



CITY COUNCIL MEETING REGULAR SESSION

Tuesday, February 20, 2024 at 6:00 PM

City Hall, 102 W. Ashley Wilson Rd, Sweeny, Texas

AGENDA

BE IT KNOWN that the City Council of the City of Sweeny will meet in **Regular Session** on **Tuesday, February 20, 2024 at 6:00 PM**, at City Hall, 102 W. Ashley Wilson Rd, Sweeny, Texas with the following agenda. Council is conducted under modified Roberts Rules of Order as approved by Resolution 102-16; July 19, 2016. In accordance with Chapter §551 of the Texas Government Code, if required, the Council may conduct an executive session on any of the agenda items provided the City Attorney is present.

CALL TO ORDER/ROLL CALL

PLEDGES & INVOCATION

CEREMONIAL PRESENTATIONS

1. Presentation of Recognition by Sweeny Beautification Committee; Yard of the Month, Rholonda Dorland Fields

CITIZENS WISHING TO ADDRESS CITY COUNCIL

This item is available for those citizens wishing to address City Council on an issue not on the agenda. Any item discussed cannot be voted on but could be considered for placement on the agenda of the next regularly scheduled meeting. Limited to three (3) minutes.

CONSENT AGENDA

All of the following items on the Consent Agenda are considered to be self-explanatory by the Council and will be enacted with one motion. There will be no separate discussion of these items unless requested by the Mayor or a Council Member; in which event, the items will be removed from the consent agenda and considered separately.

2. Minutes of the Regular Session: January 16th, 2024 & Special Session January 30th, 2024
3. Proclamation(s): Texas Independence Day, Vietnam War Veterans Day, Womens History Month

REGULAR AGENDA

4. Discussion and possible action on agenda request received from V. Milian concerning a utility billing complaint and request for water fees adjusted to an average usage amount for the billing cycles between January 2023 to August 2023 in Fiscal Year 2023.

5. Discussion and possible action on the lease agreement with Union Pacific for Right of Way usage
6. Discussion and possible action to award a janitorial service provider in response to submittal received from recent advertised request for proposal (RFP)
7. Discussion and possible action to approve a resolution entering into an interlocal agreement between Region 8 Education Service Center and the City of Sweeny for membership with the TIPS purchasing cooperative.
8. Discussion and possible action to a replat of 16.93 acres at the Industrial Park
9. Discussion and possible action to approve a resolution to adopt the Brazoria County Hazard Mitigation Plan, a county wide multi-jurisdictional hazard mitigation plan.

EXECUTIVE SESSION IN ACCORDANCE WITH THE TEXAS GOVERNMENT CODE SECTION 551.071, 551.072 AND 551.074

The City Council will now convene into executive session pursuant to the provision of Chapter 551 Texas Government Code, in accordance with the authority contained therein:

10. Discussion and possible action pursuant to Section 551.071 (1) (a), Consultation with Attorney with Sweeny Economic Development Corporation

The City Council will now adjourn Executive Session, reconvene into Open Session pursuant to the Provisions of Chapter 551 Texas Government Code and take action, if any, on item(s) discussed during Closed Executive Session.

11. Any action pursuant to the provisions of Chapter 551 Texas Government Code, if any, on item discussed in Executive Session

ITEMS OF COMMUNITY INTEREST

ADJOURN REGULAR SESSION

I certify that the notice and agenda of items to be considered by the Sweeny City Council on **February 20, 2024** was posted on the City Hall bulletin board on _____, 2024, at approximately _____AM/PM.

Kaydi Smith -- City Secretary

I hereby certify that this Public Notice was removed from the City Hall bulletin board on _____, 2024 at approximately _____AM/PM.

Kaydi Smith -- City Secretary

CITY COUNCIL MEETING REGULAR SESSION

Item 2.

Tuesday, January 16, 2024 at 6:00 PM

City Hall, 102 W. Ashley Wilson Rd, Sweeny, Texas

MINUTES

BE IT KNOWN that the City Council of the City of Sweeny will met in **Regular Session** on **Tuesday, January 16, 2024 at 6:00 PM.** at City Hall, 102 W. Ashley Wilson Rd, Sweeny, Texas with the following agenda. **Meeting was additional held via zoom due to inclement weather.**

CALL TO ORDER/ROLL CALL

Mayor Hopkins called the meeting to order at 6:00 PM.

Mark Morgan Jr., Reese Cook, Brian Brooks, John Rambo, and Tim Pettigrew were in attendance.

PLEDGES & INVOCATION; Rev. Joshua Bynum

Pledges were led by Tim Pettigrew and the Invocation was given by Rev. Josh Bynum.

CITIZENS WISHING TO ADDRESS CITY COUNCIL

Leigh Ann Thornton, 702 Avenue B, approached Council and stated that an indoor animal shelter is needed and a top priority. She was concerned with the allotted budget and current conditions for the animals. She is planning a fundraiser for February 10, 2024 and asking for funding in order to provide for an animal shelter. She has been working with the City Manager for cost affordable options.

CONSENT AGENDA

1. Minutes: Regular Session, December 13, 2023

John Rambo made the motion to approve the minutes of the Regular Session, December 13, 2023. Tim Pettigrew seconded. All in favor. Motion carried.

2. Proclamation: African-American History Month; February 2024

Mayor stated the proclamation is to be signed and will be posted at City Hall.

3. Plaque of Appreciation; American Legion Post 835 and American Legion Post 241

The American Legion Post 835 and 241 brought a plaque of appreciation to City Hall in order for presentation to the City Council. The plaque is in appreciation of the City of Sweeny hosting the Veterans Day parade in 2022.

4. Fiscal Year 2023 – 2024 Q1 Leadership Reports – Office of the City Manager, Public Works, City Secretary, Sweeny Fire & Rescue, SEDC

City Manager stated that her quarterly update and the Public Works Department update are combined. She gave an overview of the potential water projects, to be discussed later in the agenda that are to help with the manganese and change out of steel water lines. The GLO project is in progress and will be bid out soon. This will require a three percent match, in which will be paid from the CO19; approximately \$150,000.00. The City has signed a gas utilities agreement with Altimira for compliance. Finance updates: we have an RFP out for an ERP Enterprise Resource Planning system in which will be approximately \$30,000.00, all inclusive. We have gained \$38,000.00 in interest off of the TxDot loan in the first quarter.

Matt with Inframark stated the new pump will be here Thursday for the WWTP. The other is working great and the next focus is to remove solids. The water plant preparations were good and helped during the recent freeze. They are keeping up with flushing as normal.

Kaydi Smith gave the quarterly update for the departments of the City Secretary, Development Services, and Municipal Court. Roger Barton, Fire Chief, gave the Fire Department update. The Fire Department

received 100 more call this past year than years before. They have completed many public relations this quarter.

Michelle Medina, Executive Director of SEDC, via zoom, gave an update on the Industrial Park utilities and roadway. She gave information on businesses she has met with during the past quarter and a quick overview of her report submitted.

5. Police Department Quarterly Reports and Vehicle Update

Chief Caudle gave the Police Department quarterly report to include public relations and praised the Fire Department's partnership. The Mayor stated he rode with Officer Ferrell on New Year's Eve and it was eye opening. The majority of the stops completed were for out of town individuals. He is glad we have two officers on duty and it was a very eye opening experience. Kuddos to the officers for the opportunity and open invitation for the ride along. Chief Caudle updated Council on the nine vehicles in his fleet. Each officer has a vehicle at this time. Two vehicles are currently in the shop, all others are in fair shape. He is hoping to get an additional K9 unit from Lake Jackson Police Department. Safety is a large concern with K9 units. There is not room in the rear of the vehicle for transporting; therefore, prisoners must ride in the front of the vehicle with the officer. This vehicle, if received, would be very beneficial.

6. Discussion and possible action on Fiscal Year 2023 - 2024 Quarterly Investment Report, First Quarter.

The quarterly investment report was given by the City Manager to include investments given and total interest gained for accounts in the amount of \$85,865 in the first quarter, of which \$78,000 is the city's portion, as we have components within such as EDC. She feels the 2024 interest rates will be decreasing; showing a decline in what we earn especially in the high interest pools. We did make \$38,000 off of the \$2.5 million TxDot loan and will be able to make that payment back in March. In our regular bank accounts, interest has tripled in the last quarter.

Mark Morgan Jr. moved to accept the financial investment report for the FY24 Q1. Tim Pettigrew seconded. All were in favor. Motion carried.

REGULAR AGENDA

7. Introduction of Reverend Joshua Bynum as Sweeny Police Department Chaplain

Chief Caudle stated that Rev Bynum has visited the Police Department on many occasions and has been very open to providing chaplain services to the Police Department as needed. Rev. Bynum and Chief Caudle have discussed and established a Chaplaincy Program to make ministerial counsel available. Rev. Bynum will work in conjunction with the crime victim liaison and offer spiritual counsel and psychological first aid to the members of the department and citizens of the community. He has additionally offered his services city wide, to include all departments. Tim Pettigrew praised Mr. Bynum and the services he offers.

Motion by Tim Pettigrew to accept Rev. Josh Bynum as the Sweeny Police Department chaplain.

Seconded by Mark Morgan Jr. All in favor. Motion carried.

8. Discussion and possible action to agenda request allowing an additional non-emergency EMS provider to transport within City limits; Enterprise Ambulance 2.0, Shellie Long

Shellie Long of Enterprise Ambulance 2.0, a transport EMS service, was in attendance via Zoom. She is requesting approval to allow Enterprise Ambulance 2.0 to transport within the city limits. In order to do so, the statute requires a signed letter from the Mayor. They are a private non-emergent transport company. Reese Cook stated he believes that the City has completed this previously. Roger Barton, Fire Chief, feels this is beneficial as entities do get strapped for transports. City Manager stated we cannot exclude and feels the information in our ordinances is outdated.

Reese Cook moved to approve Enterprise Ambulance 2.0 allowance to operate in Sweeny and for Mayor Hopkins to sign required letter for licensing. Seconded by Mark Morgan Jr. All in favor. Motion carried.

9. Discussion and possible action to variance request to allow alcohol at the Mardi Gras event hosted by Beautification on February 10th, 2024.

City Manager stated the Mardi Gas Parade and event is set for February 10, 2024. Beautification is requesting a variance to allow alcohol at the event, in which is held on city property. City Manager stated staff recommends approvals.

Mark Morgan Jr. made the motion to approve the variance requested to allow alcohol at the Mardi Gras event hosted by Beautification on February 10, 2024 for property adjacent to City Hall and Backyard Park, with security provided by the Sweeny Police Department. Tim Pettigrew seconded. Mark Morgan Jr., Reese Cook, and Tim Pettigrew approved. John Rambo and Brian Brooks abstained. Motion carried.

10. Discussion and possible action on allowance of the Beautification Committee to obtain a TABC temporary permit for the sale of alcoholic beverages at Mardi Gras festivities; February 10, 2024

City Manager stated this is a new idea from Beautification to sell alcohol to raise money. Chapter 33 of the Administrative Code allows civic organizations to apply for temporary event permits by TABC for selling of alcohol. The application requires a letter signed by the property owner. Mardi Gras is held on City property.

Mark Morgan Jr. made the motion to allow the Beautification Committee to sell alcoholic beverages during the Mardi Gras Festivities at the Backyard Park and adjacent property, on February 10, 2024 pending the receipt of the approved and issued TABC non-profit entity temporary permit. Seconded by Tim Pettigrew.

Reese Cook asked for other details to include financials. He feels additional information from Beautification is needed. This is a new concept stated the City Manager, if allowed, this would be the first time. John Rambo stated that the person selling the alcohol must be TABC certified. A beautification member is in the process of getting recertified. Chief Caudle added that law enforcement helps to determine if someone has had too much. City Manager stated she is open to working with Beautification to formalize the process to address the concerns. The timeframe was discussed as to if more information was received as to bring back to the next agenda.

Mark Morgan Jr. approved. John Rambo and Tim Pettigrew abstained. Reese Cook and Brian Brooks opposed. Motion Failed.

11. Discussion and possible action to the replat of 16.93 acres at the Industrial Park

Michelle Medina, Executive Director of the Sweeny Economic Development Corporation, presented the replat of 16.93 total acres at the Industrial Park for Stark Inc. Lot 3, comprised of two acres will house the storefront. Lot 3A of the remaining 14.93 acres, will consist of a laydown yard for materials, landscaping, and machinery. Reese Cook stated the performance agreement was approved as a single lot at 16.93 acres and now it is being requested as two separate properties. Mayor Hopkins expressed his concern for landlocking the property behind the 14.93 acres. Discussion regarding a proposed easement to Glenn Salyers property at the rear of the 14.93 acres ensued. Medina stated that Salyer could approach EDC to discuss his property. Council included Mr. Stark on a proposed easement. Mayor feels the proposed plat would bring legal action towards the City and EDC. Discussion of a proposed 35 ft. EDC easement, from the end of the roadway (hammerhead) to the edge of the property, continued. Questions regarding maintenance of an easement were addressed. Replat would need to be re-drawn to show said easement if agreed upon by EDC. Reese Cook stated we, the City, need to address what was discussed tonight with EDC and the City Manager agreed. No action taken.

12. Discussion and possible action on City Engineer presentation of the replacement of Main St. waterline originally in the 2019 Certificates of Obligation project and a new proposed city-wide waterline replacement project.

William Huebner of Strand, City Engineer, approached Council He recently discussed a Capital Improvement Plan with the City of Sweeny at a prior Council meeting. He is here to present a Main Street waterline replacement project and propose a city wide steel waterline replacement project. Main

Street was pulled off the previous project due to contactor issues, in which would have been part of the last phase of the CO19. The cost opinion provided is to rebid and use the already completed drawings. All work is within the TxDot ROW and has increased in costs. This would be to replace six thousand feet of water lines, for a total project cost of \$1.5 million. Reese Cook stated he is not sure that Main Street is the portion that needs to be addressed. He feels the Avenues, Maple Street, and Walnut Street need to be addressed first. This is separate from the proposed City Wide project, as this has already been drawn and completed. We would be able to bid out and complete at a faster rate. The Main Street waterline replacement project would encompass waterlines from Ashley Wilson Road near City Hall to the Railroad tracks on FM 524. The City has approximately \$1.396 million left from the CO's, of which \$150,000.00 is needed to meet the GLO required 3% match. \$1.25 million would still be available for water replacement projects. The TxDot permit was originally issued and Huebner hopes to be able to have that renewed in which would be thru the Houston TxDot office.

City Manager stated Council will be given a full scale CIP in the upcoming future. Huebner has completed a 6-phase city wide project scope with cost opinions, for a total of approximately \$15.5 million. The GLO sewer project is including some waterline replacements, as TCEQ distance requirements were not met, requiring the current water lines to be moved. For this, we will be utilizing GLO funds. Cost opinion provided for all six areas do include construction and engineering costs. Completing this would include additional fire protection, additional valves, and hydrants. Approximately 17 miles of piping has been estimated.

City Manager stated Council previously discussed adding a large scale water project to the May 2025 ballot. The City could not issue a certificate of obligation (CO) for a water project for three years following, if the ballot fails. If we looked at a 15 million, 30 year note, at a 4.5% interest rate, it would increase tax rates at \$0.45 cents per \$100 value. That would be a large increase. It would make since to complete in phases and be strategic on locations selected. Mayor stated we have not made one major change since June on the water. The most positive has been the water line replacements for \$50,000. He wants to see a positive approach on forward movements for the water with a timeline. Brian Brooks stated that years ago the plan was made to complete the trunk/major line replacements. We had a plan and we need to stick to it.

Brian Brooks made the motion that Council approve: 1) finishing the original scope of the 2019 waterline replacement project that includes the Main Street water trunk line and rebidding this portion of the original 2019 project as a standalone project, and 2) to approve the preliminary scope of a city wide waterline replacement project and instruct staff to move forward in developing a Capital Improvement Project with the City Engineer for the inclusion of a city wide steel waterline replacement project for a General Obligation bond in the May 2025 election. Seconded by Tim Pettigrew.

Discussion: Reese Cook agreed that we need to do something but not sure this is right thing to do. Approved by Mark Morgan Jr., Brian Brooks, John Rambo, and Tim Pettigrew. Reese Cook opposed. Motion Carried.

13. Discussion and possible action to possible water project with Water of Texas; Michael Claybourn

Michael Claybourn of Water of Texas and Nathan Clark of Brita Pro, approached Council on the water project to help with the manganese issues within the City. Joe Kudis attended via zoom. Mr. Clark went thru a presentation submitted to the City to include the water analysis report. Proposed solution is a Brita Pro Commercial Katalox Light Filter. This presentation is subject to a field inspection that is to be completed tomorrow, 01/17/24 onsite. John Rambo asked about recharging the media and discharging the contaminates. Media would need to be replaced and calculated according to the chemistry of the water. Life span of media is indefinite, but a general rule of replacement is every three to five years. Media costs can run \$300.00 per cubic foot and fluctuates, this would be \$50,000-\$60,000 every three to five years. Original proposal from Water of Texas is still the same, \$100,000.00. This would still need TCEQ approvals, as this is upgraded materials. City Manager stated that we do have \$522,414.00 in Enterprise fund savings that can be used. Finalized turnkey bid with drawings are to come tomorrow

after field inspections. Mayor asked to add this to the January 30th meeting, along with a contract to get started with final numbers. Inframark asked is there will be a bypass installed? Yes per Claybourn. No action taken.

John Rambo left the meeting at 7:48 p.m.

14. Discuss and possible action to Drainage District Updates; John Richers
Mr. Richers, Drainage District, stated he wanted to address complaints on Ashley Wilson Road, from FM 524 to the Railroad tracks. He discussed water flows and issues at hand. The railroad trestle near CR 331, near the Hilcorp property, is set to be replaced and enlarged by Union Pacific, in which will help. Majority of culverts from Ashley Wilson Road to the Railroad are either undersized or half full of debris. Drainage District completed engineering and found they cannot dig deeper due to pipelines in the area. High spots will need to be taken out and culverts changed out to appropriate sizes. Interlocal agreements would need to be put in place to complete the work. The concrete breaking and replacement is an issue as to who is going to be responsible. He is leaving plans with the City Manager on the Ashley Wilson Road drainage portion. Drainage District will be working with Hilcorp to get into the property near S. Orange/FM 1459 to work on drainage as well. Drainage District is correlating a project near Old Ocean and McKinney for culvert replacement thru an interlocal with Brazoria County. City Manager stated the City will be ordering materials once a date is given from the County, as it was just approved by Commissioners Court.
Motion: NO ACTION

Mayor Hopkins stated Council will take a five (5) minute recess at 8:08 PM. Mayor Hopkins reconvened at 8:17 PM.

15. Discussion and possible action on a request to open a bank account with First State Bank Louise in Sweeny, Texas for the newly formed Crime Control and Prevention District and approve account signatories.

City Manager stated that a separate fund is needed for the CCPD and will be audited as a component of the city. Approved minutes are needed to open the account and for signatories.

Brian Brooks made the motion to approve staff to open a bank account with First State Bank Louise in Sweeny, Texas for the purpose of maintaining Crime Control and Prevention District funds and approve Police Chief Brad Caudle, Finance Director Karla Wilson, and CCPD President, Vicki Kraemer to be signatories on said account. Seconded by Tim Pettigrew.

Discussion: Mark Morgan Jr. asked why First State Bank? City Manager stated that is the bank Council agreed to contract with.

Mark Morgan Jr., Reese Cook, Brian Brooks, and Tim Pettigrew approved. Motion carried.

16. Discussion/ Possible Action to appoint applicant to the Planning and Zoning Board of Commissioners

City Secretary stated that the Board of Commissioners is a seven member board, which currently only has three members. We have received an application from Jenny Massey and we are desperately in need of applicants.

Reese Cook moved to approve Jenny Massey to the Planning and Zoning Board of Commissioners. Seconded by Mark Morgan Jr., Reese Cook, Brian Brooks, and Tim Pettigrew approved. Motion carried.

17. Discussion and possible action to approve an ordinance calling the May 04, 2024 General Election for the Municipal Judge & Council Positions 1,3, & 5, all terms of two years

Tim Pettigrew made the motion to approve the ordinance 24-100, calling the May 4th, 2024 General Election, for the position of Municipal Judge and Council Positions 1, 3, & 5. Seconded by Brian Brook. Mark Morgan Jr., Reese Cook, Brian Brooks, and Tim Pettigrew approved. Motion carried.

18. Discussion and possible action on casting a vote for the officers of the 2024 H-GAC board
After discussion, Council chose not to cast a vote for the 2024 H-GAC board.
No action taken.

19. Discussion and possible action to approve a Resolution designating a representative and alternate to the Houston-Galveston Area Council (HGAC) 2024 General Assembly
Reese Cook moved to approve the resolution designating Mark Morgan as a representative and John Rambo as an alternate to the Houston-Galveston Area Council (HGAC) 2024 General Assembly.
Seconded by Tim Pettigrew. Mark Morgan Jr., Reese Cook, Brian Brooks, and Tim Pettigrew approved.
Motion Carried.

Mayor Hopkins convened into executive session at 8:26PM.

EXECUTIVE SESSION IN ACCORDANCE WITH THE TEXAS GOVERNMENT CODE SECTION 551.071, 551.072 AND 551.074

The City Council will now convene into executive session pursuant to the provision of Chapter 551 Texas Government Code, in accordance with the authority contained therein:

20. Discussion and possible action pursuant to Section 551.071 (1) (a); Consultation with Attorney; Railroad Commission of Texas

OPEN SESSION

Mayor reconvened into Open Session; closing Executive Session at 8:41 PM.

ACTION TO ITEMS OF EXECUTIVE SESSION #20

Reese Cook moved to approve \$9,000.00 from Logic Acct 600234600 for ARPA funds 2nd tranche to be used to pay Railroad Commission fines of \$9,000.00. Due by 01/25/24 stated City Manager. Seconded by Tim Pettigrew. Mark Morgan Jr., Reese Cook, Brian Brooks, and Tim Pettigrew approved. Motion carried.

ITEMS OF COMMUNITY INTEREST

Brian Brooks stated Public Works and the Police Department are doing great job.

Mayor Hopkins stated he was glad to be able to ride with the Police Department.

Tim Pettigrew bragged on the EDC. Stewarts has processed 150 deer this year and has made \$22,000.00 to \$25,000.00 in revenue for deer processing this year alone. The smoke house and processing was a good idea and very successful. Pettigrew stated his family is having an estate sale and all proceeds will go to the diabetes foundation in Houston.

City Manager recognized Rodger Larsen, Animal Control Officer, on an excellent job to get the dogs from the pound into foster care during the recent freeze. In preparation of the TCEQ inspection, Shae Welman did an excellent job on the overhaul for aesthetics. Thanks to Public Works for the great work on winterizing the plant and to Matt with Inframark on providing guidance.

ADJOURN REGULAR SESSION- Mayor Hopkins adjourned the meeting at 8:46PM.

Exhibit- Engineer's Opinion and Project Costs for a Citywide Water System Improvements Project & Rebid of Water Line Improvements- Main Street

Staff present:

City Manager, Lindsay Koskiniemi

Police Chief, Brad Caudle

Director of Public Works, Terrance Bell

Finance Director / Personnel Services, Karla Wilson

City Secretary/ Developmental Services, Kaydi Smith

Public Works Department/Gas Operator, Shea Welman

City Engineer, William Huebner

Passed and approved this _____ day of _____, 2024.

Kaydi Smith - City Secretary



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CITY OF SWEENY, TEXAS
CITYWIDE WATER SYSTEM IMPROVEMENTS—OVERVIEW
ENGINEER'S OPINION OF PROBABLE PROJECT COSTS
January 16, 2024

OVERALL PROJECT SUMMARY		
LOCATION	CONSTRUCTION	ENGINEERING
City Area No. 1	\$ 3,260,000.00	\$ 445,000.00
City Area No. 2	\$ 2,008,000.00	\$ 295,000.00
City Area No. 3	\$ 2,159,000.00	\$ 305,000.00
City Area No. 4	\$ 2,061,000.00	\$ 295,000.00
City Area No. 5	\$ 1,681,000.00	\$ 255,000.00
City Area No. 6	\$ 2,330,000.00	\$ 325,000.00
TOTAL COSTS (ROUNDED):	\$ 13,499,000.00	\$ 1,920,000.00
CITYWIDE PROJECT COSTS (ROUNDED):		\$ 15,419,000.00

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**CITY OF SWEENEY, TEXAS
 CITYWIDE WATER SYSTEM IMPROVEMENTS-AREA NO. 1
 ENGINEER'S OPINION OF PROBABLE PROJECT COSTS
 January 16, 2024**

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY		UNIT COST	TOTAL COST
1.	Furnish materials and install 6-inch American Water Works Association (AWWA) C900 dimension ratio (DR)18 polyvinyl chloride (PVC) water line by open cut, with trace wire, and complete in place.	16,250	LF	\$ 50.00	\$ 812,500.00
2.	Furnish materials and install 6-inch AWWA C900 DR 18 PVC water line by bore, with trace wire, and complete in place.	1,800	LF	\$ 90.00	\$ 162,000.00
3.	Furnish materials and install 8-inch AWWA C900 DR 18 PVC water line by open cut, with trace wire, and complete in place.	830	LF	\$ 60.00	\$ 49,800.00
4.	Furnish materials and install 8-inch AWWA C900 DR 18 PVC water line by bore, with trace wire, and complete in place.	90	LF	\$ 120.00	\$ 10,800.00
5.	Furnish materials and install 10-inch AWWA C900 DR 18 PVC water line by open cut, with trace wire, and complete in place.	2,610	LF	\$ 80.00	\$ 208,800.00
6.	Furnish materials and install 10-inch AWWA C900 DR 18 PVC water line by bore, with trace wire, and complete in place.	290	LF	\$ 150.00	\$ 43,500.00
7.	Furnish and install 6-inch gate valve with valve box; complete in place.	70	EA	\$ 1,800.00	\$ 126,000.00
8.	Furnish and install 8-inch gate valve with valve box; complete in place.	3	EA	\$ 2,400.00	\$ 7,200.00
9.	Furnish and install 10-inch gate valve with valve box; complete in place.	9	EA	\$ 3,200.00	\$ 28,800.00
10.	Furnish and install ductile iron fittings; complete in place.	8.8	TON	\$ 8,500.00	\$ 74,800.00
11.	Furnish and install standard fire hydrant unit; complete in place.	12	EA	\$ 7,000.00	\$ 84,000.00
12.	Furnish materials and connect new water line to existing 6-inch line (wet connection); complete in place.	12	EA	\$ 700.00	\$ 8,400.00
13.	Furnish materials and connect new water line to existing 10-inch line (wet connection); complete in place.	5	EA	\$ 2,250.00	\$ 11,250.00
14.	Furnish materials and connect new water line to existing 12-inch line (wet connection); complete in place.	10	EA	\$ 3,000.00	\$ 30,000.00
15.	Furnish materials and install 6-inch tapping sleeve and valve; complete in place.	2	EA	\$ 4,500.00	\$ 9,000.00
16.	Furnish materials and install 8-inch tapping sleeve and valve; complete in place.	2	EA	\$ 5,000.00	\$ 10,000.00
17.	Furnish materials and install 10-inch tapping sleeve and valve; complete in place.	2	EA	\$ 8,000.00	\$ 16,000.00
18.	Furnish materials and install 12-inch tapping sleeve and valve; complete in place.	2	EA	\$ 10,000.00	\$ 20,000.00
19.	Furnish materials and install 3/4-inch polyethylene service line by open cut; complete in place.	2,220	LF	\$ 20.00	\$ 44,400.00
20.	Furnish materials and install 3/4-inch polyethylene service line by bore; complete in place.	2,220	LF	\$ 15.00	\$ 33,300.00
21.	Furnish materials and install 3/4-inch single water service connection (including service saddle, corporation stop, meter stop, connection to existing meter, and all other fittings and piping necessary to connect existing service to new water line); complete in place.	185	EA	\$ 1,200.00	\$ 222,000.00
22.	Furnish materials and install asphalt pavement repair for water lines (all sizes) in all locations; complete in place.	7,900	LF	\$ 80.00	\$ 632,000.00
23.	Furnish materials and install concrete pavement repair for water lines (all sizes) in all locations; complete in place.	100	LF	\$ 125.00	\$ 12,500.00
24.	Furnish materials and perform seeding and restoration in all areas (including Texas Department of Transportation [TxDOT] right-of-way [ROW]) disturbed by construction of new water lines; complete in place.	1	LS	\$ 10,000.00	\$ 10,000.00
25.	Furnish materials and perform all necessary traffic control in City and TxDOT ROW, in accordance with the latest version of the Texas Manual on Uniform Traffic Control Devices and applicable TxDOT permit requirements; complete in place.	1	LS	\$ 30,000.00	\$ 30,000.00

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY		UNIT COST	TOTAL COST
26.	Furnish materials and connect new water line to existing water tower supply line.	1	EA	\$ 20,000.00	\$ 20,000.00
Subtotal Construction Costs (Rounded):					\$ 2,717,050.00
20% Contingencies (Rounded):					\$ 543,410.00
SUBTOTAL CONSTRUCTION COST:					\$ 3,260,000.00
ENGINEERING					
1.	Basic services (design-, bidding-, and construction-phase services).				\$ 400,000.00
2.	Additional services (resident project representative).				\$ 45,000.00
TOTAL ENGINEERING COSTS (ROUNDED):					\$ 445,000.00
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COSTS (ROUNDED):					\$ 3,705,000.00

William J. Huebner, P.E.
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CITY OF SWEENEY, TEXAS
 CITYWIDE WATER SYSTEM IMPROVEMENTS--AREA NO. 2
 ENGINEER'S OPINION OF PROBABLE PROJECT COSTS
 January 16, 2024

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY		UNIT COST	TOTAL COST
1.	Furnish materials and install 6-inch American Water Works Association (AWWA) C900 dimension ratio (DR) 18 polyvinyl chloride (PVC) water line by open cut, with trace wire, and complete in place.	11,590	LF	\$ 50.00	\$ 579,500.00
2.	Furnish materials and install 6-inch AWWA C900 DR 18 PVC water line by bore, with trace wire, and complete in place.	1,330	LF	\$ 90.00	\$ 119,700.00
3.	Furnish materials and install 6-inch AWWA C900 DR 18 PVC water line by bore with a 12-inch welded steel casing, with trace wire, and complete in place.	380	LF	\$ 180.00	\$ 68,400.00
4.	Furnish and install 6-inch gate valve with valve box; complete in place.	40	EA	\$ 1,800.00	\$ 72,000.00
5.	Furnish and install ductile iron fittings; complete in place.	5.3	TON	\$ 8,500.00	\$ 45,050.00
6.	Furnish and install standard fire hydrant unit; complete in place.	12	EA	\$ 7,000.00	\$ 84,000.00
7.	Furnish materials and connect new water line to existing 6-inch line (wet connection); complete in place.	8	EA	\$ 700.00	\$ 5,600.00
8.	Furnish materials and connect new water line to existing 10-inch line (wet connection); complete in place.	1	EA	\$ 2,250.00	\$ 2,250.00
9.	Furnish materials and connect new water line to existing 12-inch line (wet connection); complete in place.	1	EA	\$ 3,000.00	\$ 3,000.00
10.	Furnish materials and install 6-inch tapping sleeve and valve; complete in place.	3	EA	\$ 4,500.00	\$ 13,500.00
11.	Furnish materials and install 10-inch tapping sleeve and valve; complete in place.	1	EA	\$ 8,000.00	\$ 8,000.00
12.	Furnish materials and install 12-inch tapping sleeve and valve; complete in place.	1	EA	\$ 10,000.00	\$ 10,000.00
13.	Furnish materials and install 3/4-inch polyethylene service line by open cut; complete in place.	1,320	LF	\$ 20.00	\$ 26,400.00
14.	Furnish materials and install 3/4-inch polyethylene service line by bore; complete in place.	1,320	LF	\$ 15.00	\$ 19,800.00
15.	Furnish materials and install 3/4-inch single water service connection (including service saddle, corporation stop, meter stop, connection to existing meter, and all other fittings and piping necessary to connect existing service to new water line); complete in place.	110	EA	\$ 1,200.00	\$ 132,000.00
16.	Furnish materials and install asphalt pavement repair for water lines (all sizes) in all locations; complete in place.	4,650	LF	\$ 80.00	\$ 372,000.00
17.	Furnish materials and install concrete pavement repair for water lines (all sizes) in all locations; complete in place.	580	LF	\$ 125.00	\$ 72,500.00
18.	Furnish materials and perform seeding and restoration in all areas (including Texas Department of Transportation [TxDOT] right-of-way [ROW]) disturbed by construction of new water lines; complete in place.	1	LS	\$ 15,000.00	\$ 15,000.00
19.	Furnish materials and perform all necessary traffic control in City and TxDOT ROW, in accordance with the latest version of the Texas Manual on Uniform Traffic Control Devices and applicable TxDOT permit requirements; complete in place.	1	LS	\$ 25,000.00	\$ 25,000.00
Subtotal Construction Costs (Rounded):					\$ 1,673,700.00
20% Contingencies (Rounded):					\$ 334,740.00
SUBTOTAL CONSTRUCTION COST:					\$ 2,008,000.00

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT COST	TOTAL COST
ENGINEERING				
1.	Basic services (design-, bidding-, and construction-phase services).			\$ 250,000.00
2.	Additional services (resident project representative).			\$ 45,000.00
TOTAL ENGINEERING COSTS (ROUNDED):				\$ 295,000.00
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COSTS (ROUNDED):				\$ 2,303,000.00

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CITY OF SWEENEY, TEXAS
CITYWIDE WATER SYSTEM IMPROVEMENTS-AREA NO. 3
ENGINEER'S OPINION OF PROBABLE PROJECT COSTS
 January 16, 2024

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY		UNIT COST	TOTAL COST
1.	Furnish materials and install 6-inch American Water Works Association (AWWA) C900 dimension ratio (DR) 18 polyvinyl chloride (PVC) water line by open cut, with trace wire, and complete in place.	11,880	LF	\$ 50.00	\$ 594,000.00
2.	Furnish materials and install 6-inch AWWA C900 DR 18 PVC water line by bore, with trace wire, and complete in place.	1,320	LF	\$ 90.00	\$ 118,800.00
3.	Furnish materials and install 12-inch AWWA C900 DR 18 PVC water line by open cut, with trace wire, and complete in place.	700	LF	\$ 100.00	\$ 70,000.00
4.	Furnish materials and install 12-inch AWWA C900 DR 18 PVC water line by bore, with trace wire, and complete in place.	70	LF	\$ 180.00	\$ 12,600.00
5.	Furnish materials and install 12-inch AWWA C900 DR 18 PVC water line by bore with a 20-inch welded steel casing, with trace wire, and complete in place.	80	LF	\$ 400.00	\$ 32,000.00
6.	Furnish and install 6-inch gate valve with valve box; complete in place.	25	EA	\$ 1,800.00	\$ 45,000.00
7.	Furnish and install 12-inch gate valve with valve box; complete in place.	2	EA	\$ 4,500.00	\$ 9,000.00
8.	Furnish and install ductile iron fittings; complete in place.	5.6	TON	\$ 8,500.00	\$ 47,600.00
9.	Furnish and install standard fire hydrant unit; complete in place.	14	EA	\$ 7,000.00	\$ 98,000.00
10.	Furnish materials and connect new water line to existing 6-inch line (wet connection); complete in place.	6	EA	\$ 700.00	\$ 4,200.00
11.	Furnish materials and connect new water line to existing 10-inch line (wet connection); complete in place.	2	EA	\$ 2,250.00	\$ 4,500.00
12.	Furnish materials and connect new water line to existing 12-inch line (wet connection); complete in place.	2	EA	\$ 3,000.00	\$ 6,000.00
13.	Furnish materials and install 6-inch tapping sleeve and valve; complete in place.	2	EA	\$ 4,500.00	\$ 9,000.00
14.	Furnish materials and install 12-inch tapping sleeve and valve; complete in place.	2	EA	\$ 10,000.00	\$ 20,000.00
15.	Furnish materials and install 3/4-inch polyethylene service line by open cut; complete in place.	1,536	LF	\$ 20.00	\$ 30,720.00
16.	Furnish materials and install 3/4-inch polyethylene service line by bore; complete in place.	1,536	LF	\$ 15.00	\$ 23,040.00
17.	Furnish materials and install 3/4-inch single water service connection (including service saddle, corporation stop, meter stop, connection to existing meter, and all other fittings and piping necessary to connect existing service to new water line); complete in place.	128	EA	\$ 1,200.00	\$ 153,600.00
18.	Furnish materials and install asphalt pavement repair for water lines (all sizes) in all locations; complete in place.	5,030	LF	\$ 80.00	\$ 402,400.00
19.	Furnish materials and install concrete pavement repair for water lines (all sizes) in all locations; complete in place.	630	LF	\$ 125.00	\$ 78,750.00
20.	Furnish materials and perform seeding and restoration in all areas (including Texas Department of Transportation [TxDOT] right-of-way [ROW]) disturbed by construction of new water lines; complete in place.	1	LS	\$ 15,000.00	\$ 15,000.00
21.	Furnish materials and perform all necessary traffic control in City and TxDOT ROW, in accordance with the latest version of the Texas Manual on Uniform Traffic Control Devices and applicable TxDOT permit requirements; complete in place.	1	LS	\$ 25,000.00	\$ 25,000.00
Subtotal Construction Costs (Rounded):					\$ 1,799,210.00
20% Contingencies (Rounded):					\$ 359,842.00
SUBTOTAL CONSTRUCTION COST:					\$ 2,159,000.00

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT COST	TOTAL COST
ENGINEERING				
1.	Basic services (design-, bidding-, and construction-phase services).			\$ 260,000.00
2.	Additional services (resident project representative).			\$ 45,000.00
TOTAL ENGINEERING COSTS (ROUNDED):				\$ 305,000.00
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COSTS (ROUNDED):				\$ 2,464,000.00

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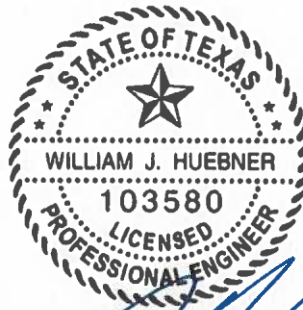
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CITY OF SWEENEY, TEXAS
CITYWIDE WATER SYSTEM IMPROVEMENTS--AREA NO. 4
ENGINEER'S OPINION OF PROBABLE PROJECT COSTS
 January 16, 2024

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY		UNIT COST	TOTAL COST
1.	Furnish materials and install 6-inch American Water Works Association (AWWA) C900 dimension ratio (DR)18 polyvinyl chloride (PVC) water line by open cut, with trace wire, and complete in place.	10,350	LF	\$ 50.00	\$ 517,500.00
2.	Furnish materials and install 6-inch AWWA C900 DR 18 PVC water line by bore, with trace wire, and complete in place.	1,150	LF	\$ 90.00	\$ 103,500.00
3.	Furnish materials and install 8-inch AWWA C900 DR 18 PVC water line by open cut, with trace wire, and complete in place.	80	LF	\$ 60.00	\$ 4,800.00
4.	Furnish materials and install 8-inch AWWA C900 DR 18 PVC water line by bore, with trace wire, and complete in place.	1,620	LF	\$ 120.00	\$ 194,400.00
5.	Furnish and install 6-inch gate valve with valve box; complete in place.	17	EA	\$ 1,800.00	\$ 30,600.00
6.	Furnish and install 8-inch gate valve with valve box; complete in place.	3	EA	\$ 2,400.00	\$ 7,200.00
7.	Furnish and install ductile iron fittings; complete in place.	5.3	TON	\$ 8,500.00	\$ 45,050.00
8.	Furnish and install standard fire hydrant unit; complete in place.	11	EA	\$ 7,000.00	\$ 77,000.00
9.	Furnish materials and connect new water line to existing 6-inch line (wet connection); complete in place.	3	EA	\$ 700.00	\$ 2,100.00
10.	Furnish materials and connect new water line to existing 10-inch line (wet connection); complete in place.	3	EA	\$ 2,250.00	\$ 6,750.00
11.	Furnish materials and connect new water line to existing 12-inch line (wet connection); complete in place.	5	EA	\$ 3,000.00	\$ 15,000.00
12.	Furnish materials and install 6-inch tapping sleeve and valve; complete in place.	1	EA	\$ 4,500.00	\$ 4,500.00
13.	Furnish materials and install 10-inch tapping sleeve and valve; complete in place.	2	EA	\$ 8,000.00	\$ 16,000.00
14.	Furnish materials and install 12-inch tapping sleeve and valve; complete in place.	2	EA	\$ 10,000.00	\$ 20,000.00
15.	Furnish materials and install 3/4-inch polyethylene service line by open cut; complete in place.	1,716	LF	\$ 20.00	\$ 34,320.00
16.	Furnish materials and install 3/4-inch polyethylene service line by bore; complete in place.	1,704	LF	\$ 15.00	\$ 25,560.00
17.	Furnish materials and install 3/4-inch polyethylene service line inside 1-inch welded steel casing by bore; complete in place.	125	LF	\$ 60.00	\$ 7,500.00
18.	Furnish materials and install 3/4-inch single water service connection (including service saddle, corporation stop, meter stop, connection to existing meter, and all other fittings and piping necessary to connect existing service to new water line); complete in place.	145	EA	\$ 1,200.00	\$ 174,000.00
19.	Furnish materials and install asphalt pavement repair for water lines (all sizes) in all locations; complete in place.	4,200	LF	\$ 80.00	\$ 336,000.00
20.	Furnish materials and install concrete pavement repair for water lines (all sizes) in all locations; complete in place.	525	LF	\$ 125.00	\$ 65,625.00
21.	Furnish materials and perform seeding and restoration in all areas (including Texas Department of Transportation [TxDOT] right-of-way [ROW]) disturbed by construction of new water lines; complete in place.	1	LS	\$ 10,000.00	\$ 10,000.00
22.	Furnish materials and perform all necessary traffic control in City and TxDOT ROW, in accordance with the latest version of the Texas Manual on Uniform Traffic Control Devices and applicable TxDOT permit requirements; complete in place.	1	LS	\$ 20,000.00	\$ 20,000.00
Subtotal Construction Costs (Rounded):					\$ 1,717,405.00
20% Contingencies (Rounded):					\$ 343,481.00
SUBTOTAL CONSTRUCTION COST:					\$ 2,061,000.00

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT COST	TOTAL COST
ENGINEERING				
1.	Basic services (design-, bidding-, and construction-phase services).			\$ 250,000.00
2.	Additional services (resident project representative).			\$ 45,000.00
TOTAL ENGINEERING COSTS (ROUNDED):				\$ 295,000.00
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COSTS (ROUNDED):				\$ 2,356,000.00

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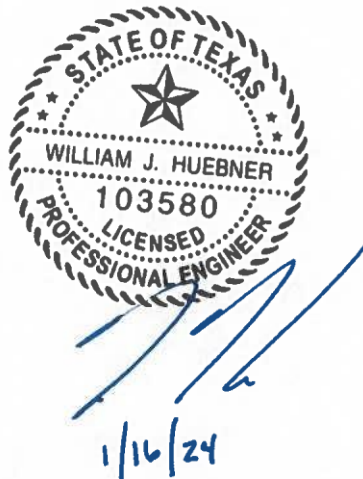


CITY OF SWEENY, TEXAS
CITYWIDE WATER SYSTEM IMPROVEMENTS-AREA NO. 5
ENGINEER'S OPINION OF PROBABLE PROJECT COSTS
 January 16, 2024

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY		UNIT COST	TOTAL COST
1.	Furnish materials and install 6-inch American Water Works Association (AWWA) C900 dimension ratio (DR)18 polyvinyl chloride (PVC) water line by open cut, with trace wire, and complete in place.	9,900	LF	\$ 50.00	\$ 495,000.00
2.	Furnish materials and install 6-inch AWWA C900 DR 18 PVC water line by bore, with trace wire, and complete in place.	1,100	LF	\$ 90.00	\$ 99,000.00
3.	Furnish and install 6-inch gate valve with valve box; complete in place.	24	EA	\$ 1,800.00	\$ 43,200.00
4.	Furnish and install ductile iron fittings; complete in place.	4.4	TON	\$ 8,500.00	\$ 37,400.00
5.	Furnish and install standard fire hydrant unit; complete in place.	12	EA	\$ 7,000.00	\$ 84,000.00
6.	Furnish materials and connect new water line to existing 6-inch line (wet connection); complete in place.	1	EA	\$ 700.00	\$ 700.00
7.	Furnish materials and connect new water line to existing 10-inch line (wet connection); complete in place.	6	EA	\$ 2,250.00	\$ 13,500.00
8.	Furnish materials and connect new water line to existing 12-inch line (wet connection); complete in place.	10	EA	\$ 3,000.00	\$ 30,000.00
9.	Furnish materials and install 6-inch tapping sleeve and valve; complete in place.	4	EA	\$ 4,500.00	\$ 18,000.00
10.	Furnish materials and install 12-inch tapping sleeve and valve; complete in place.	2	EA	\$ 10,000.00	\$ 20,000.00
11.	Furnish materials and install 3/4-inch polyethylene service line by open cut; complete in place.	1,116	LF	\$ 20.00	\$ 22,320.00
12.	Furnish materials and install 3/4-inch polyethylene service line by bore; complete in place.	1,116	LF	\$ 15.00	\$ 16,740.00
13.	Furnish materials and install 3/4-inch single water service connection (including service saddle, corporation stop, meter stop, connection to existing meter, and all other fittings and piping necessary to connect existing service to new water line); complete in place.	93	EA	\$ 1,200.00	\$ 111,600.00
14.	Furnish materials and install asphalt pavement repair for water lines (all sizes) in all locations; complete in place.	3,960	LF	\$ 80.00	\$ 316,800.00
15.	Furnish materials and install concrete pavement repair for water lines (all sizes) in all locations; complete in place.	500	LF	\$ 125.00	\$ 62,500.00
16.	Furnish materials and perform seeding and restoration in all areas (including Texas Department of Transportation [TxDOT] right-of-way [ROW]) disturbed by construction of new water lines; complete in place.	1	LS	\$ 10,000.00	\$ 10,000.00
17.	Furnish materials and perform all necessary traffic control in City and TxDOT ROW, in accordance with the latest version of the Texas Manual on Uniform Traffic Control Devices and applicable TxDOT permit requirements; complete in place.	1	LS	\$ 20,000.00	\$ 20,000.00
Subtotal Construction Costs (Rounded):					\$ 1,400,760.00
20% Contingencies (Rounded):					\$ 280,152.00
SUBTOTAL CONSTRUCTION COST:					\$ 1,681,000.00

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT COST	TOTAL COST
ENGINEERING				
1.	Basic services (design-, bidding-, and construction-phase services).			\$ 210,000.00
2.	Additional services (resident project representative).			\$ 45,000.00
TOTAL ENGINEERING COSTS (ROUNDED):				\$ 255,000.00
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COSTS (ROUNDED):				\$ 1,936,000.00

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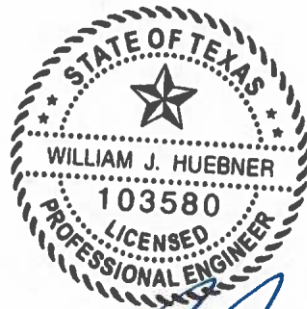
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CITY OF SWEENY, TEXAS
CITYWIDE WATER SYSTEM IMPROVEMENTS-AREA NO. 6
ENGINEER'S OPINION OF PROBABLE PROJECT COSTS
 January 16, 2024

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY		UNIT COST	TOTAL COST
1.	Furnish materials and install 6-inch American Water Works Association (AWWA) C900 dimension ratio (DR)18 polyvinyl chloride (PVC) water line by open cut, with trace wire, and complete in place.	13,920	LF	\$ 50.00	\$ 696,000.00
2.	Furnish materials and install 6-inch AWWA C900 DR 18 PVC water line by bore, with trace wire, and complete in place.	1,560	LF	\$ 90.00	\$ 140,400.00
3.	Furnish materials and install 6-inch AWWA C900 DR 18 PVC water line by bore with a 12-inch welded steel casing, with trace wire, and complete in place.	120	LF	\$ 180.00	\$ 21,600.00
4.	Furnish and install 6-inch gate valve with valve box; complete in place.	28	EA	\$ 1,800.00	\$ 50,400.00
5.	Furnish and install ductile iron fittings; complete in place.	6.3	TON	\$ 8,500.00	\$ 53,550.00
6.	Furnish and install standard fire hydrant unit; complete in place.	17	EA	\$ 7,000.00	\$ 119,000.00
7.	Furnish materials and connect new water line to existing 6-inch line (wet connection); complete in place.	4	EA	\$ 700.00	\$ 2,800.00
8.	Furnish materials and connect new water line to existing 10-inch line (wet connection); complete in place.	3	EA	\$ 2,250.00	\$ 6,750.00
9.	Furnish materials and connect new water line to existing 12-inch line (wet connection); complete in place.	7	EA	\$ 3,000.00	\$ 21,000.00
10.	Furnish materials and install 6-inch tapping sleeve and valve; complete in place.	2	EA	\$ 4,500.00	\$ 9,000.00
11.	Furnish materials and install 10-inch tapping sleeve and valve; complete in place.	1	EA	\$ 8,000.00	\$ 8,000.00
12.	Furnish materials and install 12-inch tapping sleeve and valve; complete in place.	2	EA	\$ 10,000.00	\$ 20,000.00
13.	Furnish materials and install 3/4-inch polyethylene service line by open cut; complete in place.	1,632	LF	\$ 20.00	\$ 32,640.00
14.	Furnish materials and install 3/4-inch polyethylene service line inside 1-inch welded steel casing by bore; complete in place.	1,632	LF	\$ 15.00	\$ 24,480.00
15.	Furnish materials and install 3/4-inch single water service connection (including service saddle, corporation stop, meter stop, connection to existing meter, and all other fittings and piping necessary to connect existing service to new water line); complete in place.	136	EA	\$ 1,200.00	\$ 163,200.00
16.	Furnish materials and install asphalt pavement repair for water lines (all sizes) in all locations; complete in place.	5,570	LF	\$ 80.00	\$ 445,600.00
17.	Furnish materials and install concrete pavement repair for water lines (all sizes) in all locations; complete in place.	700	LF	\$ 125.00	\$ 87,500.00
18.	Furnish materials and perform seeding and restoration in all areas (including Texas Department of Transportation [TxDOT] right-of-way [ROW]) disturbed by construction of new water lines; complete in place.	1	LS	\$ 15,000.00	\$ 15,000.00
19.	Furnish materials and perform all necessary traffic control in City and TxDOT ROW, in accordance with the latest version of the Texas Manual on Uniform Traffic Control Devices and applicable TxDOT permit requirements; complete in place.	1	LS	\$ 25,000.00	\$ 25,000.00
Subtotal Construction Costs (Rounded):					\$ 1,941,920.00
20% Contingencies (Rounded):					\$ 388,384.00
SUBTOTAL CONSTRUCTION COST:					\$ 2,330,000.00

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY	UNIT COST	TOTAL COST
ENGINEERING				
1.	Basic services (design-, bidding-, and construction-phase services).			\$ 280,000.00
2.	Additional services (resident project representative).			\$ 45,000.00
TOTAL ENGINEERING COSTS (ROUNDED):				\$ 325,000.00
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COSTS (ROUNDED):				\$ 2,655,000.00

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CITY OF SWEENEY, TEXAS
REBID OF WATER LINE IMPROVEMENTS-MAIN STREET
ENGINEER'S OPINION OF PROBABLE PROJECT COST
 January 12, 2024

ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY		UNIT COST	TOTAL COST
1.	Furnish materials and install 12-inch American Water Works Association (AWWA) C900 dimension ratio (DR)18 polyvinyl chloride (PVC) water line by open cut, with trace wire, and complete in place.	2,550	LF	\$ 100.00	\$ 255,000.00
2.	Furnish materials and install 12-inch AWWA C900 DR18 PVC water line by bore, no casing, with trace wire, and complete in place.	2,520	LF	\$ 180.00	\$ 453,600.00
3.	Furnish materials and install 12-inch AWWA C900 DR18 PVC water line by bore, inside 20-inch welded steel casing, with trace wire, and complete in place.	60	LF	\$ 400.00	\$ 24,000.00
4.	Furnish materials and install 6-inch AWWA C900 DR18 PVC water line by open cut, with trace wire, and complete in place.	350	LF	\$ 50.00	\$ 17,500.00
5.	Furnish materials and install 6-inch AWWA C900 DR18 PVC water line by bore, no casing, with trace wire, and complete in place.	970	LF	\$ 90.00	\$ 87,300.00
6.	Furnish materials and install 3/4-inch polyethylene service line by open cut; complete in place.	760	LF	\$ 15.00	\$ 11,400.00
7.	Furnish materials and install 3/4-inch polyethylene service line inside 1-inch welded steel casing by bore; complete in place.	1,300	LF	\$ 60.00	\$ 78,000.00
8.	Furnish and install 12-inch gate valve with valve box; complete in place.	8	EA	\$ 4,500.00	\$ 36,000.00
9.	Furnish and install 6-inch gate valve with valve box; complete in place.	2	EA	\$ 1,800.00	\$ 3,600.00
10.	Furnish and install ductile iron fittings; complete in place.	4	TON	\$ 10,000.00	\$ 40,000.00
11.	Furnish and install a standard fire hydrant unit; complete in place.	15	EA	\$ 7,000.00	\$ 105,000.00
12.	Furnish materials and connect a new water line to the existing 6-inch line (wet connection); complete in place.	5	EA	\$ 1,400.00	\$ 7,000.00
13.	Furnish materials and connect new water line to the existing 2-inch line (wet connection), as shown on the details for small diameter water connection; complete in place.	6	EA	\$ 700.00	\$ 4,200.00
14.	Furnish materials and install 10-inch tapping sleeve and valve; complete in place.	1	EA	\$ 8,000.00	\$ 8,000.00
15.	Furnish materials and install 8-inch tapping sleeve and valve; complete in place.	2	EA	\$ 5,000.00	\$ 10,000.00
16.	Furnish materials and install 6-inch tapping sleeve and valve; complete in place.	2	EA	\$ 4,500.00	\$ 9,000.00
17.	Furnish materials and install 3/4-inch single water service connection (including service saddle, corporation stop, meter stop, connection to existing meter, and other fittings and piping necessary to connect existing service to new water line); complete in place.	60	EA	\$ 1,200.00	\$ 72,000.00
18.	Furnish materials and install asphalt pavement repair for water lines (all sizes) in all locations; complete in place.	30	LF	\$ 60.00	\$ 1,800.00
19.	Furnish materials and install concrete pavement repair for water lines (all sizes) in all locations; complete in place.	200	LF	\$ 50.00	\$ 10,000.00
20.	Furnish materials and perform seeding and restoration in all areas (including Texas Department of Transportation [TxDOT] right-of-way [ROW]) disturbed by construction of new water lines; complete in place.	1	LS	\$ 10,000.00	\$ 10,000.00

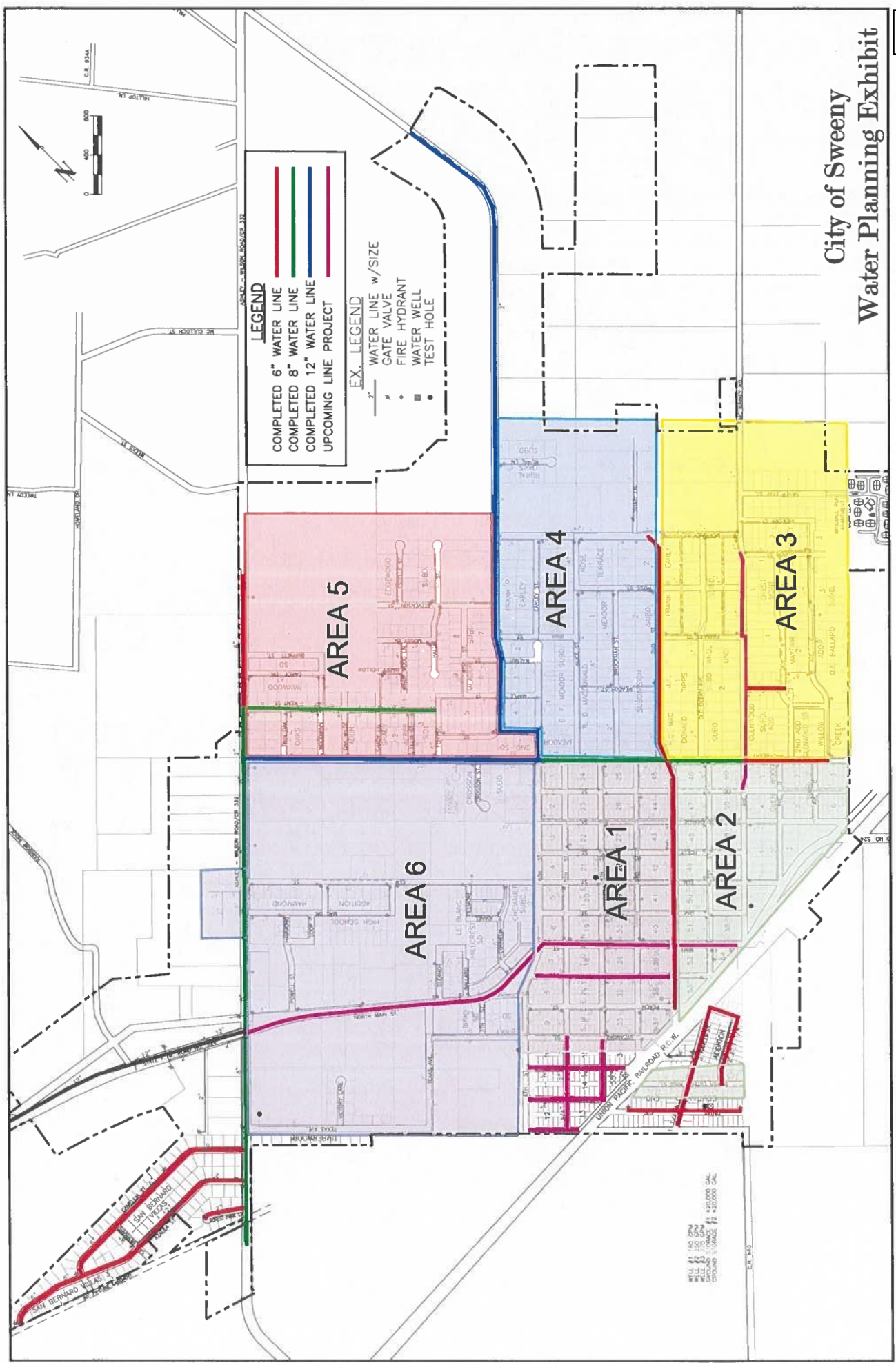
ITEM NO.	DESCRIPTION	ESTIMATED QUANTITY		UNIT COST	TOTAL COST
21.	Furnish materials and perform all necessary traffic control in the City and TxDOT ROW, in accordance with the latest version of the Texas Manual on Uniform Traffic Control Devices and applicable TxDOT permit requirements; complete in place.	1	LS	\$ 25,000.00	\$ 25,000.00
22.	Furnish materials and connect the new water line to the existing water tower supply line.	1	EA	\$ 20,000.00	\$ 20,000.00
Subtotal Construction Costs (Rounded):					\$ 1,288,400.00
10% Contingencies (Rounded):					\$ 128,840.00
TOTAL ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COST:					\$ 1,417,240.00
2022 SANITARY SEWER IMPROVEMENTS-ALTERNATIVE FORCE MAIN ALIGNMENT					
1.	Basic services (design-, bidding-, construction-phase services).				\$ 60,000.00
2.	Additional services (Resident Project Representative).				\$ 23,000.00
TOTAL ENGINEERING COSTS (ROUNDED):					\$ 83,000.00
TOTAL ENGINEER'S OPINION OF PROBABLE PROJECT COSTS (ROUNDED):					\$ 1,500,240.00

William J. Huebner, P.E.
Strand Associates, Inc.* (TBPE No. F-8405)
1906 Niebuhr Street
Brenham, TX 77833



City of Sweeny Water Planning Exhibit

Item 2.



CITY COUNCIL MEETING SPECIAL SESSION

Item 2.

Tuesday, January 30, 2024 at 5:00 PM

City Hall, 102 W. Ashley Wilson Rd, Sweeny, Texas and Via ZOOM at
<https://zoom.us/j/98427261064> Meeting ID: 984 2726 1064

MINUTES

BE IT KNOWN that the City Council of the City of Sweeny will met in **Special Session** on **Tuesday, January 30, 2024 at 5:00 PM.** at City Hall, 102 W. Ashley Wilson Rd, Sweeny, Texas and Via ZOOM at <https://zoom.us/j/98427261064> Meeting ID: 984 2726 1064 with the following agenda.

CALL TO ORDER/ROLL CALL- Meeting was additionally held via zoom.

Mayor Hopkins called the meeting to order at 5 PM.

Mark Morgan Jr., Reese Cook, Brian Brooks, and John Rambo were in attendance.

PLEDGES & INVOCATION

Pledges were led by Brian Brooks. The Invocation was given by Reese Cook.

CITIZENS WISHING TO ADDRESS CITY COUNCIL

No citizen comments.

REGULAR AGENDA

1. Discussion and possible action on a request from Sweeny Independent School District for a variance to the 2015 International Plumbing Code adopted by the City's Code of Ordinance and a variance to Section 110-162 Parking Requirements of Article VI of the City's Code.

City Manager stated this request is for a variance in two areas of preliminary planning for the SISD stadium. We do not have architectural or engineered plans to review as of yet. However, she has met with SISD's Superintendent, Dan Fuller, and feels the request is appropriate. First request is to the required parking for a stadium. Our code provides stadiums/event centers are to have one parking space for every three seats. They are reducing/scaling back the number of seats from 5,600 to 5,000 seats and requesting a variance to the amount of parking required. Extra parking would require extra drainage due to additional concrete needed. Second request is to the reduction of toilets/sinks/lavatories required per the adopted 2015 IBC. What is proposed is triple to what is currently onsite. Dan Fuller added that he knows that variances are normally requested after plans are reviewed. Due to circumstances, the variances would allow SISD to capitalizing dollars in other areas. SISD is planning to have a bond on the 2024 General Election ballot. The requested variances would cut costs and/or allow for funding to be spread out for the entire district more evenly; a response to timeliness pre bond planning. He stated that they are planning to better distribute the home and visitors bleachers. The current concrete stadium was built in the 1980's; in the 1990's structural re-support was completed. In 2014, a structural integrity report showed further issues and emergency maintenance was completed to remove fall hazards. They are now having to meet a need as the stadium is near life expectancy. They feel the variances will help to redistribute funds to other needs within the district, versus water runoff mitigation if required to have additional parking. Reese Cook confirmed the sink and water lavatories are a variance to Plumbing Code and the parking variance is to the Zoning Ordinance. Cook also asked about fire hazards relating to the parking requirements. City Manager stated nothing was found relating to sporting events, not sure why it was adopted that way.

Reese Cook moved to approve a variance to the 2015 International Plumbing Code adopted by the City of Sweeny to allow the District to have at least 20 total sinks and 12 total lavatories, and approval of a variance to Article VI. Supplementary Regulations- Section 110-162- Parking requirements, of the City's Code of Ordinances, to allow a 1:6 parking space to seat ration, subject to the receipt of plans with the stamp of licensed architect or engineer in Texas. Seconded by Mark Morgan Jr. All approved. Motion carried.

2. Discussion and possible action on engaging Kennemer, Masters, and Lunsford for professional financial audit services for the 2022-2023 Fiscal year ending September 30, 2023.

Karla Wilson, Finance Director, approached Council stating that this is an annual formal approval process to engage Kennemer, Masters, and Lunsford (KM&L) as our financial auditors for the year ending 09/30/2023. To begin the audit process, the letter is required to be approved and signed. This is budgeted per the City Manager. Last year's audit was approximately \$20,000.00, but we are trying to bring that amount down each year stated Wilson. The engagement letter states the fees will not exceed \$30,000.00, but we've only budgeted \$23,500.00. Cook questioned where we would make up the difference if we were to exceed budgeted funds. City Manager stated that we have engaged/contracted Tom Masters to complete the preliminary audit so that KM&L is not here as long. We would use fund balance for the contingency plan. KM&L have been auditing the City for approximately forty years and Mr. Master's time is budgeted as a consultant.

Reese Cook moved to approve engagement with Kennemer Masters and Lunsford for professional financial audit services 2022/2023 Fiscal Year as presented. Seconded by Mark Morgan Jr. All in favor. Motion carried.

3. Discussion and possible action on agenda request for Council Meetings to be regularly scheduled to twice monthly; Councilman Brooks

Brian Brooks stated that with the water issues, actions need to be taken. We keep switching ideas. Meeting every thirty days is too much time in between to help citizens out for water issues. He wants to try and meet twice a month. Mayor Hopkins and John Rambo agreed.

Brian Brooks made the motion to start meetings twice monthly on the first and third Tuesday of month beginning February.

Discussion: Reese Cook recommended starting March 5th. Council discussed how agenda requests would be handled versus water issues. All residential requests would still continue to be placed on the normal 3rd Tuesday. Water would be the only topic for the 1st Tuesday of the month special meetings. Mr. Brooks amended the motion to meet twice monthly on the first and third Tuesday of the month beginning March 5th. Seconded by John Rambo. All in favor. Motion carried.

4. Discussion and possible action to presentations from Water of Texas and Inframark on potential water project(s)

City Manager stated that Inframark will not be here tonight and Mr. Claybourn of Water of Texas has not appeared. She was able to receive clarification and requirements from TCEQ as to what constitutes the need for a pilot? A 300 sq. ft. filter would be required, due to our wells having a 15,000 gallons per minute flow. A filtration system equivalent or better will meet and we would not need a pilot program. TCEQ would require a pilot for removal of maximum contaminants; secondary constituents do not require. They would need to be NSF 61 or 44 certified. An engineer must submit plans and specs. Hopkins stated that navigating a pilot is hard to complete without Water of Texas here. Concerns of just softening, and the effect of corrosion it would have on existing infrastructure was discussed. The opinion provided from TCEQ stated the softener plans reviewed that were from Water of Texas, are using a normal resin and not the type previously used in the units, and that may not work. TCEQ suggested the City would want some type of performance contract initiated. Inframark's current operator previously stated that if we take soft water and run it thru the pipes, it would descale them and would exacerbate brown water complaints. Hopkins feels we need to go with someone else for filtration needs as Claybourn was not in attendance as requested at the last meeting. William Huebner, City Engineer, discussed with Council the filters previously at the water plant, their purpose, and how they were also used to keep the manganese out of the water. City Manager's suggestion is to put out a RFP to state what were looking for and our wants. Council discussed the options of filters, softeners, piping change outs, and forward paths. Huebner stated that our water from the wells to the tank is clear. When Water Of Texas pulled samples, they were still high in iron and manganese. You will not see discoloration until

it oxidizes. The pipes need replacing and the manganese needs to be removed. The regimented schedule of flushing is going to help build up, but both will be needed.

TIM PETTIGREW arrived at 5: 33 PM.

Kelly Fuller, resident, stated they recently put a water filter on their home. They have had to have a plumber out three times since installing, as corrosion is now releasing and causing issues. She agrees that if we put on a new unit for softening, homeowners will have more issues. Dan Fuller stated this is what CIP's are for. He asked if the city can match homeowners? It wouldn't fix CIP issues, but would show efforts. City Manager stated she has discussed this with Council and legal. We can not subsidize public funds to private properties. Discussion continued.

Reese Cook motioned that the City Manager to go out for RFP issued for 30 days seeking proposals for iron and manganese filtration at the water plant.

Mr. Rambo stated he is for the water softeners and has been researching. He is a proponent for the water softeners but acknowledges pipes need to be done. Hopkins thinks just a filter system without softening would be sufficient. Council also discussed the recent approval for the Main Street Water Line Replacement Project. Mr. Cook stated he opposed the motion last month for the project. Could we oppose or not accept a bid for the Main Street project; meaning could it fail? Yes, that is correct per Attorney Stevenson.

Seconded by John Rambo. All approved. Motion carried.

5. Discussion and possible action to adopt a capital improvement projects plan.

City Manager was given orders to start working on a CIP and it is critical. If executed correctly and reviewed annually prior to the budget, it would respond proactively to meet city needs. She feels we would qualify for zero interest loan with the Texas Water Development Board (TWDB), but an adopted CIP must be submitted with the application. Previously, she had shown Council a CIP of five years. She is now presenting a 15 year plan. City Manager feels a General Obligation (GO) bond could be leveraged. She also feels that this will present the need for project studies moving forward. She needs a CIP completed by February in order to submit the TWDB application by March 1st. Attorney Steveson stated bonds such as GO's are payable from tax revenue. Utility bonds are payable from utility revenues by voter approval. The last CO (Certificate of Obligation) included water and sewer. For bonds, the principal and interest must be included in the City's budget as debt obligation. Discussion of presented information ensued.

Reese Cook moved to approve the CIP as presented. Seconded by John Rambo.

Discussion: Mr. Rambo is concerned about the county interlocal and the asphalt roadways, as it builds up the roadway and causes an issue for drainage, water valves, etc. He would like to look at that further. Mr. Cook stated he thinks we need to have another meeting to talk about CIP only and determine what we want to move forward on, and shift numbers around accordingly. City Manager stated that when we do meet for a workshop, we need to revisit the strategic plan and the vision for the city. Then we would pick five to six projects to meet those visions and move forward. Brian Brooks asked if EDC funds can be used to help for any of the projects listed in the CIP given. City Manager stated our EDC is a type B and their funds can be used for city projects pertaining to quality of life, such as Parks. Mr. Cook asked for the types of projects eligible for EDC to fund to be designated. City Manager will color code them in light purple.

All in favor. Motion carried.

ITEMS OF COMMUNITY INTEREST

Reese Cook stated Mardi Gras is coming up on February 10th.

Brian Brooks told Tex, Director of Public Works, that they are doing a good job on leaks and the guys are working hard.

John Rambo stated the Mardi Gras Festival and the City Dog Pound fundraiser are the same day; February 10th.

ADJOURN REGULAR SESSION- Mayor Hopkins adjourned the meeting at 6:17 PM.

Staff present:

City Manager, Lindsay Koskiniemi
Police Chief, Brad Caudle
Director of Public Works, Terrance Bell
Finance Director / Personnel Services, Karla Wilson
City Secretary/ Developmental Services, Kaydi Smith

City affiliates present:

City Engineer, William Huebner
City Attorney, Charlie Stevenson

Passed and approved this _____ day of _____, 2024.

Kaydi Smith - City Secretary

**IN-HOUSE WATER COLOR SURVEY
CONDUCTED JANUARY 29 - 30, 2024**

FIG STREET - 3RD ST. TO AVE. A

ADDRESS	SAMPLE TAKEN Y/N?	COLOR	NOTES
507	Y	LY	DEBRIS OBSERVED IN SAMPLE
411	Y	LY	DEBRIS OBSERVED IN SAMPLE
509 E. 2ND	Y	LB	DIRT IN OBSERVED IN SAMPLE
101	Y	LB	DEBRIS OBSERVED IN SAMPLE
108	Y	LY	DEBRIS OBSERVED IN SAMPLE
502	Y	LY	DEBRIS OBSERVED IN SAMPLE
312	Y	CL	DEBRIS OBSERVED IN SAMPLE
206	Y	CL	
104	Y	CL	DEBRIS OBSERVED IN SAMPLE
115	Y	CL	DEBRIS OBSERVED IN SAMPLE

AVE. B FROM HACKBERRY TO YAUPON

ADDRESS	SAMPLE TAKEN Y/N?	COLOR	NOTES
			RESIDENT NOTICES STRONG SMELL OF CLORINE AT NIGHT AND OBSERVES COLORATION IN WATER INTERMITENTLY, SELDOMN SEE DEBRIS IN WATER
209	Y	LY	
703	Y	LB	
705	Y	CL	DEBRIS OBSERVED IN SAMPLE
801	Y	CL	DEBRIS LIKELY FROM WATER HOSE
702	Y	CL	BROWN IN AM, CLEAR IN PM
704	Y	CL	INSIDE
708	Y	CL	INSIDE
802	Y	CL	OUTSIDE
804	Y	CL	OUTSIDE
904	Y	LY	DEBRIS OBSERVED IN SAMPLE
803	N	N/A	N/A

HICKORY ST.

ADDRESS	SAMPLE TAKEN Y/N?	COLOR	NOTES
205	N	N/A	NO WATER SERVICE
207	N	N/A	NO WATER SERVICE
209	Y	LY	
301	Y	CL	DEBRIS OBSERVED IN SAMPLE
303	N	N/A	NO WATER SERVICE
305	Y	CL	
307	N	N/A	NO WATER SERVICE
204	Y	CL	
302	Y	LB	DIRT
304	Y	CL	DEBRIS OBSERVED IN SAMPLE

308 N N/A NO WATER SERVICE

ALICE ST.

ADDRESS	SAMPLE TAKEN Y/N?	COLOR	NOTES
1014	Y	LB	DEBRIS
1004	Y	LY	THICK, MISTY
910	Y	CL	
806	Y	CL	
1105	Y	LY	
1009	Y	CL	
1003	Y	LY	THICK, MISTY, STRANGE ODOR
917	Y	CL	

ESTELLE ST.

ADDRESS	SAMPLE TAKEN Y/N?	COLOR	NOTES
1101	Y	CL	DEBRIS
1103	Y	CL	
1105	Y	CL	
1109	Y	BRN	STARTS DARK BROWN, ENDS LY
1102	Y	CL	
1104	Y	BL	
1106	Y	LY	
1110	N	N/A	

OAK ST. FROM 3RD TO AVE A.

ADDRESS	SAMPLE TAKEN Y/N?	COLOR	NOTES
SR. BUILDING	Y	LY	LY WITH DEBRIS
POLICE	Y	CL	HARDLY EVER OBSERVES COLORATION
28	Y	LY	DEBRIS
207	Y	LY	DEBRIS

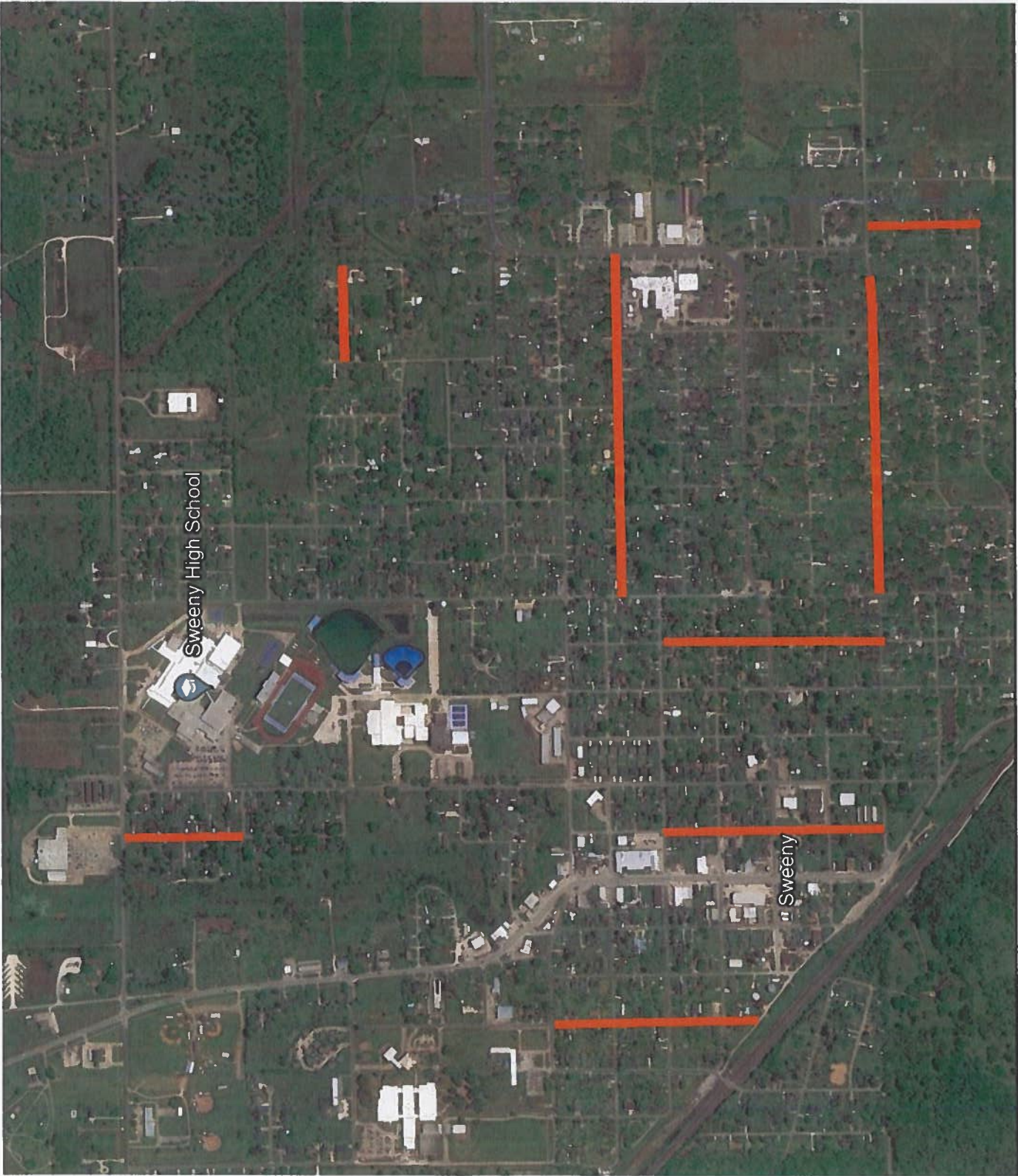
SYCAMORE ST.

ADDRESS	SAMPLE TAKEN Y/N?	COLOR	NOTES
223	Y	CL	RESIDENT OBSERVED BROWN DURING FREEZE
301	Y	CL	RESIDENT SAID USUALLY 1X/MO WATER BRN
311	Y	LY	RESIDENT OBSERVES BRN WTR DAILY
401	N	N/A	
403	Y	CL	DEBRIS
411	Y	LY	DEBRIS, RESIDENT OBSERVES RUSTY COOLOR WTR DAILY, DURING HEAVY RAIN, FREEZE WAS WORSE
503	Y	LY	DEBRIS
505	N	N/A	ABANDONED
509	Y	CL	DEBRIS
513	Y	LY	DEBRIS
208	Y	CL	RESIDENTS OBSERVES YW WTR
306	Y	LB	DEBRIS
308	N	N/A	
310	Y	CL	
402	N	N/A	

408	N	N/A	
412	Y	CL	DEBRIS
504	Y	LY	DEBRIS
510	Y	DY	DEBRIS
512	Y	CL	

MAC DRIVE

ADDRESS	SAMPLE TAKEN Y/N?	COLOR	NOTES
1007	N	N/A	
1009	Y	LB	
1101	N	N/A	
1103	Y	CL	
1105	Y	CL	DEBRIS
1107	Y	CL	DEBRIS
1008	Y	LY	
1102	Y	DB	
1104	Y	CL	
1108	Y	LY	THICK, MISTY, DEBRIS





**CITY OF SWEENEY
OFFICE OF THE MAYOR**

Through the pen and the sword, Texans fought for independence from a government in Mexico that denied its citizens freedom and justice. While delegates gathered at Washington-on-the-Brazos on March 2, 1836, to sign the Texas Declaration of Independence, brave defenders continued fighting, many making the ultimate sacrifice and securing independence at the Battle of San Jacinto.

As those delegates declared 185 years ago, when a government ceases to protect the lives, liberty, and property of the people from whom its power is derived, that government becomes an instrument of oppression and must be abolished.

In the fall of 1835 at Gonzales, Texans of all backgrounds banded together to fight for the cause of liberty. Throughout the revolution, many heroic Texans were lost, most notably at the Alamo and Presidio La Bahia in Goliad, but their sacrifices were not in vain and served as a rallying cry for the Texian forces under General Sam Houston. Texas forces defeated Santa Anna at the Battle of San Jacinto on April 21, 1836, declaring victory and securing freedom for the Republic of Texas.

The vision of freedom set down by our founders in the Texas Declaration of Independence lives on in the Texas spirit today. As we continue building Texas, we must always remember how the sacrifices of past generations build the future for the next.

Therefore, I, Dusty Hopkins, Mayor of Sweeny, do hereby proclaim March 2nd, 2024, to be

Texas Independence Day

in Sweeny and urge the appropriate recognition whereof.

In official recognition whereof, I hereby affix my signature this the 20th day of February, 2024.

Mayor Dusty Hopkins



**CITY OF SWEENY
OFFICE OF THE MAYOR**

On March 29, 2012, President Barack Obama proclaimed this day as Vietnam Veterans Day to commemorate the 50-year anniversary of the Vietnam War. On March 28, 2017, President Donald Trump signed the Vietnam War Veterans Recognition Act of 2017 which officially recognizes March 29 as National Vietnam War Veterans Day.

Texas has always been willing to answer the call of Armed Forces to fight for the freedoms that our country stands for; the Vietnam War was no exception. In a time of social and political unrest, the members of our armed forces took on the task and gave themselves to the duty at hand. For this, we owe Vietnam veterans the utmost respect and should recognize the courage of our service members.

Many residents of our great city served during Vietnam and there were some that paid the ultimate price. Marine Lance Corporal Rockne Lamar Hardwick and Marine Private First-Class Frank Levi Swinford, III are memorialized for their sacrifice at the Vietnam Veterans Memorial in Washington, D.C.

At this time, I encourage my fellow citizens to learn more about the sacrifices and struggles of our Vietnam veterans and honor what they have done for us.

Therefore, I, Dusty Hopkins, Mayor of Sweeny, do hereby proclaim March 29th, 2024, to be

National Vietnam War Veterans Day

in Sweeny and urge the appropriate recognition whereof.

In official recognition whereof, I hereby affix my signature this the 20th day of February, 2024.

Mayor Dusty Hopkins



**CITY OF SWEENY
OFFICE OF THE MAYOR**

Behind every great man, is a great woman. A homage to the mothers, wives, daughters and sisters that help us strive to better each and every day.

The American spirit of grit and ingenuity is renowned throughout the world. From the founding of this great nation to the present, Americans continuously seek to create new inventions and reach new heights. Texas women have strongly contributed to this legacy.

Texas is home to many women who have shaped the legacy of our great state. And as such, our town of Sweeny has seen many great women grace our City and their efforts to build and continue a legacy of Pride in our great City.

From Sweeny's first female City Administrator, Exa Mae Keller, to our first female Mayor Vivian Brooks. These ladies helped pave the way for others to be involved in our town and lead and leave a legacy that we can be proud of for years to come.

At this time, I encourage my fellow citizens to join me in honoring the women of the Lone Star State by supporting their work and recognizing their accomplishments.

Therefore, I, Dusty Hopkins, Mayor of Sweeny Texas, do hereby proclaim March 2024, to be

Women's History Month

in Sweeny and urge the appropriate recognition whereof.

In official recognition whereof, I hereby affix my signature this the 20th day of February 2024.

Mayor Dusty Hopkins



AGENDA MEMO

Business of the City Council

City of Sweeny, Texas

Meeting Date	2/20/2024	Agenda Item	
Approved by City Manager	Yes	Presenter(s)	Administration / Finance
Reviewed by City Attorney	No	Department	Utility Billing
Subject	Discussion and possible action on a billing complaint from resident located at		
Attachments	1) Statement of Events – Utility Billing Manager 2) Statement of Events – Public Works Director 3) Supporting documentation		
Financial Information	Expenditure Required:	N/A	
	Amount Budgeted:	N/A	
	Account Number:		
	Additional Appropriation Required:		
	Additional Account Number:		

Executive Summary

Beginning in October 2023, City Manager, L. Koskiniemi was notified by City Hall staff of a customer billing complaint located at 1621 Milian Circle. Customer, V. Milian, contacted L. Koskiniemi via cell phone while attending a training session in McKinny, TX. L. Koskiniemi requested staff to make an adjustment to the bill until the matter could be investigated further.

Higher usage was initially observed in September 2023 through a routine usage audit conducted by the Utility Billing Manager. Public Works investigated the usage and determined there was a leak on the customer’s line – a line that ran across other properties. Said line was capped and a new line installed running to the customer’s home directly from the main water line (See attached map).

City staff have responded to several complaints from V. Milian since initiating contact with the customer concerning usage subsequent to the consumption audit in September 2023 provided in the back up documentation. In response to the complaints, staff has completed the following at the City’s expense:

- Provided a one-time billing adjustment of \$94.68 (October 2023)
- Completed 2 meter change-out’s amounting to \$381.34
- Completed a module change out amounting to \$157.40
- Made several on site visits to diagnose, troubleshoot, and replace parts to remove any /all variables.

Customer stated, “I want to be reimbursed for any amounts that are over my average usage from January-August 2023.” (page 12/19, attached document).

Staff has continued to monitor the usage on this account. According to staff statement of events, the most recent meter and register change-out occurred on January 19, 2024, and more comparative data will be available at the end of the current billing cycle.



AGENDA MEMO

Business of the City Council

City of Sweeny, Texas

Recommended Action

Utility usage is variable at all times. Comparing an average use from one period of time to the next is not a fair representation of usage. For example, a customer may have higher usage for several reasons: toilet leak, drought, filling a pool, guests, etc.

An average usage is not a static measurement. That's why it is an average of several different numbers. If a meter registers usage, the customer used the water whether they used more water one month and less the next month.

Staff has done what it possible to resolve the complaint and has found no other variables that can be addressed. For these reasons, staff has found no compelling reason to honor the customer's request to reimburse for 6 months of usage to make the monthly payment an average from a different time.

It is the professional opinion of staff that honoring a request to reimburse a customer to a forced average amount without supporting data indicating a failure on the City would set a precedent that any account user could make a request for reimbursement of utility fees when utilities were used.

Staff does not recommend Council approve this request.



CITY OF SWEENY

102 W. Ashley Wilson Rd. • PO Box 248 • Sweeny, Texas 77480 • P: (979) 548-3321 • F: (979) 548-7745

The following will be used to request an item to be placed on the agenda with the Sweeny City Council.

Personal Information:

Name: Vicki Milian

Mailing Address: [Redacted] Sweeny, TX 77480

Physical Address: (Same)

Email(s): [Redacted]

Phone(s): [Redacted]

Please include specific details of the item you wish to be placed on the agenda.

Water billing for usage is incorrect.

Signature: [Redacted] Date: 2/5/24

Requests must be received by the City Manager by close of business 10 days prior to the scheduled meeting date for placement. Administration and/or their designee reserves the right to delay the item to the following regularly scheduled meeting if it is determined that more time is needed in order to compile information specific to the request.

Once Council has acted on an agenda item; that item cannot be placed on the agenda for a period of six (6) full months. Exception is provided if three members of Council ask that the item be returned early to the agenda, or the Mayor or City Manager determines it is in the interest of the City to do so.

RECEIVED
 1:00pm
 02/05/2024, mm

If there is a wa leak agreement form signed, it has to be signed by the person listed.

Consumption Audit

Item 4.

	[Redacted]	WA	[Redacted]	9902	010032 WA
*	[Redacted]	WA	[Redacted]	5106	005128 WA 0.5
*	Signed [Redacted]	WA	[Redacted]	1383	001442 WA ? 0.5
	[Redacted]	WA	[Redacted]	1476	001472 WA
	[Redacted]	WA	[Redacted]	1805	001809 WA
	Signed Vicki Milian 1621 Milian Circle	WA	[Redacted]	4572	~1gal/min 004606 WA 0.0-1.0
	[Redacted]	WA	[Redacted]	1460	001464 WA
	[Redacted]	WA	[Redacted]	5860	005868 WA
	[Redacted]	WA	[Redacted]	3808	003839 WA
	Signed [Redacted]	WA	[Redacted]	3290	Display damaged mostly readable 003324 WA ? 0.3?
	[Redacted]	WA	[Redacted]	4772	004783 WA
	[Redacted]	WA	[Redacted]	3233	003242 WA



979-487-9651

City of Sweeny

P.O. BOX 248 ★ 102 W. ASHLEY WILSON RD.★ SWEENY, TEXAS 77480

(979) 548-3321 ★ FAX (979) 548-7745

KJ 10/12/23

POSTED

Date 9/24/23

The City of Sweeny has detected a water leak on your property.

By signing this agreement, you are taking responsibility for any and all charges that will incur with the excessive water usage in leaving the services connected. Those charges will reflect on your monthly city utility bill.

Address : 1621 Milian Circle

Vicki Milian

Resident's Signature

Vicki Milian

Resident's Printed Name

Shea Rubin

Department of Public Works Signature

Status: Closed Priority: Yes

Submitted By	Phone	Email	Address
Kyli Jones		utilitybilling@sweenytx.gov	102 W. Ashley Wilson Rd

Type	Area	Room	Class	Assigned To
WATER		1621 Milian Circle		

Asset	GL Code	Transaction Vendor	Amount \$	Assigned Vendor

Date Created	Date Modified	Resolution	Duration
09/27/2023 1.48 PM	09/27/2023 3.28 PM	0 Days 1Hrs 40Mins	0Hrs 0 Mins

Comments:

Attn: Shea

Vicki Milian
1621 Milian Circle
Wa M# [REDACTED] LR@4572

Check if flow rate is still there, and if so Can you please go to her house and try to help pin point where the leak could possibly be coming from. She mentioned turning the water off at the house and seeing if the flow stops or not because she has a really large service line.

Notes:

Water was shut off at the house, water meter/module still showed flow. Water turned back on at house Shea Welman Wed Sep 27 15:28:46 CDT 2023

Status: Closed Priority: Yes

Submitted By	Phone	Email	Address
Jennifer Miller		jnmiller@sweenytx.gov	102 W. Ashley Wilson Rd

Type	Area	Room	Class	Assigned To
WATER		1621 Millian Circle		

Asset	GL Code	Transaction Vendor	Amount \$	Assigned Vendor

Date Created	Date Modified	Resolution	Duration
10/11/2023 11.48 AM	10/16/2023 11.30 AM	5 Days 23Hrs 42Mins	0Hrs 0 Mins

Comments:

Attn : Shea
 Vicky Millian would like to be called at [REDACTED] regarding water line locate she called into 811. she said she has some questions she would like to ask . She provided a ticket # 2378236927

Notes:

Tex spoke with resident, at residence, on Thursday 10/12.

I've called her multiple times today. Left a voicemail message each time. Resident keeps insisting that it is the City's responsibility to mark her private property water line, between her house and the meter, on her private property. I have explained multiple times over the phone and in person that the City can only mark the utility lines that they own. Our ownership stops at the meter. Anything beyond the meter is her private property. Shea Welman Wed Oct 11 13:22:47 CDT 2023

1131

LC KW 3 People

hey can you help with going on...

Lindsay COS

Vicki Milian does not have a pool. Kyli, can you please pull her billing history for the last three months, take the average, and adjust current billing for that?

LC Please let me know the amount too

Okay, we adjust the sewer portion only for leaks and Milian circle has their own septics so they aren't being charged sewer. Are you wanting me to adjust their water?

Lindsay COS

LC Yes please

Okay, average over the last three months to be adjusted is \$94.68

Lindsay COS

She told me her bill is normally \$40/mo

LC 🙄

I'm sorry but that is not true. I've looked back all the way to 2020 and she has never had a bill below \$65.

Lindsay COS

LC Perfect, thank you for researching that. Numbers don't lie!

Adjustment

DATE: 02/05/2024
 TIME: 12:47:06
 USER: Admin - 1

CUSTOMER FINANCIAL SUMMARY
 CITY OF SWEENEY

For - VICKI MILLIAN - From 01/29/2024 To 02/13/2023

Posting Date	Type	Charge Amount	Penalty Amount	Tax Amount	Pay Plan Amount	Transaction Amount	Arrears Plus Added Penalty	Balance
01/31/2024	Bill	\$301.27	\$0.00	\$1.78	\$0.00	\$303.05	\$0.00	\$303.05
01/11/2024	Pay	\$229.20	\$0.00	\$1.61	\$0.00	\$230.81	\$230.81	\$0.00
12/31/2023	Bill	\$229.20	\$0.00	\$1.61	\$0.00	\$230.81	\$0.00	\$230.81
12/12/2023	Pay	\$203.14	\$0.00	\$1.61	\$0.00	\$204.75	\$204.75	\$0.00
11/30/2023	Bill	\$203.14	\$0.00	\$1.61	\$0.00	\$204.75	\$0.00	\$204.75
11/13/2023	Pay	\$34.23	\$0.00	\$1.61	\$0.00	\$35.84	\$35.84	\$0.00
10/31/2023	Bill	\$128.91	\$0.00	\$1.61	\$0.00	\$130.52	\$-94.68	\$35.84
10/23/2023	Adj	\$-94.68	\$0.00	\$0.00	\$0.00	\$-94.68	\$0.00	\$-94.68
10/10/2023	Pay	\$219.53	\$0.00	\$1.61	\$0.00	\$221.14	\$221.14	\$0.00
09/30/2023	Bill	\$219.53	\$0.00	\$1.61	\$0.00	\$221.14	\$0.00	\$221.14
09/11/2023	Pay	\$105.87	\$0.00	\$1.61	\$0.00	\$107.48	\$107.48	\$0.00
08/31/2023	Bill	\$105.87	\$0.00	\$1.61	\$0.00	\$107.48	\$0.00	\$107.48
08/10/2023	Pay	\$82.80	\$0.00	\$1.61	\$0.00	\$84.41	\$84.41	\$0.00
07/31/2023	Bill	\$82.80	\$0.00	\$1.61	\$0.00	\$84.41	\$0.00	\$84.41
07/10/2023	Pay	\$76.77	\$0.00	\$1.61	\$0.00	\$78.38	\$78.38	\$0.00
06/30/2023	Bill	\$76.77	\$0.00	\$1.61	\$0.00	\$78.38	\$0.00	\$78.38
06/12/2023	Pay	\$72.03	\$0.00	\$1.61	\$0.00	\$73.64	\$73.64	\$0.00
05/31/2023	Bill	\$79.87	\$0.00	\$1.61	\$0.00	\$81.48	\$-7.84	\$73.64
05/02/2023	Pay	\$89.65	\$0.00	\$1.61	\$0.00	\$91.26	\$83.42	\$-7.84
04/30/2023	Bill	\$81.81	\$0.00	\$1.61	\$0.00	\$83.42	\$0.00	\$83.42
04/10/2023	Pay	\$95.78	\$0.00	\$1.61	\$0.00	\$97.39	\$97.39	\$0.00
03/31/2023	Bill	\$95.78	\$0.00	\$1.61	\$0.00	\$97.39	\$0.00	\$97.39
03/13/2023	Pay	\$214.79	\$0.00	\$1.61	\$0.00	\$216.40	\$216.40	\$0.00
02/28/2023	Bill	\$214.79	\$0.00	\$1.61	\$0.00	\$216.40	\$0.00	\$216.40
02/10/2023	Pay	\$200.64	\$0.00	\$1.61	\$0.00	\$202.25	\$202.25	\$0.00

Task # 27267572

Item 4.

City of Sweeny
102 W. Ashley Wilson Rd, Sweeny, TX

Status: Closed Priority: Yes

Submitted By	Phone	Email	Address
Kyli Jones		utilitybilling@sweenytx.gov	102 W. Ashley Wilson Rd

Type	Area	Room	Class	Assigned To
WATER		1621 Milian Cir		

Asset	GL Code	Transaction Vendor	Amount \$	Assigned Vendor

Date Created	Date Modified	Resolution	Duration
11/01/2023 9:36 AM	11/09/2023 11:01 AM	8 Days 1 Hrs 24 Mins	0 Hrs 0 Mins

Comments:

1621 Milian Circle has paid their water tap fee.

Notes:

water tap installed just need to go back and finish covering around meter box left it open for the plumbers to tap there side into our meter Jody Simmons Thu Nov 09 11:01:26 CST 2023

W M# [REDACTED] UID# [REDACTED] LR@4683

Old water meter # [REDACTED]

New water meter # [REDACTED]

Service line inspection approved by plumbing inspector 11/3/2023 9AM= eligible for connection and water to be turned on

Status: Closed Priority: Yes

Submitted By	Phone	Email	Address
Kyli Jones		utilitybilling@sweenytx.gov	102 W. Ashley Wilson Rd

Type	Area	Room	Class	Assigned To
WATER		1621 Milian Circle		

Asset	GL Code	Transaction Vendor	Amount \$	Assigned Vendor

Date Created	Date Modified	Resolution	Duration
01/03/2024 2.01 PM	01/03/2024 3.16 PM	0 Days 1 Hrs 15 Mins	0 Hrs 0 Mins

Comments:

Attn: Courtlyn

1621 Milian Circle - Questioning high bill
 Brand new line and meter put in not too long ago due to a leak and the bill amount hasn't gone down. Please check meter for any signs of a leak or flow rate and provide reading
 WA M: [REDACTED] UID# [REDACTED] LR@5022

Notes:

Water 512766no water leak detected Courtlyn Davidson Wed Jan 03 15:16:48 CST 2024

Task # 28129423

City of Sweeny
102 W. Ashley Wilson Rd, Sweeny, TX

Status: Closed Priority: Yes

Submitted By	Phone	Email	Address
Jennifer Miller		jnmiller@sweenytx.gov	102 W. Ashley Wilson Rd

Type	Area	Room	Class	Assigned To
WATER		1621 Millian Circle		

Asset	GL Code	Transaction Vendor	Amount \$	Assigned Vendor

Date Created	Date Modified	Resolution	Duration
01/05/2024 10.42 AM	01/11/2024 9.35 AM	6 Days 22Hrs 53Mins	0Hrs 0 Mins

Comments:

Attn : Tex

Please make contact with Vicki Millian to schedule a time to meet with her. She would like you to check her meter and has some questions about her new water line .
Vicki Millian - 1621 Millian Circle [REDACTED]

Notes:

we'll b out to change meter next Tuesday Courtlyn Davidson Thu Jan 11 09:35:55 CST 2024

Task # 28336090

City of Sweeny
102 W. Ashley Wilson Rd, Sweeny, TX

Status: Closed Priority: No

Submitted By	Phone	Email	Address
Kyli Jones		utilitybilling@sweenytx.gov	102 W. Ashley Wilson Rd

Type	Area	Room	Class	Assigned To
REGISTER		1621 Milian Cir		

Asset	GL Code	Transaction Vendor	Amount \$	Assigned Vendor

Date Created	Date Modified	Resolution	Duration
01/19/2024 2.34 PM	01/19/2024 2.34 PM	0 Days 0 Hrs 0 Mins	0 Hrs 0 Mins

Comments:

1621 Milian Cir. Meter and Module change out.

Notes:

WATER

Old M# [REDACTED]
New M# [REDACTED]

Old UID# [REDACTED]
New UID# [REDACTED]

Rdg - 520571

City of Sweeny Utility Billing

From: Lindsay Koskiniemi
Sent: Friday, January 19, 2024 7:30 AM
To: Terrence Bell; City of Sweeny Utility Billing
Subject: Fwd: Water Meter

Email from C. Milian I referenced in earlier email.

Get [Outlook for iOS](#)

From: Lindsay Koskiniemi <citymanager@sweenytx.gov>
Sent: Thursday, January 18, 2024 10:39 AM
To: Karla Wilson <kwwilson@sweenytx.gov>; City of Sweeny Utility Billing <utilitybilling@sweenytx.gov>
Subject: FW: Water Meter

Hi Ladies,

I am running out to the sewer plant, and when I get back, let's discuss this.

Thanks,

Lindsay Koskiniemi, CGFO, CPM, MPA, MSA
City Manager
Office 979-548-3321
Sweeny City Hall | 102 W. Ashley Wilson Rd. | Sweeny, TX 77480

-----Original Message-----

From: Vickimilian <[REDACTED]>
Sent: Thursday, January 18, 2024 10:06 AM
To: Lindsay Koskiniemi <citymanager@sweenytx.gov>
Subject: Water Meter

I just left the office after speaking with the Utilities Director.
She told me to reach out to you about a credit for the last 2 billing cycles.

She also said they would be replacing the new meter with additional new parts to see if that resolves the problem.
We have been dealing with this since October!
After spending \$6000 to completely replace a water line, I am now questioning if it was ever really broken, as my water charges have changed only a little.
My husband and I average around 40-50 gallons, and the last two readings were 177 and 162.

The usage of 219 when the line was supposedly broken, even though there was no evidence anywhere other than the meter running, and then the "improved" reading of 111, after the line replacement, still indicates twice the normal usage. And that's with no leak.

Tex came to inspect the new meter and verified it was no longer indicating any leak. It was not running.
There is no way these readings are correct. You can pull up my records for many years and easily see this.

I have lived in Sweeny 30+ years and never had a problem like this.

I want to be reimbursed for any amounts that are over my average usage from January-August, 2023.

If the problem is not corrected this billing cycle, I will remove Auto Pay and wait to pay after the problem is resolved moving forward.

I appreciate your serious attention and rapid response to this problem.

Vicki Milian

24 months Detailed History

DATE: 02/06/2024

TIME: 09:15:44

USER: Admin - 1

CUSTOMER FINANCIAL DETAIL

CITY OF SWEENEY

PAGE

INQUIRY

Item 4.

For - VICKI MILIAN - From 01/31/2024 To 02/12/2022

Account Number - [REDACTED]

Service	Posting Date	Type	Check No	Cons	Charge Amount	Penalty Amount	Tax Amount	Pay Plan Amount	Total
WA	01/31/2024	Bill		176	\$142.07	\$0.00	\$0.00	\$0.00	\$142.07
GA	01/31/2024	Bill		130	\$132.63	\$0.00	\$0.00	\$0.00	\$132.63
GB	01/31/2024	Bill			\$21.57	\$0.00	\$1.78	\$0.00	\$23.35
FD	01/31/2024	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	01/31/2024	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 01/31/2024					\$301.27	\$0.00	\$1.78	\$0.00	\$303.05
WA	01/11/2024	Pay			\$130.61	\$0.00	\$0.00	\$0.00	\$130.61
GA	01/11/2024	Pay			\$74.11	\$0.00	\$0.00	\$0.00	\$74.11
GB	01/11/2024	Pay			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	01/11/2024	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	01/11/2024	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 01/11/2024					\$229.20	\$0.00	\$1.61	\$0.00	\$230.81
WA	12/31/2023	Bill		162	\$130.61	\$0.00	\$0.00	\$0.00	\$130.61
GA	12/31/2023	Bill		66	\$74.11	\$0.00	\$0.00	\$0.00	\$74.11
GB	12/31/2023	Bill			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	12/31/2023	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	12/31/2023	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 12/31/2023					\$229.20	\$0.00	\$1.61	\$0.00	\$230.81
WA	12/12/2023	Pay			\$142.89	\$0.00	\$0.00	\$0.00	\$142.89
GA	12/12/2023	Pay			\$35.77	\$0.00	\$0.00	\$0.00	\$35.77
GB	12/12/2023	Pay			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	12/12/2023	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	12/12/2023	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 12/12/2023					\$203.14	\$0.00	\$1.61	\$0.00	\$204.75
WA	11/30/2023	Bill		177	\$142.89	\$0.00	\$0.00	\$0.00	\$142.89
GA	11/30/2023	Bill		25	\$35.77	\$0.00	\$0.00	\$0.00	\$35.77
GB	11/30/2023	Bill			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	11/30/2023	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	11/30/2023	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 11/30/2023					\$203.14	\$0.00	\$1.61	\$0.00	\$204.75
WA	11/13/2023	Pay			\$-5.84	\$0.00	\$0.00	\$0.00	\$-5.84
GA	11/13/2023	Pay			\$15.59	\$0.00	\$0.00	\$0.00	\$15.59
GB	11/13/2023	Pay			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	11/13/2023	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	11/13/2023	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 11/13/2023					\$34.23	\$0.00	\$1.61	\$0.00	\$35.84
WA	10/31/2023	Bill		111	\$88.84	\$0.00	\$0.00	\$0.00	\$88.84
GA	10/31/2023	Bill		6	\$15.59	\$0.00	\$0.00	\$0.00	\$15.59
GB	10/31/2023	Bill			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	10/31/2023	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	10/31/2023	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 10/31/2023					\$128.91	\$0.00	\$1.61	\$0.00	\$130.52
WA	10/23/2023	Adj			\$-94.68	\$0.00	\$0.00	\$0.00	\$-94.68
Total Adj For 10/23/2023					\$-94.68	\$0.00	\$0.00	\$0.00	\$-94.68
WA	10/10/2023	Pay			\$177.46	\$0.00	\$0.00	\$0.00	\$177.46
GA	10/10/2023	Pay			\$17.59	\$0.00	\$0.00	\$0.00	\$17.59
GB	10/10/2023	Pay			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	10/10/2023	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	10/10/2023	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 10/10/2023					\$219.53	\$0.00	\$1.61	\$0.00	\$221.14

DATE: 02/06/2024
 TIME: 09:15:44
 USER: Admin - 1

CUSTOMER FINANCIAL DETAIL
 CITY OF SWEENEY

For - VICKI MILIAN - From 01/31/2024 To 02/12/2022

Account Number - XXXXXXXXXX

Service	Posting Date	Type	Check No	Cons	Charge Amount	Penalty Amount	Tax Amount	Pay Plan Amount	Total
WA	09/30/2023	Bill		219	\$177.46	\$0.00	\$0.00	\$0.00	\$177.46
GA	09/30/2023	Bill		8	\$17.59	\$0.00	\$0.00	\$0.00	\$17.59
GB	09/30/2023	Bill			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	09/30/2023	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	09/30/2023	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 09/30/2023					\$219.53	\$0.00	\$1.61	\$0.00	\$221.14
WA	09/11/2023	Pay			\$65.91	\$0.00	\$0.00	\$0.00	\$65.91
GA	09/11/2023	Pay			\$15.48	\$0.00	\$0.00	\$0.00	\$15.48
GB	09/11/2023	Pay			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	09/11/2023	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	09/11/2023	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 09/11/2023					\$105.87	\$0.00	\$1.61	\$0.00	\$107.48
WA	08/31/2023	Bill		83	\$65.91	\$0.00	\$0.00	\$0.00	\$65.91
GA	08/31/2023	Bill		6	\$15.48	\$0.00	\$0.00	\$0.00	\$15.48
GB	08/31/2023	Bill			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	08/31/2023	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	08/31/2023	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 08/31/2023					\$105.87	\$0.00	\$1.61	\$0.00	\$107.48
WA	08/10/2023	Pay			\$40.66	\$0.00	\$0.00	\$0.00	\$40.66
GA	08/10/2023	Pay			\$17.66	\$0.00	\$0.00	\$0.00	\$17.66
GB	08/10/2023	Pay			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	08/10/2023	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	08/10/2023	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 08/10/2023					\$82.80	\$0.00	\$1.61	\$0.00	\$84.41
WA	07/31/2023	Bill		49	\$40.66	\$0.00	\$0.00	\$0.00	\$40.66
GA	07/31/2023	Bill		8	\$17.66	\$0.00	\$0.00	\$0.00	\$17.66
GB	07/31/2023	Bill			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	07/31/2023	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	07/31/2023	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 07/31/2023					\$82.80	\$0.00	\$1.61	\$0.00	\$84.41
WA	07/10/2023	Pay			\$36.99	\$0.00	\$0.00	\$0.00	\$36.99
GA	07/10/2023	Pay			\$15.30	\$0.00	\$0.00	\$0.00	\$15.30
GB	07/10/2023	Pay			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	07/10/2023	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	07/10/2023	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 07/10/2023					\$76.77	\$0.00	\$1.61	\$0.00	\$78.38
WA	06/30/2023	Bill		44	\$36.99	\$0.00	\$0.00	\$0.00	\$36.99
GA	06/30/2023	Bill		6	\$15.30	\$0.00	\$0.00	\$0.00	\$15.30
GB	06/30/2023	Bill			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	06/30/2023	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	06/30/2023	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 06/30/2023					\$76.77	\$0.00	\$1.61	\$0.00	\$78.38
WA	06/12/2023	Pay			\$28.07	\$0.00	\$0.00	\$0.00	\$28.07
GA	06/12/2023	Pay			\$19.48	\$0.00	\$0.00	\$0.00	\$19.48
GB	06/12/2023	Pay			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	06/12/2023	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	06/12/2023	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 06/12/2023					\$72.03	\$0.00	\$1.61	\$0.00	\$73.64
WA	05/31/2023	Bill		42	\$35.52	\$0.00	\$0.00	\$0.00	\$35.52
GA	05/31/2023	Bill		11	\$19.87	\$0.00	\$0.00	\$0.00	\$19.87
GB	05/31/2023	Bill			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	05/31/2023	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	05/31/2023	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 05/31/2023					\$79.87	\$0.00	\$1.61	\$0.00	\$81.48

DATE: 02/06/2024
 TIME: 09:15:44
 USER: Admin - 1

CUSTOMER FINANCIAL DETAIL

CITY OF SWEENEY

For - VICKI MILIAN - From 01/31/2024 To 02/12/2022

Account Number - XXXXXXXXXX

Service	Posting Date	Type	Check No	Cons	Charge Amount	Penalty Amount	Tax Amount	Pay Plan Amount	Total
WA	05/02/2023	Pay	1469		\$45.17	\$0.00	\$0.00	\$0.00	\$45.17
GA	05/02/2023	Pay			\$20.00	\$0.00	\$0.00	\$0.00	\$20.00
GB	05/02/2023	Pay			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	05/02/2023	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	05/02/2023	Pay			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 05/02/2023					\$89.65	\$0.00	\$1.61	\$0.00	\$91.26
WA	04/30/2023	Bill		45	\$37.72	\$0.00	\$0.00	\$0.00	\$37.72
GA	04/30/2023	Bill		11	\$19.61	\$0.00	\$0.00	\$0.00	\$19.61
GB	04/30/2023	Bill			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	04/30/2023	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	04/30/2023	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 04/30/2023					\$81.81	\$0.00	\$1.61	\$0.00	\$83.42
WA	04/10/2023	Pay			\$39.19	\$0.00	\$0.00	\$0.00	\$39.19
GA	04/10/2023	Pay			\$32.11	\$0.00	\$0.00	\$0.00	\$32.11
GB	04/10/2023	Pay			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	04/10/2023	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	04/10/2023	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 04/10/2023					\$95.78	\$0.00	\$1.61	\$0.00	\$97.39
WA	03/31/2023	Bill		47	\$39.19	\$0.00	\$0.00	\$0.00	\$39.19
GA	03/31/2023	Bill		23	\$32.11	\$0.00	\$0.00	\$0.00	\$32.11
GB	03/31/2023	Bill			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	03/31/2023	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	03/31/2023	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 03/31/2023					\$95.78	\$0.00	\$1.61	\$0.00	\$97.39
WA	03/13/2023	Pay			\$56.83	\$0.00	\$0.00	\$0.00	\$56.83
GA	03/13/2023	Pay			\$133.48	\$0.00	\$0.00	\$0.00	\$133.48
GB	03/13/2023	Pay			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	03/13/2023	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	03/13/2023	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 03/13/2023					\$214.79	\$0.00	\$1.61	\$0.00	\$216.40
WA	02/28/2023	Bill		71	\$56.83	\$0.00	\$0.00	\$0.00	\$56.83
GA	02/28/2023	Bill		128	\$133.48	\$0.00	\$0.00	\$0.00	\$133.48
GB	02/28/2023	Bill			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	02/28/2023	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	02/28/2023	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 02/28/2023					\$214.79	\$0.00	\$1.61	\$0.00	\$216.40
WA	02/10/2023	Pay			\$63.45	\$0.00	\$0.00	\$0.00	\$63.45
GA	02/10/2023	Pay			\$112.71	\$0.00	\$0.00	\$0.00	\$112.71
GB	02/10/2023	Pay			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	02/10/2023	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	02/10/2023	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 02/10/2023					\$200.64	\$0.00	\$1.61	\$0.00	\$202.25
WA	01/31/2023	Bill		80	\$63.45	\$0.00	\$0.00	\$0.00	\$63.45
GA	01/31/2023	Bill		85	\$112.71	\$0.00	\$0.00	\$0.00	\$112.71
GB	01/31/2023	Bill			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	01/31/2023	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	01/31/2023	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 01/31/2023					\$200.64	\$0.00	\$1.61	\$0.00	\$202.25
WA	01/12/2023	Pay			\$60.51	\$0.00	\$0.00	\$0.00	\$60.51
GA	01/12/2023	Pay			\$55.05	\$0.00	\$0.00	\$0.00	\$55.05
GB	01/12/2023	Pay			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	01/12/2023	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	01/12/2023	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 01/12/2023					\$140.04	\$0.00	\$1.61	\$0.00	\$141.65

DATE: 02/06/2024
 TIME: 09:15:44
 USER: Admin - 1

CUSTOMER FINANCIAL DETAIL
 CITY OF SWEENEY

For - VICKI MILIAN - From 01/31/2024 To 02/12/2022

Account Number - XXXXXXXXXX

Service	Posting Date	Type	Check No	Cons	Charge Amount	Penalty Amount	Tax Amount	Pay Plan Amount	Total
WA	12/31/2022	Bill		76	\$60.51	\$0.00	\$0.00	\$0.00	\$60.51
GA	12/31/2022	Bill		31	\$55.05	\$0.00	\$0.00	\$0.00	\$55.05
GB	12/31/2022	Bill			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	12/31/2022	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	12/31/2022	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 12/31/2022					\$140.04	\$0.00	\$1.61	\$0.00	\$141.65
WA	12/13/2022	Pay			\$106.04	\$0.00	\$0.00	\$0.00	\$106.04
GA	12/13/2022	Pay			\$32.61	\$0.00	\$0.00	\$0.00	\$32.61
GB	12/13/2022	Pay			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	12/13/2022	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	12/13/2022	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 12/13/2022					\$163.13	\$0.00	\$1.61	\$0.00	\$164.74
WA	11/30/2022	Bill		132	\$106.04	\$0.00	\$0.00	\$0.00	\$106.04
GA	11/30/2022	Bill		18	\$32.61	\$0.00	\$0.00	\$0.00	\$32.61
GB	11/30/2022	Bill			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	11/30/2022	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	11/30/2022	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 11/30/2022					\$163.13	\$0.00	\$1.61	\$0.00	\$164.74
WA	11/14/2022	Pay			\$60.51	\$0.00	\$0.00	\$0.00	\$60.51
GA	11/14/2022	Pay			\$23.35	\$0.00	\$0.00	\$0.00	\$23.35
GB	11/14/2022	Pay			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	11/14/2022	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	11/14/2022	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 11/14/2022					\$108.34	\$0.00	\$1.61	\$0.00	\$109.95
WA	10/31/2022	Bill		76	\$60.51	\$0.00	\$0.00	\$0.00	\$60.51
GA	10/31/2022	Bill		10	\$23.35	\$0.00	\$0.00	\$0.00	\$23.35
GB	10/31/2022	Bill			\$19.48	\$0.00	\$1.61	\$0.00	\$21.09
FD	10/31/2022	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	10/31/2022	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 10/31/2022					\$108.34	\$0.00	\$1.61	\$0.00	\$109.95
WA	10/12/2022	Pay			\$38.46	\$0.00	\$0.00	\$0.00	\$38.46
GA	10/12/2022	Pay			\$24.05	\$0.00	\$0.00	\$0.00	\$24.05
GB	10/12/2022	Pay			\$18.55	\$0.00	\$1.53	\$0.00	\$20.08
FD	10/12/2022	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	10/12/2022	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 10/12/2022					\$86.06	\$0.00	\$1.53	\$0.00	\$87.59
WA	09/30/2022	Bill		46	\$38.46	\$0.00	\$0.00	\$0.00	\$38.46
GA	09/30/2022	Bill		8	\$24.05	\$0.00	\$0.00	\$0.00	\$24.05
GB	09/30/2022	Bill			\$18.55	\$0.00	\$1.53	\$0.00	\$20.08
FD	09/30/2022	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	09/30/2022	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 09/30/2022					\$86.06	\$0.00	\$1.53	\$0.00	\$87.59
WA	09/13/2022	Pay			\$72.46	\$0.00	\$0.00	\$0.00	\$72.46
GA	09/13/2022	Pay			\$21.99	\$0.00	\$0.00	\$0.00	\$21.99
GB	09/13/2022	Pay			\$18.55	\$0.00	\$1.53	\$0.00	\$20.08
FD	09/13/2022	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	09/13/2022	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 09/13/2022					\$118.00	\$0.00	\$1.53	\$0.00	\$119.53
WA	08/31/2022	Bill		91	\$72.46	\$0.00	\$0.00	\$0.00	\$72.46
GA	08/31/2022	Bill		7	\$21.99	\$0.00	\$0.00	\$0.00	\$21.99
GB	08/31/2022	Bill			\$18.55	\$0.00	\$1.53	\$0.00	\$20.08
FD	08/31/2022	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	08/31/2022	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 08/31/2022					\$118.00	\$0.00	\$1.53	\$0.00	\$119.53

DATE: 02/06/2024
 TIME: 09:15:44
 USER: Admin - 1

CUSTOMER FINANCIAL DETAIL

CITY OF SWEENEY

For - VICKI MILIAN - From 01/31/2024 To 02/12/2022

Account Number - XXXXXXXXXX

Service	Posting Date	Type	Check No	Cons	Charge Amount	Penalty Amount	Tax Amount	Pay Plan Amount	Total
WA	08/12/2022	Pay			\$68.36	\$0.00	\$0.00	\$0.00	\$68.36
GA	08/12/2022	Pay			\$24.79	\$0.00	\$0.00	\$0.00	\$24.79
GB	08/12/2022	Pay			\$18.55	\$0.00	\$1.53	\$0.00	\$20.08
FD	08/12/2022	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	08/12/2022	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 08/12/2022					\$116.70	\$0.00	\$1.53	\$0.00	\$118.23
WA	07/31/2022	Bill		86	\$68.36	\$0.00	\$0.00	\$0.00	\$68.36
GA	07/31/2022	Bill		10	\$24.79	\$0.00	\$0.00	\$0.00	\$24.79
GB	07/31/2022	Bill			\$18.55	\$0.00	\$1.53	\$0.00	\$20.08
FD	07/31/2022	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	07/31/2022	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 07/31/2022					\$116.70	\$0.00	\$1.53	\$0.00	\$118.23
WA	07/12/2022	Pay			\$49.48	\$0.00	\$0.00	\$0.00	\$49.48
GA	07/12/2022	Pay			\$26.02	\$0.00	\$0.00	\$0.00	\$26.02
GB	07/12/2022	Pay			\$18.55	\$0.00	\$1.53	\$0.00	\$20.08
FD	07/12/2022	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	07/12/2022	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 07/12/2022					\$99.05	\$0.00	\$1.53	\$0.00	\$100.58
WA	06/30/2022	Bill		61	\$49.48	\$0.00	\$0.00	\$0.00	\$49.48
GA	06/30/2022	Bill		9	\$26.02	\$0.00	\$0.00	\$0.00	\$26.02
GB	06/30/2022	Bill			\$18.55	\$0.00	\$1.53	\$0.00	\$20.08
FD	06/30/2022	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	06/30/2022	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 06/30/2022					\$99.05	\$0.00	\$1.53	\$0.00	\$100.58
WA	06/14/2022	Pay			\$100.31	\$0.00	\$0.00	\$0.00	\$100.31
GA	06/14/2022	Pay			\$24.01	\$0.00	\$0.00	\$0.00	\$24.01
GB	06/14/2022	Pay			\$18.55	\$0.00	\$1.53	\$0.00	\$20.08
FD	06/14/2022	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	06/14/2022	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 06/14/2022					\$147.87	\$0.00	\$1.53	\$0.00	\$149.40
WA	05/31/2022	Bill		125	\$100.31	\$0.00	\$0.00	\$0.00	\$100.31
GA	05/31/2022	Bill		9	\$24.01	\$0.00	\$0.00	\$0.00	\$24.01
GB	05/31/2022	Bill			\$18.55	\$0.00	\$1.53	\$0.00	\$20.08
FD	05/31/2022	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	05/31/2022	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 05/31/2022					\$147.87	\$0.00	\$1.53	\$0.00	\$149.40
WA	05/14/2022	Pay			\$72.46	\$0.00	\$0.00	\$0.00	\$72.46
GA	05/14/2022	Pay			\$43.31	\$0.00	\$0.00	\$0.00	\$43.31
GB	05/14/2022	Pay			\$18.55	\$0.00	\$1.53	\$0.00	\$20.08
FD	05/14/2022	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	05/14/2022	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 05/14/2022					\$139.32	\$0.00	\$1.53	\$0.00	\$140.85
WA	04/30/2022	Bill		91	\$72.46	\$0.00	\$0.00	\$0.00	\$72.46
GA	04/30/2022	Bill		25	\$43.31	\$0.00	\$0.00	\$0.00	\$43.31
GB	04/30/2022	Bill			\$18.55	\$0.00	\$1.53	\$0.00	\$20.08
FD	04/30/2022	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	04/30/2022	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 04/30/2022					\$139.32	\$0.00	\$1.53	\$0.00	\$140.85
WA	04/12/2022	Pay			\$44.34	\$0.00	\$0.00	\$0.00	\$44.34
GA	04/12/2022	Pay			\$142.53	\$0.00	\$0.00	\$0.00	\$142.53
GB	04/12/2022	Pay			\$18.55	\$0.00	\$1.53	\$0.00	\$20.08
FD	04/12/2022	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	04/12/2022	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 04/12/2022					\$210.42	\$0.00	\$1.53	\$0.00	\$211.95

DATE: 02/06/2024
 TIME: 09:15:44
 USER: Admin - 1

CUSTOMER FINANCIAL DETAIL
 CITY OF SWEENEY

For - VICKI MILIAN - From 01/31/2024 To 02/12/2022

Account Number - XXXXXXXXXX

Service	Posting Date	Type	Check No	Cons	Charge Amount	Penalty Amount	Tax Amount	Pay Plan Amount	Total
WA	03/31/2022	Bill		54	\$44.34	\$0.00	\$0.00	\$0.00	\$44.34
GA	03/31/2022	Bill		111	\$142.53	\$0.00	\$0.00	\$0.00	\$142.53
GB	03/31/2022	Bill			\$18.55	\$0.00	\$1.53	\$0.00	\$20.08
FD	03/31/2022	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	03/31/2022	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 03/31/2022					\$210.42	\$0.00	\$1.53	\$0.00	\$211.95
WA	03/14/2022	Pay			\$48.01	\$0.00	\$0.00	\$0.00	\$48.01
GA	03/14/2022	Pay			\$236.36	\$0.00	\$0.00	\$0.00	\$236.36
GB	03/14/2022	Pay			\$18.55	\$0.00	\$1.53	\$0.00	\$20.08
FD	03/14/2022	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	03/14/2022	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 03/14/2022					\$307.92	\$0.00	\$1.53	\$0.00	\$309.45
WA	02/28/2022	Bill		59	\$48.01	\$0.00	\$0.00	\$0.00	\$48.01
GA	02/28/2022	Bill		158	\$236.36	\$0.00	\$0.00	\$0.00	\$236.36
GB	02/28/2022	Bill			\$18.55	\$0.00	\$1.53	\$0.00	\$20.08
FD	02/28/2022	Bill			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	02/28/2022	Bill			\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Bill For 02/28/2022					\$307.92	\$0.00	\$1.53	\$0.00	\$309.45
WA	02/12/2022	Pay			\$50.22	\$0.00	\$0.00	\$0.00	\$50.22
GA	02/12/2022	Pay			\$127.79	\$0.00	\$0.00	\$0.00	\$127.79
GB	02/12/2022	Pay			\$18.55	\$0.00	\$1.53	\$0.00	\$20.08
FD	02/12/2022	Pay			\$2.00	\$0.00	\$0.00	\$0.00	\$2.00
SF	02/12/2022	Pay	DRAFT		\$3.00	\$0.00	\$0.00	\$0.00	\$3.00
Total Pay For 02/12/2022					\$201.56	\$0.00	\$1.53	\$0.00	\$203.09

4 MONTHS reading history

DATE: 02/06/2024

CUSTOMER METER READING DETAIL

PAGE

TIME: 09:14:39

CITY OF SWEENEY

INQUIRY

Item 4.

USER: Admin - 1

For - VICKI MILIAN - From 01/31/2024 To 02/28/2022

Account Number - [REDACTED]

Service	Bill Date	Present Read	Previous Read	Consumption	Read Date/Time	Read Type	Meter Change
WA	01/31/2024	5198	5022	176	01/18/2024 12:00:00	AM Actual	No
GA	01/31/2024	6983	6853	130	01/18/2024 12:00:00	AM Actual	No
WA	12/31/2023	5022	4860	162	12/18/2023 12:00:00	AM Actual	No
GA	12/31/2023	6853	6787	66	12/18/2023 12:00:00	AM Actual	No
WA	11/30/2023	4860	4683	177	11/17/2023 12:00:00	AM Actual	No
GA	11/30/2023	6787	6762	25	11/17/2023 12:00:00	AM Actual	No
WA	10/31/2023	4683	4572	111	10/17/2023 05:00:00	PM Actual	No
GA	10/31/2023	6762	6756	6	10/17/2023 12:00:00	AM Actual	No
WA	09/30/2023	4572	4353	219	09/19/2023 12:00:00	AM Actual	No
GA	09/30/2023	6756	6748	8	09/19/2023 12:00:00	AM Actual	No
WA	08/31/2023	4353	4270	83	08/18/2023 12:00:00	AM Actual	No
GA	08/31/2023	6748	6742	6	08/18/2023 12:00:00	AM Actual	No
WA	07/31/2023	4270	4221	49	07/17/2023 06:47:00	PM Actual	No
GA	07/31/2023	6742	6734	8	07/17/2023 12:00:00	AM Actual	No
WA	06/30/2023	4221	4177	44	06/14/2023 12:00:00	AM Actual	No
GA	06/30/2023	6734	6728	6	06/14/2023 12:00:00	AM Actual	No
WA	05/31/2023	4177	4135	42	05/17/2023 12:00:00	AM Actual	No
GA	05/31/2023	6728	6717	11	05/17/2023 12:00:00	AM Actual	No
WA	04/30/2023	4135	4090	45	04/17/2023 12:00:00	AM Actual	No
GA	04/30/2023	6717	6706	11	04/17/2023 12:00:00	AM Actual	No
WA	03/31/2023	4090	4043	47	03/21/2023 12:00:00	AM Actual	No
GA	03/31/2023	6706	6683	23	03/21/2023 12:00:00	AM Actual	No
WA	02/28/2023	4043	3972	71	02/14/2023 12:00:00	AM Actual	No
GA	02/28/2023	6683	6555	128	02/14/2023 12:00:00	AM Actual	No
WA	01/31/2023	3972	3892	80	01/17/2023 08:00:00	PM Actual	No
GA	01/31/2023	6555	6470	85	01/17/2023 12:00:00	AM Actual	No
WA	12/31/2022	3892	3816	76	12/16/2022 04:08:00	PM Actual	No
GA	12/31/2022	6470	6439	31	12/16/2022 12:00:00	AM Actual	No
WA	11/30/2022	3816	3684	132	11/16/2022 12:00:00	AM Actual	No
GA	11/30/2022	6439	6421	18	11/16/2022 12:00:00	AM Actual	No
WA	10/31/2022	3684	3608	76	10/18/2022 12:00:00	AM Actual	No
GA	10/31/2022	6421	6411	10	10/18/2022 12:00:00	AM Actual	No
WA	09/30/2022	3608	3562	46	09/20/2022 12:00:00	AM Actual	No
GA	09/30/2022	6411	6403	8	09/20/2022 12:00:00	AM Actual	No
WA	08/31/2022	3562	3471	91	08/16/2022 03:30:00	PM Actual	No
GA	08/31/2022	6403	6396	7	08/16/2022 12:00:00	AM Actual	No
WA	07/31/2022	3471	3385	86	07/20/2022 12:00:00	AM Actual	No
GA	07/31/2022	6396	6386	10	07/20/2022 12:00:00	AM Actual	No
WA	06/30/2022	3385	3324	61	06/17/2022 12:00:00	AM Actual	No
GA	06/30/2022	6386	6377	9	06/17/2022 12:00:00	AM Actual	No
WA	05/31/2022	3324	3199	125	05/17/2022 12:00:00	AM Actual	No
GA	05/31/2022	6377	6368	9	05/17/2022 12:00:00	AM Actual	No
WA	04/30/2022	3199	3108	91	04/18/2022 01:55:00	PM Actual	No
GA	04/30/2022	6368	6343	25	04/18/2022 12:00:00	AM Actual	No
WA	03/31/2022	3108	3054	54	03/17/2022 12:00:00	AM Actual	No
GA	03/31/2022	6343	6232	111	03/17/2022 12:00:00	AM Actual	No
WA	02/28/2022	3054	2995	59	02/17/2022 12:00:00	AM Actual	No
GA	02/28/2022	6232	6074	158	02/17/2022 12:00:00	AM Actual	No

Lindsay Koskiniemi

From: Vickimilian [REDACTED]
Sent: Monday, February 5, 2024 3:12 PM
To: Lindsay Koskiniemi
Cc: Dusty Hopkins; Brian Brooks; tgpettigrew@aweenytx.gov; Reese Cook; Mark Morgan; John Rambo
Subject: Re: Leak

I appreciate your attention.

I did not appreciate the way you spoke to me on the phone this morning.

A “partial” part of meter was originally moved in October. The utility clerk explained to me that they used a portion of the meter I had on my property for 30 years. Not the entire meter.

After complaining that my bill was still reflecting a large usage of water that we were not using, Tex replaced more parts of the meter on January 19th, which I just found out about this morning.

The “relief” I am referring to is not being charged for water I am NOT using!

I removed my auto payment due to the fact that since September, this overage of water usage has remained.

My average usage before this disaster was around 45-60! Even in the driest, hottest time of the year, my usage reflected the 60-80 range.

I paid to have a “leak” fixed that I question ever existed, as my water usage has not returned to the average used for MANY years.

That information can easily be looked up if you review my bills from the past 30 years!

To be clear, I appreciate the compensation, but it does not address the urgent matter at hand, which is the meter reporting an amount of water usage that I am not using. I want it fixed!

I will be at the City Council meeting on the 20th to discuss what steps I plan to take moving forward.

Disappointed,

Vicki Milian
 [REDACTED]

On Feb 5, 2024, at 2:28 PM, Lindsay Koskiniemi <citymanager@sweenytx.gov> wrote:

Ms. Milian,

Staff has been instructed to prepare statements concerning your account due to me this week. Until I receive statements, I am unable to assess the totality of your complaint and make a determination on how to proceed.

It would be helpful if you could include in your email correspondence what relief it is that you are seeking from the City.

In an attempt to work with you, I granted a billing accommodation to you in the amount of approximately \$90 in October 2023 when staff replaced your meter to reduce any possible usage variables.

I will follow up with you after I have read staff’s statements.

Thank you,

Lindsay Koskiniemi, CGFO, CPM, MPA, MSA
City Manager

Office 979-548-3321
Sweeny City Hall | 102 W. Ashley Wilson Rd. | Sweeny, TX 77480



From: Vickimilian <[REDACTED]>
Sent: Monday, February 5, 2024 1:33 PM
To: Dusty Hopkins <mayor@sweenytx.gov>; Mark Morgan <mjmorgan@sweenytx.gov>; Reese Cook <rcook@sweenytx.gov>; Brian Brooks <bjbrooks@sweenytx.gov>; tgpettigrew@aweenytx.gov; John Rambo <jarambo@sweenytx.gov>
Cc: Lindsay Koskiniemi <citymanager@sweenytx.gov>
Subject: Fwd: Leak

I am sharing the attached email that was sent to citymanager@sweenytx.gov this morning.

It relates to an ongoing problem over what was reported as a leak this past August/September. I question if there ever really was one at this point. After spending a considerable amount of money, my water usage reading has still remained incorrect and has not been resolved.

This matter has reached the urgent concern level.

I have exhausted all the avenues I know to use at City Hall, with no resolution.

I am on the agenda for the Feb. 20th council meeting, searching for answers and direction moving forward.

Thank you,
Vicki Milian
[REDACTED]

Begin forwarded message:

From: Vickimilian <[REDACTED]>
Date: February 5, 2024 at 11:21:24 AM CST
To: citymanager@sweenytx.gov
Subject: Leak

I just spoke to you on the phone. (11:15)

I was at the office this morning to question the water bill that continues to indicate a huge amount of usage. It is incorrect.

The utility clerk said you were still not in your office, at 9:30, but she sent you an email this morning and that you said you were going to reach out to me.

I called your phone to leave a message but your mail box was full.

I am emailing now, as you very rudely instructed me to do after being able to reach you, and you telling me no, you were not trying to contact me. You said you were in a

meeting.

I have removed auto pay from my account, and my next step is to first reach out to other community leaders to resolve this ridiculous problem. If that doesn't work, I will talk to the city attorney, and then the media.

I'm simply letting you know in advance out of respect.

No need to reply, unless you feel the need.

There has been a total failure, in this case, to resolve this problem at MY expense.

I don't think I am the only one in Sweeny who is totally dissatisfied with the way things are being handled concerning utilities.

I have decided to move ahead now in search of help.

Extremely disappointed,

Vicki Milian





In the past, these three (3) properties were owned by the same family. The water and gas meters for all 3 homes were located in the approximate location on the green box, across properties. When Public Works replaced the water meter, the old line was capped, and a new waterline was run sometime between October and November 2023.

The objective was to replace the customer's line taking the 'path of least resistance" in response to an identified water leak on the customer's side of the meter. By capping the old line and installing a new waterline, no excavation on neighboring properties was needed.

The old waterline was a steel 1" line, and the newly installed line is a 3/4" poly line.

Due to the age and composition of the old line and registered water usage, concluding a water leak was reasonable, especially with consideration to the Summer 2023 drought.

Work Order Statement

Details of Work Order:

We received a call out for 1621 Milian Circle in regards to the water bill being higher than usual. After checking the water meter on location it was determined that she had a water leak on her side of the property. Mrs. Milian was advised to contact a plumber to have a look at her water lines. A few days later we received another call out to the same location. Mrs. Milian stated that she believes the leak is on the property next door to her house. After Mrs. Milian further explained that all three houses were built from the same line that broke off to each house we decided to try to fix the issue by adding a separate water tap to Mrs. Milian's house in hopes that it fixed the problem. But a few weeks later we received another call from Mrs. Milian stating that her bill is still high. This time we switched out her water module on the water meter. We have been working extremely hard to address Mrs. Milian's complaints.



TERRENCE BELL

TO: Lindsay Koskiniemi, City Manager
FROM: K. Jones, Utility Billing Manager
CC: K. Wilson, Director of Finance and Personnel Services
RE: Statement of events for utility account at 1621 Milian Circle

At the end of September 2023 Vicki Milian was put on the consumption audit due to a high consumption of 219 which equals to 21,900 gallons for the period of 8/18/2023 to 9/19/2023. When I received the consumption audit sheet back on 9/26/2023 PW indicated there was a leak on her side of about 1 gallon per minute. Vicki Milian signed the water leak agreement to keep her water on while PW was on site.

On 9/27/2023 Vicki Milian called, and I put in a work order. The work order was addressed to Shea and asked him to try and help pinpoint where the leak was. She also mentioned turning the water off at the house and seeing if the flow rate was still visible. Notes came back stating they turned the water off at the house and the flow rate persisted which indicated the leak being on the service line somewhere. Task #26791150, which is attached.

On 10/11/2023 Vicki Milian called and spoke with Jennifer which resulted in a work order with questions about an 811. Task #26988710, which is attached.

On 10/23/2023 Mrs. Milian received an adjustment of \$94.68 making her bill \$35.84.

On 11/1/2023 Mr. Milian came in and paid for a water tap and hired plumbers to have a new water service line ran. The water tap was installed, the meter was changed, but we kept the same module attached. I do not recall the date, but I do remember within this time Mrs. Milian called in asking Tex to hold off on turning the water back on because the plumbers broke the line or something along those lines.

On 11/3/2023 The service line passed inspection. Task #27267572, which is attached.

On 1/3/2024 Mrs. Milian called in asking to have her meter checked because her bill was still high. I put in a work order and PW went out and found no indications of a leak. I called her and told her the findings and by the end of the call she requested for Tex to come out and speak to her. I spoke to Tex and he said they were going to change her meter and module again. Task #28100917, which is attached.

On 1/5/2024 Mrs. Milian called and spoke to Jennifer. Jennifer put in a work order for Tex to contact Mrs. Milian. On 1/11/24 notes said they would be out next Tuesday 1/16/24 to change the meter and module.

Task #28129423, which is attached.

On 1/18/2024 Mrs. Milian came into City Hall, expressed her concerns, and asked for reimbursement for all the bills this past year. (Back to Jan. 2023) I informed her that would be a request she would need to send City Manager as I cannot approve that. I told her we would be changing the meter and module this week and then we would observe.

On 1/16/24 we were closed due to bad weather. On 1/17 & 1/18 the computer had an active billing session. They went out to change the meter and module on 1/19/24.

Task #28336090, which is attached.

I don't believe Mrs. Milian needs reimbursement for bills from Jan 2023 to August 2023. When I pull her account history there are multiple months with over 40 consumption. Her service line ran through three different properties and was extremely long. Considering the drought over the summer and age of the line a crack is very likely. After we changed the meter and moved the module to the new line the leak stopped so I don't think it was a 'fake' leak. As for the high usage I am not able to say exactly where it's going or what its being used on. She is trying to compare her situation to a situation she claims to have happened in the past in which someone's meter was apparently counting in fast forward. She will not name who she is referring to nor do I know anything about it.

Mrs. Milians Tesla Net meter has been responding regularly so I do not believe things are inaccurate. I agree our next step is to change the module and monitor for a couple of weeks. If the high usage persists, then I would say the water is being used. We will have a better idea after we have usage readings to compare after this current cycle is complete on 2/15/2024.

Respectfully Submitted,

K. Jones

Utility Billing Manager





AGENDA MEMO

Business of the City Council

City of Sweeny, Texas

Meeting Date	02/20/2024	Agenda Item	
Approved by City Manager		Presenter(s)	City Manager
Reviewed by City Attorney		Department	Administration
Subject	Discussion and possible action on the lease agreement with Union Pacific for Right of Way usage		
Attachments	Current Lease, Schematic, Newly Presented Lease		
Financial Information	Expenditure Required:	\$5,000.00	
	Amount Budgeted:	-	
	Account Number:	-	
	Additional Appropriation Required:		
	Additional Account Number:		

Executive Summary

Previous agreement was for a term of 20 years beginning June 30, 2004.

Current Lease expiring this year--- Article III Rent: As consideration for this agreement Lessee agrees to mow and/or maintain vegetation control as well as remove all trash and debris in accordance with any and all current and future ordinances or other legal requirements on the Premises, and should said City limits change, so shall the working of this provision change accordingly.

Union Pacific no longer enters into long term leases, but can offer to continue to lease the property on a year to year basis with automatic renewals. However, they will charge their standard rent of \$5,000.00 ANNUALLY.

If the City decides not to continue to lease the property, the site will need to be cleared and returned to good condition. This would encompass the southern portion of Gazebo Park, spanning from Pecan to Main Street.

Recommended Action

Council discretion

LEASE OF PROPERTY

203390

THIS LEASE ("Lease") is entered into on the 19th day of July, 2004, between UNION PACIFIC RAILROAD COMPANY ("Lessor") and SWEENEY, CITY OF, a Texas municipal corporation, whose address is P O Box 248 102 W Ashley Wilson Rd, Sweeny, Texas 77480 ("Lessee").

IT IS AGREED BETWEEN THE PARTIES AS FOLLOWS:

Article I. PREMISES; USE.

Lessor leases to Lessee and Lessee leases from Lessor the premises ("Premises") at Sweeny Texas, shown on the print dated March 05, 2004, marked **Exhibit A**, hereto attached and made a part hereof, subject to the provisions of this Lease and of **Exhibit B** attached hereto and made a part hereof. The Premises may be used for location of Lessee's improvement, landscaping, beautification, and parking and purposes incidental thereto, only, and for no other purpose. For the purposes of mowing and maintenance the Premises shall also include all the Lessor's right of way within the City Limits of Sweeny, Texas, located over 25 feet from any railroad track.

Article II. TERM.

The term of this Lease is for 20 years beginning on June 30, 2004, and expiring on June 29, 2024, unless sooner terminated as provided in this Lease. In the event Lessor shall receive an offer to lease all or a portion of the Premises described in Article I as for mowing and maintenance for any industrial or commercial lease, Lessor shall retain the right to terminate that portion of the agreement.

Article III. RENT.

As consideration for this agreement Lessee agrees to mow and/or maintain vegetation control as well as remove all trash and debris in accordance with any and all current and future ordinances or other legal requirements on the Premises, and should said City Limits change, so shall the working of this provision change accordingly. This is intended to be self-policing by the Lessee. It is not the Lessor's intention to force or compel the Lessee to perform under this requirement in any way that would be inconsistent with compliance with weed and vegetation control ordinances policed and enforced by the Lessee either currently or in the future.

Article IV. SPECIFICATIONS.

Should the Lessee violate any of the following specifications, or use or attempt to use the Premises for any other or different purpose than that stated herein, then the Lessor may, at its option, immediately terminate this lease.

1. No planting or other landscaping material shall be allowed within 16 feet of the edge of the nearest tie nor allowed to grow into this zone other than grass or ground cover that will not grow in excess of three (3) feet in height.
2. Any planting or other landscape material done on the railroad right-of-way within 250 feet of any grade crossing shall be maintained so as not to exceed a height of three (3) feet.

Long Term Industrial Lease 6/01/03
(Unimproved Property)
FORM APPROVED, LAW

Folder No. 02208-48
Audit No.

- 3. Any grading or future planting done on Lessor's property must be approved in writing by Lessor at the following address:

Director – Track Maintenance
 24125 Aldine-Westfield Road
 Spring, Texas 77373
 Phone: (281) 350-7605
 Fax: (281) 350-7194

- 4. Any work done on Lessor's property closer than 25 feet from the centerline of the nearest track will require a flagman provided by Lessor at Lessee's expense.
- 5. There is to be no interference with Lessor's facilities, including pole lines, drainage structures and signal apparatus.
- 6. There is to be no adverse effect to visibility or drainage on Lessor's property.

Article V. INSURANCE.

A. Before commencement of the term of this Lease, Lessee shall provide to Lessor a certificate issued by its insurance carrier evidencing the insurance coverage required under **Exhibit C** hereto attached and made a part hereof.

B. Not more recently than once every two years, Lessor may reasonably modify the required insurance coverage to reflect then-current risk management practices in the railroad industry and underwriting practices in the insurance industry.

C. All insurance correspondence, certificates and endorsements shall be directed to: Real Estate Department, 1800 Farnam Street, Omaha, Nebraska 68102, ATTN: Linda Baburek, Folder No. 02208-48.

IN WITNESS WHEREOF, the parties have executed this Lease as of the day and year first herein written.

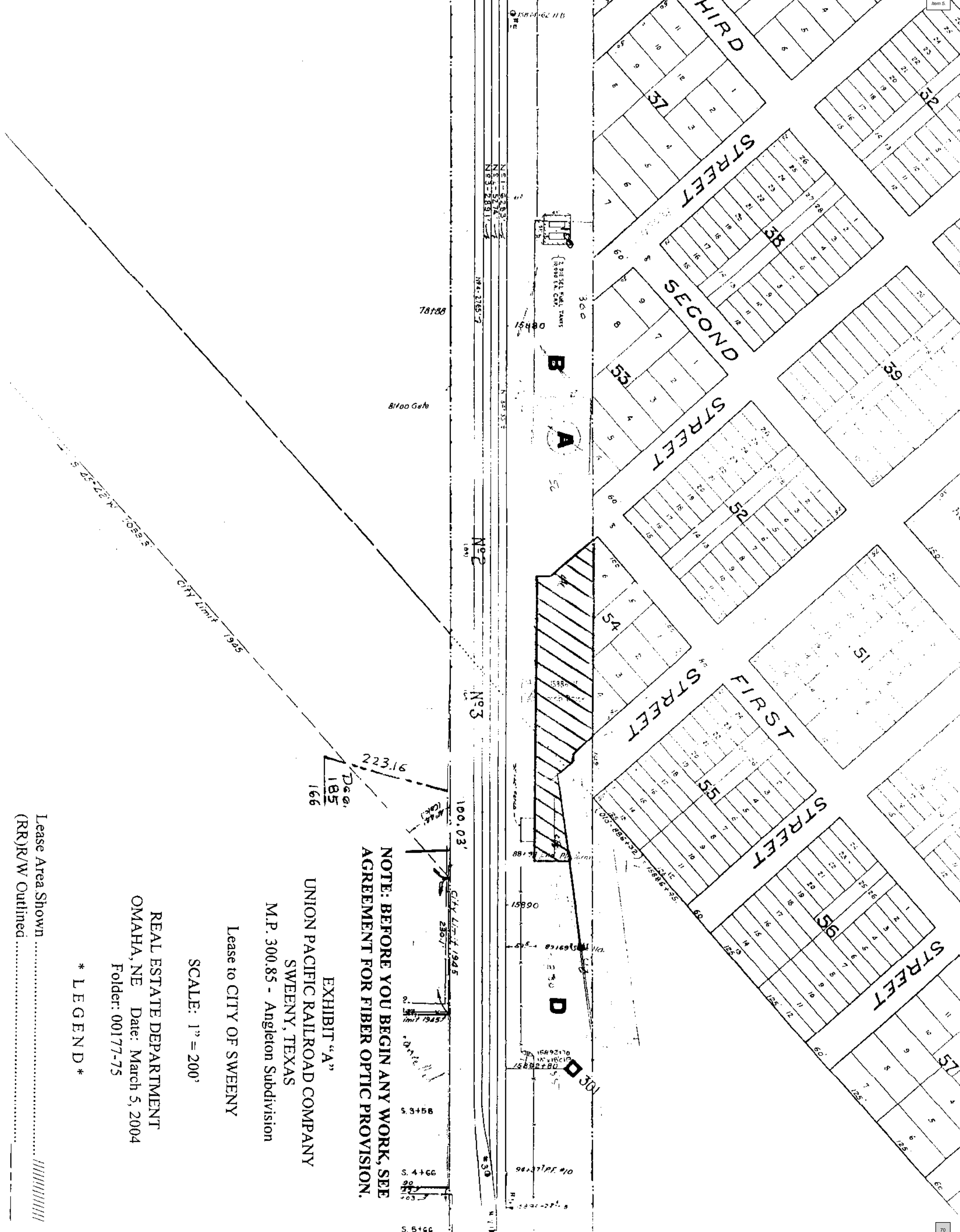
UNION PACIFIC RAILROAD COMPANY

SWEENEY, CITY OF

By: Mary B. Collins
 Director - Real Estate

By: [Signature]
 Title: MAYOR

NOTE: New Lease.



NOTE: BEFORE YOU BEGIN ANY WORK, SEE AGREEMENT FOR FIBER OPTIC PROVISION.

EXHIBIT "A"

**UNION PACIFIC RAILROAD COMPANY
SWEENEY, TEXAS**

M.P. 300.85 - Angleton Subdivision

Lease to CITY OF SWEENEY

SCALE: 1" = 200'

REAL ESTATE DEPARTMENT
OMAHA, NE Date: March 5, 2004
Folder: 00177-75

* LEGEND *

Lease Area Shown
(RR)R/W Outlined

**EXHIBIT B
TO
LONG TERM INDUSTRIAL LEASE (UNIMPROVED)**

Section 1. IMPROVEMENTS.

No improvements placed upon the Premises by Lessee shall become a part of the realty.

Section 2. RESERVATIONS, TITLE AND PRIOR RIGHTS.

A. Lessor reserves to itself, its agents and contractors, the right to enter the Premises at such times as will not unreasonably interfere with Lessee's use of the Premises.

