

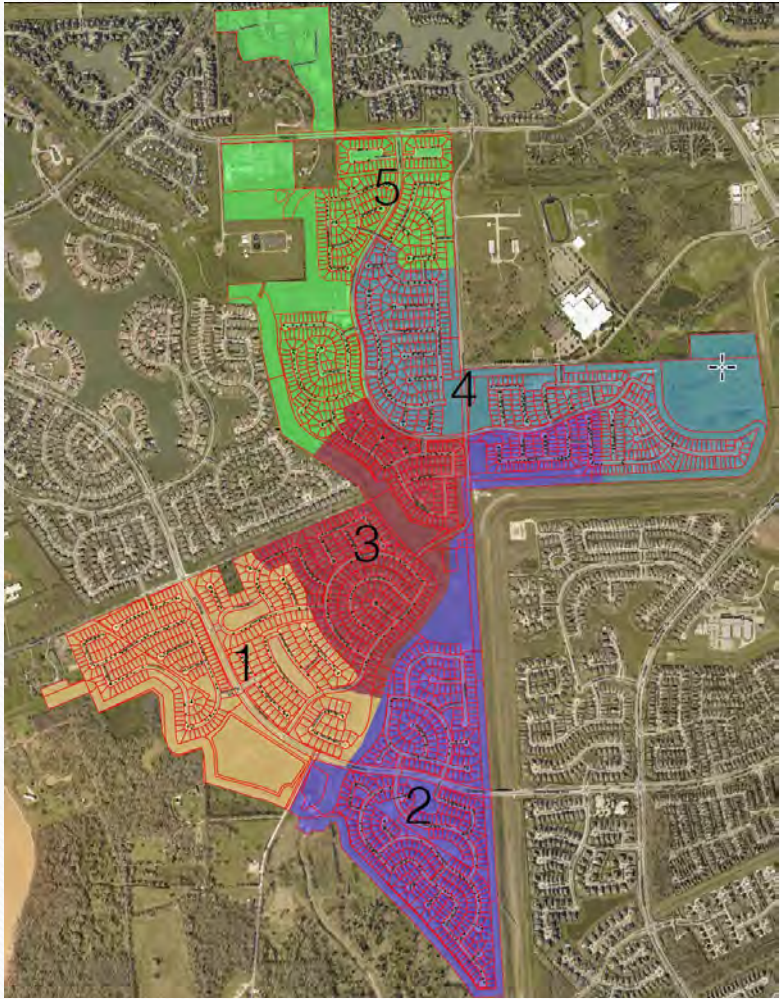
Levee Improvement District 19

Feb 2019 Community Meeting

Agenda

- Introduction (LID 19 Directors and FBC elected officials)
- Words from Fort Bend County Judge George
- Operational Report (Jeff Perry – LMS)
- District Financial Update
- Status of district projects (completed, in-progress, proposed)
- Aptim Report
- Responses to pre-submitted questions

LID 19 Directors



Precinct 1
Kalapi Sheth
Vice President
5/18-5/20



Precinct 2
James Green
President
5/18-5/22



Precinct 3
John Arndt
Asst Secretary
5/18-5/22



Precinct 4
Dean Cooper
Asst Vice President
5/18-5/20



Precinct 5
Radhika Iyer
Secretary
5/18-5/22

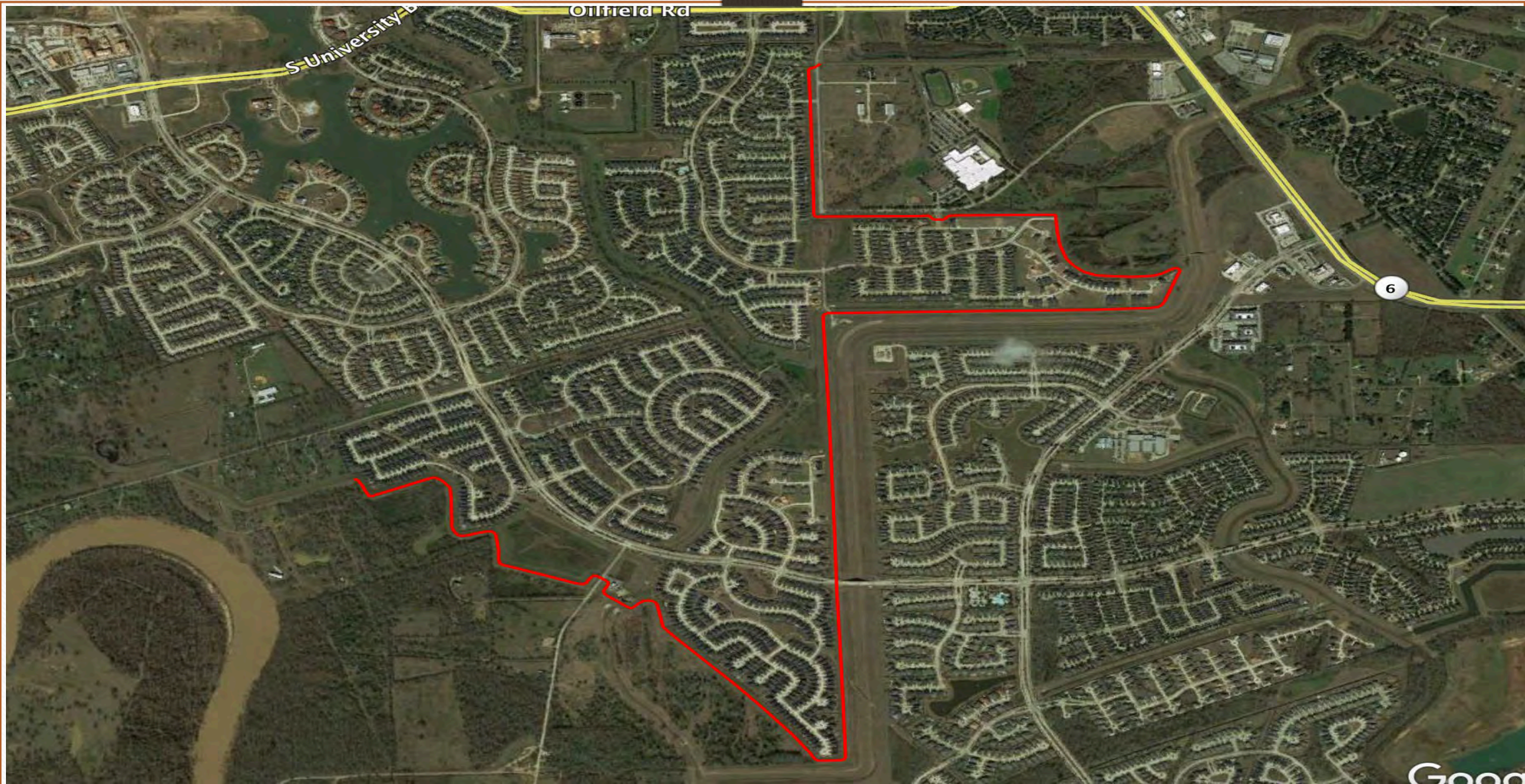
Fort Bend County Officials

- County Judge KP George
- Commissioner Ken DeMerchant (pct 4)
- Commissioner Grady Prestage (Lost Creek/Millwood)

