

Sabine River Basin Big Sandy Creek Watershed Characterization Report 2015

Prepared in Cooperation with the Texas Commission on Environmental Quality under the Authorization of the Texas Clean Rivers Act









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Segment 0514 – Big Sandy Creek

Segment Description:

Segment 0514 begins at the confluence of Big Sandy Creek and the Sabine River in Upshur County and extends to a point 2.6 kilometers (1.6 miles) upstream of SH 11 in Hopkins County. The Big Sandy Creek watershed is 58 miles long, has an approximate drainage area of 245 square miles, and is located in the South Central Plains Ecoregion. This watershed is characterized by low rolling hills, deciduous forest, hay pastures, woody wetlands, and is predominately rural. The cities of Big Sandy and Winnsboro and the community of Holly Lake are located within this watershed and all have a population under 5,000 (see Figure 1).

Big Sandy Creek is comprised of two assessment units (AUs): AU 0514_01 and AU 0514_02. AU 0514_01 is defined as Big Sandy Creek from the confluence of the Sabine River southeast of Big Sandy upstream to the confluence of Mill Creek near FM49 north of Hawkins (Figure 1). AU 0514_02 is defined as Big Sandy Creek from the confluence of Mill Creek near FM 49 north of the City of Hawkins upstream to the headwater 2.6 kilometers (1.6 miles) upstream of SH11 northwest of the City of Winnsboro and includes Lake Winnsboro (see Figure 1). The TCEQ station IDs used for the 2014 TCEQ Integrated Report (IR) assessment along with their descriptions, assigned AU_IDs and monitoring entities are listed in Table 1.

TCEQ Station ID (SRA-TX ID)	Description	AU_ID	Monitoring Entity
16011 (BS9)	Big Sandy Creek at White Oak Road 3.5 kilometers (2.2 miles) east of Big Sandy	0514_01	SRA-TX
10468 (BS1) *	Big Sandy Creek 70 meters (76.6 yards) downstream from SH155 northeast of Big Sandy	0514_01	SRA-TX
17950 *	Lake Winnsboro 0.4 kilometers (0.25 miles) upstream from center of dam structure 9.7 kilometers (6.0 miles) southwest of Winnsboro	0514_02	TCEQ

* Active monitoring stations

Hydrologic Characteristics:

Big Sandy Creek is classified as a freshwater stream with perennial flow and is used as a sole-source surface drinking water supply for the International Alert Academy and the City of White Oak. Segment 0514 has a high aquatic life use designation. The United States Geologic Survey (USGS) maintains one flow gaging station (USGS #08019500) located on Big Sandy Creek at SH155 at TCEQ station 10468 (see Figure 1). During the 2014 IR assessment period of



12/1/2005 to 11/30/2012, the mean flow at this site was 160 cubic feet per second (cfs) with a maximum flow of 11,100 cfs on 05/04/2009 and a minimum flow of 0.35 cfs on 09/15/2006. The 7Q2¹ for this site is 12.4 cfs and the flood stage gage height is 16.5 feet. Intermittent flows with pools are typical in the upper AU 0514_02 during late summer, early fall and periods of drought. Lake Winnsboro, which was impounded in 1962 and has a surface area of 800 acres, is located in AU0514_02. Wood County District 4 is the reservoir controlling authority for Lake Winnsboro.

This watershed has numerous springs which contribute to the flow of Big Sandy Creek. During high rainfall runoff events, Big Sandy Creek can experience rapid changes in water levels and overbank flows. Changes in the stream channel, shifting sandbars and soil deposition are observed during high flow events.

Land Use

Spatial analysis of this segment's watershed indicates that deciduous forests, hay pastures, woody wetlands, and shrub/scrub account for 79 % of land use (see Figure 2). Farming, dairy and

¹ The 7Q2 is the lowest average discharge over a period of 7 days with a recurrence interval of two years.



poultry production, commercial nursery operations, silviculture activities, and oil and gas production occur within this rural watershed. Hay pastures are the dominant land cover in the upper portion of AU0514_02 (see Figure 2). These hay pastures are fertilized with chicken litter and manure from numerous dairy and poultry farms in the area. The watershed population is approximately 14,469, which correlates to a density of 59 people per square mile (US Census Bureau, 2010).