B. Lessor reserves (i) the exclusive right to permit third party placement of advertising signs on the Premises, and (ii) the right to construct, maintain and operate new and existing facilities (including, without limitation, trackage, fences, communication facilities, roadways and utilities) upon, over, across or under the Premises, and to grant to others such rights, provided that Lessee's use of the Premises is not interfered with unreasonably.

C. Lessee acknowledges that Lessor makes no representations or warranties, express or implied, concerning the title to the Premises, and that the rights granted to Lessee under this Lease do not extend beyond such right, title or interest as Lessor may have in and to the Premises. Without limitation of the foregoing, This Lease is made subject to all outstanding rights, whether or not of record. Lessor reserves the right to renew any such outstanding rights granted by Lessor or Lessor's predecessors.

Section 3. PAYMENT OF RENT.

Rent (which includes the fixed advance rent and all other amounts to be paid by Lessee under this Lease) shall be paid in lawful money of the United States of America, at such place as shall be designated by the Lessor, and without offset or deduction.

Section 4. TAXES AND ASSESSMENTS.

Lessee shall pay, prior to delinquency, all Property Taxes on the Premises and on all personal property and improvements on the Premises. Lessee shall reimburse Lessor within thirty (30) days of rendition of Lessor's bill for any Property Taxes paid by Lessor, whether paid separately, as a part of the levy on other real property of Lessor, or as a part of the central or unit assessment of Lessor's property. For purposes of this Lease, "Property Taxes" means all governmental charges and levies (including, without limitation, real estate and personal property taxes, special assessments and other charges for public improvements or services, and impact fees, but not including income taxes) as may during the term of this Lease be levied upon, assessed against or imposed upon, or become due and payable with respect to, the Premises or the rents payable under this Lease.

Section 5. WATER RIGHTS.

This Lease does not include any right to the use of water under any water right of Lessor, or to establish any water rights except in the name of Lessor.

Section 6. CARE AND USE OF PREMISES.

A. Lessee shall use reasonable care and caution against damage or destruction to the Premises. Lessee shall not use or permit the use of the Premises for any unlawful purpose, maintain any nuisance, permit any waste, or use the Premises in any way that creates a hazard to persons or property. Lessee shall keep the Premises in a safe, neat, clean and presentable condition, and in good condition and repair. Lessee shall keep the sidewalks and public ways on the Premises, and the walkways appurtenant to any railroad spur track(s) on or serving the Premises, free and clear from any substance which might create a hazard and all water flow shall be directed away from the tracks of the Lessor.

B. Lessee shall not permit any sign on the Premises, except signs relating to Lessee's business.

C. If any improvement on the Premises is damaged or destroyed by fire or other casualty, Lessee shall, within thirty (30) days after such casualty, remove all debris resulting therefrom. If Lessee fails to do so, Lessor may remove such debris, and Lessee agrees to reimburse Lessor for all expenses incurred within thirty (30) days after rendition of Lessor's bill.

D. Lessee shall comply with all governmental laws, ordinances, rules, regulations and orders relating to Lessee's use of the Premises and this Lease, including, without limitation, any requirements for subdividing or platting the Premises.

Section 7. HAZARDOUS MATERIALS, SUBSTANCES AND WASTES.

A. Without the prior written consent of Lessor, Lessee shall not use or permit the use of the Premises for the generation, use, treatment, manufacture, production, storage or recycling of any Hazardous Substances, except that Lessee may use, if lawful, small quantities of common chemicals such as adhesives, lubricants and cleaning fluids in order to conduct business at the Premises. The consent of Lessor may be withheld by Lessor for any reason whatsoever, and may be subject to conditions in addition to those set forth below. It shall be the sole responsibility of Lessee to determine whether or not a contemplated use of the Premises is a Hazardous Substance use.

B. In no event shall Lessee (i) release, discharge or dispose of any Hazardous Substances, (ii) bring any hazardous wastes as defined in RCRA onto the Premises, (iii) install or use on the Premises any underground storage tanks, or (iv) store any Hazardous Substances within one hundred feet (100') of the center line of any main track.

C. If Lessee uses or permits the use of the Premises for a Hazardous Substance use, with or without Lessor's consent, Lessee shall furnish to Lessor copies of all permits, identification numbers and notices issued by governmental agencies in connection with such Hazardous Substance use, together with such other information on the Hazardous Substance use as may be requested by Lessor. If requested by Lessor, Lessee shall cause to be performed an environmental assessment of the Premises upon termination of the Lease and shall furnish Lessor a copy of such report, at Lessee's sole cost and expense.

D. Without limitation of the provisions of Section 12 of this Exhibit B, Lessee shall be responsible for all damages, losses, costs, expenses, claims, fines and penalties related in any manner to any Hazardous Substance use of the Premises (or any property in proximity to the Premises) during the term of this Lease or, if longer, during Lessee's occupancy of the Premises, regardless of Lessor's consent to such use or any negligence, misconduct or strict liability of any Indemnified Party (as defined in Section 12), and including, without limitation, (i) any diminution in the value of the Premises and/or any

adjacent property of any of the Indemnified Parties, and (ii) the cost and expense of clean-up, restoration, containment, remediation, decontamination, removal, investigation, monitoring, closure or post-closure. Notwithstanding the foregoing, Lessee shall not be responsible for Hazardous Substances (i) existing on, in or under the Premises prior to the earlier to occur of the commencement of the term of the Lease or Lessee's taking occupancy of the Premises, or (ii) migrating from adjacent property not controlled by Lessee, or (iii) placed on, in or under the Premises by any of the Indemnified Parties; except where the Hazardous Substance is discovered by, or the contamination is exacerbated by, any excavation or investigation undertaken by or at the behest of Lessee. Lessee shall have the burden of proving by a preponderance of the evidence that any of the foregoing exceptions to Lessee's responsibility for Hazardous Substances applies.

E. In addition to the other rights and remedies of Lessor under this Lease or as may be provided by law, if Lessor reasonably determines that the Premises may have been used during the term of this Lease or any prior lease with Lessee for all or any portion of the Premises, or are being used for any Hazardous Substance use, with or without Lessor's consent thereto, and that a release or other contamination may have occurred, Lessor may, at its election and at any time during the life of this Lease or thereafter (i) cause the Premises and/or any adjacent premises of Lessor to be tested, investigated, or monitored for the presence of any Hazardous Substance, (ii) cause any Hazardous Substance to be removed from the Premises and any adjacent lands of Lessor, (iii) cause to be performed any restoration of the Premises and any adjacent lands of Lessor, and (iv) cause to be performed any remediation of, or response to, the environmental condition of the Premises and the adjacent lands of Lessor, as Lessor reasonably may deem necessary or desirable, and the cost and expense thereof shall be reimbursed by Lessee to Lessor within thirty (30) days after rendition of Lessor's bill. In addition, Lessor may, at its election, require Lessee, at Lessee's sole cost and expense, to perform such work, in which event, Lessee shall promptly commence to perform and thereafter diligently prosecute to completion such work, using one or more contractors and a supervising consulting engineer approved in advance by Lessor.

F. For purposes of this Section 7, the term "Hazardous Substance" shall mean (i) those substances included within the definitions of "hazardous substance", "pollutant", "contaminant", or "hazardous waste", in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. §§ 9601, et seq., as amended or in RCRA, the regulations promulgated pursuant to either such Act, or state laws and regulations similar to or promulgated pursuant to either such Act, (ii) any material, waste or substance which is (A) petroleum, (B) asbestos, (C) flammable or explosive, or (D) radioactive; and (iii) such other substances, materials and wastes which are or become regulated or classified as hazardous or toxic under any existing or future federal, state or local law.

Section 8. UTILITIES.

A. Lessee will arrange and pay for all utilities and services supplied to the Premises or to Lessee.

B. All utilities and services will be separately metered to Lessee. If not separately metered, Lessee shall pay its proportionate share as reasonably determined by Lessor.

Section 9. LIENS.

Lessee shall not allow any liens to attach to the Premises for any services, labor or materials furnished to the Premises or otherwise arising from Lessee's use of the Premises. Lessor shall have the right to discharge any such liens at Lessee's expense.

Section 10. ALTERATIONS AND IMPROVEMENTS; CLEARANCES.

A. No alterations, improvements or installations may be made on the Premises without the prior consent of Lessor. Such consent, if given, shall be subject to the needs and requirements of the Lessor in the operation of its Railroad and to such other conditions as Lessor determines to impose. In all events such consent shall be conditioned upon strict conformance with all applicable governmental requirements and Lessor's then-current clearance standards.

B. All alterations, improvements or installations shall be at Lessee's sole cost and expense.

C. Lessee shall comply with Lessor's then-current clearance standards, except (i) where to do so would cause Lessee to violate an applicable governmental requirement, or (ii) for any improvement or device in place prior to Lessee taking possession of the Premises if such improvement or device complied with Lessor's clearance standards at the time of its installation.

D. Any actual or implied knowledge of Lessor of a violation of the clearance requirements of this Lease or of any governmental requirements shall not relieve Lessee of the obligation to comply with such requirements, nor shall any consent of Lessor be deemed to be a representation of such compliance.

Section 11. AS-IS.

Lessee accepts the Premises in its present condition with all faults, whether patent or latent, and without warranties or covenants, express or implied. Lessee acknowledges that Lessor shall have no duty to maintain, repair or improve the Premises.

Section 12. RELEASE AND INDEMNITY.

A. As a material part of the consideration for this Lease, Lessee, to the extent it may lawfully do so, waives and releases any and all claims against Lessor for, and agrees to indemnify, defend and hold harmless Lessor, its affiliates, and its and their officers, agents and employees ("Indemnified Parties") from and against, any loss, damage (including, without limitation, punitive or consequential damages), injury, liability, claim, demand, cost or expense (including, without limitation, attorneys' fees and court costs), fine or penalty (collectively, "Loss") incurred by any person (including, without limitation, Lessor, Lessee, or any employee of Lessor or Lessee) (i) for personal injury or property damage caused to any person while on or about the Premises, or (ii) arising from or related to any use of the Premises by Lessee or any invitee or licensee of Lessee, any act or omission of Lessee, its officers, agents, employees, licensees or invitees, or any breach of this Lease by Lessee.

B. The foregoing release and indemnity shall apply regardless of any negligence, misconduct or strict liability of any Indemnified Party, except that the indemnity, only, shall not apply to any Loss determined by final order of a court of competent jurisdiction to have been caused by the sole active direct negligence of any Indemnified Party.

C. Where applicable to the Loss, the liability provisions of any contract between Lessor and Lessee covering the carriage of shipments or trackage serving the Premises shall govern the Loss and shall supersede the provisions of this Section 12.

D. No provision of this Lease with respect to insurance shall limit the extent of the release and indemnity provisions of this Section 12.

Section 13. TERMINATION.

A. Lessor may terminate this Lease for Lessee's default by giving Lessee notice of termination, if Lessee (i) defaults under any obligation of Lessee under this Lease and, after written notice is given by Lessor to Lessee specifying the default, Lessee fails either to immediately commence to cure the default, or to complete the cure expeditiously but in all events within thirty (30) days after the default notice is given, or (ii) Lessee abandons the Premises for a period of one hundred twenty (120) consecutive days.

B. Lessee acknowledges that Lessor's possible future needs for the Premises in connection with Lessor's transportation operations are paramount. Accordingly, if at any time Lessor, in its sole and absolute discretion, determines that the Premises or any portion thereof are necessary or desirable for use in connection with Lessor's transportation operations, or that Lessee's use of the Premises should be terminated due to safety considerations associated with Lessor's transportation operations, Lessor may terminate this Lease upon not less than thirty (30) days notice to Lessee or, in emergency situations, upon such shorter notice as is reasonable in the circumstances.

C. Lessor may terminate this Lease upon not less than thirty (30) days notice to Lessee in the event the Premises form a portion of Lessor's railroad operating right-of-way and such right-of-way is abandoned for railroad operating purposes.

D. After payment of the advance fixed rent to Lessor, Lessee may terminate this Lease without cause upon thirty (30) days notice to Lessor.

Section 14. LESSOR'S REMEDIES.

Lessor's remedies for Lessee's default are to (a) enter and take possession of the Premises, without terminating this Lease, and relet the Premises on behalf of Lessee, collect and receive the rent from reletting, and charge Lessee for the cost of reletting, and/or (b) terminate this Lease as provided in Section 13 A) above and sue Lessee for damages, and/or (c) exercise such other remedies as Lessor may have at law or in equity. Lessor may enter and take possession of the Premises by self-help, by changing locks, if necessary, and may lock out Lessee, all without being liable for damages.

Section 15. VACATION OF PREMISES; REMOVAL OF LESSEE'S PROPERTY.

A. Upon termination howsoever of this Lease, Lessee (i) shall have peaceably and quietly vacated and surrendered possession of the Premises to Lessor, without Lessor giving any notice to quit or demand for possession, and (ii) shall have removed from the Premises all structures, property and other materials not belonging to Lessor, and restored the surface of the ground to as good a condition as the same was in before such structures were erected, including, without limitation, the removal of foundations, the filling in of excavations and pits, and the removal of debris and rubbish.

B. If Lessee has not completed such removal and restoration within thirty (30) days after termination of this Lease, Lessor may, at its election, and at any time or times, (i) perform the work and Lessee shall reimburse Lessor for the cost thereof within thirty (30) days after bill is rendered, (ii) take title to all or any portion of such structures or property by giving notice of such election to Lessee, and/or (iii) treat Lessee as a holdover tenant at will until such removal and restoration is completed.

Section 16. FIBER OPTICS.

Lessee shall telephone Lessor during normal business hours (7:00 a.m. to 9:00 p.m., Central Time, Monday through Fridays, except for holidays) at 1-800-336-9193 (also a 24-hour, 7-day

number for emergency calls) to determine if fiber optic cable is buried on the Premises. Lessor may change the telephone number and hours of operation by giving Lessee notice of the change. If cable is buried on the Premises, Lessee will telephone the telecommunications company(ies), arrange for a cable locator, and make arrangements for relocation or other protection of the cable. Notwithstanding compliance by Lessee with this Section 16, the release and indemnity provisions of Section 12 above shall apply fully to any damage or destruction of any telecommunications system.

Section 17. NOTICES.

Any notice, consent or approval to be given under this Lease shall be in writing, and personally served, sent by reputable courier service, or sent by certified mail, postage prepaid, return receipt requested, to Lessor at: Union Pacific Railroad Company, Attn: General Manager - Real Estate, Real Estate Department, 1800 Farnam Street, Omaha, Nebraska 68102; and to Lessee at the above address, or such other address as a party may designate in notice given to the other party. Mailed notices shall be deemed served five (5) days after deposit in the U.S. Mail. Notices which are personally served or sent by courier service shall be deemed served upon receipt.

Section 18. ASSIGNMENT.

A. Lessee may sublease the Premises or assign this Lease, by operation of law or otherwise, only if Lessee provides Lessor with advance notice of the assignment or sublease and the subtenant's or assignee's written agreement for the benefit of Lessor to be bound by the terms of this Lease. No subletting or assignment shall relieve Lessee of its obligations under this Lease. Any assignment or sublease by Lessee in violation of this Paragraph A shall be void and ineffective and shall, at the option of Lessor, result in an immediate termination of this Lease.

B. Subject to this Section 18, this Lease shall be binding upon and inure to the benefit of the parties hereto and their respective heirs, executors, administrators, successors and assigns.

Section 19. CONDEMNATION.

If, as reasonably determined by Lessor, the Premises cannot be used by Lessee because of a condemnation or sale in lieu of condemnation, then this Lease shall automatically terminate. Lessor shall be entitled to the entire award or proceeds for any total or partial condemnation or sale in lieu thereof, including, without limitation, any award or proceeds for the value of the leasehold estate created by this Lease. Notwithstanding the foregoing, Lessee shall have the right to pursue recovery from the condemning authority of such compensation as may be separately awarded to Lessee for Lessee's relocation expenses, the taking of Lessee's personal property and fixtures, and the interruption of or damage to Lessee's business.

Section 20. ATTORNEY'S FEES.

If either party retains an attorney to enforce this Lease (including, without limitation, the indemnity provisions of this Lease), the prevailing party is entitled to recover reasonable attorney's fees.

Section 21. RIGHTS AND OBLIGATIONS OF LESSOR.

If any of the rights and obligations of Lessor under this Lease are substantially and negatively affected by any changes in the laws applicable to this Lease, whether statutory, regulatory or under federal or state judicial precedent, then Lessor may require Lessee to enter into an amendment to

this Lease to eliminate the negative effect on Lessor's rights and obligations to the extent reasonably possible.

Section 22. ENTIRE AGREEMENT.

This Lease is the entire agreement between the parties, and supersedes all other oral or written agreements between the parties pertaining to this transaction, including, without limitation, Lease Audit No. _____ and any other lease under which all or any portion of the Premises was leased to Lessee. Notwithstanding the prior sentence, Lessee shall retain any and all obligations and liabilities which may have accrued under any other such agreements prior to the commencement of the term of this Lease. This Lease may be amended only by a written instrument signed by Lessor and Lessee.

**EXHIBIT C
TO
LONG TERM INDUSTRIAL LEASE (UNIMPROVED)**

**UNION PACIFIC RAILROAD
INSURANCE REQUIREMENTS**

Lessee shall, at its sole cost and expense, procure and maintain during the life of this Lease the following insurance coverage:

A. Commercial General Liability insurance. This insurance shall contain broad form contractual liability with a single limit of at least \$1,000,000 each occurrence or claim and an aggregate limit of at least \$2,000,000. Coverage must be purchased on a post 1998 ISO or equivalent form, including but not limited to coverage for the following:

- Bodily injury including death and personal injury
- Property damage
- Fire legal liability
- Products and completed operations

The policy shall also contain the following endorsements **which shall be indicated on the certificate of insurance:**

- The employee and workers compensation related exclusions in the above policy apply only to Lessee's employees
- The exclusions for railroads (except where the Premises is more than fifty feet (50') from any railroad including but not limited to tracks, bridges, trestles, roadbeds, terminals, underpasses or crossings), and explosion, collapse and underground hazard shall be removed.
- Waiver of subrogation
- Designated Premises Pollution Coverage (CG00-39), unless Lessee does not use or permit the use of the Premises for the generation, use, treatment, manufacture, production, storage or recycling of any Hazardous Substance (as defined in Section 7F of **Exhibit B** to this Lease).

B. Business Automobile Coverage insurance. This insurance shall contain a combined single limit of at least \$1,000,000 per occurrence or claim, including but not limited to coverage for the following:

- Bodily injury and property damage
- Any and all motor vehicles including owned, hired and non-owned

The policy shall also contain the following endorsements **which shall be indicated on the certificate of insurance:**

- The employee and workers compensation related exclusions in the above policy apply only to Lessee's employees

- The exclusions for railroads (except where the Premises is more than fifty feet (50') from any railroad including but not limited to tracks, bridges, trestles, roadbeds, terminals, underpasses or crossings), and explosion, collapse and underground hazard shall be removed.

C. Workers Compensation and Employers Liability insurance including but not limited to:

- Lessee's statutory liability under the workers' compensation laws of the state where the Premises are located
- Employers' Liability (Part B) with limits of at least \$500,000 each accident, \$500,000 disease policy limit \$500,000 each employee

If Workers Compensation insurance will not cover the liability of Lessee in states that require participation in state workers' compensation fund, Lessee shall comply with the laws of such states. If Lessee is self-insured, evidence of state approval must be provided along with evidence of excess workers compensation coverage. Coverage shall include liability arising out of the U. S. Longshoremen's and Harbor Workers' Act, the Jones Act, and the Outer Continental Shelf Land Act, if applicable.

The policy shall also contain the following endorsement **which shall be indicated on the certificate of insurance:**

- Alternate Employer Endorsement

D. Umbrella or Excess Policies In the event Lessee utilizes Umbrella or excess policies, these policies shall "follow form" and afford no less coverage than the primary policy.

Other Requirements

E. Punitive damage exclusion must be deleted, **which deletion shall be indicated on the certificate of insurance.**

F. Lessee agrees to waive its right of recovery, and its insurers, through policy endorsement, agree to waive their right of subrogation against Lessor. Lessee further waives its right of recovery, and its insurers also waive their right of subrogation against Lessor for loss of its owned or leased property or property under its care, custody and control. Lessee's insurance shall be primary with respect to any insurance carried by Lessor. All waivers of subrogation **shall be indicated on the certificate of insurance.**

G. All policy(ies) required above (excluding Workers Compensation) shall provide severability of interests and shall name Lessor as an additional insured. The coverage provided to Lessor as additional insured shall not be limited by Lessee's liability under the indemnity provisions of this Lease. **Severability of interest and naming Lessor as additional insured shall be indicated on the certificate of insurance.**

H. Prior to the execution of this Lease, Lessee shall furnish to Lessor original certificate(s) of insurance evidencing the required coverage, endorsements, and amendments. The certificate(s) shall contain a provision that obligates the insurance company(ies) issuing such policy(ies) to notify Lessor in writing of any cancellation or material alteration. **Upon request from Lessor, a certified duplicate original of any required policy shall be furnished.**

I. Any insurance policy shall be written by a reputable insurance company acceptable to Lessor or with a current Best's Insurance Guide Rating of A- and Class VII or better, and authorized to do business in the state where the Premises are located.

J. Lessee **WARRANTS** that this Lease has been thoroughly reviewed by Lessee's insurance agent(s)/broker(s), who have been instructed by Lessee to procure the insurance coverage required by this Lease and acknowledges that Lessee's insurance coverage will be primary.


K. If Lessee fails to procure and maintain insurance as required, Lessor may elect to do so at the cost of Lessee plus a 25% administration fee.


L. The fact that insurance is obtained by Lessee or Lessor on behalf of Lessee shall not be deemed to release or diminish the liability of Lessee, including, without limitation, liability under the indemnity provisions of this Lease. Damages recoverable by Lessor shall not be limited by the amount of the required insurance coverage.



DISTANCES ARE APPROXIMATE

LEGEND:

LEASE AREA 

UPRRCO. R/W OUTLINED 

LEASE AREA: 41,670 SQ.FT. / 0.96 AC. +/-

NOTE: BEFORE YOU BEGIN ANY WORK, SEE AGREEMENT FOR FIBER OPTIC PROVISIONS.

EXHIBIT "A"

UNION PACIFIC RAILROAD COMPANY

SWEENEY, BRAZORIA COUNTY, TX

M.P. 300.9 - ANGLETON SUB.

MP/TX/V-4/20AS4

SCALE: 1" = 100'

OFFICE OF REAL ESTATE
OMAHA, NEBRASKA DATE: 12-28-2022

DSK FILE: 2208-48

CADD
FILENAME | 0220848

SCAN
FILENAME | S:/MP/TX/4/220AOS4.TIF

REQUEST FOR PROPOSAL (RFP)

Janitorial Services

Following is a summary of information for this Project.

The City of Sweeny, Texas, hereafter called the City, is requesting sealed written Proposals for Performing all Work required for the **FY 2023/2024 Janitorial Services**, to include, in part: Cleanings as Requested for the Sweeny Community Center, Twice (2) Weekly at the Seniors Building, and Five (5) days a week at the Sweeny Community Library.

The City of Sweeny is seeking a qualified Contractor who shall provide janitorial services. The City currently has three (3) locations that require janitorial services. This number is subject to change and the City reserves the right to either add or delete locations, square footage and/or frequency of service(s). The successful Contractor will be required to provide quality service with minimal service call backs.

Sealed Proposals will be received at the office of the City Secretary, City of Sweeny, 102 W. Ashley Wilson Road, Sweeny, Texas, 77480 until **3:00 p.m. on Thursday, February 08, 2024**. Any proposals received after the closing time will not be accepted for consideration and will be returned unopened.

All proposals must be clearly marked on the outside with the following: “**Proposal for Janitorial Services FY 2023/2024**”. **Proposals can be mailed and/or sent electronically.** All mailed submittals must be received in the office of the City Secretary by 3:00 p.m. on Thursday, February 08, 2024. Any electronically sent RFP’s will be required to have reached the City’s inbox by 3:00 p.m. and must be labeled the same as noted above. Any proposals received after 3:00 p.m. will not be accepted.

Request for Proposals shall be directed to:

Kaydi Smith
City Secretary
Email: info@sweenytx.gov

Questions regarding this Proposal must not be directed to other City of Sweeny employees. Clarification requests will not be accepted by telephone. All responses to clarification requests will be provided to all proponents in writing by email and publication as an addendum on the City’s website.

Appendix A Scope of Work

Buildings: Sweeny Community Center, Sweeny Community Library, and Sweeny Seniors Building

1. Sweeny Community Center: As needed/ Requested Monday thru Sunday. Requests come with little notice as this building is rented by the public. Dates are subject to change at all times. Hours of cleaning may be limited to 1AM-6 AM on occasion. Normal public rentals are from 8AM- 12AM (midnight).
The Community Center is approximately 4,000 square feet containing a men's and women's restroom with three (3) toilets and/or urinals in each, one (1) sink each, and vinyl flooring. The facility contains an operational full size kitchen with two (2) sinks, refrigerator, standup freezer, microwave, and full oven with range. The kitchen contains tile flooring. There is a wooden dance floor surrounded a large carpeted area, making up the majority of the building. There are three sets of double glass doors and a tiled entry way.
 - A. Each Cleaning will require the following:
 - Vacuum all carpeting; spot clean carpets to remove fresh spills or stains as needed.
 - Thoroughly dust and wipe/sanitize all horizontal surfaces, including countertops, window sills, tables, and all manner of furnishings.
 - Wipe interior and exterior surfaces of all appliances.
 - Clean out refrigerator and freezer, throwing away any left items, and wipe down. Inspect and confirm all items have been discarded and/or disposed of within all cabinets and appliances.
 - Sweep and mop all hard surface floors to remove any spillage and/or soiled areas; Entry Foyer, Bathroom, Kitchen area, Backdoor exit/entryway, and Dance floor.
 - Clean glass doors (all), windows, and mirrors from smudges/ fingerprints on all glass surfaces.
 - Clean all toilets, sinks (4 to include bathroom and kitchen), hard surfaces with each rental. All cleaning supplies are supplied by the City. Toilets and urinals to be cleaned and sanitized inside and outside. Polish bright work.
 - Replace all paper goods as needed in restroom and kitchen. All goods are supplied by the city.
 - Empty all trash receptacles, replace and tie liners, as needed, and remove trash to a collection point (Liners to be furnished by City).
 - Inspect and pick up building as needed and take pictures as necessary of any damages found with each rental.
 - Complete cleaning logs and notify City of low cleaning supplies inventory.

2. Sweeny Community Library : Cleanings are required five (5) days a week; Tuesday – Saturday; prior too business hours. The Sweeny Community Library is located at 205 W Ashley Wilson Road and is approximately 3920 square feet. The Library contains one office, a breakroom, a main area consisting of carpeted flooring, a men's and women's restroom that contains 2 stalls with toilets and/or urinals and one sink per restroom. The entrance into the Library is linoleum flooring with one set of double glass doors.
 - A. Each cleaning will require the following:

- Vacuum all carpeting.
- Damp wipe and sanitize all horizontal surfaces as needed.
- Wipe interior and exterior surfaces of all appliances.
- Sweep and mop all hard surface floors to remove any spillage and/or soiled areas; Entry Foyer, Bathroom, and Kitchen area.
- Clean glass doors, windows, and mirrors from smudges/ fingerprints on all glass surfaces.
- Clean all toilets, sinks, and bathroom hard surfaces. All cleaning supplies are supplied by the City. Toilets and urinals to be cleaned and sanitized inside and outside. Polish bright work.
- Replace all paper goods as needed in restroom and kitchen. All goods are supplied by the city.
- Empty all trash receptacles, replace and tie liners, as needed, and remove trash to a collection point (Liners to be furnished by City).
- Inspect and pick up building as needed and take pictures as necessary of any damages found within.
- Complete cleaning logs and notify City of low cleaning supplies inventory.

3. Sweeny Seniors Building: Cleanings are required twice (2) weekly. Prior to the opening hours of 8 a.m. or after the hours of 10 p.m. The Sweeny Seniors building is located at 205 N Oak Street. The Seniors Building is mostly comprised of linoleum flooring and is approximately 1,768 square feet. This space contains a full kitchen, men's and women's restroom, and office area.

A. Each cleaning will require the following:

- Sweep and mop all hard surface floors to remove any spillage and/or soiled areas; Main area, Bathrooms, Kitchen and Office area.
- Wipe all horizontal surfaces, countertops, furniture, tables, and chairs. Sanitize as needed.
- Wipe interior and exterior surfaces of all appliances and clean sink within the kitchen area.
- Clean glass doors, windows, and mirrors from smudges/ fingerprints on all glass surfaces.
- Dust surfaces as needed.
- Clean all toilets, sinks, and bathroom hard surfaces. All cleaning supplies are supplied by the City. Toilets and urinals to be cleaned and sanitized inside and outside. Polish bright work.
- Replace all paper goods as needed in restroom and kitchen. All goods are supplied by the city.
- Empty all trash receptacles, replace and tie liners, as needed, and remove trash to a collection point (Liners to be furnished by City).
- Inspect and pick up building as needed and take pictures as necessary of any damages found within.

- Complete cleaning logs and notify City of low cleaning supplies inventory.

Other Provisions:

- Janitor closets, equipment and materials shall be kept in a neat, clean and orderly condition at all times.
- All damages are to be reported to the City immediately upon finding and documented accordingly; images, written report, and call placed to City employee if warranted.
- Defective or inoperative building equipment shall be brought to the attention of the City such as:
 - Leakage or problem plumbing.
 - Defective lights or lighting.
 - Doors not properly secured.
 - Other unusual circumstances that might affect the security, maintenance or effectiveness of the facility.
- AC units shall be set to 68 or higher upon leaving the facility unless otherwise instructed.
- Janitorial supplies inventory is the responsibility of the janitorial services contractor. All requests need to be submitted on cleaning logs per building requested for, in ample time for ordering and receipt.



AGENDA MEMO

Business of the City Council City of Sweeny, Texas

Meeting Date	2/20/2024	Agenda Item	
Approved by City Manager	Yes	Presenter(s)	Lindsay Koskiniemi, City Manager
Reviewed by City Attorney	No	Department	Finance – Procurement
Subject	Discussion and possible action to approve an interlocal agreement between Region 8 Education Service Center and the City of Sweeny for membership with the TIPS purchasing cooperative and approval of a resolution.		
Attachments	1) Purchasing cooperative agreement 2) TIPS Board resolution 3) Membership benefits		
Financial Information	Expenditure Required:	N/A	
	Amount Budgeted:	N/A	
	Account Number:		
	Additional Appropriation Required:		
	Additional Account Number:		

Executive Summary

This item is a request for two things:

- 1) Approval of an interlocal agreement for participation in the TIPS purchasing cooperative, and:
- 2) Approval of a resolution to participate in TIPS.

TIPS is a purchasing cooperative used by several municipalities, school districts, tribal nations, and other eligible entities for pre-negotiated, turnkey pricing for supplies and various services.

Participation in TIPS would broaden the City’s available resources of finding best pricing solutions.

The City currently participates with BuyBoard, Choice Partners, and Omnia Partners.

TIPS offers a rewards rebate program (flyer attached).

Recommended Action

Staff recommends Council approval.

Recommended motion:

“I move to approve an interlocal agreement between the City of Sweeny and Region 8 Education Service Center and to approve a resolution for the City’s participation in TIPS purchasing cooperative.”

**AN INTERLOCAL AGREEMENT Between
Region 8 Education Service Center and a
TEXAS PUBLIC ENTITY OR LOCAL GOVERNMENT
(School, College, University, State, City, County, or Other Political Subdivision)**

TEXAS PUBLIC ENTITY NAME

_____-_____
Control Number (TIPS will Assign)
Schools enter County-District Number

Region 8 Education Service Center
Pittsburg, Texas

225 - 950
County-District Number

Texas Education Code §8.002 permits regional education service centers, at the direction of the Commissioner of Education, to provide services to assist school districts, colleges and universities in improving student performance and increasing the efficiency and effectiveness of school, college and university operations. Authority for an Interlocal agreement to provide such services is granted under Texas Government Code § 791 *et seq* as amended. Cooperative Purchasing Services under this agreement are extended to all Texas State, City or County Government Agencies, or any other legally eligible Local Government Entity as defined in the Texas Government Code § 791.003.

This Interlocal Agreement (hereinafter the "Agreement") is effective _____ and shall be automatically renewed unless either party gives sixty (60) days prior written notice of non-renewal. This Agreement may be terminated without cause by either party upon (60) days prior written notice, or may also be determined for cause at any time upon written notice stating the reason for and effective date of such terminations and after giving the affected party a thirty (30) day period to cure any breach.

Statement of Services to be Performed:

Region 8 Education Service Center, by this Agreement, agrees to provide cooperative purchasing services to the above-named public entity through a Program known as The Interlocal Purchasing System (TIPS) Program.

The purpose of the TIPS Program shall be to improve procurement process efficiencies and assist in achieving best value for participating School District, University, College, Community College, City, County or Other Public Agencies through cooperative purchasing.

Roles of the TIPS Purchasing Cooperative:

- Provide for the organizational structure of the program.
- Provide staff for efficient operation of the program.
- Promote marketing of the TIPS Program.
- Coordinate the Competitively Bid Process for all Vendor Awarded Contracts.
- Provide members with procedures for placing orders through TIPS PO System.
- Maintain filing system for Due Diligence Documentation.
- Collect fees from vendors to support the costs of operations of TIPS.

Role of the Public Entity:

- Commit to participate in the program by an authorized signature on membership forms.
- Designate a Primary Contact and Secondary Contact for entity.

- ✓ Commit to purchase products and services from TIPS Vendors when in the best interest of the entity.
- ✓ Submit Purchase Orders and/or Vendor Contracts through the TIPS PO System by emailing the pdf document to tipspo@tips-usa.com.
- ✓ Accept shipments of products ordered from Awarded Vendors.
- ✓ Process Payments to Awarded Vendors in a timely manner.

General Provisions:

The Parties agree to comply fully with all applicable federal, state, and local statutes, ordinances, rules, and regulations in connection with the programs contemplated under this Agreement. This Agreement is subject to all applicable present and future valid laws governing such programs.

This Agreement shall be governed by the law of the State of Texas and venue shall be in the county in which the administrative offices of RESC 8 are located which is Camp County, Texas.

This Agreement contains the entire agreement of the Parties hereto with respect to the matters covered by its terms, and it may not be modified in any manner without the express written consent of the Parties.

If any term(s) or provision(s) of this Agreement are held by a court of competent jurisdiction to be invalid, void, or unenforceable, the remainder of the provisions of this Agreement shall remain in full force and effect.

The Parties to this Agreement expressly acknowledge and agree that all monies paid pursuant to this Agreement shall be paid from legally appropriated and budgeted available funds for the current fiscal year of each such entity.

No jointly owned property shall be created by this agreement and, therefore, no provision to dispose of jointly held property is required.

Before any party may resort to litigation, any claims, disputes or other matters in question between the Parties to this Agreement shall be submitted to nonbinding mediation. The site of the mediation shall be in Camp County, Texas or a site mutually agreed by the parties. The selection of the mediator shall be mutually agreed. The cost of mediation shall be shared equally.

No Party to this Agreement waives or relinquishes any immunity or defense on behalf of themselves, their directors, officers, employees, and agents as a result of its execution of this Agreement and performance of the functions and obligations described herein.

This Agreement may be negotiated and transmitted between the Parties by electronic means and the terms and conditions agreed to are binding upon the Parties.

Authorization:

Region 8 Education Service Center and The Interlocal Purchasing System (TIPS) Program have entered

TIPS BOARD RESOLUTION

STATE OF TEXAS

FOR: THE REGION VIII
EDUCATION SERVICE
CENTER

WHEREAS, the Board of Directors of _____, _____, Texas,
(Named Public Agency) (City)

pursuant to the authority granted by TEX. GOV'T CODE § 791.001, *et seq*, desires to participate in the TIPS Purchasing Cooperative offered by Region VIII Education Service Center, and in the Opinion that participating in this program will be highly beneficial to the taxpayers through the anticipated savings to be realized.

Therefore, be it RESOLVED that the _____ requests a stated need for
(Named Public Agency)
participation in The Interlocal Purchasing System (TIPS) whereby _____
(Name of Authorized Person)

is authorized and directed to sign and deliver any and all necessary requests and documents in connection therewith for and on behalf of _____.
(Named Public Agency)

I certify that the foregoing is a true and correct original Resolution duly adopted by the _____ and is filed on record at the TIPS office.
(Named Public Agency)

In witness thereof, I have set my hand and signature this ____ day of _____, 20____.

By: _____
(Authorized Signature)

(Printed Authorized Name)

(Title)

This legal document will remain current on file until either party severs the agreement.



REWARDS QUALIFICATIONS

Texas Members Only



Item 7.



TIPS Rewards Dollars are awarded based on all purchases processed through TIPS. A purchase is considered completed once TIPS has received full payment from the Vendor.



TIPS Rewards Dollars are based on Vendor payments received during the TIPS fiscal year (September 1st - August 31st).



Purchase Orders should be sent to TIPS within 30 days of issue date/PO date.*

Best Practice To Ensure Maximum Rewards



Send Purchase Order and Quote to TIPS for processing. *Be sure to include the TIPS contract #.* You may also reference [How To Make A Purchase](#) for detailed instructions.



If you elect to send a Purchase Order directly to a vendor, send a “confirmation only” copy to TIPS at tipspo@tips-usa.com

*Purchase orders received more than 30 days after the issued date/PO date may be ineligible from the TIPS Rewards Program. TIPS reserves the right to exclude purchases not received in a timely manner. You will be notified if your PO is ineligible.

TIPS Member Purchase Order Process

1. Visit the TIPS website at: www.tips-usa.com and click the “Contracts” tab or “Vendors” tab to locate a specific Vendor, service, or product.
2. The TIPS Member must request a **TIPS Quote** from the TIPS Vendor with the **TIPS Contract Number referenced on the quote**. Note: you can easily request a quote using the TIPS Member Portal.
3. If the Member decides to proceed with the purchase, the Member should identify whether the Vendor is an “**Automated Vendor**” by checking the list of “**Automated Vendors**” located online at www.tips-usa.com/automatedvendors.cfm. If so, please send the PO and TIPS Quote directly to the **Automated Vendor** to complete the TIPS purchase.
4. If the Vendor is not an “**Automated Vendor**”, and Member desires to issue the purchase through TIPS, the Member should submit their **PO & TIPS Quote, both referencing the TIPS Contract Number, merged into one PDF (1) document** to tipspo@tips-usa.com.
Note: sending both documents merged into one PDF attachment expedites the process.
5. PO will be verified for contract compliance and forwarded to the **TIPS Awarded Vendor**. The **TIPS Member** will receive a compliance letter for their files.
6. If you elect to send a PO directly to a Vendor that is NOT an “**Automated Vendor**”, send a copy marked “**Confirmation Only**” to tipspo@tips-usa.com. **TIPS will confirm receipt, but no compliance letter will be sent**. PO must be sent within **30 days** of issue date.
7. **Member payment** will be made directly to the Vendor by the Member as agreed by the parties.

Important Things to Note:

1. **Live PO’s** will typically be processed in 1 to 3 business days. Submissions with missing documents or pending information from vendor or member may take longer. **Confirmation Only PO’s** will be entered within 10 business days.
2. Please note that emails sent to tipspo@tips-usa.com are not seen by the TIPS vendor so **all vendor instructions must be included on the PO**.
3. Please see the **TIPS Reseller Purchase Order Process** guide when using a Reseller of the primary TIPS vendor.



Purchasing Made Personal

Need Assistance? 866-839-8477



MEMBERSHIP BENEFITS

ABOUT TIPS

Purchasing Cooperative

TIPS is a national purchasing cooperative offering competitively solicited contracts to education government and nonprofit agencies, saving them both time and money. TIPS provides a proven, streamlined process that eliminates the purchasing stress for Members.





TIPS MEMBERS

are able to save time and money without the delay and expense because TIPS completes the competitive bid process for you

BENEFITS

Full-Line Contract Solutions

- Choose the products & services desired

Leveraging Relationships

- Select the Vendor desired to purchase from & work with
- TIPS is always available to assist in the process & confirm pricing

Quality Pricing

- Avoid low-bids and low-quality awards.
- Receive national volume, ceiling-based, discounted pricing
- Submit your own RFQ and specs through our Member Portal in one easy step

WHO CAN JOIN

The benefits of using TIPS are available to Education, Government and Non-Profit Agencies



TIPS is the purchasing cooperative of Region 8 Education Service Center, the **Lead Public Agency**.



TIPS has the **legislative authority** to establish contracts for government and education agencies **nationwide**.



Membership is **FREE** with no purchasing obligation or liability. Members gain immediate access to our competitively procured contracts with **quality vendors**.





AGENDA MEMO

Business of the City Council

City of Sweeny, Texas

Meeting Date	02/20/2024	Agenda Item	
Approved by City Manager		Presenter(s)	Michelle Medina
Reviewed by City Attorney		Department	Sweeny EDC
Subject	Approve and sign revised mylars for Stark Inc.		
Attachments	Revised mylars		
Financial Information	Expenditure Required:		
	Amount Budgeted:		
	Account Number:		
	Additional Appropriation Required:		
	Additional Account Number:		

Executive Summary

Survey for Stark Inc. total of 16.93 acres. 2 acres lot 3 (EDC will be 2nd lien) and 14.93 acres lot 3a EDC as 1st lien holders. The two acres were approved in the performance agreement to be used for a store front to rent/sale landscaping equipment and materials.

Recommended Action

Requesting approval of the revised plan and signatures.

CITY COUNCIL MEETING REGULAR SESSION

Item 8.

Tuesday, October 24, 2023 at 5:30 PM

City Hall, 102 W. Ashley Wilson Rd, Sweeny, Texas

MINUTES

BE IT KNOWN that the City Council of the City of Sweeny met in Regular Session on Tuesday, October 24, 2023 at 5:30 PM. at City Hall, 102 W. Ashley Wilson Rd, Sweeny, Texas with the following agenda.

CALL TO ORDER/ROLL CALL

Mayor Hopkins called the meeting to order at 5:30 P.M.

Reese Cook, Brian Brooks, John Rambo, and Tim Pettigrew were in attendance. Mark Morgan Jr. was absent.

PLEDGES & INVOCATION

Pledges were led by Councilman Brooks. The invocation was given by Attorney Stevenson.

EXECUTIVE SESSION IN ACCORDANCE WITH THE TEXAS GOVERNMENT CODE SECTION 551.071, 551.072 AND 551.074

Mayor Hopkins stated the City Council will now convene into executive session pursuant to the provision of Chapter 551 Texas Government Code, in accordance with the authority contained therein at 5:31 p.m.:

1. ***Discussion / Possible Action on Deliberations Regarding Real Property, pursuant to Section 551.072 of the Texas Government Code***
2. ***Discussion/ Possible Action Pursuant to Section 551.071 (1) (a), Consultation with Attorney with Sweeny Economic Development Corporation***

OPEN SESSION

The Mayor closed Executive Session and announced the City Council will now adjourn Executive Session, reconvene into Open Session pursuant to the Provisions of Chapter 551 Texas Government Code and take action, if any, on item(s) discussed during Closed Executive Session at 6:47 p.m.

3. ***Discussion/Possible Action pursuant to Executive Session item on Deliberations to Real Property, Pursuant to Section 551.072***
No Action Taken.
4. ***Discussion/Possible Action pursuant to Executive Session item on Consultation with Attorney, Pursuant to Section 551.071 (1) (a), and the Sweeny Economic Development Corporation***
No Action Taken.

CITIZENS WISHING TO ADDRESS CITY COUNCIL

No citizen comments.

CONSENT AGENDA

5. ***Proclamation: Veterans Day, November 11, 2023***
Mayor Hopkins stated the proclamation would be signed and posted at City Hall.
6. ***Minutes: Special Session September 12, 2023, Regular Session September 19, 2023, & Special Session October 04, 2023***
John Rambo made the motion to approve the Special Session September 12, 2023, Regular Session September 19, 2023, and Special Session October 04, 2023 minutes. Tim Pettigrew seconded. All in favor. Motion carried.

7. Discussion and possible action to the Third Quarter Financial Reports for Fiscal Year 2022-2023, spanning April – June

Reese Cook moved to approve as presented agenda items 7 & 8. Tim Pettigrew seconded. All in favor. Motion carried.

8. Discussion and possible action on the Fourth Quarter investment report of Fiscal Year 2022 – 2023, spanning July – September 2023

See prior item- Reese Cook moved to approve as presented agenda items 7 & 8. Tim Pettigrew seconded. All in favor. Motion carried.

REGULAR AGENDA

9. Discussion/ Possible action to agenda request received on cats and trash; Darlene Tipps

Darlene Tipps approached the Council as Yvonne Darrell handed out information to be included within minutes as Exhibit 1 provided by Tipps. Ms. Tipps lives at 401 E 3rd Street and is approaching Council to address the stray feline problem within Sweeny. She has brought Council suggestions to help with the issue consisting of a cat community and neighborhood adoption program that would trap, neuter, and release. Additionally, Tipps has suggested a City partnership with a veterinarian or the SPCA to help with the program suggested. She would like to see the City adopt an ordinance to allow donations on the city utility bill that would help with a volunteer program for cats, TNR, or a better animal shelter. She would like to see a social media page to help with fostering dogs and cats. She stated her neighborhood is overrun with strays and she is looking to Council for a way to move forward in helping to combat the ever increasing population. According to the last action taken by Council in 2019, the City is to pickup trapped felines and hold for said amount of time, then euthanize.

Mayor Hopkins asked if our ACO is catching strays? Animal Control is not housing cats at this time due to space constraints. City Manager, Lindsay Koskiniemi, stated she is seeking information from Texas Rebuild to reskin the back shop (located at the Public Works Building on Peach Street) to use as a climate controlled animal shelter. Brian Brooks stated that four (4) years ago, Council received an anonymous letter leading to the motion from 2019 to pickup trapped feral cats. We are not currently picking up trapped feral cats. Tipps asked if kennels were provided, could the City hold or would the vet be able to hold? City Manager stated we do not have a facility to keep them, but does recognize something needs to be done. She thinks we need to check our current agreement with Marsh Vet on retentions (spaces/housing) as she believes the agreement is only for euthanization purposes. Reese Cook suggested looking into purchasing wall cages/kennels for housing and possible adoptions. Koskiniemi stated the City does not have the budget for the supplies and expense. Koskiniemi asked Council if she could work with Police Chief Caudle and bring back a plan to the next Council meeting, as the ACO is under his department, and he is not in attendance this evening.

Reese Cook moved to approve as requested. Seconded by John Rambo. All in favor. Motion carried.

10. Discussion and possible action on Fourth Quarter Updates from the Sweeny Executive Leadership Team, covering July, August, and September 2023.

The Leadership Team gave an update to their quarterly reports given to Council to include Ed Srebalus, Rusty Lofton, Terrance "Tex" Bell, Kaydi Smith, Karla Wilson, and Michelle Medina. Michelle Medina, SEDC Executive Director, gave an update on the roadway at Industrial Park. It is approximately 66 % completed and on budget. It is expected to be completed by the 2nd week of November. City Manager gave a detailed report consisting of the following to include an update to the Top 10 Projects List. She stated that the water wells are found to be non-restrictive and must adhere to the County's requirements. Water quality issues are still being addressed and water line replacements are being completed. She is currently pursuing a grant for water line replacements. We have been conditionally awarded for a one mile water line and hydrant expansion project. For

the Waste Water Treatment Plant, clarifier one is in need of a 6" gorman pump that has been obtained. We will need to construct a roadway leading to the plant in order for the installation. The roadway is being completed in house. Staff is looking at executing a mowing/drainage agreement in the near future. The city street lights have been evaluated and those that remain out are being reviewed by an electrician.

Brian Brooks asked about the clock on Main Street. It was originally donated by Rotary and she is currently looking into this with Beautification. Reese Cook asked about the water quality on pg. 68 of Koskiniemi's update within the packet. It states that we are uncertain if dead end flushers are needed. Council previously approved \$50,000.00 to purchase the auto flushers. Koskiniemi stated staff believes the flushers will not fix the problem. She is wanting to talk in greater depth, prior to continuing forward with the purchase. Reese Cook asked about drainage on West Ashley Wilson Road and McKinney Street. Koskiniemi stated the Drainage District is handling both. On McKinney, they are to replace a culvert and cut out a portion of the tree stump within the ditch area. She has requested an interlocal for labor and materials with the County. Reese Cook asked about the Sidewalk Project. Koskiniemi stated TxDot has a board meeting Thursday at 10 a.m. to announce those selected. She intends to pay the full amount back after the first payment if Sweeny is not selected. John Rambo followed up on the water wells information. He asked about making the committee more relaxed, as we are required to have a wellhead committee per the Ordinance. Rambo is proposing to amend to allow wells if the resident adheres to all county requirements and for Council to act as the wellhead protection committee. Council would need to establish a process for permitting and determine if any fees will be associated. This would need to be put on another agenda to discuss in depth. John Rambo asked for the current headcount of public works employees. We have 2 open positions: a wastewater operator and general laborer. We currently have 7/8 employees. In years prior, we had 12 to 13 employees, then decreased to 9 to 10.
Discussion only; no action.

11. Discussion and possible action on staff generated request for the purchase of a new sewer jetter for use on culverts to improve and manage drainage and respond to sewer blockages.

City Manager stated that last month Council gave permission to rent a sewer jetter for a month. She is requesting to purchase. Public Works has been using the jetter to clean culverts in the areas of MLK, Hackberry, and 5th Street. Public Works Director Bell stated his department is in need of the equipment to clear sewer blockages. We have been borrowing from the City of Brazoria. If Brazoria is using and cannot spare to loan, our residents have to wait. Representatives from Kinloch and Pipe Hunter were in attendance. Both representatives were able to answer questions on their quotes previously given, warranty information, and training opportunities associated to the purchase. Both companies are affiliated with either the Buyboard or HGAC cooperatives. At this time, the City of Sweeny is renting a machine from Kinloch.

Reese Cook motioned to move items 11 and 12 down with items 18 & 19 to talk about all four (agenda) items together. John Rambo seconded. All in favor. Motion carried.

Reese Cook moved for a short recess, 5 minutes. Mayor Hopkins stated we would recess starting at 7:48 p.m. Mayor Hopkins reconvened Council at 7:55 p.m.

13. Discussion/ Possible action on Sweeny EDC's Performance Agreement amendment with Cecil Joe Stark Sawmill & Logging, Inc.

Michelle Medina, Executive Director of Sweeny EDC, stated Council requested more information at the last Council meeting. EDC previously asked to amend the performance agreement with Stark. Councilman Cook stated the request previously made from Council was for sales tax numbers from prior years. He also referred to page 5 of the business proposal submitted by Stark that shows land

clearing, site prep, and limestone. Is that taxable? Stark stated the clearing is not, but limestone is, only if sold direct. He wants to move to Sweeny in order to have a storefront. He already has a successful business elsewhere. Currently his sells are mainly commercial. He went to the business department at the college to help him with the business proposal submitted to Council, as this will be a new business. These are projections as his business model is changing. His yearly taxable income is approximately \$200,000-\$300,000 taxed at 6.75, the County rate. That would equvalate to approximately \$20,000 a year in sales tax. Stark stated he has provided his sales tax information previously to the EDC. He did pass a copy of the information around for Council to view. Stark gave Council an overview of the types of rental equipment he will have available and the types of materials available for purchase.

John Rambo made the motion to approve the EDC's approval for the performance agreement to move forward with the survey and deed for Stark. Brian Brooks seconded. Brian Brooks, John Rambo, and Tim Pettigrew approved. Reese Cook opposed. Motion carried.

14. Discussion/ Possible action on amendment to Ordinance 130.07 and determining zone allowance; Eight-liner machines

City Manager stated that staff was asked to look into allowing coin machines within the City limits. Is this something that Council wants to allow? City Secretary stated that as of now eight liners are prohibited by city ordinance. If Council wants to allow, the ordinance would need to be amended to include zoning allowances, restrictions, and establishing a permitting process. Councilman Cook asked if eight liners are a taxable income? Yes, we could check with City of Brazoria to see if they could give us approximate amounts annually received. Discussion ensued regarding the length of time these types of establishments remain open and if Council wants to consider allowance.

Reese Cook made the motion to keep the current ordinance in effect. Brian Brooks seconded. All in favor. Motion carried.

15. Discussion/ Possible Action to amend Ordinance Chapter 110; Peddlers and Solicitors

City Secretary stated that the Peddlers and Solicitors Ordinance and the Mobile Food Ordinance was previously brought to Council on possible amendments as the current is in conflict with the Texas Administrative Code and the Health and Safety Code, due to temperature related foods. Roadside and push cart food vendors have been removed from the peddlers ordinance and placed into the mobile food ordinance to comply.

John Rambo made the motion to approve the ordinance as presented. Tim Pettigrew seconded. All in favor. Motion carried.

16. Discussion/ Possible Action to amend Ordinance Chapter 115; Mobile Food Establishments

See item number 15.

John Rambo made the motion to approve amendment to the ordinance as presented. Tim Pettigrew seconded. All in favor. Motion carried.

17. Discussion and possible action for the fourth quarter salvage items from 2023

Reese Cook moved to approve as presented. Tim Pettigrew seconded. All in favor. Motion carried.

18. Discussion/ Possible action on a budget amendment to the FY 2022/2023 Budget; Enterprise Fund amendment for \$50,000.00 to be used for Water Line Replacement Purposes

City Manager stated this is a formality allowing the \$50,000 to be utilized for water line replacements. A budget amendment is required for auditing purposes in order to move funds.

Tim Pettigrew made the motion to approve the budget amendment to the budget year, Fiscal Year 2022/2023, from the Enterprise Fund for \$50,000.00, to be used for water line replacements. John Rambo seconded.

Discussion: John Rambo asked about moving the funds from fund balance. City Manager stated any movement of funds from fund balance needs to be followed up with an amendment. She stated the appropriation from Fund Balance to this fiscal year budget would need to be shown as a new line item as maintenance of water, or in capital outlay for next year in order to show the day to day. *All in favor. Motion carried.*

19. Discussion and possible action on staff generated request to amend the Fiscal Year 2022 – 2023 budget for unanticipated expenses related to water and wastewater.

City Manager explained the agenda item and invoices attached within the packet are due to unanticipated expenses relating to the water and wastewater. The amendments are \$91,728.40 for water and \$167,188.59 for wastewater. The total dollar amount for requested budget amendment is \$258,916.99. Councilman Cook asked if we could talk about items 11 & 12 with this item all together? City Manager wants to table item number 12, as Claybourne is not in attendance to speak about the presentation. Attorney Stevenson stated that all items could be discussed together but Council would need to take action separately, per agenda item. Karla Wilson, Finance Director, reiterated that we are looking at different budget years, as discussion on combining the agenda items continued. City Manager recommended pulling the funds from interest earnings, Texpool funds, or the CO 19.

Reese Cook moved to approve funds transfer from the following accounts: Logic CO 2019 Investment Account- \$144,000.00 and Logic Enterprise Investment Account- \$115,000.00, to pay for unanticipated expenses related to water and wastewater from the FY 2022/2023 budget. Tim Pettigrew seconded. All in favor. Motion carried.

Council continued discussions on previous agenda items, number 11 and 12.

11. Discussion and possible action on staff generated request for the purchase of a new sewer jetter for use on culverts to improve and manage drainage and respond to sewer blockages.

Brian Brooks made the motion to take the one (sewer jetter) we have that we are currently using. Tim Pettigrew seconded.

Discussion: City Manager stated the funds of \$20,000 would cover the first year on the rent to own agreement, which would be approximately \$1,676 a month. We are receiving credit in the amount of \$2,000 from the old sewer jetter. Total is \$84,000 for the model we are currently using. City Manager stated we have the money for the first year now. John Rambo asked what Kinloch will do with the old jetter we are trading in? Morgan Kinloch Taylor stated they would use as parts possibly. *All in favor. Motion carried.*

12. Discussion/ Possible action on proposal received by Water of Texas, Michael Claybourn Sr.

City Manager stated she would like to table this discussion as Mr. Claybourn was not in attendance. *Reese Cook moved to table item 12. John Rambo seconded. All in favor. Motion carried.*

ITEMS OF COMMUNITY INTEREST

Brian Brooks congratulated "Tex", Terrance Bell, on his promotion as Public Works Director.

John Rambo stated the Beautification Main Street clean up was successful. Dr. Leal's Halloween in the park is coming up on Saturday the 28th.

Tim Pettigrew stated the Veteran's Day parade will be Saturday 11/11/23 in Angleton. Breakfast will be before the parade at 6:30 a.m. at the Angleton High School. Pettigrew thanked city staff for the plant received for his moms funeral.

City Manager stated the regularly scheduled Council meeting dates for November and December are close to the Thanksgiving and Christmas holidays. She is proposing to move them a week prior which would be Wednesday, November 15th and Wednesday, December 13th.

ADJOURN REGULAR SESSION

Mayor Hopkins adjourned the Regular Session of the City Council at 8:36 PM.

Staff present:

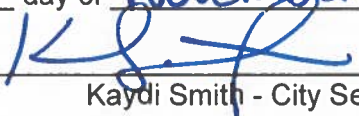
- City Manager, Lindsay Koskiniemi
- Police Sargent, Ed Srebalus
- Director of Public Works, Terrance Bell
- Finance Director / Personnel Services, Karla Wilson
- City Secretary/ Developmental Services, Kaydi Smith
- Project Manager, Rusty Lofton

Exhibit 1: Packet presented by Darlene Tipps; Regular Agenda Item No. 9

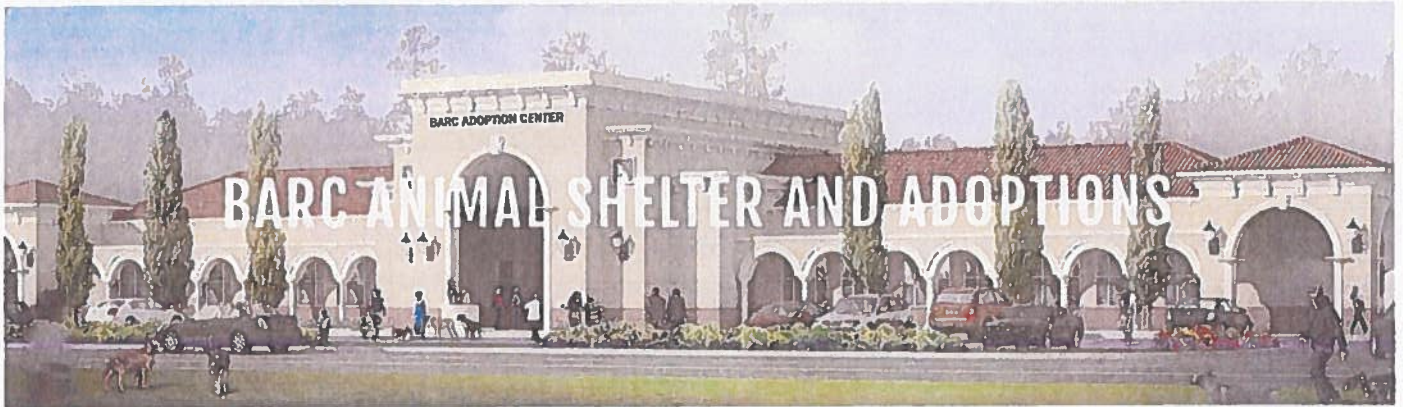
Exhibit 2: Pipe Hunter Quotes (2); 4733 Single Axle Trailer & 7724 Tandem Axle Trailer; Regular Agenda Item No. 11; submitted by City of Sweeny Project Manager, Rusty Lofton

Exhibit 3: Packet presented by Morgan Kinloch Taylor of Kinloch Equipment Co; Regular Agenda Item No. 11

Passed and approved this 15 day of November, 2023.



 Kaydi Smith - City Secretary



Home > [BARC Animal Shelter](#) > [Get Involved](#) > About Trap-Neuter-Return Program

[MORE BARC LINKS](#)

Cat = 20 kittens a year

BARC ANIMAL SHELTER AND ADOPTIONS

About Trap-Neuter-Return Program



We love our TNR / Community cats and are grateful for fosters, BARC employees and rescue groups who help us take care of them. Recently we received a very much needed donation from the estate of Mr. Richard Matelske, a cat feeding station for our parking lot kitties. Special thank you to Kelli Matelske and Nela Brown from Frisky Paws Rescue for organizing the feeding station.

GET INVOLVED LINKS

[Volunteer with Us](#)

[Foster a Pet](#)

[Trap-Neuter Return](#)

[Donate Main Page](#)

BARC LINKS

[BARC Home Page](#)

[Hours of Operation](#)

[Our Location](#)

[Donate to BARC](#)

[About BARC](#)

[Before Turning In A Pet To BARC](#)

[License Your Pet](#)

[Fixin' Houston Spay / Neuter Clinic](#)

[Adopt A Pet / Search Adoptable Pets](#)

[Canine Manners Classes](#)

[About Trap-Neuter-Return](#)

[Become a TNR Colony Manager](#)

What is a community cat?

"Community cat" is an umbrella definition that includes any *un-owned* cat. These cats may be "feral" (un-socialized) or friendly, may have been born into the wild or may be lost or abandoned pet cats. Some community cats are routinely fed by one or more community members, while others survive without human intervention. Whatever a cat's individual circumstances, the term "community cat" reflects the reality that for these cats, "home" is within the community rather than in an individual household.

A colony can range from 3–25 cats. Their locations vary. Community cat colonies can be in alleyways, parks, or neighborhoods. Members consist of adult females, their young, and some adult males.

What Is Trap Neuter Return?

A Trap, Neuter, and Return (TNR) program is a program approved by the Director of BARC Animal Shelter & Adoptions in which community cats are humanely trapped, evaluated, vaccinated, sterilized, and marked by an identifying notch in the left ear, all administered by a veterinarian, and returned to the trap location. TNR is a proven method that is both humane and effective. The colony population size remains stable. When all cats are spayed, neutered, and returned to a colony, the population size will gradually decrease as offspring are no longer produced. Because of the gradual decrease, the vacuum effect will not occur.

- [TNR] is not only the most humane method of preventing cats from entering the shelter system; it's the most effective. - [Best Friends Animal Society](#)

- "The programs and services of the No Kill Equation include a feral cat Trap-Neuter-Return program..." - [Nathan Winograd, National No-Kill Leader](#)

Why is TNR Beneficial to Houston's Community?

For a long time, "catch and kill" was a widely accepted method of managing community cat colonies. The cats were trapped and removed from their established colony to be euthanized. While this method causes an instant decrease in the overall colony numbers, *it is not effective over time*. Colonies subject to "catch and kill" typically end up increasing in number back to their original size as a result of what is known as the vacuum effect.

What is the vacuum effect? Community cat colonies, like other populations of animals in the wild, have a certain population size at which they are most stable. When the population size of a colony is drastically reduced in a short amount of time, the colony reacts by trying to return to the stable size. The remaining members of the colony increase mating activities in an effort to create more offspring and stabilize the colony population size. A reduction in size also opens the door for newcomers to the colony - other cats in the area may move in. Because of the vacuum effect, "catch and kill" has no lasting impact on the size of a community cat colony.

Once the community cats within a colony are spayed and neutered, not only will the population size gradually decrease, but the cats will also be healthier and coexist more peacefully within a neighborhood. Female cats, prevented from having any more litters, will be healthier. Male cats will gradually lose the urge to roam and fight, and will be less prone to injury. Behaviors associated with unaltered cats, such as yowling and marking territory with urine, will disappear.

What is the alternative to TNR?

BARC operates a very robust adoption program that is focused on saving lives by placing cats and kittens into forever homes. However, the open admission shelter takes in thousands more felines into the shelter annually than it can adopt out.

[Get Involved!](#)

[Our Wellness Center](#)

[Lost a Pet?](#)

[Healthy Pets Healthy Streets](#)

[Enforcement Information](#)

[Helpful Links](#)

[Statistics & Reports](#)

BARC integrated an aggressive TNR program to provide additional alternatives to humanely putting them to sleep. If more animals are responsibly released back into their original environments through the TNR program, less animals are euthanized.

TNR is a widely accepted and supported effort to save lives, not only in Houston but around the country. For example, [UC Davis School of Veterinary Medicine](#) recently published an [article supporting the Initiative](#). Additionally, shelters across the state including [San Antonio's Animal Care Services](#) and national organizations such as [Best Friends Animal Society](#) and the National No-Kill movement support the initiative.

Does putting community cats back into the community increase the risk for birds and wildlife to be harmed?

It has been argued that cats should be collected from the community, impounded and euthanized in shelters to protect wildlife and public health. However, euthanizing or removing all community cats from an area may lead to an increased population of other non-native species with an even more detrimental effect.

There are many more cats in the community currently than BARC can take in over a short period of time. The TNR program will decrease the number of cats that could potentially harm birds and wildlife over time (refer to more information about the benefits of TNR above).

How can I keep unwanted community cats off of my property?

Remove all potential food sources from the property: This would include pet food for the resident's animals, meat scraps in compost, fallen fruit from trees, barbecue grills, excess bird food from birdfeeders and garbage. Garbage bags are very attractive to animals, so trash should be kept in containers with a secure lid, and put out in the morning of pick up to reduce the temptation for the animals.

Limit availability of water: Limit access to water features, pools and ponds with fencing. Remove or repair sources of standing water.

Remove or secure potential shelter areas: Secure access under houses, sheds, decks, porches and buildings with wire fencing. Open spaces beneath structures should be tightly screened with 1/4- or 1/3-inch galvanized hardware mesh. The bottom edge of the wire should be buried at least 6 inches deep, extended outward for 12 inches, so it forms an L shape, and then covered with soil, or heavy stones. Trees should be trimmed so that the branches that overhang roofs are at least 5 feet from the house. Bushes and shrubs need to be thinned and trimmed so that there is 18 inches of open space above the ground to limit the cover for animals to hide under.

Other useful tactics to deter unwanted cats: Place chicken wire or plastic carpet runner, spikes up, under flower bed mulch to make scratching uncomfortable. Sprinkle coffee grounds or citrus peels or use citrus spray on gardens and shrubs. One very effective tool is a motion detection device combined with common water, available from various outlets. The cat breaks the beam of the device, and is immediately sprayed with a stream of water. This device works on raccoons, dogs, opossums and other animals, too.

What is a TNR Colony Manager?

The City of Houston promotes TNR for the management of our city's community cats, and citizens. Any citizen feeding community cats must be actively working towards getting all cats in the colony spayed and neutered (i.e. accomplishing the TNR of the colony), must be feeding in a way that does not attract raccoons or possums, and must have the permission of the property owner/manager to be

feeding the cats if the colony location is not on either their own property or on city property. As long as citizens are in accordance with these requirements, they are encouraged to feed and care for the community cats within their colony and can submit an application to become an official colony manager.

According to Houston City Ordinance section 6-22, "It shall be unlawful for any person intentionally to cause, suffer, or permit the maintenance of an attractive environment for the assembly of a congregation of unconfined and unlicensed stray cats or dogs by the placement of dog food or cat food," however colony managers who follow city TNR guidelines are permitted to feed community cats "subject to a trap, neuter, and return program approved by the Director."

Get Involved!

Become a colony manager!

Are you feeding community cats in your community? Have you been trapping them and getting them spayed and neutered? If so, you might be interested in becoming a colony manager.

We appreciate and value our colony managers. By Trapping, Neutering, and Returning community cats of your neighborhood, colony managers make an impact on stopping the cycle of community cat overpopulation in the City of Houston.

The City can help you and the cats in your colony by providing spay/neuter appointments for feral cats. Colony managers who follow the City's TNR guidelines will have the City's support. To be in accordance with City of Houston ordinance, all citizens feeding feral or stray cats must adhere to the following requirements:

Citizens must be actively working towards getting the entire colony of cats spayed, neutered, and ear notched.

Citizens must be feeding in a way that does not attract raccoons or possums. Cats must be fed at set times and food cannot be left out after the cats have finished eating.

Citizens must have the permission of the property owner or manager to be feeding unless they are feeding on either their own property or on city property.

If you are following the above guidelines and are interested in becoming a colony manager:

1. You must live inside the Houston city limits. The colony must also be located inside the Houston city limits.
2. Fill out the [Feral Cat Colony Manager Application](#) (.pdf). (Please return by mail to BARC Animal Shelter, 3200 Carr St, Houston, TX 77026 ;or email to barctnr@houstontx.gov)
3. Fill in the spreadsheet we will provide with information on all the cats in your colony. Update this spreadsheet and submit it again at regular intervals so we can keep track of all the cats in your colony.
4. Provide us with written, signed proof of permission from the property owner/manager where you are feeding, unless you are feeding on either your own property or on Houston city property.

Need to Borrow a Trap?

Traps are available and can be reserved by emailing barctnr@houstontx.gov. BARC has limited number of traps available and MUST be reserved ahead of time.

There is no cost to reserve a trap, but a credit card form must be completed and if the trap is not returned within 30 days a credit card will be charged

If you are looking to trap and have a preferred day you would like to bring a cat in for surgery you can schedule a surgery appointment for a feral cat by emailing barctr@houstontx.gov.



BARC INFORMATION

3200 Carr Street,
Houston, TX 77026
Call 3-1-1 for more information

GET INVOLVED



[Home](#) • [311 Help & Info](#) • [Contact Us](#) • [FAQs](#) • [Privacy Policy](#) • [CitizensNet](#)

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Exhibit 2

Confidential PipeHunter Quote

April 2008

Version **Item 8.**



4733 Single Axle Trailer - 2,500 PSI @ 40 GPM

Quote Date: September 25, 2023
 Customer: Sweeny, Texas
 Job #:
 Salesman: David Mills

Due Date:
 Dealer: Texas Underground
 Stock #:
 P.O. Number:

Part Number	Description	Quantity	Price	Total
WATER TANK				
9000-0055	400 Gallon Tank 7000 LB AXLE STD	1	Std.	Std.
9000-0103P	Single Filler Assembly	1	Std.	Std.
9000-0106	25' Fill Hose w Storage Rack	1	Std.	Std.
9000-0032P	Main Tank Water Sight Guage(1)Std	1	Std.	Std.
WATER PUMP				
	3,000 PSI @ 30 GPM - Giant Water Pump	1	Std.	Std.
9000-0040	Washdown System-43H with gun and 25ft hose	1	Std.	Std.
9000-0059	Air Purge	1	\$ 185.00	\$ 185.00
9000-0058	Winter recirculation (not available on Jet Eye)	1	\$ 295.00	\$ 295.00
9000-0061	Multi-Flow Valve	1	\$ 295.00	\$ 295.00
ENGINE				
D3307-CR-TIE4B-KEA-1	KOHLER DIESEL ENGINE RATED 74.3 HP Tier 4 Final W Clutch	1	Std.	Std.
	15 Gallon Fuel Tank	1	Std.	Std.
9000-0048	Emergency Kill	1	Std.	Std.
9000-0064	Electric Throttle Upgrade	1	Std.	Std.
	Digital Gauge Package & Tachometer Low Pressure High Temp Shutdown	1	Std.	Std.
9000-0045	Engine Shroud/ Belt Guard/ Fenders - Aluminum	1	Std.	Std.
HOSE REEL				
<i>Single Jet Hose Reels</i>				
9000-0133	800' x 3/4" Jet Hose Reel	1	Std.	Std.
<i>Articulating Reel Option</i>				
9000-0316	Articulating Reel Option Hydraulic Powered Worm Gear	1	\$ 4,200.00	\$ 4,200.00
<i>Hose Reel Accessories</i>				
9000-0049	Standard Level Wind	1	Std.	Std.
	Double Roller Levelwind 45 Degree	1	\$ 295.00	\$ 295.00
HOSE OPTIONS (per foot)				
	3/4" Leader hose-per foot	10	\$ 13.00	\$ 130.00
	3/4" Jet Hose per foot Piranha	500	\$ 4.15	\$ 2,075.00
	Tiger Tail(1)Std 3"	1	Std.	Std.
NOZZLE OPTIONS- Std. Hose Reel Nozzles				
7600-0084	Nozzle Rack (1)	1	Std.	Std.
3007-4014-25400	15 Degree Nozzle (1)	1	Std.	Std.
3007-4013-25400	30 Degree Nozzle (1)	1	Std.	Std.
3007-9000	Nozzle Skid Assy 6" (1)	1	Std.	Std.
ELECTRICAL OPTIONS				
	Light - Strobe Flat Qty 4 ea. Corner	1	\$ 1,200.00	\$ 1,200.00
	Light - Strobe Light w/Limb Guard LED	1	\$ 450.00	\$ 450.00
	Light - Low Water Warning Light	1	\$ 205.00	\$ 205.00
	Light - Panel Light LED	1	\$ 120.00	\$ 120.00
9000-0112	L.E.D. Upgrade Marker and Tail Lights Only	1	\$ 250.00	\$ 250.00
TOOL BOX OPTIONS (Aluminum Diamond Treadplate Construction)				
7600-0661	Locking, (Drawbar) - Aluminum 52" x 26" x 15.5"	1	Std.	Std.
ACCESSORIES				
8401-1401	Manhole - Upper Roller Aluminum	1	\$ 500.00	\$ 500.00
MANUALS				
3023-0002	PipeHunter Operator's Manual CD	1	\$ 10.00	Std.
26-OMRG33324	Engine Operator's Manual CD	1	\$ 75.00	Std.
FRAME & AXLE				
	6" Frame	1	Std.	Std.
	DOT LIGHTING PACKAGE	1	Std.	Std.
	Single 7000 LB Axle W/Electric Brakes 2 5/16 Hitch 3 positions STD W 400	1	Std.	Std.
LINER OPTION				
	PipeHunter Speed Liner Frame & Reel	1	Std.	Std.

Color: **TBA**

9000-0050(001) ~ 9000-0039(200) ~ 9000-0053(250) ~ 9000-0056(450)
 9000-0052(600)

Quoted By: David Mills 9 25 2023

Total Options:	\$ 10,200.00
Base Price:	\$ 72,000.00
Sub Total:	\$ 82,200.00
ATD Total:	\$ -
Subtotal:	\$ 82,200.00
	\$ -
	\$ -

ATD

PipeHunter, Inc.
 1617 Garden Road, Pearland, TX 77581
 www.pipehunter.com - 800.373.1318



4733 Single Axle Trailer - 2,500 PSI @ 40 GPM

Quote Date: September 25, 2023
 Customer: Sweeny, Texas
 Job #:
 Salesman: David Mills

Due Date:
 Dealer: Texas Underground
 Stock #:
 P.O. Number:

Part Number	Description	Quantity	Price	Total
WATER TANK				
9000-0055	400 Gallon Tank 7000 LB AXLE STD	1	Std.	Std.
9000-0103P	Single Filler Assembly	1	Std.	Std.
9000-0106	25' Fill Hose w Storage Rack	1	Std.	Std.
9000-0032P	Main Tank Water Sight Guage(1)Std	1	Std.	Std.
WATER PUMP				
	3,000 PSI @ 30 GPM - Giant Water Pump	1	Std.	Std.
9000-0040	Washdown System-43H with gun and 25R hose	1	Std.	Std.
9000-0059	Air Purge	1	\$ 185.00	\$ 185.00
9000-0058	Winter recirculation (not available on Jet Eye)	1	\$ 295.00	\$ 295.00
9000-0081	Multi-Flow Valve	1	\$ 295.00	\$ 295.00
ENGINE				
D3307-CR-TIE4B-KEA-1	KOHLER DIESEL ENGINE RATED 74.3 HP Tier 4 Final W Clutch	1	Std.	Std.
	15 Gallon Fuel Tank	1	Std.	Std.
9000-0048	Emergency Kill	1	Std.	Std.
9000-0064	Electric Throttle Upgrade	1	Std.	Std.
	Digital Gauge Package & Tachometer Low Pressure High Temp Shutdown	1	Std.	Std.
9000-0045	Engine Shroud/ Belt Guard/ Fenders - Aluminum	1	Std.	Std.
HOSE REEL				
<i>Single Jet Hose Reels</i>				
9000-0133	800' x 3/4" Jet Hose Reel	1	Std.	Std.
<i>Articulating Reel Option</i>				
9000-0316	Articulating Reel Option Hydraulic Powered Worm Gear	1	\$ 4,200.00	\$ 4,200.00
Hose Reel Accessories				
9000-0049	Standard Level Wind	1	Std.	Std.
	Double Roller Levelwind 45 Degree	1	\$ 295.00	\$ 295.00
HOSE OPTIONS (per foot)				
	3/4" Leader hose-per foot	10	\$ 13.00	\$ 130.00
	3/4" Jet Hose per foot Piranha	500	\$ 4.15	\$ 2,075.00
	Tiger Tail(1)Std 3"	1	Std.	Std.
NOZZLE OPTIONS- Std. Hose Reel Nozzles				
7600-0084	Nozzle Rack (1)	1	Std.	Std.
3007-4014-25400	15 Degree Nozzle (1)	1	Std.	Std.
3007-4013-25400	30 Degree Nozzle (1)	1	Std.	Std.
3007-9000	Nozzle Skid Assy 6" (1)	1	Std.	Std.
ELECTRICAL OPTIONS				
	Light - Strobe Flat Qty 4 ea. Corner	1	\$ 1,200.00	\$ 1,200.00
	Light - Strobe Light w/Limb Guard LED	1	\$ 450.00	\$ 450.00
	Light - Low Water Warning Light	1	\$ 205.00	\$ 205.00
	Light - Panel Light LED	1	\$ 120.00	\$ 120.00
9000-0112	L E D. Upgrade Marker and Tail Lights Only	1	\$ 250.00	\$ 250.00
TOOL BOX OPTIONS (Aluminum Diamond Treadplate Construction)				
7600-0681	Locking, (Drawbar) - Aluminum 52" x 26" x 15.5"	1	Std.	Std.
ACCESSORIES				
8401-1401	Manhole - Upper Roller Aluminum	1	\$ 500.00	\$ 500.00
MANUALS				
3023-0002	PipeHunter Operator's Manual CD	1	\$ 10.00	Std.
26-OMRG33324	Engine Operator's Manual CD	1	\$ 75.00	Std.
FRAME & AXLE				
	6" Frame	1	Std.	Std.
	DOT LIGHTING PACKAGE	1	Std.	Std.
	Single 7000 LB Axle W/Electric Brakes 2 5/16 Hitch 3 positions STD W 400	1	Std.	Std.
LINER OPTION				
	PipeHunter Speed Liner Frame & Reel	1	Std.	Std.

Color: **TBA**

9000-0050(001) ~9000-0039(200) ~ 9000-0053(250) ~ 9000-0056(450)
 9000-0052(800)

Quoted By: David Mills 9 25 2023

Total Options: \$ 10,200.00
 Base Price: \$ 72,000.00
 Sub Total: \$ 82,200.00
 ATD Total: \$ -
 Subtotal: \$ 82,200.00
 \$ -
 \$ -

ATD

April 2008

Confidential PipeHunter Quote

Version Item 8.

Part Number

Description

Quantity

Price

Total

Ship Method:

Trade In \$ (2,000.00)

TERMS:

Total: \$ **80,200.00**

Notes:

PH PRICING 01-14-06

Signing this quote confirms that you have verified the specifications and agree with the final costs. Any specification changes made after verification may alter costs. It is the dealer/customer's responsibility to ensure that the equipment ordered meets specifications and/or quotations.

Terms: TBD

Signature: _____

Date: _____



CADENCE EQUIPMENT FINANCE

10/24/2023

City of Sweeny, TX dmills@texasundergrouninc.com

It is a pleasure to submit for your consideration the following proposal to provide lease-purchase financing based on the terms and conditions set forth below:

- 1. Lessor: Cadence Equipment Finance, a division of Cadence Bank
- 2. Lessee: City of Sweeny, TX
- 3. Equipment Description: One (1) New Single Axle PipeHunter Trailer
- 4. Equipment Cost: \$60,200.00 amount to be financed (\$20,000.00 Down Payment)
- 5. Lease Term: 3 and 4 years
- 6. Lease Payments: (These are approximate payment amounts. The actual payment will be determined at funding date.)

Pay off at any time with no penalty

3 annual payments of \$22,578.14 arrears
36 monthly payments of \$1,830.58 arrears
4 annual payments of \$17,427.38 arrears
48 monthly payments of \$1,412.97 arrears
- 7. Lease Rate: 5.97%
- 8. Funding Date: This proposal is contingent upon the equipment being delivered and the lease funded prior to the prime rate increasing above 8.50%. Any extension of the funding or delivery date must be in writing.
- 9. Purchase Option: Title is passed to Lessee at lease expiration for no further consideration.
- 10. Non-appropriation/Termination: The lease provides that Lessee is to make reasonable efforts to obtain funds to satisfy the obligation in each fiscal year. However, the lease may be

terminated without penalty in the event of non-appropriation. In such event, the Lessee agrees to provide an attorney's opinion confirming the events of non-appropriation and Lessee's exercise of diligence to obtain funds.

- 11. **Bank Qualification:** This lease-purchase financing shall be designated as a bank qualified tax-exempt transaction as per the 1986 Federal Tax Bill. **This means that the Lessee's governing body will pass a resolution stating that it does not anticipate issuing more than \$10 million in General Obligation debt or other debt falling under the Tax Bill's definition of qualifying debt during the calendar year that the lease is funded.**
- 12. **Tax Status:** This proposal is subject to the Lessee being qualified as a governmental entity or "political subdivision" within the meaning of Section 103(a) of the Internal Revenue Code of 1954 as amended, within the meaning of said Section. Lessee agrees to cooperate with Lessor in providing evidence as deemed necessary or desirable by Lessor to substantiate such tax status.
- 13. **Net Lease:** This will be a net lease transaction whereby maintenance, insurance, taxes (if applicable), compliance with laws and similar expenses shall be borne by Lessee.
- 14. **Financial Statements:** Complete and current financial statements must be submitted to Lessor for review and approval of Lessee creditworthiness
- 15. **Lease Documentation:** This equipment lease-purchase package is subject to the mutual acceptance of lease-purchase documentation within a reasonable time period, otherwise payments will be subject to market change.

If the foregoing is acceptable, please so indicate by signing this letter in the space provided below and returning it to Cadence Equipment Finance. **The proposal is subject to approval by Cadence Equipment Finance's Credit Committee and to mutually acceptable terms, conditions and documentation.**

Acceptance of this proposal expires as the close of business on 11/24/2023. Extensions must be approved by the undersigned.

Any concerns or questions should be directed to Jonathan King at 228-223-4642 or Jonathan.King@cadencebank.com.

Jonathan King
Municipal Territory Manager

ACKNOWLEDGMENT AND ACCEPTANCE

By: _____
Title

Date: _____



7724 Tandem Axle Trailer - 2,500 PSI @ 40 GPM

Quote Date: October 24, 2023
 Customer: Sweeny
 Job #:
 Salesman: David Mills

Due Date:
 Dealer: Texas Underground
 Stock #:
 P.O. Number:

Part Number	Description	Quantity	Price	Total
WATER TANK				
	700 Gallon High-Density Polyethylene 12000 GVW	1	Std.	Std.
9000-0103P	Single Filler Assembly	1	Std.	Std.
9000-0032P	Main Tank Water Sight Gauge(1)Std Side	1	Std.	Std.
9000-0106	25' Fill Hose w Storage Rack	1	Std.	Std.
WATER PUMP				
9000-0079	2500 PSI @ 40 GPM Giant Water Pump	1	Std.	Std.
9000-0040	Washdown System-43H with gun and 25ft hose	1	Std.	Std.
9000-0059	Air Purge	1	\$ 185.00	\$ 185.00
9000-0058	Winter recirculation (not available on Jet Eye)	1	\$ 295.00	\$ 295.00
9000-0061	Multi-Flow Valve	1	\$ 295.00	\$ 295.00
ENGINE				
	Kohler 74 HP Tier 4 Final With Clutch	1	Std.	Std.
9000-0048	Emergency Kill	1	Std.	Std.
	15 Gallon Fuel Tank	1	Std.	Std.
	Electric Throttle	1	Std.	Std.
	Digital Gauge Package & Tachometer Low Pressure High Temp Shutdown	1	Std.	Std.
9000-0045	Engine Shroud/ Belt Guard/ Fenders - Aluminum	1	Std.	Std.
7834-HRA				
<i>Single Jet Hose Reels</i>				
9000-0093	800' x 3/4" Jet Hose Reel (Narrow Design)	1	Std.	Std.
Articulating Reel Option				
	Articulating Reel Option Hydraulic Powered Articulation Worm Gear	1	\$ 4,200.00	\$ 4,200.00
Hose Reel Accessories				
	Standard Level Wind 3/4"		Std.	Std.
	Double Roller Levelwind 45 Degree 3/4" - Upgrade	1	\$ 395.00	\$ 395.00
HOSE OPTIONS (per foot) Minimum 400 foot Jet hose with 10 foot leader- 400, 600,800 increments				
3009-4522	Leader hose 3/4"-per foot	10	\$ 13.00	\$ 130.00
4625-12-XXX	3/4" Jet Hose per foot Piranha Only	500	\$ 4.15	\$ 2,075.00
3007-7000	3" Tiger Tail(1)Std	1	\$ 85.00	\$ -
NOZZLE OPTIONS- Std. Hose Reel Nozzles				
	Nozzle Rack(1) 3/4"	1	Std.	Std.
	15 Degree Nozzle(1) 3/4"	1	Std.	Std.
	30 Degree Nozzle(1) 3/4"	1	Std.	Std.
	Nozzle Skid Assy 6"(1) 3/4"	1	Std.	Std.
ELECTRICAL OPTIONS				
	Light - Strobe Flat Qty 4 ea. Corner	1	\$ 1,200.00	\$ 1,200.00
	Light - Strobe Light w/Limb Guard LED	1	\$ 450.00	\$ 450.00
	Light - Low Water Warning Light	1	\$ 205.00	\$ 205.00
	Light - Panel Light LED	1	\$ 120.00	\$ 120.00
9000-0112	L.E.D. Upgrade Marker and Tail Lights Only	1	\$ 250.00	\$ 250.00
TOOL BOX OPTIONS (Aluminum Diamond Treadplate Construction)				
7600-0661	Locking (Drawbar) - Aluminum 52" x 26" x 15.5"	1	Std.	Std.
ACCESSORIES				
8401-1401	Manhole - Upper Roller Aluminum	1	\$ 500.00	\$ 500.00
7600-0278	Traffic Cone Rack - Deck Mount	1	\$ 150.00	\$ 150.00
MANUALS				
3023-0002	PipeHunter Operator's Manual CD	1	Std.	Std.
26-OMRG33324	Engine Operator's Manual CD	1	Std.	Std.
FRAME & AXLE				
	6" Frame	1	Std.	Std.
	Dual #6000 Axles W/Electric Brakes 2 5/16 Hitch 3 positions	1	Std.	Std.
	DOT LIGHTING PACKAGE	1	Std.	Std.
LINER OPTION				
	PipeHunter Speed Liner Frame & Reel	1	Std.	Std.

Liner Color: TBA

9000-0050(001) ~ 9000-0039(200) ~ 9000-0053(250)
 9000-0058(450) ~ 9000-0052(600)

Quoted By: David Mills

Total Options: \$ 10,450.00
 Base Price: \$ 73,500.00
 Sub Total: \$ 83,950.00
 ATD Total: \$ -

April 2008

Confidential PipeHunter Quote

Version **Item 8.**

Part Number

Description

Quantity

Price

Total

Subtotal: \$ 83,950.00

\$ -

\$ -

Trade In \$ (2,000.00)

Total: \$ 81,950.00

Ship Method: FOB PEARLAND TX

PI PRICING 2018 06

Signing this quote confirms that you have verified the specifications and agree with the final costs. Any specification changes made after verification may alter costs. It is the dealer/customer's responsibility to ensure that the equipment ordered meets specifications and/or quotations.

Terms: MUNICIPAL (NET 30) CONTRACTORS (COD)

Signature: _____

Date: _____



CADENCE EQUIPMENT FINANCE

10/24/2023

City of Sweeny, TX dmills@texasundergrouninc.com

It is a pleasure to submit for your consideration the following proposal to provide lease-purchase financing based on the terms and conditions set forth below:

- 1. Lessor: Cadence Equipment Finance, a division of Cadence Bank
- 2. Lessee: City of Sweeny, TX
- 3. Equipment Description: One (1) New Tandem Axle PipeHunter Trailer
- 4. Equipment Cost: \$61,950.00 amount to be financed (\$20,000.00 Down Payment)
- 5. Lease Term: 3 and 4 years
- 6. Lease Payments: (These are approximate payment amounts. The actual payment will be determined at funding date.)

Pay off at any time with no penalty

3 annual payments of \$23,234.48 arrears
36 monthly payments of \$1,883.80 arrears
4 annual payments of \$17,933.99 arrears
48 monthly payments of \$1,454.05 arrears
- 7. Lease Rate: 5.97%
- 8. Funding Date: This proposal is contingent upon the equipment being delivered and the lease funded prior to the prime rate increasing above 8.50%. Any extension of the funding or delivery date must be in writing.
- 9. Purchase Option: Title is passed to Lessee at lease expiration for no further consideration.
- 10. Non-appropriation/Termination: The lease provides that Lessee is to make reasonable efforts to obtain funds to satisfy the obligation in each fiscal year. However, the lease may be

terminated without penalty in the event of non-appropriation. In such event, the Lessee agrees to provide an attorney's opinion confirming the events of non-appropriation and Lessee's exercise of diligence to obtain funds.

- 11. **Bank Qualification:** This lease-purchase financing shall be designated as a bank qualified tax-exempt transaction as per the 1986 Federal Tax Bill. **This means that the Lessee's governing body will pass a resolution stating that it does not anticipate issuing more than \$10 million in General Obligation debt or other debt falling under the Tax Bill's definition of qualifying debt during the calendar year that the lease is funded.**
- 12. **Tax Status:** This proposal is subject to the Lessee being qualified as a governmental entity or "political subdivision" within the meaning of Section 103(a) of the Internal Revenue Code of 1954 as amended, within the meaning of said Section. Lessee agrees to cooperate with Lessor in providing evidence as deemed necessary or desirable by Lessor to substantiate such tax status.
- 13. **Net Lease:** This will be a net lease transaction whereby maintenance, insurance, taxes (if applicable), compliance with laws and similar expenses shall be borne by Lessee.
- 14. **Financial Statements:** Complete and current financial statements must be submitted to Lessor for review and approval of Lessee creditworthiness
- 15. **Lease Documentation:** This equipment lease-purchase package is subject to the mutual acceptance of lease-purchase documentation within a reasonable time period, otherwise payments will be subject to market change.

If the foregoing is acceptable, please so indicate by signing this letter in the space provided below and returning it to Cadence Equipment Finance. **The proposal is subject to approval by Cadence Equipment Finance's Credit Committee and to mutually acceptable terms, conditions and documentation.**

Acceptance of this proposal expires as the close of business on 11/24/2023. Extensions must be approved by the undersigned.

Any concerns or questions should be directed to Jonathan King at 228-223-4642 or Jonathan.King@cadencebank.com.

Jonathan King
Municipal Territory Manager

ACKNOWLEDGMENT AND ACCEPTANCE

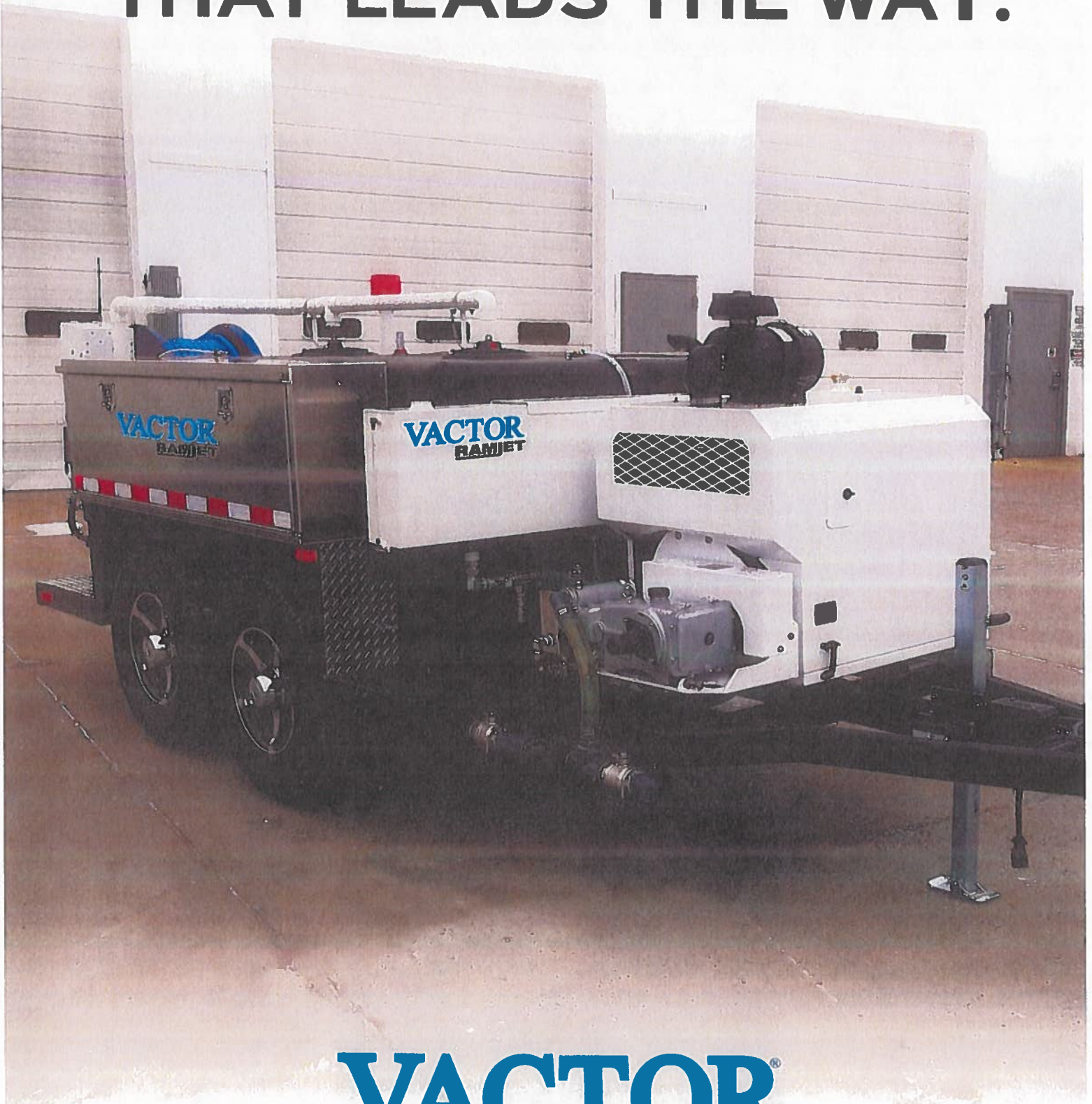
By: _____
Title

Date: _____

Exhibit 3

Item 8.

A TRAILER JETTER THAT LEADS THE WAY.



VACTOR[®]
RAMJET

DISCOVER THE RAMJET TRAILER & SKID-MOUNTED JETTERS.

Performance you expect from a proven leader.



The Ramjet trailer & skid-mounted jettors are the perfect machines for fast, safe response to sewer blockages as well as regular preventative line maintenance. Our line of reliable, high-pressure water jettors are specially designed for cleaning municipal sewer, drain and pipe lines as well as culverts at low water volume. These units are ideal for cost effective maintenance and emergency response in tight, confined environments.

Vactor has proudly been dedicated to continuously improving sewer cleaners for over fifty years, and the versatile and reliable Ramjet trailer & skid-mounted units are just a few options of the highly customized solutions we offer.

 **Kinloch**
Equipment & Supply, Inc. kinlochequip.com

Pasadena P | 800.231.6929 F | 713.473.7858
Arlington P | 800.536.5902 F | 817.633.7239
San Antonio P | 210.881.9344 F | 210.881.9475

Scan code
for more info



VACTOR®

Subsidiary of Federal Signal Corporation

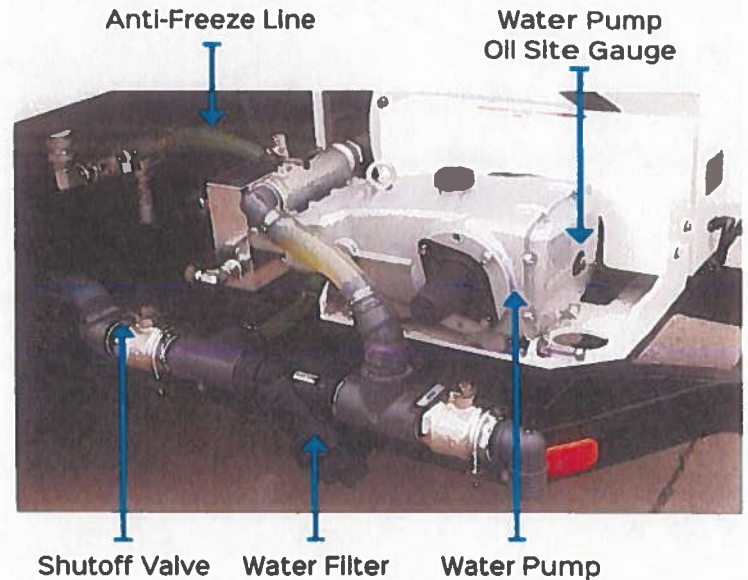
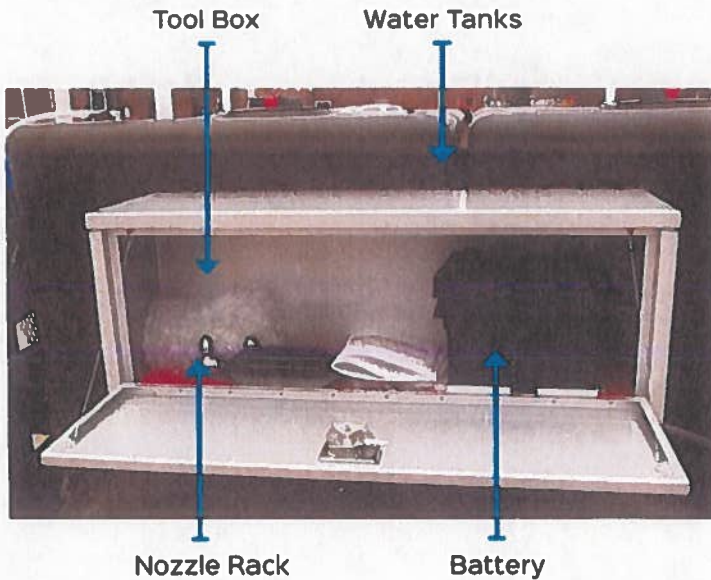
vactor.com

Vactor Manufacturing, Inc. • 1621 South Illinois Street • Streator, IL 61364 USA
Phone 815.672.3171 • Fax 815.672.2779

Specifications subject to change without notice. Some product shown with optional equipment. Vactor® and Ramjet® are registered trademarks and subsidiaries of Federal Signal Corp. Federal Signal is listed in the NYSE by the symbol FSS.

WATER SYSTEMS

Item 8.



BASIC FEATURES

18 GPM at 4,000 PSI

- 300 Gallon single axle trailer
- 600 gallon tandem axle trailer
- 3 Cylinder engine
- Tier 4 diesel engine
- 3 Cylinder run-dry water pump*
- Water recirculation, anti-freeze, and pulsation system
- 800' x 1/2" cap rotating hose reel

30 GPM @ 3,000 PSI

- 375 Gallon single axle trailer
- 750 gallon tandem axle trailer
- Tier 4 diesel engine
- 3 Cylinder ceramic plunger run-dry water pump*
- Water recirculation, anti-freeze, and pulsation system
- 600' x 3/4" cap rotating hose reel

36 GPM @ 3,000 PSI

- 375 Gallon single axle trailer
- 750 gallon tandem axle trailer
- Tier 4 diesel engine
- 3 Cylinder ceramic plunger run-dry water pump*
- Water recirculation, anti-freeze, and pulsation system
- 600' x 3/4" cap rotating hose reel

40 GPM @ 2,000 PSI

- 375 Gallon single axle trailer
- 750 gallon tandem axle trailer
- Tier 4 diesel engine
- 3 Cylinder ceramic plunger run-dry water pump*
- Water recirculation, anti-freeze, and pulsation system.
- 600' x 3/4" cap rotating hose reel

40 GPM @ 3,000 PSI

- 375 Gallon single axle trailer
- 750 gallon tandem axle trailer
- Tier 4 diesel engine
- 3 Cylinder direct gear box driven water pump
- Water recirculation, anti-freeze, and pulsation system
- 600' x 3/4" cap rotating hose reel

OPTIONAL EQUIPMENT

- Engine shroud silent pak
- Electronic throttle control
- JMS remote control system
- Power telescoping hose reel
- Dual hose reel
- Washdown system
- Tool storage

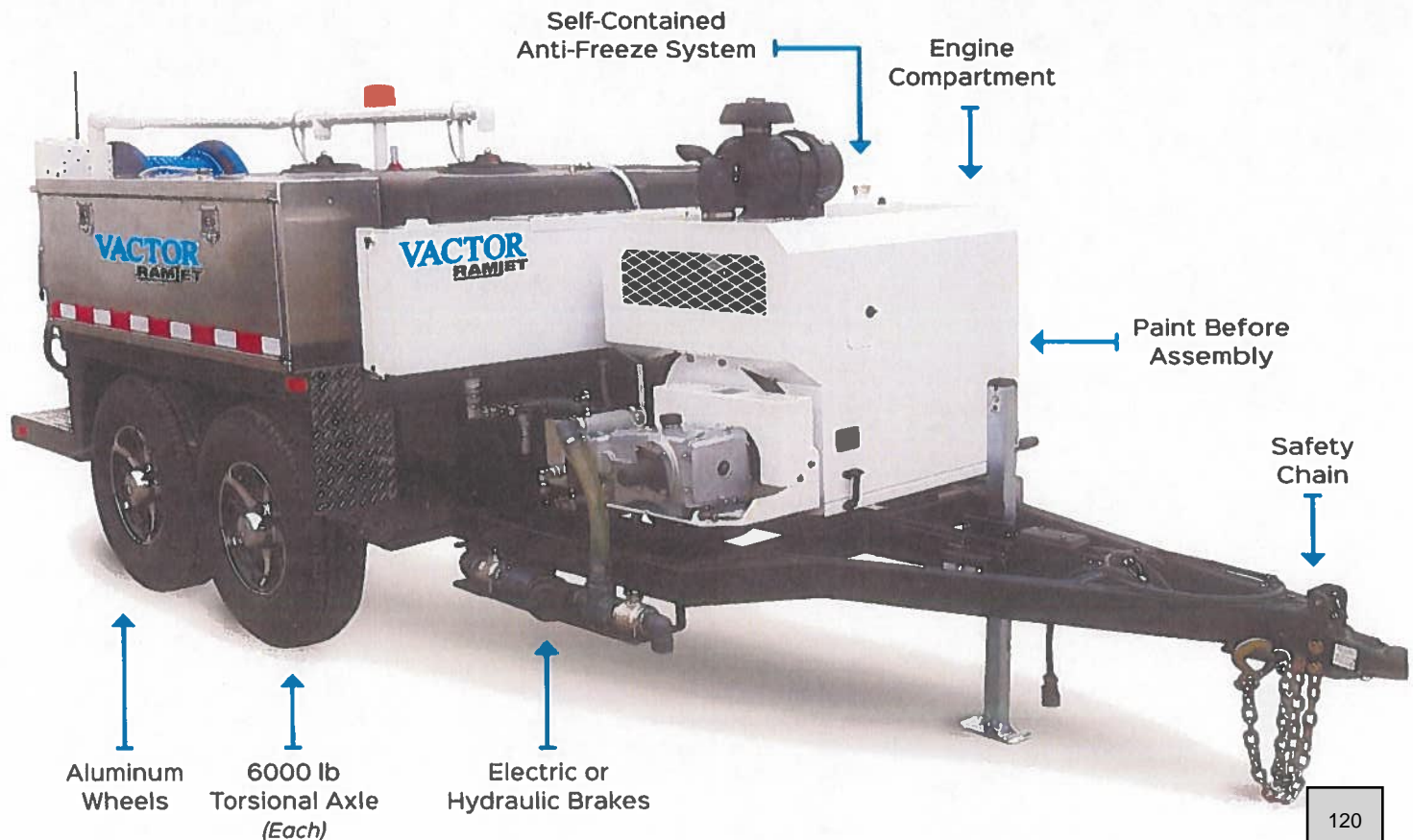
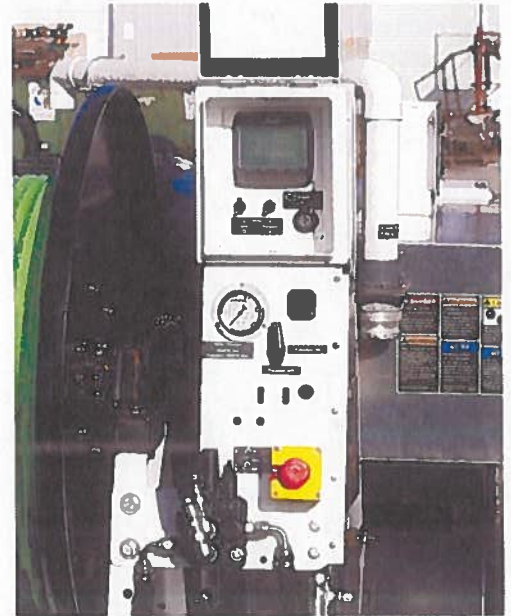
* Run-dry plunger pumps provide the ability of running dry of water sustaining pump damage. It is not intended to run for long periods and/or at high RPM levels without water.

VACTOR® RAMJET® TRAILER & SKID-MOUNTED JETTER Item 8.

If you're looking for a cost-effective, yet powerful, sewer maintenance tool, the Vactor Ramjet trailer and skid-mounted series offers you more than just performance and convenience. With more configuration choices in engines and pumps, plus water tanks up to 1,000 gallons, and a wide range of productivity-building options, the Ramjet series is simply your best choice.

To effectively clean sewers, drains, pipelines and culverts, the Ramjet offers you:

- Five available water systems: 18 GPM at 4,000 PSI, 30 GPM at 3,000 PSI, 36 GPM at 3,000 PSI, 40 GPM at 2,000 PSI and 40 GPM at 3,000 PSI
- State-of-the-art control panel with complete jetter management system and optional wireless remote
- Pivot hose reel for greater operating ease and precision
- Self-contained anti-freeze system for improved cold weather operation
- Advanced hydraulic controls including pay in/out and speed control
- Optional hydraulic pull out reel
- Rugged construction engineered for years of reliable service
- Performance enhancing options that allow you to create a jetter suited to your specific needs and applications





Presents a Proposal Summary

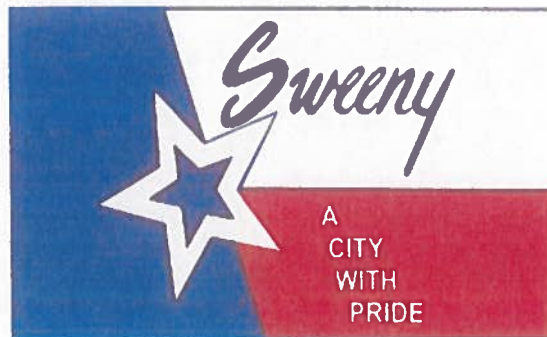
of the

VACTOR **RAMJET**



Vactor RamJet 2040-750 Trailer

For



Morgan Taylor
Tel: 281-620-1827

PRODUCT DESCRIPTION

Vactor Ramjet Tandem Axle trailer with 750 gallons of fresh water powered by a 74hp Hatz Tier 4 diesel engine with an output of 40 GPM at 2,000psi.

STANDARD FEATURES**Engine/Pump:**

Hatz 74 HP Diesel Engine Tier IV

USJ 40 GPM @ 2,000 PSI

Triplex Plunger Run Dry Pump

Tier 4 Basic Control Panel

Auto Shutdown (for High Engine Temp/Low Oil Pressure)

Water Recirculation & Anti-Freeze System

Pulsation System

Shrouded Engine

Twin 375 Gallon Black Water Tank

Standard Pivot Hose Reel

3/4" x 500' Piranha Sewer Hose

Manual Hose Guide

Hydraulic Driven Hose Reel

Twin 6,000 lbs. Torsion Bar Axles

D.O.T. Approved LED Lighting

42" Aluminum Toolbox

Aluminum Rims

2 5/16" Ball Hitch

Black Rounded Fenders

10' Leader Hose

3/4" RPD 3R/1F Nozzle

3/4" RPD 6R Nozzle

Finned Nozzle Extension

3" Tiger Tail

Nozzle Rack

2 1/2" x 25' Hydrant Hose

Emergency Stop Button

Additional Features

FOOTAGE COUNTER MANUAL OPTION

FILL STORAGE HOSE RACK

KEG CULVERT CLEANING NOZZLE

1/2" ADAPTOR

150 FEET 1/2" HOSE

Product Model: Vactor RamJet 2040-750

Payment Terms: Net due Upon Delivery.

Morgan Taylor
Tel: 281-620-1827

Sourcewell Contract Price F.O.B. Sweeny, TX:	\$84,904.58
Less Trailer Jet Trade-In:	(\$2,000)
Less one-month Rent to Purchase rebate:	(\$4,252)
Down Payment:	(\$20,000)
Total Price Net Down Payment:	\$58,652.58

OPTIONAL LEASE/PURCHASE PROGRAM

TERM	ANNUAL PAYMENT	MONTHLY PAYMENT
3 Years	\$22,552.42	\$1,817.73
4 Years	\$17,510.12	\$1,411.32

Proposal Notes:

1. Prices quoted herein are firm until 10.21.23.
2. Price in accordance to Purchasing Coop Sourcewell #101221-VTR.

SIGNED BY:

Date: _____



	<u>Daily</u>	<u>Weekly</u>	<u>4 Weeks</u>
Trailer Mounted Jetter Rental Rates	\$ 315	\$ 1,575	\$ 4,725

RPO Structure Details

The Customer shall have the option to purchase the equipment listed on the rental contract after any rental payments have been made, for the selling price of: eighty nine thousand, six hundred and thirty eight (\$89,638.33) plus all amounts then owed to the Supplier.

If the customer purchases/pays for the unit outright during the first 28 days of the contract and prior to the return of the unit, KESI will apply ninety percent (90%) of the accumulated/total rental money paid against the purchase of the unit.

If the customer purchases/pays for the unit outright during the 29th to the 56th day of the contract and prior to the return of the unit, KESI will apply eighty percent (80%) of the accumulated/total rental money paid against the purchase of the unit.

If the customer purchases/pays for the unit outright during the 57th to the 84th day of the contract and prior to the return of the unit, KESI will apply seventy percent (70%) of the accumulated/total rental money paid against the purchase of the unit.

If the customer purchases/pays for the unit outright during the 85th to the 112th day of the contract and prior to the return of the unit, KESI will apply sixty-five percent (65%) of the accumulated/total rental money paid against the purchase of the unit.

If the customer purchases/pays for the unit outright between the 113th to the 168th day of the contract and prior to the return of the unit, KESI will apply sixty percent (60%) of the accumulated/total rental money paid against the purchase of the unit.

If the customer purchases/pays for the unit outright between the 169th to the 224th day of the contract and prior to the return of the unit, KESI will apply fifty percent (50%) of the accumulated/total rental money paid against the purchase of the unit.

If the customer purchases/pays for the unit outright between the 225th to the 365th day of the contract and prior to the return of the unit, KESI will apply forty percent (40%) of the accumulated/total rental money paid against the purchase of the unit.

Any implied purchase option will expire on the date of expiration of this contract, which is no more than 364 days from the start of this contract.

PERFORMANCE AGREEMENT

This **PERFORMANCE AGREEMENT** by and between the **SWEENEY ECONOMIC DEVELOPMENT CORPORATION**, a Texas non-profit corporation (hereinafter referred to as the “EDC”), and **CECIL JOE STARK SAWMILL & LOGGING, INC.**, a Texas corporation (hereinafter referred to as “Developer”), is made and executed on the following recitals, terms and conditions.

WHEREAS, the EDC is a Type B economic development corporation, created pursuant to Chapter 505 of the Texas Local Government Code, as amended; and

WHEREAS, Section 501.101 of the Texas Local Government Code, in pertinent part, defines the term “project” to mean “land, buildings, equipment, facilities, expenditures, targeted infrastructure, and improvements that are: (1) for the creation or retention of primary jobs; and (2) found by the board of directors to be required or suitable for the development, retention, or expansion of: (A) manufacturing and industrial facilities; (B) research and development facilities; (C) military facilities, including closed or realigned military bases; . . . (F) recycling facilities; . . . (I) distribution centers; (J) small warehouse facilities capable of serving as decentralized storage and distribution centers; (K) primary job training facilities for use by institutions of higher education; or (L) regional or national corporate headquarters facilities”; and

WHEREAS, Section 501.103 of the Texas Local Government Code, in pertinent part, defines the term “project” to mean “expenditures that are found by the board of directors to be required or suitable for infrastructure necessary to promote or develop new or expanded business enterprises, limited to: (1) streets and roads, rail spurs, water and sewer utilities, electric utilities, or gas utilities, drainage, site improvements, and related improvements; (2) telecommunications and Internet improvements . . .”; and

WHEREAS, Section 505.158 of the Texas Local Government Code provides that “[f]or a Type B corporation authorized to be created by a municipality with a population of 20,000 or less, “project” also includes the land, buildings, equipment, facilities, expenditures, targeted infrastructure, and improvements found by the corporation’s board of directors to promote new or expanded business development.” Further, the statute provides that “[a] Type B corporation may not undertake a project authorized by this section that requires an expenditure of more than \$10,000 until the governing body of the corporation’s authorizing municipality adopts a resolution authorizing the project after giving the resolution at least two separate readings”; and

WHEREAS, Section 501.158 of the Texas Local Government Code prohibits the provision of a direct incentive unless EDC enters into an Agreement with Developer providing at a minimum a schedule of additional payroll or jobs to be created or retained by EDC’s investment; a schedule of capital investments to be made as consideration for any direct incentives provided by EDC to Developer; and a provision specifying the terms and conditions upon which repayment must be made should Developer fail to meet the agreed to performance requirements specified in this Agreement; and

WHEREAS, Developer has applied to EDC for economic development assistance necessary to construct and operate a commercial office and retail establishment to be located on an 16.93 acre tract of land being out of a 67.288 acre tract being located in the Charles Breen League, Abstract No. 46 , City of Sweeny, Brazoria County, Texas (hereinafter referred to as the “Property”); and

WHEREAS, the EDC’s Board of Directors have determined the economic development assistance to be provided to Developer pursuant to this Agreement is consistent and meets the definition of “project” as that term is defined in Sections 501.101, 501.103, and 505.158 of the Texas Local Government Code; and the definition of “cost” as that term is defined by Section 501.152 of the Texas Local Government Code; and

WHEREAS, Developer agrees and understands that Section 501.073(a) of the Texas Local Government Code requires the City Council of the City of Sweeny, Texas, to approve all programs and expenditures of the EDC, and accordingly this Agreement is not effective until City Council has approved this project at a City Council meeting called and held for that purpose.

NOW, THEREFORE, for and in consideration of the agreements contained herein, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the EDC and Developer agree as follows:

SECTION 1. FINDINGS INCORPORATED.

The foregoing recitals are hereby incorporated into the body of this Agreement and shall be considered part of the mutual covenants, consideration and promises that bind the parties.

SECTION 2. TERM.

This Agreement shall be effective as of the Effective Date, as defined herein, and shall continue thereafter until **December 31, 2030**, unless terminated sooner under the provisions hereof.

SECTION 3. DEFINITIONS.

The following words shall have the following meanings when used in this Agreement.

- (a) **Act.** The word “Act” means Chapters 501 to 505 of the Texas Local Government Code, as amended.
- (b) **Agreement.** The word “Agreement” means this Performance Agreement, together with all exhibits and schedules attached to this Agreement from time to time, if any.
- (c) **Developer.** The word “Developer” means Cecil Joe Stark Sawmill & Logging, Inc., a Texas corporation, its successors and assigns, whose address for the purposes of this

Agreement is P.O. Box 1207, West Columbia, Texas 77486.

- (d) **EDC.** The term “EDC” means the Sweeny Economic Development Corporation, a Texas non-profit corporation, its successors and assigns, whose corporate address for the purposes of this Agreement is 111 W. 3rd Street, Sweeny, Texas 77480.
- (e) **Effective Date.** The words “Effective Date” mean the date of the latter to execute this Agreement by and between the Developer and the EDC.
- (f) **Event of Default.** The words “Event of Default” mean and include any of the Events of Default set forth below in the section entitled “Events of Default.”
- (g) **Full-Time Equivalent Employment Position.** The words “Full-Time Equivalent Employment Position” or “Full-Time Equivalent Employment Positions” mean and include a job requiring a minimum of One Thousand Nine Hundred Twenty (1,920) hours of work averaged over a twelve (12) month period.
- (h) **Property.** The word “Property” means the approximately 16.93 acre tract of land being out of a 67.288 acre tract being located in the Charles Breen League, Abstract No. 46, City of Sweeny, Brazoria County, Texas, and as generally depicted in *Exhibit A* of this Agreement, which is attached hereto and incorporated herein for all purposes.
- (i) **Qualified Expenditures.** The words “Qualified Expenditures” mean those expenditures consisting of the construction of an office and retail building located on the Property, as generally depicted in *Exhibit B* of this Agreement, which is attached hereto and incorporated herein for all purposes, and those expenses which meet the definition of “project” as that term is defined in Sections 501.101, 501.103, and 505.158 of the Act, and meet the definition of “cost” as that term is defined in Section 501.152 of the Act.
- (j) **Term.** The word “Term” means the term of this Agreement as specified in Section 2 of this Agreement.

SECTION 4. AFFIRMATIVE COVENANTS OF DEVELOPER.

Developer covenants and agrees with EDC that, while this Agreement is in effect, it shall comply with the following terms and conditions:

- (a) **Qualified Expenditures.** Developer covenants and agrees to commence construction of the Qualified Expenditures within 120 days of the EDC’s completion of the road and utilities leading to the Property. Further, Developer covenants and agrees to complete construction of an office and retail building within twelve (12) months of the City of Sweeny’s completion of the road and utilities leading to the Property.
- (b) **Certificate of Occupancy.** Developer covenants and agrees to obtain or cause to be

obtained within twelve (12) months of EDC's completion of the road and utilities leading to the Property, a certificate of occupancy from the City of Sweeny, Texas, for an office and retail space located on the Property.

- (c) **Operate Office and Retail Facility.** Developer covenants and agrees to maintain and operate an office and retail space located on the Property within twelve (12) months of the EDC's completion of the road and utilities leading to the Property, and during the Term of this Agreement.
- (d) **Job Creation and Retention.** Developer covenants and agrees to employ and maintain a minimum Full-Time Equivalent Employment Positions working at the Property as follows:
- (1) a minimum of eight (8) Full-Time Equivalent Employment Positions by **July 1, 2024;**
 - (2) a minimum of ten (10) Full-Time Equivalent Employment Positions by **July 1, 2025;**
 - (3) a minimum of twelve (12) Full-Time Equivalent Employment Positions by **July 1, 2026;**
 - (4) a minimum of fourteen (14) Full-Time Equivalent Employment Positions by **July 1, 2027;**
 - (5) a minimum of sixteen (16) Full-Time Equivalent Employment Positions by **July 1, 2028; and**
 - (6) a minimum of eighteen (18) Full-Time Equivalent Employment Positions by **July 1, 2029.**

Further, Developer covenants and agrees beginning on **July 1, 2024**, and during the Term of this Agreement, Developer shall deliver to EDC an annual compliance verification signed by a duly authorized representative of Developer that shall certify the number of Full-Time Equivalent Employment Positions, and shall disclose and certify the average wage for all Full-Time Equivalent Employment Positions (the "Annual Compliance Verification"). The Developer covenants and agrees beginning on **July 1, 2024**, and annually thereafter during the Term of this Agreement, there will be a total of **six (6)** Annual Compliance Verifications due and submitted to the EDC covering the Full-Time Equivalent Employment Positions created and maintained during the Term of this Agreement. All Annual Compliance Verifications shall include quarterly IRS 941 returns, or Texas Workforce Commission Employer Quarterly Reports.

- (e) **Acquisition of the Property.** Developer covenants and agrees to acquire the Property from the EDC within ninety (90) days of the Effective Date of this Agreement or consistent with the terms of a real estate sales contract executed by and between the Developer and the EDC. The Developer covenants and agrees the Property has a value of **Three Hundred Four Thousand Seven Hundred Forty and No/100 Dollars (\$304,740.00)**. Developer covenants and agrees to execute a deed of trust lien or other lien for the Property in a form acceptable to the EDC providing a first lien position to 14.093 acres of the Property, and a

second lien position to 2.00 acres of the Property at the time of closing on the Property.

- (f) **Performance Conditions.** Developer agrees to make, execute and deliver to EDC such other promissory notes, instruments, documents and other agreements as EDC or its attorneys may reasonably request to evidence this Agreement.
- (g) **Performance.** Developer agrees to perform and comply with all terms, conditions, and provisions set forth in this Agreement and in all other instruments and agreements by and between the Developer and EDC.

SECTION 5. AFFIRMATIVE COVENANTS OF EDC.

EDC covenants and agrees with Developer that, while this Agreement is in effect, it shall comply with the following terms and conditions:

- (a) **Conveyance of the Property.** The EDC covenants and agrees to convey to the Developer good and indefeasible fee simple title to the Property, free and clear of any liens or other encumbrances, by special warranty deed within ninety (90) days of the Effective Date of this Agreement or consistent with the terms of a real estate sales contract executed by and between the Developer and the EDC.
- (b) **Performance.** EDC agrees to perform and comply with all terms, conditions, and provisions set forth in this Agreement and in all other instruments and agreements by and between the Developer and EDC.

SECTION 6. CESSATION OF ADVANCES.

If the EDC has made any commitment to provide any financial assistance to Developer, whether under this Agreement or under any other agreement, the EDC shall have no obligation to advance or disburse the financial assistance if: (i) Developer becomes insolvent, files a petition in bankruptcy or similar proceedings, or is adjudged bankrupt; or (ii) an Event of Default occurs.

SECTION 7. EVENTS OF DEFAULT.

Each of the following shall constitute an Event of Default under this Agreement:

- (a) **General Event of Default.** Failure of Developer or EDC to comply with or to perform any other term, obligation, covenant or condition contained in this Agreement, or failure of Developer or EDC to comply with or to perform any other term, obligation, covenant or condition contained in any other agreement by and between Developer and EDC is an Event of Default.
- (b) **False Statements.** Any warranty, representation, or statement made or furnished to EDC by or on behalf of Developer under this Agreement that is false or misleading in any material

respect, either now or at the time made or furnished is an Event of Default.

- (c) **Insolvency.** Developer’s insolvency, appointment of receiver for any part of Developer’s property, any assignment for the benefit of creditors of Developer, any type of creditor workout for Developer, or the commencement of any proceeding under any bankruptcy or insolvency laws by or against Developer is an Event of Default.
- (d) **Ad Valorem Taxes.** Developer allows its ad valorem taxes owed to the City of Sweeny, Texas, to become delinquent and fails to timely and properly follow the legal procedures for protest and/or contest of such taxes and to cure such failure within thirty (30) days after written notice thereof from EDC and/or Brazoria County Central Appraisal District is an Event of Default.

SECTION 8. EFFECT OF AN EVENT OF DEFAULT.

In the event of default under Section 7 of this Agreement, the non-defaulting party shall give written notice to the other party of any default, and the defaulting party shall have thirty (30) days to cure said default. Should said default remain uncured as of the last day of the applicable cure period, and the non-defaulting party is not otherwise in default, the non-defaulting party shall have the right to immediately terminate this Agreement, enforce specific performance as appropriate or maintain a cause of action for damages caused by the event(s) of default. In the event, Developer defaults and is unable or unwilling to cure said default within the prescribed time period, the Developer covenants and agrees to immediately reconvey the Property to the EDC free and clear of all liens or other encumbrances.

In the event, Developer defaults and is unable to or willing to cure said default within the prescribed time period, or based on the written notification by Developer of his intent to terminate the Agreement, the Developer shall immediately pay to EDC the following amounts:

EVENT OF DEFAULT OCCURS:	PAYMENT AMOUNT:
Effective Date to December 31, 2024	\$304,740.00
January 1, 2025 to December 31, 2025	\$261,205.71
January 1, 2026 to December 31, 2026	\$217,671.42
January 1, 2027 to December 31, 2027	\$174,137.13
January 1, 2028 to December 31, 2028	\$130,602.84
January 1, 2029 to December 31, 2029	\$ 87,068.55
January 1, 2030 to December 31, 2030	\$ 43,534.26

SECTION 9. INDEMNIFICATION.

Developer shall indemnify, save, and hold harmless EDC, its directors, officers, agents, attorneys, and employees (collectively, the “Indemnitees”) from and against: (i) any and all claims, demands, actions or causes of action that are asserted against any Indemnitee

if the claim, demand, action or cause of action directly or indirectly relates to tortious interference with contract or business interference, or wrongful or negligent use of EDC's financial assistance by Developer or its agents and employees; (ii) any administrative or investigative proceeding by any governmental authority directly or indirectly related, to a claim, demand, action or cause of action in which EDC is a disinterested party; (iii) any claim, demand, action or cause of action which directly or indirectly contests or challenges the legal authority of EDC or Developer to enter into this Agreement; and (iv) any and all liabilities, losses, costs, or expenses (including reasonable attorneys' fees and disbursements) that any Indemnitee suffers or incurs as a result of any of the foregoing; provided, however, that Developer shall have no obligation under this Section to EDC with respect to any of the foregoing arising out of the gross negligence or willful misconduct of EDC or the breach by EDC of this Agreement. If any claim, demand, action or cause of action is asserted against any Indemnitee, such Indemnitee shall promptly notify Developer, but the failure to so promptly notify Developer shall not affect Developer's obligations under this Section unless such failure materially prejudices Developer's right to participate in the contest of such claim, demand, action or cause of action, as hereinafter provided. If requested by Developer in writing, as so long as no Default or Event of Default shall have occurred and be continuing, such Indemnitee shall in good faith contest the validity, applicability and amount of such claim, demand, action or cause of action and shall permit Developer to participate in such contest. Any Indemnitee that proposes to settle or compromise any claim, demand, action, cause of action or proceeding for which Developer may be liable for payment of indemnity hereunder shall give Developer written notice of the terms of such proposed settlement or compromise reasonably in advance of settling or compromising such claim or proceeding and shall obtain Developer's concurrence thereto.

SECTION 10. MISCELLANEOUS PROVISIONS.

The following miscellaneous provisions are a part of this Agreement:

- (a) **Amendments.** This Agreement constitutes the entire understanding and agreement of the parties as to the matters set forth in this Agreement. No alteration of or amendment to this Agreement shall be effective unless given in writing and signed by the party or parties sought to be charged or bound by the alteration or amendment.
- (b) **Applicable Law and Venue.** This Agreement shall be governed by and construed in accordance with the laws of the State of Texas, and all obligations of the parties created hereunder are performable in Brazoria County, Texas. Venue for any action arising under this Agreement shall lie in the state district courts of Brazoria County, Texas.
- (c) **Assignment.** This Agreement may not be assigned without the express written consent of the other party.
- (d) **Binding Obligation.** This Agreement shall become a binding obligation on the signatories upon execution by all signatories hereto. Developer warrants and represents that the

(k) **Undocumented Workers.** Developer certifies that the Developer does not and will not knowingly employ an undocumented worker in accordance with Chapter 2264 of the Texas Government Code, as amended. If during the Term of this Agreement, Developer is convicted of a violation under 8 U.S.C. § 1324a(f), Developer shall repay the amount of the public subsidy provided under this Agreement plus interest, at the rate of six percent (6%), not later than the 120th day after the date the EDC notifies Developer of the violation.

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DEVELOPER:

**CECIL JOE STARK SAWMILL
& LOGGING, INC.,**
a Texas corporation,

By: _____

Cecil Joe Stark, President

Date Signed: _____

STATE OF TEXAS

§

§

COUNTY OF BRAZORIA

§

This instrument was acknowledged before me on the ____ day of _____, 2023, by Cecil Joe Stark, President of Cecil Joe Stark Sawmill & Logging, Inc., a Texas corporation, on behalf of said Texas corporation.

Notary Public, State of Texas

Exhibit A

Legal Description and/or Depiction of the Property



AGENDA MEMO

Business of the City Council City of Sweeny, Texas

Meeting Date	2/20/2024	Agenda Item	
Approved by City Manager	Yes	Presenter(s)	Lindsay Koskiniemi, City Manager
Reviewed by City Attorney	Yes	Department	Emergency Management / Administration
Subject	Discussion and possible action to adopt a resolution to adopt the Brazoria County Hazard Mitigation Plan, a county wide multi-jurisdictional hazard mitigation plan.		
Attachments	1) Resolution 24-102 2) 2023 Brazoria County Hazard Mitigation Plan		
Financial Information	Expenditure Required:	N/A	
	Amount Budgeted:	N/A	
	Account Number:		
	Additional Appropriation Required:		
	Additional Account Number:		

Executive Summary

Brazoria County and several jurisdictions within the County have identified natural hazards that pose a threat to public safety that include hurricanes, tornadoes, drought, floods, etc., and have updated the existing Brazoria County Hazard Mitigation Plan (BCHMP). This document is updated by the County and affected jurisdictions every few years.

The BCHMP identifies mitigation goals and actions to reduce or eliminate long-term risks to people and property and impacts of future hazards within the County. This is an important emergency management and planning tool that aids affected jurisdictions with obtaining funding for grants, such as the West Side Water Line Replacement grant that was conditionally awarded to Sweeny in 2023 for one mile of water line replacement and installation of additional fire hydrants.

Sweeny is one of the affected jurisdictions included in the BCHMP. Adoption of the attached resolution recognizes that Sweeny accepts the updates to the 2023 BCHMP.

Recommended Action

Staff recommends approval of the resolution.

Recommended motion, "I move we approve the Resolution 24-102 in support of the 2023 Brazoria County Hazard Mitigation Plan updates."

RESOLUTION NO. 24- 102

A RESOLUTION OF THE CITY OF SWEENY, ADOPTING THE BRAZORIA COUNTY HAZARD MITIGATION PLAN,

WHEREAS the City of Sweeny recognizes the threat that natural hazards pose to people and property within its jurisdiction; and

WHEREAS the City of Sweeny has prepared a multi-hazard mitigation plan, hereby known as the Brazoria County Hazard Mitigation Plan 2023 in accordance with federal laws, including the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and the National Dam Safety Program Act, as amended; and

WHEREAS the Brazoria County Hazard Mitigation Plan 2023 identifies mitigation goals and actions to reduce or eliminate long-term risk to people and property in its jurisdiction from the impacts of future hazards and disasters; and

WHEREAS adoption by the City of Sweeny demonstrates its commitment to hazard mitigation and achieving the goals outlined in the Brazoria County Hazard Mitigation Plan 2023.

NOW THEREFORE, BE IT RESOLVED BY THE CITY OF SWEENY, TEXAS, THAT:

In accordance with the City’s local adoptions, the City of Sweeny adopts the Brazoria County Hazard Mitigation Plan 2023. While content related to the City of Sweeny may require revisions to meet the plan approval requirements, changes occurring after adoption will not require the City of Sweeny to re-adopt any future iterations of the plan. Subsequent plan updates following the approval period for this plan will require separate adoption resolutions.

ADOPTED by a vote of the City of Sweeny City Council this _____ day of _____, 2024.

Mayor: _____

Clerk: _____

Brazoria County Hazard Mitigation Plan

Table of Contents

Part 1: Introduction

Part 2: Planning Process

Part 3: County Profile

Part 4: Hazard Identification

Part 5: Risk Assessment

Part 6: Hazard & Vulnerability Assessment

Part 7: Mitigation Strategy

Part 8: Plan Maintenance Procedures

Appendices

Appendix A – Planning Process

Appendix B – Critical & Valuable Assets

Appendix C – HAZUS Report

Appendix D - Repetitive Loss Properties

Appendix E – Future Mitigation Additions

Acronym List

RHMP	Regional Hazard Mitigation Plan
HMAP	Hazard Mitigation Plan
H-GAC	Houston-Galveston Area Council
FEMA	Federal Emergency Management Agency
TDEM	Texas Division of Emergency Management
TX	Texas
CRS	Community Rating System
NFIP	National Flood Insurance Program
HGMP	Hazard Mitigation Grant Program
CHARM	Community Health and Resource Management
mph	miles per hour
NOAA	National Oceanic and Atmospheric Administration
NSSL	National Severe Storm Laboratory
OEM	Office of Emergency Management
ArcGIS	Geographic Information System
RL	repetitive loss
KBDI	Keetch-Byram Drought Index
WUI	Wildland Urban Interface
FM	Farm to Market road
PHDI	Palmers Hydrological Severity Index
USDA	United States Department of Agriculture
LAL	Lightning Activity Levels
NCDC	National Climate Data Center
CDC	Centers for Disease Control and Prevention
NCEI	National Centers for Environmental Information
SPIA	Sperry-Piltz Ice Accumulation
NWS	National Weather Service
LEP	Linear Extensibility Percent
COLE	Coefficient of Linear Extent
PMT	Plan Maintenance Team

Part 1: INTRODUCTION

Brazoria County's previous Hazard Mitigation Plan was adopted in 2006 and updated in 2011 as part of a seven-county Regional Hazard Mitigation Plan (RHMP). Due to new regulation and planning recommendations, Brazoria County prepared a new countywide multi-jurisdictional Hazard Mitigation Plan (HMAP). Brazoria County partnered with the Houston- Galveston Area Council (H-GAC) for both the 2006 and 2011 plans and continued this partnership during the development and adoption of the HMAP.



Image source: <https://www.wikipedia.org/>

History

On April 28, 2006, the Federal Emergency Management Agency (FEMA) and the Texas Division of Emergency Management (TDEM) approved the first RHMP. H-GAC prepared the regional plan in coordination with FEMA and TDEM to ensure it met all applicable state and federal requirements. H-GAC updated the RHMP in 2011 to re-assess vulnerabilities and increase the number and diversity of mitigation action items. The plan includes a more robust assessment of natural hazards, newly uncovered vulnerabilities, more advanced analysis techniques, and a more effective and informed mitigation strategy. In 2018, Brazoria County and H-GAC developed a county HMAP and included a fresh look at specific county hazards and new mitigation efforts to address this in Brazoria County.

Purpose of Plan

The purpose of Brazoria County's HMAP is to reduce the loss of life and property within the county and lessen the negative impacts of natural disasters. Vulnerability to several natural hazards has been identified through research, analysis, and public input. These hazards threaten the safety of residents and have the potential to damage or destroy both public and private property, disrupt the local economy, and impact the overall quality of life of individuals who live, work, and play in the county. While natural hazards cannot be eliminated, the effective reduction of a hazard's impact can be accomplished through thoughtful planning and action.

The concept and practice of reducing risks to people and property from known hazards is generally referred to as hazard mitigation. One of the most effective tools a community can use to reduce hazard vulnerability is developing, adopting, and updating a hazard mitigation plan as needed. A hazard mitigation plan establishes the broad community vision and guiding principles for reducing hazard risk, including the development of specific mitigation actions designed to eliminate or reduce identified vulnerabilities.

Scope of Plan

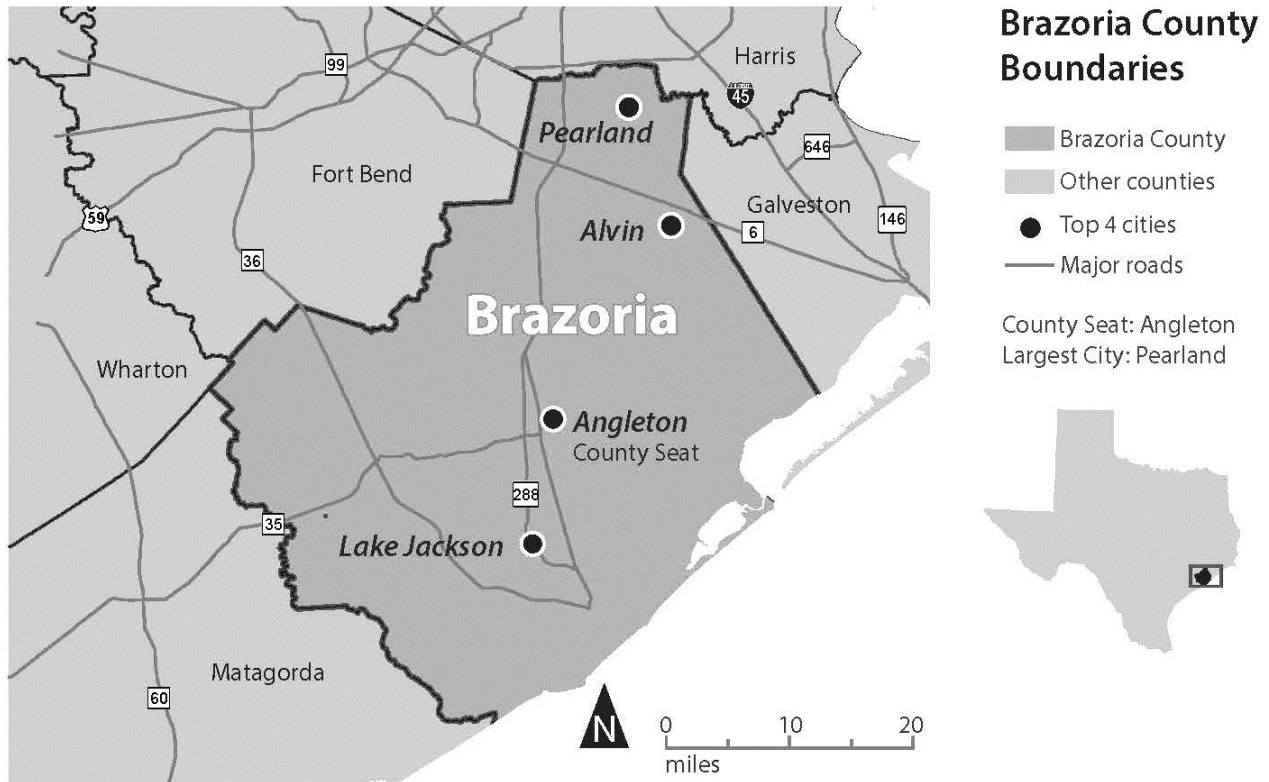
Brazoria County is in the east-central region of Texas along the coast, and scope of the HMAP includes the following participating jurisdictions:

- Brazoria County
- Brazosport ISD
- Sweeny ISD
- Baileys Prairie
- Bonney
- Brazoria
- Brookside Village
- Clute
- Danbury
- Iowa Colony
- Hillcrest Village
- Holiday Lakes
- Jones Creek
- Lake Jackson

- Liverpool
- Manvel
- Oyster Creek
- Quintana
- Richwood
- Surfside Village
- Sweeny
- Damon ISD

- West Columbia
- Brazosport College
- Drainage District 11
- Velasco Drainage District
- Freeport
- Port Freeport
- Alvin ISD
- Danbury ISD

Planning Area Map



The plan, developed in accordance with state and federal rules and regulations governing local hazard mitigation plans, was adopted by the participating jurisdictions and shall be routinely monitored and revised to maintain compliance with all state and federal regulations. All Climate change factors will be considered in this plan relating to future mitigation projects and increased hazard potential. Increased awareness and focus in vulnerable areas, at-risk populations and underserved communities are forefront in plan development with equitable and impartial treatment of all individuals in the entire community. No new hazards were observed in climate changes to alter the current mitigation strategies developed in this plan.

The HMAP profiles the following hazards:

- Flooding
- Hurricanes and Tropical Storms
- Wildfire
- Drought
- Lightning
- Heat
- Hail
- Winter Weather
- Tornado
- Dam/Levee Failure
- Coastal Erosion
- Expansive Soils

Presidential Declared Disasters

Brazoria County has persevered through many natural disasters. The table below lists the presidential declared disasters that the County has experienced since 1973. Each disaster is costly and challenging. The goal of this HMAP is mitigation and reduce the impact of future disasters.

Year	Declaration Type	Title
1973	Major Disaster Declaration	Flood
1979	Major Disaster Declaration	Flood
1979	Major Disaster Declaration	Flood
1983	Major Disaster Declaration	Hurricane
1991	Major Disaster Declaration	Severe Storm
1991	Major Disaster Declaration	Flood
1994	Major Disaster Declaration	Flood
1998	Major Disaster Declaration	Severe Storm
1998	Major Disaster Declaration	Severe Storm
1998	Major Disaster Declaration	Flood
1999	Emergency Declaration	Fire
2001	Major Disaster Declaration	Coastal Storm
2002	Major Disaster Declaration	Coastal Storm
2002	Major Disaster Declaration	Severe Storm
2003	Major Disaster Declaration	Hurricane
2005	Major Disaster Declaration	Hurricane
2005	Emergency Declaration	Hurricane
2005	Emergency Declaration	Hurricane
2006	Major Disaster Declaration	Fire
2007	Emergency Declaration	Hurricane
2008	Major Disaster Declaration	Hurricane
2008	Emergency Declaration	Hurricane
2008	Emergency Declaration	Hurricane
2015	Major Disaster Declaration	Severe Storm
2015	Major Disaster Declaration	Severe Storm
2016	Major Disaster Declaration	Flood
2017	Major Disaster Declaration	Hurricane
2020	Emergency Declaration	Tropical Storm
2021	Emergency Declaration	Winter Storm
2021	Major Disaster Declaration	Winter Storm

Source: Presidential Declared Disasters List (1950-2023), FEMA

Part 2: Planning Process

Part 2: PLANNING PROCESS

This section includes a description of the process used by Brazoria County and participating jurisdictions to develop the 2023 HMAP.

Overview

Hazard mitigation planning can be described as the means to break the repetitive cycle of disaster loss. A core assumption of hazard mitigation is that pre-disaster investments will significantly reduce the demand for post-disaster assistance by alleviating the need for emergency response, repair, recovery, and reconstruction. All Climate change factors will be considered in this plan relating to future mitigation projects and increased hazard potential. Increased awareness and focus in vulnerable areas, at-risk populations and underserved communities are forefront in plan development with equitable and impartial treatment of all individuals in the entire community. No new hazards were observed in climate changes to alter the current mitigation strategies developed in this plan.

Hazard mitigation planning is the process of identifying natural hazards, understanding community capabilities and resources, identifying and assessing hazard vulnerability and risk, and determining how to minimize or manage those risks. Brazoria County approached the hazard mitigation planning process by establishing a Planning Team. The next step of the planning process was the assessment of hazards and how they can impact specific assets. H-GAC conducted a hazard analysis in 2017 and the county, with updated information, presented this at the kick-off meeting and Planning Team on November 9, 2022.

After hazard identification and analysis, communities considered their vulnerability to the identified threats. Crucial input from the participating jurisdictions and members of the public helped inform a vulnerability and risk assessment for the entire county. This information gathered from meetings with the Planning Team, online participation and input from the participating jurisdictions, and natural hazard modeling techniques was used to produce a comprehensive vulnerability assessment.

The planning process culminated in a Mitigation Strategy, i.e. identification of specific mitigation actions, which when viewed, represents a comprehensive strategy to reduce the impact of hazards. The Planning Team then began the process of developing an overarching Mitigation Strategy, and a long-term approach to update and maintain the HMAP. Specific mitigation actions are identified in this plan and included in the Appendix E. Responsibility for each mitigation action is assigned to a specific individual, department or agency along with a schedule for its implementation. Plan maintenance procedures (Part 8 of this plan) establish procedures to monitor progress, including the regular evaluation and enhancement of the Plan. Multijurisdictional coordination and integration of the HMAP into local planning mechanisms was also addressed. The established maintenance procedures ensure that the plan remains a dynamic and functional document over time.

Plan Development Resources

The Brazoria County HMAP was developed using existing plans, studies, reports, and technical information. Materials and historic data were used to inform participants throughout the planning process, evaluate and analyze hazards, and develop the mitigation strategy.

Plan Development Resources: Existing Documents and Data	
FEMA Disaster Declarations	FEMA Flood Map Services
H-GAC Land Use & Demography Database	Houston-Galveston Area Regional Plan
2011 Regional Hazard Mitigation Plan	NOAA Storm Event Database
State of Texas Hazard Mitigation Plan	Texas A&M Forest Service Wildfire Reports
US Census American Fact Finder	USDA Census of Agriculture Reports
USGS Homeland Infrastructure Foundation-Level Data	Brazoria County Disaster Recovery Plan
Brazoria County Emergency Operations Plan	2017 Brazoria County Hazard Mitigation Plan

Planning Team

Brazoria County and participating jurisdictions established the Planning Team in Fall 2022 in preparation for the first meeting and hazard mitigation planning workshop held on October 19-20, 2022. Members were asked to attend all meetings in person but were provided an online alternative if they were unable to do so. Online materials, surveys, forms, and documentation are provided in Appendix A. Representatives from the County Office of Emergency Management served as liaisons between stakeholders, staff, and members of the public who were unable to attend the meetings, the County's Office of Emergency Management sent out a series of emails to the planning team to invite them to the meeting and to participate in the online forums. In addition to the list below a TDEM Chief and TDEM Hazard Mitigation Planner/Supervisor were part of the workshop and advised the team.

Jurisdiction	Title	Contact Method
Velasco Drainage District	Superintendent	Email
Freeport	Fire Chief / EMC	Email
Port Freeport	Director of Protective Services	Email
Sweeny	City Manager	Email
Bailey's Prairie	Mayor	Email
Angleton	Emergency Management Coordinator	Email
Drainage District 11	Superintendent	Email
Lake Jackson	City Manager	Email
Iowa Colony	Mayor	Email
Brazoria	City Manager	Email
Holiday Lakes	Mayor	Email
Surfside Beach	City Secretary	Email
Liverpool	Mayor	Email
Alvin ISD	Superintendent	Email
West Columbia	City Manager	Email
Brazoria County	Deputy Emergency Management Coordinator	Email
Clute	Fire Marshal / EMC	Email
Richwood	City Manager & Chief of Police	Email
Hillcrest Village	Mayor	Email
Danbury	Mayor	Email
Bonney	Mayor	Email
Brookside Village	Mayor	Email
Oyster Creek	Mayor	Email
Quintana	Mayor	Email
Jones Creek	Mayor	Email
Manvel	Mayor	Email
Brazosport ISD	Superintendent	Email
Brazosport College	Emergency Management Coordinator	Email
Alvin ISD	Director Safety and Security	Email

Stakeholders

There were a variety of stakeholders throughout the community and neighboring jurisdictions that were a part of the planning process; these stakeholders either attended meetings, contacted the planning team with their input or both. The chart below shows these stakeholders and their titles. Their input was utilized throughout the plan and specifically in the Hazard Analysis and Mitigation Strategy sections of this plan.

