Kickapoo Creek in Henderson County Watershed Protection Plan

Texas Institute for Applied Environmental Research (TIAER)

Stephenville, TX.

June 17, 2021

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Project Partners

- Texas State Soil and Water Conservation Board (TSSWCB)
- Texas Institute for Applied Environmental Research (TIAER)
- Angelina & Neches River Authority

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Federal Clean Water Act

- Requires States to establish Water Quality Standards to achieve objectives & goals
- Requires States to identify waterbodies failing to meet water quality standards & not supporting their designated uses
  - this list of impaired waterbodies is known as the *Texas 303(d) List,* developed by TCEQ

History of water quality impairment

Year	Bacteria impairment category		Dissolved Oxygen impairment category	
	Seg0605A_02	0605A_01	0605A_02	0605A_01
2020	5c	5c		5c
2018	5c	5c		5c
2016	5b	5b		5c
2014	5b	5b		5c
2012		5b		5c
2010		5c		5c
2008		5c		5c
2006		5c		5c
2004		5c		
2002		5c		
2000	Not supported for contact recreation	Not supported for contact recreation		

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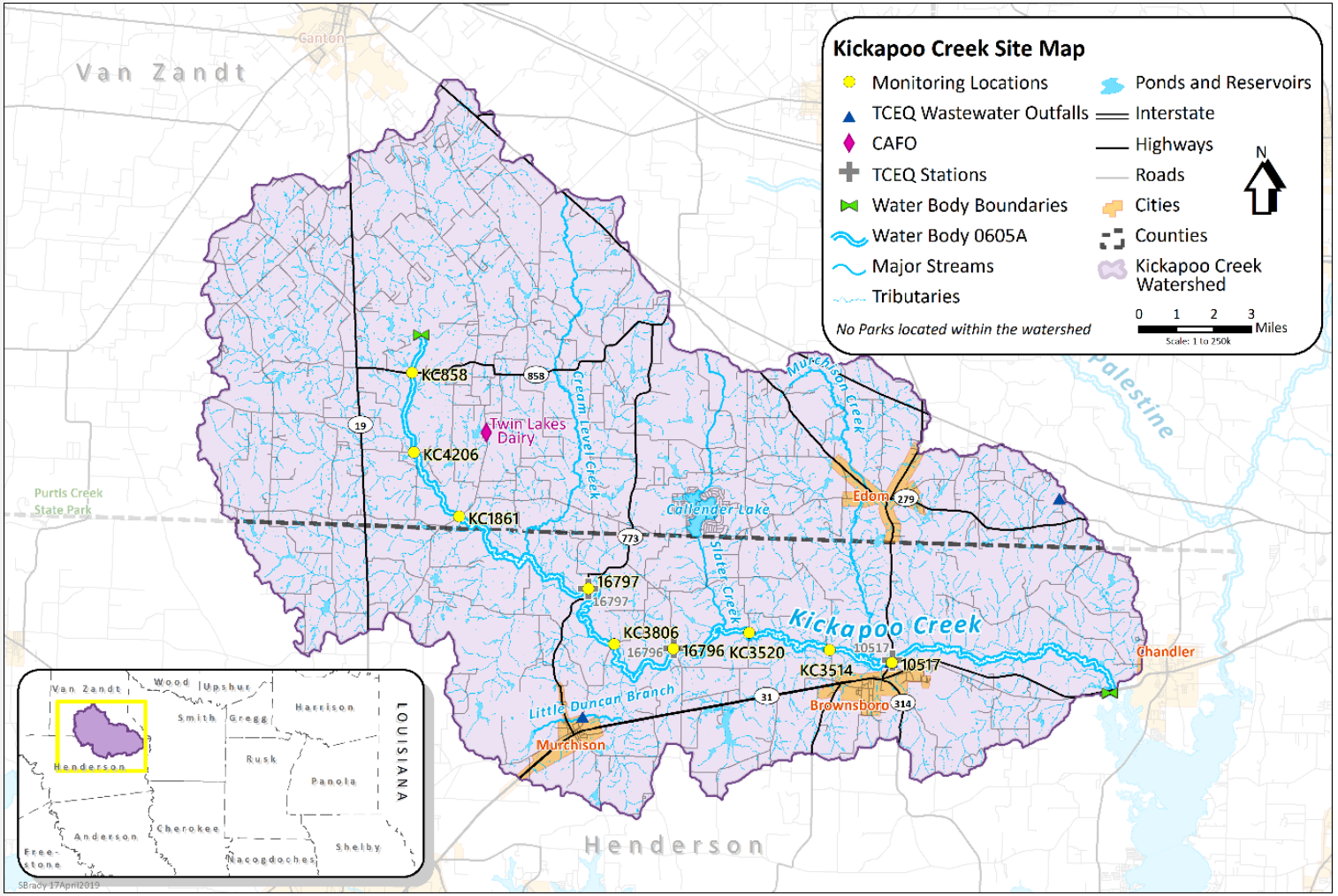
Why we are here

