



CITY OF LA PORTE DRAINAGE AND FLOODING COMMITTEE MEETING AGENDA

Notice is hereby given of a meeting of the Drainage and Flooding Committee of the City Council of the City of La Porte, to be held August 10, 2020, in the City Hall Council Chamber, 604 West Fairmont Parkway, La Porte, beginning at 5:00 p.m., to consider the following items of business.

Social distancing protocols will be in effect in the Council Chambers. Remote participation is available. Join via a screen using <https://us02web.zoom.us/j/89890354246?pwd=TmtQWnJ4NGJ2ZGIUVVE1dFZHSUhVdz09> or call in to 877-853-5257 or 888-475-4499. The meeting ID is 898 9035 4246 and the passcode is 058303.

Join via a screen using <https://us02web.zoom.us/j/89890354246?pwd=TmtQWnJ4NGJ2ZGIUVVE1dFZHSUhVdz09> or call in to 877-853-5257 or 888-475-4499. The meeting ID is 898 9035 4246 and the passcode is 058303.

1. **CALL TO ORDER**
2. **CITIZEN COMMENT** *(Generally limited to five minutes per person; in accordance with state law, the time may be reduced if there is a high number of speakers or other considerations.)*
3. **STATUTORY AGENDA**
 - (a) Presentation, discussion and possible action to approve the July 13, 2020, meeting minutes. [Councilperson Jay Martin, Chairman]
 - (b) Presentation, discussion, and possible action regarding changes to drainage criteria recommended by Harris County. [Lorenzo Wingate, Assistant Director of Public Works]
 - (c) Presentation, discussion, and possible action regarding prioritization of current and future drainage projects. [Lorenzo Wingate, Assistant Director of Public Works]
 - (d) Presentation, discussion, and possible action in connection with receipt of a report regarding the Harris County Flood Control District's (HCFCD) and Harris County Precinct 2's current and future plans relating to flooding in the City of La Porte. [Lorenzo Wingate, Assistant Director of Public Works]
 - (e) Presentation, discussion, and possible action regarding the status of current drainage projects. [Lorenzo Wingate, Assistant Director of Public Works]
 - (f) Presentation, discussion, and possible action to provide staff with direction, if necessary, regarding additional drainage concerns. [Lorenzo Wingate, Assistant Director of Public Works]
4. **SET NEXT MEETING**
5. **COMMITTEE COMMENT** *Hear announcements concerning matters appearing on the agenda; items of community interest; and/or inquiries of staff regarding specific factual information or existing policy from the Committee members and City staff, for which no formal action will be discussed or taken.*
6. **ADJOURN**

If, during the course of the meeting and discussion of any items covered by this notice, the Drainage and Flooding Committee determines that a Closed or Executive Session of the Committee is required, then such closed meeting will be held as authorized by Texas Government Code, Chapter 551, Section 551.071 - consultation with counsel on legal matters; Section 551.072 - deliberation regarding purchase, exchange, lease or value of real property; Section 551.073 - deliberation regarding a prospective gift; Section 551.074 - personnel matters regarding the appointment, employment, evaluation, reassignment, duties, discipline, or dismissal of a public officer or employee; Section 551.076 - implementation of security personnel or devices; Section 551.087 - deliberation regarding economic development negotiation; Section 551.089 - deliberation regarding security devices or security audits, and/or other matters as authorized under the Texas Government Code. If a Closed or Executive Session is held in accordance with the Texas Government Code as set out above, the Drainage and Flooding Committee will reconvene in Open Session in order to take action, if necessary, on the items addressed during Executive Session.

Persons with disabilities who plan to attend this meeting and who may need auxiliary aids or services are requested to contact the City Secretary's office (281-470-5019), two working days prior to the meeting for appropriate arrangements.

Pursuant to Texas Government Code Sec. 551.127, on a regular, non-emergency basis, members may attend and participate in the meeting remotely by video conference. Should that occur, a quorum of the members will be physically present at the location noted above on this agenda.

Councilmembers may attend in numbers constituting a quorum. This is a Drainage and Flooding Committee Meeting at which there will be no deliberation or formal action taken by City Council as a governmental body.

CERTIFICATE

I, Lee Woodward, City Secretary, do hereby certify that a copy of the August 10, 2020, Drainage and Flooding Committee agenda was posted on the City Hall bulletin board, a place convenient and readily accessible to the general public at all times, and to the City's website, www.LaPorteTX.gov, in compliance with Chapter 551, Texas Government Code.

DATE OF POSTING _____
TIME OF POSTING _____
TAKEN DOWN _____

Lee Woodward

Lee Woodward, City Secretary

JAY MARTIN
Chairman

DANNY EARP
Vice-Chairman



CHUCK ENGELKEN
Member

STEVE GILLETT
Alternate Member

MINUTES OF THE DRAINAGE AND FLOODING COMMITTEE MEETING JULY 13, 2020

The Drainage and Flooding Committee of the City of La Porte met on Monday, July 13, 2020, at the City Hall Council Chambers, 604 West Fairmont Parkway, La Porte, Texas, at 5:00 p.m. to consider the following items of business:

Committee Members present: Jay Martin, Danny Earp

Committee Members attending remotely: Chuck Engelken

Committee Members absent: None

Council-appointed officers present: Corby Alexander, City Manager; Lee Woodward, City Secretary

1. **CALL TO ORDER** - Chairman Martin called the meeting to order at 5:01 p.m.
2. **CITIZEN COMMENT** (*Generally limited to five minutes per person, in accordance with state law, the time may be reduced if there is a high number of speakers or other considerations.*)

There were no citizen comments.

3. STATUTORY AGENDA

- (a) **Presentation, discussion, and possible action to approve the June 8, 2020, meeting minutes. [Jay Martin, Chair]**

Committee member Engelken moved to approve the minutes; the motion was adopted, 3-0.

- (b) **Presentation, discussion, and possible action regarding the Texas General Land Office grant funding opportunity. [Lorenzo Wingate, Assistant Director of Public Works]**

Mr. Wingate noted the GLO has invited the City to apply for supplemental funding for Brookglen. He noted the County has LMI data and is willing to assist with the LMI calculations. Committee member Engelken shared that the meeting with Mr. Black of Harris County Flood Control District (HCFCD) this morning had included additional drainage funding, as well as for F-216, potentially including channel improvements and other work. The Committee asked Mr. Wingate to inquire as to whether the airport project might be eligible, as well.

- (c) **Presentation, discussion, and possible action regarding changes to drainage criteria recommended by Harris County. [Lorenzo Wingate, Assistant Director of Public Works]**

Mr. Wingate explained the potential impacts of increased Harris County design requirements on future projects and the correlations to supplementary funding requests. Mr. Wingate explained the potential floodplain development impacts, particularly for those with fill within the 500-year flood plain. Chairman Martin asked that the item come back with more information.

(d) Presentation, discussion, and possible action regarding an interlocal agreement between the City of La Porte and the City of Pasadena related to land within the ETJ of the respective cities. [Lorenzo Wingate, Assistant Director of Public Works]

Assistant City Attorney Clark Askins said the agreement was enforceable from the City of La Porte's end. He said he understood the main concern of the Committee was to have the drainage facilities constructed. Mr. Askins said the City of Pasadena had created a plan and submitted it to HCFCD, but had never followed up on it, and that now Pasadena wanted to work on a larger project in the area. He said the City could claim a breach by Pasadena. Committee member Engelken expressed concern about the area around Brookglen and asked that pressure be kept on the process. If the City of La Porte wanted to move forward, it could consider a formal demand letter, perhaps accompanied by a meeting to clearly indicate the action was needed. Committee member Engelken moved that the City of La Porte move forward with any action needed to have the City of Pasadena honor the agreement; the motion was adopted, 3-0.

(e) Presentation, discussion, and possible action regarding the status of current drainage projects. [Lorenzo Wingate, Assistant Director of Public Works]

Mr. Wingate referred to status changes on several projects.

(f) Presentation, discussion, and possible action to provide staff with direction, if necessary, regarding additional drainage concerns. [Lorenzo Wingate, Assistant Director of Public Works]

There were no additional items.

4. Set next meeting - The next meeting date was set for August 10, 2020.

5. Committee Member Comments – There were no comments.

ADJOURN – The meeting was adjourned without objection at 5:45 p.m.

Lee Woodward, City Secretary



REQUEST FOR DRAINAGE & FLOODING COMMITTEE AGENDA ITEM

Agenda Date Requested: <u>August 10, 2020</u>
Requested By: <u>Lorenzo Wingate, P.E., C.F.M.</u>
Department: <u>Public Works</u>
<input checked="" type="radio"/> Report <input type="radio"/> Resolution <input type="radio"/> Ordinance

Appropriation	
Source of Funds:	_____
Account Number:	_____
Amount Budgeted:	_____
Amount Requested:	_____
Budgeted Item:	<input type="radio"/> Yes <input type="radio"/> No

Exhibits: Harris County Letter; Harris County Clarification Letter; La Porte FIRMs

SUMMARY & RECOMMENDATION

At the previous Drainage Committee Meeting, Staff presented Harris County recommended minimum standards for drainage criteria and floodplain management. The proposed changes were presented in a letter dated May 12, 2020, drafted by the County Engineer for Harris County and the Executive Director of Harris County Flood Control District (HCFCD). The meeting concluded with the Drainage Committee requesting additional information regarding the potential impact of adopting the recommended changes.

In a letter dated July 9, 2020 (attached), Harris County's County Engineer provided clarification on coastal and stillwater requirements related to the minimum standards presented in the May 12th letter. La Porte staff was unaware of the July 9th letter until discussing the May 12th letter with Alisa Max, P.E., Chief Operations Officer with the Harris County Engineering Department, on July 17, 2020. Ms. Max has agreed to participate in the August 10th Drainage Committee Meeting to discuss the recommendations. Additionally, Harris County has procured professional engineering services to assist communities with determining the feasibility of implementing the proposed Harris County requirements.

The potential changes and their impact(s) to the City of La Porte are listed in the following table:

Harris County Requirement	Impact to La Porte
Atlas 14 rainfall rates to size storm water conveyance and detention systems	Minimal impact. Systems are designed using current rainfall characteristics.
0.55 ac-ft/ac detention rate	Increases detention volume requirement by 22%.
Prohibit detention design using hydrograph timing	Minimal impact. Rarely used for design in COLP.
No net fill in the current 500-yr floodplain	To be explained by HCFCD/EHRA.
Finished floor elevation established at or waterproofed to the 500-yr flood elevation	To be explained by HCFCD/EHRA.

Staff recommends allowing Harris County’s consultant to perform an impact analysis to show how the minimum standards for drainage criteria and floodplain management would potentially impact the City of La Porte.

ACTION REQUIRED BY DRAINAGE AND FLOODING COMMITTEE

Receive report, and provide staff with direction, as necessary.

Approved for Drainage Committee Agenda

Corby D. Alexander, City Manager

Date

HARRIS COUNTY
OFFICE OF THE COUNTY ENGINEER

**1001 Preston, Suite 500
Houston, Texas 77002
(713) 755-5370**

May 12, 2020

Honorable County Judge
& Commissioners

SUBJECT: Recommendation on Minimum Standards for Communities in Harris County and Draining to Harris County

Dear Court Members:

At the April 28, 2020, Commissioners Court, we were directed to recommend minimum standards for adoption by communities located in Harris County to ensure the benefits achieved by the 2018 Harris County Flood Control Bond Program are protected.

Our recommendation is that all cities within Harris County, and those entities located outside of Harris County but drain to Harris County, adopt the following minimum standards by December 31, 2020, and be effective within their municipal boundaries and extraterritorial jurisdiction:

- Use Atlas 14 rainfall rates for sizing storm water conveyance and detention systems.
- Require a minimum detention rate of 0.55 acre feet per acre of detention for any new development on tracts one acre or larger in size. However, a single family residential structure and accessory buildings proposed on an existing lot is exempt from providing detention.
- Prohibit the use of hydrograph timing as a substitution for detention on any project, unless it directly outfalls into Galveston Bay.
- Require no net fill in the current mapped 500-year floodplain, except in areas identified as coastal zones only
- Require the minimum Finished Floor Elevation (FFE) of new habitable structures be established at or waterproofed to the 500-year flood elevation as shown on the effective Flood Insurance Study.

It is further recommended that the County Engineer extend the current agreement with EHRA Engineering to assist communities in evaluating and updating their policies and ordinances upon their request at no cost to the community. As part of this process, these communities may identify additional requirements or criteria to implement depending on their flood risk and storm water infrastructure capacity.

To help reinforce participation, we also recommend that no partnership projects, including flood control or county roadway projects, be constructed in these communities after December 31, 2020, until such time their criteria is updated to reflect the above minimum standards. Partnership projects that are currently scheduled for construction in these communities before December 31, 2020, may continue as scheduled provided the communities are actively working with us to update their criteria. It should be noted that this effort is part of a larger Fix Flooding First initiative that will be presented to Commissioners Court for an official roll out in June 2020.

