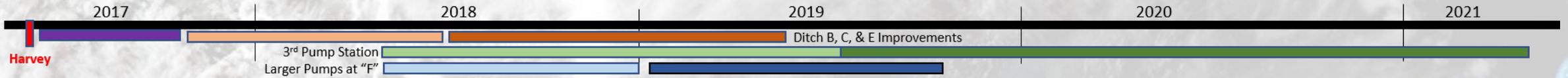
Fort Bend County
Levee Improvement District No. 2

Spring 2019

Improvement on Flood

Protection Improvements



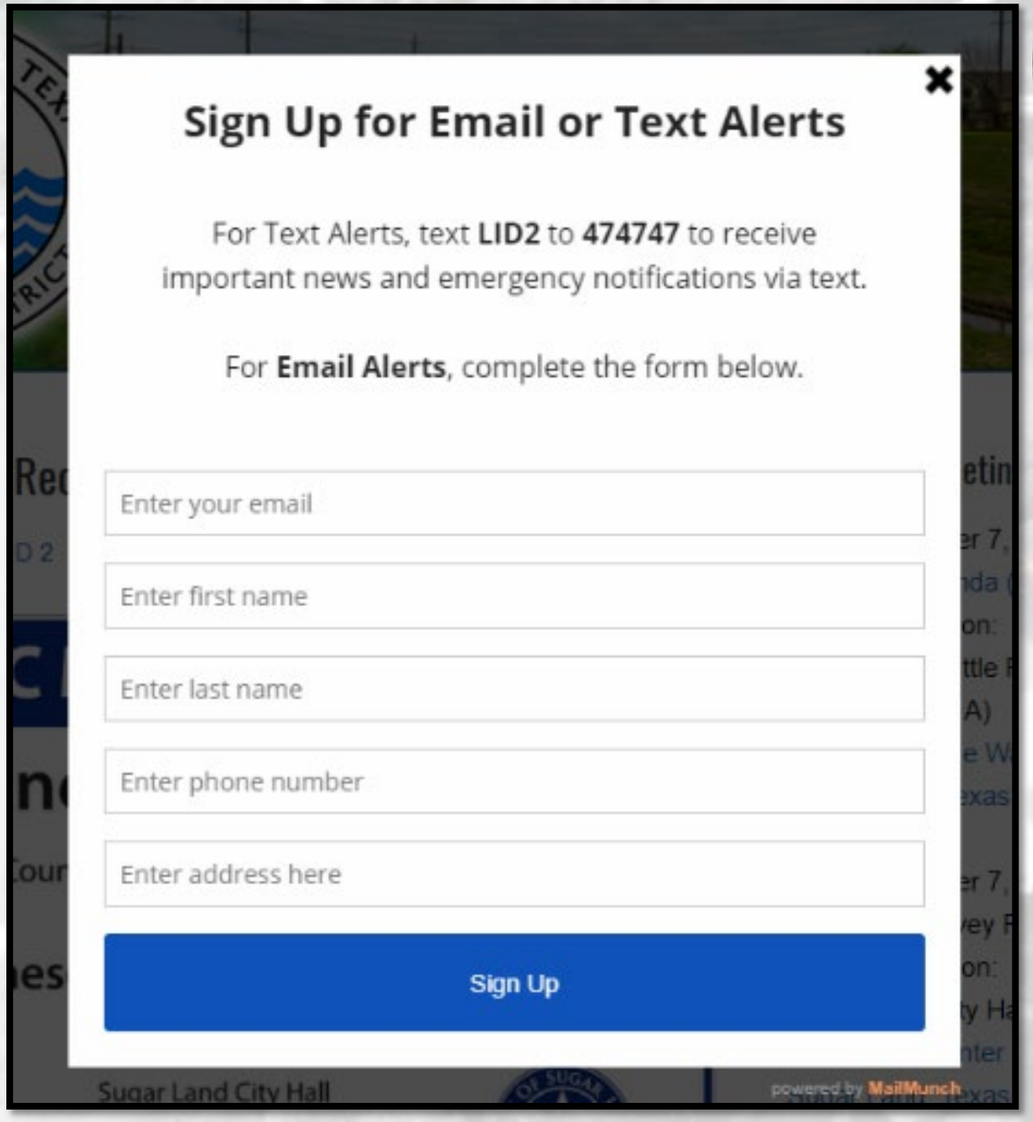
Update Topics / Agenda

- Introduction
- Recap of Events
- Status of Projects / Studies
- Budget / Cost Estimates
- Use of Bond Funds / Tax Impacts
- Conclusion / Questions

Sign Up for Alerts

Go To: FBCLID2.com/alerts

There will be a pop-up box to sign up for alerts.

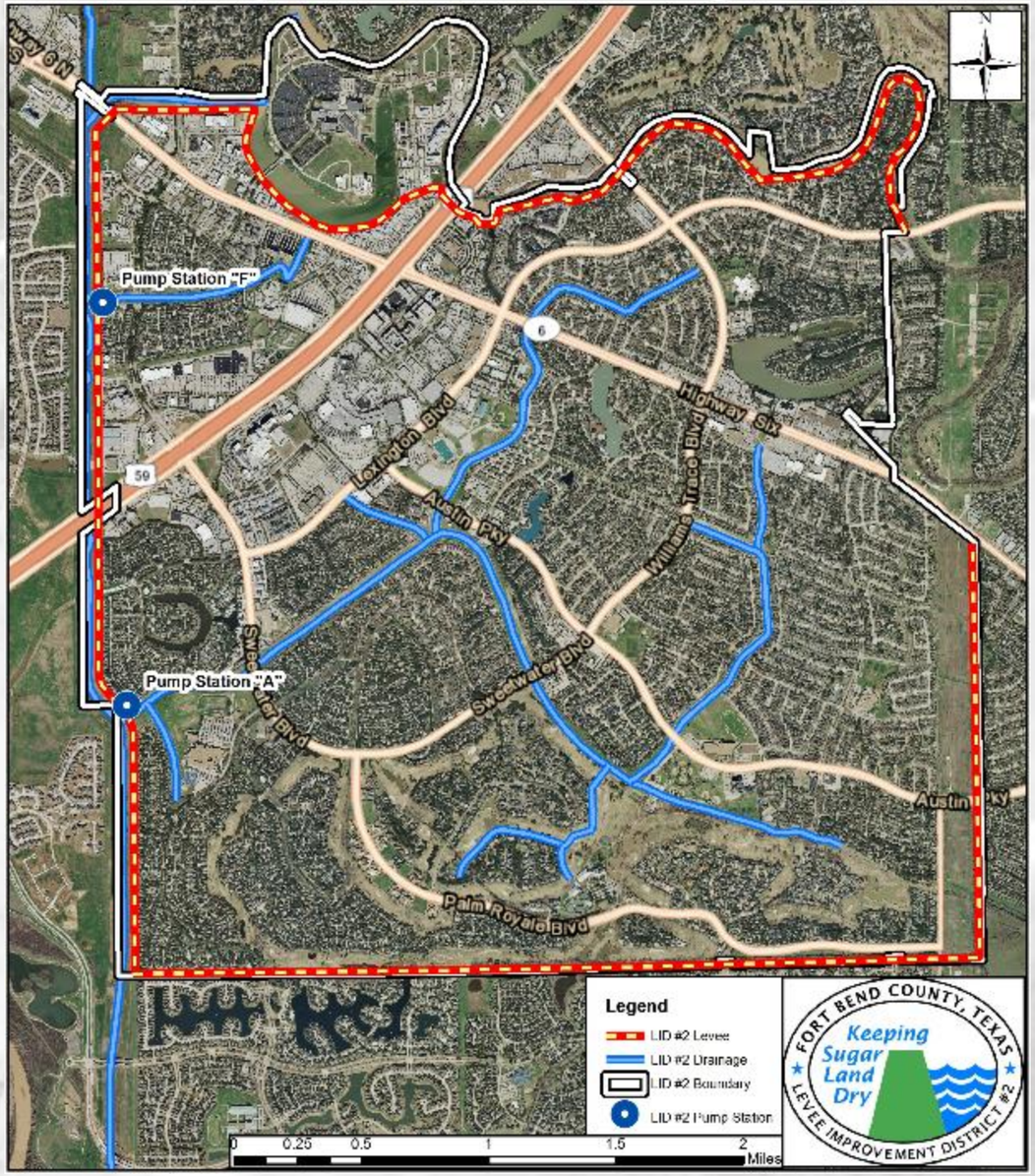


Do You Know Where You Live!