Bacteria Impairment

- Kickapoo Creek is not meeting the water quality standard for primary contact recreation
  - Due to elevated levels of bacteria, *E. coli.*
  - Depressed dissolved oxygen impairment is classified as 5c – indicating that additional data or information needed
- TIAER performed a Recreational Use Attainability Analysis on Kickapoo Creek in 2014

Kickapoo Creek in Henderson County



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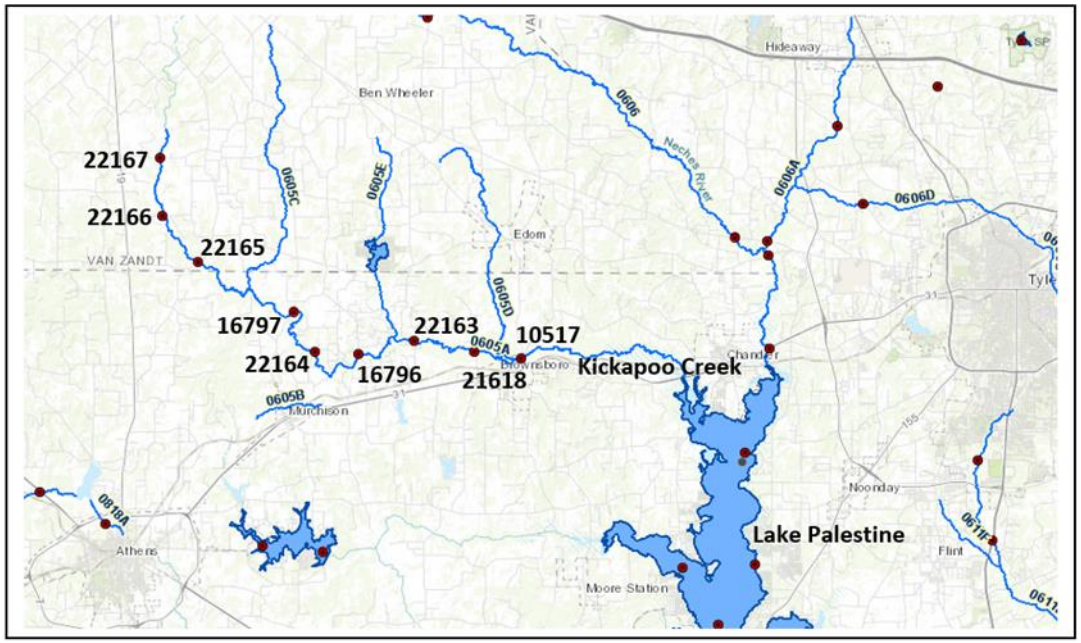
Routine Monitoring Locations
Kickapoo Creek



Upstream----------→Downstream								
Segment 0605A_02							Segment 0605A_01	
22167	**22166**	22165	16797	**22164**	16796	22163	21618	**10517**