Sincerely,



John R. Blount, P.E.
County Engineer



Russell A. Poppe, P.E.
Executive Director
Harris County Flood Control District

JRB/RP/ed

HARRIS COUNTY

OFFICE OF THE COUNTY ENGINEER

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MEMORANDUM

DATE: July 9, 2020

TO: File

FROM: John R. Blount, P.E. 
County Engineer

CC: Russell A. Poppe, P.E.
Executive Director, Harris County Flood Control District

SUBJECT: **Coastal and Stillwater Floodplain Clarification - May 19, 2020
Commissioners Court Action Concerning Requirement Minimum
Standards for Communities in Harris County and Draining to Harris
County**

On May 19, 2020, Harris County Commissioners Court recommended that all cities within Harris County and those entities outside of Harris County that drain to Harris County adopt five minimum standards in their drainage and/or floodplain regulations prior to December 31, 2020 in order to continue participating in partnership projects with Harris County.

The intent of the initiative is to ensure that minimum flood protection measures are in place that take into consideration the changes brought about by the new understanding of rainfall rates in the NOAA Atlas 14 study so as to create a more resilient community. However, Atlas 14 rainfall changes do not significantly impact flood risk in coastal and stillwater areas. Therefore, the following clarification shall be made to the approved Court letter as it applies to coastal and stillwater areas as defined below:

1. Minimum Measure #1: Use Atlas 14 rainfall rates for sizing storm water conveyance and detention systems: Atlas 14 shall be required to size localized storm water conveyance systems, such as storm sewers and roadside ditches, and size detention systems that outfall into the localized storm water conveyance systems. Atlas 14 rainfall shall not be a minimum requirement for detention for developments that directly outfall into a stream or body of water impacted by coastal flooding (i.e. tidal impacts, Stillwater elevation, storm surge).

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2. Minimum Measure #2: Require a minimum detention rate of 0.55 acre feet per acre detention for any new development on tracts one acre or larger. However, a single family residential structure and accessory buildings proposed on an existing lot is exempt from providing detention. This minimum measure shall be applied to all areas that require detention based on the clarification Minimum Measure #1. If an area is exempt from providing detention based on Minimum Measure #1, this measure does not apply.
3. Minimum Measure #3: Prohibit the use of hydrograph timing as a substitution for detention on any project, unless it directly outfalls into Galveston Bay. The measure shall not apply for any developments that directly outfall into a stream or body of water impacted by coastal flooding (i.e. tidal impacts, Stillwater elevation, storm surge).
4. Minimum Measure #4: Require no net fill in the current mapped 500-year floodplain, except in areas identified as coastal zones only. As this requirement clearly states, this should not be required in coastal areas. It also makes sense that this requirement should not be required in stillwater areas as well.
5. Minimum Measure #5: Require the minimum Finished Floor Elevation (FFE) of new habitable structures be established at or waterproofed to the 500-year floodplain elevation as shown on the effective Flood Insurance Study. The Flood Insurance Study does not show a 500-year elevation for coastal areas, hence coastal areas are exempt from this requirement. However, stillwater areas show a 500-year floodplain that is not based on riverine conditions but rather based surge and wave action. Therefore, stillwater areas shall also be exempted from this requirement. Rather, local governments shall be required, at a minimum, to meet FEMA requirements for FFEs in these zones.

Further background and information to determine if a floodplain is coastal or stillwater is as follows:

Coastal communities face a range of flooding hazards that include storm surge, waves, and erosion. Elevated water levels at the coast is a main reason for coastal flooding. Elevated water levels allow floodwaters and waves to travel further inland than they would otherwise. The elevated water level observed during a flood event is typically called the Stillwater Elevation (SWEL). The SWEL tells us how high floodwaters could rise during a flood event due to storm surge, tides, wave setup, or other factors that cause increases in water levels. This elevation does not include the additional heights of the waves.

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The coastal SFHA is where the source of flooding consists of coastal hazards such as storm surge and waves. On the FIRM, the coastal SFHA is designated by Zones VE, AE, and AO. Each flood zone area is bounded by a solid white boundary line and is assigned a single, typically whole-foot, BFE. Coastal BFEs apply to the entire area between the white boundary lines. Coastal BFEs are shown as values in parentheses under the zone labels...i.e. if the BFE were 10 feet, the BFE label would read (EL 10) under a VE or AE designation. The Limit of Coastal Floodplain is marked on a flood map with a white line to show the location where, for BFEs, flooding from riverine flood sources becomes greater than flooding from coastal flood sources. Typically, on the coastal side of the line, static, whole-foot BFEs are shown while on the riverine side of the line, BFEs are marked at cross sections and BFE lines.

The below example shows an area containing a Coastal Zone AE with whole-foot BFEs. For Zone AE flood zones within a coastal community, it indicates areas that have at least a 1-percent-annual-chance of being flooded, but where wave heights are less than 3 feet. On the flood map, Zone X (shaded) areas are shown with a light orange color. While no flood elevations will be shown on the flood map for this zone, information about the 0.2-percent-annual-chance SWELs and wave hazards may be found in the FIS report for coastal areas (which would be labeled on the flood profiles). It should be noted that the Zone X (shaded) areas determined by coastal flooding are not associated with riverine flooding or stream modeling. These areas should be considered separately when applying Harris County Minimum Standards, since these elevations are not determined by riverine modeling.



The source used to obtain the information provided above is from the Federal Emergency Management Agency (FEMA) document, "An Introduction to FEMA Coastal Floodplain Mapping."

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NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The community map repository should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator, Zone 15. The **horizontal datum** was NAD83, GRS90 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NINGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit their website at <http://www.ngs.noaa.gov/>.

Base map information shown on this FIRM was provided in digital format by the Houston-Galveston Area Council and was revised and enhanced by Harris County.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

The AE Zone category has been divided by a **Limit of Moderate Wave Action (LIMWA)**. The LIMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the VE Zone and the LIMWA (or between the shoreline and the LIMWA for areas where VE Zones are not identified) will be similar to, but less severe than those in the VE Zone.

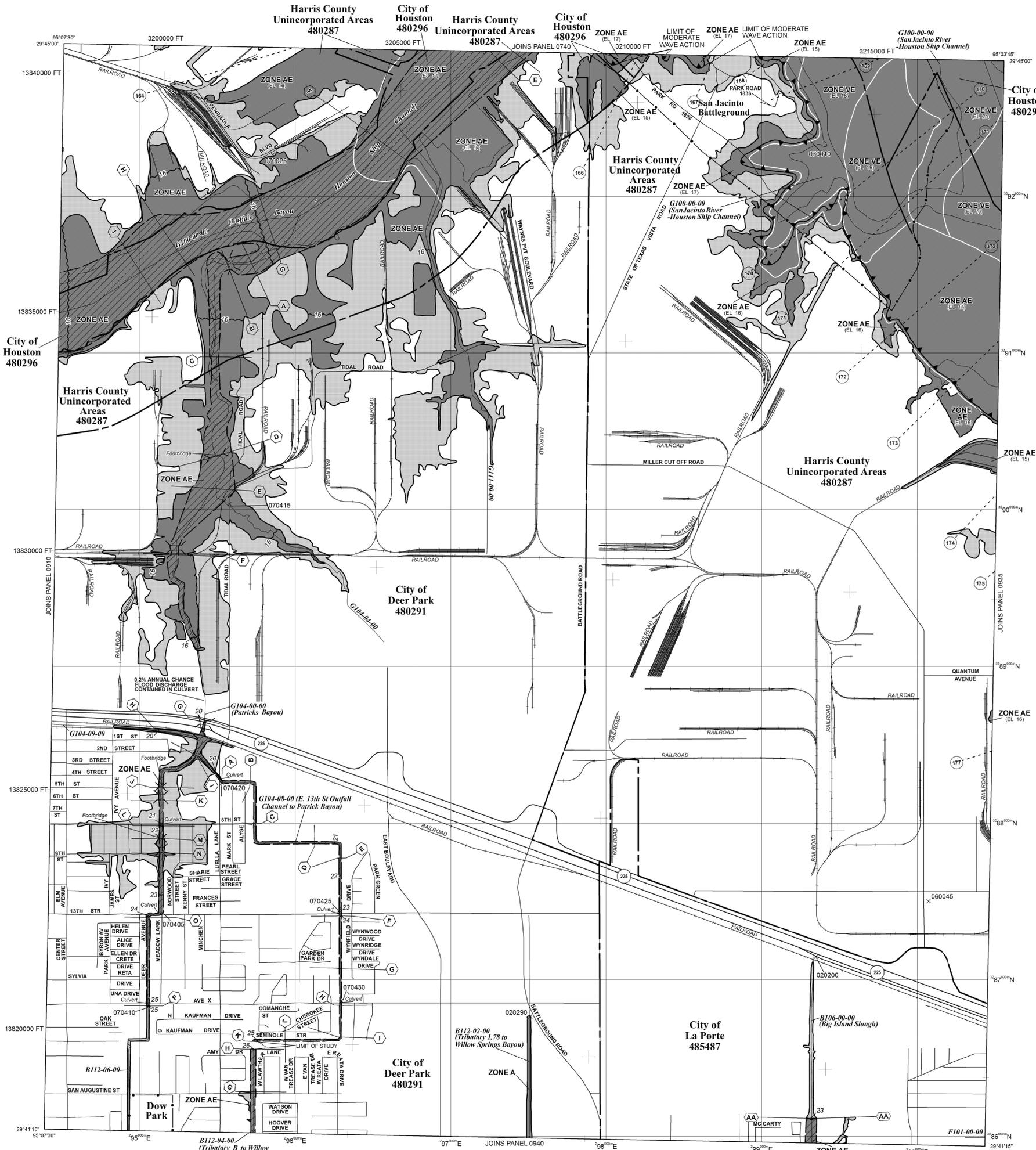
Contact the **FEMA Map Information eXchange** at 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Information eXchange may also be reached by Fax at 1-800-358-9620 and their website at <http://www.msc.fema.gov/>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/national-flood-insurance-program>.

Vertical Datum Adjustment due to subsidence is the 2001 adjustment.

Benchmarks shown on this map were provided by either Harris County or the National Geodetic Survey. To obtain elevation, description, and location information for benchmarks provided by Harris County, please contact the Permits Office of the Engineering Department at 713-274-3900 or visit their website at <http://www.eng.hctx.net/permits>. For information regarding the benchmarks provided by National Geodetic Survey, please see note above.

Some bridges and other structures shown on the detailed studied streams are not labeled. See corresponding flood profile for appropriate names.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently dewatered. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Limit of Moderate Wave Action

513 Base Flood Elevation line and value; elevation in feet* (EL 987)

* Referenced to the North American Vertical Datum of 1988

(A) Cross section Line

(B) Transect line

87°07'45", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

76°00'N 1000-meter Universal Transverse Mercator grid values, zone 15N

60000 FT 5000-foot grid values: Texas State Plane coordinate system, South Central zone (FIPSZONE 4204), Lambert Conformal Conic projection

DX5510 x Bench mark (see explanation in Notes to Users section of this FIRM panel)

M1.5 River Mile

MAP REPOSITORY Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTY-WIDE FLOOD INSURANCE RATE MAP

September 28, 1990

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

September 30, 1992

November 6, 1996

April 20, 2000

June 18, 2007

January 6, 2017

FOR REASON OF REVISION SEE NOTICE TO FLOOD INSURANCE STUDY USERS IN THE FIS REPORT

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0930M

FIRM FLOOD INSURANCE RATE MAP

HARRIS COUNTY, TEXAS AND INCORPORATED AREAS

PANEL 930 OF 1150 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DEER PARK, CITY OF	480291	0930	M
HARRIS COUNTY	480287	0930	M
HOUSTON, CITY OF	480296	0930	M
LA PORTE, CITY OF	485487	0930	M

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER 48201C0930M

MAP REVISED JANUARY 6, 2017

Federal Emergency Management Agency

NOTES TO USERS

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To obtain more detailed information in areas where **Base Flood Elevations (BFEs)** and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction, and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator, Zone 15. The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at <http://www.ngs.noaa.gov> or contact the National Geodetic Survey at the following address:

NGS Information Services
 NOAA, NIMS12
 National Geodetic Survey
 SSMC-3, #9202
 1315 East-West Highway
 Silver Spring, Maryland 20910-3282
 (301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit their website at <http://www.ngs.noaa.gov/>.

Base map information shown on this FIRM was provided in digital format by the Houston-Galveston Area Council and was revised and enhanced by Harris County.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

The AE Zone category has been divided by a **Limit of Moderate Wave Action (LIMWA)**. The LIMWA represents the approximate landward limit of the 1.5-foot breaking wave. The effects of wave hazards between the VE Zone and the LIMWA (or between the shoreline and the LIMWA for areas where VE Zones are not identified) will be similar to, but less severe than those in the VE Zone.