National, Regional, and Local Agencies		
Stakeholder	Title	Contact Method
Texas A&M AgriLife	Extension Program Specialist	Email/ Hosted CHARM Meeting
The Trust for Public Land	Senior Vice President and Director of Conservation Strategies	Email/ Phone
U.S Army Corps of Engineers	Civil Engineer & Flood Risk Manager	Email/ Attended CHARM Meeting
Neighboring Communities and Regulatory Authorities		
Stakeholder	Title	Contact Method
TDEM	County Engineer	Email/ Attended CHARM Meeting
Brazoria Drainage District #4	District Engineer	Email/ Attended CHARM Meeting
Chambers County	Emergency Management Coordinator	Email/ Phone Call

Meeting Dates & Details

November 9, 2022: Hazard Mitigation Kick-off Meeting

Brazoria County and the Planning Team hosted a Kick-off meeting at new Brazoria County Emergency Operations Center 520 North Front Street Angleton, TX 77515 on November 9, 2022. The purpose of the meeting was for Brazoria County and participating jurisdictions to gather feedback and input on the draft Hazard Analysis and discuss local vulnerabilities. The Planning Team and local jurisdictions were given a presentation and provided large maps displaying the analysis of various hazards. Participants worked with the planning team to improve the accuracy of the analysis and pinpoint the vulnerabilities of each hazard within their communities. Meeting participants also discussed their current ability to mitigate these threats and how to draft a mitigation action to address them. Prior to the meeting, community members and jurisdiction stakeholders were invited. Past meetings and information from the initial HMAP are documented and information was also gleaned from the 2017 HMAP. Public involvement data was used to update the new plan and process. Past actions used for gathering the public's information online, web based, press releases, public service announcements, and other advertisements in newspapers and on the radio. See Appendix A for meetings agenda, attendees list, and press releases.

October 19-20, 2022: Hazard Mitigation Workshop (G-318)

Brazoria County hosted a Planning Team workshop at the Lake Jackson Civic Center for local jurisdiction officials and staff on October 19-20, 2022. The purpose of this workshop was to develop a framework to begin the updating of our HMAP and mitigation strategy. TDEM staff presented the materials and helped formulate a procedure with steps to update our existing plan. Presentations and examples were offered on appropriate topics and workgroup discussions occurred about strategy development. Planning Team members outlined a Mitigation Strategy and refined their mitigation actions. See Appendix A for the workshop information, agenda and sign-in sheet.

October 27, 2022: Community Health and Resource Management (CHARM) Workshop

The County and City of West Columbia had the opportunity to partner with Texas A&M's AgriLife and US Army Corps of Engineers to host a workshop for all jurisdictions in the county (<https://tcwp.tamu.edu/charm/>); members of the planning team attended. The workshop utilized GIS to explore current conditions including data such as 100 year-floodplain overlays and social vulnerability throughout the area. After current conditions were presented, the workshop participants discussed what they wanted future land use to look like given the current conditions.

Ongoing 2022-2023: Request for Public Comment

Brazoria County hosted a draft of the HMAP on its website, and provided an online method for the public to submit comments and feedback on the draft. The comments and feedback will be discussed at planning meetings when the plan is up for adoption. The jurisdictions' HMAP adoption meeting dates and public comments were also provided on the same webpage. Press releases were then sent to all local media outlets to notify the public of the opportunity to comment online or by phone at each jurisdiction. Each jurisdiction also notified the public as described in Part 8 of this plan.

February 2, 2023: Public Open House for The Freeport Project – Lake Jackson Civic Center

The Freeport Project, a component of the Sabine Pass to Galveston Bay Program (S2G Program), hosted a public open house on February 2, 2023, to provide the public with information about project progress. The Freeport Project is one of three mitigation projects included in the S2G Program and focuses on improvements to the existing hurricane flood protection system in the Freeport area. These improvements will reduce the risk of flooding from coastal storm surge, while not inducing adverse impacts to area residents and businesses within the Freeport area. The Freeport Project is a partnership of the U.S. Army Corps of Engineers (USACE) and its non-Federal sponsor, the Velasco Drainage District.

Plan Adoption - 2023

To be completed after Plan Adoption.

The participation of small school districts (Danbury ISD, Sweeny ISD and Damon ISD) was through conversations at meetings, email question & answer correspondence. These school districts are small and under resourced and represent underserved communities and vulnerable populations. Their participation in planning helped develop strategies with emphasis on their respective populations. This correspondence and planning involved each school superintendent and mayor of these three smaller school districts.

Non-profit participation and representation in our planning process, at planning meetings and through email correspondence, provided valuable information to help formulate strategies to included insight into the vulnerable populations they serve.

The United Way of Brazoria County liaison, Women's Center Director, Action's Inc. Executive Director, Brazosport CARE Director and the Gulf Coast Transit Manager all worked with the planning team and gave meaningful guidance/insight to help form strategies that would impact the populations they serve in a positive way. These non-profit organizations worked with their respective populations and community leaders to gain awareness into what mitigation strategies would benefit them.

Participation invitations and continued interaction with vulnerable populations will be done through our non-profit organizations.

Participation & Public Input

Public input and participation are crucial elements of hazard mitigation planning. Feedback and input from the November 2022 Hazard Mitigation Kick-off meeting, surveys and other meetings were used to identify vulnerabilities in each jurisdiction, identify valuable assets, and develop the risk assessment. Covid 19 has altered the way Brazoria County gathered public input and the “in-person” meetings have not been recommended. We have incorporated a county-wide method of obtaining public opinion through surveys, email and social media outlets. Online surveys, resources, a mitigation action survey with a place to submit comments on the draft plan were made public on Brazoria County’s website and social media accounts with links to participating jurisdictions’ websites. (see Appendix A). Examples of online participation include submitting mitigation actions, completing the hazard mitigation survey, and conversations over email. The Brazoria County Office of Emergency Management also distributed hardcopies of the surveys at various public locations and to each participating jurisdiction. These jurisdictions then had the option to either mail in the survey responses or hand deliver them to Brazoria County. The data from returned surveys was used to develop the risk assessment and identify vulnerabilities.

The chart below demonstrates the method and type of participation by each jurisdiction.

Jurisdiction	Representative attended Hazard Mitigation Meeting(s)	Participated in Mitigation Strategy Development	Online Participation
Brazoria County	x	x	x
Pearland	x	x	x
Brazosport College	x	x	x
Bailey’s Prairie	x	x	x
Bonney			x
Brazoria	x	x	x
Brookside Village	x	x	x
Clute	x	x	x
Danbury	x	x	x
Iowa Colony	x	x	x
Hillcrest Village	x	x	x
Holiday Lakes	x	x	x
Jones Creek	x		x
Lake Jackson	x	x	x
Liverpool			x
Manvel	x	x	x
Oyster Creek			x
Quintana			x
Richwood	x	x	x
Surfside Beach		x	x
Sweeny		x	x
West Columbia	x	x	x
Brazosport ISD	x	x	x
Velasco Drainage District	x	x	x
Port of Freeport	x	x	x
Drainage District 11	x	x	x
Freeport	x	x	x
Alvin ISD		x	x

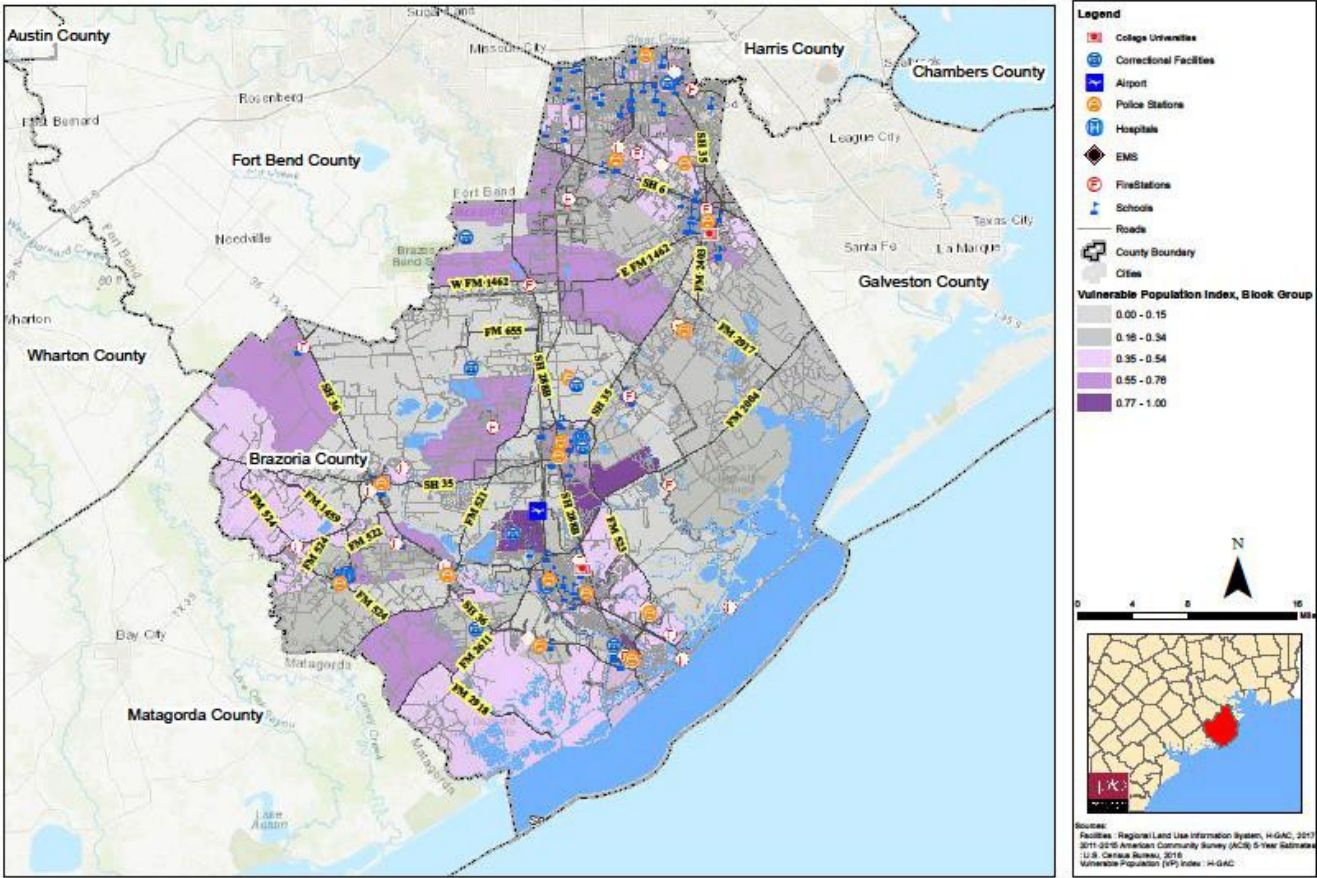
5

Part 3: County Profile

Brazoria County's median household income is one of the largest in the region* at \$87,958. The county also has a high rate of homeownership (73.6%) and a median home value of \$225,200. Residents of the county spend approximately 54% of their income on costs related to housing and transportation.

Although Brazoria County is largely residential (the majority of Brazoria County residents work in neighboring Harris County), Brazoria County's economy has grown in pace with its residential development.^[iv] Business services are the largest employment cluster, with approximately 18,000 employees. Many of these jobs are related to the support activities for oil and gas operations.^[v] Retail, healthcare, distribution, and manufacturing are important private sector employers. Retail trade comprised 12 percent of employment in 2014, and retail sales totaled \$6.3 billion in 2012.^[vi] Several major national retailers have distribution centers in Brazoria County. Healthcare is a growing sector of the economy as many of the institutions based in the Texas Medical Center have opened or are planning to open hospitals in the county. The county has one of the highest median home values in the region at \$225,200 and over 40% of its housing units have been built since 2000.

Vulnerable Population Map : Brazoria County



The Vulnerable Population Index identifies areas throughout Brazoria County that may not have the means or the resources to act when a natural disaster occurs in Brazoria County. For the purposes of this plan, vulnerable populations include any households without a car, single female household with child/children in the home, individuals living below the poverty line, individuals who are disabled, individuals who are Hispanic, individuals who are non-Hispanic, and non-white, and individuals 65 years and older. The areas in the county with the greatest proportion of these individuals is defined as the most vulnerable areas in Brazoria County. On the map, the areas that are deep purple (or black if printed in black and white) are where the greatest proportion of the vulnerable population is located in Brazoria County. Cities that have the largest proportion of the vulnerable population in

Brazoria County include Angleton, West Columbia, and Bailey's Prairie. Defining and mapping vulnerable populations provides the opportunity to demonstrate where perhaps the most need is throughout Brazoria County.

*The region includes Austin, Brazoria, Chambers, Colorado, Fort Bend, Galveston, Harris, Liberty, Matagorda, Montgomery, Walker, Waller and Wharton counties.

[\[i\] Houston-Galveston Area Council](#)

[\[ii\] U.S. Census Bureau](#)

[\[iii\] Texas Association of Counties](#)

[\[iv\] U.S. Census Bureau](#)

[\[v\] U.S. Cluster Mapping](#)

[\[vi\] U.S. Census](#)

[\[vii\] DATA USA, Workforce Solutions](#)

[\[viii\] USDA Census of Agriculture](#)

[\[ix\] Community Impact Newspaper](#)

[\[x\] National Weather Service](#)

[\[xi\] Workforce Solutions](#)

[\[xii\] Federal Reserve Bank of Saint Louis](#)

The changes and increases in population do not currently show any impacts of hazards listed in the plan.

Brazoria County has seen significant growth in population since the last plan update. This growth has had no change in vulnerability in the planning area. This increase in population has been factored into the current planning and mitigation strategies.

Part 4: Hazard Identification

Part 4: HAZARD IDENTIFICATION

The State of Texas's Hazard Mitigation Plan has identified 5 major natural hazards that affect the region. These include hurricane, flood, wildfire, drought, and tornadoⁱ. The local planning team identified 12 natural hazards which could affect the county and local jurisdictions.

Flooding

Flooding is one of the most frequently occurring, destructive, and costly natural hazards facing Texas.ⁱⁱ There are two main categories for floods: general and flash flooding. General flooding is typically a long-term event that can last from a couple of days to weeks. This type of flooding is characterized by an overflow of water from an existing waterway, including rivers, streams, and drainage ditches. Flash flooding is an event that typically lasts a few minutes to less than 6 hours. These floods are characterized by heavy rain or water from a dam failure that inundates waterways and infrastructure, such as bridges and roads. Either type of flooding can destroy infrastructure, homes, and other structures, and pulling cars off roads. However, flash flooding typically is considered the most dangerous type of flooding, because of its "speed and the unpredictability"ⁱⁱⁱ. Generally, the impact of flooding is intensified in urban areas because of less impervious surfaces and in suburban or rural areas because of building in vulnerable areas. While 100 and 500-year floodplains are identified throughout the county and local jurisdictions, flooding can occur outside of these areas.

Lightning

Lightning can be seen throughout thunderstorms, hurricanes, intense forest fires, and winter storms. Lightning occurs when positive and negative charges build within a cloud leading to a rapid discharge of electricity^{iv}. While there are several types, lightning is typically classified as ground flashes or cloud flashes. One of the more common lightning strikes are cloud-to-ground lightning; these strikes are classified as ground flashes. Cloud-to-ground lightning starts as a channel of negative charge, called a stepped leader, zigzagging downward in roughly 50-yard segments in a forked pattern^v

Lightning often strikes tall structures, such as trees and skyscrapers, but can also strike open fields or other areas depending on where the electrical charges form. Lightning causes an average of 80 deaths and 300 injuries each year in the United States.⁷ In 2017, 16 people were killed by lightning in the United States, two of these deaths occurred in Texas, but not in the county.^{vi}

Hail

Hail is a form of precipitation that occurs when updrafts in thunderstorms carry raindrops upward into extremely cold areas of the atmosphere where they freeze into balls of ice. To be considered hail, frozen precipitation needs to be at least .2 inches. Size of hail can range from pea-sized (1/4 inch in diameter) to softball-sized (4 1/2 inches in diameter). Quarter sized hail (1 inch in diameter) and above is considered severe by the National Oceanic and Atmospheric Administration's (NOAA) National Severe Storm Laboratory. Hail storms can result in significant damage to vehicles, buildings, and crops. Severe hail and hail swaths can result in an accumulation of hail on roadways and roofs, which may result in car accidents or roofs collapsing.^{vii} As of 2015, Texas had the highest level of hail loss claims throughout the country. According to the National Insurance Crimes Bureau, hail loss claims totaled 400,000 dollars in Texas from 2013 to 2015. However, damage from hail typically occurs in northern Texas rather than southern Texas.

Winter Weather

A winter storm is any event in which the main type of precipitation is snow, sleet, or freezing rain, according to (NOAA), 70 percent of injuries related to winter storms are in automobiles. Winter storms form with cold air, lift, and moisture.^{viii} While there are several types of winter storms, ice storms and snow flurries or showers with light accumulation are the most likely in the region. The main concerns with winter weather are road conditions and power outages.

Hurricanes and Tropical Storms

Tropical cyclones with sustained winds of 74 mph and above are classified as hurricanes. Hurricanes can reach wind speeds of 156 mph or more, which would be considered a category five on the Saffir-Simpson scale with potential for catastrophic damage. Hurricanes generally have a well-defined center, called the eye. Hurricane season is generally June 1st through November 30th each year.^{ix} However, hurricanes can and have formed outside of this season. Hurricanes are one of the top natural hazards affecting the region, with high winds and flooding considered two of the main impacts from hurricanes and tropical storms.^x

Tropical cyclones (rotating low-pressure weather systems that have organized thunderstorms, but no fronts) with sustain winds of at least 39 mph and no higher than 73 mph are classified as tropical storms. Tropical storms generally have ill-defined centers and slower moving winds than hurricanes.¹²

Flooding is also a concern for the county during these events. Hurricane Harvey is a recent example of the impact flooding during hurricanes and tropical storms has on the region, county, and local jurisdictions. Hurricane Harvey made landfall on August 25th, 2017 as a category four hurricane near Rockport, Texas; Hurricane Harvey traveled further inland as a tropical storm over the next few days. The tropical storm triggered general and flash flooding throughout the region with recorded rainfall measuring as high as 60.58 inches in the region. Flooding was seen throughout the county and local jurisdictions.

Windstorms are identified by the State of Texas as a common hazard affecting the region. The plan addresses the concerns of windstorms through the hurricane/ tropical storm and tornado sections.

Tornado

Tornadoes are a violently rotating column of air touching the ground, usually attached to the base of a thunderstorm.^{xi} However, tornadoes have formed during hurricanes and tropical storms. Tornadoes form when there is a change in a storm's speed and direction. Tornadoes can have wind speeds that range from 40 mph to 300 mph and move at 10 mph to 20 mph. However, tornadoes typically last a few minutes. The damage seen from a tornado is largely due to the strength of the winds, but strong hail and lightning often accompany tornadoes.^{xii}

Wildfire

Wildfires are any non-structure fire, except prescribed fires that occur in wildland areas, including prairies or forest. as many as 90 percent of wildland fires in the United States are cause by humans and the other 10 percent are started by lava or lightning.^{xiii} In understanding that most wildfires are started by people, the Texas Forest Service assigns a high priority to year-round wildfire prevention activities that reduce risks to residents and property. Texas Forest Service prevention campaigns use radio, TV, print, and web-based products along with local outreach programs to increase wildfire awareness and deliver fire safety messages. Texas Forest Service works with local and county officials to keep them informed of fire danger and the likelihood of large damaging wildfires. In 2017, five Texans

died due to wildfires in north Texas; Texas faced more than 21 million dollars in damages from wildfires throughout the state.^{xiv}

Drought

Drought varies greatly in length and extent. High temperatures, high winds, and low humidity can worsen drought conditions and can make areas more susceptible to wildfire. Human demands and actions, such as farming and animal grazing, can also hasten drought-related impacts. There are typically four types of drought: meteorological, agricultural, hydrological, and socio-economic. Meteorological droughts are typically defined by the level of dryness over a given period. Hydrological droughts are defined by the decline of soil/ground water or stream flow or lake/ river levels. Agricultural droughts refer to the impact of low rainfall and storm water or reduced ground water or reservoir levels needed for agriculture. Socio-economic drought considers the impact of drought conditions on supply and demand of some economic goods such as grains.^{18, xv} There are a wide range of effects that can occur from drought, including decreased land prices, loss of wetlands, increased energy demand, and increase of mental health disorders.^{xvi} Impacts seen in Texas from drought in the past, include wildfires, loss of agricultural crops including rice and wheat fields, and increase in energy cost and demand.^{xvii}

Coastal Erosion

There are several types of erosion including soil and coastal erosion. Soil erosion is comprised of two types: wind erosion and water erosion. Wind erosion is a common occurrence, which typical occurs when winds blow across flat, sparsely vegetated, or disturbed land, lifting soil into the air or displacing soil to a new location. Wind erosion can cause soil deterioration and air pollution.^{xviii} Water erosion can occur over land or in streams and channels. Water erosion that takes place over land may result from rain, shallow sheets of water flowing off the land, or surface flow, which is concentrated in areas of lower elevation. Stream channel erosion may occur as the volume and velocity of water flow increases enough to cause movement of the streambed and bank soils.^{xix} Major storms, such as hurricanes, may cause significant erosion by combining high winds with heavy surf and storm surge to significantly affect the rate of coastal erosion.^{xx}

Coastal erosion in the county is a central concern for communities located along the coast. Coastal erosion is the wearing away of beaches and bluffs due to storms, wave action, sea level rise, and human activities. Coastal erosion is responsible for an estimated 500 million dollars per year in property loss throughout the U.S. Coastal erosion can impact local economies that depend on tourism and ports, and high property values for beachfront homes and establishments. Additionally, coastal erosion can greatly impact wetlands and destroy natural ecosystem and natural barriers that can help to protect from other natural hazards including hurricanes.

Heat Events

While the National Weather Service defines excessive heat as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks, a Heat Event is more loosely defined. A heat event could be a period where the county experiences high temperatures which could affect residents particularly children and the elderly. According to the National Weather Service, the county particularly in summer months experiences typical daily temperatures more than 90 degrees and humidity more than 75 percent. These high temperatures mixed with high percentage of humidity can affect the elderly and children even though these are not above average temperatures for the county.

Dam/ Levee Failure

Aging infrastructure and increased uncertainty of other natural hazards such as flooding are factors in the rising concern of dam and levee failure. Rising flood levels can create a levee breach or dam failure resulting in flashing flooding within as little as six hours or less. Aging infrastructure and other factors such as debris or melting snow may create a dam failure or levee breach over a greater period, weeks to months. The results of a dam failure or levee failure can result in residential and commercial buildings flooded outside of the identified 100 to 500-year floodplain and increase flood water levels during a flood event.^{xxi}

There are 51 known dams and levees in Brazoria County. These dams are maintained by public, state, federal, local, or partnering entities. All dams have been classified as 'Low' in the hazard potential classification. The failure of a dam or levee during a major rain event would cause additional flood damage, but substantial economic, environmental, or lifeline losses are not expected. Only the communities at risk of experiencing impacts from a dam or levee failure are profiled. Those jurisdictions include Unincorporated Brazoria County, Bailey's Prairie, Brazoria, Holiday Lakes, Oyster Creek, West Columbia, Port of Freeport, and Freeport. The remaining jurisdictions participating in this plan are not at risk for dam and failure and will not be profiled.

Expansive Soils

Expansive soils are soils and soft rock that tend to swell or shrink due to changes in moisture content. Expansive soils (bentonite, smectite, or other reactive clays) expand when the soil particles attract water and can shrink when the clay dries. Changes in soil volume present a hazard primarily to structures built on top of expansive soils. In Texas, most expansive soils are in band 200 miles west of the coastline, stretching approximately from Beaumont to Brownsville. These areas receive the most moisture and are also vulnerable to droughts, which can cause the soils to contract. Problems associated with expansive soils are sinking or broken foundations or ruptured pipelines. In the region, the problems associated with expansive soils typically occur during drought periods.^{xxii} Drought may also worsen the effects of land subsidence. Land subsidence is identified as a common hazard by the State of Texas. However, land subsidence was not brought up throughout the planning process and there were no recorded events or damage found throughout the county. Consequently, land subsidence is not identified as a natural hazard in this plan.

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Part 5: Risk Assessment

Part 5: RISK ASSESSMENT

A Vulnerability Assessment is the process of identifying threats by natural hazards to the population and infrastructure. By identifying the greatest vulnerabilities within the County, it becomes possible to develop a Mitigation Strategy that effectively allocates resources for addressing the most serious vulnerabilities. For this assessment, the Planning Team conducted three main processes to identify the vulnerabilities within Brazoria County:

- Cataloging critical and valuable assets within the County.
- Conducting a capability assessment.
- Assessing the County’s vulnerability to each hazard and ranking these hazards according to degree of risk.

H-GAC maintains a database of critical facilities. During our kick-off meeting on November 9, 2022, Brazoria County and local jurisdiction officials reviewed and updated this list, including adding additional valuable assets within the community. Following this process, the Planning Team determined 461 facilities are critical or valuable assets. Through a Hazus analysis, the Planning Team also identified residential and commercial units. Appendix B contains a comprehensive list of the facilities. The full Hazus analysis is catalogued in Appendix C. A summary of the facilities is provided below.

Critical Facilities & Valuable Assets

Asset Description	Quantity
Emergency Operation Centers	11
Medical Facilities and Emergency Rooms	21
Fire Station	34
Police Station	50
Utility, Electrical, and Waste Water Facilities	76
Correctional Facilities	8
College University Campus and Buildings	5
Schools	91
Nursing Home	59
Dams	53
Natural Gas Receipt Delivery	5
Brownfields & Superfund Sites	3
Shelters	45
Housing Units	146,180
Commercial Units	37,287

AUTHORITY

The Plan is tailored specifically for participating jurisdictions within Brazoria County and plan participants including Planning Team members, stakeholders, and the general public who participated in the Plan Update development process. The Plan complies with all requirements promulgated by the Texas Division of Emergency Management (TDEM) and all applicable provisions of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Section 104 of the Disaster Mitigation Act of 2000 (DMA 2000) (P.L. 106-390), and the Bunning Bereuter-Blumenauer Flood Insurance Reform Act of 2004 (P.L. 108-264), which amended the National Flood Insurance Act (NFIA) of 1968 (42 U.S.C. 4001, et al). Additionally, the Plan complies with the Interim Final Rules for the Hazard Mitigation Planning and Hazard Mitigation Grant Program (44 CFR, Part 201), which specify the criteria for approval of mitigation plans required in Section 322 of the DMA 2000 and standards found in FEMA’s “Local Mitigation Plan Review Guide” (April 2023), and the “Local Mitigation Planning Handbook” (March 2013). Additionally, the Plan is developed in accordance with FEMA’s Community Rating System (CRS) Floodplain Management Plan standards and policies.

Risk Assessment Survey

The Planning Team ranked the hazards by scoring the frequency, impact, and vulnerability of each. Impact and vulnerability ratings were weighted more heavily than frequency scores when determining overall risk. Additionally, communities described the loss or damage, and provided specific data that expand on the descriptions provided below.

Frequency Ratings	Impact Ratings	Vulnerability Ratings
Unlikely: Rare and isolated occurrences; Unlikely to occur within the next 5 years.	Negligible: Less than 10 percent of property and population impacted in the planning area.	Low: Hazard results in little to no damage, and negligible loss of property, services, and no loss of life. Planning area is not vulnerable to this hazard.
Likely: Frequent and regular occurrences; Likely to occur within the next 5 years.	Limited: 10 to 25 percent of property and population impacted in the planning area.	Moderate: Hazard results in some damage, and moderate loss of property, services, and potentially loss of life. Planning area is moderately vulnerable to this hazard.
Very Likely: Consistent and predictable occurrences; Likely to occur more than once in the next 5 years.	Significant: 25 to 75 percent of property and population impacted in the planning area.	High: Hazard results in extensive damage, and extensive loss of property, services, and potentially loss of life. Planning area is highly vulnerable to this hazard.
	Extensive: 75 to 100 percent of property and population impacted in the planning area.	Extreme: Hazard results in catastrophic damage, loss of property, services, and loss of life. Planning area is extremely vulnerable to this hazard.

Hazards Ranked by Risk

Each identified hazard poses a risk to Brazoria County. Ranking the hazards from greatest to lowest risk allows the communities to prioritize their resources and focus efforts where they are most needed.

Risk Rating	Ranking	Hazards
High	1	Flooding
	2	Hurricanes and Tropical Storms
	3	Tornadoes
Moderate	4	Drought
	5	Lightning
	6	Heat Events
	7	Winter Weather
Low	8	Expansive Soils
	9	Hail
	12	Coastal Erosion

Capability Assessment

The participating jurisdictions completed a capability assessment survey to collect data on hazards that affect communities, the communities’ ability to mitigate damages from these hazards, and current plans or programs in place to help mitigate natural hazards. The Planning Team used this information to assess the risk within each community and to determine a strategy to integrate the HMAP into their current planning mechanisms.

- HMP: Hazard Mitigation Plan
- DRP: Disaster Recovery Plan
- CP: Comprehensive Land Use Plan
- FMP: Floodplain Management Plan
- SMP: Stormwater Management Plan
- EOP: Emergency Operations Plan
- COOP: Continuity of Operations Plan
- REP: Radiological Emergency Plan
- SARA: SARA Title III Emergency Response Plan
- TP: Transportation Plan
- REG-PL: Regional Planning
- SO: Subdivision Ordinance
- FDPO: Flood Damage Prevention Ordinance
- MA: Mutual Aid Agreements
- CRS: Community Rating System
- CIP: Capital Improvements Plan (that regulates infrastructure in hazard areas)

Jurisdiction	DRP	CP	FMP	SMP	EOP	COOP	REP	SARA	TP	REG	SO	AB	MA	FDPO	CRS	CIP
Unincorporated Brazoria County					x					x		x	X			
Alvin										x		x	X			
Angleton	x	x	x	x	x	x	x	x	x	x	x	x	X	x		x
Bailey’s Prairie	x	x	x		x		x		x	x	x	x		x		
Bonney										x		x				
Brazoria					x					x	x	x	X			
Brookside Village	x									x		x	X			
Clute	x		x		x					x		x	X			x
Danbury										x		x				
Hillcrest										x		x	X			
Holiday Lakes			x							x		x	X	x		
Iowa Colony		x	x		x		x			x	x	x	X	x		x
Jones Creek					x					x		x	X	x		
Lake Jackson	x	x	x	x	x				x	x	x	x	X		x	x
Liverpool										x		x	X			
Manvel	x	x	x	x	x	x	x	x	x	x	x	x	X	x		x
Oyster Creek										x		x				
Quintana										x		x				
Richwood					x	x		x		x		x	X			x
Surfside Beach	x		x	x	x					x	x	x	X	x	x	x
Sweeny	x		x		x	x	x		x	x		x	X			x
West Columbia	x		x		x	x	x		x	x		x	X			x
Alvin ISD												x				
Freeport				x							x			x	x	
Brazosport ISD																
Port Freeport					x					x		x				
Velasco Drainage District	x		x	x	x					x		x				

Brazoria County has not adopted building codes for developments. Brazoria County does not regulate land use and has not adopted zoning ordinances in the county.

All participating jurisdictions have adopted the NFIP minimum floodplain management criteria.

Brazoria County has a Floodplain administrator and maintains that each participating jurisdiction has adopted the latest effective Flood Insurance Rate Map (FIRM).

Our Floodplain Administrator enforces and regulates the floodplain management regulations and permit development in SFHAs.

Brazoria County Floodplain Administrator implements and addresses commitments and requirements of the NFIP.

Expand and Improve

All participating jurisdiction examined their existing authorities, policies, programs and resources. Each participating jurisdiction then identified ways to improve upon and expand their existing authorities to support the mitigation strategy.

Jurisdiction	Capability Expansion Opportunities
Unincorporated Brazoria County	Identified their local budget as a factor that decreases their capability to implement mitigation actions and reduce future damages. Brazoria County will apply for state and federal funding to help fund mitigation actions that reduce the impact of natural hazards. They will also expand their mutual aid agreements and continuity of operations plan to include more jurisdictions in the county.
Alvin	Expand and improve their floodplain regulation practices to reduce the effects of flooding on their community.
Angleton	Identified an inadequate budget as a factor that decreases their capability to implement mitigation actions and reduce future damages. Angleton will apply for state and federal funding to help fund mitigation actions that reduce the impact of natural hazards. They also plan to expand their mutual aid agreements to address flood emergency response needs.
Bailey's Prairie	Identified the need to improve their fire protection compliance practices. Bailey's Prairie will also expand their local budget to resolve their shortage of technical and administrative staff needed to more effectively implement the HMAP. Baileys Prairie will apply for state and federal funding to help fund mitigation actions that reduce the impact of natural hazards, send technical staff to continuing education courses, and work with elected officials and the public to increase their budget to meet their administrative staff needs and improve infrastructure.
Bonney	Expand their mutual aid agreement practices, and consider drafting and implementing a disaster recovery plan.
Brazoria	Identified the local budget as a factor that decreases their capability to fund technical staff that can implement the mitigation strategy. Brazoria will apply for state and federal funding to help fund mitigation actions that reduce the impact of natural hazards. They will expand their mutual aid to better coordinate emergency response services with neighboring jurisdictions and Brazoria County.
Brookside	Brookside will supplement their local budget by applying for state and federal funding to help fund mitigation actions that reduce the impact of natural hazards. The jurisdiction will also expand their mutual aid agreements with neighboring jurisdictions in the county.
Clute	Expand their NFIP compliance practices, send technical staff to continuing education courses, and consider the adoption of mutual aid agreements with neighboring jurisdictions.
Danbury	Expand their floodplain regulation practices to reduce the effects of flooding on their community. The city will also consider drafting and implementing a disaster recovery plan and expanding their mutual aid agreements.
Hillcrest	Expand their mutual aid agreement practices, and consider drafting and implementing a disaster recovery plan, and emergency operations plan.
Holiday Lakes	Expand their NFIP compliance practices, improve their current regulation of development in the floodplain, and will consider adopting stronger fire codes.
Iowa Colony	Expand their mutual aid agreements to better coordinate emergency response services with the neighboring jurisdictions and Brazoria County.

Jones Creek	Expand outreach efforts to enroll more residents in their existing education and notification strategy.
Lake Jackson	Expand their mutual aid agreements to better coordinate emergency response services with the neighboring jurisdictions and Brazoria County, and consider the adoption of continuity of operations plan. Lake Jackson identified their Capital Improvements Plan has a program that could be expanded to better mitigate against the natural hazards in their community. Officials will take steps to allocate their budget toward projects that reduce the impacts of natural hazards.
Liverpool	Craft mutual aid agreements and interlocal agreements with the neighboring jurisdictions and Brazoria County.
Manvel	Consider becoming a CRS community to improve NFIP compliance and strengthen flood mitigation practices.
Oyster Creek	Develop and implement a drainage plan or partner with a drainage district to address flooding damages in Oyster Creek.
Quintana	Develop new mutual aid agreements to better coordinate emergency response services with the neighboring jurisdictions and Brazoria County, and consider the adoption of continuity of operations plan.
Richwood	Identified their Capital Improvements Plan has a program that could be expanded to better mitigate against the natural hazards in their community. Richwood will take steps to allocate their budget toward projects that reduce the impacts of natural hazards.
Surfside Beach	Expand their mutual aid agreements to better coordinate emergency response services with the neighboring jurisdictions and Brazoria County.
Sweeny	Sweeny will supplement their local budget by applying for state and federal funding to help fund mitigation actions that reduce the impact of natural hazards. They will also expand their mutual aid agreements and emergency operations plan to include more jurisdictions in the county.
Alvin ISD	Further relationship with County and local emergency coordinators to expand outreach and mitigation efforts across the district
Freeport	Expand outreach efforts to enroll more residents in their existing education and notification strategy.
West Columbia	Expand and improve their Capital Improvements Plan strategy to better mitigate against the natural hazards in their community. West Columbia will take steps to allocate their budget toward projects that reduce the impacts of natural hazards.
Port of Freeport	Improve the Emergency Operations Plan to ensure that communication and utilities are not at risk in the event of a natural disaster.
Velasco Drainage District	Expand their NFIP compliance practices, improve their current regulation of development in the floodplain, and will consider expanding their emergency operations plan.
Brazosport ISD	Collaborate with local and County emergency management officials to implement projects that help to reduce the impacts of natural hazards.
Brazosport College	Work with local jurisdictions and County emergency management officials to implement projects that help to reduce the impacts of natural hazards.
Sweeny ISD	Expand relationships with County and local emergency coordinators to expand outreach and mitigation efforts across the district
Drainage District 11	Identify problem areas, areas for future development and constraints affecting the watershed and expand relationships with County and local emergency coordinators
Danbury ISD	Increase relationships with local and County emergency management officials to implement projects that help to reduce the impacts of natural hazards
Damon ISD	Develop new mutual aid agreements to better coordinate emergency response services with the neighboring jurisdictions and Brazoria County.

Part 6: Hazard Analysis & Vulnerability Assessment

Part 6: HAZARD & VULNERABILITY ANALYSIS

Introduction

After the potential hazards in the county were identified, the Planning Team reviewed historic data and conducted an analysis in ArcGIS for each hazard. This analysis was presented at the November 9, 2022, Kick-off meeting. At this meeting, stakeholders provided many firsthand accounts of damage caused by natural disasters. These reports were taken into consideration and included in the hazard analysis when possible. The result of that process has determined 12 different natural hazards require mitigation efforts. The maps and the discussion that follow are a compilation of data analysis, historic information, and public feedback.

Damon ISD is a very small school district with only 1 school in the northwest corner of Brazoria County on Highway 36. They would be included with all the Hazards identified with unincorporated Brazoria County for the purposes of this plan. This school district is a noted vulnerability and we are currently working with this under resourced jurisdiction to assist with strategies leading to mitigation actions.

- 6.1 Flooding
- 6.2 Wildfire
- 6.3 Hurricanes and Tropical Storms
- 6.4 Drought
- 6.5 Lightning
- 6.6 Heat Events
- 6.7 Winter Weather
- 6.8 Hail
- 6.9 Tornado
- 6.10 Dam and Levee Failure
- 6.11 Expansive Soils
- 6.12 Coastal Erosion

There has not been any significant historical occurrences and data with hazards since the last plan update in 2017.

Part 6.1: Flooding

6.1 Flooding

Floodplains are the primary tool used by FEMA to determine areas at risk of flooding. The periodic flooding of lands adjacent to rivers, streams, and shorelines is a natural and inevitable occurrence that can be expected based upon established recurrence intervals. The recurrence interval of a flood is the average time interval, in years, that can be anticipated between flood events of a certain magnitude. Using the recurrence interval with land and precipitation modeling, forecasters can estimate the probability and likely location of flooding. These are expressed as floodplains. The most commonly used floodplain measurements are the 100-year floodplain and the 500-year floodplain. The 100-year floodplain has a 1 in 100 chances of flooding each year. The 500-year floodplain is estimated to have a 1 in 500 chances of occurring each year.

Flooding causes widespread and varying degrees of damage. The magnitude or extent of flood damage is expressed by using the maximum depth of flood water during a specific flood event. Structures inundated by 4-feet or more of flood water are considered an absolute loss. Other forms of loss, such as roads, bridges, agriculture, services, or death or injury are also summarized by jurisdiction in this plan.

Historic Occurrences

The National Oceanic and Atmospheric Administration (NOAA) collects historic climate data for the entire nation. NOAA's storm event data can be accessed on the National Climatic Data Center (NCDC) storm events database. A condensed version of the Brazoria County flood events data from 2000 - present is provided in the table below. No deaths, injuries, or crop damages were reported in the last 17 years in the county.

Jurisdiction	Date	Property Damage	Notes
Unincorporated	9/13/2000	\$150,000	Several roads and railroad underpass impassable in Freeport and Clute. Water inside a house in Clute. Cars flooded and high water in streets in Clute, Freeport, and Danbury. Total of 7.7 inches of rainfall in Angleton.
Unincorporated	6/5/2001	\$0	Flooding from T.S. Allison.
Freeport	6/7/2001	\$0	Flooding from the remnants of T.S. Allison
Unincorporated	6/8/2001	\$0	Flooding from the remnants of T.S. Allison
Unincorporated	6/8/2001	\$0	Flooding from the remnants of T.S. Allison
Countywide	6/9/2001	\$0	Flooding from the remnants of T.S. Allison
Countywide	6/9/2001	\$0	Flooding from the remnants of T.S. Allison
Unincorporated	8/30/2001	\$30,000	Highway 35 underpass, South Johnson Street and surrounding streets underwater in Alvin; street flooding in Angleton.
Unincorporated	8/31/2001	\$500,000	High water in Alvin, Manvel, and Danbury.
Unincorporated	9/2/2001	\$80,000	Homes flooded in the Shadow Bend subdivision on Austin Bayou in Danbury. Numerous streets flooded, including Highway 6 between Manvel and Alvin and Highway 36 in Damon.
Angleton	8/15/2002	\$50,000	Street flooding in Angleton and Lake Jackson.
Alvin	8/15/2002	\$90,000	Several roads in and around Alvin have high water; water is in homes in Alvin.
Freeport	9/6/2002	\$25,000	Numerous roads flooded and impassable from Freeport to Lake Jackson.
Sweeny	9/7/2002	\$250,000	Waist deep water and flooding in Sweeny.
Freeport	9/9/2002	\$30,000	Two feet of water on streets in Freeport.
Countywide	9/10/2002	\$30,000	Countywide flooding due to training cells.
Countywide	11/5/2002	\$35,000	Numerous roads closed due to high water on extremely saturated grounds.
Unincorporated	12/4/2002	\$2,000	Flooding in extreme northeast portion of county.
Lake Jackson	9/4/2003	\$10,000	Bumper-high street flooding. Water threatening homes in the Winding Woods subdivision.

Manvel	10/9/2003	\$15,000	Flooding over County Road 190, west of Highway 146, forced its closure. Subdivision along Highway 6 in Manvel experienced flooding.
Sweeny	6/23/2004	\$5,000	Roads flooded in and around Sweeny.
Brazoria	10/16/2006	\$500,000	Approximately 115 homes flooded in several locations. Several roads flooded including County Road 5995 near Bastrop Bayou, Highway 36 and County Road 304 near Jones Creek, and near County Road 769B.
Freeport	4/25/2007	\$15,000	Water reported in a couple of homes in and around the old Velasco District.
Angleton	5/28/2007	\$110,000	Three flooded homes with over a foot of water in them off Henderson Road. Reports of 50 more flooded homes, or homes with water damage, in Angleton.
Angleton	5/28/2007	0	Flooding across Highway 288 near the intersections of FM 523 and County Roads 340 and 341. Flooding also reported on Highway 35 between Angleton and West Columbia.
Unincorporated	7/1/2010	0	Numerous roads were closed due to high water in Sweeny and West Columbia.
Sweeny	7/1/2010	\$500,000	Heavy rainfall caused flooding of 30 to 35 homes in the town of Sweeny.
West Columbia	7/1/2010	\$1,250,000	Flooding of 40 to 45 homes and businesses in the town of West Columbia.
Brazoria	1/22/2015	\$1,000	The intersection of CR 353 and CR 354 between West Columbia and Brazoria was barricaded.
Lake Jackson	4/14/2015	\$0	Heavy rain caused residential street flooding that left some roadways impassable across northern Lake Jackson.
Unincorporated	4/17/2015	\$5,000	Street flooding in the town of Richwood.
Angleton	5/12/2015	\$75,000	Widespread flooding was reported with water in homes in Angleton.
Unincorporated	8/28/2016	\$12,000	Nearly 6 inches over a relatively short period of time caused flood waters to be reported entering a few homes in northern Freeport. There were reports of water in at least 5 homes in Velasco along 800 north Avenue F. There were numerous reports of flooded roadways and standing water in the Dow Chemical plant.
Danbury	4/18/2017	\$450,000	Over 60 homes had a couple of inches of water in the town of Danbury. The worst flooding occurred in the eastern and western side of town, or near the sloughs. Sections of County Roads 208, 201 and 211 were impassable due to the flooding.
Unincorporated	4/18/2017	\$0	Flood waters from Halls Bayou came over sections of FM 2004, from FM 2917 to near the Galveston County line, forcing road closures.
Iowa Colony	8/26/2017	\$0	There were numerous water rescues within the county; from Pearland down to the Angleton-Lake Jackson area. Flash flood waters, from sheet flooding and bayous/creeks coming out of banks, completely inundated hundreds to thousands of homes and businesses. Roads and highways in and along the Highway 288 corridor were flooded and therefore closed for long time periods. Major record flooding of the Brazos, San Bernard and Oyster Creek caused the flooding of hundreds to thousands of vicinity homes, vehicles and businesses. Numerous roads and homes were inundated with flood waters on east side of Oyster Creek including the Columbia Lakes, Mallard Lakes, Great Lakes, Riverside Estates and Bar X subdivisions as well as homes along CR 39. Other county roads that became impassable due to high flood waters include FM 1462, Highways 35 and 90, FM 950, CR 25, 380A, CR 42 and FM 521. The Phillips refinery outside of the town of Sweeny took on water from the west near Little Linville Bayou. Hanson Riverside County Park along the San Bernard River southwest of West Columbia was inundated and water over-topped the Phillips Terminal.
Unincorporated	8/28/2017	\$0	Sections of FM 523 near Highway 288 north of Angleton was closed due to flooding. Major record flooding of the Brazos, San Bernard and Oyster Creek caused the flooding of hundreds to thousands of vicinity homes, vehicles and businesses. Numerous Roads and homes were inundated with flood waters on east side of Oyster Creek including the Columbia Lakes, Mallard Lakes, Great Lakes, Riverside Estates and Bar X subdivisions as well as homes along CR 39. Other county roads that became impassable due to high flood waters include, but are not limited to, FM 1462, Highways 35 and 90, FM 950, CR 25, 380A, CR 42 and FM 521. The Phillips refinery outside of the town of Sweeny took on water from the west near Little Linville Bayou. Hanson Riverside County Park along the San Bernard River southwest of West Columbia was inundated and water over-topped the Phillips Terminal.
Iowa Colony	8/28/2017	\$0	Sections of FM 521 near FM 1462 in the Rosharon area were closed due to flooding. Major record flooding of the Brazos, San Bernard and Oyster Creek caused the flooding of hundreds to thousands of vicinity homes, vehicles and businesses. Numerous Roads and homes were inundated with flood waters on east

			side of Oyster Creek including the Columbia Lakes, Mallard Lakes, Great Lakes, Riverside Estates and Bar X subdivisions as well as homes along CR 39. Other county roads that became impassable due to high flood waters include, but are not limited to, FM 1462, Highways 35 and 90, FM 950, CR 25, 380A, CR 42 and FM 521. The Phillips refinery outside of the town of Sweeny took on water from the west near Little Linville Bayou. Hanson Riverside County Park along the San Bernard River southwest of West Columbia was inundated and water over-topped the Phillips Terminal.
Brazoria	8/28/2017	\$0	Parts of SH 36 and FM 521 around the town of Brazoria were closed due to flooding. Major record flooding of the Brazos, San Bernard and Oyster Creek caused the flooding of hundreds to thousands of vicinity homes, vehicles and businesses. Numerous Roads and homes were inundated with flood waters on east side of Oyster Creek including the Columbia Lakes, Mallard Lakes, Great Lakes, Riverside Estates and Bar X subdivisions as well as homes along CR 39. Other county roads that became impassable due to high flood waters include, but are not limited to, FM 1462, Highways 35 and 90, FM 950, CR 25, 380A, CR 42 and FM 521. The Phillips refinery outside of the town of Sweeny took on water from the west near Little Linville Bayou. Hanson Riverside County Park along the San Bernard River southwest of West Columbia was inundated and water over-topped the Phillips Terminal.

Source: <https://www.ncdc.noaa.gov/stormevents/>

Brazoria County Disaster Declarations

There have been twenty-four federally declared flood disasters in Brazoria County since 1973. These events are considered the most significant flood events in Brazoria County's recent history.

Date	Disaster Number	Title	Date (Cont.)	Disaster Number	Title
7/11/1973	398	Severe Storms & Flooding	7/17/2003	1479	Hurricane Claudette
7/28/1979	595	Storms & Flash Floods	9/2/2005	3216	Hurricane Katrina Evacuation
9/25/1979	603	Severe Storms & Flooding	9/21/2005	3261	Hurricane Rita
8/19/1983	689	Hurricane Alicia	9/24/2005	1606	Hurricane Rita
4/12/1991	900	Severe Storms & Tornadoes	8/18/2007	3277	Hurricane Dean
12/26/1991	930	Severe Thunderstorms & Flood	8/29/2008	3290	Hurricane Gustav
10/18/1994	1041	Severe Thunderstorms & Flood	9/10/2008	3294	Hurricane Ike
8/26/1998	1239	Tropical Storm Charlie	9/13/2008	1791	Hurricane Ike
9/23/1998	1245	Hurricane Georges- Texas	5/29/2015	4223	Severe Storms & Tornadoes & Flooding & Straight-line Winds
10/21/1998	1257	Texas Flooding	11/25/2015	4245	Severe Storms & Tornadoes & Flooding & Straight-line Winds
9/26/2002	1434	Tropical Storm Fay	6/11/2016	4272	Severe Storms & Flooding
11/5/2002	1439	Severe Storms & Tornadoes & Flooding	8/25/2017	4332	Hurricane Harvey

Source: <https://www.FEMA.gov>

NFIP Participation

The National Flood Insurance Program (NFIP) is a voluntary program that aims to reduce the impacts of flooding by incentivizing communities to adopt and enforce floodplain management regulations. The NFIP provides affordable flood insurance for property owners, renters, and businesses in participating communities. This reduces the socio-economic impacts of flooding on communities through risk reduction via flood insurance, and reduces the physical impacts of flooding through beneficial floodplain regulation.

NFIP Participants in Brazoria County:

- City of Alvin
- City of Angleton
- Village of Bailey’s Prairie
- Town of Bonney
- Brazoria County
- City of Brazoria
- City of Brookside Village
- City of Clute
- City of Manvel
- Town of Quintana
- City of Sweeny
- City West Columbia
- City of Hillcrest Village
- Town of Holiday Lakes
- City of Iowa Colony
- Village of Jones Creek
- City of Lake Jackson
- City of Danbury
- City of Liverpool
- City of Oyster Creek
- City of Richwood
- City of Surfside Beach
- City of Freeport

Each of the participating jurisdictions has a certified floodplain manager on staff, and/or function under the regulatory umbrella of Brazoria County. To remain NFIP compliant, the CFM's office conducts jurisdiction wide permitting of new development, permit review, flood code enforcement, document flood zones using GIS, educate the public, and provide public assistance. The County CFM regulates new development by determining if the property in question is in a flood hazard area designated by FEMA by the legal description. The next step is to determine the flood elevation for new structures based on the FEMA data.

In May 2005, Commissioners' Court required the elevation to be set at 2-feet above the FEMA elevation based on the large amount of development in the County and to comply with the Countywide Drainage Criteria for new subdivisions. If the property is not located in a flood hazard area, the requirement will be recommended to be 24-inches above existing grade.

To improve flood mitigation efforts and enhance their NFIP program, the participating jurisdictions will adopt and enforce stronger floodplain management regulations for new construction in Special Flood Hazard Areas (SFHAs).

The Port of Freeport, Alvin ISD, Brazoria ISD, Damon ISD, Danbury ISD, Sweeny ISD, Brazosport College and the Drainage Districts do not participate in the NFIP, because they do not regulate the floodplain in their planning area and are therefore not considered communities under the NFIP.

Repetitive Loss Properties

Repetitive loss properties (RL) are properties that have received a minimum of two insurance payments of \$1,000 or more from the NFIP within the last 10 years. Brazoria County has a total of 1,356 RL properties, and 376 severe repetitive loss properties totaling \$177,892,291.82 in insurance payouts.

An exhaustive and comprehensive list of all RL properties are listed in Appendix D.

Jurisdiction	Residential RLPs	Non-residential RLPs	SRL Properties	Total RLPs
Unincorporated Brazoria County	738	24	76	762
Alvin	106	6	19	112
Angleton	83	9	22	92
Bailey's Point	9	0	0	9
Brazoria	24	0	2	24
Brookside	35	0	5	35
Clute	16	5	2	21
Danbury	9	0	0	9
Freeport	37	7	2	44
Hillcrest Village	6	0	1	6
Holiday Lakes	1	0	0	1
Iowa Colony	6	0	1	6
Jones Creek	16	0	2	16
Lake Jackson	15	3	0	18
Liverpool	4	0	0	4
Manvel	27	1	4	28
Oyster Creek	6	2	0	8
Quintana	1	0	0	1
Richwood	11	0	3	11
Surfside	123	16	8	139
Sweeny	6	1	3	7
West Columbia	14	0	2	14

Hazard Analysis & Vulnerability Identification

The hazard analysis uses historic hazard event data to determine the probability of an event occurring again within a given year. The analysis calculates the average number of events in each jurisdiction annually and then calculates the chance of the event occurring in a year.

The hazard analysis also provides hazard extent data for each participating jurisdiction. The extent data is the most extreme data recorded during a storm or hazard event and represents the worst damage a jurisdiction has experienced in recent history and an estimate of what the jurisdiction could experience in the future. Information from stakeholders, FEMA, NOAA, and the Department of Homeland Security (DHS) are the sources of data for the analysis.

To identify vulnerabilities for each jurisdiction, this plan used the following methods:

- FEMA's Hazus analysis software
- GIS analysis of critical facilities in the floodplain; and
- Stakeholder identified vulnerabilities.

Hazus was used to determine the economic loss and calculate the buildings stock that's at risk of flooding in Brazoria County. Shelter needs were also projected using this method. The complete HAZUS report is in Appendix C. H-GAC maintains a database of critical facilities in Brazoria County. Using GIS, this plan identifies any critical assets located within the 100-year and 500-year floodplain. Stakeholders then provided valuable insight into additional vulnerabilities within their communities. These findings are provided in condensed charts for each jurisdiction.

Brazoria County (All participating jurisdictions)

Identified Vulnerabilities:

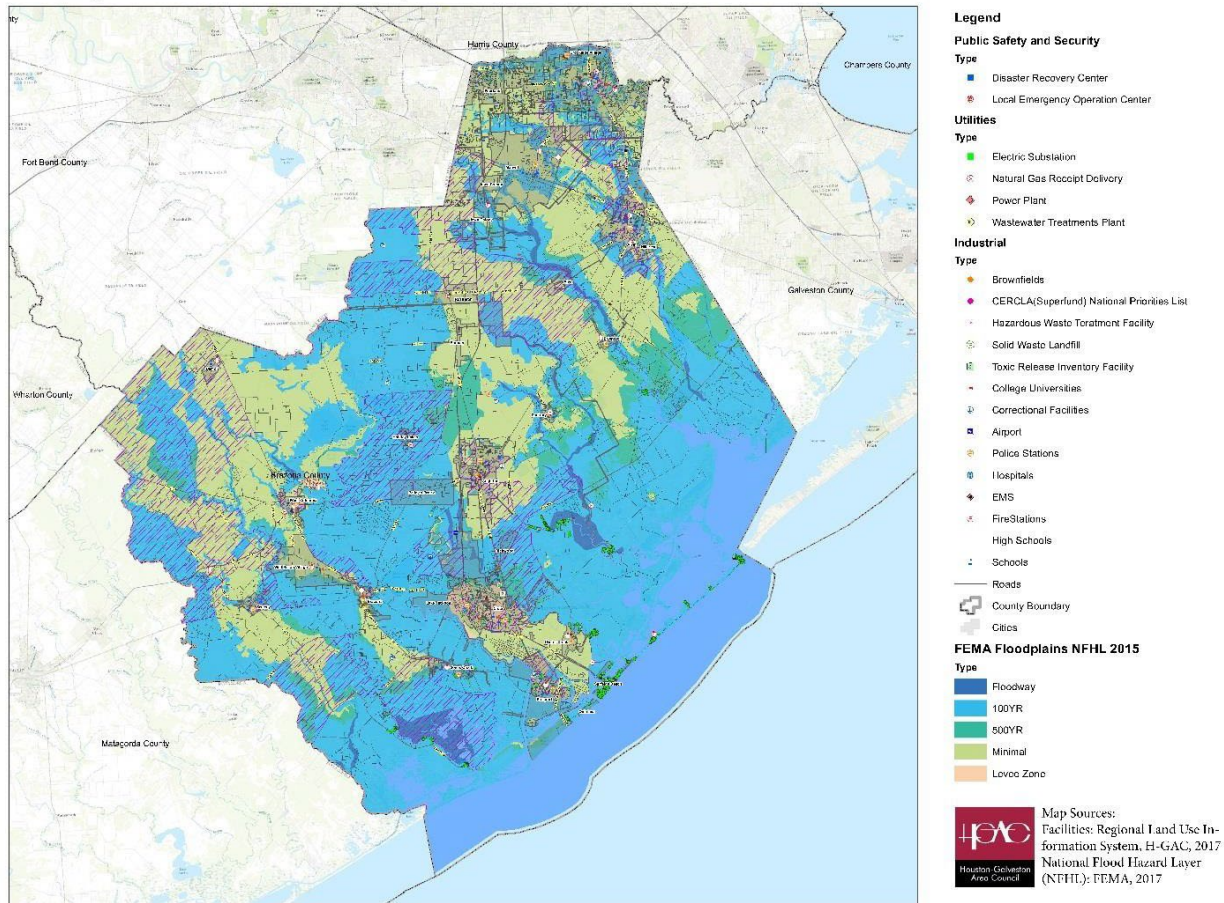
- Community members and city staff expressed the concern of major infrastructure, roads and bridges, acting as physical barriers throughout the county, in past major flood events this:
 - Prevented water from certain areas, but also allowed for increased floodwaters in other areas
 - Led to rescuers not being able to reach communities where the main highway was the only way for first responders to reach people in need
- Individuals who reside or work within the 100 year or 500 year floodplain
- Communities without emergency shelters, local hospitals, or fire stations- relying on the county or larger jurisdiction for emergency services/ response
- Local farmers and other business owners whose shops or farmland flood
- Industrial sites located throughout the county particularly along the coast

Identified Impacts:

- Major roadways blocked by floodwaters may create an increase of serious injuries or loss of life due to responders not being able to reach those injured or in danger
- Lack of shelters and emergency responders throughout the county may lead to an increase in response time which may lead to a loss of life or serious injury
- Economic and financial loss for cities and individuals including property loss and loss of economic activity from loss of major employers including industrial and farming activities

Floodplains: Brazoria County

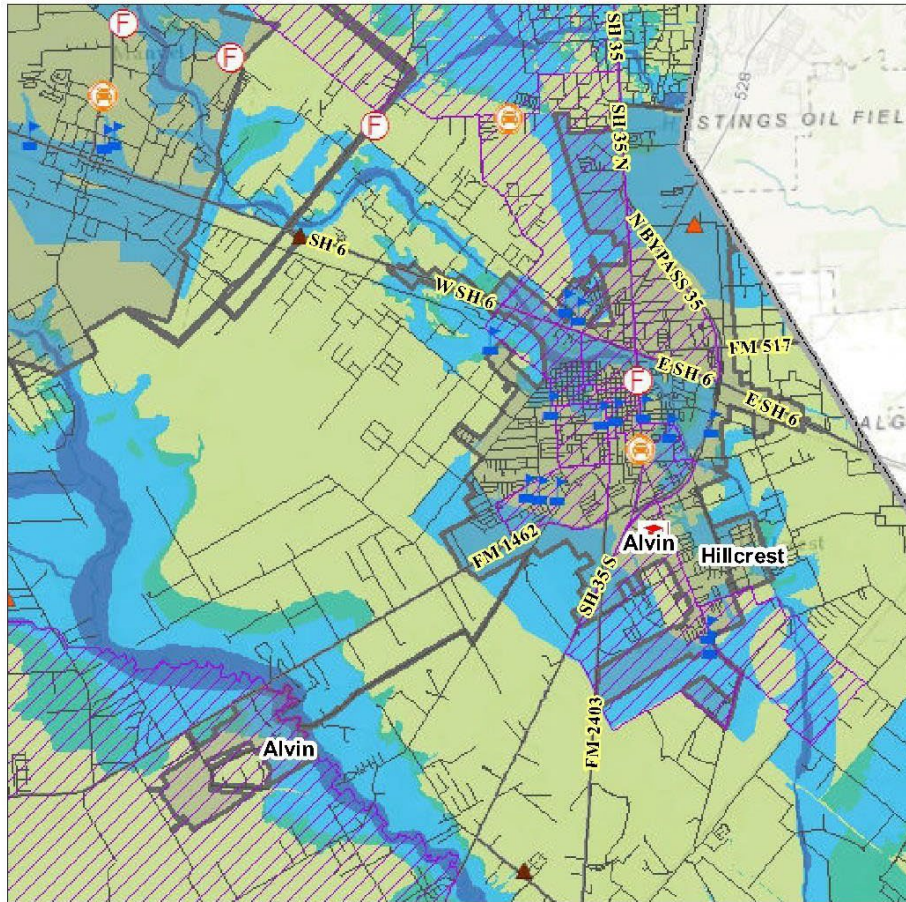
Item 9.



Brazoria County (Unincorporated)			
Planning Area (Sq. mi):	1,475	Occurrences since 2000:	12
Area Affected:	61 %	Annual Event Average:	1.42
Probability: Very Likely; 100 percent chance the event will occur in a year			
Extent: According to past events the county has experienced 5 feet of water; the county can experience 6 to 7 feet of water.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> Critical facilities including: 3 fire station, 5 schools, 1 shelter, and 2 correctional facilities Vulnerable populations concentrated near Brazoria National Wildlife Refuge 			
Identified Impacts:			
<ul style="list-style-type: none"> Vulnerable populations (defined in the Community Profile Section) include residents without cars, funds or other resources to evacuate in case of a flood event; significant injury, loss of life could occur because of the inability evacuate to dry land Roadways during future events may become impassable throughout the county due to high flood waters making it difficult or impossible to reach critical facilities or those most in need. More than 500 homes throughout the unincorporated areas and commercial establishments may see damage or complete destruction during future events 			

Floodplains: Alvin

Item 9.



Legend

Public Safety and Security

Type

- Disaster Recovery Center
- Local Emergency Operation Center

Utilities

Type

- Electric Substation
- Natural Gas Receipt Delivery
- Power Plant
- Wastewater Treatment Plant

Industrial

Type

- Brownfields
- CERCLA(Superfund) National Priorities List
- Hazardous Waste Treatment Facility
- Solid Waste Landfill
- Toxic Release Inventory Facility
- College Universities
- Correctional Facilities
- Airport
- Police Stations
- Hospitals
- EMS
- Fire Stations
- High Schools
- Schools
- Roads
- County Boundary
- Cities

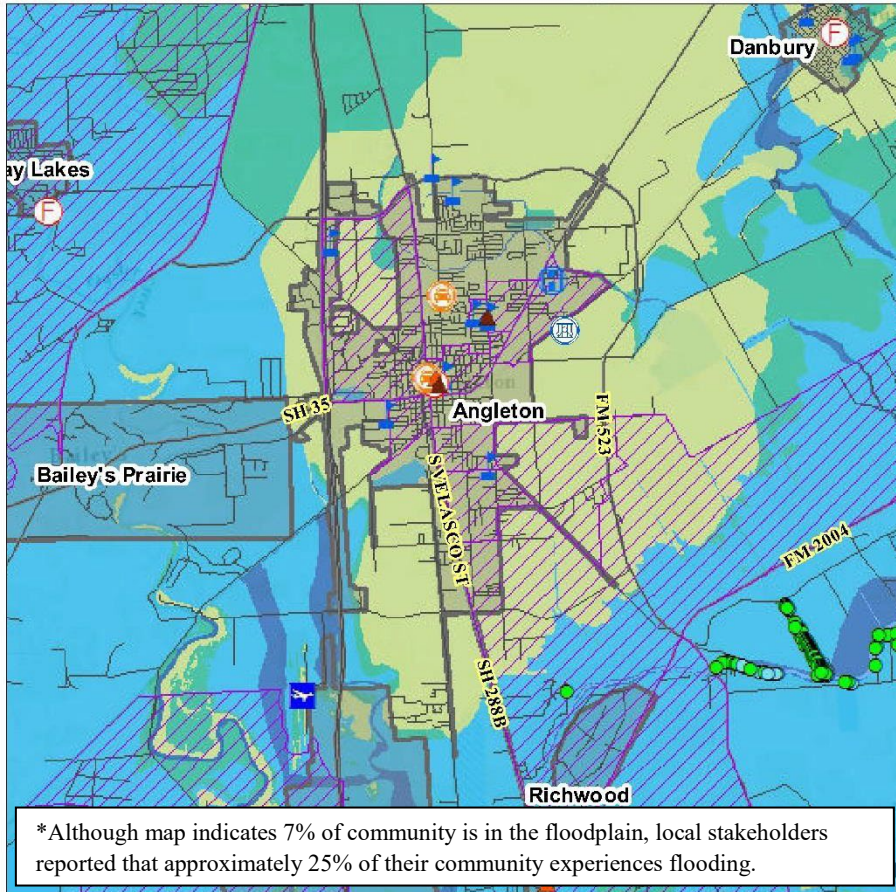
FEMA Floodplains NFHL 2015

Type

- Floodway
- 100YR
- 500YR
- Minimal
- Levee Zone

Map Sources:
 Facilities: Regional Land Use Information System, H-GAC, 2017
 National Flood Hazard Layer (NFHL): FEMA, 2017

Alvin			
Planning Area (Sq. mi):	25.6	Occurrences since 2000:	6
Planning Area Affected:	69 %	Annual Event Average:	.35
Probability: Likely; 35 percent chance the event will occur in a year			
Extent: According to past events the county has experienced 5 feet of water; the jurisdiction can experience 7 to 8 feet of water.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> Mustang Bayou runs along the edge of the city; several residential areas are within the 100-year floodplain along the Bayou particularly along W. Talmage Rd. and Bellaire Blvd. 			
Identified Impacts:			
<ul style="list-style-type: none"> Injury and loss of life due to flooded homes or traveling on impassable roadways Residential and commercial property loss. Loss of homes and residents who may have to move due to damage to their home or business 			



Legend

Public Safety and Security

Type

- Disaster Recovery Center
- Local Emergency Operation Center

Utilities

Type

- Electric Substation
- Natural Gas Receipt Delivery
- Power Plant
- Wastewater Treatment Plant

Industrial

Type

- Brownfields
- CERCLA(Superfund) National Priorities List
- Hazardous Waste Treatment Facility
- Solid Waste Landfill
- Toxic Release Inventory Facility
- College Universities
- Correctional Facilities
- Airport
- Police Stations
- Hospitals
- EMS
- Fire Stations
- High Schools
- Schools

Roads

- County Boundary
- Cities

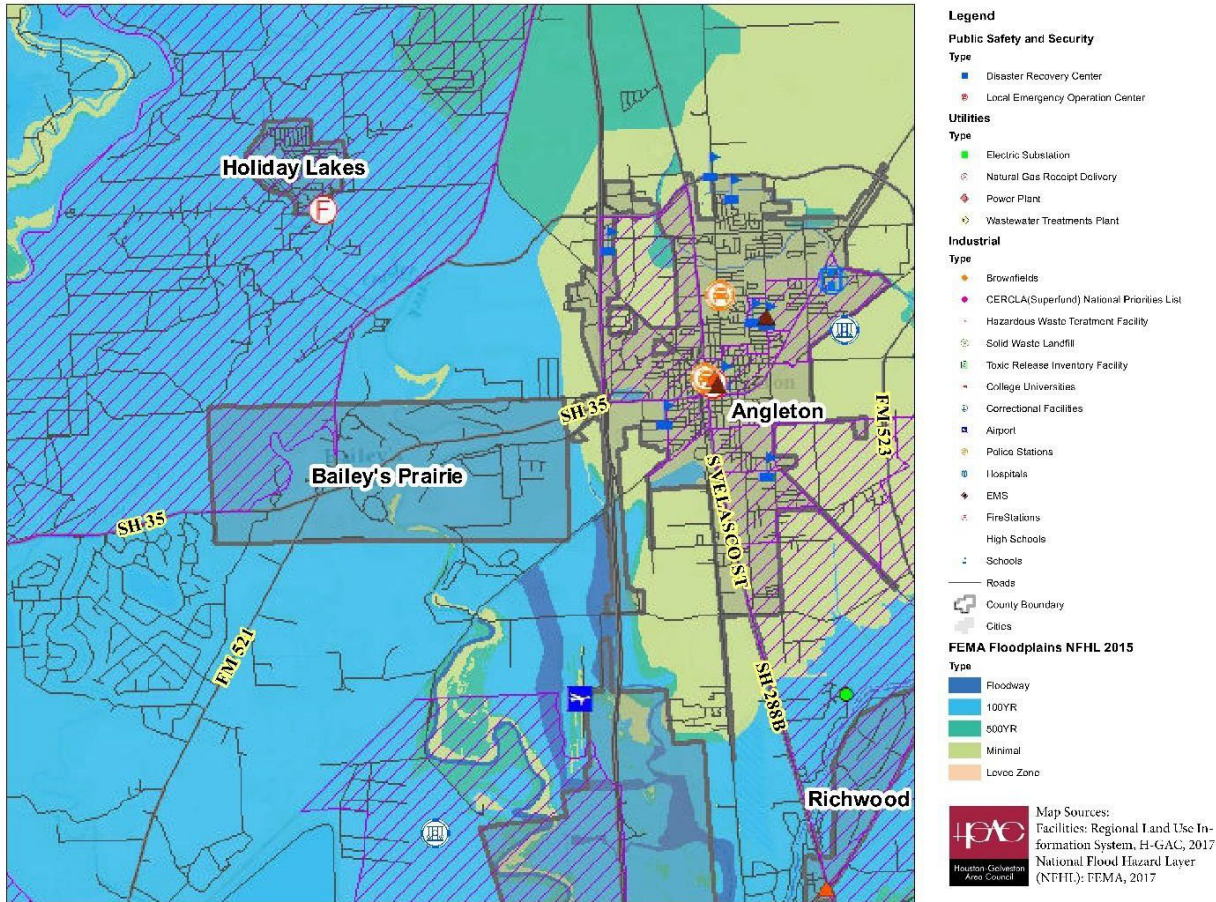
FEMA Floodplains NFHL 2015

Type

- Floodway
- 100YR
- 500YR
- Minimal
- Levee Zone

Map Sources:
 Facilities: Regional Land Use Information System, H-GAC, 2017
 National Flood Hazard Layer (NFHL): FEMA, 2017

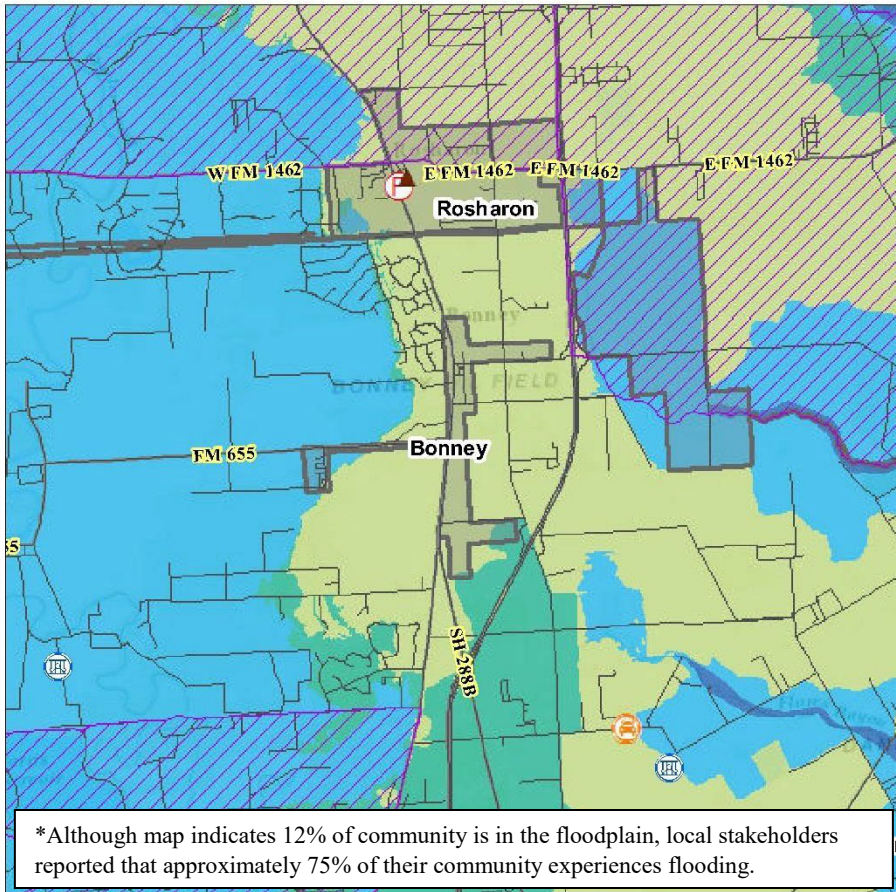
Angleton			
Planning Area (Sq. mi):	11.27	Occurrences since 2000:	8
Planning Area Affected:	25 %	Annual Event Average:	.47
Probability: Likely; 47 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 3 feet of water; the jurisdiction can experience 4 to 5 feet of water.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> Residential neighborhoods in the north of the city are within the 100-year floodplain along North Valderas Street and North Plantation Drive Sheet flooding occurs throughout the center of the city with the up to 3 feet of water potentially accumulating near Cannan Drive and North Valderas Street. Sheet flooding could potentially affect the police departments, fire station, shelters, EOC and theater within the city 			
Identified Impacts:			
<ul style="list-style-type: none"> Potential flooding within critical facilities may lead to first responders not being able to respond to the community's needs such as rescues or calls for help, because of damage sustained to communication systems or equipment within these facilities Residential and commercial property loss. Residents with property within or just outside of the 100 to 500-year floodplain may be more likely to see significant damage from flood events Significant damage to commercial and residential property may lead to residents moving away and a loss of economic activity throughout the jurisdiction 			



Bailey's Prairie			
Planning Area (Sq. mi):	7.7	Occurrences since 2000:	5
Area Affected:	100 %	Annual Event Average:	.29
Probability: Likely; 29 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 3 feet of water; the jurisdiction can experience 4 to 5 feet of water.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> The entire city is within the 100-year floodplain; residential areas in the north along Highway 35 and the south towards 521 are most vulnerable to 3 feet of water 170 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> With the entire city within the 100 year-floodplain there is potentially a greater chance that commercial and residential structures throughout the city will flood leading to loss of life, significant injury, and cost of home and business repair With no police station EMS or fire station, the jurisdiction relies on Angleton's and Brazoria's first responders. If Highway 35 and 521 are impassable due to floodwaters first responders needing to come into the city will have a difficult time reaching residents or visitors within the city. Potentially leading to first responders, residents, and visitors sustaining injuries or a loss of life. 			

Floodplains: Bonney

Item 9.



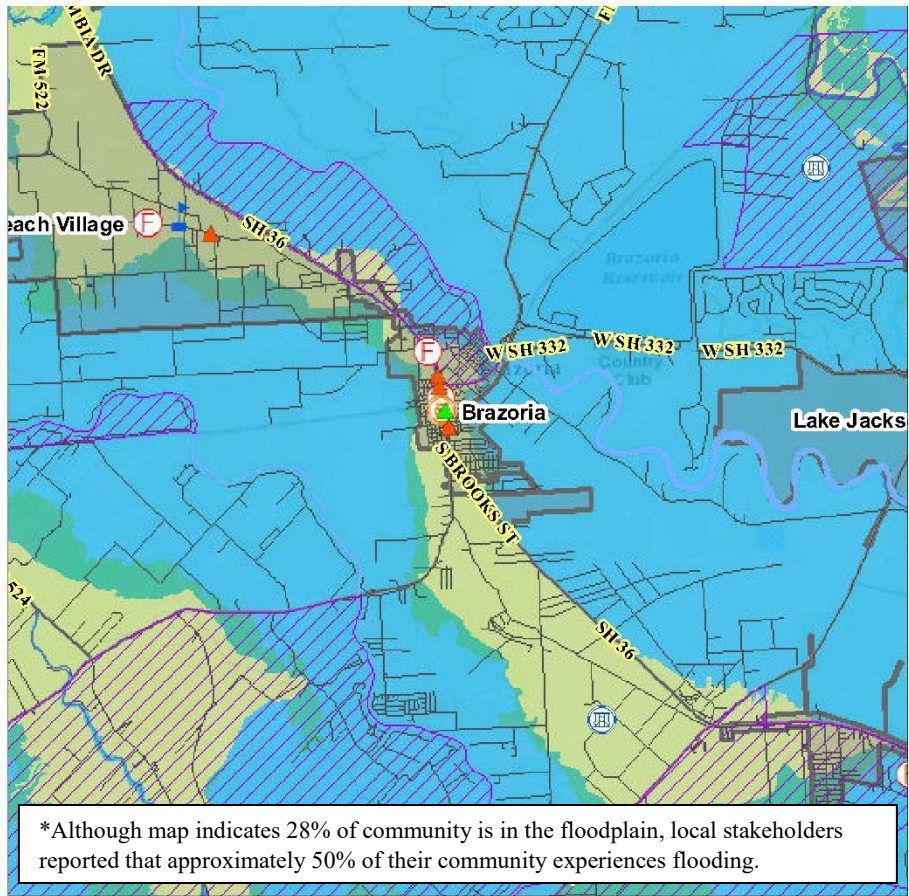
- Legend**
- Public Safety and Security**
- Type
- Disaster Recovery Center
 - Local Emergency Operation Center
- Utilities**
- Type
- Electric Substation
 - Natural Gas Receipt Delivery
 - Power Plant
 - Wastewater Treatment Plant
- Industrial**
- Type
- Brownfields
 - CERCLA(Superfund) National Priorities List
 - Hazardous Waste Treatment Facility
 - Solid Waste Landfill
 - Toxic Release Inventory Facility
 - College Universities
 - Correctional Facilities
 - Airport
 - Police Stations
 - Hospitals
 - EMS
 - Fire Stations
 - High Schools
 - Schools
- Roads
- County Boundary
 - Cities
- FEMA Floodplains NFHL 2015**
- Type
- Floodway
 - 100YR
 - 500YR
 - Minimal
 - Lovee Zone

Map Sources:
 Facilities: Regional Land Use Information System, H-GAC, 2017
 National Flood Hazard Layer (NFHL); FEMA, 2017

Bonney			
Planning Area (Sq. mi):	1.66	Occurrences since 2000:	5
Area Affected:	75 %	Annual Event Average:	.29
Probability: Likely; 29 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 3 feet of water; the jurisdiction can experience 4 to 5 feet of water.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> In the past, Highway 288 acted as a divider. Everything west of the highway was flooded with up to 3 feet of water; the jurisdiction is west of Highway 288. 			
Identified Impacts:			
<ul style="list-style-type: none"> Residential and commercial property loss can occur throughout the city Reliance on neighboring jurisdictions and county first responders may lead to increased response time which may create a potential for serious injury or loss of life 			

Floodplains: Brazoria

Item 9.



Legend

Public Safety and Security

Type

- Disaster Recovery Center
- Local Emergency Operation Center

Utilities

Type

- Electric Substation
- Natural Gas Receipt Delivery
- Power Plant
- Wastewater Treatment Plant

Industrial

Type

- Brownfields
- CERCLA(Superfund) National Priorities List
- Hazardous Waste Treatment Facility
- Solid Waste Landfill
- Toxic Release Inventory Facility
- College Universities
- Correctional Facilities
- Airport
- Police Stations
- Hospitals
- EMS
- Fire Stations
- High Schools
- Schools

Roads

- County Boundary
- Cities

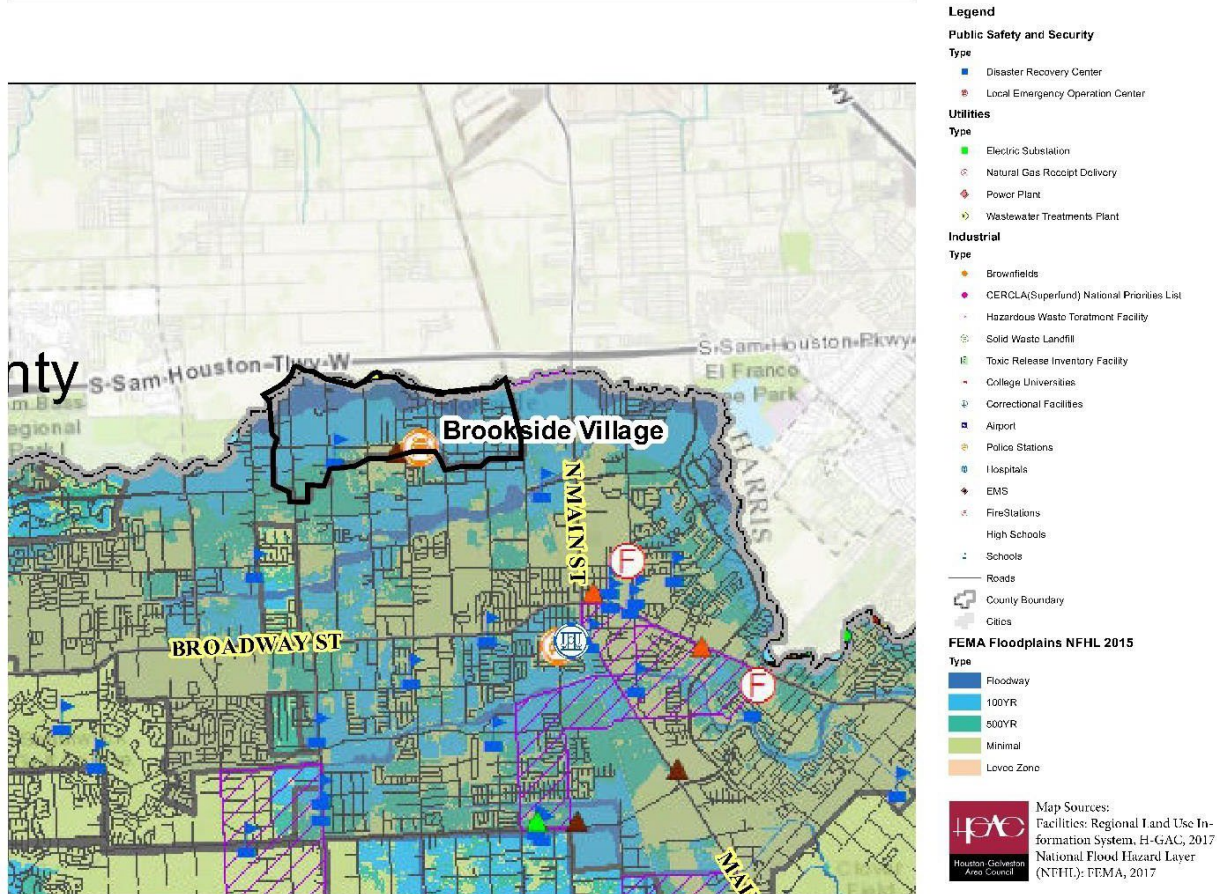
FEMA Floodplains NFHL 2015

Type

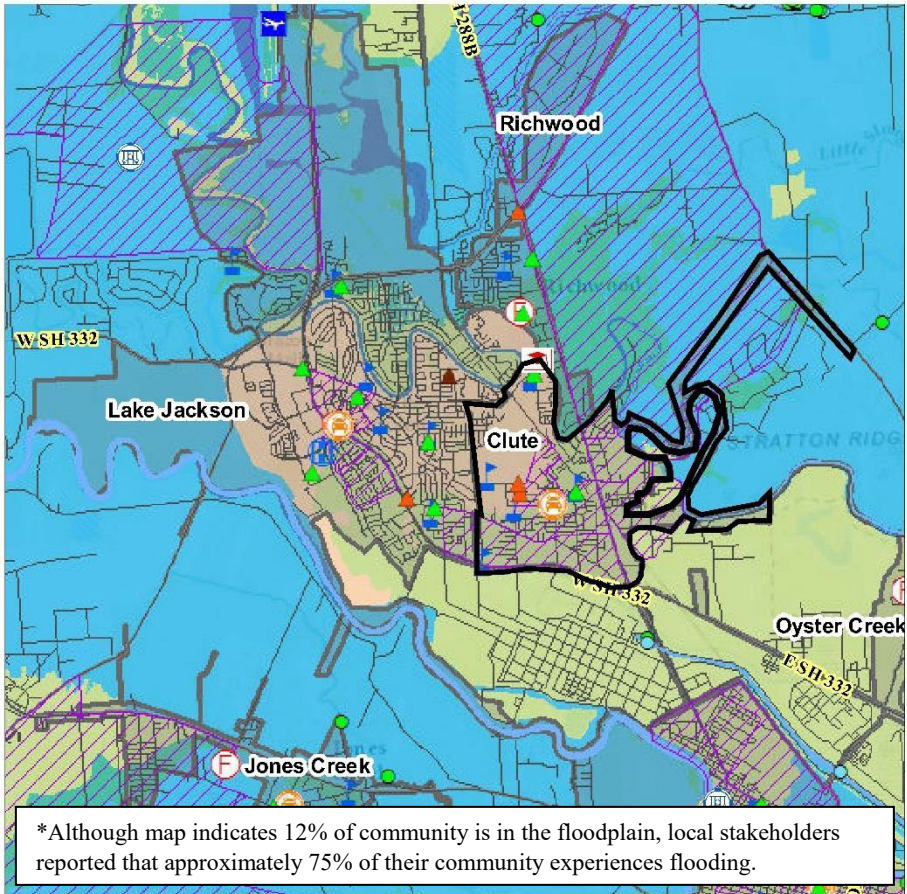
- Floodway
- 100YR
- 500YR
- Minimal
- Levee Zone

Map Sources:
 Facilities: Regional Land Use Information System, H-GAC, 2017
 National Flood Hazard Layer (NFHL): FEMA, 2017

Brazoria			
Planning Area (Sq. mi):	2.6	Occurrences since 2000:	8
Area Affected:	50 %	Annual Event Average:	.47
Probability: Likely; 47 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 4 feet of water; the jurisdiction can experience 6 to 7 feet of water.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> Past flooding along the Brazos River in the north east of the city near Old Brazoria, potential for homes and businesses to be damaged near this area Wastewater treatment plant flooded due to the San Bernard 			
Identified Impacts:			
<ul style="list-style-type: none"> Commercial and residential property loss due to flooding Financial loss for residents who lost their homes or sustained damage to their homes Financial loss for the city in terms of losing commercial/ retail areas A loss of the wastewater treatment plant may lead to a lack of clean water throughout city or sewer-water impacting water quality in local rivers and bays 			



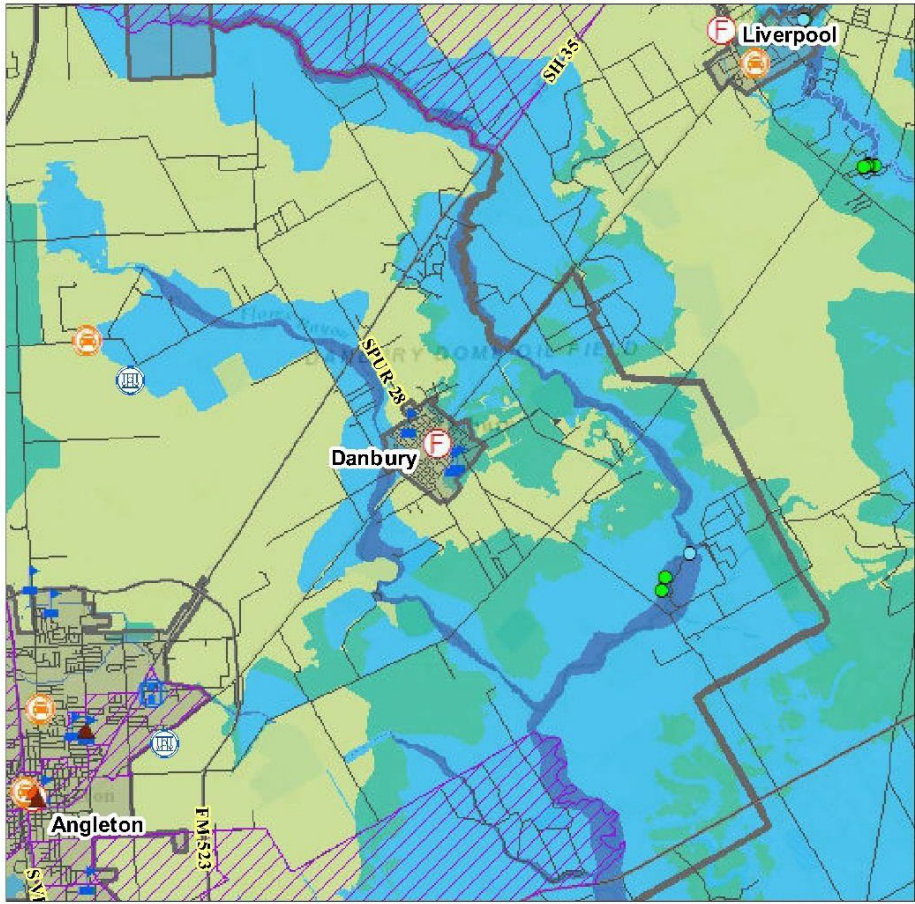
Brookside Village			
Planning Area (Sq. mi):	2.085	Occurrences since 2000:	5
Area Affected:	99 %	Annual Event Average:	.29
Probability: Likely; 29 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 3 feet of water; the jurisdiction can experience 4 to 5 feet of water.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> Past flooding has occurred in the north west of the city near Elen Lane and Rice Road, residential and commercial areas are the most vulnerable in these areas. 			
Identified Impacts:			
<ul style="list-style-type: none"> Potential loss of life or serious injury could occur for those trapped on flooded roadways, or in homes and commercial areas Loss of commercial and residential property due to damage from floodwaters; this could lead to individuals displaced from their homes and a financial loss for the city due to the loss in taxes and/ or businesses throughout the jurisdiction 			



Clute			
Planning Area (Sq. mi):	5.6	Occurrences since 2000:	5
Area Affected:	75 %	Annual Event Average:	.29
Probability: Likely; 29 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 3 feet of water; the jurisdiction can experience 4 to 6 feet of water			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Vulnerable populations are concentrated to the northeast and southwest of the city • The vulnerable population to the north east of the city is on the edge of oyster creek which has overflowed in the past. 			
Identified Impacts:			
<ul style="list-style-type: none"> • Vulnerable populations may have a significantly harder time trying to evacuate during flood events; they may also not have the resources to move away from the floodplain or obtain flood insurance. This may lead to an increase in serious injury or loss of life during events and a loss of residential and commercial property. 			

Floodplains: Danbury

Item 9.



Legend

Public Safety and Security

Type

- Disaster Recovery Center
- Local Emergency Operation Center

Utilities

Type

- Electric Substation
- Natural Gas Receipt Delivery
- Power Plant
- Wastewater Treatment Plant

Industrial

Type

- Brownfields
- CERCLA(Superfund) National Priorities List
- Hazardous Waste Treatment Facility
- Solid Waste Landfill
- Toxic Release Inventory Facility
- College Universities
- Correctional Facilities
- Airport
- Police Stations
- Hospitals
- EMS
- Fire Stations
- High Schools
- Schools

Roads

- County Boundary
- Cities

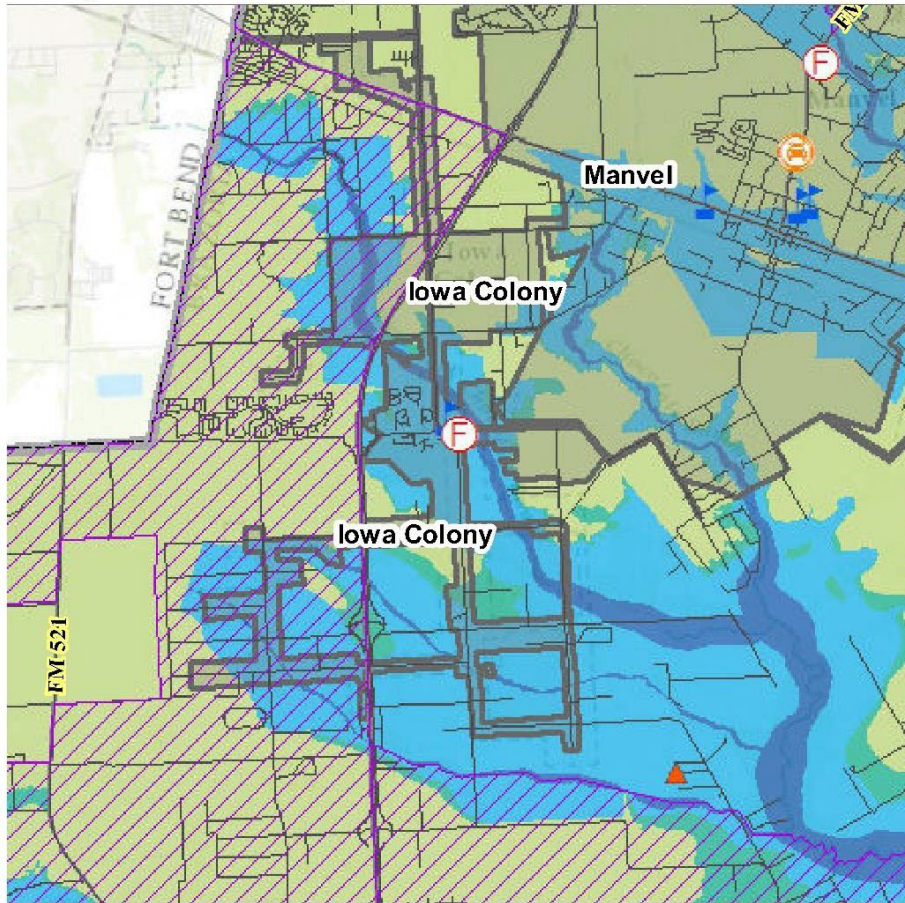
FEMA Floodplains NFHL 2015

Type

- Floodway
- 100YR
- 500YR
- Minimal
- Lovee Zone

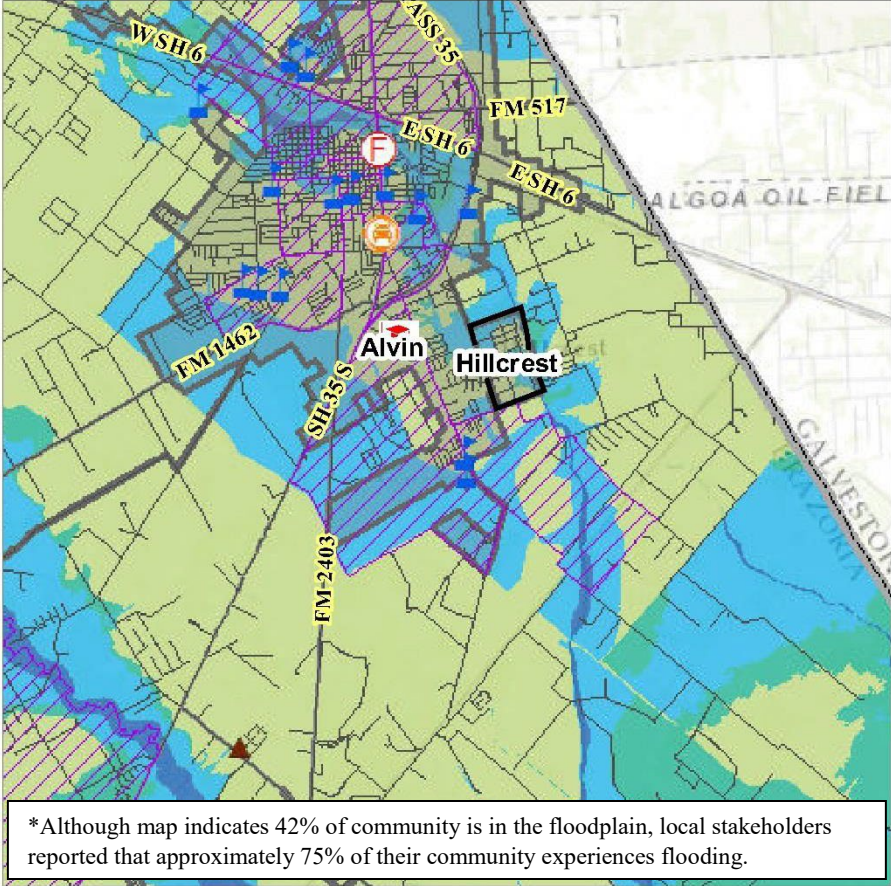
Map Sources:
 Facilities: Regional Land Use Information System, H-GAC, 2017
 National Flood Hazard Layer (NFHL): FEMA, 2017

Danbury and Danbury ISD			
Planning Area (Sq. mi):	1.0	Occurrences since 2000:	6
Area Affected:	62 %	Annual Event Average:	.35
Probability: Likely; 35 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 2 feet of water; the jurisdiction can experience 3 to 4 feet of water			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> The southeast of the city is within the 100-year flood plan and has a concentration of industry and residential areas In the north of the city the Danbury oil field and Fish Farms are also located in the 100-year floodplain 			
Identified Impacts:			
<ul style="list-style-type: none"> Residential and commercial property loss due to floodwaters A potential for a domino effect; flooding could create a technical hazard because of the location of the oil and industrial sites leading to potential serious injury or loss of life Economic loss for the city if main industry and employment centers are flooded and damaged 			



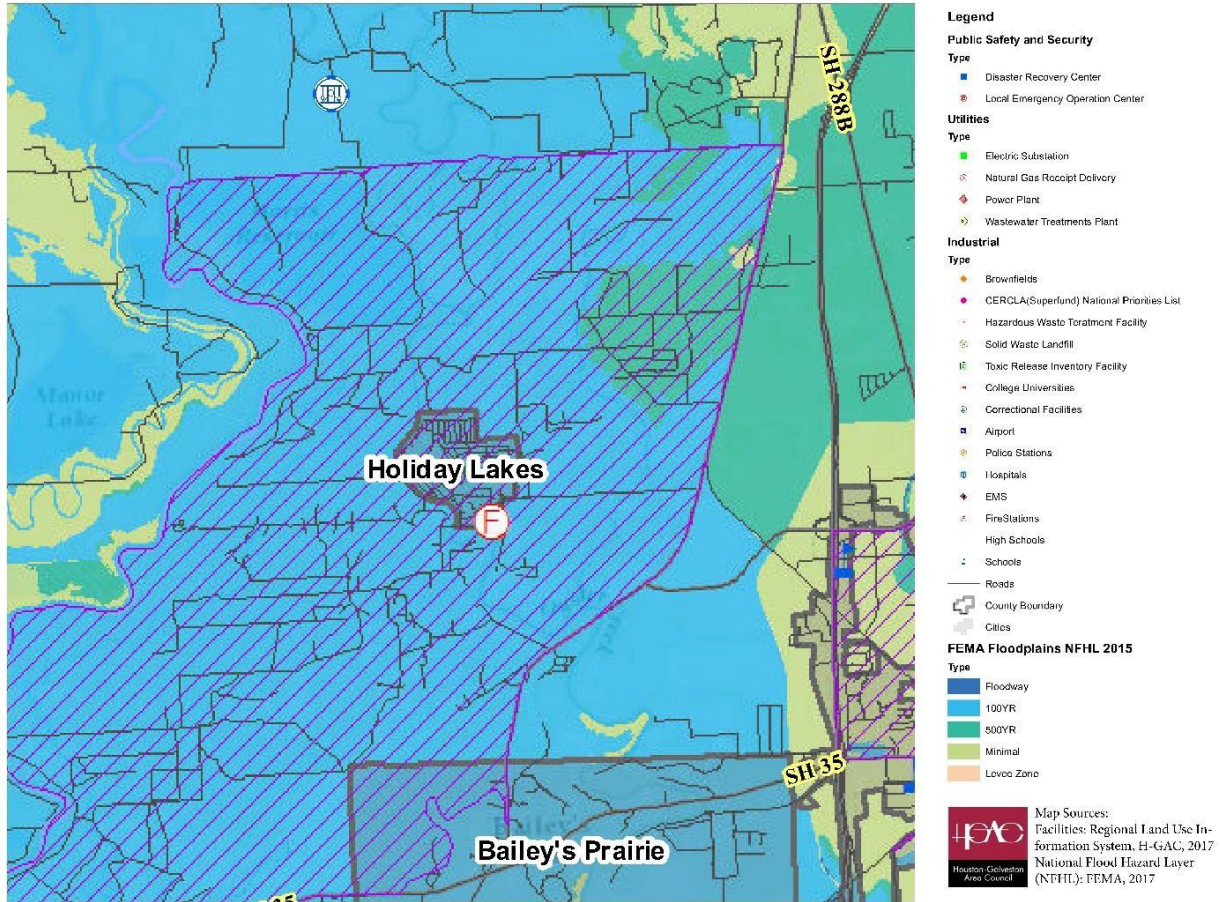
Iowa Colony			
Planning Area (Sq. mi):	7.33	Occurrences since 2000:	7
Area Affected:	87 %	Annual Event Average:	.41
Probability: Likely; 41 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 3 feet of water; the jurisdiction can experience 4 to 5 feet of water			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> 30 homes flooded throughout the city and City Hall flooded with 1.5 feet to 3 feet of water City Hall currently located within the 100-year floodplain. 			
Identified Impacts:			
<ul style="list-style-type: none"> Residential and commercial property loss Residents displaced from their homes Delay in city services, because of the loss of City Hall 			

Floodplains: Hillcrest Village



*Although map indicates 42% of community is in the floodplain, local stakeholders reported that approximately 75% of their community experiences flooding.

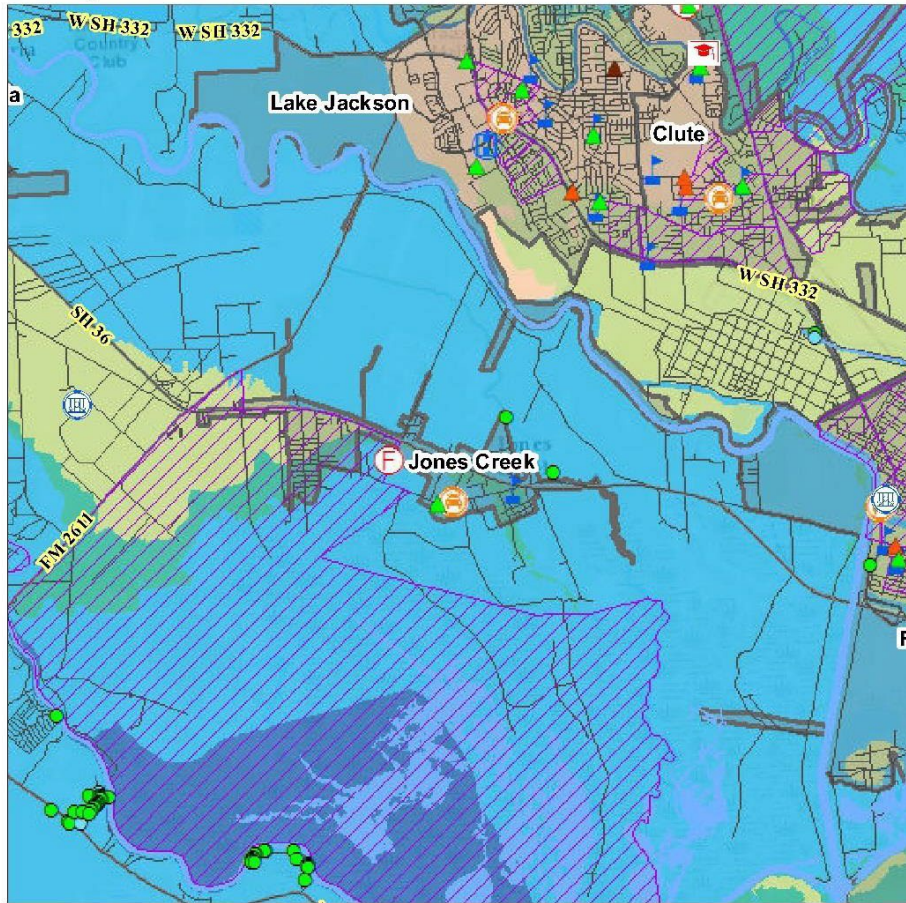
Hillcrest Village			
Planning Area (Sq. mi):	0.4	Occurrences since 2000:	5
Area Affected:	75 %	Annual Event Average:	.29
Probability: Likely; 29 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 5 feet of water; the jurisdiction can experience 6 to 8 feet of water			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> The most vulnerable population in the city is in the northeast. This population is within and just out of the 100-year floodplain in the city. 			
Identified Impacts:			
<ul style="list-style-type: none"> Vulnerable populations may have a harder time evacuating during flooding events, potentially leading to an increase loss of life or serious injury Vulnerable populations may not have the resources to move away from the floodplain; this may lead to reoccurring injuries, property loss, and damage 			



Holiday Lakes			
Planning Area (Sq. mi):	1	Occurrences since 2000:	5
Area Affected:	100 %	Annual Event Average:	.29
Probability: Likely; 29 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 3 feet of water; the jurisdiction can experience 4 to 6 feet of water			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> Approximately 60 percent of the city’s residential areas are within the 100-year floodplain The city is surrounded by the 100-year floodplain 			
Identified Impacts:			
<ul style="list-style-type: none"> Loss of or significant damage to commercial and residential property due to flood damage With the city surrounded by the 100-year flood plain and the city depending on the Angleton fire department there may be loss of life or serious injury due to a potential delay in response during large scale events 			

Floodplains: Jones Creek

Item 9.



Legend

Public Safety and Security

Type

- Disaster Recovery Center
- Local Emergency Operation Center

Utilities

Type

- Electric Substation
- Natural Gas Receipt Delivery
- Power Plant
- Wastewater Treatment Plant

Industrial

Type

- Brownfields
- CERCLA(Superfund) National Priorities List
- Hazardous Waste Treatment Facility
- Solid Waste Landfill
- Toxic Release Inventory Facility
- College/Universities
- Correctional Facilities
- Airport
- Police Stations
- Hospitals
- EMS
- Fire Stations
- High Schools
- Schools
- Roads
- County Boundary
- Cities

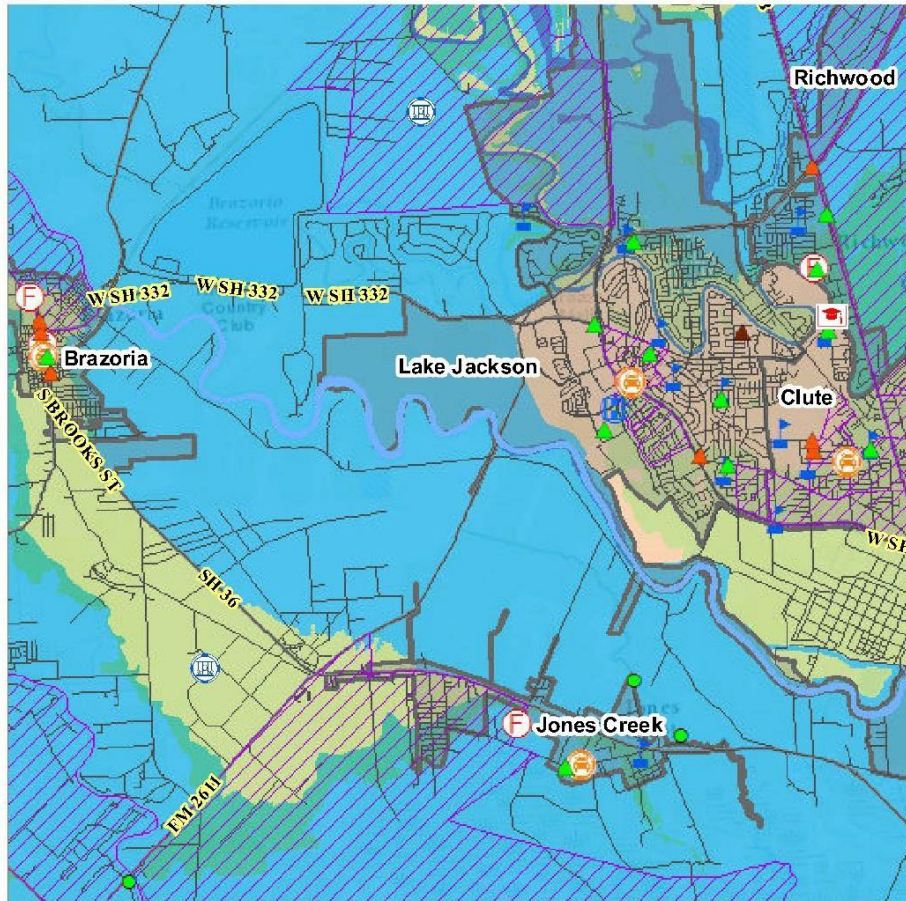
FEMA Floodplains NFHL 2015

Type

- Floodway
- 100YR
- 500YR
- Minimal
- Levee Zone

Map Sources:
 Facilities: Regional I and Use Information System, H-GAC, 2017
 National Flood Hazard Layer (NFHL): FEMA, 2017

Jones Creek			
Planning Area (Sq. mi):	2.6	Occurrences since 2000:	5
Area Affected:	86 %	Annual Event Average:	.29
Probability: Likely; 29 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 3 feet of water; the jurisdiction can experience 5 to 7 feet of water			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> Residential areas in the far east of the city are just outside of the 100-year floodplain. Highway 36, which has flooded in the past, runs directly through the city 			
Identified Impacts:			
<ul style="list-style-type: none"> Residential and commercial property loss due to flood damage If a major roadway becomes impassable, serious injury or loss of life could occur because of residents not being able to evacuate or first responders unable to reach residents in homes 			



Legend

Public Safety and Security

Type

- Disaster Recovery Center
- Local Emergency Operation Center

Utilities

Type

- Electric Substation
- Natural Gas Receipt Delivery
- Power Plant
- Wastewater Treatment Plant

Industrial

Type

- Brownfields
- CERCLA(Superfund) National Priorities List
- Hazardous Waste Treatment Facility
- Solid Waste Landfill
- Toxic Release Inventory Facility
- College Universities
- Correctional Facilities
- Airport
- Police Stations
- Hospitals
- BMS
- Fire Stations
- High Schools
- Schools

Roads

- County Boundary
- Cities

FEMA Floodplains NFHL 2015

Type

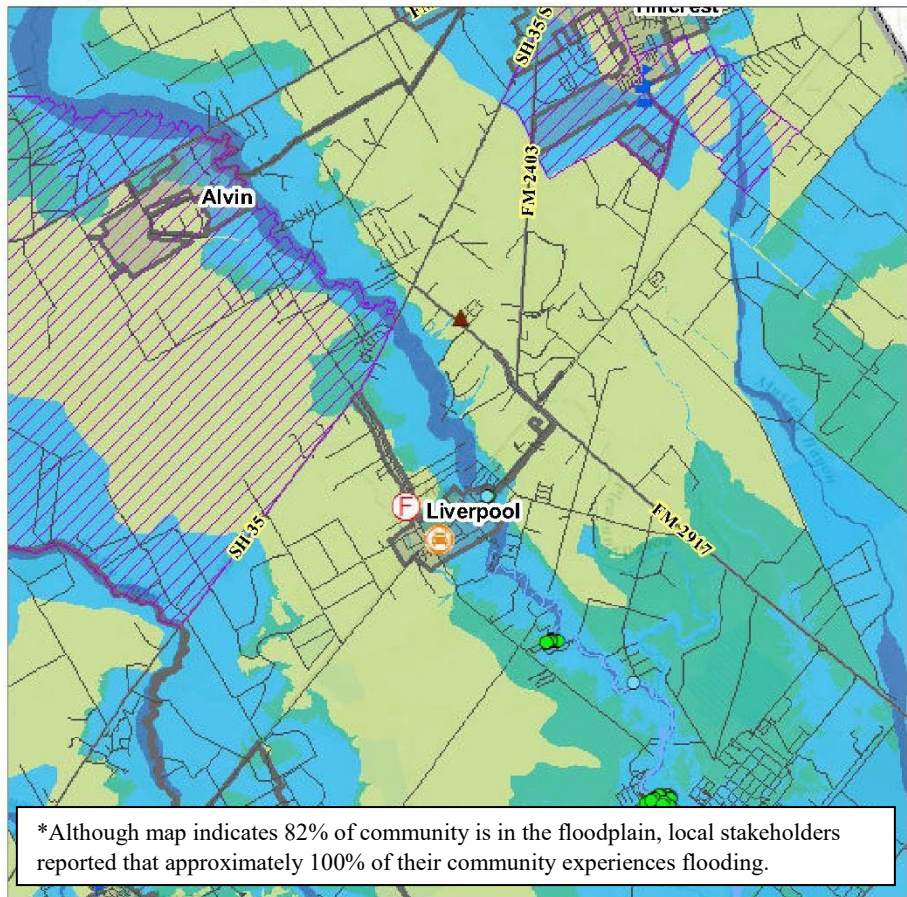
- Floodway
- 100YR
- 500YR
- Minimal
- Levee Zone

Map Sources:
 Facilities: Regional Land Use Information System, H-GAC, 2017
 National Flood Hazard Layer (NFHL): FEMA, 2017

Lake Jackson			
Planning Area (Sq. mi):	20.9	Occurrences since 2000:	6
Area Affected:	71 %	Annual Event Average:	.35
Probability: Likely; 35 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced .5 feet of water; the jurisdiction can experience 1 to 2 feet of water			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> The 100-year floodplain runs just east of the city Residential areas in the northeast of the city are within the 100-year floodplain 			
Identified Impacts:			
<ul style="list-style-type: none"> Serious injury or loss of life with residents or visitors trying to evacuate from flooded homes and or neighborhoods Residential property loss throughout the east of the city Economic loss due to residents displaced from their homes 			

Floodplains: Liverpool

Item 9.



Legend

Public Safety and Security
Type
 ■ Disaster Recovery Center
 ■ Local Emergency Operation Center

Utilities
Type
 ■ Electric Substation
 ○ Natural Gas Receipt Delivery
 ■ Power Plant
 ○ Wastewater Treatment Plant

Industrial
Type
 ■ Brownfields
 ■ CERCLA(Superfund) National Priorities List
 ■ Hazardous Waste Treatment Facility
 ■ Solid Waste Landfill
 ■ Toxic Release Inventory Facility
 ■ College Universities
 ■ Correctional Facilities
 ■ Airport
 ■ Police Stations
 ■ Hospitals
 ■ EMS
 ■ Fire Stations
 ■ High Schools
 ■ Schools
 ■ Roads
 ■ County Boundary
 ■ Cities

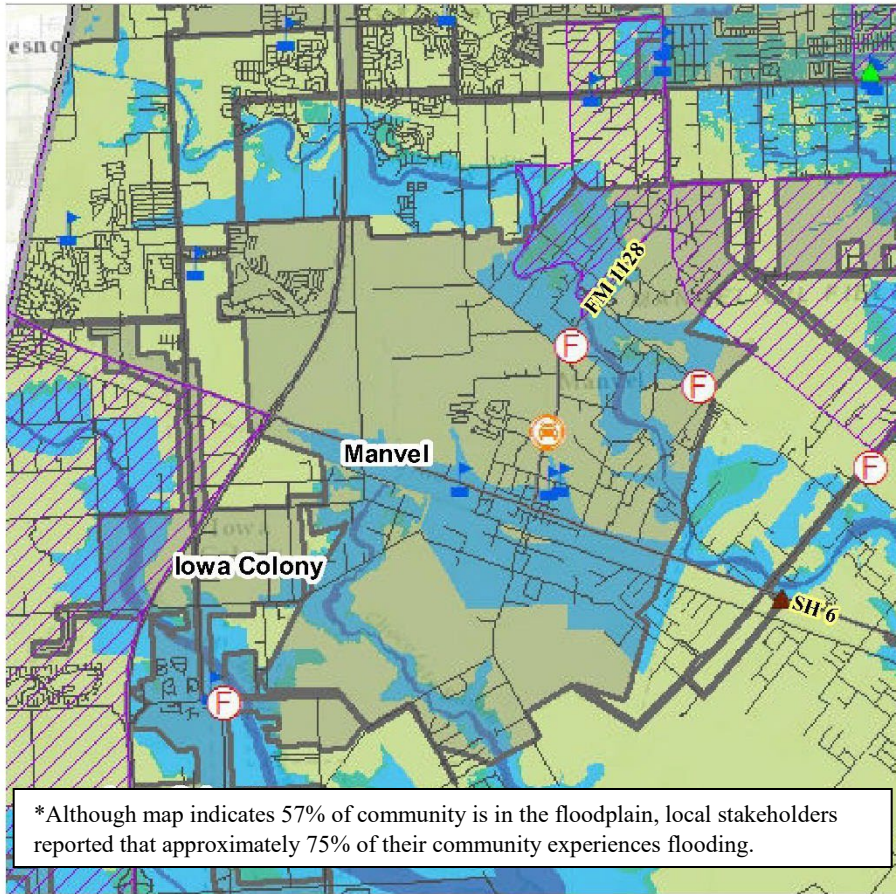
FEMA Floodplains NFHL 2015
Type
 ■ Floodway
 ■ 100YR
 ■ 500YR
 ■ Minimal
 ■ Levee Zone

Map Sources:
 Facilities: Regional Land Use Information System, H-GAC, 2017
 National Flood Hazard Layer (NFHL): FEMA, 2017

Liverpool			
Planning Area (Sq. mi):	1.1	Occurrences since 2000:	5
Area Affected:	100 %	Annual Event Average:	.29
Probability: Likely; 29 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 3.5 feet of water; the jurisdiction can experience 5 to 7 feet of water			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> The far east of the city along Chocolate Bayou is within the 100-year floodplain; residential areas are prone to flooding throughout this area 			
Identified Impacts:			
<ul style="list-style-type: none"> Residential and commercial property loss throughout the east of the city Loss of life or serious injury for those trying to evacuate from their homes and neighborhoods 			

Floodplains: Manvel

Item 9.



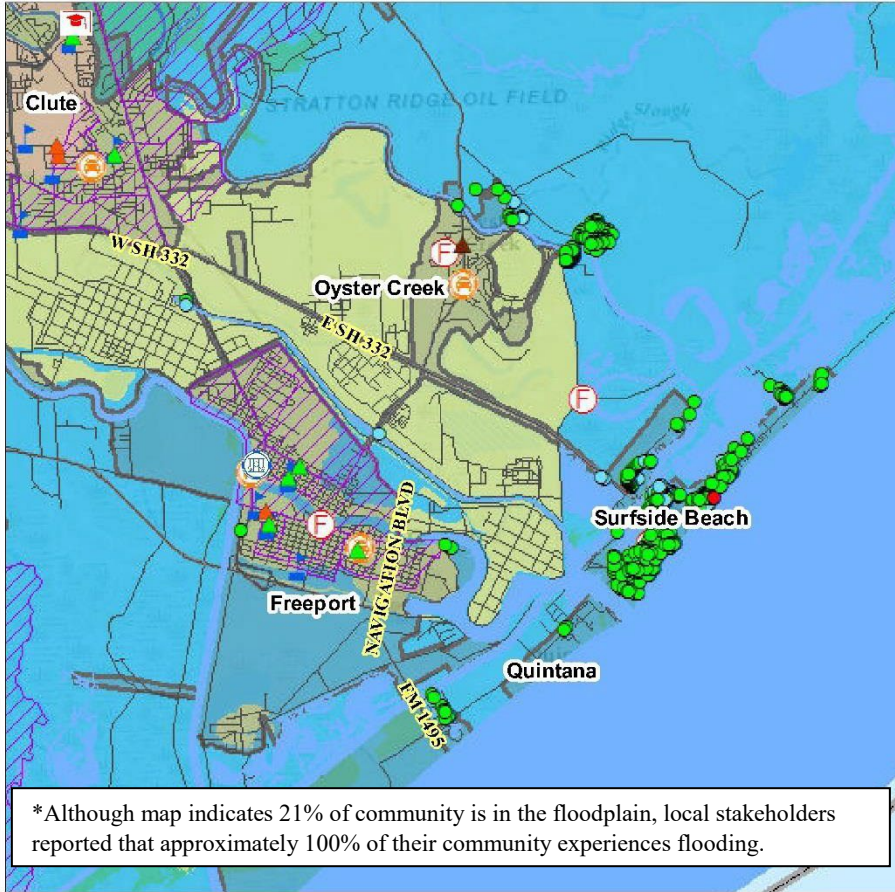
- Legend**
- Public Safety and Security**
- Type
- Disaster Recovery Center
 - Local Emergency Operation Center
- Utilities**
- Type
- Electric Substation
 - Natural Gas Receipt Delivery
 - Power Plant
 - Wastewater Treatment Plant
- Industrial**
- Type
- Brownfields
 - CERCLA(Superfund) National Priorities List
 - Hazardous Waste Treatment Facility
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 - Airport
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 - Fire Stations
 - High Schools
 - Schools
- Roads
- County Boundary
- Cities
- FEMA Floodplains NFHL 2015**
- Type
- Floodway
 - 100YR
 - 500YR
 - Minimal
 - Levee Zone

Map Sources:
 Facilities: Regional Land Use Information System, H-GAC, 2017
 National Flood Hazard Layer (NFHL): FEMA, 2017

Manvel			
Planning Area (Sq. mi):	23.6	Occurrences since 2000:	6
Area Affected:	75 %	Annual Event Average:	.35
Probability: Likely; 35 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 3 feet of water; the jurisdiction can experience 4 to 5 feet of water			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> Mustang Bayou runs through the east of the city; homes near Mustang Bayou are prone to flooding Commercial and residential areas along Bissell Road toward TX 288 are prone to sheet flooding 			
Identified Impacts:			
<ul style="list-style-type: none"> Loss of commercial and residential properties throughout the city Serious injury or loss of life of those trying to evacuate their neighborhood or commercial areas Economic loss with residents displaced from their homes and businesses shut down throughout the city 			

Floodplains: Oyster Creek

Item 9.



Legend

Public Safety and Security
Type
 ■ Disaster Recovery Center
 ■ Local Emergency Operation Center

Utilities
Type
 ■ Electric Substation
 ○ Natural Gas Receipt Delivery
 ◆ Power Plant
 ○ Wastewater Treatment Plant

Industrial
Type
 ● Brownfields
 ● CERCLA(Superfund) National Priorities List
 ○ Hazardous Waste Treatment Facility
 ○ Solid Waste Landfill
 ■ Toxic Release Inventory Facility
 ○ College Universities
 ■ Correctional Facilities
 ■ Airport
 ■ Police Stations
 ■ Hospitals
 ◆ EMS
 ◆ Fire Stations
 ■ High Schools
 ■ Schools

— Roads
 ■ County Boundary
 ■ Cities

FEMA Floodplains NFHL 2015
Type
 ■ Floodway
 ■ 100YR
 ■ 500YR
 ■ Minimal
 ■ Lowco Zone

Map Sources:
 Facilities: Regional Land Use Information System, H-GAC, 2017
 National Flood Hazard Layer (NFHL): FEMA, 2017

Oyster Creek

Planning Area (Sq. mi):	2	Occurrences since 2000:	5
Area Affected:	100 %	Annual Event Average:	.29

Probability: Likely; 29 percent chance the event will occur in a year

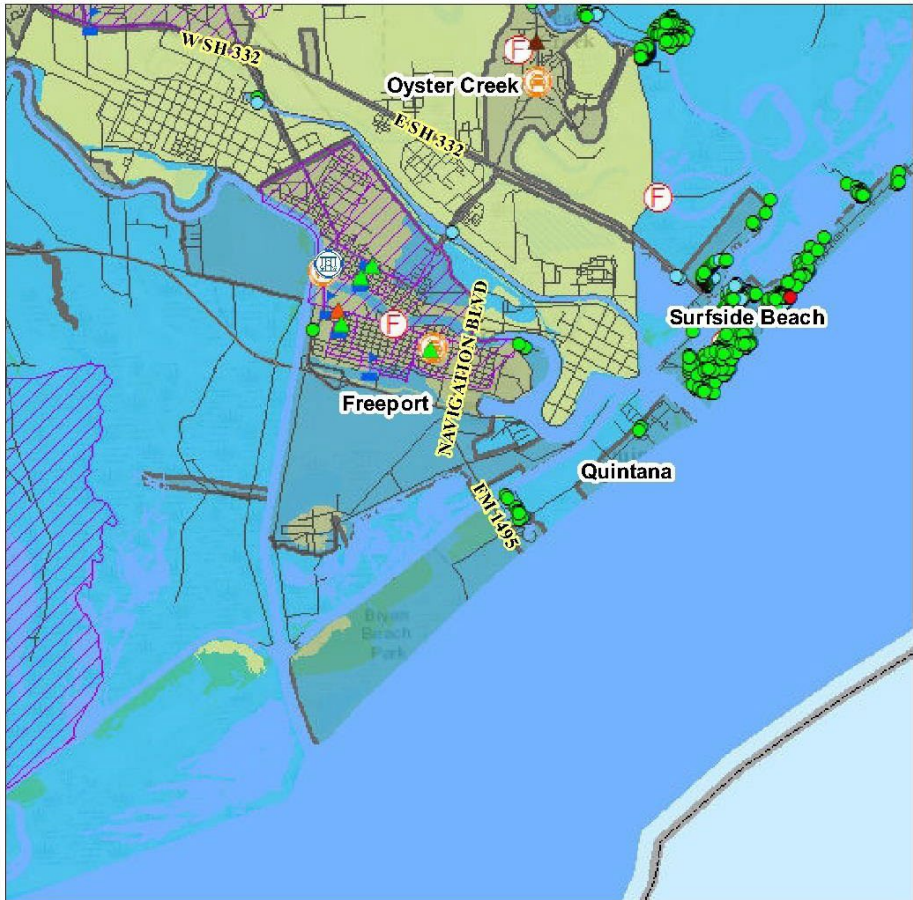
Extent: According to past events the jurisdiction has experienced 3 feet of water; the jurisdiction can experience 4 to 5 feet of water

Identified Vulnerabilities:

- The northeast of the city is adjacent to oyster creek and is within the 100-year floodplain
- The city’s largest retail center is in this area as well as residential areas; these areas are prone to flooding.

Identified Impacts:

- Commercial and residential property loss throughout the city, particularly in the northeast of the city
- Economic loss for the city and local business that could be damaged during flooding
- Financial loss for residents who were displaced because of the event and/ or whose homes were destroyed or damaged due to the event.



Legend

Public Safety and Security

Type

- Disaster Recovery Center
- Local Emergency Operation Center

Utilities

Type

- Electric Substation
- Natural Gas Receipt Delivery
- Power Plant
- Wastewater Treatment Plant

Industrial

Type

- Brownfields
- CERCLA(Superfund) National Priorities List
- Hazardous Waste Treatment Facility
- Solid Waste Landfill
- Toxic Release Inventory Facility
- College Universities
- Correctional Facilities
- Airport
- Police Stations
- Hospitals
- EMS
- Fire Stations
- High Schools
- Schools

Roads

County Boundary

Cities

FEMA Floodplains NFHL 2015

Type

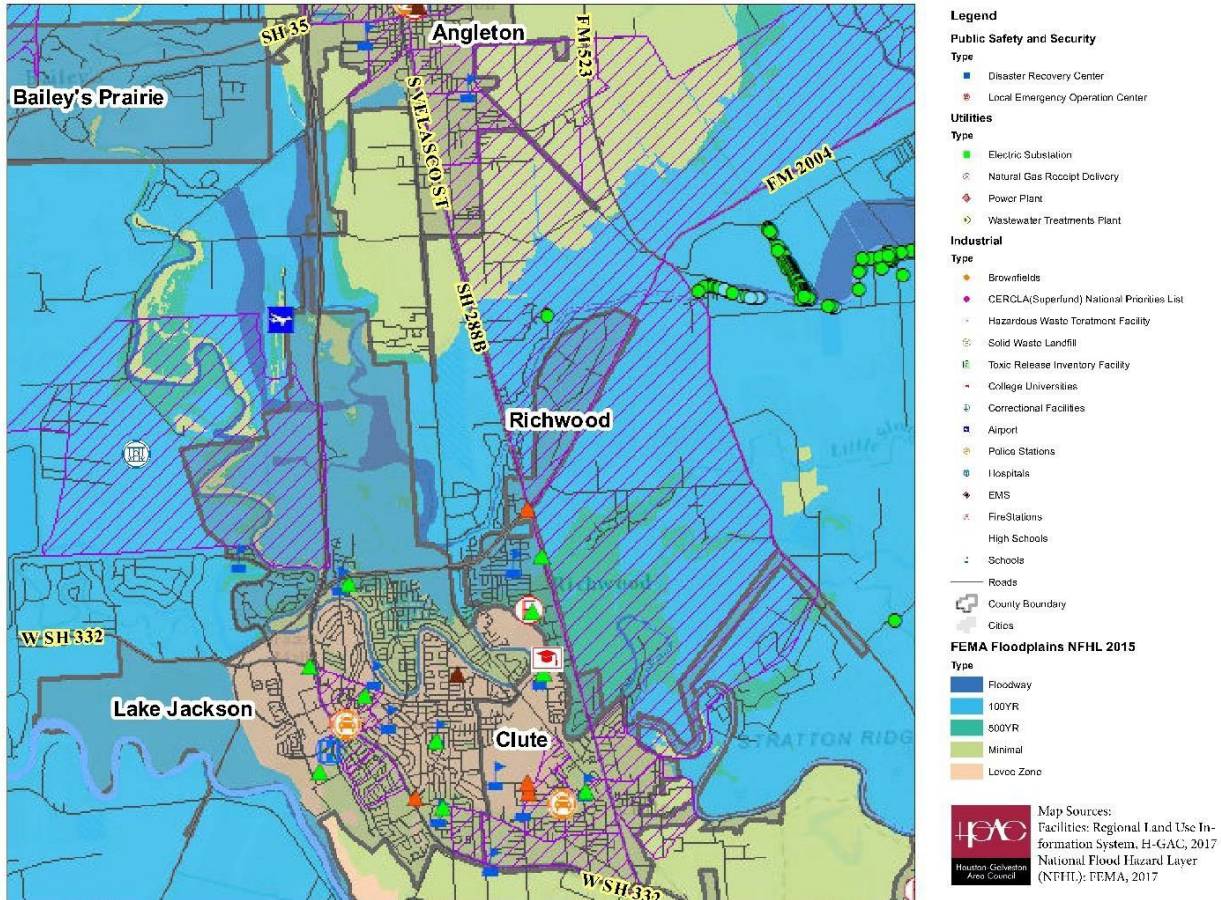
- Floodway
- 100YR
- 500YR
- Minimal
- Levee Zone

Map Sources:
 Facilities: Regional Land Use Information System, H-GAG, 2017
 National Flood Hazard Layer (NFHL): FEMA, 2017

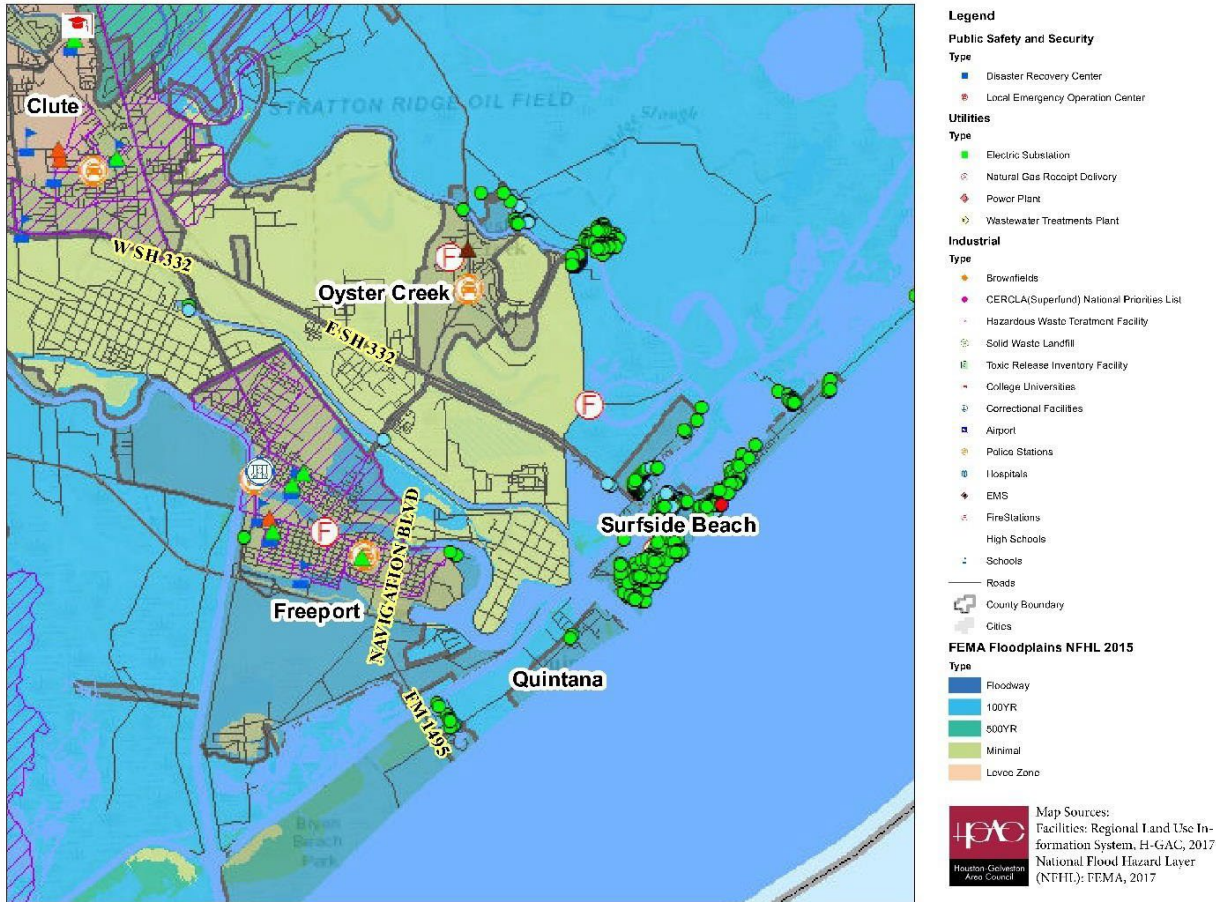
Quintana			
Planning Area (Sq. mi):	2	Occurrences since 2000:	5
Area Affected:	100 %	Annual Event Average:	.29
Probability: Likely; 29 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 1.6 feet of water; the jurisdiction can experience 3 to 4 feet of water			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> The entire city is within the 100-year floodplain The port facility to the northeast is considered a critical facility and is within the 100-year floodplain Residential and commercial areas throughout the city are prone to flooding 			
Identified Impacts:			
<ul style="list-style-type: none"> Residential, commercial and public property loss due to flood events Loss of basic city services with the potential for the entire city to flood during events Economic loss for the city with a loss of public and commercial activity Financial loss for residents whose homes were destroyed or damaged 			

Floodplains: Richwood

Item 9.



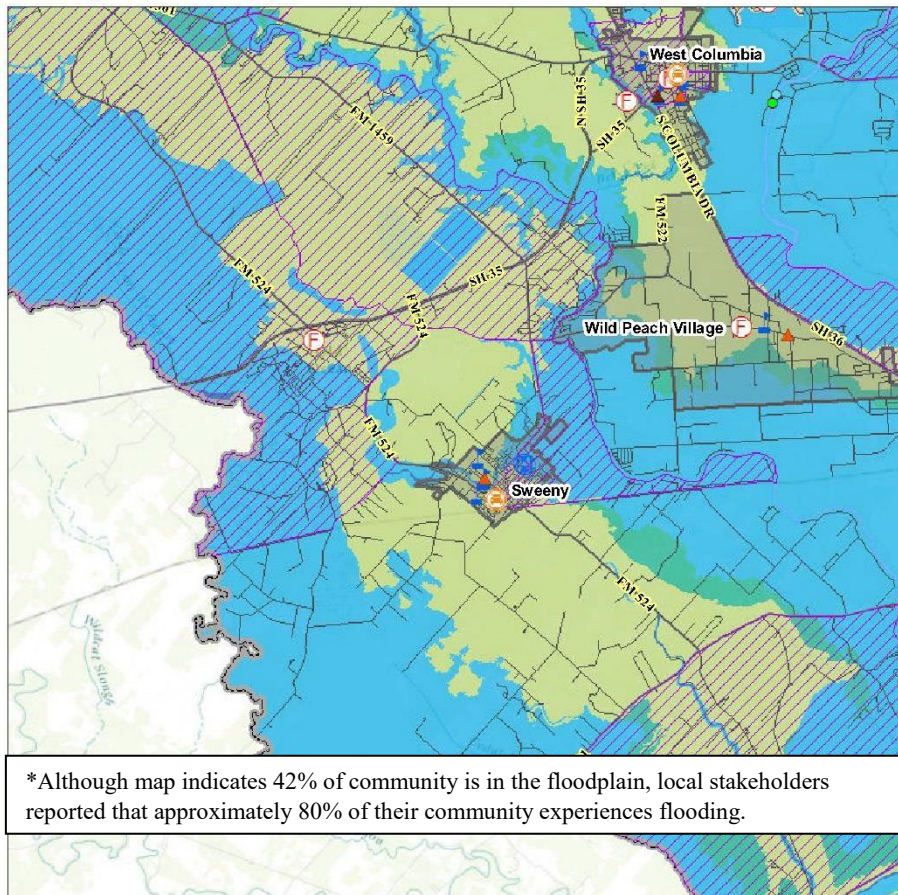
Richwood			
Planning Area (Sq. mi):	3.1	Occurrences since 2000:	5
Area Affected:	100%	Annual Event Average:	.29
Probability: Likely; 29 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 5 feet of water; the jurisdiction can experience 6 to 7 feet of water			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 264 homes have flooded in the past from a single event; homes to the southwest of the city along Oyster Creek are prone to flooding • Highway 2004 and Brazos Crossing neighborhood is prone to flooding 			
Identified Impacts:			
<ul style="list-style-type: none"> • Residential property loss throughout the southwest of the city • Financial loss for residents displaced by the event 			



Surfside Beach			
Planning Area (Sq. mi):	2.2	Occurrences since 2000:	5
Area Affected:	100 %	Annual Event Average:	.29
Probability: Likely; 29 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 1.7 feet of water; the jurisdiction can experience 3 to 4 feet of water			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • The entire jurisdiction is located within the 100-year floodplain. • Toxic release site located in the center of town within the 100-year floodplain • Port facility and police station are located within the 100-year floodplain 			
Identified Impacts:			
<ul style="list-style-type: none"> • Loss of public, commercial, and residential property throughout the city • Financial and economic loss for residents and the city due to a lack of public services, commercial activity and damage to homes • Potential for a compounding hazard; if the toxic release site is flooded this may result in a technical hazard that leads to further injuries, loss of life or property damage 			

Floodplains: Sweeny

Item 9.