Note: For the sites highlighted in red, TIAER will conduct 24-hour DO

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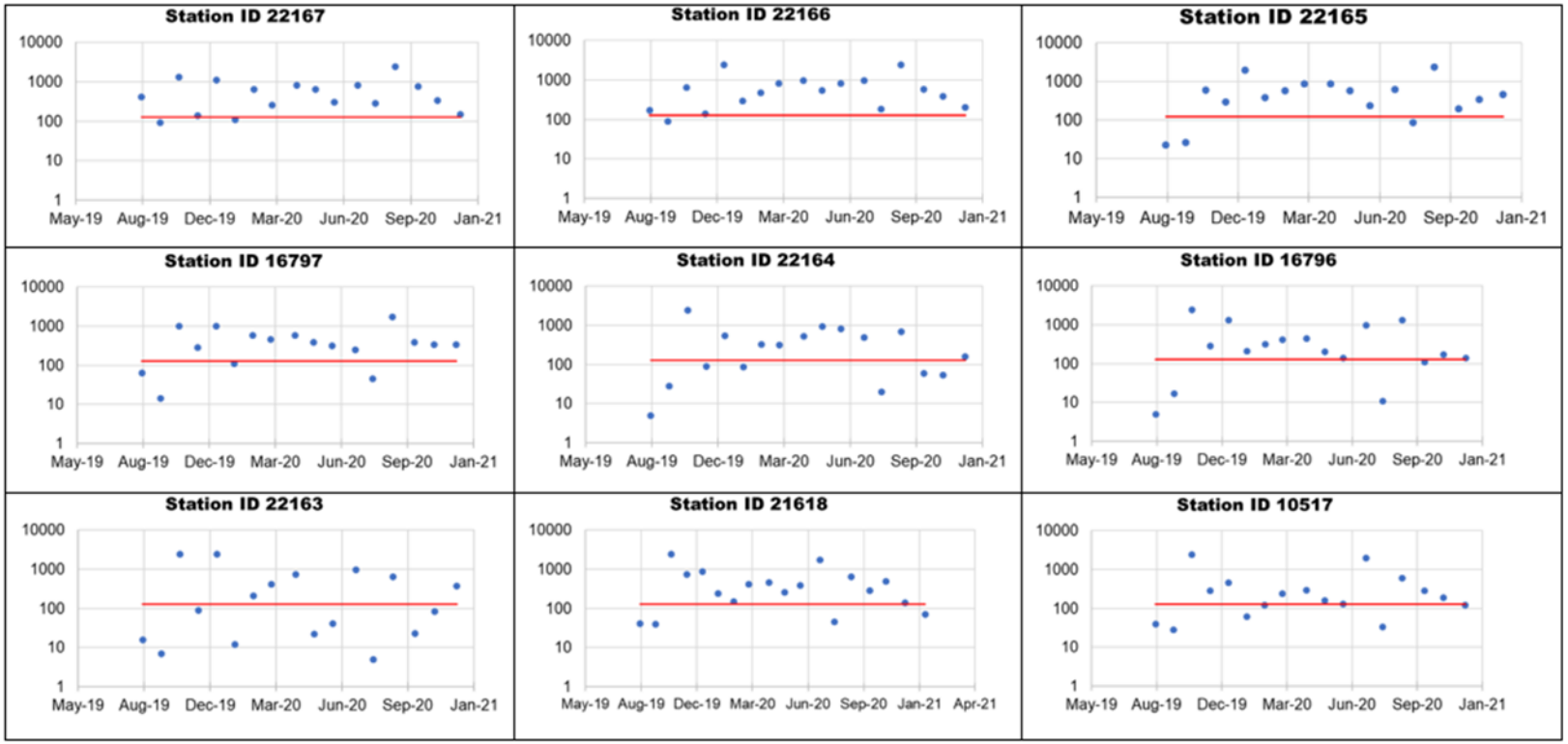
Recent E-coli observations



Note: The observations are a part of the recently completed watershed characterization project for the Kickapoo Creek

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E-coli load reductions needed

