



CYPRESS CREEK FLOOD CONTROL COALITION

ANNUAL REPORT 2019 20TH ANNIVERSARY



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CLAY V. HIGGINS

FIGHT FLOODING
We have been battling flooding since 1912
LET'S FINISH THE JOB

...community organizations united for collaboration in regional government watershed management...
Spring, Texas • Houston, Texas • Cypress, Texas • Waller, Texas

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CYPRESS CREEK FLOOD CONTROL COALITION

12503 Ramona
Cypress, Texas 77429
Tel: 281-469-5161
Fax: 281-469-5468

e-mail: floodalliance@ccfcc.org
www.ccfcc.org

January 30, 2020

President's Letter
- 2019 Annual Report -

December 9, 2019 was the 20th anniversary date of our watershed community residents and businesses coming together under the Cypress Creek Flood Control Coalition name to work with our government as a proactive non-profit partner in flood mitigation endeavors. The "CCFCC" (Coalition) its mission and goals encompass all the 320 square mile watershed locations in Harris County and Waller County, Texas. A section of the adjacent Addicks Watershed shares in the Cypress Creek drainage issues and thereby has created the necessity for a combined systems approach to flood management. The Coalition mission and goals were recorded in a Charter signed by the 21 original member organizations. A copy is enclosed, elsewhere in this report.

During the next 20 years neighboring communities in the watershed repeatedly "*weathered the storms*" US presidential disasters were declared. Rising waters flooded homes, schools, churches and businesses threatening the lives and safety of families isolated by muddy waters. Access to flooded neighborhoods by firemen, police, and rescue teams, medical/ambulance personnel and school busses were often blocked. Homes and other properties estimated in total to be in the thousands were severely damaged or destroyed beyond recovery. The safety and lives of residents were at risk.

This anniversary in retrospect highlighted 2 prominent long standing CCFCC mission goals. One is implementation of long overdue regional flood water detention basins. Other flood mitigation infrastructure has broken ground. This decades of delay was caused by lack of funding and lack of political commitment. Now, such infrastructure is a reality due to the successful 2018 flood bond election. Information on some of these and more in the making is provided in this report. The other highlight is the continued need for but failure in correcting inadequate flood mitigation criteria for new development underway and coming located primarily in the upper watershed locations.

Through-out these 2 decades, the Coalition has employed skilled engineering flood consultants to review government stormwater management development criteria / regulations applicable to the Cypress Creek Watershed. Their job is to evaluate and determine the adequacy in damage mitigation within the watershed.

continued on next page...

President's letter

Where found to be inadequate, the results and recommended actions have been provided to flood control representatives and elected government officials seeking their corrective action in the Coalition quest to reduce the resulting *rising waters*. Unfortunately, with some exceptions the responsible officials failed to take remedial action. Thus, the issue remains a challenge still reaming to be resolved. I am pleased to say the new Harris County Flood Control District officials and staff which came on board 2 years ago have undertaken a massive forward step in providing excellent services to the Cypress Creek Watershed community.

Before ending this year's letter, there is one last point worthy of mention with the hopes it will be given a higher priority in our citizens and elected Harris County leadership efforts to continue major achievements in flood management. This is to consider by what means can we improve accountability in new development drainage. . Currently new building construction is not allowed without first obtaining an approved building permit from the Harris County Engineer. This requires the contractor's engineer to do the following:

1. Provide a drainage plan with information evidencing compliance with all applicable flood regulatory criteria, regulations, and,
2. Certify on the application that the proposed construction / project will comply with the Harris County "**NO ADVERSE IMPACT**" regulation. This NAI requirement stipulates the work and products covered by the approved not result in damage to other parties or their property.

The NAI regulation is especially important as protection against increased flood drainage damage to neighboring and downstream properties. However it is believed by many there is no existing regulatory process to verify proof this "NO ADVERSE IMPACT" requirement will be met. And after the new development is constructed, what methods, if any, to monitor and verify the NAI commitment on the approved permit application is actually achieved?

Or is it not being achieved and thereby is one of the contributing reasons for the "*rising waters*" increases in the Cypress Creek Watershed? Is review of the permit application documents sufficient to verify this requirement will be met? Or is it met but the overall flooding is entirely due to reasons beyond the adequacy and compliance therewith of the stormwater management criteria applicable to new development?

The existing "*rising waters*" dilemma is a major issue. And as required by the Coalition charter, the President's additional recommended goals / actions for the forthcoming year are summaarized on the attachment to this letter.

President's Letter

This year's report is closed by thanking those of our member organizations who each month the donates funds to pay out-of-pocket expenses. Also thanks to each of you who serve faithfully as unpaid directors and volunteers. Lastly, please keep yourself, families and neighborhoods safe from the COVID-19 virus pandemic.

A handwritten signature in blue ink, appearing to read "Dick Smith", with a long, sweeping horizontal line extending to the left.

