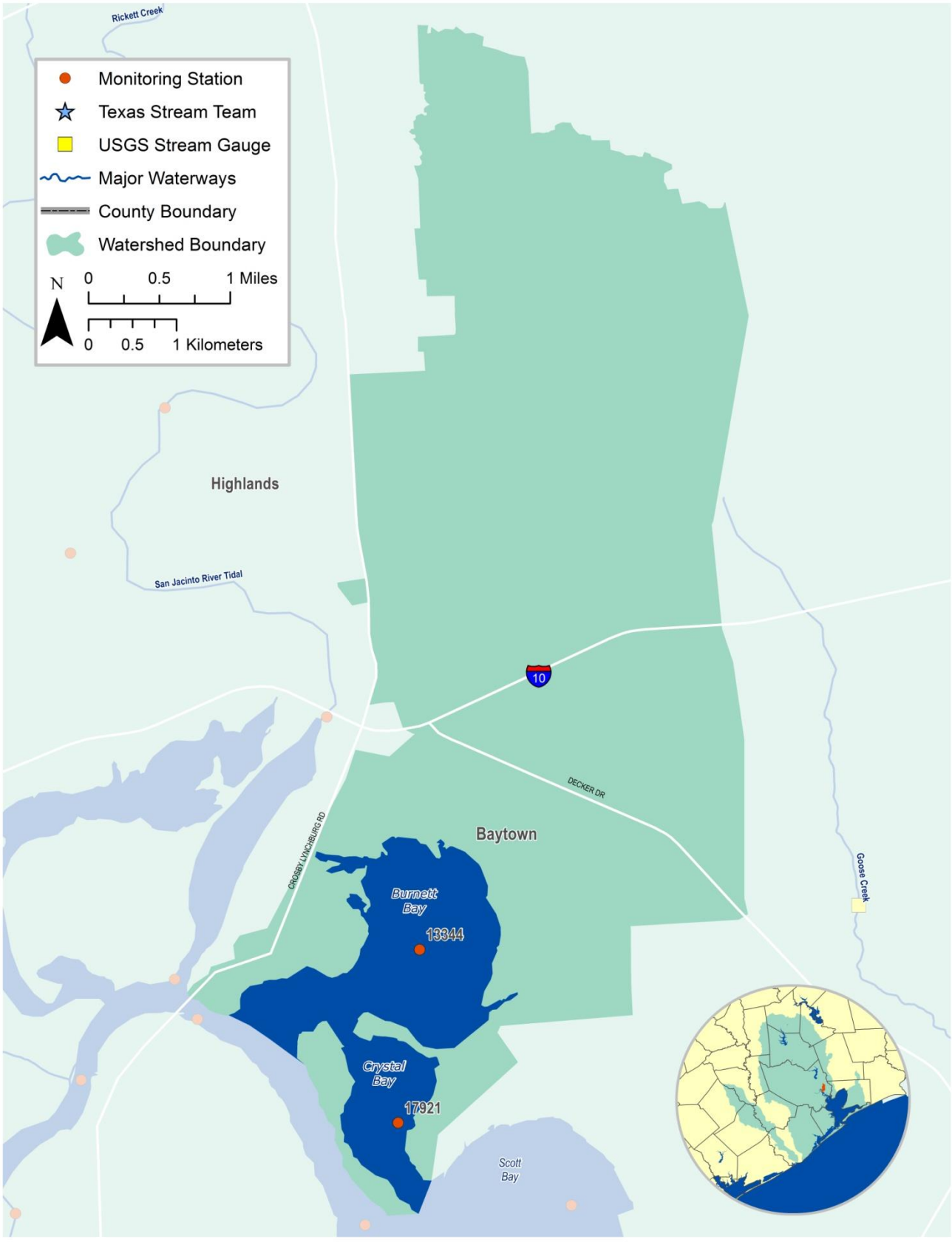
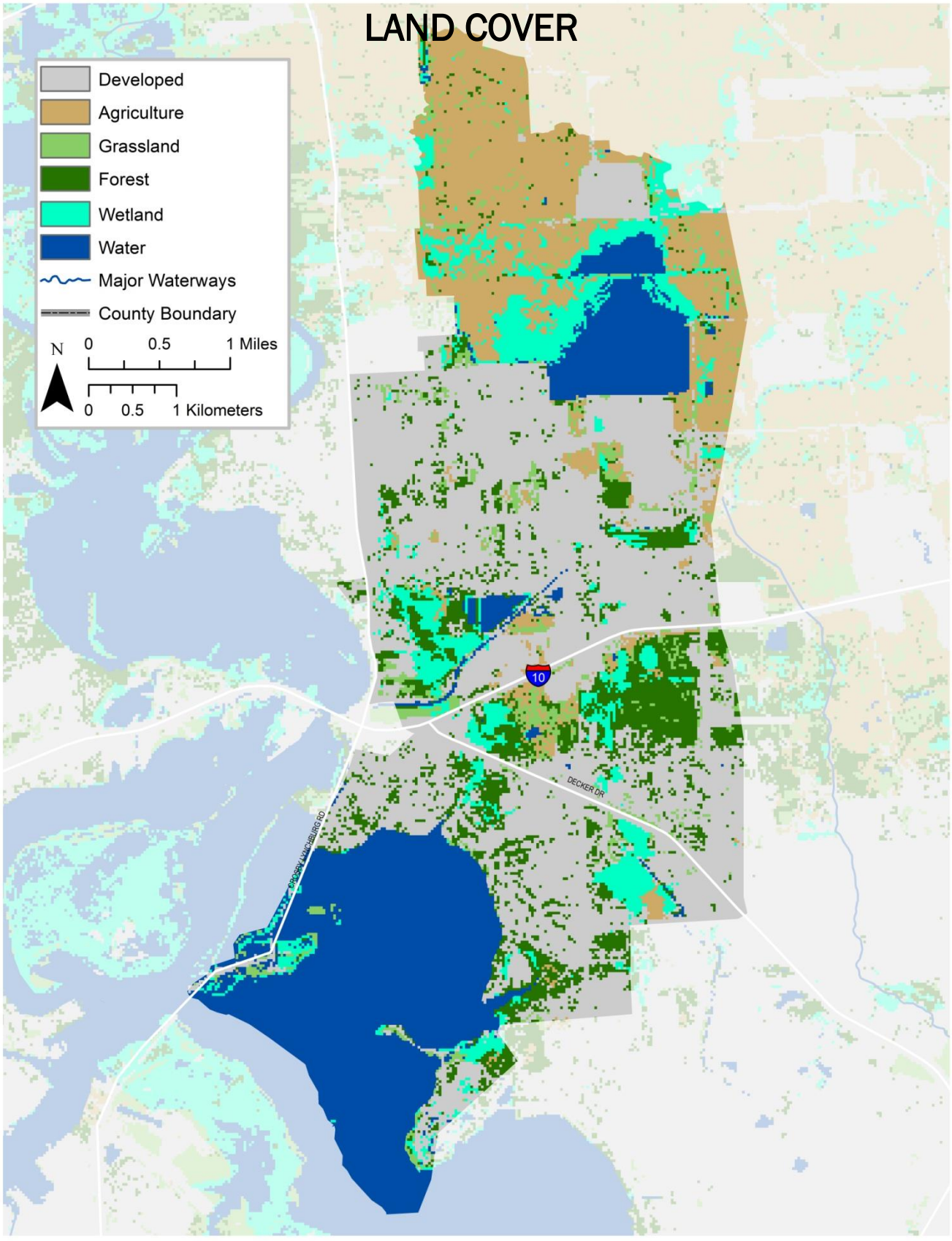
