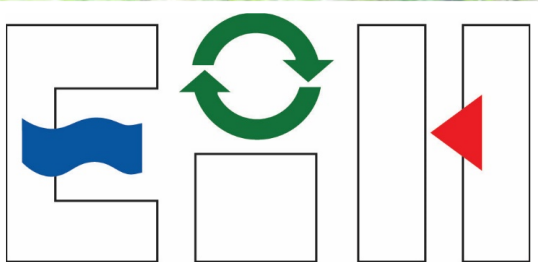


You may use the information and images contained in this document for non-commercial, personal, or educational purposes only, provided that you (1) do not modify such information and (2) include proper citation. If material is used for other purposes, you must obtain written permission from the author(s) to use the copyrighted material prior to its use.



Environmental Institute of Houston



May 26, 2021

Jenny Oakley, Ph.D.
Associate Director, Research Programs

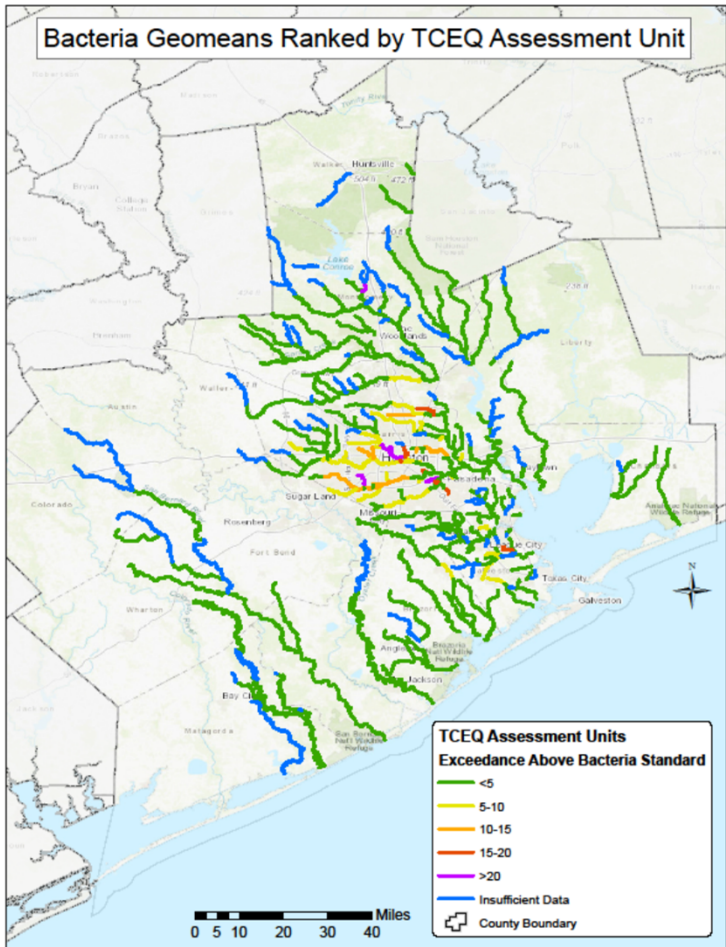
Targeted Bacteria Monitoring in the Houston-Galveston Area

Background



- Bacteria (E. coli) among the top impairments in the Houston-Galveston Area.
- Nearly ½ of stream miles have higher bacteria levels than the state standard (126 MPN)
- H-GAC identified 10 segments for Targeted Bacteria Monitoring

Study Area



- H-GAC conducted a data review
- Assessment Units (AU) ranked based on the number of times the 7 year geomean exceeded the standard
- AUs further categorized by predominant landcover types
 - Urban
 - Suburban
 - Rural

Study Assessment Units



Landcover Type	AU ID	AU Name	Relative Bacteria Geomean	AU Length Miles
urban	1007T_01	Bintliff Ditch	24.46	3.9
urban	1017E_01	Unnamed trib. of White Oak Bayou	17.22	1.92
urban	1007U_01	Mimosa Ditch	15.37	1.9
urban	1016D_01	Unnamed Trib. of Greens Bayou	15.11	4.49
suburban	1004J_01	White Oak Creek	26.39	2.96
suburban	1103G_01	Unnamed Trib. of Gum Bayou	15.26	3.29
suburban	2432A_02	Mustang Bayou	11.68	5.08
suburban	1101D_01	Robinson Bayou	6.62	2.7
rural	1104_01	Dickinson Bayou Above Tidal	14.11	3.43
rural	1103E_01	Cedar Creek	1.96	1.31

Targeted Monitoring Design

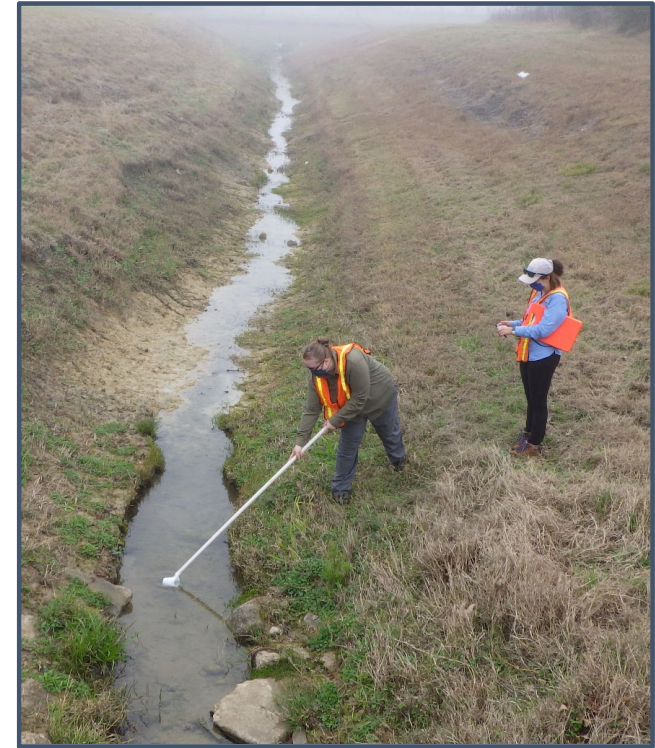


- Dry-weather Sampling
 - ≥ 72 hrs with no significant rainfall in the watershed
- Bacteria Holding Time
 - Extended to 30 hr when necessary

GOAL: Collect point-source bacteria data throughout the AUs and then refer any high exceedances to the proper authorities for further investigation and remediation.

Targeted Monitoring Design

- Windshield Survey (WS)
 - Conducted first
 - Reconnaissance (access)
 - Spatial snapshot of bacteria in AU



Targeted Monitoring Design

- Field Investigation (FI)
 - Thorough survey
 - Focused on the main AU and key tributaries
 - Flowing, point-sources
 - Permitted
 - WWTF
 - MS4
 - Unpermitted





Results

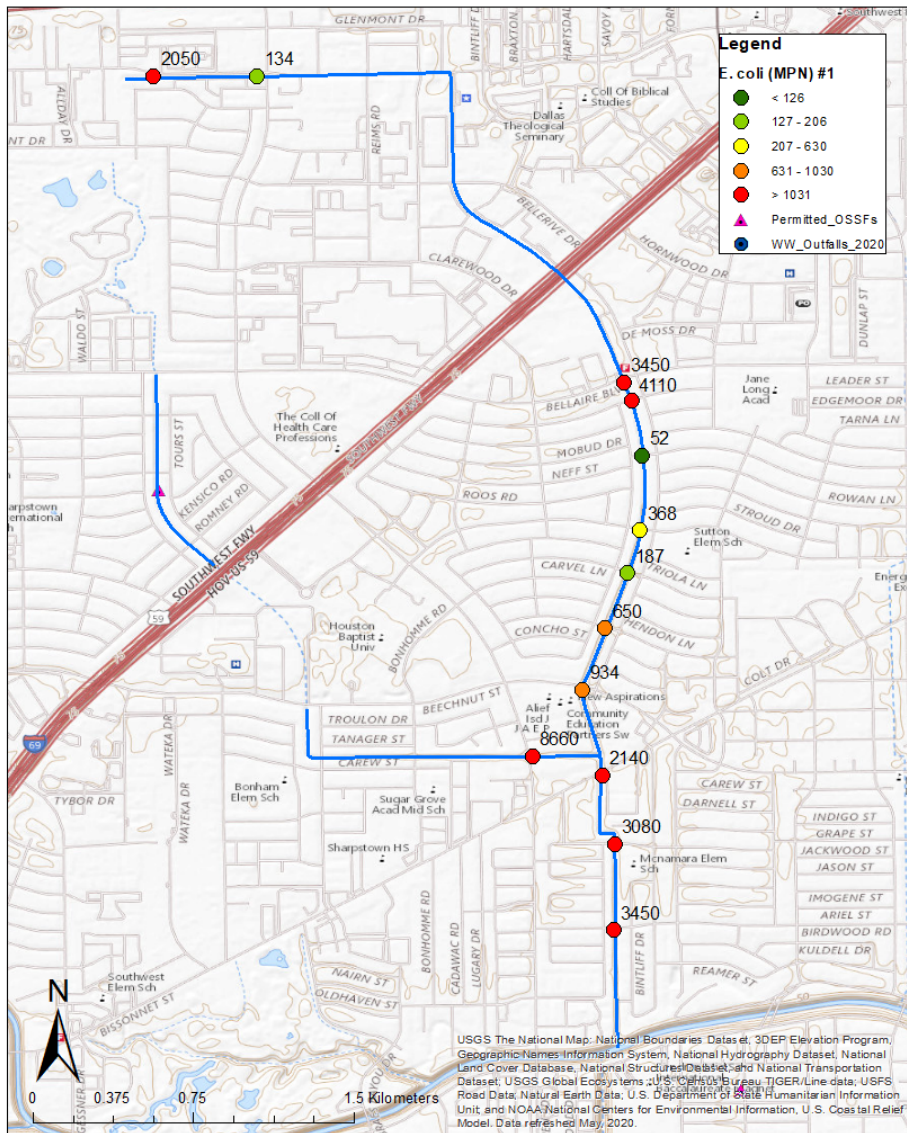
AU Name	Windshield		Field Investigation		
	# of Samples	% Above Standard	# of Samples	% Above Standard	# of Referrals
Bintliff Ditch	13	92	76	93	8+
Unnamed Trib. of White Oak Bayou	13	62	26	73	3
Mimosa Ditch	7	15	26	23	4
Unnamed Trib. of Greens Bayou	11	64	47	87	5
Unnamed Trib. of Gum Bayou	8	63	22	68	4
Mustang Bayou	16	81	39	79	10
Robinson Bayou	10	70	53	53	9
Dickinson Bayou Above Tidal	4	75	13	69	5
Cedar Creek	1	100	11	100	1