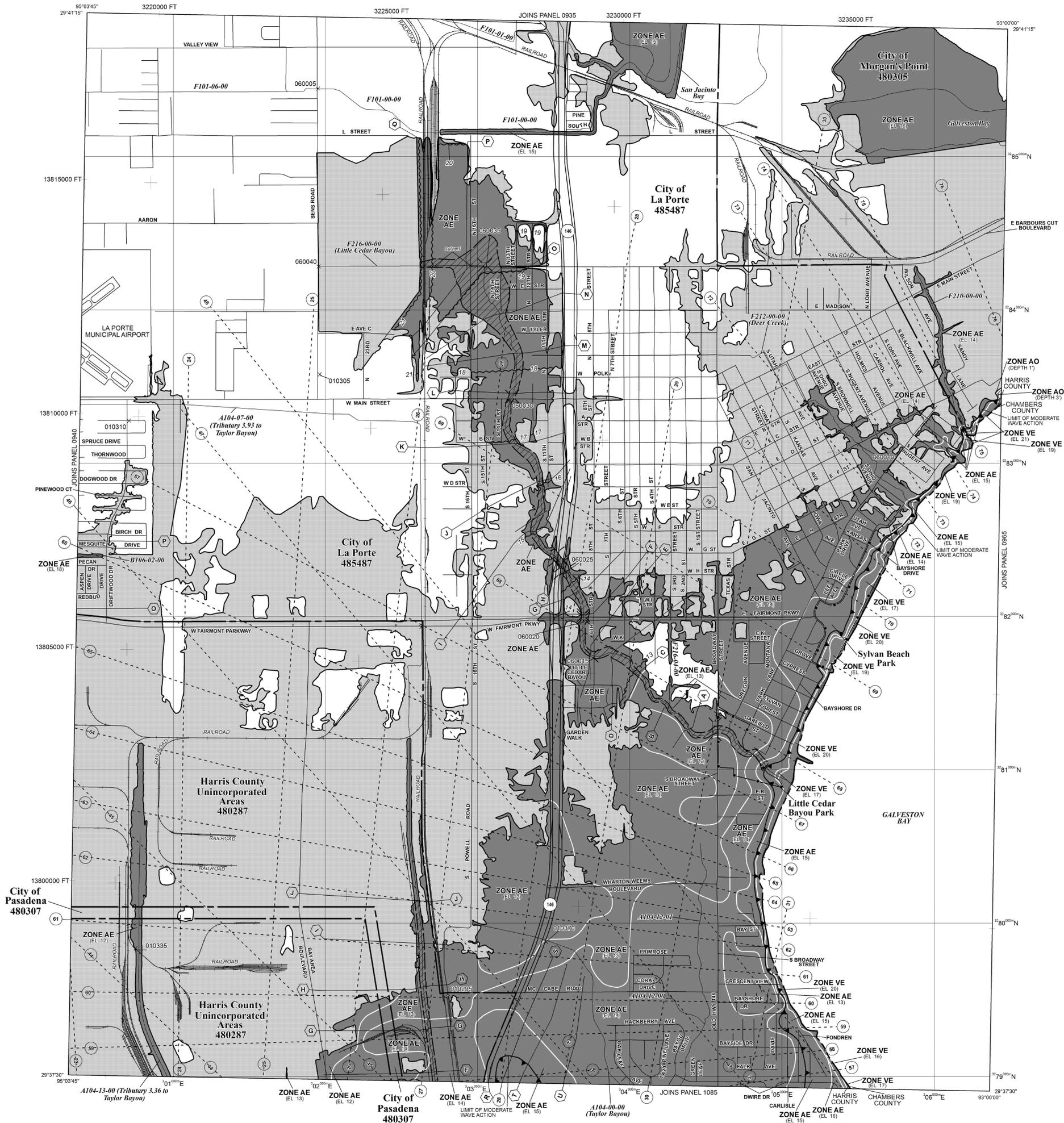
Contact the **FEMA Map Information eXchange** at 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Information eXchange may also be reached by Fax at 1-800-358-9620 and their website at <http://www.msc.fema.gov/>.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call 1-877-FEMA MAP (1-877-336-2627) or visit the FEMA website at <http://www.fema.gov/national-flood-insurance-program>.

Vertical Datum Adjustment due to subsidence is the 2001 adjustment.

Benchmarks shown on this map were provided by either Harris County or the National Geodetic Survey. To obtain elevation, description, and location information for benchmarks provided by Harris County, please contact the Permits Office of the Engineering Department at 713-274-3900 or visit their website at <http://www.eng.hctx.net/permits>. For information regarding the benchmarks provided by National Geodetic Survey, please see note above.

Some bridges and other structures shown on the detailed studied streams are not labeled. See corresponding flood profile for appropriate names.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently deteriorated. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- - - Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Limit of Moderate Wave Action

513 Base Flood Elevation line and value; elevation in feet*
 (EL 987) Base Flood Elevation value where uniform within zone; elevation in feet

* Referenced to the North American Vertical Datum of 1988

(A) Cross section line
 (B) Transect line

67°07'45", 32°22'30" Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

76°00'N 1000-meter Universal Transverse Mercator grid values, zone 15N

600000 FT 5000-foot grid values: Texas State Plane coordinate system, South Central zone (FIPSZONE 4204), Lambert Conformal Conic projection

DX5510 x Bench mark (see explanation in Notes to Users section of this FIRM panel)

M1.5 River Mile
 MAP REPOSITORY Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTY-WIDE FLOOD INSURANCE RATE MAP
 September 28, 1990

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
 September 30, 1992
 November 6, 1996
 April 20, 2000
 June 18, 2007
 January 6, 2017

FOR REASON OF REVISION
 SEE NOTICE TO FLOOD INSURANCE STUDY USERS IN THE FIS REPORT

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET
 300 0 300 600 METERS

PANEL 0945M

FIRM
FLOOD INSURANCE RATE MAP

HARRIS COUNTY, TEXAS AND INCORPORATED AREAS

PANEL 945 OF 1150
 (SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HARRIS COUNTY	480287	0945	M1
HARRIS COUNTY	485487	0945	M1
MORGAN'S POINT, CITY OF	480305	0945	M1
PASADENA, CITY OF	480307	0945	M1

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
48201C0945M

MAP REVISED
JANUARY 6, 2017

Federal Emergency Management Agency



REQUEST FOR DRAINAGE & FLOODING COMMITTEE AGENDA ITEM

Agenda Date Requested: <u>August 10, 2020</u>		
Requested By: <u>Lorenzo Wingate, P.E., C.F.M.</u>		
Department: <u>Public Works</u>		
<input checked="" type="radio"/> Report <input type="radio"/> Resolution <input type="radio"/> Ordinance		

Appropriation	
Source of Funds:	_____
Account Number:	_____
Amount Budgeted:	_____
Amount Requested:	_____
Budgeted Item:	<input type="radio"/> Yes <input type="radio"/> No

Exhibits: Battleground Estates Area Map; Roseberry Area Mission Drive Area Map; Sylvan Beach Area Map; Bay Colony Map

Map;
Area

SUMMARY & RECOMMENDATION

Staff has prepared the following table (shown in order of highest priority to lowest) to update the status of projects that were prioritized by the Drainage Committee at the August 8, 2018 Drainage Committee Meeting:

Priority	Project Name	Project Phase (% Complete)	Total % Complete
1	Brookglen Drainage Improvements	Feasibility (0%)	0%
2	Bayside Terrace Drainage Improvements	Feasibility (85%)	30%
3	F101-06-00 Improvements	Preliminary Engineering (25%)	25%
4	Little Cedar Bayou (F216) Phase 3	Preliminary Engineering (0%)	10%
5	6 th Street (North Side Neighborhood Drainage Improvement Project)	Design (5%)	5%
6	Southside Neighborhood Drainage Improvements;	Final Design (90%)	60%
7	Bob's Gully Analysis	Project Complete	100%

In order to plan for future Capital Improvement Projects, staff is requesting Drainage Committee input and direction regarding potential future projects. Staff has preliminarily developed the following non-prioritized list of potential projects:

Project Name	Project Background
Battleground Estates Phase II	This would be a continuation of previously completed drainage improvements along the F101-00-00 drainage channel to mitigate flooding north of N P Street with the Battleground Estates subdivision. Project is prefunded; \$65,000 for preliminary design.
Roseberry Drive Drainage Improvements	Several complaints received about street flooding along Roseberry. The Drainage Committee consented to further evaluation of the Roseberry drainage system at the August 12, 2019 meeting.
Mission Drive Drainage Improvements	Storm sewer system within Monument Estates subdivision holds water because conveyance channel between N P and N L has not been maintained.
Sylvan Beach Subdivision Drainage Improvements	Subdivision do not have roadside ditches or enclosed drainage system. All drainage is conveyed along street surface. Roadway is flooded during moderate rain events.
Bay Colony Subdivision Drainage Improvements	Inconsistent pipe sizes and elevations create restrictions within the drainage system.

Staff is recommending that the Drainage Committee consider the potential projects presented above or other potential projects not listed and provide staff with prioritization of additional projects to append to the previously prioritized drainage projects list.

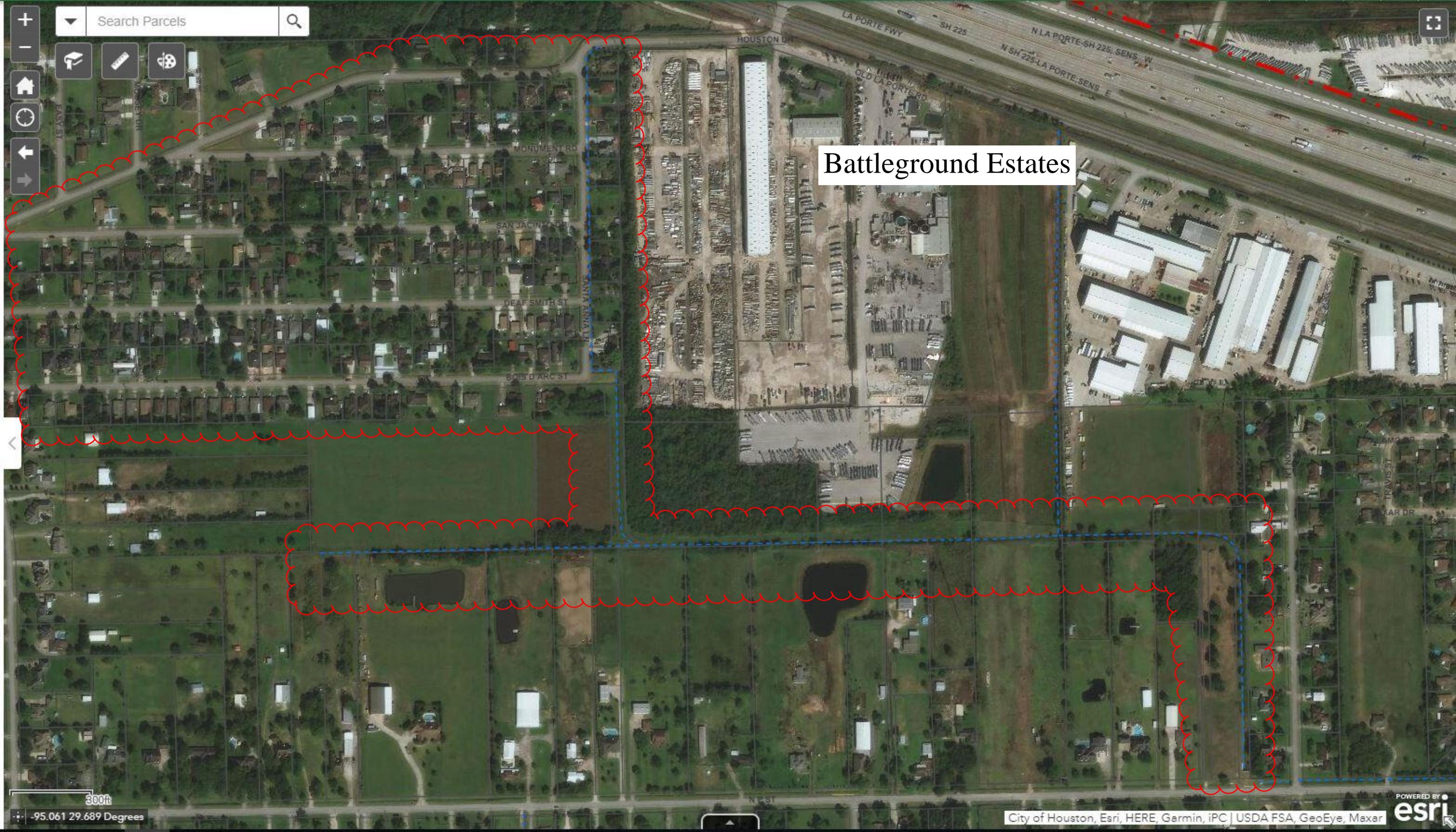
ACTION REQUIRED BY DRAINAGE AND FLOODING COMMITTEE

Receive report, and provide staff with direction, as necessary.