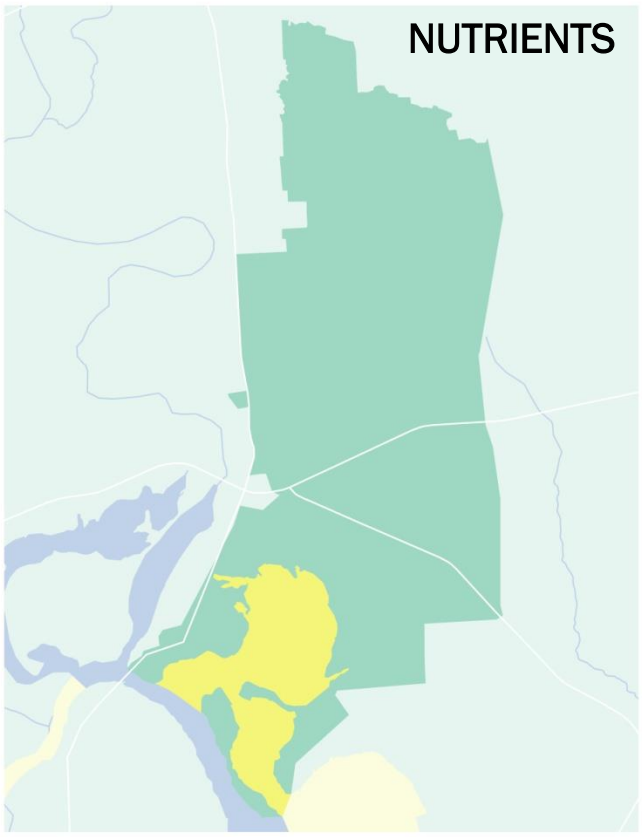
BURNETT BAY - SEGMENT 2430