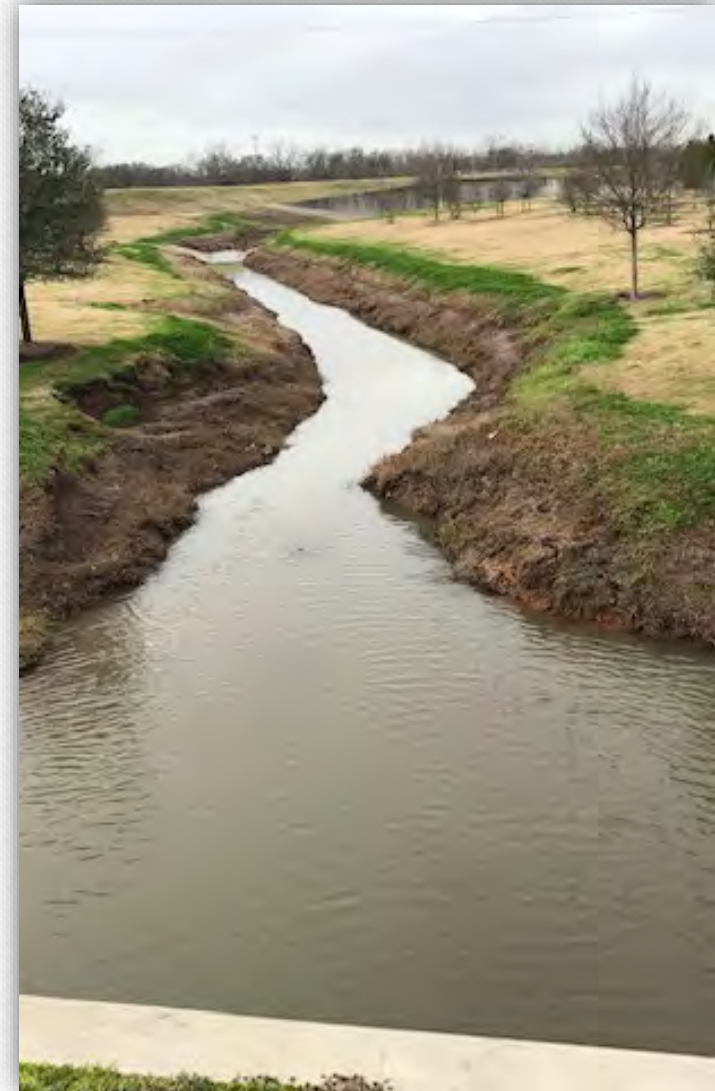
Operational Report

Jeff Perry – district operational manager

(Levee Management Systems)



Steep Bank Creek



Pump Station



Outfall Structure



Emergency Supplies



Emergency Supplies



Levee



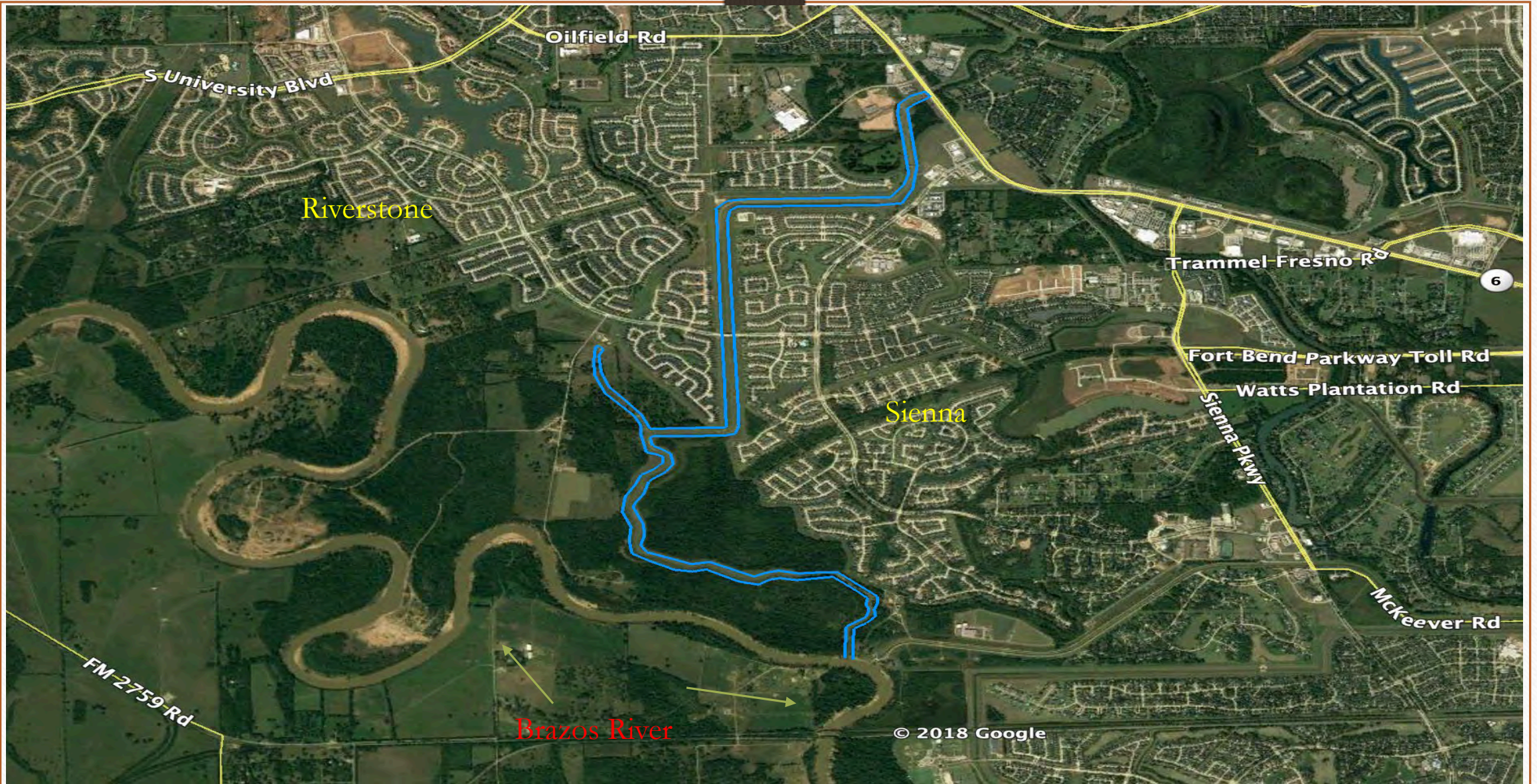


Levee Hard Surfacing Phase 1

Flat Bank Diversion Channel

County owned and operated





Status of District Projects

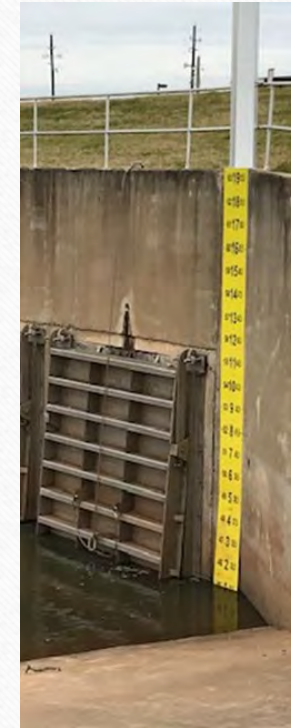
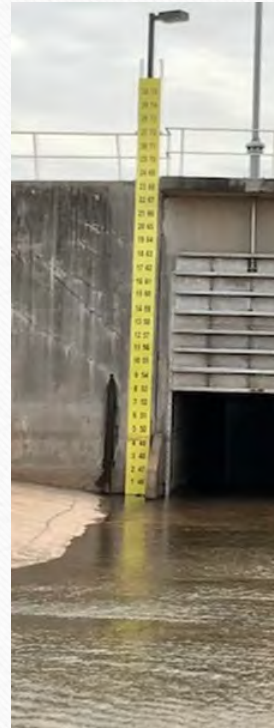
Completed / In-Progress / Future

Completed Projects

- Staff gauges
- Emergency Notification System and independent website design
- Temporary pumps/capacity
- Storage for temporary pumps


Completed Projects

- Staff gauges
 - Provide accurate real-time reference for operators and emergency response personnel
 - Additional electronic monitoring is also available



Completed Projects

- Emergency Notification System and independent website design

FORT BEND LID 19
Opt-in Program 

Have you already registered? | [Login](#)

Sign up for Immediate Warning™

Registration only takes a few minutes. To get started, we first need to confirm your account and contact information.