- Everyone who lives in FBCLID 2 lives in Sugar Land
- NOT everyone who lives in Sugar Land lives in FBCLID 2
- Take a few minutes to make sure you know which levee district you live in: FBCLID2.com FAQ page

Sugar-Stone Perimeter Levee Group

First Colony LID	**FBC LID 14**	**FBC LID 7**	**FBC LID 11**
First Colony LID 2	**FBC LID 15**	**FBC LID 17**	**FBC LID 6**
FBC MUD 46	**FBC LID 19**	**FBC LID 10**	**FBC MUD 121**


Pump Station "F"
Pump Station "A"
Lexington Blvd
Austin Pky
Williams Trace Blvd
Highway Six
Sweetwater Blvd
Palm Royale Blvd
Austin Pky
59
6
Legend
LID #2 Levee
LID #2 Drainage
LID #2 Boundary
LID #2 Pump Station
0 0.25 0.5 1 1.5 2 Miles

2017
2018
2019
2020
2021
Harvey
Ditch B, C, & E Improvements
3rd Pump Station
Larger Pumps at "F"

Recap – Harvey to Now

- Worst flood event in modern history for the Houston area
- Approx. 175-200,000 homes flooded in the Greater Houston area

  (Only 200,000 homes in all of Fort Bend County)
- The vast majority of those were not in the 100 year flood plain
- The Brazos River reached a modern record – 55.2’ (Richmond Gage)
- FBCLID 2 had 230+ homes that flooded due to heavy rain
- FBCLID 2 had no homes that flooded due to the high river

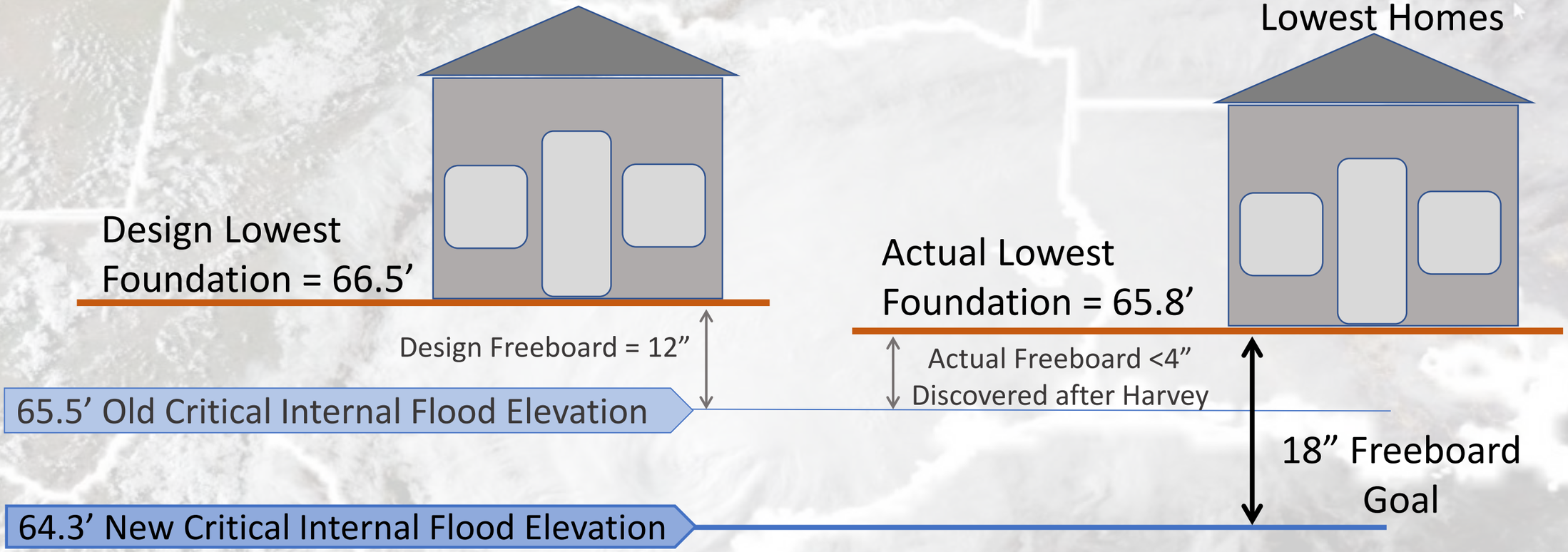
Lowering the Internal Critical Flood Elevation

- Current standard is 18” between maximum water level and slab
- Old standard was 12” between maximum water level and slab

“Freeboard”

- Discovered multiple homes with slabs below the minimum slab elevation within the District
- Following Harvey the goal was to provide **ALL** homes in the District flood protection meeting the most current requirements - “***If financially feasible***.”

Increasing Freeboard is the Goal



Last Update from LID 2

Soft Improvements

- Study open end of the District
- Study internal drainage system
- Study South and East levee
- Improve flood monitoring system
- Improve website
- Opt-In email / text alert system
- Increase public outreach
- Purchase high water vehicle

Hard Improvements

- Pilot project to armor levee top
- Ditch B, C, & E Improvements
- Increase pump capacity at Thelen PS
- Design & construct a 3rd pump station
- Widen Ditch A
- Partnerships to add off-line detention
- Redirect flow from Steep Bank Creek

ATLAS 14 - NOAA Changes Expected Rainfall

- NOAA performed a study to re-evaluate the amount of rainfall to be used when designing infrastructure in Texas
- The changes were significant and affect all of our projects
- The rainfall increased from 12.5” to 16.5” - an increase of 32% for the 100-year / 24-hour rain event

This change in rainfall, in effect, reduces everyone’s “Freeboard”