Richard (Dick) Smith,
President

Encl: Attachment

Attachment:

- **Cypress Creek Overflow:** This issue is at the forefront of the USACE ongoing 3-year BBTRS investigation, One of the alternatives to reduce this rising waters danger to the Addicks Watershed / Buffalo Bayou communities is to block and/or divert these floodwater elsewhere. Strong consideration is making this change by re-direction into the Cypress Watershed. This possibility necessitates formation of a strong Cypress Watershed task force to both monitor and determine actions appropriate for our participating in the decision making process.
- **New building permits.** Seek improvement to the Harris County regulatory process to determine the method(s) the Harris County flood plain management “**NO ADVERSE IMPACT**” (NAI) new building construction permit regulations. Needs improvement in clarity of methodology for determining compliance prior to permit approval, documentation of compliance and documented post construction inspection (and fee). If new development after construction is determined to not meet the NO ADVERSE IMPACT criteria, what remedial action is required to protect downstream property owners from the resulting harm?
- **Completing Cypress Creek Watershed Master Plan Funding.** In current plans the upper Cypress/Addicks watershed area will include:
 - (1) A 3rd reservoir (or equivalent in function),
 - (2) An underground tunnel for conveyance of major stormwater downstream from these watersheds to the Galveston Bay area,
 - (3) Infrastructure to solve the existing Cypress Creek Overflow into the Addicks Watershed, (possibly contracted by the US Corp of Engineers).

These are not included in the existing Harris County 2018 flood bond funding. A written plan of requirements and action should be created by the board of directors in early 2021. It clearly, will require participation by other watershed organizations working together as was previously done during the pre-election process for the 2018 flood bond program.

CHARTER

Cypress Creek Flood Control Coalition

The Cypress Creek Watershed, located as shown on the attached map in Harris County and Waller County, Texas has experienced significant, recurring flooding in recent years. Damage to property, risk of injury/death to the inhabitants, and disruption to on-going business, school, medical and other community activities has resulted. It is believed these conditions will worsen in both frequency and extent in the future. Further, it is believed the existing planned method for future solutions to the interrelated issues of: (1) flood control, (2) conversion to surface sources of community water supply, and (3) green-belt recreational development within this watershed are presently inadequate and/or not properly integrated.

The communities and organizations listed below, all being within the watershed, believe the most beneficial solutions must be regional solutions which can best be determined and achieved by joining together in a united effort for accomplishing this objective. The charter of this alliance, hereafter called the **Cypress Creek Flood Control Coalition**, a Texas Unincorporated Nonprofit Association, will be to undertake the following actions in a proactive manner interacting with governmental bodies, agencies and personnel having jurisdiction for such matters:

1. Evaluate the adequacy of governmental planned methods for flood reduction and control within the Cypress Creek Watershed. Determine if viable short term and long term alternative solutions exist and the resources required to implement such alternatives;
2. Advocate integration of flood and land subsidence control, conversion to a surface-based public water supply, and upgrading of public green-belt recreation development into a viable overall watershed plan;
3. Develop and promote an effective community awareness program to communicate (1) to and from our residents, (2) between our respective members and (3) to and from governmental representatives and bayou/creek conservation groups on matters related to such flooding. These would include, but not be limited to information and recommendations concerning (a) Action Items 1 and 2 above, (b) the Harris County property "Buyout" program, and (c) flood insurance and property tax appraisal within the 100-year flood plain;

CHARTER

4. Identify actual and potential impediments, if any exist, within the overall framework of local, regional and state government which appear to hinder effective solutions to flooding within the watershed; and,
5. Create and implement action plans to stimulate the development, adoption and implementation of long term solutions to the problem(s).

It is recognized and agreed this coalition is not authorized to undertake any activity which would create a binding legal and/or financial obligation upon any coalition member. It will function solely as a united body chartered to accomplish the actions listed above and to act in an advisory capacity to the undersigned members.

Signed in agreement this 9 th day of December 1999


Cypress Creek Estates
Civic Association

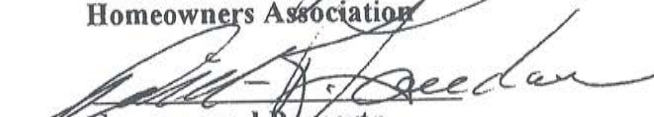

Cypresswood Homeowners
Improvement Assoc.

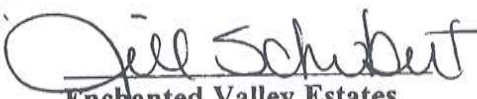

Enchanted Valley
Homeowners Assoc.



Grantwood Civic Club


Lake Cypress Estates
Civic Club


Cypress Mills
Homeowners Association


Cypresswood Property
Owners Assoc.


Enchanted Valley Estates
Homeowners Assoc.


Kleinwood Maintenance
Fund Inc.


Lakewood Forest Fund, Inc

CHARTER

DeCoccione
Lake Forest Utility District

Jim Duggan
Lakewood Glen
Property Owners Assoc.

Robert E. Dunn
Norchester
Maintenance Fund

Russell E. A. H.
Ponderosa Forest
Maintenance Assoc.

Mary Ellen Wood
Krestonwood Forest
Maintenance Association

Ellen Lafferty
Timberlake Estates
Property Owners Assoc.