Approved for Drainage Committee Agenda

Corby D. Alexander, City Manager

Date



Search Parcels

Battleground Estates

300ft
-95.061 29.689 Degrees

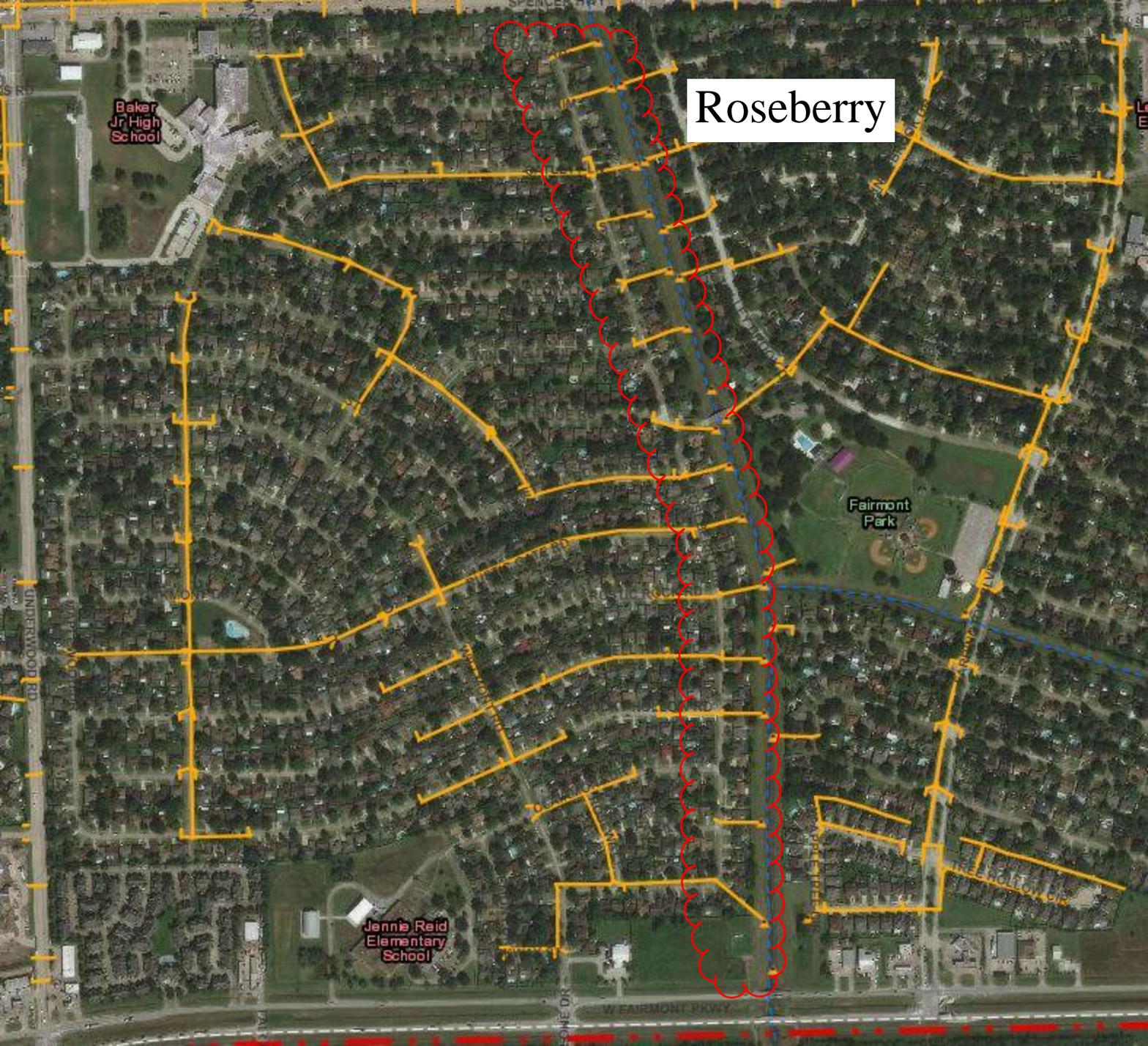
City of Houston, Esri, HERE, Garmin, iPC | USDA FSA, GeoEye, Maxar
POWERED BY esri