New Study on River Levels Underway

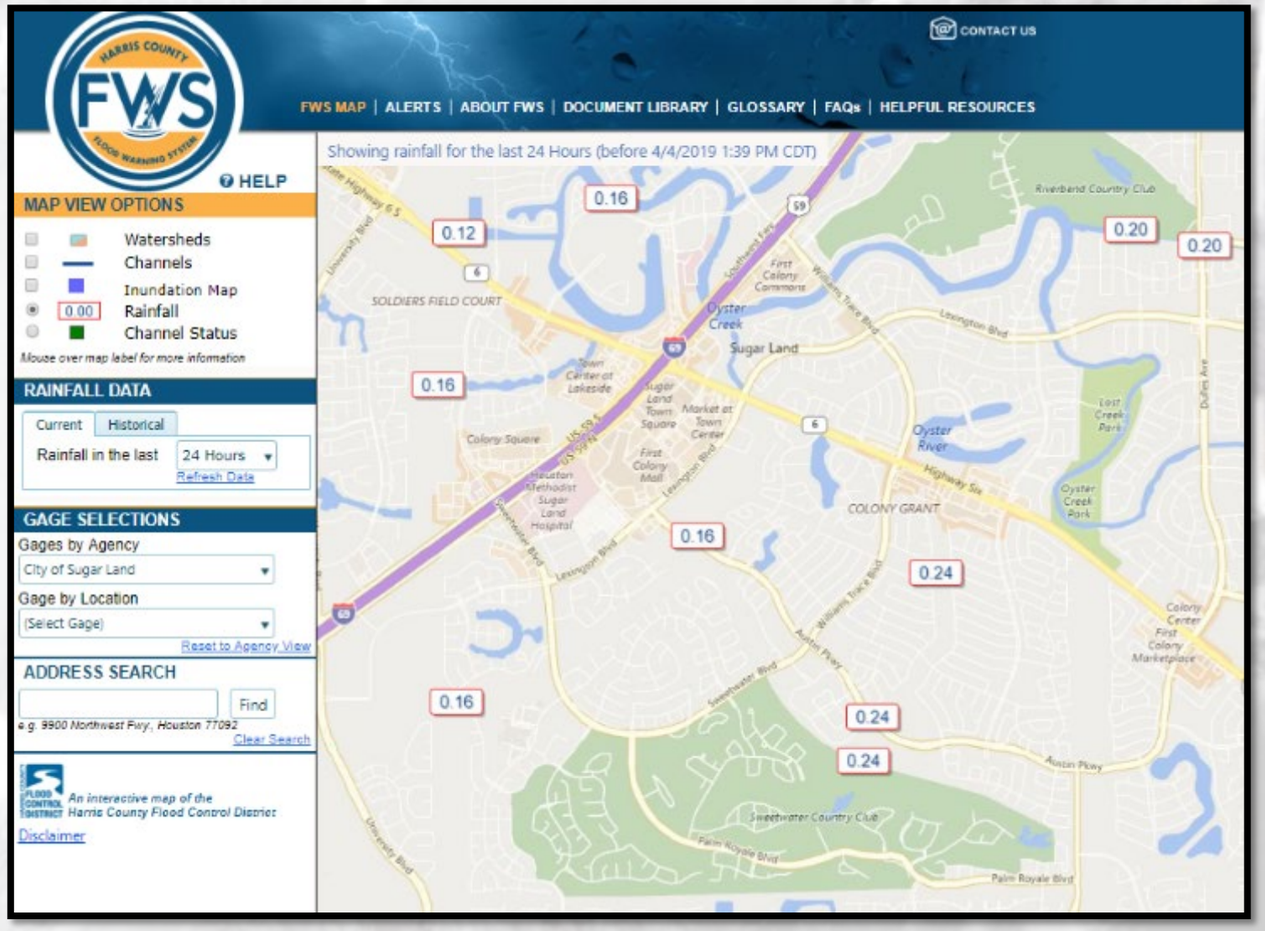
- *“The river is going to do what the river wants to do!”*
- The Brazos River is changing – all the time
- Several studies currently being performed on the Brazos River
- It is unclear if these studies will indicate that we should expect higher or lower river levels in the future
- These studies may take several months or years to complete

Soft Projects

- Study Open End of the District
  - Natural Ground provides 500+ year protection from Brazos River in FBCLID2
- Study internal drainage
  - Existing FBCLID2 drainage
    - 16” freeboard during 12.5” rainfall (previous 100-year, 24-hour)
    - 5” freeboard during 16.5”rainfall (new 100-year, 24 hour)
- Additional projects needed to increase freeboard during 16.5” rainfall
    - FBCLID2 can increase to 11” freeboard within existing right-of-way (New PS + Widening Ditch A)
    - Increase to 13” freeboard with FBISD partnership (with new offline storage)
    - Increase to 18+” freeboard with Sweetwater Country Club partnership (additional offline storage)

Soft Projects (cont'd)

- Improve Flood Monitoring:
  - Partner Harris County & City of Sugar Land
  - Replaced 2 old flood monitoring stations
  - Added 5 new flood monitoring stations
  - Available for public view: FBCLID2.COM/GAUGES
  - Adding cameras to monitor critical drainage areas



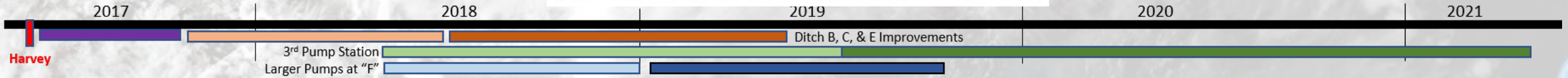
Soft Projects (cont'd)

- Website improvements – ongoing process
  - Email & Text Alert system
  - Update & Expand Emergency Operations page
- Increase Public Outreach
  - Quarterly newsletter
  - Fall and Spring public meetings
  - Provide speakers for any group in the area
  - FBCLID2 Information to in District HOA newsletters and websites

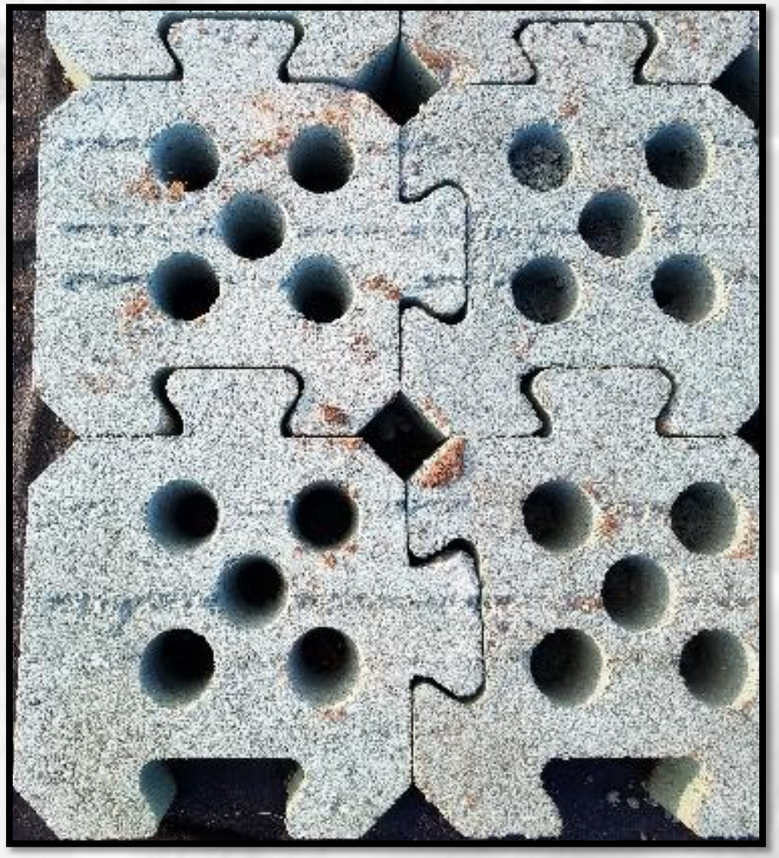
Pilot Project to Hard Top Levee

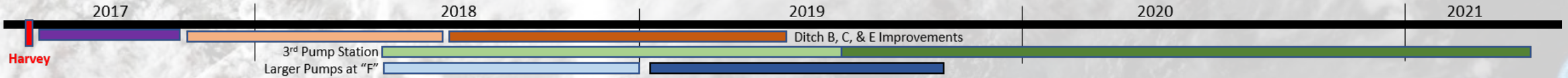
- Hard surface West levee top from US-59 to Pump Station “A”
- Allows access to station during high water event
- Complete
- Pilot program – would be helpful during events to facilitate levee inspections without damaging the top of the levees