Station	Assessment Unit	Total E-coli loads (billion MPN/day)		Load reductions needed to meet the allowed load		
		Existing	Allowed	Proportion (%)	Daily (billion MPN/day)	Annual (billion MPN/year)
22167	0605A_02	78,816.21	7,796.06	90.1	71,020.15	25,922,355.5
22166	0605A_02	144,426.43	8,898.37	93.8	135,528.06	49,467,743.3
22165	0605A_02	332,325.64	11,566.28	96.5	320,759.36	117,077,165.1
16797	0605A_02	297,022.64	22,914.80	92.3	274,107.85	100,049,364.2
22164	0605A_02	233,565.39	24,698.16	89.4	208,867.23	76,236,538.5
16796	0605A_02	420,030.17	26,480.01	93.7	393,550.16	143,645,809.6
22163	0605A_02	60,473.36	30,768.86	49.1	29,704.49	10,842,139.8
21618	0605A_01	547,120.10	32,222.64	94.1	514,897.47	187,937,575.7
10517	0605A_01	214,691.88	37,502.55	82.5	177,189.33	64,674,107.1

Note: The results are from the recently completed watershed characterization project for the Kickapoo Creek

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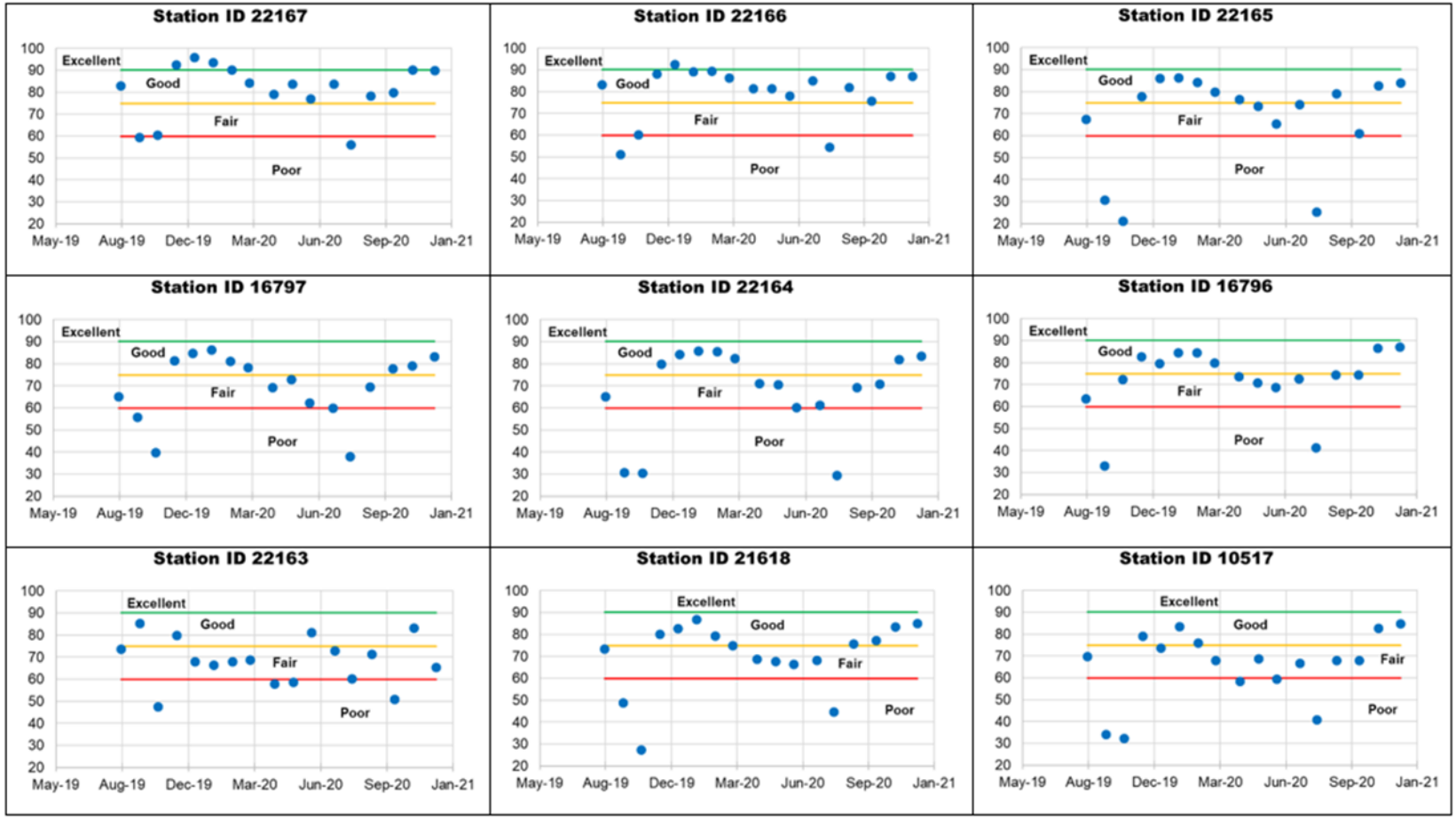
Dissolved Oxygen Grab Samples



