

Cotton Bayou Watershed Total Maximum Daily Load Development

Virtual Meeting
July 13, 2021

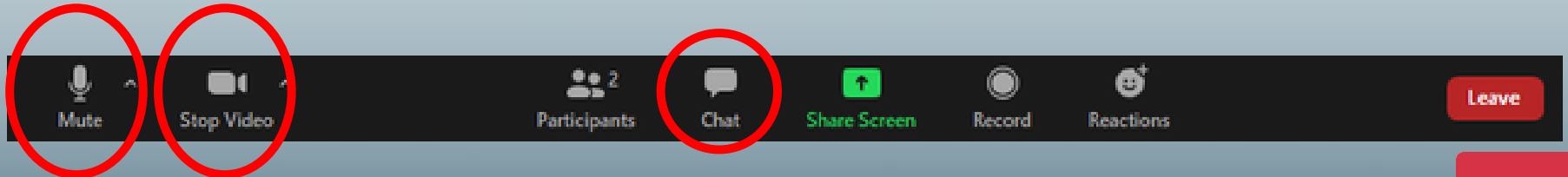




Zoom User Tools

Web Tips and Etiquette

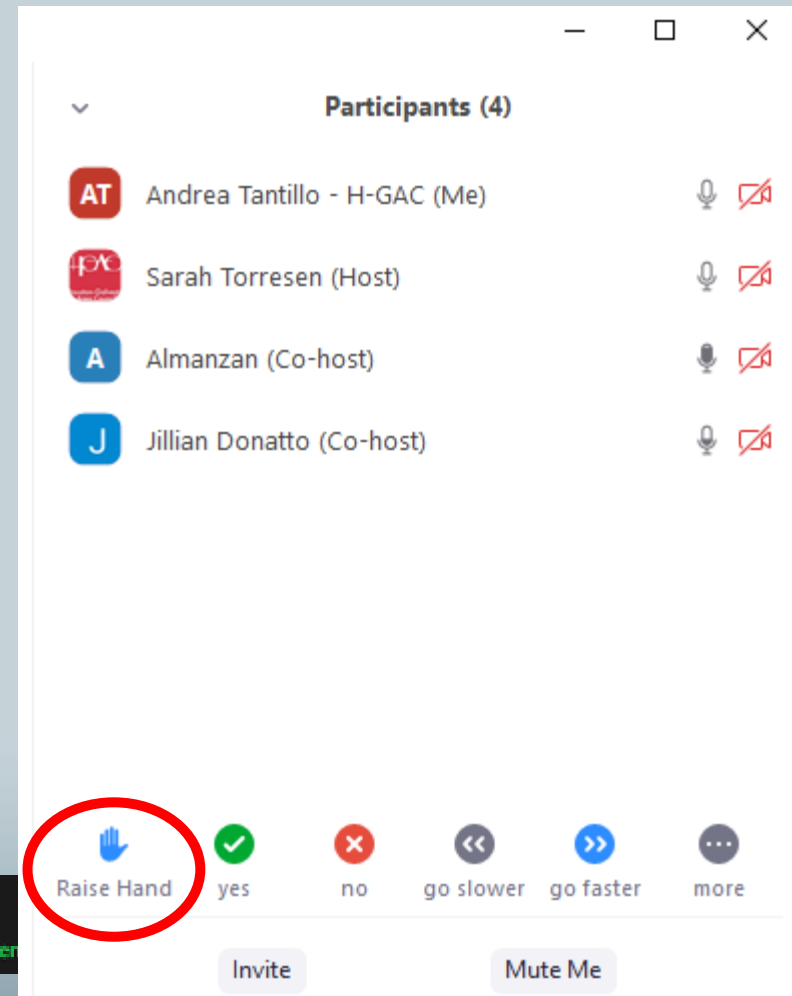
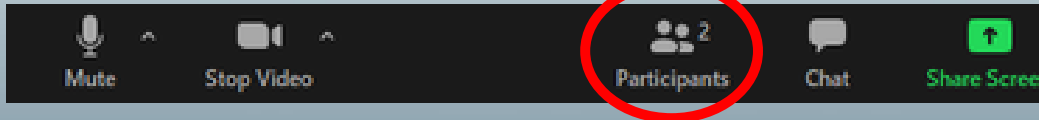
- Mute yourself when not speaking
- Turn off your camera when not presenting
- Mute/unmute and video on/off in lower left corner of the screen
- Chat is on the bottom tool bar