Donna McBride
Tower Oaks Plaza
Homeowners Association

M. L. J. (Jack) Crawford
Longwood Residents Council

Lin Bsh
Ponderosa Forest Community
Improvement Association

Eugene W. Miller
Ponderosa Forest
Civic Association

RD Smith, Flood Committee
Ravensway/Saracen Park
Home Association
Chairman

Oliver Hargreaves
Tower Oak Bend
Homeowners Association

Mike A. Loney
Timberlake Improvement
District

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Mission Goals/Statement

Mission Statement

Protecting people, property, and the environment from increasing flood risks occurring in the Cypress Creek Watershed through mitigation, preservation, and education.

Flooding – Human Safety and Property Damage Protection

- Engineering evaluation/analysis, identification, and reporting of methodology to achieve flood damage risk reductions.
- Enforcement of the Harris County Flood Plain Management Regulations with emphasis on enforcement of the county's "No Adverse Impact" flood plain management regulations.
- Consistent short-range and long-range funding by Harris County, State of Texas, and US Federal government funding for the following Cypress Creek Watershed requirements:
 - Timely land acquisition
 - Engineering requirements
 - Construction
 -

Preservation

- Master watershed plans:
 - Seek and promote policy and methods for reduction in tree deforestation
 - Support wetland preservation
 - Promote parks and trails through the Cypress Creek Greenway project
 - Protect and provide for wildlife habitat
 - Participate in environmental projects and programs protecting stream and lake water quality.

..... continued on next page

Education

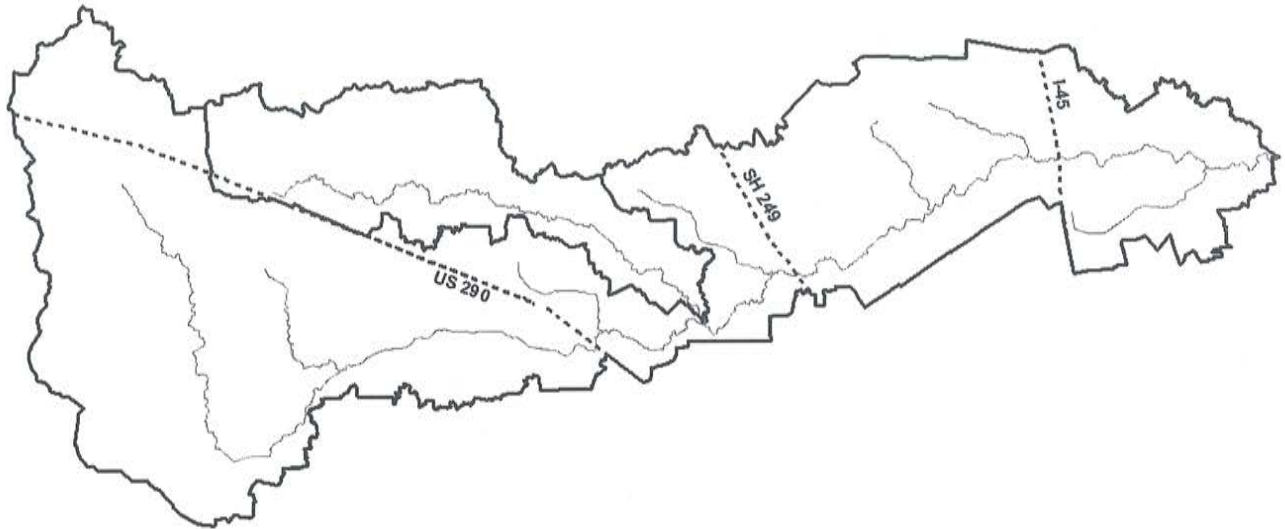
Enhance communications between government, community citizens and organizations which promote effective collaboration on root cause(s) and mitigation of flooding which cause danger to watershed residents and property.

~

- Board of Directors
 - Government regulations covering new land development.
 - Cypress Creek Watershed flood mitigation projects by local and federal government.
- CCFCC Members
 - Open attendance at monthly BOD meetings
 - Board meeting minutes (abbreviated)
 - Annual Membership Meeting guest speaker presentations
- Watershed Residents and General Public
 - Website
 - News media interviews

Cypress Creek Watershed Flood Mitigation Projects / Studies ¹

Rev. #2



Cypress Creek Watershed

- "Master Drainage Plan", dated July, 1984 by Turner, Collie & Braden, (Conceptual study.
- "Cypress Creek Upper Regional Detention Study". Completed in 1990 by Vansickle, Mickelson & Kline under contract to HCFCD. In- depth study identifying prospective regional detention basin locations. Provides site locations, storage capacity, surface acres and excavation requirements for use in follow-on planning to the Vansickle study. Used by CCFCC in current BBRTS planning with USACE.
-
- "Cypress Creek Stormwater Management Plan". HCFCD/TWDB. Created in 2001 after CCFCC successful communications with Congressman Bill Archer, Chairman House Ways and Means Committee. Suspended in 2006 – 2007 before completion due to lack of funding.

..... Continued on next page

¹ These are current ongoing or recently completed projects. Also includes some selected earlier studies which are being used as source data for these ongoing studies / projects.