Pilot Project to Hard Top Levee



Pilot Project to Hard Top Levee

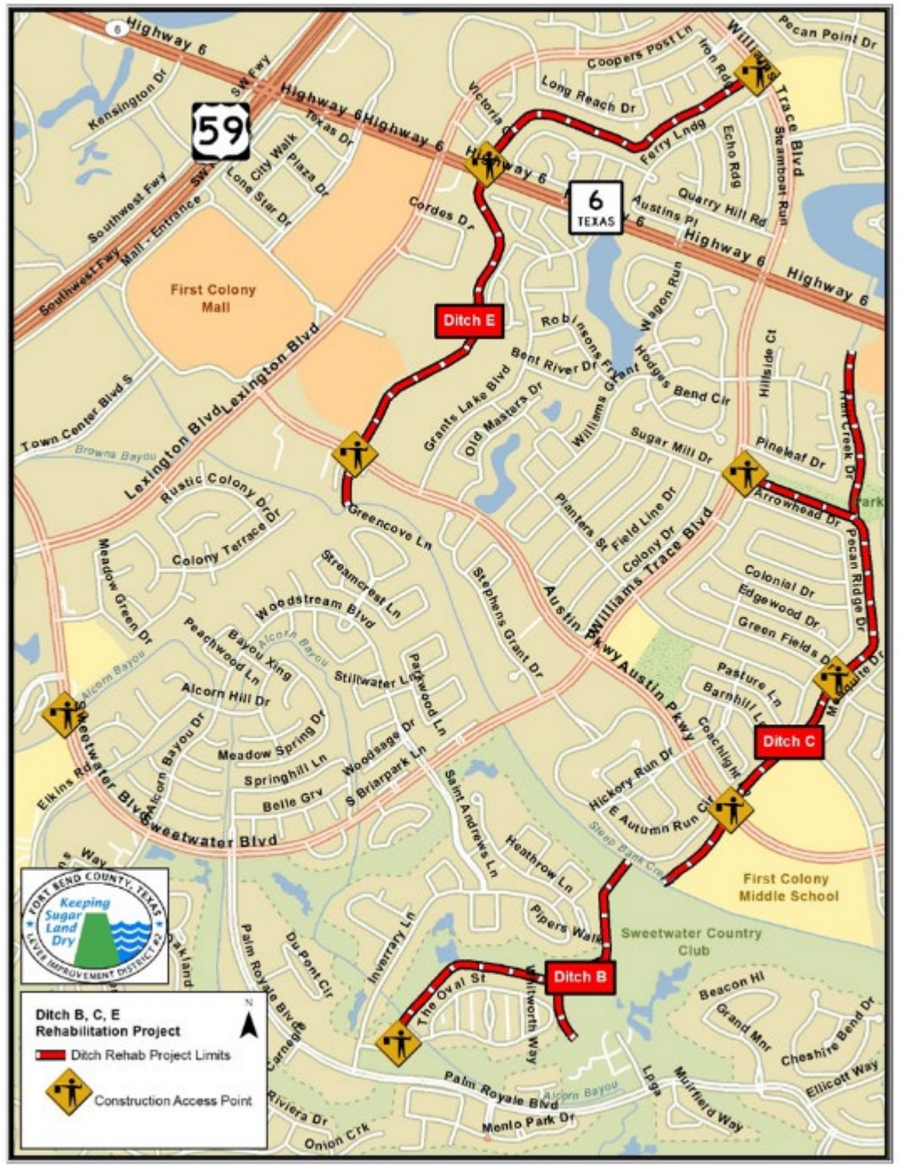




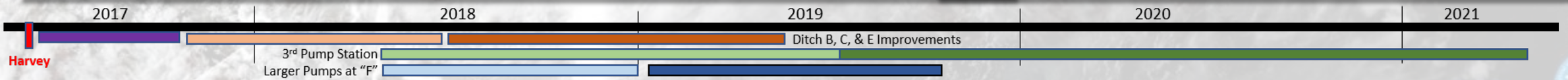
Ditch B, C, & E Project

- Rectify channel of ditches serving the areas most impacted
- Hard surfacing the main channel to prevent erosion and meandering
- Project is well underway – will be complete late 2019
- This will complete the ditch rehab program
- Should improve drainage in the Chimney Stone / Settlers Park areas

Ditch B, C, & E Project



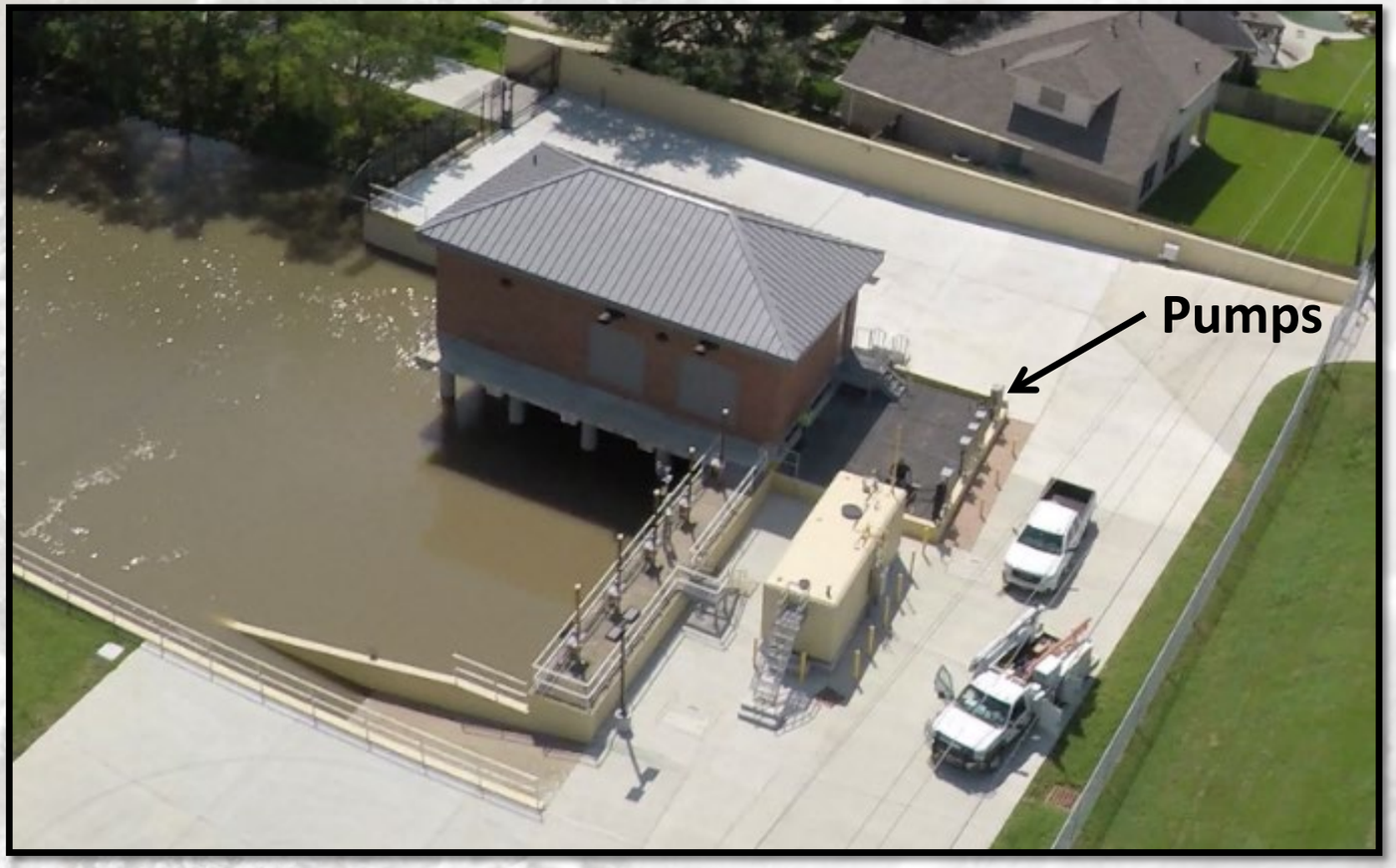
Ditch B, C, & E Project



Increase Pump Capacity – Mike Thelen Pump Station

- Increase pump capacity to provide 18” freeboard with ATLAS 14 rainfall totals.
- Phase 1:
  - Replace 4 existing pumps nearing end of useful life
  - Pumps have been ordered and will be installed by fall 2019
  - Long lead item; manufacturing and delivery of the pumps (6 months)
- Phase 2:
  - Increase overall pump capacity as much as 150,000 GPM
  - Preliminary Design Phase complete by fall 2019