I am registering as ... ☒ A Resident
☐ A Business

Last Name

Address Street Number


Address Street Name

SUBMIT

Fort Bend County Levee Improvement District 19

[Sign up for Immediate Warning™](#)

HOME ABOUT MEETINGS ELECTIONS EMERGENCY OPERATIONS CONSULTANTS RESOURCES CONTACT US



Welcome to Fort Bend County LID 19


January 10, 2019 by FBLID 19

Fort Bend County Levee Improvement Districts 19, through the dedication of their Directors and Consultants, are committed to providing flood protection, drainage, roads, and park and recreational facilities to their residents.

To sign up to receive emergency alerts via text message, please sign up at fbld19.classicmessaging.com.

Posted in: [Latest News](#)

Translate This Website

Select Language 

Search

Upcoming Meetings

February 2 (Saturday) at 2:00 PM
Community Meeting
• [Community Meeting Agenda \(PDF\)](#)
The Club at Riverstone

Completed Projects

- Temporary pumps/capacity
 - Provide immediate increase in pumping capacity while permanent solutions are funded and built
 - Provide flexible deployment to specific areas as required



Completed Projects

- Storage for temporary pumps
 - Protection for our investment
 - Structure is hurricane rated
 - Structure can be repurposed or moved when no longer needed

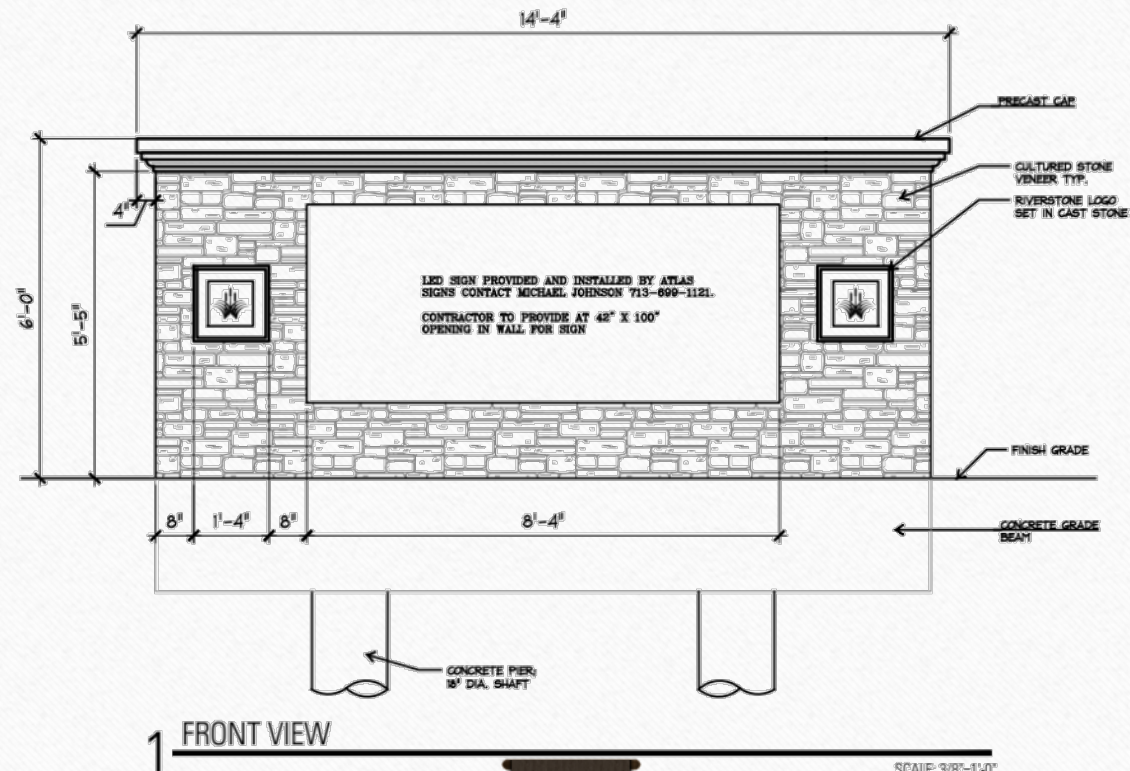


Projects in Progress

- Street Signage
- Hagerson Road watershed interconnect (SBC – Snake Slough)

Projects in Progress

- Street Signage



Projects in Progress

- Hagerson Road watershed interconnect (SBC – Snake Slough)

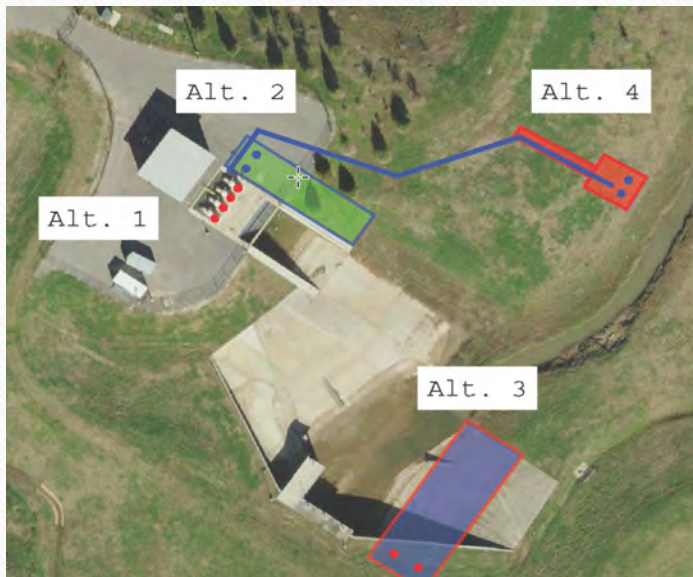


Future Projects

- Steep Bank Creek Pump Station Expansion
- Hardening of levee top
- Regional Flood Resiliency Project
- Lighting Improvements
- Data Logging
- Emergency Operations Center
- University BLVD watershed interconnect (SBC – Alcorn Bayou)
- Additional communications and interfacing with FBC improvements

Future Projects

- Steep Bank Creek Pump Station Expansion



Future Projects

- Hardening of levee top



Future Projects

- Regional Flood Resiliency Project
 - Partnership with ALL watershed districts
 - Initial LIDAR and 2D model
 - Increased capacity (storage or pumping)
 - FBC Drainage Regulation Revision