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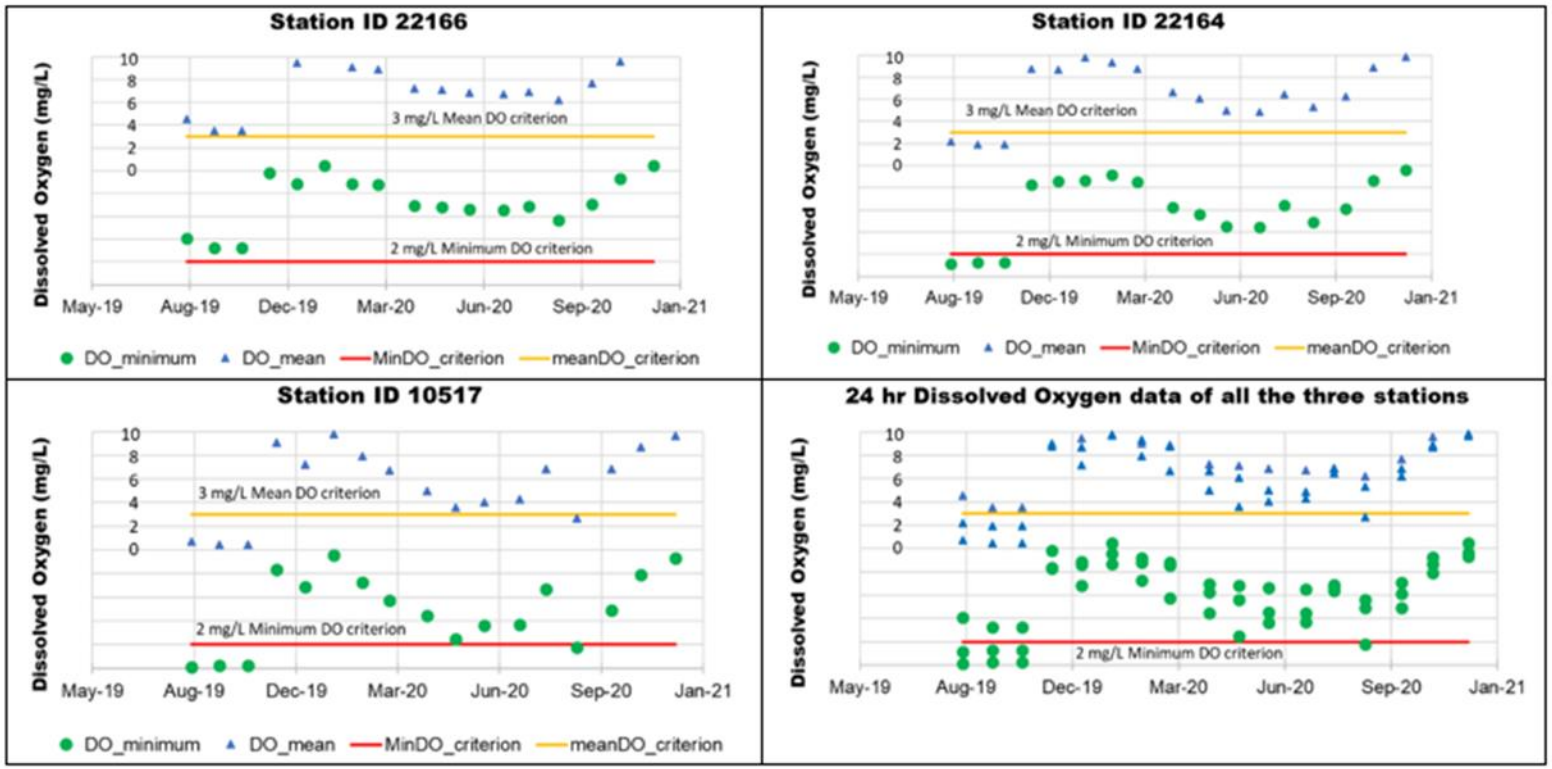
24-hour DO data