Increase Pump Capacity – Mike Thelen Pump Station



- Thelen Pump Station (current)
  - 65,000 GPM firm capacity
  - 90,000 GPM total capacity
- Phase 1 Completion (2019)
  - 74,400 GPM firm (+14%)
  - 103,200 GPM total (+13%)
- Phase 2 Completion (2020-2021)
  - 250,000+ GPM total (+175%)

Design and Construct 3rd Pump Station

- Preliminary engineering is complete – final design is underway
- Bid project in 5 distinct phases
  - April 2019 – Award pump contract
  - June 2019 – Award back-up power service contract
  - July 2019 – Bid Pump Station construction contract
  - Nov 2019 – Bid Ditch H Outfall Armoring contract
  - July 2020 – Bid Control and Operations Building contract

Design and Construct 3rd Pump Station

Significant Increase In Pumping Capacity

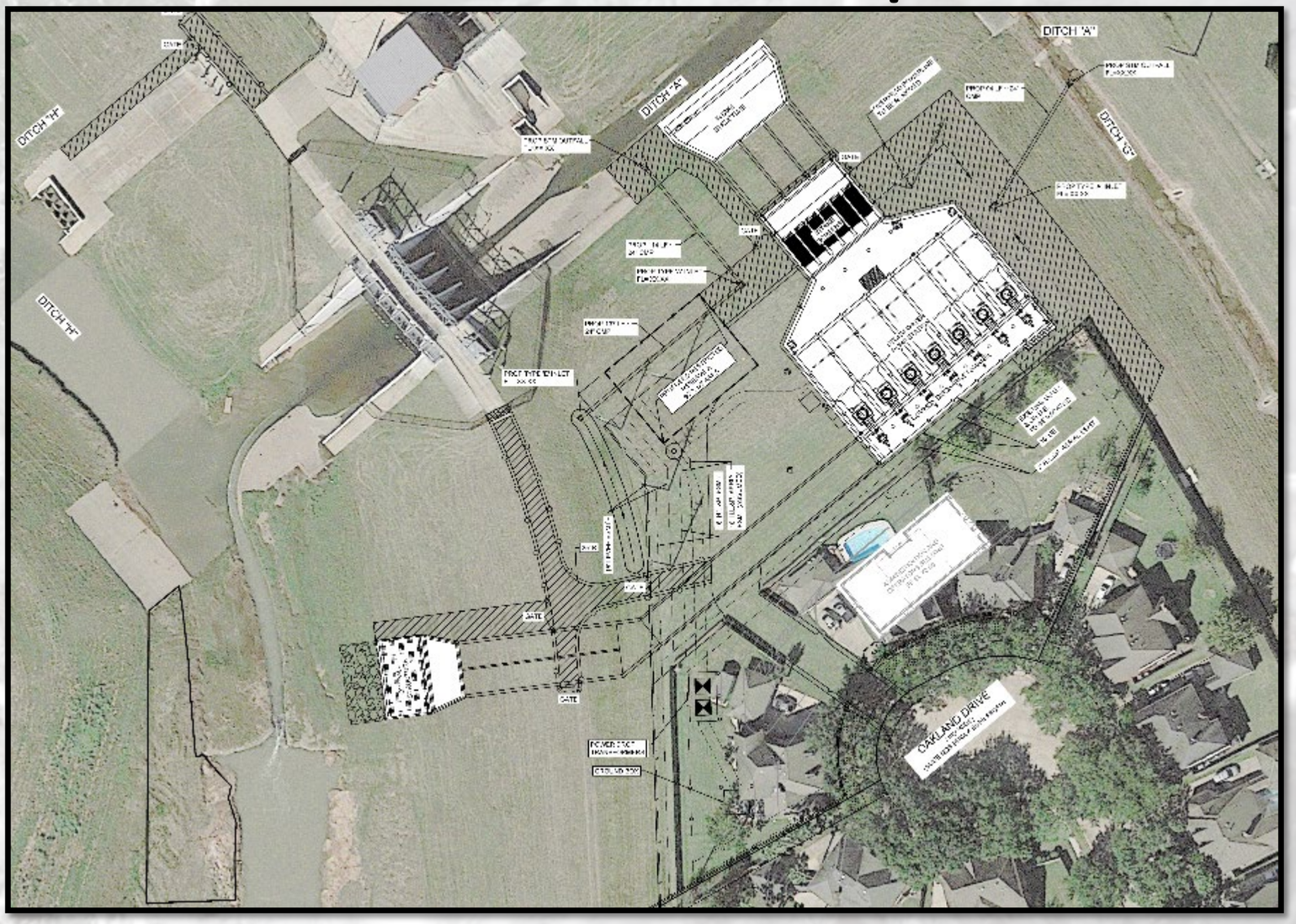
Existing pump station “A”	240,000 GPM	
3rd pump station adds	980,000 GPM	(4 x larger than existing)
Total capacity now	1,220,000 GPM	

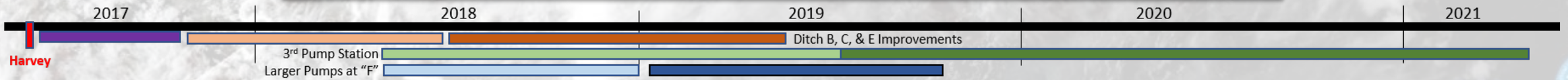
Design and Construct 3rd Pump Station

<u>Key Features of New Pump Station</u>

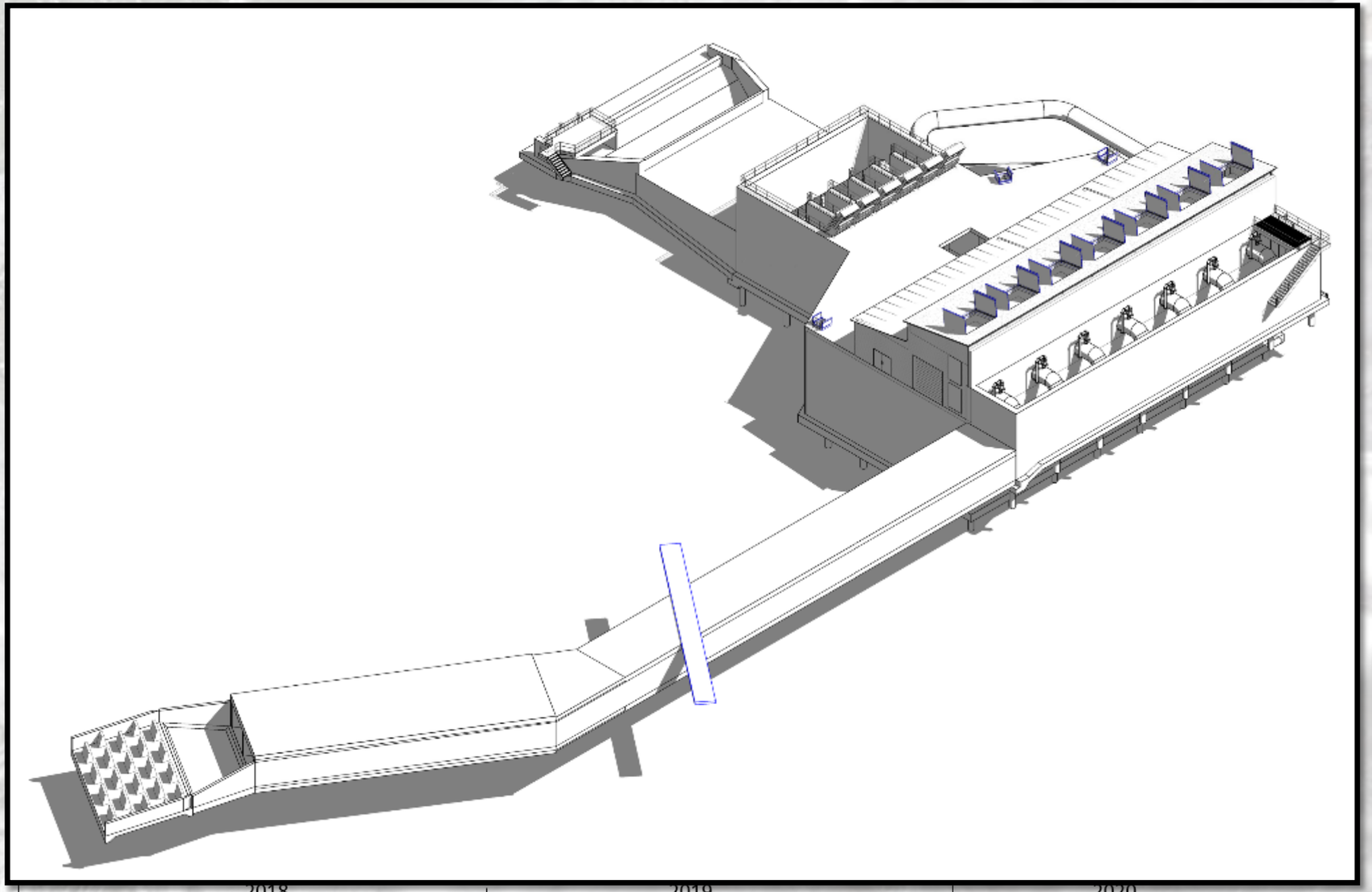
- Begin pumping earlier, as little as 6’ of water in Ditch “A”
- Early operation allows District to reclaim storage during an event
- Natural gas generators will serve as backup power
- Re-circulation system allows testing of pumps