Legend

Public Safety and Security
 Type
 ■ Disaster Recovery Center
 ■ Local Emergency Operation Center

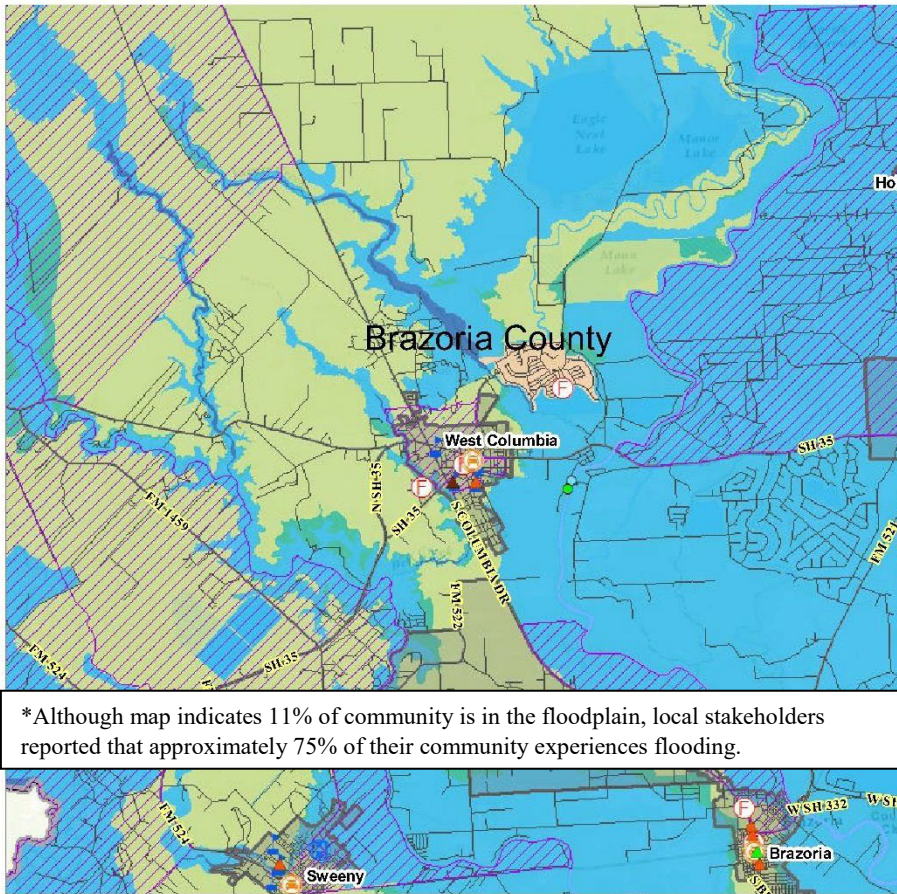
Utilities
 Type
 ● Electric Substation
 ○ Natural Gas Receipt Delivery
 ◆ Power Plant
 ◇ Wastewater Treatment Plant

Industrial
 Type
 ● Brownfields
 ● CERCLA(Superfund) National Priorities List
 ● Hazardous Waste Treatment Facility
 ● Solid Waste Landfill
 ■ Toxic Release Inventory Facility
 ■ College Universities
 ■ Correctional Facilities
 ■ Airport
 ● Police Stations
 ● Hospitals
 ◆ EMS
 ● Fire Stations
 ● High Schools
 ■ Schools
 — Roads
 □ County Boundary
 □ Citia

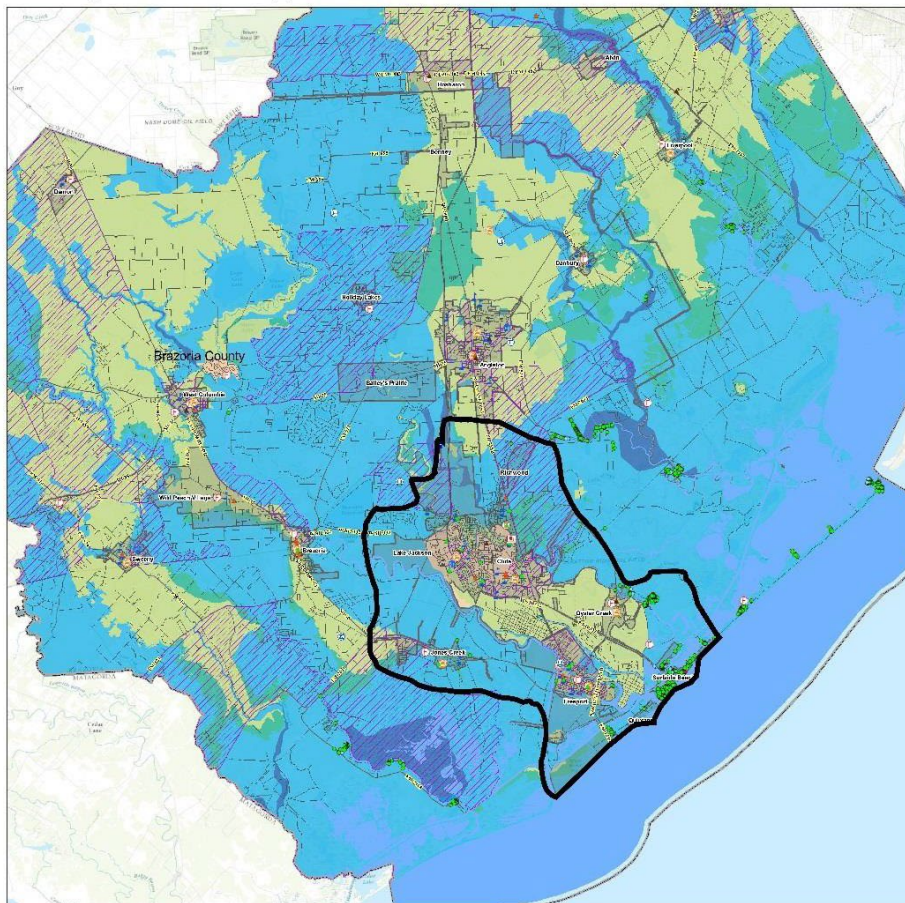
FEMA Floodplains NFHL 2015
 Type
 ■ Floodway
 ■ 100YR
 ■ 500YR
 ■ Minimal
 ■ Levee Zone

Map Sources:
 Facilities: Regional Land Use Information System, H-GAC, 2017
 National Flood Hazard Layer (NFHL): FEMA, 2017

Sweeny and Sweeny ISD			
Planning Area (Sq. mi):	2	Occurrences since 2000:	6
Area Affected:	80 %	Annual Event Average:	.35
Probability: Likely; 35 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 1 foot of water; the jurisdiction can experience 2 to 3 feet of water			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Electric substation and hospital are in the AO flood zone; where sheet flooding could be expected • Roads throughout the city are prone to flooding; in past events road 524 was the only way out of the city 			
Identified Impacts:			
<ul style="list-style-type: none"> • Loss of power throughout the city potentially leading to loss of communication with residents needing assistance • Loss of available hospital beds or needed medical devices and medical help in the city- leading to serious injury or death and stress on neighboring jurisdictions first responders and hospital systems • Serious injury or loss of life due to residents and visitors unable to evacuate due to flooded major roadways 			



West Columbia			
Planning Area (Sq. mi):	2.58	Occurrences since 2000:	6
Area Affected:	75 %	Annual Event Average:	.35
Probability: Likely; 35 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 3 feet of water; the jurisdiction can experience 4 to 5 feet of water			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> 80 homes throughout the city flooded during past events, greatest damage seen along Bell Creek and along Humble Drive Wastewater treatment facility flooded in past events due to backup Police department and several lift stations flooded in the city due to the Brazos River 			
Identified Impacts:			
<ul style="list-style-type: none"> Residential and commercial property loss throughout the city Serious injury or loss of life due to delayed response because of damage to police station Reduced water quality during and after event due to potential damage to waste water treatment facility 			



Legend

Public Safety and Security
 Type
 ■ Disaster Recovery Center
 ■ Local Emergency Operation Center

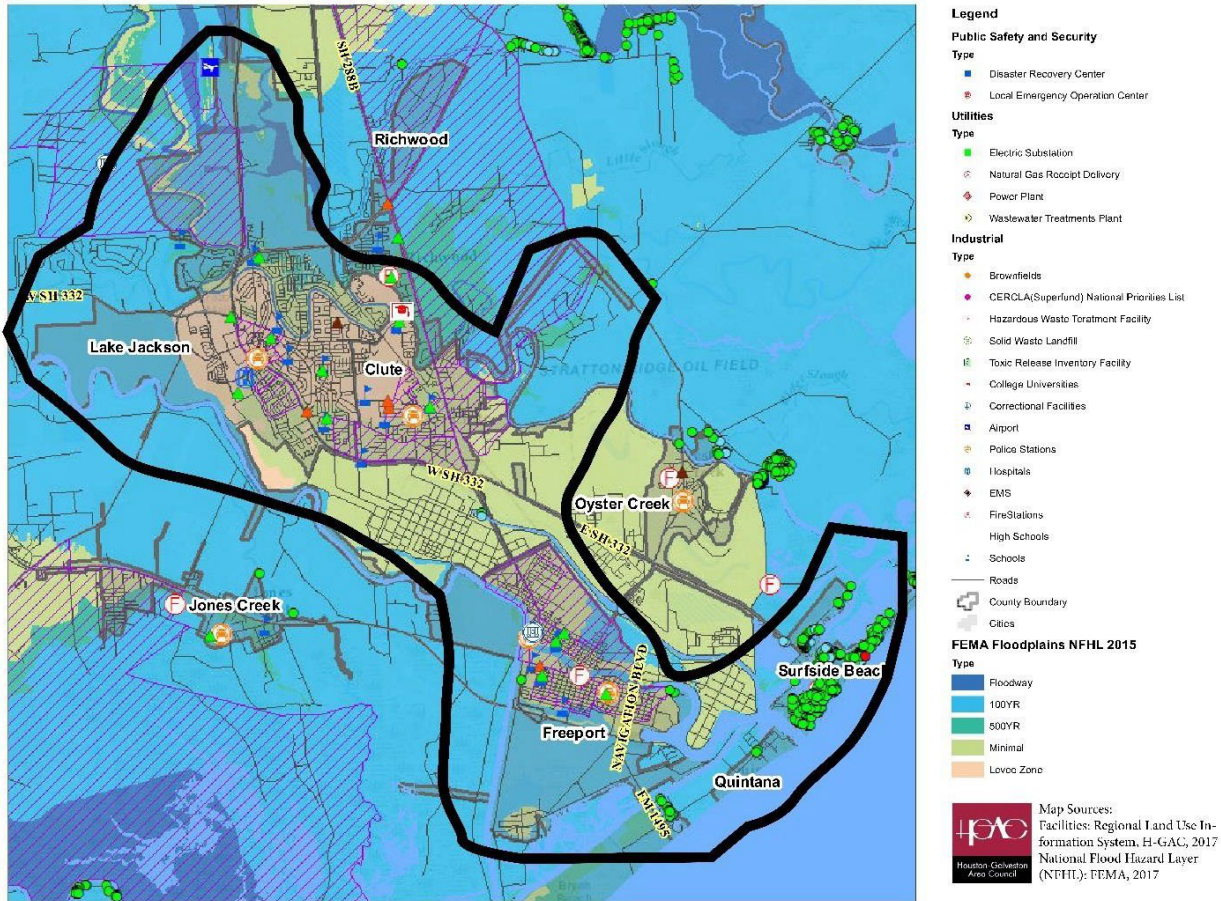
Utilities
 Type
 ■ Electric Substation
 ■ Natural Gas Receipt Delivery
 ■ Power Plant
 ■ Wastewater Treatments Plant

Industrial
 Type
 ■ Brownfields
 ■ CERCLA(Superfund) National Priorities List
 ■ Hazardous Waste Treatment Facility
 ■ Solid Waste Landfill
 ■ Toxic Release Inventory Facility
 ■ College Universities
 ■ Correctional Facilities
 ■ Airport
 ■ Police Stations
 ■ Hospitals
 ■ EMS
 ■ Fire Stations
 ■ High Schools
 ■ Schools
 ■ Roads
 ■ County Boundary
 ■ Cities

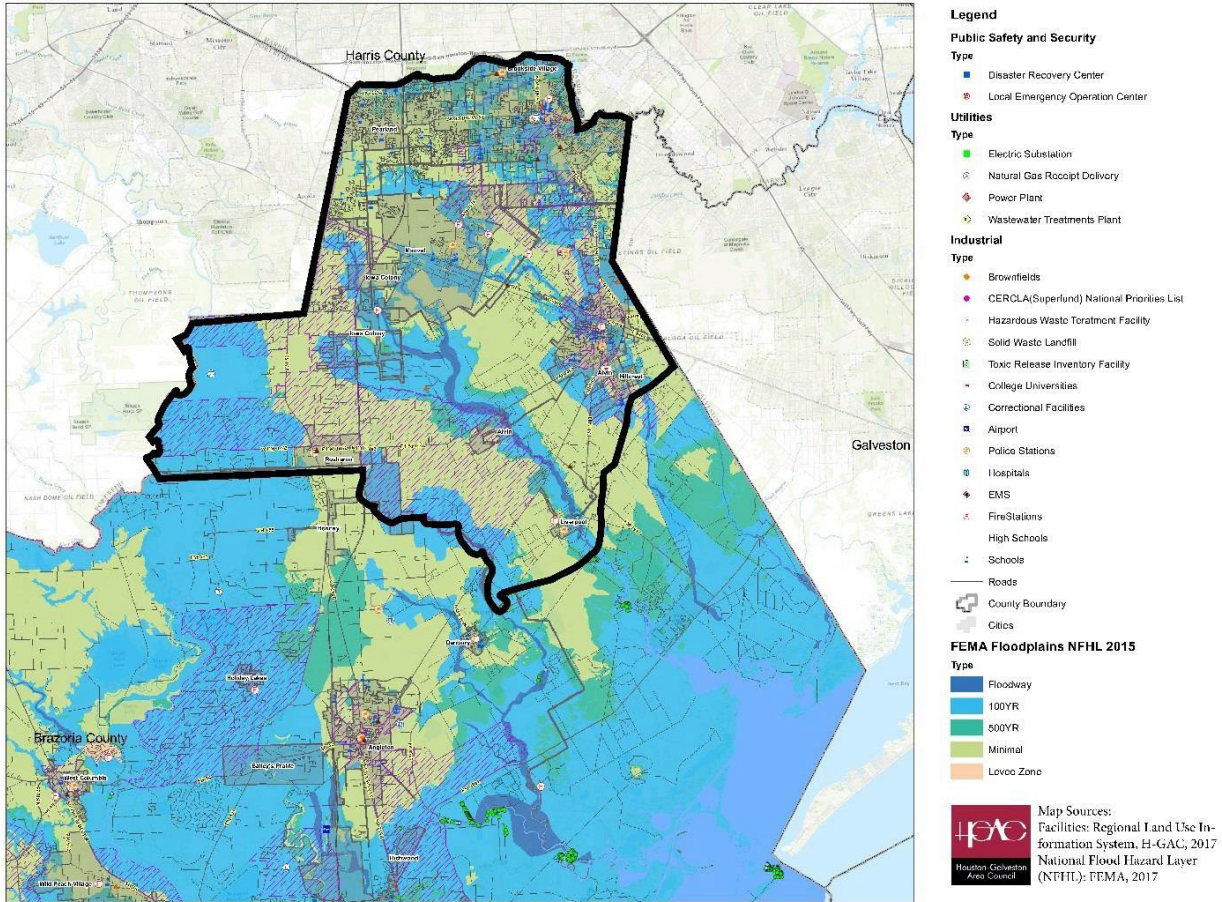
FEMA Floodplains NFHL 2015
 Type
 ■ Floodway
 ■ 100YR
 ■ 500YR
 ■ Minimal
 ■ Lowco Zone

Map Sources:
 Facilities: Regional Land Use Information System, H-GAC, 2017
 National Flood Hazard Layer (NFHL): FEMA, 2017

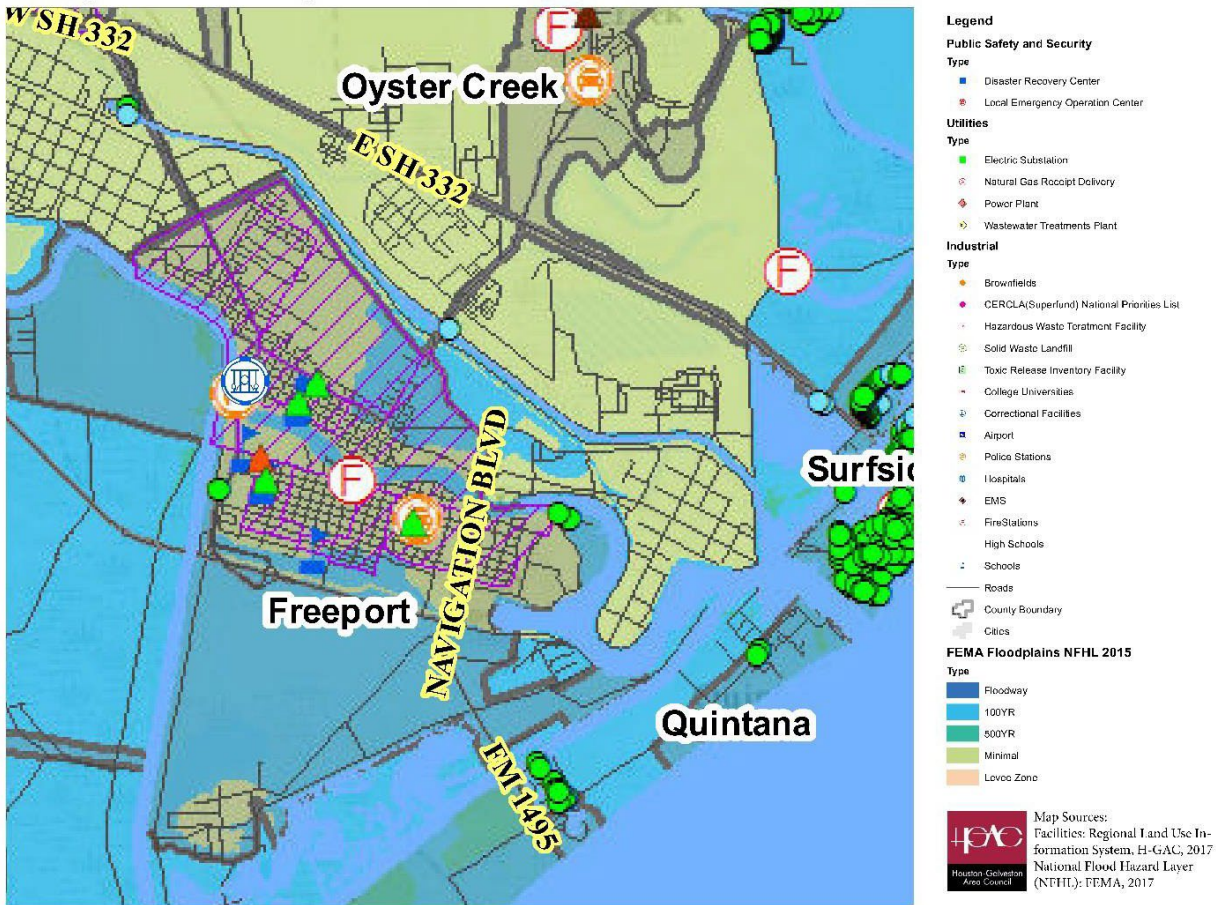
Brazosport ISD			
Planning Area (Sq. mi):	200	Occurrences since 2000:	0
Area Affected:	66 %	Annual Event Average:	0
Probability: Although there have been no reported events in the schools or administrative buildings, the school district has schools and buildings across the county. In considering this, the probability may be similar to Unincorporated Areas in the county: Very Likely; 100 percent chance the event will occur in a year			
Extent: All school buildings within the district were reopened 2 weeks after the most extensive flooding event in the county (flooding from Hurricane Harvey). Although there have been no recorded events in the district extent may be similar to the Unincorporated Areas in the county: According to past events the county has experienced 5 feet of water; the county can experience 6 to 7 feet of water.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 19 schools- 10 elementary schools, 3 high schools, 5 middle schools, 1 alternative school • 12,000 children 18 years and younger 			
Identified Impacts:			
<ul style="list-style-type: none"> • Serious injury or loss of life due to students and staff trying to evacuate from a potentially flooding building or trying to get to school after an event and debris is still on roadways • Property and financial loss due to flood damage to schools or administrative buildings and schools closed for a prolonged period 			



Velasco Drainage District			
Planning Area (Sq. mi):	236	Occurrences since 2000:	5
Area Affected:	69 %	Annual Event Average:	.29
Probability: Likely; 29 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 3 feet of water; The jurisdiction can experience 4 to 5 feet of water			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> Headquarters are directly adjacent to Oyster Creek in Clute, just outside the 100-year floodplain 14 pumps and levees 			
Identified Impacts:			
<ul style="list-style-type: none"> Potential delay in service due to potential damage to administrative buildings Pump failure could result in a levee or dam failure leading to property loss, loss of life, and an increase in needed shelters 			



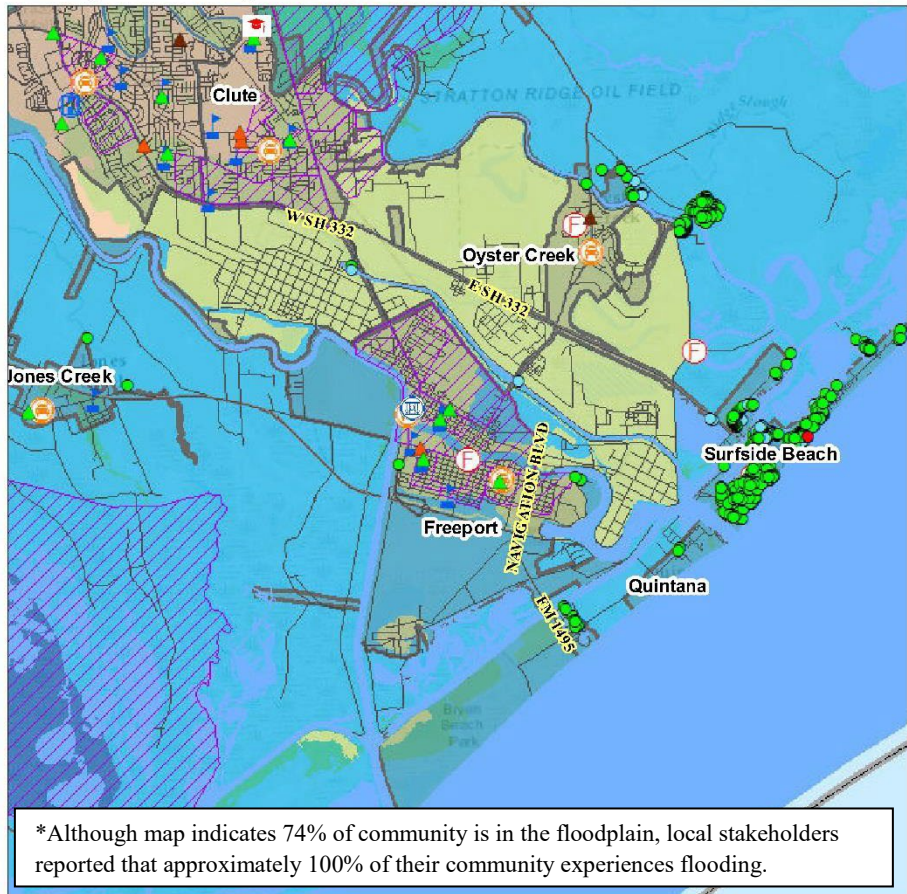
Alvin ISD			
Planning Area (Sq. mi):	252	Occurrences since 2000:	0
Area Affected:	39 %	Annual Event Average:	0
Probability: Although there have been no reported events in the schools or administrative buildings, the school district has schools and buildings across the county. In considering this the probability may be similar to Unincorporated Areas in the county: Very Likely; 100 percent chance the event will occur in a year			
Extent: All school buildings within the district were reopened less than 2 weeks after the most extensive flooding event in the county (flooding from Hurricane Harvey). Although there have been no recorded events in the district extent may be similar to the Unincorporated Areas in the county: According to past events the county has experienced 5 feet of water; the county can experience 6 to 7 feet of water.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 31 schools- 17 elementary schools, 3 high schools, 6 middle schools, 1 alternative school • 22,000 children 18 years and younger 			
Identified Impacts:			
<ul style="list-style-type: none"> • Serious injury or loss of life due to students and staff trying to evacuate from a potentially flooding building or trying to get to school after an event and debris is still on roadways • Property and financial loss due to flood damage to schools or administrative buildings and schools closed for a prolonged period 			



Port Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 2000:	5
Area Affected:	100 %	Annual Event Average:	.29
Probability: Likely; 29 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 3 feet of water; The jurisdiction can experience 4 to 5 feet of water			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> Brazos Harbor wraps around the south and east of the city. The port is in the floodplain 			
Identified Impacts:			
<ul style="list-style-type: none"> Potential for a flood hazard to turn into a technical hazard which may lead to an increase in potential injuries or loss of life Financial loss for residents who may lose their jobs and economic loss for the city and state with one of the main ports down for a prolonged time 			

Floodplains: Freeport

Item 9.



- Legend**
- Public Safety and Security**
- Type
- Disaster Recovery Center
 - Local Emergency Operation Center
- Utilities**
- Type
- Electric Substation
 - Natural Gas Receipt Delivery
 - Power Plant
 - Wastewater Treatment Plant
- Industrial**
- Type
- Brownfields
 - CERCLA(Superfund) National Priorities List
 - Hazardous Waste Treatment Facility
 - Solid Waste Landfill
 - Toxic Release Inventory Facility
 - College Universities
 - Correctional Facilities
 - Airport
 - Police Stations
 - Hospitals
 - EMS
 - Fire Stations
 - High Schools
 - Schools
- Roads
- County Boundary
- Cities
- FEMA Floodplains NFHL 2015**
- Type
- Floodway
 - 100YR
 - 500YR
 - Minimal
 - Levee Zone

*Although map indicates 74% of community is in the floodplain, local stakeholders reported that approximately 100% of their community experiences flooding.

Map Sources:
 Facilities: Regional Land Use Information System, H-GAG, 2017
 National Flood Hazard Layer (NFHL): FEMA, 2017

Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 2000:	5
Area Affected:	100 %	Annual Event Average:	.29
Probability: Likely; 29 percent chance the event will occur in a year			
Extent: According to past events the jurisdiction has experienced 3 feet of water; The jurisdiction can experience 4 to 5 feet of water			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> Brazos Harbor wraps around the northeast of the city. The largest industrial site in the city is in the floodplain 			
Identified Impacts:			
<ul style="list-style-type: none"> Commercial and residential property loss due to potential flood damage Economic loss from the harbor being potentially closed due to flooding Delay in city services due to potential impassable roadways from debris 			

Part 6.2: Wildfire

6.2 Wildfire

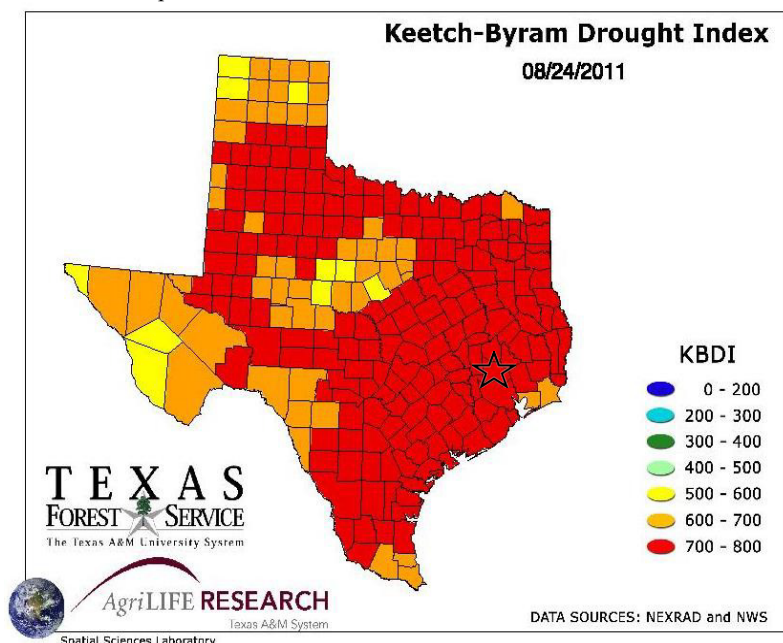
A combination of the Keetch-Byram Drought Index (KBDI) and the Texas Wildfire Risk Assessment are used to assess the risk of wildfire. KBDI is an index that measures the daily water balance, precipitation, and moisture in the soil to determine the potential for wildfires. KBDI ranges from 0 to 800 units. Zero represents fully saturated soil or no indication of drought. A measurement of 800 is the maximum measurement for drought and indicates no moisture is present in the soil. In August 2011, the maximum KBDI value recorded in Brazoria County was 792. The minimum KBDI value, 41, was recorded in September of 2017. KBDI conditions can change rapidly based on short-term weather conditions, so the most extreme values should be considered when addressing wildfire risk.

The Texas Wildfire Risk Assessment uses a variety of factors, such as fuels, vegetation, weather, and topography, to determine the fire potential of a specific land area. Particularly vulnerable are the Wildland Urban Interface (WUI) areas. These areas occur at the intersection of development and wildland. With continued population growth throughout the county, the WUI zones will become more abundant. Because most wildfires are caused by human activities, the intersection of WUI and drought are particularly dangerous.

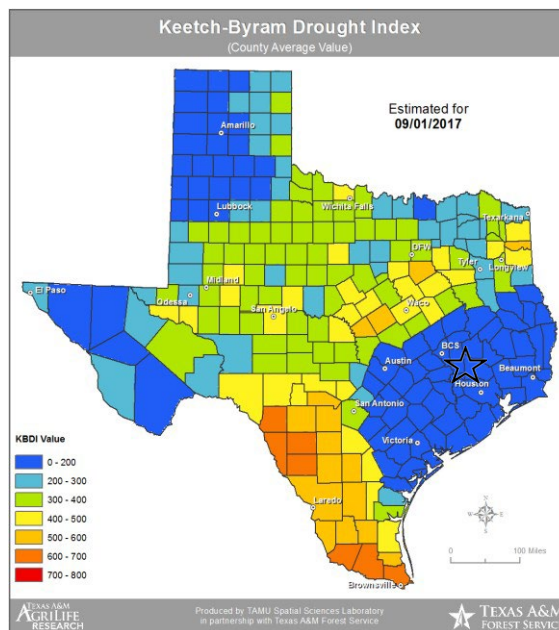
Wildland Fire Assessment System (WFAS) KBDI Value Scale:

KBDI Value	Score	Description
0 - 200	0 - 200	Soil moisture and large class fuel moistures are high and do not contribute much to fire intensity. Typical of early spring following winter precipitation.
200 - 300	200 - 400	Fuels are beginning to dry and contribute to wildfire intensity. Heavier fuels will still not readily ignite and burn. This is often seen in late spring or early summer.
300 - 400	400 - 600	Lower litter and duff layers contribute to fire intensity and will burn actively. Wildfire intensity begins to increase significantly. Larger fuels could burn or smolder for several days. This is often seen in late summer and early fall.
400 - 500	600 - 800	Often associated with more severe drought with increased wildfire occurrence. Intense, deep-burning fires with extreme intensities can be expected. Live fuels can also be expected to burn actively at these levels.
500 - 600		
600 - 700		
700 - 800		

Source: <https://twc.tamu.edu/kbdi>



Source: <https://twc.tamu.edu/kbdi>



Historic Occurrence

The Texas A&M Forest Service tracks wildfire events, acres destroyed, and the initial ignition cause of the fire. Below is the historic data associated with any burns that caused recorded damage.

Date	Acres Burned	Cause	Jurisdiction	Date (Cont.)	Acres Burned (Cont.)	Cause (Cont.)	Jurisdiction (Cont.)
5/24/2006	560	Equipment use	Unincorporated	4/25/2010	1	Equipment use	Manvel
2/16/2007	1	Debris burning	Unincorporated	5/17/2010	1	Debris burning	Unincorporated
10/27/2007	3	Smoking	Surfside Beach	5/20/2010	1	Debris burning	Unincorporated
12/25/2007	1.5	Miscellaneous	Unincorporated	5/23/2010	1	Debris burning	Unincorporated
12/31/2007	1	Miscellaneous	Unincorporated	6/15/2010	1	Debris burning	Unincorporated
1/1/2008	0.5	Debris burning	Unincorporated	7/4/2010	0	Campfire	Surfside Beach
1/4/2008	0.5	Debris burning	Unincorporated	8/5/2010	1	Equipment use	Manvel
1/6/2008	1	Miscellaneous	Unincorporated	8/8/2010	2	Debris burning	Unincorporated
1/9/2008	100	Debris burning	Unincorporated	8/11/2010	4	Debris burning	Unincorporated
1/11/2008	0	Debris burning	Unincorporated	10/2/2010	1	Equipment use	Unincorporated
1/13/2008	0.5	Debris burning	Clute	10/17/2010	2	Debris burning	Unincorporated
1/14/2008	1	Debris burning	Unincorporated	10/28/2010	1	Debris burning	Unincorporated
1/22/2008	0	Debris burning	Unincorporated	12/6/2010	150	Miscellaneous	Unincorporated
1/28/2008	0	Debris burning	Surfside Beach	12/12/2010	2	Debris burning	Unincorporated
2/5/2008	5	Debris burning	Manvel	12/23/2010	3	Debris burning	Unincorporated
2/8/2008	4	Debris burning	Unincorporated Brazoria County	12/26/2010	0.25	Incendiary	Unincorporated
3/8/2008	1	Miscellaneous	Unincorporated	12/27/2010	100	Miscellaneous	Unincorporated
4/9/2008	1	Debris burning	Unincorporated	12/31/2010	0.5	Debris burning	Freeport
5/9/2008	1	Debris burning	Manvel	12/31/2010	0	Debris burning	Unincorporated
5/26/2008	1	Debris burning	Unincorporated	1/6/2011	1	Miscellaneous	Unincorporated
6/1/2008	1	Debris burning	Iowa Colony	1/19/2011	1.5	Miscellaneous	Bonney
7/1/2008	2	Incendiary	Manvel	2/2/2011	1	Miscellaneous	Unincorporated
7/1/2008	1	Equipment use	Unincorporated	2/8/2011	0.5	Debris burning	Unincorporated
7/8/2008	10	Debris burning	Manvel	2/13/2011	5	Children	Manvel
7/13/2008	2	Equipment use	Iowa Colony	2/13/2011	0	Children	Manvel
7/29/2008	1	Debris burning	Manvel	2/14/2011	30	Debris burning	Unincorporated Brazoria County
8/10/2008	1	Debris burning	Unincorporated	2/15/2011	20	Debris burning	Unincorporated
8/15/2008	1	Debris burning	Unincorporated	2/18/2011	1	Debris burning	Unincorporated
9/6/2008	1	Equipment use	Manvel	2/19/2011	2	Debris burning	Unincorporated
9/11/2008	1	Miscellaneous	Unincorporated	2/24/2011	10	Debris burning	Unincorporated
9/18/2008	1	Debris burning	Alvin	2/28/2011	3	Equipment use	Unincorporated
9/21/2008	1	Power Lines	Unincorporated	3/6/2011	2	Debris burning	Unincorporated
9/22/2008	1	Debris burning	Unincorporated	3/6/2011	5	Debris burning	Unincorporated
9/24/2008	1	Debris burning	Manvel	3/7/2011	10	Debris burning	Manvel
10/2/2008	2	Debris burning	Manvel	3/18/2011	1	Debris burning	Unincorporated
10/2/2008	0	Miscellaneous	Unincorporated	3/24/2011	0.5	Smoking	Freeport
10/3/2008	1	Power Lines	Manvel	4/1/2011	0.5	Miscellaneous	Surfside Beach

10/4/2008	2	Debris burning	Unincorporated	4/5/2011	0.25	Miscellaneous	Unincorporated
10/4/2008	1	Debris burning	Unincorporated	4/13/2011	1	Equipment use	Manvel
10/6/2008	2	Debris burning	Unincorporated	4/15/2011	1	Campfire	Surfside Beach
10/11/2008	1	Debris burning	Unincorporated	4/16/2011	2	Debris burning	Unincorporated
10/11/2008	1	Debris burning	Unincorporated	4/22/2011	1	Campfire	Surfside Beach
10/13/2008	1	Miscellaneous	Unincorporated	4/27/2011	15	Miscellaneous	Unincorporated
10/14/2008	1	Debris burning	Unincorporated	5/1/2011	1	Incendiary	Unincorporated
10/19/2008	1	Debris burning	Unincorporated	5/4/2011	1	Power Lines	Unincorporated
10/20/2008	2	Debris burning	Manvel	5/7/2011	1	Smoking	Unincorporated
10/28/2008	1	Debris burning	Unincorporated	5/11/2011	0.5	Debris burning	Unincorporated
10/29/2008	1	Debris burning	Unincorporated	5/22/2011	2	Debris burning	Unincorporated
11/7/2008	1	Debris burning	Bonney	5/30/2011	2	Miscellaneous	Unincorporated
11/10/2008	1	Debris burning	Unincorporated	5/31/2011	2	Debris burning	Unincorporated
11/21/2008	1	Debris burning	Unincorporated	6/4/2011	5	Debris burning	Freeport
11/27/2008	1	Debris burning	Unincorporated	6/12/2011	1	Equipment use	Unincorporated Brazoria County
11/29/2008	1	Debris burning	Unincorporated	6/18/2011	11	Lightning	Freeport
11/29/2008	2	Debris burning	Unincorporated	6/18/2011	1	Children	Unincorporated
12/3/2008	1	Debris burning	Unincorporated	6/20/2011	5	Miscellaneous	Unincorporated
12/8/2008	2	Debris burning	Unincorporated	7/1/2011	5	Debris burning	Unincorporated
12/8/2008	1	Miscellaneous	Unincorporated	7/1/2011	3	Debris burning	Unincorporated
12/12/2008	1	Debris burning	Unincorporated	7/4/2011	1	Debris burning	Unincorporated
12/12/2008	1	Debris burning	Unincorporated	7/12/2011	20	Railroads	Unincorporated
12/12/2008	1	Debris burning	Unincorporated	7/14/2011	1	Debris burning	Unincorporated
12/12/2008	1	Debris burning	Unincorporated	7/23/2011	1	Smoking	Freeport
12/14/2008	1	Smoking	Unincorporated	7/30/2011	1	Power Lines	Unincorporated
12/31/2008	1	Debris burning	Unincorporated	8/18/2011	1	Miscellaneous	Unincorporated
12/31/2008	1	Debris burning	Unincorporated	8/21/2011	5	Smoking	Unincorporated
12/31/2008	1	Debris burning	Unincorporated	8/24/2011	1	Miscellaneous	Unincorporated
1/1/2009	2	Railroads	Angleton	8/28/2011	1	Miscellaneous	Unincorporated
1/8/2009	2	Debris burning	Unincorporated	9/2/2011	1	Miscellaneous	Manvel
1/9/2009	1	Debris burning	Unincorporated	9/3/2011	1	Power Lines	Manvel
1/9/2009	1	Debris burning	Unincorporated	9/3/2011	0.5	Power Lines	Manvel
1/11/2009	2	Debris burning	Unincorporated	9/3/2011	0.5	Power Lines	Manvel
1/16/2009	6	Lightning	Freeport	9/3/2011	0.5	Power Lines	Manvel
1/18/2009	150	Miscellaneous	Unincorporated	9/3/2011	0.5	Power Lines	Manvel
1/19/2009	10	Lightning	Freeport	9/3/2011	0.2	Power Lines	Unincorporated
1/19/2009	0	Miscellaneous	Unincorporated	9/3/2011	0.2	Power Lines	Unincorporated
1/19/2009	1	Miscellaneous	Unincorporated	9/5/2011	10	Equipment use	Bonney
1/19/2009	1	Debris burning	Unincorporated	9/5/2011	15	Miscellaneous	Unincorporated
1/19/2009	2	Debris burning	Unincorporated	9/6/2011	0.25	Equipment use	Manvel
1/19/2009	1	Debris burning	Unincorporated	9/6/2011	1	Miscellaneous	Unincorporated
1/20/2009	2	Lightning	Freeport	9/6/2011	5	Miscellaneous	Unincorporated
1/20/2009	60	Debris burning	Unincorporated	9/8/2011	1.25	Miscellaneous	Unincorporated

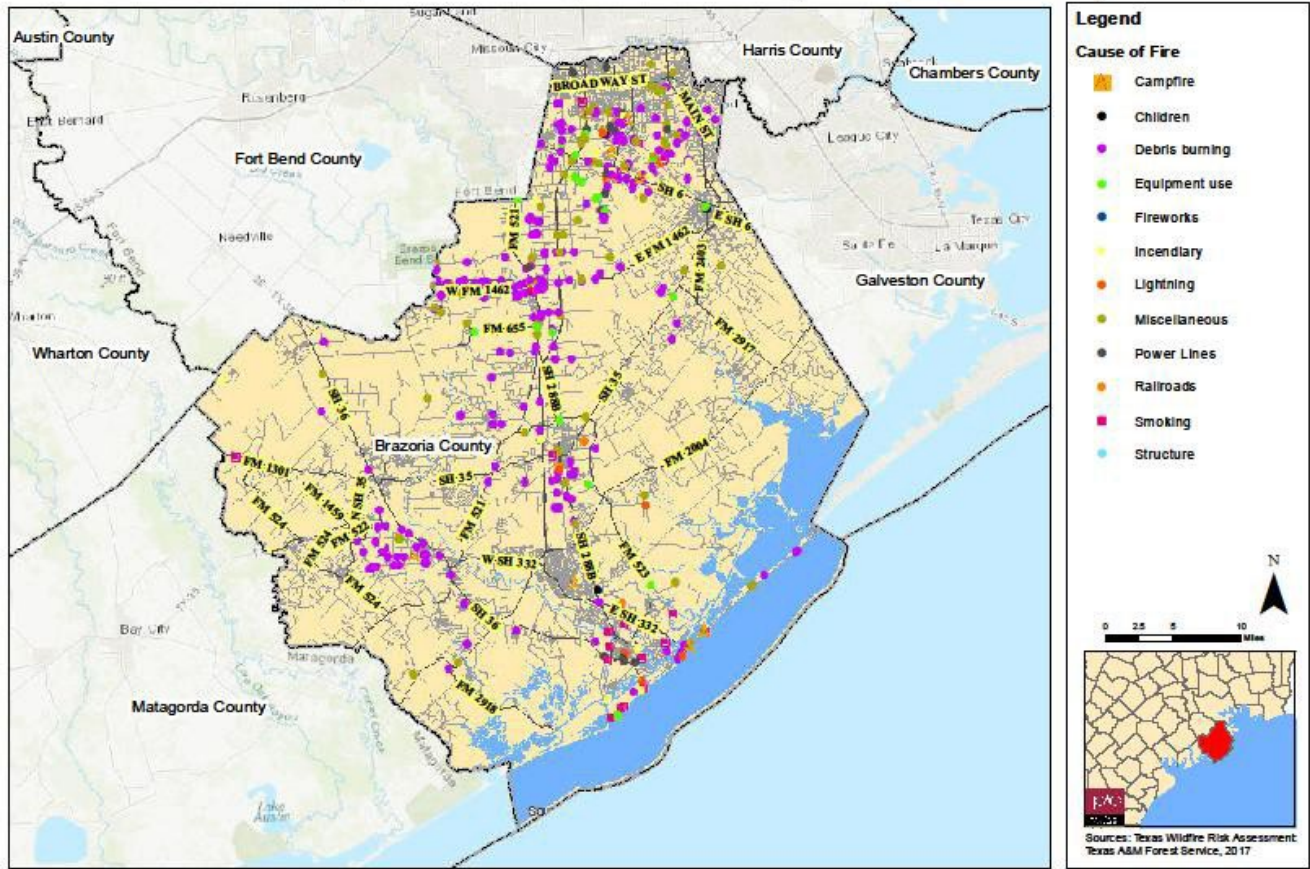
1/20/2009	60	Debris burning	Unincorporated	9/9/2011	0.5	Equipment use	Manvel
1/20/2009	60	Miscellaneous	Unincorporated	9/10/2011	0.75	Equipment use	Unincorporated
1/20/2009	60	Debris burning	Unincorporated	9/12/2011	0.25	Smoking	Freeport
1/20/2009	40	Miscellaneous	Unincorporated Brazoria County	9/13/2011	0.5	Miscellaneous	Manvel
1/20/2009	40	Miscellaneous	Unincorporated	9/13/2011	150	Debris burning	Unincorporated
1/22/2009	1	Miscellaneous	Angleton	9/13/2011	300	Miscellaneous	Unincorporated Brazoria County
1/22/2009	1	Debris burning	Unincorporated	9/14/2011	1	Power Lines	Unincorporated
1/23/2009	1	Debris burning	Angleton	9/26/2011	4	Debris burning	Unincorporated
1/23/2009	2	Debris burning	Unincorporated	10/12/2011	1	Debris burning	Unincorporated
1/24/2009	1	Debris burning	Iowa Colony	11/2/2011	1	Debris burning	Unincorporated
1/24/2009	1	Debris burning	Unincorporated	11/16/2011	1	Debris burning	Unincorporated
1/24/2009	2	Debris burning	Unincorporated	11/27/2011	0.5	Debris burning	Angleton
1/24/2009	1	Debris burning	Unincorporated	12/4/2011	1	Debris burning	Unincorporated
1/25/2009	1	Debris burning	Angleton	12/13/2011	1	Debris burning	Unincorporated
1/25/2009	1	Debris burning	Unincorporated	1/2/2012	2	Debris burning	Unincorporated
1/26/2009	2	Debris burning	Unincorporated	1/16/2012	0	Debris burning	Unincorporated
1/28/2009	5	Miscellaneous	Bonney	1/29/2012	0	Debris burning	Unincorporated
1/29/2009	1	Miscellaneous	Alvin	2/7/2012	0	Debris burning	Unincorporated
1/29/2009	6	Incendiary	Angleton	2/24/2012	0	Debris burning	Unincorporated
1/29/2009	2	Miscellaneous	Angleton	3/3/2012	0	Debris burning	Unincorporated
1/29/2009	1	Debris burning	Unincorporated	3/16/2012	1	Debris burning	Unincorporated
1/30/2009	1	Miscellaneous	Unincorporated	3/18/2012	10	Debris burning	Unincorporated
1/31/2009	1	Children	Clute	3/18/2012	0	Debris burning	Unincorporated
1/31/2009	2	Debris burning	Unincorporated	3/28/2012	0	Debris burning	Unincorporated
1/31/2009	1	Equipment use	Unincorporated	4/13/2012	0	Debris burning	Unincorporated
2/1/2009	2	Debris burning	Unincorporated	5/2/2012	0	Debris burning	Unincorporated
2/1/2009	2	Equipment use	Unincorporated	5/7/2012	1	Incendiary	Freeport
2/2/2009	1	Debris burning	Manvel	5/7/2012	2	Power Lines	Freeport
2/3/2009	1	Debris burning	Alvin	6/8/2012	0	Smoking	Manvel
2/3/2009	100	Debris burning	Jones Creek	6/9/2012	0.25	Miscellaneous	Unincorporated
2/3/2009	1	Debris burning	Unincorporated	6/15/2012	0	Debris burning	Alvin
2/3/2009	10	Miscellaneous	Unincorporated	6/22/2012	0	Debris burning	Unincorporated
2/3/2009	5	Debris burning	Unincorporated	6/26/2012	1	Miscellaneous	Manvel
2/3/2009	1	Debris burning	Unincorporated	6/28/2012	1	Miscellaneous	Angleton
2/3/2009	1	Debris burning	Unincorporated	7/16/2012	0	Debris burning	Unincorporated
2/4/2009	1	Debris burning	Unincorporated	7/28/2012	0	Debris burning	Unincorporated
2/6/2009	1	Debris burning	Unincorporated	8/1/2012	0	Debris burning	Unincorporated
2/7/2009	2	Debris burning	Bailey's Prairie	8/3/2012	1	Miscellaneous	Angleton
2/7/2009	2	Debris burning	Brazoria	8/11/2012	0	Debris burning	Unincorporated
2/7/2009	175	Miscellaneous	Unincorporated	8/12/2012	0.25	Debris burning	Unincorporated
2/7/2009	175	Miscellaneous	Unincorporated	8/12/2012	0.25	Debris burning	Unincorporated
2/7/2009	1	Debris burning	Unincorporated	8/14/2012	0	Debris burning	Unincorporated

2/9/2009	2	Debris burning	Manvel	8/18/2012	100	Lightning	Unincorporated
2/12/2009	2	Debris burning	Angleton	8/22/2012	1	Debris burning	Angleton
2/12/2009	7	Smoking	Unincorporated	8/22/2012	0.25	Smoking	Freeport
2/13/2009	1	Debris burning	Unincorporated	8/29/2012	0.1	Smoking	Angleton
2/13/2009	1	Debris burning	Unincorporated	8/29/2012	0	Debris burning	Unincorporated
2/19/2009	1	Debris burning	Unincorporated	8/30/2012	2	Debris burning	Unincorporated
2/21/2009	1	Debris burning	Surfside Beach	9/5/2012	0.1	Power Lines	Freeport
2/21/2009	1	Debris burning	Unincorporated	9/9/2012	0.5	Miscellaneous	Unincorporated
2/22/2009	1	Debris burning	Unincorporated	9/10/2012	0	Debris burning	Unincorporated
2/26/2009	1	Debris burning	Unincorporated	9/16/2012	1	Debris burning	Unincorporated
2/28/2009	1	Debris burning	Unincorporated	9/21/2012	0	Debris burning	Unincorporated
3/1/2009	1	Campfire	Clute	9/23/2012	0.5	Lightning	Angleton
3/2/2009	1	Debris burning	Unincorporated	9/26/2012	2	Debris burning	Angleton
3/3/2009	1	Miscellaneous	Iowa Colony	9/28/2012	0	Lightning	Surfside Beach
3/3/2009	1	Smoking	Unincorporated	10/20/2012	0.25	Miscellaneous	Unincorporated
3/4/2009	2	Debris burning	Unincorporated	10/25/2012	0.25	Railroads	Unincorporated
3/4/2009	1	Debris burning	Unincorporated	10/29/2012	1	Equipment use	Unincorporated
3/6/2009	2	Debris burning	Unincorporated	10/29/2012	1	Debris burning	Unincorporated
3/6/2009	1	Debris burning	Unincorporated	10/30/2012	1	Debris burning	Unincorporated
3/8/2009	1	Miscellaneous	Unincorporated	11/17/2012	0.25	Debris burning	Unincorporated
3/9/2009	1	Miscellaneous	Manvel	11/18/2012	0	Debris burning	Unincorporated
3/9/2009	1	Smoking	Unincorporated	11/19/2012	20	Debris burning	Unincorporated
3/9/2009	1	Debris burning	Unincorporated	11/20/2012	0	Debris burning	Unincorporated
3/11/2009	2	Smoking	Unincorporated	11/21/2012	0	Debris burning	Unincorporated
3/16/2009	1	Debris burning	Unincorporated	11/25/2012	0	Debris burning	Unincorporated
3/17/2009	4	Debris burning	Unincorporated	11/29/2012	0.25	Debris burning	Manvel
3/19/2009	1	Debris burning	Unincorporated	12/15/2012	1	Debris burning	Unincorporated
3/19/2009	1	Equipment use	Unincorporated	12/28/2012	0	Debris burning	Unincorporated
3/19/2009	30	Debris burning	Unincorporated	1/24/2013	1	Debris burning	Unincorporated
3/21/2009	1	Debris burning	Unincorporated	1/25/2013	1	Debris burning	Unincorporated
3/25/2009	2	Debris burning	Unincorporated	2/1/2013	0	Incendiary	Unincorporated
3/26/2009	1	Debris burning	Bonney	2/3/2013	1	Debris burning	Manvel
3/31/2009	1	Debris burning	Unincorporated	3/7/2013	1	Debris burning	Unincorporated
4/3/2009	3	Debris burning	Unincorporated	3/12/2013	1	Railroads	Manvel
4/5/2009	2	Debris burning	Unincorporated	3/13/2013	1	Debris burning	Manvel
4/10/2009	1	Debris burning	Unincorporated	3/21/2013	1	Incendiary	Unincorporated
4/11/2009	3	Debris burning	Unincorporated	3/23/2013	1	Debris burning	Manvel
4/12/2009	1	Debris burning	Unincorporated	3/26/2013	0.1	Power Lines	Freeport
4/18/2009	1	Debris burning	Unincorporated	4/13/2013	0.1	Incendiary	Freeport
4/22/2009	0.5	Miscellaneous	Manvel	5/5/2013	1	Campfire	Freeport
4/28/2009	4	Debris burning	Unincorporated	5/14/2013	0	Children	Alvin
5/8/2009	2	Debris burning	Unincorporated	5/31/2013	0.25	Debris burning	Unincorporated
5/9/2009	1	Debris burning	Iowa Colony	6/3/2013	0.1	Miscellaneous	Alvin

5/9/2009	1	Debris burning	Unincorporated	6/3/2013	0.1	Equipment use	Alvin
5/9/2009	1	Miscellaneous	Unincorporated	6/6/2013	1	Lightning	Manvel
5/12/2009	0.5	Debris burning	Manvel	6/6/2013	1	Lightning	Manvel
5/12/2009	0.1	Miscellaneous	Manvel	6/16/2013	1	Incendiary	Manvel
5/15/2009	0.1	Miscellaneous	Manvel	6/17/2013	1	Debris burning	Unincorporated
5/18/2009	0.8	Miscellaneous	Unincorporated	6/19/2013	0.5	Smoking	Freeport
5/18/2009	2	Debris burning	Unincorporated	6/22/2013	1	Debris burning	Manvel
5/20/2009	3	Debris burning	Unincorporated	7/1/2013	0	Debris burning	Unincorporated Brazoria County
5/21/2009	1	Debris burning	Unincorporated	7/4/2013	0.5	Smoking	Freeport
5/22/2009	2	Debris burning	Unincorporated	7/4/2013	1	Miscellaneous	Manvel
5/23/2009	1	Debris burning	Unincorporated	7/5/2013	2	Debris burning	Manvel
5/29/2009	1	Debris burning	Unincorporated	7/5/2013	1	Debris burning	Unincorporated
5/31/2009	1	Debris burning	Unincorporated	7/9/2013	0.1	Miscellaneous	Unincorporated
6/11/2009	1	Debris burning	Unincorporated	7/14/2013	1	Debris burning	Unincorporated
6/16/2009	1	Debris burning	Unincorporated	7/18/2013	1	Campfire	Unincorporated
6/18/2009	5	Miscellaneous	Alvin	7/27/2013	1	Campfire	Manvel
6/18/2009	1	Debris burning	Unincorporated	8/14/2013	20	Incendiary	Unincorporated
6/18/2009	1	Miscellaneous	Unincorporated	8/21/2013	1	Campfire	Manvel
6/20/2009	20	Miscellaneous	Unincorporated	8/23/2013	1	Debris burning	Manvel
6/24/2009	2	Debris burning	Alvin	8/25/2013	1	Debris burning	Manvel
6/24/2009	0.5	Children	Manvel	9/9/2013	1	Campfire	Manvel
6/30/2009	1	Lightning	Unincorporated	9/13/2013	1	Debris burning	Manvel
7/1/2009	1	Debris burning	Unincorporated	10/8/2013	1	Campfire	Unincorporated
7/1/2009	1	Debris burning	Unincorporated	10/25/2013	1	Debris burning	Manvel
7/4/2009	2	Debris burning	Unincorporated	11/16/2013	1	Smoking	Freeport
7/5/2009	1	Power Lines	Manvel	11/17/2013	1	Smoking	Freeport
7/5/2009	1	Miscellaneous	Surfside Beach	11/18/2013	2	Smoking	Freeport
7/8/2009	1	Miscellaneous	Unincorporated	11/21/2013	1	Equipment use	Freeport
7/10/2009	2	Debris burning	Unincorporated	12/23/2013	1	Equipment use	Freeport
7/12/2009	1	Miscellaneous	Unincorporated	1/22/2014	2	Debris burning	Freeport
7/13/2009	1	Debris burning	Unincorporated	2/8/2014	1	Debris burning	Manvel
7/13/2009	1	Debris burning	Unincorporated	2/9/2014	1	Incendiary	Manvel
7/17/2009	2	Debris burning	Unincorporated	2/15/2014	2	Debris burning	Unincorporated
7/31/2009	2	Debris burning	Unincorporated	2/21/2014	1	Miscellaneous	Manvel
8/1/2009	1	Debris burning	Unincorporated	2/21/2014	67.25	Equipment use	Unincorporated
8/11/2009	0.5	Smoking	Unincorporated	3/8/2014	1	Debris burning	Manvel
8/15/2009	1	Miscellaneous	Manvel	4/10/2014	1	Incendiary	Unincorporated
8/15/2009	1	Miscellaneous	Unincorporated	4/14/2014	1	Debris burning	Unincorporated
8/19/2009	5	Debris burning	Unincorporated	4/24/2014	1	Debris burning	Manvel
8/28/2009	5	Debris burning	Unincorporated	4/30/2014	1	Debris burning	Manvel
9/5/2009	2	Debris burning	Unincorporated	6/6/2014	1	Incendiary	Manvel
9/28/2009	2	Debris burning	Unincorporated	6/6/2014	1	Miscellaneous	Manvel
10/3/2009	1	Debris burning	Unincorporated	7/2/2014	1	Debris burning	Unincorporated

11/16/2009	2	Debris burning	Brazoria	8/6/2014	0.25	Power Lines	Freeport
1/9/2010	1	Debris burning	Manvel	9/1/2014	1	Debris burning	Manvel
1/12/2010	6	Debris burning	Manvel	9/1/2014	1	Power Lines	Unincorporated
3/25/2010	0.5	Debris burning	Surfside Beach	11/1/2014	0.1	Smoking	Unincorporated
3/26/2010	1	Debris burning	Manvel	11/10/2014	1	Debris burning	Manvel
4/4/2010	1	Power Lines	Unincorporated	11/10/2014	1	Debris burning	Unincorporated
4/7/2010	1	Debris burning	Unincorporated	11/18/2014	1	Power Lines	Manvel
4/8/2010	3	Debris burning	Unincorporated	11/26/2014	1	Debris burning	Manvel
4/23/2010	1	Debris burning	Unincorporated	7/31/2015	0.5	Power Lines	Freeport

Fire Ignition Point (2000 - 2015) : Brazoria County



Brazoria County Wildfire Disaster Declarations

Year	Title	Disaster Number
1999	Extreme Fire Hazard	3142
2006	Extreme Wildfire Threat	1624

<https://www.FEMA.gov/>

Hazard Analysis & Vulnerability Identification

The hazard analysis uses historic hazard event data to determine the probability of an event occurring again within a given year. The analysis calculates the average number of events in each jurisdiction annually and then calculates the percent chance of the event occurring within a year.

The hazard analysis also provides hazard extent data for each participating jurisdiction. The extent data is the most extreme data recorded during a storm or hazard event and represents the worst damage a jurisdiction has experienced in recent history. The extent data also includes an estimate of what the jurisdiction could experience in the future. Information from stakeholders, Texas Forest Service, FEMA, and NOAA are the sources of data for the analysis.

To identify vulnerabilities for each jurisdiction, this plan used the following methods:

- American Community Survey (5-year, 2016) data on residential structures
- GIS analysis of residential structures within 500 to 800 KBDI zones; and
- Stakeholder identified vulnerabilities

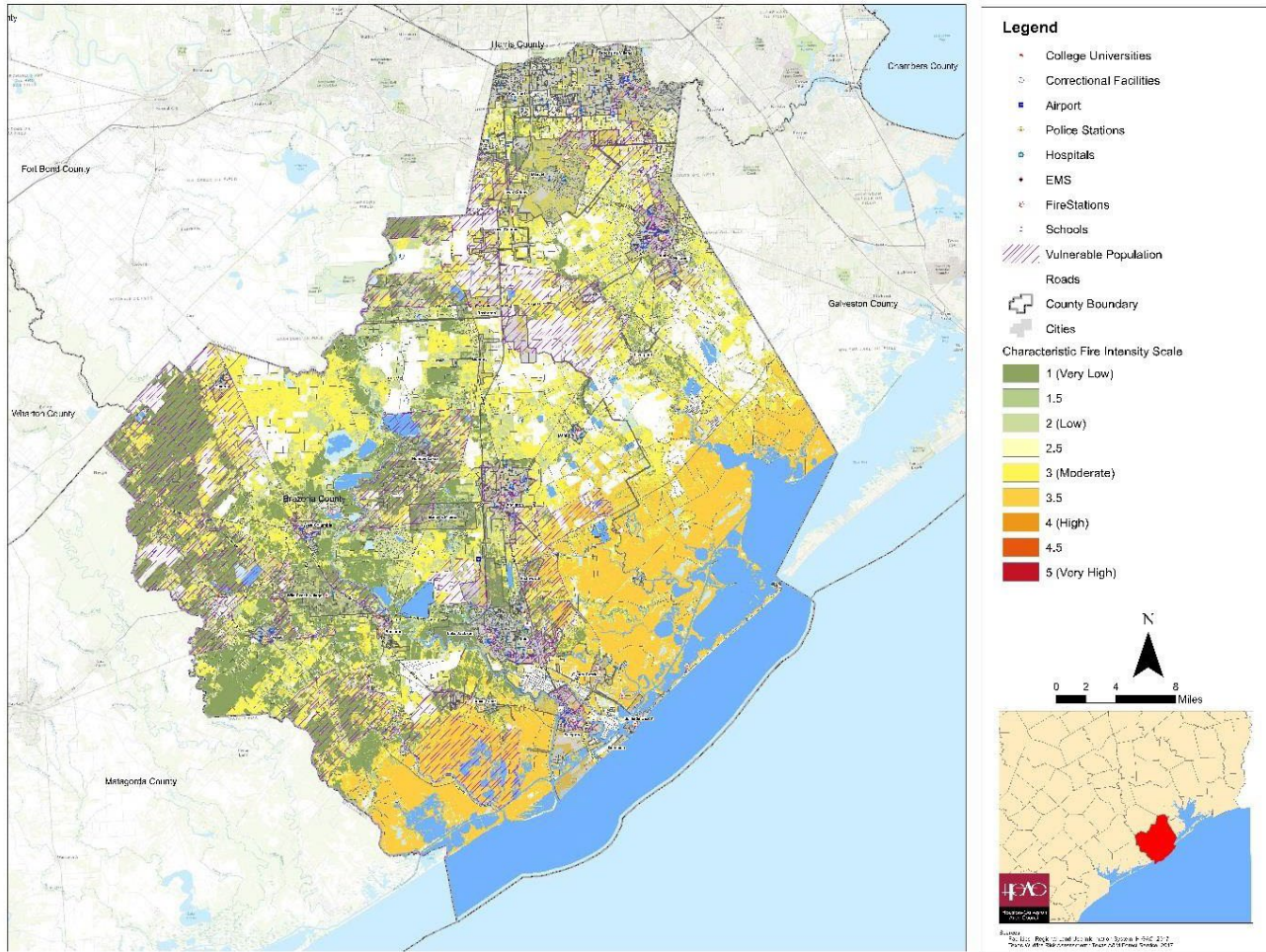
Brazoria County (All Participating Jurisdictions)

Identified Vulnerabilities:

- Agriculture is a major source of revenue for the county and farmers throughout the participating jurisdictions
- Industrial sites are located throughout the county including chemical plants
- A significant proportion of individuals throughout the county are under the age of 18 or above the age of 65 years old

Identified Impacts:

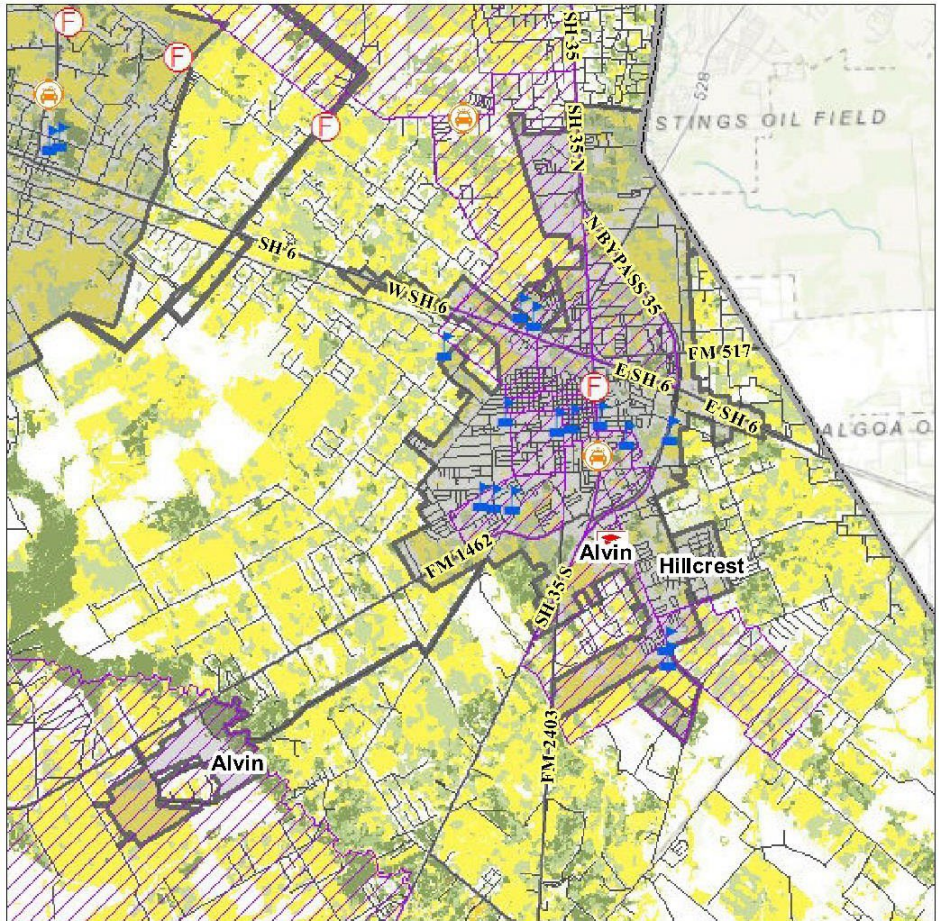
- Loss of agriculture land throughout the county (631,021 acres) may lead to an economic loss for the county of approximately 118,236,00 dollars in revenue and a loss for local farmers throughout the county as well
- If an industrial or chemical site catches fire this may lead to a technical hazard leading to an increase in property loss, serious injuries or loss of life
- Residential and commercial property loss throughout the county (identified by local jurisdictions below) may lead to a financial loss for residents and jurisdictions
- Significant injury or loss of life particularly for children and older individuals (identified by local jurisdiction below)



Brazoria County (Unincorporated Area)			
Planning Area (Sq. mi):	1,475	Occurrences since 2005:	286
Area Affected:	22 %	Annual Event Average:	24 events a year
Probability: Very Likely; 100 percent chance event will occur in a year			
Extent: The largest wildfire in the past 12 years has been a 560-acre fire. The unincorporated areas can expect a 600-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 19,898 residential structures at risk • Reliance on neighboring jurisdictions' and county healthcare and first responder's systems 			
Identified Impacts:			
<ul style="list-style-type: none"> • Residential and commercial property loss throughout the county • Increased response times which may lead to greater injuries, loss of life, or property loss 			

Wildfire Risk Assessment: Alvin

Item 9.



Legend

- College Universities
- Correctional Facilities
- Airport
- Police Stations
- ✕ Hospitals
- ★ EMS
- Fire Stations
- Schools
- ▨ Vulnerable Population
- Roads
- ▭ County Boundary
- ⊕ Cities

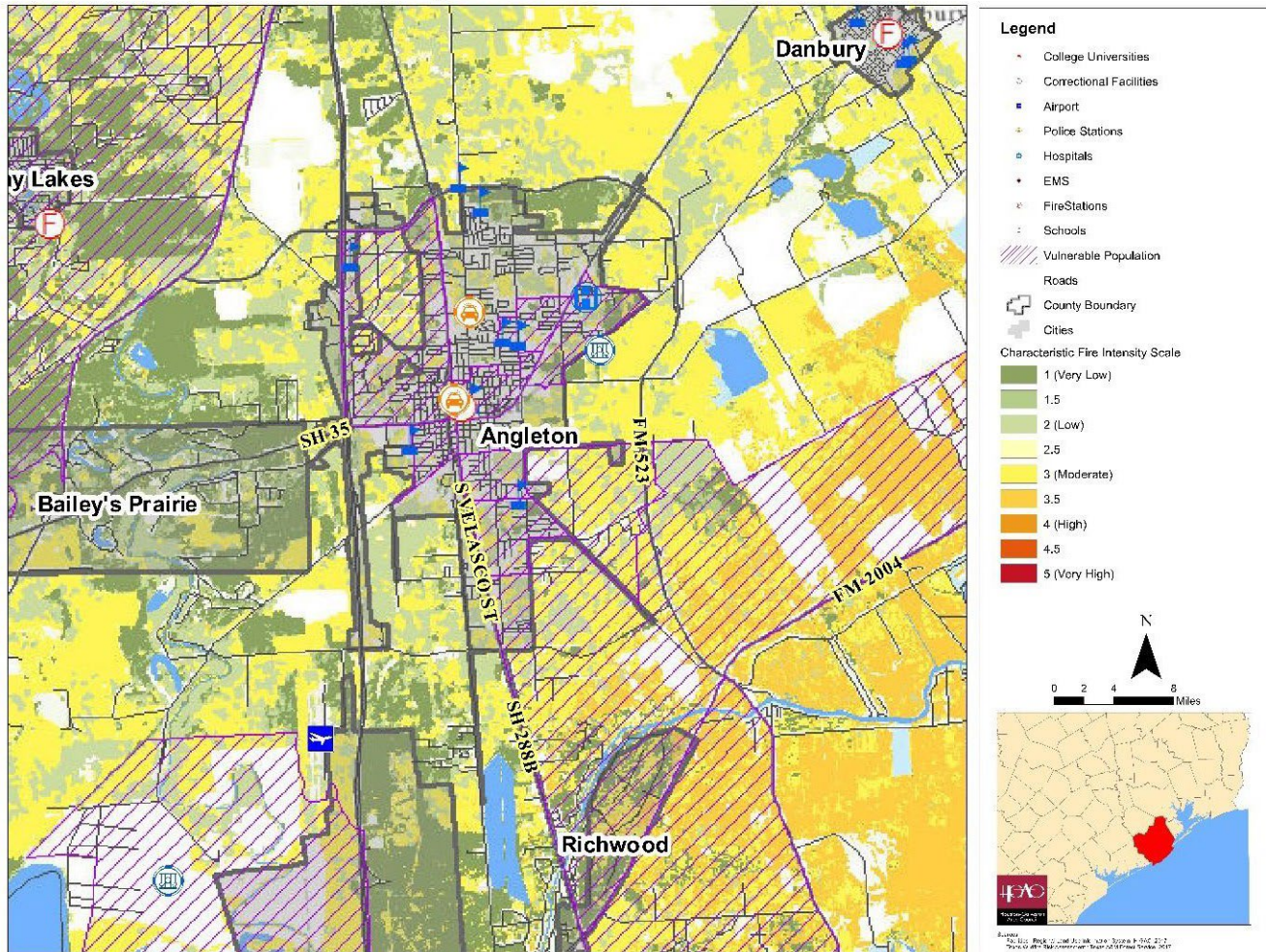
Characteristic Fire Intensity Scale

- 1 (Very Low)
- 1.5
- 2 (Low)
- 2.5
- 3 (Moderate)
- 3.5
- 4 (High)
- 4.5
- 5 (Very High)

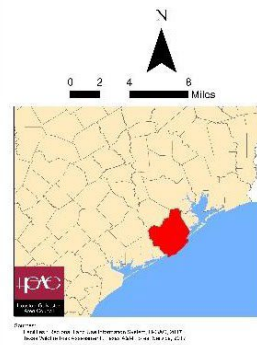
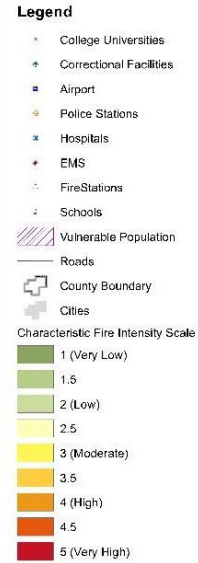
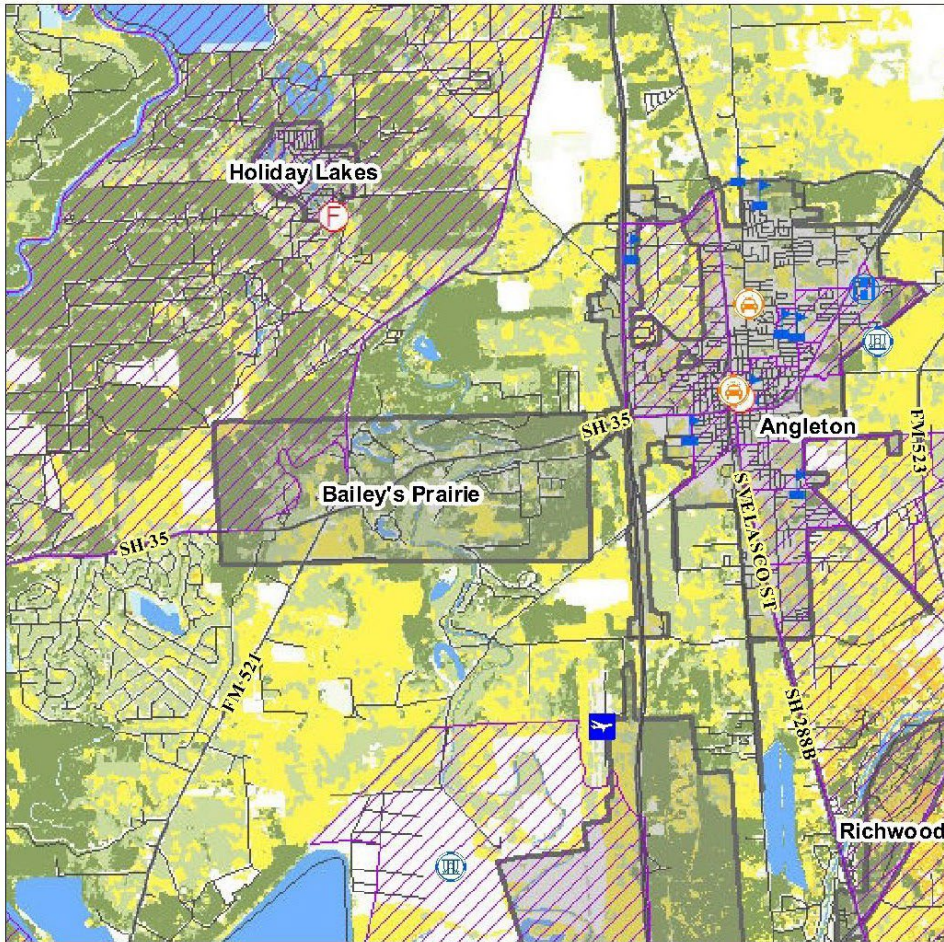
0 2 4 8 Miles

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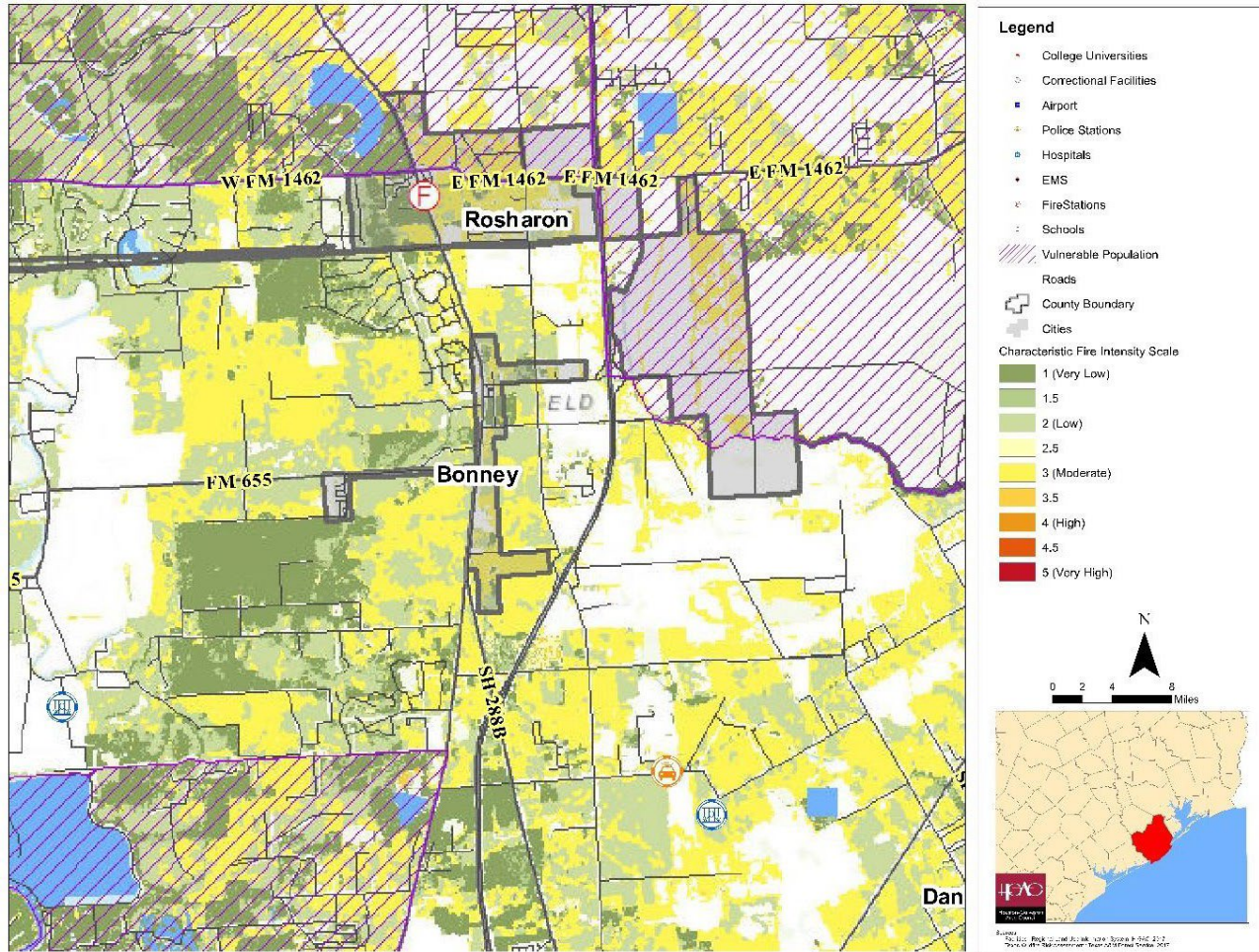
Alvin			
Planning Area (Sq. mi):	25.6	Occurrences since 2005:	9
Area Affected:	4 %	Annual Event Average:	.75 events a year
Probability: Very Likely; 75 percent chance event will occur in a year			
Extent: The largest wildfire in the past 12 years has been a 5-acre fire. The jurisdiction can expect a 6 to 8-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 1,431 residential structures at risk • 29 percent of population are individuals 18 years and younger (7,370 children) • 13 percent of population are individuals 65 and older (3,264 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 42 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			



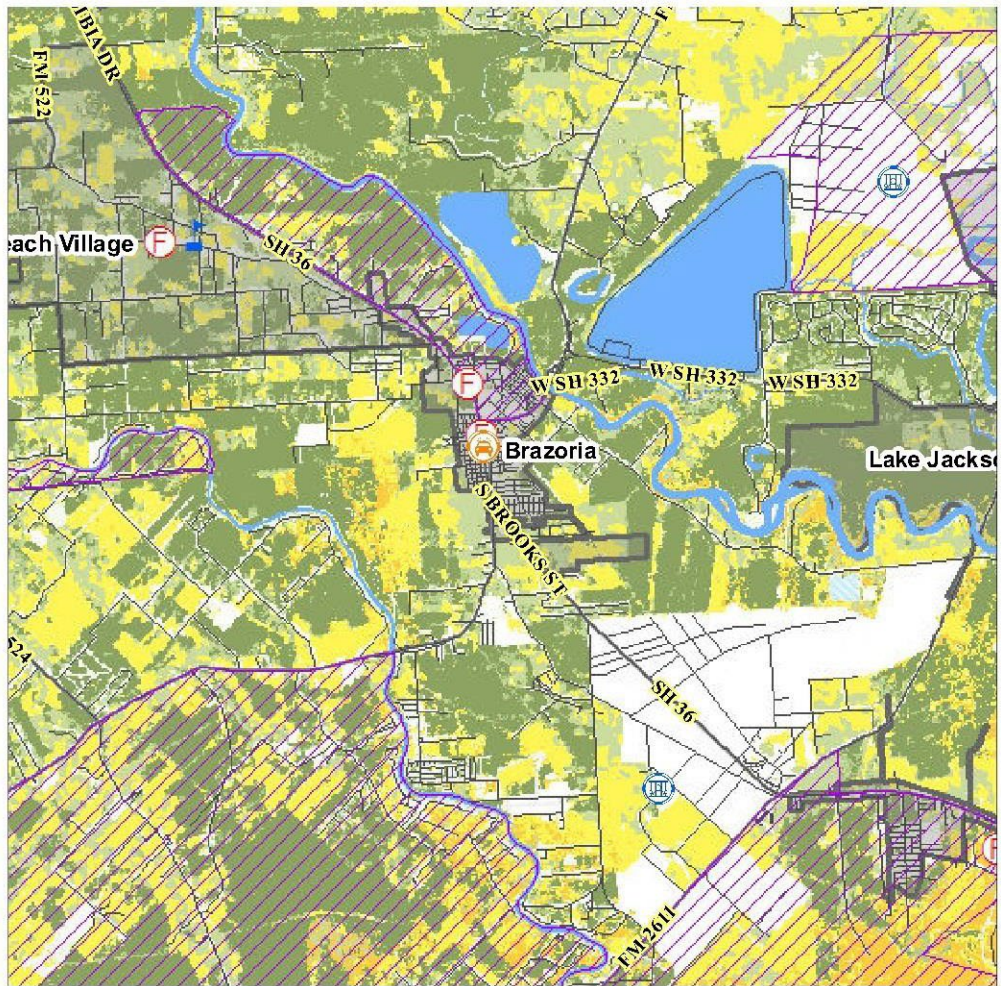
Angleton			
Planning Area (Sq. mi):	11.27	Occurrences since 2005:	14
Area Affected:	9 %	Annual Event Average:	1.2 events a year
Probability: Very Likely; 100 percent chance event will occur in a year			
Extent: The largest wildfire in the past 12 years has been a 6-acre fire. The jurisdiction can expect an 8 to 10-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 803 residential structures at risk • 30 percent of population are individuals 18 years and younger (5,793 children) • 13 percent of population are individuals 65 and older (2,540 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 43 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			



Bailey's Prairie			
Planning Area (Sq. mi):	7.7	Occurrences since 2005:	1
Area Affected:	22 %	Annual Event Average:	.08 events a year
Probability: Unlikely; 8.3 percent chance to occur within a year			
Extent: The largest wildfire in the past 12 years has been a 2-acre fire. The jurisdiction can expect a 4 to 6-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 170 residential structures at risk • 26 percent of population are individuals 18 years and younger (215 children) • 14 percent of population are individuals 65 and older (114 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 40 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			



Bonney			
Planning Area (Sq. mi):	1.66	Occurrences since 2005:	5
Area Affected:	18 %	Annual Event Average:	.42
Probability: Likely; 41 percent chance to occur within a year			
Extent: The largest wildfire in the past 12 years has been a 10-acre fire. The jurisdiction can expect a 12 to 14-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 22 residential structures at risk • 35 percent of population are individuals 18 years and younger (104 children) • 3 percent of population are individuals 65 and older (8 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 42 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			



Legend

- College Universities
- Correctional Facilities
- Airport
- Police Stations
- Hospitals
- EMS
- Fire Stations
- Schools
- ▨ Vulnerable Population
- Roads
- ▭ County Boundary
- ▭ Cities

Characteristic Fire Intensity Scale

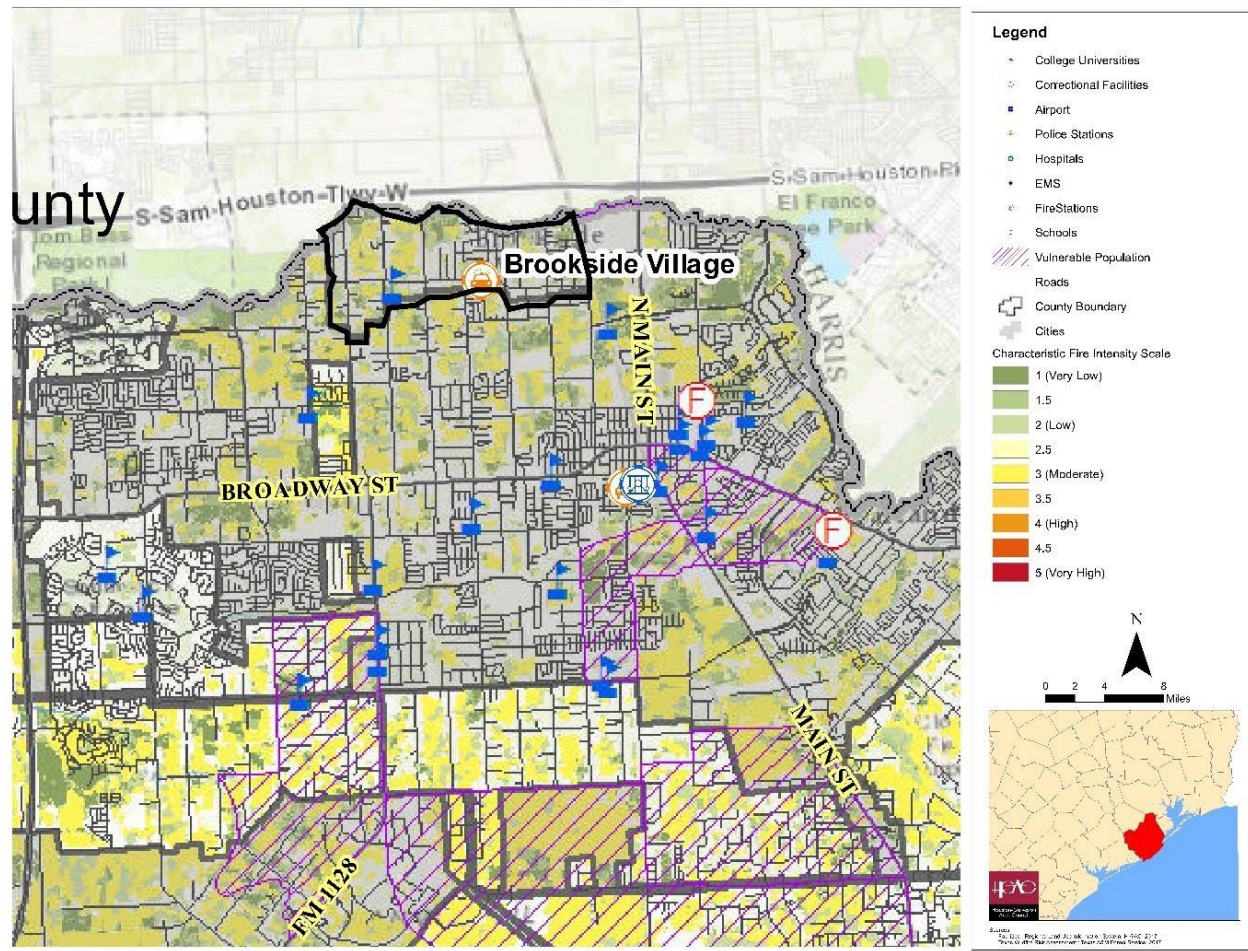
- 1 (Very Low)
- 1.5
- 2 (Low)
- 2.5
- 3 (Moderate)
- 3.5
- 4 (High)
- 4.5
- 5 (Very High)

0 2 4 8 Miles

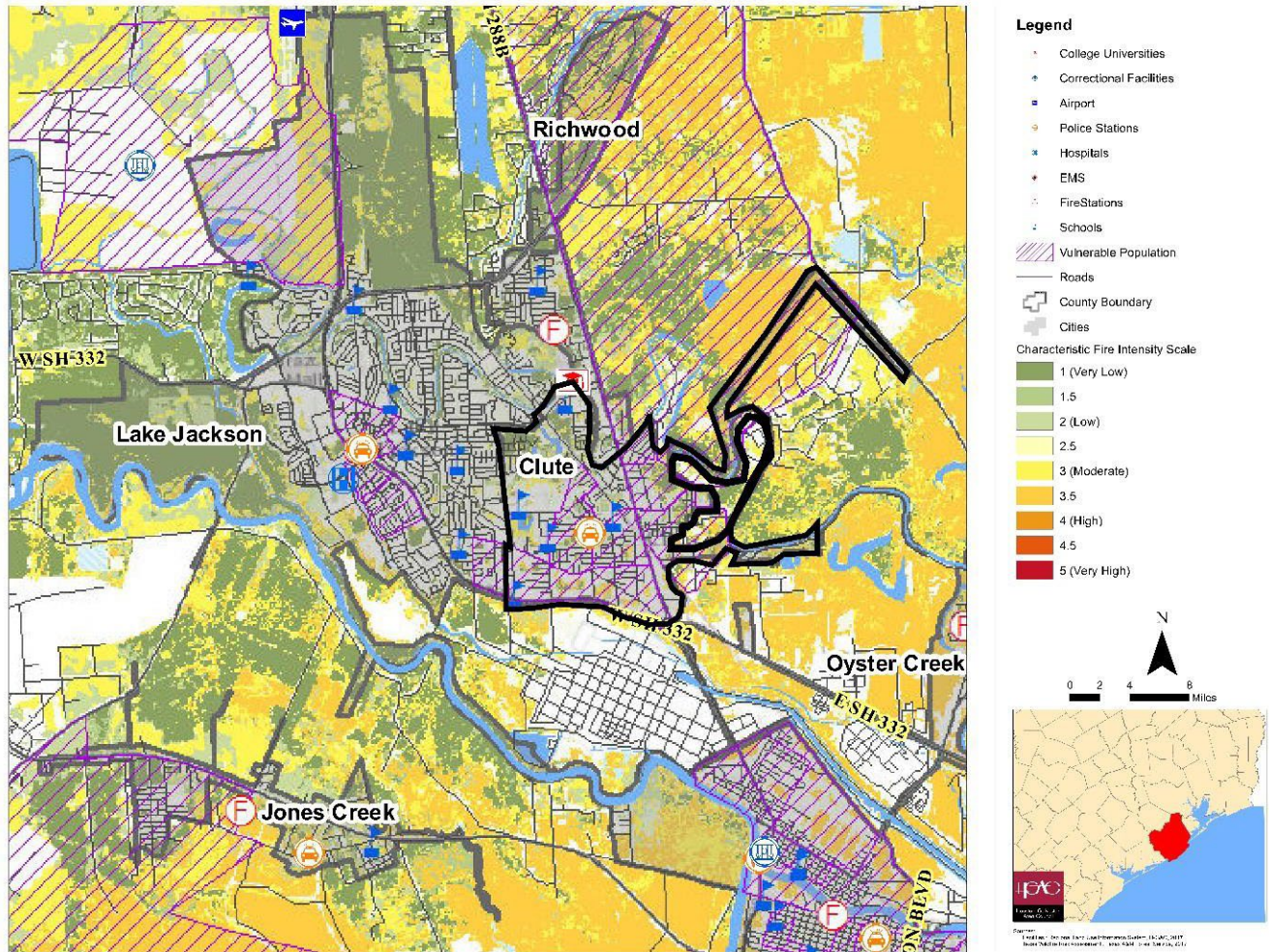
IPC
Texas 6.5.17

Source: The map data is derived from the Texas Department of Transportation (TxDOT) and the Texas State Geospatial Information Center (TSGIC).

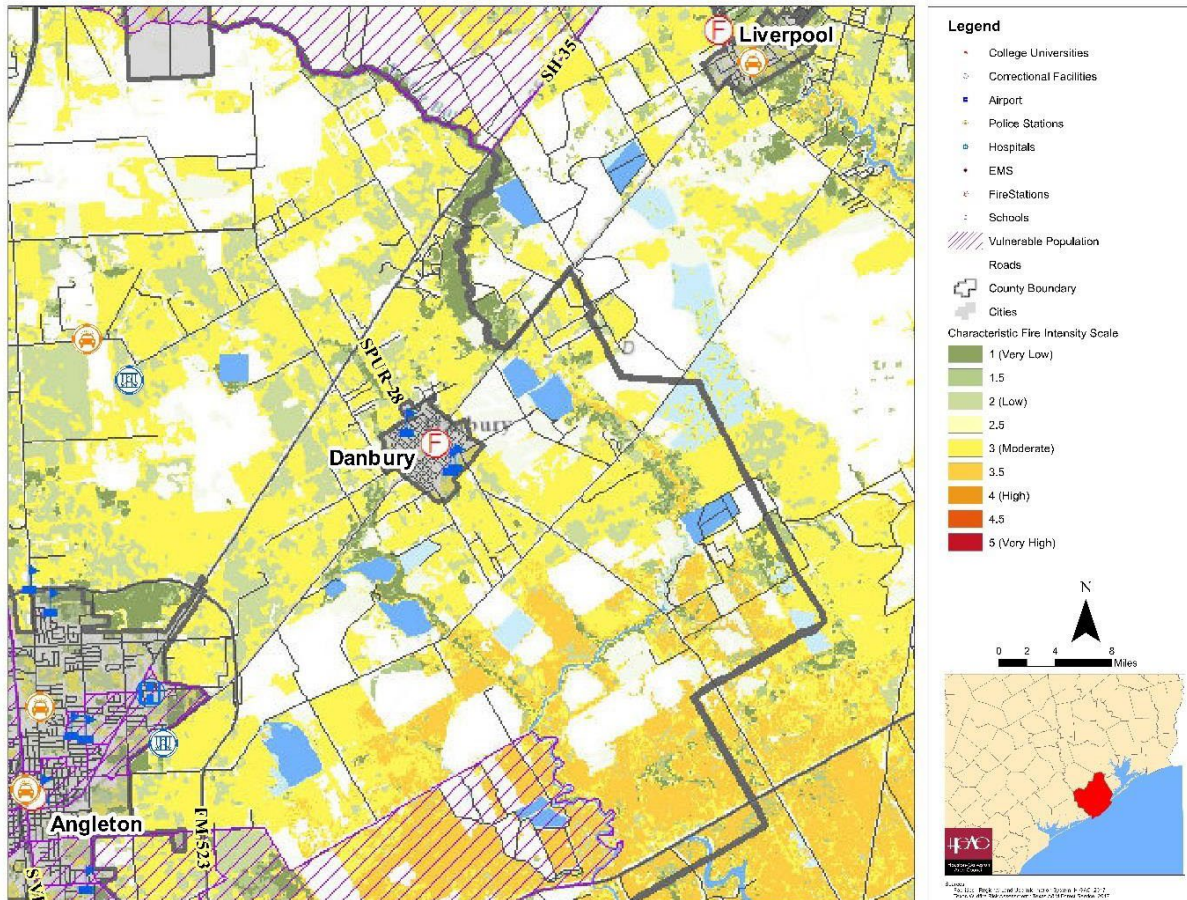
Brazoria			
Planning Area (Sq. mi):	2.6	Occurrences since 2005:	2
Area Affected:	5 %	Annual Event Average:	.17
Probability: Unlikely; 17 percent chance to occur within a year			
Extent: The largest wildfire in the past 12 years has been a 2-acre fire. The jurisdiction can expect a 4 to 6-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 282 residential structures at risk • 28 percent of population are individuals 18 years and younger (872 children) • 14 percent of population are individuals 65 and older (429 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 42 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			



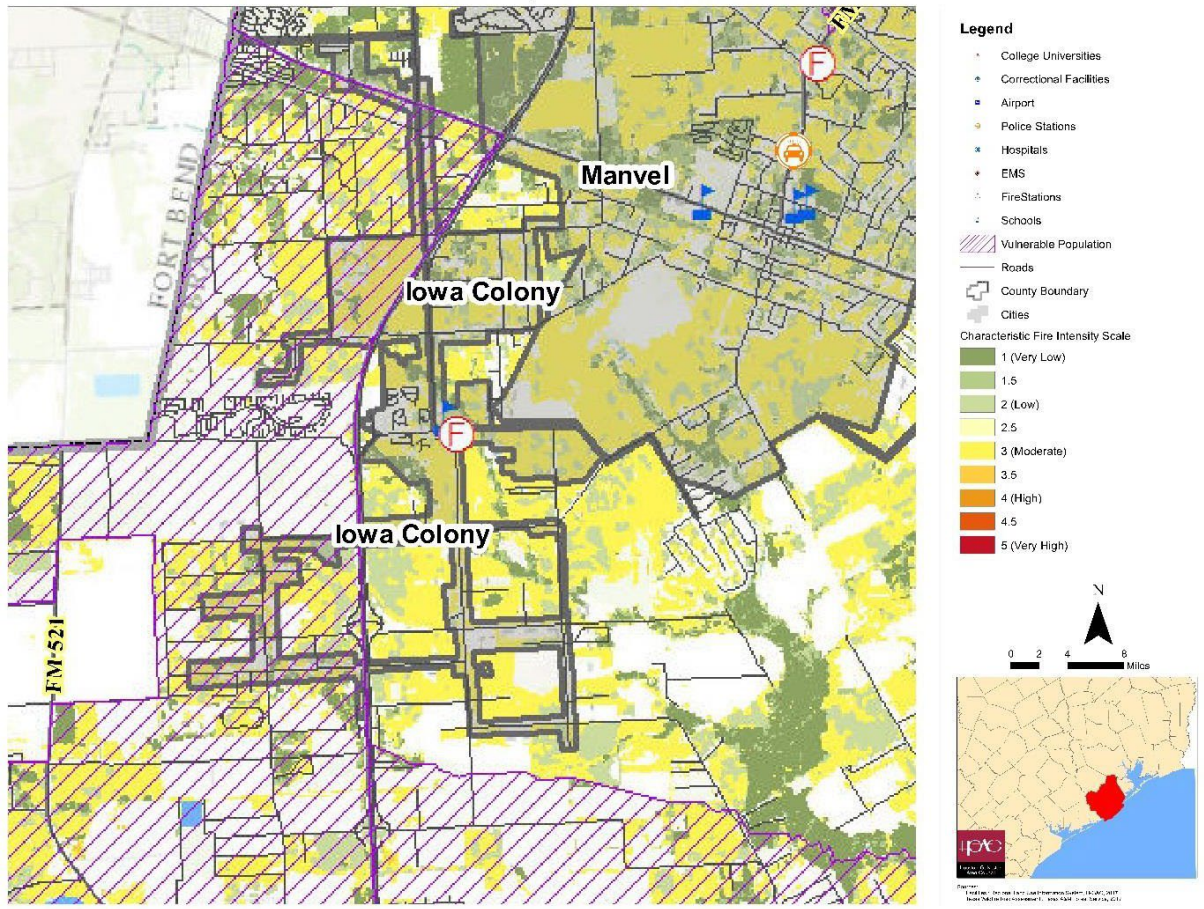
Brookside Village			
Planning Area (Sq. mi):	2.085	Occurrences since 2000:	0
Area Affected:	7 %	Annual Event Average:	0
Probability: Although the jurisdiction has no recorded events, the jurisdiction is near Manvel perhaps the jurisdiction has a similar likelihood that the event will occur. Manvel’s probability is: Unlikely; 5.83 percent chance event will occur in each year.			
Extent: Similarly, Manvel’s extent is: The largest wildfire in the past 12 years has been a 10-acre fire. The jurisdiction can expect a 12 to 14-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 122 residential structures at risk • 25 percent of population are individuals 18 years and younger (419 children) • 15 percent of population are individuals 65 and older (259 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 40 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			



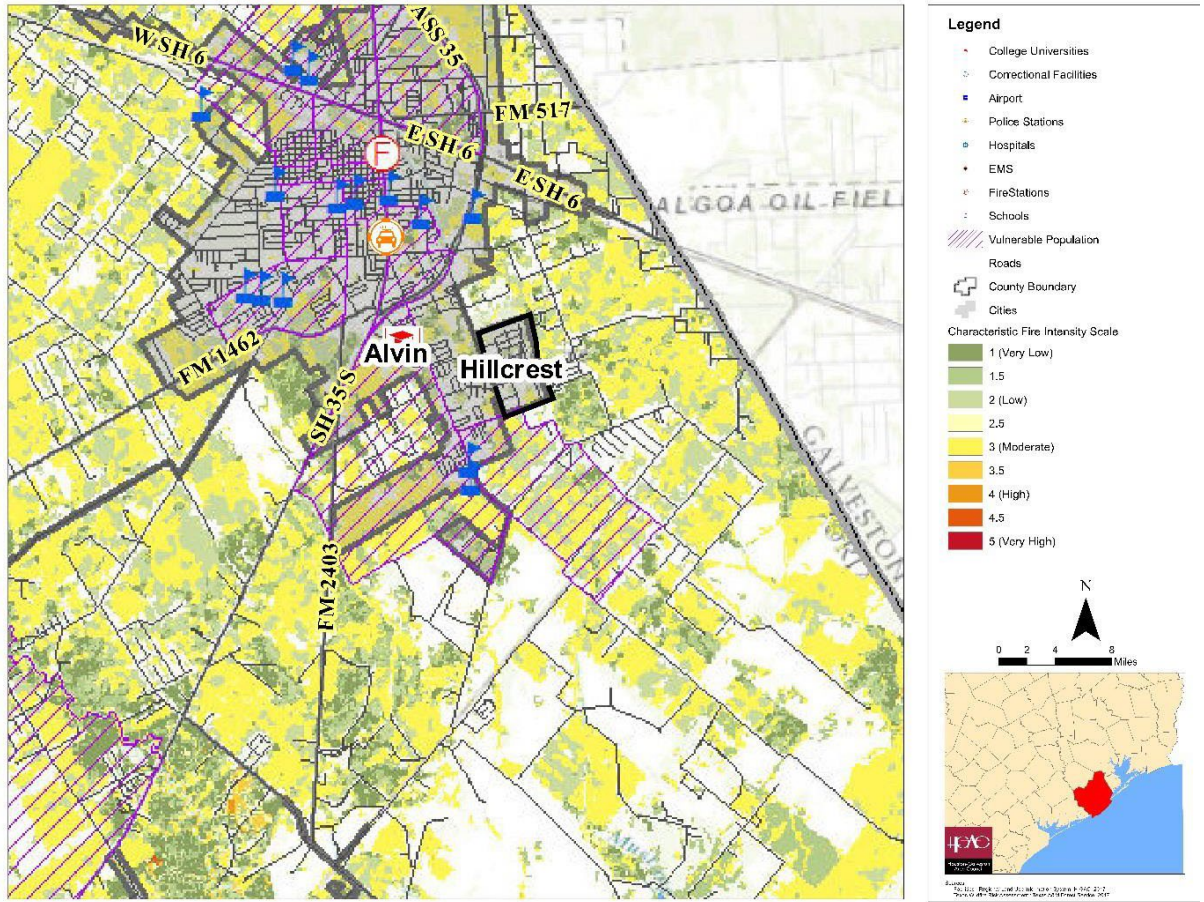
Clute			
Planning Area (Sq. mi):	5.6	Occurrences since 2000:	3
Area Affected:	9%	Annual Event Average:	.25
Probability: Likely; 25 percent chance to occur within a year			
Extent: The largest wildfire in the past 12 years has been a 1-acre fire. The jurisdiction can expect a 2 to 4-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 775 residential structures at risk • 35 percent of population are individuals 18 years and younger (104 children) • 3 percent of population are individuals 65 and older (8 older individuals) 			
Identified Impacts			
<ul style="list-style-type: none"> • 38 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			



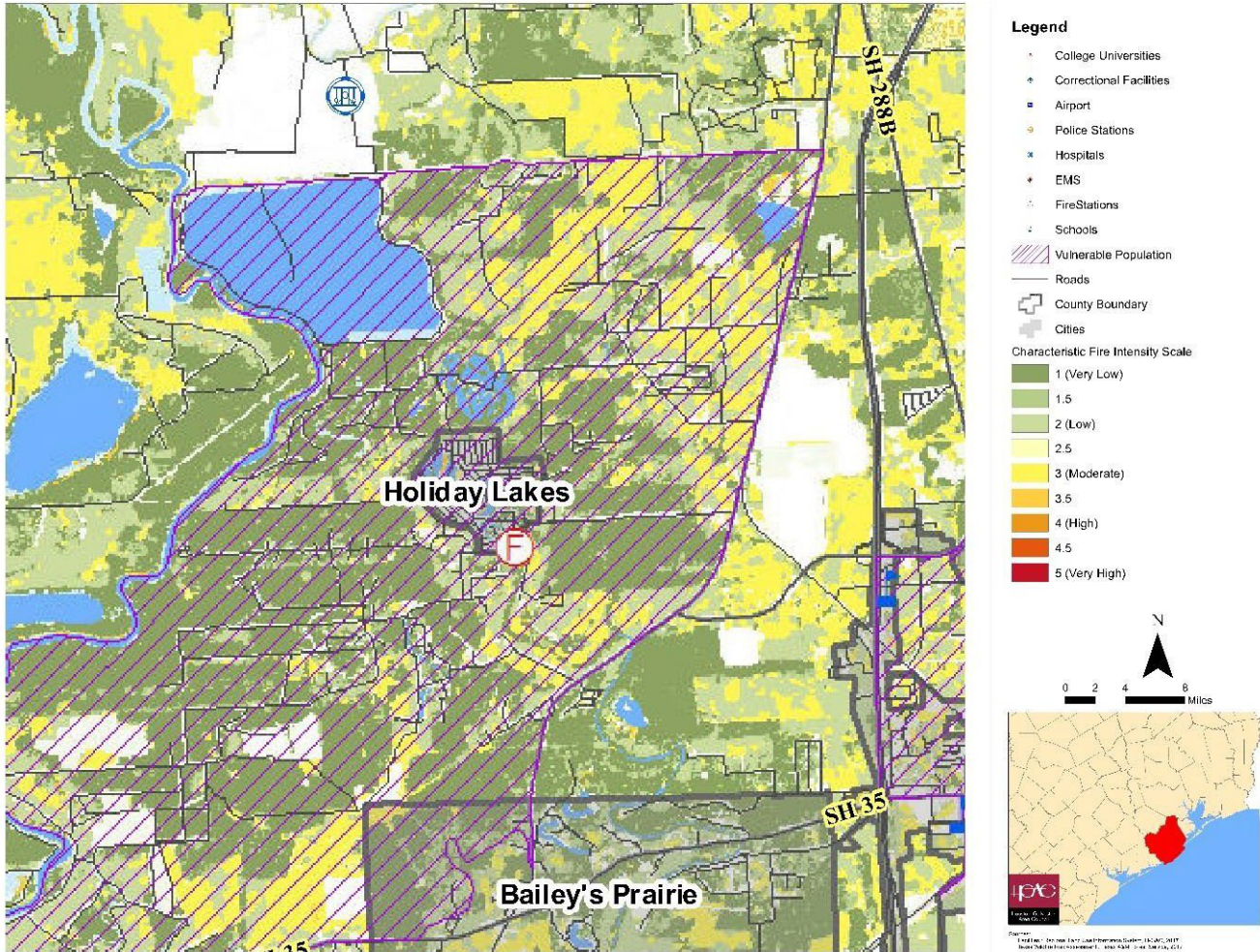
Danbury and Danbury ISD			
Planning Area (Sq. mi):	1.0	Occurrences since 2005:	0
Area Affected:	40%	Annual Event Average:	0
Probability: Although the jurisdiction has no recorded events, the jurisdiction is near Angleton. Perhaps Danbury has a similar likelihood that the event will occur. Angleton’s probability is: Highly Likely; 100 percent chance event will occur in each year.			
Extent: Similarly, Angleton’s extent is: The largest wildfire in the past 12 years has been a 6-acre fire. The jurisdiction can expect an 8 to 10-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 92 residential structures at risk • 28 percent of population are individuals 18 years and younger (414 children) • 8 percent of population are individuals 65 and older (120 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 36 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			



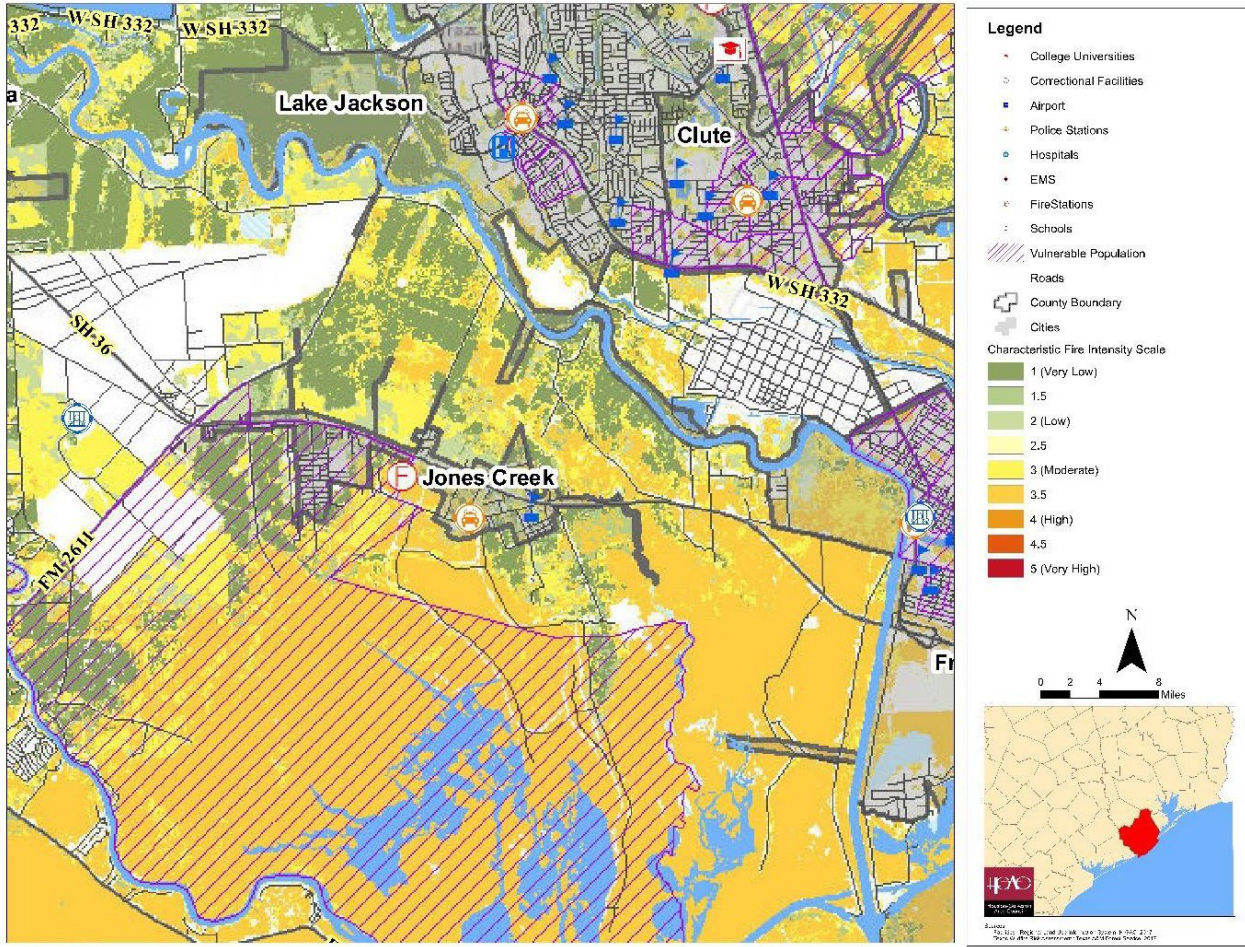
Iowa Colony			
Planning Area (Sq. mi):	7.33	Occurrences since 2005:	5
Area Affected:	64 %	Annual Event Average:	.42
Probability: Likely; 42 percent chance to occur within a year			
Extent: The largest wildfire in the past 12 years has been a 2-acre fire. The jurisdiction can expect a 4 to 6-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 88 residential structures at risk • 21 percent of population are individuals 18 years and younger (104 children) • 14 percent of population are individuals 65 and older (185 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 42 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			



Hillcrest Village			
Planning Area (Sq. mi):	0.4	Occurrences since 2005:	0
Area Affected:	8 %	Annual Event Average:	0
Probability: Although the jurisdiction has no recorded events, the jurisdiction is near Alvin. Perhaps Hillcrest Village has a similar likelihood that the event will occur. Alvin’s probability is: Likely; 75 percent chance event will occur within a year.			
Extent: Similarly, Alvin’s extent is: The largest wildfire in the past 12 years has been a 5-acre fire. The jurisdiction can expect a 6 to 8-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 53 residential structures at risk • 16 percent of population are individuals 18 years and younger (129 children) • 39 percent of population are individuals 65 and older (325 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 42 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			



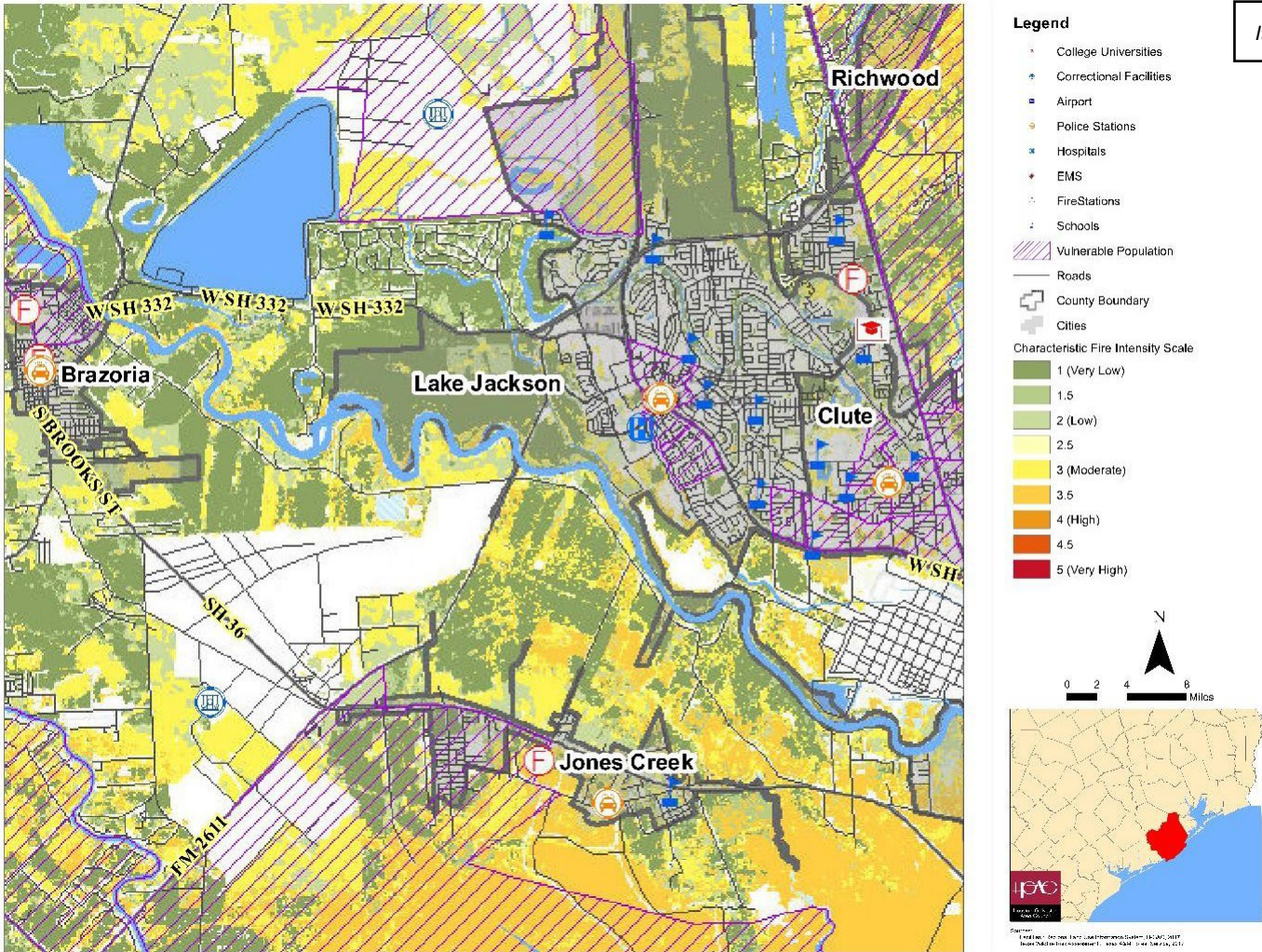
Holiday Lakes			
Planning Area (Sq. mi):	1	Occurrences since 2005:	1
Area Affected:	3 %	Annual Event Average:	.08
Probability: Unlikely; 8.3 percent chance to occur within a year			
Extent: The largest wildfire in the past 12 years has been a 1-acre fire. The jurisdiction can expect a 2 to 4-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 84 residential structures at risk • 39 percent of population are individuals 18 years and younger (401 children) • 7 percent of population are individuals 65 and older (71 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 46 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			



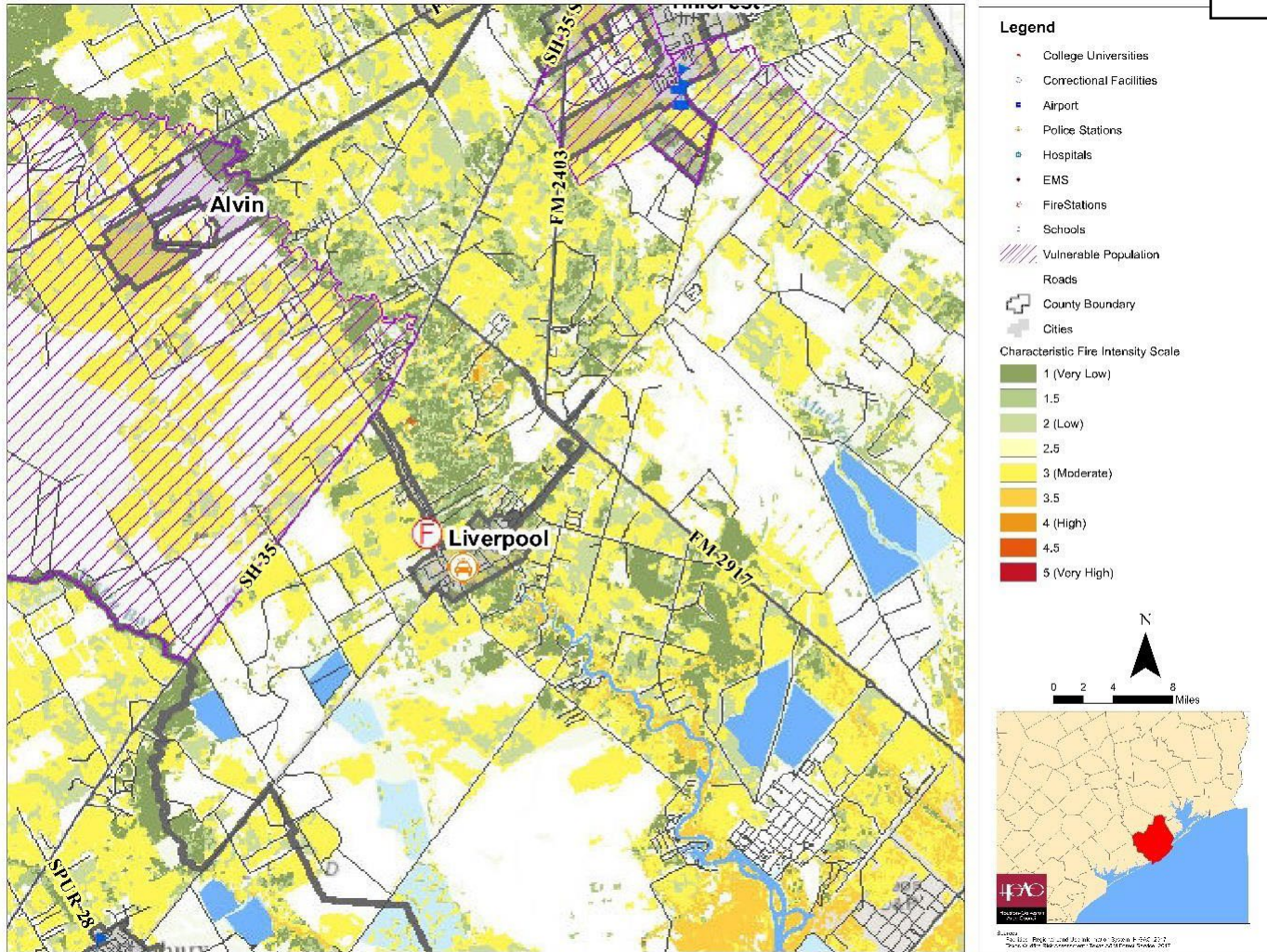
Jones Creek			
Planning Area (Sq. mi):	2.6	Occurrences since 2005:	1
Area Affected:	10 %	Annual Event Average:	.08
Probability: Unlikely; 8.3 percent chance to occur within a year			
Extent: The largest wildfire in the past 12 years has been a 100-acre fire. The jurisdiction can expect a 120 to 140-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 130 residential structures at risk • 28 percent of population are individuals 18 years and younger (604 children) • 14 percent of population are individuals 65 and older (307 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 42 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			

Wildfire Risk Assessment: Lake Jackson

Item 9.



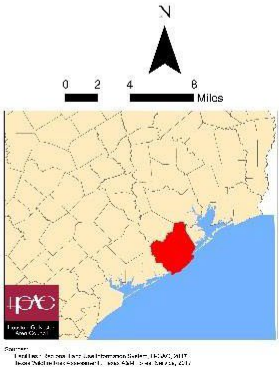
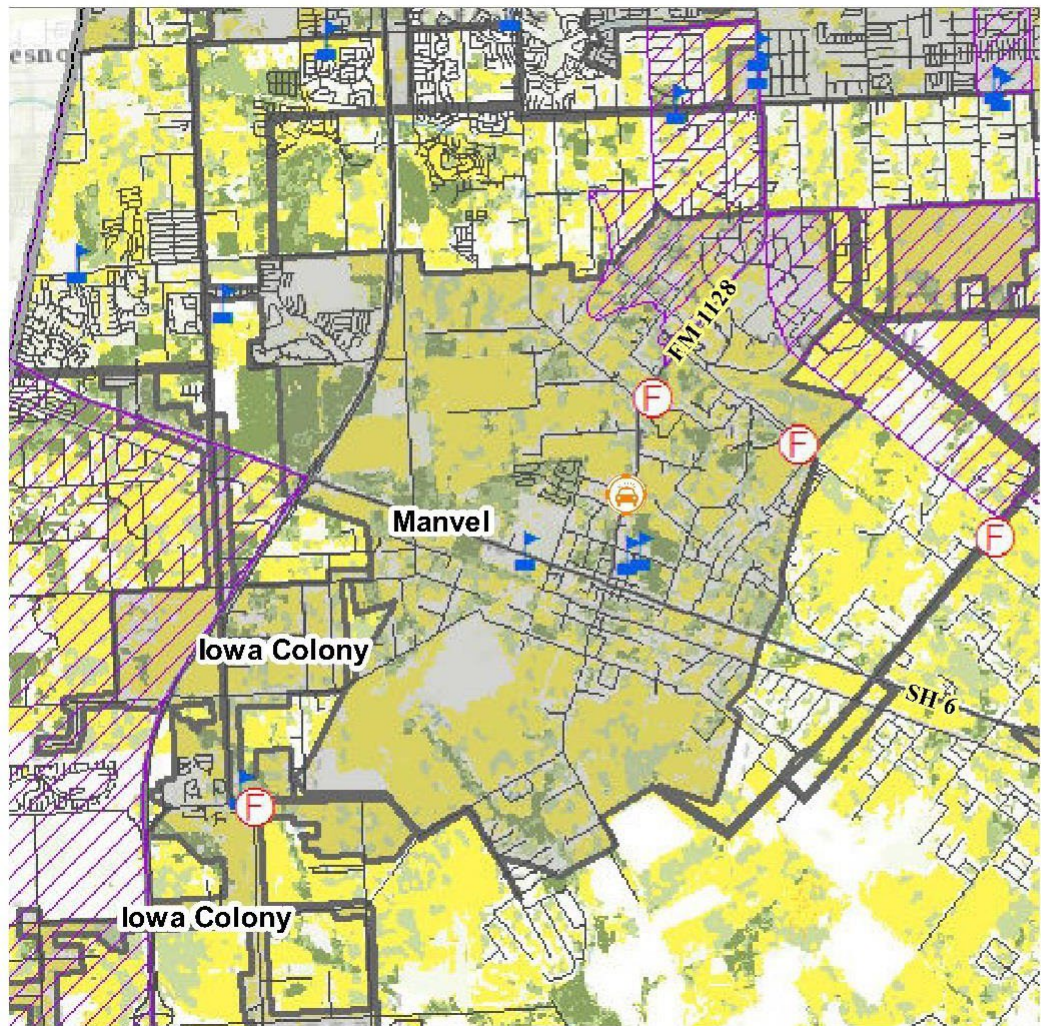
Lake Jackson			
Planning Area (Sq. mi):	20.9	Occurrences since 2000:	0
Area Affected:	6%	Annual Event Average:	0
<p>Probability: Although the jurisdiction has no recorded events, the jurisdiction is near Jones Creek. Perhaps Lake Jackson has a similar likelihood that the event will occur. Jones Creek’s probability is: Unlikely; 8.3 percent chance to occur within a year</p>			
<p>Extent: Similarly, Jones Creek’s extent is: The largest wildfire in the past 12 years has been a 100-acre fire. The jurisdiction can expect a 120 to 140-acre fire.</p>			
<p>Identified Vulnerabilities:</p> <ul style="list-style-type: none"> • 11,729 residential structures • 35 percent of population are individuals 18 years and younger (7,372 children) • 14 percent of population are individuals 65 and older (3,700 older individuals) 			
<p>Identified Impacts:</p> <ul style="list-style-type: none"> • 49 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			



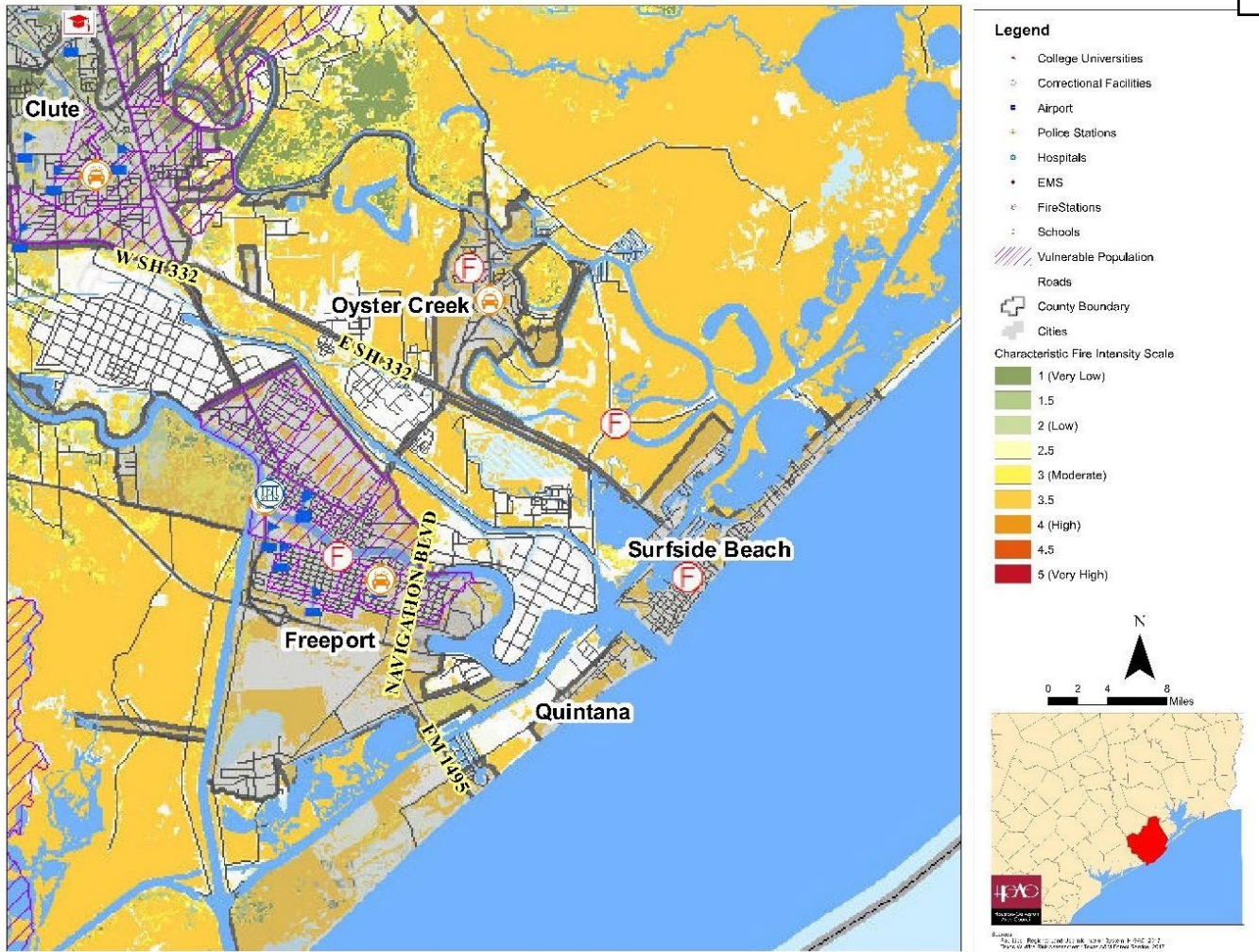
Liverpool			
Planning Area (Sq. mi):	1.1	Occurrences since 2000:	0
Area Affected:	19 %	Annual Event Average:	0
Probability: Although the jurisdiction has no recorded events, the jurisdiction is near Alvin. Perhaps Liverpool has a similar likelihood that the event will occur. Alvin’s probability is: Likely; 75 percent chance event will occur in a given year.			
Extent: Similarly, Alvin’s extent is: The largest wildfire in the past 12 years has been a 5-acre fire. The jurisdiction can expect a 6 to 8-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 37 residential structures at risk • 28 percent of population are individuals 18 years and younger (121 children) • 14 percent of population are individuals 65 and older (61 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 42 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			

Wildfire Risk Assessment: Manvel

Item 9.



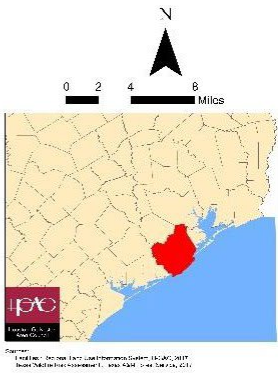
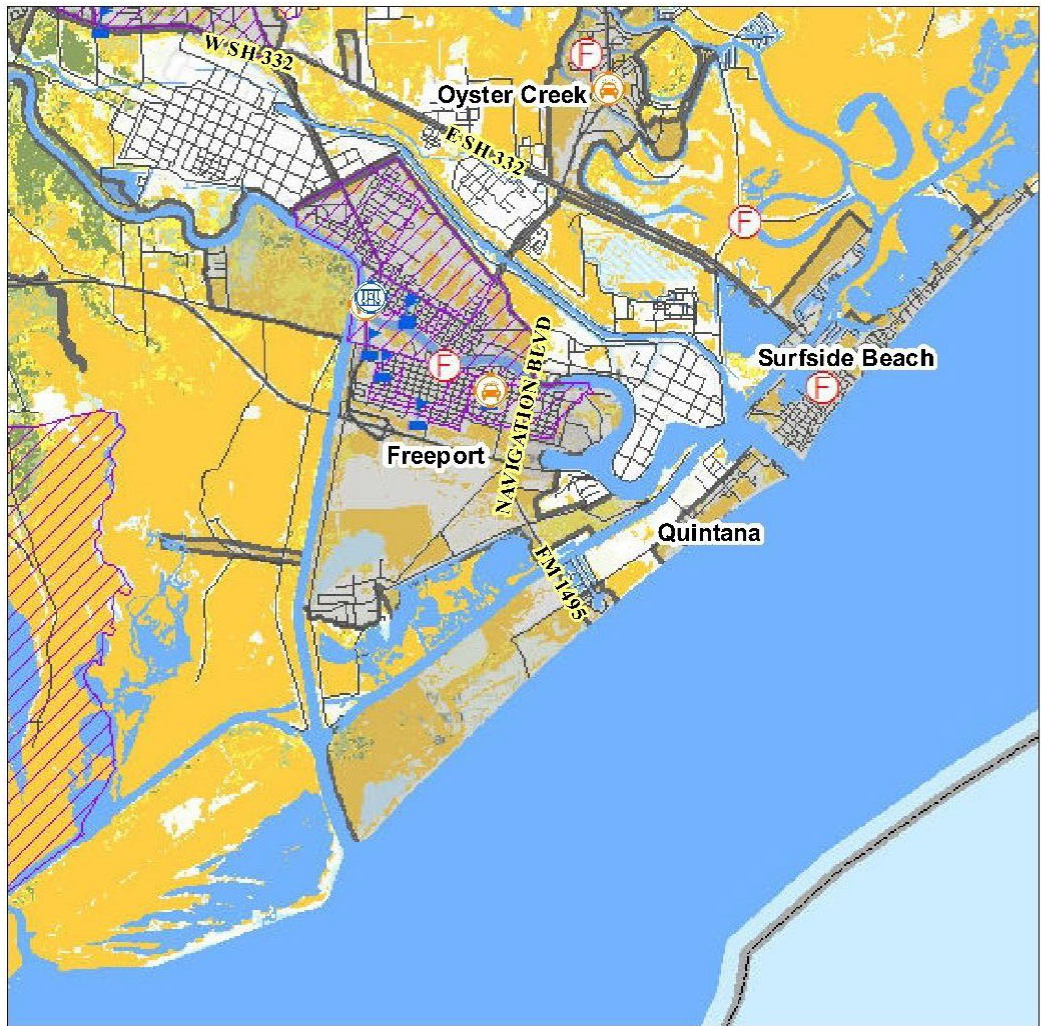
Manvel			
Planning Area (Sq. mi):	23.6	Occurrences since 2005:	70
Area Affected:	41 %	Annual Event Average:	5.83
Probability: Unlikely; 5.83 percent chance to occur within a year			
Extent: The largest wildfire in the past 12 years has been a 10-acre fire. The jurisdiction can expect a 12 to 14-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 443 residential structures at risk • 31 percent of population are individuals 18 years and younger (2,265 children) • 10 percent of population are individuals 65 and older (740 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 41 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			



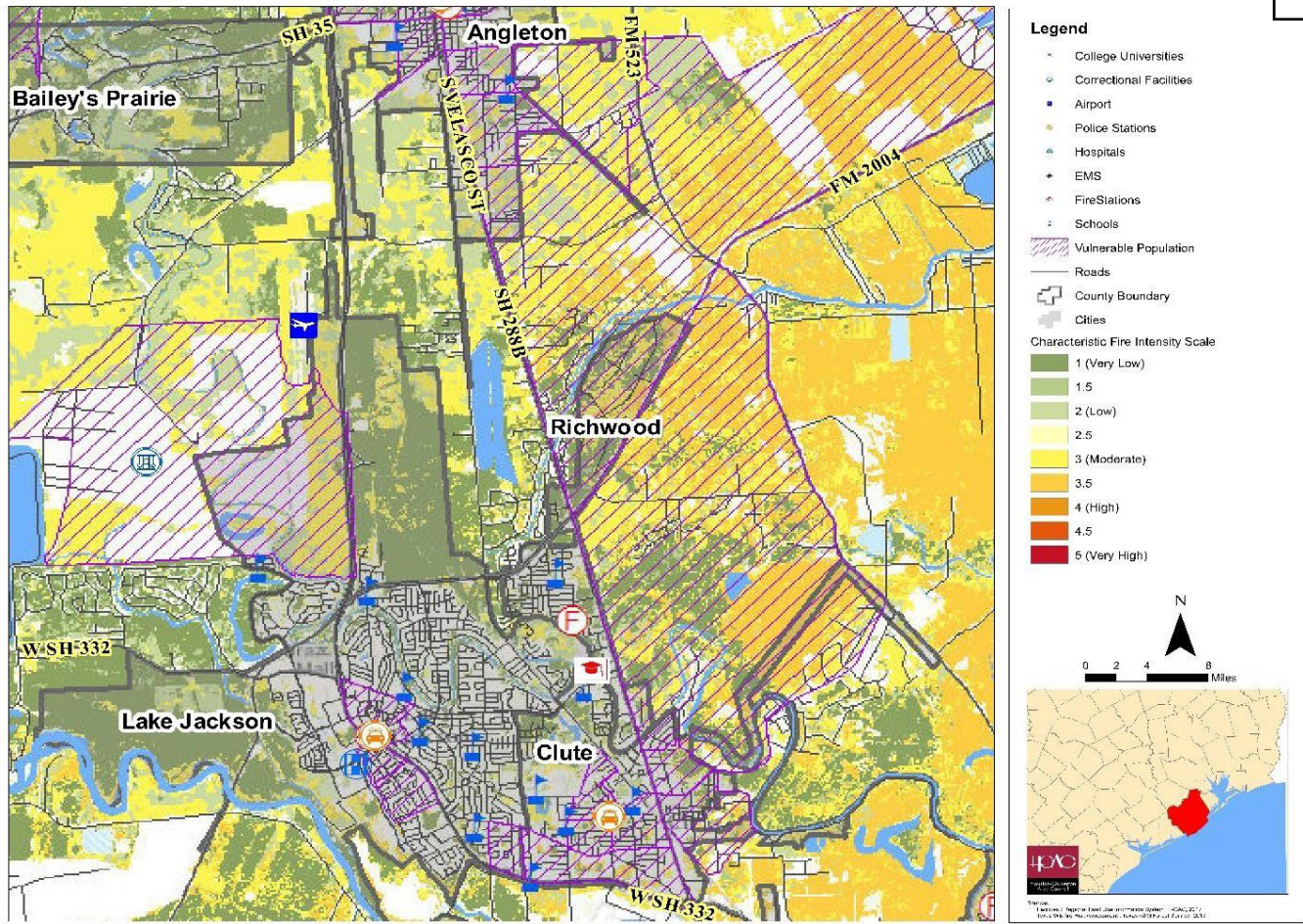
Oyster Creek			
Planning Area (Sq. mi):	2	Occurrences since 2005:	0
Area Affected:	78%	Annual Event Average:	0
Probability: Although the jurisdiction has no recorded events, the jurisdiction is near Freeport. Oyster Creek has a similar likelihood that the event will occur. Freeport’s probability is: Highly Likely; 100 percent chance to occur within a year			
Extent: Similarly, Freeport’s extent is: The largest wildfire in the past 12 years has been a 10-acre fire. The jurisdiction can expect a 12 to 14-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 78 residential structures at risk • 35 percent of population are individuals 18 years and younger (439 children) • 14 percent of population are individuals 65 and older (307 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 49 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			

Wildfire Risk Assessment: Quintana

Item 9.



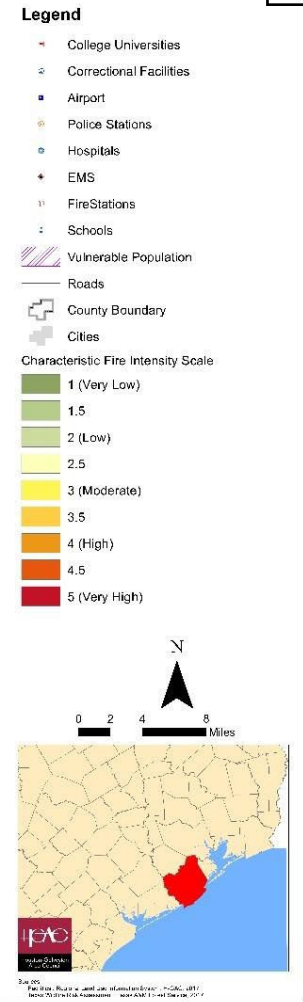
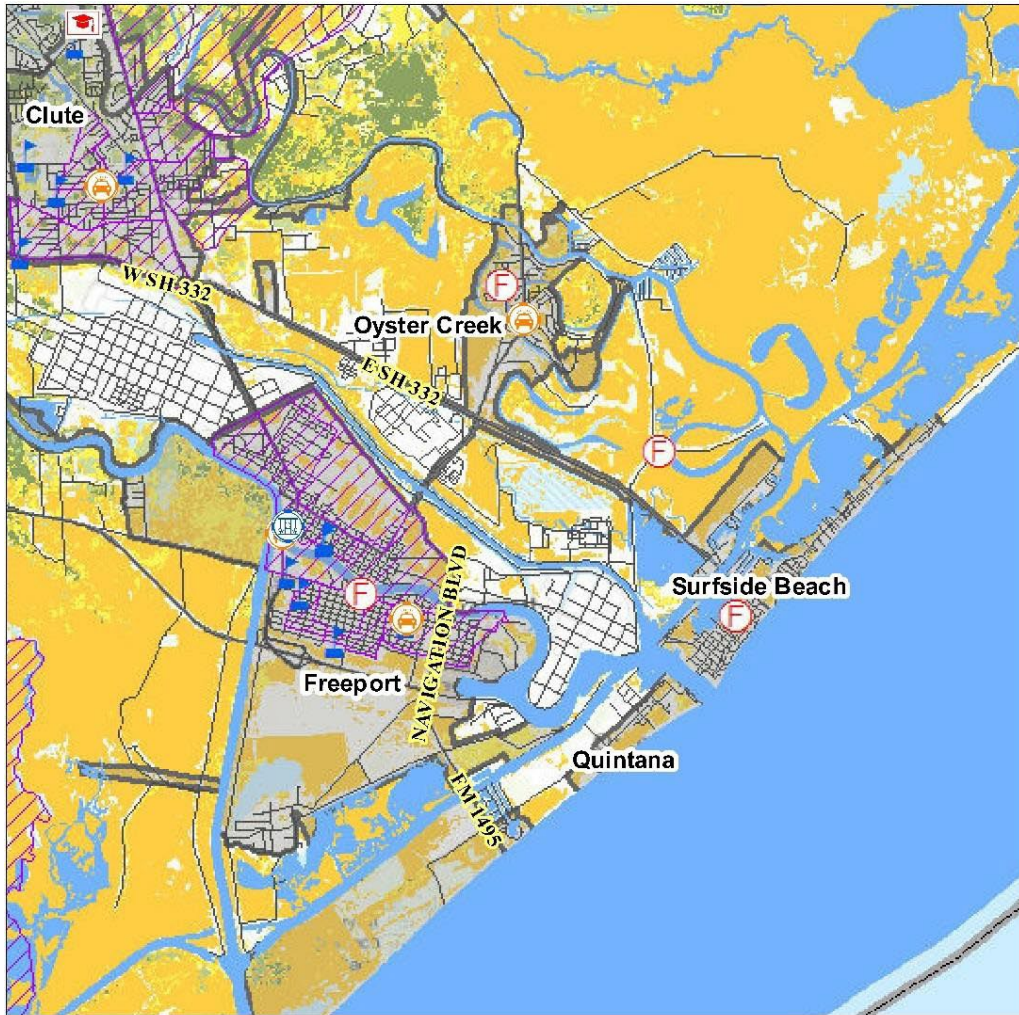
Quintana			
Planning Area (Sq. mi):	2	Occurrences since 2000:	0
Area Affected:	74%	Annual Event Average:	0
Probability: Although the jurisdiction has no recorded events, the jurisdiction is near Surfside Beach. Perhaps Quintana has a similar likelihood that the event will occur. Surfside Beach’s probability is: Unlikely; 8.3 percent chance to occur within a year.			
Extent: Similarly, Surfside Beach’s extent is: The largest wildfire in the past 12 years has been a 1-acre fire. The jurisdiction can expect a 2 to 4-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 5 residential structures at risk • 16 percent of population are individuals 18 years and younger (6 children) • 3 percent of population are individuals 65 and older (1 older individual) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 19 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			



Richwood			
Planning Area (Sq. mi):	3.1	Occurrences since 2000:	0
Area Affected:	59 %	Annual Event Average:	0
<p>Probability: Although the jurisdiction has no recorded events, the jurisdiction is near Clute. Perhaps Richwood has a similar likelihood that the event will occur. Clute's probability is: Unlikely; 8.3 percent chance to occur within a year.</p>			
<p>Extent: Similarly, Clute's extent is: The largest wildfire in the past 12 years has been a 1-acre fire. The jurisdiction can expect a 2 to 4-acre fire.</p>			
<p>Identified Vulnerabilities:</p> <ul style="list-style-type: none"> • 246 residential structures at risk • 26 percent of population are individuals 18 years and younger (987 children) • 19 percent of population are individuals 65 and older (101older individuals) 			
<p>Identified Impacts:</p> <ul style="list-style-type: none"> • 45 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			

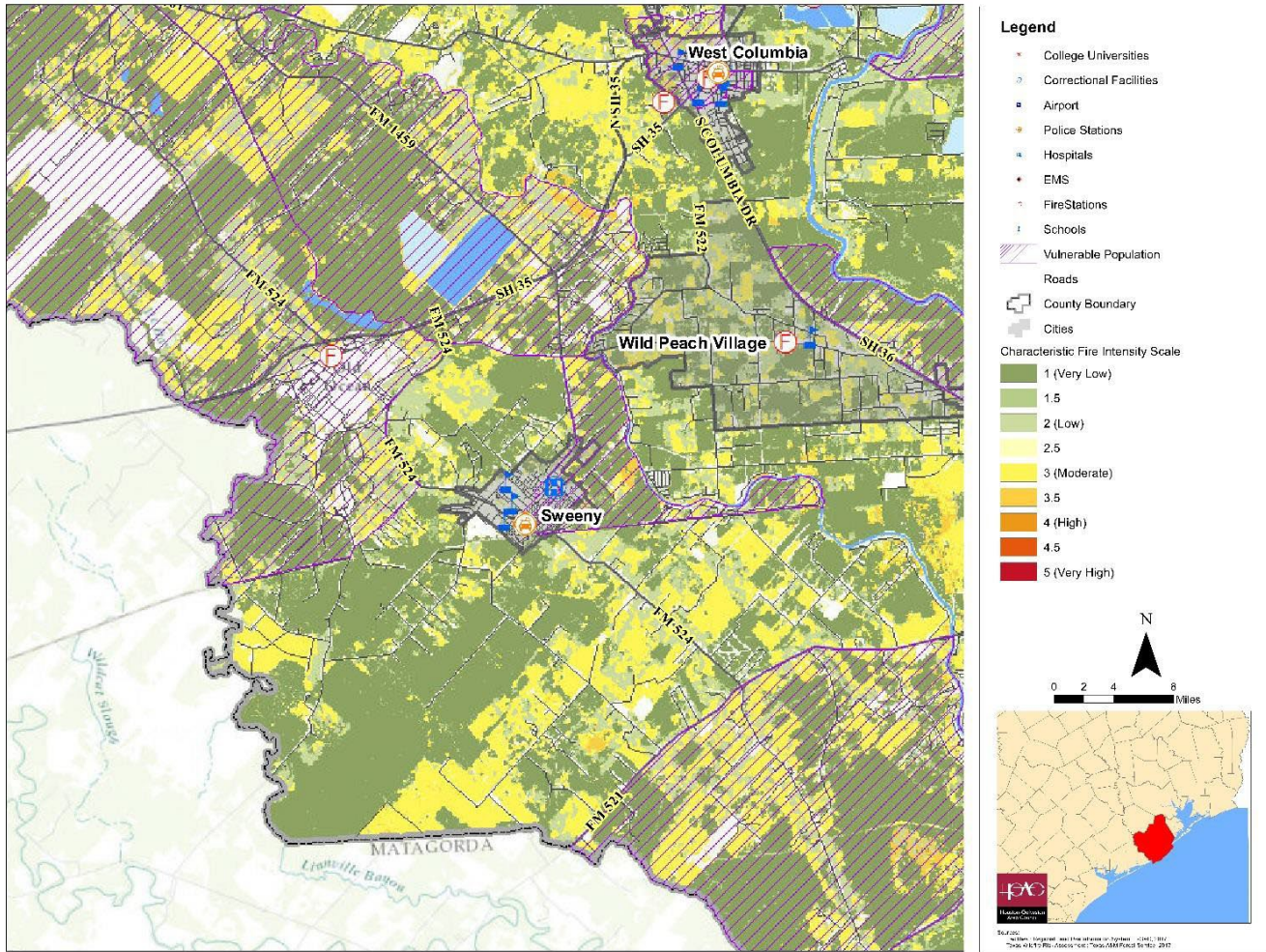
Wildfire Risk Assessment: Surfside Beach

Item 9.