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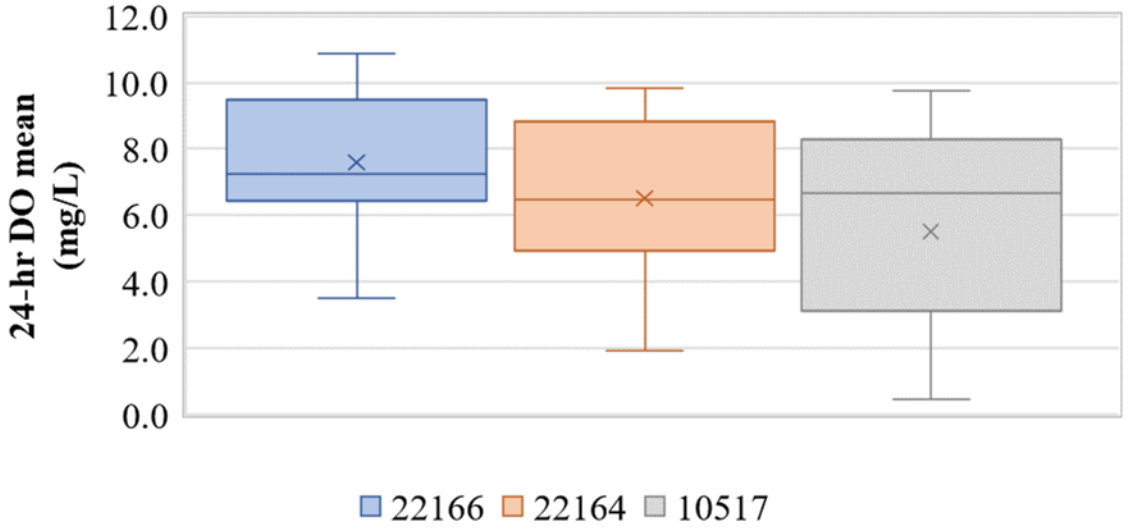
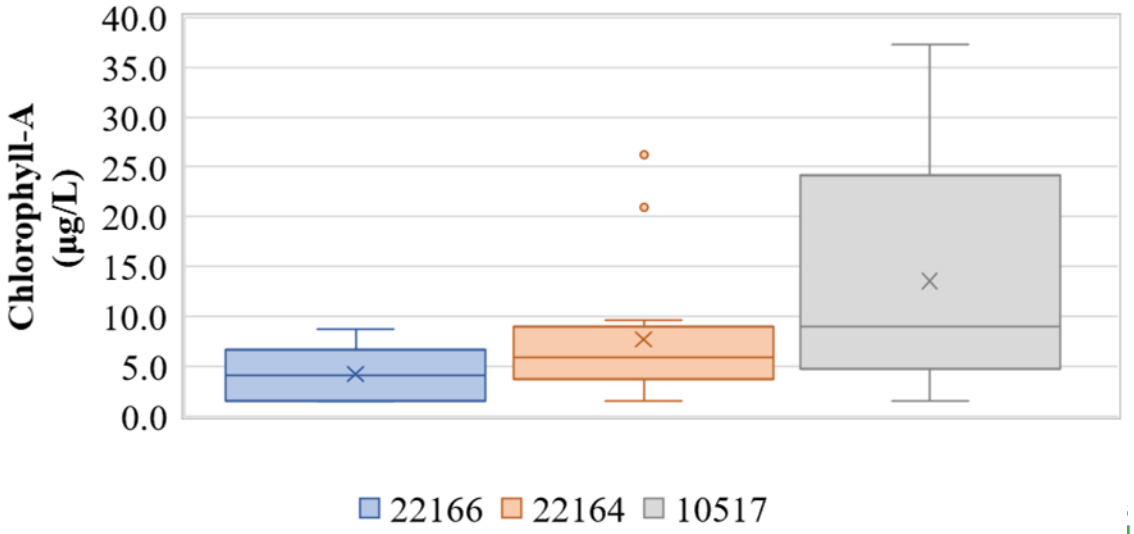
What we found