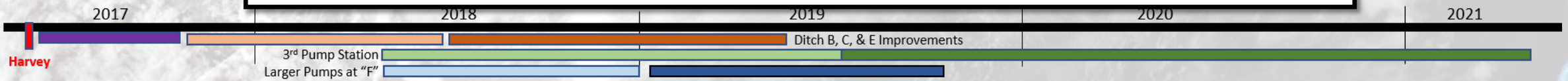
Design and Construct 3rd Pump Station





Design and Construct 3rd Pump Station





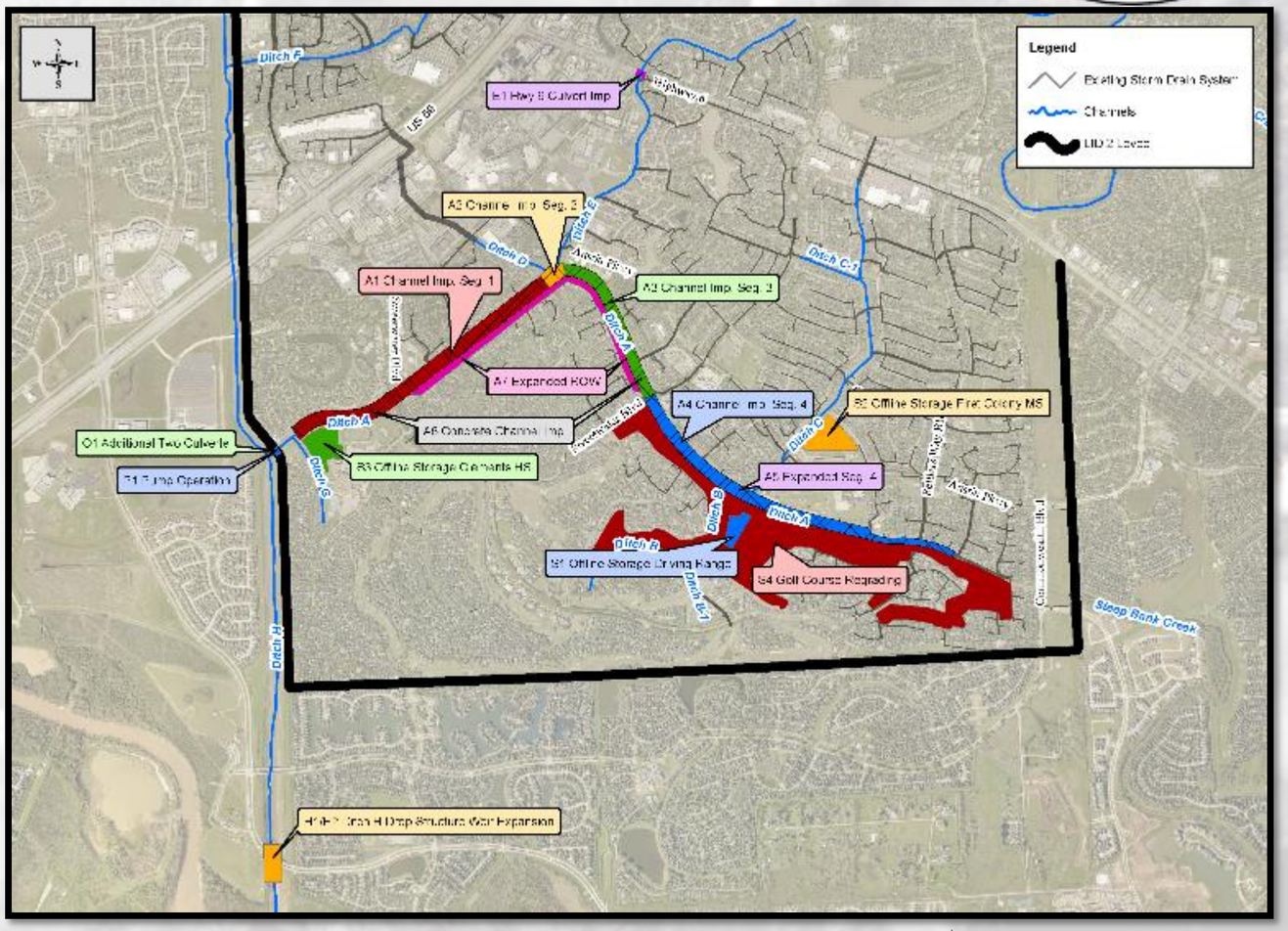
Design and Construct 3rd Pump Station

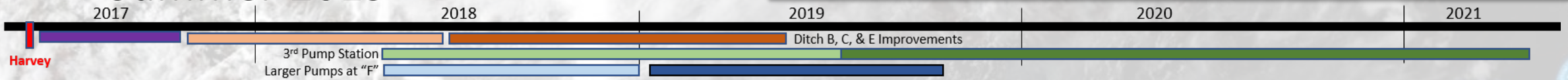
Alternative Back-Up Power Options:

- Looking at partnering with private “emergency power as a service” providers in lieu of buying generators
- Substantial cost savings
- Increased reliability
- Transfer of monthly and annual maintenance cost

Widen Ditch “A”