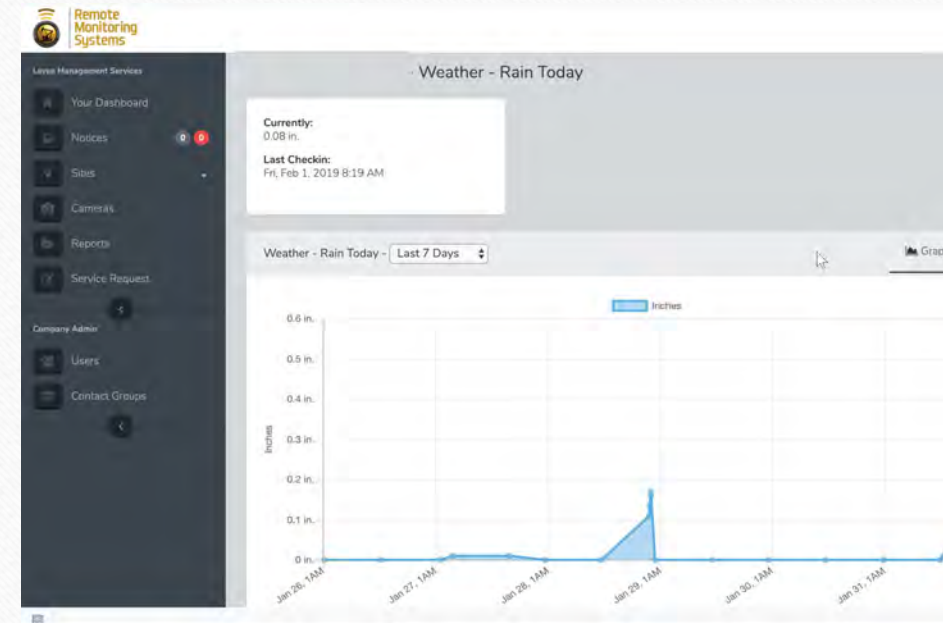
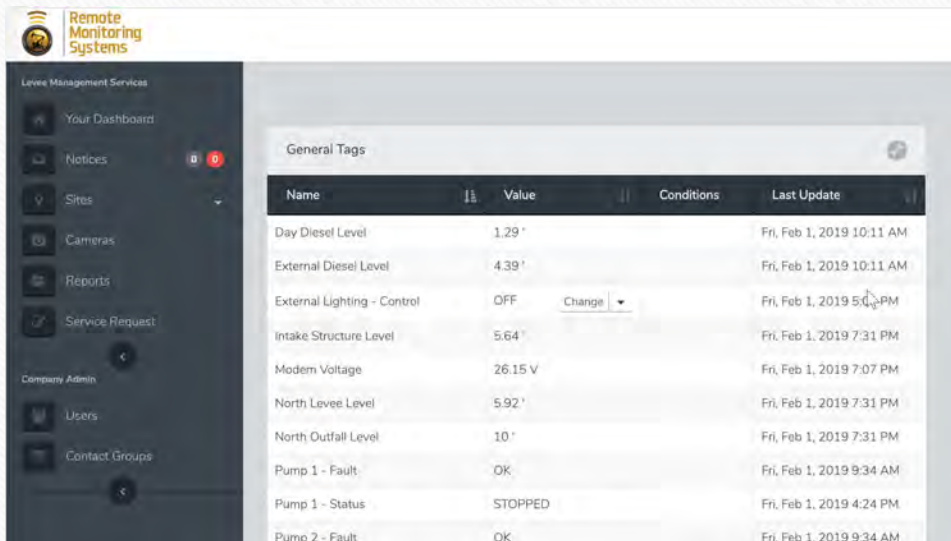
Future Projects

- Lighting Improvements
 - Improved SAFETY
 - Provide adequate lighting for operation of permanent and temporary systems



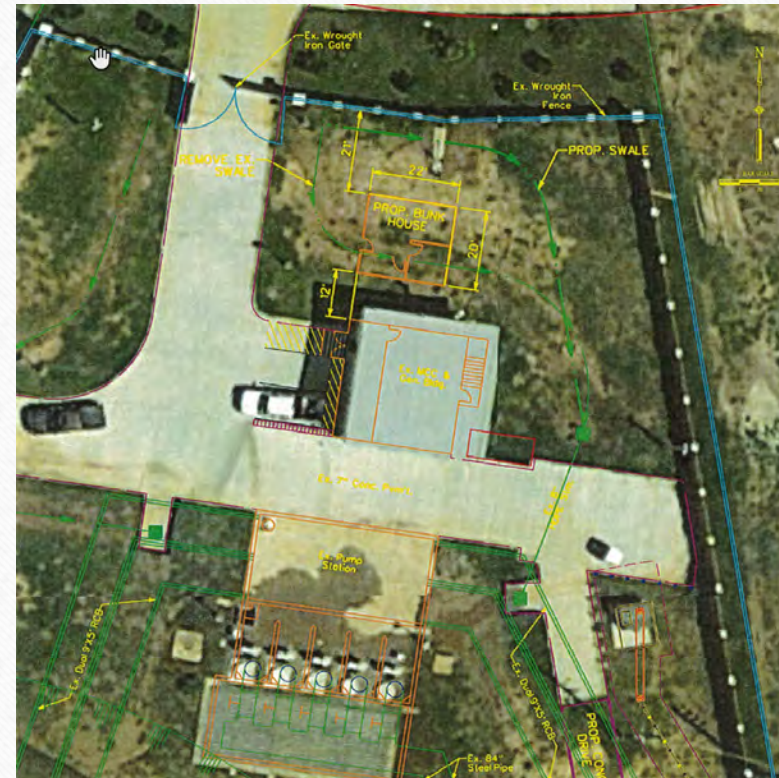
Future Projects

- Data Logging



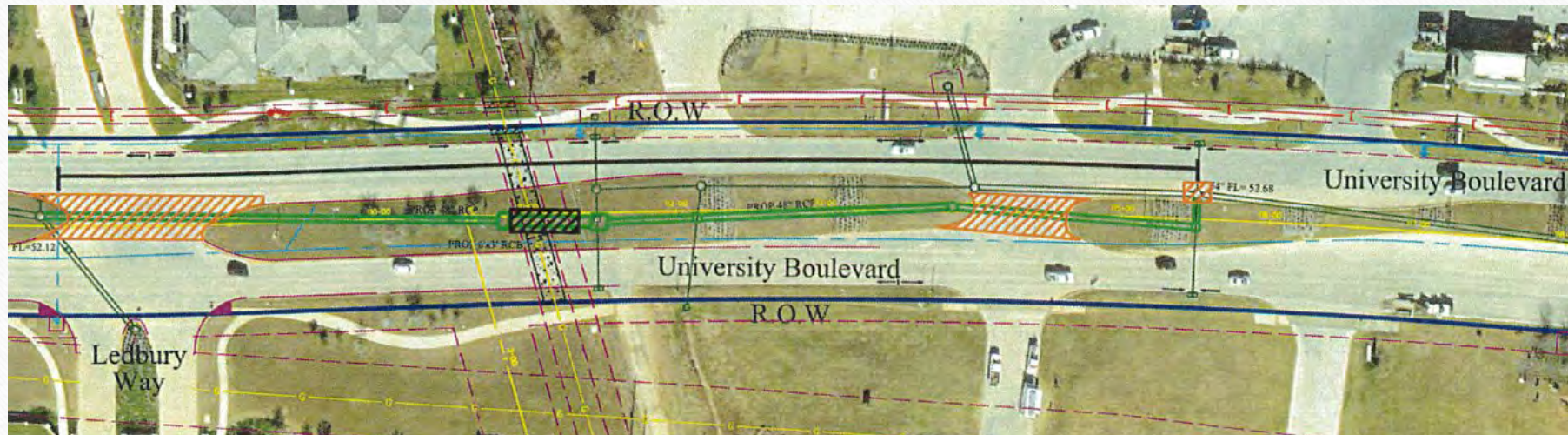
Future Projects

- Emergency Operations Center
 - Provide a centralized operations headquarters with sleeping and hygiene facilities for extended operations



Future Projects

- University BLVD watershed interconnect (SBC – Alcorn Bayou)



Future Projects

- Additional communications and interfacing with FBC improvements



FORT BEND COUNTY OEM

Fort Bend County Office of Emergency Management

Aptim Report

Phase 2 Results

&

Regional 2D modeling and LIDAR



MEMO

SUBJECT

Fort Bend LID 19 – Phase 2

DATE

November 27, 2018

FROM

Hilary Thibodeaux, PE / Laura Barnes, PE

TO

Fort Bend County LID 19
c/o Nancy Carter



1.0 EXECUTIVE SUMMARY

This memorandum represents APTIM's Review Phase 2: Operations and Response, which involves reviewing the operations and emergency response for Hurricane Harvey by LID 19 and supporting contractors. This review has been divided into four sections, including Preparedness, Emergency Operations, Emergency Response, and Recovery. In reviewing all of the documentation provided, it was determined that the LID performed within the current Emergency Action Plan (EAP) and no significant findings of any deviations were discovered. District personnel performed as best as practical under the given storm events of Hurricane Harvey. It is also important to note that no communications were lost between field operations and the Office of Emergency Management (OEM) throughout the storm.