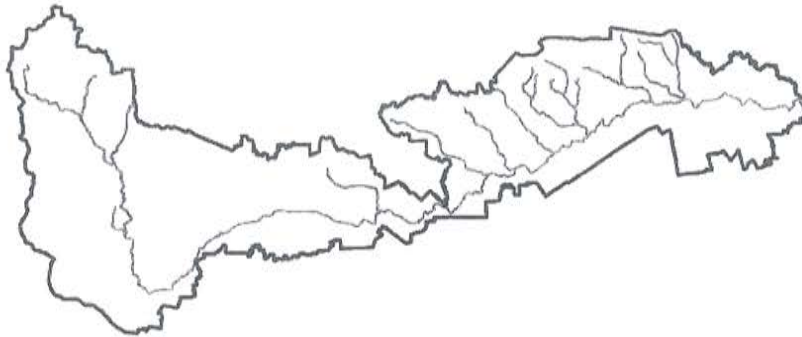
- Cypress Creek Major Tributaries Drainage and Environmental Plan completed in 2003 under a HCFCD/TWDB project. Updated at CCFCC request in 2018 to "Current Conditions" and implemented in 2019 as a project funded under the flood bond election. C request in preparation for implementation authorization. Encompasses 8 major sub watersheds from Mound Creek headwaters in Waller County downstream to confluence with Spring Creek.
-
- "Future Conditions Flood Hazard Boundary Project", Implemented in response to CCFCC recommendation to FEMA and HCFCD. Purpose was to determine probable community flooding under full development conditions. Completed in or about 2006
-
- Little Cypress Creek Sub regional Frontier Program. (52 square miles) Ongoing. Completion expected in 2024.
- "Cypress Creek Overflow Management Plan" (study), HCFCD/TWDB. Completed before Tax Day flood but apparently not submitted to Harris County Commissioners Court for implementation consideration. *Note: Contains recommended changes to development criteria,*
-
- Greater Houston Flood Mitigation / SPEED Study (Post Harvey investigation).
- Cypress Creek Watershed "Analysis of the 2016 and 2017 Floods". L.G. Dunbar / Phil Bedient. Report completed in 2018.
- Floodplain mapping update (including Atlas 14 100-year event). Expected 2024 completion.
 - Arcadis y study of shallow water storage areas in Upper Cypress Creek / Addicks Watersheds. Purpose is to determine if this approach is a feasible alternative to "3rd Reservoir",
- Underground tunnel 3-phase feasibility study for conveyance of storm flood waters from upper Cypress / Addicks Watersheds to Galveston Bay area. Phase 3 expected to begin in 2021.
-
- USACE Buffalo Bayou and Tributaries Resiliency Study (BBTRS. US Corps of Engineers 3 year project implemented after CCFCC last meeting with COL Lars Zetterstrom. Implemented in early 2019 under COL. Timothy Vail. HCFCD is local sponsor. CCFCD is participating in planning phase.
-
- USACE "Houston Regional Watershed Assessment" project. On-going.
-
- San Jacinto River Authority Regional Master Drainage Plan, HCFCD is project manager. CCFCC is monitoring.
-
- Halff Engineering studies, 2012 and 2015. The 2012 study covers Mound Creek sub-watershed in cities of Waller and Parkview. The 2015 is conceptual study for planning.

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**Cypress Creek Watershed
Major Tributaries
Regional Drainage Plan Update
Bond Projects CI-20, CI-35, and CI-36
HCFCF Project ID: K100-00-00-P005**

Cypress Creek Report



Prepared for:



Prepared by:

**Michael Baker
INTERNATIONAL**

**Firm Registration No. 2677
1904 W. Grand Parkway N, Suite 110
Katy, Texas 77449
(713) 954-5300**



February, 2020

Executive Summary

This report summarizes the results of an engineering investigation for Bond Projects CI-20, CI-35, and CI-36. The investigation was initiated by Harris County Flood Control District (HCFCD) immediately after the Harris County voters, on August 25, 2018, approved \$2.5 billion in bonds to fund flood damage reduction projects in Harris County. All the three bond projects are in Cypress Creek watershed with the majority of the area between US 290 and I-45. This area experienced severe flooding during both the 2017 Hurricane Harvey and 2016 Tax Day rainfall events. The bond projects were identified based on the comments and input from the public during the community engagement meetings hosted by HCFCD prior to the bond election.

The scope of the Bond Projects CI-20 and CI-36 was to evaluate the benefits of proposed detention basins along the Cypress Creek at North Eldridge Parkway and Stuebner Airline Road respectively. The scope of Bond Project CI-35 was to update a prior study completed in 2003 titled "*Regional Drainage Plan and Environmental Investigation for Major Tributaries in the Cypress Creek Watershed*" to meet current HCFCD criteria and if needed, propose revisions to the plans to mitigate flooding in the tributary watersheds. As part of the engineering investigation, a total of 103 stream miles were modeled including a 27-mile section of Cypress Creek and 76 miles of tributary streams spread across eight tributary watersheds as shown in Exhibit 1. A desktop environmental investigation was also conducted for the proposed alternatives to identify potential environmental concerns and costs to mitigate them.