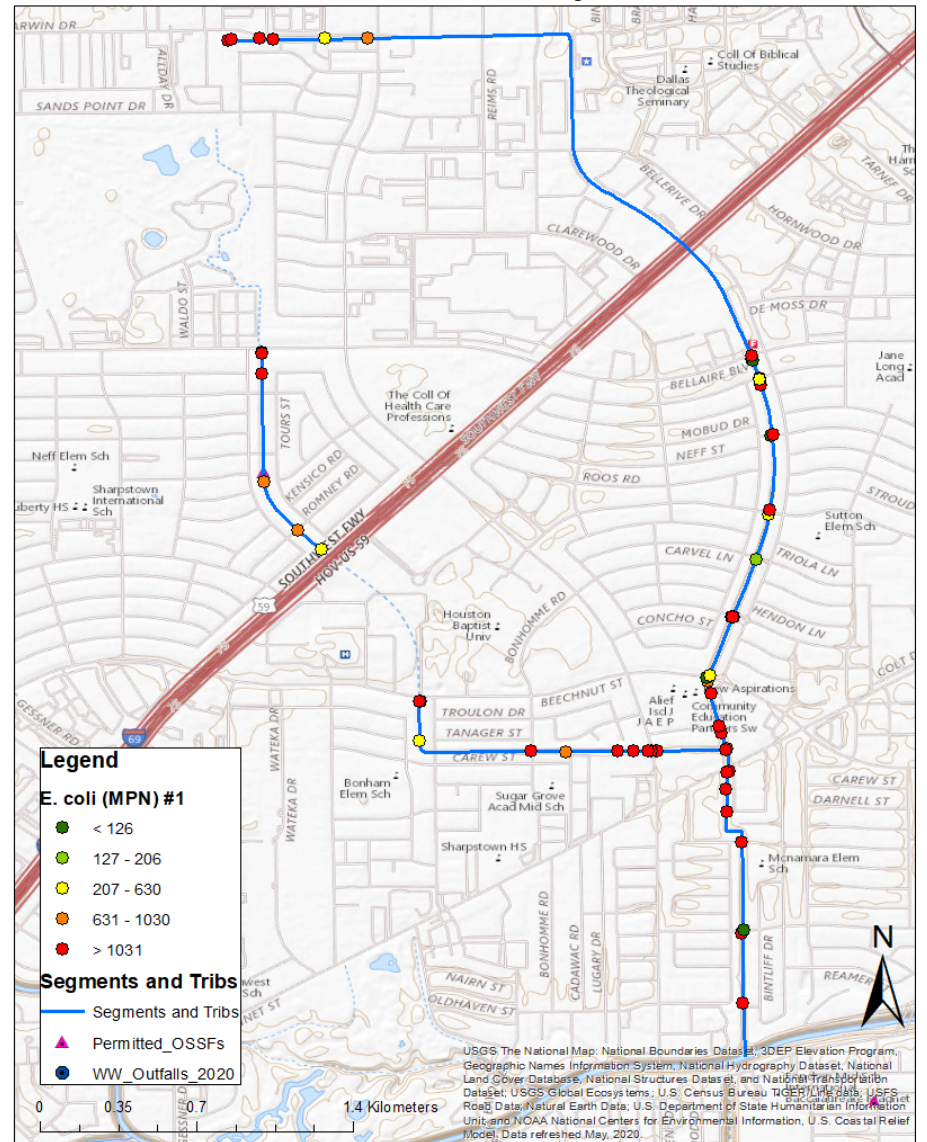
Bintliff Ditch



Bintliff Ditch Windshield Survey



Bintliff Ditch Field Investigation

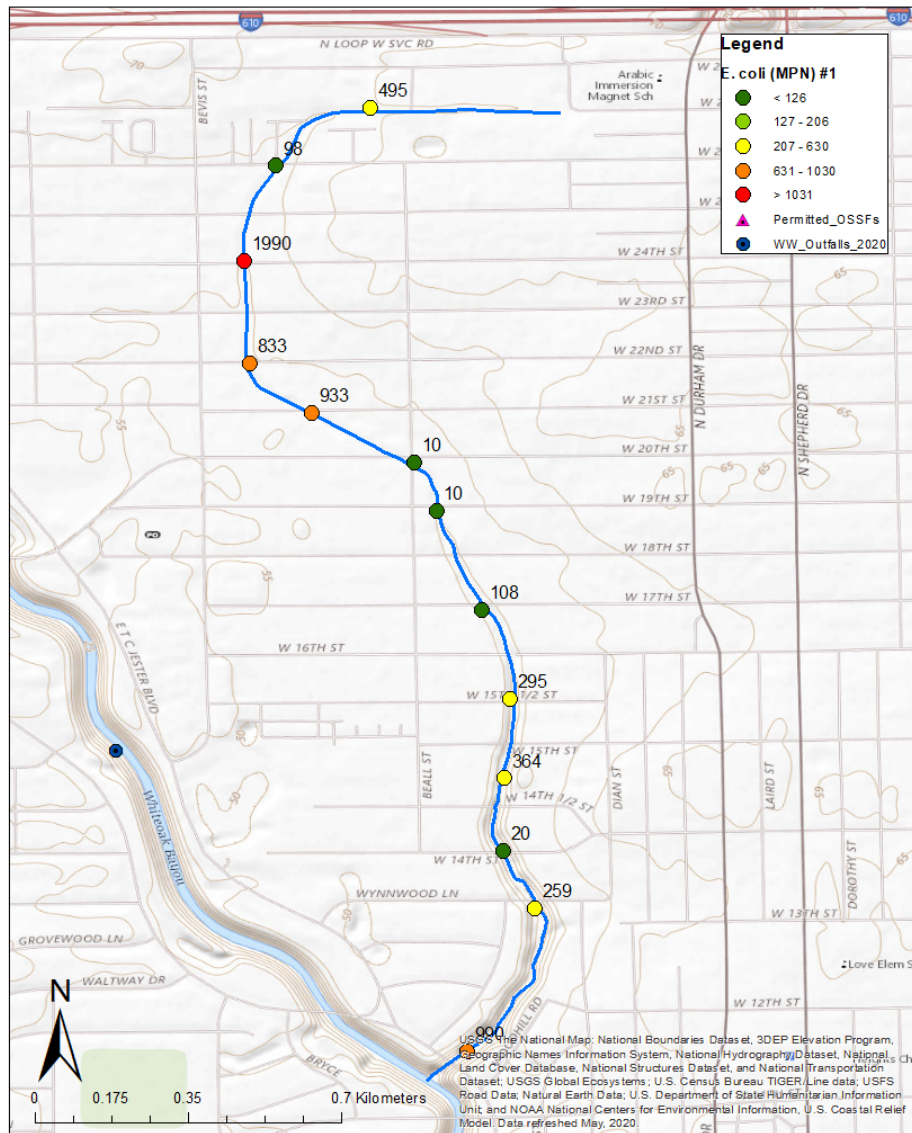




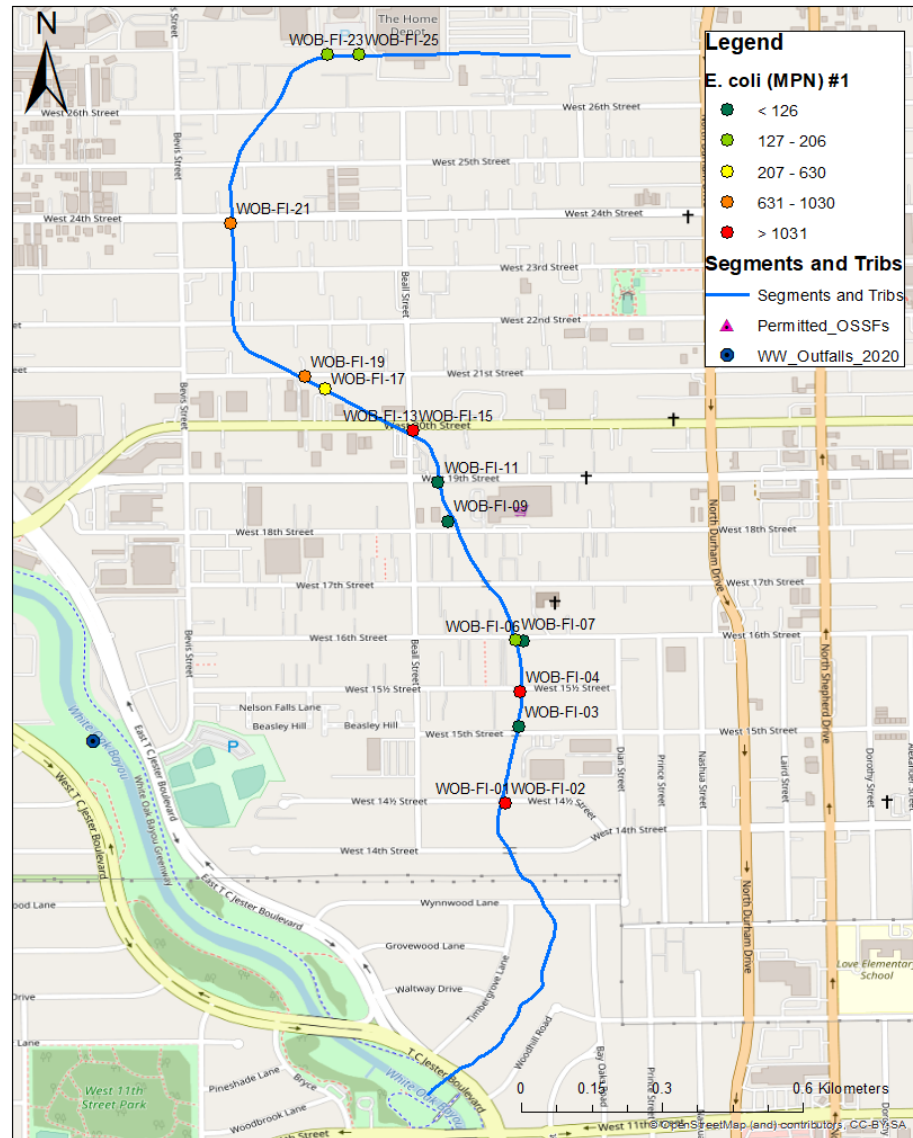
Unnamed Tributary of White Oak Bayou



Unnamed Tributary to White Oak Bayou Windshield Survey