Phase 2

Independent Review of Operations
and Emergency Response for
Hurricane Harvey

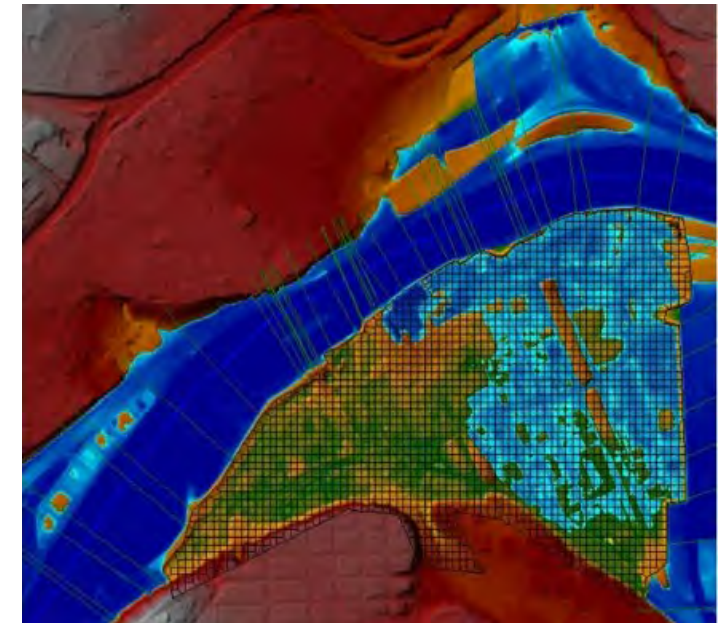
STEEP BANK CREEK REGIONAL WATERSHED MODELING STUDY

LID 19, LID 15, First Colony LID, MUD 115, and MUD 46

Feb. 2019

2D HYDRAULIC MODELING

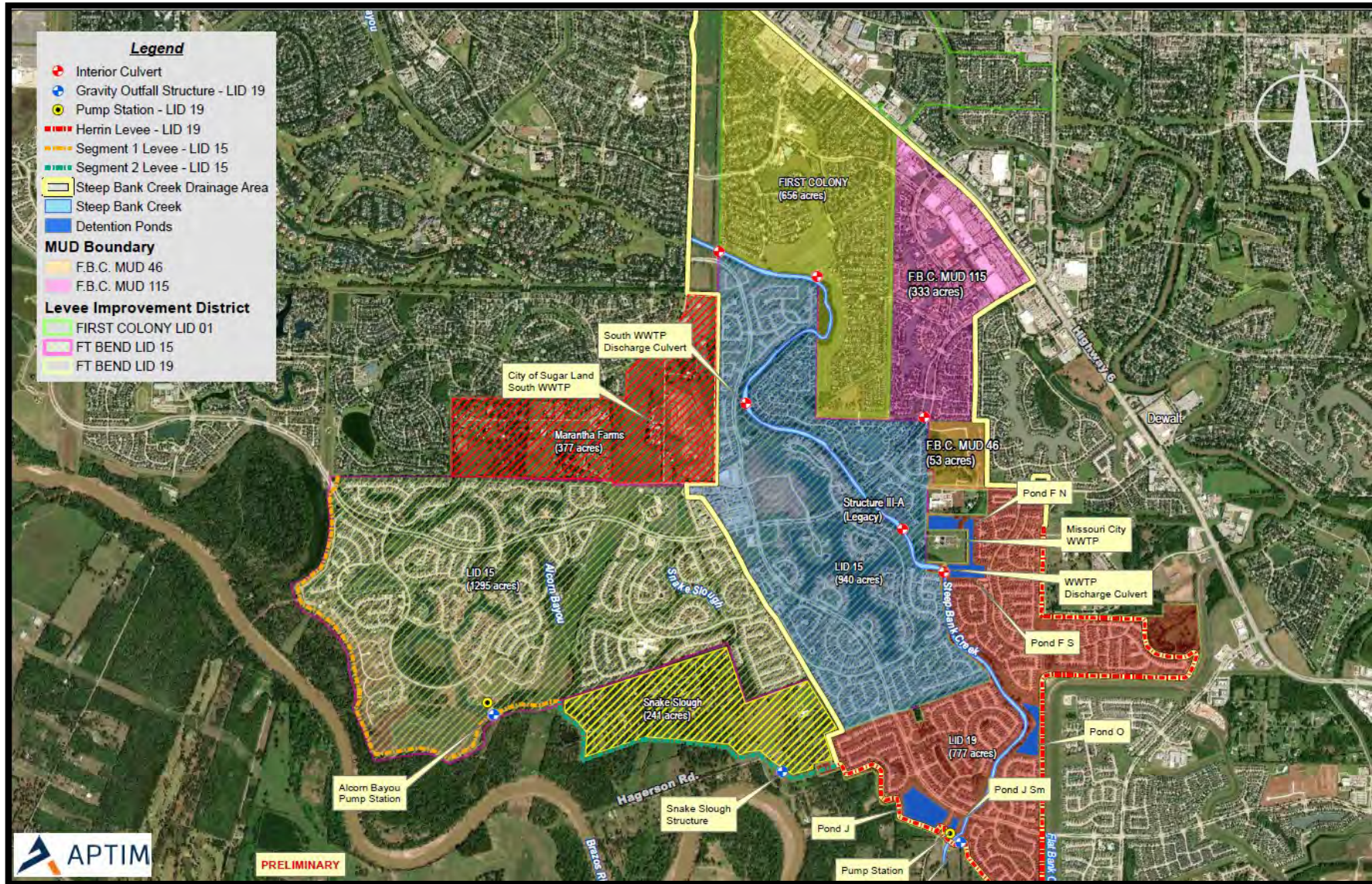
- ▶ Water can move in multiple directions (or dimensions):
 - > Forward and backward (Upstream and Downstream)
 - > Side to side
 - > Up and down
- ▶ To simply and minimize necessary computing power, we often assume the majority of water is moving in only one dimension — upstream to downstream.
- ▶ 2D models give us a tool to understand flow in multiple directions.
 - > Advances in computer technology have made 2D modeling faster and more cost effective.
 - > 2D modeling provides detailed mapping and modeling of floodplain area, depth, and velocity



HEC-RAS Interface, USACE 2018



STEEP BANK CREEK REGIONAL WATERSHED



Total Area:
Approximately
4,700 acres or
7.3 square miles



REGIONAL MODELING STUDY: GOALS

- ▶ Model the current hydrologic and hydraulic conditions of the Steep Bank Creek Regional Watershed.
- ▶ Identify current flood risk, specifically for large low-frequency flood events, within the Steep Bank Creek Regional Watershed.
- ▶ Develop a modeling tool and an asset to maintain within the Steep Bank Creek LIDs and MUDs.
 - > This will allow the districts to continue to model and evaluate the changing conditions in the watershed.