Engineering investigation revealed the two detention basins along Cypress Creek (Bond Projects CI-20 and CI-36) would provide reasonable flood mitigation benefits prompting evaluation of additional detention sites. In consultation with HCFCD, 10 additional sites were identified between SH 249 and Hardy Toll Road. Multiple alternatives were evaluated using a combination of detention basins. Alternative-4 with nine detention basins in total, listed in Table S1, is being recommended. Alternative-4 reduces water surface elevations (WSELs) on an average by 1.00 ft along Cypress Creek between Huffmeister Road and Hardy Toll Road resulting in the removal of 500-year baseline floodplain from 1,590 homes.

Table S1: Proposed Detention Basins

Detention Basin ID	Location	Area (ac)	Volume (ac-ft)
1	CI-36	411	9,336
2	CI-20	142	4,576
3	Between US 249 & I 45	232	5,207
7		38	886
8		93	1,960
9		108	2,794
10	Downstream of I 45	76	1,160
11		41	530
12		11	98
Total		1,152	26,546

As a part of the Bond Project CI-35, the tributary watersheds of Lemm Gully, Seals Gully, Spring Gully, Dry Gully, Pillot Gully, Faulkey Gully, Dry Creek, and Mound Creek were updated. Little Cypress Creek watershed is not part of this update. A flood mitigation feasibility study was completed for Little Cypress Creek watershed under the Little Cypress Creek Frontier Program in August 2018. Voluntary buyouts and floodplain preservation were recommended for Seals Gully, Faulkey Gully, and Dry Creek. Dry Gully and Mound Creek in Harris County did not have flooding problems along the channel. In the rest of the tributary watersheds, flood mitigation alternatives utilizing channel modification, new channels and detention basins were recommended to mitigate flooding. A total of 2.7 miles of channel modification, 0.8 miles of new channels and seven detention ponds with a combined capacity of 1,610 ac-ft were recommended. The preliminary costs of the recommended alternative for Cypress Creek and each of the tributary watershed are listed in Table S2.

Finally, the recommended projects were prioritized based on the criteria outlined in the document "Prioritization Framework for the Implementation of the HCFCD 2018 Bond Projects". The total scores for the recommended projects are presented in Table S2. The recommended projects that include only buyouts or drainage improvements were not considered for the prioritization. Cypress Creek with a score of 5.1 has the highest priority among the recommended projects.

Table S2: Prioritization Score and Preliminary Cost Estimates of the Recommended Projects

Watershed	Bond Project	Prioritization Score	Recommended Project Cost
Cypress Creek	CI-20 & CI-36	5.1	\$641,991,295
Lemm Gully	CI-35	3.15	\$20,649,200
Seals Gully		*	\$1,000,000
Spring Gully		4.3	\$73,678,774
Dry Gully			-
Pillot Gully		4.1	\$12,386,117
Faulkey Gully		*	\$23,823,772
Dry Creek		*	\$3,243,592
Mound Creek			-
Total			\$776,772,750

*Not considered for prioritization

NOTE ↓

Below is a link to the report for the Cypress Creek Watershed Major Tributaries Regional Drainage Plan Update which was prepared by Michael Baker International. The report has 537 pages so it takes a while to open or download..

<https://www.hcfcd.org/Portals/62/Watershed/Cy-Creek/CC Major Tributaries Update Report Combined 02242020 Reduced.pdf>

Regards,

Cypress Creek Flood Control Coalition

From: <jhrver@aol.com>
Date: Thursday, October 24, 2019 6:15 AM
To: <floodalliance@ccfcc.org>; <mwadam@bleylengineering.com>; <p-r-s@att.net>; <jptx1001@gmail.com>; <jsakolosky@othon.com>; <carl.zeitler@ieee.org>
Cc: <spg115calico@entouch.net>; <jhrver@aol.com>; <Jzvelas@gmail.com>; <lyras.nicholas@gmail.com>
Attach: Public Notice Cypress Creek FINAL 10.4.19.pdf
Subject: Fwd: IMPORTANT NOTICE: Cypress Creek Flood Management Plan / Fw: Community Engagement Meetings for the Cypress Creek Watershed

BOD Members,

For your info. This article (linked and copied below) is in Community Impact today and relates to the information presented at the two meetings in the e-mail below.. Jack and I attended Monday's meeting, and the second meeting is tonight.

https://communityimpact.com/houston/spring-klein/city-county/2019/10/22/flood-control-district-recommends-743-million-worth-of-projects-in-cypress-creek-watershed/?utm_source=mailpoet&utm_medium=email&utm_campaign=Houston%20weekly%20roundup%2C%20Oct.%2024%2C%202019

Flood Control District recommends \$743 million worth of projects in Cypress Creek watershed



Harris County Flood Control District officials recommended \$743 million worth of projects for new detention, channel projects and buyouts in the Cypress Creek watershed during community engagement meeting Oct. 21. (Vanessa Holt/Community Impact Newspaper)

By Hannah Zedaker

| 10:34 am Oct. 22, 2019 CDT

Harris County Flood Control District officials recommended \$743 million worth of projects for new detention, channel projects and buyouts in the Cypress Creek watershed during its project progress and community engagement meeting Oct. 21.