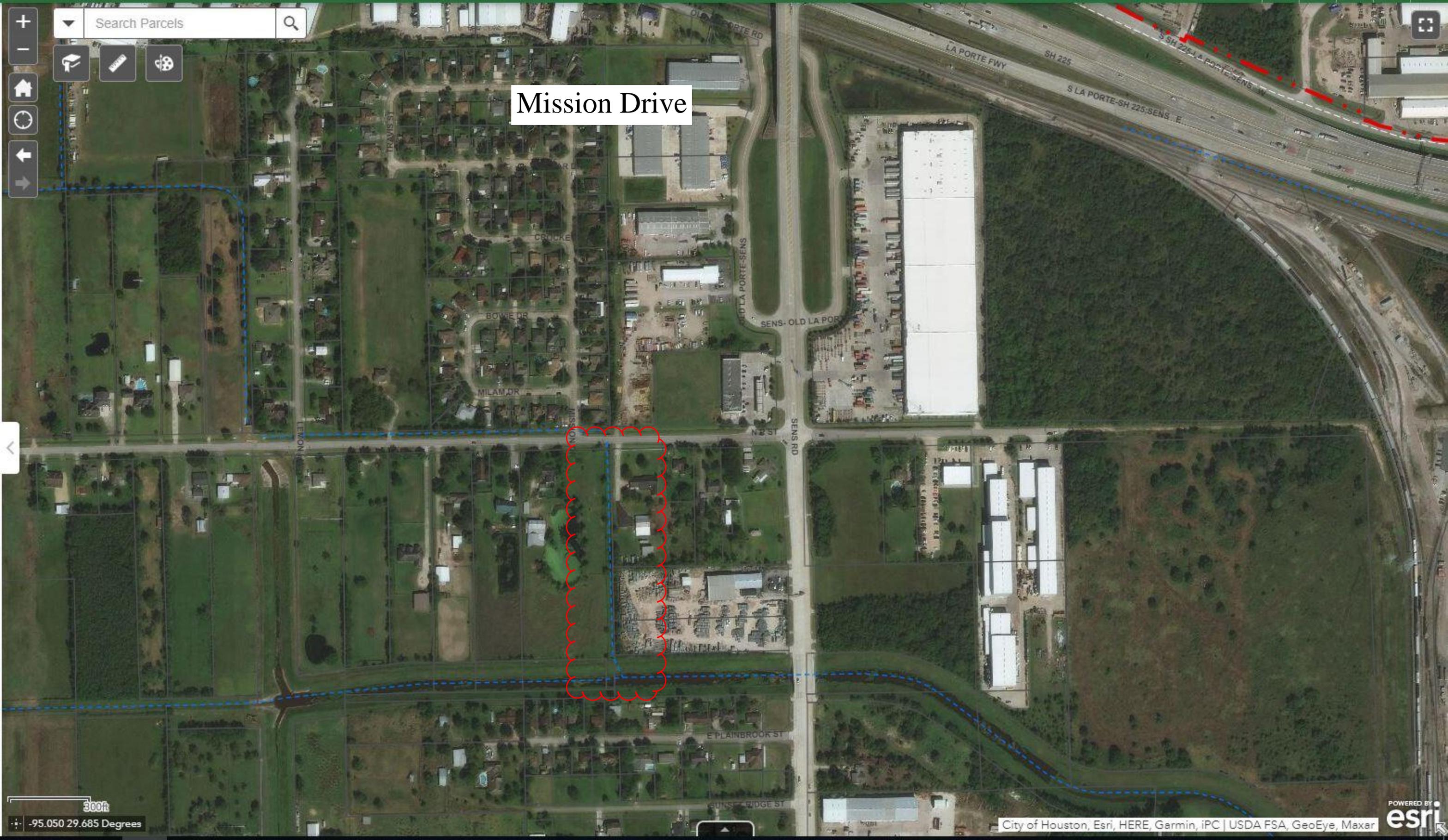
Roseberry

Baker Jr High School

Fairmont Park

Jennie Reid Elementary School





Mission Drive

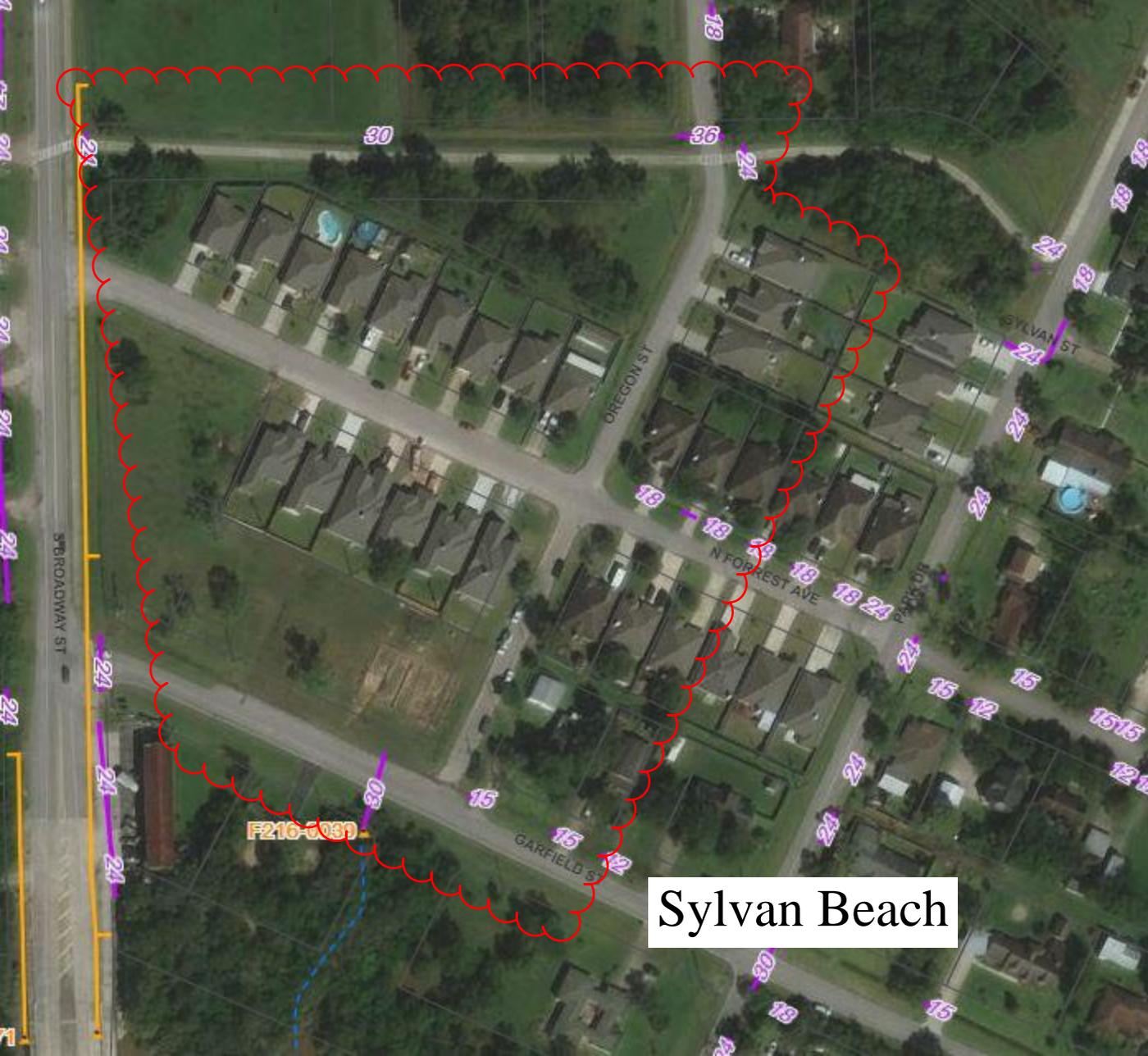
Search Parcels

300ft

-95.050 29.685 Degrees

City of Houston, Esri, HERE, Garmin, iPC | USDA FSA, GeoEye, Maxar

POWERED BY
esri



S BROADWAY ST

OREGON ST

N FORREST AVE

GARFIELD ST

GYLVAN ST

PARK ST

F216-0089

Sylvan Beach

Bay Colony

Shore acres

BAY COLONY DR

TANOR LN

WINDY HILL LN

SAIL FISHTN

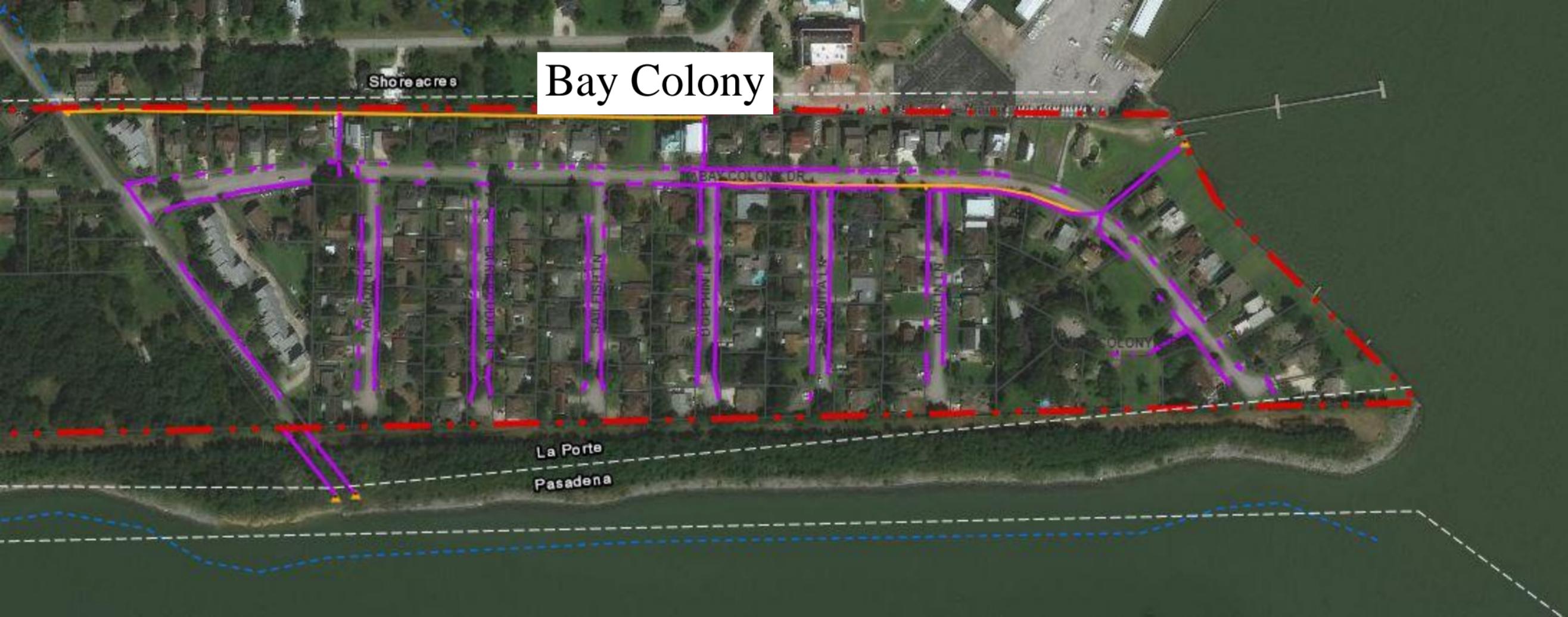
DOLPHIN LN

SCORPION LN

MARLIN LN

COLONY

La Porte
Pasadena





REQUEST FOR DRAINAGE & FLOODING COMMITTEE AGENDA ITEM

Agenda Date Requested: <u>June 8, 2020</u>
Requested By: <u>Lorenzo Wingate, P.E., C.F.M.</u>
Department: <u>Public Works</u>
<input checked="" type="radio"/> Report <input type="radio"/> Resolution <input type="radio"/> Ordinance

Appropriation	
Source of Funds:	_____
Account Number:	_____
Amount Budgeted:	_____
Amount Requested:	_____
Budgeted Item:	<input type="radio"/> Yes <input type="radio"/> No

Exhibits: F210-00-00 Watershed Planning Presentation

SUMMARY & RECOMMENDATION

Receive report regarding Harris County Flood Control District's (HCFCD) and Harris County Precinct 2's current and future plans relating to flooding in the City of La Porte.

- **F210-00-00 Project** - As part of HCFCD's Galveston Bay Watershed Planning Project, Lockwood, Andrews, & Newnam, Inc. has recently recommended a flood improvement project for tributary F212-00-00 which has extensive historical flooding and predicted continued flooding problems. LAN evaluated multiple alternatives for this problem area and subsequently recommended a project which is estimated to cost approximately \$5 MM and which requires an enlargement of existing open channel and construction of two large box culverts along an existing street ROW with a 60-inch storm sewer.

ACTION REQUIRED BY DRAINAGE AND FLOODING COMMITTEE

Receive report, and provide staff with direction, as necessary.

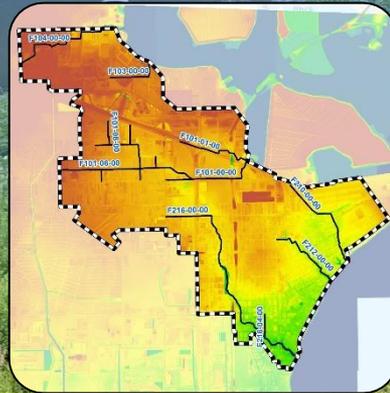
Approved for Drainage Committee Agenda

Corby D. Alexander, City Manager

Date

Galveston Bay Watershed Planning Project

City of LaPorte
Drainage Committee Meeting
(August 10, 2020)

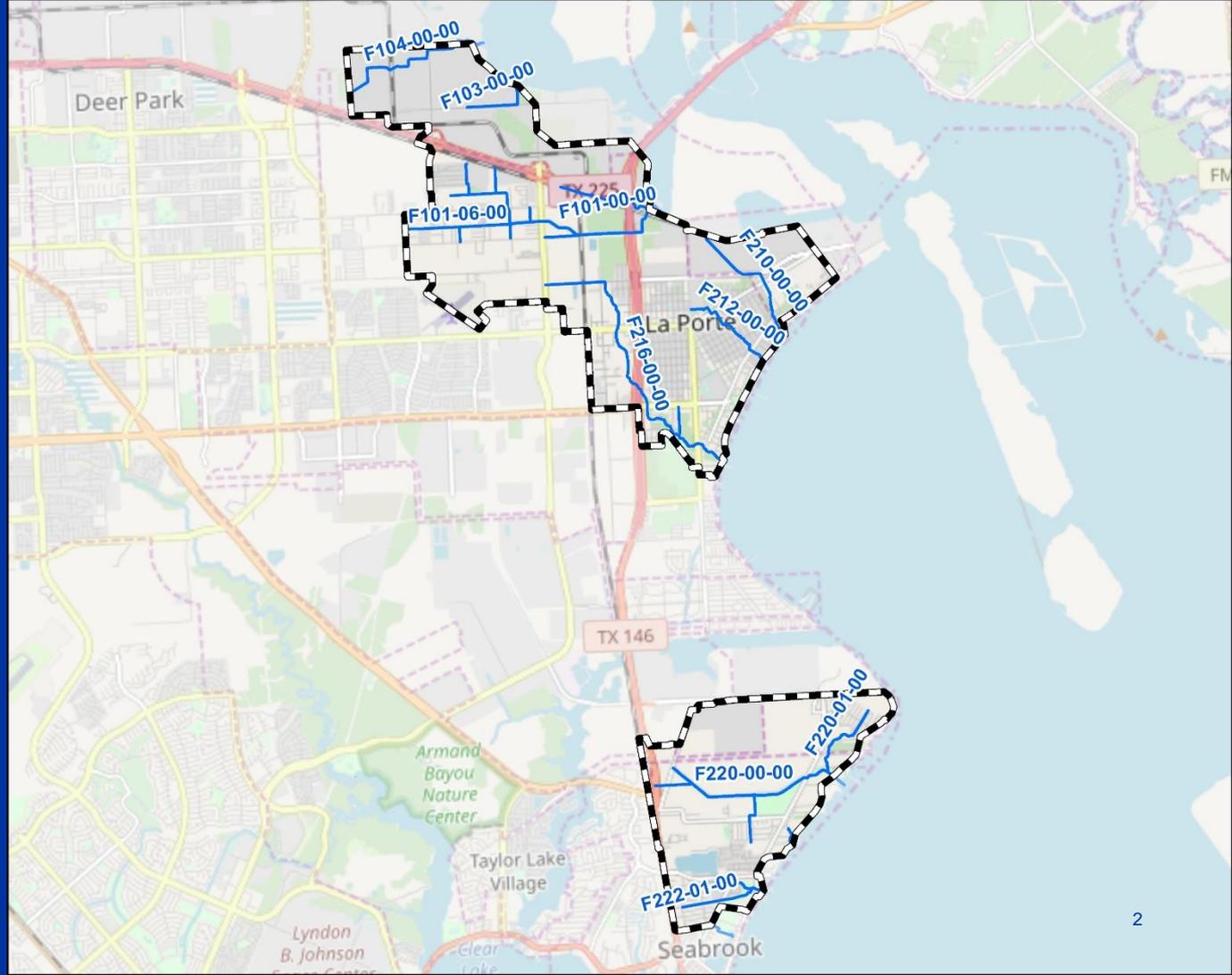


Problem Area 2 (N+6)

**F212-00-00 &
F210-00-00**

Content:

- Source of Flooding
- Possible Flood Mitigation Projects
- Constraints & Opportunities
- Damage Reduction Metrics and Costs
- Recommendations



PROBLEM AREA: N + 6

Sources of Flooding

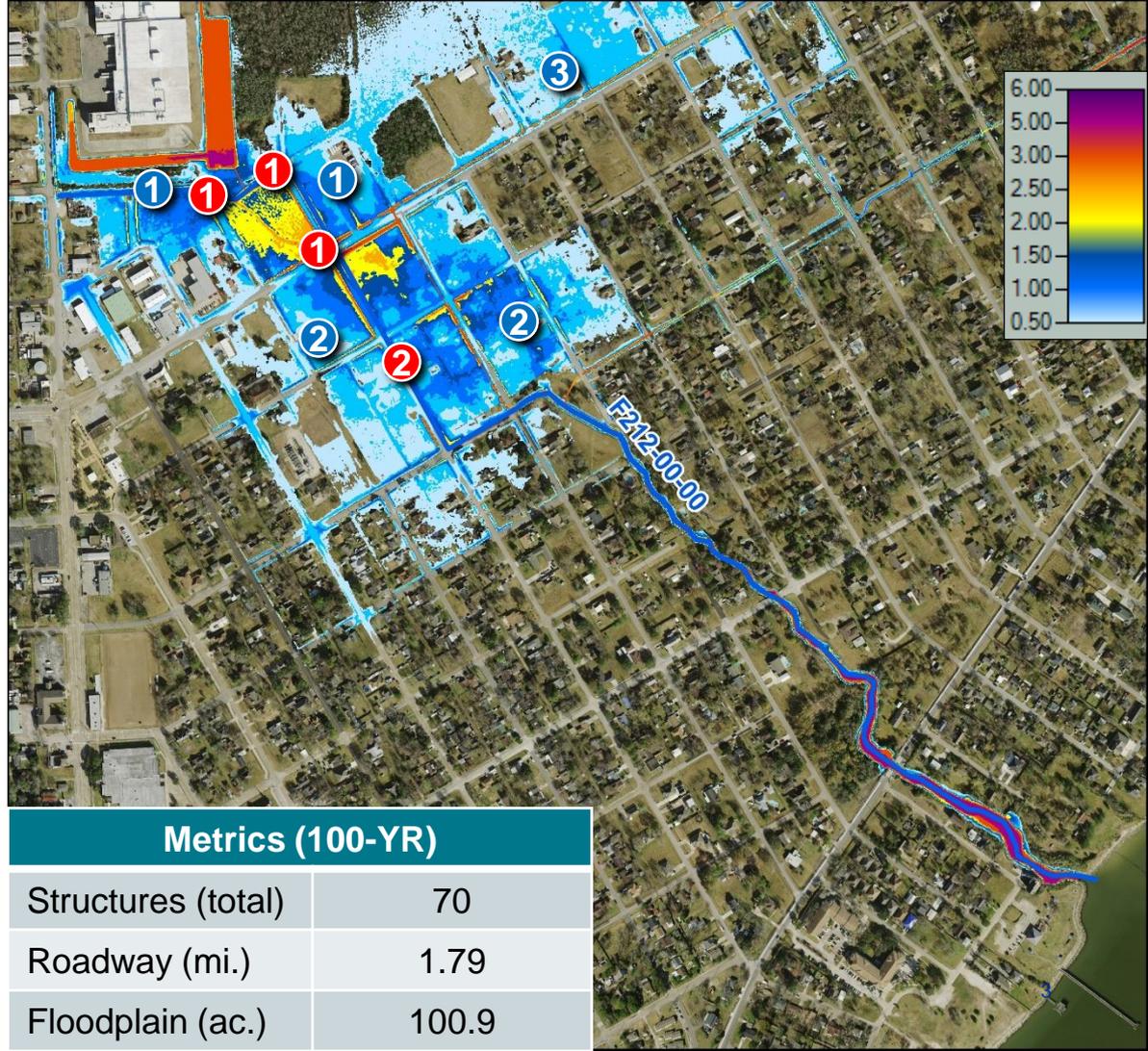
Existing Conditions (100-YR)
F212-00-00 & F210-00-00

Likely Cause

- ① Undersized Culvert
- ② Undersized Trunk-line

Flood Risk

- ① Riverine Flooding
- ② Sheet Flow to Southeast
- ③ Sheet Flow to Northeast



Metrics (100-YR)	
Structures (total)	70
Roadway (mi.)	1.79
Floodplain (ac.)	100.9