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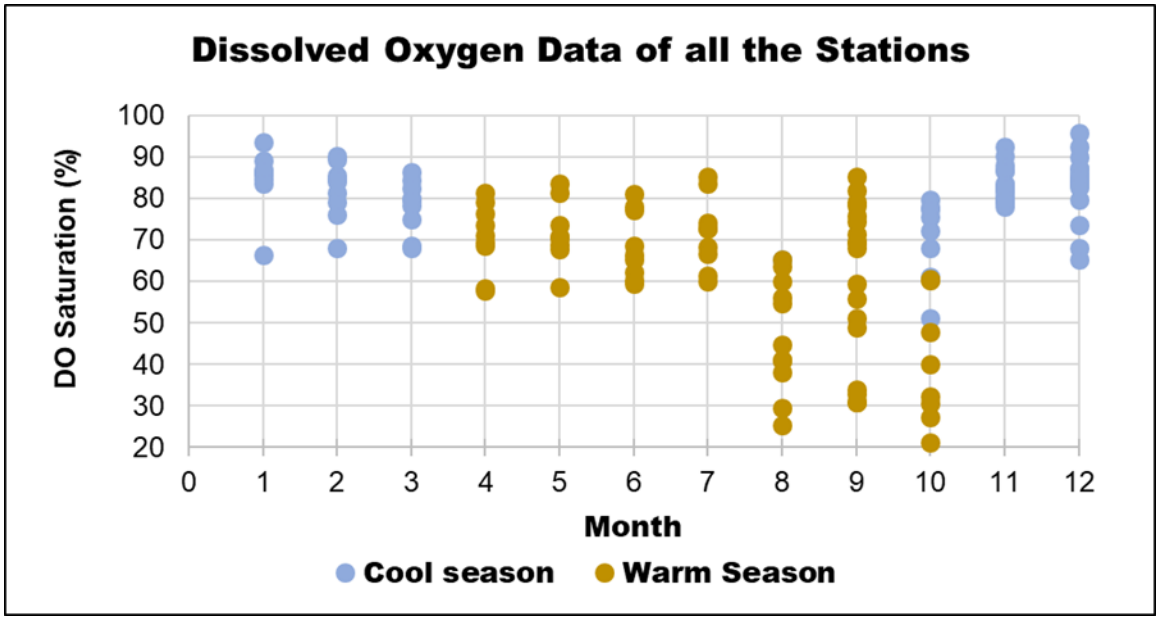

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Purpose of the current project

- Continue to provide monitoring data to facilitate the development of the Watershed Protection Plan (WPP)
- Develop the WPP following EPA's nine elements for watershed-based plans
- Obtain approval by stakeholders, TCEQ, TSSWCB and EPA and develop the final WPP.

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Plan of Action

- Continue the routine monitoring (monthly) at 9 sites on Kickapoo Creek
  - NH_3-N, TSS, VSS, NO_2-N+NO_3-N, TKN, PO_4-P, TP, BOD, and CHLA
- Conduct 24-hr DO monitoring (in conjunction with routine monthly) at 3 locations
- Obtain stakeholder input, outline pollutant loads, sources and control measures for the development of an educational component, describe management measures, estimate the technical and financial assistance needed to improve water quality in the Kickapoo Creek.

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Questions?

Project Website:

www.kickapoocreekwpp.com

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