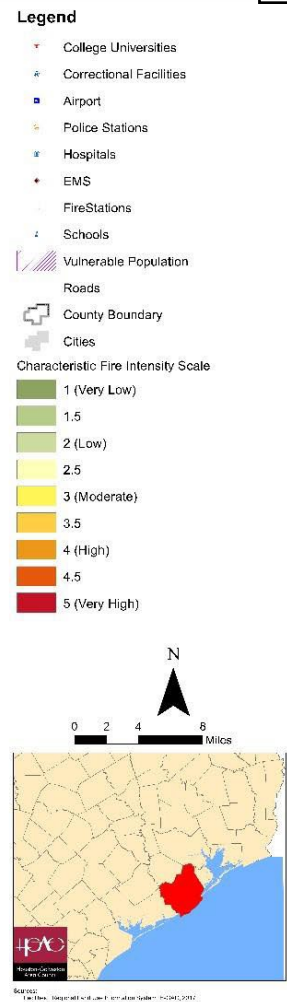
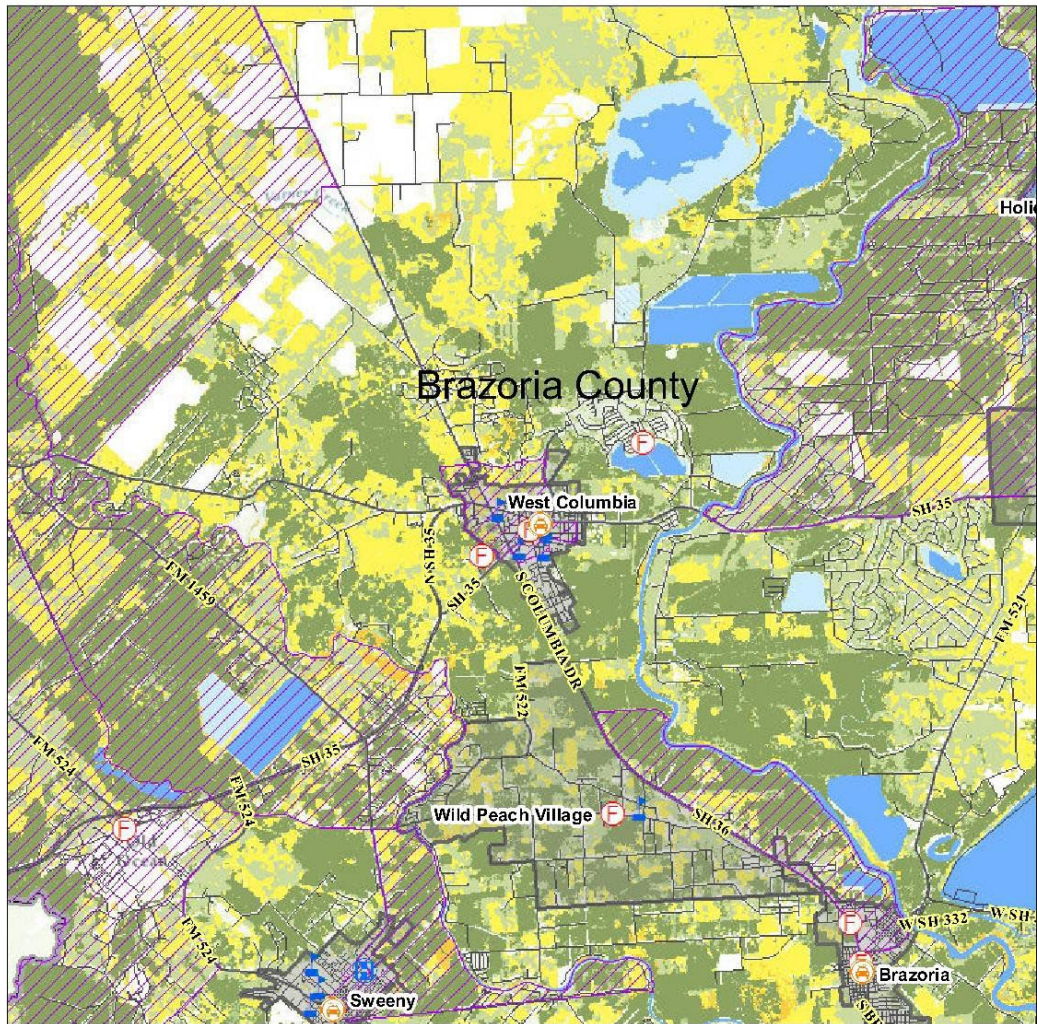


Surfside Beach			
Planning Area (Sq. mi):	2.2	Occurrences since 2005:	10
Area Affected:	60 %	Annual Event Average:	.83
Probability: Unlikely; 8.3 percent chance to occur within a year			
Extent: The largest wildfire in the past 12 years has been a 1-acre fire. The jurisdiction can expect a 2 to 4-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 205 residential structures at risk • 16 percent of population are individuals 18 years and younger (84 children) • 19 percent of population are individuals 65 and older (101) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 35 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			

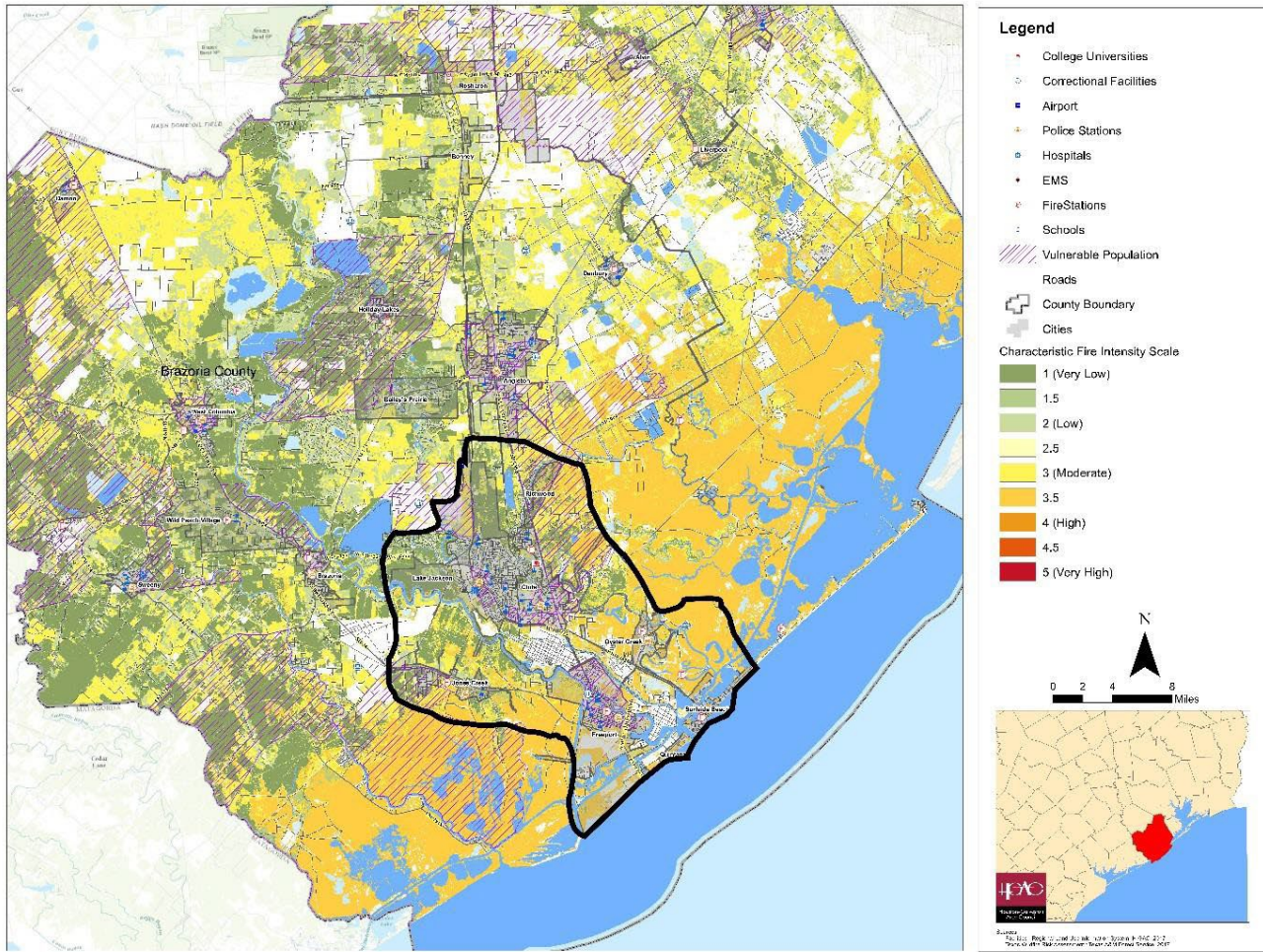
Wildfire Risk Assessment: Sweeny



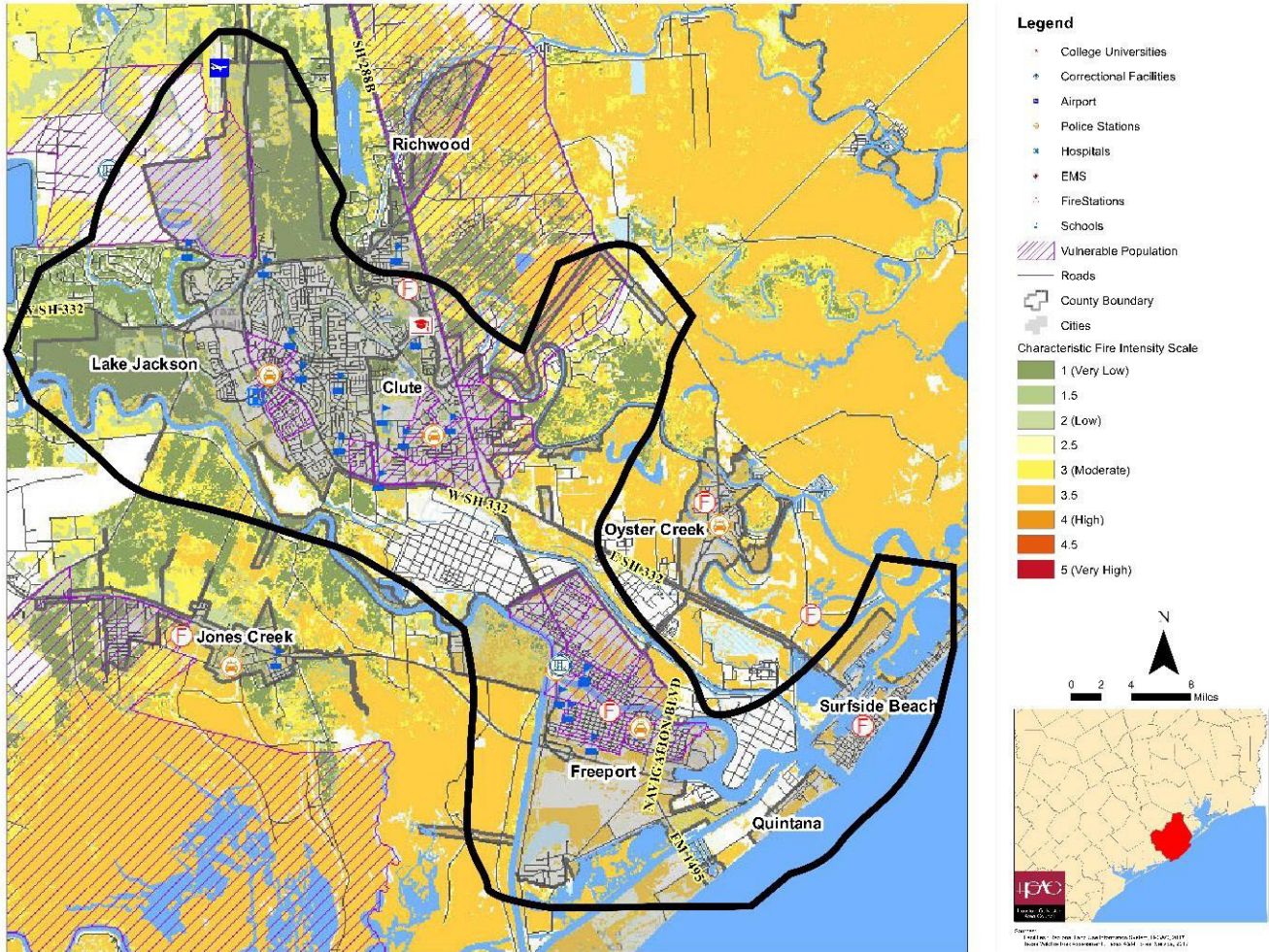
Sweeny and Sweeny ISD			
Planning Area (Sq. mi):	2	Occurrences since 2000:	0
Area Affected:	3 %	Annual Event Average:	0
Probability: Although the jurisdiction has no recorded events, the jurisdiction is near Brazoria. Sweeny has a similar likelihood that the event will occur. Brazoria’s probability is: Unlikely; 17 percent chance to occur within a year.			
Extent: Similarly, Brazoria’s extent is: The largest wildfire in the past 12 years has been a 2-acre fire. The jurisdiction can expect a 4 to 6-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 251 structures at risk • 28 percent of population are individuals 18 years and younger (1,058 children) • 18 percent of population are individuals 65 and older (686 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 46 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			



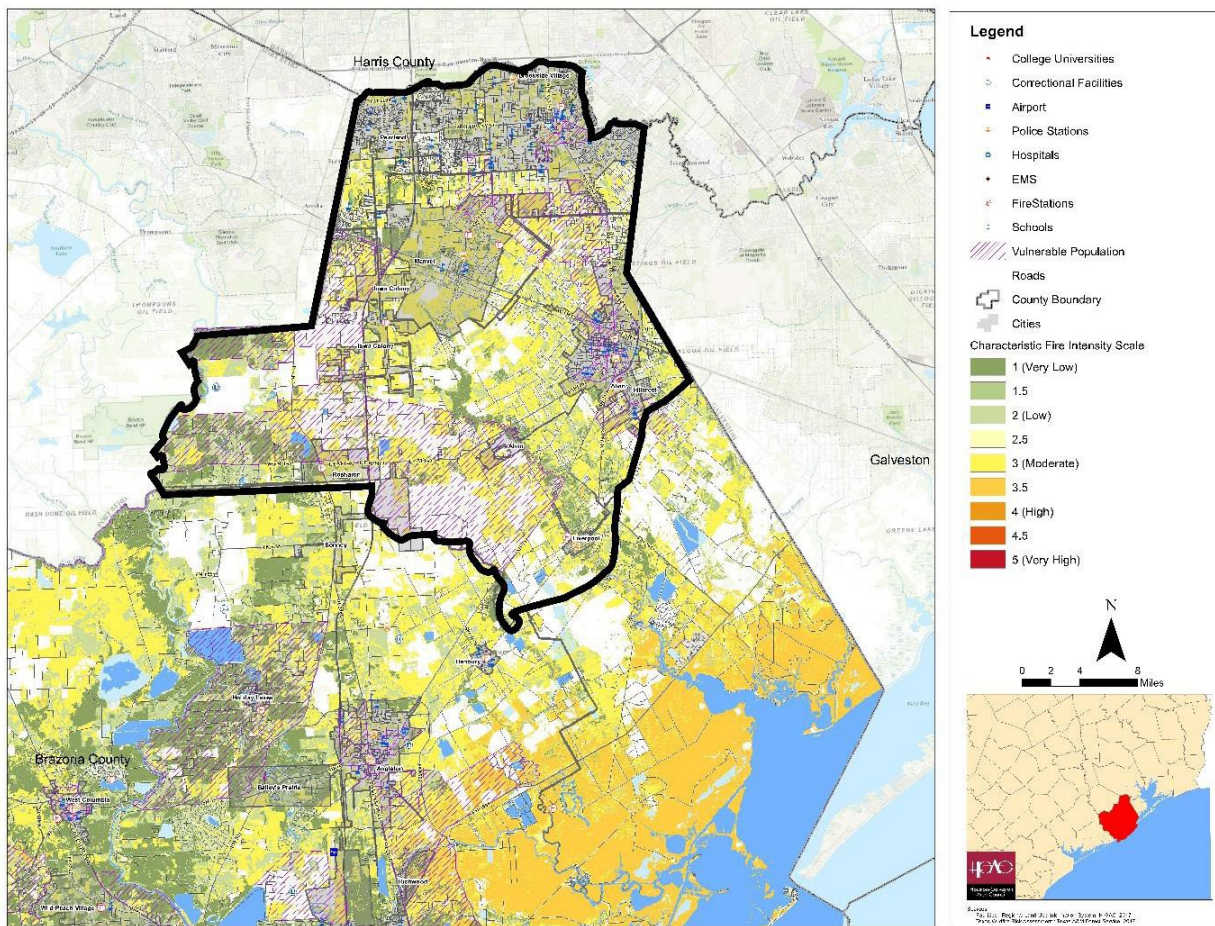
West Columbia			
Planning Area (Sq. mi):	2.58	Occurrences since 2000:	0
Area Affected:	8 %	Annual Event Average:	0
Probability: Although the jurisdiction has no recorded events, the jurisdiction is near Brazoria. West Columbia has a similar likelihood that the event will occur. Brazoria's probability is: Unlikely; 8.3 percent chance to occur within a year.			
Extent: Similarly, Brazoria's extent is: The largest wildfire in the past 12 years has been a 2-acre fire. The jurisdiction can expect a 4 to 6-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 246 residential structures at risk • 29 percent of population are individuals 18 years and younger (1,120 children) • 12 percent of population are individuals 65 and older (482 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 41 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			



Brazosport ISD			
Planning Area (Sq. mi):	200	Occurrences since 2000:	0
Area Affected:	46 %	Annual Event Average:	0
Probability: Although the jurisdiction has no recorded events, the jurisdiction is throughout Brazoria County. The ISD has a similar likelihood that the event will occur as unincorporated areas of the county. Brazoria County unincorporated area's probability is: Very Likely; 100 percent chance event will occur in a year.			
Extent: The ISD areas can expect a 75-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> 12,000 students 18 years and younger 19 schools- 10 elementary schools, 3 high schools, 5 middle schools, 1 alternative school 			
Identified Impacts:			
<ul style="list-style-type: none"> 100 percent of the total identified population may face serious illness or health conditions due to poor air quality If administration or schools need to close due to fire damage or poor air quality this may lead to a financial loss for families needing to take off work or find childcare for their children. Academic/ educational loss for children missing school and potentially falling behind in course work 			

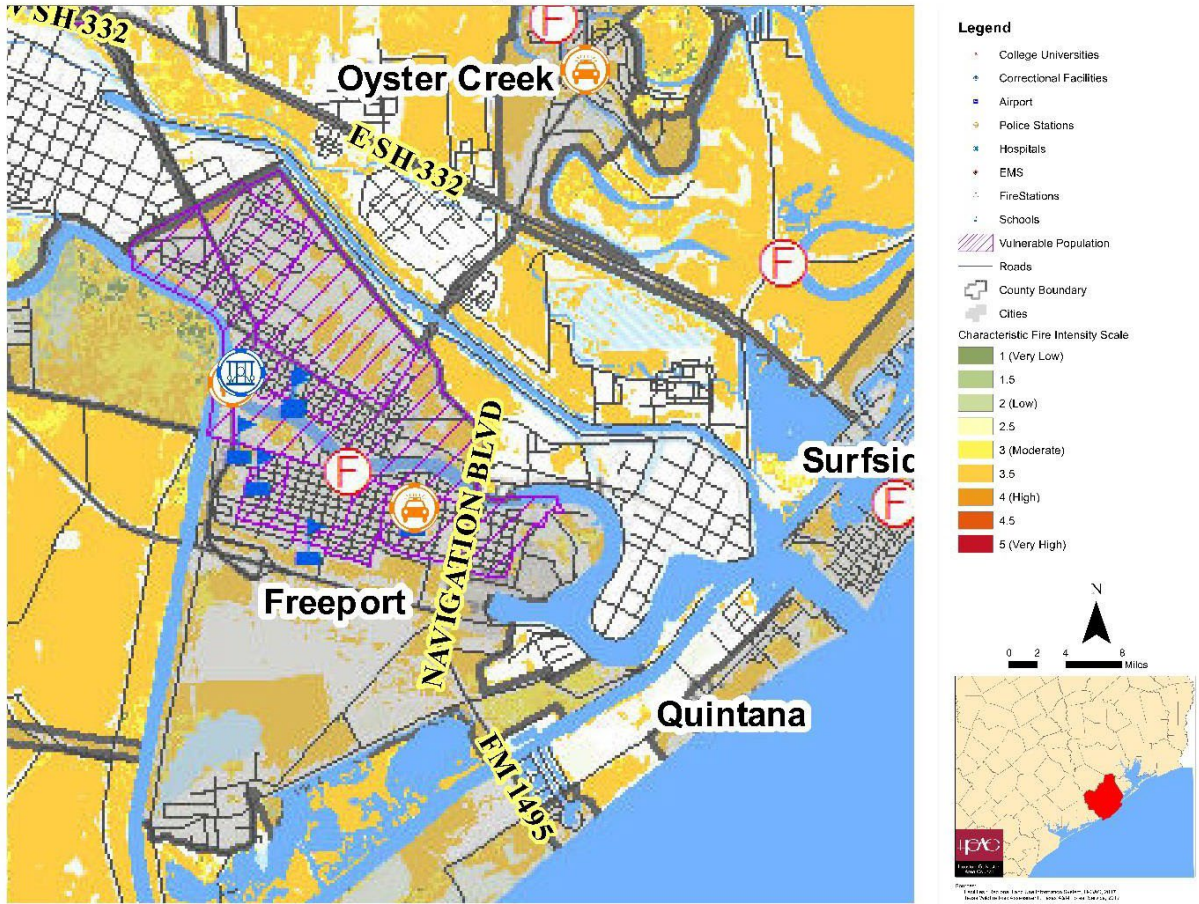


Velasco Drainage District			
Planning Area (Sq. mi):	236	Occurrences since 2000:	0
Area Affected:	37%	Annual Event Average:	0
Probability: Although the jurisdiction has no recorded events, the jurisdiction is throughout Brazoria County. Perhaps the District has a similar likelihood that the event will occur as unincorporated areas of the county. Brazoria County unincorporated area's probability is: Very Likely; 100 percent chance event will occur in a year.			
Extent: Similarly, Brazoria County unincorporated area's extent is: The largest wildfire in the past 12 years has been a 560-acre fire. The unincorporated areas can expect a 600-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Administrative building • 14 pump stations and levees 			
Identified Impacts:			
<ul style="list-style-type: none"> • If the district's infrastructure becomes damaged this may lead to a decrease in service or slower services, in extreme circumstances this may lead to a decrease in agriculture production • Financial cost of repairing administration building, pumps and levees damaged 			

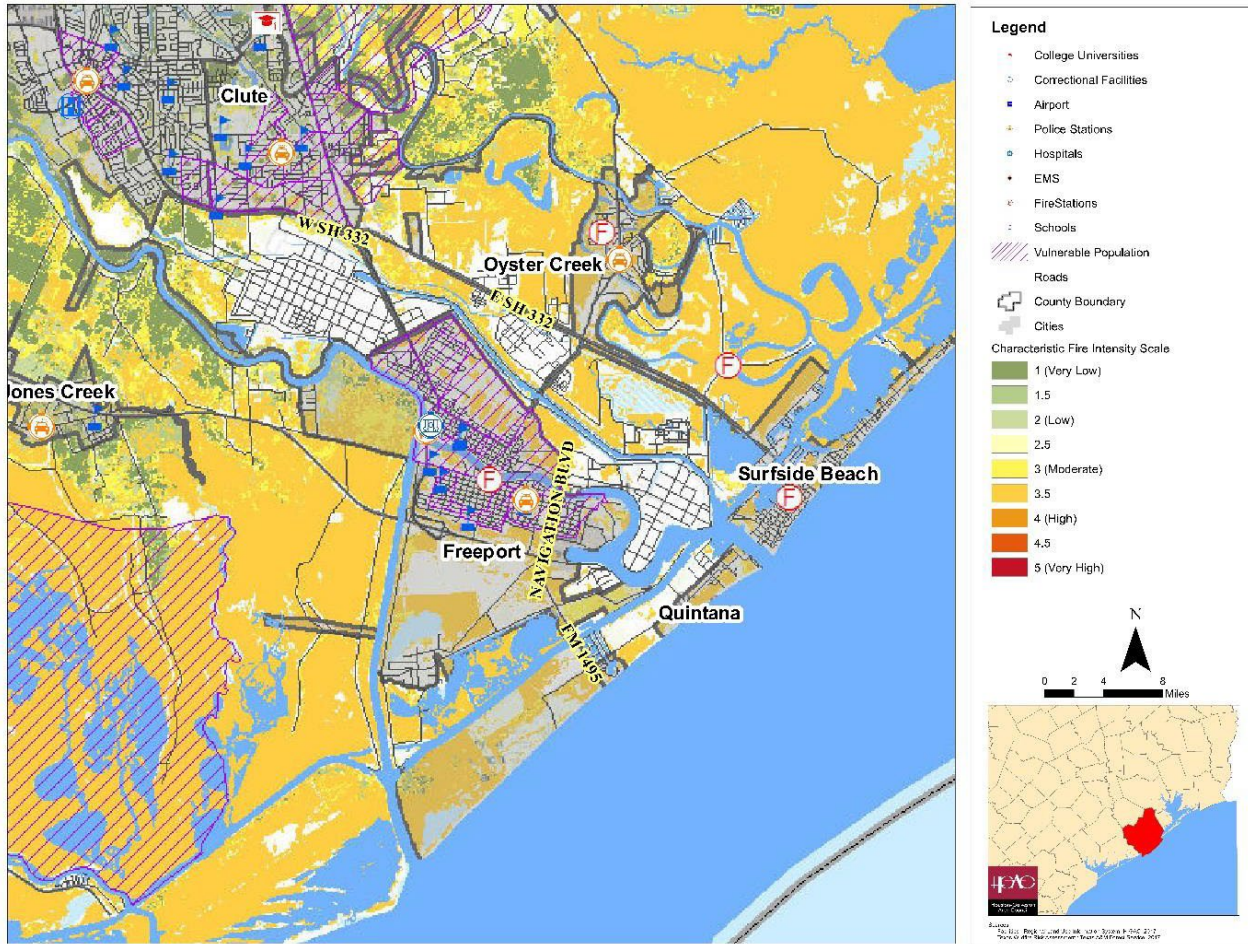


Item 9.

Alvin ISD			
Planning Area (Sq. mi):	252	Occurrences since 2000:	0
Area Affected:	23 %	Annual Event Average:	0
<p>Probability: Although the jurisdiction has no recorded events, the jurisdiction is throughout Brazoria County. Perhaps the ISD has a similar likelihood that the event will occur as unincorporated areas of the county. Brazoria County unincorporated area's probability is: Very Likely; 100 percent chance event will occur in a year.</p>			
<p>Extent: The ISD area can expect a 103-acre fire.</p>			
<p>Identified Vulnerabilities:</p> <ul style="list-style-type: none"> • 31 schools- 17 elementary schools, 3 high schools, 6 middle schools, 1 alternative school • 22,000 children 18 years and younger 			
<p>Identified Impacts:</p> <ul style="list-style-type: none"> • 100 percent of the total identified population may face serious illness or health conditions due to poor air quality • If administration or schools need to close due to fire damage or poor air quality this may lead to a : <ul style="list-style-type: none"> ○ financial loss for families needing to take off work or find childcare for their children ○ Academic/ educational loss for children missing several days of school and potentially falling behind in course work 			



Port Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 2000:	26
Area Affected:	12 %	Annual Event Average:	2.2
Probability: Highly Likely; 100 percent chance to occur within a year			
Extent: The largest wildfire in the past 12 years has been a 10-acre fire. The jurisdiction can expect a 12 to 14-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Port facilities, equipment, and administrative buildings 			
Identified Impacts:			
<ul style="list-style-type: none"> • If a wildfire spreads throughout the port facilities this could endanger employees and may create a loss of life and serious injury • The port is one of 18 ports in Texas, if the port had to close due to a fire this may have an impact on the local and state economy; leading to a potential loss of \$226.6 million dollars per day 			



Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 2000:	26
Area Affected:	31 %	Annual Event Average:	2.2
Probability: Highly Likely; 100 percent chance to occur within a year			
Extent: The largest wildfire in the past 12 years has been a 10-acre fire. The jurisdiction can expect a 12 to 14-acre fire.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 697 residential structures at risk • 29 percent of population are individuals 18 years and younger (1,120 children) • 12 percent of population are individuals 65 and older (482 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 45 percent of the total population may face serious illness or health conditions due to poor air quality • Residential and commercial property loss throughout the jurisdiction 			

Part 6.3: Hurricanes & Tropical Storms

6.3 Hurricanes and Tropical Storms

The Saffir-Simpson Scale ranks hurricanes that are formed in the Atlantic Ocean and Northern Pacific Ocean east of the international date line. The scale considers winds and the amount of damages that could be sustained by the storm. Category 1 is the lowest category of storm, while Category 5 is the strongest level storm. Tropical storms are tropical cyclones that have winds between 39 to 73 mph. While tropical cyclone winds do not reach the wind speeds for the Saffir- Simpson scale, according to the Beaufort Wind Scale, tropical storms are capable of producing winds that could break or uproot trees or create considerable structural damage.

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	74-95 mph 64-82 kt. 119-153 km/h	Very dangerous winds will produce some damage: Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	96-110mph 83-95 kt. 154-177 km/h	Extremely dangerous winds will cause extensive damage: Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (Major)	111-129 mph 96-112 kt. 178-208 km/h	Devastating damage will occur: Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water will be unavailable for several days to weeks after the storm passes.
4 (Major)	130-156 mph 113-136 kt. 209-251 km/h	Catastrophic damage will occur: Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months
5 (Major)	157 mph min. 137 kt. min. 252 km/h	Catastrophic damage will occur: A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Historic Occurrence

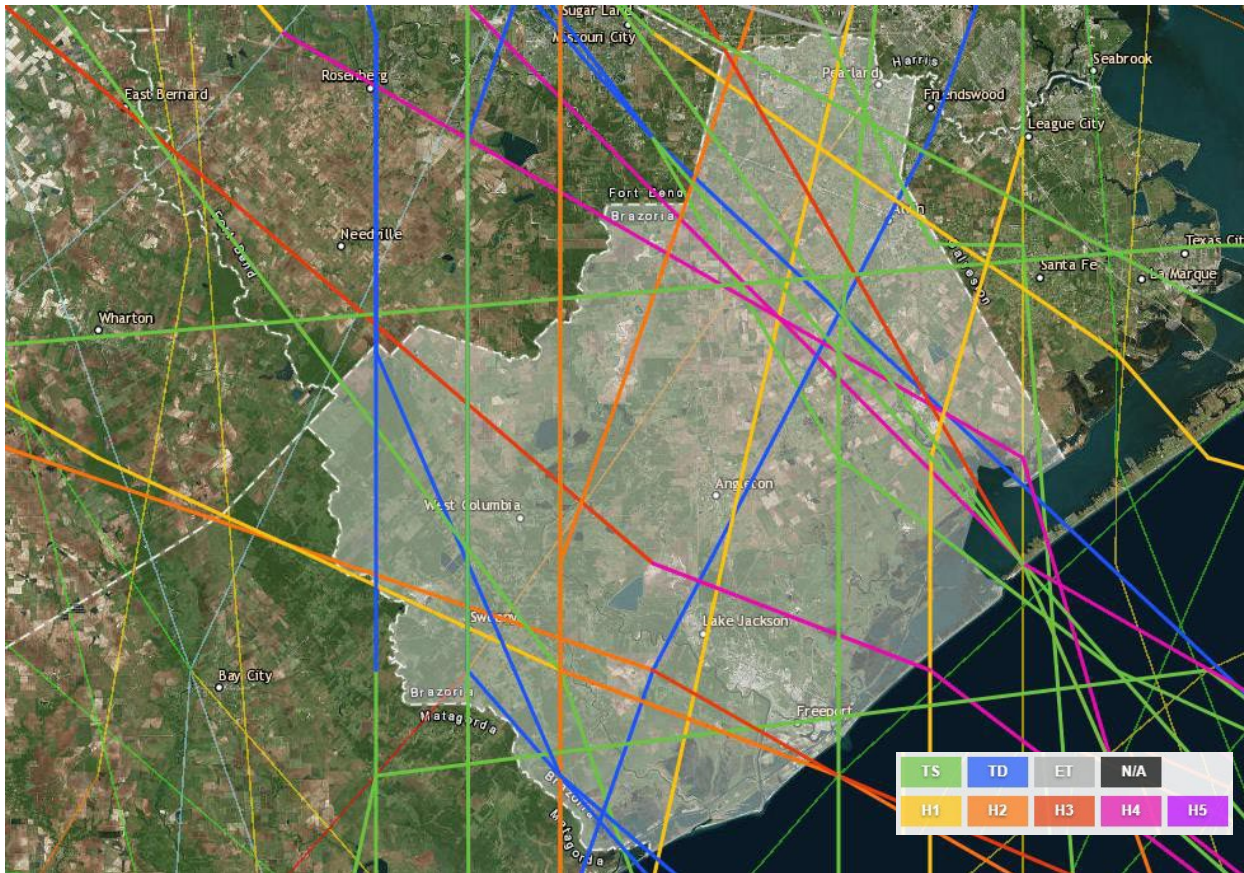
Based on recorded data, twelve hurricanes and tropical storms have direct paths over Brazoria County. Hurricanes and tropical storms since 2000 are included in the list below, and their monetary impact is also noted. There were no reported injuries or deaths from these events or crop damage.

Date	Event Type	Property Damage (2015 Dollars)	Notes
6/5/2001	Tropical Storm	\$22,200,000	None
9/5/2002	Tropical Storm	\$0	None
7/14/2003	Hurricane (Typhoon)	\$1,270,000	Hurricane Claudette. In Brazoria County, 2 single family homes were destroyed, 10 received major damage, and 39 received minor damage. 2 businesses were destroyed and 9 received major damage totaling \$655,000. The highest recorded tide level, 6.99 feet above mean low water, occurred in Freeport at the Brazos River levee.
8/30/2003	Tropical Storm	\$30,000	Tropical Storm Grace became the second tropical cyclone in less than two months to make landfall around Port O'Connor. There was no damage due to Grace's winds. Total rainfall amounts included 5.57 inches in Freeport
9/1/2003	Tropical Storm	\$8,000	This flash flood event was from the remnants of Tropical Storm Grace. Rainfall totals from the 1st and 2nd were 4.75 inches in Freeport.

8/29/2005	Storm Surge/Tide	\$40,000	Minor coastal flooding from swells created by Hurricane Katrina caused a bulkhead to break in Surfside. Washed out some roads and broke a few sewer lines.
9/23/2005	Hurricane (Typhoon)	\$500,000	None
9/12/2008	Storm Surge/Tide	\$1,000,000,000	Significant damage occurred due to surge along gulf facing sections including Quintana and Surfside areas. Surge estimates of 7 to 10 feet were obtained from high water marks.
9/12/2008	Hurricane (Typhoon)	\$700,000,000	Ike produced damage due to high storm surge and high winds over the region. Brazoria County was located to the left of the landfall where winds and surge were not quite as high, but still enough to produce significant damage. Storm surge estimates were 7 to 10 feet with wind gusts to hurricane force.
6/15/2015	Tropical Storm	\$0	Surge flooded impacted Surfside beaches, the Treasure Island subdivision and San Luis Pass Park. In the village of Surfside Beach, Seashell, Surf and Beach Roads were closed due to high water form storm surge. All countywide beach access roads were closed. Storm surge flooding was two feet deep in the Treasure Island subdivision. Heavy rain caused the flooding of Chocolate and Halls Bayous. There were trees downed by winds that were blocking roads in the town of Angleton.
6/21/2017	Tropical Storm	\$0	There was minor coastal flooding around Surfside and Blue Water Highway with minimal impact.
8/25/2017	Tropical Storm	\$2,000,000,000	Slow moving Tropical Storm Harvey produced torrential rains and catastrophic flooding. Several tornadoes touched down. Major to record flooding occurred along the Brazos and San Bernard Rivers and several other creeks and tributaries including Oyster Creek.

NCDC: <https://www.ncdc.noaa.gov/stormevents/>

NOAA: Historical Hurricane Tracks in Brazoria County Map (1871 -Present)



Source: NOAA <https://coast.noaa.gov/hurricanes/>

Hazard Analysis & Vulnerability Identification

The hazard analysis uses historic hazard event data to determine the probability of an event occurring within a given year. The analysis calculates the average number of events in each jurisdiction annually and then calculates the percent chance of the event occurring within a year.

The hazard analysis also provides hazard extent data for each participating jurisdiction. The extent data is the most extreme data recorded during a storm or hazard event and represents the worst damage a jurisdiction has experienced in recent history. Information from stakeholders, FEMA, NOAA, and the Department of Homeland Security (DHS) are the sources of data for the analysis.

To identify vulnerabilities for each jurisdiction, this plan used the following methods:

- FEMA's Hazus analysis software
- Stakeholder identified vulnerabilities
- American Community Survey (ACS, 5-year, 2016) Data on building stock and residents

Hazus was used to determine the economic loss and calculate the building stock at risk of hurricane damage in Brazoria County. The complete Hazus report is in Appendix C. Stakeholders provided valuable insight into additional vulnerabilities within their communities. These findings are provided in condensed charts for each jurisdiction.

Brazoria County (All participating jurisdictions)

Identified Vulnerabilities:

While participating jurisdictions identified flooding as one of the main effects of hurricanes, flooding is addressed in the first section. In this section vulnerabilities from hurricane winds are addressed. High winds can tear down powerlines, trees, barns, fences, and multitude of other debris can be blown into roadways and homes during the event.

Additionally, residences and commercial buildings could be damaged or destroyed due to events; older residential neighborhoods and structures without a permanent foundation were identified as one of the main vulnerabilities throughout the county. While current building codes address the vulnerability of wind damage to structures, older buildings (particularly residential buildings) were built when less stringent building codes were in place; therefore, older residential building and residences without a permanent foundation are a focus in this section.

- According to Hazus 4,086 commercial residential buildings are at risk
- According to Hazus 90,641 residential buildings are at risk
- According to Hazus 26,654 individuals will be displaced from their homes
- Based on the Hazus reports residential buildings in comparison to commercial buildings are most at risk of the effects of hurricanes throughout the county

Brazoria County (All participating jurisdictions)

Identified Impacts:

- Downed powerlines could impact communication and daily active leading to a financial loss for the county, cities and individuals, and could impede first responders from reaching those in need or residents evacuating
- Strong winds could prevent first responders from traveling to assist individuals, because of unsafe driving conditions such as debris hitting emergency vehicles
- Critical facilities could sustain wind damage, potentially delaying first responders reaching those in need and city services after the event
- Economic and financial loss for cities and individuals including property loss:
 - According to Hazus there could be a potential of \$ 29,401,709 in residential loss or 87 percent of total loss
 - According to Hazus there could be a potential of \$2,672,546 in commercial property loss or 8 percent of total loss

Brazoria County (Unincorporated)

Planning Area (Sq. mi):	1,475	Occurrences since 1871:	26
Area Affected:	100 %	Annual Event Average:	.18 events a year

Probability: Unlikely; 17 percent chance to occur a year

Extent: The strongest hurricane in the past was a category 5 hurricane; the unincorporated areas can expect to see a category 5 hurricane in the future

Identified Vulnerabilities:

- Vulnerable populations are concentrated near the coast near the San Bernard Wildlife Refuge
- Critical facilities including: 3 fire station, 5 schools, 1 shelter, and 2 correctional facilities

Identified Impacts:

- Vulnerable populations located near the coast could sustain greater injury or loss of life due to the lack of resources to evacuate or to contact responders when they need help
- Critical facilities and equipment could be damaged with windows broken or roofs blown off or destroyed by high winds
- First responders could be delayed, this may increase serious injury or loss of life throughout the county

Alvin			
Planning Area (Sq. mi):	25.6	Occurrences since 2000:	4
Area Affected:	100%	Annual Event Average:	.24
Probability: Unlikely; 24 percent chance occurring within a given year			
Extent: According to past events, the strongest tornado was an F0; the jurisdiction can see a EF1 to EF2 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 6,275 Residential buildings built before 1980 (65.8% of housing stock) • 1,334 Mobile Homes (14% of housing stock) • 42 Boats/ RVs/ Vans acting as main housing (.4 % of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • Almost 85 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Angleton			
Planning Area (Sq. mi):	11.27	Occurrences since 1871:	7
Area Affected:	100 %	Annual Event Average:	.048 events a year
Probability: Unlikely; 4.8 percent chance to occur within a year			
Extent: The strongest hurricane in the past was a category 1 hurricane; the jurisdiction can expect to see a category 3 to 5 hurricane in the future			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 6,426 Residential buildings built before 1980 (80 % of housing stock) • 685 Mobile Homes (8.5 % of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • Almost 90 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Bailey's Prairie

Planning Area (Sq. mi):	7.7	Occurrences since 1871:	4
Area Affected:	100%	Annual Event Average:	.027 events a year

Probability: Unlikely; 2.7 percent chance to occur within a year

Extent: The strongest hurricane in the past was a category 3 hurricane; the jurisdiction can expect to see a category 3 to 5 hurricane in the future

- Identified Vulnerabilities:**
- 82 Residential buildings built before 1980 (80.5% of housing stock)
 - 22 Mobile Homes (19.5% of housing stock)
- Identified Impacts:**
- 100 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction.

Bonney

Planning Area (Sq. mi):	1.66	Occurrences since 1871:	5
Area Affected:	100%	Annual Event Average:	.034 events a year

Probability: Unlikely; 3.4 percent chance to occur within a year

Extent: The strongest hurricane in the past was a category 5 hurricane; the jurisdiction can expect to see a category 3 to 5 hurricane in the future

- Identified Vulnerabilities:**
- 107 Residential buildings built before 1980 (73.1% of housing stock)
 - 30 Mobile Homes (20.5% of housing stock)
 - 4 Boats/ RVs/ Vans acting as main housing (2.7% of housing stock)
- Identified Impacts:**
- 96 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction.

Brazoria			
Planning Area (Sq. mi):	2.6	Occurrences since 1871:	8
Area Affected:	100%	Annual Event Average:	.055 events a year
Probability: Unlikely; 5.5 percent chance to occur within a year			
Extent: The strongest hurricane in the past was a category 3 hurricane; the jurisdiction can expect to see a category 3 to 5 hurricane in the future			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 1,129 Residential buildings built before 1980 (80% of housing stock) • 144 Mobile Homes (10.2% of housing stock) • 14 Boats/ RVs/ Van acting as main housing (1% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 91 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Brookside Village			
Planning Area (Sq. mi):	2.085	Occurrences since 1871:	5
Area Affected:	100%	Annual Event Average:	.034 events a year
Probability: Unlikely; 3.4 percent chance to occur within a year			
Extent: The strongest hurricane in the past was a category 1 hurricane; the jurisdiction can expect to see a category 2 to 4 hurricane in the future			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 480 Residential buildings built before 1980 (79.1% of housing stock) • 7 Mobile Homes (1.2% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • Almost 81 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Clute			
Planning Area (Sq. mi):	5.6	Occurrences since 1871:	7
Area Affected:	100%	Annual Event Average:	.048 events a year
Probability: Unlikely; 4.8 percent chance to occur within a year			
Extent: The strongest hurricane in the past was a category 5 hurricane; the jurisdiction can expect to see a category 4 to 5 hurricane in the future			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 3,347 Residential buildings built before 1980 (64.8% of housing stock) • 312 Mobile Homes (6% of housing stock) • 26 Boats/ RVs/ Vans acting as main housing (.5% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • Approximately 71 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Danbury and Danbury ISD			
Planning Area (Sq. mi):	1.0	Occurrences since 1871:	4
Area Affected:	100%	Annual Event Average:	.027 events a year
Probability: Unlikely; 2.7 percent chance to occur within a year			
Extent: The strongest hurricane in the past was a category 5 hurricane; the jurisdiction can expect to see a category 4 to 5 hurricane in the future			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 500 Residential buildings built before 1980 (86.2% of housing stock) • 4 Mobile Homes (.7% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • Almost 87 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Iowa Colony

Planning Area (Sq. mi):	7.33	Occurrences since 1871:	6
Area Affected:	100 %	Annual Event Average:	.041 events a year

Probability: Unlikely; 4.1 percent chance to occur within a year

Extent: The strongest hurricane in the past was a category 3 hurricane; the jurisdiction can expect to see a category 4 to 5 hurricane in the future

Identified Vulnerabilities:

- 263 Residential buildings built before 1980 (60% of housing stock)
- 122 Mobile Homes (27.9% of housing stock)

Identified Impacts:

- Almost 83 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction.

Hillcrest Village

Planning Area (Sq. mi):	0.4	Occurrences since 1871:	9
Area Affected:	100 %	Annual Event Average:	.062 events a year

Probability: Unlikely; 6.2 percent chance to occur within a year

Extent: The strongest hurricane in the past was a category 3 hurricane; the jurisdiction can expect to see a category 3 to 5 hurricane in the future

Identified Vulnerabilities:

- 289 Residential buildings built before 1980 (82.9% of housing stock)

Identified Impacts:

- Almost 83 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction.

Holiday Lakes

Planning Area (Sq. mi):	1	Occurrences since 1871:	4
Area Affected:	100%	Annual Event Average:	.027

Probability: Unlikely; 2.7 percent chance to occur within a year

Extent: The strongest hurricane in the past was a category 3 hurricane; the jurisdiction can expect to see a category 3 to 5 hurricane in the future

Identified Vulnerabilities:

- 271 Residential buildings built before 1980 (64.8% of housing stock)
- 216 Mobile Homes (51.8% of housing stock)
- 5 Boats/ RVs/ Van acting as main housing (1.2% of housing stock)

Identified Impacts:

- 100 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction.

Jones Creek

Planning Area (Sq. mi):	2.6	Occurrences since 1871:	7
Area Affected:	100%	Annual Event Average:	.048 events a year

Probability: Unlikely; 4.8 percent chance to occur within a year

Extent: The strongest hurricane in the past was a category 3 hurricane; the jurisdiction can expect to see a category 3 to 5 hurricane in the future

Identified Vulnerabilities:

- 3,347 Residential buildings built before 1980 (64.8% of housing stock)
- 165 Mobile Homes (19.1% of housing stock)
- 4 Boats/ RVs/ Van acting as main housing (.5% of housing stock)

Identified Impacts:

- About 85 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction.

Lake Jackson

Planning Area (Sq. mi):	20.9	Occurrences since 1871:	7
Area Affected:	100%	Annual Event Average:	.048 events a year

Probability: Unlikely; 4.8 percent chance to occur within a year

Extent: The strongest hurricane in the past was a category 5 hurricane; the jurisdiction can expect to see a category 5 hurricane in the future

Identified Vulnerabilities:

- 8,272 Residential buildings built before 1980 (70.1% of housing stock)
- 6 Mobile Homes (.1% of housing stock)
- 9 Boats/ RVs/ Vans acting as main housing (.1% of housing stock)

Identified Impacts:

- About 71 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction.

Liverpool

Planning Area (Sq. mi):	1.1	Occurrences since 1871:	9
Area Affected:	100 %	Annual Event Average:	.062 events a year

Probability: Unlikely; 6.2 percent chance to occur within a year

Extent: The strongest hurricane in the past was a category 5 hurricane; the jurisdiction can expect to see a category 5 hurricane in the future

Identified Vulnerabilities:

- 177 Residential buildings built before 1980 (72.2% of housing stock)
- 37 Mobile Homes (15.1% of housing stock)

Identified Impacts

- Approximately, 87 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction.

Manvel

Planning Area (Sq. mi):	23.6	Occurrences since 1871:	4
Area Affected:	100 %	Annual Event Average:	.027 events a year

Probability: Unlikely; 2.7 percent chance to occur within a year

Extent: The strongest hurricane in the past was a category 3 hurricane; the jurisdiction can expect to see a category 4 to 5 hurricane in the future

Identified Vulnerabilities:

- 971 Residential buildings built before 1980 (32.8% of housing stock)
- 329 Mobile Homes (11.1% of housing stock)
- 77 Boats/ RVs/ Van acting as main housing (2.6% of housing stock)

Identified Impacts:

- 100 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction.

Oyster Creek

Planning Area (Sq. mi):	2	Occurrences since 1871:	5
Area Affected:	100 %	Annual Event Average:	.034 events a year

Probability: Unlikely; 3.4 percent chance to occur within a year

Extent: The strongest hurricane in the past was a category 5 hurricane; the jurisdiction can expect to see a category 4 to 5 hurricane in the future

Identified Vulnerabilities:

- 356 Residential buildings built before 1980 (68.6% of housing stock)
- 231 Mobile Homes (44.5% of housing stock)
- 23 Boats/ RVs/ Vans acting as main housing (4.4% of housing stock)

Identified Impacts:

- 100 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction.

Quintana

Planning Area (Sq. mi):	2	Occurrences since 1871:	6
Area Affected:	100 %	Annual Event Average:	.041 events a year

Probability: Unlikely; 4.1 percent chance to occur within a year

Extent: The strongest hurricane in the past was a category 5 hurricane; the jurisdiction can expect to see a category 4 to 5 hurricane in the future

Identified Vulnerabilities:

- 554 Residential buildings built before 1980 (83.9% of housing stock)
- 59 Mobile Homes (8.9% of housing stock)

Identified Impacts:

- About 94 percent of the housing stock was either built before 1980 or does not have a permanent foundation this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction.

Richwood

Planning Area (Sq. mi):	3.1	Occurrences since 1871:	3
Area Affected:	100 %	Annual Event Average:	.021 events a year

Probability: Unlikely; 2.1 percent chance to occur within a year

Extent: The strongest hurricane in the past was a category 1 hurricane; the jurisdiction can expect to see a category 4 to 5 hurricane in the future

Identified Vulnerabilities:

- 356 Residential buildings built before 1980 (68.6% of housing stock)
- 231 Mobile Homes (44.5% of housing stock)
- 23 Boats/ RVs/ Vans acting as main housing (4.4% of housing stock)

Identified Impacts:

- 100 percent of the housing stock was either built before 1980 or does not have a permanent foundation this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction.

Surfside Beach

Planning Area (Sq. mi):	2.2	Occurrences since 1871:	6
Area Affected:	100 %	Annual Event Average:	.041 events a year

Probability: Unlikely; 4.1 percent chance to occur within a year

Extent: The strongest hurricane in the past was a category 5 hurricane; the jurisdiction can expect to see a category 4 to 5 hurricane in the future

Identified Vulnerabilities:

- 739 Residential buildings built before 1980 (72.2% of housing stock)

Identified Impacts:

- 72 percent of the housing stock was either built before 1980; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction.

Sweeny and Sweeny ISD

Planning Area (Sq. mi):	2	Occurrences since 1871:	5
Area Affected:	100 %	Annual Event Average:	.034

Probability: Unlikely; 3.4 percent chance to occur within a year

Extent: The strongest hurricane in the past was a category 3 hurricane; the jurisdiction can expect to see a category 4 to 5 hurricane in the future

Identified Vulnerabilities:

- 1,220 Residential buildings built before 1980 (73% of housing stock)
- 127 Mobile Homes (7.6% of housing stock)

Identified Impacts:

- 100 percent of the housing stock was either built before 1980 or does not have a permanent foundation this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction.

West Columbia

Planning Area (Sq. mi):	2.58	Occurrences since 1871:	4
Area Affected:	100%	Annual Event Average:	.027 events a year

Probability: Unlikely; 2.7 percent chance to occur within a year

Extent: The strongest hurricane in the past was a category 3 hurricane; the jurisdiction can expect to see a category 4 to 5 hurricane in the future

Identified Vulnerabilities:

- 1,447 Residential buildings built before 1980 (88.3% of housing stock)
- 38 Mobile Homes (2.3% of housing stock)

Identified Impacts:

- About 93 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction.

Brazosport ISD

Planning Area (Sq. mi):	200	Occurrences since 1871:	0
Area Affected:	100%	Annual Event Average:	0

Probability: Although there have been no recorded events in the ISD, the ISD is throughout the county. Consequently, the ISD's probability may be like unincorporated areas of Brazoria County. Brazoria County's unincorporated area's probability is: Unlikely; 17 percent chance to occur a year

Extent: Similarly, Brazoria County's unincorporated area's extent is: The strongest hurricane in the past was a category 5 hurricane; the unincorporated areas can expect to see a category 5 hurricane in the future

Identified Vulnerabilities:

- 12,000 students
- 19 schools- 10 elementary schools, 3 high schools, 5 middle schools, 1 alternative school

Identified Impacts:

- Serious injury or loss of life if an event occurs during school hours or during extracurricular activities
- Financial loss for the school district if any of the schools or administrative buildings are damaged due to the event
- If administration or schools need to close due to flood damage or flooding throughout the community this may lead to a:
 - financial loss for families needing to take off work or find childcare for their children
 - Academic/ educational loss for children missing several days of school and potentially falling behind in course work

Velasco Drainage District			
Planning Area (Sq. mi):	236	Occurrences since 1871:	5
Area Affected:	100%	Annual Event Average:	.034 events a year
Probability: Unlikely; 3.4 percent chance to occur within a year			
Extent: The strongest hurricane in the past was a category 5 hurricane; the jurisdiction can expect to see a category 4 to 5 hurricane in the future			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Administrative building just outside of the 100-year floodplain and along the coast. 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial loss for the port, local area, and the state if the port must close for a prolonged time 			

Alvin ISD			
Planning Area (Sq. mi):	256	Occurrences since 1871:	0
Area Affected:	100 %	Annual Event Average:	0
Probability: Although there have been no recorded events in the ISD, the ISD is throughout the county. Consequently, the ISD's probability may be like unincorporated areas of Brazoria County. Brazoria County's unincorporated area's probability is: Unlikely; 17 percent chance to occur a year			
Extent: Similarly, Brazoria County's unincorporated area's extent is: The strongest hurricane in the past was a category 5 hurricane; the unincorporated areas can expect to see a category 5 hurricane in the future			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 31 schools- 17 elementary schools, 3 high schools, 6 middle schools, 1 alternative school • 22,000 children 18 years and younger, adds an additional 1,000 students per year 			
Identified Impacts:			
<ul style="list-style-type: none"> • Serious injury or loss of life if an event occurs during school hours or during extracurricular activities • Financial loss for the school district if any of the schools or administrative buildings are damaged due to the event. • If administration or schools need to close due to flood damage or flooding throughout the community this may lead to a: <ul style="list-style-type: none"> ○ financial loss for families needing to take off work or find childcare for their children ○ Academic/ educational loss for children missing several days of school and potentially falling behind in course work 			

Port Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 1871:	5
Area Affected:	100 %	Annual Event Average:	.034 events a year
Probability: Unlikely; 3.4 percent chance to occur within a year			
Extent: The strongest hurricane in the past was a category 3 hurricane; the jurisdiction can expect to see a category 4 to 5 hurricane in the future			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Port facilities, equipment, and administrative buildings 			
Identified Impacts:			
<ul style="list-style-type: none"> • Serious injury or loss of life if an event occurs while staff or visitors are at the port • Financial loss for the port if damage occurs and needs repair or replacement • Economic loss for the surrounding cities and state if the port is closed for a prolonged time. 			

Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 1871:	5
Area Affected:	100 %	Annual Event Average:	.034 events a year
Probability: Unlikely; 3.4 percent chance to occur within a year			
Extent: The strongest hurricane in the past was a category 3 hurricane; the jurisdiction can expect to see a category 4 to 5 hurricane in the future			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 4,004 Residential buildings built before 1980 (86.2% of housing stock) • 229 Mobile Homes (4.9% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • About 91 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Part 6.4: Drought

6.4 Drought

The Palmers Hydrological Drought Severity Index (PHDI) is the typical way extent of drought is observed throughout the United States. This regional index considers dry and wet spells over an extended period to calculate the range in the Index. The greater the number the more extreme the drought in a specific area.

Drought has particularly adverse effects on agriculture which is major industry in Brazoria County. The most extreme conditions occurred in 2011. The county's PHDI rating was < -4.0 (Extreme Drought) from March 2011 through January 2012. There were periods of severe drought preceding and following this period from August 2010 through October 2014. The agricultural losses are estimated at \$5.2 billion, though specific numbers by county are not available for this event.

Palmer's Drought Severity Index	
< -4.0	Extreme Drought
-3.99 to -3.0	Severe Drought
-2.99 to -2.0	Moderate Drought
-1.99 to -1.0	Mild Drought
-0.99 to -0.5	Incipient Drought
-0.49 to 0.49	Near Normal
0.5 to 0.99	Incipient Moist Spell
1.0 to 1.99	Moist Spell
2.0 to 2.99	Unusual Moist Spell
3.0 to 3.99	Very Moist Spell
> 4.0	Extreme Moist Spell
Source: https://www.ncdc.noaa.gov/	

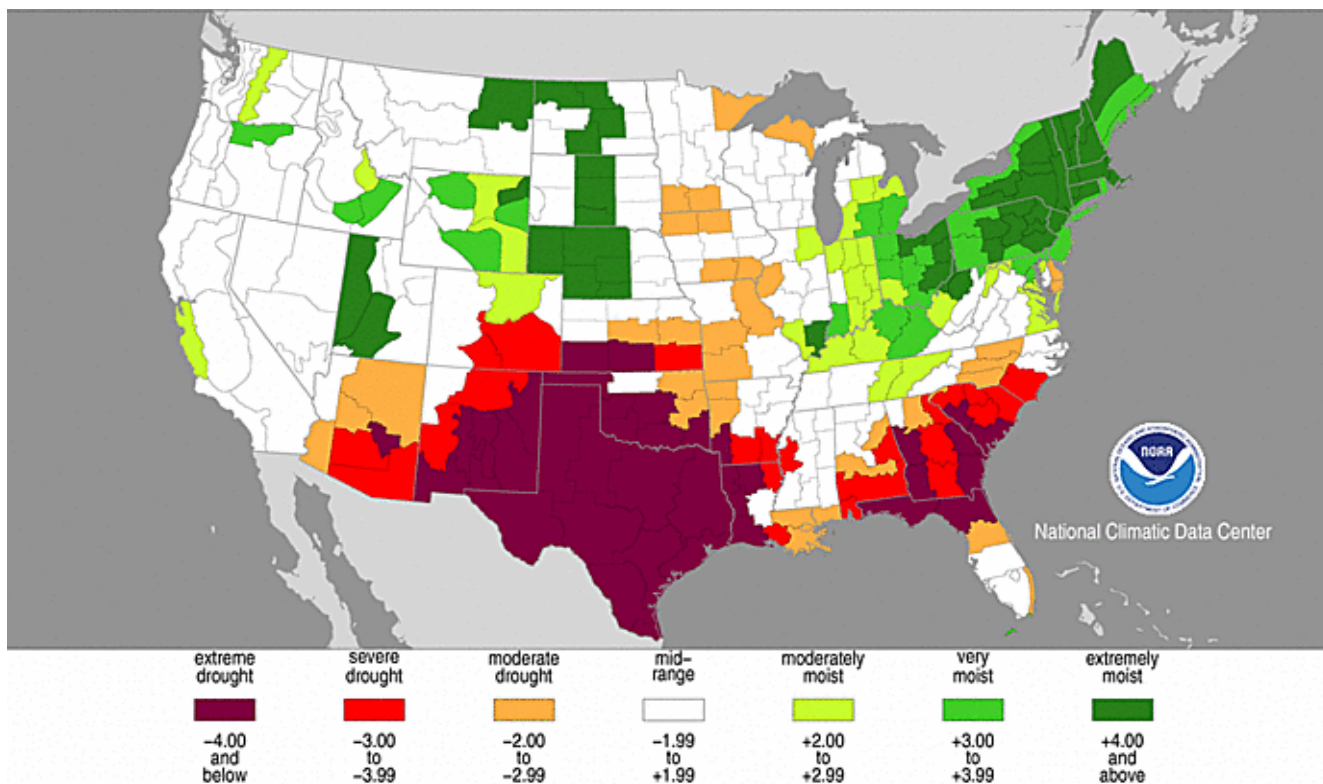
Historic Occurrence

In Brazoria County's recent history, there have been two major droughts. Zero injuries, deaths, crop or property damage was reported during these events in the county. This information is listed below at the county level. There is no county-level data available for property and agricultural losses for the most recent and most extreme drought event.

Date	Notes
8/1/2000	Severe drought continued across southeast Texas through the month of August. Rainfall for the month of August averaged only 30 to 50 percent of normal across southeast Texas. Several cities were placed under water rationing with large crop losses were noted across the area. Wildfires became increasingly common, especially toward the end of the month. Drought losses in dollars will be computed at the end of the summer growing season.
9/1/2000	Severe drought continued across southeast Texas through September 2000. The combination of excessive heat and dryness caused many wildfires to burn during the first week of the month. Water rationing continued during the first half of the month in several small communities. Water line breaks and small grass fires were a common problem across southeast Texas, especially at the beginning of the month. By the end of September, damage estimates for the season to cotton, wheat, and forage crops and increased irrigation reached \$102.3 million for southeast Texas.
10/1/2011	No notes were recorded for this event from the NCDC. However, the map directly below demonstrates the extent of the drought in 2011. Additionally, 5.2 billion dollars in agriculture loss throughout the state of Texas was reported during this event. (http://twri.tamu.edu/publications/txh2o/fall-2011/timeline-of-droughts-in-texas/)

Source: <https://www.ncdc.noaa.gov/>

Palmer's Drought Severity Index: October 2011



Maps source: <https://www.ncdc.noaa.gov/>

Hazard Analysis & Vulnerability Identification

The hazard analysis uses historic hazard event data to determine the probability of an event occurring again within the next five years. The analysis calculates the average number of events in each jurisdiction annually and then calculates the percentage of that event occurring within a year.

The hazard analysis also provides hazard extent data for each participating jurisdiction. The extent data is the most extreme data recorded during a storm or hazard event and represents the worst damage a jurisdiction has experienced in recent history. Information from stakeholders, USDA, CDC, and NOAA are the sources of data for the analysis.

To identify vulnerabilities for each jurisdiction, this plan used the following methods:

- GIS analysis of vulnerable populations
- USDA livestock production projections; and
- Stakeholder identified vulnerabilities

All Participating Jurisdictions

Area Impacted:	Drought is not contained to a boundary and is measured by region through the Palmers Drought Severity Index. Consequently, it can arise equally in all participating jurisdictions and in the unincorporated areas of the county.	Occurrences since 2000	3
		Annual Event Average	.18
Probability: Likely; 18 % chance that an event will occur within a year			
Extent: As shown above through the Palmers Drought Severity Index maps, drought can vary greatly in terms of extent and duration. Based on the historical events in the county, all participating jurisdictions can expect moist to extreme drought throughout the planning area. The planning area can expect to see extreme drought in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> Drought can greatly affect agriculture production. While Brazoria County has a diverse economy, agriculture remains a prominent part of the economy. For example, Brazoria County ranks fourth in Texas for rice production. In addition, the county has hay, cattle, soybean crops with crops representing 61% of production and cattle 39 %. In total, agriculture represents 118.2 million dollars for the county annually. 			
Identified Impacts:			
<ul style="list-style-type: none"> The potential loss of crops and the loss of revenue for local farmers and the entire county may impact economic standing and mental wellbeing of farmers and those taking a financial loss from the occurrence. 			

Part 6.5: Lightning

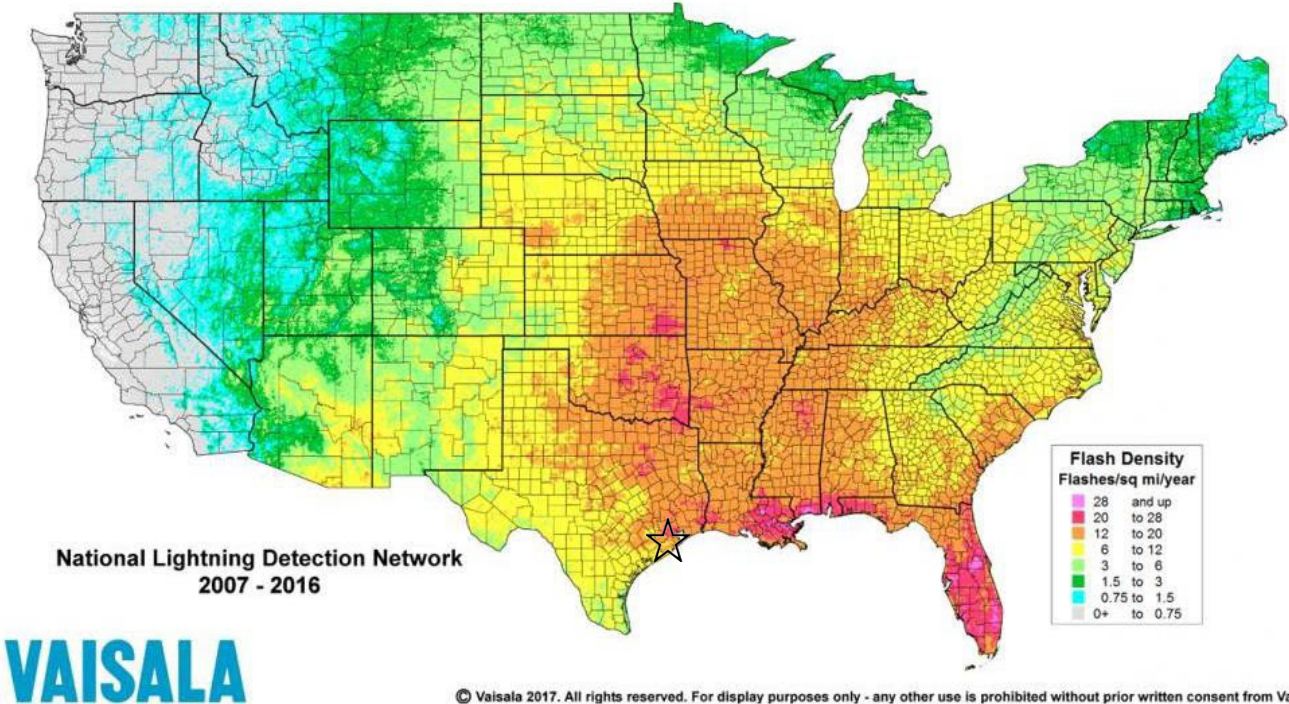
6.5 Lightning

There are two typical ways the magnitude of lightning is measured. The first is through the Lightning Activity Levels (LAL) grid. The National Oceanic and Atmospheric Administration (NOAA) considers how many cloud-to-ground strikes occur over a given period as well as rainfall to measure the amount of lightning activity occurring.

LAL	Cloud & Storm Development	Lightning Strikes/15 per minute
1	No thunderstorms	None
2	Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 clouds to ground strikes in a five-minute period.	1 to 8
3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 clouds to ground strikes in a 5-minute period.	9 to 15
4	Scattered thunderstorms. Moderate rain is commonly produced Lightning is frequent, 11 to 15 clouds to ground strikes in a 5-minute period	16 to 25
5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 clouds to ground strikes in a 5-minute period.	Greater than 25
6	Dry lightning (same as LAL 3 but without rain). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red Flag Warning.	Greater than 25

Source: <https://www.ncdc.noaa.gov/>

The second method is through the National Lightning Detection Network by Vaisala. This Network works by recording when lightning strikes the ground, considering the location, time, and polarity of the strike. According to this Network, Brazoria County is rated 12-20 flashes per square mile per year.



Historic Occurrences

There have been 2 deaths in the county due to lightning in the past 17 years; one death was reported in Angleton on August 24th, 2000. Another death was reported in Danbury on October 7th, 2007. Three injuries were reported from lightning since 2000; two injuries were reported in Quintana in 2006 and one injury was reported in Danbury on June 25th, 2007.

Jurisdiction	Date	Property Damage	Notes
Angleton	8/24/2000	\$0	Lightning struck and killed 31-year-old man on motorcycle.
Quintana	6/30/2006	\$0	Two victims sought shelter under a cabana on Surfside Beach when lightning struck. Both went to the hospital, but were released with minor injuries.
Unincorporated	4/25/2007	\$50,000	Lightning strike to residential home caused home fire.
Lake Jackson	6/5/2007	\$30,000	Lightning struck a home on the 200 block of Peppermint Drive causing a fire.
Unincorporated	6/15/2007	\$210,000	Home was destroyed by fire caused by a lightning strike.
Danbury	6/25/2007	\$0	Lightning strike at a Brazoria County golf course, seriously injuring one golfer.
Danbury	10/7/2007	\$0	A 30-year-old male was killed by a lightning strike while standing underneath a tree.
Manvel	4/17/2014	\$1,000	A lightning strike caused a grass fire on a golf course.
Iowa Colony	4/17/2014	\$1,000	A lightning strike set a palm tree on fire.
Iowa Colony	4/17/2014	\$15,000	A lightning strike caused a fire at a two-story residential home.
Manvel	4/17/2014	\$15,000	A lightning strike set fire to a structure in Manvel.
Lake Jackson	4/14/2015	\$5,000	A lightning strike caused damage to a structure.
Freeport	5/21/2016	\$3,000	Lightning that struck a power pole in Freeport caused power outages throughout the city.

Hazard Analysis & Vulnerability Identification

The hazard analysis uses historic hazard event data to determine the probability of an event occurring again within a given year. The analysis calculates the average number of events in each jurisdiction annually and then calculates the percent chance of the event occurring within a year.

The hazard analysis also provides hazard extent data for each participating jurisdiction. The extent data is the most extreme data recorded during a storm or hazard event and represents the worst damage a jurisdiction has experienced in recent history. Information from stakeholders, Texas Forest Service, and NOAA are the sources of data.

To identify vulnerabilities for each jurisdiction, this plan used the following methods:

- American Community Survey (ACS 5-year 2016) Data on structures
- GIS analysis of structures and critical facilities exposed to lightning damage; and
- Stakeholder identified vulnerabilities

Extent

The magnitude of lightning was not recorded for each historical event; not all participating jurisdictions have a history of all lightning strikes that may have occurred in their jurisdiction; and lightning flashes per event for each jurisdiction was not found. Due to these data limitations and considering that lightning is not contained to a particular geographic area or jurisdiction, extent for the entire county was estimated; NOAA's Severe Weather Data Inventory does provide a history of flashes per event on the county level. According to the Data Inventory, the entire planning area saw approximately a range of lightning flashes per event between an average of 12 to 61 flashes per event from 2000 to 2017.

Brazoria County (All Jurisdictions)

Identified Vulnerabilities:

As described in the hazard identification section, lightning can strike anywhere, but is more likely to strike tall trees and structures, and in open fields. As noted in the historical occurrences above, lightning can cause serious injury to residents and property in these places. Lightning can also cause wildfires that could destroy or damage residential, commercial, public property or agricultural lands. Additionally, lightning could hit a structure directly and cause a structural fire. In considering this, vulnerabilities throughout the county include:

- Agricultural and parkland areas throughout the county including the Brazoria National Wildlife Refuge, Justin Hurst Wildlife and San Bernard National Wildlife Refuge
- Residential buildings throughout the county (identified below by jurisdiction)
- Communication towers (no data was found for the exact number of towers throughout the county)
- Critical facilities throughout the county (identified below by jurisdiction)

Identified Impacts:

- Residential, commercial, and public property loss throughout the county due to wildfires or structural fires started by lightning
- In total, 631,021 acres in total throughout the county in farmland at risk if a lightning strike causes a wildfire (accounting for 118,236,00 dollars in revenue). Leading to financial and economic loss for individual farmers and the county
- Lightning striking a communication tower may lead to a loss of communication for a particular jurisdiction or for a large portion of the county. This could lead to an inability to reach people in need.
- In the instance that lightning does strike a critical facility without a generator or the generator does not work, critical facilities could lose power. This may slow down first responders and allow for greater loss of life, injury, or property damage particularly when lightning is accompanied by flooding or other hazardous events

Brazoria County (Unincorporated)

Planning Area (Sq. mi):	1,475	Occurrences since 2000:	2
Area Affected:	100 %	Annual Event Average:	.12 events a year

Probability: Unlikely; 12 percent chance event occurs within a year

Extent: According to past events there have been .12 events recorded per year. According to NOAA’s data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- Critical facilities including: 3 fire station, 5 schools, 1 shelter, 2 correctional facilities

Identified Impacts:

- 11 critical facilities could lose power or catch on fire if lightning strikes; this may slow down first responders and allow for greater loss of life, injury, or property damage particularly when lightning is accompanied by flooding or other hazardous events.

Alvin

Planning Area (Sq. mi):	25.6	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0

Probability: The jurisdiction has no recorded lightning strikes. However, lightning strikes have been recorded in other areas of the county and are not geographically based. Therefore, probability may be similar to surrounding jurisdictions: Unlikely; 12 percent chance event occurs within a year

Extent: According to past events there have been 0 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- Critical facilities including: 14 schools, 5 electrical substations, 4 fire stations, 2 EMS, 1 wastewater treatment plant, 2 shelters, 6 police stations, and 1 emergency operation center
- 1,431 residential structures at risk

Identified Impacts:

- 29 critical facilities could lose power or catch on fire if lightning strikes; this may slow down first responders and allow for greater loss of life, injury, or property damage particularly when lighting is accompanied by flooding or other hazardous events.
- Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock

Angleton

Planning Area (Sq. mi):	11.27	Occurrences since 2000:	1
Area Affected:	100%	Annual Event Average:	.05 events a year

Probability: Unlikely; 5 percent chance of the event occurring within a year

Extent: According to past events there have been .05 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- Critical facilities including: 3 correctional facilities, 1 electrical substation, 1 EMS, 2 fire stations, 9 schools, 3 shelters, 9 police stations, and 2 hospitals
- 803 residential structures at risk

Identified Impacts:

- 29 critical facilities could lose power or catch on fire if lightning strikes; this may slow down first responders and allow for greater loss of life, injury, or property damage particularly when lighting is accompanied by flooding or other hazardous events.
- Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock

Bailey's Prairie

Planning Area (Sq. mi):	7.7	Occurrences since 2000:	0
Area Affected:	100 %	Annual Event Average:	0

Probability: The jurisdiction has no recorded lightning strikes. However, lightning strikes have been recorded in other areas of the county and are not geographically based. Therefore, probability may be similar to surrounding jurisdictions: Unlikely; 12 percent chance event occurs within a year.

Extent: According to past events there have been 0 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- 170 residential structures at risk

Identified Impacts:

- Relying on first responders in neighboring jurisdictions may lead to a delayed response time which could increase the loss of life, serious injuries, or structures damaged
- Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock

Bonney

Planning Area (Sq. mi):	1.66	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0

Probability: The jurisdiction has no recorded lightning strikes. However, lightning strikes have been recorded in other areas of the county and are not geographically based. Therefore, probability may be similar to surrounding jurisdictions: Unlikely; 12 percent chance event occurs within a year

Extent: According to past events there have been 0 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- 22 residential structures at risk

Identified Impacts:

- Relying on first responders in neighboring jurisdictions may lead to a delayed response time which could increase the loss of life, serious injuries, or structures damaged
- Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock

Brazoria

Planning Area (Sq. mi):	2.6	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0

Probability: The jurisdiction has no recorded lightning strikes. However, lightning strikes have been recorded in other areas of the county and are not geographically based. Therefore, probability may be similar to surrounding jurisdictions: Unlikely; 12 percent chance event occurs within a year

Extent: According to past events there have been 0 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- Critical facilities including: 1 correctional facility, 1 electrical substation, 1 EMS, 4 fire stations, 9 schools, 6 shelters, 2 police stations, 2 hospitals, 6 shelters, and 2 emergency operation centers
- 282 residential structures at risk

Identified Impacts:

- 36 critical facilities could lose power or catch on fire if lightning strikes; this may slow down first responders and allow for greater loss of life, injury, or property damage particularly when lighting is accompanied by flooding or other hazardous events.
- Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock

Brookside Village

Planning Area (Sq. mi):	2.085	Occurrences since 2000:	0
Area Affected:	100 %	Annual Event Average:	0

Probability: The jurisdiction has no recorded lightning strikes. However, lightning strikes have been recorded in other areas of the county and are not geographically based. Therefore, probability may be similar to surrounding jurisdictions: Unlikely; 12 percent chance event occurs within a year

Extent: According to past events there have been 0 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- 1 police station
- 122 residential structures at risk

Identified Impacts:

- 1 critical facility could lose power or catch on fire if lightning strikes; this may slow down first responders and allow for greater loss of life, injury, or property damage particularly when lighting is accompanied by flooding or other hazardous events.
- Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock

Clute

Planning Area (Sq. mi):	5.6	Occurrences since 2000:	0
Area Affected:	100 %	Annual Event Average:	0

Probability: The jurisdiction has no recorded lightning strikes. However, lightning strikes have been recorded in other areas of the county and are not geographically based. Therefore, probability may be similar to surrounding jurisdictions: Unlikely; 12 percent chance event occurs within a year.

Extent: According to past events there have been 0 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- Critical facilities including: 1 EMS, 1 electrical substation, 1 fire station, 5 schools, 5 shelters, 2 police stations, 2 hospitals, 1 emergency operation center, and 1 wastewater treatment
- 775 residential structures at risk

Identified Impacts:

- 19 critical facilities could lose power or catch on fire if lightning strikes; this may slow down first responders and allow for greater loss of life, injury, or property damage particularly when lightning is accompanied by flooding or other hazardous events.
- Lightning striking a wastewater treatment facility without a generator could impede water quality throughout the area
- Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock

Danbury and Danbury ISD

Planning Area (Sq. mi):	1.0	Occurrences since 2000:	2
Area Affected:	100 %	Annual Event Average:	.12

Probability: Unlikely; 12 percent chance event occurs within a year

Extent: According to past events there have been .12 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- Critical facilities including: 1 electrical substation, 1 EMS, 1 fire station, 3 schools, and 1 police station
- 92 residential structures at risk

Identified Impacts:

- 7 critical facilities could lose power or catch on fire if lightning strikes; this may slow down first responders and allow for greater loss of life, injury, or property damage particularly when lightning is accompanied by flooding or other hazardous events.
- Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock

Iowa Colony

Planning Area (Sq. mi):	7.33	Occurrences since 2000:	2
Area Affected:	100 %	Annual Event Average:	.12

Probability: Unlikely; 12 percent chance event occurs within a year

Extent: According to past events there have been .12 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- Critical facilities including: 1 EMS and 1 school
- 88 residential structures at risk

Identified Impacts:

- 2 critical facilities could lose power or catch on fire if lightning strikes; this may slow down first responders and allow for greater loss of life, injury, or property damage particularly when lightning is accompanied by flooding or other hazardous events.
- Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock

Hillcrest Village

Planning Area (Sq. mi):	0.4	Occurrences since 2000:	0
Area Affected:	100 %	Annual Event Average:	0

Probability: The jurisdiction has no recorded lightning strikes. However, lightning strikes have been recorded in other areas of the county and are not geographically based. Therefore, probability may be similar to surrounding jurisdictions: Unlikely; 12 percent chance event occurs within a year.

Extent: According to past events there have been 0 events recorded per year. . According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- 53 residential structures at risk

Identified Impacts:

- Relying on first responders in neighboring jurisdictions may lead to a delayed response time which could increase the loss of life, serious injuries, or structures damaged
- Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock

Holiday Lakes

Planning Area (Sq. mi):	1	Occurrences since 2000:	0
Area Affected:	100 %	Annual Event Average:	0

Probability: The jurisdiction has no recorded lightning strikes. However, lightning strikes have been recorded in other areas of the county and are not geographically based. Therefore, probability may be similar to surrounding jurisdictions: Unlikely; 12 percent chance event occurs within a year.

Extent: According to past events there have been 0 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- 84 residential structures at risk

Identified Impacts:

- Relying on first responders in neighboring jurisdictions may lead to a delayed response time which could increase the loss of life, serious injuries, or structures damaged
- Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock

Jones Creek

Planning Area (Sq. mi):	2.6	Occurrences since 2000:	0
Area Affected:	100 %	Annual Event Average:	0

Probability: The jurisdiction has no recorded lightning strikes. However, lightning strikes have been recorded in other areas of the county and are not geographically based. Therefore, probability may be similar to surrounding jurisdictions: Unlikely; 12 percent chance event occurs within a year.

Extent: According to past events there have been 0 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- Critical facilities including: 1 school and 1 shelter
- 130 residential structures at risk

Identified Impacts:

- 2 critical facilities could lose power or catch on fire if lightning strikes; this may slow down first responders and allow for greater loss of life, injury, or property damage particularly when lightning is accompanied by flooding or other hazardous events.
- Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock

Lake Jackson

Planning Area (Sq. mi):	20.9	Occurrences since 2000:	2
Area Affected:	100 %	Annual Event Average:	.12

Probability: Unlikely; 12 percent chance event occurs within a year

Extent: According to past events there have been .12 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- Critical facilities including: 1 dam, 1 electrical substation, 2 EMS, 2 fire stations, 1 hospital, 2 police stations, 7 schools, 9 shelters, and 1 wastewater treatment facility

Identified Impacts:

- 2 critical facilities could lose power or catch on fire if lightning strikes; this may slow down first responders and allow for greater loss of life, injury, or property damage particularly when lightning is accompanied by flooding or other hazardous events.
- Lightning striking a wastewater treatment facility without a generator could impede water quality throughout the area
- Lightning striking an electrical substation could allow for
- Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock

Liverpool

Planning Area (Sq. mi):	1.1	Occurrences since 2000:	0
Area Affected:	100 %	Annual Event Average:	0

Probability: The jurisdiction has no recorded lightning strikes. However, lightning strikes have been recorded in other areas of the county and are not geographically based. Therefore, probability may be similar to surrounding jurisdictions: Unlikely; 12 percent chance event occurs within a year.

Extent: According to past events there have been 0 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- Critical facilities including: 1 fire station and 2 police stations
- 37 residential structures at risk

Identified Impacts:

- 3 critical facilities could lose power or catch on fire if lightning strikes; this may slow down first responders and allow for greater loss of life, injury, or property damage particularly when lightning is accompanied by flooding or other hazardous events.
- Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock

Manvel

Planning Area (Sq. mi):	23.6	Occurrences since 2000:	2
Area Affected:	100 %	Annual Event Average:	.12

Probability: Unlikely; 12 percent chance event occurs within a year

Extent: According to past events there have been .12 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- Critical facilities including: 1 EMS, 2 fire stations, 3 police stations, 4 schools, and 1 shelter
- 443 residential structures at risk

Identified Impacts:

- 11 critical facilities could lose power or catch on fire if lightning strikes; this may slow down first responders and allow for greater loss of life, injury, or property damage particularly when lightning is accompanied by flooding or other hazardous events.
- Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock

Oyster Creek

Planning Area (Sq. mi):	2	Occurrences since 2000:	0
Area Affected:	100 %	Annual Event Average:	0

Probability: The jurisdiction has no recorded lightning strikes. However, lightning strikes have been recorded in other areas of the county and are not geographically based. Therefore, probability may be similar to surrounding jurisdictions: Unlikely; 12 percent chance event occurs within a year.

Extent: According to past events there have been 0 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- Critical facilities including: 1 fire station, 1 police station, 1 power plant, and 1 shelter
- 78 residential structures at risk

Identified Impacts:

- 4 critical facilities could lose power or catch on fire if lightning strikes; this may slow down first responders and allow for greater loss of life, injury, or property damage particularly when lightning is accompanied by flooding or other hazardous events.
- Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock

Quintana			
Planning Area (Sq. mi):	2	Occurrences since 2000:	1
Area Affected:	100 %	Annual Event Average:	.059
Probability: Unlikely; 5 percent chance of the event occurring within a year			
Extent: According to past events there have been .05 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 5 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Relying on first responders in neighboring jurisdictions may lead to a delayed response time which could increase the loss of life, serious injuries, or structures damaged • Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock 			

Richwood			
Planning Area (Sq. mi):	3.1	Occurrences since 2000:	0
Area Affected:	100 %	Annual Event Average:	0
Probability: The jurisdiction has no recorded lightning strikes. However, lightning strikes have been recorded in other areas of the county and are not geographically based. Therefore, probability may be similar to surrounding jurisdictions: Unlikely; 12 percent chance event occurs within a year.			
Extent: According to past events there have been 0 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 1 police station, 1 school, and 1 shelter • 246 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • 3 critical facilities could lose power or catch on fire if lightning strikes; this may slow down first responders and allow for greater loss of life, injury, or property damage particularly when lighting is accompanied by flooding or other hazardous events. • Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock 			

Surfside Beach

Planning Area (Sq. mi):	2.2	Occurrences since 2000:	0
Area Affected:	100 %	Annual Event Average:	0

Probability: The jurisdiction has no recorded lightning strikes. However, lightning strikes have been recorded in other areas of the county and are not geographically based. Therefore, probability may be similar to surrounding jurisdictions: Unlikely; 12 percent chance event occurs within a year.

Extent: According to past events there have been 0 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- Critical facilities including: 1 fire station, and 1 police station
- 205 residential structures at risk

Identified Impacts:

- 2 critical facilities could lose power or catch on fire if lightning strikes; this may slow down first responders and allow for greater loss of life, injury, or property damage particularly when lighting is accompanied by flooding or other hazardous events.
- Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock

Sweeny and Sweeny ISD

Planning Area (Sq. mi):	2	Occurrences since 2000:	0
Area Affected:	100 %	Annual Event Average:	0

Probability: The jurisdiction has no recorded lightning strikes. However, lightning strikes have been recorded in other areas of the county and are not geographically based. Therefore, probability may be similar to surrounding jurisdictions: Unlikely; 12 percent chance event occurs within a year.

Extent: According to past events there have been 0 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- Critical facilities including: 1 electrical substation, 1 EMS, 2 fire stations, 1 hospital, 2 emergency operations centers, 3 police stations, 2 schools, 1 shelter, 3 schools, 2 power plants
- 251 structures at risk

Identified Impacts:

- 4 critical facilities could lose power or catch on fire if lightning strikes; this may slow down first responders and allow for greater loss of life, injury, or property damage particularly when lighting is accompanied by flooding or other hazardous events.
- Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock

West Columbia

Planning Area (Sq. mi):	2.58	Occurrences since 2000:	0
Area Affected:	100 %	Annual Event Average:	0

Probability: The jurisdiction has no recorded lightning strikes. However, lightning strikes have been recorded in other areas of the county and are not geographically based. Therefore, probability may be similar to surrounding jurisdictions: Unlikely; 12 percent chance event occurs within a year.

Extent: According to past events there have been 0 events recorded per year. . According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- Critical facilities including: 1 electrical substation, 1 EMS, 1 fire station, 3 schools, 3 shelters, 4 police stations, and 1 powerplant
- 246 residential structures at risk

Identified Impacts:

- 4 critical facilities could lose power or catch on fire if lightning strikes; this may slow down first responders and allow for greater loss of life, injury, or property damage particularly when lighting is accompanied by flooding or other hazardous events.
- Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock

Brazosport ISD

Planning Area (Sq. mi):	200	Occurrences since 2000:	0
Area Affected:	100 %	Annual Event Average:	0

Probability: The ISD has no recorded lightning strikes. However, lightning strikes have been recorded in other areas of the county and are not geographically based. Therefore, probability may be similar to surrounding jurisdictions: Unlikely; 12 percent chance event occurs within a year.

Extent: According to past events there have been 0 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- 19 schools- 10 elementary schools, 3 high schools, 5 middle schools, 1 alternative school
- 12,000 children 18 years and younger

Identified Impacts:

- Serious injury or loss of life due to students and staff outside or trying to get inside during an event
- Property and financial loss due to a lightning strike hitting a building or hitting equipment or trees on school property

Velasco Drainage District

Planning Area (Sq. mi):	236	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0

Probability: The jurisdiction has no recorded lightning strikes. However, lightning strikes have been recorded in other areas of the county and are not geographically based. Therefore, probability may be similar to surrounding jurisdictions: Unlikely; 12 percent chance event occurs within a year.

Extent: According to past events there have been 0 events recorded per year. According to NOAA's data inventory, the jurisdiction could see 12 to 61 flashes per event.

Identified Vulnerabilities:

- Administrative buildings and equipment

Identified Impacts:

- If lightning strikes the administrative building or equipment this may lead to a loss or reduction in service, in extreme cases this may impact proper drainage throughout the planning areas and could lead to a decrease in agriculture production.

Alvin ISD

Planning Area (Sq. mi):	252	Occurrences since 2000:	0
Area Affected:	100 %	Annual Event Average:	0

Probability: The ISD has no recorded lightning strikes. However, lightning strikes have been recorded in other areas of the county and are not geographically based. Therefore, probability may be similar to surrounding jurisdictions: Unlikely; 12 percent chance event occurs within a year.

Extent: According to past events there have been 0 events recorded per year. According to Vaisala, the jurisdiction could see 6 to 20 strikes per square mile per year.

Identified Vulnerabilities:

- 31 schools- 17 elementary schools, 3 high schools, 6 middle schools, 1 alternative school
- 22,000 children 18 years and younger

Identified Impacts:

- Serious injury or loss of life due to students and staff outside or trying to get inside during an event
- Property and financial loss due to a lightning strike hitting a building or hitting equipment or trees on school property
- Financial loss for families if parents/ guardians need to take off work/ find childcare during a school closure

Port Freeport		
Planning Area (Sq. mi):	2.81	Occurrences since 2000: 3
Area Affected:	100 %	Annual Event Average: 0
<p>Probability: The jurisdiction has 3 recorded lightning strikes. These have been recorded in other areas of the county and are not geographically based. Therefore, probability may be similar to surrounding jurisdictions: Unlikely; 12 percent chance event occurs within a year.</p>		
<p>Extent: According to past events there have been 0 events recorded per year. According to Vaisala, the jurisdiction could see 6 to 20 strikes per square mile per year.</p>		
<p>Identified Vulnerabilities:</p> <ul style="list-style-type: none"> Tall cranes, metal warehouses, stack metal cargo containers, and maritime vessels are all a potential target for lightning strikes 		
<p>Identified Impacts:</p> <ul style="list-style-type: none"> Damage to administrative building, port facilities and equipment could have a financial impact on the port and an economic loss for the county, state and federal levels. (\$157.3 billion economic potential) Serious injury or loss of life for staff or visitors at the port during an event The port is one of 18 ports in Texas, if the port had to close due to a fire this may have an impact on the local and state economy; leading to a potential loss of \$226.6 million dollars per day 		

Damage to administrative building, port facilities and equipment could have an economic impact at a local, state, and federal level (\$157.3 billion in total national economic output).

- Negative impact to local, state, and federal tax revenues (\$5.3 billion in local and state tax revenues nationally and \$5.4 billion in federal tax revenues nationally)
- Increase in unemployment rate (266,300 jobs supported nationally).
- Decrease in consumer spending at a local, state, and national level (\$22.5 billion in labor income nationally).
- Serious injury or loss of life for staff and/or Port users at the port during an event (8,600 individual entries/week).
- Port Freeport is ranked number 6th in chemical exports in the US, so a port closure would have a large impact on the gasoline, LNG, and other chemical supply chains.
- Port Freeport is ranked number 11th in foreign tonnage, so a port closure could have a negative impact on foreign affairs.

Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 2000:	1
Area Affected:	100 %	Annual Event Average:	.059
Probability: Unlikely; 6 percent chance of the event occurring within a year			
Extent: According to past events there have been .05 events recorded per year. According to Vaisala, the jurisdiction could see 6 to 20 strikes per square mile per year.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 1 correctional facility, 5 electrical substation, 2 EMS, 3 fire stations, 6 schools, 5 shelters, 8 police stations, 1 emergency operations center, 2 wastewater treatment plants, and 1 power plant • 697 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • 4 critical facilities could lose power or catch on fire if lightning strikes; this may slow down first responders and allow for greater loss of life, injury, or property damage particularly when lightning is accompanied by flooding or other hazardous events. • Damage to homes caused by lightning may lead to a financial loss for residents and/ or injury or loss of life in a house fire or electrical shock 			

Part 6.6: Heat Events

6.6 Heat Event

Heat Events are defined by NOAA as a period of heat resulting from the combination of elevated temperatures and relative humidity. A Heat Event occurs whenever heat index values meet or exceed locally/regionally established advisory thresholds. Fatalities or major impacts on human health occurring when ambient weather conditions meet heat advisory criteria are reported using the Heat Event (NCDC).

NOAA's National Weather Service Heat Index

		Temperature °F (°C)															
		80(27)	82(28)	84(29)	86(30)	88(31)	90(32)	92(34)	94(34)	96(36)	98(37)	100(38)	102(39)	104(40)	106(41)	108(43)	110(47)
Relative Humidity (%)	40	80(27)	81(27)	83(28)	85(29)	88(31)	91(33)	94(34)	97(36)	101(38)	105(41)	109(43)	114(46)	119(48)	124(51)	130(54)	136(58)
	45	80(27)	82(28)	84(29)	87(31)	89(32)	93(34)	96(36)	100(38)	104(40)	109(43)	114(46)	119(48)	124(51)	130(50)	137(58)	
	50	80(27)	83(28)	85(29)	88(31)	91(33)	95(35)	99(37)	103(39)	108(42)	113(45)	118(48)	124(51)	131(55)	137(58)		
	55	80(27)	84(29)	86(30)	89(32)	93(34)	97(36)	101(38)	106(41)	112(44)	117(47)	124(51)	130(54)	137(58)			
	60	82(28)	84(29)	88(31)	91(33)	95(35)	100(38)	105(41)	110(43)	116(47)	123(51)	129(54)	137(58)				
	65	82(28)	85(29)	89(32)	93(34)	98(37)	103(39)	108(43)	114(46)	121(49)	128(53)	136(58)					
	70	82(28)	86(30)	90(32)	95(35)	100(38)	105(41)	112(46)	119(48)	126(52)	134(57)						
	75	84(29)	88(31)	92(33)	97(36)	103(39)	109(43)	116(47)	124(51)	132(56)							
	80	84(29)	89(32)	94(34)	100(38)	106(41)	113(45)	121(49)	129(54)								
	85	84(29)	90(32)	96(36)	102(39)	110(43)	117(47)	126(52)	135(57)								
	90	86(30)	91(33)	98(37)	105(41)	113(45)	122(50)	131(55)									
	95	86(30)	93(34)	100(38)	108(42)	117(47)	127(53)										
	100	87(31)	95(35)	103(39)	112(44)	121(49)	132(56)										

Likelihood of Heat Disorders with Prolonged Exposure or Strenuous Activity

Caution	Extreme Caution	Danger	Extreme Danger
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Historic Occurrences

June to August are the months that Brazoria County could experience the most severe heat, with average temperatures between 90 and 100 degrees. According to NOAA's database, zero deaths, injuries, crop or property damage were reported from 2000 to 2017 due to Heat Events.

Date	Event	Jurisdiction	Notes
7/6/2000	Heat Event	County wide	Excessive heat impacted southeast Texas for much of the month of July. High temperatures ranged from 98 to 105 degrees daily over all but the immediate coast during a 2-week period. Only traces of rainfall were observed during this period.
8/29/2000	Heat Event	County wide	Excessive heat occurred over southeast Texas during the last 3 days of August.
9/1/2000	Heat Event	County wide	A record setting heat wave continued over southeast Texas through the first week of September 2000. A heat wave with temperatures of this duration and magnitude is unprecedented for southeast Texas.
6/24/2009	Heat Event	County wide	Hot, humid conditions led to heat indices above 105 degrees for several days in late June.

Source: <https://www.ncdc.noaa.gov>

Hazard Analysis & Vulnerability Identification

The hazard analysis uses historic hazard event data to determine the probability of an event occurring again within a given year.

The hazard analysis also provides hazard extent data for each participating jurisdiction. The extent data is the most extreme data recorded during a storm or hazard event and represents the worst damage a jurisdiction has experienced in recent history. Additionally, extent estimates the worst event the jurisdiction could experience in the future. Information from stakeholders, USDA, CDC, and NOAA are the sources of data for the analysis.

To identify vulnerabilities for each jurisdiction, this plan used the following methods:

- American Community Survey (ACS, 2016, 5-year) Data on residents
- GIS analysis of vulnerable populations
- USDA production projections; and
- Stakeholder identified vulnerabilities

All Participating Jurisdictions		
Area Affected: Heat events are not contained to a specific boundary and past events are measured by county; this event can arise in all participating jurisdictions equally.	Occurrences since 1990:	4
	Annual Event Average:	.15
<p>Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.</p> <p>Although the probability based on past occurrences appears low, participating jurisdictions at the public meeting voiced that all jurisdictions experience high temperatures and humidity particularly during summer months.</p>		
<p>Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit.</p>		
<p>Vulnerabilities: While heat events have the potential to damage buildings and crops, vulnerable populations are most at risk in the county during these events. According to the Centers for Disease Control and Prevention (CDC), adults over 65 years of age, infants, children, individuals with chronic illnesses, low-income, outdoor workers, and athletes are the most vulnerable populations to heat related illnesses. The data available on these specified populations suggests that approximately 48% of the population in Brazoria County is vulnerable to heat related illnesses.</p>		
<p>Impacts:</p> <ul style="list-style-type: none"> • 631,021 acres in total throughout the county in farmland (accounting for 118,236,00 dollars in revenue) may be impacted resulting in financial loss for farmers and the county as a whole • Serious illness or loss of life throughout the county 		

Brazoria County (Unincorporated)

Planning Area (Sq. mi):	1,475	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 3 fire station, 5 schools, and 1 shelter 			
Identified Impacts:			
<ul style="list-style-type: none"> • Potential lack of shelters throughout the unincorporated areas could lead to an increase of serious illness or loss of life or stress on other shelters and critical facilities throughout the other areas in the county 			

Alvin

Planning Area (Sq. mi):	25.6	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 29 percent of population are individuals 18 years and younger (7,370 children) • 13 percent of population are individuals 65 and older (3,264 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 42 percent of the total population may face serious illness or health conditions due to high temperatures and humidity 			

Angleton			
Planning Area (Sq. mi):	11.27	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 30 percent of population are individuals 18 years and younger (5,793 children) • 13 percent of population are individuals 65 and older (2,540 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 43 percent of the total population may face serious illness or health conditions due to high temperatures and humidity 			

Bailey's Prairie			
Planning Area (Sq. mi):	7.7	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 26 percent of population are individuals 18 years and younger (215 children) • 14 percent of population are individuals 65 and older (114 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 42 percent of the total population may face serious illness or health conditions due to high temperatures and humidity 			

Bonney			
Planning Area (Sq. mi):	1.66	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 35 percent of population are individuals 18 years and younger (104 children) • 3 percent of population are individuals 65 and older (8 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 38 percent of the total population may face serious illness or health conditions due to high temperatures and humidity 			

Brazoria			
Planning Area (Sq. mi):	2.6	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 28 percent of population are individuals 18 years and younger (872 children) • 14 percent of population are individuals 65 and older (429 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 42 percent of the total population may face serious illness or health conditions due to high temperatures and humidity 			

Brookside Village			
Planning Area (Sq. mi):	2.085	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 25 percent of population are individuals 18 years and younger (419 children) • 15 percent of population are individuals 65 and older (259 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 40 percent of the total population may face serious illness or health conditions due to high temperatures and humidity 			

Clute			
Planning Area (Sq. mi):	5.6	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 35 percent of population are individuals 18 years and younger (104 children) • 3 percent of population are individuals 65 and older (8 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 38 percent of the total population may face serious illness or health conditions due to high temperatures and humidity 			

Danbury and Danbury ISD			
Planning Area (Sq. mi):	1.0	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 28 percent of population are individuals 18 years and younger (414 children) • 8 percent of population are individuals 65 and older (120 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 36 percent of the total population may face serious illness or health conditions due to high temperatures and humidity 			

Iowa Colony			
Planning Area (Sq. mi):	7.33	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 21 percent of population are individuals 18 years and younger (104 children) • 14 percent of population are individuals 65 and older (185 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 35 percent of the total population may face serious illness or health conditions due to high temperatures and humidity 			

Hillcrest Village			
Planning Area (Sq. mi):	0.4	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 16 percent of population are individuals 18 years and younger (129 children) • 39 percent of population are individuals 65 and older (325 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 55 percent of the total population may face serious illness or health conditions due to high temperatures and humidity 			

Holiday Lakes			
Planning Area (Sq. mi):	1	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 39 percent of population are individuals 18 years and younger (401 children) • 7 percent of population are individuals 65 and older (71 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 46 percent of the total population may face serious illness or health conditions due to high temperatures and humidity 			

Jones Creek

Planning Area (Sq. mi):	2.6	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year

Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.

Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit

Identified Vulnerabilities:

- 28 percent of population are individuals 18 years and younger (604 children)
- 14 percent of population are individuals 65 and older (307 older individuals)

Identified Impacts:

- 42 percent of the total population may face serious illness or health conditions due to high temperatures and humidity

Lake Jackson

Planning Area (Sq. mi):	20.9	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year

Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.

Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit.

Identified Vulnerabilities:

- 35 percent of population are individuals 18 years and younger (7,372 children)
- 14 percent of population are individuals 65 and older (3,700 older individuals)

Identified Impacts:

- 49 percent of the total population may face serious illness or health conditions due to high temperatures and humidity

Liverpool			
Planning Area (Sq. mi):	1.1	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 28 percent of population are individuals 18 years and younger (121 children) • 14 percent of population are individuals 65 and older (61 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 42 percent of the total population may face serious illness or health conditions due to high temperatures and humidity 			

Manvel			
Planning Area (Sq. mi):	23.6	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 31 percent of population are individuals 18 years and younger (2,265 children) • 10 percent of population are individuals 65 and older (740 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 41 percent of the total population may face serious illness or health conditions due to high temperatures and humidity 			

Oyster Creek			
Planning Area (Sq. mi):	2	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 35 percent of population are individuals 18 years and younger (439 children) • 14 percent of population are individuals 65 and older (307 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 49 percent of the total population may face serious illness or health conditions due to high temperatures and humidity 			

Quintana			
Planning Area (Sq. mi):	2	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 16 percent of population are individuals 18 years and younger (6 children) • 3 percent of population are individuals 65 and older (1 older individual) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 19 percent of the total population may face serious illness or health conditions due to high temperatures and humidity 			

Richwood			
Planning Area (Sq. mi):	3.1	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 26 percent of population are individuals 18 years and younger (987 children) • 9 percent of population are individuals 65 and older (101 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 35 percent of the total population may face serious illness or health conditions due to high temperatures and humidity 			

Surfside Beach			
Planning Area (Sq. mi):	2.2	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 16 percent of population are individuals 18 years and younger (84 children) • 19 percent of population are individuals 65 and older (101) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 35 percent of the total population may face serious illness or health conditions due to high temperatures and humidity 			

Sweeny and Sweeny ISD			
Planning Area (Sq. mi):	2	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 28 percent of population are individuals 18 years and younger (1,058 children) • 18 percent of population are individuals 65 and older (686 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 46 percent of the total population may face serious illness or health conditions due to high temperatures and humidity 			

West Columbia			
Planning Area (Sq. mi):	2.58	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 29 percent of population are individuals 18 years and younger (1,120 children) • 12 percent of population are individuals 65 and older (482 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 41 percent of the total population may face serious illness or health conditions due to high temperatures and humidity 			

Brazosport ISD			
Planning Area (Sq. mi):	200	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> 12,000 students 18 years and younger, while school is out for summer typically for the hottest months of the year, students in summer school or participating in school events such as athletic events would be vulnerable 			
Identified Impacts:			
<ul style="list-style-type: none"> Students under age 18 and staff over the age of 65 may face serious illness or health conditions due to high temperatures and humidity when participating in summer school activities 			

Velasco Drainage District			
Planning Area (Sq. mi):	236	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> Administrative building and 14 pump stations and levees 			
Identified Impacts:			
<ul style="list-style-type: none"> A heat event may lead to damage to levees or pumps throughout the district. This may result in financial loss for the district in time and funds needed to fix a broken structure or equipment 			

Alvin ISD			
Planning Area (Sq. mi):	252	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 22,000 students 18 years and younger 			
Identified Impacts:			
<ul style="list-style-type: none"> • Students under age 18 and staff over the age of 65 may face serious illness or health conditions due to high temperatures and humidity when participating in summer school activities 			

Port Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Over 20 staff and numerous visitors throughout the port 			
Identified Impacts:			
<ul style="list-style-type: none"> • With large metal structures throughout the port visitors and staff may be more likely to experience heat related illness. 			

Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; .75 events to occur in the next 5 years. A 14 percent chance of the event happening in the next year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 40 percent of population are individuals 18 years and younger (4,861 children) • 7 percent of population are individuals 65 and older (836 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 47 percent of the total population may face serious illness or health conditions due to high temperatures and humidity 			

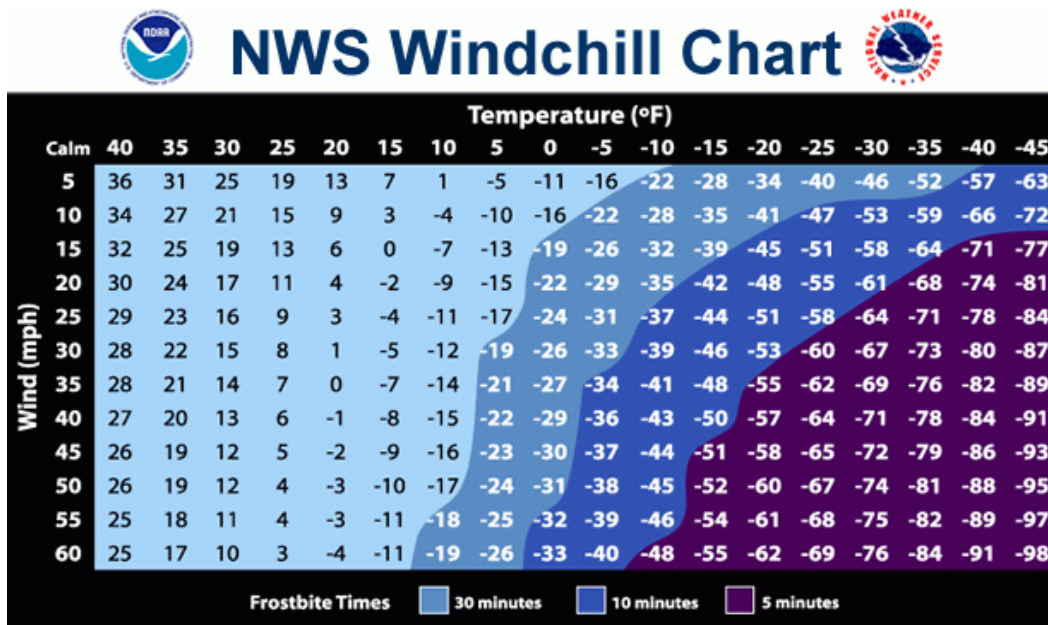
Part 6.7: Winter Weather

6.7 Winter Weather

The two main charts used to measure the magnitude of winter storms is the Sperry-Piltz Ice Accumulation (SPIA) Index Parameters and the National Weather Service's Windchill Chart. The SPIA chart measures the extent of ice in a region considering wind speed and the depth of ice on surfaces. The NWS Windchill Chart considers wind speed and temperatures to determine the amount of time frostbite may occur.

ICE DAMAGE INDEX	* AVERAGE NWS ICE AMOUNT (in inches) * Revised-October, 2011	WIND (mph)	DAMAGE AND IMPACT DESCRIPTIONS
0	< 0.25	< 15	Minimal risk of damage to exposed utility systems; no alerts or advisories needed for crews, few outages.
1	0.10 – 0.25	15 - 25	Some isolated or localized utility interruptions are possible, typically lasting only a few hours. Roads and bridges may become slick and hazardous.
	0.25 – 0.50	> 15	
2	0.10 – 0.25	25 - 35	Scattered utility interruptions expected, typically lasting 12 to 24 hours. Roads and travel conditions may be extremely hazardous due to ice accumulation.
	0.25 – 0.50	15 - 25	
	0.50 – 0.75	< 15	
3	0.10 – 0.25	> = 35	Numerous utility interruptions with some damage to main feeder lines and equipment expected. Tree limb damage is excessive. Outages lasting 1 – 5 days.
	0.25 – 0.50	25 - 35	
	0.50 – 0.75	15 - 25	
	0.75 – 1.00	< 15	
4	0.25 – 0.50	> = 35	Prolonged & widespread utility interruptions with extensive damage to main distribution feeder lines & some high voltage transmission lines/structures. Outages lasting 5 – 10 days.
	0.50 – 0.75	25 - 35	
	0.75 – 1.00	15 - 25	
	1.00 – 1.50	< 15	
5	0.50 – 0.75	> = 35	Catastrophic damage to entire exposed utility systems, including both distribution and transmission networks. Outages could last several weeks in some areas. Shelters needed.
	0.75 – 1.00	> = 25	
	1.00 – 1.50	> = 15	
	> 1.50	Any	

Source: <http://www.spia-index.com/>



Source: http://www.nws.noaa.gov/om/cold/wind_chill.shtml

The national weather service and NOAA also have a variety of watches and warnings for freeze, frost, wind, and ice events; these have been organized in a chart below.

Watch/ Warning/ Advisory	Description
Winter Storm Watch	Issued when there is the potential for significant and hazardous winter weather within 48 hours. It is possible hazardous weather may occur. Significant and hazardous winter weather is defined as: 5 inches or more of snow/sleet within a 12-hour period or 7 inches or more of snow/sleet within a 24-hour period. And/ or enough ice accumulation to cause damage to trees or powerlines and/or a life threatening or damaging combination of snow and/or ice accumulation with wind.
Winter Storm Warning	Issued when a significant combination of hazardous winter weather is occurring or imminent. Significant and hazardous winter weather is defined as above.
Ice Storm Warning	¼ inch or more of ice accumulation.
Winter Weather Advisory	Issued for any amount of freezing rain, or when 2 to 4 inches of snow (alone or in combination with sleet and freezing rain) is expected to cause a significant inconvenience, but not serious enough to warrant a warning.
Freeze Watch	Issued when there is a potential for significant, widespread freezing temperatures within the next 24-36 hours.
Freeze Warning	Issued when significant, widespread freezing temperatures are expected.
Frost Advisory	Issued when the minimum temperature is forecast to be 33 to 36 degrees on clear and calm nights during the growing season.
Wind Chill Advisory	Issued when wind chills of -5F to -19F are expected east of the Blue Ridge Mountains and when wind chills of -10 to -24F are expected along and west of the Blue Ridge Mountains and in Frederick and Carroll Counties in Maryland.
Wind Chill Warning	Issued when wind chills of -20F or lower are expected east of the Blue Ridge Mountains, and when wind chills of -25F or lower are expected along and west of the Blue Ridge Mountains and in Frederick and Carroll Counties in Maryland.

Source: [www.weather.gov/lwx/WarningsDefined#Winter Storm Watch](http://www.weather.gov/lwx/WarningsDefined#Winter%20Storm%20Watch)

Historic Occurrences

There have been no occurrences where deaths, injuries, or property or crop damage was reported.

Jurisdiction	Date	Event	Notes
Brazoria County	2/3/2011	Ice Storm	A period of freezing rain and freezing drizzle led to icy roads, especially bridges and overpasses, and numerous accidents. Between one and two tenths of an inch of ice accumulated.
Brazoria County	1/28/2014	Winter Weather	Light snow was observed just to the west of the Pearland area. No accumulation was reported.
Brazoria County	12/8/2017	Heavy Snow	1 to 3 inches of snow were measured around Pearland, Alvin and the Lake Jackson area.
Brazoria County	2/15/2021	Freeze	Winter storm Uri was a major freeze event that enveloped the entire county for multiple days.

Source: <https://www.ncdc.noaa.gov/stormevents/>

Hazard Analysis & Vulnerability Identification

The hazard analysis uses historic hazard event data to determine the probability of an event occurring again within a given year.

The hazard analysis also provides hazard extent data for each participating jurisdiction. The extent data is the most extreme data recorded during a storm or hazard event and represents the worst damage a jurisdiction has experienced in recent history. Additionally, extent information provides an estimate of the worst event the jurisdiction could experience in the future. Information from stakeholders, Centers for Disease Control and Prevention (CDC), and NOAA are the sources of data for the analysis.

To identify vulnerabilities for each jurisdiction, this plan used the following methods:

- American Community Survey (ACS, 5-year, 2016) data on residents
- GIS analysis of vulnerable populations
- Stakeholder identified vulnerabilities

According to the CDC, adults over 65 years of age and children are the most vulnerable populations to winter weather related illnesses. The data available on these populations suggests that approximately 48% of the population in Brazoria County is vulnerable to winter weather.

All Participating Jurisdictions		
Area Affected: Like heat events winter weather does not have a geographic boundary. This hazard can affect all planning areas equally.	Occurrences since 2000:	3
	Annual Event Average:	.18
Probability: Unlikely; 18 percent chance to occur within a given year.		
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2		
Identified Vulnerabilities:		
<p>From the public meeting participating jurisdictions identified icy roads as a main vulnerability; icy road conditions create dangerous roadways that make people unable to drive to work school etc. at most a few days a year during the winter. Additionally, according to the CDC, adults over 65 years of age and children are the most vulnerable populations to winter weather related illnesses. The data available on these populations suggests that approximately 48% of the population in Brazoria County is vulnerable to winter weather.</p>		
Identified Impacts:		
<ul style="list-style-type: none"> • Power outages caused by frozen limbs that fall and damage powerlines has a far-reaching impact on the jurisdictions participating in this plan. It can cause loss of life, loss of wages for closed businesses, and can cause students to miss school. • Frozen falling limbs can also cause harm to individuals and costly damage to homes, vehicles, and other property. • Icy roadways may lead to accidents with severe injury or loss of life and monetary loss for residents • Extreme and/or prolonged freezing temperatures can cause damage to levee and dam pumps throughout the county. This may result in expensive financial repairs. 		

Brazoria County (Unincorporated)			
Planning Area (Sq. mi):	1,475	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 3 fire station, 5 schools, 1 shelter, 2 correctional facilities • All county-owned roadways 			
Identified Impacts:			
<ul style="list-style-type: none"> • Ice on power lines may lead to power outages throughout the unincorporated areas leading to the 1 shelter being overwhelmed with individuals • Icy roadways may lead to accidents with serious injury or loss of life and financial loss for residents 			

Alvin			
Planning Area (Sq. mi):	25.6	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 29 percent of population are individuals 18 years and younger (7,370 children) • 13 percent of population are individuals 65 and older (3,264 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 42 percent of the total population may face serious illness or health conditions due to low temperatures 			

Angleton			
Planning Area (Sq. mi):	11.27	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance of the event occurring within a year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 30 percent of population are individuals 18 years and younger (5,793 children) • 13 percent of population are individuals 65 and older (2,540 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 43 percent of the total population may face serious illness or health conditions due to low temperatures 			

Bailey's Prairie			
Planning Area (Sq. mi):	7.7	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 26 percent of population are individuals 18 years and younger (215 children) • 14 percent of population are individuals 65 and older (114 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 50 percent of the total population may face serious illness or health conditions due to low temperatures 			

Bonney			
Planning Area (Sq. mi):	1.66	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 35 percent of population are individuals 18 years and younger (104 children) • 3 percent of population are individuals 65 and older (8 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 38 percent of the total population may face serious illness or health conditions due to low temperatures 			

Brazoria			
Planning Area (Sq. mi):	2.6	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 28 percent of population are individuals 18 years and younger (872 children) • 14 percent of population are individuals 65 and older (429 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 32 percent of the total population may face serious illness or health conditions due to low temperatures 			

Brookside Village			
Planning Area (Sq. mi):	2.085	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 25 percent of population are individuals 18 years and younger (419 children) • 15 percent of population are individuals 65 and older (259 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 40 percent of the total population may face serious illness or health conditions due to low temperatures 			

Clute			
Planning Area (Sq. mi):	5.6	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 35 percent of population are individuals 18 years and younger (104 children) • 3 percent of population are individuals 65 and older (8 older individuals) 			
Identified Impacts			
<ul style="list-style-type: none"> • 38 percent of the total population may face serious illness or health conditions due to low temperatures 			

Danbury and Danbury ISD			
Planning Area (Sq. mi):	1.0	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 28 percent of population are individuals 18 years and younger (414 children) • 8 percent of population are individuals 65 and older (120 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 36 percent of the total population may face serious illness or health conditions due to low temperatures 			

Iowa Colony			
Planning Area (Sq. mi):	7.33	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance of the event happening within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 21 percent of population are individuals 18 years and younger (104 children) • 14 percent of population are individuals 65 and older (185 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 35 percent of the total population may face serious illness or health conditions due to low temperatures 			

Hillcrest Village			
Planning Area (Sq. mi):	0.4	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 16 percent of population are individuals 18 years and younger (129 children) • 39 percent of population are individuals 65 and older (325 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 55 percent of the total population may face serious illness or health conditions due to low temperatures 			

Holiday Lakes			
Planning Area (Sq. mi):	1	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 39 percent of population are individuals 18 years and younger (401 children) • 7 percent of population are individuals 65 and older (71 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 46 percent of the total population may face serious illness or health conditions due to low temperatures 			

Jones Creek			
Planning Area (Sq. mi):	2.6	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 28 percent of population are individuals 18 years and younger (604 children) • 14 percent of population are individuals 65 and older (307 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 52 percent of the total population may face serious illness or health conditions due to low temperatures 			

Lake Jackson			
Planning Area (Sq. mi):	20.9	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 35 percent of population are individuals 18 years and younger (7,372 children) • 14 percent of population are individuals 65 and older (3700 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 49 percent of the total population may face serious illness or health conditions due to low temperatures 			

Liverpool			
Planning Area (Sq. mi):	1.1	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 28 percent of population are individuals 18 years and younger (121 children) • 14 percent of population are individuals 65 and older (61 older individuals). 			
Identified Impacts:			
<ul style="list-style-type: none"> • 52 percent of the total population may face serious illness or health conditions due to low temperatures 			

Manvel			
Planning Area (Sq. mi):	23.6	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 31 percent of population are individuals 18 years and younger (2,265 children) • 10 percent of population are individuals 65 and older (740 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 41 percent of the total population may face serious illness or health conditions due to low temperatures 			

Oyster Creek			
Planning Area (Sq. mi):	2	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 35 percent of population are individuals 18 years and younger (439 children) • 14 percent of population are individuals 65 and older (307 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 49 percent of the total population may face serious illness or health conditions due to low temperatures 			

Quintana			
Planning Area (Sq. mi):	2	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 16 percent of population are individuals 18 years and younger (6 children) • 3 percent of population are individuals 65 and older (1 older individual) 			
Identified Impacts:			
19 percent of the total population may face serious illness or health conditions due to low temperatures			

Richwood			
Planning Area (Sq. mi):	3.1	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 26 percent of population are individuals 18 years and younger (987 children) • 9 percent of population are individuals 65 and older (342 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 35 percent of the total population may face serious illness or health conditions due to low temperatures 			

Surfside Beach			
Planning Area (Sq. mi):	2.2	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 16 percent of population are individuals 18 years and younger (84 children) • 19 percent of population are individuals 65 and older (101 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 35 percent of the total population may face serious illness or health conditions due to low temperatures 			

Sweeny and Sweeny ISD			
Planning Area (Sq. mi):	2	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 28 percent of population are individuals 18 years and younger (1,058 children) • 18 percent of population are individuals 65 and older (686 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 46 percent of the total population may face serious illness or health conditions due to low temperatures 			

West Columbia			
Planning Area (Sq. mi):	2.58	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 29 percent of population are individuals 18 years and younger (1,120 children) • 12 percent of population are individuals 65 and older (482 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 41 percent of the total population may face serious illness or health conditions due to low temperatures 			

Brazosport ISD			
Planning Area (Sq. mi):	200	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 12,000 children 18 years and younger • Traveling on icy roads to school 			
Identified Impacts:			
<ul style="list-style-type: none"> • 100 percent of the identified population may face serious illness or health conditions due to low temperatures • School closures may lead to: <ul style="list-style-type: none"> ○ A financial loss for families needing to find childcare or take off work ○ Students falling behind in course work ○ A potential increase in car crashes/ injuries if school closes during the middle of the day and parents are traveling on icy roads to pick up their students 			

Velasco Drainage District			
Planning Area (Sq. mi):	236	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Administrative building and 14 pump stations and levees 			
Identified Impacts:			
<ul style="list-style-type: none"> • An event may lead to damage to levees or pumps throughout the district. This may result in financial loss for the district in time and funds needed to fix a broken structure or equipment, which could lead to a delay in service for the county 			

Alvin ISD			
Planning Area (Sq. mi):	252	Occurrences since 2000:	4
Area Affected:	100 %	Annual Event Average:	.15 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Based on past occurrences recorded above, the highest temperature recorded for the planning area is 105 degrees. The planning area can see temperatures from 110 degrees Fahrenheit to 120 degrees Fahrenheit			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 22,000 students 18 years and younger • Traveling on icy roads to school 			
Identified Impacts:			
<ul style="list-style-type: none"> • 100 percent of the identified population may face serious illness or health conditions due to low temperatures • School closures may lead to: <ul style="list-style-type: none"> ○ A financial loss for families needing to find childcare or take off work ○ Students falling behind in course work 			
A potential increase in car crashes/ injuries if school closes during the middle of the day and parents are traveling on icy roads to pick up their students			

Port Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Over 20 staff and numerous visitors throughout the port 			
Identified Impacts:			
<ul style="list-style-type: none"> • Ice or cold conditions may lead to the port closing for a period leading to a potential economic loss for the surrounding areas and state • If staff or visitors are present during icy conditions they may fall on ice leading to injury 			

Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 2000:	3
Area Affected:	100 %	Annual Event Average:	.18 events a year
Probability: Unlikely; 18 percent chance to occur within a given year.			
Extent: Past events described above demonstrate that the county has experienced a winter weather advisory and an ice damage index of 1; all participating jurisdiction could potentially see a winter storm warning and an Ice Damage Index of 2			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 40 percent of population are individuals 18 years and younger (4,861 children) • 7 percent of population are individuals 65 and older (836 older individuals) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 47 percent of the total population may face serious illness or health conditions due to low temperatures 			

Part 6.8: Hail

6.8 Hail

NOAA's National Centers for Environmental Information (NCEI) intensity scale for hail is the typical way to measure the extent for hail storms. This scale considers the size of an individual piece of hail. A hail storm is considered severe if hail reaches one inch in diameter or roughly the size of a quarter.

Size	Hail Diameter (Inches)	Description
H0	1/4	Pea Size
H1	1/2	Small Marble Size
H2	3/4	Penny or Large Marble Size
H3	7/8	Nickel Size
H4	1	Quarter Size
H5	1 1/4	Half Dollar Size
H6	1 1/2	Walnut or Ping Pong Ball Size
H7	1 3/4	Golfball Size
H8	2	Hen Egg Size
H9	2 1/2	Tennis Ball Size
H10	2 3/4	Baseball Size
H11	3	Teacup Size
H12	4	Grapefruit Size
H13	4 1/2	Softball Size

Source: <https://www.ncei.noaa.gov/>

Historic Occurrences

Since 2000, Brazoria County experienced 47 hail events. Twenty-eight were considered severe (quarter sized and above). Baseball sized hail or size H10 is the largest size hail the County experienced.

Jurisdiction	Date	Magnitude	Property Damage	Notes
Clute	4/2/2000	1.75	\$50,000	
Alvin	5/2/2000	0.88	\$15,000	
Manvel	5/2/2000	0.88	\$15,000	
Manvel	4/16/2001	0.75	\$10,000	
Manvel	9/21/2001	0.75	\$2,000	Dime size hail at State Highway 288 and County Road 58.
Unincorporated	3/30/2002	1	\$10,000	Quarter sized hail occurred at FM 762 and Meyer Field
Lake Jackson	4/8/2002	0.75	\$5,000	Lake Jackson and Richwood Village received 3/4 inch
Brazoria	4/8/2002	1	\$10,000	Sheriff reported quarter sized Hail at CR 521 in Brazoria.
Alvin	5/30/2002	1.75	\$15,000	CR 435 just south of FM 1462.
Sweeny	8/27/2002	0.75	\$10,000	Dime size hail.
Iowa Colony	12/30/2002	0.75	\$5,000	3/4-inch hail.
Danbury	8/11/2003	0.75	\$3,000	
Alvin	6/5/2004	0.75	\$7,000	
Sweeny	6/14/2004	0.75	\$10,000	
Freeport	7/29/2005	1	\$9,000	
Unincorporated	4/21/2006	0.75	\$2,000	
Unincorporated	4/21/2006	0.75	\$2,000	
Unincorporated	5/14/2006	1	\$8,000	Quarter size hail near FM 521.
Unincorporated	5/14/2006	0.75	\$3,000	

Alvin	10/12/2006	0.75	\$0	Penny-sized hail between Angleton and Alvin.
Bailey's Prairie	3/12/2007	2.5	\$35,000	Quarter to tennis ball size hail between Lake Jackson and Sweeny.
Brazoria	3/12/2007	2.25	\$200,000	Residence and 2 cars damaged by near Tennis ball-size hail. Roof damage to a city facility. 43 vehicles damaged. Damage reported to two other businesses and few homes in Brazoria.
Angleton	3/14/2007	0.75	\$5,000	Penny size hail.
Bailey's Prairie	6/3/2009	1.75	\$2,000	Golfball sized hail was observed near Baileys Prairie.
Iowa Colony	6/6/2011	1.75	\$0	Golf ball size hail fell near the intersection of State Highway 288 and State Highway 6.
Alvin	4/4/2012	1	\$1,000	Quarter sized hail reported in Alvin.
Alvin	4/4/2012	2.75	\$5,000	Baseball sized hail reported along Community Drive in Alvin.
Alvin	4/4/2012	1.75	\$4,000	Golfball sized hail reported at a gas station in Alvin.
Alvin	4/4/2012	1.75	\$4,000	Golfball sized hail reported at Alvin Community College.
Lake Jackson	4/4/2012	1	\$1,000	Quarter sized hail reported in Lake Jackson.
Brazoria	4/4/2012	1.75	\$1,000	Golfball sized hail reported by television viewers in Brazoria.
Unincorporated	4/20/2012	1	\$0	Quarter sized hail reported.
Manvel	3/31/2013	0.75	\$0	The penny size hail was reported in the town of Manvel.
Iowa Colony	4/2/2013	1	\$0	A severe thunderstorm produced quarter sized hail along Highway 6 between Fresno and Manvel.
Iowa Colony	6/8/2013	0.75	\$0	The hail was reported at the intersection of Highway 288 and FM Road 101.
Angleton	4/17/2015	2.5	\$15,000	Egg to tennis ball sized hail was reported in Angleton.
Oyster Creek	4/17/2015	1	\$0	Quarter sized hail was reported at Landers Road.
Angleton	4/17/2015	1	\$0	There were multiple reports of quarter sized hail in and around the Angleton area.
Lake Jackson	4/17/2015	1.5	\$2,000	Ping pong sized hail was observed in the Lake Jackson area.
Unincorporated	4/17/2015	2	\$0	Two-inch hail observed to the west of Danbury along SH 288.
Angleton	4/17/2015	1	\$0	Quarter sized hail was observed in the Angleton area.
Iowa Colony	4/17/2015	1	\$0	Quarter sized hail was observed south of Iowa Colony.
Iowa Colony	4/19/2015	0.88	\$0	Nickel sized hail was reported near the intersection of FM 521 and FM 2234.
Iowa Colony	4/19/2015	1	\$0	Quarter sized hail was reported near the intersection of FM 518 and Kirby Drive.
Manvel	5/26/2015	0.75	\$0	Dime size hail was reported between Manvel and Pearland.
Unincorporated	5/13/2016	1	\$0	Quarter size hail was reported about two miles southeast of Sweeny.
Jones Creek	5/21/2016	1.5	\$2,000	Ping pong ball size hail was observed in Jones Creek from this severe thunderstorm.

Source: <https://www.ncdc.noaa.gov/stormevents/>

Hazard Analysis & Vulnerability Identification

The hazard analysis uses historic hazard event data to determine the probability of an event occurring again within a given year.

The hazard analysis also provides hazard extent data for each participating jurisdiction. The extent data is the most extreme data recorded during a storm or hazard event and represents the worst damage a jurisdiction has experienced in recent history. Information from stakeholders, ACS, and NOAA are the sources of data for the analysis.

To identify vulnerabilities for each jurisdiction, this plan used the following methods:

- American Community Survey (ACS, 2016, 5-year) data on residential buildings
- GIS analysis of structures and critical facilities exposed to hail damage; and
- Stakeholder identified vulnerabilities

Brazoria County (All participating jurisdictions)

Identified Vulnerabilities:

- During the county-wide public meeting attendees described critical facilities including emergency response vehicles (fire trucks, ambulances etc.) as vulnerabilities throughout the county.
 - Uncovered parking lots may lead to damaged vehicles
 - Facility's generators located outside may be damaged.
 - Damage to critical facilities, including roof damage or window damage, may occur as well.
- Identified vulnerable populations throughout the county, identified in the county profile, may be more vulnerable financially if they sustain damage to a personal vehicle, property

Identified Impacts:

- Strong winds or hail could prevent first responders from traveling to assist individuals, because of unsafe driving conditions such as debris hitting emergency vehicles
- Critical facilities could sustain hail damage- windows of response vehicles broken, potentially delaying first responders reaching those in need and city services during and after the event
- Financial loss for individuals whose vehicles or homes are damaged by hail-including cost to repair hail damage and potential financial loss from potential loss of a job because of the lack of transportation to and from their job
- Financial loss for jurisdictions that need to replace damaged buildings or infrastructure, including damaged roofs or equipment

Brazoria County (Unincorporated)			
Planning Area (Sq. mi):	1,475	Occurrences since 2000:	8
Area Affected:	100 %	Annual Event Average:	.47
Probability: Likely; 47 percent chance event will occur in a year			
Extent: According to past events, the jurisdiction has recorded 2-inch hail (H8); the jurisdiction could see H9 to H10 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 3 fire station, 5 schools, 1 shelter, and 2 correctional facilities 			
Identified Impacts:			
<ul style="list-style-type: none"> • Damage to critical facilities and equipment including uncovered emergency vehicles may impede response time and lead to increase loss of life or serious injury 			

Alvin			
Planning Area (Sq. mi):	25.6	Occurrences since 2000:	8
Area Affected:	100%	Annual Event Average:	.47
Probability: Likely; 47 percent chance event will occur in a year			
Extent: According to past events, the jurisdiction has recorded 2.75-inch hail (H10); the jurisdiction could see H11 to H12 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 14 schools, 5 electrical substations, 4 fire stations, 2 EMS, 1 wastewater treatment plant, 2 shelters, 6 police stations, and 1 emergency operation center • 1,431 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Damage to critical facilities and equipment including uncovered emergency vehicles may impede response time and lead to increase loss of life or serious injury • Financial loss for individuals whose homes or cars are damaged due to the event • Economic loss for the city due to public facilities that may be damaged 			

Angleton			
Planning Area (Sq. mi):	11.27	Occurrences since 2000:	4
Area Affected:	100%	Annual Event Average:	.235
Probability: Likely; 23.5 percent chance event will occur in a year			
Extent: According to past events, the jurisdiction has recorded 2.5-inch hail (H9); the jurisdiction could see H10 to H11 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 3 correctional facilities, 1 electrical substation, 1 EMS, 2 fire stations, 9 schools, 3 shelters, 9 police stations, and 2 hospitals • 803 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Damage to critical facilities and equipment including uncovered emergency vehicles may impede response time and lead to increase loss of life or serious injury • Financial loss for individuals whose homes or cars are damaged due to the event • Economic loss for the city due to public facilities that may be damaged 			

Bailey's Prairie			
Planning Area (Sq. mi):	7.7	Occurrences since 2000:	2
Area Affected:	100%	Annual Event Average:	.12
Probability: Unlikely; 12 percent chance event will occur in a year			
Damage: According to past events, the jurisdiction has recorded 2.5-inch hail (H9); the jurisdiction could see H10 to H11 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 170 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial loss for individuals whose homes or cars are damaged due to the event • Economic loss for the city due to public facilities that may be damaged 			

Bonney			
Planning Area (Sq. mi):	1.66	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0
Probability: Although there have been no recorded events, hail is not contained to a specific area; the probability of hail can be similar to neighboring jurisdictions. Considering surrounding jurisdictions, the probability is: Likely; 47 percent chance event will occur in a year.			
Extent: In considering surrounding jurisdictions the extent is: the largest hail recorded is 2.75-inch hail (H10); the jurisdiction could see H11 to H12 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 22 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial loss for individuals whose homes or cars are damaged due to the event • Economic loss for the city due to public facilities that may be damaged 			

Brazoria			
Planning Area (Sq. mi):	2.6	Occurrences since 2000:	3
Area Affected:	100%	Annual Event Average:	.18
Probability: Unlikely; 12 percent chance event will occur in a year			
Extent: According to past events, the jurisdiction has recorded 2.5-inch hail (H9); the jurisdiction could see H10 to H11 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 1 correctional facility, 1 electrical substation, 1 EMS, 4 fire stations, 9 schools, 6 shelters, 2 police stations, 2 hospitals, 6 shelters, and 2 emergency operation centers • 282 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Damage to critical facilities and equipment including uncovered emergency vehicles may impede response time and lead to increase loss of life or serious injury • Financial loss for individuals whose homes or cars are damaged due to the event • Economic loss for the city due to public facilities that may be damaged 			

Brookside Village			
Planning Area (Sq. mi):	2.085	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0
Probability: Although there have been no recorded events, hail is not contained to a specific area; the probability of hail can be similar to neighboring jurisdictions. Considering surrounding jurisdictions, the probability is: Likely; 47 percent chance event will occur in a year.			
Extent: In considering surrounding jurisdictions the extent is: the largest hail recorded is 2.75-inch hail (H10); the jurisdiction could see H11 to H12 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 1 police station • 122 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Damage to critical facilities and equipment including uncovered emergency vehicles may impede response time and lead to increase loss of life or serious injury • Financial loss for individuals whose homes or cars are damaged due to the event • Economic loss for the city due to public facilities that may be damaged 			

Clute			
Planning Area (Sq. mi):	5.6	Occurrences since 2000:	1
Area Affected:	100 %	Annual Event Average:	.059
Probability: Unlikely; 5.9 percent chance event will occur in a year			
Extent: According to past events, the jurisdiction has recorded 1.75-inch hail (H7); the jurisdiction could see H8 to H9 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 1 EMS, 1 electrical substation, 1 fire station, 5 schools, 5 shelters, 2 police stations, 2 hospitals, 1 emergency operation center, and 1 wastewater treatment • 775 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Damage to critical facilities and equipment including uncovered emergency vehicles may impede response time and lead to increase loss of life or serious injury • Financial loss for individuals whose homes or cars are damaged due to the event • Economic loss for the city due to public facilities that may be damaged 			

Danbury and Danbury ISD			
Planning Area (Sq. mi):	1.0	Occurrences since 2000:	1
Area Affected:	100%	Annual Event Average:	.059
Probability: Unlikely; 5.9 percent chance event will occur in a year			
Extent: According to past events, the jurisdiction has recorded .75-inch hail (H2); the jurisdiction could see H3 to H4 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 1 electrical substation, 1 EMS, 1 fire station, 3 schools, and 1 police station • 92 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Damage to critical facilities and equipment including uncovered emergency vehicles may impede response time and lead to increase loss of life or serious injury • Financial loss for individuals whose homes or cars are damaged due to the event • Economic loss for the city due to public facilities that may be damaged 			

Iowa Colony			
Planning Area (Sq. mi):	7.33	Occurrences since 2000:	7
Area Affected:	100%	Annual Event Average:	.41
Probability: Likely; 41 percent chance event will occur in a year			
Greatest Extent of Damage: According to past events, the jurisdiction has recorded 1-inch hail (H4); the jurisdiction could see H5 to H6 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 1 EMS and 1 school • 88 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Damage to critical facilities and equipment including uncovered emergency vehicles may impede response time and lead to increase loss of life or serious injury • Financial loss for individuals whose homes or cars are damaged due to the event • Economic loss for the city due to public facilities that may be damaged 			

Hillcrest Village			
Planning Area (Sq. mi):	0.4	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0
<p>Probability: Although there have been no recorded events, hail is not contained to a specific area; the probability of hail can be similar to neighboring jurisdictions. Considering surrounding jurisdictions, the probability is: Likely; 47 percent chance event will occur in a year.</p>			
<p>Extent: In considering surrounding jurisdictions the extent is: the largest hail recorded is 2.75-inch hail (H10); the jurisdiction could see H11 to H12 hail in the future.</p>			
<p>Identified Vulnerabilities:</p> <ul style="list-style-type: none"> • 53 residential structures at risk 			
<p>Identified Impacts:</p> <ul style="list-style-type: none"> • Financial loss for individuals whose homes or cars are damaged due to the event • Economic loss for the city due to public facilities that may be damaged 			

Holiday Lakes			
Planning Area (Sq. mi):	1	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0
<p>Probability: Although there have been no recorded events, hail is not contained to a specific area; the probability of hail can be similar to neighboring jurisdictions. Considering surrounding jurisdictions, the probability is: Likely; 47 percent chance event will occur in a year.</p>			
<p>Extent: In considering surrounding jurisdictions the extent is: the largest hail recorded is 2.75-inch hail (H10); the jurisdiction could see H11 to H12 hail in the future.</p>			
<p>Identified Vulnerabilities:</p> <ul style="list-style-type: none"> • 84 residential structures at risk 			
<p>Identified Impacts:</p> <ul style="list-style-type: none"> • Financial loss for individuals whose homes or cars are damaged due to the event • Economic loss for the city due to public facilities that may be damaged 			

Jones Creek			
Planning Area (Sq. mi):	2.6	Occurrences since 2000:	1
Area Affected:	100%	Annual Event Average:	.059
Probability: Unlikely; 5.9 percent chance event will occur in a year			
Extent: According to past events, the jurisdiction has recorded 1.5-inch hail (H6); the jurisdiction could see H7 to H8 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 1 school and 1 shelter • 130 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Damage to critical facilities and equipment including uncovered emergency vehicles may impede response time and lead to increase loss of life or serious injury • Financial loss for individuals whose homes or cars are damaged due to the event • Economic loss for the city due to public facilities that may be damaged 			

Lake Jackson			
Planning Area (Sq. mi):	20.9	Occurrences since 2000:	3
Area Affected:	100%	Annual Event Average:	.18
Probability: Unlikely; 18 percent chance event will occur in a year			
Extent: According to past events, the jurisdiction has recorded 2.5-inch hail (H6); the jurisdiction could see H7 to H8 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 1 dam, 1 electrical substation, 2 EMS, 2 fire stations, 1 hospital, 2 police stations, 7 schools, 9 shelters, and 1 wastewater treatment facility 			
Identified Impacts:			
<ul style="list-style-type: none"> • Damage to critical facilities and equipment including uncovered emergency vehicles may impede response time and lead to increase loss of life or serious injury • Financial loss for individuals whose homes or cars are damaged due to the event • Economic loss for the city due to public facilities that may be damaged 			

Liverpool			
Planning Area (Sq. mi):	1.1	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0
Probability: Although there have been no recorded events, hail is not contained to a specific area; the probability of hail can be similar to neighboring jurisdictions. Considering surrounding jurisdictions, the probability is: Likely; 47 percent chance event will occur in a year.			
Extent: In considering surrounding jurisdictions the extent is: the largest hail recorded is 2.75-inch hail (H10); the jurisdiction could see H11 to H12 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 1 fire station and 2 police stations • 37 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Damage to critical facilities and equipment including uncovered emergency vehicles may impede response time and lead to increase loss of life or serious injury • Financial loss for individuals whose homes or cars are damaged due to the event • Economic loss for the city due to public facilities that may be damaged 			

Manvel			
Planning Area (Sq. mi):	23.6	Occurrences since 2000:	5
Area Affected:	100%	Annual Event Average:	.29
Probability: Unlikely; 2.9 percent chance event will occur in a year			
Extent: According to past events, the jurisdiction has recorded .75-inch hail (H2); the jurisdiction could see H3 to H4 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 1 EMS, 2 fire stations, 3 police stations, 4 schools, and 1 shelter • 443 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Damage to critical facilities and equipment including uncovered emergency vehicles may impede response time and lead to increase loss of life or serious injury • Financial loss for individuals whose homes or cars are damaged due to the event • Economic loss for the city due to public facilities that may be damaged 			

Oyster Creek			
Planning Area (Sq. mi):	2	Occurrences since 2000:	1
Area Affected:	100%	Annual Event Average:	.059
Probability: Unlikely; 6 percent chance event will occur in a year			
Extent: According to past events, the jurisdiction has recorded 1-inch hail (H4); the jurisdiction could see H5 to H6 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 1 fire station, 1 police station, 1 power plant, and 1 shelter • 78 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Damage to critical facilities and equipment including uncovered emergency vehicles may impede response time and lead to increase loss of life or serious injury • Financial loss for individuals whose homes or cars are damaged due to the event • Economic loss for the city due to public facilities that may be damaged 			

Quintana			
Planning Area (Sq. mi):	2	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0
Probability: Although there have been no recorded events, hail is not contained to a specific area; the probability of hail can be similar to neighboring jurisdictions. Considering surrounding jurisdictions, the probability is: Likely; 47 percent chance event will occur in a year.			
Extent: In considering surrounding jurisdictions the extent is: the largest hail recorded is 2.75-inch hail (H10); the jurisdiction could see H11 to H12 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 5 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial loss for individuals whose homes or cars are damaged due to the event • Economic loss for the city due to public facilities that may be damaged 			

Richwood			
Planning Area (Sq. mi):	3.1	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0
Probability: Although there have been no recorded events, hail is not contained to a specific area; the probability of hail can be similar to neighboring jurisdictions. Considering surrounding jurisdictions, the probability is: Likely; 47 percent chance event will occur in a year.			
Extent: In considering surrounding jurisdictions the extent is: the largest hail recorded is 2.75-inch hail (H10); the jurisdiction could see H11 to H12 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 1 police station, 1 school, and 1 shelter • 246 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Damage to critical facilities and equipment including uncovered emergency vehicles may impede response time and lead to increase loss of life or serious injury • Financial loss for individuals whose homes or cars are damaged due to the event • Economic loss for the city due to public facilities that may be damaged 			

Surfside Beach			
Planning Area (Sq. mi):	2.2	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0
Probability: Although there have been no recorded events, hail is not contained to a specific area; the probability of hail can be similar to neighboring jurisdictions. Considering surrounding jurisdictions, the probability is: Likely; 47 percent chance event will occur in a year.			
Extent: In considering surrounding jurisdictions the extent is: the largest hail recorded is 2.75-inch hail (H10); the jurisdiction could see H11 to H12 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 1 fire station, and 1 police station 			
Identified Impacts:			
<ul style="list-style-type: none"> • Damage to critical facilities and equipment including uncovered emergency vehicles may impede response time and lead to increase loss of life or serious injury • Financial loss for individuals whose homes or cars are damaged due to the event • Economic loss for the city due to public facilities that may be damaged 			

Sweeny and Sweeny ISD			
Planning Area (Sq. mi):	2	Occurrences since 2000:	1
Area Affected:	100%	Annual Event Average:	.06
Probability: Unlikely; 6 percent chance event will occur in a year			
Extent: According to past events, the jurisdiction has recorded .75-inch hail (H2); the jurisdiction could see H3 to H4 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> Critical facilities including: 1 electrical substation, 1 EMS, 2 fire stations, 1 hospital, 2 emergency operations centers, 3 police stations, 2 schools, 1 shelter, 3 schools, 2 power plants 			
Identified Impacts:			
<ul style="list-style-type: none"> Damage to critical facilities and equipment including uncovered emergency vehicles may impede response time and lead to increase loss of life or serious injury 			

West Columbia			
Planning Area (Sq. mi):	2.58	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0
Probability: Although there have been no recorded events, hail is not contained to a specific area; the probability of hail can be similar to neighboring jurisdictions. Considering surrounding jurisdictions, the probability is: Likely; 47 percent chance event will occur in a year.			
Extent: In considering surrounding jurisdictions the extent is: the largest hail recorded is 2.75-inch hail (H10); the jurisdiction could see H11 to H12 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> 246 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> Financial loss for individuals whose homes or cars are damaged due to the event Economic loss for the city due to public facilities that may be damaged 			

Brazosport ISD

Planning Area (Sq. mi):	200	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0

Probability: Although there have been no recorded events, hail is not contained to a specific area; the probability of hail can be similar to neighboring jurisdictions. Considering surrounding jurisdictions, the probability is: Likely; 47 percent chance event will occur in a year.

Extent: In considering surrounding jurisdictions the extent is: the largest hail recorded is 2.75-inch hail (H10); the jurisdiction could see H11 to H12 hail in the future.

Identified Vulnerabilities:

- 19 schools- 10 elementary schools, 3 high schools, 5 middle schools, 1 alternative school
- 12,000 children 18 years and younger

Identified Impacts:

- Serious injury could occur if students or staff are outside during event
- Financial loss for the school district if buildings are damaged due to hail
- 100 percent of the identified population may face serious illness or health conditions due to low temperatures
- School closures may lead to:
 - A financial loss for families needing to find childcare or take off work
 - Students falling behind in course work
- A potential increase in car crashes/ injuries if school closes during the middle of the day and parents are traveling to pick up their students during a hail event

Velasco Drainage District

Planning Area (Sq. mi):	236	Occurrences since 2000:	0
Area Affected:	100 %	Annual Event Average:	0

Probability: Although there have been no recorded events, hail is not contained to a specific area; the probability of hail can be similar to neighboring jurisdictions. Considering surrounding jurisdictions, the probability is: Likely; 47 percent chance event will occur in a year.

Extent: In considering surrounding jurisdictions the extent is: the largest hail recorded is 2.75-inch hail (H10); the jurisdiction could see H11 to H12 hail in the future.

Identified Vulnerabilities:

- 14 pump stations and administrative building

Identified Impacts:

- If pump stations are damaged due to hail or administrative building is damaged, there could be a delay in service and a financial loss for the District

Alvin ISD			
Planning Area (Sq. mi):	252	Occurrences since 2000:	0
Area Affected:	100 %	Annual Event Average:	0
Probability: Although there have been no recorded events, hail is not contained to a specific area; the probability of hail can be similar to neighboring jurisdictions. Considering surrounding jurisdictions, the probability is: Likely; 47 percent chance event will occur in a year.			
Extent: In considering surrounding jurisdictions the extent is: the largest hail recorded is 2.75-inch hail (H10); the jurisdiction could see H11 to H12 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 31 schools- 17 elementary schools, 3 high schools, 6 middle schools, 1 alternative school • 22,000 children 18 years and younger 			
Identified Impacts:			
<ul style="list-style-type: none"> • Serious injury could occur if students or staff are outside during event • Financial loss for the school district if buildings are damaged due to hail • School closures may lead to: <ul style="list-style-type: none"> ○ A financial loss for families needing to find childcare or take off work ○ Students falling behind in course work • A potential increase in car crashes/ injuries if school closes during the middle of the day and parents are traveling to pick up their students during a hail event 			

Port Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 2000:	1
Area Affected:	100%	Annual Event Average:	.059
Probability: Although there have been no recorded events, Port Freeport is near the City of Freeport. The likelihood of the event happening in the Port maybe similar to the city. Freeport’s probability is: Unlikely; 5.9 percent chance event will occur in a year.			
Extent: Similarly, the City of Freeport’s extent is: According to past events, the jurisdiction has recorded 1-inch hail (H2); the jurisdiction could see H3 to H4 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Port facilities, equipment, and administrative buildings 			
Identified Impacts:			
<ul style="list-style-type: none"> • Serious injury or loss of life if an event occurs while staff or visitors are at the port • Financial loss for the port if damage occurs and economic loss for the surrounding cities and state if the port is closed for a prolonged time. 			

Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 2000:	1
Area Affected:	100%	Annual Event Average:	.059
Probability: Unlikely; 5.9 percent chance event will occur in a year.			
Extent: According to past events, the jurisdiction has recorded 1-inch hail (H2); the jurisdiction could see H3 to H4 hail in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 1 correctional facility, 5 electrical substations, 2 EMS, 3 fire stations, 6 schools, 5 shelters, 8 police stations, 1 emergency operations center, 2 wastewater treatment plants, and 1 power plant • 697 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial loss for individuals whose homes or cars are damaged due to the event • Economic loss for the city due to public facilities that may be damaged 			

Part 6.9: Tornado

6.9 Tornado

Before 2007, tornadoes were ranked through the Fujita Scale. The Enhanced Fujita Scale replaced the Fujita Scale in 2007 and is a set of wind estimates (not measurements) based on damage. The higher the number the more intense the tornado. Both the Fujita Scale and the Enhanced Fujita Scale are below.

Fujita Scale		Enhanced Fujita Scale			Typical Damage
Scale	Fastest 1/4 mile (mph)	3 second gust (mph)	EF Number	3 Second Gust (mph)	
F0	40-72	45-78	0	65-85	Light damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over.
F1	73-112	79-117	1	86-109	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
F2	113-157	118-161	2	110-137	Considerable damage. Roofs torn off well-constructed houses; foundations of frame homes shifted; mobile homes destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
F3	158-207	162-209	3	138-167	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations blown away some distance.
F4	208-260	210-261	4	168-199	Devastating damage. Whole frame houses Well-constructed houses and whole frame houses completely leveled; cars thrown and small missiles generated.
F5	261-318	262-317	5	200-234	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly more than 109 yards; high-rise buildings have significant structural deformation; incredible phenomena will occur.

Source: <http://www.spc.noaa.gov/>

Historic Occurrence

There has been no crop damage or deaths reported due to tornadoes in the county. There have been six injuries reported over the last 17 years due to tornadoes. One injury was reported in the City of Brazoria in 2003. Three injuries were reported in Manvel and two injuries were reported in unincorporated Brazoria County in 2015.

Jurisdiction	Date	Event Type	Magnitude	Property Damage	Notes
Unincorporated	5/2/2000	Tornado	F0	\$25,000	Barn damaged at FM 521 and FM 1462.
Angleton	9/14/2000	Funnel Cloud		\$0	Numerous funnel clouds sighted.
Angleton	9/14/2000	Funnel Cloud		\$0	Numerous funnel clouds sighted.
Quintana	5/7/2001	Funnel Cloud		\$0	
Freeport	5/7/2001	Funnel Cloud		\$0	
Angleton	5/31/2001	Funnel Cloud		\$0	
Manvel	6/5/2001	Tornado	F0	\$40,000	A tornado touched down near Highway 6 and County Road 99, downing trees and damaging one home.
Liverpool	6/5/2001	Funnel Cloud		\$0	
Alvin	8/30/2001	Tornado	F0	\$45,000	Fire Department reported a tornado near FM 2351 and County Road 129. Damage included a few metal roofs torn off buildings and trees down.
Brazoria	8/30/2001	Tornado	F0	\$5,000	tornado touched down 2.5 miles southeast of Wild Peach Village.
Unincorporated	9/4/2001	Funnel Cloud		\$0	A waterspout moved over land as a funnel near Chocolate Bayou and dissipated near Liverpool.
Brazoria	12/12/2001	Tornado	F1	\$200,000	Several homes in the Lazy Oak Ranch Subdivision on CR 461A had roof damage. A machine shop on CR 461 sustained heavy damage, along with the cars and boats in its parking lot. Numerous trees were down from the San Bernard River to the Lazy Oak subdivision.
Brazoria	12/12/2001	Tornado	F0	\$200,000	There was roof and structural damage to homes and businesses, in a 10-block area, along TX Highway 36 in Brazoria. A 175-foot internet tower was blown down, signs were bent over, and minor roof damage to Brazoria Elementary school.
Lake Jackson	9/6/2002	Tornado	F0	\$5,000	Tornado sighted west Lake Jackson and CR 332
West Columbia	9/7/2002	Tornado	F0	\$25,000	Downed trees in West Columbia along Hwy 36.
Iowa Colony	10/9/2003	Tornado	F0	\$2,000	Tornado caused damage to a barn.
Brazoria	11/17/2003	Tornado	F0	\$75,000	Tornado touch down in downtown Brazoria. Roof damage to several buildings along Highway 36 with tree damage in Old Town Brazoria. A semi-trailer was lifted and over-turned on its side at intersection of Road 332 and Highway 36.
Unincorporated	6/30/2004	Funnel Cloud		\$0	Several reports of funnel cloud off FM 521.
Oyster Creek	5/14/2006	Tornado	F0	\$5,000	Tornado sighted by restaurant customers near FM 523 caused minimal damage.
Oyster Creek	4/25/2007	Tornado	EF0	\$0	CR 459 and FM 227 in the community of Demi-John.
Alvin	5/11/2007	Funnel Cloud		\$0	
Angleton	7/1/2007	Funnel Cloud		\$0	
Clute	7/27/2007	Funnel Cloud		\$0	
Unincorporated	7/10/2008	Funnel Cloud		\$0	Sighted near the intersection of FM 521 and CR 32.
Unincorporated	1/9/2012	Tornado	EF0	\$15,000	Damaged a barn and a shed near the Brazos Bend State Park.
Unincorporated	1/9/2012	Tornado	EF0	\$20,000	This EF-0 tornado destroyed a shed and blew off the top of a rice dryer.

Bonney	1/9/2012	Tornado	EF0	\$10,000	This EF-0 tornado rolled over two semi-tractor trailers on Highway 288 near the intersection of Highway 288 and South County Road 48.
Unincorporated	9/12/2012	Funnel Cloud		\$0	At the Brazoria National Wildlife Refuge near the intersection of FM 2004 and FM 523.
Alvin	9/12/2012	Funnel Cloud		\$0	Intersection of Highway 6 and Highway 35.
Alvin	5/28/2014	Funnel Cloud		\$0	Three were reported off of Highway 6 west of the town of Alvin.
Angleton	7/6/2014	Funnel Cloud		\$0	State Highway 35 just to the west of Angleton.
Angleton	7/6/2014	Funnel Cloud		\$0	Just to the north of Angleton.
Unincorporated	7/24/2014	Funnel Cloud		\$0	A funnel cloud was sighted to the east of Danbury.
Bonney	7/24/2014	Funnel Cloud		\$0	Spotted just outside the town of Bonney.
Unincorporated	4/26/2015	Funnel Cloud		\$0	A funnel cloud was sighted in Damon.
Unincorporated	5/5/2015	Funnel Cloud		\$0	Two funnel clouds were sighted.
Unincorporated	5/17/2015	Funnel Cloud		\$0	Near the intersection of FM 2004 and FM 2917.
Jones Creek	10/31/2015	Tornado	EF1	\$50,000	One mile southwest south of Jones Creek where it uprooted several large trees. The tornado then crossed Highway 36 and severely damaged a mobile home just north of the roadway. Estimated peak wind speed was 90 mph.
Lake Jackson	10/31/2015	Tornado	EF0	\$50,000	Tracked from a subdivision south of the Brazos Mall knocking down fences and shallow rooted trees. It then continued into a subdivision to the northeast of the mall uprooting several large trees. Estimated peak wind speed was 85 mph.
Unincorporated	10/31/2015	Tornado	EF0	\$50,000	In a field south of Liverpool and damaged a cattle handling area. The tornado tracked into the town of Liverpool and produced minor damage to trees and structures. The tornado lifted north of town. The estimated peak wind was 80 mph.
Angleton	10/31/2015	Tornado	EF0	\$200,000	Severely damaged a farm house and barn then flipped three trailers over at an RV park before weakening. Estimated peak wind was 90 mph.
Manvel	10/31/2015	Tornado	EF1	\$50,000	Tracked along Wink Road. The tornado injured 3 people as it destroyed one mobile home and damaged several other mobile homes. The estimated peak wind was 100 mph.
Unincorporated	10/31/2015	Tornado	EF1	\$200,000	Damaged 15 to 20 trailers and overturned 1 trailer. An elderly couple sustained injuries in the overturned trailer. The estimated peak wind was 90 mph.
Unincorporated	10/31/2015	Tornado	EF2	\$2,000,000	Down just east of Clover Field Airport. Expanded in size and weakened in intensity as it approached FM 518 over the last half of its track. There was extensive tree damage along the entire track. Estimated peak wind was 115 mph.
Unincorporated	10/31/2015	Tornado	EF2	\$2,000,000	East of Clover Field Airport. This tornado expanded in size and weakened in intensity as it approached FM 518 over the last half of its track. There was extensive tree damage along the entire track. Estimated peak wind was 115 mph.
Sweeny	2/14/2017	Tornado	EF0	\$100,000	Along CR 321 and intersection of FM 524 and CR 321. Damage was mainly to trees and power lines. Estimated peak winds were 75 mph.
Unincorporated	3/5/2017	Tornado	EF0	\$0	Touched down around FM 2611 and CR 659.
Unincorporated	5/22/2017	Tornado	EF0	\$200,000	Damaged a porch roof in the back of a home, destroyed a pump house and damaged a trailer, and knocked over several trees.
Liverpool	5/22/2017	Funnel Cloud		\$0	Funnel cloud was sighted in the Liverpool area.