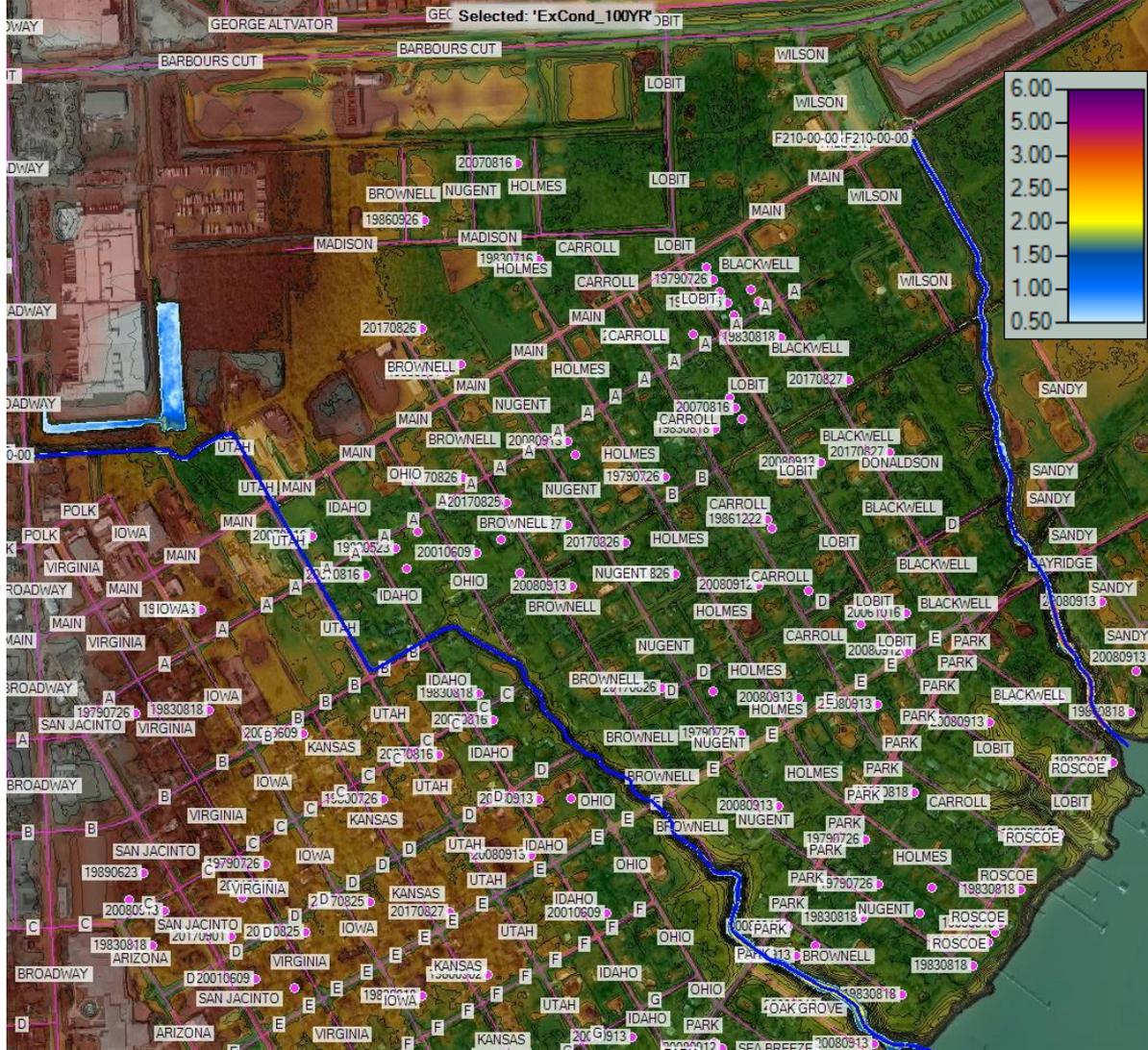
PROBLEM AREA: N + 6

Sources of Flooding

Existing Conditions (100-YR)

F212-00-00 & F210-00-00

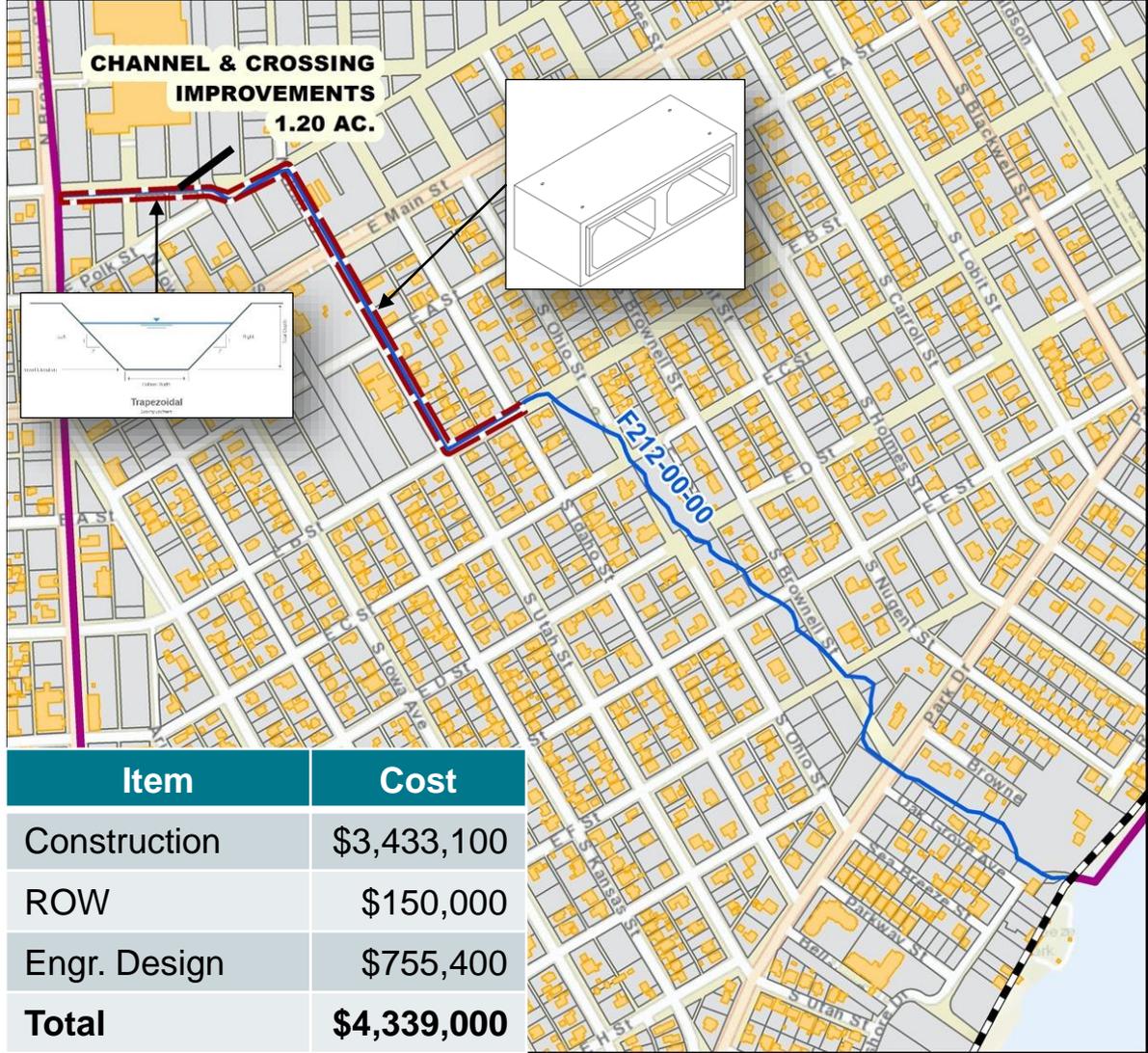
Video



PROBLEM AREA: N + 6
Possible Flood Damage Reduction Projects –
Alternative D
(Recommended)

Channel Improvement + Box Culvert Replacement

- Channel Improvement:
 - N Broadway St to N Utah St
 - Deepening, 4:1 side slope
- Box Culvert Replacement:
 - N Utah St to East E St
 - Double 8'x5' conc box culvert

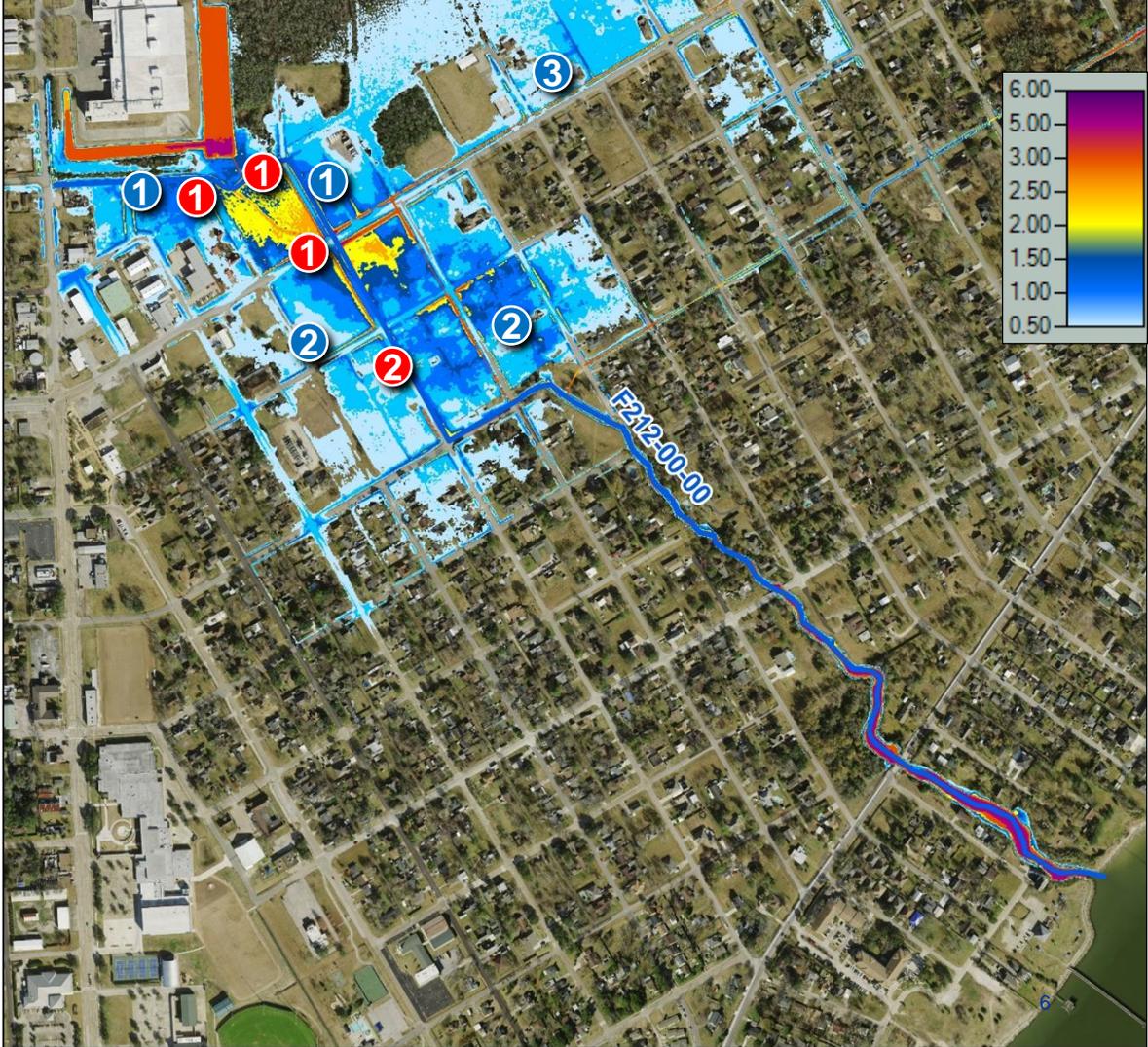


Item	Cost
Construction	\$3,433,100
ROW	\$150,000
Engr. Design	\$755,400
Total	\$4,339,000

PROBLEM AREA: N + 6
Sources of Flooding
 Existing Conditions (100-YR)
 F212-00-00 & F210-00-00