REGIONAL MODELING STUDY: SCOPE OF WORK

- ▶ **Data Collection - Survey Data Collection and Existing Information Gathering**
 - > LIDAR Survey
 - > Topographic Survey
 - > Existing Information Gathering
- ▶ **Hydrologic and Hydraulic Modeling**
 - > Hydrologic Model (HEC-HMS)
 - > 2D Hydraulic Model (HEC-RAS)
- ▶ **Reporting**
 - > Data Collection Report Deliverables
 - > Modeling Report Deliverables



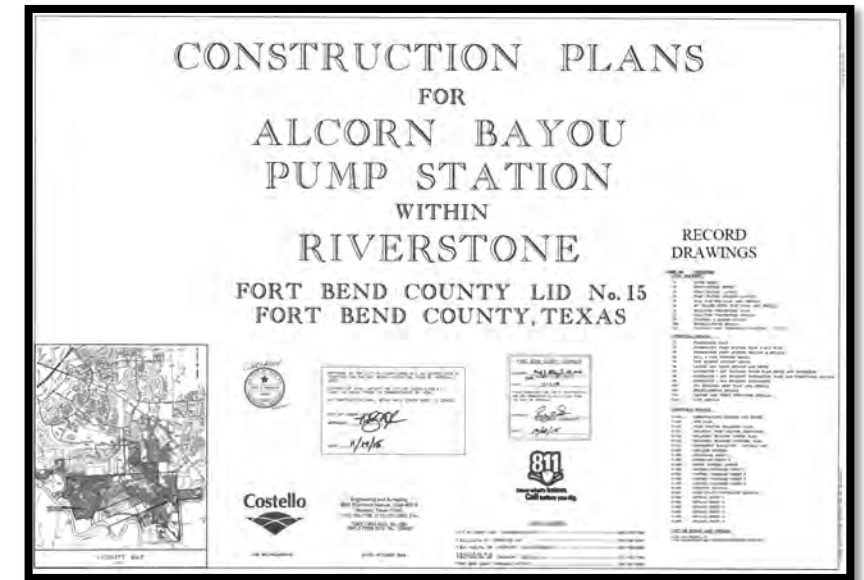
EXISTING INFORMATION GATHERING & REVIEW

- ▶ Site Visit
 - > APTIM and Kleinschmidt conducted sites visits on Nov. 15 and Nov. 26-28
 - > Visited all areas of Steep Bank Creek, Alcorn Bayou and Snake Slough Regional Watershed
 - > Met with LMS for Site Visit of Pump Stations and Major Infrastructure
 - > Photo Log of Major Infrastructure



EXISTING INFORMATION GATHERING & REVIEW

- ▶ APTIM has met with LID and MUD Engineers to obtain review available information
- ▶ Requested and received most information on existing drainage infrastructure:
 - > Pump Stations
 - > Culverts
 - > Bridge Crossings
 - > Detention Pond
 - > Lakes
- ▶ APTIM and Kleinschmidt are reviewing all available information



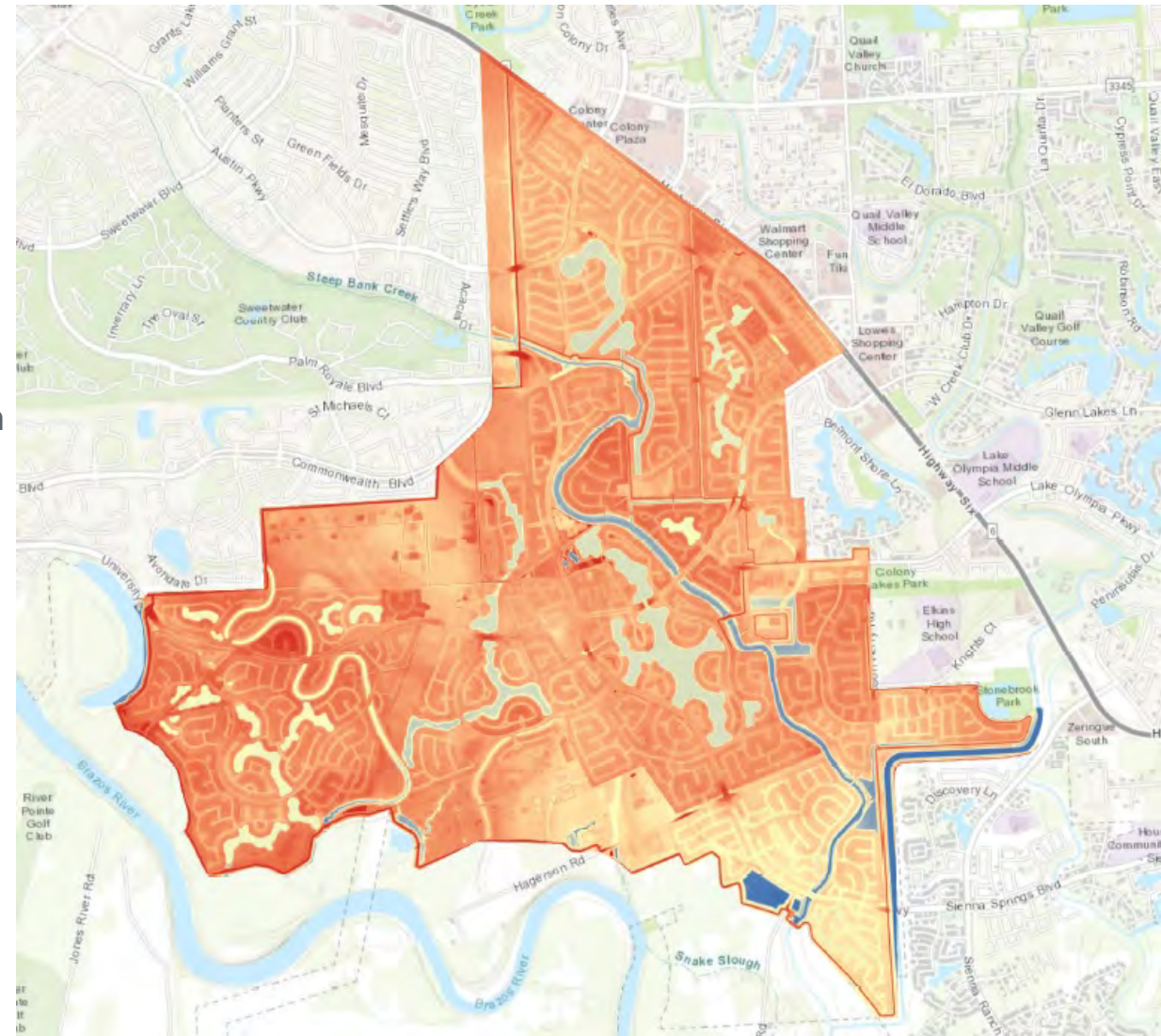
EXISTING INFORMATION GATHERING & REVIEW

- ▶ APTIM has met with LID operators to obtain and review available information
- ▶ Requested information on existing drainage infrastructure:
 - > Recorded High Water Marks
 - > Pump Station Operating Logs
 - > Gate Operations Log
 - > Flooding Photographs
 - > Flooding Log Flooded Structures List
- ▶ Information will help to calibrate the 2D Hydraulic Model



LIDAR DATA COLLECTION

- ▶ LIDAR Helicopter and Equipment mobilized on Nov. 27th
- ▶ LIDAR Flight took place on Nov. 28th-29th
 - > Collected all necessary data
- ▶ Fugro has processed the data
 - > High resolution DEM
 - > 1 FT. Grid Spacing