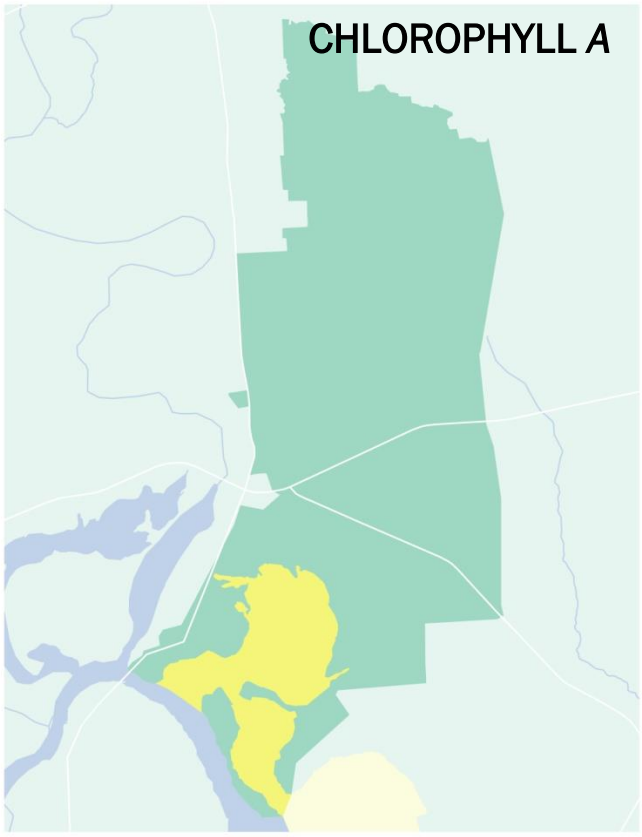


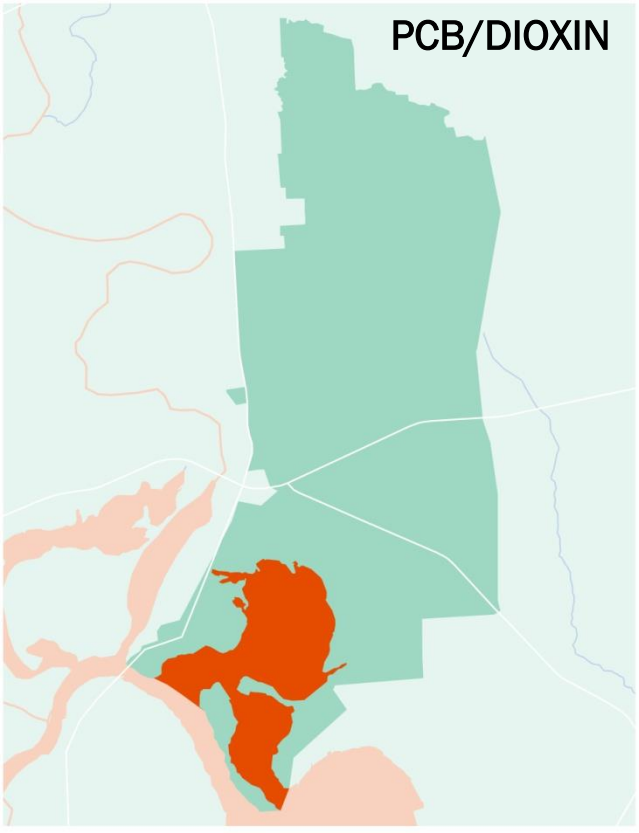
BURNETT BAY - SEGMENT 2430

LAND COVER





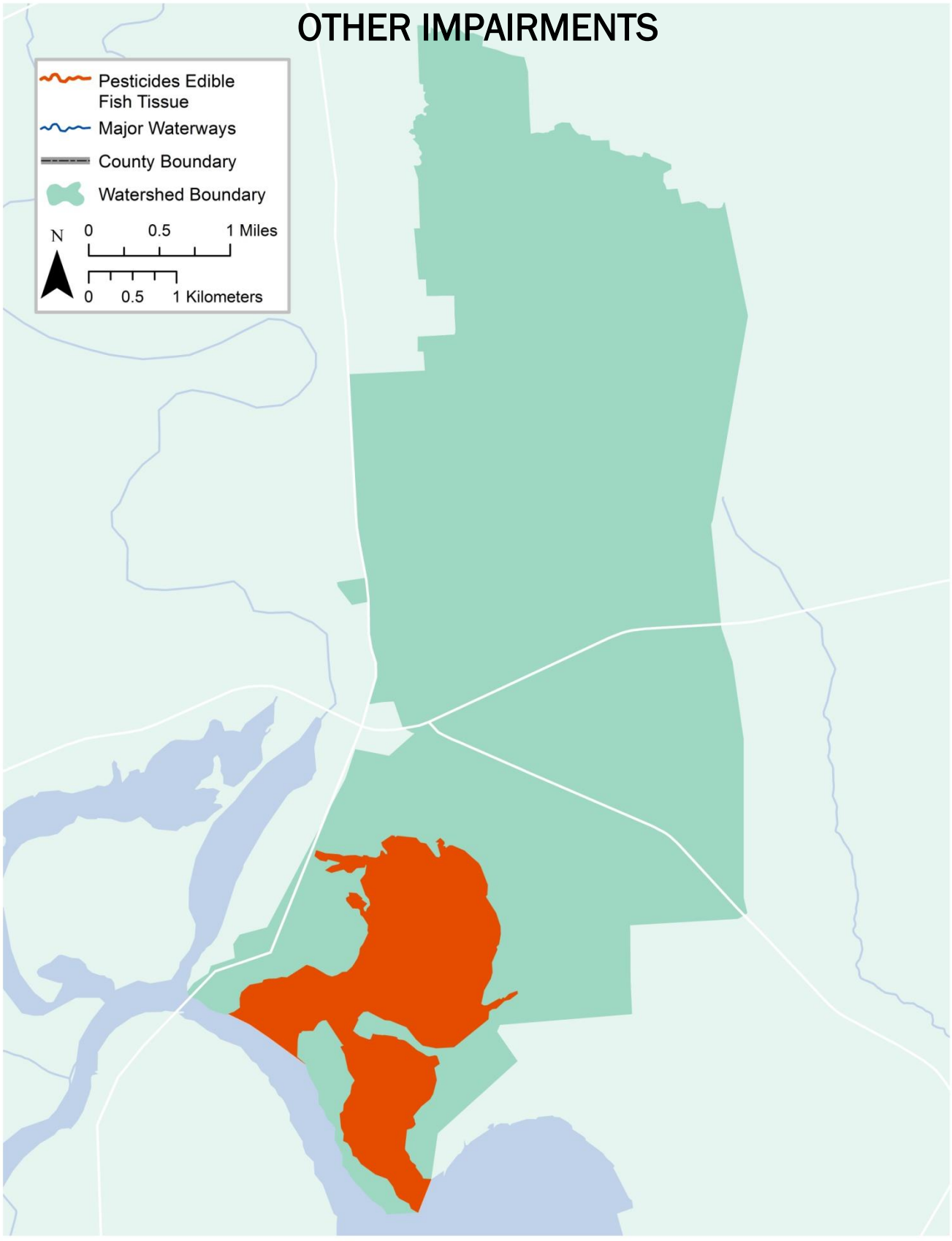




Impairment Concern No Impairments or Concerns

BURNETT BAY - SEGMENT 2430

OTHER IMPAIRMENTS



Segment Number:	2430	Name:	Burnett Bay
Area:	2 square miles	**Miles of Shoreline:**	8.6 miles
Designated Uses:	Primary Contact Recreation 1;High Aquatic Life Use		
Number of Active Monitoring Stations:	2	**Texas Stream Team Monitors:**	0
Permitted Outfalls:	5		
Description:	A side bay located to the east of the Houston Ship Channel/tidal San Jacinto River south of Interstate-10 immediately north of the Baytown Nature Center and southeast of the Lynchburg Ferry Road Segment 2430A (Estuary w/ high ALU): Crystal Bay (unclassified water body) — Crystal Bay, a side bay of Burnett Bay, is located between Burnett Bay and Scott Bay (Segment 2429) due east of the San Jacinto Monument and lying on the east side and adjacent to the Houston Ship Channel (Segment 1005)		

Percent of Stream Impaired or of Concern

Segment ID	PCBs/Dioxin	Bacteria	Dissolved Oxygen	Nutrients	Chlorophyll *a*	Other
2430	100	-	-	100	100	100
2430A	100	-	-	100	-	100

Segment 2430

Standards	Bays & Estuaries	Screening Levels	Bays & Estuaries
Temperature (°C/°F):	35 / 95	Ammonia-N (mg/L):	0.10