Unincorporated	8/25/2017	Tornado	EF0	\$30,000	Touched down near HWY 36 with numerous trees snapped or downed. Barn also damaged.
Bailey's Prairie	8/25/2017	Tornado	EF0	\$100,000	East of West Columbia damaging trees, roofs, and outbuildings off of highway 35. A barn and several outbuildings were also destroyed on the east side of the Brazos River. Property was flooded.
Oyster Creek	8/25/2017	Funnel Cloud		\$0	
Danbury	8/25/2017	Tornado	EF0	\$100,000	Damaged a barn along with several trees off of County Road 207. Crossed Hwy 35. Snapped and/or downed several trees along County Rd 45 before lifting at the Crocodile Encounter on County Rd 48.
Liverpool	8/25/2017	Tornado	EF0	\$50,000	West of Liverpool. 4 power poles downed on highway 35 along with trees near the Gulf Coast Speedway. Damaged some barns and outbuildings as well as trees on County Road 511.
Iowa Colony	8/25/2017	Tornado	EF0	\$500,000	It struck a new subdivision along county road 56 and highway 288. Roofs and fences were damaged and several trees snapped and/or downed.

Source: <https://www.ncdc.noaa.gov/stormevents/>

Hazard Analysis & Vulnerability Identification

The hazard analysis uses historic hazard event data to determine the probability of an event occurring again within a given year. The analysis calculates the average number of events in each jurisdiction annually and then calculates the percent chance of the event occurring within a year.

The hazard analysis also provides hazard extent data for each participating jurisdiction. The extent data is the most extreme data recorded during a storm or hazard event and represents the worst damage a jurisdiction has experienced in recent history. Information from stakeholders and NOAA are the sources of data for the analysis.

To identify vulnerabilities for each jurisdiction, this plan used the following methods:

- American Community Survey (5-year, 2016)
- GIS analysis of structures exposed to tornado damage; and
- Stakeholder identified vulnerabilities.

Brazoria County (All participating jurisdictions)

Identified Vulnerabilities:

Similar to the hurricane section, this section identifies vulnerabilities from high winds. High winds can tear down powerlines, trees, barns, fences, and multitude of other debris can be blown into roadways and homes during the event.

Additionally, residences and commercial buildings could be damaged or destroyed due to wind events; older residential neighborhoods and structures without a permanent foundation were identified as one of the main vulnerabilities throughout the county. While current building codes address the vulnerability of wind damage to structures, older buildings (particularly residential buildings) were built when less stringent building codes were in place; therefore, older residential building and residences without a permanent foundation are a focus in this section.

Identified Impacts:

- Downed powerlines could impact communication and daily active leading to a financial loss for the county, cities and individuals, and could impede first responders from reaching those in need or residents evacuating
- Strong winds could prevent first responders from traveling to assist individuals, because of unsafe driving conditions such as debris hitting emergency vehicles
- Critical facilities could sustain wind damage, potentially delaying first responders reaching those in need and city services during and after the event
- Economic and financial loss for cities and individuals including property loss

Brazoria County (Unincorporated)			
Planning Area (Sq. mi):	1,475	Occurrences since 2000:	18
Area Affected:	100%	Annual Event Average:	1.06
Probability: Highly Likely; 100 percent chance of event occurring in each year			
Extent: According to past events, the strongest tornado was an EF1; the jurisdiction can see an EF1 to EF2 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 3 fire station, 5 schools, 1 shelter, 2 correctional facilities 			
Identified Impacts:			
<ul style="list-style-type: none"> • Critical facilities and equipment could be damaged with windows broken or roofs blown off or destroyed by high winds • First responders could be delayed, this may increase serious injury or loss of life throughout the county 			

Alvin			
Planning Area (Sq. mi):	25.6	Occurrences since 2000:	4
Area Affected:	100%	Annual Event Average:	.24
Probability: Likely; 24 percent chance occurring within a given year			
Extent: According to past events, the strongest tornado was an F0 (EF0); the jurisdiction can see a EF1 to EF2 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 6,275 Residential buildings built before 1980 (65.8% of housing stock) • 1,334 Mobile Homes (14% of housing stock) • 42 Boats/ RVs/ Vans acting as main housing (.4 % of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • Almost 81 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Angleton			
Planning Area (Sq. mi):	11.27	Occurrences since 2000:	7
Area Affected:	100%	Annual Event Average:	.41
Probability: Likely; 41 percent chance of event occurring in each year			
Extent: According to past events, the strongest tornado was an EF0; the jurisdiction can see a EF1 to EF2 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 6,426 Residential buildings built before 1980 (80 % of housing stock) • 685 Mobile Homes (8.5 % of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • Almost 90 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Bailey's Prairie			
Planning Area (Sq. mi):	7.7	Occurrences since 2000:	1
Area Affected:	100%	Annual Event Average:	.059
Probability: Unlikely; 5.9 percent chance of event occurring in a year			
Extent: According to past events, the strongest tornado was an EF0; the jurisdiction can see a EF1 to EF2 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 82 Residential buildings built before 1980 (85.5% of housing stock) • 22 Mobile Homes (22.9% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 100 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Bonney			
Planning Area (Sq. mi):	1.66	Occurrences since 2000:	1
Area Affected:	100%	Annual Event Average:	.059
Probability: Unlikely; 5.9 percent chance of event occurring in a year			
Extent: According to past events, the strongest tornado was a funnel cloud; the jurisdiction can see a EF0 to EF1 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 107 Residential buildings built before 1980 (73.1% of housing stock) • 30 Mobile Homes (20.5% of housing stock) • 4 Boats/ RVs/ Vans acting as main housing (2.7% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 96 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Brazoria			
Planning Area (Sq. mi):	2.6	Occurrences since 2000:	4
Area Affected:	100%	Annual Event Average:	.24
Probability: Likely; 24 percent chance occurring within a given year			
Extent: According to past events, the strongest tornado was an F1(EF1); the jurisdiction can see a EF2 to EF3 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 1,129 Residential buildings built before 1980 (80% of housing stock) • 144 Mobile Homes (10.2% of housing stock) • 14 Boats/ RVs/ Vans acting as main housing (1% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 91 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Brookside Village			
Planning Area (Sq. mi):	2.085	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0
Probability: Although the jurisdiction has no recorded events, the jurisdiction is near Manvel perhaps the jurisdiction has a similar likelihood that the event will occur Manvel's probability is: Unlikely; 12 percent chance event will occur in each year.			
Extent: Similarly, Manvel's extent is: According to past events, the strongest tornado was an EF0; the jurisdiction can see a EF2 to EF3 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 480 Residential buildings built before 1980 (79.1% of housing stock) • 7 Mobile Homes (1.2% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • Almost 81 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Clute			
Planning Area (Sq. mi):	5.6	Occurrences since 2000:	1
Area Affected:	100%	Annual Event Average:	.059
Probability: Unlikely; 5.9 percent chance of event occurring in a year			
Extent: According to past events, the strongest event was a funnel cloud; the jurisdiction can see a EF10 to EF1 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 3,347 Residential buildings built before 1980 (64.8% of housing stock) • 312 Mobile Homes (6% of housing stock) • 26 Boats/ RVs/ Vans acting as main housing (.5% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • Approximately 71 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Danbury and Danbury ISD			
Planning Area (Sq. mi):	1.0	Occurrences since 2000:	1
Area Affected:	100%	Annual Event Average:	.059
Probability: Unlikely; 5.9 percent chance of event occurring in a year			
Extent: According to past events, the strongest tornado was an EF0; the jurisdiction can see a EF1 to EF2 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 500 Residential buildings built before 1980 (86.2% of housing stock) • 4 Mobile Homes (.7% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • Almost 87 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Iowa Colony			
Planning Area (Sq. mi):	7.33	Occurrences since 2000:	2
Area Affected:	100%	Annual Event Average:	.12
Probability: Unlikely; 12 percent chance of event occurring in a year			
Extent: According to past events, the strongest tornado was an EF0; the jurisdiction can see a EF1 to EF2 in the future.			
Identified Vulnerabilities and Impacts:			
<ul style="list-style-type: none"> • 263 Residential buildings built before 1980 (60% of housing stock) • 122 Mobile Homes (27.9% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • Almost 88 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Hillcrest Village			
Planning Area (Sq. mi):	0.4	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0
Probability: Although the jurisdiction has no recorded events, the jurisdiction is near Alvin. Perhaps Hillcrest Village has a similar likelihood that the event will occur. Alvin's probability is: Likely; 24 percent chance event will occur in each year.			
Extent: Similarly, Alvin's extent is: According to past events, the strongest tornado was an F0 (EF0); the jurisdiction can see a EF1 to EF2 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 289 Residential buildings built before 1980 (82.9% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • Almost 83 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Holiday Lakes			
Planning Area (Sq. mi):	1	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0
Probability: Although the jurisdiction has no recorded events, the jurisdiction is near Bailey's Prairie. Perhaps Holiday Lakes has a similar likelihood that the event will occur. Bailey's Prairie extent is: Unlikely; 5.9 percent chance of event occurring in a year			
Extent: Similarly, Holiday Lake's extent is: According to past events, the strongest tornado was an EF0; the jurisdiction can see a EF1 to EF2 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 3,347 Residential buildings built before 1980 (64.8% of housing stock) • 216 Mobile Homes (51.8% of housing stock) • 5 Boats/ RVs/ Vans acting as main housing (1.2% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 100 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Jones Creek			
Planning Area (Sq. mi):	2.6	Occurrences since 2000:	1
Area Affected:	100%	Annual Event Average:	.059
Probability: Unlikely; 5.9 percent chance of event occurring in a year			
Extent: According to past events, the strongest tornado was an EF1; the jurisdiction can see a EF2 to EF3 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 3,347 Residential buildings built before 1980 (64.8% of housing stock) • 165 Mobile Homes (19.1% of housing stock) • 4 Boats/ RVs/ Van acting as main housing (.5% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • About 85 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Lake Jackson			
Planning Area (Sq. mi):	20.9	Occurrences since 2000:	2
Area Affected:	100%	Annual Event Average:	.12
Probability: Unlikely; 12 percent chance event will occur in each year			
Extent: According to past events, the strongest tornado was an EF0; the jurisdiction can see a EF1 to EF2 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 8,272 Residential buildings built before 1980 (70.1% of housing stock) • 6 Mobile Homes (.1% of housing stock) • 9 Boats/ RVs/ Vans acting as main housing (.1% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • About 71 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Liverpool			
Planning Area (Sq. mi):	1.1	Occurrences since 2000:	3
Area Affected:	100%	Annual Event Average:	.18
Probability: Unlikely; 18 percent chance event will occur in each year			
Extent: According to past events, the strongest tornado was an EF0; the jurisdiction can see a EF1 to EF2 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 177 Residential buildings built before 1980 (72.2% of housing stock) • 37 Mobile Homes (15.1% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • Approximately, 87 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Manvel			
Planning Area (Sq. mi):	23.6	Occurrences since 2000:	2
Area Affected:	100%	Annual Event Average:	.12
Probability: Unlikely; 12 percent chance event will occur in each year			
Extent: According to past events, the strongest tornado was an EF0; the jurisdiction can see a EF2 to EF3 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 971 Residential buildings built before 1980 (32.8% of housing stock) • 329 Mobile Homes (11.1% of housing stock) • 77 Boats/ RVs/ Van acting as main housing (2.6% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 100 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Oyster Creek			
Planning Area (Sq. mi):	2	Occurrences since 2000:	3
Area Affected:	100%	Annual Event Average:	.18
Probability: Unlikely; 18 percent chance event will occur in each year			
Extent: According to past events, the strongest tornado was an EF0; the jurisdiction can see a EF1 to EF2 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 356 Residential buildings built before 1980 (68.6% of housing stock) • 231 Mobile Homes (44.5% of housing stock) • 23 Boats/ RVs/ Vans acting as main housing (4.4% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 100 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Quintana			
Planning Area (Sq. mi):	2	Occurrences since 2000:	1
Area Affected:	100%	Annual Event Average:	.059
Probability: Unlikely; 5.9 percent chance of event occurring in a year			
Extent: According to past events, the strongest event was a funnel cloud; the jurisdiction can see an EF0 to EF1 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 554 Residential buildings built before 1980 (83.9% of housing stock) • 59 Mobile Homes (8.9% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • About 94 percent of the housing stock was either built before 1980 or does not have a permanent foundation this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Richwood			
Planning Area (Sq. mi):	3.1	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0
Probability: Although the jurisdiction has no recorded events, the jurisdiction is near Clute. Perhaps Richwood has a similar likelihood that the event will occur. Clute's probability is: Unlikely; 5.9 percent chance to occur within a given year.			
Extent: Similarly, Clute's extent is: According to past events, the strongest event was a funnel cloud; the jurisdiction can see a EF10 to EF1 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 356 Residential buildings built before 1980 (68.6% of housing stock) • 231 Mobile Homes (44.5% of housing stock) • 23 Boats/ RVs/ Vans acting as main housing (4.4% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 100 percent of the housing stock was either built before 1980 or does not have a permanent foundation this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Surfside Beach			
Planning Area (Sq. mi):	2.2	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0
Probability: Although there have been no recorded events, the city of Surfside is near the jurisdiction of Quintana which has experienced one tornado; the probability maybe like Quintana's which is: Unlikely; 5.9 percent chance of event occurring in a year.			
Extent: Similarly, Surfside Beach's extent maybe like Quintana's which is: According to past events, the strongest event was a funnel cloud; the jurisdiction can see an EF0 to EF1 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 356 Residential buildings built before 1980 (68.6% of housing stock) • 231 Mobile Homes (44.5% of housing stock) • 23 Boats/ RVs/ Van acting as main housing (4.4% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 72 percent of the housing stock was either built before 1980; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Sweeny and Sweeny ISD			
Planning Area (Sq. mi):	2	Occurrences since 2000:	1
Area Affected:	100%	Annual Event Average:	.059
Probability: Unlikely; 5.9 percent chance of event occurring in a year			
Extent: According to past events, the strongest tornado was an F0; the jurisdiction can see a EF1 to EF2 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 1,220 Residential buildings built before 1980 (73% of housing stock) • 127 Mobile Homes (7.6% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • 81 percent of the housing stock was either built before 1980 or does not have a permanent foundation this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

West Columbia			
Planning Area (Sq. mi):	2.58	Occurrences since 2000:	1
Area Affected:	100%	Annual Event Average:	.059
Probability: Unlikely; 5.9 percent chance of event occurring in a year			
Extent: According to past events, the strongest tornado was an F0 (EF0); the jurisdiction can see a EF1 to EF2 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 1,447 Residential buildings built before 1980 (88.3% of housing stock) • 38 Mobile Homes (2.3% of housing stock) 			
Identified Impacts			
<ul style="list-style-type: none"> • About 92 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Brazosport ISD

Planning Area (Sq. mi):	200	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0

Probability: Although the jurisdiction has no recorded events, the jurisdiction is throughout Brazoria County. Perhaps the ISD has a similar likelihood that the event will occur as unincorporated areas of the county. Brazoria County unincorporated area's probability is: Very Likely; 100 percent chance event will occur in a year.

Extent: Similarly, Brazoria's extent is: According to past events, the strongest tornado was an EF1; the jurisdiction can see an EF1 to EF2 in the future.

Identified Vulnerabilities:

- 12,000 students
- 19 schools- 10 elementary schools, 3 high schools, 5 middle schools, 1 alternative school

Identified Impacts:

- Serious injury or loss of life if an event occurs during school hours or during extracurricular activities
- Financial loss for the school district if any of the schools or administrative buildings are damaged due to the event.
- School closures due to damage or during the day of the event may lead to:
 - A financial loss for families needing to find childcare or take off work
 - Students falling behind in course work
- A potential increase in car crashes/ injuries if school closes during the middle of the day and parents are traveling to pick up their students during an event

Velasco Drainage District

Planning Area (Sq. mi):	236	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0

Probability: Although the jurisdiction has no recorded events, the jurisdiction is throughout Brazoria County. Perhaps the district has a similar likelihood that the event will occur as unincorporated areas of the county. Brazoria County unincorporated area's probability is: Very Likely; 100 percent chance event will occur in a year.

Extent: Similarly, Brazoria's extent is: According to past events, the strongest tornado was an EF1; the jurisdiction can see an EF1 to EF2 in the future.

Identified Vulnerabilities:

- Administrative building 14 pump stations and levees throughout the district

Identified Impacts:

- Financial loss for the district if buildings, equipment or levees are damaged during the event

Alvin ISD			
Planning Area (Sq. mi):	256	Occurrences since 1871:	0
Area Affected:	100 %	Annual Event Average:	0
<p>Probability: Although the jurisdiction has no recorded events, the jurisdiction is throughout Brazoria County. Perhaps the ISD has a similar likelihood that the event will occur as unincorporated areas of the county. Brazoria County unincorporated area’s probability is: Very Likely; 100 percent chance event will occur in a year.</p>			
<p>Extent: Similarly, Brazoria’s extent is: According to past events, the strongest tornado was an EF1; the jurisdiction can see an EF1 to EF2 in the future.</p>			
<p>Identified Vulnerabilities:</p> <ul style="list-style-type: none"> • 31 schools- 17 elementary schools, 3 high schools, 6 middle schools, 1 alternative school • 22,000 children 18 years and younger, adds an additional 1,000 students per year 			
<p>Identified Impacts:</p> <ul style="list-style-type: none"> • Serious injury or loss of life if an event occurs during school hours or during extracurricular activities • Financial loss for the school district if any of the schools or administrative buildings are damaged due to the event. • School closures due to damage or during the day of the event may lead to: <ul style="list-style-type: none"> ○ A financial loss for families needing to find childcare or take off work ○ Students falling behind in course work • A potential increase in car crashes/ injuries if school closes during the middle of the day and parents are traveling to pick up their students during an event 			

Port Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 2000:	0
Area Affected:	100%	Annual Event Average:	0
<p>Probability: Although there have been no recorded events, the Port of Freeport is near the jurisdiction of Freeport which has experienced one tornado; the probability maybe like Freeport’s which is: Unlikely; 5.9 percent chance of event occurring in a year</p>			
<p>Extent: Similarly, the Port of Freeport’s extent maybe like the Jurisdiction of Freeport’s which is: According to past events, the strongest event was a funnel cloud; the jurisdiction can see an EF0 to EF1 in the future.</p>			
<p>Identified Vulnerabilities:</p> <ul style="list-style-type: none"> • Port facilities, equipment, and administrative buildings 			
<p>Identified Impacts:</p> <ul style="list-style-type: none"> • Serious injury or loss of life if an event occurs while staff or visitors are at the port • Financial loss for the port if damage occurs and economic loss for the surrounding cities and state if the port is closed for a prolonged time. 			

Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 2000:	1
Area Affected:	100 %	Annual Event Average:	.059
Probability: Unlikely; 5.9 percent chance of event occurring in a year			
Extent: According to past events, the strongest event was a funnel cloud; the jurisdiction can see an EF0 to EF1 in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 4,004 Residential buildings built before 1980 (82.9% of housing stock) • 229 Mobile Homes (4.9% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • About 88 percent of the housing stock was either built before 1980 or does not have a permanent foundation; this may lead to an increase in home damage, a financial loss for residents, and a potential increase in serious injuries or loss of life throughout the jurisdiction. 			

Part 6.10: Dam & Levee Failure

6.10 Dam and Levee Failure

According to FEMA's Federal Guidelines for Dam Safety: Hazard Potential Classification System for Dams, extent is measured through judging the potential for human, economic, lifeline, and environmental loss.

Hazard Potential Classification	Loss of Human Life	Economic, Environmental, Lifeline Losses
Low	None Expected	Low and generally limited to owner
Significant	None Expected	Yes
High	Probable. One or more expected.	Yes (But not necessary for this classification)

Source: <https://www.fema.gov/>

Historic Occurrence

Brazoria County does not have any dam or levee failures identified since 2000. There was a levee breach near West Columbia in a neighborhood to the north, Columbia Lakes, during Hurricane Harvey on August 27th, 2017. While this levee protects hundreds of homes and during this event the county evacuated these neighborhoods and residents to the south-east, this incident was not a levee break. The breached levee increased flooding in the nearby neighborhoods.

There are 51 known dams and levees in Brazoria County. These dams are maintained by public, state, federal, local, or partnering entities. All dams have been classified as 'Low' in the hazard potential classification.

Jurisdiction	Name	Hazard Potential Classification
Unincorporated County	Beal Reservoir Levee	Low
Unincorporated County	Black Ranch Lake Levee	Low
Unincorporated County	Brazos River Club Levee	Low
Unincorporated County	Mallard Lake Club Dam	Low
Alvin	Division Lake Levee	Low
Unincorporated County	Lake Jackson Levee	Low
Unincorporated County	Mowery Lake Levee	Low
Alvin	Duck Lake Dam	Low
Unincorporated County	Solutia Reservoir Levee	Low
Unincorporated County	Salt Bayou Lake Water	Low
Brazoria	Brazoria Reservoir Dam	Low
Lake Jackson	Buffalo Camp Bayou Reservoir Dam	Low
Liverpool	Dingle Lake Number 1 Levee	Low
Danbury	Lazy CZ Number 1 Reservoir Levee	Low
Danbury	McCullough Lake Levee	Low
Danbury	McCullough Number 17 Reservoir	Low
Danbury	Reservoir Number Levee Complex 2	Low
Danbury	Reservoir Number 9 Levee Complex 2	Low
Unincorporated County	Linnville Bayou Reservoir Dam	Low
Unincorporated County	Markle Lake Levee	Low
Unincorporated County	San Bernard Reservoir Number 1	Low
Unincorporated County	San Bernard Reservoir Number 2 Levee	Low
Unincorporated County	San Bernard Reservoir Number 3 Levee	Low
Angleton	Angleton Fishing & Hunting Club Levee	Low

Angleton	Bar X Ranch Lake Levee	Low
Unincorporated County	Bieri Lakes Reservoir Number 1 Levee	Low
Unincorporated County	Bieri Lakes Reservoir Number 2 Levee	Low
Unincorporated County	Bieri Lakes Reservoir Number 3 Levee	Low
Unincorporated County	Bieri Lakes Reservoir Number 4 Levee	Low
Angleton	Bintliff Lake Levee	Low
Angleton	Coale Dam	Low
Angleton	Hudeck Reservoir Levee	Low
Unincorporated County	Mccormack Reservoir Number 3 Levee	Low
Unincorporated County	Mccormack Reservoir Number 4 Levee	Low
Unincorporated County	Tigner-Farrer Levee	Low
Holiday Lakes	William Harris Reservoir Dam	Low
Unincorporated County	Raleigh Farms Reservoir Levee	Low
Unincorporated County	Brazoria City Reservoir Levee	Low
Brazoria	Dacus Lake Dam	Low
Unincorporated County	TDCJ Clemens Unit Dam 1	Low
Unincorporated County	TDCJ Clemens Unit Dam 2	Low
Unincorporated County	Columbia Lakes Reservoir Dam	Low
Unincorporated County	Griffth Reservoir Levee	Low
Unincorporated County	Lagoon Reservoir Dam	Low
Unincorporated County	Live Oak 1 Levee	Low
Unincorporated County	Live Oak 2 Levee	Low
Unincorporated County	Pappas Lakes and Lodge Levee	Low
Alvin	Amoco Chemicals Reservoir Levee	Low
Unincorporated County	Dingle Lake 2 Levee	Low
Unincorporated County	Mustang Lake East Dam	Low
Unincorporated County	Mustang Lake West Dam	Low

Hazard Analysis & Vulnerability Identification

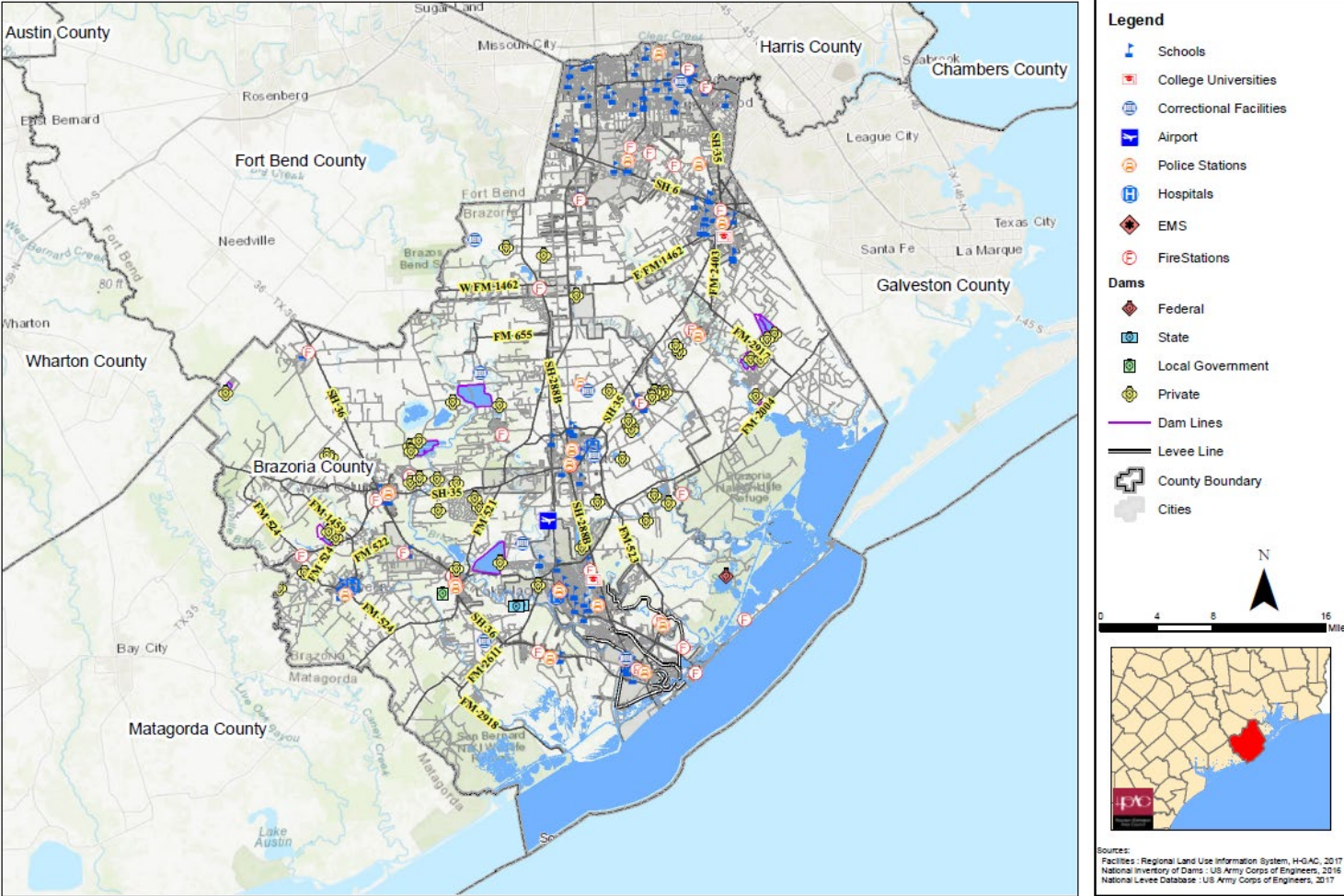
A data deficiency exists for dams throughout the county. An inundation map and modeling a dam failure could not be completed with current information available. More research and information regarding dams is needed and is included as a mitigation action in this plan.

The hazard analysis uses historic hazard event data to determine the probability of an event occurring again within the next five years. The analysis calculates the average number of events in each jurisdiction annually and then multiplies by five. With no recorded occurrences in the last 17 years and limited data there is unknown information.

The hazard analysis also provides hazard extent data for each affected jurisdiction. The extent data is the most extreme data recorded during a storm or hazard event and represents the worst damage a jurisdiction has experienced in recent history. Information from stakeholders, FEMA, and H-GAC's critical facilities database were used for this analysis.

Only the communities at risk of experiencing impacts from a dam or levee failure are profiled. Those jurisdictions include Unincorporated Brazoria County, Holiday Lakes, West Columbia, Bailey's Prairie, Brazoria, Freeport, Port of Freeport, and Oyster Creek. The remaining jurisdictions participating in this plan are not at risk for dam and failure and will not be profiled.

Dam & Levee Map : Brazoria County



Brazoria County (All Jurisdictions)

Identified Vulnerabilities:

As described in the hazard identification section, there are no records of failed dams or levees in the county and no available inundation maps. For the purposes of this plan, all immediately downstream critical facilities, residences, and human life will be treated as vulnerable to dam and levee failures. Each dam and levee has a low hazard classification, and some flooding can be expected in the event of a complete or partial failure. Because of the low hazard classification, this analysis only considered structures and property within 1 mile of dams and levees. Based on this assumption, the following vulnerabilities have been identified:

- 667 residences immediately downstream of dam and levees are considered vulnerable.
- Approximately 1,057 acres of agricultural land is vulnerable
- 84 downstream critical facilities are vulnerable to a dam and levee failure

Potential Impacts:

- Residential, commercial, and public property loss throughout the county due to flooding in localized areas or throughout the county
- In total, 631,021 acres in total throughout the county in farmland at risk of flooding due to a dam or levee failure
- Mass evacuations during a levee breach or failure may strain shelters throughout the county or may create a potential for an increase in car accidents leading to serious injury or financial loss for residents throughout the county
- Destroyed powerlines or electrical substations may lead to a loss of communication for a particular jurisdiction or for a large portion of the county. This could lead to an inability to reach people in need.
- In the instance that flooding occurs at critical facility without a generator or the generator does not work, critical facilities could lose power and may not be usable due to flooding or power outage. This may slow down first responders and allow for a greater loss of life, injury, or property damage particularly when dam or levee failure is accompanied by other hazardous events.

Brazoria County (Unincorporated)

Planning Area (Sq. mi):	1,475	Occurrences since 2000:	0
Area Affected:	6%	Annual Event Average:	0

Probability: Not Likely, Less than 10% chance event will occur within the next 5 years

Greatest Extent of Damage: Complete failure of dam and levees during major rain event.

Identified Vulnerabilities:

- 312 residential structures
- Vulnerable populations are concentrated near the coast near the San Bernard Wildlife Refuge
- Critical facilities including: 3 fire station, 5 schools, 1 shelter, 2 correctional facilities

Identified Impacts:

- Expensive repairs and rebuilding associated with flooding of properties and structures.

Bailey's Prairie

Planning Area (Sq. mi):	7.7	Occurrences since 2000:	0
Area Affected:	6%	Annual Event Average:	0

Probability: Not Likely, Less than 10% chance event will occur within the next 5 years

Greatest Extent of Damage: Complete failure of dam and levees during major rain event.

Identified Vulnerabilities:

- 11 residential structures at risk

Identified Impacts:

- Expensive repairs and rebuilding associated with flooding of properties and structures.

Brazoria			
Planning Area (Sq. mi):	2.6	Occurrences since 2000:	0
Area Affected:	5%	Annual Event Average:	0
Probability: Complete failure of dam and levees during major rain event.			
Greatest Extent of Damage: Not Likely, Less than 10% chance event will occur within the next 5 years			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 1 correctional facility, 1 electrical substation, 1 EMS, 4 fire stations, 9 schools, 6 shelters, 2 police stations, 2 hospitals, 6 shelters, and 2 emergency operation centers • 14 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Expensive repairs and rebuilding associated with flooding of properties and structures. 			

Holiday Lakes			
Planning Area (Sq. mi):	1	Occurrences since 2000:	0
Area Affected:	30%	Annual Event Average:	0
Probability: Not Likely, Less than 10% chance event will occur within the next 5 years			
Greatest Extent of Damage: Complete failure of dam and levees during major rain event.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 26 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Expensive repairs and rebuilding associated with flooding of properties and structures. 			

Oyster Creek			
Planning Area (Sq. mi):	2	Occurrences since 2000:	0
Area Affected:	15%	Annual Event Average:	0
Probability: Not Likely, Less than 10% chance event will occur within the next 5 years			
Greatest Extent of Damage: Complete failure of dam and levees during major rain event.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 1 fire station, 1 police station, 1 power plant, and 1 shelter • 8 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Expensive repairs and rebuilding associated with flooding of properties and structures. 			

West Columbia			
Planning Area (Sq. mi):	2.58	Occurrences since 2000:	0
Area Affected:	27%	Annual Event Average:	0
Probability: Not Likely, Less than 10% chance event will occur within the next 5 years			
Greatest Extent of Damage: Complete failure of dam and levees during major rain event.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 1 electrical substation, 1 EMS, 1 fire station, 3 schools, 3 shelters, 4 police stations, and 1 powerplant • 66 residential structures at risk 			
Identified Impacts:			
<ul style="list-style-type: none"> • Expensive repairs and rebuilding associated with flooding of properties and structures. 			

Port Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 2000:	0
Area Affected:	45%	Annual Event Average:	0
Probability: Not Likely, Less than 10% chance event will occur within the next 5 years			
Greatest Extent of Damage: Complete failure of dam and levees during major rain event.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Administrative buildings, cargo ships, equipment, semi-trucks • Over 20 staff and visitors at the port 			
Identified Impacts:			
<ul style="list-style-type: none"> • Expensive repairs and rebuilding associated with flooding of properties and structures. • Economic losses would also be expected if port activities were to be halted due to levee failures. • Loss of staff wages due to closing of port. 			

Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 2000:	0
Area Affected:	33%	Annual Event Average:	0
Probability: Not Likely, Less than 10% chance event will occur within the next 5 years			
Greatest Extent of Damage: Complete failure of dam and levees during major rain event.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Critical facilities including: 1 correctional facility, 5 electrical substations, 2 EMS, 3 fire stations, 6 schools, 5 shelters, 8 police stations, 1 emergency operations center, 2 wastewater treatment plants, and 1 power plant • 230 residential structures exposed to hazard 			
Identified Impacts:			
<ul style="list-style-type: none"> • Expensive repairs and rebuilding associated with flooding of properties and structures. 			

Part 6.11: Expansive Soils

6.11 Expansive Soils

The chart below shows the Linear Extensibility Percent (LEP) and Coefficient of Linear Extent (COLE) to show the Shrink-Swell Class of expansive soils. COLE is a test frequently used to characterize expansive soils. COLE is a measure expressed as a fraction of the change in a soil sample dimension from the moist to dry state. The LEP is a measure expressed as a percentage of the change in a soil sample dimension from the moist to dry state. The Shrink-Swell Class is found in comparing these two measurements. A Moderate to Very High rating marks soils that have the potential to contract and expand, leading to broken foundations and water pipes, for example.

Shrink-Swell Class	Linear Extensibility Percent (LEP)	Coefficient of Linear Extent (COLE)
Low	3	0.03
Moderate	3 to 6	.03-.06
High	6 to 9	.06-.09
Very High	Greater than or equal to 9	Greater than or equal to 0.09

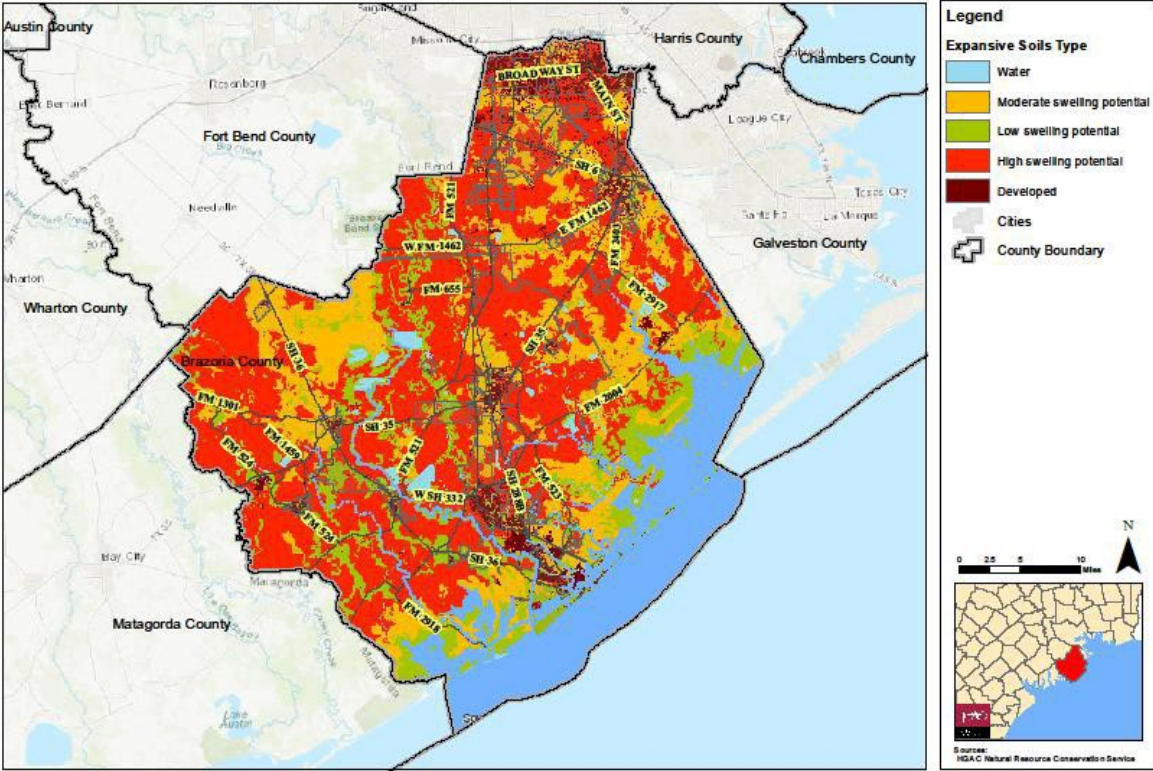
Source: <https://www.nrcs.usda.gov>

Brazoria County Expansive Soils Data

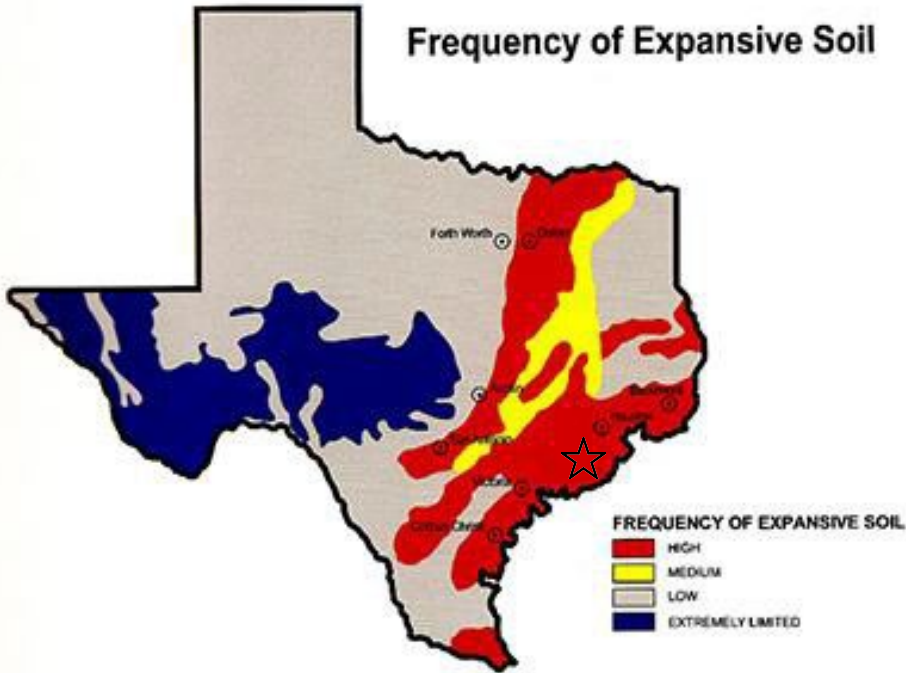
Jurisdiction	Low Swelling Potential	Moderate Swelling Potential	High Swelling Potential
Unincorporated			X
City of Alvin			X
City of Angleton			X
City of Baileys Prairie			X
City of Bonney			X
City of Brazoria			X
City of Brookside Village			X
City of Clute			X
City of Danbury			X
City of Iowa Colony			X
City of Hillcrest Village			X
Town of Holiday Lakes			X
City of Jones Creek			X
City of Lake Jackson			X
City of Liverpool			X
City of Manvel			X
City of Oyster Creek			X
City of Quintana	X		
City of Richwood			X
City of Surfside Beach	X		
City of Sweeny			X
City of West Columbia			X
Brazosport ISD			X
Velasco Drainage District			X
Port of Freeport			X

While there are no previous events recorded, the chart directly above and the Expansive Soil Map directly below help define the extent and location of expansive soils for each of the participating jurisdictions. The Frequency of Expansive Soils map further below helps to demonstrate the probability of expansive soils in the planning area.

Expansive Soil Map : Brazoria County



Frequency of Expansive Soil



Source: <http://www.tellafirma.com/find-texas-expansive-soils/>. Star notes Brazoria county's general location.

Hazard Analysis & Vulnerability Identification

The hazard analysis provides hazard extent data for each participating jurisdiction. The extent data is the most extreme data recorded during a storm or hazard event and represents the worst damage a jurisdiction has experienced in recent history. A data deficiency for "Occurrences" was addressed by assigning 1 occurrence for any jurisdiction that had Moderate to High shrink swell classes.

Information from stakeholders, USDA's Natural Resource Conservation Services, and H-GAC's critical facilities database were used for this analysis.

To identify vulnerabilities for each jurisdiction, this plan used the following methods:

- American Community Survey (ACS 2016, 5 year) data on residential structures
- GIS analysis of structures within the high to very high shrink swell classes; and
- Stakeholder identified vulnerabilities.

Brazoria County (All Jurisdictions)

Identified Vulnerabilities:

Broken foundations and water pipes in commercial and residential buildings and public property. While newer buildings can be impacted; older buildings including critical facilities and homes are more likely to be impacted; this is due to older buildings being exposed to numerous weather events and seasons, having building standards that do not take expansive soils into account, and the lack of engineering solutions to mitigate expansive soils in the past. Therefore, the vulnerabilities focus on older buildings in each of the jurisdictions.

Identified Impacts:

Jurisdictions can be impacted by expensive financial costs to repair foundations and water lines for public facilities. School districts, home owners, and business owners could also be impacted by broken pipes, cracked foundations, and other structural repairs caused by expanding and contracting soils. Pipes in critical facilities may also lead to a loss of service, or damaged roads/bridges can increase response time to get to someone in need.

Brazoria County (Unincorporated)

Planning Area (Sq. mi):	1,475	Occurrences since 2000:	1
Area Affected:	85%	Annual Event Average:	.06

Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.

Extent: Based off Brazoria County’s expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.

Identified Vulnerabilities:

- Critical facilities including: 3 fire station, 5 schools, 1 shelter, and 2 correctional facilities

Identified Impacts:

- Financial cost to county to repair foundations for public facilities
- Cracked pipes in critical facilities may lead to a loss of service or increased response time to get to someone in need.

Alvin

Planning Area (Sq. mi):	25.6	Occurrences since 2000:	1
Area Affected:	75%	Annual Event Average:	.06

Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.

Extent: Based off Brazoria County's expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.

Identified Vulnerabilities:

- 6,275 Residential buildings built before 1980 (65.8% of housing stock)
- Critical facilities including: 14 schools, 5 electrical substations, 4 fire stations, 2 EMS, 1 wastewater treatment plant, 2 shelters, 6 police stations, and 1 emergency operation center

Identified Impacts:

- Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities
- Cracked pipes in critical facilities may lead to a loss of service or length the time first responders take to get to someone in need.

Angleton

Planning Area (Sq. mi):	11.27	Occurrences since 2000:	1
Area Affected:	75%	Annual Event Average:	.06

Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.

Extent: Based off Brazoria County's expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.

Identified Vulnerabilities:

- 6,426 Residential buildings built before 1980 (80 % of housing stock)
- Critical facilities including: 3 correctional facilities, 1 electrical substation, 1 EMS, 2 fire stations, 9 schools, 3 shelters, 9 police stations, and 2 hospitals

Identified Impacts:

- Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities
- Cracked pipes in critical facilities may lead to a loss of service or length the time first responder take to get to someone in need.

Bailey's Prairie

Planning Area (Sq. mi):	7.7	Occurrences since 2000:	1
Area Affected:	75%	Annual Event Average:	.06

Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.

Extent: Based off Brazoria County's expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.

Identified Vulnerabilities:

- 82 Residential buildings built before 1980 (85.5% of housing stock)

Identified Impacts:

- Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities
- Cracked pipes in critical facilities may lead to a loss of service or length the time first responder take to get to someone in need.

Bonney

Planning Area (Sq. mi):	1.66	Occurrences since 2000:	1
Area Affected:	75 %	Annual Event Average:	.06

Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.

Extent: Based off Brazoria County's expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.

Identified Vulnerabilities:

- 107 Residential buildings built before 1980 (73.1% of housing stock)

Identified Impacts:

- Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities

Brazoria			
Planning Area (Sq. mi):	2.6	Occurrences since 2000:	1
Area Affected:	75%	Annual Event Average:	.06
Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.			
Extent: Based off Brazoria County’s expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 1,129 Residential buildings built before 1980 (80% of housing stock) • Critical facilities including: 1 correctional facility, 1 electrical substation, 1 EMS, 4 fire stations, 9 schools, 6 shelters, 2 police stations, 2 hospitals, 6 shelters, and 2 emergency operation centers 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities • Cracked pipes in critical facilities may lead to a loss of service or length the time first responderstake to get to someone in need. 			

Brookside Village			
Planning Area (Sq. mi):	2.085	Occurrences since 2000:	1
Area Affected:	50%	Annual Event Average:	.06
Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.			
Extent: Based off Brazoria County’s expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 480 Residential buildings built before 1980 (79.1% of housing stock) • 1 police station 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities • Cracked pipes in critical facilities may lead to a loss of service or length the time first responderstake to get to someone in need. 			

Clute			
Planning Area (Sq. mi):	5.6	Occurrences since 2000:	1
Area Affected:	75 %	Annual Event Average:	.06
Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.			
Extent: Based off Brazoria County’s expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 3,347 Residential buildings built before 1980 (64.8% of housing stock) • Critical facilities including: 1 EMS, 1 electrical substation, 1 fire station, 5 schools, 5 shelters, 2 police stations, 2 hospitals, 1 emergency operation center, and 1 wastewater treatment 			
Identified Impacts			
<ul style="list-style-type: none"> • Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities • Cracked pipes in critical facilities may lead to a loss of service or length the time first responder take to get to someone in need. 			

Danbury and Danbury ISD			
Planning Area (Sq. mi):	1.0	Occurrences since 2000:	1
Area Affected:	75%	Annual Event Average:	.06
Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.			
Extent: Based off Brazoria County’s expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 500 Residential buildings built before 1980 (86.2% of housing stock) • Critical facilities including: 1 electrical substation, 1 EMS, 1 fire station, 3 schools, and 1 police station 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities • Cracked pipes in critical facilities may lead to a loss of service or length the time first responders take to get to someone in need. 			

Iowa Colony

Planning Area (Sq. mi):	7.33	Occurrences since 2000:	1
Area Affected:	50%	Annual Event Average:	.06

Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.

Extent: Based off Brazoria County's expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.

Identified Vulnerabilities:

- 263 Residential buildings built before 1980 (60% of housing stock)
- Critical facilities including: 1 EMS and 1 school

Identified Impacts:

- Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities
- Cracked pipes in critical facilities may lead to a loss of service or length the time first responder take to get to someone in need.

Hillcrest Village

Planning Area (Sq. mi):	0.4	Occurrences since 2000:	1
Area Affected:	25%	Annual Event Average:	.06

Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.

Extent: Based off Brazoria County's expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.

Identified Vulnerabilities:

- 289 Residential buildings built before 1980 (82.9% of housing stock)

Identified Impacts:

- Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities

Holiday Lakes			
Planning Area (Sq. mi):	1	Occurrences since 2000:	1
Area Affected:	25%	Annual Event Average:	.06
Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.			
Extent: Based off Brazoria County’s expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 3,347 Residential buildings built before 1980 (64.8% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities 			

Jones Creek			
Planning Area (Sq. mi):	2.6	Occurrences since 2000:	1
Area Affected:	25 %	Annual Event Average:	.06
Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.			
Extent: Based off Brazoria County’s expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 3,347 Residential buildings built before 1980 (64.8% of housing stock) • Critical facilities including: 1 school and 1 shelter 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities • Cracked pipes in critical facilities may lead to a loss of service or length the time first responder take to get to someone in need. 			

Lake Jackson

Planning Area (Sq. mi):	20.9	Occurrences since 2000:	1
Area Affected:	25%	Annual Event Average:	.06

Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.

Extent: Based off Brazoria County's expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.

Identified Vulnerabilities:

- 8,272 Residential buildings built before 1980 (70.1% of housing stock)
- Critical facilities including: 1 dam, 1 electrical substation, 2 EMS, 2 fire stations, 1 hospital, 2 police stations, 7 schools, 9 shelters, and 1 wastewater treatment facility

Identified Impacts:

- Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities
- Cracked pipes in critical facilities may lead to a loss of service or length the time first responder take to get to someone in need.

Liverpool

Planning Area (Sq. mi):	1.1	Occurrences since 2000:	1
Area Affected:	25 %	Annual Event Average:	.06

Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.

Extent: Based off Brazoria County's expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.

Identified Vulnerabilities:

- 177 Residential buildings built before 1980 (72.2% of housing stock)
- Critical facilities including: 1 fire station and 2 police stations

Identified Impacts:

- Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities
- Cracked pipes in critical facilities may lead to a loss of service or length the time first responder take to get to someone in need.

Manvel

Planning Area (Sq. mi):	23.6	Occurrences since 2000:	1
Area Affected:	25 %	Annual Event Average:	.06

Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.

Extent: Based off Brazoria County's expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.

Identified Vulnerabilities:

- 971 Residential buildings built before 1980 (32.8% of housing stock)
- Critical facilities including: 1 EMS, 2 fire stations, 3 police stations, 4 schools, and 1 shelter

Identified Impacts:

- Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities
- Cracked pipes in critical facilities may lead to a loss of service or length the time first responder take to get to someone in need.

Oyster Creek

Planning Area (Sq. mi):	2	Occurrences since 2000:	1
Area Affected:	25%	Annual Event Average:	.06

Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.

Extent: Based off Brazoria County's expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.

Identified Vulnerabilities:

- 356 Residential buildings built before 1980 (68.6% of housing stock)
- Critical facilities including: 1 fire station, 1 police station, 1 power plant, and 1 shelter

Identified Impacts:

- Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities
- Cracked pipes in critical facilities may lead to a loss of service or length the time first responder take to get to someone in need.

Quintana			
Planning Area (Sq. mi):	2	Occurrences since 2000:	0
Area Affected:	10%	Annual Event Average:	0
Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.			
Extent: Based off Brazoria County’s expansive soils map above, the jurisdiction has a current shrink-swell class of low; the jurisdiction can see a moderate to very high shrink swell class in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 554 Residential buildings built before 1980 (83.9% of housing stock) 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities 			

Richwood			
Planning Area (Sq. mi):	3.1	Occurrences since 2000:	1
Area Affected:	50 %	Annual Event Average:	.06
Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.			
Extent: Based off Brazoria County’s expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 356 Residential buildings built before 1980 (68.6% of housing stock) • Critical facilities including: 1 police station, 1 school, and 1 shelter 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities • Cracked pipes in critical facilities may lead to a loss of service or length the time first responderstake to get to someone in need. 			

Surfside Beach			
Planning Area (Sq. mi):	2.2	Occurrences since 2000:	0
Area Affected:	10%	Annual Event Average:	0
Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.			
Extent: Based off Brazoria County’s expansive soils map above, the jurisdiction has a current shrink-swell class of low; the jurisdiction can see a moderate to high shrink swell class in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 356 Residential buildings built before 1980 (68.6% of housing stock) • Critical facilities including: 1 fire station, and 1 police station 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities • Cracked pipes in critical facilities may lead to a loss of service or length the time first responderstake to get to someone in need. 			

Sweeny and Sweeny ISD			
Planning Area (Sq. mi):	2	Occurrences since 2000:	1
Area Affected:	75 %	Annual Event Average:	.06
Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.			
Extent: Based off Brazoria County’s expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 1,220 Residential buildings built before 1980 (73% of housing stock) • Critical facilities including: 1 electrical substation, 1 EMS, 2 fire stations, 1 hospital, 2 emergency operations centers, 3 police stations, 2 schools, 1 shelter, 3 schools, 2 power plants 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities • Cracked pipes in critical facilities may lead to a loss of service or length the time first responderstake to get to someone in need. 			

West Columbia			
Planning Area (Sq. mi):	2.58	Occurrences since 2000:	1
Area Affected:	50%	Annual Event Average:	.06
Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.			
Extent: Based off Brazoria County’s expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 1,447 Residential buildings built before 1980 (88.3% of housing stock) • Critical facilities including: 1 electrical substation, 1 EMS, 1 fire station, 3 schools, 3 shelters, 4 police stations, and 1 powerplant 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities • Cracked pipes in critical facilities may lead to a loss of service or length the time first responderstake to get to someone in need. 			

Brazosport ISD			
Planning Area (Sq. mi):	200	Occurrences since 2000:	1
Area Affected:	75%	Annual Event Average:	.06
Probability: Very Likely; based off the frequency of expansive soils map above, the ISD has a high chance of seeing expansive soils within the year.			
Extent: Based off Brazoria County’s expansive soils map above, the ISD has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 19 schools- 10 elementary schools, 3 high schools, 5 middle schools, 1 alternative school 			
Identified Impacts:			
<ul style="list-style-type: none"> • Cracked pipes and foundations in buildings may lead to a finical loss for the school district • A disruption in school services for repairs could result in loss wages for parents who cannot find alternative childcare, and disrupt educational progress of students. 			

Velasco Drainage District			
Planning Area (Sq. mi):	236	Occurrences since 2000:	1
Area Affected:	75%	Annual Event Average:	.06
Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.			
Extent: Based off Brazoria County’s expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Administrative building • 14 pump stations and levees 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial cost of repairing the foundation of the administration building and pumps and levees damaged 			

Alvin ISD			
Planning Area (Sq. mi):	256	Occurrences since 1871:	0
Area Affected:	75 %	Annual Event Average:	0
Probability: Very Likely; based off the frequency of expansive soils map above, the ISD has a high chance of seeing expansive soils within the year.			
Extent: Based off Brazoria County’s expansive soils map above, the ISD has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 31 schools- 17 elementary schools, 3 high schools, 6 middle schools, 1 alternative school 			
Identified Impacts:			
<ul style="list-style-type: none"> • Cracked pipes and foundations in buildings may lead to a finical loss for the school district • A disruption in school services for repairs could result in loss wages for parents who cannot find alternative childcare and disrupt educational progress of students. 			

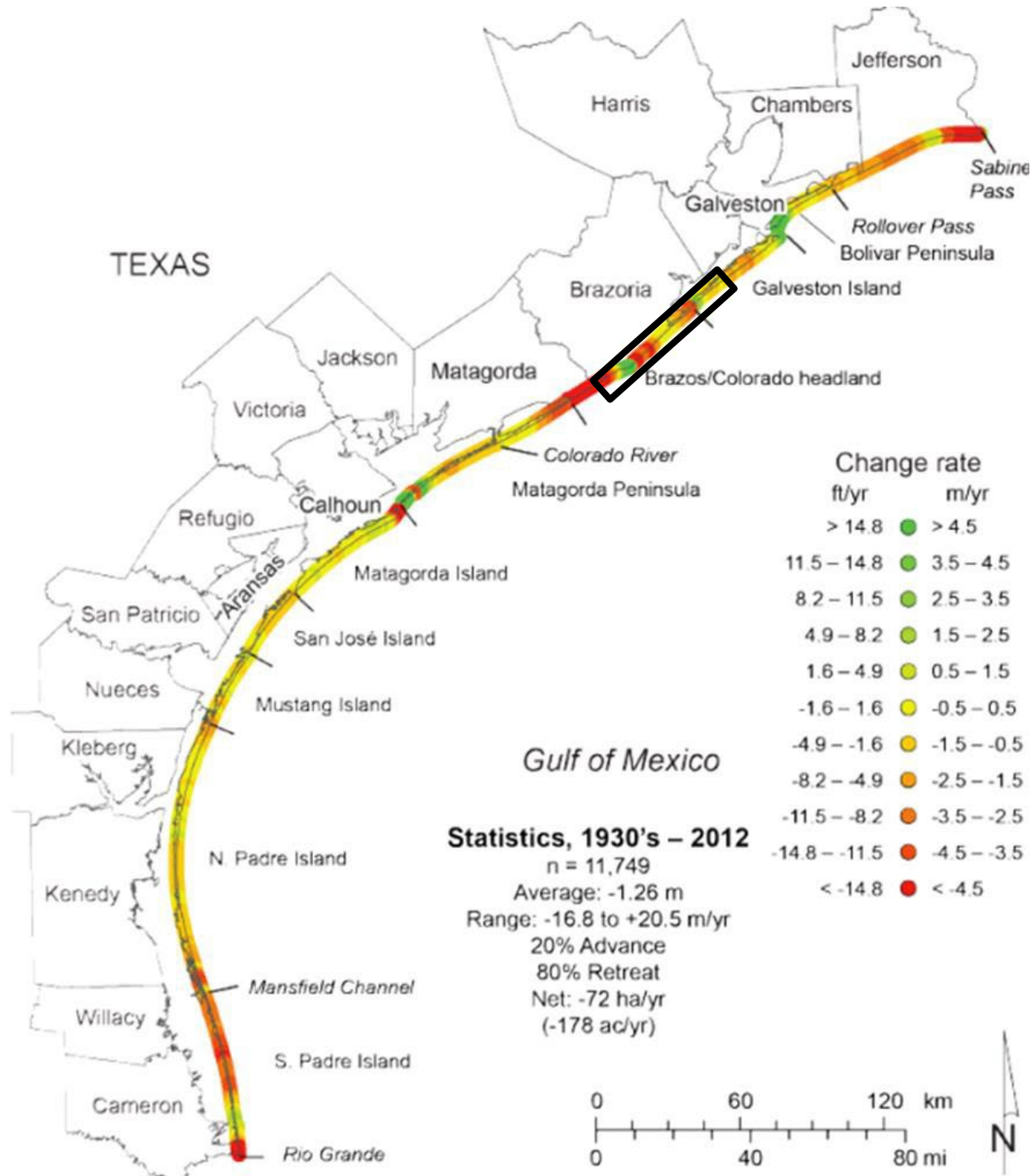
Port Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 2000:	1
Area Affected:	10%	Annual Event Average:	.06
Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.			
Extent: Based off Brazoria County’s expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Port facilities and administrative buildings 			
Identified Impacts:			
<ul style="list-style-type: none"> • Cracked pipes and foundations in buildings may lead to a financial loss for the port. • A disruption of economic activities at the port due to required repairs 			

Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 2000:	1
Area Affected:	10%	Annual Event Average:	
Probability: Very Likely; based off the frequency of expansive soils map above, the jurisdiction has a high chance of seeing expansive soils within the year.			
Extent: Based off Brazoria County’s expansive soils map above, the jurisdiction has a current shrink-swell class of high; the jurisdiction can see a high to very high shrink swell class in the future.			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • 4,004 Residential buildings built before 1980 (82.9% of housing stock) • Critical facilities including: 1 correctional facility, 5 electrical substations, 2 EMS, 3 fire stations, 6 schools, 5 shelters, 8 police stations, 1 emergency operations center, 2 wastewater treatment plants, and 1 power plant 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial cost to residents and jurisdiction of repairing foundations for homes and public facilities • Cracked pipes in critical facilities may lead to a loss of service or length the time first responder take to get to someone in need. 			

Part 6.12: Coastal Erosion

6.12 Coastal Erosion

Coastal Erosion is measured through feet or meters lost per year. The map below shows the southeast coast of Texas with Brazoria County labeled between Galveston and Matagorda counties.



Source: Coastal Erosion Planning & Response Act. Black rectangle shows general Brazoria area

Historic Occurrence

There have been no recorded erosion events in the county between 2000 to 2017.

Hazard Analysis & Vulnerability Identification

The hazard analysis uses historic hazard event data to determine the probability of an event occurring again within a given year.

The hazard analysis also provides hazard extent data for each participating jurisdiction. The extent data is the most extreme data recorded during a storm or hazard event and represents the worst damage a jurisdiction has experienced in recent history. Information from stakeholders, FEMA, and H-GAC's critical facilities database were used for this analysis.

The jurisdictions below are alongside the coast and are profiling this hazard. All other participating jurisdictions are not profiling coastal erosion.

Brazoria County (All Participating Jurisdictions Impacted by Coastal Erosion)

Identified Vulnerabilities:

- Local shops and businesses that depend on tourism
- Community infrastructure include roads, bridges, and critical facilities along the coast
- Residents living along the coast
- Port infrastructure

Identified Impacts:

- Economic loss for jurisdictions and the county if local businesses have to close due to damage or loss of tourists/ customers
- Financial loss for business owners along the coast that need to make repairs to buildings or have less customers over time
- Closure of the port due to repairs may lead to an economic loss for the county
- Residential and commercial property loss throughout the county along the coast may lead to a financial loss for residents and jurisdictions that need to repair or replace property

Brazoria County (Unincorporated)			
Planning Area (Sq. mi):	1,475	Occurrences since 2000:	0; Ongoing
Area Affected:	30 %	Annual Event Average:	0; Ongoing
Probability: Likely; coasts are affected by storms and other natural events as well as development along the coast on a day-to-day basis.			
Greatest Extent of Damage: According to the map above the county is seeing < 14.8 feet per year; the county could expect to see greater than 14.8 feet per year			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Treasure Island Beach- Beach erosion • Follett’s Island- Wetlands protection in southeast of the county 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial cost of beach replenishment for the county • Potential loss of revenue from tourism along the coast • Loss of natural habitat and wildlife along the coast 			

Quintana			
Planning Area (Sq. mi):	2	Occurrences since 2000:	0; Ongoing
Area Affected:	100 %	Annual Event Average:	0; Ongoing
Probability: Likely; coasts are affected by storms and other natural events as well as development along the coast on a day-to-day basis.			
Greatest Extent of Damage: According to the map above the jurisdiction is seeing < 14.8 feet per year; the jurisdiction could expect to see greater than 14.8 feet per year			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Residential and commercial property along the coast 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial cost of beach replenishment for the jurisdiction • Potential loss of revenue from tourism along the coast • Loss of natural habitat and wildlife along the coast 			

Surfside Beach			
Planning Area (Sq. mi):	2.2	Occurrences since 2000:	0; Ongoing
Area Affected:	100 %	Annual Event Average:	0; Ongoing
Probability: Likely; coasts are affected by storms and other natural events as well as development along the coast on a day-to-day basis.			
Greatest Extent of Damage: According to the map above the jurisdiction is seeing < 14.8 feet per year; the jurisdiction could expect to see greater than 14.8 feet per year			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Breakaways • Residential and commercial property along the coast • Land near Beach Drive 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial cost of beach replenishment for the jurisdiction • Potential loss of revenue from tourism along the coast • Loss of natural habitat and wildlife along the coast 			

Port Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 2000:	0; Ongoing
Area Affected:	75 %	Annual Event Average:	0; Ongoing
Probability: Likely; coasts are affected by storms and other natural events as well as development along the coast on a day-to-day basis.			
Greatest Extent of Damage: According to the map above the jurisdiction is seeing < 14.8 feet per year; the jurisdiction could expect to see greater than 14.8 feet per year			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> • Erosion along the fence line • Safety of vessels throughout the port 			
Identified Impacts:			
<ul style="list-style-type: none"> • Financial cost of land lost and equipment or infrastructure damaged • Loss of natural habitat and wildlife along the coast 			

Freeport			
Planning Area (Sq. mi):	2.81	Occurrences since 2000:	0; Ongoing
Area Affected:	75%	Annual Event Average:	0; Ongoing
Probability: Likely; coasts are affected by storms and other natural events as well as development along the coast on a day-to-day basis.			
Greatest Extent of Damage: According to the map above the jurisdiction is seeing < 14.8 feet per year; the jurisdiction could expect to see greater than 14.8 feet per year			
Identified Vulnerabilities:			
<ul style="list-style-type: none"> Residential and commercial property along the coast particularly near the Brazos River Delta 			
Identified Impacts:			
<ul style="list-style-type: none"> Financial cost of beach replenishment for the jurisdiction Potential loss of revenue from tourism along the coast Loss of natural habitat and wildlife along the coast 			

Part 7: Mitigation Strategy

Part 7: MITIGATION STRATEGY

The planning process, hazard analysis, and vulnerability assessment serve as a foundation for a meaningful hazard mitigation strategy. The mitigation strategy provides an outline for how the county and the local jurisdictions aim to address and reduce the risks associated with the natural hazards identified in the HMAP and reduce the potential impact on residents and structures identified through the Vulnerability Analysis. The mitigation strategy is divided into three sections the mission statement, goals and objectives, and the mitigation action plan. The mission statement provides the overall purpose of the mitigation strategy and the HMAP. The goals and objectives provide milestones for how the county aims to meet this purpose. The mitigation action plan details specific mitigation actions, or projects, programs, and polices the county aims to meet these goals and objectives.

Mission Statement

The HMAP aims to implement new policies, programs, and projects to reduce the risks and impacts associated with natural hazards, including public education and partnerships between local officials and residents.

Goal

Reduce the loss of public and private infrastructure throughout the county due to natural hazards

Objective

Raise and remove structures in the 500- year floodplain through creating, implementing, and updating county programs and local codes

Objective

Retrofit coastal roads to prevent loss from coastal erosion

Objective

Create levees or berms to protect sewage treatment facilities throughout the county

Goal

Create predictability along the Brazos river floodplain

Objective

Through collaborative projects with public and private partners rid oyster creek of obstructions in order to allow river to flow naturally

Objective

Raise and repair lost river bank to keep flood waters in the river

Objective

Partner with local and county officials to identify at least three additional measures to keep water where it should be throughout the county

Goal

Improve collaboration and communication between fire, police, medical units, and local jurisdictions

Objective

The county and all local jurisdictions shall share a common radio or communications network

Objective

Provide educational opportunities for municipalities to understand the importance of staying in contact with MACC (Multi-Agency Coordination Center)

Objective

Develop a common dispatch procedure for the county and local jurisdictions

Mitigation Action Plan

The mitigation action plan explains the specific programs, policies, and projects that the county and the local jurisdictions aim to implement for the county to reach its HMAP objectives and goals. The mitigation action plan provides the details of each mitigation action including which local department will be in charge of implementing the actions, how the county or local jurisdiction plan to pay for these actions, and the estimated time for implementing these actions.

Each jurisdiction and the county prioritized their mitigation actions based on their greatest vulnerabilities and needs. Actions were rated 1, 2, or 3 with 1 being the highest priority. Within each of the priority categories, a sub-category for feasibility was created. Each action was evaluated for feasibility using FEMA's mitigation action evaluation worksheet (Appendix A). After evaluating the mitigation actions based on priorities and feasibility, the actions were ranked. The actions are separated by jurisdiction and then ranked as described. The charts below demonstrate the final ranking of mitigation actions based on their scoring.

Ongoing Mitigation Strategies

Past mitigation strategies, that were not complete due to unavailable funding opportunities, are still viable projects and will be carried over to this updated plan. Careful review of past projects by each participating jurisdiction will be monitored and ready to move forward, as funding becomes available. New projects have been added to the mitigation strategies and a new plan addition, Annex E, will be a placeholder for future projects as ideas and funding are presented and attainable.

Mitigation Strategy N6 – Project Title – “Elevate Structures in Flood Zone” is currently in progress.

All other mitigation strategies were unable to be started or completed due to funding opportunities. Some are being discussed with current grant opportunities and will be noted as they progress.

All Participating Jurisdictions

Jurisdiction:	All participating jurisdictions		Action Number:	P1
Hazard(s) Addressed:	Flooding, Hurricane, Wildfire, Drought, Lightning, Heat Events, Hail, Winter Weather, Tornado, Expansive Soils			
Project Title:	Educating public on mitigation techniques			
Project Description:	Implement an outreach and education campaign to educate the public on mitigation techniques for all hazards to reduce loss of life and property.			
Responsible Entity:	County Emergency Managers, All participating jurisdictions mayors and city councils			
Losses avoided:	Residents and business owners			
Cost Estimate:	10,000	Timeframe:	3 months	
Potential Funding Sources:	Local budget and salary, HMPG, Fire Prevention and Safety Grants	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio	
Does this action reduce effects of hazards on existing buildings?				Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?				Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?				No

Jurisdiction:	Brazoria County, Quintana, Surfside Beach, Port Freeport, Freeport		Action Number:	P2
Hazard(s) Addressed:	Coastal Erosion			
Project Title:	Educating public on mitigation techniques			
Project Description:	Implement an outreach and education campaign to educate the public on mitigation techniques for coastal erosion to reduce loss of life and property.			
Responsible Entity:	County Emergency Managers, jurisdictions mayors, and city councils			
Losses avoided:	Residents and businesses			
Cost Estimate:	9,000	Timeframe:	3-6 months	
Potential Funding Sources:	Local budget and salary, HMPG,	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio	
Does this action reduce effects of hazards on existing buildings?				Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?				Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?				No

Jurisdiction:	Unincorporated Brazoria County, Holiday Lakes, West Columbia, Bailey's Prairie, Brazoria, Freeport, Port of Freeport, and Oyster Creek		Action Number:	P3
Hazard(s) Addressed:	Dam and Levee Failure			
Project Title:	Educating public on mitigation techniques			
Project Description:	Implement an outreach and education campaign to educate the public on mitigation techniques for dam and levee failure to reduce loss of life and property.			
Responsible Entity:	County Emergency Managers, jurisdictions, mayors and city councils			
Losses avoided:	Residents and businesses			
Cost Estimate:	9,000	Timeframe:	3-6 months	
Potential Funding Sources:	Local budget and salary, HMPG	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio	
Does this action reduce effects of hazards on existing buildings?				Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?				Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?				No

Jurisdiction:	All participating jurisdictions		Action Number:	P4
Hazard(s) Addressed:	Hail, Tornado, Hurricane			
Project Title:	Retrofitting structures for hail and wind protection			
Project Description:	All participating jurisdictions will retrofit city and county owned structures with roofs and window panes that can withstand hail and high wind damage.			
Responsible Entity:	Emergency Coordinator, Brazoria County			
Losses avoided:	Buildings, residents, and city/ county employees in county and city buildings when a hail storm hits.			
Cost Estimate:	60,000	Timeframe:	60 months	
Potential Funding Sources:	HMGP, PDM, Local budgets	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio	
Does this action reduce effects of hazards on existing buildings?				Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?				Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?				No

Jurisdiction:	All participating jurisdictions		Action Number:	P5
Hazard(s) Addressed:	Wildfire			
Project Title:	Technical support for residents to reduce the risk of wildfire			
Project Description:	The county and partnering cities will provide incentives and technical support for property owners to reduce underbrush throughout the county to properly cut back trees, upgrade fences, and replace landscape materials with nonflammable materials			
Responsible Entity:	County's Emergency Management Coordinator			
Losses avoided:	Homes within the wild-urban interface and residents living within these areas			
Cost Estimate:	5,000	Timeframe:	3 months	
Potential Funding Sources:	HMPG, Current county and city budget/ staff time	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio	
Does this action reduce effects of hazards on existing buildings?				Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?				Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?				No

Jurisdiction:	All participating jurisdictions		Action Number:	P6
Hazard(s) Addressed:	Wildfire			
Project Title:	Rebate program for wildfire protection			
Project Description:	The city will develop a rebate program for residents who use non-combustible material when renovating properties or building new homes			
Responsible Entity:	Mayors and County Emergency Management Coordinator			
Losses avoided:	Residents and existing and new properties			
Cost Estimate:	150,000	Timeframe:	12 to 24 months	
Potential Funding Sources:	HMPG, current city and staff time	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio	
Does this action reduce effects of hazards on existing buildings?				Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?				Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?				No

Jurisdiction:	All participating jurisdictions		Action Number:	P7
Hazard(s) Addressed:	Heat Events			
Project Title:	Installing misting stations			
Project Description:	The county and partnering cities will install misting stations throughout city and county owned parks and property.			
Responsible Entity:	County Emergency Coordinator			
Losses avoided:	Loss of life; Especially the elderly and children in the county			
Cost Estimate:	5,000	Timeframe:	6 to 12 months	
Potential Funding Sources:	HMPG, current city and staff time	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio	
Does this action reduce effects of hazards on existing buildings?				No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?				No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?				No

Jurisdiction:	All participating jurisdictions		Action Number:	P8
Hazard(s) Addressed:	Drought			
Project Title:	Adopting ordinance for drought tolerant plants			
Project Description:	All participating jurisdictions will develop an ordinance to require incorporating drought tolerant landscape design into all new county and city owned properties.			
Responsible Entity:	Emergency Coordinators for the county and partnering jurisdictions.			
Losses avoided:	Structures throughout the jurisdiction impacted by drought			
Cost Estimate:	1,000	Timeframe:	3 months	
Potential Funding Sources:	Current staff time	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio	
Does this action reduce effects of hazards on existing buildings?				Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?				Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?				No

Jurisdiction:	All participating jurisdictions		Action Number:	P9
Hazard(s) Addressed:	Lightning			
Project Title:	Rebate program for lightning rods			
Project Description:	All participating jurisdictions will work to develop a program that offers reduced price lightning rods and technical assistance for homeowners throughout the county.			
Responsible Entity:	County Emergency Coordinator			
Losses avoided:	Homes and residents who could be affected by lightning throughout the county.			
Cost Estimate:	150,000	Timeframe:	12 months	
Potential Funding Sources:	HMGP, FP&S Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio	
Does this action reduce effects of hazards on existing buildings?				Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?				Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?				No

Jurisdiction:	All participating jurisdictions		Action Number:	P10
Hazard(s) Addressed:	Expansive Soils, Drought			
Project Title:	Drip irrigation			
Project Description:	All participating jurisdictions will install drip irrigation around critical facilities' foundations throughout the county. This action mitigates the damage that shrinking and expanding soils cause on foundations and pipes.			
Responsible Entity:	Emergency Coordinator			
Losses avoided:	Cost of repair to critical facilities' foundations, water and sewer lines.			
Cost Estimate:	250,000	Timeframe:	12 months	
Potential Funding Sources:	HMGP, FP&S Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio	
Does this action reduce effects of hazards on existing buildings?				Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?				Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?				No

Jurisdiction:	All participating jurisdictions	Action Number:	P11
Hazard(s) Addressed:	Winter Weather		
Project Title:	Warning system for icy roadways		
Project Description:	All participating jurisdictions will install signage and sensors to alert drivers during winter weather on major roadways, curved roads, and steep roads.		
Responsible Entity:	County Emergency Coordinator		
Losses avoided:	Residents and visitors traveling throughout the county.		
Cost Estimate:	250,000	Timeframe:	12-24 months
Potential Funding Sources:	HMGP, FP&S Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	All participating jurisdictions	Action Number:	P12
Hazard(s) Addressed:	Flooding, Hurricane/Tropical Storm, Wildfire, Drought, Dam and Levee Failure		
Project Title:	Non-structural mitigation		
Project Description:	Preserve natural lands and green space to reduce the impacts of natural hazards. Up to 35,000 acres of land tracts could be purchased from willing sellers for their natural ecosystem services. Including floodwater storage, groundwater recharge, erosion control, drought mitigation, and wildfire damage reduction. The land will be converted to parks, wildlife management areas, community forests, and/or other public open spaces.		
Responsible Entity:	The Trust for Public Land and voluntary partnering jurisdictions.		
Losses avoided:	Reduce the loss of life and property by preserving pervious surface and open space to reduce the effects of flooding. Reduce agricultural and water reservoir losses during droughts, and reduce the loss of life and property during wildfires, floods, and dam/ levee failures by using wetlands and wetland forests as natural fire breaks and storm infrastructure.		
Cost Estimate:	65,000,000.00	Timeframe:	60 months – currently in process
Potential Funding Sources:	HMGP, FMA, PDM, Philanthropic Institutions, the Deep Water Horizon Settlement, and Local budgets.	Benefit-Cost Ratio:	Greater than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Unincorporated Brazoria County, Holiday Lakes, West Columbia, Bailey's Prairie, Brazoria, Freeport, Port of Freeport, and Oyster Creek.	Action Number:	P13
Hazard(s) Addressed:	Flood, Dam and Levee Failure		
Project Title:	Updating Maps		
Project Description:	Each jurisdiction will work to update their dam and levee failure inundation maps to identify the probability and impact of a dam and levee failures in their jurisdiction. The mapping action will also identify the homes, critical facilities and agricultural lands that are vulnerable to a complete dam or levee failure, determine the extent of damage that can be expected, and show the probability and impact of dam failure. The updated inundation maps will also be made available to public.		
Responsible Entity:	County Emergency Coordinator		
Losses avoided:	Homes and residents (loss of life) who could be affected by flooding throughout the county		
Cost Estimate:	150,000	Timeframe:	12 months
Potential Funding Sources:	HMGP, FP&S Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Multi-Jurisdiction Mitigation Actions

Jurisdiction:	Lake Jackson, Clute, Velasco Drainage District	Action Number:	M1
Hazard(s) Addressed:	Floods		
Project Title:	Flag Lake Drainage Infrastructure Project		
Project Description:	Lake Jackson, Clute, and Velasco Drainage District will conduct a Flag Lake drainage study. Runoff from Lake Jackson flows into Clute. Using the study, Clute and Velasco Drainage District would implement a drainage project that lessens the flooding impact from the Lake Jackson runoff.		
Responsible Entity:	Lake Jackson EMC, Mayor, Clute EMC, Mayor and Drainage District Director		
Partners:	Clute, Velasco Drainage District		
Losses avoided:			
Cost Estimate:	350,000	Timeframe:	24 months
Potential Funding Sources:	USACE Planning Assistance to States, Flood Mitigation Assistance Program, HMGP, TWDB Research and Planning Fund	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Quintana, Freeport	Action Number:	M2
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms and Coastal Erosion		
Project Title:	Prevention, Property Protection		
Project Description:	Develop and implement a beach nourishment project on each jurisdiction's shoreline to mitigate the effects of coastal erosion.		
Responsible Entity:	Quintana Mayor, Freeport Parks Engineering Department Manager		
Losses avoided:	Life safety and public property		
Cost Estimate:	6,000,000	Timeframe:	48 to 60 months
Potential Funding Sources:	FEMA, HMG, CEPRA, CIAP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Bailey's Prairie

Jurisdiction:	Bailey's Prairie	Action Number:	A1
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms		
Project Title:	Property Protection		
Project Description:	Project will clear obstacles, widen and reshape ditches, and upgrade culverts to restore adequate drainage to mitigate flooding		
Responsible Entity:	City Engineer and Mayor		
Losses avoided:	Homes, businesses, and public facilities		
Cost Estimate:	250,000	Timeframe:	24 months
Potential Funding Sources:	HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Bailey's Prairie	Action Number:	A2
Hazard(s) Addressed:	Hail		
Project Title:	Educate Public of Home Improvement Opportunities		
Project Description:	Educate elderly, low-income residents of grant funding opportunities to insulate the foundation of pier and beam homes, and update homes to withstand strong winds and hail.		
Responsible Entity:	City Council		
Losses avoided:	Life, health, and safety of vulnerable populations, and property damage		
Cost Estimate:	2,000	Timeframe:	12 months
Potential Funding Sources:	Local Budget, HMGP, USDA Home Repair grant	Benefit-Cost Ratio:	Less than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Bailey's Prairie	Action Number:	A3
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms		
Project Title:	Adopting City Ordinance		
Project Description:	The city shall adopt a land use ordinance which requires any structure within the 100-year floodplain to be elevated 2 feet above base flood elevation.		
Responsible Entity:	City Council and mayor		
Losses avoided:	Homes, businesses, and residents within the 100-year flood plain.		
Cost Estimate:	5,000	Timeframe:	6 months
Potential Funding Sources:	HMGP, current city budget and staff time.	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Bailey's Prairie	Action Number:	A4
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms		
Project Title:	Adopting land-use ordinance		
Project Description:	The city shall adopt a land-use ordinance which prohibits building residential or commercial structures in the 100-year floodplain.		
Responsible Entity:	City Manager, City Council, Office of Code Enforcement		
Losses avoided:	Future buildings and infrastructure that may have been built within the 100-year flood plain		
Cost Estimate:	5,000	Timeframe:	6 months
Potential Funding Sources:	Current city budget and salary, HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Surfside Beach

Jurisdiction:	Surfside Beach	Action Number:	B1
Hazard(s) Addressed:	Hurricane/ Tropical Storms, Coastal Erosion		
Project Title:	Installing Shoreline Structures		
Project Description:	Install groins along the beach front throughout the city specifically near Breakaway to decrease coastal erosion and damage caused by storm surge and hurricanes.		
Responsible Entity:	Mayor and EMC		
Losses avoided:	Shoreline erosion, loss of natural wildlife habitat, etc.		
Cost Estimate:	12,000,000	Timeframe:	48 months
Potential Funding Sources:	HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Surfside Beach	Action Number:	B2
Hazard(s) Addressed:	Hurricane/ Tropical Storms, Coastal Erosion		
Project Title:	Installing Shoreline Structures		
Project Description:	Extend revetment wall to jetties throughout the city to reduce coastal erosion and decrease the impacts caused by hurricanes and storm surge.		
Responsible Entity:	Mayor and EMC		
Losses avoided:	Coastal erosion, wildlife habitat, infrastructure, etc.		
Cost Estimate:	2,500,000	Timeframe:	48 months
Potential Funding Sources:	HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Surfside Beach	Action Number:	B3
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms		
Project Title:	Property Protection		
Project Description:	Install hurricane shutters on city hall/court/police station.		
Responsible Entity:	Mayor and EMC		
Losses avoided:	Loss of municipal buildings, lives, essential documents, and equip		
Cost Estimate:	35,000	Timeframe:	12 months
Potential Funding Sources:	HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Surfside Beach	Action Number:	B4
Hazard(s) Addressed:	Hurricane/ Tropical Storms, Coastal Erosion		
Project Title:	Protecting Shorelines		
Project Description:	Develop and implement a shoreline protection program.		
Responsible Entity:	Mayor and EMC		
Losses avoided:	Natural wildlife habitat, property, shoreline		
Cost Estimate:	3,500,000	Timeframe:	24 months
Potential Funding Sources:	TX Coastal Coordination Council - TX Coastal Management Program, USACE-Emergency Rehabilitation of Flood Control Works	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Surfside Beach	Action Number:	B5
Hazard(s) Addressed:	Hurricane/ Tropical Storms, Coastal Erosion		
Project Title:	Natural Resource Protection		
Project Description:	Acquisition of seaward property and re-establish stabilizing vegetation.		
Responsible Entity:	Mayor and EMC		
Losses avoided:	Life and property along the coast		
Cost Estimate:	1,000,000	Timeframe:	36 to 60 months
Potential Funding Sources:	HMGP, PDM Program, Flood Mitigation Assistance Program, HUD-Disaster Recovery Initiative, TX Coastal Coordination Council - TX	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

West Columbia

Jurisdiction:	West Columbia	Action Number:	C1
Hazard(s) Addressed:	Flooding, Hurricane, Wildfire, Drought, Lightning, Heat Events, Hail, Winter Weather, Tornado, Dam and Levee Failure		
Project Title:	Structure Hardening		
Project Description:	Harden and reinforce critical facilities throughout the city: Purchase and install generators for all critical facilities, harden windows to withstand hurricane, tornado, and hail, and install irrigation system around foundations to prevent foundation cracking and breaking pipes.		
Responsible Entity:	City Manager, EMC and Mayor		
Losses avoided:	Reduce the risk to critical facilities and assets during a natural hazard event		
Cost Estimate:	2,500,000	Timeframe:	24-36 months
Potential Funding Sources:	HMGP, CDBG, PDM, FP&S Grants, Weatherization Assistance Program	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	West Columbia	Action Number:	C2
Hazard(s) Addressed:	Floods, Hurricane, Tropical Storms, Drought, Heat Events, and Winter Storms		
Project Title:	Upgrade water & maintain/Improve existing water storage capacity		
Project Description:	Upgrade older water storage tanks throughout the city with newer and/or improvements to existing water storage tanks.		
Responsible Entity:	Public Works Director, TCEQ and Mayor		
Losses avoided:	Upgrading or maintaining water storage capacities to enable proper firefighting capabilities, to sufficiently handle potential breaks in water lines or the dripping of faucets during extreme cold, ample capacity for watering, misting stations and firefighting during drought conditions, and ample water storage to supply the community during any emergency that may increase the stay-at-home population, such as during COVID-19.		
Cost Estimate:	\$3,500,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	West Columbia	Action Number:	C3
Hazard(s) Addressed:	Floods, Hurricane, Tropical Storms, Severe Thunderstorms		
Project Title:	Develop and implement a Master Drainage Plan for the City		
Project Description:	This action proposes creating a drainage master plan for the City that will provide a comprehensive planning document that provides basic information and necessary guidance for the county-wide drainage system, including but not limited to an H&H study.		
Responsible Entity:	City of West Columbia Mayor and Brazoria County EMC		
Losses avoided:	Protection to property and life.		
Cost Estimate:	\$100,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants such as FEMA BRIC, FEMA FMA, FEMA HMGP, CDBG-MIT	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	West Columbia		Action Number:	C4
Hazard(s) Addressed:	Floods, Hurricane, Tropical Storms, Severe Thunderstorms			
Project Title:	Highway Drainage and Evacuation Routes			
Project Description:	SH 36 (Columbia Dr.) drainage ditches to be widened and reshaped. Upgrade culverts to restore adequate drainage to prevent flooding, relocate and improve one lift station to minimize damage from potential flooding, and widening highway for evacuation of surrounding areas to include the addition of an overpass at SH 35 & SH36, project location is from Westview to City Limits.			
Responsible Entity:	TxDOT and City Manager			
Losses avoided:	Reduce the loss of property due to flooding and improve evacuation routes.			
Cost Estimate:	\$125,000,000	Timeframe:	60 months	
Potential Funding Sources:	TxDOT	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio	
Does this action reduce effects of hazards on existing buildings?				Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?				Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?				Yes

Jurisdiction:	West Columbia		Action Number:	C5
Hazard(s) Addressed:	Floods, Hurricane/Tropical Storms, Severe Thunderstorms			
Project Title:	Drainage Improvements			
Project Description:	Partner with local drainage district to maintain and improve drainage in and around the City. Widen and reshape drainage ditches and upgrade culverts to restore adequate drainage to mitigate flooding.			
Responsible Entity:	City Manager, Mayor, Brazoria County EMC and Brazoria Co. Drainage District No. 11 Director			
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards.			
Cost Estimate:	\$5,000	Timeframe:	As funding becomes available	
Potential Funding Sources:	Federal, State, County and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio	
Does this action reduce effects of hazards on existing buildings?				Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?				Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?				Yes

Lake Jackson

Jurisdiction:	Lake Jackson	Action Number:	D1
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Dam/ Levee Failure		
Project Title:	Jackson Oaks II Levee Service Road Repair		
Project Description:	Repair service road/levee on north side of Jackson Oaks II subdivision to reduce the flooding of home and streets.		
Responsible Entity:	Velasco Drainage District Director and City Manager		
Losses avoided:	Reduce flood waters in streets and homes.		
Cost Estimate:	75,000	Timeframe:	Nearing completion
Potential Funding Sources:	Local funds: Velasco Drainage will provide manpower and equipment and Lake Jackson will provide materials to bring the berm and service road back to its original height.	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Lake Jackson	Action Number:	D2
Hazard(s) Addressed:	Hurricane/Tropical Storms, Lightning		
Project Title:	Lightning Protection of Critical Facilities		
Project Description:	Conduct a city-wide lightning vulnerability assessment for key infrastructure. Communications, fuel storage tanks and distribution, pump systems, wells and install surge protectors or other lightning protection for property.		
Responsible Entity:	Public Works Director		
Losses avoided:	Reduce risk to critical facilities and assets during a storm event.		
Cost Estimate:	25,000	Timeframe:	12 months
Potential Funding Sources:	Local Budget	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Lake Jackson	Action Number:	D3
Hazard(s) Addressed:	Hurricane/ Tropical Storms, Tornado, Hail, Winter Weather		
Project Title:	Protect Powerlines from winds and falling limbs		
Project Description:	Remove or trim trees that pose a threat to power lines in the event of strong winds, winter weather, or hail.		
Responsible Entity:	Public Works Director and Parks Department Director		
Losses avoided:	Reduce risk to critical facilities and assets during storms.		
Cost Estimate:	300,000	Timeframe:	24-60 months
Potential Funding Sources:	City and Center Point funding of private contractors. Center Point has become more active in removing trees near power lines as part of their efforts to harden the system. The City would work on trees in parks and parkways near power lines.	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Lake Jackson	Action Number:	D4
Hazard(s) Addressed:	Hurricane/ Tropical Storms, Tornado, Hail, Winter Weather		
Project Title:	Shy Pond Drainage		
Project Description:	Remove old, damaged drainage piping and restore the drainage system.		
Responsible Entity:	Public Works Director and Parks Department Director		
Losses avoided:	Reduce flood waters in the pond, streets, and homes		
Cost Estimate:	\$1,500,000.00	Timeframe:	0-24 months
Potential Funding Sources:	City Funding	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Lake Jackson	Action Number:	D5
Hazard(s) Addressed:	Drought		
Project Title:	Harris Reservoir Expansion		
Project Description:	Expand the reservoir in size to hold more water to ensure enough water during drought conditions. Shore up the riverbank to help prevent erosion.		
Responsible Entity:	A collaboration: Dow Chemical, BWA, and the 7 local city's Mayors		
Losses avoided:	Ensuring the area has enough water for drinking and other necessary needs		
Cost Estimate:	750,000,000.00	Timeframe:	0-60 months
Potential Funding Sources:	All partners will share the cost. Lake Jackson's portion in 15%	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Lake Jackson	Action Number:	D6
Hazard(s) Addressed:	Flooding		
Project Title:	City of Lake Jackson Flood Study		
Project Description:	Have a flood study performed for the City of Lake Jackson for evaluation purposes, to identify areas of concern for future hazard mitigation.		
Responsible Entity:	City of Lake Jackson Mayor and City Manager		
Losses avoided:	Flooding		
Cost Estimate:	6,000,000.00	Timeframe:	0-60
Potential Funding Sources:	City Funds & Grants	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Lake Jackson	Action Number:	D7
Hazard(s) Addressed:	Flooding		
Project Title:	Eastside Drainage		
Project Description:	Flood mitigation for the Eastside Drainage area of Lake Jackson. Restore ditches, resize culverts, slop panels, prevent erosion. Area is roughly south of Oyster Creek Drive, west of Dixie Drive and Flag Lake Drive, and east of Sycamore, to Highway 332.		
Responsible Entity:	Engineering Director and Public Works Director		
Losses avoided:	Reduce flood waters in streets and homes		
Cost Estimate:	\$15,000,000.00	Timeframe:	24-60 months
Potential Funding Sources:	City funds and GLO funding	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Lake Jackson	Action Number:	D8
Hazard(s) Addressed:	Hurricane/ Tropical Storms, Tornadoes, Extreme Heat, Winter Weather, Electrical Infrastructure Failure.		
Project Title:	Standby Generators for Critical Infrastructure Sites		
Project Description:	9 standby generators at 9 city critical infrastructure sites. Generator sizes are specific for each site. This includes engineering and installation to completion.		
Responsible Entity:	City of Lake Jackson Mayor, City Manager and EMC		
Losses avoided:	During any sustained power outages, this project would ensure that the city will be able to maintain the critical infrastructure sites to operate in an emergency state. This includes generators needed for the Municipal Water System, thereby providing power to maintain pumps and pressure during a sustained power outage. The generators for the water system are required to meet Senate Bill 3		
Cost Estimate:	5,000,000.00	Timeframe:	6 to 36 months
Potential Funding Sources:	HMPG & City Funds	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Lake Jackson	Action Number:	D9
Hazard(s) Addressed:	Flooding		
Project Title:	Moss-Chestnut Street Drainage Outfall		
Project Description:	Flood mitigation for the Moss-Chestnut Street drainage area of Lake Jackson. The mitigation project includes the replacement of roadway crossings, enlarging channels, resizing culverts, and installing slope paving for erosion control for pollution prevention plan. The area is roughly south of Oyster Creek Drive, west of Dixie Drive, and east of Sycamore.		
Responsible Entity:	Engineering Department Director and Public Works Director		
Losses avoided:	Reduce flood waters in streets and homes		
Cost Estimate:	\$11,000,000.00, which includes a cost contingency	Timeframe:	24-60 months
Potential Funding Sources:	City funds, Bonds, and HMGP	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Holiday Lakes

Jurisdiction:	Holiday Lakes	Action Number:	E1
Hazard(s) Addressed:	Wildfire		
Project Title:	Becoming an active participant in Firewise USA program, and implement the program in the community.		
Project Description:	The City will become an active participant in the Firewise USA program and encourage local neighborhoods to join the program as well.		
Responsible Entity:	Mayor and city council		
Losses avoided:	Property and residents throughout the city		
Cost Estimate:	4,000	Timeframe:	24 Months
Potential Funding Sources:	HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Velasco Drainage District

Jurisdiction:	Velasco Drainage District	Action Number:	F1
Hazard(s) Addressed:	Floods		
Project Title:	Structural Project		
Project Description:	Construct a 75-acre detention pond south of the Sea Center adjacent to the Clute/Lake Jackson Drainage Channel. Provide 800,000 gallons per minute of diverted flood water into pond.		
Responsible Entity:	Velasco Drainage District Director		
Losses avoided:	Mitigated damage of homes, businesses, and public facilities of Lake Jackson and Clute		
Cost Estimate:	2,000,000	Timeframe:	36-60 months
Potential Funding Sources:	TWDB Small Flood Control Projects, NRCS Watershed Protection and Flood Prevention Program, Disaster Relief/Urgent needs Fund for CDBG, PDM, HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Velasco Drainage District	Action Number:	F2
Hazard(s) Addressed:	Floods		
Project Title:	Structural Project		
Project Description:	Construct detention pond in the Clute/Lake Jackson watershed. Propose to build near the East Levee Pump Station adjacent to the Clute/Lake Jackson Pump Station.		
Responsible Entity:	Velasco Drainage District Director		
Losses avoided:	Mitigated damage of homes, businesses, and public facilities of Lake Jackson and Clute		
Cost Estimate:	2,000,000	Timeframe:	24-36 months
Potential Funding Sources:	TWDB Small Flood Control Projects, NRCS Watershed Protection and Flood Prevention Program, Disaster Relief/Urgent needs Fund or CDBG, PDM, HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Velasco Drainage District	Action Number:	F3
Hazard(s) Addressed:	Floods		
Project Title:	Property Protection, Structural Project		
Project Description:	Purchase and install additional pump equipment in the East Levee Pump Station. Would provide an additional 780,000 gallons capacity per minute stormwater infrastructure capacity to the Clute/Lake Jackson watershed.		
Responsible Entity:	Velasco Drainage District Director		
Losses avoided:	Flooding of Dow Chemical & Other Industrial & Residential areas		
Cost Estimate:	4,500,000	Timeframe:	24-36 months
Potential Funding Sources:	TWDB, Small Flood Control Projects, NRCS Watershed Protection and Flood Prevention Program, Disaster Relief/Urgent Needs Fund for CDBG, PDM, HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Velasco Drainage District	Action Number:	F4
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms		
Project Title:	Property Protection		
Project Description:	Project will clear obstacles, widen and reshape ditches, and upgrade culverts to restore adequate drainage to mitigate flooding throughout the entire drainage district.		
Responsible Entity:	Velasco Board of Supervisors and Drainage District Director		
Losses avoided:	Homes, business, and public facilities		
Cost Estimate:	2,500,000	Timeframe:	48 months
Potential Funding Sources:	HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Velasco Drainage District	Action Number:	F5
Hazard(s) Addressed:	Hurricane/ Tropical Storms		
Project Title:	Hurricane resistant powerline poles		
Project Description:	All new power line poles installed within the district will be resistant to hurricane winds.		
Responsible Entity:	Engineering Department Director		
Losses avoided:	Homes, business, and public facilities		
Cost Estimate:	120,000	Timeframe:	36 months
Potential Funding Sources:	HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Manvel

Jurisdiction:	Manvel	Action Number:	G1
Hazard(s) Addressed:	Floods		
Project Title:	Structural Project		
Project Description:	Street drainage improvements: widen and reshape ditches, and upgrade culverts to restore adequate drainage to mitigate flooding in Manvel neighborhoods.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Residents and existing and new properties		
Cost Estimate:	100,000	Timeframe:	48 months
Potential Funding Sources:	FEMA-HMGP, PDM, FMA, City, County, Drainage Districts	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Manvel	Action Number:	G2
Hazard(s) Addressed:	Floods		
Project Title:	Structural Project		
Project Description:	All road drainage improvements, including storm sewer rehabilitation and ditch deepening.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Residents and existing and new properties		
Cost Estimate:	500,000	Timeframe:	48 months
Potential Funding Sources:	FEMA-HMGP, PDM, FMA, City, County, Drainage Districts	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Manvel	Action Number:	G3
Hazard(s) Addressed:	Floods		
Project Title:	Structural Project		
Project Description:	State Highway 6 drainage improvements, including storm sewer upgrades to meet current capacities, ditch deepening, and sub regional detention ponds. Project will also widen and reshape ditches, and upgrade culverts.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Residents and existing and new properties		
Cost Estimate:	3,000,000	Timeframe:	48 months
Potential Funding Sources:	FEMA-HMGP, PDM, FMA, City, County, Drainage Districts, Gulf Coast Water Authority TXDOT	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Manvel	Action Number:	G4
Hazard(s) Addressed:	Floods		
Project Title:	Structural Project		
Project Description:	Gates Loop subdivision drainage improvements including deepening and widening ditches around Gates Loop and Sandy Point Rd.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Residents and existing and new properties		
Cost Estimate:	100,000	Timeframe:	12 months
Potential Funding Sources:	FEMA-HMGP, PDM, FMA, City, County, Drainage Districts	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Manvel	Action Number:	G5
Hazard(s) Addressed:	Floods		
Project Title:	Structural Project		
Project Description:	Reed Lane, Sherri Circle, Booth Plummer Road and 1128 South of Hwy 6, drainage improvements, including storm sewer rehabilitation and ditch deepening.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Residents and existing and new properties		
Cost Estimate:	150,000	Timeframe:	12 months
Potential Funding Sources:	FEMA-HMGP, PDM, FMA, City, County, Drainage Districts	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Manvel	Action Number:	G6
Hazard(s) Addressed:	Floods, Hurricanes /Tropical Storms		
Project Title:	Public Education and Planning		
Project Description:	Improve GIS database to include repetitive loss properties areas and flooded structure data. Data to be used for future drainage infrastructure planning and to provide outreach and emergency services to residents in substantial risk zones.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Residents and existing and new properties		
Cost Estimate:	20,000	Timeframe:	12 months
Potential Funding Sources:	FEMA-HMGP, PDM, FMA, SRL, City, County, Drainage Districts	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Manvel	Action Number:	G7
Hazard(s) Addressed:	Wildfire and Drought		
Project Title:	Public Education		
Project Description:	Conduct wildfire outreach and education campaign. Make presentations at civic club meetings and local schools. Work with Texas A&M Forest Service to develop and implement a Wild Land Urban Interface loss reduction plan.		
Responsible Entity:	Mayor, City Manager and County EMC		
Losses avoided:	Residents and existing and new properties		
Cost Estimate:	10,000	Timeframe:	6 months
Potential Funding Sources:	PGM, HMGP, Texas Forest Service	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Manvel	Action Number:	G8
Hazard(s) Addressed:	Floods		
Project Title:	Property Protection		
Project Description:	Acquire Repetitive Loss (RL) and Severe Repetitive Loss (SRL) properties in the 100-year flood plain, as identified by FEMA and NFIP		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Residents and existing and new properties		
Cost Estimate:	1,700,000	Timeframe:	60 months
Potential Funding Sources:	FEMA-HMGP, PDM, FMA, SRL, City, County, Drainage Districts	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Manvel	Action Number:	G9
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms		
Project Title:	City Ordinance		
Project Description:	The city shall adopt a land use ordinance which requires any structure within the 100-year floodplain to be elevated 2 feet above base flood elevation.		
Responsible Entity:	City council, Mayor and City Manager		
Losses avoided:	Homes, businesses, and residents within the 100-year flood plain		
Cost Estimate:	5,000	Timeframe:	6 months
Potential Funding Sources:	HGMP, current city and staff time	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Manvel	Action Number:	G10
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms		
Project Title:	Adopting land-use ordinance		
Project Description:	The city shall adopt a land-use ordinance which prohibits building residential or commercial structures in the 100-year floodplain		
Responsible Entity:	City Manager, City Council, Office of Code Enforcement Director		
Losses avoided:	Future buildings and infrastructure that may have been built within the 100-year flood plain.		
Cost Estimate:	5,000	Timeframe:	12 months
Potential Funding Sources:	Current city budget and salary, HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Manvel	Action Number:	G11
Hazard(s) Addressed:	Wildfire		
Project Title:	Education and Outreach: Firewise USA program		
Project Description:	The City will become an active participant in the Firewise USA program and implement a Firewise plan and outreach campaign in the community.		
Responsible Entity:	Mayor and city council		
Losses avoided:	Property and residents throughout the city		
Cost Estimate:	4,000	Timeframe:	12 months
Potential Funding Sources:	HMP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Manvel	Action Number:	G12
Hazard(s) Addressed:	Hurricane/ Tropical Storms		
Project Title:	Hurricane resistant powerline poles		
Project Description:	All new power line poles installed within the jurisdiction will be wind resistant to Hurricane grade winds.		
Responsible Entity:	Engineering Department Director		
Losses avoided:	Homes, businesses, and public facilities		
Cost Estimate:	250,000	Timeframe:	48 months
Potential Funding Sources:	HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Manvel	Action Number:	G13
Hazard(s) Addressed:	Hail, Hurricanes, Winter Storms		
Project Title:	Educate public of home improvement opportunities		
Project Description:	Educate elderly, low-income residents of grant funding opportunities to insulate the foundation of pier and beam homes, and update homes to withstand hurricane force winds and hail.		
Responsible Entity:	County EMC, partnering jurisdictions mayors and city councils, code enforcement and building department Manager		
Losses avoided:	Life, health, and safety of vulnerable populations, and property damage		
Cost Estimate:	2,500	Timeframe:	6 months
Potential Funding Sources:	HMGP, USDA Home Repair Grant	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Manvel	Action Number:	G14
Hazard(s) Addressed:	Wildfire		
Project Title:	Reducing underbrush for wildfire prevention		
Project Description:	The city will work to reduce underbrush on identified wild-urban interface areas through techniques such as using skid steers or goats.		
Responsible Entity:	County EMC, Mayor and City Manager		
Losses avoided:	Current and future buildings and residents in wild-urban interface areas		
Cost Estimate:	500,000	Timeframe:	12-24 months
Potential Funding Sources:	HMGP, local budget and current salary, fire prevention and safety grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Manvel	Action Number:	G15
Hazard(s) Addressed:	Tornado		
Project Title:	Tornado mitigation through rebate program		
Project Description:	The city will develop a rebate program for building owners who install straps, structural bracings, window shutters, or interlocking roof shingles in new construction or when renovating residences or businesses.		
Responsible Entity:	City Manager, Office of Code Enforcement Director		
Losses avoided:	Resident, homes, business, and local facilities		
Cost Estimate:	5,000	Timeframe:	3 months
Potential Funding Sources:	Current city budget and salary, HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Manvel	Action Number:	G16
Hazard(s) Addressed:	Drought, Expansive Soils		
Project Title:	Structural and foundation protection		
Project Description:	Install moisture sensing irrigation systems at all existing and future county, local and critical facilities. Irrigation systems automatically water building to reduce the impacts of shrinking and swelling soils during drought.		
Responsible Entity:	Facilities and building department Director		
Losses avoided:	Structural foundations and anticipated cost of repairs		
Cost Estimate:	175,000	Timeframe:	36-48 months
Potential Funding Sources:	Local budgets and HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Manvel	Action Number:	G17
Hazard(s) Addressed:	Dam/ Levee Failure		
Project Title:	Structural		
Project Description:	Incorporate routine repairs and structural renovation efforts of dams and levee into capital improvement plans.		
Responsible Entity:	County EMC, partnering jurisdictions, mayors, city councils, capital improvement boards, engineering department Director		
Losses avoided:	Lives, homes, businesses, critical assets, public facilities, and infrastructure destruction in the event of dam or levee failure.		
Cost Estimate:	1,500,000	Timeframe:	24-36 months
Potential Funding Sources:	HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Brazoria

Jurisdiction:	Brazoria	Action Number:	H1
Hazard(s) Addressed:	Flooding, Hurricane, Wildfire, Lightning, Heat Events, Hail, Winter Weather, Tornado, Dam and Levee Failure		
Project Title:	Communication and Emergency Services		
Project Description:	Purchase radio/ communication equipment to improve communication leading up to and during natural disasters. Equipment will be protected against electrical surges caused by lightning, and elevated 4' above base flood level to protect equipment from flooding.		
Responsible Entity:	Police Chief, Fire Marshall, Mayor, City Manager and Public Works Director		
Losses avoided:	Residents (loss of life) and existing and new properties		
Cost Estimate:	120,000	Timeframe:	36-60 months
Potential Funding Sources:	Federal, State, Local, HMGP, PDM, FEMA Emergency Operations Center Funding, FEMA Emergency Management Performance Grant, USDA Rural Utilities Service Weather Radio Grant Program	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H2
Hazard(s) Addressed:	Floods		
Project Title:	Prevention		
Project Description:	Develop and implement a drainage improvement program: Widen and reshape city owned drainage ditches, and upgrade culverts to restore adequate drainage to mitigate flooding, and increase size of culverts, including box culverts.		
Responsible Entity:	Public works department Director		
Losses avoided:	Flooding of homes and roads.		
Cost Estimate:	100,000	Timeframe:	12-24 months
Potential Funding Sources:	Drainage district funds available, Local funds, TWDB-Clean Water Development Board (Development Fund, USDA NRCA Watershed Protection and Flood Prevention Program, EPA-NPS Grant Program, 406 Public Assistance Program (following federal disaster declaration	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Brazoria	Action Number:	H3
Hazard(s) Addressed:	Flooding, Hurricane, Wildfire, Lightning, Heat Events, Hail, Winter Weather, Tornado, Dam and Levee Failure		
Project Title:	Property Protection		
Project Description:	Retrofit Emergency Operations Center at City Hall. Add storm protection to glass doors and windows at EOC, Police Station, and Fire Station. Install network connection and Emergency Dispatch radio in EOC.		
Responsible Entity:	City EMC, Mayor and City Manager		
Losses avoided:	Residents and existing and new properties		
Cost Estimate:	75,000	Timeframe:	12 months
Potential Funding Sources:	City funds, FEMA-HMGP and PDM program Federal, State, Local, FEMA-Emergency Management Performance Grant, Dept. of Justice-State Homeland Security Program, FEMA All Hazards Operational Planning, PDM, HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H4
Hazard(s) Addressed:	Hurricane/ Tropical Storms and Wildfire		
Project Title:	Emergency Services		
Project Description:	Replace aging Fire/EMS chief/ EMS Command and Emergency Management Staff command vehicles that are more than 100,000 miles or older than seven years old.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Residents and existing and new properties		
Cost Estimate:	150,000	Timeframe:	12 months
Potential Funding Sources:	Federal, state, local, FEMA-Assistance to Fire Fighters Grant, FEMA-All Hazards Operational Planning	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H5
Hazard(s) Addressed:	All Hazards		
Project Title:	Emergency Services		
Project Description:	Upgrade Brazoria Life Flight Landing Zone by replacing fence, landing surface and install pavement markings; improve drainage system and replace electrical system.		
Responsible Entity:	City EMC, Mayor and City Manager		
Losses avoided:	Loss of life and Continuity of services during natural disasters and/or hazards.		
Cost Estimate:	\$ 250,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, FEMA-Emergency Management Performance Grant, Homeland Security, PDM, and HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H6
Hazard(s) Addressed:	Hurricane/ Tropical Storms and Hail		
Project Title:	Property Protection		
Project Description:	Install hurricane shutters on City Hall, fire station and police department.		
Responsible Entity:	City EMC, Mayor and City Manager		
Losses avoided:	Prevents the need for expensive repairs, the loss of power, communication, and ability to provide emergency services.		
Cost Estimate:	40,000	Timeframe:	12-24 months
Potential Funding Sources:	USACE-Small Flood Control Projects, USDA NRCS-Emergency Watershed Protection Agency, TWDB-Clean Water State Revolving Fund, TWDB (Development Fund II)-Texas Water Development Fund, USDA NRCS-Watershed Protection and Flood Prevention Program, EPA-NPS Grant	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H7
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Tornado, Hail, Heat Events, Winter Storms		
Project Title:	Public Information and Education		
Project Description:	Develop severe weather warning system to alert the public of impending natural disasters.		
Responsible Entity:	Police Chief and Fire Marshall		
Losses avoided:	Loss of life and property protection		
Cost Estimate:	95,000	Timeframe:	6 months
Potential Funding Sources:	USDA-Rural Utilities Service-Weather Radio Grant Program, DOJ-State Homeland Security Program, National Weather Service, HMGP, PDM, FEMA-Emergency Operations Center Funding, FEMA-Emergency Management Performance Grant, USDA-Environmental Quality Incentive	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H8
Hazard(s) Addressed:	Floods and Wildfire		
Project Title:	Emergency Services		
Project Description:	Purchase street sign and barricades to block off streets for evacuation		
Responsible Entity:	Police Chief and City EMC		
Losses avoided:	Flooding, Homes lost, loss of life		
Cost Estimate:	2,500	Timeframe:	6 months
Potential Funding Sources:	Local funds	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H9
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms		
Project Title:	Property Protection		
Project Description:	Install security system for City service center.		
Responsible Entity:	Public Works Department Director		
Losses avoided:	Residents and existing and new properties		
Cost Estimate:	5,000	Timeframe:	12-24 months
Potential Funding Sources:	FEMA-Emergency Management Performance Grant, Dept. of Justice-State Homeland Security Program, FEMA-All Hazards Operational Planning	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H10
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Wildfire		
Project Title:	Emergency Services		
Project Description:	Purchase rescue vehicle		
Responsible Entity:	Fire Marshall		
Losses avoided:	Residents and existing and new properties		
Cost Estimate:	250,000	Timeframe:	6 months
Potential Funding Sources:	FEMA-Assistance to Firefighter's Grant	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H11
Hazard(s) Addressed:	Floods, Wildfire, Tornado		
Project Title:	Emergency Services		
Project Description:	Purchase emergency medical service, fire and police rescue equipment.		
Responsible Entity:	Police Chief, Fire Marshall, EMS Director, Mayor and City Manager		
Losses avoided:	Residents and existing and new properties		
Cost Estimate:	50,000	Timeframe:	6 months
Potential Funding Sources:	DOJ-State Homeland Security Program, FEMA-Assistance to Firefighter's Grant	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H12
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Wildfire, Tornado		
Project Title:	Public Information and Awareness, Emergency Services		
Project Description:	Develop evacuation plan.		
Responsible Entity:	Police Chief, Fire Marshall and Public Works Department Director		
Losses avoided:	Residents and existing and new properties		
Cost Estimate:	10,000	Timeframe:	6 months
Potential Funding Sources:	PDM Program, FEMA Emergency Management Performance Grant, Flood Mitigation Assistance Program, HMGP, USDA Environmental Quality Incentives Program, FEMA-All Hazards Operational Planning, FEMA Hazardous Materials Assistance Program, FEMA Fire Management As	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H13
Hazard(s) Addressed:	Wildfire		
Project Title:	Becoming an active participant in Firewise USA program		
Project Description:	The City will become an active participant in the Firewise USA program and implement a Firewise plan and outreach campaign in the community.		
Responsible Entity:	Mayor and city council		
Losses avoided:	Property and residents throughout the city.		
Cost Estimate:	4,000	Timeframe:	12 months
Potential Funding Sources:	HMP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H14
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms		
Project Title:	Adopting land-use ordinance		
Project Description:	The city shall adopt a land-use ordinance which prohibits building residential or commercial structures in the 100-year floodplain.		
Responsible Entity:	City manager, City Council, Office of Code Enforcement Director		
Losses avoided:	Future buildings and infrastructure that may have been built within the 100-year floodplain.		
Cost Estimate:	5,000	Timeframe:	4 months
Potential Funding Sources:	Current city budget and salary, HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Brazoria	Action Number:	H15
Hazard(s) Addressed:	Tornado		
Project Title:	Tornado mitigation through rebate program		
Project Description:	The city will develop a rebate program for building owners who install straps, structural bracings, window shutters, or interlocking roof shingles in new construction or when renovating residences or businesses		
Responsible Entity:	City Manager, Office of Code Enforcement Director		
Losses avoided:	Residents, homes, business, and local facilities		
Cost Estimate:	5,000	Timeframe:	3 months
Potential Funding Sources:	Current city budget and salary, HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H16
Hazard(s) Addressed:	Hurricane/ Tropical Storm		
Project Title:	Hurricane resistant powerline poles		
Project Description:	All new power line poles installed within the jurisdiction will be wind resistant to Hurricane grade winds.		
Responsible Entity:	Engineering Department Director		
Losses avoided:	Homes, businesses, and public facilities		
Cost Estimate:	120,000	Timeframe:	36 Months
Potential Funding Sources:	HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Brazoria	Action Number:	H17
Hazard(s) Addressed:	Hurricane/ Tropical Storms Hail and Winter Storms		
Project Title:	Educate public of home improvement opportunities		
Project Description:	Educate elderly, low-income residents of grant funding opportunities to insulate the foundation of pier and beam homes, and update homes to withstand hurricane force winds and hail.		
Responsible Entity:	County EMC, partnering jurisdictions mayors and city councils, code of enforcement and building department Director		
Losses avoided:	Life, health, and safety of vulnerable populations, and property damage.		
Cost Estimate:	2,500	Timeframe:	6 months
Potential Funding Sources:	HMGP, USDA Home Repair Grant	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H18
Hazard(s) Addressed:	Dam/ Levee Failure		
Project Title:	Structural		
Project Description:	Incorporate routine repairs and structural renovation efforts of dams and levee into capital improvement plans.		
Responsible Entity:	County EMC, partnering jurisdictions, mayors, city councils, capital improvement boards, engineering department Director		
Losses avoided:	Lives, homes, businesses, critical assets, public facilities, and infrastructure destruction in the event of dam or levee failure.		
Cost Estimate:	1,500,000	Timeframe:	24-36 months
Potential Funding Sources:	HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H19
Hazard(s) Addressed:	All Hazards		
Project Title:	Emergency Services		
Project Description:	Construct a new Multi Jurisdiction Emergency Services building to house Fire Station, EMS, Police, and EOC.		
Responsible Entity:	Mayor and City Manager and Emergency Services District Director		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards.		
Cost Estimate:	\$3,000,000	Timeframe:	When funding becomes available
Potential Funding Sources:	FEMA EOC Funding & Performance Grant, HMPG, and BRIC Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H20
Hazard(s) Addressed:	Flooding, Hurricane, and Tornado		
Project Title:			
Project Description:	Construct a new City Hall to withstand Hurricane Force winds and continue city operations after a disaster event		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Continuity of services during and after natural disasters and/or hazards.		
Cost Estimate:	\$2,000,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, TWDB, HMPG, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	City of Brazoria, Brazoria County, West of the Brazos DD #11	Action Number:	H21
Hazard(s) Addressed:	Floods, Hurricanes, Tropical Storms		
Project Title:	Implement Drainage Improvements to Outfall Channels		
Project Description:	Widen and reshape channels, removal of trees and vegetation, and upgrade culverts to restore conveyance in channels and ditches to mitigate flooding.		
Responsible Entity:	Mayor and City Manager and Drainage District #11 Director		
Partners:	City of Brazoria, Brazoria County, and West of the Brazos DD #11		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards.		
Cost Estimate:	\$2,000,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, TWDB, HMGP, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	City of Brazoria	Action Number:	H22
Hazard(s) Addressed:	Floods, Hurricanes, Tropical Storms		
Project Title:	Magnolia Subdivision Drainage Improvements		
Project Description:	Construct detention pond, channel improvements, and upgrade culverts		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards.		
Cost Estimate:	\$1,750,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, TWDB, HMGP, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Brazoria and West of the Brazos DD #11	Action Number:	H23
Hazard(s) Addressed:	Floods		
Project Title:	Implement Storm Sewer Master Plan		
Project Description:	Conduct a drainage study to determine additional improvements to the drainage channels and conveyance restrictions. Using the study, the city would implement projects to widen and reshape channels and upgrade culverts to restore adequate conveyance to mitigate flooding.		
Responsible Entity:	Mayor and City Manager and Drainage District #11 Director		
Partners:	City of Brazoria and West of the Brazos DD #11		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards.		
Cost Estimate:	\$500,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, TWDB, HMGP, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Brazoria	Action Number:	H24
Hazard(s) Addressed:	Floods		
Project Title:	Garden Acres Subdivision Drainage Improvements		
Project Description:	Construct detention pond, channel and ditch improvements, and upgrade culverts		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards.		
Cost Estimate:	\$1,950,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, TWDB, HMGP, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Brazoria	Action Number:	H25
Hazard(s) Addressed:	Drought and Wildfire		
Project Title:	Construct additional EST, Replace GST		
Project Description:	Conduct an additional EST and replace 400,000 gal GST for additional storage to be used during a drought and fire protection to homes and businesses.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Loss of life; continuity of services during and after natural disasters and/or hazards.		
Cost Estimate:	\$2,000,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, TWDB, HMGP, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	City of Brazoria	Action Number:	H26
Hazard(s) Addressed:	Expansive Soils		
Project Title:	Waterline Replacement Program		
Project Description:	Replace old cast iron waterlines, service lines, fire hydrants, and valves throughout the city to provide adequate water during droughts, fire protection, and promote water conservation.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Loss of life; continuity of services during and after natural disasters and/or hazards.		
Cost Estimate:	\$2,500,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, TWDB, HMGP, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H27
Hazard(s) Addressed:	Flooding, Hurricanes, and Tropical Storms		
Project Title:	Sanitary Sewer Collections System Rehab		
Project Description:	Replace brick manholes, clay & concrete sewer mains, and service lines with PVC to eliminate infiltration/inflow of water into sewer system thereby preventing overflows of sewer into rivers and streams.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Continuity of services during natural disasters and/or hazards and protecting the environment.		
Cost Estimate:	\$12,000,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, TWDB, HMGP, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	City of Brazoria	Action Number:	H28
Hazard(s) Addressed:	Flooding, Hurricanes, and Tropical Storms		
Project Title:	Lift Station Improvements		
Project Description:	Rehabilitate Lift Station pumps, electrical, reline wet wells to prevent water intrusion during events and maintain pumping capacity and protect the environment.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Continuity of services during and after natural disasters and/or hazards.		
Cost Estimate:	\$3,500,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, TWDB, HMGP, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H29
Hazard(s) Addressed:	Floods, Hurricanes, & Tropical Storms		
Project Title:	Sanitary Sewer I&I and Capacity Study		
Project Description:	Conduct smoke testing, physical manhole inspections and GIS mapping of the system. Conduct a capacity study to ensure orderly development that would not impact existing system.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Continuity of services during natural disasters and/or hazards and orderly development.		
Cost Estimate:	\$500,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Brazoria	Action Number:	H30
Hazard(s) Addressed:	All Hazards		
Project Title:	New Public Works Facility		
Project Description:	Construct new Public Works facility to withstand hurricane force winds in order for employees to respond during and after a disaster hits.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Loss of life; continuity of services during and after natural disasters and/or hazards.		
Cost Estimate:	\$1,000,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H31
Hazard(s) Addressed:	Floods, Hurricanes, Tropical Storms & Winter Storms		
Project Title:	Lift Station Rehabilitation		
Project Description:	Rehabilitate 11 Lift Stations to maintain operability during events by upgrading electrical controls and pumps, seal coat inside wet wells, or upsizing lift stations.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Continuity of services during natural disasters and/or hazards and orderly development.		
Cost Estimate:	\$1,000,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H32
Hazard(s) Addressed:	Wildfire, Drought, & Heat Events		
Project Title:	Fire Hydrant Inspection, Repairing & Replacement		
Project Description:	Inspect all fire hydrants for operability and replace outdated hydrants to maintain adequate flow to fight fires; install new fire hydrants where fire protection is lacking.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Loss of life; continuity of services during and after natural disasters and/or hazards.		
Cost Estimate:	\$500,000,	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H33
Hazard(s) Addressed:	All Hazards		
Project Title:	Property Protection		
Project Description:	Install security system for City Service center and Fire Stations		
Responsible Entity:	Public Works Director and Fire Marshall		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards.		
Cost Estimate:	\$ 25,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H34
Hazard(s) Addressed:	Floods, Hurricanes, Tropical Storms		
Project Title:	Emergency Services		
Project Description:	Purchase a high-water rescue vehicle		
Responsible Entity:	Police Chief and Fire Marshall		
Losses avoided:	Loss of life during natural disasters and/or hazards.		
Cost Estimate:	\$195,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants, Texas Forest Service	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H35
Hazard(s) Addressed:	All Hazards		
Project Title:	Property Protection		
Project Description:	Install storm protection to glass doors and windows, hurricane shutters at EOC, Police Station, Fire Station and auxiliary building at FS #2		
Responsible Entity:	City EMC		
Losses avoided:	Continuity of services during natural disasters and/or hazards.		
Cost Estimate:	\$ 125,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, FEMA-Emergency Management Performance Grant, Homeland Security, PDM, and HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria	Action Number:	H36
Hazard(s) Addressed:	Floods, Hurricanes, Tropical Storms, Winter Storm, Hail, and Lightning		
Project Title:	Emergency Services		
Project Description:	Purchase back-up generators for all critical facilities and Fire Stations		
Responsible Entity:	Public Works Director and Fire Marshall		
Losses avoided:	Continuity of services during natural disasters and/or hazards.		
Cost Estimate:	\$300,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants, Texas Forest Service	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Hillcrest Village

Jurisdiction:	Hillcrest Village	Action Number:	I1
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Wildfire, Tornado, Drought, Heat Events, Hail, and Winter Storms, Expansive Soils		
Project Title:	Emergency Management Services		
Project Description:	Develop an outreach website and online notification system for residents to obtain Emergency information as well as informing the public of available programs to assist them in hazardous situations.		
Responsible Entity:	Emergency Management Coordinator		
Losses avoided:	Dangerous situations avoided due to the lack of information by the residents especially the elderly and low income.		
Cost Estimate:	5,000	Timeframe:	24 months
Potential Funding Sources:	Local Budgets.	Benefit-Cost Ratio:	Less than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Hillcrest Village	Action Number:	I2
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Wildfire, Tornado, Heat Events, Hail, and Winter Storms		
Project Title:	Emergency Management Services		
Project Description:	Purchase and install backup 60KW generator to power Emergency Operations Command Center during power outages.		
Responsible Entity:	Emergency Management Coordinator		
Losses avoided:	Loss of life due to the incapacity to respond during emergency situations.		
Cost Estimate:	50,000	Timeframe:	24 months
Potential Funding Sources:	Local Budgets.	Benefit-Cost Ratio:	Less than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Hillcrest Village	Action Number:	I3
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms		
Project Title:	Flood Mitigation		
Project Description:	Partner with local Drainage District to widen and reshape drainage ditches, and upgrade culverts to restore adequate drainage to mitigate flooding.		
Responsible Entity:	Public Works Director and Velasco Drainage District Director		
Losses avoided:	Repairs to homes flooded due to improper drainage.		
Cost Estimate:	5,000	Timeframe:	12 months
Potential Funding Sources:	Local Budgets.	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Hillcrest Village	Action Number:	I4
Hazard(s) Addressed:	Wildfire, Drought, and Heat Events		
Project Title:	Fire Mitigation		
Project Description:	Replace outdated fire Hydrants and associated system requirements with upgraded equipment.		
Responsible Entity:	Public Works Director		
Losses avoided:	Repairs to city structures and homes flooded due to improper drainage.		
Cost Estimate:	100,000	Timeframe:	36 months
Potential Funding Sources:	Local Budgets.	Benefit-Cost Ratio:	Less than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Hillcrest Village	Action Number:	I5
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms		
Project Title:	Flood Mitigation		
Project Description:	Conduct an engineering survey to establish proper drainage for 24 Homes in the Flood Zone.		
Responsible Entity:	Public Works Director		
Losses avoided:	Repairs to city structures and homes flooded due to improper drainage.		
Cost Estimate:	5,000	Timeframe:	12 months
Potential Funding Sources:	Local Budgets.	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Hillcrest Village	Action Number:	I6
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms		
Project Title:	Flood Mitigation		
Project Description:	Purchase additional land for retention pond construction to mitigate flooding in flood zones.		
Responsible Entity:	Emergency Management Coordinator		
Losses avoided:	Repairs to homes and city structures after flooding.		
Cost Estimate:	250,000	Timeframe:	72 months
Potential Funding Sources:	Local, State and Federal Grants.	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Clute

Jurisdiction:	Clute	Action Number:	J1
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms		
Project Title:	Waste water treatment plant		
Project Description:	Replace the old generator unit with a new unit at the waste water treatment plant.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	During any power outages, this would assure that the waste water treatment plant would continue to operate and avoid sewer back up. This plant serves Clute; Richwood		
Cost Estimate:	225,000	Timeframe:	36 to 48 months
Potential Funding Sources:	HMPG	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Clute	Action Number:	J2
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms		
Project Title:	Infrastructure		
Project Description:	Deepen Velasco drainage District ditch between Lake Bend Ramp; Mammoth Lake, Lakeview, College park		
Responsible Entity:	Mayor and City Manager, Velasco drainage District Director		
Losses avoided:	Clute Ramp; Lake Jackson subdivision flooding		
Cost Estimate:	1,500,000	Timeframe:	24 to 36 months
Potential Funding Sources:	HMPG	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Clute	Action Number:	J3
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms		
Project Title:	Refurbish Temple Ditch		
Project Description:	Refurbish Temple Ditch from Plantation to SH332, Deepen, widen, replace culverts and Clean.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Temple ditch is one of the city's main ditch for drainage especially during a storm or heavy rain.		
Cost Estimate:	750,000	Timeframe:	12 to 24 months
Potential Funding Sources:	HMPG	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Clute	Action Number:	J4
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms		
Project Title:	Deepen VDD ditch behind high school		
Project Description:	Deepen Velasco drainage district ditch behind the Brazos wood high school to Lake Bend outfall		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	This ditch drains both Lake Jackson and Clute during heavy rains or storms. This would avoid subdivisions in both cities from flooding.		
Cost Estimate:	350,000	Timeframe:	12 months
Potential Funding Sources:	HMPG	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Clute	Action Number:	J5
Hazard(s) Addressed:	Floods		
Project Title:	College Park Pump Station		
Project Description:	Install a permanent ditch water pumping station at College Park.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	Flooding of Homes throughout the subdivision		
Cost Estimate:	250,000	Timeframe:	
Potential Funding Sources:	HMPG	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Clute	Action Number:	J6
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms		
Project Title:	Lexington & Creek Rd Water Pumping station		
Project Description:	Install permanent ditch water pumping station at Lexington & Creek Road.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	This ditch receives rain water from Lake Jackson and Clute. Flooding		
Cost Estimate:	250,000	Timeframe:	24 to 36 months
Potential Funding Sources:	HMPG	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Clute	Action Number:	J7
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms		
Project Title:	Flag Lake Dry Culverts		
Project Description:	Deepen ditch and replace culverts on Flag Lake Dry to increase storm water infrastructure capacity.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	The flooding of homes and businesses along Flag Lake Dr.		
Cost Estimate:	200,000	Timeframe:	12 months
Potential Funding Sources:	HMPG	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Clute	Action Number:	J8
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms		
Project Title:	Wood shore Lift Station		
Project Description:	Obtain and install a SCADA notification system for the Wood Shore sewer lift station.		
Responsible Entity:	Mayor and City Manager		
Losses avoided:	The is used to monitor the lift station levels and flows, and possibly pump failure. A pump failure could cause potentially sewer to back up in the subdivision.		
Cost Estimate:	25,000	Timeframe:	6 months
Potential Funding Sources:	HMPG	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Clute	Action Number:	J9
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms		
Project Title:	Bumpy Rd sewer lift station		
Project Description:	Deepen Wet Well at Bumpy Rd sewer lift station. This would increase the sewer capacity.		
Responsible Entity:	Clute Mayor and City Manager		
Losses avoided:	The inability to keep up with the City's sewer demands in times of heavy rains		
Cost Estimate:	350,000	Timeframe:	12 to 24 months
Potential Funding Sources:	HMPG	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Port of Freeport

Jurisdiction:	Port Freeport	Action Number:	L1
Hazard(s) Addressed:	Flooding, Hurricane, Wildfire, Drought, Lightning, Heat Events, Hail, Winter Weather, Tornado, Dam and Levee Failure, Coastal Erosion		
Project Title:	Warning System		
Project Description:	Develop audio warning system for notifying the Port personnel and tenants of an imminent natural hazard threat.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Human injury and loss of life Property damage		
Cost Estimate:	250,000	Timeframe:	4 to 6 months
Potential Funding Sources:	Grant funding will be used with matching funds coming from Port Freeport funds.	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Port Freeport	Action Number:	L2
Hazard(s) Addressed:	Flooding, Hurricane, Wildfire, Drought, Lightning, Heat Events, Hail, Winter Weather, Tornado, Dam and Levee Failure, Coastal Erosion		
Project Title:	Weather Station		
Project Description:	Update and expand the current weather station capabilities to give more detailed and earlier warnings of potentially threatening natural hazards.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Human injury or loss of life Property and equipment damage		
Cost Estimate:	35,000	Timeframe:	3 months
Potential Funding Sources:	Grant funds will be utilized with matching coming from Port Freeport funds.	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Port Freeport	Action Number:	L3
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Wildfire, Tornado, Dam/ Levee Failure, and Winter Storms		
Project Title:	Record Management System		
Project Description:	Identify and implement a paperless records management system to improve resilience before and after a disaster.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Data loss (financial and sales), Engineering drawings destroyed or damaged, Administrative documents such as policies and procedures, Records required by law (ex. compliance and open record data)		
Cost Estimate:	75,000	Timeframe:	6 to 9 months
Potential Funding Sources:	Grant funds would be used with the matching coming from Port Freeport funds.	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Port Freeport	Action Number:	L4
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Dam/ Levee Failure, and Winter Storms		
Project Title:	Drainage Improvement		
Project Description:	Implement drainage improvements to drain water away from the transit shed facilities and dock areas. Widen and reshape drainage ditches, and upgrade culverts to restore adequate drainage to mitigate flooding.		
Responsible Entity:	Port Freeport Engineering Director		
Losses avoided:	Building damage, Cargo damage/loss, Human injury		
Cost Estimate:	3,750,000	Timeframe:	9 to 12 months
Potential Funding Sources:	Grant funds will be used which the grant match coming from Port Freeport funds.	Benefit-Cost Ratio:	Less than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Port Freeport	Action Number:	L5
Hazard(s) Addressed:	Hurricane/ Tropical Storms, Wildfire, Tornado, Hail, and Winter Storms		
Project Title:	Storm Shutters		
Project Description:	Install storm shutters on all exterior Port facility windows and glass doors		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Human injury or death and Facility damage		
Cost Estimate:	325,000	Timeframe:	9 to 12 months
Potential Funding Sources:	The match will be paid with Port Freeport funds.	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L6
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Wildfire, Tornado, Dam/ Levee Failure, Hail, Winter Storms		
Project Title:	Communication Center Improvements		
Project Description:	Expand the information and communication capabilities of the Port Freeport Emergency Operation Center to better communicate vessel traffic and waterway information to channel users before, during and after natural disaster		
Responsible Entity:	Port Freeport Operations Director		
Losses avoided:	Human injury or death Marine vessel damage or loss Water channel blockage Damage to the shore line, Decreased channel depth, Environmental hazard release/spill, Vessel collision		
Cost Estimate:	425,000	Timeframe:	6 to 9 months
Potential Funding Sources:	Match will be paid with Port Freeport funds	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L7
Hazard(s) Addressed:	All Hazards		
Project Title:	Emergency Power Back-up		
Project Description:	Implement a backup power solution for critical Port Freeport infrastructure which includes a fixed back up emergency power generator for the Port Freeport Administration Building and two mobile emergency power generator trailers.		
Responsible Entity:	Port Freeport Engineering Manager		
Losses avoided:	Lose the function of Administrative, Operation, and cargo storage facilities Impact to economy (\$126.6M/day) Loss of economy income (\$20.8M/day)		
Cost Estimate:	350,000	Timeframe:	6 to 9 months
Potential Funding Sources:	Match will be paid with Port Freeport funds	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L8
Hazard(s) Addressed:	Coastal Erosion		
Project Title:	Erosion Barrier		
Project Description:	Add an erosion barrier wall to eliminate or reduce erosion along the Port's fence line.		
Responsible Entity:	Port Freeport Engineering Manager		
Losses avoided:	Human injury, Cargo damage, Property damage, Loss of usable property for cargo storage		
Cost Estimate:	250,000	Timeframe:	12 to 18 months
Potential Funding Sources:	Match will be paid with Port Freeport funds	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L9
Hazard(s) Addressed:	Wildfire, Drought, Heat Events		
Project Title:	Cooling zones		
Project Description:	Implement cooling zones in the Port to protect Port users from extreme heat. Cooling fans can also be utilized to deflect smoke and chemical released gases to a non-populated area.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Human injury or death, Cargo damage, Facility damage		
Cost Estimate:	175,000	Timeframe:	6 to 9 months
Potential Funding Sources:	Match will be paid with Port Freeport funds	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L10
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Tornado, Hail, Winter Storms		
Project Title:	Crane simulator		
Project Description:	Install a crane simulator and implement a crane training program to improve resilience after a natural disaster. This capability would allow technicians and operators to train on crane troubleshooting and repairs in a training.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	During crane down time, the technicians will be better prepared to get the crane operational again. In return, this reduces the lost time and allows vessel to get out of the port in a timelier manner.		
Cost Estimate:	300,000	Timeframe:	12 to 18 months
Potential Funding Sources:	Match will be paid with Port Freeport funds	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L11
Hazard(s) Addressed:	Hurricane/ Tropical Storms, Wildfire, Tornado, Heat Events and Winter Storms		
Project Title:	Emergency Vessel Simulator		
Project Description:	Design and construct a ship vessel simulator for emergency response training to improve the response and rescue capabilities for first responders in the region. The marine training prop would be utilized to train local firefighters in a realistic live setting.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Human injury or death, Property loss, Cargo loss, Channel blockage, Dock damage, Environmental spill or release		
Cost Estimate:	425,000	Timeframe:	12 to 18 months
Potential Funding Sources:	Match will be paid with Port Freeport funds	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L12
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Wildfire, Tornado, Drought, Dam/ Levee Failure, Heat Events, and Winter Storms		
Project Title:	IT Fail-over		
Project Description:	Implement an IT fail-over at a second location to assure proper network operation during and after a natural disaster. In the event the main data center failed, the fail-over location would take over IT network operations.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Commercial interruption (\$126.6M/day economic impact)		
Cost Estimate:	225,000	Timeframe:	9 to 12 months
Potential Funding Sources:	Match will be paid with Port Freeport funds	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L13
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Tornado, Dam/ Levee Failure and Winter Storms		
Project Title:	Weather Cameras		
Project Description:	Expand the current video management system to include weather cameras along the waterway to remotely monitoring weather conditions, search for people in distress, and evaluate damage caused by natural hazards.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Human injury or death, Vessel damage or loss, Commercial interruption (\$126.6M/day in economic impact), Cargo damage or loss, Shoreline damage		
Cost Estimate:	200,000	Timeframe:	9 to 12 months
Potential Funding Sources:	Match will be paid with Port Freeport funds	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L14
Hazard(s) Addressed:	Hurricane/ Tropical Storms, Wildfire, Tornado, Hail, and Winter Storms		
Project Title:	Channel lighting		
Project Description:	Add additional lighting along the waterway for increased vessel safety and visibility during poor weather conditions.		
Responsible Entity:	Port Freeport Engineering Manager		
Losses avoided:	Human injury or death, Vessel damage or loss, Cargo damage or loss, Commercial interruption (\$226.6M/day in economic impact), Shore line damage		
Cost Estimate:	150,000	Timeframe:	12 to 18 months
Potential Funding Sources:	Match will be paid with Port Freeport funds	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L15
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Tornado, Drought, Dam/ Levee Failure Heat Events and Winter Storms		
Project Title:	Power Back up		
Project Description:	Upgrade the IT power backup and electrical grounding protection capabilities for Port of Freeport's Data Center to protect data and IT equipment during a natural hazard.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Commercial interruption (\$226.6M/day in economic impact), Cargo damage or loss, Port facilities not functional, including the Emergency Operation Center		
Cost Estimate:	250,000	Timeframe:	3 to 6 months
Potential Funding Sources:	Match will be paid with Port Freeport funds	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L16
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storm, Erosion, and Dam/ Levee Failure		
Project Title:	Water Flow Monitor		
Project Description:	Design and install a system which will transmit water flow characteristics for the surrounding creeks, rivers, and intracoastal waterway to a central location, so the information can be shared with other waterway users while increasing the safety of vessel		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Human injury or death, Vessel damage or loss, Cargo damage or loss, Commercial interruption (\$226.6M/day in economic impact), Hazardous material release or spill		
Cost Estimate:	185,000	Timeframe:	12 to 18 months
Potential Funding Sources:	Match will be paid with Port Freeport funds	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L17
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Tornado, Wildfire, Lightning, Levee Failure, Severe Weather, Winter Storm, or Tropical Cyclone		
Project Title:	Emergency Alert System		
Project Description:	Audio and visual warning system for notifying the Port personnel and port users of an imminent natural hazard threat.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards; property and facility damage.		
Cost Estimate:	\$200,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Port Freeport	Action Number:	L18
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Tornado, Wildfire, Lightning, Levee Failure, Severe Weather, Winter Storm, or Tropical Cyclone		
Project Title:	Weather Station Enhancement		
Project Description:	Update and expand the current weather station capabilities to give more detailed and earlier warnings of potentially threatening natural hazards		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards; property and facility damage.		
Cost Estimate:	\$35,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Port Freeport	Action Number:	L19
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Tornado, Wildfire, Lightning, Levee Failure, Severe Weather, Winter Storm, Coastal Erosion, Expansive Soils, or Tropical Cyclone		
Project Title:	Paperless Record System		
Project Description:	Identify and implement a paperless records management system to improve resilience before and after a disaster.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards; data loss (financial and sales); engineering drawings destroyed or damaged; administrative documents such as policies and procedures; records required by law (ex. compliance and open record data)		
Cost Estimate:	\$150,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Port Freeport	Action Number:	L20
Hazard(s) Addressed:	Flood, Levee Failure, Severe Weather, Winter Storm, Coastal Erosion, Expansive Soils, or Tropical Cyclone		
Project Title:	Drainage Improvements		
Project Description:	Implement drainage improvements to drain water away from the transit shed facilities and dock areas. Widen and reshape drainage ditches, and upgrade culverts to restore adequate drainage to mitigate flooding.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards; cargo damage; reduction in cargo staging areas.		
Cost Estimate:	\$3,500,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Port Freeport	Action Number:	L21
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Tornado, Wildfire, Lightning, Levee Failure, Severe Weather, Winter Storm, Coastal Erosion, Expansive Soils, or Tropical Cyclone		
Project Title:	Channel User Communications		
Project Description:	Expand the information and communication capabilities of the Port Freeport Emergency Operation Center to better communicate vessel traffic and waterway information to channel users before, during and after natural disaster.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards; marine vessel damage; waterway channel blockage; shoreline damage; environmental hazardous spill/release; marine vessel collision.		
Cost Estimate:	\$400,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L22
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Tornado, Wildfire, Lightning, Levee Failure, Severe Weather, Winter Storm, Coastal Erosion, Expansive Soils, or Tropical Cyclone		
Project Title:	Back-up Generator for Administration Building		
Project Description:	Implement a backup power solution for critical Port Freeport infrastructure which includes a static Back-up emergency power generator for the Port Freeport Administration Building.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards.		
Cost Estimate:	\$425,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L23
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Tornado, Wildfire, Levee Failure, Severe Weather, Winter Storm, Coastal Erosion, Expansive Soils, or Tropical Cyclone		
Project Title:	Fence Line Erosion Barrier		
Project Description:	Add an erosion barrier wall to eliminate or reduce erosion along the Port's fence line.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards; cargo damage; property damage; loss of usable property for cargo storage.		
Cost Estimate:	\$300,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L24
Hazard(s) Addressed:	Extreme Heat, Flood, Hail, Tornado, Lightning, Severe Weather, Winter Storm, or Tropical Cyclone		
Project Title:	Crane Maintenance Simulator		
Project Description:	Install a crane simulator and implement a crane training program to improve resilience after a natural disaster. This capability would allow technicians and operators to train on crane troubleshooting and repairs in a training.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards; time delays to supply chain.		
Cost Estimate:	\$350,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L25
Hazard(s) Addressed:	Extreme Heat, Flood, Tornado, Wildfire, Lightning, Levee Failure, Severe Weather, Winter Storm, or Tropical Cyclone		
Project Title:	Emergency Response Training Simulator		
Project Description:	Design and construct a ship vessel simulator for emergency response training to improve the response and rescue capabilities for first responders in the region. The marine training prop would be utilized to train local firefighters in a realistic live setting simulating a response to a natural hazard incident on a maritime vessel.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards; cargo loss; delays to supply chain; dock damage.		
Cost Estimate:	\$600,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L26
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Tornado, Wildfire, Lightning, Levee Failure, Severe Weather, Winter Storm, Coastal Erosion, Expansive Soils, or Tropical Cyclone		
Project Title:	Network Failover Site		
Project Description:	Implement an IT fail-over at a second location to assure proper network operation during and after a natural disaster. In the event the main data center failed, the fail-over location would take over IT network operations.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards; delays to the supply chain.		
Cost Estimate:	\$460,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L27
Hazard(s) Addressed:	Flood, Hail, Tornado, Wildfire, Levee Failure, Severe Weather, Winter Storm, Coastal Erosion, Expansive Soils, or Tropical Cyclone		
Project Title:	Channel Weather Cameras		
Project Description:	Expand the current video management system to include weather cameras along the waterway to remotely monitoring weather conditions, search for people in distress, and evaluate damage caused by natural hazards.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards; delays to the supply chain.		
Cost Estimate:	\$225,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L28
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Tornado, Wildfire, Lightning, Levee Failure, Severe Weather, Winter Storm, Coastal Erosion, Expansive Soils, or Tropical Cyclone		
Project Title:	Network Infrastructure Power Backup and Electrical Grounding		
Project Description:	Upgrade the IT power backup and electrical grounding protection capabilities for Port of Freeport's Data Center to protect data and IT equipment during a natural hazard.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards; Emergency Operation Center going off-line.		
Cost Estimate:	\$75,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L29
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Hail, Tornado, Wildfire, Lightning, Levee Failure, Severe Weather, Winter Storm, Coastal Erosion, Expansive Soils, or Tropical Cyclone		
Project Title:	Backup Internet Services		
Project Description:	Add cellular and satellite internet service to the Emergency Operation Center, which would be utilized in the event of fiber internet service failure.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards; Emergency Operation Center going off-line; delays to the supply chain.		
Cost Estimate:	\$75,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Ye
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Port Freeport	Action Number:	L30
Hazard(s) Addressed:	Drought, Extreme Heat, Flood, Tornado, Wildfire, Levee Failure, Severe Weather, Winter Storm, Coastal Erosion, Expansive Soils, or Tropical Cyclone		
Project Title:	Pavement, Roadways and Surface Repairs		
Project Description:	Repair damages to roadways, driveways, entrances, parking lots and cargo staging area surfaces caused by a natural hazard.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards.		
Cost Estimate:	\$5,000,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Port Freeport	Action Number:	L31
Hazard(s) Addressed:	Drought, Flood, Tornado, Wildfire, Levee Failure, Severe Weather, Coastal Erosion, Expansive Soils, or Tropical Cyclone		
Project Title:	Dock Repairs		
Project Description:	Repair damages to the docks caused by a natural hazard, particularly if a natural hazard causes a ship to break loss and crash into the dock.		
Responsible Entity:	Port Freeport Protective Services Chief		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards; inability to handle cargo; divert cargo to other ports causing supply chain delays and shortages; spoiled food cargo.		
Cost Estimate:	\$20,000,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Brazosport College

Jurisdiction:	Brazosport College	Action Number:	S1
Hazard(s) Addressed:	Emergencies on Campus (human and natural), Active Shooter, Floods, Severe Thunderstorms, Tornado, Hail, Public Safety		
Project Title:	Internal and External Campus-Wide Emergency Warning System Upgrade (<i>TV screens inside buildings, personal computers, desk phones, and outside speakers</i>)		
Project Description:	Install, improve, and upgrade the campus-wide warning system for notifying all persons on campus of an imminent human or natural hazard threat on many platforms. This project would include software that would encompass all means of notification possible.		
Responsible Entity:	Brazosport College EMC and Police Chief		
Losses avoided:	Human injury and loss of life		
Cost Estimate:	\$254,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Hazard Mitigation Program Grant	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Brazosport College	Action Number:	S2
Hazard(s) Addressed:	Hurricanes, Tornadoes, High Winds, Public Safety		
Project Title:	Roofing and Structural Re-enforcement		
Project Description:	Reinforcing RTU's and piping on all building roofs. This will prevent system damages and flying debris caused by strong storms and hurricanes. Also, correcting structural issues in several concrete columns that are deteriorating from rusted rebar that has busted out large pieces of concrete in our Sadler and BASF buildings.		
Responsible Entity:	Brazosport College EMC and Police Chief		
Losses avoided:	Loss of Property, Continuity of services during natural disasters.		
Cost Estimate:	\$850,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Hazard Mitigation Program Grant	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazosport College	Action Number:	S3
Hazard(s) Addressed:	Emergencies on Campus – Public Safety, Active Shooter, Fire, Chemical Release, Explosion		
Project Title:	North Emergency Roadway		
Project Description:	Design, engineer and construct a rock-based ~754' emergency roadway to the north end of campus that would exit into Oyster Bend Subdivision. Roadway would only be used for emergency ingress/egress to Oyster Bend subdivision.		
Responsible Entity:	Brazosport College EMC and Police Chief		
Losses avoided:	Human injury and loss of life		
Cost Estimate:	\$125,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Hazard Mitigation Program Grant, Brazoria County Pct. 1 Road and Bridge	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazosport College	Action Number:	S4
Hazard(s) Addressed:	Emergencies on Campus (human and natural), Active Shooter, Fire, Floods, Severe Thunderstorms, Tornados		
Project Title:	Building Automation Systems (Automated External Door Locks)		
Project Description:	Install building automation systems to all exterior doors to buildings on campus to be used in case of an imminent human or natural hazard threat.		
Responsible Entity:	Brazosport College EMC and Police Chief		
Losses avoided:	Human injury and loss of life		
Cost Estimate:	\$400.000	Timeframe:	When funding becomes available
Potential Funding Sources:	Hazard Mitigation Program Grant	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazosport College	Action Number:	S5
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Severe Thunderstorms, Tornado, Hail		
Project Title:	Upgrade Exterior Glass/Windows		
Project Description:	Upgrading campus exterior windows to windstorm rated glass. Due to our coastal location, amount of exterior window walls, and large amounts of trees, we need the added building and student/staff protection from severe storms and hurricanes.		
Responsible Entity:	Brazosport College EMC and Police Chief		
Losses avoided:	Loss of/damage to property; continuity of services during natural disasters.		
Cost Estimate:	\$2,500.000	Timeframe:	When funding becomes available
Potential Funding Sources:	Hazard Mitigation Program Grant	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Brazosport College	Action Number:	S6
Hazard(s) Addressed:	Public Safety, Crime Reduction		
Project Title:	Lighting Improvement on campus and jogging trail		
Project Description:	Install additional and stronger light coverage in darker areas between buildings, parking lots, sidewalks, and along the campus/community walking trail.		
Responsible Entity:	Brazosport College EMC and Police Chief		
Losses avoided:	Life Safety, Crime Reduction		
Cost Estimate:	\$250,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Hazard Mitigation Program Grant	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Sweeny