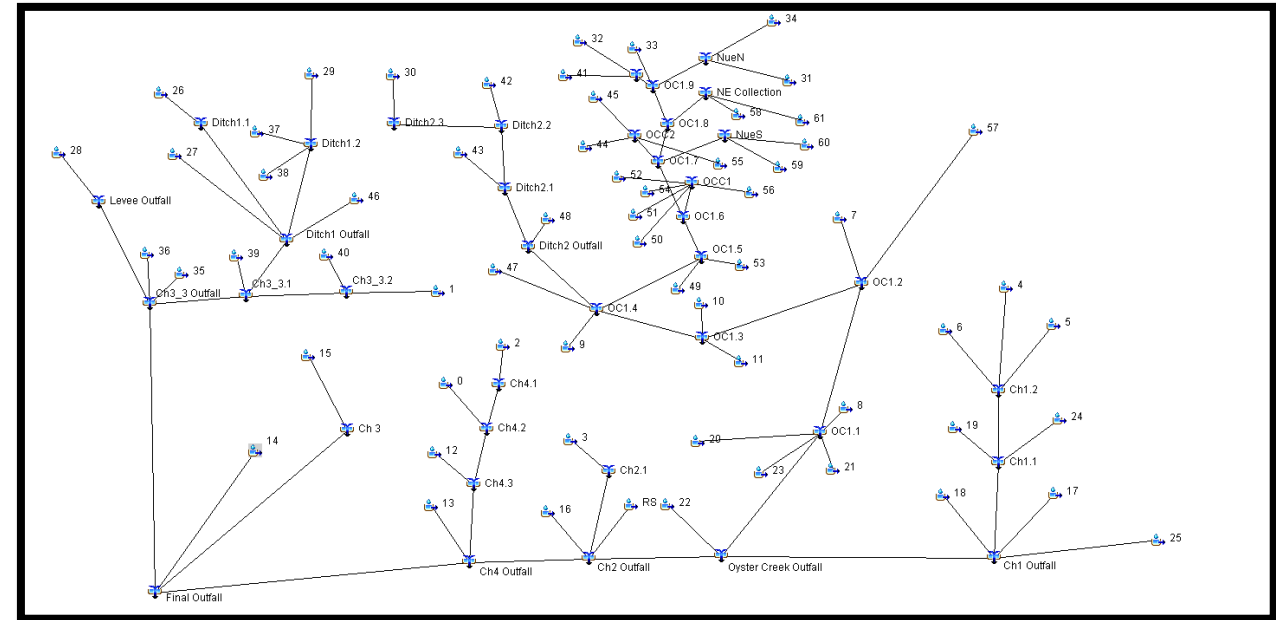
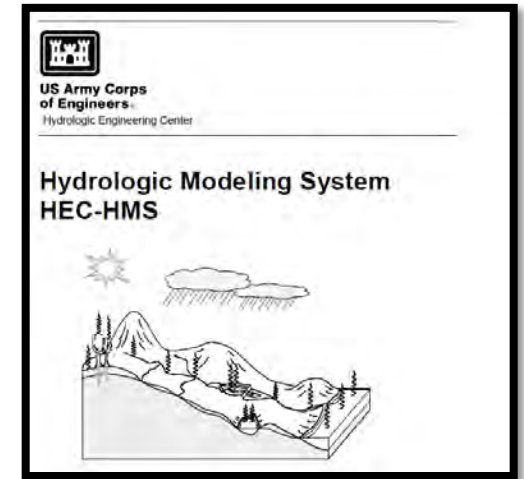
TOPOGRAPHIC SURVEY SCOPING

- ▶ APTIM will review areas along waterbodies captured with LIDAR
- ▶ APTIM will review as-built and design plan sets
- ▶ APTIM and Kleinschmidt are developing a detailed scope of work for the areas and structures to be surveyed
- ▶ Survey will include:
 - > High water marks
 - > Flooded areas in LID 19
 - > Ground Truthing along Steep Bank Creek, Alcorn Bayou, and Snake Slough
 - > Ground Truthing major crossings and bridges



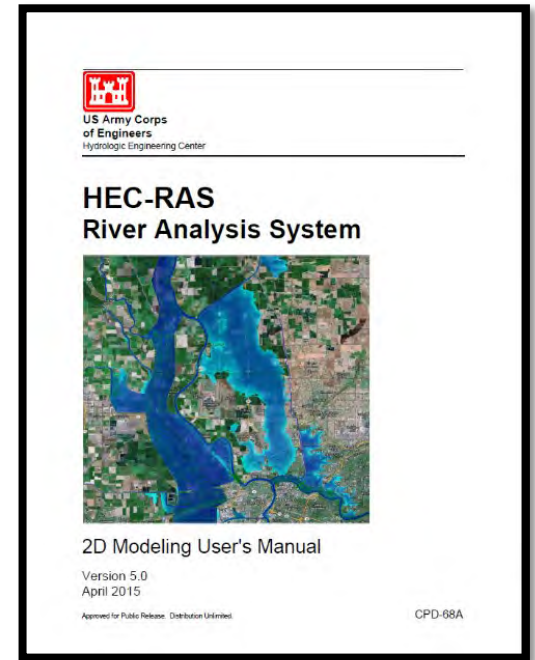
HYDROLOGIC MODELING (HEC-HMS)

- ▶ Hydrologic Model HEC-HMS
- ▶ Modeling Effort
 - > Review Existing Delineated Watersheds and Sub-basins
 - > Review Existing Hydrologic Parameters
 - > Organize and Setup HMS Model
 - Sub-basins
 - Reaches
 - > Design Storm Events