Dissolved Oxygen *(24-Hr Average)* (mg/L):	4.0	Nitrate-N (mg/L):	0.17
Dissolved Oxygen *(Absolute Minima)* (mg/L):	3.0	Orthophosphate Phosphorus (mg/L):	0.19
pH (standard units):	6.5-9.0	Total Phosphorus-P (mg/L):	0.21
Enterococci (MPN/100mL) (grab):	104	Chlorophyll *a* (µg/L):	11.6
Enterococci (MPN/100mL) (geometric mean):	35		

FY 2016 Active Monitoring Stations				
Site ID	**Site Description**	**Frequency**	**Monitoring Entity**	**Parameter Groups**
13344	Burnett Bay at mid bay	Bi-Monthly	HCPHES	Field, Conventional, Bacteria, Chlorophyll *a* (Qrtrly)
17921	Crystal Bay near Bayshore Dr and Crow Rd	Bi-Monthly	HCPHES	Field, Conventional, Bacteria, Chlorophyll *a* (Qrtrly)

Water Quality Issues Summary			
Issue	**2014 Assessment** *I – Impaired* *C – Of Concern*	**Possible Causes/Influences / Concerns Voiced by Stakeholders**	**Possible Solutions / Actions To Be Taken**
Elevated Nutrients	2430 C 2430A C	▪ Fertilizer runoff from urbanized properties, such as landscaped areas, residential lawns, and sport fields ▪ Agricultural runoff from row crops, fallow fields, and animal operations ▪ Nutrient loading from WWTF effluent, sanitary sewer overflows, and malfunctioning OSSFs	▪ Implement YardWise and Watersmart landscape practices ▪ Encourage Water Quality Management Plans or similar projects for agricultural properties ▪ Install and/or maintain riparian buffer areas between agricultural fields and waterways ▪ Monitor phosphorus levels at WWTFs to determine if controls are needed
PCBs/Dioxin in Edible Fish Tissue	2430 I 2430A I	▪ Concentrated deposits outside boundaries of the waste pits located adjacent to San Jacinto River and I-10 bridge ▪ Unknown industrial or urban sources	▪ Remove or contain contamination from locations already identified ▪ Encourage additional testing to locate all unknown sources/deposits
Elevated Chlorophyll *a* Concentrations	2430 C	▪ Fertilizer runoff from surrounding watershed promotes algal growth in waterways ▪ Nutrient loading from WWTF effluent, sanitary sewer overflows, and malfunctioning OSSFs promotes algal growth	▪ Improve compliance and enforcement of existing stormwater quality permits ▪ Improve stormwater controls in new developments ▪ More public education regarding nutrients and consequences
Pesticides in Edible Fish Tissue	2430 I 2430A I	▪ Runoff from upstream agricultural areas. ▪ Contaminated groundwater discharging into surface water.	▪ Educate agricultural producers about proper pesticide application. ▪ Promote conservation practices like riparian buffers that help reduce runoff pollutants in agricultural areas. ▪ Encourage additional testing to locate all unknown sources.