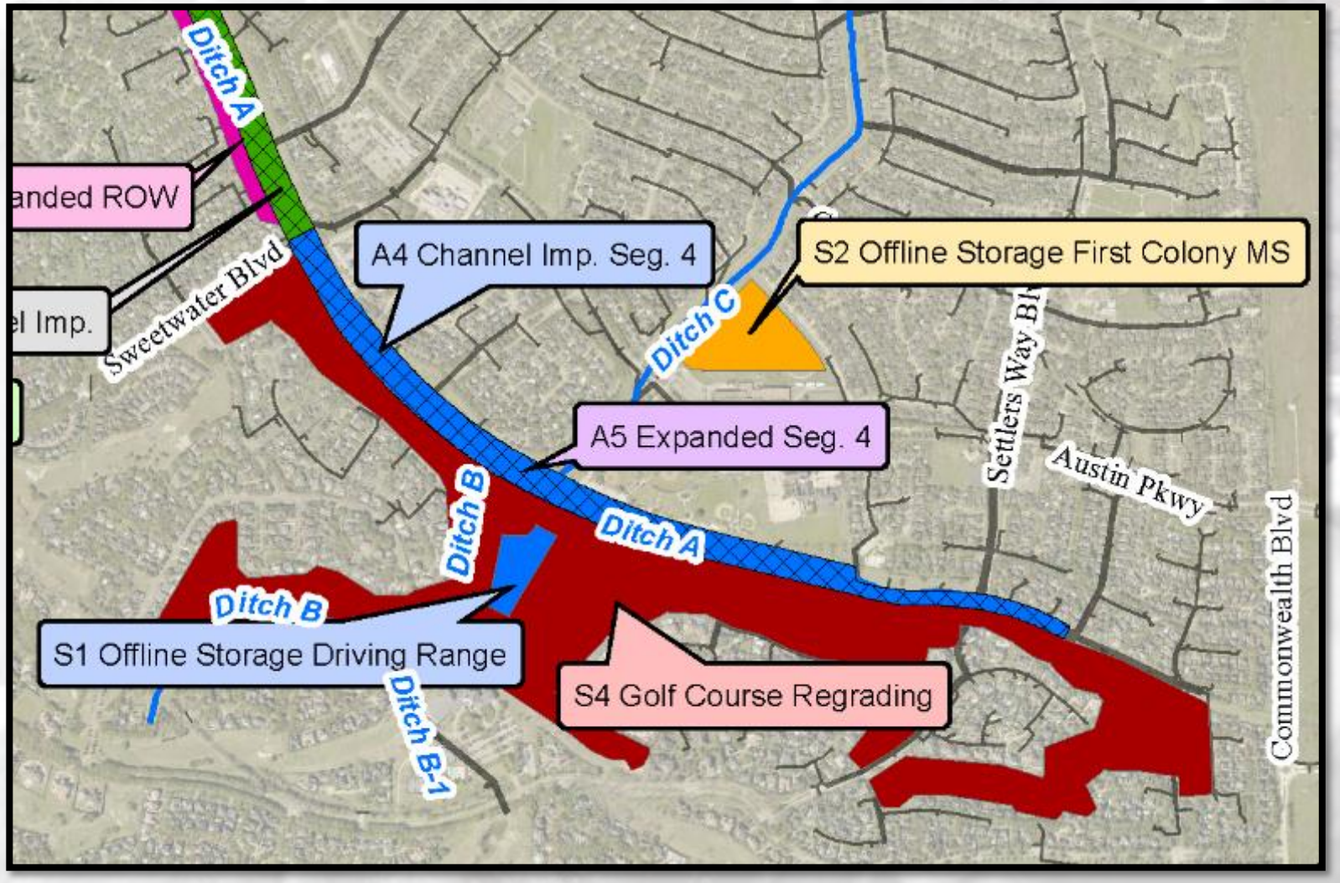
- Widening Ditch A as much as possible within existing ROW
- Increase freeboard 6” during 16.5” rainfall
- Channel widening will not impact recently completed pilot channel installation
- Preliminary Engineering – Summer 2019





Offline Storage

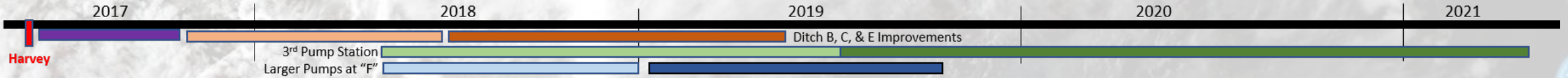
- Requires partnership with FBISD and Sweetwater Country Club
- Lower athletics fields 10 feet and reshape golf course fairways
- Creates additional offline or overbank storage during only the most extreme rainfalls



Redirect Steep Bank Creek

- Goal of project – redirect the water currently flowing from CenterPoint ROW into LID 15 & LID 19 during extreme events
- Preliminary study complete – shows LID 2 can redirect the flow to Ditch “A” outfall with no adverse impact. Some potential benefit to use the ROW as detention during extreme events
- Final design will be complete by late spring of 2019

High-water Vehicle



Budgets / Cost Estimates

Project Description	Project Cost
Ditch B, C, & E Improvements (remaining)	$4,300,000
Flood Monitor Improvements	$260,000
Thelen Pump Station - Increase Pump Capacity	
Phase 1 – Replace existing pumps	$540,000
Phase 2 – Add new pumps	$5,000,000
3rd Pump Station (Design, Build, Inspect, Admin)	$45,000,000
Ditch A Widening	$10,000,000
Offline/overbank Storage	$15,000,000
Redirect Flow to Steep Bank Creek	$500,000
Total	**$80,600,000**

Bond Funding

- Bonds spread the cost of projects over multiple years
- Last bond election was November 2013
- Resident's authorized the District to issue $48 million of bonds
- Plan is to issue all $48 million of authorized bonds in 2019
- May 4 Bond Election – Authorization of $88 million to fund future drainage and flood control projects
- Early Voting begin April 22

Funding Projects

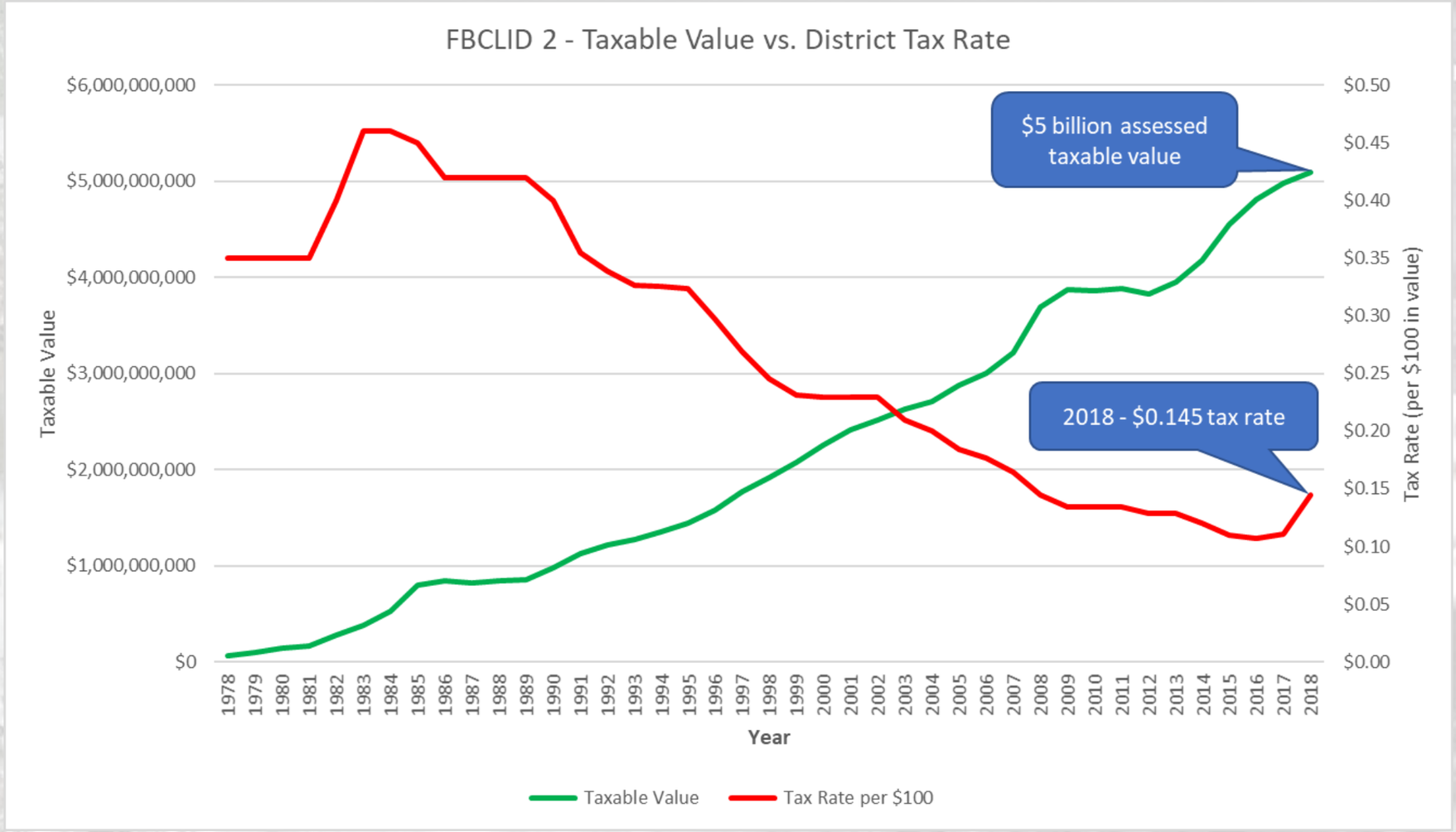
Total for all Projects	$80,600,000
- Bond Proceeds	$44,500,000
- Capital Project Fund	$ 8,500,000
= Estimated Shortfall	$27,600,000