Web Participation Tools

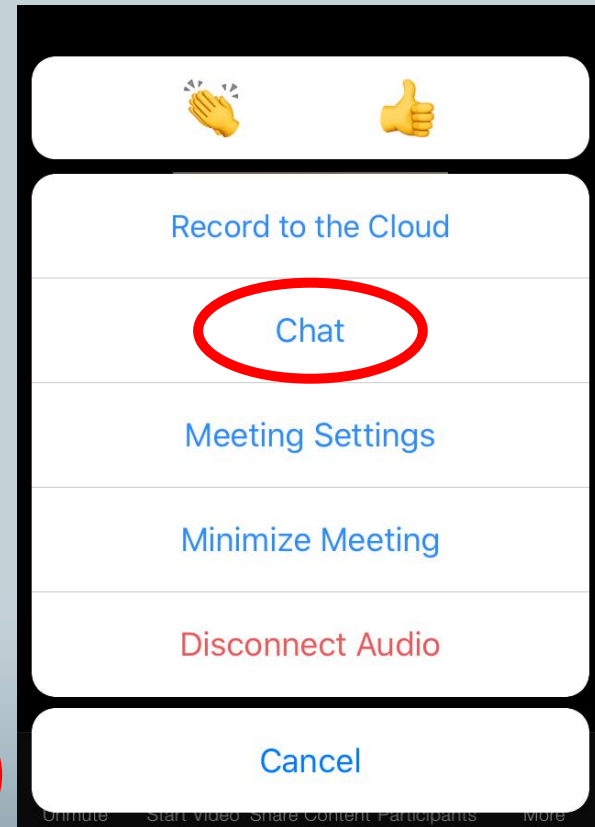
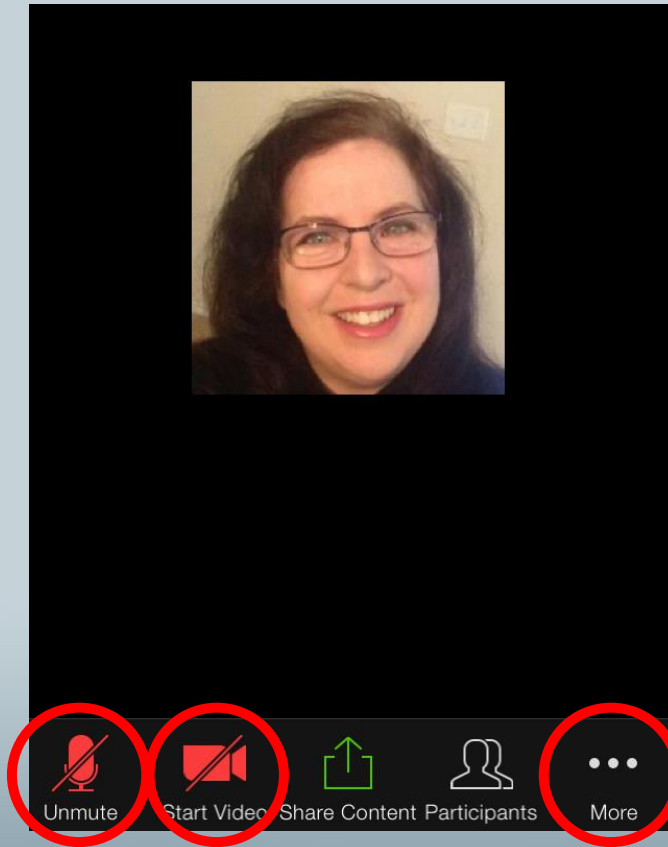
To raise your hand or answer questions:

- Click on the Participants button
- Access those controls below the participants list



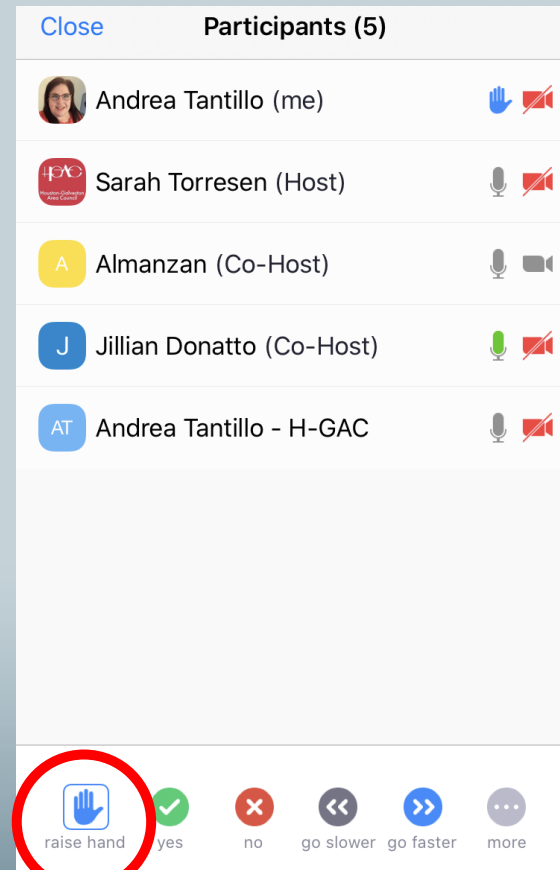
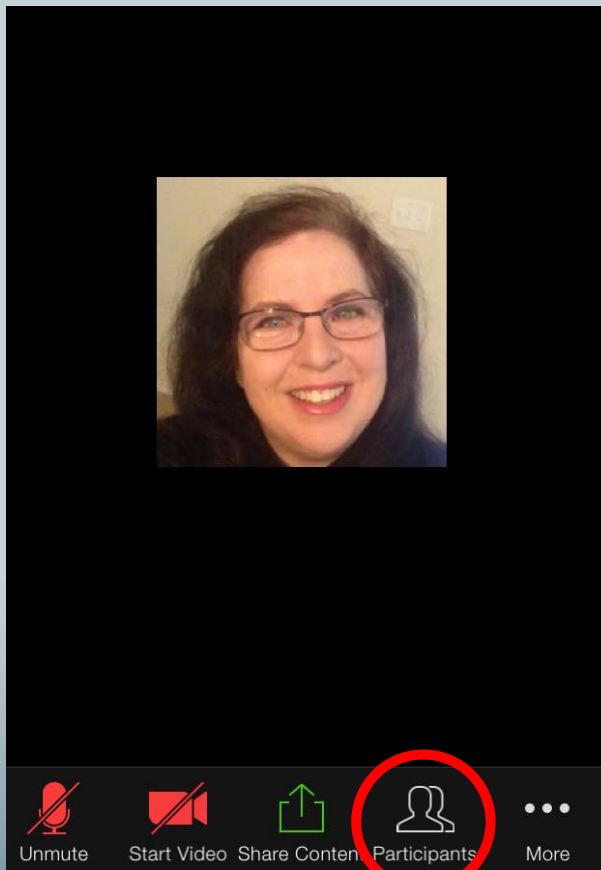
iPhone Tips and Etiquette