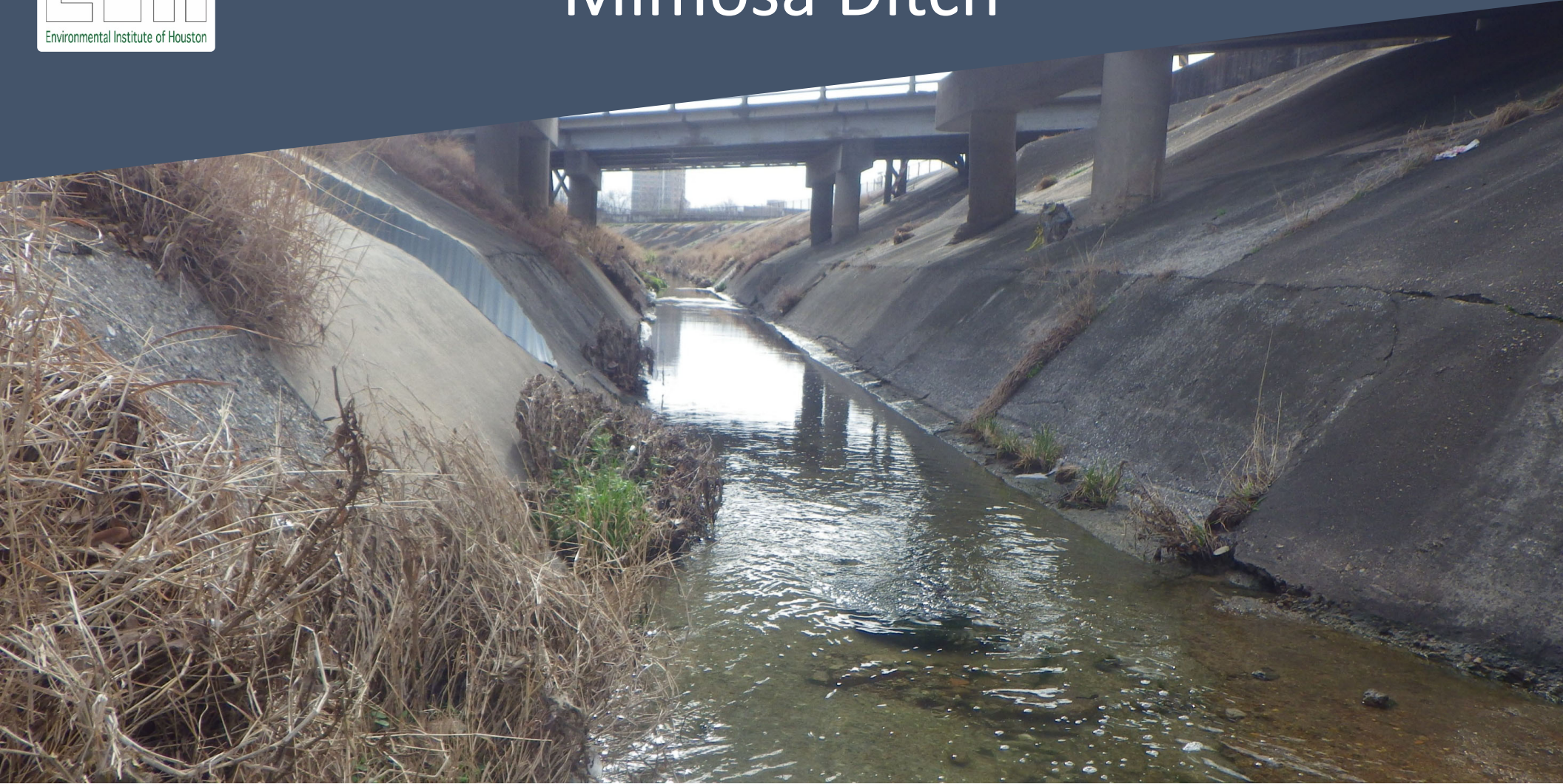


Unnamed Tributary to White Oak Bayou - Field Investigation

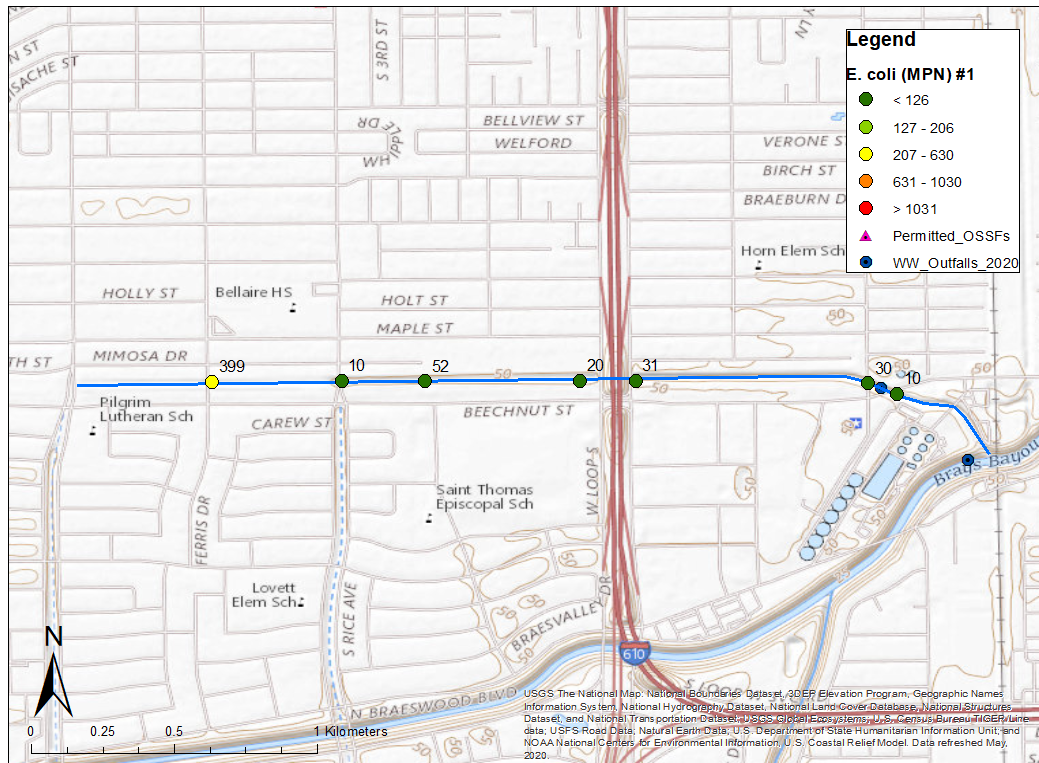




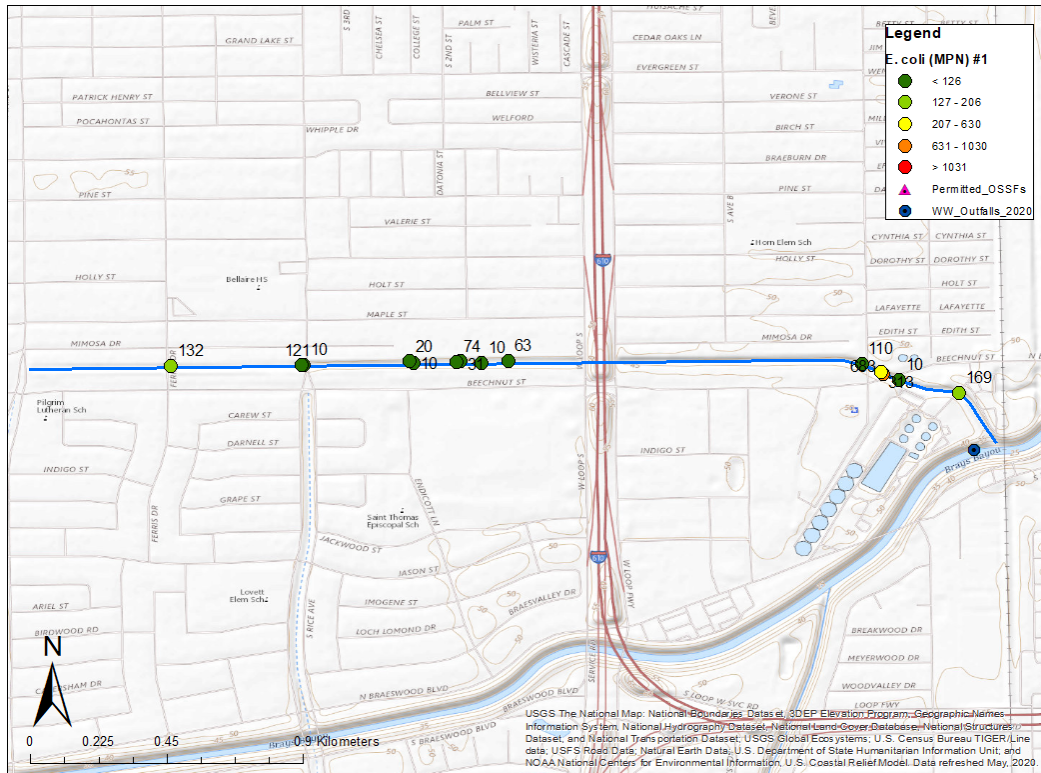
Mimosa Ditch

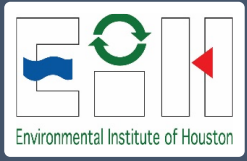


Mimosa Ditch Windshield Survey



Mimosa Ditch Field Investigation #1

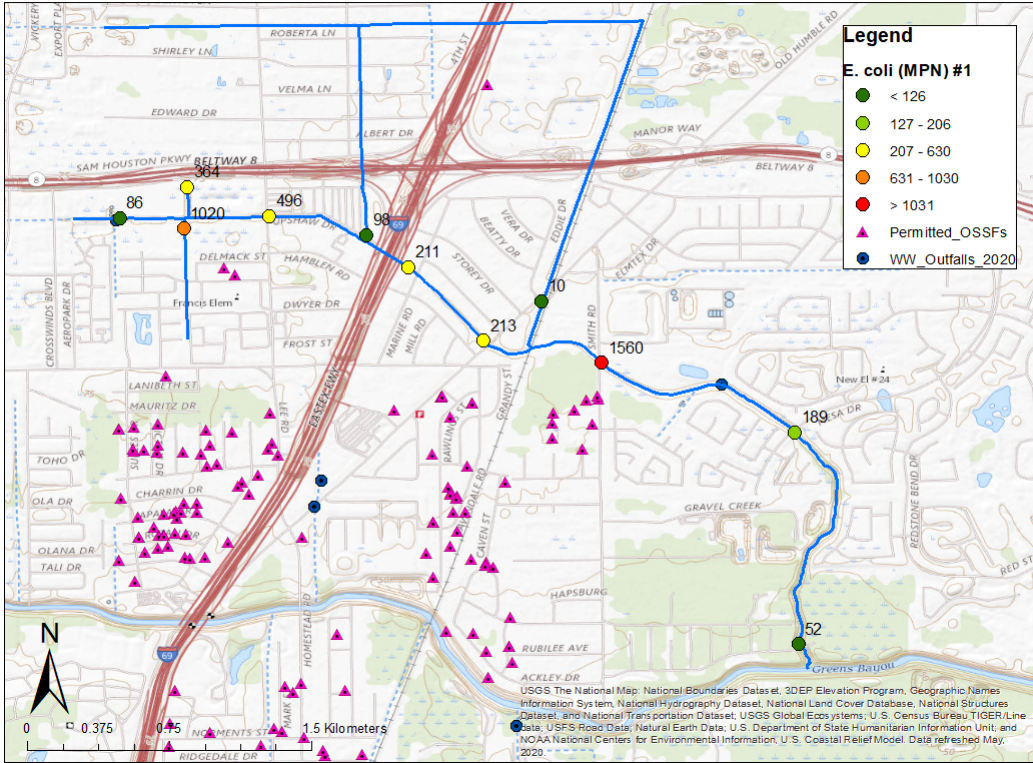




