event.

BS—Biased Season: Monitoring targeted toward a certain time of year (e.g., index period for 24-hour dissolved oxygen measurements).

LNVA Water Quality Monitoring Stations

Figure 1: Map of FY 2009 Routine Monitoring Stations

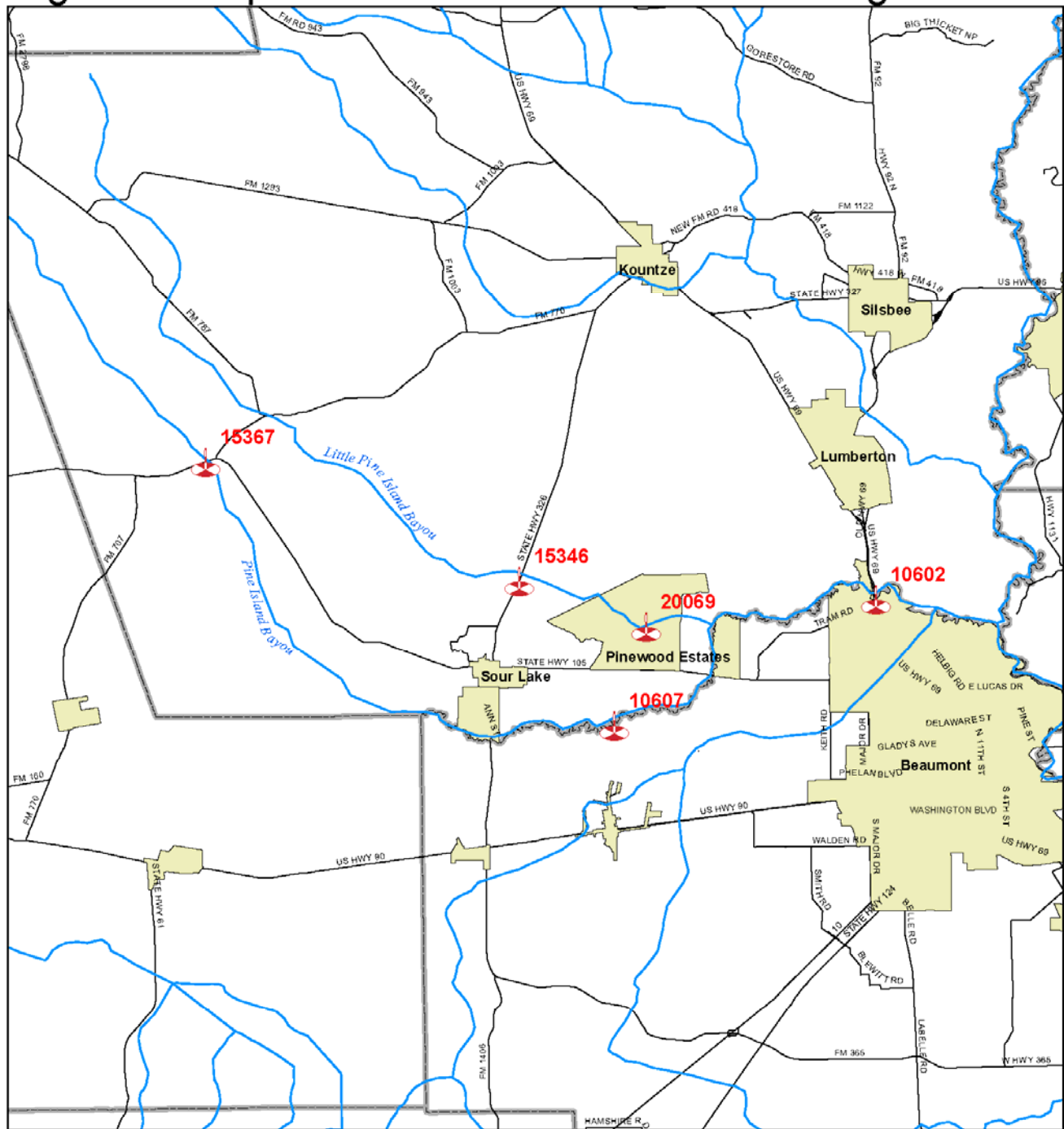


Legend

- Cities
- Hydrology
- Roads
- Lakes/Reservoirs
- Counties
- FY 2009 LNVA Routine Stations

LNVA Water Quality Monitoring Stations

Figure 2: Map of FY 2009 24-Hr. DO Monitoring Stations



Legend

- Cities
- Hydrology
- Roads
- LNVA Diurnal Monitoring Stations
- Counties

Summary of Water Quality Impairments & Concerns

The Texas Water Quality Inventory and 303(d) List of Impaired Waters is a comprehensive assessment report of the historical water quality data in Texas. This report describes the status of the state's waters, as required by Sections 305(b) and 303(d) of the federal Clean Water Act. The assessment report is completed every two years, in even numbered years, and must be approved by the EPA before it is considered final.

The 2008 Texas Water Quality Inventory and 303(d) List were issued by TCEQ on March 19, 2008 and submitted to the EPA for approval on April 1, 2008. They were approved by the EPA on July 9, 2008. Water bodies included on the 2008 303(d) List are not meeting current water quality standards and therefore do not support their designated uses. Water bodies may also have concerns for use attainment and established screening levels which are reported in the 2008 Texas Water Quality Inventory or 305(b) Report.

A summary of the water quality impairments and concerns are listed below in blue font for all segments in the Lower Neches River and Neches-Trinity Coastal Basins. A list of special projects designed to address an impairment or concern is also provided for each segment.