- Mute yourself when not speaking
- Mute/unmute and video on/off in lower left corner of the screen
- Access chat using the 3 dots at the bottom of the screen



iPhone Participation Tools

Select the Participants button to access controls (below participants list)



Meeting Outline



- Introductions
- Project Overview & Updates
- Technical Support Document
- Next Steps
- Discussion

Introductions



**Texas Commission on
Environmental Quality (TCEQ)**
lead state environmental management agency

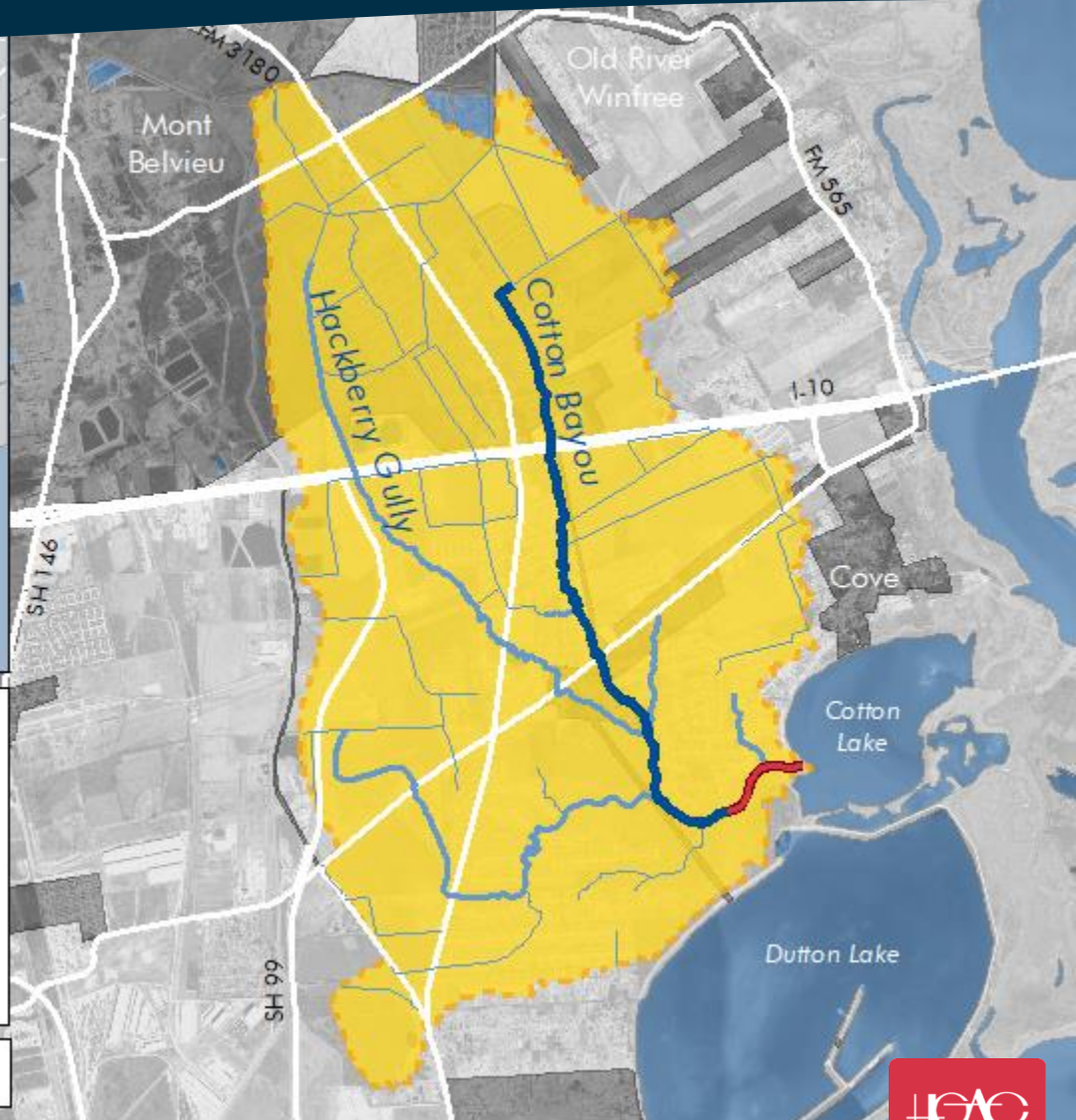
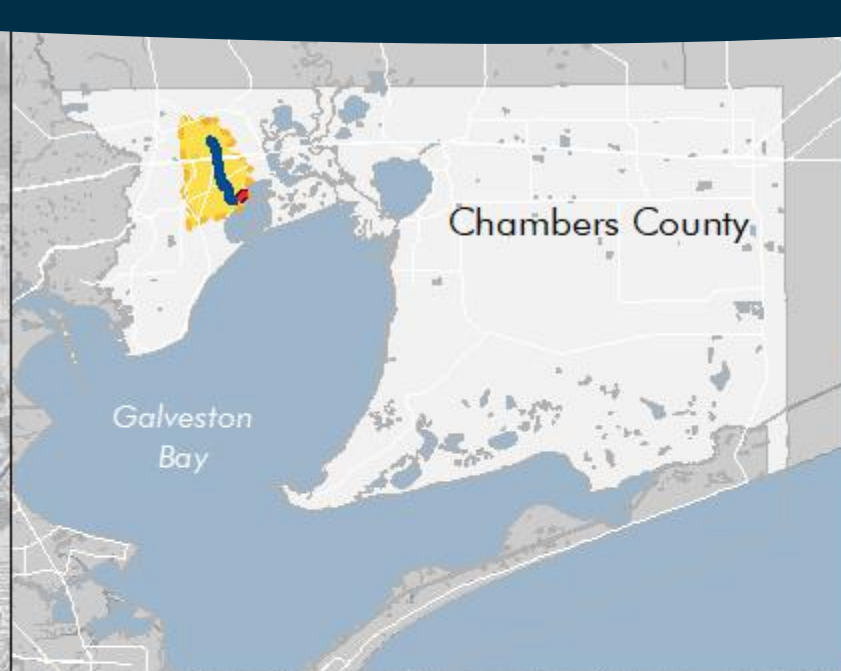