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10/24/2019

The meeting, which included a video presentation and a community open house, focused solely on the Cypress Creek watershed and updated residents on two specific projects funded through the bond approved by voters in August 2018: "Regional Drainage Plan and Environment Investigation for Major Tributaries in the Cypress Creek Watershed," or bond project CI-035, CI-35 and CI-020; and "Major Maintenance of Cypress Creek and Tributaries," or Bond Project CI-012.

An identical meeting will be held Oct. 24 from 6-8 p.m. at Houston's First Baptist Church, located at 11011 Mason Road, Cypress. To view the full presentation, see the video below.

According to the presentation, the Cypress Creek watershed is the largest of Harris County's 22 main watersheds, covering 267 square miles in Harris and Waller counties, and is the fifth-largest in terms of population.

The area is prone to flooding due to its flat topography and impermeable clay soils. The downstream, eastern portion of the watershed was developed in the 1980s prior to the current understanding of flood plains; thousands of homes were thus built in flood-prone areas.

According to the presentation, the 2018 bond includes \$291 million in projects for the Cypress Creek watershed, all of which have been initiated.

Bond projects CI-035, CI-36 and CI-020 update the 2003 Regional Drainage Plan, expand the existing storm water detention basin off Eldridge Road and look at potential storm water detention sites near Cypress Creek and Stuebner Airline Road, respectively.

The results of the feasibility study for this project included recommendations for increasing storm water detention in the watershed by 24,759 acre-feet, which could reduce water height along Cypress Creek between Hwy. 290 and I-45 and remove the 100-year flood plain from hundreds of structures. Another \$743 million worth of projects were also recommended—for new detention, channel projects and buyouts along Cypress Creek and its tributaries.

While the bond program does not include enough funding for all of these projects, Flood Control District officials said they intend to get started with preliminary engineering and property acquisition and will seek additional funding thereafter.

Bond Project CI-012 concerns major maintenance along Cypress Creek, which includes removing silt and blockages, repairing erosion, replacing failed outfall pipes, increasing storm water conveyance and returning tributaries to their original design conditions.

According to the presentation, \$60 million from the bond is allocated for these efforts, and the Flood Control District is currently surveying the first 24 miles of Cypress Creek, between west of Hwy. 249 and east of the Hardy Toll Road. Construction on this portion of the creek is expected to begin in early 2020, the presentation stated.

Flood Control District officials said next steps include continued surveying, preparing more projects for construction bidding in 2019 and beginning construction in early 2020.

To give feedback on these projects or any other flood bond projects, [click here](#). To request service or report a concern along a Harris County bayou or tributary, [click here](#).

Regards,

Jim Robertson
Chairman, Cypress Creek Greenway Project
Cypress Creek Flood Control Coalition
281-370-8243

From: floodalliance@ccfcc.org
To: floodalliance@ccfcc.org
Sent: 10/8/2019 7:21:02 PM Central Standard Time
Subject: Fw: IMPORTANT NOTICE: Cypress Creek Flood Management Plan / Fw: Community Engagement Meetings for the Cypress Creek Watershed

From: [Cypress Creek Flood Control Coalition](#)
Sent: Tuesday, October 08, 2019 7:18 PM
To: [Cypress Creek Flood Control Coalition](#)
Subject: IMPORTANT NOTICE: Cypress Creek Flood Management Plan / Fw: Community Engagement Meetings for the Cypress Creek Watershed

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10/24/2019

Privacy Notice: You are being sent this information via e-mail consistent with provisions of the Cypress Creek Flood Control Coalition (CCFCC) By-Laws. . All mass CCFCC correspondence is sent via bcc to maintain your email address privacy. If you no longer want to receive such documents or if you change your email address, please notify the Board Secretary at floodalliance@ccfcc.org.

All Members, Coalition Friends and Watershed Residents,

Do you want to know what is now planned for flood management / flood risk reduction in the Cypress Creek Watershed? **This is the meeting you should attend.** It is about the 2003 plan which has been in archives' storage collecting dust since 2003 - - - never implemented because of no funds and questionable political will which prevented the funding. The successful flood bond election has changed that handicap - - - an election supported by our Commissioners Cagle and Radack.

The Cypress Creek Watershed is not only the he largest in area of all 22 watersheds in Harris County. It is **significantly the largest**. And it is the greatest challenge to solution of the Addicks Reservoir decreasing capacity to holding back waters flowing into Buffalo Bayou and downtown City of Houston. Therefore significant drainage challenges exist which require infrastructure and regulatory solutions. pea. It's headwaters are in Waller County. Thus to manage the downhill drainage runoff throughout its 38 mile length into and through your community, it requires regional detention to be constructed in any areas plus long due maintenance in each of these tributary sub-watersheds.

Another primary purpose of the meeting is to obtain our resident's comments / concerns because these will be taken into account **before the plans are finalized and then submitted to Commissioners Court for approval - - - plus court approval of necessary funding consistent with what we voted for in the bond election.**

Your board of directors highly encourages your attendance.