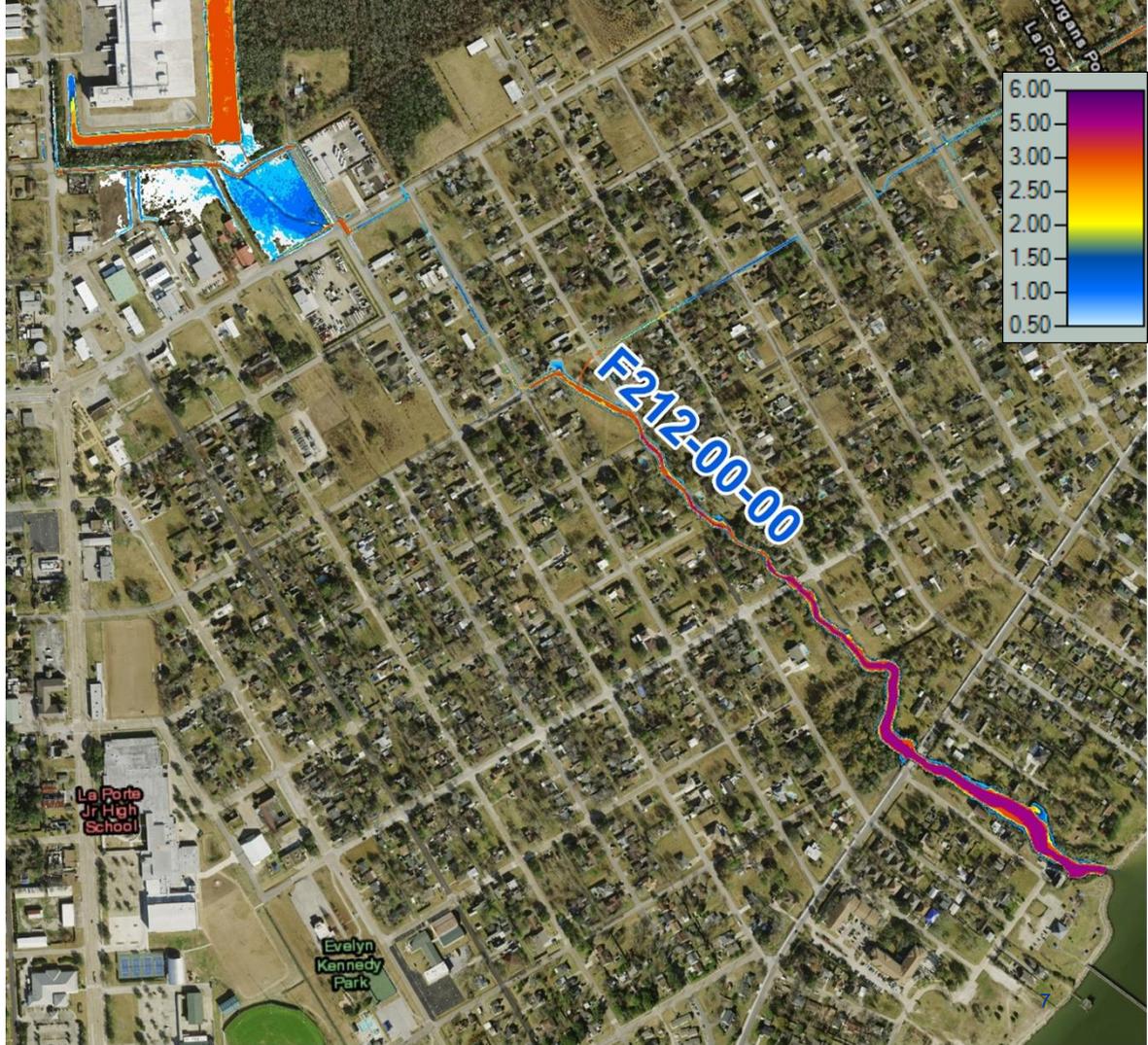
Damage Reduction (total)

Type	Existing	Proposed	Reduction
TPASF50	199	3	193
Structures	70	0	70
Roadway (mi.)	1.79	0.12	1.67
Floodplain (ac.)	61.9	53.2	8.7



PROBLEM AREA: N + 6
Sources of Flooding
 Proposed Conditions (100-YR)
 F212-00-00

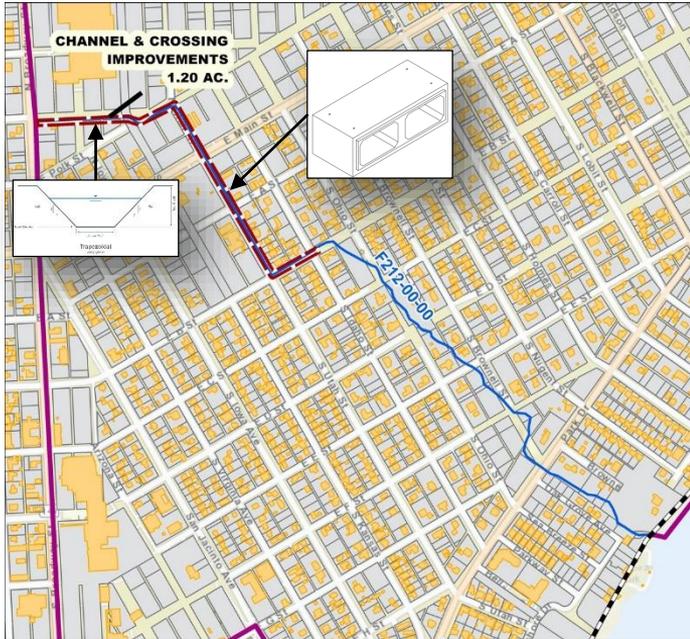
Damage Reduction (total)			
Type	Existing	Proposed	Reduction
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Structures	70	0	70
Roadway (mi.)	1.79	0.12	1.67
Floodplain (ac.)	61.9	53.2	8.7



PROBLEM AREA: N + 6

Probable Costs

Alternative D (Recommended)



F212-00-00 RECOMMENDED IMPROVEMENTS - ALTERNATIVE D				
OPINION OF PROBABLE COST				
ITEM NAME	QTY	UNIT	UNIT COST	GROSS COST (USD.)
DEMOLITION				
REMOVE STR BOX CULV	EA.	11	\$5,844.92	\$64,300
REMOVE STR DRIVEWAY CULV (5 Along Idaho St. & 2 Along Main St.)	EA.	7	\$736.42	\$5,200
RELOCATE ELECTRICAL SERVICES	EA	11	\$2,439.86	\$26,900
REMOV STR (BOX CULVERT)	LF.	3,000.00	\$47.94	\$143,900
ROAD & CROSSING IMPROVEMENTS				
FULL - DEPTH REPAIR CRCP (8")	SY	458.33	\$237.17	\$108,800
BOX CULVERTS - 2 (8 FT X 5 FT) BOX CULVERTS @ 1,800 LF.	LF.	3,600.00	\$570.05	\$2,052,200
DETENTION PONDS 1				
EXCAVATION (CHANNEL)	CY.	10,137.00	\$11.80	\$119,700
REMOV STR (MANHOLE)	EA	2	\$460.12	\$1,000
ROW ACQUISITION & TRAFFIC CONTROL				
TRAFFIC CONTROL	MO	6	\$2,500.00	\$15,000
EROSION CONTROL MEASURES	MO	6	\$1,000.00	\$6,000
MOBILIZATION & START UP	%	5	-	\$127,200
CONTINGENCY	%	30	-	\$762,900
TOTAL CONSTRUCTION COST				\$3,433,100
ROW ACQUISITION & TRAFFIC CONTROL				
ROW ACQUISITION (2.5 ACRES TOTAL)	LS.	2.5	\$60,000.00	\$150,000
TOTAL ROW COST				\$150,000
DESIGN PHASE SERVICES				
ENGINEERING / SURVEYING / GEOTECH	%	12	-	\$412,000
CONSTRUCTION MANAGMENT / PERMITTING	%	10	-	\$343,400
TOTAL ENGINEERING COST				\$755,400
TOTAL PROJECT COST				\$4,338,500



REQUEST FOR DRAINAGE & FLOODING COMMITTEE AGENDA ITEM

Agenda Date Requested: <u>August 10, 2020</u>
Requested By: <u>Lorenzo Wingate, P.E., C.F.M.</u>
Department: <u>Public Works</u>
<input checked="" type="radio"/> Report <input type="radio"/> Resolution <input type="radio"/> Ordinance

Appropriation	
Source of Funds:	_____
Account Number:	_____
Amount Budgeted:	_____
Amount Requested:	_____
Budgeted Item:	<input type="radio"/> Yes <input type="radio"/> No

Exhibits: Project map
Project update chart
Harris County Drainage Network Map

SUMMARY & RECOMMENDATION

Refer to attached exhibit(s) for updates on various drainage projects throughout the City.

ACTION REQUIRED BY DRAINAGE AND FLOODING COMMITTEE

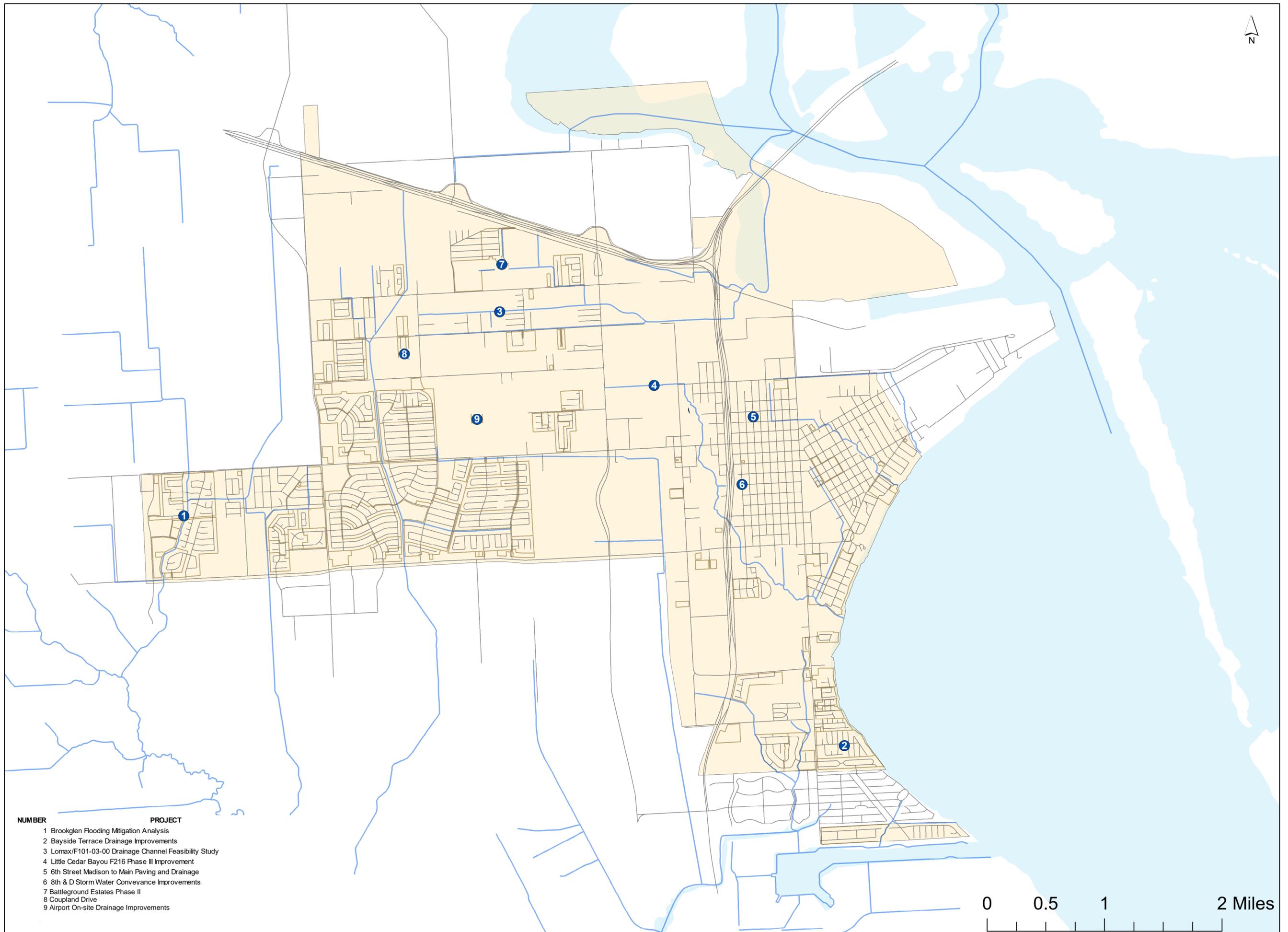
Receive report, and provide staff with direction, as necessary.