Houston-Galveston Area Council (H-GAC)
regional council of governments



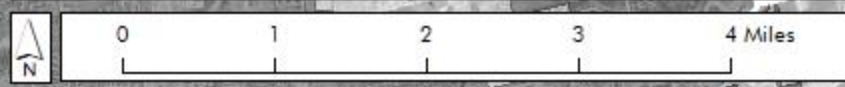
Project Overview

Watershed Area



Legend

Cotton Bayou Watershed	Stream Network
Segment 0801E	Major Roadways
Impaired Segment 0801C	City Boundaries



Surface Water Uses



- Agricultural
- Municipal
- Industrial
- Recreational
- Natural

Determining Water Quality



- Statewide monitoring
- TCEQ produces integrated report of results every two years
- Waterways exceeding standards are **impaired**

2020 Integrated Report

Impairments					
Parameter	Use	Data #	Unit	Criteria	Assessed Value
Dissolved Oxygen Grab (Minimum)	Aquatic Life	49	mg/L	3	1.55
Bacteria (Enterococcus)	Recreation	43	cfu/100 mL	35	137.4
Concerns					
Parameter	Use	Data #	Unit	Screening Level	Assessed Value
Dissolved Oxygen Grab (Screening Level)	Aquatic Life	49	mg/L	4	2.47
Chlorophyll-a	General Use	50	µg/L	21	49.52
Nitrate	General Use	51	mg/L	1.10	6.67
Total Phosphorous	General Use	44	mg/L	0.66	1.58