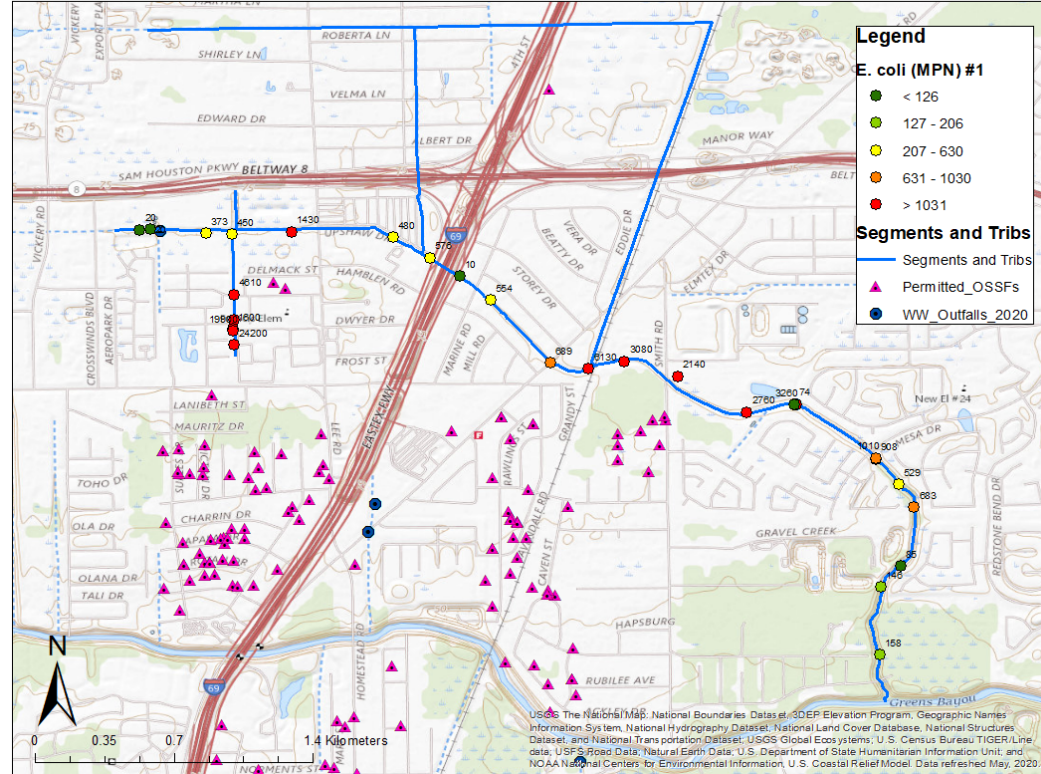
Unnamed Tributary of Greens Bayou



Unnamed Tributary to Greens Bayou Windshield Survey



Unnamed Tributary to Greens Bayou Field Investigation

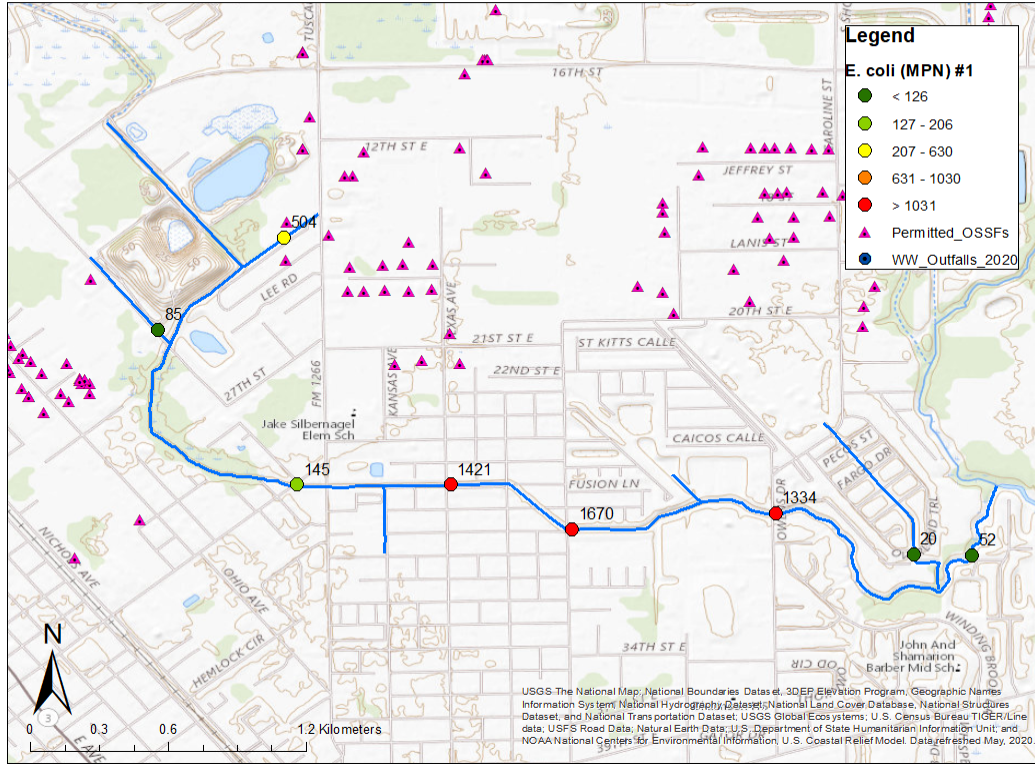




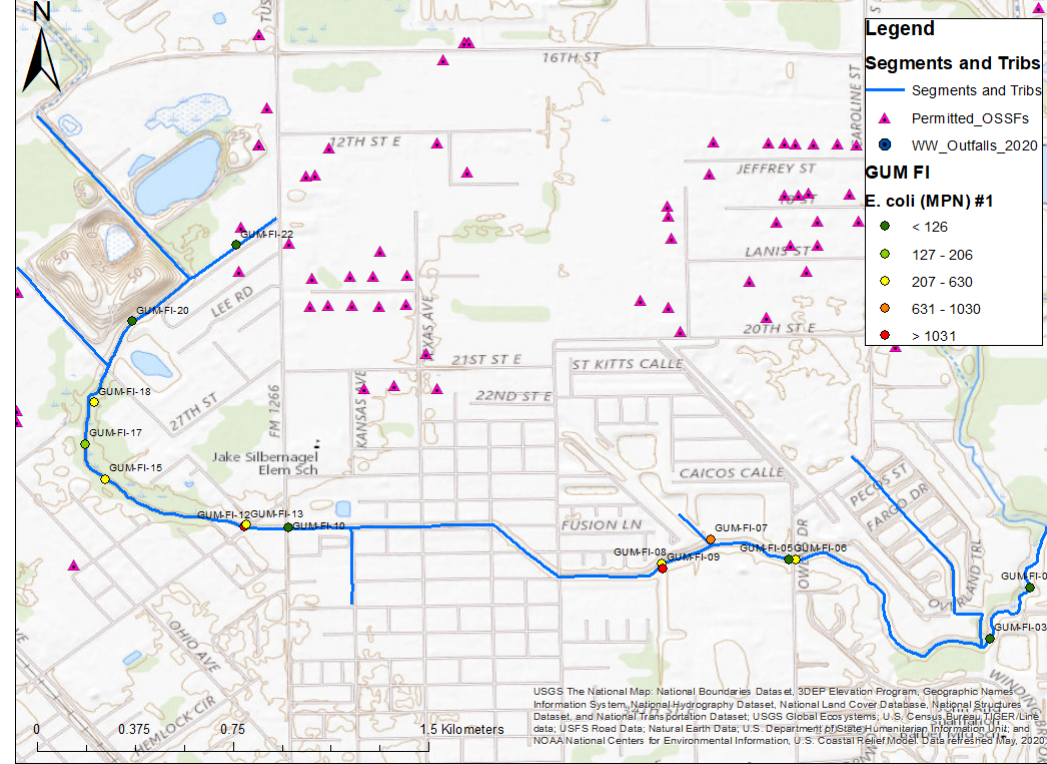
Unnamed Tributary of Gum Bayou