Segment 0601: Neches River Tidal

- ◆ Aquatic life use concern for depressed dissolved oxygen (Star Lake Canal)
- ◆ Concern for malathion (lower portion only)
- ◆ Fully supports general use criteria
- ◆ Fully supports contact recreation use
- ◆ Fully supports public water supply use
- ◆ No concerns for nutrients in the segment

Segment 0602: Lower Neches River

- ◆ Concern for mercury in fish tissue (Neches River)
- ◆ Fully supports aquatic life use
- ◆ Fully supports general use criteria
- ◆ Fully supports contact recreation use
- ◆ Fully supports public water supply use
- ◆ No concerns for nutrients in the segment

Segment 0603: B.A. Steinhagen Reservoir

- ◆ Concern for mercury in fish tissue (B.A. Steinhagen)

- ◆ Not supporting contact recreation use for bacteria (E. coli) in Sandy Creek (0603A) and Wolf Creek (0603B)
- ◆ Fully supports the aquatic life use
- ◆ No concerns for nutrients

Segment 0607: Pine Island Bayou

- ◆ Not supporting the aquatic life use due to depressed dissolved oxygen in Pine Island Bayou, Boggy Creek (0607A), Little Pine Island Bayou (0607B), and Willow Creek (0607C)
- ◆ Not supporting contact recreation use for bacteria (E. coli) in Pine Island Bayou and Little Pine Island Bayou (0607B)
- ◆ Impaired habitat concern for Boggy Creek (0607A)
- ◆ General use criteria is fully supported
- ◆ No concerns for nutrients in the segment

Special Projects

Use Attainability Analysis (UAA) on Pine Island Bayou, 9/1/2005–present (TCEQ)

Aquatic Life Assessment (ALA) of Little Pine Island Bayou, 9/1/2005– present (TCEQ)

Willow Creek UAA, 6/1/2007– present (TCEQ)

Continuous Water Quality Monitoring (CWQM) Station on Pine Island Bayou, 6/9/2008– present (TCEQ/LNVA)

Organics in water sampling at Pine Island Bayou, 5/25/2009–present (TCEQ/LNVA)

Segment 0608: Village Creek

- ◆ General use is not supported for low pH in Village Creek and is a concern in Beech Creek (0608A) and Cypress Creek (0608C)
- ◆ Aquatic life use is not supported for depressed DO in Cypress Creek (0608C) and Mill Creek (0608E)
- ◆ Contact recreation use is not supported for bacteria (E. coli) in Beech Creek (0608A), Big Sandy Creek (0608B), Cypress Creek (0608C), and Turkey Creek (0608F)
- ◆ Fish consumption use is not supported at Lake Kimble (0608G) due to mercury in fish tissue and is a concern at Village Creek
- ◆ Impaired habitat concern for Beech Creek (0608A) and Cypress Creek (0608C)
- ◆ No concerns for nutrients in this segment

Summary of Water Quality Impairments & Concerns

Special Projects

Tier 2 Mercury in East Texas Water Bodies – Village Creek sampled June 2007, 12/1/2004- present (TX Dept. of State Health Services)

24-hour DO & Biological Assessment of 5b/5c listed waterbodies in Texas—includes Mill Creek near Silsbee, 6/1/2008– present (TCEQ)

Criteria evaluation on Village Creek—low pH, 8/31/2008– present (TCEQ)

Segment 0609: Angelina River below Sam Rayburn Reservoir

- ◆ Fully supports the aquatic life use
- ◆ Fully supports the contact recreation use
- ◆ Fully supports the fish consumption use
- ◆ Fully supports the general use criteria
- ◆ Fully supports public water supply use
- ◆ No concerns for nutrients in this segment

Segment 0701: Taylor Bayou above Tidal

- ◆ Not supporting the aquatic life use due to depressed DO in Taylor Bayou above Tidal and Shallow Prong Lake (0701D)
- ◆ Concern for chlorophyll-a in Taylor Bayou above Tidal
- ◆ Concern for arsenic in fish tissue at Shallow Prong Lake
- ◆ Fully supports the contact recreation use
- ◆ Fully supports the general use criteria

Special Projects

Taylor Bayou UAA, 4/1/2009– present (TCEQ/TIAER)

Segment 0702: Intracoastal Waterway Tidal

- ◆ Not supporting aquatic life use in Alligator Bayou (0702A) due to impaired fish community, toxicity in water, and toxicity in sediment
- ◆ Concern for nutrients—chlorophyll-a (Alligator Bayou)
- ◆ Concern for toxic substances in sediment (Alligator Bayou)
- ◆ Fully supports the contact recreation use
- ◆ Fully supports the fish consumption use
- ◆ Fully supports the general use criteria

Special Projects

Statewide Ambient Toxicity– Alligator Bayou, 7/6/2000– 10/24/2003 (TCEQ)

Alligator Bayou ALA, 6/15/2004– present (TCEQ)

Segment 0703: Sabine-Neches Canal Tidal

- ◆ Fully supports the aquatic life use
- ◆ Fully supports the contact recreation use
- ◆ Fully supports the general use criteria
- ◆ Fully supports fish consumption use
- ◆ No concerns for nutrients

Segment 0704: Hillebrandt Bayou

- ◆ Aquatic life use is not supported due to depressed dissolved oxygen
- ◆ Concern for nutrients– chlorophyll-a, ammonia-nitrogen
- ◆ Fully supports the contact recreation use
- ◆ Fully supports the general use criteria

Special Projects

Hillebrandt Bayou UAA, 4/1/2009– present (TCEQ/TIAER)



Pine Island Bayou is on the 303d List of Impaired Waterbodies for low DO and elevated E. coli bacteria levels. Special projects in the basin are designed to address water quality issues and/or concerns.