Bacteria Sources



■ Human Waste

- Wastewater
- Septic/Aerobic Systems
- Illicit Sewage

■ Domestic Animal Waste

- Pets
- Livestock

■ Wildlife and Invasive Waste

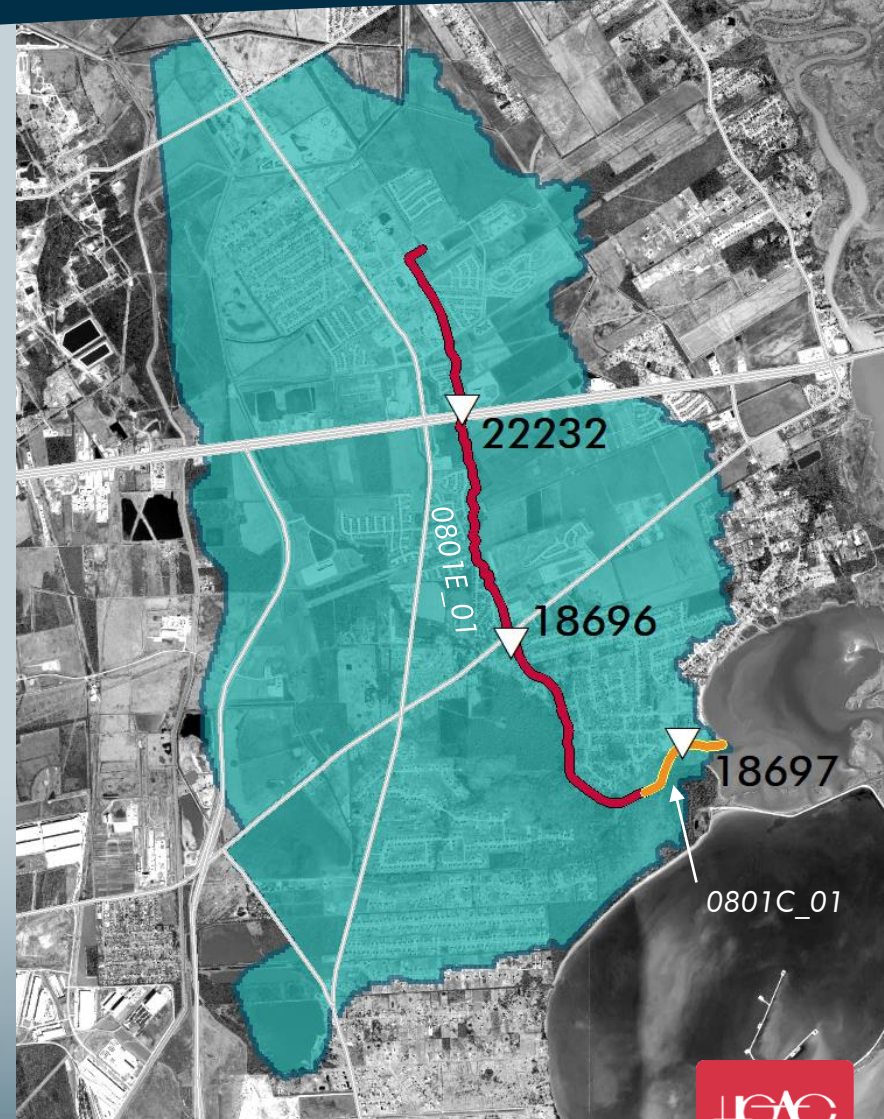
- Deer and Other Wildlife
- Feral Hogs



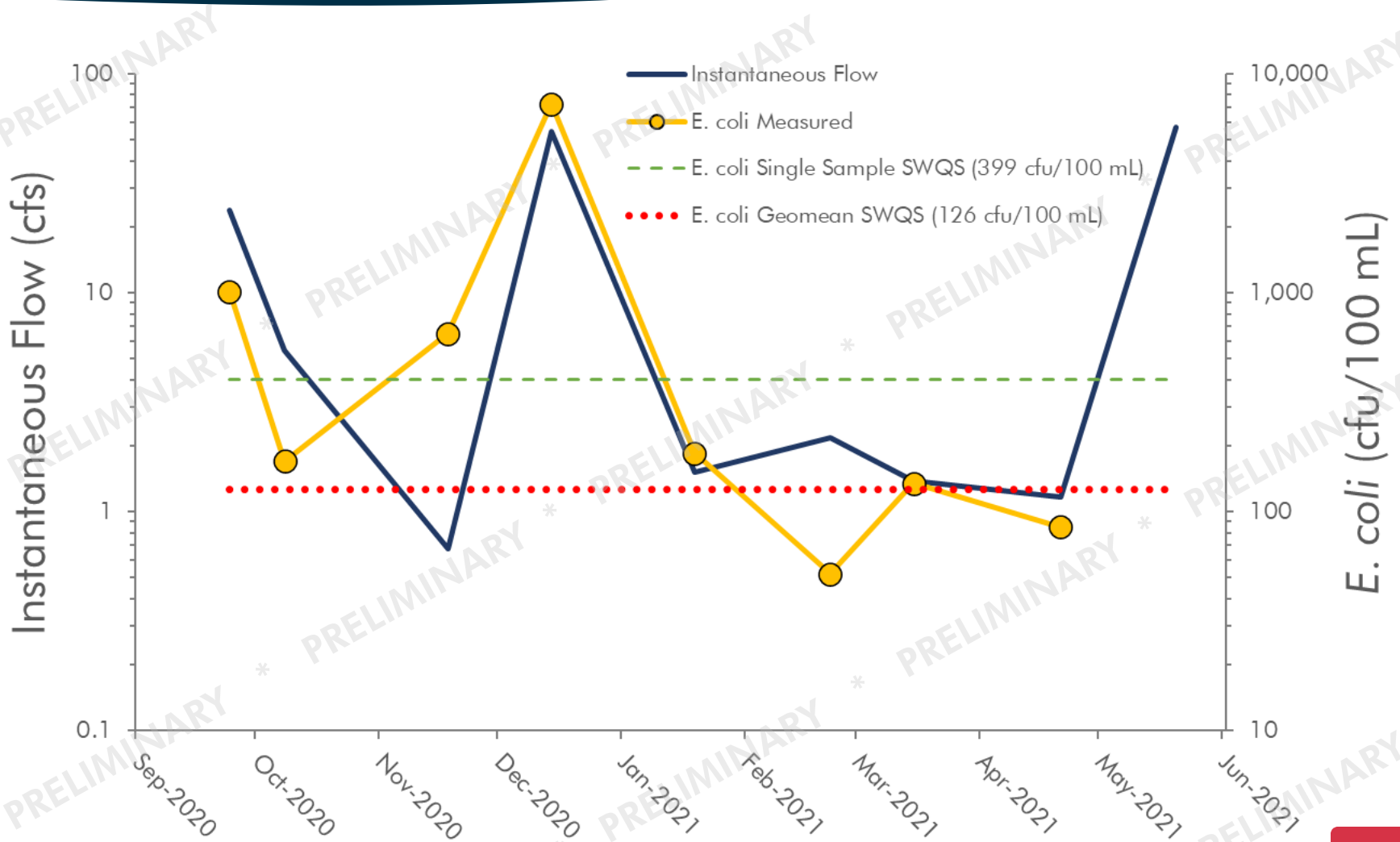
Project Updates