R.D. (Dick) Smith
President
Cypress Creek Flood Control Coalition
Tel: 281-469-5161
floodalliance@ccfcc.org
www.ccfcc.org

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

From: Harris County
Sent: Tuesday, October 08, 2019 12:47 PM
To: Flood Alliance
Subject: Community Engagement Meetings for the Cypress Creek Watershed

10/24/2019

20

Community Engagement Meetings for the Cypress Creek Watershed

→ Regional Drainage Plan and Environmental Investigation for Major Tributaries in the Cypress Creek Watershed HCFCD Unit K100-00-00-P005 - Bond Project CI-035

Major Maintenance of Cypress Creek and Tributaries HCFCD Unit K100-00-00-G002 - Bond Project CI-012

The Harris County Flood Control District will hold two identical Community Engagement Meetings in the Cypress Creek watershed. The purpose of these meetings is to inform residents about the status of projects and share project information.

Bond Project CI-035, "Regional Drainage Plan and Environmental Investigation for Major Tributaries in the Cypress Creek Watershed" is an update to the 2003 Texas Water Development Board plan by the same name. The goal of the update is to identify projects to reduce or eliminate existing flooding risks within the Cypress Creek watershed. The results and recommendations, including additional stormwater detention basins, will be presented for discussion.

Bond Project CI-012 "Major Maintenance of Cypress Creek and Tributaries" involves major maintenance along Cypress Creek and its tributaries to restore channel conveyance capacity. It may include right-of-way acquisition, design and construction along tributaries. Maintenance projects do not involve widening or deepening a channel. The goal is to repair and restore the channel to its original condition so that it can effectively convey stormwater.

Both projects will be funded with bonds approved by Harris County voters on August 25, 2018. Community engagement is an important component of the Bond Program, and we invite your participation as the program is implemented.

The Community Engagement Meetings will be held in an open-house format and area residents can attend any time between 6:00 p.m. and 8:00 p.m. An overview presentation will replay every 10-15 minutes throughout the two-hour period to accommodate more people. Participants can visit a variety of informational stations in the open house area and discuss the projects individually with representatives from the Harris County Flood Control District and their partners.

Monday, October 21, 2019 Between 6:00 and 8:00 p.m. Klein High School Cafeteria 16715 Stuebner Airline Road Klein, Texas 77379

Thursday, October 24, 2019 Between 6:00 and 8:00 p.m. Houston's First Baptist Church 11011 Mason Road Cypress, Texas 77433

For questions, please contact the Flood Control District at 713-684-4000, or fill out the comment form online www.hcfcd.org/CI035 or www.hcfcd.org/CI012.

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22

10/24/2019



ARCADIS

Design & Consultancy
for natural and
built assets

FEASIBILITY STUDY OF UPPER CYPRESS CREEK / ADDICKS RESERVOIR SHALLOW STORAGE AREAS

Prepared For
Harris County Flood Control District in
Partnership with Harris County Precinct 4

Project ID U500-00-00-P001

January 24th, 2020

(23)

PROJECT DESCRIPTION (this is from HCFCD website - - - am not sure it is the arcadis study or more.)

This project included a feasibility investigation to determine whether creating multiple shallow stormwater detention and retention areas on private agricultural or open property in the upper Cypress and Addicks Reservoir watersheds would reduce flooding risks in the Addicks Reservoir and upper Cypress Creek watersheds.

These areas, which would be surrounded by low 3-4-foot earthen berms – rather than created by excavation – would temporarily hold back stormwater until it naturally drained and evaporated, or was manually pumped dry. The berms, which could be distributed on the properties of willing landowners throughout the upper Cypress Creek watershed, would not interfere with the land's other uses.

Drainage in the Addick Reservoir watershed is complicated by the fact that, during storm events in the upper northwest areas of the county exceeding a 10-percent (10-year) event, runoff overflows from the upper Cypress Creek watershed and travels overland (south) into the tributary watersheds draining into the Addicks and Barker reservoirs. These include Langham, Bear and South Mayde creeks. This unique hydrological condition is referred to as the "Cypress Creek Overflow."

This is a natural condition caused by the particular topography of northwest Harris County and the upper Cypress Creek area. This condition predates urban development and was taken into consideration when the Addicks and Barker reservoirs were constructed in the 1940s.

The feasibility investigation found that nearly 700 parcels in the project area could be candidates for the shallow storage concept, potentially holding an estimated 26,000 acre-feet of runoff during a 1 percent (100-year) rain event (using Atlas 14 rain data.) This equates to 40 percent of the Cypress Creek Overflow from Cypress Creek into the Addicks Reservoir watershed, and is comparable to the capacity of some reservoir concepts discussed in the Cypress Creek Overflow Management Plan.

The feasibility investigation also found that the shallow storage concept also would have an impact on the peak flowrate along Cypress Creek between the Grand Parkway and Highway 290, and would offer benefits in both regional and local drainage.