Unnamed Tributary to Gum Bayou Windshield Survey

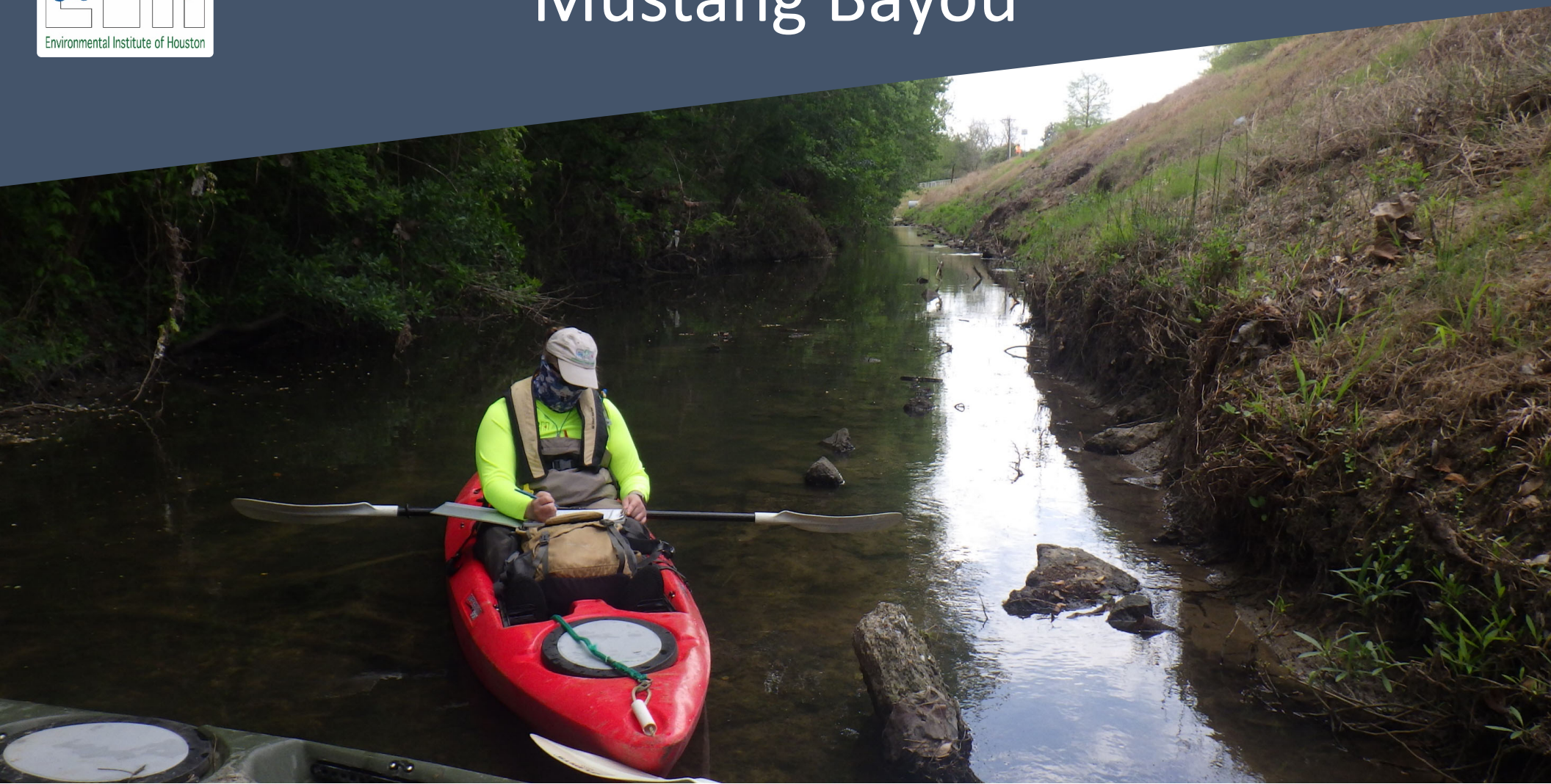


Unnamed Tributary to Gum Bayou - Field Investigation

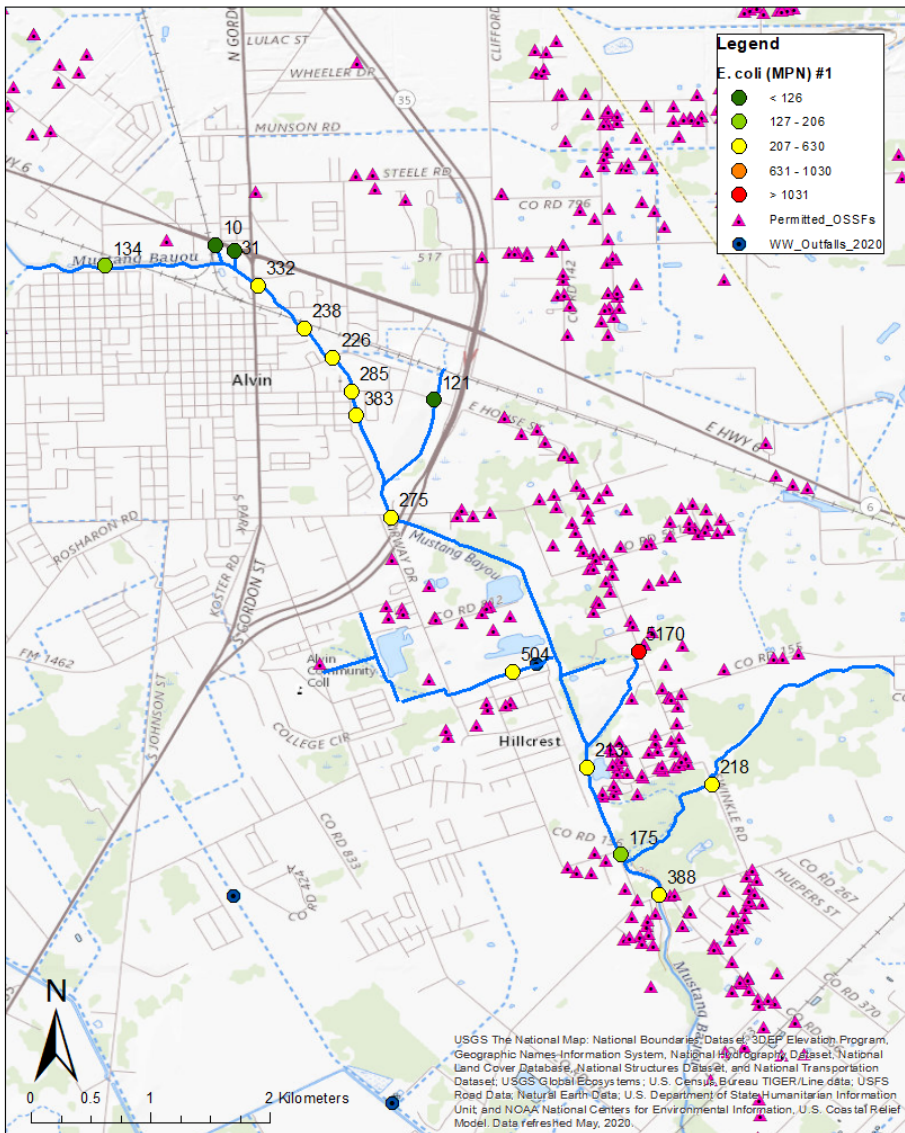




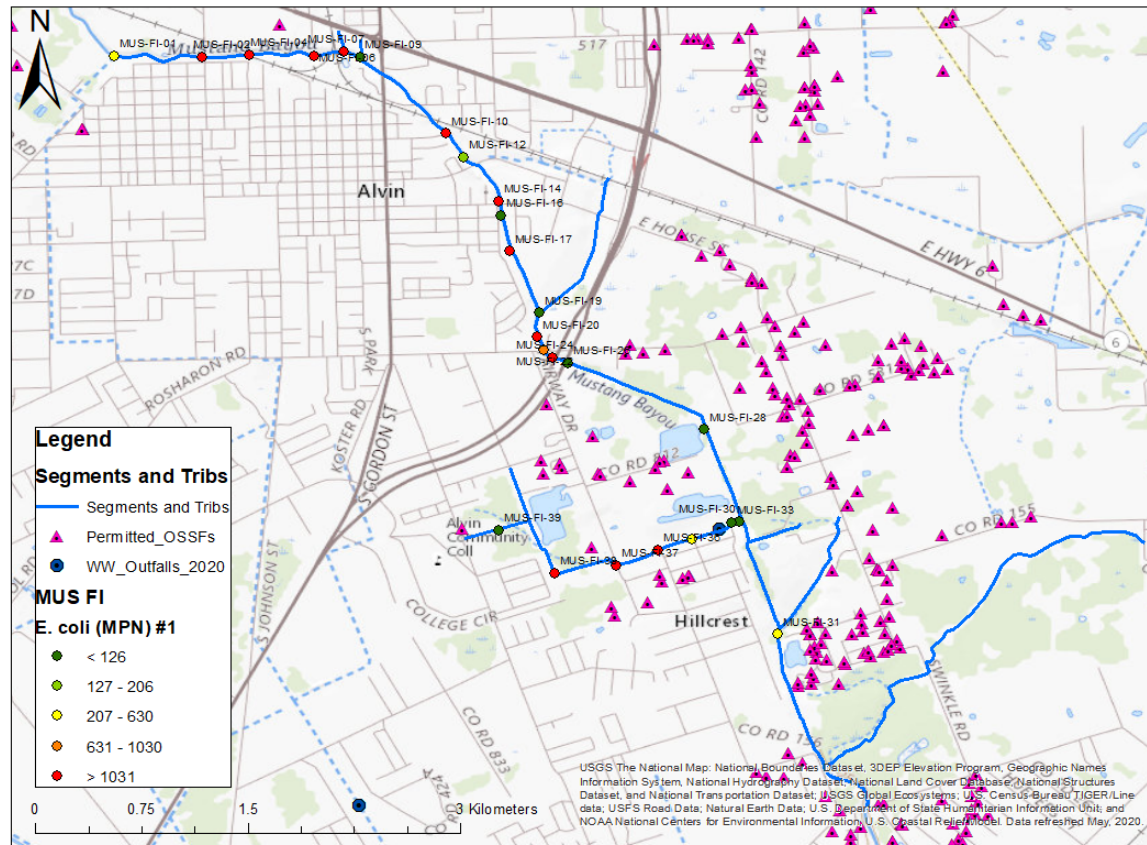
Mustang Bayou



Mustang Bayou Windshield Survey



Mustang Bayou - Field Investigation