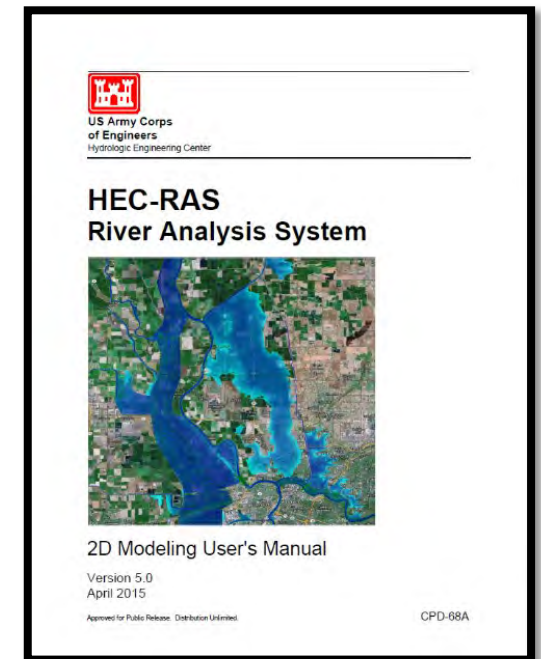
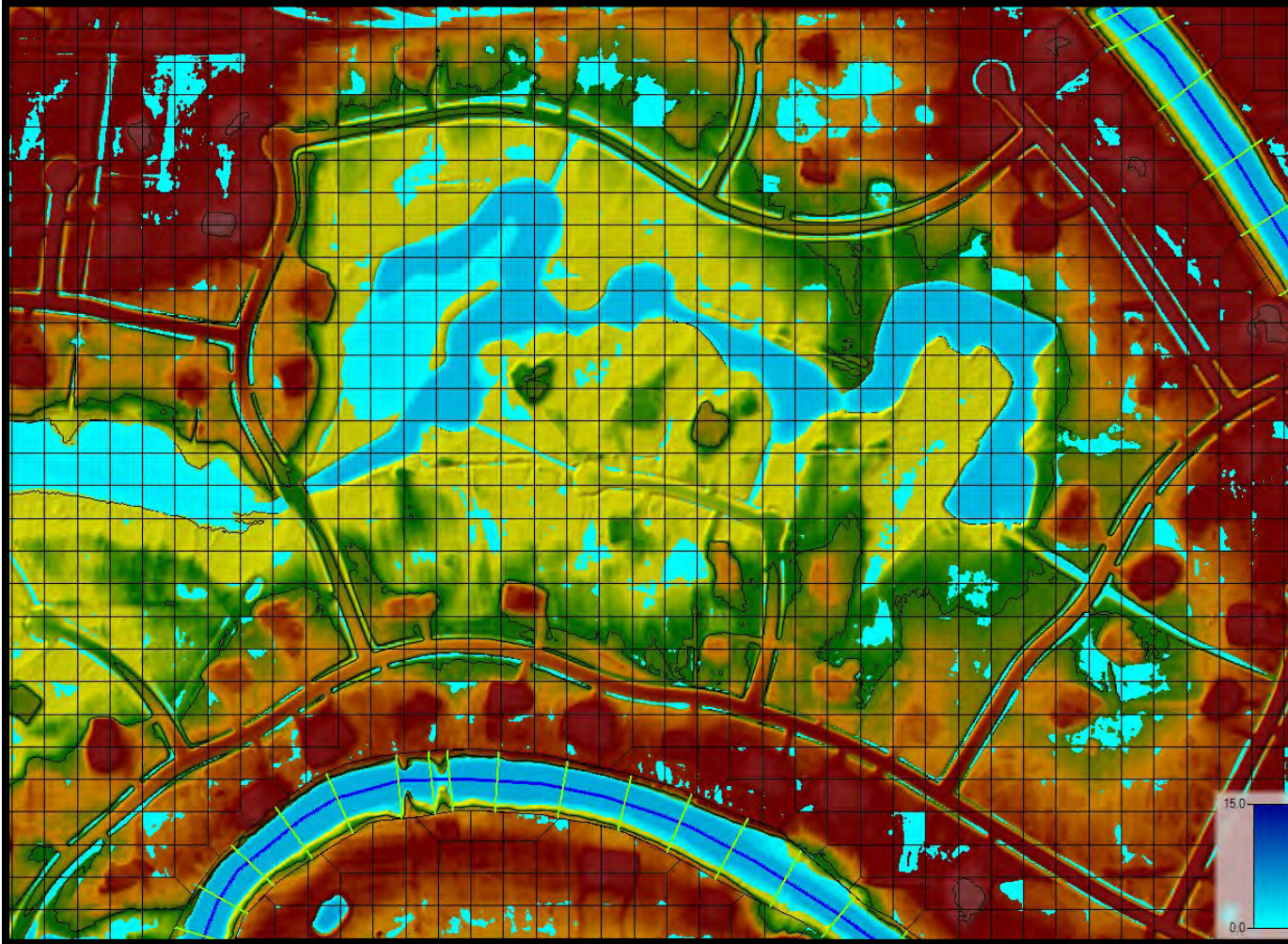


2D HYDRAULIC MODELING (HEC-RAS)

- ▶ 2D Hydrologic Model HEC-RAS
- ▶ Initiating Modeling Effort
 - > Review LIDAR
 - > Develop Grid
 - > Develop Crossings and Hydraulic Structures



2D HYDRAULIC MODELING (HEC-RAS)





Expect the Extraordinary.

District Financial Report

Tax Rate / Current Bond Issue / Future Bond Capacity

LID Comparison

	Community	Acreage	2018 Assessed Valuation	2018 Tax Rate	2018 Tax Revenue	Age (yrs since first tax levy)
Fort Bend LID 15	Riverstone	2,398	\$ 1,931,532,149	\$ 0.6200	\$ 11,975,499	14
Fort Bend LID 17	Telfair	2,331	\$ 1,883,841,862	\$ 0.5700	\$ 10,737,899	13
Fort Bend LID 19	Riverstone	817	\$ 695,664,102	\$ 0.6800	\$ 4,730,516	12
Sienna LID	Sienna Plantation	9,832	\$ 3,535,271,230	\$ 0.4500	\$ 15,908,721	24

Response to Submitted Questions

Has there been coordination between upstream LIDs regarding floodwater releases downstream to SBC?

G. Wong

-
- Yes
 - Discussions have and are being conducted with the FBCDD on proposed updates to county drainage regulations that would provide a legal means to address this. As of right now, these proposals are still being considered but have not been adopted.
 - Additionally, ALL the districts that comprise the SBC watershed have had a joint meeting to discuss water management within the watershed. Progress such as the joint watershed 2D model is being made and other districts have recognized the issues affecting ALL of us. Future meetings with the results of the 2D model will begin to focus on overall flood protection resiliency within the watershed.

There is damage to the levees at several spots on the bayou from LJ Parkway crossing between Riverstone and Sienna.

Will they be repaired?

G. Wong

-
- Yes
 - As discussed during the Operations Report, this area is known as Flat Bank Creek and is maintained by Fort Bend County. We routinely inspect the area and inform the county of issues. The county is currently working on a more pressing issue along the Brazos and is aware of the sloughing along Flat Bank Creek. We will continue to closely monitor the situation and ensure the county gives this the right level of priority.

Has the LID evaluated the new development off Hagerson – what have they found?

S. Wood

-
- Yes
 - The new development will be contained in its own watershed known as Snakes Slough. The integrity between the two watersheds will be maintained so neither directly affects the other. As part of the study, we identified a potential resiliency project discussed earlier as the Hagerson Road interconnect. This interconnect will give strictly controlled redirect capability of flood water between the two watersheds. It will only be used post event to aide in recovery efforts.

What impact does the Grove have?

S. Wood

-
- The development of the Grove was included in the development of LID 19 and as such no additional impact to the watershed will occur. As part of our continued modeling efforts, the board will require post development data be used to confirm the impact to the watershed is as designed.

What has LID 19 done since Harvey?

H. Huang

-
- Without rehashing the details discussed earlier, here is a brief overview:
 - Changes made to the Board
 - changed from 3 appointed members (2 non-residents) to 3 appointed members (ALL residents)
 - changed from 3 person appointed board to 5 person elected board

Note that none of the current board members were on the board prior to Hurricane Harvey

What has LID 19 done since Harvey?

H. Huang

-
- Continued...
 - Review of our system
 - Hired a 3rd party engineering firm (Aptim) to perform an evaluation of the design, build and operation of our system. These are known as Aptim reports phase 1, 2 and 3 respectively.
 - Purchased 12 trailer mounted pumps to immediately provide an additional 81k gpm capacity. This effectively doubles the capacity of our current station.

What has LID 19 done since Harvey?

H. Huang

-
- Continued...
 - Began a three pronged approach to improve the overall system's capacity
 1. Increase capacity at the SBC pump station to meet the new regulatory standards and base this capacity on a more conservative approach to the regulatory requirements.
 2. Increase flexibility to the system to allow more tools such as interconnects to respond to future events.
 3. Work with ALL the Steep Bank Watershed districts to develop a beyond regulatory design strategy known as the Regional Flood Resiliency Project.

What improvements have been done? What are the impact/benefits to residents in Shadow Glen?

K. Ma

-
- The improvements that have been completed, are in-progress, and are being pursued have been discussed earlier in this presentation. With regards to the impact/benefits to any one sub-development, we have not been looking at specific benefit to any one sub-group. Instead our approach has been to seek fiscally responsible projects that will provide better flood protection through either increased capacity, flexibility in operation, or better tools to plan our operations. Additionally, we have focused on providing better ways to communicate to ALL residents the information that we have pertaining to the LID.

For additional information or to submit
questions, please visit the LID 19
website

<http://www.fblid19.com/>

Want to get more involved?

Contact any board member or attend any of our board meetings.

Regular board meetings are 0830 the 4th Friday of every month at The Muller Law Group's offices.