There are eight closed or inactive landfills and no superfund sites within this watershed.

The City of Winnsboro has a permit to discharge 1.5 million gallons per day (MGD) of treated wastewater into Indian Creek, located approximately 16 kilometers (9.94 miles) upstream of TCEQ station 16867. Crutcher Tie and Lumber, LLC is a hardwood sawmill which produces lumber, railroad ties, chips, and sawdust. Its permitted discharge volume is intermittent and flow variable. The discharge flows from a settling pond to a manmade ditch and then into Indian Creek, approximately 11 kilometers (6.8 miles) upstream of TCEQ station 16867. Algonquin Water Resources of Texas, which serves the Holly Lake Ranch Community, has a wastewater permit to discharge 0.068 MGD into Warren Swamp, approximately 24 kilometers (14.9 miles) upstream of TCEQ station 10468 (BS1). Nestle Waters North America, Inc., or Wood County Bottling Plant, a producer and distributor of spring drinking water products, is permitted to discharge 0.15 MGD process wastewater into Boggy Creek, approximately 19 kilometers (11.8 miles) upstream of TCEQ station 10468 (BS1).

Potential Stakeholders

Potential stakeholders and entities with possible interest in this watershed are as follows:

- AgriLife Extension
- City of Gladewater
- City of Henderson
- City of Kilgore
- City of Longview
- City of White Oak
- Eastman Chemical Company
- International Alert Academy
- Landowners / Citizens
- Permitted Dischargers

- Railroad Commission of Texas
- Sabine River Authority of Texas
- Texas Commission on Environmental Quality
- Texas Forest Service
- Texas Parks and Wildlife Department
- Texas State Soil and Water Conservation Board
- Upshur- Gregg Soil and Water
 Conservation District

Impairment/Area of Interest

The 2014 TCEQ IR indicated non-support for *E. coli* in both AUs, as well as screening level concerns for depressed dissolved oxygen (DO) and chlorophyll-a (Chl-a), in the upper AU 0514 02. This segment was first listed in 2006 for *E. coli* and remains on the 303(d) list. The 2014 TCEQ IR assessment results for AU0514_01 indicated a geometric mean of 210 MPN for the 36 samples collected for E. coli analysis, which exceeds the Texas Surface Water Quality Standard (TSWQS) of 126 MPN for primary contact recreation. This impairment is currently classified as Category 5c, which indicates that additional data or information must be collected or evaluated before a management strategy is



scheduled. The remaining water quality parameters assessed met the TSWQS, and AU 0514_01 had no other designated use impairments.

For AU 0514_02, the non–support assessment for bacteria was carried forward from the 2012 TCEQ IR and was also classified as Category 5c. A "carryforward" designation indicates the integrated level of support was extended from a previous assessment due to inadequate data.

Possible Causes of Impairment

Due to the small number of permitted dischargers in this rural watershed, Non-point source runoff is a probable source of bacteria impairment. Elevated bacteria levels are consistently observed during periods of increased flows from rainfall runoff and are correlated with increased turbidity and reduced Secchi transparencies. Non-point bacteria sources within this watershed include urban runoff, agriculture practices, wildlife, and private septic systems. Agricultural sources include livestock grazing and the use of manure for fertilizing hay meadows. This rural watershed has large populations of wildlife including feral hogs, beaver, otter, and deer.

Recommendations:



The SRA-TX will continue to monitor and sample TCEQ station 10468 (BS1) monthly. This is the most downstream representative station with a USGS flow gage. TCEQ station 17950 on Lake Winnsboro, has been monitored quarterly by the TCEQ Region 5 personnel since 2010. Future monitoring and sampling plans for the Big Sandy Creek watershed will be discussed during the 2016 Coordinated Monitoring Meeting.



Figure 1. Big Sandy Creek Watershed Segment 0514