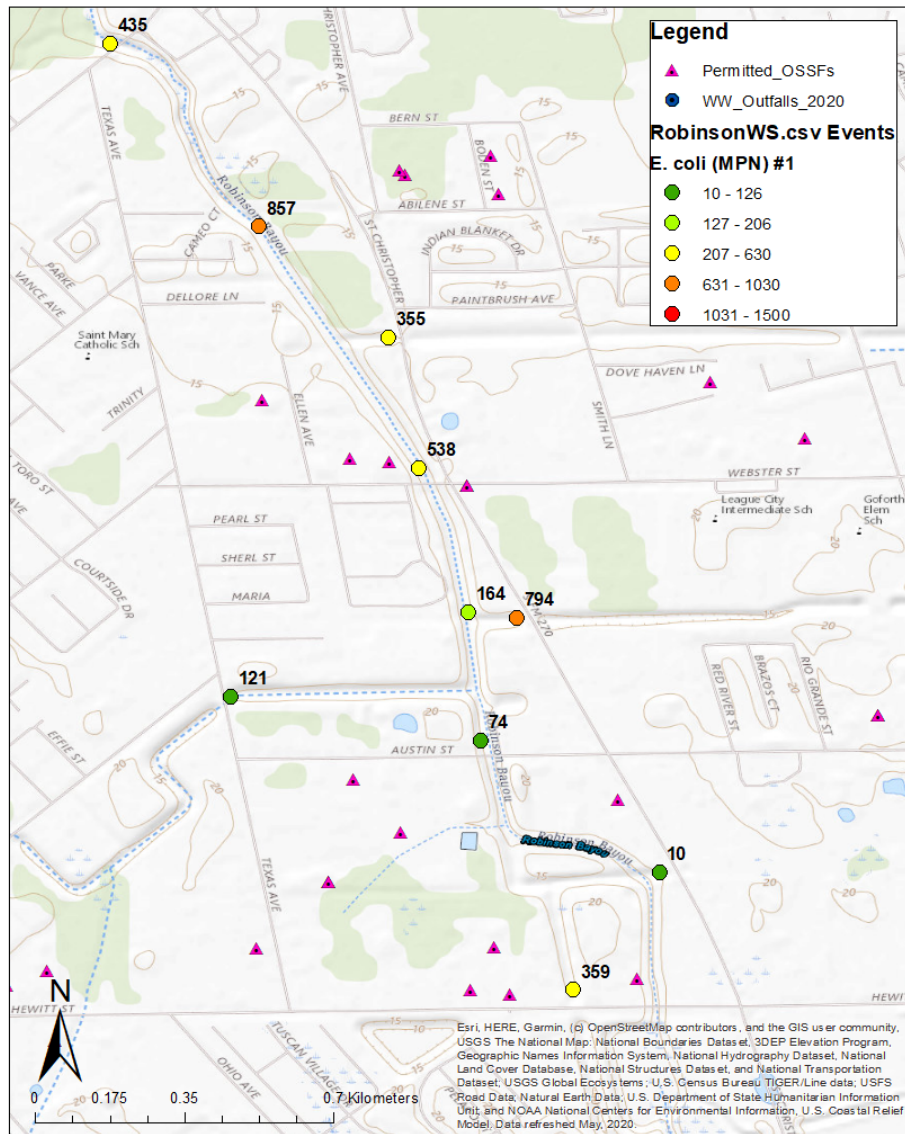




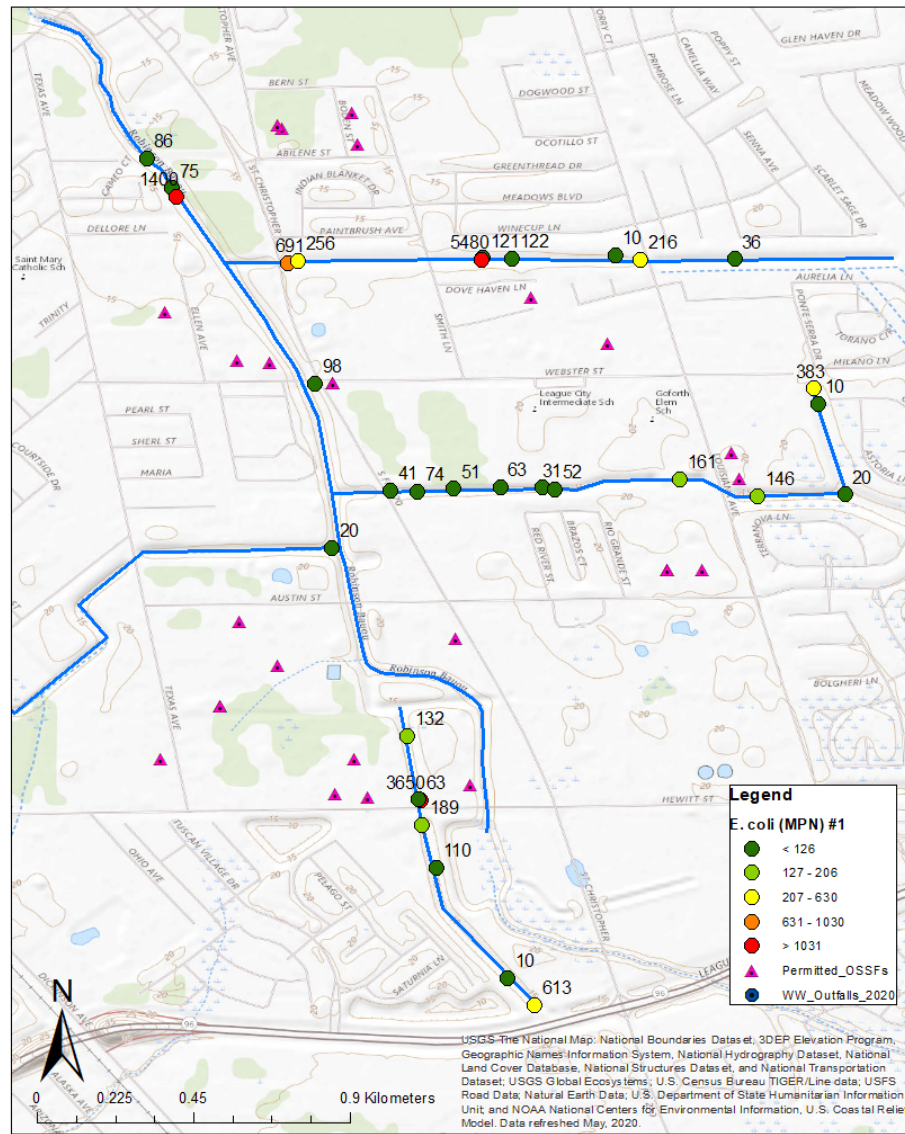
Robinson Bayou



Robinson Bayou Windshield Survey



Robinson Bayou Field Investigation #1

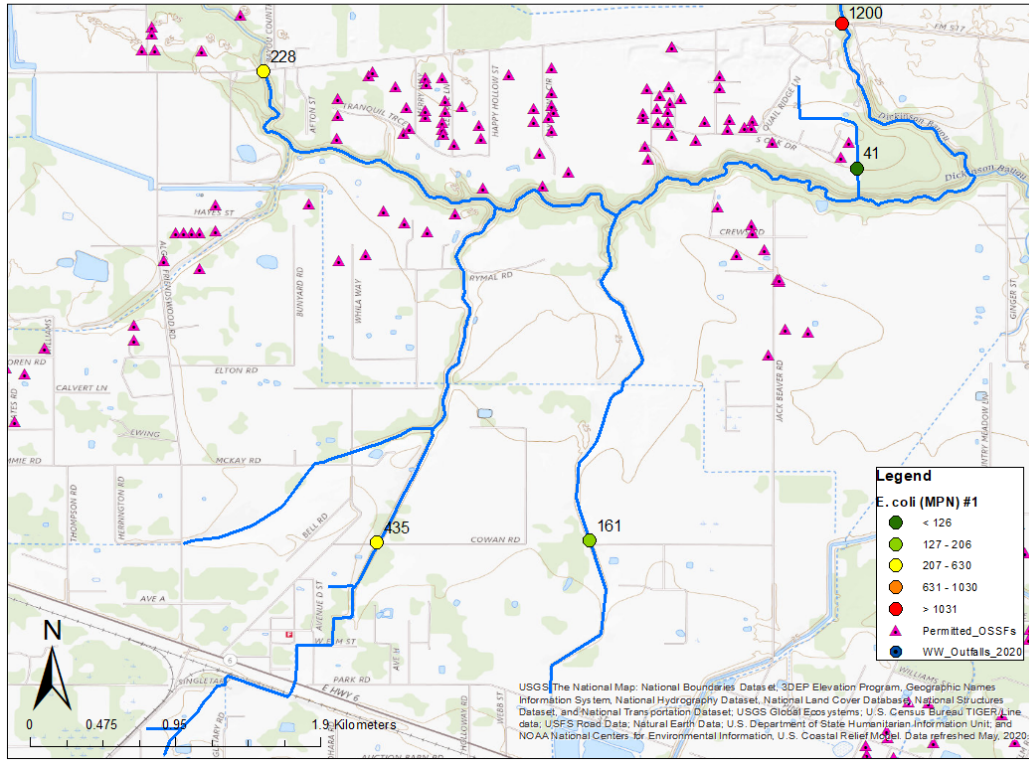




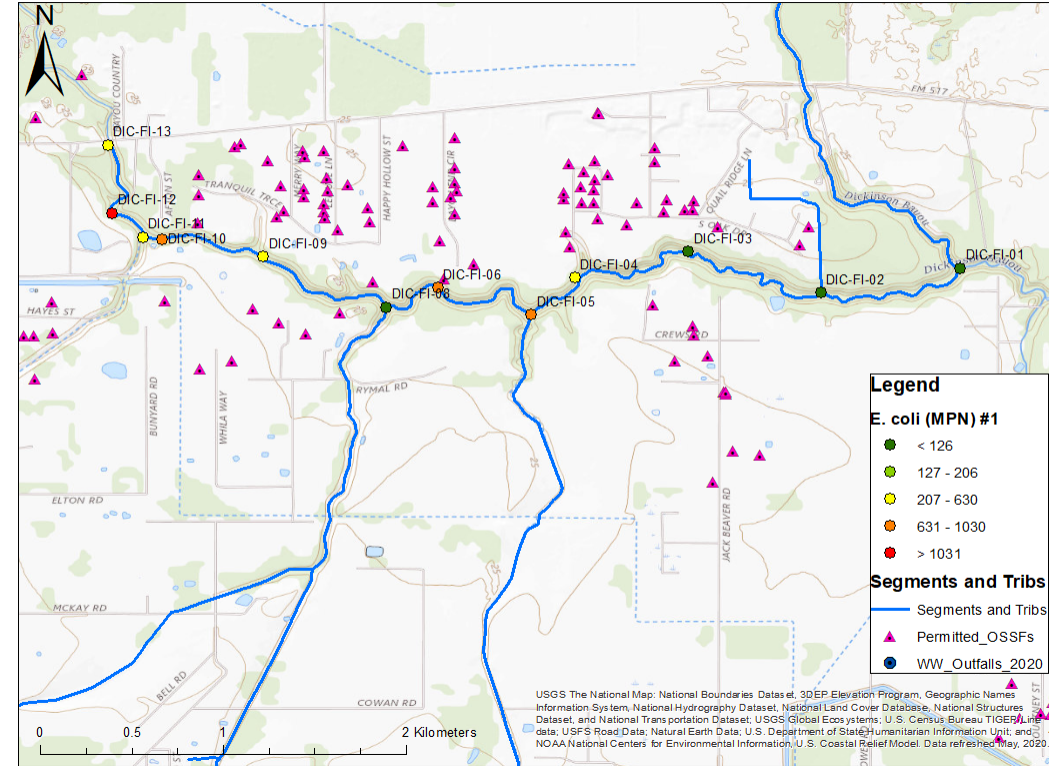
Dickinson Bayou Above Tidal

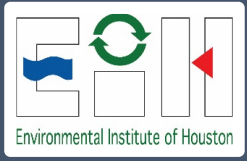