Stream Characterization

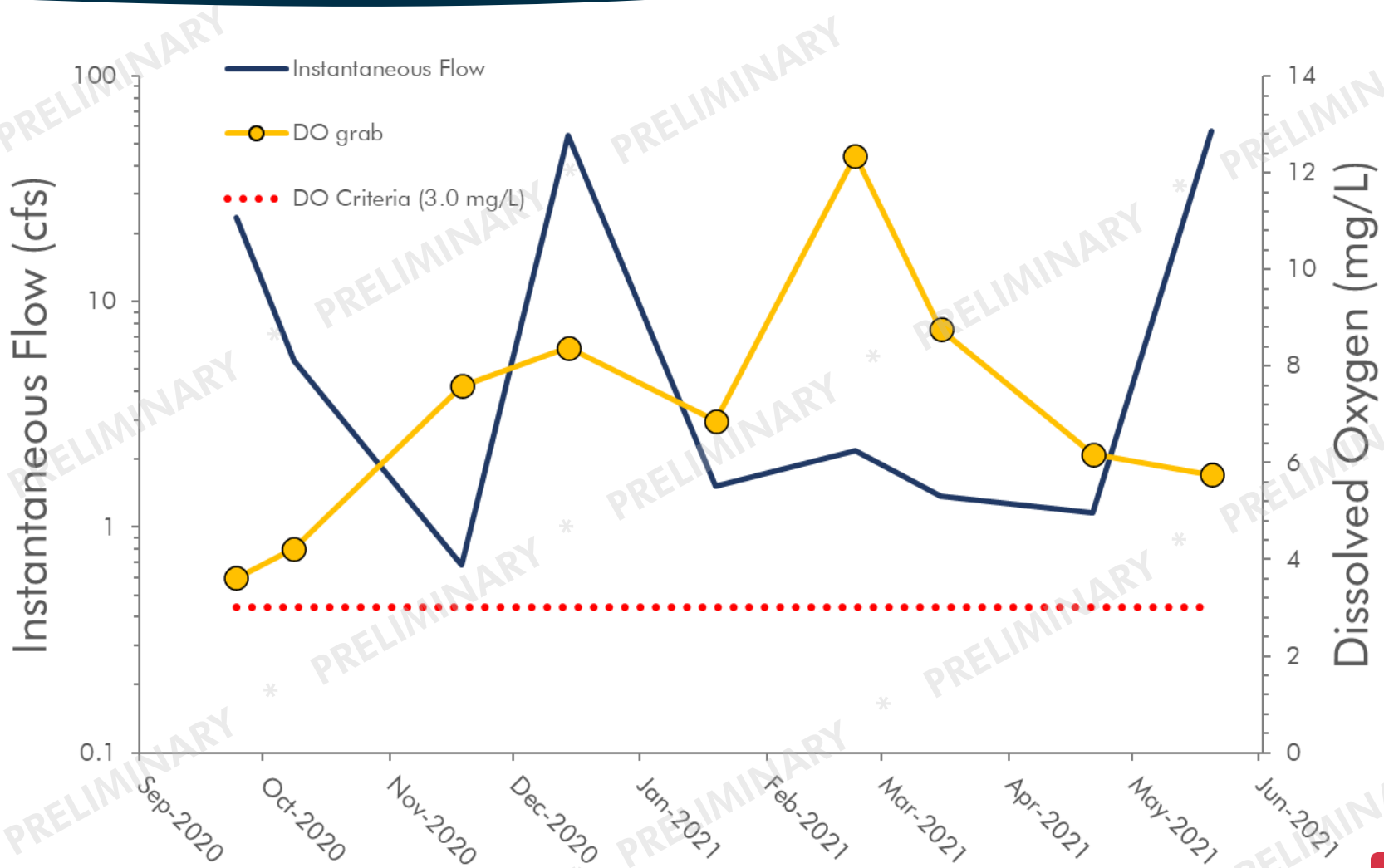
- TCEQ will reclassify the upstream portion of Cotton Bayou as an above-tidal segment
 - Bacteria monitoring at 18696 will target *Escherichia coli* (*E. coli*)
 - Established new station (22232) in Mont Belvieu to assess water quality further upstream