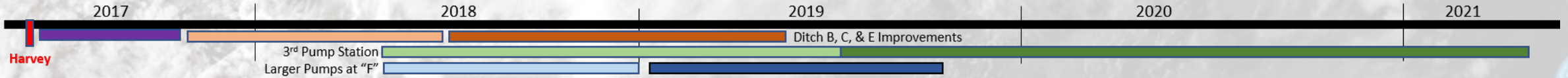
** LID 2 has called for a bond election on May 4, 2019 to fund capital projects.*

Funding Gap

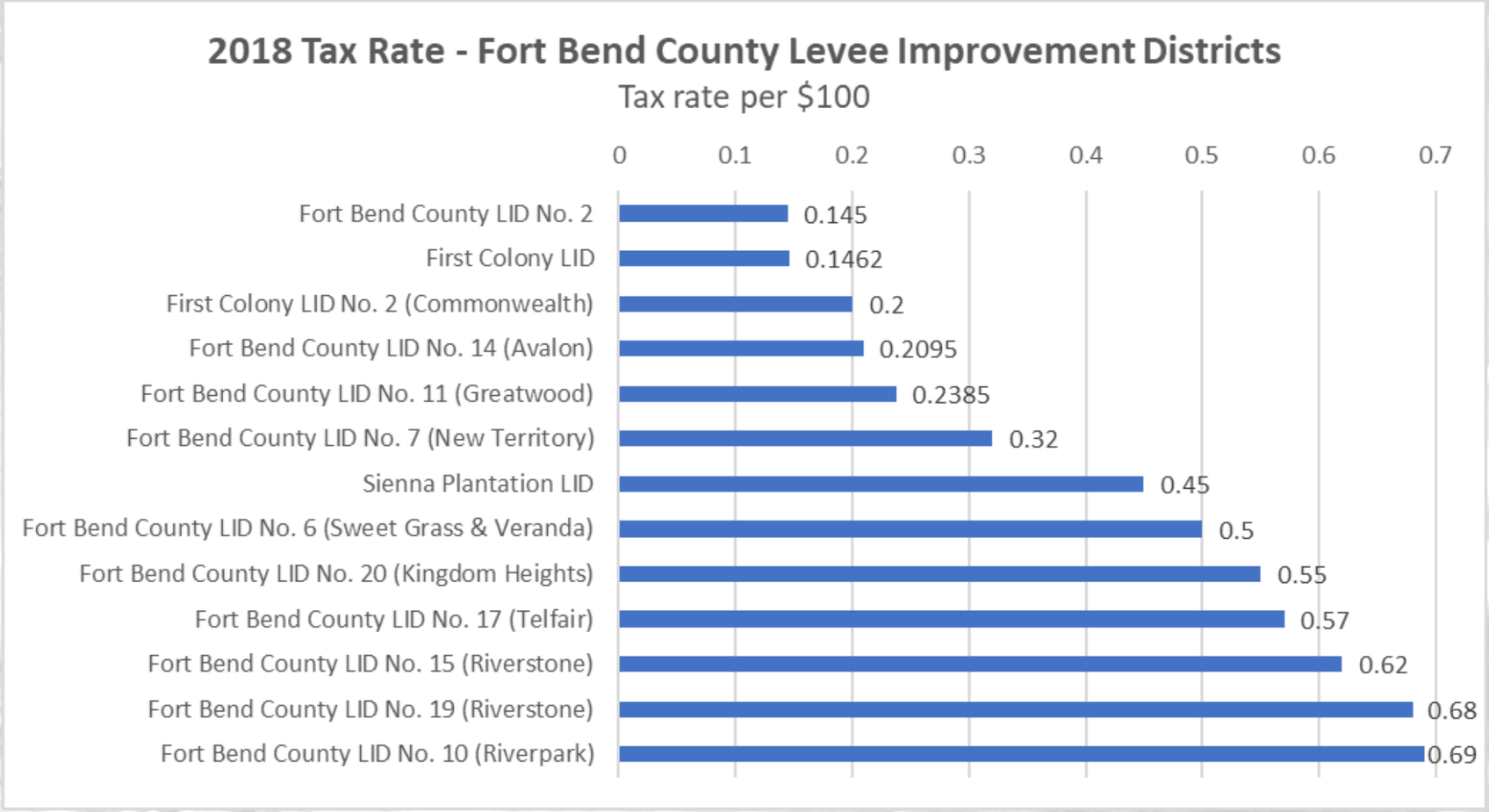
- Attempting to reduce costs wherever possible on all projects
- Utilizing all currently available funds to help with debt service
- Staggering projects to best utilize cash flow
- District will need an additional bond authorization to complete the projects required to increase the free board

Tax History of LID 2





Tax Rate Comparison



Tax Impact of Harvey + NOAA Atlas 14

- 2017 Tax Rate was $0.111
- 2018 Tax Rate is $0.145
- Increase of $0.034 cents to cover additional debt service
  - Average home value in LID 2 = $405,000
  - Average tax increase = $137.70 per year
  - Tax increase is approximately 38 cents per day

- The tax rate in 2008 was $0.145

Historic Reference for Current Tax Increase

- 1984 $0.4600 - highest rate
- 1990 $0.4000
- 1995 $0.3230
- 2000 $0.2300
- 2005 $0.1840
- 2008 $0.1450
- 2012 $0.1290
- 2016 $0.1067 - All time low tax rate

Board maintained a policy to reduce tax rate every year when financially feasible

Tax Impact of Harvey + NOAA Atlas 14

- Harvey identified the need for several significant projects
- All prior improvements within the District have been funded while lowering the tax rate
- Size and urgency of the current projects requires debt (bonds)
- Repayment of the bond debt requires a tax increase

Tax Impact / Tax Increase

- The current plan still has a shortfall in the required revenue
- Goal is to minimize costs and phase projects to maximize all revenue
- There is a possibility that another tax increase will be required
- It would be a fraction of the current increase
- Is the funding mechanism of last resort

Everyone Benefits

- These projects will help protect District residents from future storms like Hurricane Harvey
- Once all of the projects are complete, they will provide the homes at the lowest elevation with flood protection that meets all of the current standards
- All of these projects increase the flood protection of **all** the homes in the District

Conclusion

- Majority of the study work is complete
- The District will utilize 100% of the available bond authorization
- The current tax rate increase is necessary to fund the 3rd pump station and repay the current bond authorization
- Increased detention and ditch widening will require an additional bond authorization
- Bond election has been called for Saturday May 4, 2019

Questions

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