Jurisdiction:	Sweeny	Action Number:	T1
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Dam/ Levee Failure,		
Project Title:	Drainage Improvements		
Project Description:	Implement drainage improvement program to include widening and reshaping drainage ditches, and upgrade culverts to restore adequate drainage on CR 332		
Responsible Entity:	West Brazos Drainage District #11 Director, Sweeny Mayor and City Manager		
Losses avoided:	Life safety, protect property		
Cost Estimate:	500,000	Timeframe:	36-60 months
Potential Funding Sources:	HMPG	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Sweeny	Action Number:	T2
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Dam/ Levee Failure		
Project Title:	Drainage		
Project Description:	Enlarge culverts along Stevenson Slough to increase stormwater infrastructure.		
Responsible Entity:	Sweeny Mayor and City Manager		
Losses avoided:	Life safety and protect property		
Cost Estimate:	125,000	Timeframe:	36-60 months
Potential Funding Sources:	HMPG	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Sweeny	Action Number:	T3
Hazard(s) Addressed:	Drought, Heat Events, Expansive Soils, Winter Storms		
Project Title:	Replace Infrastructure		
Project Description:	Replacement of aging water and sewer lines throughout the city that are vulnerable to failure during natural disasters.		
Responsible Entity:	Sweeny Public Works Director		
Losses avoided:	Protect our sewer plant with less rain water going into broken sewer lines		
Cost Estimate:	10,000,000	Timeframe:	36-48 months
Potential Funding Sources:	FEMA Grants, TWDB Grants	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Unincorporated Brazoria County

Jurisdiction:	Brazoria County	Action Number:	N1
Hazard(s) Addressed:	Floods		
Project Title:	Structural Project		
Project Description:	Widen and reshape drainage ditches, and upgrade culverts to restore adequate drainage to mitigate flooding. Use a drainage study to target high impact areas.		
Responsible Entity:	County Road and Bridge Dept. Manager and County Drainage District Director		
Losses avoided:	Property and lives throughout the city		
Cost Estimate:	500,000	Timeframe:	48 months
Potential Funding Sources:	Drainage district funds as available, Local funds, TWDB-Clean Water Revolving Fund, TWDB (Development Fund II), USDA NRCS-Watershed Protection and Flood Prevention Program, EPA NPS Grant Program, 406 Public Assistance, USACE-Clearing and Snagging P	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Brazoria County	Action Number:	N2
Hazard(s) Addressed:	Floods		
Project Title:	Public Education		
Project Description:	Implement campaign on public education of ICC (Increased Cost of Compliance) coverage.		
Responsible Entity:	Brazoria County NFIP Administrator		
Losses avoided:	Life safety and public property		
Cost Estimate:	5,000	Timeframe:	24 months
Potential Funding Sources:	Flood Mitigation Assistance Program, Hazard Grant Program, ICC training for public and insurance agents may be available free of charge through FEMA	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Brazoria County	Action Number:	N3
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms		
Project Title:	Structural Project, Property Protection		
Project Description:	Implement dune and beach restoration to protect county beach areas between Surfside Beach and San Luis Pass		
Responsible Entity:	County Rd and Bridge Dept. Director and Parks Dept. Director		
Losses avoided:	Life safety and public property		
Cost Estimate:	750,000	Timeframe:	18 months
Potential Funding Sources:	USACE-Emergency Stream Bank and Shoreline Protection, USACE-Planning Assistance to States, HMGP, USACE-Nonstructural Alternatives to Structural Rehabilitation of Damages Flood Control Works, USACE-Planning Assistance to States	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria County	Action Number:	N4
Hazard(s) Addressed:	Floods		
Project Title:	Coastal River Flood Extent Analysis		
Project Description:	Determine flood extents, in Brazoria County, because of recent hurricane disasters, by analyzing the post event aerial imagery through a GIS image classification process, and compare the flood extent area to other sources, such as LIDAR surface elevate		
Responsible Entity:	Engineering Department Director		
Losses avoided:	Will prevent future loss of life and property, by refining evacuation area decisions, floodplain updates, development / building construction codes.		
Cost Estimate:	50,000	Timeframe:	6 to 12 months.
Potential Funding Sources:	90 percent - HMGP, PDM, TWDB FMA; 10 percent In-kind service match on part of Brazoria County through labor and in-turn data provision.	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Brazoria County		Action Number:	N5
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms and Erosion			
Project Title:	Prevention, Property Protection			
Project Description:	Treasure Island Revetment project. The project also focuses on developing alternatives for a beach nourishment project near the revetment and fishing pier area to widen the beach and provide a buffer to reduce storm impacts to the existing s			
Responsible Entity:	Commissioner Donald "Dude" Payne, Brazoria County Pct. 1			
Losses avoided:	Life safety and public property			
Cost Estimate:	4,000,000	Timeframe:	48 to 60 months	
Potential Funding Sources:	FEMA, HMG, CEPRA, CIAP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio	
Does this action reduce effects of hazards on existing buildings?				Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?				Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?				No

Jurisdiction:	Brazoria County		Action Number:	N6
Hazard(s) Addressed:	Floods and Hurricane/ Tropical Storms			
Project Title:	Elevate structures in flood zone			
Project Description:	Elevate structures in flood zone. During Harvey Brazoria County had 12,000 structures flooded. Over 70% of these structures are pre-firm and do not meet current FEMA elevation standards. FEMA estimates that over 400 structures may be substantially damaged and must be elevated to meet current standards			
Responsible Entity:	Floodplain District Director			
Losses avoided:	The County estimates 60,000,000.00 in savings from flood damage to structures.			
Cost Estimate:	60,000,000	Timeframe:	60 months	
Potential Funding Sources:		Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio	
Does this action reduce effects of hazards on existing buildings?				Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?				Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?				Yes

Jurisdiction:	Brazoria County	Action Number:	N7
Hazard(s) Addressed:	Floods		
Project Title:	NFIP Technical Material		
Project Description:	Place copies of FEMA Flood-related technical bulletins in County libraries.		
Responsible Entity:	Emergency Management Coordinator		
Losses avoided:	Creating an awareness of building requirements for NFIP participants will encourage them to build sensibly or modify existing structure, to be more flood damage-resistant.		
Cost Estimate:	1,000	Timeframe:	6 months
Potential Funding Sources:	PDM, HMGP, local funds	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Brazoria County	Action Number:	N8
Hazard(s) Addressed:	Flood and Hurricane/ Tropical Storms		
Project Title:	Property Protection		
Project Description:	Removal of debris, widen and reshape drainage ditches, and upgrade culverts to restore adequate drainage to mitigate flooding throughout the county.		
Responsible Entity:	Brazoria County EMC and Velasco Drainage District Director		
Losses avoided:	Life safety and public property		
Cost Estimate:	500,000	Timeframe:	12 months
Potential Funding Sources:	PDM, HMGP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria County	Action Number:	N9
Hazard(s) Addressed:	Floods		
Project Title:	Secure and develop park land surrounding Hanson-Riverside County Park and San Bernard River area		
Project Description:	Purchase adjacent tracts of approximately 335 acres surrounding existing Hanson-Riverside County Park footprint. This land is divided into a few tracts, but all is listed as one owner, and much of it was impacted by recent flooding by near-record levels of the San Bernard River		
Responsible Entity:	Brazoria County Parks Department Director		
Losses avoided:	To help mitigate future flooding to which this area is prone.		
Cost Estimate:	6,000,000	Timeframe:	15 to 24 months
Potential Funding Sources:	County funds and all available grants, commercial and governmental	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Brazoria County	Action Number:	N10
Hazard(s) Addressed:	Floods		
Project Title:	Secure and develop Park land of surrounding tracts near Camp Mohawk County Park		
Project Description:	Purchase approximately 160 acres adjacent to and surrounding Camp Mohawk County Park, which will involve negotiating with several landowners of smaller tracts, and one large, 107-acre tract. Minimal but useful development of trails and boardwalks would be appropriate along this new acreage, and no doubt utilized by citizens of surrounding neighborhoods who already visit the park for day use such as hiking, biking, fishing and other recreation. Such development could also be engineered and appropriately elevated so as to help mitigate future high-water issues.		
Responsible Entity:	Brazoria County Park Department Director		
Losses avoided:	This area along Chocolate Bayou is also historically prone to flooding. During Hurricane Harvey, this immediate vicinity received huge amounts of rain along the bayou and its watershed, and the park and surrounding neighborhoods experienced severe flooding with hundreds of homes affected. Converting remaining undeveloped land into park space is perhaps the single most practical use of it, and would likely be welcomed by the surrounding populace.		
Cost Estimate:	7,500,000	Timeframe:	14 to 24 months
Potential Funding Sources:	County Funds and any applicable grants	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Brazoria County	Action Number:	N11
Hazard(s) Addressed:	Floods		
Project Title:	Property Protection		
Project Description:	Dig ditch to take water that builds up in Quail Ridge subdivision to the Austin Bayou.		
Responsible Entity:	Brazoria County Engineering Department Director		
Losses avoided:	Life safety and public property		
Cost Estimate:	75,000	Timeframe:	12 months
Potential Funding Sources:	Road and Bridge funds operating budget, TWDB-Clean Water Revolving Fund, TWDB (Development Fund II) - Texas Water Development Fund, USDA NRCS-Watershed Protection and Flood Prevention Program, EPA NPS Grant Program ,406 Public Assistance, USACE-Clear	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria County	Action Number:	N12
Hazard(s) Addressed:	Floods		
Project Title:	Land Acquisitions and Park Development for Brazoria County Park System		
Project Description:	Secure and develop Park land on and surrounding Lake Tenneco		
Responsible Entity:	Brazoria County Parks Department Director		
Losses avoided:	Property losses during floods and preservation of floodplain and bottom land.		
Cost Estimate:	7,000,000	Timeframe:	12 to 24 months
Potential Funding Sources:	County funds, mitigation grants, CBD Grants	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Brazoria County	Action Number:	N13
Hazard(s) Addressed:	Floods		
Project Title:	Land acquisitions and Park Development for Brazoria County Park System Near Brazos River Park		
Project Description:	Acquire available three tracts of land adjacent to and near Brazos River County Park, develop and improve Park facilities and access		
Responsible Entity:	Brazoria County Parks Department Director		
Losses avoided:	Flooding of residences and preservation of flood plain		
Cost Estimate:	3,000,000	Timeframe:	13 to 24 months
Potential Funding Sources:	County funds, mitigation and other state and federal grants	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Brazoria County	Action Number:	N14
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Tornado and Winter Storms		
Project Title:	Standby Generator for Airport Terminal Building		
Project Description:	Install a standby generator to power the airport terminal and adjacent hanger during power outages.		
Responsible Entity:	Brazoria County Airport Director		
Losses avoided:	Life Safety and Public Property		
Cost Estimate:	150,000	Timeframe:	12 months
Potential Funding Sources:	County budget, HMPG	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria County	Action Number:	N16
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, and Coastal Erosion		
Project Title:	Prevention, Property Protection, Natural Resource Protection		
Project Description:	Create a feeder beach for Follett's Island to slow the current erosion rate and protect wetlands in southeast Brazoria County.		
Responsible Entity:	Commissioner Donald "Dude" Payne, Brazoria County Pct. 1		
Losses avoided:	Life safety and public property		
Cost Estimate:	5,000,000	Timeframe:	18 months
Potential Funding Sources:	HMG, PD, CEPTRA, CIAP	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Brazoria County	Action Number:	N17
Hazard(s) Addressed:	Floods		
Project Title:	Property Acquisition		
Project Description:	Acquisition and demolition of severe repetitive loss properties along 14 miles of the Brazoria County coastline.		
Responsible Entity:	Brazoria County Floodplain Dept Director		
Losses avoided:	Occupied homes		
Cost Estimate:	5,000,000	Timeframe:	24 months
Potential Funding Sources:	HMGP, PDM, FMA, RFC, SRL	Benefit-Cost Ratio:	Approximately a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

BRAZOSPORT INDEPENDENT SCHOOL DISTRICT

Jurisdiction:	BRAZOSPORT INDEPENDENT SCHOOL DISTRICT	Action Number:	V1
Hazard(s) Addressed:	ACTIVE SHOOTER (MASS CASUALTY)		
Project Title:	Educating students, staff, substitute teachers, and visitors on the Standard Response Protocols for an active shooter (Mass casualty) event.		
Project Description:	Implement an outreach and education campaign to educate students in grades 7th - 12th, staff, substitute teachers, and visitors on the Standard Response Protocols for an active shooter (Mass casualty) event. This training will help mitigate the loss of life and damage to property. This training will occur at the Districts Campuses (10 Elementary schools, 3 High schools, 5 Middle schools, and 1 Alternative school)		
Responsible Entity:	Brazosport ISD EMC		
Losses avoided:	Loss of life, prevention training, continuity of response, services, and recovery before, during, and after an event.		
Cost Estimate:	\$20,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce the effects of hazards on existing buildings?			Yes or No
Does this action reduce the effects of hazards for new buildings, infrastructure, or future development?			Yes or No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes or No

Jurisdiction:	BRAZOSPORT INDEPENDENT SCHOOL DISTRICT	Action Number:	V2
Hazard(s) Addressed:	Flooding, Hurricanes, Tropical Storm, Lighting, Heat, Winter Storm, Tornado		
Project Title:	Installation of Generators as a Secondary Source of Power during power outages due to Weather events. This allows the below instructional facilities to function as COMMUNITY SAFE ROOMS		
Project Description:	<p>Installation of 13 Generators at the following Instructional Campuses:</p> <ul style="list-style-type: none"> ● Stephen F. Austin Elementary / Madge Griffith Elementary ● Elisabet Ney Pre-Kindergarten / Gladys Polk Elementary ● Velasco Elementary / R. O'Hare Lanier Middle School ● Grady Rasco Middle School / Clute Intermediate School ● Freeport Intermediate School / Lake Jackson Intermediate School ● Brazosport High School / Brazos Success Academy / Lighthouse Learning Center <p>During power outage events, these facilities would be able to be community-safe rooms.</p>		
Responsible Entity:	BRAZOSPORT ISD EMC		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards.		
Cost Estimate:	\$4,550,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce the effects of hazards on existing buildings?			Yes or No
Does this action reduce the effects of hazards for new buildings, infrastructure, or future development?			Yes or No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes or No

Freeport

Jurisdiction:	Freeport	Action Number:	R1
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Wildfire, Severe Thunderstorms, Tornado, Hail, Winter Storms		
Project Title:	Generator – City Hall		
Project Description:	Purchase Generator for critical facilities		
Responsible Entity:	City of Freeport Mayor and City Manager		
Losses avoided:	Loss of life; continuity of services during natural disasters.		
Cost Estimate:	\$425,000.00	Timeframe:	12 to 36 months
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Program	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Freeport	Action Number:	R2
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Wildfire, Severe Thunderstorms, Tornado, Hail, Winter Storms		
Project Title:	Generator – Recreation Center		
Project Description:	Purchase Generator for critical facilities		
Responsible Entity:	City of Freeport Mayor and City Manager		
Losses avoided:	Loss of life; continuity of services during natural disasters.		
Cost Estimate:	\$200,000.00	Timeframe:	12 to 36 months
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Program	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Freeport	Action Number:	R3
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Wildfire, Severe Thunderstorms, Tornado, Hail, Winter Storms		
Project Title:	Generator – Service Center		
Project Description:	Purchase Generator for critical facilities		
Responsible Entity:	City of Freeport Public Works Director		
Losses avoided:	Loss of life; continuity of services during natural disasters.		
Cost Estimate:	\$200,000.00	Timeframe:	12 to 36 months
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Program	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Freeport	Action Number:	R4
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Wildfire, Severe Thunderstorms, Tornado, Hail, Winter Storms		
Project Title:	Generator – Civic Center		
Project Description:	Purchase Generator for critical facilities		
Responsible Entity:	City of Freeport Public Works Director		
Losses avoided:	Loss of life; continuity of services during natural disasters.		
Cost Estimate:	\$200,000.00	Timeframe:	12 to 36 months
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Program	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Freeport	Action Number:	R5
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Wildfire, Severe Thunderstorms, Tornado, Hail, Winter Storms, Drought, Expansive Soil, Dam / Levee Failure, Heat Events		
Project Title:	Upgrade water and waste water lines		
Project Description:	Upgrade old and weak water and wastewater pipes throughout the city with need to be replaced.		
Responsible Entity:	City of Freeport Public Works Director and TCEQ		
Losses avoided:	Due to old water and wastewater lines throughout the city, we have many pipes break or collapse every year. Some breaks and collapses are due to inundation of rain water into the waste waterlines or creating washout of dirt around water and wastewater pipes.		
Cost Estimate:	\$5,000,000.00	Timeframe:	60 months
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Program	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Freeport	Action Number:	R6
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Wildfire, Severe Thunderstorms, Tornado, Hail, Winter Storms, Drought, Expansive Soil, Dam / Levee Failure, Heat Events		
Project Title:	Communication		
Project Description:	Purchase radio/communication equipment for emergency response personnel to communicate during disasters.		
Responsible Entity:	City of Freeport Fire Chief, EMS Director, Police Chief and EMC		
Losses avoided:	Emergency Services, Continuity of services during response, recovery to disasters		
Cost Estimate:	\$200,000.00	Timeframe:	60 months
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Program	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Freeport	Action Number:	R7
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Severe Thunderstorms, Tornado, Hail, Winter Storms, Expansive Soil, Dam / Levee Failure		
Project Title:	Master Drainage Plan		
Project Description:	Develop and implement a master drainage plan for the City.		
Responsible Entity:	City of Freeport Mayor and City Manager, Public Works Director and TCEQ		
Losses avoided:	Mitigate existing flood prone areas and prepare for future development and growth of the City.		
Cost Estimate:	\$300,000.00	Timeframe:	60 months
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Program	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Freeport	Action Number:	R8
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Severe Thunderstorms,		
Project Title:	West Second Street Drainage Improvements		
Project Description:	Implement drainage improvement program to include enlarging culverts to increase stormwater infrastructure and replacing existing roadway grade to supplement the drainage to inlets.		
Responsible Entity:	City of Freeport Mayor and City Manager, Public Works Director		
Losses avoided:	Mitigate existing flood prone areas and prepare for future development and growth of the City.		
Cost Estimate:	\$10,000,000.00	Timeframe:	60 months
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Program	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Freeport	Action Number:	R9
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Severe Thunderstorms,		
Project Title:	Velasco Blvd Second Street Drainage Improvements		
Project Description:	Implement drainage improvement program to include enlarging culverts to increase stormwater infrastructure and replacing existing roadway grade to supplement the drainage to inlets.		
Responsible Entity:	City of Freeport Mayor and City Manager, Public Works Director		
Losses avoided:	Mitigate existing flood prone areas and prepare for future development and growth of the City.		
Cost Estimate:	\$10,000,000.00	Timeframe:	60 months
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Program	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Freeport	Action Number:	R10
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Severe Thunderstorms,		
Project Title:	Freeport Municipal Golf Course Riverbank Erosion		
Project Description:	Implement drainage improvement program. River bank stabilization in preventing flooding the property and eroding river bank when the Brazos River floods.		
Responsible Entity:	City of Freeport Mayor and City Manager, Public Works Director		
Losses avoided:	Mitigate existing bank erosion from the Brazos River. River bank stabilization and slope.		
Cost Estimate:	\$10,000,000.00	Timeframe:	60 months
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Program	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

City of Danbury

Jurisdiction:	City of Danbury		Action Number:	K1
Hazard(s) Addressed:	Danbury TX 77534			
Project Title:	Lift Station Power			
Project Description:	Install quick disconnects to the 7 lift stations in town that do not have a emergency generator, so during times of power outages we can take the mobile generators to them, and have the pumps working.			
Responsible Entity:	City of Danbury Mayor and City Manager			
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards.			
Cost Estimate:	\$15,000.00	Timeframe:	When funding becomes available	
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio	
Does this action reduce effects of hazards on existing buildings?				Yes or No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?				Yes or No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?				Yes or No

Jurisdiction:	City of Danbury		Action Number:	K2
Hazard(s) Addressed:	1600 Ave L Danbury TX 77534			
Project Title:	Protect the Waste plant			
Project Description:	Install lightening protection devices and methods at the waste water treatment plant. We need to minimize any damage caused by a lightning strike to our towns waste water plant.			
Responsible Entity:	City of Danbury Utility department Director			
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards.			
Cost Estimate:	\$7,000.00	Timeframe:	When funding becomes available	
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio	
Does this action reduce effects of hazards on existing buildings?				Yes or No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?				Yes or No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?				Yes or No

Jones Creek

Jurisdiction:	Jones Creek	Action Number:	Q1
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms Severe Thunderstorms		
Project Title:	Partner for Drainage		
Project Description:	Partner with local drainage district to maintain and improve drainage: Widen and reshape drainage ditches, and upgrade culverts to restore adequate drainage to mitigate flooding.		
Responsible Entity:	Jones Creek Streets Department Manager		
Losses avoided:	Prevention of flooding		
Cost Estimate:	1,000	Timeframe:	12 to 18 months
Potential Funding Sources:	City and County Funds	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Jones Creek	Action Number:	Q2
Hazard(s) Addressed:	Floods Hurricane/ Tropical Storms Severe Thunderstorms		
Project Title:	Highway Drainage		
Project Description:	Highway 36 drainage (7) ditches to be widened and reshaped. Upgrade culverts to restore adequate drainage to mitigate flooding.		
Responsible Entity:	TXDOT, Mayor and City Manager		
Losses avoided:	Reduction of property loss due to flooding		
Cost Estimate:	250,000	Timeframe:	36 months
Potential Funding Sources:	TXDOT	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Jones Creek	Action Number:	Q3
Hazard(s) Addressed:	Floods Hurricane/ Tropical Storms Severe Thunderstorms		
Project Title:	Master Drainage		
Project Description:	Develop and implement a master drainage plan for the City.		
Responsible Entity:	Jones Creek EMC, Mayor and City Manager		
Losses avoided:			
Cost Estimate:	100,000	Timeframe:	18 months
Potential Funding Sources:	Flood Mitigation Assistance Program, HMPG, TWDB, USACE	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	Jones Creek	Action Number:	Q4
Hazard(s) Addressed:	Hurricane/ Tropical Storms, Severe Thunderstorms, Tornado, Hail		
Project Title:	Retrofitting		
Project Description:	Retrofit City Hall/Emergency Operations Center with hurricane shutters, and any other storm related protection systems.		
Responsible Entity:	Jones Creek EMC, Mayor and City Manager		
Losses avoided:	Protection of EOC and City Hall		
Cost Estimate:	50,000	Timeframe:	When funding becomes available
Potential Funding Sources:	City Funds, FEMA HMPG and PDM Programs, State and local Grant Sources	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Jones Creek	Action Number:	Q5
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Wildfire, Severe Thunderstorms, Tornado, Hail, Winter Storms		
Project Title:	Communication		
Project Description:	Purchase radio/communication equipment for emergency response personnel to communicate during disasters.		
Responsible Entity:	Jones Creek EMC, Mayor and City Manager		
Losses avoided:	Emergency Services		
Cost Estimate:	60,000	Timeframe:	When funds become available
Potential Funding Sources:	Federal, State, and Local grants; HMPG; PDM	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Jones Creek	Action Number:	Q6
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Wildfire, Severe Thunderstorms, Tornado, Drought, Hail, Winter Storms		
Project Title:	Debris Management		
Project Description:	Develop and maintain a debris management plan to speed up the removal of debris generated by flood/hurricane events, etc.		
Responsible Entity:	Jones Creek EMC, Mayor and City Manager		
Losses avoided:			
Cost Estimate:	25,000	Timeframe:	As needed within 5 years
Potential Funding Sources:	Public Assistance	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Jones Creek	Action Number:	Q7
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Wildfire, Severe Thunderstorms, Tornado, Hail, Winter Storms		
Project Title:	Emergency Siren		
Project Description:	Installation of an emergency siren to utilize in the event of a natural or man-made disaster.		
Responsible Entity:	Jones Creek Marshal		
Losses avoided:	Siren would help prevent loss of life and property.		
Cost Estimate:	5,000	Timeframe:	12 months
Potential Funding Sources:		Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Jones Creek	Action Number:	Q8
Hazard(s) Addressed:	Flooding, Hurricane, Wildfire, Drought, Lightning, Heat Events, Hail, Winter Weather, Tornado, Dam and Levee Failure, Coastal Erosion		
Project Title:	Training		
Project Description:	Implement emergency management training programs.		
Responsible Entity:	Jones Creek EMC		
Losses avoided:	Loss of life; continuity of services during natural disasters.		
Cost Estimate:	7,500	Timeframe:	6 months
Potential Funding Sources:	Emergency Management Institute, FEMA Training Programs	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	Jones Creek	Action Number:	Q9
Hazard(s) Addressed:	Floods, Hurricane/ Tropical Storms, Wildfire, Severe Thunderstorms, Tornado, Hail, Winter Storms		
Project Title:	Generator		
Project Description:	Purchase equipment generators for critical facilities		
Responsible Entity:	Jones Creek Street Department Manager		
Losses avoided:	Loss of life; continuity of services during natural disasters.		
Cost Estimate:	40,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Program	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Sweeny Independent School District

Jurisdiction:	Sweeny Independent School District	Action Number:	Y1
Hazard(s) Addressed:	Flooding, Hurricanes, Tropical Storm, Lighting, Heat, Winter Storm, Tornado		
Project Title:	Installation of Generators as a Secondary Source of Power during power outages due to Weather events. This allows the below instructional facilities to function as COMMUNITY SAFE ROOMS		
Project Description:	<p>Installation of 3 Generators at the following Instructional Campuses:</p> <p>Sweeny High School Sweeny Junior High School Sweeny Elementary</p> <p>During weather events that cause power outages, these facilities would be able to be community-safe rooms for the citizens located in close proximity to these facilities.</p>		
Responsible Entity:	Sweeny ISD Police Chief and EMC		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards.		
Cost Estimate:	1,050,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes or No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes or No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes or No

Danbury Independent School District

Jurisdiction:	Danbury Independent School District	Action Number:	U1
Hazard(s) Addressed:	Flooding, Hurricanes, Tropical Storms, Lightning, Heat, Winter Storm, Tornado		
Project Title:	Installation of Generators as a secondary source of power during power outages due to weather events. This allows the below instructional facilities to function as a Community Safe Room		
Project Description:	<p>Installation of 2 generators at the following Instructional Campuses:</p> <ol style="list-style-type: none"> 1. Danbury Elementary School 2. Danbury Secondary Schools (Middle and High Schools) <p>During weather events that cause power outages, these facilities would be able to be community safe rooms for the citizens located in close proximity to these facilities.</p>		
Responsible Entity:	Danbury ISD EMC and Superintendent		
Losses avoided:	Loss of life; continuity of services during natural disasters and/or hazards.		
Cost Estimate:	700,000.00	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes or No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes or No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes or No

Drainage District No. 11

Jurisdiction:	West Brazoria County Drainage District No. 11	Action Number:	W1
Hazard(s) Addressed:	Flooding and Hurricane/Tropical Storm		
Project Title:	Drainage Studies		
Project Description:	Perform various detailed studies within the district to determine best method of water outflow to the main tributaries to optimize drainage. Results of the studies will be the basis for future projects.		
Responsible Entity:	West Brazoria County Drainage District No. 11 Director		
Losses avoided:			
Cost Estimate:	200,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	West Brazoria County Drainage District No. 11	Action Number:	W2
Hazard(s) Addressed:	Flooding and Hurricane/Tropical Storm		
Project Title:	Improvement Projects		
Project Description:	To prevent localized community, perform all engineering and survey and provide materials and construction to clean 150 miles of sloughs, ditches and creeks. The work will cover removal of existing trees and brush, regrade/reshape, installation of culverts where required and grass seeding of the completed ditch, slough or creek.		
Responsible Entity:	West Brazoria County Drainage District No. 11 Director		
Losses avoided:	Reduce the loss of life and property during flooding events.		
Cost Estimate:	15,000,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	West Brazoria County Drainage District No. 11	Action Number:	W3
Hazard(s) Addressed:	Flooding and Hurricane/Tropical Storm		
Project Title:	Land Purchase		
Project Description:	Preserve natural lands and green space to reduce the impacts from flooding and hurricane/tropical storms. Up to 1,000 acres of land tracts could be purchased from willing sellers for their natural ecosystem services, including water detention and management of water outflow. The land will be converted to parks, wildlife management areas and/or other public open spaces.		
Responsible Entity:	West Brazoria County Drainage District No. 11 Director		
Losses avoided:	Reduce the loss of life and property by preserving pervious surface and open space to reduce the effects of flooding. Reduce agricultural and water reservoir losses during droughts and reduce the loss of life and property during floods and tropical storms/hurricanes by using wetlands and wetland forests as natural storm infrastructure.		
Cost Estimate:	10,000,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			No

Jurisdiction:	West Brazoria County Drainage District No. 11	Action Number:	W4
Hazard(s) Addressed:	Flooding and Hurricane/Tropical Storm		
Project Title:	Data Base Management System		
Project Description:	Develop a GIS database of all ditches, sloughs and creeks within the district and periodically update as new information becomes available. Use output from the GIS database to develop a planning tool to track all information relative to the specific ditch, slough or creek, (e.g., property easements, license agreements, last ditch maintenance, planned maintenance, etc.).		
Responsible Entity:	West Brazoria County Drainage District No. 11 Director		
Losses avoided:			
Cost Estimate:	200,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

Jurisdiction:	West Brazoria County Drainage District No. 11	Action Number:	W5
Hazard(s) Addressed:	Flooding and Hurricane/Tropical Storm		
Project Title:	Master Drainage Plan		
Project Description:	Provision of all Project Management and Engineering to develop the Master Drainage Plan, inclusive of: Collect and review of existing reports, studies, gage data, etc., verify watershed boundaries, examine flooded structures and NFIP claims data Develop base conditions models for different storm conditions using Atlas 14 rainfall events, determine level of service for the main stem and tributaries Create HEC-RAS 2D models to determine sheet flow issues. Identify problem areas, areas for future development and constraints affecting the watershed Perform desktop environmental studies Develop Technical memorandum on baseline conditions, identify alternatives to solve existing flooding issues and perform hydraulic analysis to solve future flooding issues Develop Watershed Strategy via hierarchy of alternatives considering opportunities to team with other agencies, damage reduction, costs, priority areas to be worked and score each of the alternatives, issue a technical note providing documentation on the process of developing the strategy. Create a comprehensive Watershed Plan including a summary of projects and timeline for implementation, including maps, tables and other exhibits to document the analysis.		
Responsible Entity:	West Brazoria County Drainage District No. 11 Director		
Losses avoided:	Reduce the loss of life and property during flooding events.		
Cost Estimate:	1,500,000	Timeframe:	When funding becomes available
Potential Funding Sources:	Federal, State, and Local Funds, Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes

City of Richwood

Jurisdiction:	City of Richwood	Action Number:	Z1
Hazard(s) Addressed:	Deficient Drainage		
Project Title:	Stormwater Master Plan, Phase 1		
Project Description:	6200 linear feet of main outfall stormwater drainage ditch in which slopes were graded, concrete channels added to base flow lines, and drainage grade reestablished		
Responsible Entity:	City of Richwood Mayor and City Manager, Public Works Director		
Losses avoided:	Continuity of services during natural disasters and/or hazards.		
Cost Estimate:	1.6 million	Timeframe:	2/2022 – 12/2022
Potential Funding Sources:	Local Funds (General Obligation Bond)	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes or No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes or No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes or No

Jurisdiction:	City of Richwood	Action Number:	Z2
Hazard(s) Addressed:	Lack of Resiliency		
Project Title:	American Rescue Plan Act, Lift Station & Water Well Generators		
Project Description:	Replacement of High Service Booster Pumps. Backup power generators added at primary water well site as well as Service Center to serve as backup power to City SCADA system and one wastewater lift station.		
Responsible Entity:	City of Richwood Public Works Director		
Losses avoided:	Continuity of services during natural disasters and/or hazards.		
Cost Estimate:	988,170	Timeframe:	03/2023 – 03/2024
Potential Funding Sources:	Federal & Public Assistance Grants	Benefit-Cost Ratio:	More than a 1:4 cost-benefit ratio
Does this action reduce effects of hazards on existing buildings?			Yes or No
Does this action reduce effects of hazards for new buildings, infrastructure, or future development?			Yes or No
Does mitigation action identify, analyze, and prioritize actions related to continued compliance with NFIP?			Yes or No

Part 8: Plan Maintenance

Part 8: PLAN MAINTENANCE

To remain an effective tool, the HMAP will undergo continuous review and updates. This practice is known as plan maintenance and requires monitoring, evaluating, updating, and implementing the plan. To accomplish this, a plan maintenance team (PMT) is comprised of representatives from each of the County's participating jurisdictions.

Plan Maintenance Team	
Plan Maintenance Team Leader	Brazoria County EMC / Disaster Recovery Manager
Jurisdiction	Responsible Entity
Unincorporated Brazoria County	Brazoria County EMC / Floodplain Administrator
Angleton	EMC
Brazosport College	EMC
Drainage District 11	Superintendent
Bonney	Mayor
Bailey's Prairie	Mayor
Brazoria	EMC / Mayor
Brazosport ISD	Assistant Superintendent / EMC
Brookside Village	Mayor
Clute	EMC
Danbury	Mayor
Hillcrest Village	EMC
Holiday Lakes	Mayor / City Secretary
Iowa Colony	Police Chief / City Manager
Jones Creek	Town Marshall
Lake Jackson	City Manager / Assistant EMC
Liverpool	EMC
Manvel	Fire Marshal
Oyster Creek	EMC
Port of Freeport	Safety & Security Chief
Freeport	Mayor / EMC
Quintana	EMC
Richwood	Police Chief / City Manager
Surfside Beach	City Secretary / Mayor
Sweeny	City Manager
Velasco Drainage District	Director
West Columbia	EMC / Police Chief

Meeting Schedule

The PMT will hold its first meeting within two years after the plan's approval date and will continue to meet every year thereafter. A special meeting will be held 12 months prior to the plan's expiration to develop a timeline and strategy to update the plan in accordance with TDEM and FEMA's requirements.

Procedures

The PMT will meet annually to address necessary revisions to the whole planning and public participation process, and the entirety of the written plan including developing amendments, assessing the implementation progress, and identifying emerging risks and vulnerabilities in the county.

Each participating jurisdiction is responsible for reporting and requesting updates to the HMAP, and the team will explore multi-jurisdictional solutions when applicable. Any new public participation activity suggestions, changes to the maintenance or implementation procedures, mitigation actions, strategies, or required studies will be submitted to the County's representative. The representative will evaluate the items for compliance with TDEM and FEMA regulations before leading the process to adopt or approve the new items.

Recommended changes, updates, and revisions will be implemented based on available funding to support revisions, and updates and will be assigned to appropriate officials with pre-determined timelines for completion. Updates to the HMAP will then be adopted by the appropriate governing body.

Public Involvement

Continued stakeholder and public involvement will remain a vital component of the HMAP. The PMT will seek public input at all stages of Plan Maintenance related to the HMAP. The PMT Leader will also conduct outreach and involve the public through surveys, social media and online participation. The PMT Leader will advertise all meetings in local news outlets, on county and city social media pages and websites, and coordinate with all participating jurisdictions. Public surveys and online information will be a preferred method used.

In addition, each participating jurisdiction will seek input from the public on the status of existing hazards, emerging vulnerabilities, and evaluate the HMAP's strategy with the public. During each meeting, the PMT will provide an open comment forum through surveys, social media or other online interactive discussions with the public. The development of new goals and strategies will be a joint effort between the PMT and public participants.

Progress Monitoring

It is important to monitor and evaluate the progress each jurisdiction has made toward implementing the HMAP. This ensures goals, objectives, and the mitigation strategy are regularly re-evaluated and reviewed for feasibility. Each participating jurisdiction will provide a progress report on completed or ongoing mitigation projects at each Plan Maintenance meeting. Unaddressed mitigation actions will be evaluated for relevancy and/or amended to increase feasibility.

Plan Evaluation

Procedures to monitor and evaluate the HMAP were determined and adopted. This ensures that the entirety of the plan is regularly examined for feasibility, and that the HMAP remains a relevant and adaptive tool. An additional meeting will be held 12-months prior to the plan's expiration to develop a timeline and strategy to update the HMAP.

Plan Maintenance: Evaluation & Monitoring Procedures

Method and Procedures	Schedule	Responsible Entity
<p>The PMT Leader will advertise all annual meetings in local newspapers, post invitations on the County social media pages, and post fliers at city and county buildings 30 days prior to the meetings in order to encourage public participation throughout the plan's maintenance process.</p>	<p>30 days prior to public PMT meetings</p>	<p>PMT Leader</p>
<p>Emerging risks and vulnerabilities will be identified and discussed.</p> <ol style="list-style-type: none"> 1) PMT members are responsible for monitoring each hazard in their jurisdiction, and provide an update on any new occurrences and emerging risks. 2) The PMT Leader will seek input from participants and the public at the annual meetings by opening the meeting for public comment. 	<p>Annually</p>	<p>PMT representative from each participating jurisdiction</p>
<p>The PMT will monitor the entirety of the planning process and the written plan to ensure the HMAP remains relevant and the strategy continues to be effective.</p> <ol style="list-style-type: none"> 1) PMT members will identify new projects and/or re-prioritize existing strategies based on changes in their jurisdiction. 2) Funding sources and multijurisdictional cooperation for new initiatives will be determined. 3) PMT members will review public participation outreach strategies in order to identify new or different methods of outreach in order to reach more community members 4) The Plan Maintenance Team Leader will report on any suggestions for planning, maintenance, or implementation process for the plan. 	<p>Annually</p>	<p>PMT representative from each participating jurisdiction</p>
<p>Each participating jurisdiction will evaluate their progress implementing the mitigation strategy.</p> <ol style="list-style-type: none"> 1) Representatives will publicly discuss progress and submit written progress reports to the team leader. 2) Completed and ongoing mitigation actions will be discussed by responsible entity. 3) Unaddressed mitigation actions will be evaluated for relevancy and/or amended to increase feasibility. 4) Feasibility of the mitigation strategy will be evaluated, and any necessary revisions will be proposed. 5) The team leader will seek comment from the public after each participating jurisdiction's presentation. 	<p>Annually</p>	<p>PMT, the responsible department identified in the mitigation action up for discussion, and the public.</p>
<p>The PMT will develop a timeline and strategy to update the plan 12 months before it expires. The update strategy will include:</p> <ol style="list-style-type: none"> 1) Identify entities responsible for drafting and submitting the update to TDEM 2) Send appropriate representatives to G-318 training. 3) Determine funding needs and funding sources for plan update. 	<p>12 months prior to HMAP's expiration</p>	<p>PMT, and PMT Leader</p>

Existing Plans & Regulations

Several existing plans and programs that require integration of the HMAP have been identified by the participating jurisdictions. These known planning mechanisms will be amended to support mitigation efforts, and both plans will be reviewed for contradictions.

- DRP: Disaster Recovery Plan**
- CP: Comprehensive Plan**
- FMP: Floodplain Management Plan**
- SMP Stormwater Management Plan**
- EOP: Emergency Operations Plan**
- COOP: Continuity of Operations Plan**
- TP: Transportation Plan**
- SO: Subdivision Ordinance**
- AB: Annual Budget**
- MA: Mutual Aid Agreement**
- FDPO: Flood Damage Prevention Ordinance**
- CIP: Capital Improvements Plan**

Jurisdiction	DRP	CP	FMP	SMP	EOP	COOP	TP	SO	AB	MA	FDPO	CIP
Unincorporated Brazoria County	X	X	X		X	X	X		X	X		
Alvin					X				X	X		
Angleton	X	X	X	X	X	X	X	X	X	X	X	X
Bailey's Prairie	X	X	X		X		X	X	X	X	X	
Bonney									X	X		
Brazoria					X			X	X	X		
Brookside Village					X				X	X		
Clute	X		X		X				X	X		X
Danbury					X				X	X		
Hillcrest					X				X	X		
Holiday Lakes			X		X				X	X	X	
Iowa Colony		X	X		X			X	X	X	X	X
Jones Creek					X				X	X	X	
Lake Jackson	X	X	X	X	X		X	X	X	X		X
Liverpool									X	X		
Manvel	X	X	X	X	X	X	X	X	X	X	X	X
Oyster Creek					X				X	X		
Quintana					X			X	X	X		
Richwood					X	X			X	X		X
Surfside Beach	X		X	X	X			X	X	X	X	X
Sweeny	X		X		X	X	X		X	X		X
West Columbia	X		X		X	X	X		X	X		X
Alvin ISD					X				X	X		
Brazosport ISD					X				X			
Freeport				X	X			X	X		X	
Port of Freeport					X				X	X		
Velasco Drainage District	X		X	X	X				X	X		

Plan Integration

Integrating the HMAP into county and local planning mechanisms is key to its success. Effective integration allows communities to benefit from existing plans and procedures to further reduce their vulnerability and risk. Upon approval of the plan and approval of updates or revisions as proposed by the PMT, each participating jurisdiction will follow the pre-determined actions:

To update and revise existing planning mechanisms to further integrate the HMAP, all participating jurisdictions will follow a basic process(es) described in this section.

- 1.) Propose a policy, strategy, or regulatory amendment to the proper governing body.
- 2.) Advertise the amendment a minimum of 60 days before the meeting where it will be discussed.
Advertising procedures for the public meeting(s) is outlined in the public involvement measures described in Section 8 of this plan, and will also abide by each jurisdiction's local regulations.
- 3.) Provide the public, elected officials, and governing bodies the opportunity to discuss and comment upon proposed change(s).
- 4.) If the proposal is accepted, the change is implemented by the appropriate governing authority.

Jurisdiction	Integration Method
Unincorporated Brazoria County	The HMAP and plan amendments will be presented to Commissioner’s Court by the PMT Leader. Upon approval by Commissioner’s Court, approved actions will be acted upon as funding becomes available and integrated into the identified county planning mechanisms. The PMT Leader will coordinate with the representatives tasked with maintaining the EOP and MA to incorporate the HMAP
Alvin	Alvin's PMT representative will select appropriate mitigation actions to be implemented using the City's local budget, and develop an implementation proposal. The budget request and implementation proposal will be presented before City Council. An agenda will be published 30 days before the meeting.
Angleton	The Angleton PMT representative will draft a proposal for incorporating the HMAP's mitigation strategy into their existing planning mechanisms. The proposal will be presented to the Planning and Zoning Commission (when applicable). Upon approval, it will be presented to the City Council for consideration. Angleton will advertise the amendment(s) no less than 30 days before the meetings. Upon approval, city staff will act to incorporate the HMAP into their existing planning mechanisms.
Bailey’s Prairie	The Bailey's Prairie PMT representatives will draft a proposal for incorporating the HMAP's mitigation recommendations into their existing planning mechanisms. The proposal will be presented to the City Alderman for consideration. Bailey's Prairie will advertise the amendment no less than 25 days before the meeting where it will be discussed.
Bonney	Bonney's PMT representative will select mitigation actions to be budgeted into the City of Bonney's annual budget to be implemented the following year. The proposal will be presented before City Council. An agenda will be published 30 days in advance.
Brazoria	The Brazoria City Manager will draft a proposal for incorporating the HMAP's mitigation strategy into their existing planning mechanisms. The proposal will be presented to the City Council and mayor for consideration. Brazoria will post an agenda for the public hearing no less than 14 days before the meeting when it will be considered. Upon approval, the city manager will initiate the process to incorporate the HMAP into their existing planning mechanisms.
Brookside	Brookside Village's PMT representative will select mitigation actions to be budgeted into the Brookside Village annual budget to be implemented the following year. The proposal will be presented before City Council. An agenda will be published 15 days in advance.

Clute	The Clute PMT representative will draft a proposal for incorporating the HMAP's mitigation strategy into their existing planning mechanisms. The proposal will be presented at a joint public hearing of the Planning and Zoning Commission and City Council for consideration. Clute will advertise the amendment(s) no less than 30 days before the meetings. Upon approval, city staff will act to incorporate the HMAP into their existing planning mechanisms.
Danbury	Danbury's PMT representative will select mitigation actions to be budgeted into the Danbury annual budget and be implemented the following year. The proposal will be presented before City Council and will follow General Law Type A municipality laws for adoption.
Hillcrest	Hillcrest's PMT representative will select mitigation actions to be implemented using the local budget. An agenda will be published 30 days in advance, the proposal will be presented before City Council.
Holiday Lakes	The Holiday Lakes PMT representative will draft a proposal for incorporating the HMAP's mitigation recommendations into their existing planning mechanisms. The proposal will be presented to the Town Council for consideration. Holiday Lakes will advertise the amendment no less than 14 days before the meeting where it will be considered. Upon approval, city staff will act to incorporate the HMAP into their existing planning mechanisms.
Iowa Colony	The Iowa Colony PMT representative will draft a proposal for incorporating the HMAP's mitigation strategy into their existing planning mechanisms. The proposal will be presented at a public hearing for the Mayors and City Council's consideration. Iowa Colony will post the agenda no less than 7 days before the meetings. Upon approval, city staff will act to incorporate the HMAP into their existing planning mechanisms.
Jones Creek	Jones Creek's PMT representative will draft a proposal for incorporating the HMAP's mitigation strategy into their existing planning mechanisms. The proposal will be presented before City Alderman and will follow Type A municipality laws for adoption and implementation.
Lake Jackson	The Lake Jackson City Secretary and PMT representative will draft a proposal for incorporating the HMAP's mitigation strategy into their existing planning mechanisms. The proposal will be presented to the City Council and mayor for consideration. Lake Jackson will post an agenda of the meeting no less than 7 days before the meeting when it will be considered. Upon approval, the PMT representative will initiate the process to incorporate the HMAP into their existing planning mechanisms with the assistance of Lake Jackson City Staff.
Liverpool	Liverpool's PMT representative will select appropriate mitigation actions to be implemented using the City's local budget, and develop an implementation proposal. The budget request and implementation proposal will be presented before City Council on the first Tuesday of the month following the annual PMT meetings.
Manvel	The Manvel PMT representative will draft a proposal for incorporating the HMAP's mitigation strategy into their existing planning mechanisms. The proposal will be presented at a public hearing for City Council consideration. Manvel will post the agenda no less than 14 days before the meetings. Upon approval, city and county staff will act to incorporate the HMAP into their existing planning mechanisms.
Oyster Creek	Oyster Creek's PMT representative will select appropriate mitigation actions to be implemented using the City's local budget and develop an implementation proposal. The proposal will be presented before City Council. An agenda will be published 30 days before the meeting on the city's website: http://www.cityfoystercreek.org
Quintana	Quintana's mayor will select mitigation actions to be implemented using the local budget, and will integrate new flood regulations in accordance with the HMAP's recommendations into the Code of Ordinances. An agenda will be published 30 days in advance, the

	proposal will be presented before City Council on the third Tuesday after the annual PMT meeting.
Richwood	The Richwood PMT representatives will draft a proposal to incorporate the HMAP's mitigation strategy into their existing planning mechanisms. The proposal will be presented to the Town Council for consideration. Upon approval, city staff will act to incorporate the HMAP into their existing planning mechanisms.
Surfside Beach	The Surfside PMT representatives will draft a proposal for incorporating the HMAP's mitigation recommendations into the CP and SO and present to city council. Upon approval, City staff will incorporate the HMAP into the CP and SO.
Sweeny	The Sweeny City Manager will draft a proposal for incorporating the HMAP's mitigation recommendations into their existing planning mechanisms. The proposal will be presented to the City Council and mayor for consideration. Sweeny will post an agenda of the meeting no less than 30 days before the meeting when it will be considered. Upon approval, the city manager will initiate the process to incorporate the HMAP into their existing planning mechanisms.
Brazosport ISD	The superintendent will coordinate with the PMT to ensure that students and their parents are provided proper educational resources, and that school integrates mitigation strategies and actions into their Improvement Plan and facilities schedules.
West Columbia	The West Columbia PMT representatives will draft a proposal for incorporating the HMAP's mitigation recommendations into their existing planning mechanisms. The proposal will be presented to the City Council for consideration. West Columbia will advertise the amendment no less than 1 month before the meeting when it will be considered. Upon approval, city staff will act to incorporate the HMAP into their existing planning mechanisms.
Alvin ISD	The superintendent of Alvin ISD will coordinate with the PMT to ensure that students and their parents are provided proper educational resources, and that school integrates mitigation strategies and actions into their Improvement Plan and facilities schedules.
Port of Freeport	The Port of Freeport will incorporate the HMAP and any subsequent updates into their EOP. The fire chief is responsible for presenting amendments to the Community Advisory Council for consideration.
Freeport	The Freeport PMT representative will work with the City Manager to draft a proposal for incorporating the HMAP's mitigation recommendations into their existing planning mechanisms. The proposal will be presented to the City Council and mayor for consideration. Freeport will post an agenda of the meeting no less than 30 days before the meeting when it will be considered. Upon approval, the city manager will initiate the process to incorporate the HMAP into their existing planning mechanisms.
Velasco Drainage District	Plan amendments and updates will be presented to the Velasco Drainage District superintendent by the PMT Leader. Upon approval by the Velasco Drainage District, approved actions will be acted upon and/or integrated into their FMP, EOP, and SMP but the appointed staff member.
Sweeny ISD	The superintendent and EMC will coordinate with the PMT to ensure that students and their parents are provided proper educational resources, and that school integrates mitigation strategies and actions into their Improvement Plan and facilities schedules.
Danbury ISD	Danbury ISD's PMT representative will draft a proposal for incorporating the HMAP's mitigation strategy into their existing planning mechanisms. This coordination will be through the school's superintendent, City Mayor and Brazoria County EMC.
Damon ISD	Damon ISD will be working with Brazoria County EMC to develop an integration plan and method to incorporate into the existing planning mechanisms for the school district.

The previous Hazard Mitigation Plan has not been incorporated into any other planning mechanisms.

Appendix A: Planning Process

The Planning Process began with HGAC over 5 years ago. Brazoria County and participating jurisdictions have used this as a springboard to help develop our methodology in updating our plan.

Training our PMT and other participating jurisdiction officials with the G-318 course helped guide our progression giving us useful tools to update the plan.

Our team chose to use surveys for public participation to increase results. Public meeting turnout has been low to non-existent with the pandemic.

Our surveys resulted in over 100 responses and gave valuable information from the public about their concerns, anxieties and hierarchies for Hazard Mitigation.

APPENDIX A: Planning Process Documentation

Public Meeting Press Release & Advertisement



HOUSTON-GALVESTON AREA COUNCIL

PO Box 22777 • Houston, Texas 77227-2777 • 713-627-3200

NEWS RELEASE

FOR IMMEDIATE RELEASE

September 29, 2017

Contact: Joey Kaspar: (713) 993-4547 or Joey.Kaspar@h-gac.com
 Becki Begley: (713) 993-2410 or Becki.Begley@h-gac.com (Media Inquiries Only)

BRAZORIA COUNTY HAZARD MITIGATION PLAN KICK-OFF MEETING

The Houston-Galveston Area Council (H-GAC), in partnership with Brazoria County, City of Angleton, City of Brazoria, City of Clute, City of Iowa Colony, City of Lake Jackson, City of Liverpool, City of Quintana, City of Surfside Beach, City of Sweeny, and City of West Columbia, is hosting the first public meeting to develop Brazoria County's Hazard Mitigation Plan. The meeting will be held from 9:00 a.m. to noon, October 25, at the Nolan Ryan Center, 2925 TX-35, Alvin, TX 77511.

A Hazard Mitigation Plan is a strategic plan that proposes actions to reduce or eliminate long-term risk to people and property from future natural disasters. Public input and involvement is important for developing a comprehensive approach to reduce the effects of natural disasters on communities.

All Brazoria County residents are invited to participate and contribute their local expertise during the planning process. Mitigation actions developed by participants will be considered for inclusion in the County's Hazard Mitigation Plan to be submitted to the Federal Emergency Management Agency (FEMA).

The meeting agenda is available on H-GAC's website at <http://www.h-gac.com/community/community/hazard/documents/10-25-17-Brazoria-County-Meeting-Agenda.pdf>

More information on hazard mitigation plans is available on FEMA's website at <https://www.fema.gov/hazard-mitigation-planning>.

For more information about the meeting, contact Joey Kaspar, (713) 993-4547 or at Joey.Kaspar@h-gac.com, or Amy Combs, (713) 993-4544 or at Amy.Combs@h-gac.com.

Houston-Galveston Area Council

The Houston-Galveston Area Council (www.h-gac.com) is a voluntary association of local governments in the 13-county Gulf Coast Planning Region—an area of 12,500 square miles and more than 6 million people. H-GAC works to promote efficient and accountable use of local, state, and federal tax dollars and serves as a problem-solving and information forum for local government needs.

Hazard Mitigation Plan 2023

Kick-off Meeting

November 9, 2022

1. Welcome – Steve Rosa
2. Sign in
3. Documentation is important – public involvement is vital
4. HMGP update vs. new plan development
5. Current HMGP review (mission and goals)
6. Review Hazard Rankings
7. Participating jurisdictions' responsibilities:
 - A. Mitigation Strategies (Proposed Projects)
 - B. Documented Public Participation (Surveys, Social Media, etc...)
 - C. Documented Press Releases
 - D. Jurisdiction Profile Changes
8. Role of Brazoria County:
 - A. Writing Plan Update
 - B. Collecting Hazus Analysis Data
 - C. Organizing Jurisdiction projects
 - D. Submitting Plan Draft and Final Plan
 - E. Distributing Plan Templates
9. HMGP 2023 Update Timeline (end of May final draft) and Next Meeting

Questions / Comments

Kick-Off Meeting Breakdown

Welcome & Overview of Hazard Mitigation Plans & Procedures

The presentation will also include project timelines, partner roles and responsibilities.

Review 2022 Risk Assessment

Attendees will participate in a breakout session to review the draft risk assessment maps, charts, and provide feedback.

Local Risk Assessment & Capability Form

Meeting attendees will fill out a form describing the frequency of a hazard, and rate their mitigation capabilities in their jurisdiction.

Break

Mitigation Actions Presentation & Activity

Creating mitigation actions and facilitate a practice exercise in writing a mitigation action and strategies

Update 2018 Mitigation Actions & Write New Actions

Review 2018 mitigation actions for viability, and update actions to meet new FEMA standards. With remaining time, draft new mitigations for 2023.

Questions

Sign In Sheet From Kick-Off Meeting November 9, 2022

CHECK-IN LIST		HMGP 2023	TASK NAME: HMGP 2023 Kick-off	FOR: Documentation	DATE: Nov. 9th, 2022	
HMGP 2023 Kick-off Meeting					CHECK-IN LOCATION: BC EOC	
#	PRINT NAME	E-MAIL ADDRESS & PHONE #	TIME IN	TIME OUT	INITIALS IN	INITIALS OUT
14	Katrice Davis	Katrice.davis@braspert.tx.us	0900		KD	
15	Paul Davis	Chief@westcolumbiatx.org	9		PD	
16	JY MORROW	JY.MORROW@EAZOSPORTS.D.NET	0900		JM	
17	Glenn Lybett	glennl@angelken.tx.us	9:00		GL	
18	Debbie A. Sutherland	CityManager@westcolumbiatx.org	9am		DS	
19	Eric Feesteren	e.feesteren@rickwardtx.gov	9:00			
20	Christopher D Metley	cmotley@freepertx.us	0915		CD	
21	David Velasco	david@velascodairnange.org	9:13		DV	
22	Joe Williams	Joe@velascodairnangedistrict.com	9:15			
23	Glenda Hundl	ghundl@cobvtx.org	9:15			
24	Steve ROSA	steverosa@brazoriairpountytx.gov	8:30		SR	
25						
26						



CHECK-IN LIST		HMG 2023	TASK NAME: HMG 2023 Kick-off	FOR: Documentation	CHECK-IN LOCATION: BC EOC		DATE: Nov. 9th, 2022 TIME: 0900	
#	PRINT NAME	E-MAIL ADDRESS & PHONE #	TIME IN	TIME OUT	INITIALS IN	INITIALS OUT		
1	Charlie Davis	charlie.d@brazoriacountytx.gov	0830		CD	CD		
2	Bryan Sidelton	bsidel@omplakejacksowd.net	0842		BS	BS		
3	Hobbs, Travis	emce.hillcrestvillage.tx.gov	0846		TH			
4	Holmes, S. Michael	Sholmes@Richwood.tx.gov	0844		SH			
5	Robert Hemminger	rhemminger@iowacountytx.gov	0845		RH			
6	Allen King	AKing@iowacountytx.gov	0845		AK			
7	Randall Rhyne	RANDY.RHYNE@sanpaul.tx.gov randallrr1@qnu.li.ca.us	0853		RR			
8	Naseu Coeathouse	naseu@brazoriacountytx.gov	0830		NC	NC		
9	Will Blackstock	wblackstock@clktexas.gov	850		WB			
10	Chris Hogan	hogan@portfreepart.com	8:50		CH			
11	Sheila Williams	citymanager@cityofbenton.tx.gov	8:53		SW			
12	Marreas Ratten	marreas@brazoriafire.org	8:55		MR			
13	David Kocurek	projectmanager@cityofbrazoria.org	8:55		DK	DK		

Online Surveys Sample

A new entry to a form/survey has been submitted.

Form Name: Hazard Mitigation Date & Time: 04/04/2023 4:32 PM Response #: 61

Submitter ID: 59915

IP address: 50.249.86.61

Time to complete: 7 min. , 23 sec.

Survey Details Page 1

1. How long have you lived in Brazoria County?

10 years or more

2. Are you responding on behalf of a resident or commercial property?

Commercial

3. Do you own or rent your place of residence/business?

Rent

4. What is the Zip Code of your Primary residence?

77566

5. How concerned are you about the following hazards affecting our community?

Not Concerned Somewhat Concerned Very Concerned

Dam/Levee Failure

Drought and Water Shortage

Flood (Localized/Stormwater)

Hailstorm

Lightning

Tornado and/or Straight Line Wind Severe Weather (Hurricane/Tropical Storms)

Beach/River Erosion

Extreme Heat

Winter Extreme Weather

Wildfire

6. In the past 5 years, have you been affected by any of the above hazards?

(o) Yes

7. If yes, please list the hazards that affected you?

Freeze

8. Natural disasters can have a significant impact on a community but planning for these events can help lessen the impact. The following statements will help us determine community priorities in planning for these hazards. Please tell us how important each is to you.

	Very Important	Neutral	Not Important
Protecting private property	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protecting critical facilities (hospitals, transportation networks, fire stations)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Preventing development of businesses and neighborhoods in hazard prone areas	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protecting natural environment	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Protecting historical/cultural landmarks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Promoting cooperation among public agencies, citizens and businesses	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protecting and reducing damage to utilities	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increasing emergency services (Law Enforcement, Fire, EMS)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

9. What are the most effective ways for you to receive information about disaster preparedness? (Choose all that apply)

County Website

[Empty text input area]

Social Media Television/Radio

Email

10. Do you have flood insurance through the National Flood Insurance Program?

(o) Yes

11. Please add any additional comments.

Not answered

12. Enter contact information (Optional)

Name Hidden
Company Hidden
Address Hidden
City Lake Jackson
State Texas
Zip Code 77566
Email Hidden

Thank you,
Brazoria County, TX

Course Title: G-318 Local Mitigation Planning Workshop

Course Location: Lake Jackson, TX Lake Jackson Civic Center Instructor: Ellis, Michelle

Course Beginning Date: 10/19/2022 Course Ending Date: 10/20/2022

P/F/I	Please Print Name Last, First (MI)	FEMA SID	Signature	Day 1		Day 2		Day 3		Day 4		Day 5		Day 6		Day 7	
				AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
	16 Sidebottom, Bryan Ray	0000980975	<i>Bryan Sidebottom</i>														
	17 Sutherland, Debbie A		<i>Debbie Sutherland</i>														
	18 Towne, Rhueben Walter	0000924856	<i>Rhueben Towne</i>														
	19 Williams, Sheila Jo		<i>Sheila Williams</i>														
	20 Williams II, David Carson	0007260387	<i>David Williams II</i>														
	21																
	22																
	23																
	24																
	25																
	26																
	27																
	28																
	29																
	30																

I certify that the above people were present during the teaching of this class.

Lead Instructor Signature _____ Date _____

Lead Instructor Name (Print) _____

CHARM Workshop in the City of West Columbia – October 27, 2022

From: To:

Cc:

Subject: Date: Attachments:

Importance:

[EXTERNAL]City West Columbia Project Identification Meeting Follow-up Monday, October 31, 2022 1:38:32 PM

High

Good afternoon,

Thank you all for joining us for the West Columbia Project Identification Exercise on Thursday, October 27th! I wanted to follow up with some of our program resources. Attached you will find our technical assistance flyer. As you're also aware, Texas Community Watershed Partners also includes the [Green Infrastructure for Texas \(GIFT\)](#) program, which assists communities in developing nature-based stormwater management practices. Finally, you can participate in our [Texas Citizen Planner](#) courses online to build your expertise in policy tools and best practices for more resilient planning. Should any of these programs interest you or if you'd like more information, please feel free to reach out to me. I'm also glad to set up a follow-up meeting (virtual or in-person) if you'd like to continue working with the CHARM model you used last week.

Finally, we'll be developing a report detailing key discussion topics and priority projects, as well as possible funding sources. We will share that with you in the next few weeks. Once again, thank you so much for joining us for the West Columbia Project Identification Exercise, and we'll hope to work with you again in the near future!

Best,

Dana Snyder

Urban Resilience Planner | Project Manager
Community Health and Resource Management (CHARM)
Texas Community Watershed Partners | Texas A&M AgriLife Extension Service
[1335 Regents Park Dr., STE. 260, Houston, TX 77058](#)





Community Assistance Programs

Our team is here to assist your efforts to become more resilient – at no cost.

Texas A&M AgriLife Extension's expertise in community development and mitigation planning can support your local projects and needs. We are able to offer various no-cost, in-kind technical assistance and consultation services to Texas communities through a Cooperating Technical Partners agreement with FEMA Region 6.



Project Identification Exercises

An Interactive, Data-Driven Workshop: We can facilitate mitigation project identification exercises for your community using our CHARM platform, using CHARM's risk data and interactive exercises and your local knowledge to create an engaging and collaborative experience for local stakeholders.

Identifying Local Issues and Priorities: Bringing local champions and experts around the table provides an opportunity for discussion and coordination. During a typical three-hour exercise, participants review local risk data, identify emerging or unmapped hazards and issues, assess potential mitigation opportunities or strategies, and prioritize next steps and implementation needs.

Connecting You to Implementation and Funding: We know that mitigation efforts and projects take planning time and funding. After the workshop, we review your priority projects from the exercise and develop recommendations for implementation strategies, other community assistance opportunities, and funding sources such as state and federal grant and loan programs.



Technical Assistance Services

Ordinance and Plan Writing: Zoning, subdivision, floodplain, and building regulations are some of the most effective ways to reduce future risk. We work closely with your community's key stakeholders to strategically develop regulations that reflect local priorities and capacity.

Technical Analyses: Assessing current risk and future conditions is an important step in the planning process. We can use our expertise with GIS and data including our CHARM platform to study local questions such as long-term buildout, buyout feasibility, and potential future impacts of hazards.

Education and Facilitation Assistance: Informed community leaders and stakeholders are critical. We can create customized trainings for your community and assist with meeting facilitation, visioning exercises, and community engagement process design.

GIS, Data, and Mapping Support: We believe that data is an important asset for decision-making that should be easily accessible. We can assist with data creation, data gathering, and GIS trainings to ensure your community has access to the best available information to use in decision-making.



We'd love to work with you!

Let us know how we can help your community become more resilient. To schedule a consultation, contact Andrew Knuppel at andrew.knuppel@ag.tamu.edu.

Current Hazard Mitigation Project – Public Meeting in Lake Jackson – February 2, 2023



Freeport Project Public Open House Scheduled for February 2023

The Freeport Project, a component of the Sabine Pass to Galveston Bay Program (S2G Program), will host a public open house on February 2, 2023, to provide the public with information about project progress.

The Freeport Project is one of three projects included in the S2G Program and focuses on improvements to the existing hurricane flood protection system in the Freeport area. These improvements will reduce the risk of flooding from coastal storm surge, while not inducing adverse impacts to area residents and businesses within the Freeport area. The Freeport Project is a partnership of the U.S. Army Corps of Engineers (USACE) and its non-Federal sponsor, the Velasco Drainage District.

Date, time, and location information for the public open house is as follows:

Thursday, February 2, 2023
4 p.m. – 7 p.m.
Lake Jackson Civic Center
333 TX-332
Lake Jackson, Texas 77566

Informational displays will be available for public viewing and project team representatives will be available to provide information and answer questions.

Public feedback and participation are encouraged. The public open house is intended to inform and provide opportunities for the public to participate in the Freeport Project. **The public open house is not part of the formal National Environmental Policy Act (NEPA) process, which was completed in 2017.**

Comments received during this time will be taken into consideration by the Freeport Project Team but will not be documented as part of a NEPA-required public comment period. Written comments will be accepted during the public open houses and may be emailed to S2GFreeport@usace.army.mil.

To learn more about the Freeport Project, visit the project website and StoryMap:

- Project website – www.swg.usace.army.mil/S2G/Freeport/
- Project StoryMap – <https://bit.ly/FreeportStoryMap>

Appendix B: Critical Facilities

APPENDIX B: Critical Facilities

TYPE	NAME
Colleges Universities	Alvin Community College
Electric Substation	ROSHARON
Electric Substation	ALVIN
Electric Substation	ALVIN AUTO
Electric Substation	UNKNOWN307671
Electric Substation	TAP303544
EMS	STARFIRE EMERGENCY MEDICAL SERVICES INCORPORATED
EMS	ALVIN EMERGENCY MEDICAL SERVICES
Fire Station	Wolfe Airpark Fire Dept.
Fire Station	County Road 143 VFD
Fire Station	Alvin Fire Department
Fire Station	Alvin Fire Station 3
Hazardous Waste Treatment Facility	INEOS USA LLC - CHOCOLATE BAYOU PLANT
Hazardous Waste Treatment Facility	MONSANTO CHOCOLATE BAYOU
High Schools	ALVIN H S
Local Emergency Operation Center	ALVIN EMERGENCY OPERATIONS CENTER
Natural Gas Receipt Delivery	CS #12 W RECEIPTS PLUS FUEL
Natural Gas Receipt Delivery	SOUTHERN PINES (DEL)
Police Station	ALVIN COMMUNITY COLLEGE POLICE DEPARTMENT
Police Station	ALVIN POLICE DEPARTMENT
Police Station	ALVIN INDEPENDENT SCHOOL DISTRICT POLICE DEPARTMENT
Police Station	HILLCREST VILLAGE CITY MARSHALS OFFICE
Police Station	Brazoria County Sheriff's Dept
Police Station	Alvin Police-Crime Stoppers
School	HOOD-CASE EL
School	ASSETS
School	MARK TWAIN EL
School	FAIRVIEW J H
School	WALT DISNEY EL
School	R L STEVENSON PRI
School	G W HARBY J H
School	ALVIN EL
School	ALVIN PRI
School	LONGFELLOW EL
School	ALVIN J H
School	MELBA PASSMORE EL
Shelter	Chocolate Bayou Worship Center

Shelter	Living Stones Church
Solid Waste Landfill	CITY OF ALVIN LANDFILL
Toxic Release Inventory Facility	MHBA CB LLLP
Toxic Release Inventory Facility	MAINLAND CUSTOM MARBLE INC.
Toxic Release Inventory Facility	INPUT/OUTPUT INC - ALVIN
Toxic Release Inventory Facility	INEOS USA LLC - CHOCOLATE BAYOU PLANT
Toxic Release Inventory Facility	LYONDELL CHEMICAL CO - CHOCOLATE BAYOU CHEMICALS PLANT
Toxic Release Inventory Facility	MONSANTO CHOCOLATE BAYOU
Toxic Release Inventory Facility	HUNTSMAN CORP (PART)
Wastewater Treatments Plant	CITY OF ALVIN WWTP
Correctional Facilities	Brazoria County Jail and Detention Ctr
Correctional Facilities	Brazoria County Juvenile Detention Center and Residential Treatment Facility
Correctional Facilities	RETRIEVE PRISON FACILITY
Electric Substation	ANGLETON
EMS	ANGLETON AREA EMERGENCY MEDICAL SERVICES
Fire Station	Holiday Lakes
Fire Station	Angleton Fire Dept.
High Schools	ANGLETON H S
Hospital	UTMB ANGLETON-DANBURY MEDICAL CENTER
Hospital	ANGLETON-DANBURY GENERAL HOSPITAL
Local Emergency Operation Center	BRAZORIA COUNTY EMERGENCY OPERATIONS CENTER
Police Station	BRAZORIA COUNTY JUVENILE DETENTION CENTER
Police Station	BRAZORIA COUNTY SHERIFFS OFFICE / BRAZORIA COUNTY JAIL
Police Station	ANGLETON INDEPENDENT SCHOOL DISTRICT POLICE DEPARTMENT
Police Station	ANGLETON POLICE DEPARTMENT
Police Station	TEXAS DEPARTMENT OF PUBLIC SAFETY - HIGHWAY PATROL REGION 2 DISTRICT A SERGEANT 0 AREA 7
Police Station	Brazoria County Sheriff's Ofc
Police Station	Angleton Police Dept.
Police Station	Brazoria County Criminal Div.
Police Station	Brazoria County Criminal
School	WESTSIDE EL
School	SOUTHSIDE EL
School	FRONTIER EL
School	NORTHSIDE EL
School	BRAZORIA CO JUVENILE DETENTION

School	ANGLETON J H SCHOOL
School	RANCHO ISABELLA EL
School	CENTRAL EL
Shelter	First Baptist Church - Angleton
Shelter	UMC Family Life Center
Shelter	Angleton ISD Admin Building
Solid Waste Landfill	SEABREEZE ENVIRONMENTAL LANDFILL
Toxic Release Inventory Facility	BENCHMARK ELECTRONICS
Toxic Release Inventory Facility	MALLINCKRODT MEDICAL INC INTERVENTIONAL PRODUCTS PLANT
Toxic Release Inventory Facility	GREIF BROTHERS CORP
Correctional Facilities	CLEMENS PRISON FACILITY
Electric Substation	BRAZORIA
Fire Station	Texas Mid-coast NWR
Fire Station	Wild Peach VFD
Fire Station	Brazoria Fire Department
Fire Station	Rivers End Fire Dept.
Local Emergency Operation Center	BRAZORIA EMERGENCY OPERATIONS CENTER-ALTERNATE
Local Emergency Operation Center	BRAZORIA EMERGENCY OPERATIONS CENTER
Police Station	BRAZORIA POLICE DEPARTMENT
Police Station	Brazoria Police Dept.
School	WILD PEACH EL
School	BARROW EL
School	WEST BRAZOS J H
Shelter	First Baptist Church of Brazoria
Shelter	Brazoria First Assembly of God - Bldg. 1
Shelter	Barrow Elementary School
Shelter	Brazoria First Assembly of God - Bldg. 2
Shelter	West Brazoria Jr High School
Shelter	Wild Peach Elementary School
Toxic Release Inventory Facility	CHEVRON PHILLIPS CHEMICAL CO LP CLEMENS TERMINAL
Police Station	BROOKSIDE VILLAGE POLICE DEPARTMENT
EMS	CLUTE EMERGENCY MEDICAL SERVICES
Fire Station	Clute VFD
High Schools	BRAZOSWOOD H S
Local Emergency Operation Center	CLUTE EMERGENCY OPERATIONS CENTER
Police Station	CLUTE POLICE DEPARTMENT
Police Station	Richwood Police Dept.
School	LIGHTHOUSE LEARNING CENTER - AEC
School	CLUTE INT

School	T W OGG EL
School	GRIFFITH EL
Shelter	T.W. Ogg Elementary School
Shelter	Madge Griffith Elementary
Shelter	Clute Intermediate School
Shelter	First Baptist Church
Shelter	First Baptist Church Of Richwood
Toxic Release Inventory Facility	INEOS USA LLC STRATTON RIDGE
Toxic Release Inventory Facility	SOUTHERN REFUSE COMPANY
Toxic Release Inventory Facility	BENCHMARK ELECTRONICS INC
Wastewater Treatments Plant	CLUTE-RICHWOOD WWTP
Fire Station	Damon Fire Dept.
High Schools	DAMON H S
School	DAMON ISD
EMS	DANBURY VOLUNTEER FIRE DEPARTMENT AND EMERGENCY MEDICAL SERVICES
Fire Station	Danbury Fire Dept.
High Schools	DANBURY H S
Police Station	DANBURY POLICE DEPARTMENT
School	DANBURY MIDDLE
School	DANBURY EL
CERCLA(Superfund) National Priorities List	GULFCO MARINE MAINTENANCE
Correctional Facilities	CITY OF FREEPORT
Electric Substation	FREEPORT
Electric Substation	VELASCO
Electric Substation	BOOSTER
Electric Substation	TAP303600
Electric Substation	BRYAN
EMS	FREEPORT FIRE AND EMERGENCY MEDICAL SERVICES DEPARTMENT
EMS	VILLAGE OF SURFSIDE BEACH EMERGENCY MEDICAL SERVICES
Fire Station	Demi John VFD
Fire Station	Jones Creek FD
Fire Station	Freeport Fire Dept.
Hazardous Waste Treatment Facility	BASF CORP - FREEPORT SITE
Hazardous Waste Treatment Facility	GULF CHEMICAL & METALLURGICAL CORP
Hazardous Waste Treatment Facility	DOW CHEMICAL CO FREEPORT FACILITY
High Schools	BRAZOSPORT H S

Local Emergency Operation Center	FREEPORT EMERGENCY OPERATIONS CENTER
Police Station	JONES CREEK POLICE DEPARTMENT
Police Station	BRAZORIA COUNTY CONSTABLE - PRECINCT 1
Police Station	FREEPORT CITY MARSHALS OFFICE
Police Station	FREEPORT POLICE DEPARTMENT
Police Station	Oyster Creek City Marshall
Police Station	Freeport Police Dept.
Police Station	Surfside Police Dept.
Police Station	Jones Creek Police Dept.
School	JANE LONG EL
School	FREEPORT INT
School	VELASCO EL
School	O'HARA LANIER MIDDLE
School	O A FLEMING EL
Shelter	Brazosport High School
Shelter	Freeport Intermediate School
Shelter	O.A. Fleming Elementary
Shelter	Velasco Elementary
Shelter	Lanier Middle School
Toxic Release Inventory Facility	SHINTECH INC
Toxic Release Inventory Facility	VERNOR MATERIAL & EQUIP
Toxic Release Inventory Facility	DSM NUTRITIONAL PRODUCTS
Toxic Release Inventory Facility	FREEPORT VINYL TECHNOLOGIES CO
Toxic Release Inventory Facility	AIR LIQUIDE FREEPORT HYCO PLANT
Toxic Release Inventory Facility	MARTIN OPERATING PTNR - FREEPORT OOS
Toxic Release Inventory Facility	SENTRY POLYMERS
Toxic Release Inventory Facility	MIDSTREAM FUEL SERVICE LLC FREEPORT 1
Toxic Release Inventory Facility	BRASKEM AMERICA INC OYSTER CREEK PLANT
Toxic Release Inventory Facility	SHIN-ETSU SILICONES OF AMERICA - CARBON FUNCTIONAL SILANES FACILITY
Toxic Release Inventory Facility	COASTAL OYSTER CREEK AMMONIA CHEMICAL PLANT
Toxic Release Inventory Facility	AIR LIQUIDE AMERICA CORP.
Toxic Release Inventory Facility	AIR LIQUIDE FREEPORT HPU PLANT
Toxic Release Inventory Facility	CONOCOPHILLIPS FREEPORT

Toxic Release Inventory Facility	NALCO CO
Toxic Release Inventory Facility	BASF CORP - HARBOR TERMINAL
Toxic Release Inventory Facility	TEXAS BARGE & BOAT INC
Toxic Release Inventory Facility	BASF CORP - FREEPORT SITE
Toxic Release Inventory Facility	CHEMICAL SPECIALTIES INC
Toxic Release Inventory Facility	HUNTSMAN ETHYLENEAMINES PLANT
Toxic Release Inventory Facility	GULF CHEMICAL & METALLURGICAL CORP
Toxic Release Inventory Facility	DOW CHEMICAL CO FREEPORT FACILITY
Toxic Release Inventory Facility	SI GROUP INC
Toxic Release Inventory Facility	MARTIN OPERATING PTNR FREEPORT FM 1495
Toxic Release Inventory Facility	US DOE BRYAN MOUND SPR SITE
Wastewater Treatments Plant	CENTRAL WWTF
Wastewater Treatments Plant	US DOE SPR BRYAN MOUND OIL SRG
Toxic Release Inventory Facility	THIRD COAST PACKAGING INC FRIENDSWOOD
EMS	IOWA COLONY VOLUNTEER FIRE DEPARTMENT
School	MERIDIANA EL
School	S F AUSTIN EL
Shelter	S.F. Austin Elementary
Toxic Release Inventory Facility	CONOCOPHILLIPS CO JONES CREEK TERMINAL
Colleges Universities	Brazosport College
Dam	BUFFALO CAMP BAYOU RESERVOIR DAM
Electric Substation	LAKE JACKSON
EMS	LAKE JACKSON EMERGENCY MEDICAL SERVICES
EMS	LAKE Jackson Disaster Trans
Fire Station	Richwood Fire Dept.
Fire Station	Lake Jackson Fire Dept.
Hospital	BRAZOSPORT MEMORIAL HOSPITAL
Police Station	LAKE JACKSON POLICE DEPARTMENT
Police Station	Lake Jackson Police Dept
School	BESS BRANNEN EL
School	LAKE JACKSON INT
School	A P BEUTEL EL
School	ELISABET NEY EL
School	O M ROBERTS EL

School	RASCO MIDDLE
Shelter	Christ Lutheran Church
Shelter	O.M. Roberts Elementary
Shelter	Lake Jackson Intermediate School
Shelter	Elizabet Ney Elementary
Shelter	Rasco Middle School
Shelter	Bess Brannen Elementary
Shelter	A.P. Beutel Elementary
Shelter	Willow Drive Baptist Church
Shelter	Brazos wood High School
Wastewater Treatments Plant	CITY OF LAKE JACKSON
Fire Station	Liverpool VFD
Police Station	LIVERPOOL POLICE DEPARTMENT
Police Station	Liverpool Police Dept.
EMS	MANVEL EMERGENCY MEDICAL SERVICES
Fire Station	Manvel VFD
Fire Station	Manvel Fire Department
High Schools	MANVEL H S
Police Station	MANVEL POLICE DEPARTMENT
Police Station	BRAZORIA COUNTY CONSTABLE - PRECINCT 2
Police Station	Manvel Police Dept.
School	RED DUKE EL
School	E C MASON EL
School	RODEO PALMS J H
Shelter	Manvel Junior High School
Toxic Release Inventory Facility	KEESHAN & BOST CHEMICAL CO INC
Toxic Release Inventory Facility	BENCHMARK RESEARCH & TECHNOLOGY INC
Shelter	Delaware Valley School Dist.-Delaware Valley Middle/High
Hazardous Waste Treatment Facility	PHILLIPS 66 SWEENY COMPLEX
Toxic Release Inventory Facility	PHILLIPS 66 SWEENY COMPLEX
Toxic Release Inventory Facility	PHILLIPS 66 SWEENY COMPLEX
Fire Station	Oyster Creek Community VFD
Police Station	OYSTER CREEK POLICE DEPARTMENT
Shelter	Brazoria County Youth Home
Brownfields	PEARLAND ASSAULT BASEBALL CLUB
Correctional Facilities	Pearland Police Department Jail Division
Electric Substation	SOUTHWYCK
Electric Substation	PEARLAND
Electric Substation	MARY'S CREEK

EMS	PINNACLE ENTITIES INCORPORATED DOING BUSINESS AS PINNACLE AMBULANCE SERVICE
EMS	PEARLAND AREA EMERGENCY MEDICAL SERVICES
Fire Station	Pearland Fire Department
Fire Station	Pearland Fire Station 2
Fire Station	Pearland Fire Station 5
Fire Station	Pearland Fire Station 3
Fire Station	Pearland Fire Station 4
Fire Station	Brookside Village VFD
High Schools	SHADOW CREEK H S
High Schools	ROBERT TURNER COLLEGE AND CAREER H S
High Schools	GLENDA DAWSON H S
High Schools	PEARLAND H S
Hospital	MEMORIAL HERMANN PEARLAND HOSPITAL
Hospital	PEARLAND MEDICAL CENTER
Local Emergency Operation Center	PEARLAND CITY EMERGENCY OPERATIONS CENTER
Police Station	PEARLAND POLICE DEPARTMENT
Police Station	Police Dept.-Records Div.
Police Station	BRAZORIA COUNTY CONSTABLE - PRECINCT 3
Police Station	Brookside Police Dept.
School	LAURA INGALLS WILDER
School	SILVERCREST EL
School	PEARLAND J H SOUTH
School	NOLAN RYAN J H
School	SILVERLAKE EL
School	MASSEY RANCH EL
School	ROGERS MIDDLE
School	MARY BURKS MAREK EL
School	GLENN YORK EL
School	BERRY MILLER J H
School	MAGNOLIA EL
School	ALEXANDER MIDDLE
School	PEARLAND J H WEST
School	C J HARRIS EL
School	PACE CENTER
School	PEARLAND J H EAST
School	LEON H SABLATURA MIDDLE
School	H C CARLESTON EL
School	SAM JAMISON MIDDLE
School	SHADYCREST EL
School	E A LAWHON EL
School	RUSTIC OAK EL
School	CHALLENGER EL

School	BARBARA COCKRELL EL
Shelter	Pearland Junior High South
Shelter	City of Pearland Rec Center
Shelter	Faith Center Church
Shelter	First Presbyterian Church
Shelter	FIRST UNITED METHODIST CHURCH
Shelter	Pearland High School
Solid Waste Landfill	DIXIE FARM ROAD LANDFILL (HILL SAND CO)
Toxic Release Inventory Facility	EPM - ISE MAGTECH
Toxic Release Inventory Facility	BTU GASES
Toxic Release Inventory Facility	DAVIS LYNCH
Toxic Release Inventory Facility	THIRD COAST TERMINALS PEARLAND
Toxic Release Inventory Facility	TEXAS HONING, INC. (PEARLAND)
Toxic Release Inventory Facility	PACKAGING SERVICES CO INC PEARLAND FACILITY
Wastewater Treatments Plant	FAR NORTHWEST WWTP
Wastewater Treatments Plant	SOUTHWEST ENVIRONMENTAL CENTER
Wastewater Treatments Plant	LONGWOOD WWTP
Wastewater Treatments Plant	BARRY ROSE WWTF
Police Station	RICHWOOD POLICE DEPARTMENT
School	GLADYS POLK EL
Shelter	Gladys Polk Elementary
Correctional Facilities	DARRINGTON PRISON FACILITY
Correctional Facilities	RAMSEY PRISON FACILITY
Fire Station	Iowa Colony VFD
Fire Station	Rosharon Volunteer Fire Dept.
School	MANVEL J H
School	SAVANNAH LAKES EL
School	DON JETER EL
Shelter	First Baptist Church
Toxic Release Inventory Facility	SCHLUMBERGER ROSHARON CAMPUS
Fire Station	Surfside Beach VFD
Police Station	SURFSIDE BEACH POLICE DEPARTMENT
Electric Substation	SWEENY
EMS	SWEENY FIRE AND RESCUE
Fire Station	Sweeny Fire and Rescue
Fire Station	Old Ocean Fire Dept.

High Schools	SWEENY H S
Hospital	SWEENY COMMUNITY HOSPITAL
Local Emergency Operation Center	SWEENY CITY EMERGENCY OPERATIONS CENTER-ALTERNATE
Local Emergency Operation Center	SWEENY CITY EMERGENCY OPERATIONS CENTER
Police Station	SWEENY INDEPENDENT SCHOOL DISTRICT POLICE DEPARTMENT
Police Station	SWEENY POLICE DEPARTMENT
Police Station	Sweeny Police Dept.
School	SWEENY J H
School	SWEENY EL
Shelter	Sweeny Junior High School
Solid Waste Landfill	CITIES OF BRAZORIA & WEST COLUMBIA LANDFILL
Toxic Release Inventory Facility	PHILLIPS 66 CO. FREEPORT II TERMINAL
Toxic Release Inventory Facility	CONOCOPHILLIPS SAN BERNARD TERMINAL
Brownfields	BLANCHARD AUTO SALES
Electric Substation	UNKNOWN307693
EMS	CENTRAL EMERGENCY MEDICAL SERVICES INCORPORATED
Fire Station	Columbia Lakes VFD
High Schools	COLUMBIA H S
Local Emergency Operation Center	WEST COLUMBIA EMERGENCY OPERATIONS CENTER
Local Emergency Operation Center	WEST COLUMBIA EMERGENCY OPERATIONS CENTER-ALTERNATE
Police Station	BRAZORIA COUNTY CONSTABLE - PRECINCT 4
Police Station	WEST COLUMBIA POLICE DEPARTMENT
Police Station	COLUMBIA-BRAZORIA INDEPENDENT SCHOOL DISTRICT POLICE DEPARTMENT
Police Station	West Columbia City Police
School	WEST COLUMBIA EL
School	WEST COLUMBIA CHARTER SCH
Shelter	West Columbia Elementary School
Shelter	Columbia High School
Shelter	West Columbia High School
Dam	BEAL RESERVOIR LEVEE
Dam	BLACK RANCH LAKE LEVEE
Dam	BRAZOS RIVER CLUB LEVEE
Dam	MALLARD LAKE CLUB DAM
Dam	DIVISION LAKE LEVEE
Dam	LAKE JACKSON LEVEE
Dam	MOWERY LAKE LEVEE
Dam	DUCK LAKE DAM
Dam	SOLUTIA RESERVOIR LEVEE

Dam	SALT BAYOU LAKE WATER
Dam	TWIN LAKES DAM
Dam	BRAZORIA RESERVOIR DAM
Dam	DINGLE LAKE NO 1 LEVEE
Dam	LAZY C Z NO 1 RESERVOIR LEVEE
Dam	MCCULLOUGH LAKE LEVEE
Dam	RES NO 17 LEVEE-MCCULLOUGH RES COMPLEX
Dam	RESERVOIR NO 10 LEVEE-COMPLEX NO 2
Dam	RESERVOIR NO 9 LEVEE-COMPLEX NO 2
Dam	LINNVILLE BAYOU RESERVOIR DAM
Dam	MARKLE LAKE LEVEE
Dam	SAN BERNARD RESERVOIR NO 1
Dam	SAN BERNARD RESERVOIR NO 2 LEVEE
Dam	SAN BERNARD RESERVOIR NO 3 LEVEE
Dam	ANGLETON FISHING & HUNTING CLUB LEVEE
Dam	BAR X RANCH LAKE LEVEE
Dam	BIERI LAKES RESERVOIR NO 1 LEVEE
Dam	BIERI LAKES RESERVOIR NO 2 LEVEE
Dam	BIERI LAKES RESERVOIR NO 3 LEVEE
Dam	BIERI LAKES RESERVOIR NO 4 LEVEE
Dam	BINTLIFF LAKE LEVEE
Dam	CLARK RESERVOIR DAM
Dam	COALE DAM
Dam	FLAG LAKE LEVEE
Dam	HUDECK RESERVOIR LEVEE
Dam	MCCORMACK RESERVOIR NO 3 LEVEE
Dam	MCCORMACK RESERVOIR NO 4 LEVEE
Dam	TIGNER-FARRER LEVEE
Dam	WILLIAM HARRIS RESERVOIR DAM
Dam	RALEIGH FARMS RESERVOIR LEVEE
Dam	BRAZORIA CITY RESERVOIR LEVEE
Dam	DACUS LAKE DAM
Dam	TDCJ CLEMENS UNIT DAM NO 1
Dam	TDCJ CLEMENS UNIT DAM NO 2
Dam	COLUMBIA LAKES RESERVOIR DAM
Dam	GRIFFITH RESERVOIR LEVEE
Dam	LAGOON RESERVOIR DAM
Dam	LIVE OAK NO 1 LEVEE
Dam	LIVE OAK NO 2 LEVEE
Dam	PAPPAS LAKES AND LODGE LEVEE
Dam	AMOCO CHEMICALS RESERVOIR LEVEE
Dam	DINGLE LAKE NO 2 LEVEE
Dam	MUSTANG LAKE EAST DAM
Dam	MUSTANG LAKE WEST DAM

Electric Substation	MANVEL
Electric Substation	DAMON
Electric Substation	NASH
Electric Substation	TAP303549
Electric Substation	TAP303550
Electric Substation	ARCOLA
Electric Substation	HASTINGS
Electric Substation	MUSTANG BAYOU
Electric Substation	UNKNOWN307510
Electric Substation	OASIS
Electric Substation	NORTH ALVIN
Electric Substation	TAP303542
Electric Substation	TAP303543
Electric Substation	MEADOW
Electric Substation	HOFMAN
Electric Substation	RIWOOD
Electric Substation	CAVERN
Electric Substation	SINTEK
Electric Substation	SEAWAY
Electric Substation	SEAWAY SW
Electric Substation	QUINTANA
Electric Substation	TAP303551
Electric Substation	BIPORT
Electric Substation	LIVERPOOL
Electric Substation	STRATT
Electric Substation	BRAZOSPORT
Electric Substation	UNKNOWN307694
Electric Substation	UNKNOWN307695
Electric Substation	UNKNOWN307696
Electric Substation	UNKNOWN307863
Electric Substation	UNKNOWN307864
Electric Substation	UNKNOWN307865
Electric Substation	UNKNOWN307866
Electric Substation	UNKNOWN307688
Electric Substation	RETRIEVE
Electric Substation	UNKNOWN307698
Electric Substation	UNKNOWN307700
Electric Substation	UNKNOWN307801
Electric Substation	UNKNOWN308021
Electric Substation	UNKNOWN307691
Electric Substation	UNKNOWN307692
Electric Substation	UNKNOWN307862
Electric Substation	UNKNOWN307511
Electric Substation	AMOCO

Electric Substation	DOW VELASCO
Electric Substation	UNKNOWN307708
Electric Substation	SURFSIDE
Electric Substation	UNKNOWN307794
Electric Substation	BASF
Electric Substation	UNKNOWN307799
Electric Substation	TAP303552
Electric Substation	UNKNOWN308071
Natural Gas Receipt Delivery	DUHON #1
Natural Gas Receipt Delivery	GMT-FRISCO
Natural Gas Receipt Delivery	RAMSEY ENTEX
Power Plant	FREEPORT LP PRETREATMENT FACILITY
Power Plant	SWEENEY IGCC PLANT
Power Plant	SWEENEY COGEN FACILITY
Power Plant	CHOCOLATE BAYOU WORKS
Power Plant	ASCEND PERFORMANCE MATERIALS TEXAS INC.
Power Plant	DOW CHEMICAL TEXAS OPERATION
Power Plant	OYSTER CREEK UNIT VIII
Power Plant	BASF FREEPORT WORKS
Power Plant	FREEPORT ENERGY CENTER
Wastewater Treatments Plant	OYSTER CREEK WWTP
Wastewater Treatments Plant	CITY OF WEST COLUMBIA - WWTP
EOC	BRAZORIA COUNTY

Appendix C: Hazus Analysis



Hazus-MH: Flood Global Risk Report

Region Name: Brazoria County

Flood Scenario: 100-year

Disclaimer:

This version of Hazus utilizes 2010 Census Data.

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Flood. These results can be improved by using enhanced inventory data and flood hazard information.



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General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency (FEMA) and the National Institute of Building Sciences (NIBS). The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The flood loss estimates provided in this report were based on a region that included 1 county(ies) from the following state(s):

- Texas

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 1,443 square miles and contains 10,082 census blocks. The region contains over 107 thousand households and has a total population of 313,166 people (2010 Census Bureau data). The distribution of population by State and County for the study region is provided in Appendix B.

There are an estimated 109,747 buildings in the region with a total building replacement value (excluding contents) of 33,799 million dollars (2010 dollars). Approximately 93.55% of the buildings (and 86.99% of the building value) are associated with residential housing.



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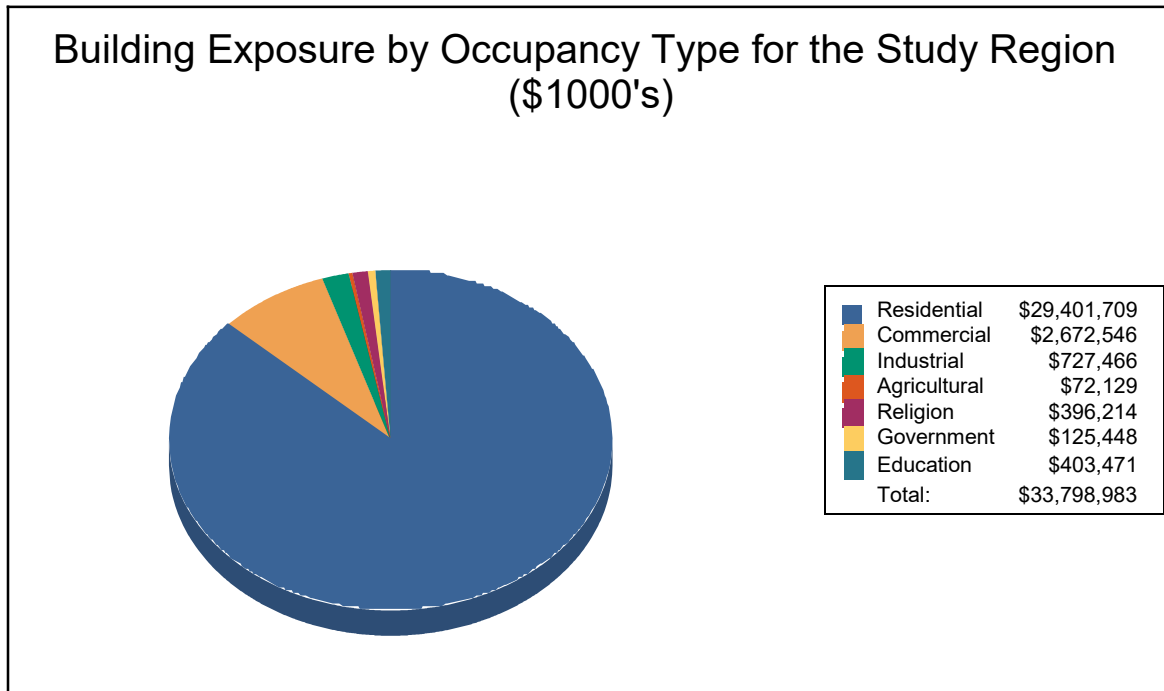
Building Inventory

General Building Stock

Hazus estimates that there are 109,747 buildings in the region which have an aggregate total replacement value of 33,799 million (2014 dollars). Table 1 and Table 2 present the relative distribution of the value with respect to the general occupancies by Study Region and Scenario respectively. Appendix B provides a general distribution of the building value by State and County.

**Table 1
Building Exposure by Occupancy Type for the Study Region**

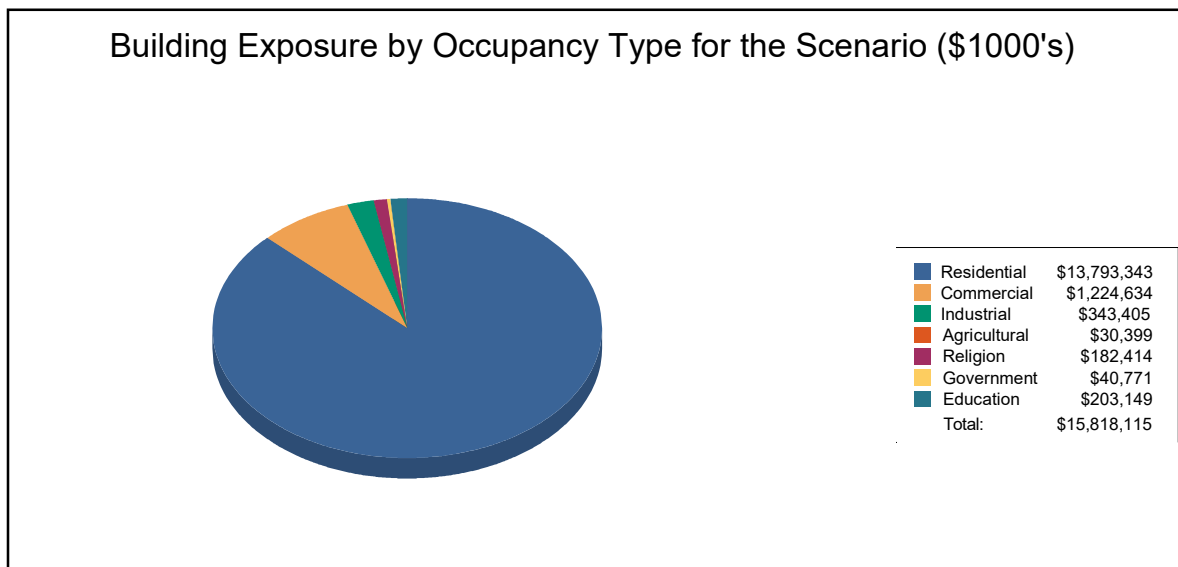
Occupancy	Exposure (\$1000)	Percent of Total
Residential	29,401,709	87.0%
Commercial	2,672,546	7.9%
Industrial	727,466	2.2%
Agricultural	72,129	0.2%
Religion	396,214	1.2%
Government	125,448	0.4%
Education	403,471	1.2%
Total	33,798,983	100.0%





**Table 2
Building Exposure by Occupancy Type for the Scenario**

Occupancy	Exposure (\$1000)	Percent of Total
Residential	13,793,343	87.2%
Commercial	1,224,634	7.7%
Industrial	343,405	2.2%
Agricultural	30,399	0.2%
Religion	182,414	1.2%
Government	40,771	0.3%
Education	203,149	1.3%
Total	15,818,115	100.0%



Essential Facility Inventory

For essential facilities, there are 3 hospitals in the region with a total bed capacity of 234 beds. There are 99 schools, 22 fire stations, 19 police stations and 1 emergency operation center.





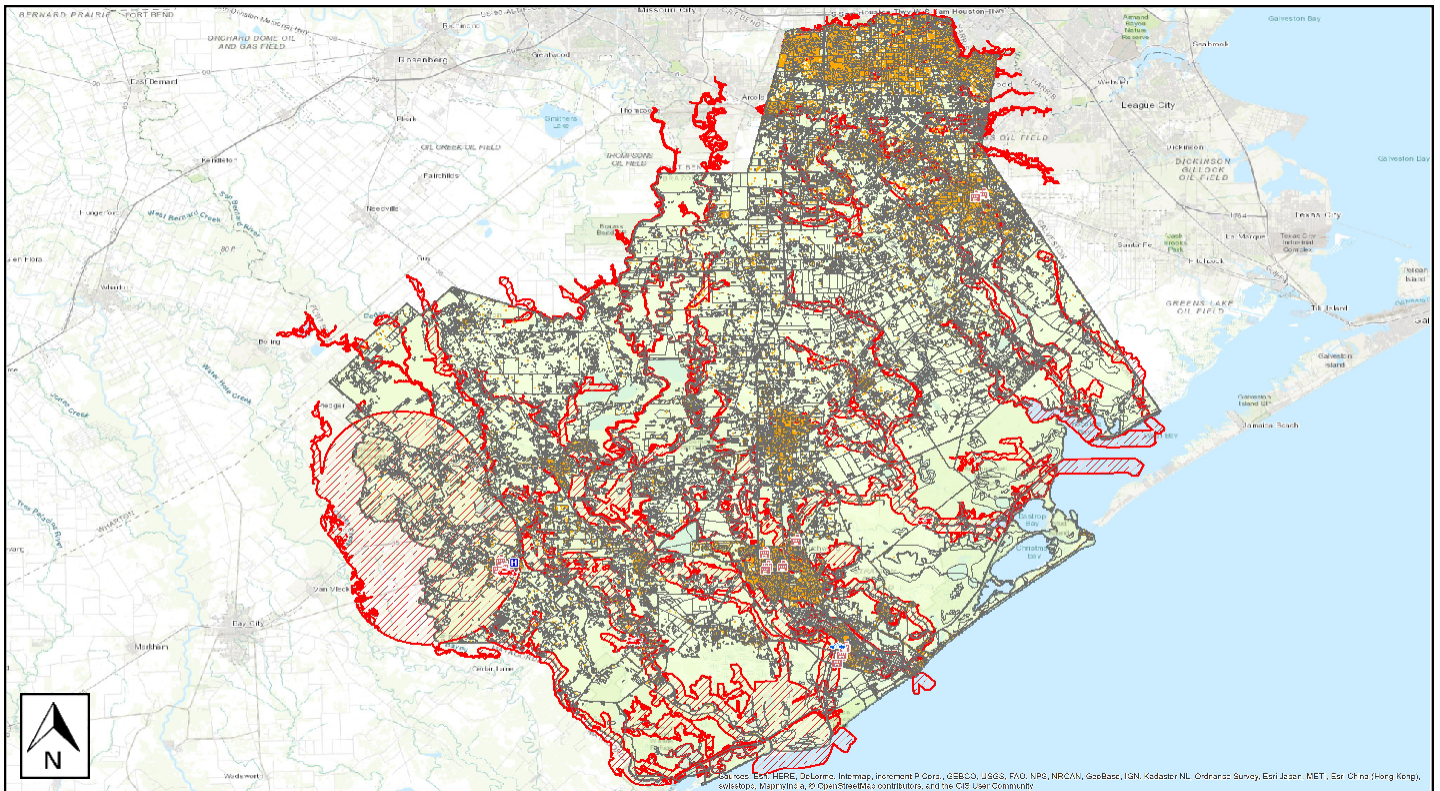
Flood Scenario Parameters

Hazus used the following set of information to define the flood parameters for the flood loss estimate provided in this report.

- Study Region Name:** Brazoria County
- Scenario Name:** 100-Year
- Return Period Analyzed:** 100
- Analysis Options Analyzed:** No What-Ifs

Study Region Overview Map

Illustrating scenario flood extent, as well as exposed essential facilities and total exposure





Building Damage

General Building Stock Damage

Hazus estimates that about 5,797 buildings will be at least moderately damaged. This is over 54% of the total number of buildings in the scenario. There are an estimated 1,611 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus Flood Technical Manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 summarizes the expected damage by general building type.

Total Economic Loss (1 dot = \$300K) Overview Map

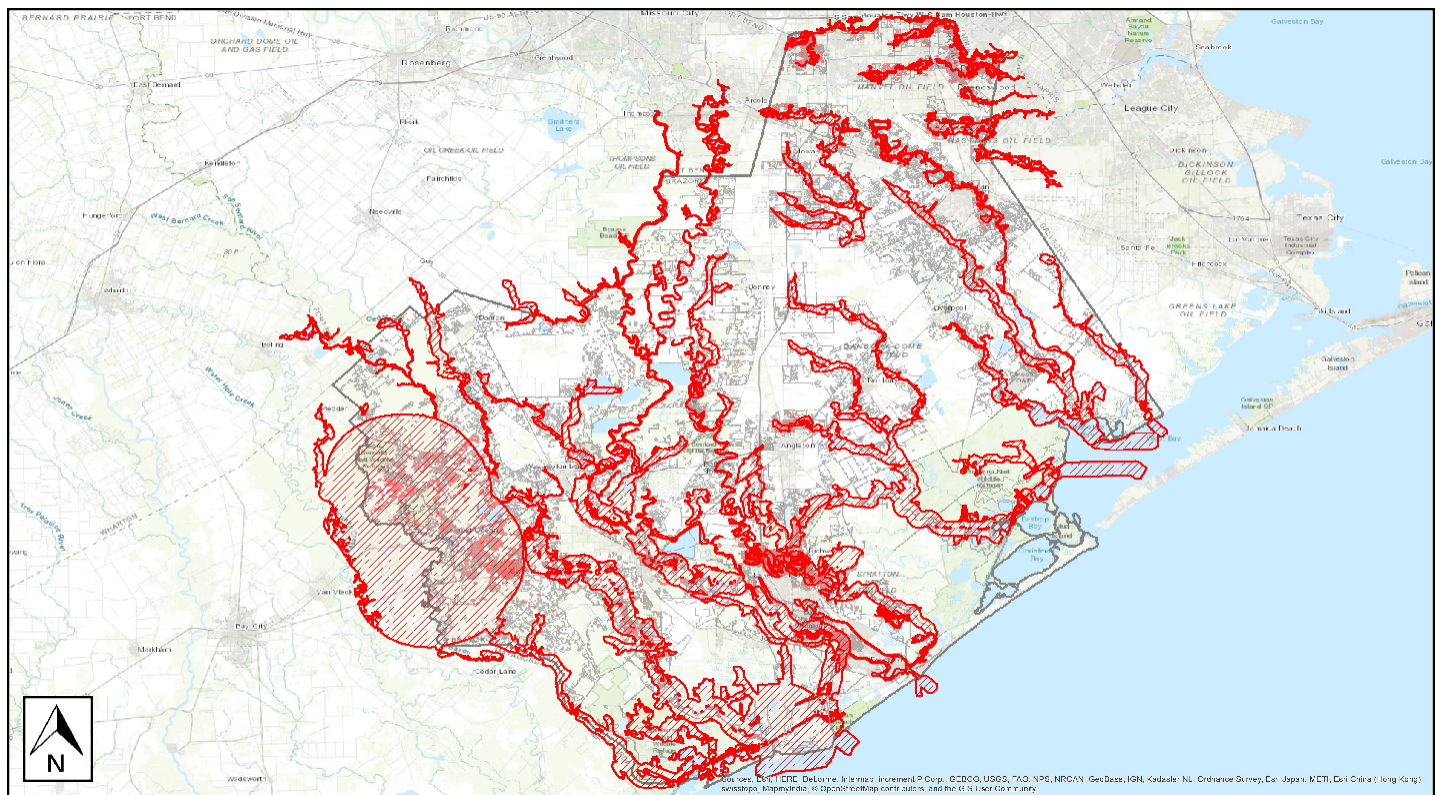




Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	1	50.00	0	0.00	0	0.00	1	50.00	0	0.00	0	0.00
Commercial	30	37.04	35	43.21	10	12.35	2	2.47	3	3.70	1	1.23
Education	2	66.67	1	33.33	0	0.00	0	0.00	0	0.00	0	0.00
Government	1	25.00	0	0.00	1	25.00	2	50.00	0	0.00	0	0.00
Industrial	6	28.57	5	23.81	1	4.76	2	9.52	1	4.76	6	28.57
Religion	4	44.44	5	55.56	0	0.00	0	0.00	0	0.00	0	0.00
Residential	2,701	32.07	2,429	28.84	1,013	12.03	397	4.71	278	3.30	1,604	19.05
Total	2,745		2,475		1,025		404		282		1,611	

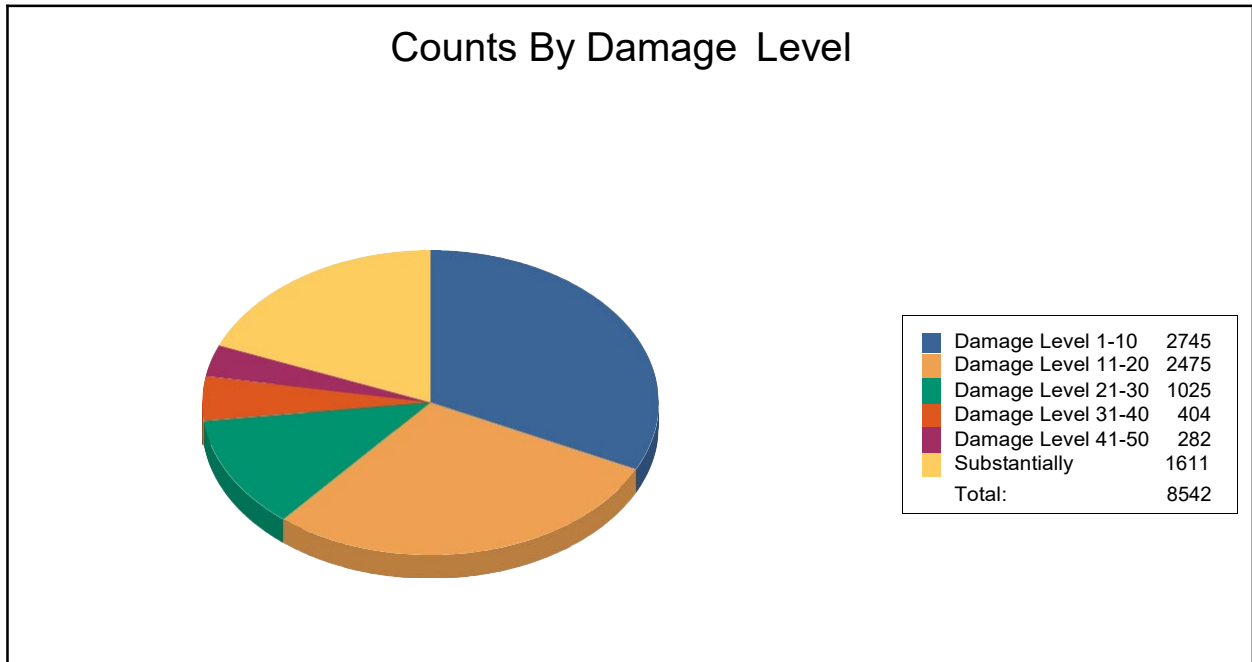




Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	6	75	0	0	1	13	1	13	0	0	0	0
ManufHousing	84	15	78	14	63	11	0	0	44	8	296	52
Masonry	231	35	224	34	65	10	23	4	13	2	97	15
Steel	7	32	9	41	3	14	2	9	1	5	0	0
Wood	2,400	33	2,142	30	890	12	376	5	221	3	1,212	17



Essential Facility Damage

Before the flood analyzed in this scenario, the region had 234 hospital beds available for use. On the day of the scenario flood event, the model estimates that 234 hospital beds are available in the region.

Before the flood analyzed in this scenario, the region had 234 hospital beds available for use. On the day of the scenario flood event, the model estimates that 214 hospital beds are available in the region.

Before the flood analyzed in this scenario, the region had 234 hospital beds available for use. On the day of the scenario flood event, the model estimates that 234 hospital beds are available in the region.

Before the flood analyzed in this scenario, the region had 234 hospital beds available for use. On the day of the scenario flood event, the model estimates that 234 hospital beds are available in the region.

Before the flood analyzed in this scenario, the region had 234 hospital beds available for use. On the day of the scenario flood event, the model estimates that 234 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	22	1	0	5
Hospitals	3	0	1	1
Police Stations	19	2	0	2
Schools	99	10	2	12

If this report displays all zeros or is blank, two possibilities can explain this.

- (1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.
- (2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.



Induced Flood Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.

Analysis has not been performed for this Scenario.



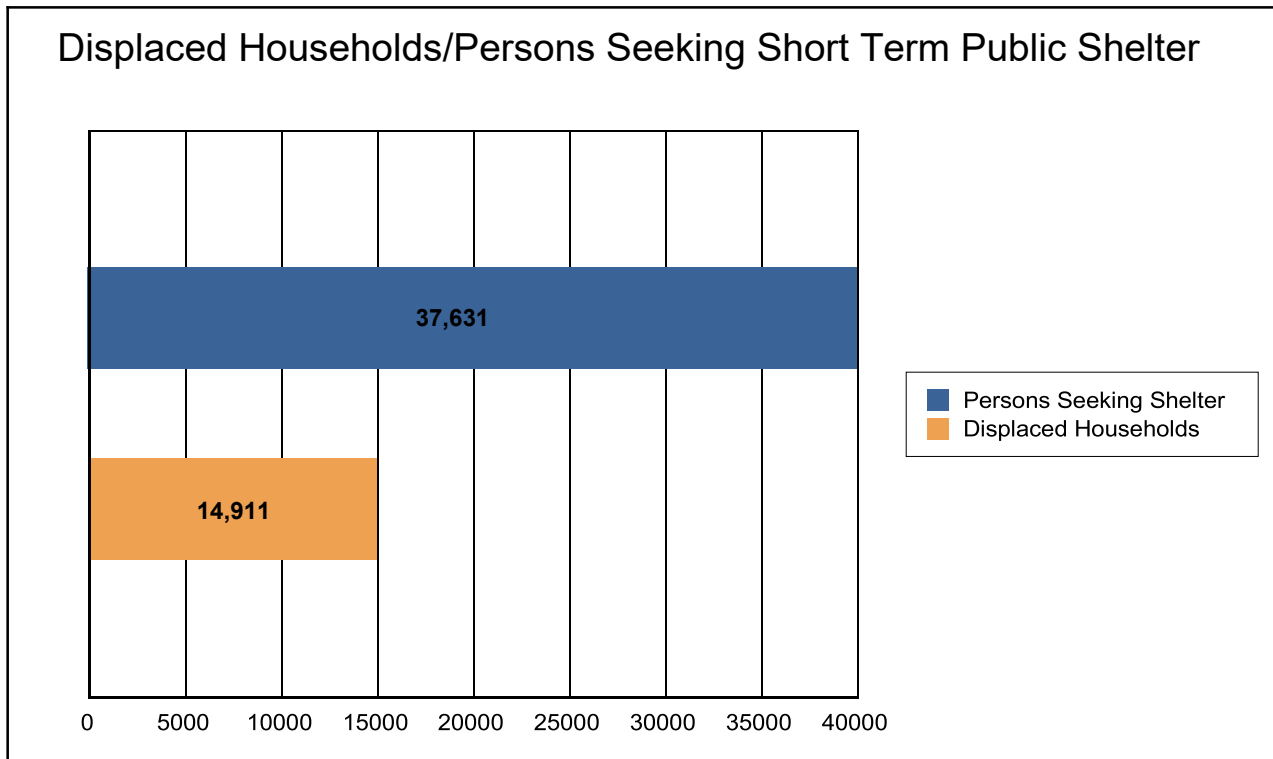
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Social Impact

Shelter Requirements

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 14,911 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 37,631 people (out of a total population of 313,166) will seek temporary shelter in public shelters.





Economic Loss

The total economic loss estimated for the flood is 1,368.81 million dollars, which represents 8.65 % of the total replacement value of the scenario buildings.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 1,361.36 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 83.73% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.

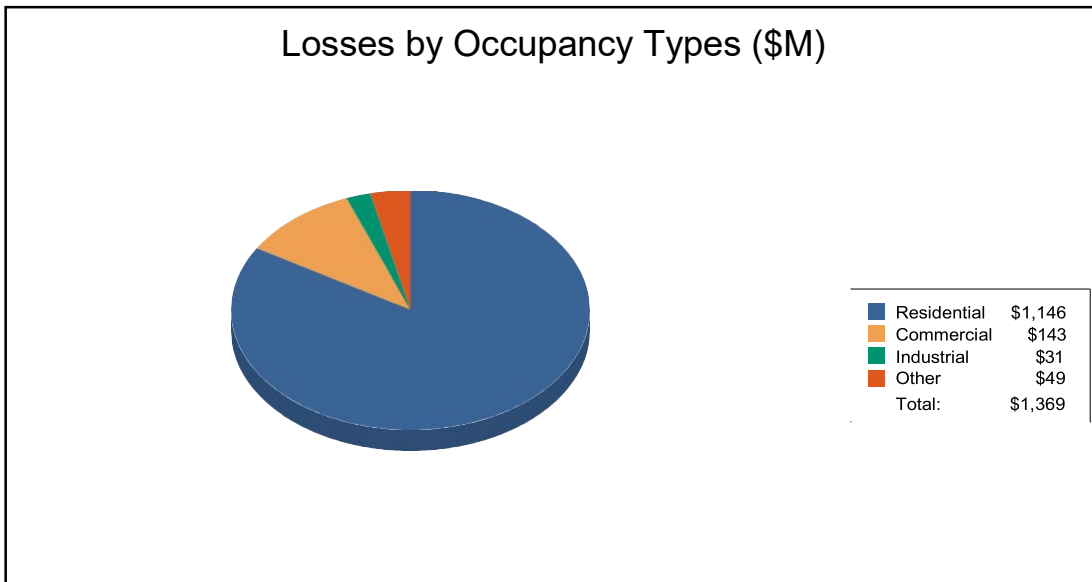


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Table 6: Building-Related Economic Loss Estimates
(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	731.76	38.15	9.33	8.83	788.08
	Content	411.57	100.64	18.39	36.92	567.51
	Inventory	0.00	2.15	3.30	0.33	5.77
	Subtotal	1,143.32	140.94	31.02	46.08	1,361.36
Business Interruption						
	Income	0.04	0.84	0.00	0.46	1.34
	Relocation	2.13	0.17	0.00	0.19	2.49
	Rental Income	0.50	0.06	0.00	0.01	0.56
	Wage	0.10	1.02	0.00	1.94	3.06
	Subtotal	2.76	2.09	0.00	2.61	7.45
ALL	Total	1,146.08	143.03	31.02	48.68	1,368.81



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Appendix A: County Listing for the Region

- Texas
- Brazoria



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Appendix B: Regional Population and Building Value Data

	Population	Building Value (thousands of dollars)		
		Residential	Non-Residential	Total
Texas				
Brazoria	313,166	29,401,709	4,397,274	33,798,983
Total	313,166	29,401,709	4,397,274	33,798,983
Total Study Region	313,166	29,401,709	4,397,274	33,798,983



Hazus-MH: Flood Global Risk Report

Region Name: Brazoria County

Flood Scenario: 500-year

Disclaimer:

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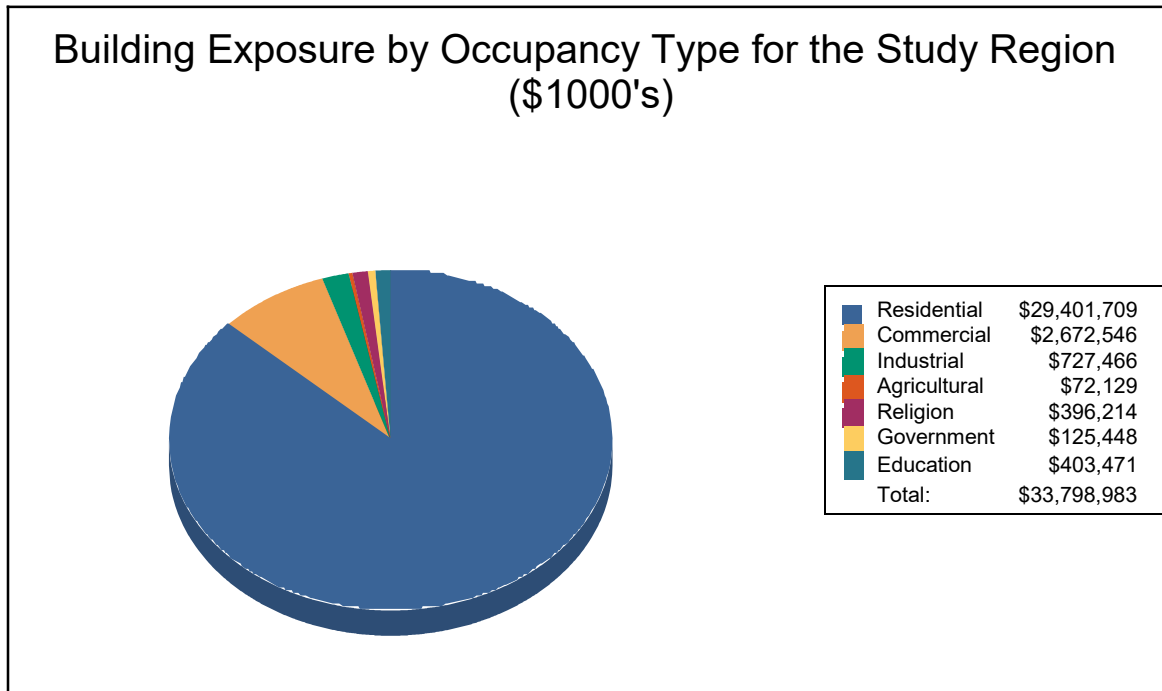
Building Inventory

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Residential	29,401,709	87.0%
Commercial	2,672,546	7.9%
Industrial	727,466	2.2%
Agricultural	72,129	0.2%
Religion	396,214	1.2%
Government	125,448	0.4%
Education	403,471	1.2%
Total	33,798,983	100.0%



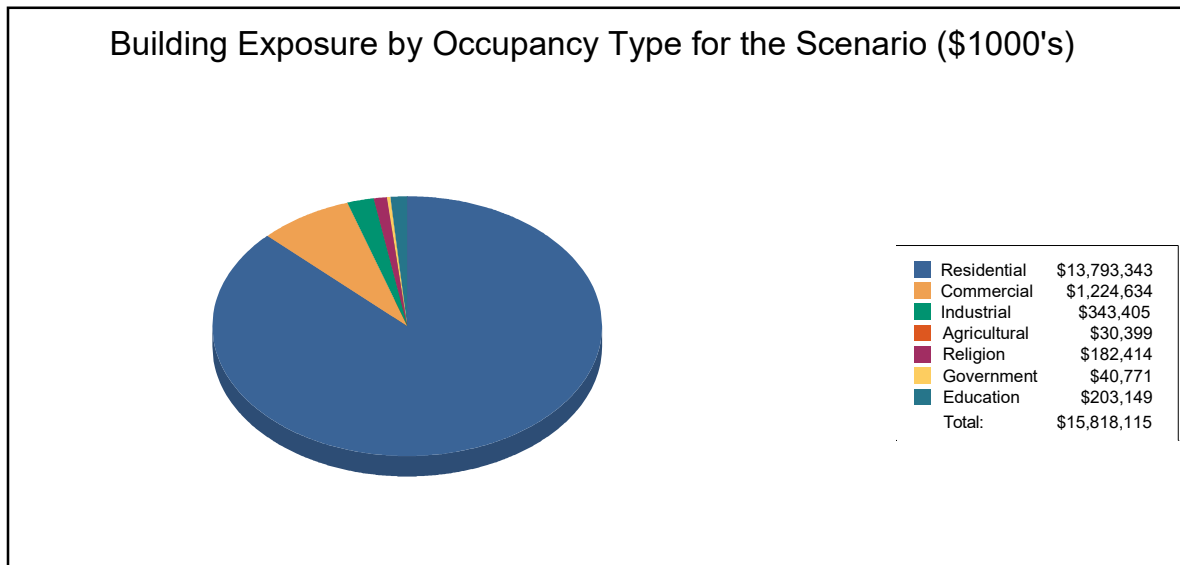
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**Table 2
Building Exposure by Occupancy Type for the Scenario**

Occupancy	Exposure (\$1000)	Percent of Total
Residential	13,793,343	87.2%
Commercial	1,224,634	7.7%
Industrial	343,405	2.2%
Agricultural	30,399	0.2%
Religion	182,414	1.2%
Government	40,771	0.3%
Education	203,149	1.3%
Total	15,818,115	100.0%



Essential Facility Inventory

For essential facilities, there are 3 hospitals in the region with a total bed capacity of 234 beds. There are 99 schools, 22 fire stations, 19 police stations and 1 emergency operation center.





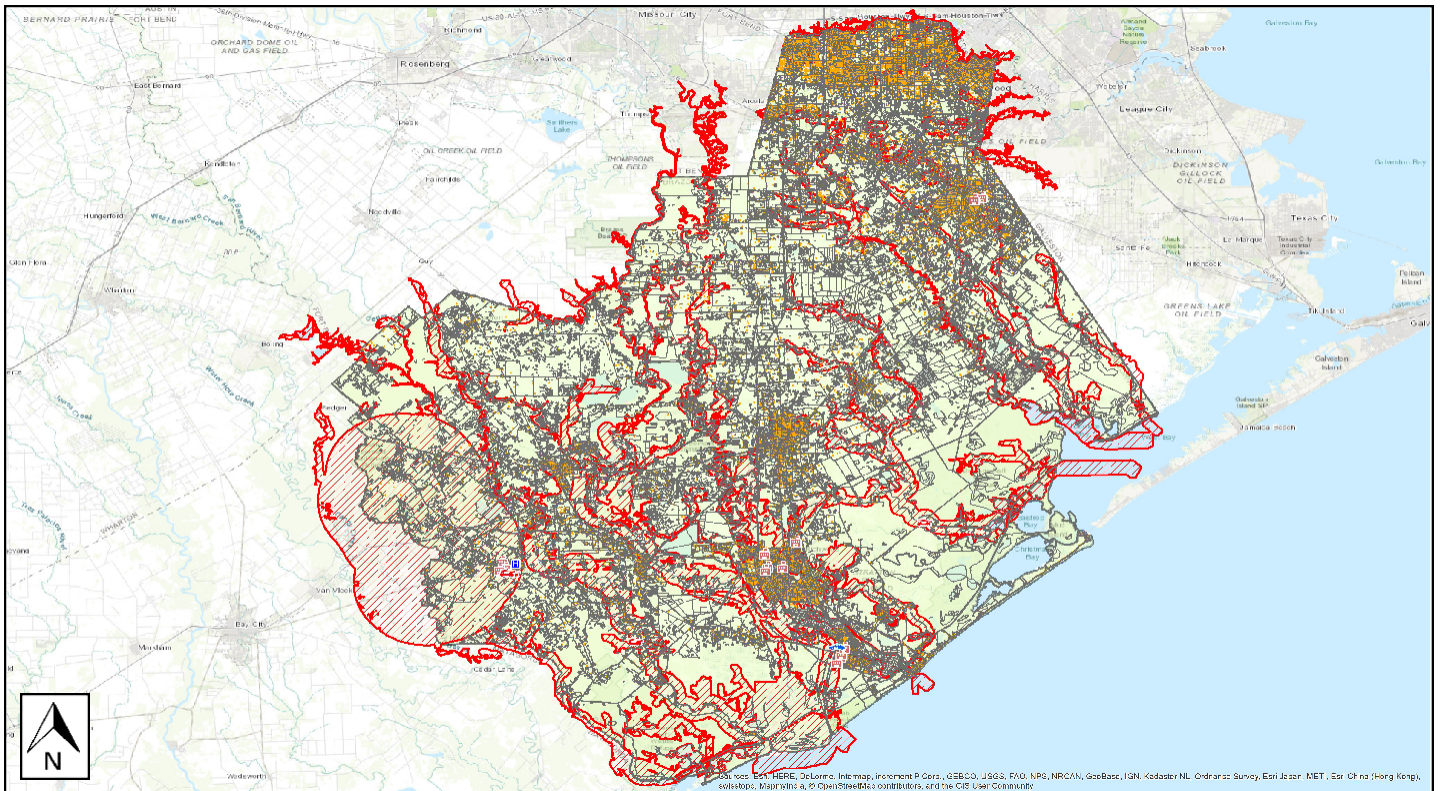
Flood Scenario Parameters

Hazus used the following set of information to define the flood parameters for the flood loss estimate provided in this report.

- Study Region Name:** Brazoria County
- Scenario Name:** 500-Year
- Return Period Analyzed:** 500
- Analysis Options Analyzed:** No What-ifs

Study Region Overview Map

Illustrating scenario flood extent, as well as exposed essential facilities and total exposure





Building Damage

General Building Stock Damage

Hazus estimates that about 8,194 buildings will be at least moderately damaged. This is over 57% of the total number of buildings in the scenario. There are an estimated 1,939 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 5 of the Hazus Flood Technical Manual. Table 3 below summarizes the expected damage by general occupancy for the buildings in the region. Table 4 summarizes the expected damage by general building type.

Total Economic Loss (1 dot = \$300K) Overview Map

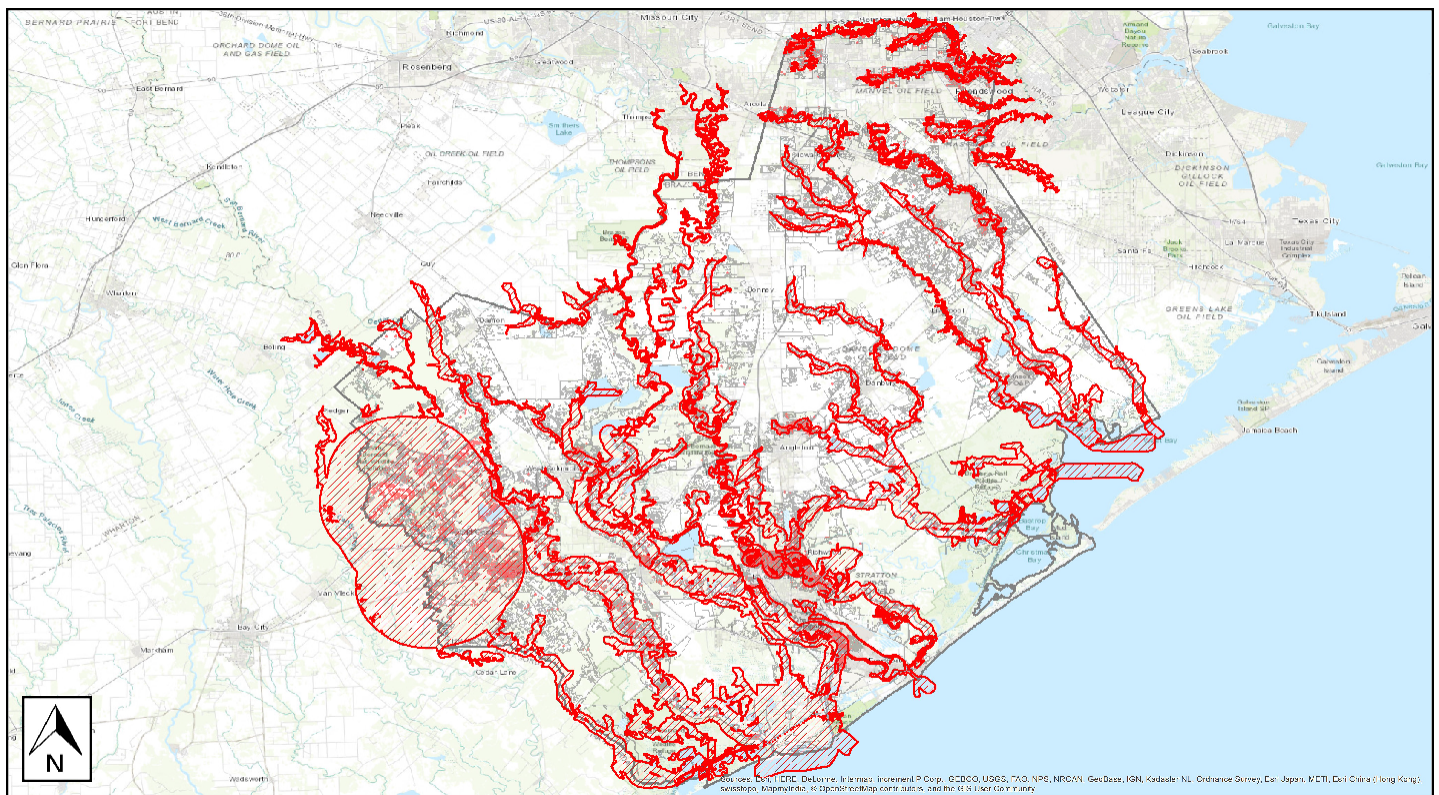




Table 3: Expected Building Damage by Occupancy

Occupancy	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0	0.00	1	50.00	0	0.00	0	0.00	0	0.00	1	50.00
Commercial	45	40.18	52	46.43	0	0.00	5	4.46	1	0.89	9	8.04
Education	7	87.50	0	0.00	1	12.50	0	0.00	0	0.00	0	0.00
Government	3	75.00	0	0.00	0	0.00	0	0.00	1	25.00	0	0.00
Industrial	7	29.17	9	37.50	1	4.17	1	4.17	2	8.33	4	16.67
Religion	9	64.29	4	28.57	1	7.14	0	0.00	0	0.00	0	0.00
Residential	3,361	29.32	3,508	30.61	1,409	12.29	782	6.82	477	4.16	1,925	16.79
Total	3,432		3,574		1,412		788		481		1,939	

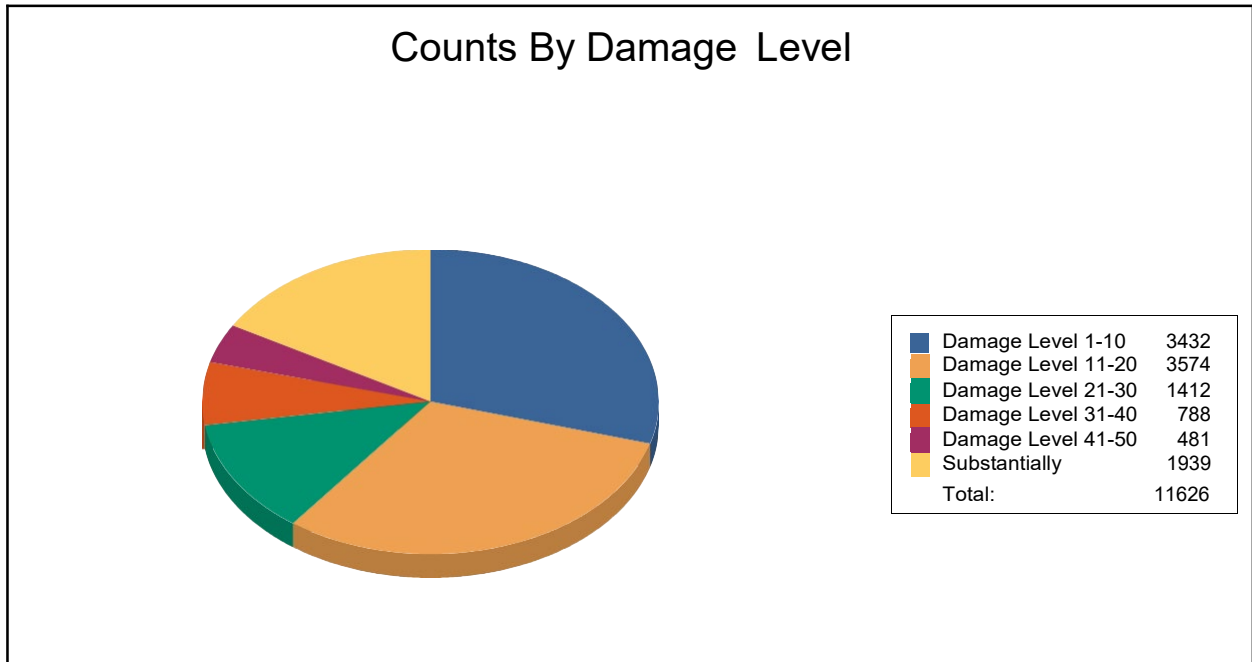




Table 4: Expected Building Damage by Building Type

Building Type	1-10		11-20		21-30		31-40		41-50		Substantially	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	6	50	4	33	0	0	1	8	0	0	1	8
ManufHousing	73	11	81	12	59	9	0	0	53	8	391	60
Masonry	319	33	331	34	109	11	54	6	28	3	126	13
Steel	15	42	17	47	0	0	2	6	1	3	1	3
Wood	3,008	30	3,131	32	1,243	13	730	7	397	4	1,410	14



Essential Facility Damage

Before the flood analyzed in this scenario, the region had 234 hospital beds available for use. On the day of the scenario flood event, the model estimates that 234 hospital beds are available in the region.

Before the flood analyzed in this scenario, the region had 234 hospital beds available for use. On the day of the scenario flood event, the model estimates that 234 hospital beds are available in the region.

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Before the flood analyzed in this scenario, the region had 234 hospital beds available for use. On the day of the scenario flood event, the model estimates that 214 hospital beds are available in the region.

Table 5: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		At Least Moderate	At Least Substantial	Loss of Use
Fire Stations	22	3	1	5
Hospitals	3	1	0	1
Police Stations	19	1	1	2
Schools	99	10	2	16

If this report displays all zeros or is blank, two possibilities can explain this.

- (1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.
- (2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.



Induced Flood Damage

Debris Generation

Hazus estimates the amount of debris that will be generated by the flood. The model breaks debris into three general categories: 1) Finishes (dry wall, insulation, etc.), 2) Structural (wood, brick, etc.) and 3) Foundations (concrete slab, concrete block, rebar, etc.). This distinction is made because of the different types of material handling equipment required to handle the debris.

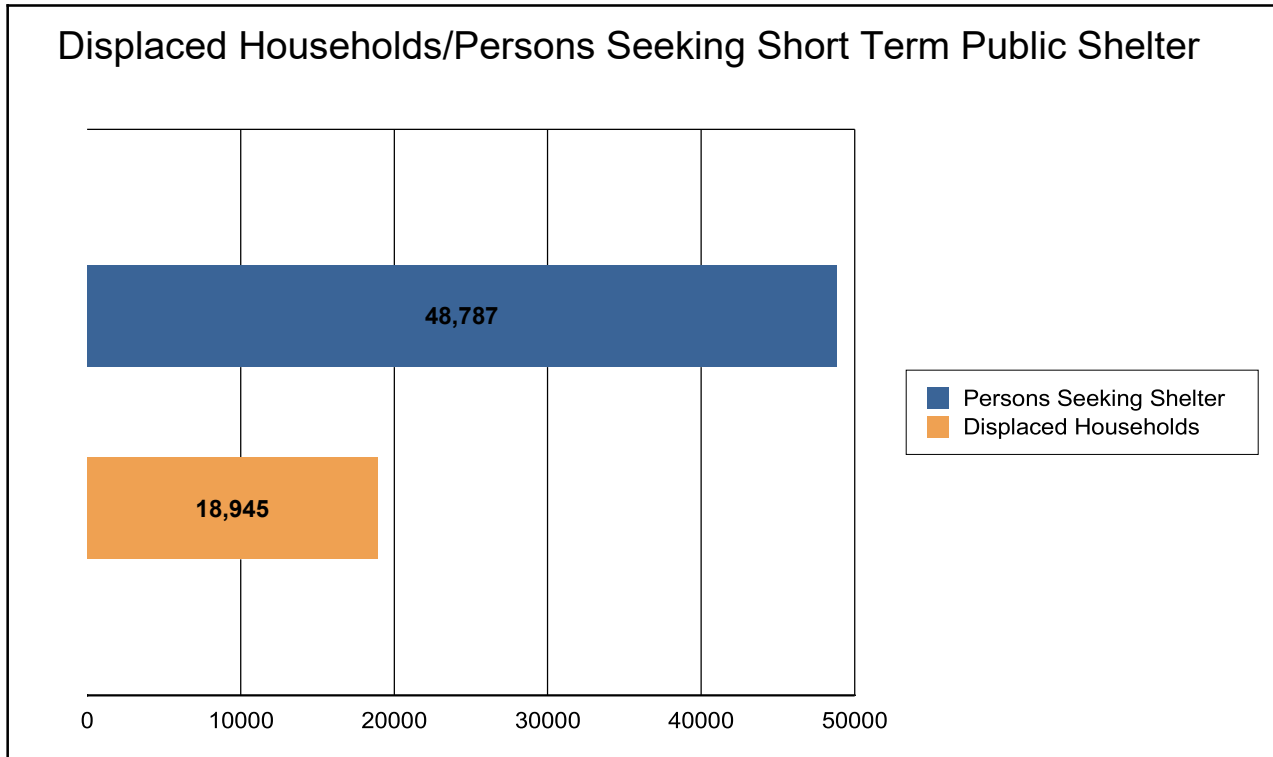
Analysis has not been performed for this Scenario.



Social Impact

Shelter Requirements

Hazus estimates the number of households that are expected to be displaced from their homes due to the flood and the associated potential evacuation. Hazus also estimates those displaced people that will require accommodations in temporary public shelters. The model estimates 18,945 households will be displaced due to the flood. Displacement includes households evacuated from within or very near to the inundated area. Of these, 48,787 people (out of a total population of 313,166) will seek temporary shelter in public shelters.



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Economic Loss

The total economic loss estimated for the flood is 1,897.96 million dollars, which represents 12.00 % of the total replacement value of the scenario buildings.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the flood. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the flood.

The total building-related losses were 1,888.22 million dollars. 1% of the estimated losses were related to the business interruption of the region. The residential occupancies made up 82.56% of the total loss. Table 6 below provides a summary of the losses associated with the building damage.

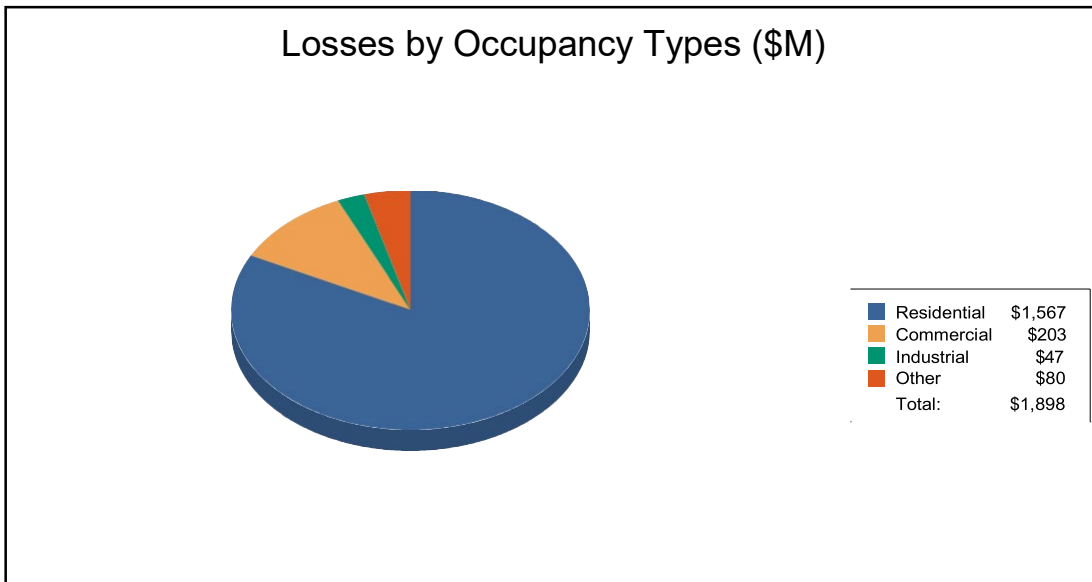


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Table 6: Building-Related Economic Loss Estimates
(Millions of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Building Loss						
	Building	1,004.77	55.72	14.30	16.99	1,091.78
	Content	558.62	141.18	27.87	59.84	787.51
	Inventory	0.00	3.47	5.06	0.40	8.92
	Subtotal	1,563.39	200.37	47.23	77.23	1,888.22
Business Interruption						
	Income	0.05	1.17	0.00	0.56	1.77
	Relocation	2.77	0.25	0.00	0.24	3.26
	Rental Income	0.66	0.11	0.00	0.01	0.78
	Wage	0.13	1.41	0.00	2.39	3.93
	Subtotal	3.61	2.94	0.00	3.19	9.74
ALL	Total	1,566.99	203.32	47.23	80.43	1,897.96





Appendix A: County Listing for the Region

- Texas
 - Brazoria



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Appendix B: Regional Population and Building Value Data

	Population	Building Value (thousands of dollars)		
		Residential	Non-Residential	Total
Texas				
Brazoria	313,166	29,401,709	4,397,274	33,798,983
Total	313,166	29,401,709	4,397,274	33,798,983
Total Study Region	313,166	29,401,709	4,397,274	33,798,983

Hazus-MH: Hurricane Global Risk Report

Region Name: Brazoria County

Hurricane Scenario: Probabilistic 1000-year Return Period

Disclaimer:

This version of Hazus utilizes 2010 Census Data.

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique.

Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Hurricane. These results can be improved by using enhanced inventory data.

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General Description of the Region

Hazus is a regional multi-hazard loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences. The primary purpose of Hazus is to provide a methodology and software application to develop multi-hazard losses at a regional scale. These loss estimates would be used primarily by local, state and regional officials to plan and stimulate efforts to reduce risks from multi-hazards and to prepare for emergency response and recovery.