Segment Discussion:

Watershed Characteristics: This watershed is located west of the City of Baytown and south of the cities of Highlands and Lynchburg. The area is highly developed with residential and commercial uses. Agricultural land uses are also present in the northern reaches of this watershed while undeveloped forested land and wetland areas are scattered throughout. Additionally, the Houston Ship Channel (HSC) supports heavy boat and barge traffic on a consistent basis.

Water Quality Issues: Segments 2430 Burnett Bay and unclassified segment 2430A Crystal Bay are impaired for fish consumption due to PCBs, Dioxin, and the pesticides chlordane, dieldrin, and heptachlor epoxide found in edible fish tissue. The Texas Department of State Health Services issued a Limited Consumption Fish Advisory.

Both 2430 and 2430A are listed on the 2014 IR for concerns for water quality based upon screening criteria levels for ammonia nitrogen, nitrate nitrogen, and total phosphorus. In segment 2430, 40 percent of ammonia nitrogen, 85 percent of nitrate nitrogen, and 94 percent of total phosphorus samples were above the screening criteria levels. In segment 2430A 50 percent of ammonia nitrogen, 100 percent of nitrate nitrogen and 97 percent of total phosphorus samples were above the screening criteria levels.

Segment 2430 also has a water quality concern for chlorophyll *a* with 52 percent of samples exceeding the screening criteria level of 11.6 micrograms per liter.

Special Studies/Projects: This segment is included in two TMDL projects, the Houston Ship Channel and Upper Galveston Bay TMDL for PCBs in Fish Tissue and the Houston Ship Channel TMDL for Dioxin, which are currently under way. For more information, please refer to the detailed discussions located in the Public Involvement and Outreach section of the 2016 Basin Summary Report regarding dioxin and PCB TMDLs.

Trends: Regression analysis of water quality data revealed nine statistically significant parameter trends for the two segments located in the Burnett Bay watershed. The main Burnett Bay segment had a total of three increasing parameter trends - salinity, specific conductance (SPCond), and total suspended solids (TSS). Crystal Bay, segment 2430A, had six significant parameter trends including increasing salinity, SPCond, total dissolved solids (TDS), and total phosphorous (TP) while chlorophyll *a* and enterococci concentrations are decreasing over time.

The 2014 Texas Integrated Report lists both assessment units in this segment as impaired for PCB/dioxin and pesticides in edible fish tissue. Refer to the water quality issues discussion above for more information about these impairments. Additionally, Crystal Bay and Burnett Bay are listed as having a concern for elevated nutrient and chlorophyll *a* concentrations. Regression analysis of nitrate and TP data for both assessment units revealed one statistically significant increasing trend for TP in Crystal Bay. All other nutrient data for Burnett Bay (nitrate, TP) and Crystal Bay (nitrate) revealed stable trends over time with the majority of samples exceeding the set screening criteria during the period of record. Regression analysis of chlorophyll *a* data for Crystal Bay revealed a gradual improvement in chlorophyll *a* concentrations since 2004 with only two samples exceeding the 11.6 µg/L screening criteria since 2001.

Recommendations
Continue collecting water quality data to support actions associated with any future watershed protection plan development and possible modeling.
Coordinate education efforts with other local TMDL and watershed protection plan efforts.
Pursue a new local partner to Clean Rivers Program to collect additional data that would help better isolate problem areas.
Support additional sampling to investigate sources of elevated dioxin and PCB levels.