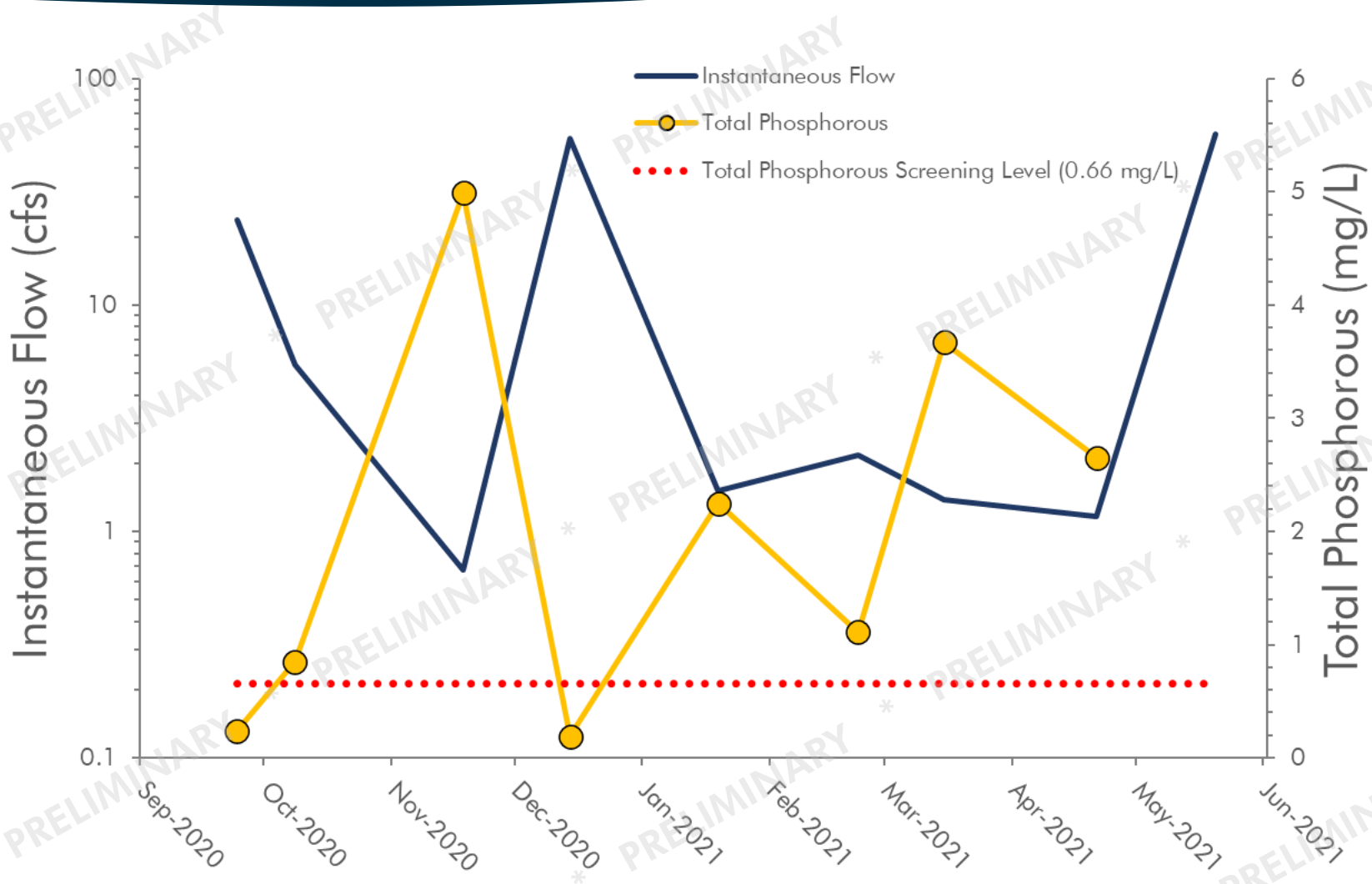
22232 - Bacteria



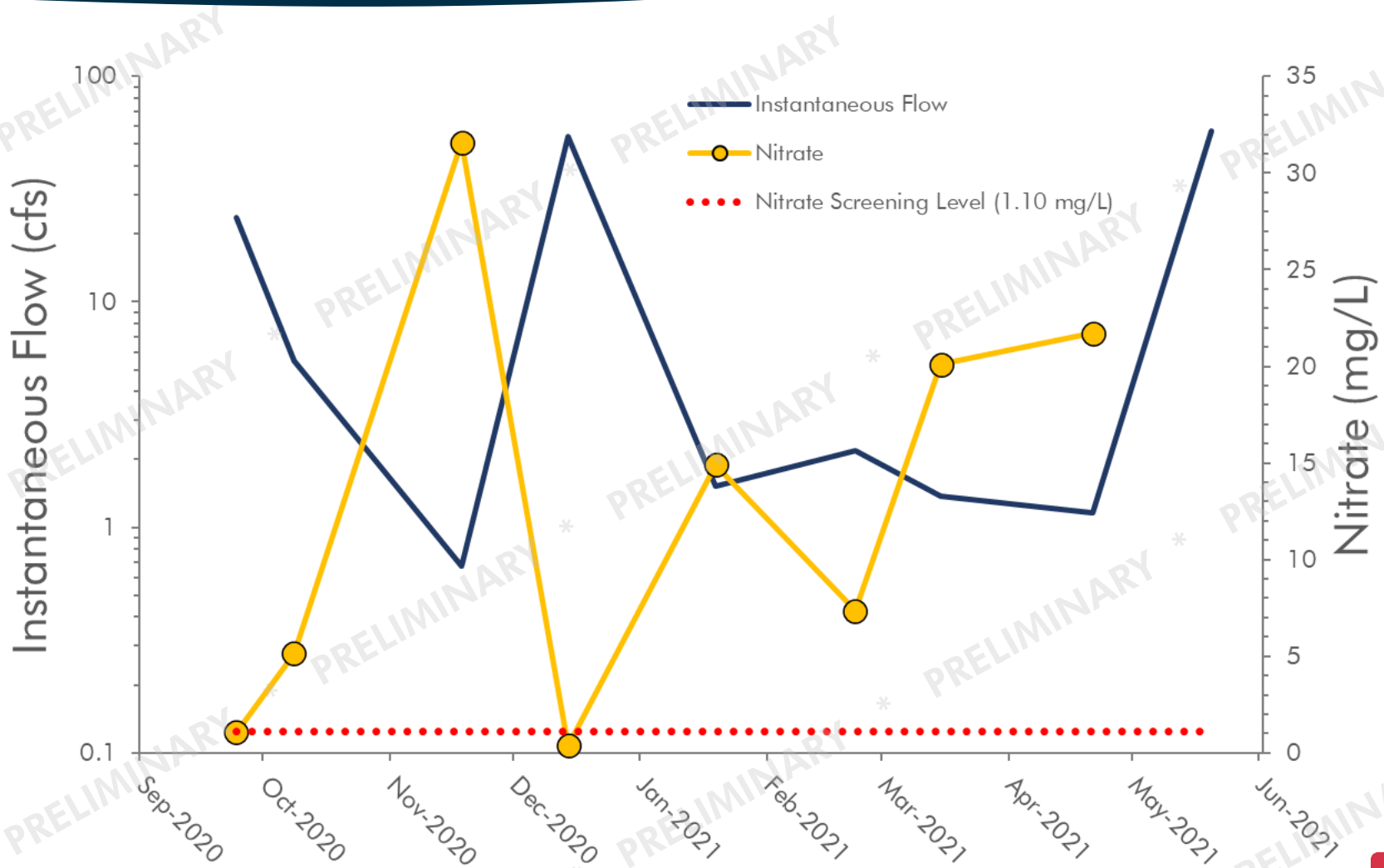
22232 – Dissolved Oxygen



22232 – Total Phosphorous



22232 - Nitrate





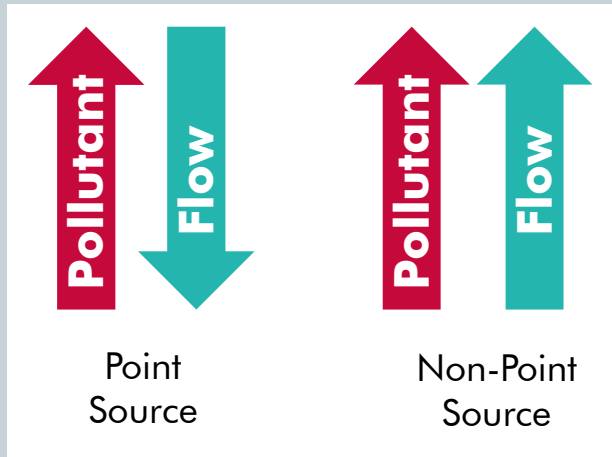
Technical Support Document

Purpose

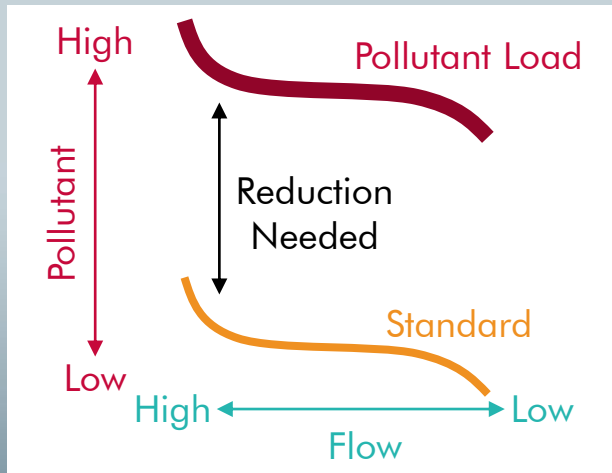


- In-depth analysis of bacteria impairment
- **Total Maximum Daily Load (TMDL)** calculation forms “budget” for pollutants

Streamflow and Pollutant Loads



- Comparing observed pollutant levels to corresponding stream flow conditions can help us estimate sources of impairment



- Comparing a curve modeled from observed pollutant levels to the standard curve can help us estimate reductions needed for compliance

Modeling Results

Percent Bacteria Reduction Needed to Comply With Standard at Different Rates of Flow		
Flow Condition	18696 (upstream)	18697 (downstream)
High Flows (<10%)	97%	99%
Moist Conditions (10-40%)	92%	87%
Mid-Range Conditions (40-60%)	87%	65%
Dry Conditions (60-90%)	83%	38%
Low Flows (>90%)	76%	

Summary of Ambient Data

- Impairment upstream is complex and may result from a combination of point and non-point source pressures
- Impairment downstream is more likely affected by non-point sources during high flow events



TMDL Development

- The TMDL is a calculation of the criterion load at the 95th percentile of flows
- The TMDL includes allocations for regulated and unregulated sources of pollution, future growth, and a 5% margin of safety by calculating the following components:

$$\text{TMDL} = \text{MOS} + \text{WLA}_{\text{wwtf}} + \text{WLA}_{\text{sw}} + \text{LA}$$

Margin of Safety (MOS)

5% of the allowable load at 95th percentile of flows

Wastewater Load Allocation for WWTFs (WLA_{wwtf})

permitted wastewater treatment facility load; includes allocation for future growth

Wastewater Load Allocation for Stormwater (WLA_{sw})

permitted stormwater load

Load Allocation:

unregulated source load



Next Steps

TMDL Timeline



Technical Goals



- Complete development of Technical Support Document
- Complete TMDL analysis for impaired segment
- Meet with stakeholders to begin implementation strategy discussion

Stakeholder Engagement



- Share your knowledge and feedback
- Help us coordinate with local efforts
- What are your ideas for this watershed?

Discussion and Questions

For more information,
please contact:

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