Dickinson Bayou Windshield Survey



Dickinson Bayou - Field Investigation

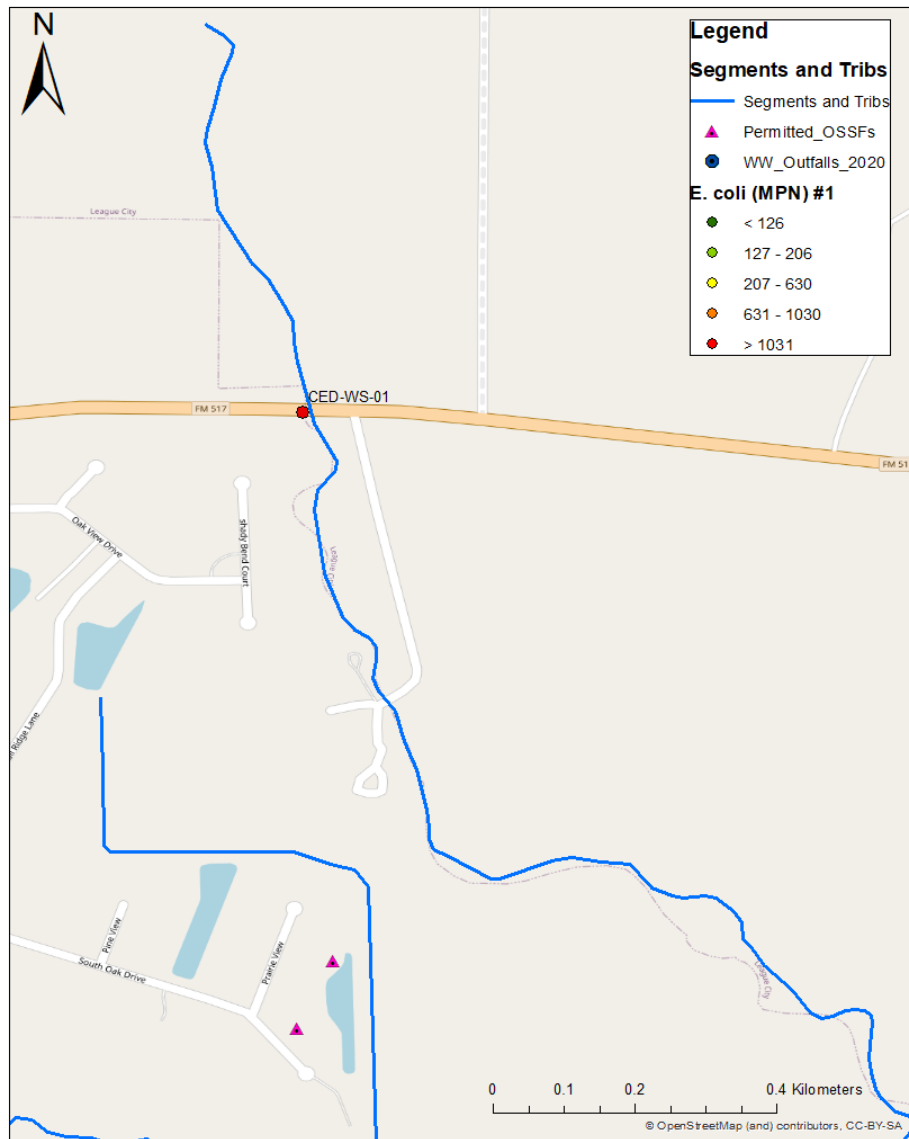




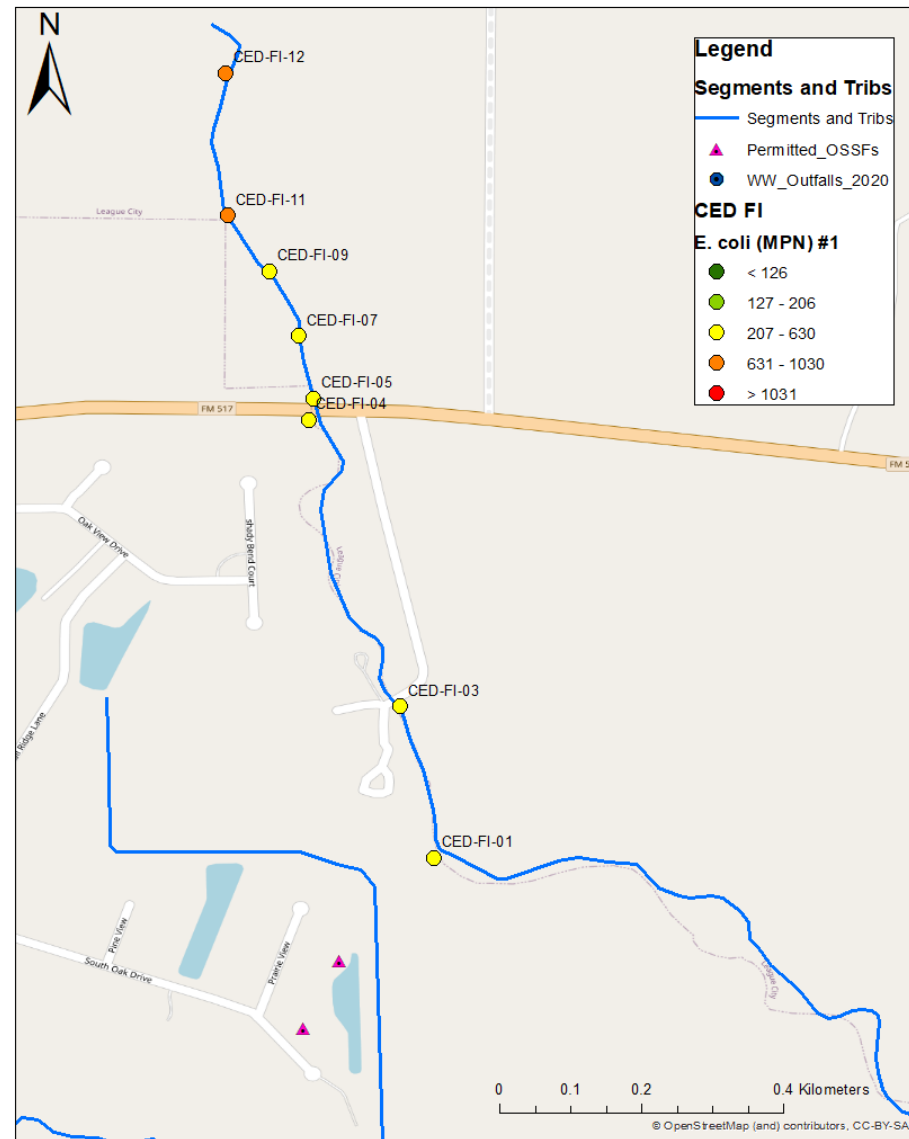
Cedar Creek



Cedar Creek - Windshield Survey

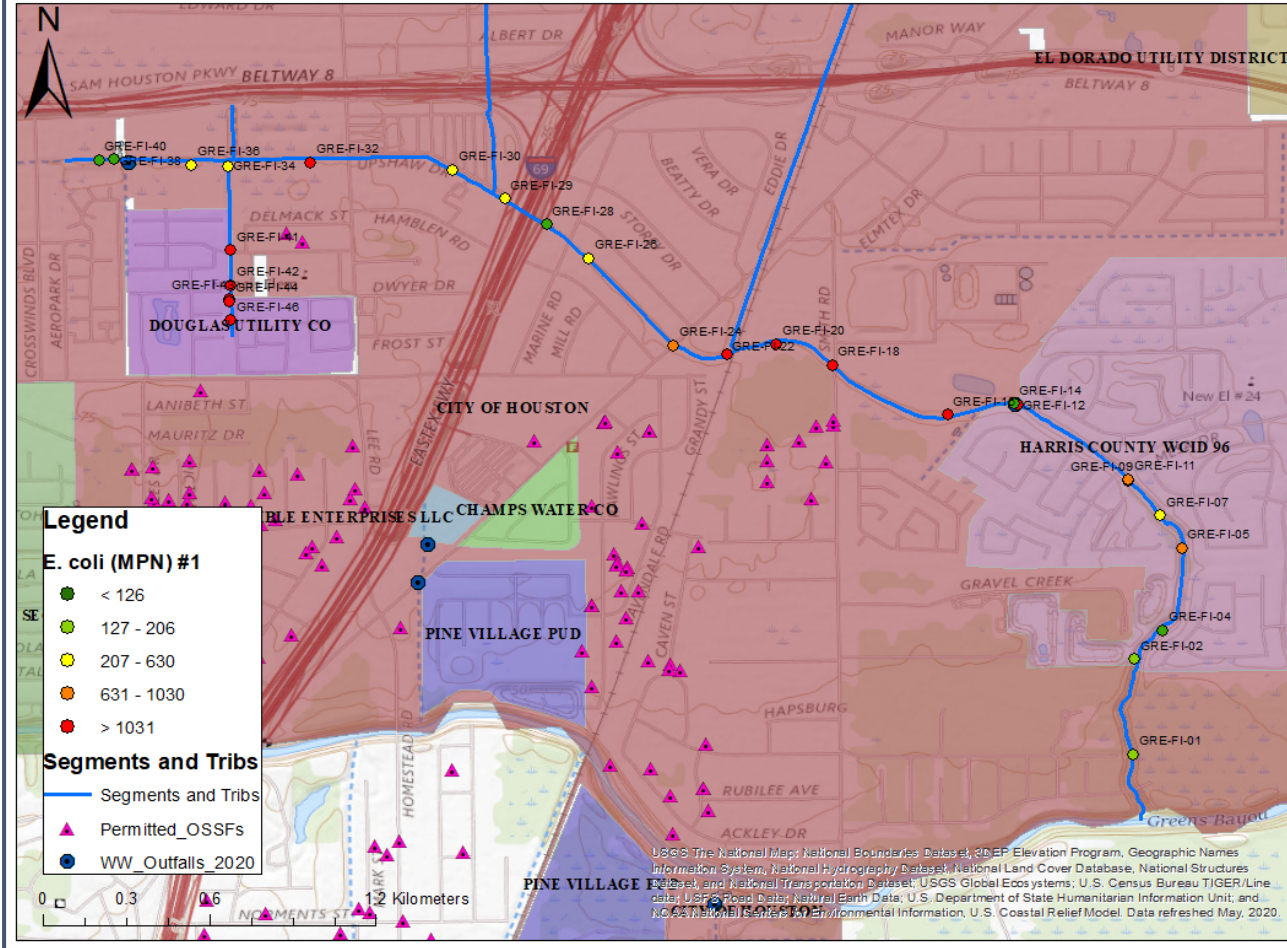


Cedar Creek - Field Investigation



Jurisdiction

Unnamed Tributary to Greens Bayou - Field Investigation



Failing Infrastructure



Other Sources



Other Sources



Next Steps



- Reports shared with authorities
- Secondary investigations by authorities
- Remediation
- Second field investigation by EIH as needed
- Important to note: This study is only a snapshot

Jenny Oakley
oakley@uhcl.edu