The hurricane loss estimates provided in this report are based on a region that includes 1 county(ies) from the following state(s):

- Texas

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 1,443.05 square miles and contains 50 census tracts. There are over 106 thousand households in the region and has a total population of 313,166 people (2010 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 109 thousand buildings in the region with a total building replacement value (excluding contents) of 33,799 million dollars (2014 dollars). Approximately 94% of the buildings (and 87% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 109,747 buildings in the region which have an aggregate total replacement value of 33,799 million (2014 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

Building Exposure by Occupancy Type

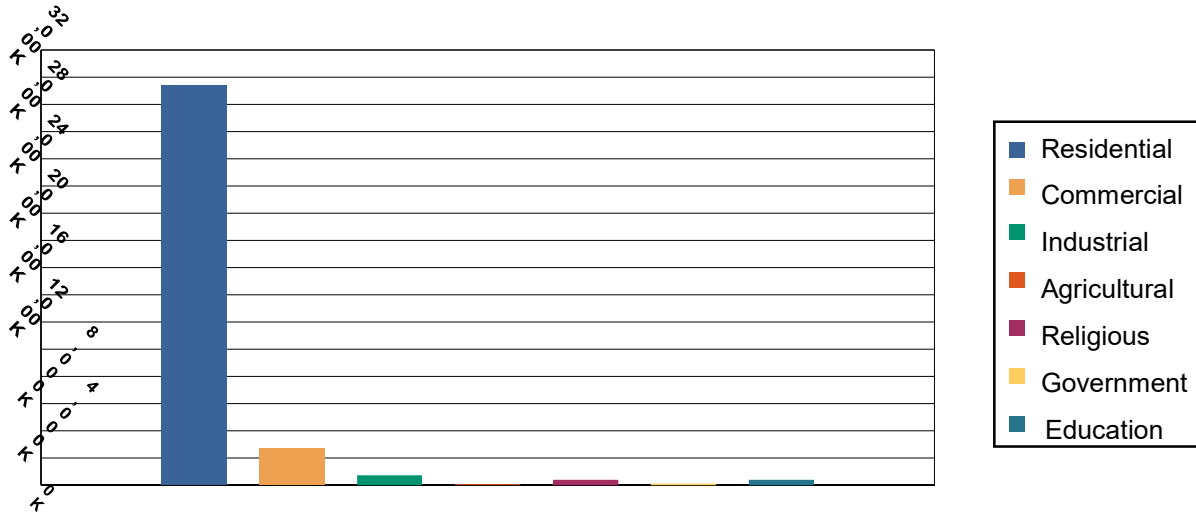


Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure (\$1000)	Percent of Tot
Residential	29,401,709	86.99 %
Commercial	2,672,546	7.91 %
Industrial	727,466	2.15 %
Agricultural	72,129	0.21 %
Religious	396,214	1.17 %
Government	125,448	0.37 %
Education	403,471	1.19 %
Total	33,798,983	100.00 %

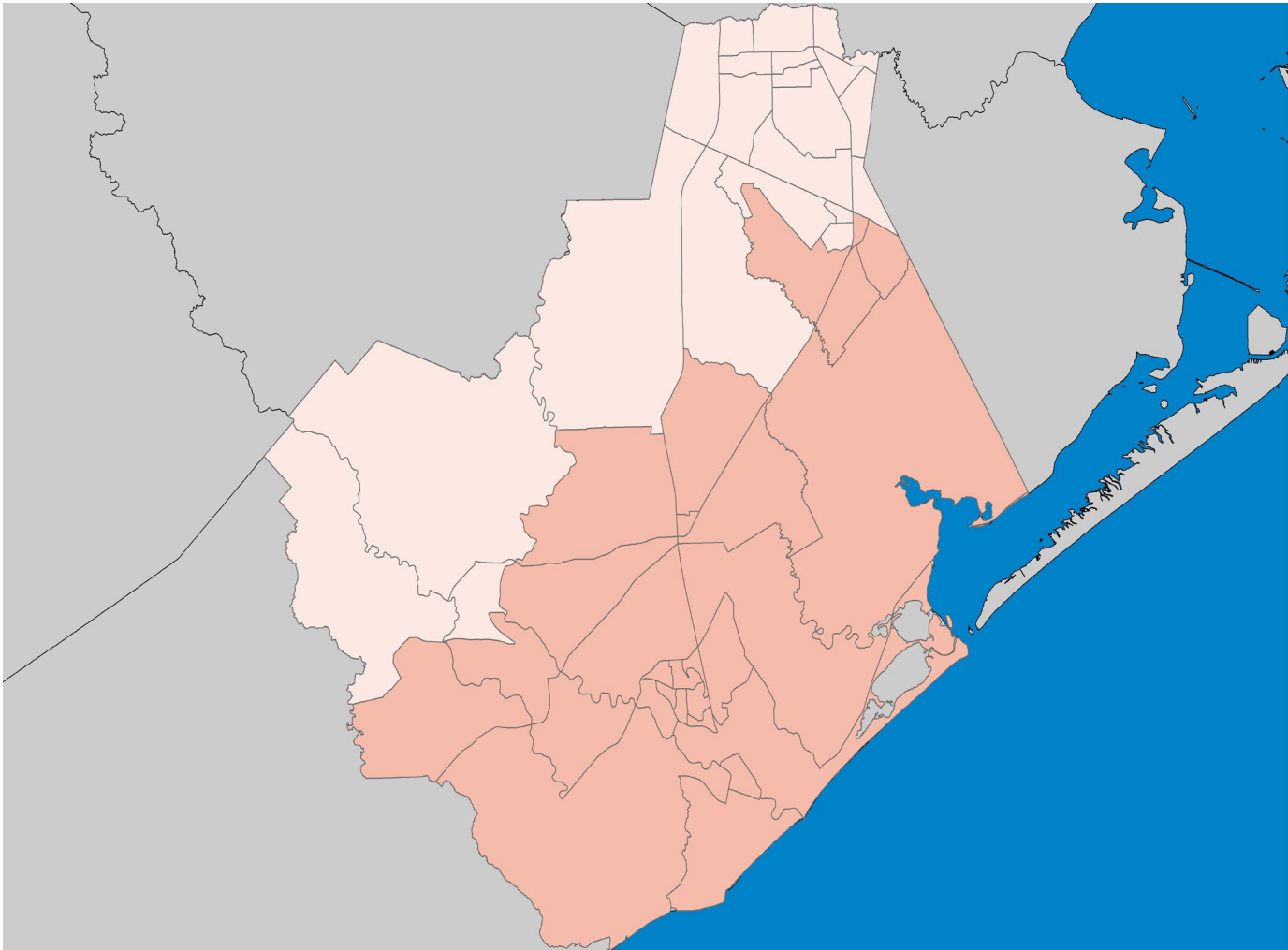
Essential Facility Inventory

For essential facilities, there are 3 hospitals in the region with a total bed capacity of 234 beds. There are 99 schools, 22 fire stations, 19 police stations and 1 emergency operation facilities.

Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Thematic Map with peak gust windfield and HU track



Scenario Name:

Probabilistic

Type:

Probabilistic

Building Damage

General Building Stock Damage

Hazus estimates that about 66,546 buildings will be at least moderately damaged. This is over 61% of the total number of buildings in the region. There are an estimated 14,446 buildings that will be completely destroyed. The definition of the 'damage states' is provided in Volume 1: Chapter 6 of the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

Expected Building Damage by Occupancy

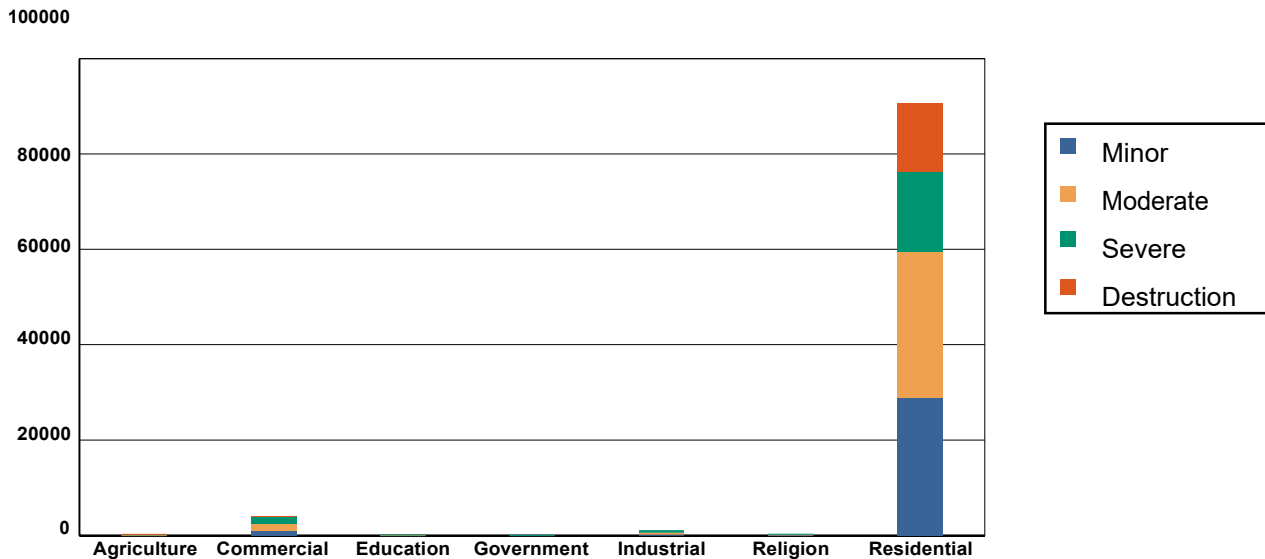


Table 2: Expected Building Damage by Occupancy: 1000 - year Event

Occupancy	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	29	9.43	36	11.82	73	23.70	118	38.51	51	16.54
Commercial	580	12.44	900	19.29	1,595	34.17	1,533	32.85	58	1.24
Education	23	13.41	27	16.11	51	30.29	67	40.05	0	0.13
Government	16	12.10	21	16.32	40	30.79	53	40.51	0	0.28
Industrial	164	12.25	227	16.89	408	30.44	531	39.55	12	0.87
Religion	59	12.71	100	21.43	150	32.02	156	33.51	2	0.34
Residential	12,026	11.71	28,992	28.24	30,511	29.72	16,814	16.38	14,324	13.95
Total	12,897		30,304		32,827		19,273		14,446	

Table 3: Expected Building Damage by Building Type : 1000 - year Event

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	78	12.16	79	12.19	210	32.55	278	43.06	0	0.04
Masonry	1,283	12.21	2,872	27.34	3,521	33.52	2,104	20.03	724	6.90
MH	10,784	79.16	388	2.85	747	5.49	245	1.80	1,458	10.70
Steel	201	12.92	177	11.38	472	30.36	684	44.01	21	1.32
Wood	8,196	10.26	24,205	30.29	23,998	30.03	13,803	17.27	9,714	12.15

Essential Facility Damage

Before the hurricane, the region had 234 hospital beds available for use. On the day of the hurricane, the model estimates that 0 hospital beds (only 0.00%) are available for use by patients already in the hospital and those injured by the hurricane. After one week, 0.00% of the beds will be in service. By 30 days, 9.00% will be operational.

Thematic Map of Essential Facilities with greater than 50% moderate

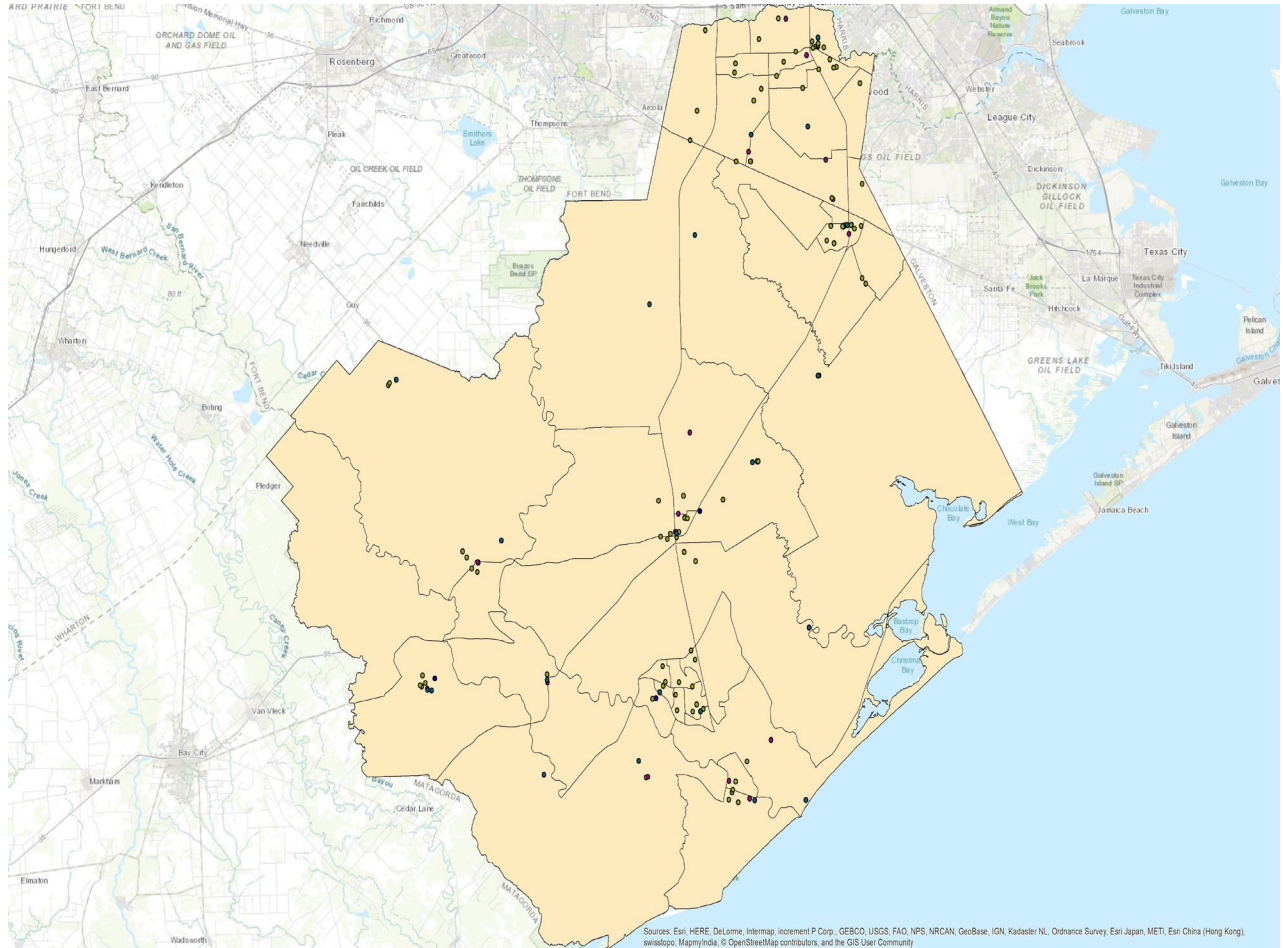
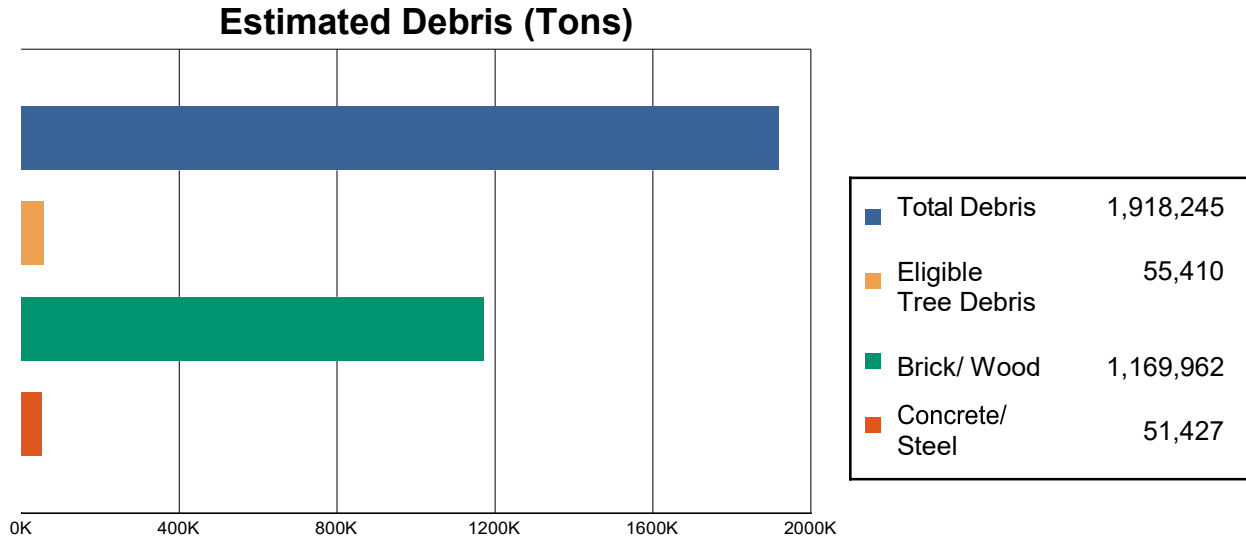


Table 4: Expected Damage to Essential Facilities

Classification	Total	# Facilities		
		Probability of at Least Moderate Damage > 50%	Probability of Complete Damage > 50%	Expected Loss of Use < 1 day
EOCs	1	1	0	1
Fire Stations	22	19	0	21
Hospitals	3	3	1	0
Police Stations	19	19	0	13
Schools	99	99	0	0

Induced Hurricane Damage

Debris Generation

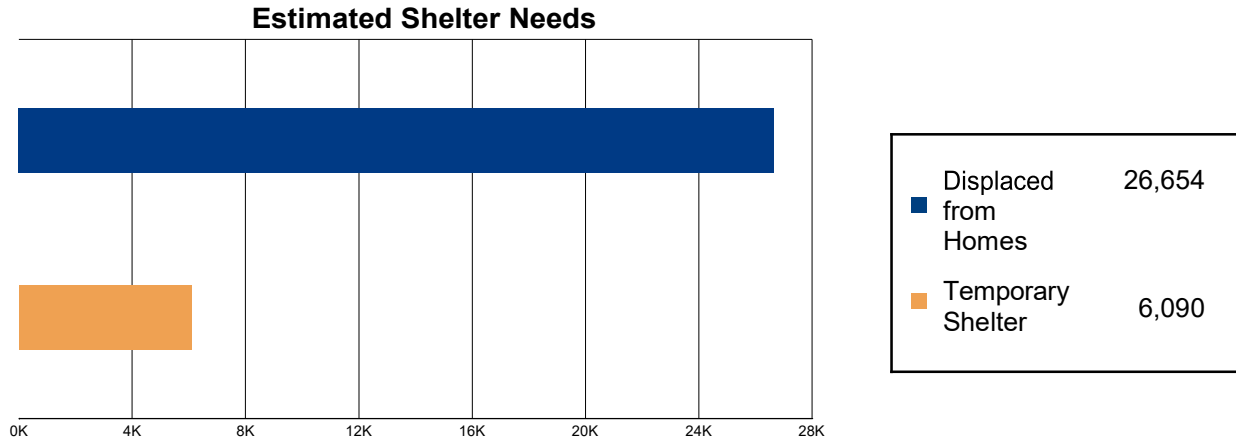


Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 1,918,245 tons of debris will be generated. Of the total amount, 632,573 tons (33%) is Other Tree Debris. Of the remaining 1,285,672 tons, Brick/Wood comprises 91% of the total, Reinforced Concrete/Steel comprises of 4% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 49210 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 55,410 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Social Impact

Shelter Requirement



Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 26,654 households to be displaced due to the hurricane. Of these, 6,090 people (out of a total population of 313,166) will seek temporary shelter in public shelters.

Economic Loss

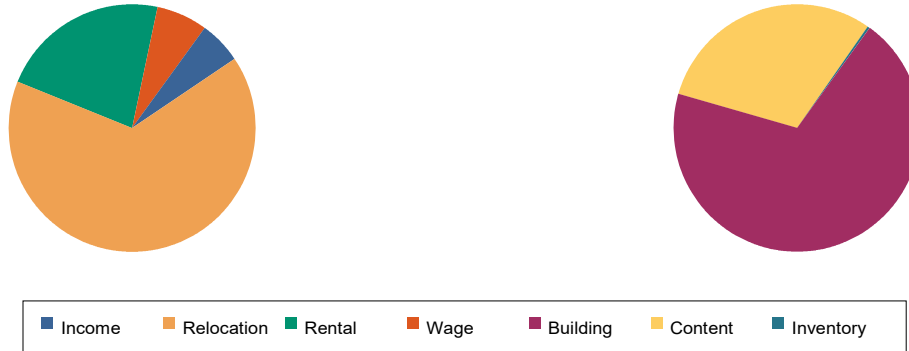
The total economic loss estimated for the hurricane is 15296.8 million dollars, which represents 45.26 % of the total replacement value of the region's buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 15,297 million dollars. 2% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 88% of the total loss. Table 5 below provides a summary of the losses associated with the building damage.

Total Loss by General Occupancy



Total Loss by Occupancy Type

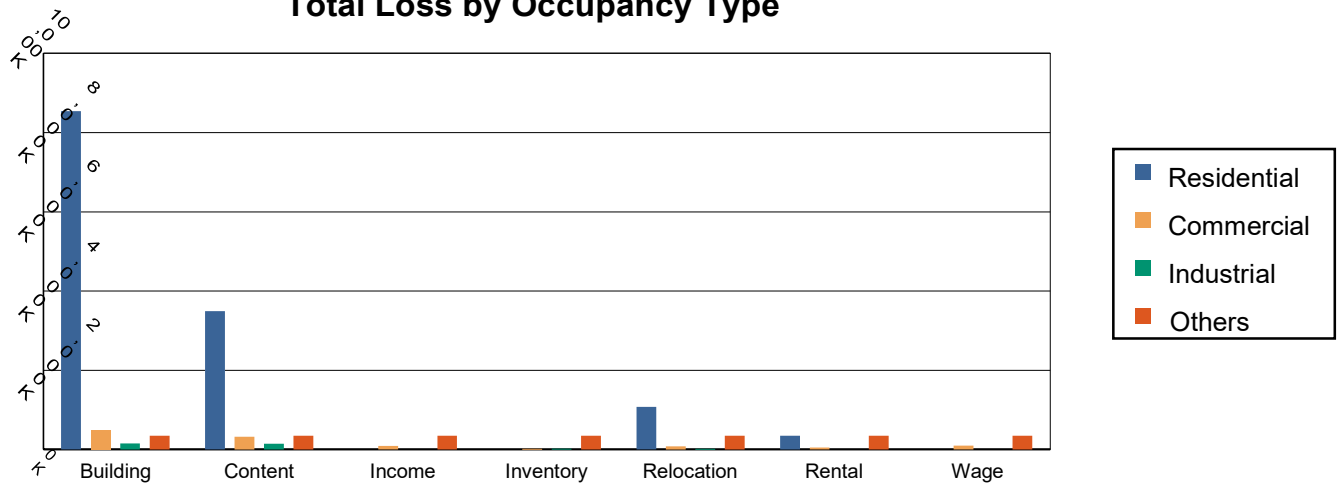


Table 5: Building-Related Economic Loss Estimates
(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Property Damage						
	Building		8,537,798.32	483,904.56	154,953.52	176,329.58
	Content		3,492,952.03	325,507.33	145,398.56	118,348.33
	Inventory		0.00	8,768.39	22,156.69	1,958.53
	Subtotal		12,030,750.35	818,180.27	322,508.77	296,636.44
Business Interruption Loss						
	Income		2,632.73	93,233.11	2,873.38	2,257.09
	Relocation		1,074,981.95	79,648.21	10,611.49	36,309.99
	Rental		351,253.79	49,340.11	2,059.39	3,844.42
	Wage		6,169.24	100,601.60	4,519.44	8,362.46
	Subtotal		1,435,037.70	322,823.03	20,063.71	50,773.95
Total						
	Total		13,465,788.05	1,141,003.30	342,572.48	347,410.39

Appendix A: County Listing for the Region

Texas

- Brazoria

Appendix B: Regional Population and Building Value Data

	Population	Building Value (thousands of dollars)		
		Residential	Non-Residential	Total
Texas				
Brazoria	313,166	29,401,709	4,397,274	33,798,983
Total	313,166	29,401,709	4,397,274	33,798,983
Study Region Total	313,166	29,401,709	4,397,274	33,798,983

Quick Assessment Report

Study Region: Brazoria County

Scenario: Probabilistic

Regional Statistics

Area (Square Miles)	1,443
Number of Census Tracts	50
Number of People in the Region	313,166
General Building Stock	

<i>Occupancy</i>	<i>Building Count</i>	<i>Dollar Exposure (\$ K)</i>
Residential	102,667	29,401,709
Commercial	4,666	2,672,546
Other	2,414	1,724,728
Total	109,747	33,798,983

Scenario Results

Number of Residential Buildings Damaged

<i>Return Period</i>	<i>Minor</i>	<i>Moderate</i>	<i>Severe</i>	<i>Destruction</i>	<i>Total</i>
10	390	13	0	0	403
20	12,270	1,472	51	72	13,865
50	29,314	9,603	1,523	1,232	41,672
100	24,995	13,995	4,376	3,486	46,852
200	29,961	19,406	8,370	6,715	64,452
500	31,997	27,467	13,405	11,857	84,725
1000	28,992	30,511	16,814	14,324	90,641

Number of Buildings Damaged

<i>Return Period</i>	<i>Minor</i>	<i>Moderate</i>	<i>Severe</i>	<i>Destruction</i>	<i>Total</i>
10	441	15	0	0	457
20	12,937	1,658	72	74	14,741
50	30,804	10,617	1,855	1,246	44,522
100	26,112	15,159	5,131	3,519	49,920
200	31,430	21,177	9,801	6,782	69,190
500	33,445	29,670	15,515	11,967	90,598
1000	30,304	32,827	19,273	14,446	96,850

Shelter Requirements

<i>Return Period</i>	<i>Displaced Households (#Households)</i>	<i>Short Term Shelter (#People)</i>
10	0	0
20	104	21
50	1,260	270
100	5,397	1,176
200	11,256	2,624
500	20,468	4,709
1000	26,654	6,090

Economic Loss (x 1000)

<i>ReturnPeriod</i>	<i>Property Damage (Capital Stock) Losses</i>		<i>Business Interruption (Income) Losses</i>
	<i>Residential</i>	<i>Total</i>	
10	35,116	35,813	795
20	344,228	364,500	33,776
50	1,725,419	1,909,965	288,220
100	3,552,626	3,960,211	577,756
200	5,693,060	6,555,734	985,210
500	9,483,735	10,702,035	1,524,986
1000	12,030,750	13,468,076	1,828,698
Annualized	128,635	144,315	20,474

Disclaimer:

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using HAZUS loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Hurricane. These results can be improved by using enhanced inventory data.



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Item 9.

RiskMAP
Increasing Resilience Together

Hazus: Hurricane Global Risk Report

Region Name: Hurricane Scenario:

Brazoria

Cat 5 HGAC Scenario

Disclaimer:

This version of Hazus utilizes 2010 Census Data.

Totals only reflect data for those census tracts/blocks included in the user's study region.

The estimates of social and economic impacts contained in this report were produced using Hazus loss estimation methodology software which is based on current scientific and engineering knowledge. There are uncertainties inherent in any loss estimation technique. Therefore, there may be significant differences between the modeled results contained in this report and the actual social and economic losses following a specific Hurricane. These results can be improved by using enhanced inventory data.



Item 9.

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General Description of the Region

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The hurricane loss estimates provided in this report are based on a region that includes 1 county(ies) from the following state(s):

- Texas

Note:

Appendix A contains a complete listing of the counties contained in the region.

The geographical size of the region is 1,443.05 square miles and contains 50 census tracts. There are over 106 thousand households in the region and a total population of 313,166 people (2010 Census Bureau data). The distribution of population by State and County is provided in Appendix B.

There are an estimated 109 thousand buildings in the region with a total building replacement value (excluding contents) of 31,721 million dollars (2014 dollars). Approximately 94% of the buildings (and 86% of the building value) are associated with residential housing.

Building Inventory

General Building Stock

Hazus estimates that there are 109,747 buildings in the region which have an aggregate total replacement value of 31,721 million (2014 dollars). Table 1 presents the relative distribution of the value with respect to the general occupancies. Appendix B provides a general distribution of the building value by State and County.

Building Exposure by Occupancy Type

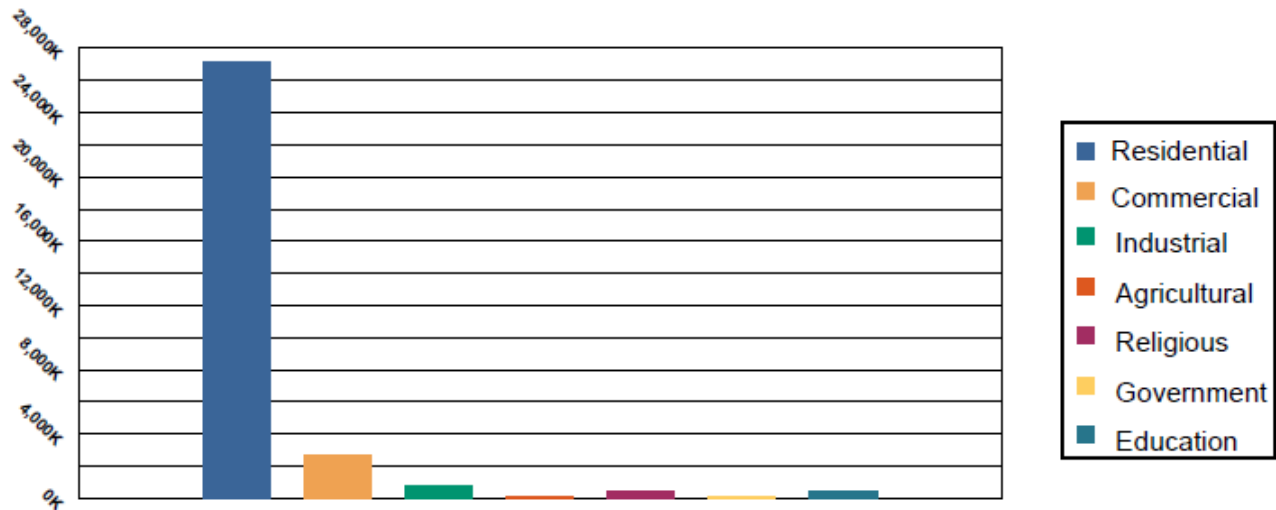


Table 1: Building Exposure by Occupancy Type

Occupancy	Exposure (\$1000)	Percent of Tot
Residential	27,197,675	85.74 %
Commercial	2,725,704	8.59%
Industrial	737,081	2.32%
Agricultural	80,369	0.25%
Religious	415,968	1.31%
Government	135,010	0.43%
Education	429,622	1.35%
Total	31,721,429	100.00%

Essential Facility Inventory

For essential facilities, there are 5 hospitals in the region with a total bed capacity of 357 beds. There are 122 schools, 32 fire stations, 27 police stations and 11 emergency operation facilities.

Hurricane Scenario

Hazus used the following set of information to define the hurricane parameters for the hurricane loss estimate provided in this report.

Scenario Name: Cat 5 HGAC Scenario
Type: Deterministic
Maximum Peak Gust in Study Region: 193 mph

User Defined Storm Track Input Data

Point	Latitude	Longitude	Time Step (hour)	Translation Speed (mph)	Radius To Max Winds (miles)	Max. Sustained Wind Speed (mph @ 10m)	Cental Pressure (mBar)	Profile Parameter	Radius to Hurricane Force Winds (miles)
1	26.60	-91.36	--	8.00	30.00	157.00	920.00	--	--
2	27.64	-93.59	--	8.00	30.00	157.00	920.00	--	--
3	28.52	-94.51	--	8.00	30.00	157.00	920.00	--	--
4	29.12	-95.05	--	8.00	30.00	157.00	920.00	--	--
5	29.63	-95.58	--	8.00	30.00	157.00	920.00	--	--
6	30.81	-96.17	--	8.00	30.00	157.00	920.00	--	--

Building Damage

General Building Stock Damage

Hazus estimates that about 109,375 buildings will be at least moderately damaged. This is over 100% of the total number of buildings in the region. There are an estimated 85,515 buildings that will be completely destroyed. The definition of the 'damage states' is provided in the Hazus Hurricane technical manual. Table 2 below summarizes the expected damage by general occupancy for the buildings in the region. Table 3 summarizes the expected damage by general building type.

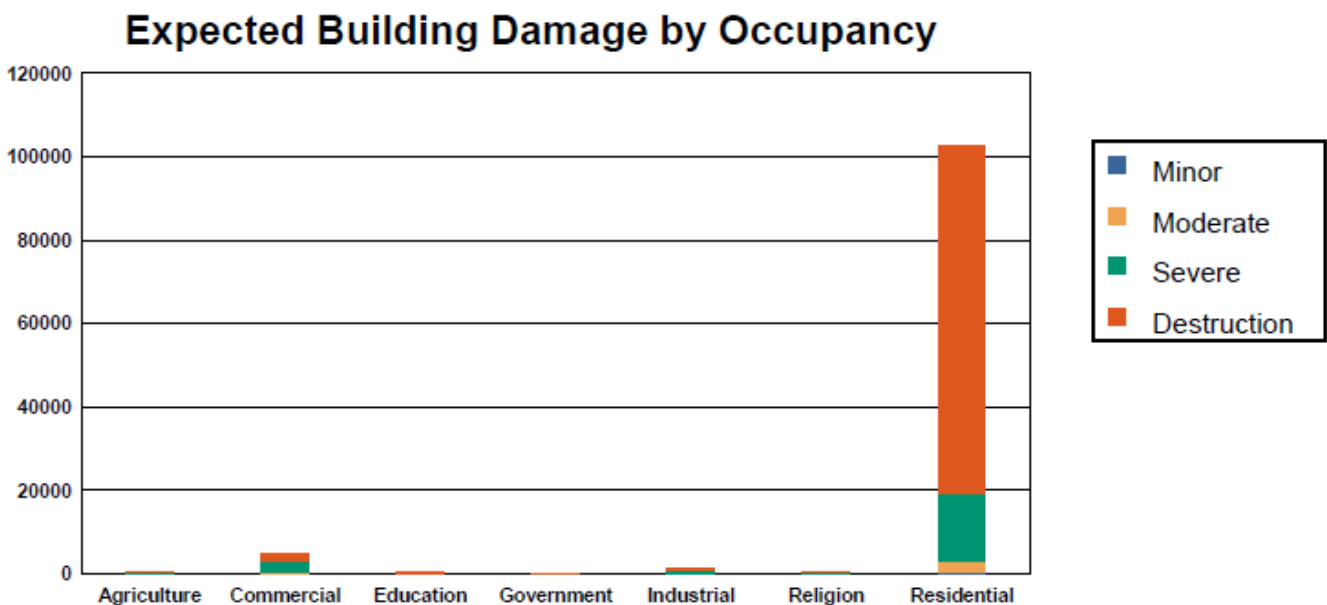


Table 2: Expected Building Damage by Occupancy

Occupancy	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	0.63	0.21	1.22	0.40	7.65	2.50	167.65	54.79	128.85	42.11
Commercial	12.27	0.26	24.70	0.53	189.54	4.06	2,930.71	62.81	1,508.78	32.34
Education	0.57	0.34	1.01	0.60	6.07	3.61	127.78	76.06	32.58	19.39
Government	0.40	0.31	0.73	0.56	4.61	3.52	96.45	73.62	28.81	21.99
Industrial	3.66	0.27	6.99	0.52	45.45	3.39	975.99	72.73	309.90	23.09
Religion	1.40	0.30	2.65	0.57	20.07	4.30	316.51	67.78	126.36	27.06
Residential	21.75	0.02	294.47	0.29	2,827.78	2.75	16,143.54	15.72	83,379.45	81.21
Total	40.69		331.77		3,101.17		20,758.64		85,514.73	

Table 3: Expected Building Damage by Building Type

Building Type	None		Minor		Moderate		Severe		Destruction	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Concrete	3	0.29	6	0.53	45	4.20	972	91.47	37	3.51
Masonry	15	0.12	54	0.44	427	3.50	4,675	38.29	7,038	57.65
MH	15	0.10	58	0.42	372	2.65	704	5.02	12,875	91.80
Steel	7	0.31	11	0.49	64	2.96	1,490	68.45	605	27.79
Wood	13	0.02	220	0.27	2,234	2.78	13,144	16.38	64,635	80.55

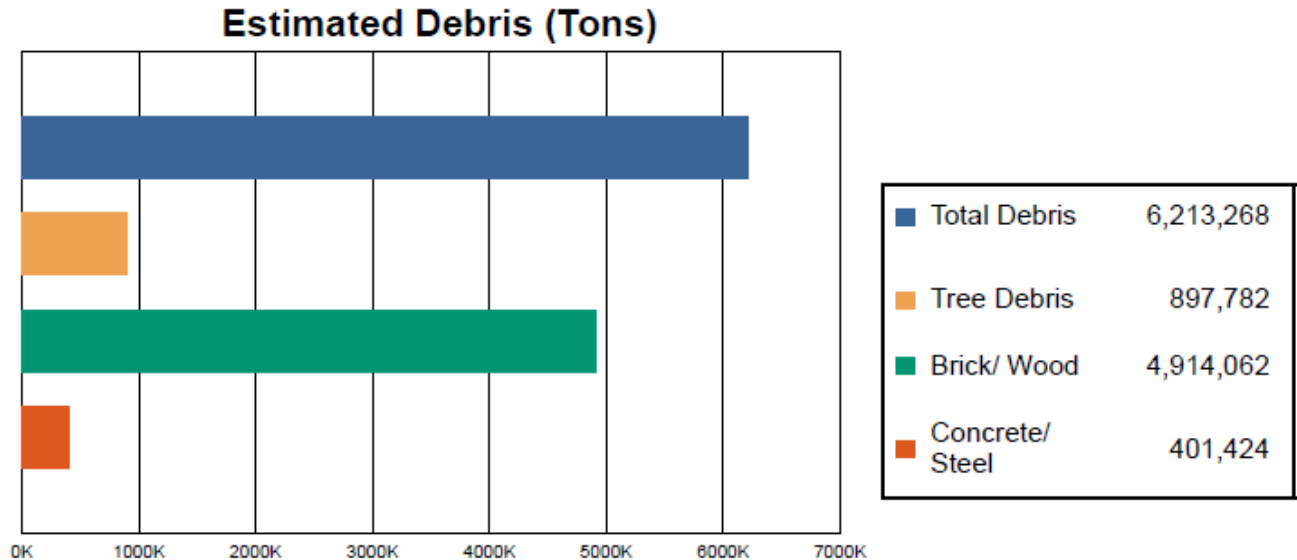


Essential Facility Damage

Before the hurricane, the region had 357 hospital beds available for use. On the day of the hurricane, the model estimates that 0 hospital beds (only 0.00%) are available for use by patients already in the hospital and those injured by the hurricane. After one week, 0.00% of the beds will be in service. By 30 days, 0.00% will be operational.

Induced Hurricane Damage

Debris Generation

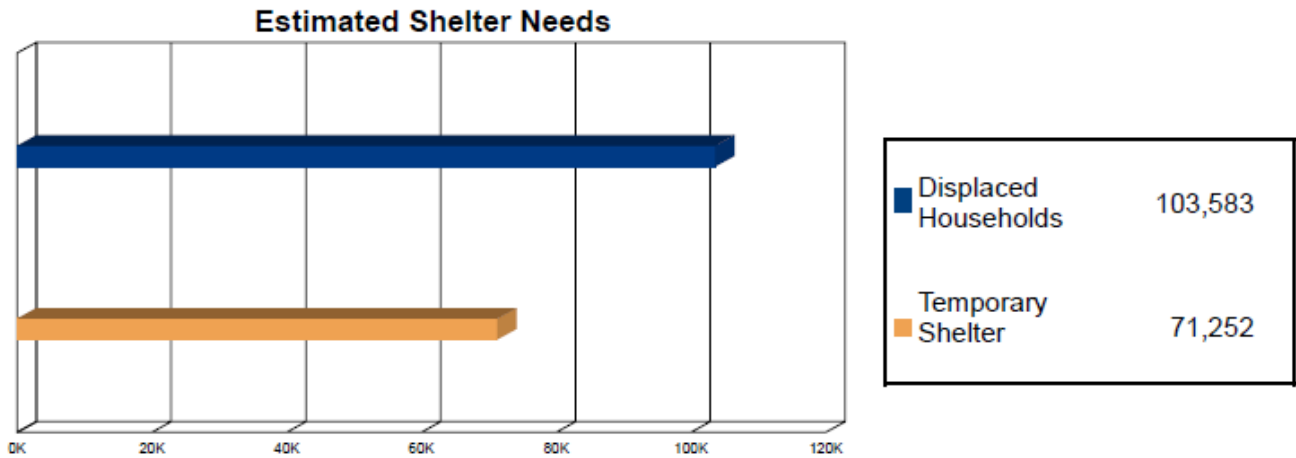


Hazus estimates the amount of debris that will be generated by the hurricane. The model breaks the debris into four general categories: a) Brick/Wood, b) Reinforced Concrete/Steel, c) Eligible Tree Debris, and d) Other Tree Debris. This distinction is made because of the different types of material handling equipment required to handle the debris.

The model estimates that a total of 6,213,268 tons of debris will be generated. Of the total amount, 826,540 tons (13%) is Other Tree Debris. Of the remaining 5,386,728 tons, Brick/Wood comprises 91% of the total, Reinforced Concrete/Steel comprises of 7% of the total, with the remainder being Eligible Tree Debris. If the building debris tonnage is converted to an estimated number of truckloads, it will require 212619 truckloads (@25 tons/truck) to remove the building debris generated by the hurricane. The number of Eligible Tree Debris truckloads will depend on how the 71,242 tons of Eligible Tree Debris are collected and processed. The volume of tree debris generally ranges from about 4 cubic yards per ton for chipped or compacted tree debris to about 10 cubic yards per ton for bulkier, uncompacted debris.

Social Impact

Shelter Requirement



Hazus estimates the number of households that are expected to be displaced from their homes due to the hurricane and the number of displaced people that will require accommodations in temporary public shelters. The model estimates 103,583 households to be displaced due to the hurricane. Of these, 71,252 people (out of a total population of 313,166) will seek temporary shelter in public shelters.

Economic Loss

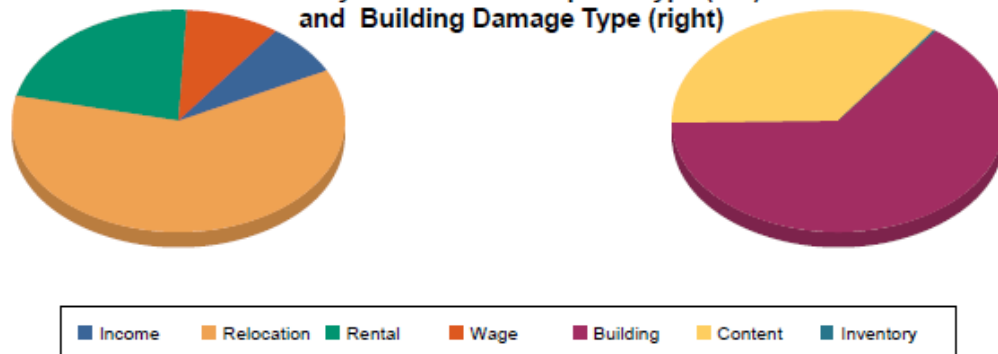
The total economic loss estimated for the hurricane is 49957.1 million dollars, which represents 157.49 % of the total replacement value of the region's buildings.

Building-Related Losses

The building related losses are broken into two categories: direct property damage losses and business interruption losses. The direct property damage losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the hurricane. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the hurricane.

The total property damage losses were 49,957 million dollars. 11% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 83% of the total loss. Table 5 below provides a summary of the losses associated with the building damage.

Loss by Business Interruption Type (left) and Building Damage Type (right)



Loss Type by General Occupancy

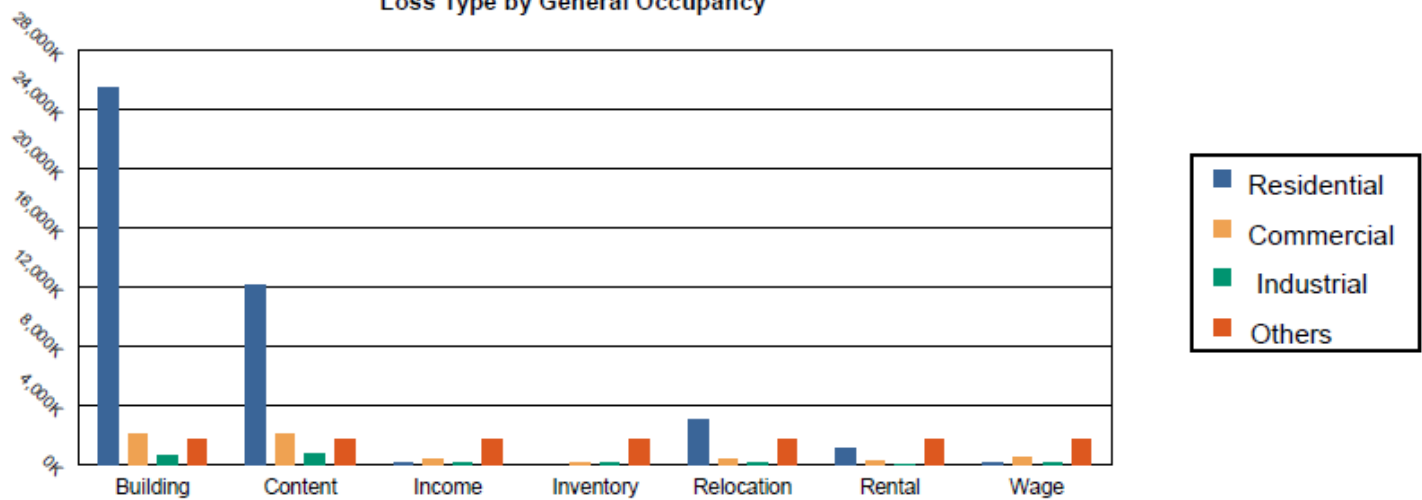


Table 5: Building-Related Economic Loss Estimates
(Thousands of dollars)

Category	Area	Residential	Commercial	Industrial	Others	Total
Property Damage						
	Building	25,394,592.92	2,059,671.26	566,151.01	766,925.17	28,787,340.36
	Content	12,082,514.69	1,995,456.25	716,025.97	731,465.81	15,525,462.72
	Inventory	0.00	49,394.39	112,205.31	7,490.06	169,089.76
	Subtotal	37,477,107.61	4,104,521.90	1,394,382.30	1,505,881.04	44,481,892.85
Business Interruption Loss						
	Income	15,499.12	373,868.75	9,813.93	9,852.62	409,034.42
	Relocation	2,946,505.56	267,720.06	25,664.50	113,287.53	3,353,177.66
	Rental	1,008,662.46	186,807.19	5,790.10	13,473.65	1,214,733.41
	Wage	36,426.65	413,018.54	15,344.37	33,434.43	498,223.99
	Subtotal	4,007,093.80	1,241,414.54	56,612.90	170,048.23	5,475,169.48



Item 9.
FEMA

Total

Total	41,484,201.41	5,345,936.43	1,450,995.20	1,675,929.28	49,957,062.32
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Item 9.
FEMA

Appendix A: County Listing for the Region

Texas
- Brazoria

Appendix B: Regional Population and Building Value Data

	Population	Building Value (thousands of dollars)		
		Residential	Non-Residential	Total
Texas				
Brazoria	313,166	27,197,675	4,523,754	31,721,429
Total	313,166	27,197,675	4,523,754	31,721,429
Study Region Total	313,166	27,197,675	4,523,754	31,721,429

Appendix D – Repetitive Loss Properties

APPENDIX D: REPETITIVE LOSS PROPERTIES

ID Number	Community Name	Insured?	Occupancy	Losses	Total Paid	SRL Indicator
0043136	Alvin, City of	No	Single Fmly	2	46,237.00	
0039608	Alvin, City of	No	Single Fmly	2	26,568.39	
0025303	Alvin, City of	No	Single Fmly	2	33,855.89	
0025979	Alvin, City of	No	Single Fmly	2	20,093.44	
0034406	Alvin, City of	No	Single Fmly	2	22,603.52	
0037725	Alvin, City of	No	Single Fmly	2	28,011.42	
0044696	Alvin, City of	No	Single Fmly	4	42,795.95	
0045113	Alvin, City of	No	Single Fmly	3	31,783.93	
0017532	Alvin, City of	No	Other Resid	3	80,190.94	
0025767	Alvin, City of	No	Single Fmly	2	15,013.86	
0018679	Alvin, City of	No	Single Fmly	2	16,362.74	
0025650	Alvin, City of	No	Single Fmly	8	194,513.27	VU
0025914	Alvin, City of	Sdf	Single Fmly	5	140,630.86	V
0186126	Alvin, City of	No	Single Fmly	2	13,736.02	
0017530	Alvin, City of	No	Other Resid	2	41,622.42	
0017531	Alvin, City of	No	Other Resid	2	42,543.60	
0119332	Alvin, City of	No	Single Fmly	2	7,028.87	
0038459	Alvin, City of	No	Single Fmly	2	8,001.13	
0091027	Alvin, City of	Yes	Single Fmly	7	112,386.10	V
0172629	Alvin, City of	No	Single Fmly	4	51,396.47	VU
0186127	Alvin, City of	No	Single Fmly	2	42,779.08	
0262697	Alvin, City of	Yes	Single Fmly	2	187,084.33	
0093931	Alvin, City of	Yes	Single Fmly	4	45,562.95	
0181441	Alvin, City of	No	Single Fmly	2	29,500.92	
0002706	Alvin, City of	No	Single Fmly	7	25,295.97	
0012934	Alvin, City of	No	Single Fmly	2	24,694.51	
0044043	Alvin, City of	No	Single Fmly	2	37,764.26	
0017471	Alvin, City of	No	Single Fmly	2	23,186.56	
0115764	Alvin, City of	No	Single Fmly	2	44,839.61	
0012871	Alvin, City of	No	Assmd Condo	8	93,909.49	VU
0186547	Alvin, City of	Yes	Single Fmly	3	129,834.67	
0013252	Alvin, City of	No	Single Fmly	8	134,372.79	VU
0262686	Alvin, City of	Yes	Single Fmly	2	71,774.23	
0091319	Alvin, City of	No	Single Fmly	3	36,007.08	
0186093	Alvin, City of	No	Single Fmly	2	5,770.49	
0179567	Alvin, City of	No	Single Fmly	2	7,182.03	
0185406	Alvin, City of	No	Single Fmly	2	16,430.78	
0044581	Alvin, City of	No	Othr-Nonres	5	41,072.42	VNU
0035331	Alvin, City of	No	Single Fmly	2	35,300.95	
0083529	Alvin, City of	No	Othr-Nonres	3	14,522.54	
0211587	Alvin, City of	No	2-4 Family	2	62,991.36	
0186085	Alvin, City of	Yes	Single Fmly	2	71,096.80	
0262683	Alvin, City of	Yes	Single Fmly	2	26,038.70	
0212640	Alvin, City of	Yes	Single Fmly	2	12,786.90	
0186118	Alvin, City of	No	Single Fmly	2	14,338.60	
0108987	Alvin, City of	Sdf	Single Fmly	6	283,637.73	V
0169739	Alvin, City of	No	Single Fmly	4	63,000.73	
0025156	Alvin, City of	No	Othr-Nonres	2	16,815.93	
0096873	Alvin, City of	Yes	Single Fmly	5	60,338.99	
0186548	Alvin, City of	No	Single Fmly	2	65,545.18	
0018615	Alvin, City of	No	Single Fmly	3	17,930.71	

0068838	Alvin, City of	No	Single Fmly	2	5,081.69	
0186160	Alvin, City of	Yes	Single Fmly	2	111,779.18	
0044364	Alvin, City of	No	Othr-Nonres	2	4,271.50	
0002937	Alvin, City of	No	Single Fmly	5	67,573.24	VU
0185925	Alvin, City of	Yes	Single Fmly	3	94,036.24	
0025983	Alvin, City of	No	Single Fmly	2	14,718.00	
0036616	Alvin, City of	No	Single Fmly	2	39,416.14	
0181159	Alvin, City of	Yes	Single Fmly	3	102,127.05	
0183779	Alvin, City of	No	Single Fmly	3	103,657.68	
0025954	Alvin, City of	No	Single Fmly	2	14,712.84	
0068830	Alvin, City of	Yes	Single Fmly	5	65,560.64	
0069910	Alvin, City of	No	Single Fmly	3	42,033.54	
0185441	Alvin, City of	No	Assmd Condo	2	11,752.61	
0185254	Alvin, City of	No	Single Fmly	2	23,884.08	
0091026	Alvin, City of	No	Single Fmly	3	42,891.30	
0094233	Alvin, City of	Yes	Single Fmly	3	60,116.71	
0262682	Alvin, City of	Yes	Single Fmly	2	88,131.69	
0185383	Alvin, City of	No	Single Fmly	2	13,526.00	
0096871	Alvin, City of	No	Othr-Nonres	2	6,963.84	
0044015	Alvin, City of	No	Single Fmly	2	14,599.11	
0018500	Alvin, City of	Yes	Single Fmly	3	25,277.78	
0026659	Alvin, City of	Yes	Single Fmly	3	20,239.02	
0026843	Alvin, City of	No	Single Fmly	2	23,820.71	
0025092	Alvin, City of	No	Single Fmly	2	20,630.71	
0096878	Alvin, City of	Yes	Single Fmly	5	141,139.80	V
0185556	Alvin, City of	Yes	Single Fmly	3	49,718.70	
0039734	Alvin, City of	No	Single Fmly	2	15,500.00	
0169084	Alvin, City of	No	Single Fmly	4	69,887.87	VU
0262698	Alvin, City of	Yes	Single Fmly	2	63,132.53	
0026006	Alvin, City of	Sdf	Single Fmly	7	205,694.67	V
0180165	Alvin, City of	Yes	Single Fmly	4	81,023.75	
0025896	Alvin, City of	Sdf	Single Fmly	4	106,073.60	V
0118860	Alvin, City of	Sdf	Single Fmly	4	54,609.94	V
0038040	Alvin, City of	No	Single Fmly	5	68,622.29	
0185093	Alvin, City of	Yes	Single Fmly	3	92,324.27	P
0068846	Alvin, City of	Sdf	Single Fmly	7	178,132.27	V
0180134	Alvin, City of	Yes	Single Fmly	4	115,985.68	V
0185562	Alvin, City of	Yes	Single Fmly	2	28,956.16	
0040526	Alvin, City of	No	Single Fmly	4	5,210.36	
0017301	Alvin, City of	Yes	Single Fmly	2	18,418.99	
0168559	Alvin, City of	Yes	Single Fmly	2	12,584.46	
0026052	Alvin, City of	No	Single Fmly	2	12,032.80	PU
0045107	Alvin, City of	Yes	Single Fmly	5	104,082.22	P
0134935	Alvin, City of	No	Single Fmly	3	36,800.83	
0068827	Alvin, City of	No	Single Fmly	2	19,223.06	
0018475	Alvin, City of	No	Single Fmly	2	21,348.16	
0026317	Alvin, City of	No	Single Fmly	2	18,965.02	
0068828	Alvin, City of	No	Single Fmly	2	28,595.87	
0026446	Alvin, City of	No	Single Fmly	2	21,256.83	
0017492	Alvin, City of	No	Single Fmly	2	30,687.64	
0018380	Alvin, City of	Yes	Single Fmly	5	90,867.84	V
0043905	Alvin, City of	No	Other Resid	3	27,292.20	
0037512	Alvin, City of	No	Other Resid	2	21,030.00	
0043906	Alvin, City of	No	Other Resid	2	26,908.39	

0045108	Alvin, City of	No	Single Fmly	2	6,979.62	
0068832	Alvin, City of	No	Othr-Nonres	2	38,098.65	
0068835	Alvin, City of	Yes	Single Fmly	3	46,801.13	
0044706	Alvin, City of	Yes	Single Fmly	3	80,912.91	
0118804	Alvin, City of	No	Single Fmly	5	101,968.74	MVU
0168132	Alvin, City of	No	Single Fmly	5	105,449.79	MVU
0069902	Alvin, City of	Yes	Single Fmly	4	159,106.93	MV
0017797	Angleton, City of	No	Single Fmly	2	13,339.47	
0039824	Angleton, City of	No	Single Fmly	2	18,699.13	
0017798	Angleton, City of	No	Othr-Nonres	2	13,084.37	
0026690	Angleton, City of	No	Single Fmly	2	5,676.81	
0046456	Angleton, City of	No	2-4 Family	2	4,952.81	
0098432	Angleton, City of	No	Single Fmly	2	4,227.05	
0042414	Angleton, City of	No	Single Fmly	10	150,187.03	VU
0038393	Angleton, City of	No	Single Fmly	2	6,612.14	
0004492	Angleton, City of	No	Single Fmly	2	17,486.92	
0068987	Angleton, City of	No	Single Fmly	4	12,787.95	
0241877	Angleton, City of	No	Single Fmly	2	60,037.03	
0000800	Angleton, City of	No	Single Fmly	9	164,910.64	VU
0001873	Angleton, City of	Sdf	Single Fmly	8	164,011.86	V
0026135	Angleton, City of	Sdf	Single Fmly	5	52,195.91	V
0068991	Angleton, City of	No	Single Fmly	2	8,274.56	
0093902	Angleton, City of	No	Single Fmly	2	28,842.08	
0045764	Angleton, City of	No	Single Fmly	3	20,609.62	
0037424	Angleton, City of	Sdf	Single Fmly	4	78,309.75	V
0068978	Angleton, City of	Yes	Single Fmly	2	12,980.02	
0013091	Angleton, City of	No	Single Fmly	2	5,490.38	
0077125	Angleton, City of	No	Single Fmly	2	16,618.44	
0025350	Angleton, City of	No	Single Fmly	6	92,122.44	VU
0118938	Angleton, City of	No	Single Fmly	2	5,793.80	
0069694	Angleton, City of	No	Single Fmly	2	3,868.55	
0017804	Angleton, City of	Sdf	Single Fmly	5	40,198.06	V
0241492	Angleton, City of	No	Single Fmly	2	7,526.06	
0262773	Angleton, City of	Yes	Single Fmly	2	26,725.19	
0093940	Angleton, City of	No	Single Fmly	2	9,092.40	
0043406	Angleton, City of	No	Single Fmly	2	8,420.82	
0026358	Angleton, City of	No	Single Fmly	5	10,667.28	
0045057	Angleton, City of	No	Single Fmly	2	7,010.74	
0038461	Angleton, City of	No	Single Fmly	5	27,090.94	
0043608	Angleton, City of	No	Single Fmly	5	27,642.42	
0046301	Angleton, City of	No	Single Fmly	4	18,292.72	
0167356	Angleton, City of	Yes	Single Fmly	2	17,241.21	
0068984	Angleton, City of	No	Single Fmly	2	11,789.94	
0042918	Angleton, City of	Yes	Single Fmly	2	13,619.03	
0026560	Angleton, City of	No	Single Fmly	2	11,459.55	
0018586	Angleton, City of	No	Single Fmly	2	9,886.00	
0042272	Angleton, City of	Yes	Single Fmly	3	28,965.49	
0017510	Angleton, City of	Yes	Single Fmly	3	41,981.64	
0170982	Angleton, City of	No	Single Fmly	2	24,257.32	
0168453	Angleton, City of	No	Single Fmly	3	33,212.86	
0170983	Angleton, City of	No	Single Fmly	2	8,798.36	
0037487	Angleton, City of	No	Single Fmly	2	27,871.12	
0026467	Angleton, City of	No	Single Fmly	2	21,501.07	
0033619	Angleton, City of	No	Single Fmly	2	26,082.85	

0042755	Angleton, City of	Yes	Single Fmly	2	19,006.41	
0025582	Angleton, City of	No	Single Fmly	2	26,698.91	
0026842	Angleton, City of	No	Single Fmly	7	187,020.51	VU
0046353	Angleton, City of	No	Othr-Nonres	2	13,769.00	
0068986	Angleton, City of	Yes	Single Fmly	3	23,985.96	
0035285	Angleton, City of	No	Othr-Nonres	2	6,024.22	
0026841	Angleton, City of	Sdf	Single Fmly	5	85,722.42	V
0008370	Angleton, City of	No	Single Fmly	5	30,652.15	
0241631	Angleton, City of	Yes	Single Fmly	2	7,395.80	
0026008	Angleton, City of	No	Single Fmly	2	6,994.09	
0172280	Angleton, City of	Yes	Single Fmly	3	31,541.81	
0026130	Angleton, City of	No	Single Fmly	2	9,132.30	
0043634	Angleton, City of	No	Single Fmly	2	6,810.00	
0017793	Angleton, City of	No	Single Fmly	2	3,067.75	
0043453	Angleton, City of	No	Single Fmly	2	3,127.62	
0262771	Angleton, City of	Yes	Single Fmly	2	312,767.59	P
0036349	Angleton, City of	No	Single Fmly	2	8,256.94	
0077080	Angleton, City of	No	Single Fmly	2	10,272.60	
0017816	Angleton, City of	No	Single Fmly	7	59,498.02	VU
0068989	Angleton, City of	No	Single Fmly	2	3,654.45	
0017767	Angleton, City of	No	Single Fmly	2	9,849.88	
0004923	Angleton, City of	No	Single Fmly	5	87,727.10	VU
0025555	Angleton, City of	Yes	Single Fmly	2	9,853.65	
0068980	Angleton, City of	No	Othr-Nonres	3	13,578.75	
0068981	Angleton, City of	No	Single Fmly	5	149,997.94	VU
0012898	Angleton, City of	Sdf	Single Fmly	7	207,224.97	V
0013043	Angleton, City of	No	Single Fmly	3	35,932.96	
0245319	Angleton, City of	No	Single Fmly	2	3,756.88	
0171472	Angleton, City of	No	Othr-Nonres	2	49,100.41	
0048719	Angleton, City of	No	Othr-Nonres	5	64,163.10	
0044660	Angleton, City of	No	Othr-Nonres	3	61,780.79	
0044863	Angleton, City of	No	Othr-Nonres	2	42,729.35	
0076302	Angleton, City of	No	Single Fmly	5	16,119.39	
0025891	Angleton, City of	Sdf	Single Fmly	5	121,991.97	V
0044609	Angleton, City of	Sdf	Single Fmly	6	139,804.41	V
0044942	Angleton, City of	Yes	Single Fmly	5	59,951.62	
0068976	Angleton, City of	Yes	Single Fmly	4	50,211.98	
0036903	Angleton, City of	No	Single Fmly	2	22,058.94	
0167354	Angleton, City of	Yes	Othr-Nonres	3	204,873.67	
0097093	Angleton, City of	No	Single Fmly	2	20,080.99	
0025112	Angleton, City of	No	Other Resid	4	14,599.58	
0025113	Angleton, City of	No	Other Resid	4	31,765.86	
0001868	Angleton, City of	No	Other Resid	5	33,675.70	
0033296	Angleton, City of	No	2-4 Family	2	22,194.18	
0045291	Angleton, City of	No	Assmd Condo	2	30,634.19	
0258541	Baileys Prairie, Village of	Yes	Single Fmly	2	284,896.09	
0262774	Baileys Prairie, Village of	Yes	Single Fmly	2	257,250.74	
0119199	Baileys Prairie, Village of	No	Single Fmly	3	76,074.94	
0260309	Baileys Prairie, Village of	Yes	Single Fmly	2	29,569.12	
0258526	Baileys Prairie, Village of	Yes	Single Fmly	2	137,768.45	
0250014	Baileys Prairie, Village of	Yes	Single Fmly	3	322,423.97	P
0013179	Baileys Prairie, Village of	Yes	Single Fmly	3	137,908.79	
0260268	Baileys Prairie, Village of	Yes	Single Fmly	2	242,743.61	P
0259946	Baileys Prairie, Village of	Yes	Single Fmly	2	79,809.46	

0017490	Brazoria County	No	Assmd Condo	2	12,043.88		Item 9.
0017609	Brazoria County	No	Single Fmly	2	24,880.66		
0048508	Brazoria County	No	Single Fmly	2	7,031.65		
0018519	Brazoria County	No	Single Fmly	2	7,187.06		
0041008	Brazoria County	No	Single Fmly	2	3,946.10		
0025212	Brazoria County	No	Single Fmly	3	6,450.08		
0038788	Brazoria County	No	Single Fmly	2	4,814.82		
0025662	Brazoria County	No	Single Fmly	3	9,888.99		
0026721	Brazoria County	No	Unknown	2	28,495.94		
0015991	Brazoria County	No	Single Fmly	2	25,547.26		
0038638	Brazoria County	No	Single Fmly	2	16,608.61	PU	
0041786	Brazoria County	No	Single Fmly	2	5,105.06		
0017543	Brazoria County	No	Single Fmly	4	97,583.69		
0026798	Brazoria County	No	Single Fmly	3	50,685.00		
0017452	Brazoria County	No	Single Fmly	2	34,716.83		
0018567	Brazoria County	No	Single Fmly	3	80,966.83		
0018559	Brazoria County	No	Single Fmly	2	18,071.81		
0016094	Brazoria County	No	Single Fmly	2	4,254.77		
0015990	Brazoria County	No	Single Fmly	4	33,437.04		
0036167	Brazoria County	No	Single Fmly	3	54,332.15		
0035346	Brazoria County	No	Single Fmly	2	14,367.73		
0043105	Brazoria County	No	Single Fmly	2	42,431.12		
0045452	Brazoria County	No	Single Fmly	2	4,743.92		
0037731	Brazoria County	No	Single Fmly	3	6,119.59		
0041184	Brazoria County	No	Single Fmly	3	11,069.46		
0069967	Brazoria County	No	Single Fmly	2	50,822.91		
0071507	Brazoria County	No	Single Fmly	2	54,833.36		
0026033	Brazoria County	No	Single Fmly	2	31,132.88		
0045541	Brazoria County	No	Single Fmly	2	24,714.61		
0026319	Brazoria County	No	Single Fmly	2	25,814.74		
0040644	Brazoria County	No	Single Fmly	2	36,747.17		
0026524	Brazoria County	No	Single Fmly	2	22,037.00		
0037485	Brazoria County	No	Single Fmly	2	28,641.59		
0037251	Brazoria County	No	Single Fmly	2	29,718.42		
0017514	Brazoria County	No	Single Fmly	2	56,118.69		
0039205	Brazoria County	No	Single Fmly	3	6,959.50		
0044406	Brazoria County	No	Single Fmly	2	44,308.83		
0026527	Brazoria County	No	Unknown	2	6,427.00		
0017612	Brazoria County	No	Single Fmly	3	10,701.05		
0015181	Brazoria County	No	Assmd Condo	2	29,901.70		
0017567	Brazoria County	No	Single Fmly	2	53,334.84		
0045810	Brazoria County	No	Single Fmly	3	21,362.59		
0043640	Brazoria County	No	Single Fmly	2	24,819.59		
0026372	Brazoria County	No	Single Fmly	3	30,100.74		
0045662	Brazoria County	No	Single Fmly	2	4,329.50		
0043301	Brazoria County	No	Single Fmly	3	8,745.33		
0035676	Brazoria County	No	Single Fmly	2	25,743.10		
0045069	Brazoria County	No	Single Fmly	2	38,851.11		
0039449	Brazoria County	No	Single Fmly	3	43,503.06		
0045227	Brazoria County	No	Single Fmly	2	12,194.03		
0044711	Brazoria County	No	Single Fmly	2	11,296.84		
0042669	Brazoria County	No	Single Fmly	2	23,195.62		
0002700	Brazoria County	No	Single Fmly	7	89,447.38		
0026824	Brazoria County	No	Single Fmly	2	21,754.08		

0044943	Brazoria County	No	Single Fmly	3	8,393.36		Item 9.
0048431	Brazoria County	No	Single Fmly	2	2,597.46		
0045341	Brazoria County	No	Single Fmly	2	10,325.61		
0025216	Brazoria County	No	Single Fmly	3	66,055.89		
0026867	Brazoria County	No	Single Fmly	6	112,395.92	VU	
0045167	Brazoria County	No	Single Fmly	2	10,687.78		
0068235	Brazoria County	No	Single Fmly	2	19,689.07		
0018638	Brazoria County	No	Single Fmly	2	13,400.00		
0025348	Brazoria County	No	Single Fmly	2	55,238.96		
0038750	Brazoria County	No	Single Fmly	2	17,041.72		
0025758	Brazoria County	No	Single Fmly	3	9,500.73		
0041510	Brazoria County	No	Single Fmly	2	17,218.96		
0026778	Brazoria County	No	Single Fmly	2	7,289.00		
0038506	Brazoria County	No	Single Fmly	2	6,481.31		
0044355	Brazoria County	No	Single Fmly	2	4,801.55		
0045525	Brazoria County	No	Single Fmly	2	10,620.01		
0017547	Brazoria County	No	Single Fmly	2	3,998.07		
0046054	Brazoria County	No	Single Fmly	2	20,273.22		
0025177	Brazoria County	No	Single Fmly	2	9,527.00		
0018491	Brazoria County	No	Othr-Nonres	2	4,827.25		
0026801	Brazoria County	No	Single Fmly	2	41,629.84		
0025952	Brazoria County	No	Single Fmly	2	24,735.20		
0018393	Brazoria County	No	Single Fmly	2	37,415.60		
0018385	Brazoria County	No	Assmd Condo	2	74,786.45		
0017358	Brazoria County	No	Single Fmly	2	36,125.90		
0026334	Brazoria County	No	Single Fmly	2	53,335.62	PU	
0017583	Brazoria County	No	Single Fmly	3	32,787.84		
0026285	Brazoria County	No	Single Fmly	2	27,541.40		
0025475	Brazoria County	No	Single Fmly	2	34,370.30		
0043561	Brazoria County	No	Single Fmly	3	12,114.56		
0073452	Brazoria County	No	Single Fmly	2	24,505.54		
0003824	Brazoria County	No	Single Fmly	2	32,758.06		
0026001	Brazoria County	No	Single Fmly	3	44,873.92	PU	
0068857	Brazoria County	No	Single Fmly	2	8,463.75		
0002845	Brazoria County	No	Single Fmly	2	41,346.98		
0017484	Brazoria County	No	Single Fmly	2	15,324.86		
0026847	Brazoria County	No	Single Fmly	2	47,652.64		
0045420	Brazoria County	No	Single Fmly	2	3,551.62		
0018514	Brazoria County	No	Single Fmly	2	20,585.44		
0097082	Brazoria County	No	Single Fmly	2	18,834.40		
0026831	Brazoria County	No	Single Fmly	3	35,853.68		
0042560	Brazoria County	No	Single Fmly	2	27,047.65		
0068848	Brazoria County	No	Single Fmly	2	32,405.73		
0018684	Brazoria County	No	Single Fmly	2	58,425.10		
0050856	Brazoria County	No	Single Fmly	2	8,475.83		
0045409	Brazoria County	No	Single Fmly	2	17,291.89		
0044654	Brazoria County	No	Single Fmly	3	8,034.50		
0016047	Brazoria County	No	Single Fmly	3	51,310.69		
0071775	Brazoria County	No	Single Fmly	3	35,188.37		
0068864	Brazoria County	No	Single Fmly	2	6,732.41		
0042523	Brazoria County	No	Single Fmly	4	46,661.21		
0044361	Brazoria County	No	Single Fmly	3	56,948.25		
0017564	Brazoria County	No	Single Fmly	2	6,677.66		
0017581	Brazoria County	No	Single Fmly	2	38,312.48		

0025095	Brazoria County	No	Single Fmly	2	40,297.45	PU	Item 9.
0040997	Brazoria County	No	Single Fmly	2	13,465.77		
0068856	Brazoria County	No	Single Fmly	2	45,067.08		
0072004	Brazoria County	No	Single Fmly	2	7,318.92		
0018672	Brazoria County	No	Single Fmly	3	12,362.94		
0043697	Brazoria County	No	Single Fmly	2	18,299.65		
0241503	Brazoria County	No	Single Fmly	2	43,929.56		
0262102	Brazoria County	Yes	Single Fmly	2	155,934.70		
0013052	Brazoria County	No	Single Fmly	9	49,979.76	VU	
0260270	Brazoria County	Yes	Single Fmly	2	73,253.85		
0120350	Brazoria County	No	Single Fmly	2	70,058.77		
0168658	Brazoria County	No	Single Fmly	2	97,238.94		
0168156	Brazoria County	No	Single Fmly	2	47,431.47		
0093357	Brazoria County	No	Single Fmly	2	14,995.66		
0262602	Brazoria County	Yes	Single Fmly	2	140,516.97		
0026240	Brazoria County	No	Othr-Nonres	3	16,298.19		
0044325	Brazoria County	No	Othr-Nonres	2	28,598.53		
0068019	Brazoria County	No	Othr-Nonres	2	9,599.73		
0168586	Brazoria County	No	Single Fmly	2	45,398.32		
0037444	Brazoria County	Yes	Single Fmly	3	79,953.55		
0262738	Brazoria County	Yes	Single Fmly	2	86,957.59		
0168908	Brazoria County	Yes	Single Fmly	2	43,487.07		
0119841	Brazoria County	Yes	Single Fmly	3	40,350.54		
0069988	Brazoria County	No	Single Fmly	2	59,311.90		
0044934	Brazoria County	No	Single Fmly	8	200,349.02	VU	
0186065	Brazoria County	No	2-4 Family	3	19,712.92		
0167357	Brazoria County	Yes	Single Fmly	3	92,345.11		
0069916	Brazoria County	No	Single Fmly	5	230,526.64	VU	
0182795	Brazoria County	No	Single Fmly	2	73,558.03		
0068061	Brazoria County	Sdf	Single Fmly	5	120,663.84	V	
0025142	Brazoria County	No	Single Fmly	8	246,124.12	VU	
0038688	Brazoria County	No	Single Fmly	2	17,698.82		
0178178	Brazoria County	Yes	Single Fmly	2	6,225.12		
0119540	Brazoria County	Yes	Single Fmly	3	32,529.87		
0118722	Brazoria County	No	Single Fmly	3	12,060.11		
0016042	Brazoria County	No	Othr-Nonres	2	14,084.11		
0068020	Brazoria County	Yes	Single Fmly	4	19,735.82		
0097189	Brazoria County	Yes	Single Fmly	3	29,033.67		
0119333	Brazoria County	No	Single Fmly	3	14,860.57		
0259940	Brazoria County	Yes	Single Fmly	2	237,980.04		
0168895	Brazoria County	No	Single Fmly	2	116,058.87		
0026291	Brazoria County	No	Assmd Condo	2	7,482.14		
0186066	Brazoria County	No	2-4 Family	2	7,045.01		
0260275	Brazoria County	Yes	Single Fmly	2	172,933.79		
0122421	Brazoria County	No	Single Fmly	4	42,801.28		
0077678	Brazoria County	No	Single Fmly	3	60,503.31		
0258537	Brazoria County	Yes	Single Fmly	2	5,703.35		
0119177	Brazoria County	No	Single Fmly	4	38,495.34		
0068977	Brazoria County	Yes	Single Fmly	5	104,681.32	V	
0040416	Brazoria County	Yes	Single Fmly	5	245,157.72	V	
0015957	Brazoria County	No	Single Fmly	2	3,529.35		
0025189	Brazoria County	No	Single Fmly	2	38,251.40		
0017763	Brazoria County	Yes	Single Fmly	2	9,049.74		
0009021	Brazoria County	No	Single Fmly	5	34,960.30		

0003976	Brazoria County	Sdf	Single Fmly	8	734,139.66	V	Item 9.
0044098	Brazoria County	Yes	Single Fmly	3	17,725.16		
0036865	Brazoria County	Yes	Single Fmly	4	230,169.47		
0025962	Brazoria County	Yes	Single Fmly	3	89,580.49		
0035344	Brazoria County	No	Single Fmly	2	17,451.70		
0258522	Brazoria County	Yes	Single Fmly	2	53,143.00		
0039696	Brazoria County	No	Single Fmly	2	7,558.95		
0245312	Brazoria County	No	Single Fmly	3	51,355.60		
0124920	Brazoria County	No	Single Fmly	3	44,806.73		
0018704	Brazoria County	No	Single Fmly	4	51,733.51		
0172737	Brazoria County	Yes	Single Fmly	2	28,655.37		
0025243	Brazoria County	No	Single Fmly	2	20,873.82		
0025347	Brazoria County	No	Single Fmly	2	5,015.28		
0124442	Brazoria County	Yes	Single Fmly	4	45,771.55		
0180875	Brazoria County	Yes	Single Fmly	2	39,958.61		
0183384	Brazoria County	Yes	Single Fmly	2	5,122.61		
0122388	Brazoria County	Yes	Single Fmly	3	27,373.89		
0005611	Brazoria County	No	Single Fmly	9	119,038.11	VU	
0115671	Brazoria County	No	Single Fmly	2	61,259.55	PU	
0026499	Brazoria County	No	Single Fmly	4	109,139.25		
0241961	Brazoria County	No	Single Fmly	3	60,723.02		
0116975	Brazoria County	No	Single Fmly	3	39,167.22		
0018756	Brazoria County	No	Single Fmly	2	45,853.41		
0017536	Brazoria County	No	Single Fmly	2	66,772.89		
0040017	Brazoria County	No	Single Fmly	4	70,099.66		
0068071	Brazoria County	No	Single Fmly	3	72,448.54	PU	
0168434	Brazoria County	No	Single Fmly	3	99,885.23		
0180895	Brazoria County	No	Single Fmly	2	84,149.95		
0025299	Brazoria County	No	Single Fmly	3	21,345.53		
0013231	Brazoria County	No	Single Fmly	2	12,434.61		
0119178	Brazoria County	Sdf	Single Fmly	4	77,921.81	V	
0178985	Brazoria County	Yes	Single Fmly	2	23,859.38		
0123765	Brazoria County	No	Single Fmly	3	34,656.48		
0071508	Brazoria County	No	Single Fmly	4	53,592.26		
0026729	Brazoria County	No	Single Fmly	2	3,082.88		
0069678	Brazoria County	Yes	Single Fmly	3	4,421.90		
0260231	Brazoria County	Yes	Single Fmly	2	66,790.60		
0045743	Brazoria County	No	Single Fmly	3	10,776.24		
0017409	Brazoria County	No	Single Fmly	2	33,774.18		
0258833	Brazoria County	Yes	Single Fmly	2	191,129.79		
0035941	Brazoria County	No	Single Fmly	2	34,191.54		
0017544	Brazoria County	No	Single Fmly	4	226,179.30	VU	
0026837	Brazoria County	No	Single Fmly	7	34,938.83		
0258518	Brazoria County	Yes	Single Fmly	2	343,479.67		
0258834	Brazoria County	Yes	Single Fmly	2	204,824.07		
0260365	Brazoria County	Yes	Single Fmly	2	104,055.15		
0124439	Brazoria County	Yes	Single Fmly	3	97,343.14		
0033833	Brazoria County	No	Single Fmly	2	8,042.98		
0248779	Brazoria County	Yes	Single Fmly	2	50,245.44		
0196109	Brazoria County	No	Single Fmly	2	106,155.48		
0259609	Brazoria County	Yes	Single Fmly	2	106,103.46		
0213206	Brazoria County	Yes	Single Fmly	2	61,018.04		
0039567	Brazoria County	No	Single Fmly	2	31,751.04		
0026276	Brazoria County	Yes	Single Fmly	3	39,612.20		

0017337	Brazoria County	No	Single Fmly	2	55,768.80	
0025692	Brazoria County	No	Single Fmly	2	11,006.83	
0025971	Brazoria County	Yes	Single Fmly	4	231,536.06	
0119188	Brazoria County	No	Single Fmly	3	87,258.58	
0185452	Brazoria County	Yes	Single Fmly	2	11,058.31	
0248121	Brazoria County	Yes	Single Fmly	2	107,750.64	
0097144	Brazoria County	No	Single Fmly	3	60,620.91	
0185461	Brazoria County	Yes	Single Fmly	2	63,948.44	
0249003	Brazoria County	Yes	Single Fmly	2	46,595.95	
0260170	Brazoria County	Yes	Single Fmly	2	86,726.66	
0172225	Brazoria County	No	Single Fmly	2	18,842.11	
0069864	Brazoria County	No	Single Fmly	2	18,716.66	PU
0039988	Brazoria County	No	Othr-Nonres	4	14,360.60	
0124434	Brazoria County	No	Single Fmly	3	53,867.72	
0124286	Brazoria County	No	Single Fmly	3	46,721.18	
0093930	Brazoria County	Yes	Single Fmly	4	162,206.35	
0259901	Brazoria County	Yes	Single Fmly	2	75,120.27	
0249917	Brazoria County	Yes	Single Fmly	2	335,203.86	
0185624	Brazoria County	No	Single Fmly	2	24,004.73	
0180345	Brazoria County	No	Single Fmly	2	64,273.40	
0182796	Brazoria County	No	Single Fmly	2	12,331.58	
0262689	Brazoria County	Yes	Single Fmly	2	34,734.29	
0118765	Brazoria County	No	Single Fmly	2	19,552.51	
0238039	Brazoria County	Yes	Single Fmly	3	76,201.57	
0072214	Brazoria County	No	Single Fmly	3	71,015.67	
0124248	Brazoria County	No	Single Fmly	2	14,500.43	
0018394	Brazoria County	No	Single Fmly	2	25,774.95	
0184085	Brazoria County	Yes	Single Fmly	3	101,437.92	
0214088	Brazoria County	No	Single Fmly	2	134,437.55	
0262691	Brazoria County	Yes	Single Fmly	2	84,002.26	
0262692	Brazoria County	Yes	Single Fmly	2	105,747.47	
0260241	Brazoria County	Yes	Single Fmly	2	191,336.66	
0168246	Brazoria County	No	Single Fmly	2	43,788.52	
0168245	Brazoria County	No	Single Fmly	2	76,323.56	
0119168	Brazoria County	No	Single Fmly	3	95,007.53	
0249284	Brazoria County	Yes	Single Fmly	2	62,007.65	
0197026	Brazoria County	Sdf	Single Fmly	5	217,742.03	V
0018346	Brazoria County	No	Single Fmly	6	70,849.54	
0068028	Brazoria County	Yes	Single Fmly	4	58,154.62	
0097717	Brazoria County	No	Single Fmly	3	64,741.16	
0068031	Brazoria County	No	Single Fmly	3	75,339.66	
0242964	Brazoria County	No	Single Fmly	2	25,605.36	
0257879	Brazoria County	Yes	Single Fmly	2	83,891.44	
0017523	Brazoria County	No	Single Fmly	2	32,452.23	
0249893	Brazoria County	Yes	Single Fmly	2	110,076.11	
0073818	Brazoria County	No	Single Fmly	5	56,843.06	
0259654	Brazoria County	Yes	Single Fmly	2	133,618.00	
0259907	Brazoria County	Yes	Single Fmly	2	154,214.25	
0242894	Brazoria County	Yes	Othr-Nonres	2	64,937.53	
0197031	Brazoria County	Yes	Single Fmly	2	9,574.65	
0250040	Brazoria County	Yes	Single Fmly	2	162,020.24	
0013265	Brazoria County	No	Single Fmly	4	32,882.05	
0071585	Brazoria County	No	Single Fmly	5	56,715.06	VU
0041764	Brazoria County	No	Single Fmly	2	6,504.96	

0091182	Brazoria County	No	Single Fmly	3	59,847.50	
0036573	Brazoria County	No	Single Fmly	8	42,536.31	VU
0044887	Brazoria County	Sdf	Single Fmly	5	71,825.90	V
0052718	Brazoria County	No	Othr-Nonres	2	6,048.00	
0249202	Brazoria County	No	Single Fmly	2	123,245.66	
0182067	Brazoria County	No	Single Fmly	2	34,278.19	
0212801	Brazoria County	Yes	Single Fmly	3	182,823.75	
0043428	Brazoria County	No	Single Fmly	5	87,856.07	VU
0120629	Brazoria County	No	Single Fmly	2	21,501.64	
0017445	Brazoria County	No	Single Fmly	2	20,629.25	
0092100	Brazoria County	No	Single Fmly	2	63,626.86	
0191938	Brazoria County	Yes	Single Fmly	2	14,974.39	
0001452	Brazoria County	No	Single Fmly	4	23,475.89	
0026290	Brazoria County	No	Single Fmly	3	10,367.13	
0097801	Brazoria County	No	Single Fmly	5	30,883.72	
0017577	Brazoria County	No	Single Fmly	2	3,713.00	
0005681	Brazoria County	Yes	Single Fmly	6	113,190.44	V
0069945	Brazoria County	No	Single Fmly	2	12,151.41	
0002283	Brazoria County	Yes	Single Fmly	12	174,121.42	V
0071443	Brazoria County	No	Single Fmly	3	13,770.97	
0248119	Brazoria County	No	Single Fmly	3	44,093.12	
0005598	Brazoria County	No	Single Fmly	16	203,275.39	VU
0091481	Brazoria County	No	Single Fmly	4	14,669.18	
0008184	Brazoria County	No	Single Fmly	8	55,486.30	VU
0098456	Brazoria County	No	Single Fmly	2	39,575.14	
0250894	Brazoria County	No	Single Fmly	2	6,002.00	
0249347	Brazoria County	Yes	Single Fmly	2	59,362.85	
0089730	Brazoria County	No	Single Fmly	4	10,265.14	
0262776	Brazoria County	Yes	Single Fmly	2	43,650.73	
0038958	Brazoria County	No	Single Fmly	4	41,470.24	
0076993	Brazoria County	No	Single Fmly	2	7,259.60	
0259900	Brazoria County	Yes	Single Fmly	2	261,187.67	
0260208	Brazoria County	Yes	Single Fmly	2	8,368.34	
0025289	Brazoria County	No	Single Fmly	2	67,168.84	
0026686	Brazoria County	No	Single Fmly	2	26,678.03	
0118940	Brazoria County	Yes	Single Fmly	4	166,210.35	
0068834	Brazoria County	Sdf	Single Fmly	8	416,947.33	V
0259776	Brazoria County	Yes	Single Fmly	2	24,997.72	
0262778	Brazoria County	Yes	Single Fmly	2	19,252.91	
0260188	Brazoria County	No	Single Fmly	2	235,549.57	
0037865	Brazoria County	Yes	Single Fmly	3	52,466.97	
0070577	Brazoria County	Yes	Single Fmly	4	373,752.91	V
0125806	Brazoria County	No	Single Fmly	2	35,553.12	
0069911	Brazoria County	No	Single Fmly	2	34,220.67	
0094547	Brazoria County	No	Single Fmly	2	10,339.34	
0212735	Brazoria County	No	Single Fmly	2	43,624.25	
0103529	Brazoria County	No	Single Fmly	2	41,790.13	
0044343	Brazoria County	No	Single Fmly	2	20,034.80	
0260108	Brazoria County	Yes	Single Fmly	2	150,270.18	
0257770	Brazoria County	Yes	Single Fmly	2	40,232.12	
0250233	Brazoria County	Yes	Single Fmly	3	352,570.41	P
0045260	Brazoria County	No	Single Fmly	2	93,096.01	PU
0262693	Brazoria County	Yes	Single Fmly	2	109,372.97	
0002925	Brazoria County	Sdf	Single Fmly	14	325,253.70	V

0186008	Brazoria County	No	Single Fmly	2	18,535.99		Item 9.
0068840	Brazoria County	No	Single Fmly	2	12,031.41		
0073506	Brazoria County	No	Single Fmly	3	18,006.77		
0262777	Brazoria County	Yes	Single Fmly	2	30,067.61		
0182139	Brazoria County	No	Single Fmly	3	68,553.80		
0026535	Brazoria County	No	Single Fmly	2	9,153.85		
0258615	Brazoria County	Yes	Single Fmly	2	156,914.36	P	
0185567	Brazoria County	No	Single Fmly	2	33,280.46		
0258665	Brazoria County	Yes	Other Resid	2	451,860.28		
0076297	Brazoria County	Yes	Single Fmly	5	81,192.19		
0117184	Brazoria County	No	Single Fmly	2	6,442.13		
0097191	Brazoria County	No	Single Fmly	2	8,511.17		
0119184	Brazoria County	Yes	Single Fmly	2	34,122.92		
0070550	Brazoria County	No	Single Fmly	2	9,051.93		
0249245	Brazoria County	Yes	Single Fmly	2	150,097.43		
0114145	Brazoria County	No	Single Fmly	3	46,689.08		
0262779	Brazoria County	Yes	Single Fmly	2	27,048.06		
0068033	Brazoria County	No	Single Fmly	6	76,509.03	VU	
0241627	Brazoria County	Yes	Single Fmly	3	152,446.56		
0249327	Brazoria County	Yes	Single Fmly	3	225,632.60	P	
0262775	Brazoria County	Yes	Single Fmly	2	128,300.15		
0214084	Brazoria County	Yes	Single Fmly	2	51,747.75		
0116490	Brazoria County	No	Single Fmly	4	16,444.55		
0098371	Brazoria County	Yes	Single Fmly	2	12,428.24		
0128227	Brazoria County	Yes	Single Fmly	2	4,650.70		
0025474	Brazoria County	No	Single Fmly	4	15,081.25		
0054508	Brazoria County	No	Single Fmly	2	3,906.55		
0069785	Brazoria County	Sdf	Single Fmly	8	336,611.36	V	
0259217	Brazoria County	Yes	Single Fmly	2	5,214.56		
0186558	Brazoria County	No	Single Fmly	3	24,434.29		
0185429	Brazoria County	No	Single Fmly	2	11,227.27		
0262694	Brazoria County	Yes	Single Fmly	2	109,578.83		
0042450	Brazoria County	No	Single Fmly	2	66,512.01	PU	
0048795	Brazoria County	No	Single Fmly	2	72,811.20		
0025663	Brazoria County	No	Single Fmly	2	33,226.36		
0018767	Brazoria County	No	Single Fmly	3	8,057.28		
0025145	Brazoria County	Yes	Single Fmly	3	234,160.43		
0056573	Brazoria County	Sdf	Single Fmly	9	167,324.94	V	
0167757	Brazoria County	No	Single Fmly	3	72,023.69		
0069874	Brazoria County	No	Single Fmly	2	39,666.35		
0054704	Brazoria County	No	Single Fmly	3	17,362.23		
0068159	Brazoria County	No	Single Fmly	2	98,036.63		
0076942	Brazoria County	No	Single Fmly	2	44,611.06		
0069898	Brazoria County	No	Single Fmly	4	55,666.46		
0080412	Brazoria County	No	Single Fmly	2	68,015.63		
0125780	Brazoria County	No	Single Fmly	2	36,264.51		
0186662	Brazoria County	No	Single Fmly	3	32,483.27		
0005651	Brazoria County	No	Single Fmly	6	37,638.87	VU	
0052447	Brazoria County	No	Single Fmly	2	11,740.67		
0018669	Brazoria County	Sdf	Single Fmly	5	57,353.88	V	
0012841	Brazoria County	No	Single Fmly	2	46,518.89		
0098428	Brazoria County	No	Single Fmly	2	24,353.45		
0099052	Brazoria County	No	Single Fmly	3	16,119.84		
0073465	Brazoria County	No	Single Fmly	3	64,081.84		

0017481	Brazoria County	No	Single Fmly	2	6,910.65	
0116829	Brazoria County	No	Single Fmly	2	42,916.30	
0186830	Brazoria County	No	Single Fmly	2	34,165.62	
0017295	Brazoria County	No	Single Fmly	4	16,487.94	
0035511	Brazoria County	No	Single Fmly	2	14,273.02	
0180670	Brazoria County	No	Single Fmly	3	18,819.63	
0177556	Brazoria County	No	Single Fmly	2	18,325.27	
0124278	Brazoria County	No	Single Fmly	3	22,514.81	
0016048	Brazoria County	No	Single Fmly	2	54,607.59	
0018614	Brazoria County	No	Single Fmly	2	7,364.94	
0186067	Brazoria County	No	2-4 Family	2	42,964.76	
0182799	Brazoria County	No	Single Fmly	2	53,426.77	
0071431	Brazoria County	Yes	Single Fmly	5	88,202.72	
0124405	Brazoria County	No	Othr-Nonres	2	14,841.20	
0197136	Brazoria County	No	Single Fmly	2	28,313.07	
0071594	Brazoria County	Yes	Single Fmly	3	147,210.09	
0069745	Brazoria County	No	Single Fmly	3	65,339.66	
0069922	Brazoria County	No	Single Fmly	2	24,688.02	
0186750	Brazoria County	No	Single Fmly	3	17,795.63	
0184787	Brazoria County	No	Single Fmly	2	11,735.10	
0012880	Brazoria County	No	Single Fmly	4	46,422.45	
0099014	Brazoria County	No	Single Fmly	2	9,821.77	
0033684	Brazoria County	No	Single Fmly	2	17,202.90	
0044452	Brazoria County	No	Single Fmly	2	7,558.87	
0026788	Brazoria County	No	Single Fmly	2	3,648.06	
0037132	Brazoria County	Yes	Single Fmly	4	159,208.88	
0258622	Brazoria County	Yes	Single Fmly	2	187,637.39	
0258751	Brazoria County	Yes	Busi-Nonres	2	98,189.10	
0026860	Brazoria County	No	Single Fmly	2	10,015.42	
0260487	Brazoria County	Yes	Single Fmly	2	36,657.03	
0002662	Brazoria County	No	Single Fmly	2	52,740.16	
0002495	Brazoria County	No	Othr-Nonres	3	16,535.09	
0179784	Brazoria County	No	Single Fmly	4	242,060.99	
0068081	Brazoria County	No	Single Fmly	4	88,481.75	
0124860	Brazoria County	No	Single Fmly	2	15,395.17	
0168603	Brazoria County	No	Single Fmly	2	88,049.03	
0093925	Brazoria County	No	Single Fmly	2	26,588.55	
0244633	Brazoria County	No	Single Fmly	3	125,247.14	
0025796	Brazoria County	No	Single Fmly	2	2,240.64	
0262110	Brazoria County	Yes	Single Fmly	2	25,024.01	
0259692	Brazoria County	Yes	Single Fmly	2	36,787.12	
0026160	Brazoria County	No	Single Fmly	2	27,099.96	
0034529	Brazoria County	Yes	Single Fmly	2	27,644.71	
0049649	Brazoria County	No	Single Fmly	3	15,020.48	
0026127	Brazoria County	No	Single Fmly	2	2,927.45	
0016008	Brazoria County	Sdf	Single Fmly	7	321,717.10	V
0098922	Brazoria County	No	Single Fmly	2	25,727.34	
0119604	Brazoria County	No	Single Fmly	3	8,939.32	
0117416	Brazoria County	No	Single Fmly	2	5,535.68	
0037256	Brazoria County	No	Single Fmly	2	8,005.73	
0018561	Brazoria County	No	Single Fmly	2	15,373.80	
0250436	Brazoria County	No	Single Fmly	2	14,815.34	
0088274	Brazoria County	No	Single Fmly	4	57,807.29	
0178769	Brazoria County	Yes	Single Fmly	2	13,950.43	

0098565	Brazoria County	Yes	Single Fmly	4	14,293.21	
0089795	Brazoria County	No	Single Fmly	4	71,899.30	
0123020	Brazoria County	Yes	Single Fmly	3	58,813.58	
0124018	Brazoria County	Yes	Single Fmly	3	24,128.71	
0125809	Brazoria County	No	Single Fmly	3	94,657.84	
0094862	Brazoria County	No	Single Fmly	2	21,803.39	
0127389	Brazoria County	Yes	Single Fmly	3	40,254.67	
0136023	Brazoria County	Yes	Single Fmly	3	107,707.01	
0183898	Brazoria County	Yes	Single Fmly	2	64,957.26	
0035850	Brazoria County	Yes	Single Fmly	9	178,671.55	V
0100533	Brazoria County	No	Single Fmly	4	61,310.13	VU
0246925	Brazoria County	No	Single Fmly	2	48,192.55	
0018727	Brazoria County	No	Othr-Nonres	3	44,747.27	
0250274	Brazoria County	Yes	Single Fmly	2	21,072.50	
0071586	Brazoria County	Sdf	Single Fmly	4	103,176.67	V
0185454	Brazoria County	No	Single Fmly	2	25,213.13	
0089736	Brazoria County	Yes	Single Fmly	2	58,710.51	
0186125	Brazoria County	Yes	Single Fmly	2	110,319.14	
0125810	Brazoria County	No	Single Fmly	2	31,907.79	
0037583	Brazoria County	No	Single Fmly	2	52,431.35	
0002672	Brazoria County	No	Single Fmly	3	23,107.18	
0168027	Brazoria County	No	Single Fmly	2	14,058.22	
0119307	Brazoria County	No	Single Fmly	2	28,008.65	
0068080	Brazoria County	Yes	Single Fmly	2	9,929.83	
0118378	Brazoria County	No	Single Fmly	4	58,432.69	
0039513	Brazoria County	No	Single Fmly	2	11,941.11	
0053985	Brazoria County	No	Othr-Nonres	2	7,293.46	
0068233	Brazoria County	No	Single Fmly	3	63,796.40	
0259912	Brazoria County	Yes	Single Fmly	2	272,003.39	P
0044725	Brazoria County	No	Single Fmly	2	14,335.83	
0070689	Brazoria County	No	Assmd Condo	4	118,950.22	PU
0168081	Brazoria County	Yes	Single Fmly	2	139,687.14	
0116568	Brazoria County	No	Single Fmly	2	89,626.94	
0026826	Brazoria County	No	Single Fmly	2	3,253.06	
0018674	Brazoria County	No	Single Fmly	2	5,383.34	
0256590	Brazoria County	Yes	Single Fmly	3	113,477.52	
0115890	Brazoria County	No	Single Fmly	2	42,538.79	
0180872	Brazoria County	Yes	Single Fmly	2	23,378.12	
0098377	Brazoria County	Sdf	Single Fmly	4	156,553.44	V
0260330	Brazoria County	Yes	Single Fmly	2	166,460.60	
0122026	Brazoria County	No	Single Fmly	2	11,129.47	
0068050	Brazoria County	No	Single Fmly	2	8,774.19	
0179400	Brazoria County	Yes	Single Fmly	3	140,098.38	
0025974	Brazoria County	Sdf	Single Fmly	16	386,608.14	V
0069923	Brazoria County	Yes	Single Fmly	4	180,594.94	
0073440	Brazoria County	Yes	Single Fmly	3	133,474.25	
0113228	Brazoria County	Yes	Single Fmly	3	107,253.56	
0114690	Brazoria County	Yes	Single Fmly	3	134,744.76	
0073441	Brazoria County	Yes	Single Fmly	4	141,990.78	V
0069610	Brazoria County	Yes	Single Fmly	2	101,225.31	
0101644	Brazoria County	No	Single Fmly	2	4,822.75	
0043106	Brazoria County	No	Single Fmly	2	20,482.87	
0180095	Brazoria County	No	Single Fmly	2	160,951.99	VU
0179052	Brazoria County	No	Single Fmly	2	41,072.57	

0253470	Brazoria County	Yes	Single Fmly	2	213,325.20		Item 9.
0250078	Brazoria County	Yes	Single Fmly	2	34,200.04		
0000932	Brazoria County	No	2-4 Family	5	25,276.43		
0258547	Brazoria County	Yes	Single Fmly	2	163,270.72		
0180131	Brazoria County	Yes	Single Fmly	2	61,283.28		
0259944	Brazoria County	Yes	Single Fmly	2	27,548.96		
0260220	Brazoria County	Yes	Single Fmly	2	231,222.83		
0247192	Brazoria County	Yes	Single Fmly	3	131,460.61		
0257948	Brazoria County	Yes	Assmd Condo	2	194,844.66		
0262814	Brazoria County	Yes	Single Fmly	2	5,941.53		
0018521	Brazoria County	Yes	Single Fmly	2	45,976.62		
0002861	Brazoria County	No	Single Fmly	9	68,094.46	VU	
0012901	Brazoria County	No	Other Resid	2	5,518.10		
0026060	Brazoria County	No	Single Fmly	2	5,792.89		
0045874	Brazoria County	No	Single Fmly	3	28,725.26	PU	
0182964	Brazoria County	Yes	Single Fmly	2	58,145.18		
0178768	Brazoria County	Yes	Single Fmly	2	7,832.23		
0119731	Brazoria County	Sdf	Single Fmly	4	53,437.69	V	
0119568	Brazoria County	No	Single Fmly	4	90,843.65	VU	
0050733	Brazoria County	No	Othr-Nonres	2	6,236.72		
0113243	Brazoria County	No	Single Fmly	2	119,528.70		
0258716	Brazoria County	Yes	Single Fmly	2	179,838.10		
0259186	Brazoria County	Yes	Single Fmly	2	278,300.79		
0258240	Brazoria County	Yes	Single Fmly	2	314,291.13		
0045401	Brazoria County	Yes	Single Fmly	4	36,551.82		
0112890	Brazoria County	Yes	Single Fmly	3	89,558.97		
0258423	Brazoria County	Yes	Single Fmly	2	55,656.69		
0262815	Brazoria County	Yes	Single Fmly	2	336,603.93		
0070275	Brazoria County	No	Single Fmly	2	102,273.19		
0042514	Brazoria County	No	Single Fmly	4	72,681.91		
0045921	Brazoria County	Sdf	Single Fmly	5	335,247.69	V	
0112974	Brazoria County	Yes	Single Fmly	3	161,614.89		
0017551	Brazoria County	No	Single Fmly	10	384,355.46	VU	
0118755	Brazoria County	No	Single Fmly	3	83,861.33		
0070680	Brazoria County	No	Single Fmly	4	90,603.31		
0248077	Brazoria County	No	Single Fmly	2	12,891.94		
0025998	Brazoria County	No	Single Fmly	2	14,232.68		
0012996	Brazoria County	Sdf	Single Fmly	10	119,631.23	V	
0026412	Brazoria County	No	Single Fmly	2	29,911.69		
0112967	Brazoria County	No	Single Fmly	3	133,680.58		
0068097	Brazoria County	No	Single Fmly	3	22,839.39		
0069942	Brazoria County	Yes	Single Fmly	3	38,558.61		
0115564	Brazoria County	Yes	Single Fmly	2	60,189.75		
0033980	Brazoria County	No	Single Fmly	5	67,913.27		
0068072	Brazoria County	Sdf	Single Fmly	4	97,604.33	V	
0070114	Brazoria County	Yes	Single Fmly	3	81,778.86		
0072219	Brazoria County	Yes	Single Fmly	3	111,483.70		
0044789	Brazoria County	No	Single Fmly	3	8,496.51		
0026200	Brazoria County	No	Single Fmly	4	44,171.24		
0045013	Brazoria County	Yes	Single Fmly	5	91,474.84	V	
0026741	Brazoria County	No	Single Fmly	2	41,883.78		
0119310	Brazoria County	No	Single Fmly	2	10,007.54		
0119170	Brazoria County	No	Single Fmly	4	61,512.90	VU	
0119172	Brazoria County	Yes	Single Fmly	3	36,009.99		

0119569	Brazoria County	No	Single Fmly	3	130,458.76	
0262104	Brazoria County	Yes	Single Fmly	2	23,913.33	
0244058	Brazoria County	No	Single Fmly	4	61,681.44	VU
0002693	Brazoria County	No	Single Fmly	2	8,826.11	PU
0014120	Brazoria County	No	Single Fmly	5	49,585.50	VU
0074646	Brazoria County	No	Single Fmly	2	26,871.00	
0002898	Brazoria County	No	Single Fmly	10	192,521.44	VU
0018450	Brazoria County	No	Single Fmly	2	36,763.76	
0026710	Brazoria County	No	Single Fmly	4	85,730.95	
0051941	Brazoria County	Sdf	Single Fmly	9	343,594.54	V
0026548	Brazoria County	Yes	Single Fmly	3	224,593.85	
0018677	Brazoria County	Yes	Single Fmly	3	52,123.64	
0026277	Brazoria County	No	Single Fmly	2	45,674.85	
0037534	Brazoria County	Sdf	Single Fmly	7	203,074.66	V
0018632	Brazoria County	Sdf	Single Fmly	8	251,790.27	V
0018320	Brazoria County	No	Single Fmly	12	210,095.88	VU
0017404	Brazoria County	Yes	Single Fmly	6	132,750.81	V
0262717	Brazoria County	Yes	Single Fmly	2	74,341.56	
0259854	Brazoria County	Yes	Single Fmly	2	174,435.40	
0260308	Brazoria County	Yes	Single Fmly	2	185,884.28	
0037756	Brazoria County	Yes	Single Fmly	4	141,378.48	
0038353	Brazoria County	Yes	Single Fmly	2	16,767.61	
0260310	Brazoria County	Yes	Single Fmly	2	286,075.44	
0258807	Brazoria County	Yes	Single Fmly	2	124,433.51	
0182281	Brazoria County	No	Single Fmly	2	9,670.34	
0118883	Brazoria County	Yes	Single Fmly	2	29,450.59	
0096880	Brazoria County	No	Single Fmly	4	68,885.74	
0123864	Brazoria County	Yes	Single Fmly	3	31,050.28	
0025201	Brazoria County	Yes	Single Fmly	4	25,072.12	
0119200	Brazoria County	Yes	Single Fmly	4	47,588.11	
0144558	Brazoria County	Yes	Single Fmly	3	37,943.71	
0124661	Brazoria County	Yes	Single Fmly	3	36,628.82	
0008288	Brazoria County	Yes	Single Fmly	3	284,820.45	
0038281	Brazoria County	No	Single Fmly	2	8,851.55	
0018336	Brazoria County	No	Single Fmly	2	64,494.21	
0070686	Brazoria County	No	Single Fmly	2	11,325.81	
0025593	Brazoria County	No	Single Fmly	2	6,422.75	
0025652	Brazoria County	No	Single Fmly	2	10,288.39	
0018639	Brazoria County	No	Single Fmly	2	3,920.19	
0025730	Brazoria County	No	Single Fmly	2	12,865.77	
0003492	Brazoria County	Sdf	Single Fmly	8	88,001.20	V
0117336	Brazoria County	No	Assmd Condo	3	169,640.29	
0190283	Brazoria County	No	Single Fmly	3	136,194.71	
0080808	Brazoria County	No	Othr-Nonres	4	85,320.25	
0041955	Brazoria County	Sdf	Single Fmly	10	125,331.24	P
0069672	Brazoria County	Sdf	Single Fmly	5	123,584.31	V
0025467	Brazoria County	Yes	Single Fmly	3	108,496.16	
0047306	Brazoria County	No	Single Fmly	7	171,717.36	VU
0076991	Brazoria County	No	Single Fmly	2	8,653.61	
0100354	Brazoria County	No	Single Fmly	2	10,553.61	
0008217	Brazoria County	No	Single Fmly	11	73,592.46	VU
0017503	Brazoria County	No	Single Fmly	2	33,054.36	
0017546	Brazoria County	No	Single Fmly	2	47,048.50	
0039931	Brazoria County	No	Single Fmly	2	22,423.00	

0080419	Brazoria County	No	Single Fmly	3	11,342.54		Item 9.
0093914	Brazoria County	No	Single Fmly	4	65,834.14	VU	
0096796	Brazoria County	No	Single Fmly	2	8,882.82		
0259500	Brazoria County	Yes	Single Fmly	2	135,007.63		
0069926	Brazoria County	No	Single Fmly	2	33,967.83		
0118910	Brazoria County	No	Single Fmly	2	9,778.55		
0073438	Brazoria County	No	Single Fmly	2	3,919.75		
0026757	Brazoria County	No	Single Fmly	2	20,933.07		
0097113	Brazoria County	No	Single Fmly	2	11,785.70		
0120643	Brazoria County	No	Single Fmly	2	43,628.18		
0117436	Brazoria County	No	Othr-Nonres	2	55,653.26	PNU	
0098917	Brazoria County	No	Single Fmly	3	55,439.98		
0068847	Brazoria County	No	Single Fmly	4	34,648.16		
0068854	Brazoria County	No	Single Fmly	3	31,128.16		
0116879	Brazoria County	No	Single Fmly	2	37,661.91		
0035180	Brazoria County	No	Single Fmly	3	40,308.42	PU	
0120553	Brazoria County	No	Single Fmly	2	25,937.74		
0114093	Brazoria County	No	Single Fmly	3	110,231.76		
0044665	Brazoria County	No	Assmd Condo	7	303,266.07	PU	
0045182	Brazoria County	No	Single Fmly	3	40,730.02		
0018490	Brazoria County	No	Single Fmly	2	5,381.55		
0260331	Brazoria County	Yes	Single Fmly	2	202,901.78		
0260201	Brazoria County	Yes	Single Fmly	2	186,196.31		
0025852	Brazoria County	No	Single Fmly	2	24,035.71		
0026320	Brazoria County	Yes	Single Fmly	3	60,673.61		
0026497	Brazoria County	No	Single Fmly	2	15,949.37		
0026058	Brazoria County	No	Single Fmly	3	46,774.95		
0041433	Brazoria County	No	Single Fmly	3	117,361.17		
0025991	Brazoria County	Yes	Single Fmly	3	139,015.15		
0039095	Brazoria County	Yes	Single Fmly	3	155,381.19		
0017505	Brazoria County	No	Single Fmly	2	21,173.00		
0026166	Brazoria County	Yes	Single Fmly	3	91,910.30		
0039732	Brazoria County	Yes	Single Fmly	2	14,942.66		
0115588	Brazoria County	Yes	Single Fmly	3	18,430.11		
0259951	Brazoria County	Yes	Single Fmly	2	350,942.12		
0016053	Brazoria County	No	Single Fmly	5	55,034.28	VU	
0180141	Brazoria County	Yes	Single Fmly	2	8,826.74		
0119792	Brazoria County	Yes	Single Fmly	2	15,477.31		
0017655	Brazoria County	Yes	Single Fmly	2	8,263.68		
0025851	Brazoria County	No	Single Fmly	4	13,944.34		
0182775	Brazoria County	Yes	Single Fmly	2	41,239.42		
0260102	Brazoria County	Yes	Single Fmly	2	88,119.03		
0177067	Brazoria County	No	Single Fmly	2	27,511.02		
0005813	Brazoria County	No	Single Fmly	4	55,382.62	VU	
0045235	Brazoria County	No	Single Fmly	2	14,250.60		
0180126	Brazoria County	No	Single Fmly	3	72,516.93		
0262710	Brazoria County	Yes	Single Fmly	2	7,325.58		
0069969	Brazoria County	No	Othr-Nonres	2	13,865.96		
0002910	Brazoria County	No	Single Fmly	2	8,006.71		
0015953	Brazoria County	No	Single Fmly	5	27,704.26		
0257915	Brazoria County	Yes	Single Fmly	2	96,367.79		
0018645	Brazoria County	No	Single Fmly	3	12,964.20		
0119351	Brazoria County	No	Single Fmly	2	5,839.53		
0262806	Brazoria County	Yes	Other Resid	2	150,000.00		

0118878	Brazoria County	No	Single Fmly	2	43,152.09	
0025818	Brazoria County	No	Single Fmly	2	20,009.92	
0260354	Brazoria County	Yes	Single Fmly	2	176,182.20	P
0003374	Brazoria County	No	Single Fmly	5	51,275.95	VU
0216653	Brazoria County	No	2-4 Family	2	49,825.56	
0017515	Brazoria County	No	Single Fmly	2	40,190.81	PU
0018663	Brazoria County	No	Single Fmly	2	19,536.61	PU
0025679	Brazoria County	No	Single Fmly	5	204,997.84	VU
0118876	Brazoria County	No	Single Fmly	2	33,424.19	
0015971	Brazoria County	No	Single Fmly	2	30,601.54	PU
0071472	Brazoria County	No	Single Fmly	4	59,085.52	VU
0099013	Brazoria County	No	Single Fmly	2	75,360.96	
0069920	Brazoria County	Yes	Single Fmly	4	82,770.62	
0242698	Brazoria County	Yes	Single Fmly	3	10,936.91	
0070569	Brazoria County	Sdf	Single Fmly	8	169,476.50	V
0068083	Brazoria County	No	Single Fmly	5	75,960.75	
0179564	Brazoria County	Sdf	Single Fmly	4	91,018.06	V
0168802	Brazoria County	Yes	Single Fmly	2	147,933.52	
0114251	Brazoria County	No	Single Fmly	3	140,786.15	
0112240	Brazoria County	Yes	Single Fmly	4	135,594.78	
0069936	Brazoria County	Sdf	Single Fmly	5	234,767.30	V
0044313	Brazoria County	No	Single Fmly	2	9,966.09	
0049796	Brazoria County	No	Single Fmly	3	34,624.90	
0116885	Brazoria County	No	Single Fmly	2	9,414.50	
0008454	Brazoria County	No	Single Fmly	7	180,189.30	VU
0119171	Brazoria County	Yes	Single Fmly	2	18,698.05	
0039427	Brazoria County	No	Single Fmly	2	20,543.32	
0096794	Brazoria County	Sdf	Single Fmly	4	43,629.62	V
0257769	Brazoria County	Yes	Single Fmly	2	101,800.00	
0124246	Brazoria County	No	Single Fmly	2	5,625.80	
0112927	Brazoria County	No	Single Fmly	3	89,706.13	
0118459	Brazoria County	No	Single Fmly	2	25,493.78	
0119185	Brazoria County	No	Single Fmly	2	12,303.20	
0025789	Brazoria County	No	Single Fmly	2	15,414.32	
0025561	Brazoria County	No	Single Fmly	2	9,353.79	PU
0026827	Brazoria County	No	Single Fmly	4	43,771.25	
0013222	Brazoria County	No	Single Fmly	7	151,966.18	VU
0012991	Brazoria County	No	Single Fmly	7	94,499.76	VU
0097237	Brazoria County	No	Single Fmly	3	140,460.76	
0120525	Brazoria County	No	Single Fmly	2	8,615.19	
0026449	Brazoria County	No	Single Fmly	2	10,754.53	
0119542	Brazoria County	No	Single Fmly	2	9,225.36	
0068003	Brazoria County	No	Single Fmly	3	43,553.34	
0121552	Brazoria County	No	Single Fmly	2	14,989.53	
0025514	Brazoria County	Yes	Single Fmly	3	10,231.07	
0120647	Brazoria County	No	Othr-Nonres	2	57,981.01	
0124435	Brazoria County	No	Othr-Nonres	2	36,241.62	
0017608	Brazoria County	No	Single Fmly	2	66,349.63	
0117821	Brazoria County	Yes	Single Fmly	4	82,603.40	
0045236	Brazoria County	No	Assmd Condo	3	61,754.75	
0026384	Brazoria County	No	Single Fmly	2	33,003.90	
0112852	Brazoria County	Yes	Single Fmly	3	155,584.34	
0112962	Brazoria County	No	Single Fmly	2	46,525.66	
0073423	Brazoria County	Sdf	Single Fmly	4	259,366.45	V

0036666	Brazoria County	No	Single Fmly	2	19,468.49		Item 9.
0026199	Brazoria County	No	Single Fmly	5	94,376.33	VU	
0121969	Brazoria County	No	Single Fmly	2	9,566.64		
0088306	Brazoria County	No	Single Fmly	6	118,211.03	VU	
0069992	Brazoria County	No	Single Fmly	4	53,619.02		
0048504	Brazoria County	No	Single Fmly	3	14,435.04		
0257779	Brazoria County	Yes	Single Fmly	2	61,411.18		
0259798	Brazoria County	Yes	Single Fmly	2	18,716.11		
0118932	Brazoria County	Yes	Single Fmly	2	25,357.18		
0119167	Brazoria County	No	Single Fmly	2	10,860.56		
0044114	Brazoria County	Yes	Single Fmly	3	33,221.67		
0002704	Brazoria County	No	Single Fmly	5	27,854.83		
0118922	Brazoria County	No	Single Fmly	3	110,641.57		
0168435	Brazoria County	No	Single Fmly	3	50,952.56		
0118646	Brazoria County	No	Single Fmly	2	31,306.08		
0018515	Brazoria County	No	Single Fmly	7	155,397.10	VU	
0017252	Brazoria County	No	Single Fmly	3	14,910.33		
0069861	Brazoria County	No	Single Fmly	2	61,105.33		
0025804	Brazoria County	No	Single Fmly	2	9,414.51		
0026042	Brazoria County	No	Othr-Nonres	2	2,681.25		
0025104	Brazoria County	No	Othr-Nonres	2	50,420.27		
0025105	Brazoria County	No	Single Fmly	2	33,663.65	PU	
0048666	Brazoria County	No	Single Fmly	3	18,394.75		
0018437	Brazoria County	No	Single Fmly	2	9,833.42		
0017488	Brazoria County	No	Single Fmly	2	8,516.00		
0044283	Brazoria County	No	Single Fmly	3	9,173.37		
0045237	Brazoria County	No	Single Fmly	4	54,570.24		
0025384	Brazoria County	No	Single Fmly	3	10,314.57		
0068844	Brazoria County	No	Single Fmly	2	59,397.44		
0003059	Brazoria County	No	Other Resid	2	30,053.52		
0017558	Brazoria County	No	Single Fmly	2	23,248.20		
0044611	Brazoria County	No	Single Fmly	3	49,053.60		
0048453	Brazoria County	No	Othr-Nonres	2	121,322.56		
0044302	Brazoria County	No	Single Fmly	2	26,209.26		
0026108	Brazoria County	No	Single Fmly	4	12,751.45		
0044865	Brazoria County	No	Othr-Nonres	4	98,235.93		
0001455	Brazoria County	No	2-4 Family	3	32,860.54		
0017562	Brazoria County	No	Single Fmly	2	4,870.41		
0018474	Brazoria County	No	Single Fmly	5	155,565.14	MVU	
0015995	Brazoria County	No	Othr-Nonres	3	41,027.66		
0115874	Brazoria County	No	Othr-Nonres	2	10,482.74		
0068099	Brazoria County	No	Single Fmly	5	241,745.22	MVU	
0099153	Brazoria County	No	Single Fmly	2	9,495.36		
0097543	Brazoria County	No	Single Fmly	4	133,248.83		
0026012	Brazoria County	No	Single Fmly	3	65,363.46		
0050101	Brazoria County	No	Single Fmly	2	6,180.93		
0018726	Brazoria County	No	Single Fmly	8	353,082.01	MVU	
0017559	Brazoria County	No	Single Fmly	14	496,501.26	MVU	
0092099	Brazoria County	No	Single Fmly	2	27,400.00		
0044348	Brazoria County	No	Single Fmly	2	31,591.50		
0026836	Brazoria County	No	Single Fmly	2	27,696.74		
0071528	Brazoria County	No	Single Fmly	3	118,062.28		
0041346	Brazoria County	No	Single Fmly	2	17,503.00		
0018423	Brazoria County	No	Single Fmly	2	42,067.52		

0042610	Brazoria County	Yes	Single Fmly	6	146,550.94	MV	Item 9.
0074487	Brazoria, City of	Sdf	Single Fmly	4	95,778.50	V	
0044973	Brazoria, City of	Sdf	Single Fmly	7	102,012.11	V	
0249030	Brazoria, City of	Yes	Single Fmly	2	14,057.35		
0035273	Brazoria, City of	No	Single Fmly	3	4,494.36		
0119186	Brazoria, City of	No	Single Fmly	3	59,965.44		
0048874	Brazoria, City of	No	Single Fmly	2	2,717.42		
0168162	Brazoria, City of	Yes	Single Fmly	2	45,473.43		
0091965	Brazoria, City of	Yes	Single Fmly	3	43,525.71		
0080413	Brazoria, City of	Yes	Single Fmly	5	73,015.76		
0045287	Brazoria, City of	Yes	Single Fmly	3	21,918.98		
0119179	Brazoria, City of	Yes	Single Fmly	2	6,658.20		
0213229	Brazoria, City of	Yes	Single Fmly	4	42,111.48		
0093170	Brazoria, City of	No	Single Fmly	4	42,945.52		
0239616	Brazoria, City of	Yes	Single Fmly	3	74,007.36		
0093911	Brazoria, City of	No	Single Fmly	4	48,812.55		
0068030	Brazoria, City of	No	Single Fmly	3	13,101.43		
0118729	Brazoria, City of	No	Single Fmly	2	8,095.04		
0123800	Brazoria, City of	No	Single Fmly	2	61,286.24		
0048882	Brazoria, City of	No	Single Fmly	4	9,335.08		
0045259	Brazoria, City of	No	Single Fmly	3	6,326.91		
0168428	Brazoria, City of	Yes	Single Fmly	2	16,181.36		
0044886	Brazoria, City of	No	Single Fmly	3	15,060.39		
0039376	Brazoria, City of	No	Single Fmly	2	5,679.84		
0038629	Brazoria, City of	Yes	Single Fmly	4	9,517.08		
0112880	Brookside Village, City of	Yes	Assmd Condo	3	167,979.78		
0259975	Brookside Village, City of	Yes	Single Fmly	2	395,808.78		
0071471	Brookside Village, City of	No	Single Fmly	2	14,958.28		
0069944	Brookside Village, City of	No	Single Fmly	2	5,913.17		
0168026	Brookside Village, City of	Yes	Single Fmly	3	75,075.07		
0168137	Brookside Village, City of	No	Single Fmly	4	81,368.22		
0036827	Brookside Village, City of	No	Single Fmly	2	37,949.10		
0117784	Brookside Village, City of	No	Single Fmly	2	72,547.49		
0173724	Brookside Village, City of	No	Single Fmly	3	56,497.33		
0182797	Brookside Village, City of	No	Single Fmly	2	5,752.29		
0182798	Brookside Village, City of	No	Single Fmly	3	218,330.53		
0068067	Brookside Village, City of	No	Single Fmly	4	154,021.53	VU	
0071481	Brookside Village, City of	No	Single Fmly	4	72,717.10		
0070927	Brookside Village, City of	No	Single Fmly	3	74,899.99		
0115799	Brookside Village, City of	No	Single Fmly	2	83,867.20		
0040015	Brookside Village, City of	No	Single Fmly	4	114,494.37		
0044773	Brookside Village, City of	No	Single Fmly	3	35,252.87		
0004477	Brookside Village, City of	No	Single Fmly	8	108,188.31	VU	
0187054	Brookside Village, City of	Yes	Single Fmly	2	13,000.22		
0071430	Brookside Village, City of	No	Single Fmly	3	35,542.48		
0072209	Brookside Village, City of	No	Single Fmly	3	72,445.88		
0001459	Brookside Village, City of	Sdf	Single Fmly	9	249,064.62	P	
0117731	Brookside Village, City of	No	Single Fmly	3	72,463.69		
0114986	Brookside Village, City of	No	Single Fmly	2	92,894.58		
0113277	Brookside Village, City of	No	Single Fmly	2	63,442.77		
0114739	Brookside Village, City of	No	Single Fmly	2	34,759.14		
0114608	Brookside Village, City of	Yes	Single Fmly	2	84,961.03		
0025090	Brookside Village, City of	No	Single Fmly	3	39,657.37		
0002814	Brookside Village, City of	No	Single Fmly	10	197,556.72	VU	

0112914	Brookside Village, City of	Yes	Single Fmly	2	55,415.02	
0025161	Brookside Village, City of	Sdf	Single Fmly	7	208,928.84	V
0113044	Brookside Village, City of	No	Single Fmly	2	106,241.01	
0112557	Brookside Village, City of	Yes	Single Fmly	2	89,938.32	
0241552	Brookside Village, City of	Yes	Single Fmly	2	47,299.74	
0001910	Brookside Village, City of	No	Single Fmly	5	158,193.83	MVU
0115985	Brookside Village, City of	No	Single Fmly	2	84,895.42	
0045116	Clute, City of	No	Single Fmly	2	5,772.06	
0119195	Clute, City of	No	Single Fmly	2	8,854.94	
0119583	Clute, City of	No	Single Fmly	2	16,124.55	
0119191	Clute, City of	No	Othr-Nonres	2	13,883.74	
0112956	Clute, City of	Yes	Single Fmly	4	16,246.69	
0018296	Clute, City of	No	Single Fmly	2	13,691.62	
0038851	Clute, City of	No	Othr-Nonres	4	33,999.86	VNU
0118914	Clute, City of	Yes	Single Fmly	2	61,172.54	
0095192	Clute, City of	Yes	Single Fmly	3	62,497.91	
0124195	Clute, City of	No	Single Fmly	2	10,036.85	
0068429	Clute, City of	No	Single Fmly	2	2,898.91	
0068430	Clute, City of	Yes	Single Fmly	4	57,985.39	
0026744	Clute, City of	No	Single Fmly	2	11,639.00	
0041418	Clute, City of	No	Single Fmly	7	32,038.87	
0026688	Clute, City of	No	Assmd Condo	2	9,612.40	
0097563	Clute, City of	Sdf	Single Fmly	8	151,901.08	V
0119181	Clute, City of	No	Single Fmly	2	4,931.40	
0035370	Clute, City of	No	Othr-Nonres	2	33,711.44	
0040207	Clute, City of	No	Othr-Nonres	3	19,259.82	
0096848	Clute, City of	No	Single Fmly	3	72,769.46	
0112465	Clute, City of	No	Othr-Nonres	3	115,534.18	
0260271	Danbury, City of	Yes	Single Fmly	2	85,349.29	
0025204	Danbury, City of	No	Single Fmly	2	11,341.33	
0258801	Danbury, City of	Yes	Single Fmly	2	113,452.84	
0118751	Danbury, City of	No	Single Fmly	2	30,836.22	
0096866	Danbury, City of	Yes	Single Fmly	3	31,461.19	
0100353	Danbury, City of	No	Single Fmly	2	18,754.11	
0257214	Danbury, City of	Yes	Single Fmly	2	149,178.02	
0118859	Danbury, City of	No	Single Fmly	2	12,866.68	
0119190	Danbury, City of	Yes	Single Fmly	3	89,986.13	
0015145	Freeport, City of	No	Othr-Nonres	3	65,382.86	
0038724	Freeport, City of	No	Single Fmly	2	7,918.18	
0067999	Freeport, City of	No	Single Fmly	6	55,794.76	
0118739	Freeport, City of	No	Single Fmly	4	10,457.30	
0068000	Freeport, City of	No	Single Fmly	2	4,391.78	
0068001	Freeport, City of	Yes	Single Fmly	3	16,008.42	
0120650	Freeport, City of	No	Single Fmly	2	20,762.62	
0169488	Freeport, City of	No	Othr-Nonres	2	19,708.76	
0044926	Freeport, City of	No	Othr-Nonres	2	5,733.65	
0118971	Freeport, City of	Sdf	Othr-Nonres	4	156,559.12	VN
0118888	Freeport, City of	No	Single Fmly	2	12,830.94	
0018564	Freeport, City of	No	Single Fmly	3	23,340.46	
0172115	Freeport, City of	Sdf	Single Fmly	6	127,378.17	V
0025590	Freeport, City of	No	Single Fmly	3	10,542.68	
0119548	Freeport, City of	No	Single Fmly	3	40,732.21	
0128027	Freeport, City of	No	Single Fmly	2	84,254.69	
0018720	Freeport, City of	No	Single Fmly	3	58,491.24	

0119551	Freeport, City of	No	Single Fmly	2	23,413.72	
0254767	Freeport, City of	Yes	Othr-Nonres	2	210,684.47	
0026236	Freeport, City of	No	Single Fmly	2	51,480.22	
0182777	Freeport, City of	Yes	Single Fmly	2	71,492.93	
0026711	Freeport, City of	No	Single Fmly	2	5,340.77	
0068008	Freeport, City of	Yes	Single Fmly	2	44,385.57	
0118916	Freeport, City of	No	Single Fmly	2	17,141.41	
0119183	Freeport, City of	No	Single Fmly	2	5,775.25	
0118886	Freeport, City of	Yes	Single Fmly	3	65,068.74	
0124249	Freeport, City of	Yes	Single Fmly	3	37,595.11	
0043575	Freeport, City of	No	Single Fmly	2	3,093.64	
0041928	Freeport, City of	No	Othr-Nonres	2	4,653.00	
0068005	Freeport, City of	No	Assmd Condo	2	18,884.44	
0038996	Freeport, City of	No	Single Fmly	2	15,199.95	
0068010	Freeport, City of	Yes	Single Fmly	3	39,762.98	
0038133	Freeport, City of	Yes	Single Fmly	3	53,028.00	
0118889	Freeport, City of	No	Single Fmly	2	21,511.66	
0037909	Freeport, City of	No	Single Fmly	3	6,625.65	
0016077	Freeport, City of	No	Othr-Nonres	3	30,482.58	
0068011	Freeport, City of	No	Other Resid	2	11,460.97	
0018323	Freeport, City of	No	Assmd Condo	2	20,770.53	
0026090	Freeport, City of	No	Single Fmly	2	4,665.56	
0026147	Freeport, City of	No	Single Fmly	3	12,154.49	
0068013	Freeport, City of	No	Single Fmly	2	11,169.06	
0043786	Freeport, City of	No	Single Fmly	2	14,906.40	
0157859	Freeport, City of	No	Single Fmly	3	305,681.41	MVU
0068017	Freeport, City of	No	Single Fmly	2	7,927.30	
0041487	Hillcrest Village, City of	No	Single Fmly	2	8,254.14	
0017489	Hillcrest Village, City of	No	Single Fmly	2	14,956.29	
0026419	Hillcrest Village, City of	No	Single Fmly	2	25,202.95	
0017526	Hillcrest Village, City of	No	Single Fmly	2	17,237.97	
0068839	Hillcrest Village, City of	No	Single Fmly	7	47,962.71	
0026834	Hillcrest Village, City of	No	Single Fmly	2	34,157.43	
0258592	Holiday Lakes, Town of	Yes	Single Fmly	2	97,300.00	P
0071503	Iowa Colony, City of	Yes	Single Fmly	4	171,947.87	V
0115661	Iowa Colony, City of	No	Single Fmly	3	43,782.28	
0194832	Iowa Colony, City of	No	Single Fmly	2	61,034.14	
0168456	Iowa Colony, City of	No	Single Fmly	2	53,831.52	
0071470	Iowa Colony, City of	No	Single Fmly	8	225,486.74	VU
0125959	Iowa Colony, City of	Yes	Single Fmly	3	78,161.05	
0068014	Jones Creek, Village of	No	Single Fmly	3	21,389.25	
0122117	Jones Creek, Village of	No	Single Fmly	2	70,446.44	
0025677	Jones Creek, Village of	Yes	Single Fmly	5	27,333.54	
0038948	Jones Creek, Village of	No	Single Fmly	2	11,642.73	
0250744	Jones Creek, Village of	Yes	Single Fmly	3	157,447.50	
0252007	Jones Creek, Village of	Yes	Single Fmly	2	56,482.83	
0040361	Jones Creek, Village of	No	Single Fmly	2	10,855.32	
0043309	Jones Creek, Village of	No	Single Fmly	2	22,429.73	
0017575	Jones Creek, Village of	Yes	Single Fmly	2	31,198.14	
0068015	Jones Creek, Village of	No	Single Fmly	2	3,341.31	
0036431	Jones Creek, Village of	No	Single Fmly	2	4,866.04	
0040963	Jones Creek, Village of	No	Single Fmly	2	15,200.19	PU
0015139	Jones Creek, Village of	No	Single Fmly	5	95,938.88	VU
0017586	Jones Creek, Village of	No	Single Fmly	2	22,370.51	PU

0045643	Jones Creek, Village of	No	Single Fmly	2	11,487.33	
0025664	Jones Creek, Village of	No	Single Fmly	2	10,986.69	
0017462	Lake Jackson, City of	No	Single Fmly	4	14,929.74	
0119858	Lake Jackson, City of	Yes	Single Fmly	2	19,633.38	
0259643	Lake Jackson, City of	Yes	Single Fmly	2	94,094.35	
0106780	Lake Jackson, City of	No	Single Fmly	3	11,723.38	
0025754	Lake Jackson, City of	Yes	Single Fmly	3	19,568.49	
0119194	Lake Jackson, City of	No	Single Fmly	2	44,042.08	
0168452	Lake Jackson, City of	Yes	Single Fmly	2	4,195.11	
0026758	Lake Jackson, City of	Yes	Single Fmly	4	21,998.72	
0088134	Lake Jackson, City of	No	Single Fmly	2	5,508.31	
0017508	Lake Jackson, City of	No	Othr-Nonres	3	18,385.24	
0044710	Lake Jackson, City of	No	Single Fmly	3	30,525.53	
0043556	Lake Jackson, City of	No	Othr-Nonres	2	21,287.90	
0046816	Lake Jackson, City of	No	Single Fmly	3	35,478.46	
0045242	Lake Jackson, City of	No	Othr-Nonres	2	12,084.23	
0040369	Lake Jackson, City of	No	Single Fmly	4	15,364.62	
0049728	Lake Jackson, City of	Yes	Single Fmly	3	10,499.62	
0025828	Lake Jackson, City of	No	Single Fmly	3	11,097.79	
0044504	Lake Jackson, City of	No	Single Fmly	2	9,832.78	
0045288	Liverpool, City of	No	Single Fmly	2	14,491.03	
0044125	Liverpool, City of	Yes	Single Fmly	2	17,008.00	
0123863	Liverpool, City of	No	Single Fmly	2	39,559.22	
0045103	Liverpool, City of	No	Single Fmly	2	19,224.77	
0034320	Manvel, City of	No	Single Fmly	2	11,537.70	
0113964	Manvel, City of	Yes	Single Fmly	3	44,401.14	
0069918	Manvel, City of	No	Single Fmly	2	11,429.82	
0121370	Manvel, City of	No	Single Fmly	2	29,600.60	
0116004	Manvel, City of	No	Single Fmly	2	19,469.65	
0242161	Manvel, City of	Yes	Single Fmly	3	76,454.03	
0116812	Manvel, City of	No	Single Fmly	3	43,433.95	
0017435	Manvel, City of	Sdf	Single Fmly	5	154,364.25	V
0116813	Manvel, City of	Yes	Single Fmly	3	64,767.24	
0168804	Manvel, City of	Yes	Single Fmly	2	71,770.74	
0083536	Manvel, City of	No	Single Fmly	3	115,009.07	
0081789	Manvel, City of	No	Single Fmly	4	104,351.99	VU
0005609	Manvel, City of	No	Single Fmly	3	28,411.65	
0069001	Manvel, City of	No	Single Fmly	2	16,920.62	
0115730	Manvel, City of	No	Single Fmly	4	49,163.31	
0045537	Manvel, City of	No	Single Fmly	6	265,874.07	VU
0116833	Manvel, City of	No	Single Fmly	3	65,597.68	
0026047	Manvel, City of	No	Single Fmly	5	53,529.20	
0115660	Manvel, City of	No	Othr-Nonres	3	55,492.42	
0114624	Manvel, City of	Yes	Single Fmly	2	45,729.99	
0071462	Manvel, City of	Yes	Single Fmly	4	235,670.65	
0026780	Manvel, City of	No	Single Fmly	7	169,215.30	VU
0169495	Manvel, City of	Yes	Single Fmly	2	94,575.53	
0071457	Manvel, City of	No	Single Fmly	2	10,134.35	
0258291	Manvel, City of	Yes	Single Fmly	2	139,468.63	
0038723	Manvel, City of	Yes	Single Fmly	3	35,781.48	
0043388	Manvel, City of	No	Single Fmly	2	36,752.39	
0038814	Manvel, City of	No	Single Fmly	2	17,929.48	
0124247	Oyster Creek, City of	No	Assmd Condo	2	218,139.46	
0121436	Oyster Creek, City of	No	Single Fmly	3	18,488.47	

0119539	Oyster Creek, City of	Yes	Single Fmly	4	15,235.82	
0025696	Oyster Creek, City of	No	Single Fmly	2	7,528.31	
0016013	Oyster Creek, City of	No	Single Fmly	2	12,647.57	
0026118	Oyster Creek, City of	No	Othr-Nonres	2	8,697.51	
0025581	Oyster Creek, City of	No	Othr-Nonres	2	6,395.23	
0025363	Oyster Creek, City of	No	Single Fmly	2	8,169.53	
0181880	Quintana, Town of	No	Single Fmly	2	14,803.31	
0017261	Richwood, City of	No	Single Fmly	2	54,194.00	
0044101	Richwood, City of	No	Single Fmly	2	4,556.37	
0045839	Richwood, City of	Sdf	Othr-Nonres	6	84,780.62	PN
0040112	Richwood, City of	No	Single Fmly	2	4,414.86	
0045729	Richwood, City of	No	Single Fmly	7	69,719.97	VU
0018502	Richwood, City of	Yes	Single Fmly	4	32,091.63	
0128028	Richwood, City of	Yes	Single Fmly	4	87,207.94	
0244402	Richwood, City of	No	Single Fmly	2	11,602.69	
0183782	Richwood, City of	No	Single Fmly	2	7,189.92	
0017585	Richwood, City of	No	Single Fmly	7	79,630.85	VU
0048476	Richwood, City of	No	Single Fmly	3	16,320.09	
0183771	Surfside Beach, City of	Yes	Single Fmly	2	108,366.00	
0183772	Surfside Beach, City of	No	Single Fmly	2	88,098.48	
0186536	Surfside Beach, City of	Yes	Single Fmly	2	11,639.91	
0146331	Surfside Beach, City of	Sdf	Single Fmly	4	101,978.10	V
0179113	Surfside Beach, City of	No	Single Fmly	2	133,788.30	
0182772	Surfside Beach, City of	Yes	Single Fmly	2	135,556.81	V
0179186	Surfside Beach, City of	No	Single Fmly	2	235,742.49	VU
0177146	Surfside Beach, City of	Yes	Single Fmly	2	40,564.05	
0026214	Surfside Beach, City of	No	Single Fmly	4	11,234.86	
0178846	Surfside Beach, City of	Yes	Single Fmly	2	13,398.73	
0124243	Surfside Beach, City of	No	Single Fmly	2	4,337.48	
0124199	Surfside Beach, City of	No	Single Fmly	2	11,271.85	
0123745	Surfside Beach, City of	No	Single Fmly	3	40,345.81	
0124412	Surfside Beach, City of	No	Single Fmly	4	28,589.54	
0123939	Surfside Beach, City of	Yes	Single Fmly	3	25,589.92	
0179144	Surfside Beach, City of	No	Single Fmly	2	121,039.99	VU
0179071	Surfside Beach, City of	Yes	Single Fmly	2	38,447.21	
0178847	Surfside Beach, City of	Yes	Single Fmly	2	16,147.07	
0181073	Surfside Beach, City of	No	Single Fmly	2	3,595.00	
0124942	Surfside Beach, City of	No	Single Fmly	3	42,017.74	
0181197	Surfside Beach, City of	Yes	Single Fmly	2	14,617.30	
0068621	Surfside Beach, City of	No	Othr-Nonres	9	448,968.69	PNU
0123948	Surfside Beach, City of	Yes	Single Fmly	3	18,805.86	
0124313	Surfside Beach, City of	No	Single Fmly	3	51,876.65	
0181068	Surfside Beach, City of	No	Othr-Nonres	2	138,955.94	
0123949	Surfside Beach, City of	Yes	Othr-Nonres	2	20,036.99	
0119586	Surfside Beach, City of	Sdf	Othr-Nonres	4	229,942.97	PN
0162115	Surfside Beach, City of	No	Other Resid	2	19,212.80	
0132860	Surfside Beach, City of	No	Single Fmly	5	38,298.27	
0119838	Surfside Beach, City of	Sdf	Single Fmly	4	111,166.20	V
0124577	Surfside Beach, City of	No	Single Fmly	2	20,085.00	
0124214	Surfside Beach, City of	No	Single Fmly	2	10,192.00	
0182776	Surfside Beach, City of	No	Single Fmly	2	16,948.66	
0098410	Surfside Beach, City of	No	Othr-Nonres	4	293,530.78	VNU
0119315	Surfside Beach, City of	No	Single Fmly	3	12,279.14	
0124221	Surfside Beach, City of	No	Single Fmly	3	68,279.12	

0045738	Surfside Beach, City of	Sdf	Othr-Nonres	6	336,596.20	VN	Item 9.
0124345	Surfside Beach, City of	No	Single Fmly	2	13,396.43		
0181066	Surfside Beach, City of	Yes	Single Fmly	2	25,900.87		
0098357	Surfside Beach, City of	No	Single Fmly	4	59,261.97		
0132884	Surfside Beach, City of	No	Single Fmly	3	67,926.05		
0183053	Surfside Beach, City of	No	Single Fmly	2	35,728.78		
0123978	Surfside Beach, City of	No	Single Fmly	2	6,341.00		
0181827	Surfside Beach, City of	No	Single Fmly	2	122,096.60		
0048327	Surfside Beach, City of	No	Single Fmly	2	5,376.49		
0179695	Surfside Beach, City of	Yes	Single Fmly	2	26,239.99		
0181171	Surfside Beach, City of	No	Single Fmly	2	28,170.70		
0118915	Surfside Beach, City of	No	Single Fmly	3	38,409.75		
0182768	Surfside Beach, City of	No	Othr-Nonres	2	153,069.79		
0124408	Surfside Beach, City of	No	Single Fmly	2	50,778.81		
0123962	Surfside Beach, City of	No	Single Fmly	3	51,792.11		
0118747	Surfside Beach, City of	No	Single Fmly	3	22,116.97		
0254975	Surfside Beach, City of	Yes	Single Fmly	2	35,723.07		
0015175	Surfside Beach, City of	Yes	Single Fmly	5	25,410.73		
0181267	Surfside Beach, City of	Yes	Single Fmly	3	26,790.91		
0181732	Surfside Beach, City of	Yes	Single Fmly	2	10,600.84		
0124201	Surfside Beach, City of	No	Single Fmly	3	94,363.14		
0180876	Surfside Beach, City of	No	Single Fmly	2	18,348.40		
0124289	Surfside Beach, City of	Yes	Single Fmly	3	20,677.02		
0157057	Surfside Beach, City of	No	Single Fmly	2	42,782.51		
0121662	Surfside Beach, City of	Yes	Othr-Nonres	3	90,587.36		
0184358	Surfside Beach, City of	Yes	Single Fmly	2	19,498.18		
0181076	Surfside Beach, City of	No	Single Fmly	2	19,282.14		
0178982	Surfside Beach, City of	No	Single Fmly	2	13,935.77		
0182770	Surfside Beach, City of	Yes	Single Fmly	2	14,016.04		
0178845	Surfside Beach, City of	No	Single Fmly	2	10,521.10		
0026825	Surfside Beach, City of	No	Othr-Nonres	2	4,297.71		
0179062	Surfside Beach, City of	Yes	Single Fmly	3	54,989.88		
0181245	Surfside Beach, City of	No	Single Fmly	2	18,022.73		
0180243	Surfside Beach, City of	Yes	Single Fmly	2	17,217.73		
0184498	Surfside Beach, City of	No	Single Fmly	2	12,818.41		
0180196	Surfside Beach, City of	No	Single Fmly	2	20,340.72		
0181074	Surfside Beach, City of	No	Single Fmly	2	16,355.66		
0146325	Surfside Beach, City of	No	Single Fmly	2	32,396.36		
0124575	Surfside Beach, City of	Yes	Single Fmly	3	12,725.08		
0182962	Surfside Beach, City of	No	Single Fmly	2	20,371.95		
0181075	Surfside Beach, City of	No	Single Fmly	2	40,452.31		
0183235	Surfside Beach, City of	Yes	Single Fmly	2	5,591.27		
0180083	Surfside Beach, City of	Yes	Single Fmly	2	18,333.21		
0213522	Surfside Beach, City of	No	Single Fmly	2	95,306.64		
0178848	Surfside Beach, City of	Yes	Single Fmly	2	17,997.58		
0157071	Surfside Beach, City of	Yes	Single Fmly	3	27,215.20		
0044060	Surfside Beach, City of	Sdf	Single Fmly	5	49,744.35	V	
0178966	Surfside Beach, City of	Yes	Single Fmly	2	28,607.98		
0123813	Surfside Beach, City of	Yes	Single Fmly	3	37,852.65		
0178994	Surfside Beach, City of	No	Single Fmly	2	12,904.98		
0123953	Surfside Beach, City of	Yes	Single Fmly	3	55,539.14		
0182965	Surfside Beach, City of	No	Single Fmly	2	27,651.10		
0124022	Surfside Beach, City of	No	Single Fmly	2	5,662.47		
0180093	Surfside Beach, City of	No	Single Fmly	2	42,939.23		

0180148	Surfside Beach, City of	No	Single Fmly	2	33,508.92		Item 9.
0124437	Surfside Beach, City of	Sdf	Single Fmly	4	50,925.06	V	
0042831	Surfside Beach, City of	Yes	Single Fmly	6	34,125.81		
0016107	Surfside Beach, City of	No	Single Fmly	3	5,679.55		
0181414	Surfside Beach, City of	No	Single Fmly	2	52,969.15		
0178988	Surfside Beach, City of	Yes	Single Fmly	2	71,907.14		
0119166	Surfside Beach, City of	No	Single Fmly	4	27,126.08		
0177170	Surfside Beach, City of	No	Single Fmly	3	81,299.53		
0189639	Surfside Beach, City of	Yes	Single Fmly	2	19,710.15		
0124230	Surfside Beach, City of	Yes	Single Fmly	3	26,467.53		
0179059	Surfside Beach, City of	No	Single Fmly	2	72,904.44		
0026820	Surfside Beach, City of	No	Assmd Condo	5	145,196.64		
0182963	Surfside Beach, City of	No	Single Fmly	2	11,095.06		
0119169	Surfside Beach, City of	No	Single Fmly	3	124,441.35		
0025947	Surfside Beach, City of	No	Single Fmly	2	8,216.89		
0178983	Surfside Beach, City of	Yes	Single Fmly	2	23,464.34		
0178765	Surfside Beach, City of	No	Single Fmly	2	11,551.50		
0124245	Surfside Beach, City of	No	Single Fmly	2	11,044.41		
0181198	Surfside Beach, City of	Yes	Single Fmly	2	22,333.71		
0182767	Surfside Beach, City of	No	Single Fmly	2	5,528.24		
0182961	Surfside Beach, City of	No	Single Fmly	2	50,348.99		
0124372	Surfside Beach, City of	No	Single Fmly	3	38,543.24		
0181771	Surfside Beach, City of	Yes	Single Fmly	2	32,296.42		
0037907	Surfside Beach, City of	No	Othr-Nonres	2	17,536.10		
0038438	Surfside Beach, City of	No	Assmd Condo	3	28,024.00		
0046398	Surfside Beach, City of	No	Single Fmly	2	8,966.30		
0026192	Surfside Beach, City of	No	Othr-Nonres	3	32,579.50		
0048324	Surfside Beach, City of	No	Othr-Nonres	3	11,169.47		
0016111	Surfside Beach, City of	No	Othr-Nonres	2	31,692.88		
0026430	Surfside Beach, City of	No	Single Fmly	2	5,346.10		
0182164	Surfside Beach, City of	No	Single Fmly	2	72,015.36		
0124574	Surfside Beach, City of	No	Single Fmly	3	33,366.43		
0151758	Surfside Beach, City of	No	Single Fmly	2	28,150.67		
0119587	Surfside Beach, City of	No	Single Fmly	3	21,761.81		
0157854	Surfside Beach, City of	No	Single Fmly	3	146,124.03		
0025708	Surfside Beach, City of	No	Single Fmly	4	112,965.98		
0025460	Surfside Beach, City of	No	Single Fmly	6	38,288.90	MVU	
0181072	Surfside Beach, City of	No	Single Fmly	2	193,965.11		
0191655	Surfside Beach, City of	No	Single Fmly	2	76,672.32		
0151760	Surfside Beach, City of	No	Single Fmly	2	60,574.59		
0111176	Surfside Beach, City of	No	Single Fmly	3	66,842.86		
0180870	Surfside Beach, City of	No	Single Fmly	2	57,958.90		
0124421	Surfside Beach, City of	No	Single Fmly	4	137,297.76		
0119801	Surfside Beach, City of	No	Single Fmly	3	151,870.78		
0124016	Surfside Beach, City of	No	Othr-Nonres	2	64,857.31		
0124200	Surfside Beach, City of	No	Single Fmly	3	115,543.81	MVU	
0124463	Surfside Beach, City of	No	Othr-Nonres	3	548,942.69		
0184784	Surfside Beach, City of	Yes	Single Fmly	2	73,084.49		
0123952	Surfside Beach, City of	No	Single Fmly	4	14,151.98		
0005637	Sweeny, City of	No	Single Fmly	5	104,788.96	VU	
0076282	Sweeny, City of	Yes	Single Fmly	4	57,125.85		
0068234	Sweeny, City of	Sdf	Single Fmly	5	103,772.84	V	
0120587	Sweeny, City of	Yes	Single Fmly	4	259,322.43		
0042598	Sweeny, City of	No	Single Fmly	5	104,429.51	VU	

0195023	Sweeny, City of	Yes	Single Fmly	3	12,263.41	
0103528	Sweeny, City of	No	Othr-Nonres	3	53,012.05	
0239143	West Columbia, City of	Yes	Assmd Condo	2	87,761.65	
0097231	West Columbia, City of	No	Single Fmly	3	43,517.27	
0096730	West Columbia, City of	No	Single Fmly	2	53,860.71	
0026747	West Columbia, City of	No	Single Fmly	2	11,048.00	
0026123	West Columbia, City of	No	Single Fmly	2	38,123.01	PU
0001026	West Columbia, City of	No	Single Fmly	10	147,014.56	VU
0033821	West Columbia, City of	No	Single Fmly	4	53,837.13	
0119323	West Columbia, City of	No	Single Fmly	2	6,923.77	
0096729	West Columbia, City of	No	Single Fmly	2	9,630.81	
0118936	West Columbia, City of	No	Single Fmly	2	6,996.76	
0260848	West Columbia, City of	Yes	Single Fmly	2	55,425.58	
0195149	West Columbia, City of	Sdf	Single Fmly	5	52,285.54	V
0042422	West Columbia, City of	No	Single Fmly	3	8,146.47	
0098916	West Columbia, City of	No	Single Fmly	3	58,431.99	

Appendix E – Future Mitigation Strategies and Action Items