Approved for Drainage Committee Agenda

Corby D. Alexander, City Manager

Date

The City of La Porte Drainage Projects 2019



DRAINAGE PROJECTS

NO.	PROJECT	PROJECT MANAGER	DESCRIPTION	PROJECT PHASE (Feasibility/Preliminary Design/Final Design/Bidding/Construction)	Status	Potential Grant Funding	Potential COLP Cost Share	COLP Budgeted Amount	Estimated Completion Date	% Complete (Phase)	On Schedule
1	Brooklegen Flooding Mitigation Analysis	Public Works	The 2009 City-wide Drainage Study identifies the Brooklegen subdivision as an area with significant drainage/flooding problems, attributed to a mixture of inadequate sewerage and insufficient channel capacity within the 8112-00-00 Channel. Compounded improvements recommended within the City-wide Drainage Study could reduce the flood risk within the Brooklegen area. This analysis would expand upon the recommendations provided within 2009 study.	Feasibility	Staff working with HCFCD to develop regional solution. HCFCD is planning mitigation efforts within the 8800 block of Gladwyne Ct. Staff to submit application for CBDG-MIT funding by September 30, 2020.	\$4,000,021.50	\$1,000,005.38	\$1,275,000.00	March 2022	10%	No
2	Bayside Terrace Drainage Improvements	Public Works	Approximately 800 linear feet of RCP pipe, ranging in size from 15" to 24", exists within the Bayside Terrace Subdivision, which has not been properly maintained due to access issues attributed to limited access to infrastructure, provided within a five foot utility easement. Portions of Hamilton Street and Fondren Street utilize this system to convey stormwater to its outfall point of Galveston Bay. The system fails to function properly, causing flooding within the adjacent portion(s) of the subdivision. A proposed drainage study would discuss feasibility of rerouting this flow from the 800 feet of RCP towards Bayside Dr. and utilizing the existing system within Bayside Dr. to convey the storm water within the existing system.	Preliminary Design	Consultant provided Bayside Terrace update on June 18, 2020 (See presentation attached). 1st draft of PER was received on July 28, 2020. Staff is currently reviewing PER.	\$2,200,000.00	N/A	\$650,000.00	March 2022	70%	No
3	Lomax/F101-03-00 Drainage Channel Improvements	Public Works	Harris County Flood Control District's (HCFCD) F101-06-00 Channel system conveys storm water runoff from the Lomax area and ultimately outfalls into Lower San Jacinto Bay. The downstream section of the channel has been improved to ultimate capacity. An existing pipeline corridor, containing several pipelines located at depths ranging from approximately 2' to 18', cross the channel, limiting the depth of potential channel improvements. Moderate/heavy rain events, compounded with backwater conditions from this section of the channel, contributes to wide-spread flooding within the Lomax Area.	Preliminary Design	HCFCD has initiated PER phase and HCFCD consultants are currently performing preliminary design efforts	N/A	N/A	\$950,000.00	March 2022	10%	No
4	Little Cedar Bayou F216 Phase III Improvements	Public Works	Phase I and Phase II Improvements to Little Cedar Bayou, from Hwy 146 to Madison, have either been completed or are currently awarded for construction. Phase I and Phase II improvements include, but are not limited to, excavating and disposing off-site soil as required for the new channel alignment, clearing and grubbing, demolition of existing structures, erosion control, and site restoration for approximately 5,533 LF of channel. Approximately 4,680 LF of channel remains unimproved upstream, with those improvements slated to be included within this project, to be considered Phase III. Survey data has been collected on this most upstream section. Routine maintenance of clearing overgrowth, trees, and obstructions, minor erosion control and slope stabilization, and desilting is planned to maintain existing conveyance capacity. Those maintenance operations are projected to begin late 4th quarter 2018 or early 1st quarter 2019 (calendar year). The following Phase III mitigation action is proposed, as recommended within the hydraulic Analysis for Little Cedar Bayou Watershed HCFCD Unit F216-00-00: lowering the flow line of the Bayou 1 - 2 feet, from W. Madison to Sens Rd. Current channel side slopes would be modified to achieve 3:1 side slopes from W. Madison St. to Sens Rd. An estimated 200,000 cubic yards are to be excavated from the channel. Over excavation is provided to yield sufficient storage volume in the pond after siltation and build-up in the pond bottom.	Feasibility	Staff has coordinated with HCFCD to determine consultant's scope of work and is currently negotiating a professional services contract with a consultant.	N/A	N/A	\$1,355,232.00	March 2022	0%	No
5	8th Street Madison to Main Paving and Drainage	Public Works	The segment of 8th St from W. Madison St to W. Main St is considered part of Old La Porte, which was generally noted in the City-Wide Drainage Study as not having sufficient storm sewer capacity due to undersized storm sewer, undersized storm inlets, or not enough storm inlets. RPS-Klotz provided an analysis of the existing storm sewer system and identified problem areas within the project limits. Additional analysis is required to determine most efficient improvement alternatives.	Final Design	Executed contract with GLO effective March 9, 2019 through August 5, 2021. Staff received executed agreement with Harris County for \$3.4M allocation in early January. Phase I design has begun 1st week of July. Phase 2 engineering contract was approved at the July 27th Council Meeting.	\$3,798,532.30	\$125,000.00	\$1,140,000.00	August 2021	0%	Yes
6	8th & D Storm Water Conveyance Improvements	Public Works	The area generally bounded by 8th Street to the west, Main Street to the north, 8th Street to the east, and D Street to the south experiences flooding during heavy rain events due to undersized culverts within the area. Increasing culvert sizes within the area will provide additional conveyance capacity within the existing open ditch system.	Final Design	This project has been incorporated into the 7th Street Rehabilitation Project. Staff reviewed 90% plans. Consultant is revising plans to address staff comments.	N/A	N/A	\$139,340 / \$1,850,000	June 2021	60%	Yes
7	Battleground Estates Phase II	Public Works	A proposed conditions hydraulic model was developed during the preliminary design for the N P Street Culvert Improvement Project, which recommended replacing the upstream portion of the existing composite structure at N P Street, with structures matching the downstream portion of the composite structure. That project allows for full utilization of the structure's capacity, as well as protect the channel during rainfall events that produce higher amounts of runoff. Per the recommendations of the Phase 1 report, a more detailed Phase 2 engineering analysis of segments F101-00-00 and F101-08-00, that are upstream of N P Street, as well as an evaluation of the roadside ditch drainage conduits within Battleground Estates should be performed to identify necessary improvements to address structural flooding within the area. The more detailed study would evaluate the impacts of culverts located upstream of N P Street, along F-101-00-00 resulting from the 10-, 50-, and 100-year rain event. Channel improvements, and increasing culvert sizes to provide sufficient capacity within culverts along the roadside ditches are the anticipated mitigation efforts.	Feasibility	Staff is coordinating with a consultant to for preliminary engineering services.	\$880,500.00	\$220,125.00	\$65,000.00	August 2022	0%	No
8	Coupland Drive	Public Works	The proposed storm sewer improvements include re-sloping Coupland Drive to drain towards inlets located throughout the subdivision. The inlets will drain into proposed storm sewer ranging in size from 24" to 30" RCP. This storm sewer will then flow underneath the existing roadside ditch along L Street to a combined outfall with the existing roadside ditch to Big Island Slough. The proposed storm sewer underneath the existing ditch on L Street will be 42" RCP and the combined outfall will need to be a 60" RCP. These improvements will result in no net fill within the Big Island Slough 100-year floodplain. The proposed storm sewer was sized for the 5 year storm event, per the City of La Porte drainage criteria.	Final Design	Harris County has required the design to be updated to include Atlas 14 rainfall intensity. Staff is negotiating a professional services contract to update the design.	N/A	N/A	\$1,110,000.00	July 2022	45%	Yes
9	Airport On-site Drainage Improvements	Public Works	On-site and offsite study determined there is no impact from airport drainage run off to the area north(Lomax) of the airport. The study determined there is impact to the Glen Meadows Subdivision. Onsite detention and increased capacity will be designed to mitigate the impact on Glen Meadows.	Construction	Contractor is approximately 95% complete with construction improvements on west side of airport. Downstream connection to Spencer Highway is installed; construction of one of two detention ponds is complete. Schedule shows a completion approximately 75 days before the end of contract time.	\$2,200,000.00	\$244,500.00	\$248,467.00	May 2020	95%	Yes
10	Airport Detention Analysis	Public Works	An analysis will be performed to determine the feasibility of providing additional detention on the airport site to mitigate impacts of storm water runoff from the airport onto adjacent properties.	Feasibility	Staff has been finalizing procurement of services. Consultant expected to begin efforts in early July. Phase one expected by September 30, 2020.	N/A	N/A	\$22,520.00	December 2020	0%	Yes

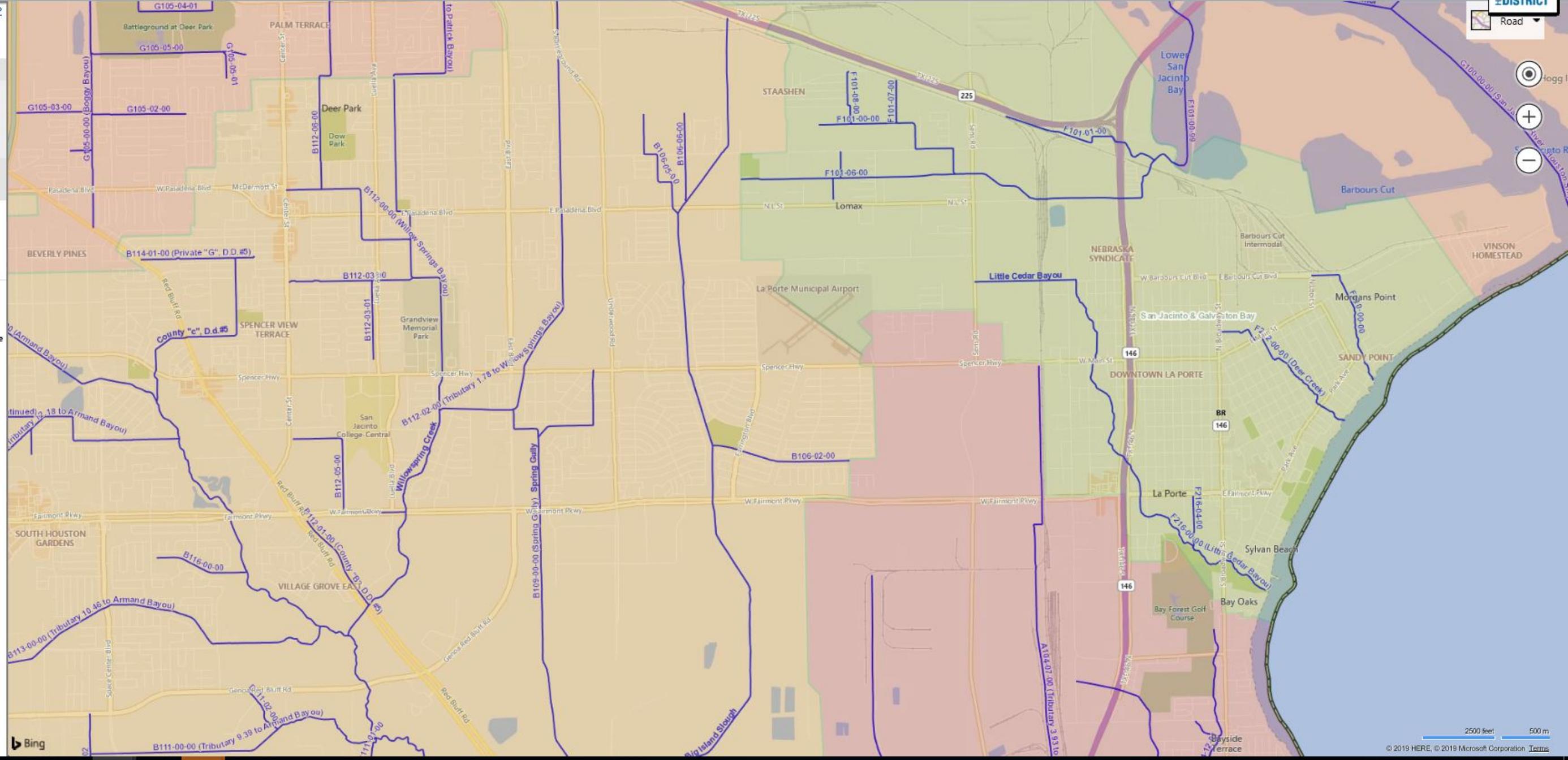
ADDRESS SEARCH [HELP](#)
Street Address, City, State, Zip Code
e.g. 8900 Northwest Fwy., Houston, TX 77092

MAP VIEW OPTIONS - Select One

- Mapped Floodplains
 - Floodway
 - 1% (100-year) Floodplain
 - 0.2% (500-year) Floodplain
 - 1% (100-year) Coastal Floodplain
- Watersheds (color-coded)
- Ponding
- Channels (Bayous and Creeks)
 - Open Channels
 - Enclosed Channels
- Harris County Boundary

[Reset to County-Level View](#) [Disclaimer](#)

 An interactive mapping tool of the Harris County Flood District





REQUEST FOR DRAINAGE & FLOODING COMMITTEE AGENDA ITEM

Agenda Date Requested: <u>August 10, 2020</u>
Requested By: <u>Lorenzo Wingate, P.E., C.F.M.</u>
Department: <u>Public Works</u>
<input checked="" type="radio"/> Report <input type="radio"/> Resolution <input type="radio"/> Ordinance

Appropriation	
Source of Funds:	_____
Account Number:	_____
Amount Budgeted:	_____
Amount Requested:	_____
Budgeted Item:	<input type="radio"/> Yes <input type="radio"/> No

Exhibits:

SUMMARY & RECOMMENDATION

Opportunity to discuss any drainage concerns not covered by previous items.

ACTION REQUIRED BY DRAINAGE AND FLOODING COMMITTEE

Receive report, and provide staff with direction, as necessary.

Approved for Drainage Committee Agenda

Corby D. Alexander, City Manager

Date