Feasibility Investigation Report

Cypress Creek Flood Control Coalition

From: "Cypress Creek Flood Control Coalition" <floodalliance@ccfcc.org>
Date: Thursday, October 15, 2020 11:17 AM
To: "R.D. (Dick) Smith" <floodalliance@ccfcc.org>
Subject: Shallow water feasibility study upper cypress creek addicks watershed

<https://www.hcfcd.org/Find-Your-Watershed/Addicks-Reservoir/F-56-Detention-and-Retention-Upper-Cypress-and-Addicks>
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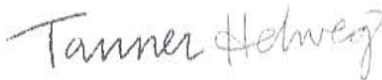
R.D. (Dick) Smith
President
Cypress Creek Flood Control Coalition
Tel: 281-469-5161
floodalliance@ccfcc.org
www.ccfcc.org



Vince DeCapio, PE
Senior Engineer / Project Manager



Wendell Barnes, PE
Principal-In-Charge / Senior Vice President



Tanner Helweg
Project Engineer

FEASIBILITY STUDY OF UPPER CYPRESS CREEK / ADDICKS RESERVOIR SHALLOW STORAGE AREAS

Prepared for:
Harris County Flood Control District
9900 Northwest Freeway
Houston, Texas 77092

Prepared by:
Arcadis U.S., Inc.
10205 Westheimer Road
Suite 800
Houston, Texas 77042
Tel 713 953 4800
Fax 713 977 4620

Date:
January 24th, 2020

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Supporting contributions by Michael Baker Inc., Asakura Robinson LLC, Piet Dircke, Edgar Westerhof, Carly Foster, Mary Kimball, Bobby Aboesono, Paul Marshall, Yawen Shen, Sergio Nevarez, Wayne Berry, Kalin Ojert, and Jason Vazquez.

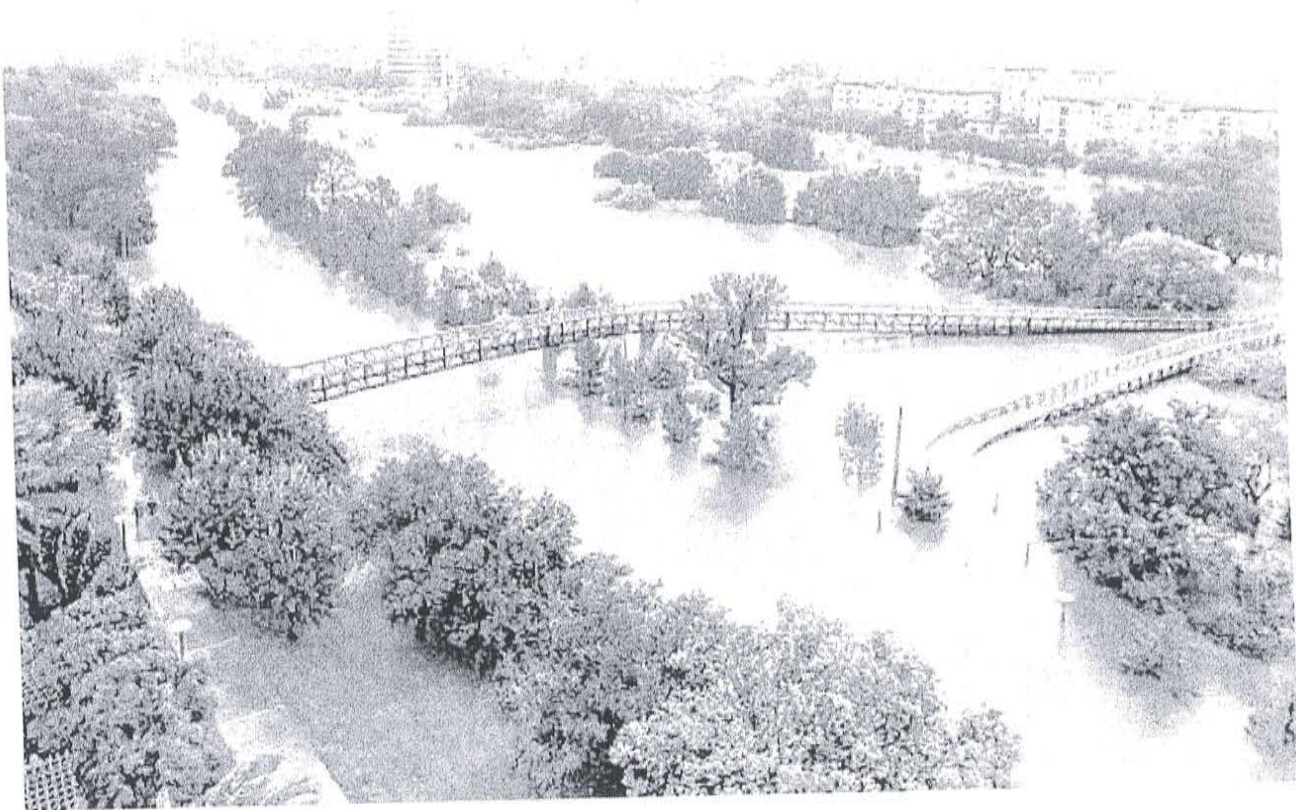
Shared from the 2018-03-26 Houston Chronicle eEdition

COPY

Flood district explores tunnel idea

Commissioners to vote on pursuing a feasibility study for costly project aimed at keeping out stormwater

By Mihir Zaveri and Mike Morris



Karen Warren / Houston Chronicle file

27

Dick,

Nice talking to you today. Here is the summary information requested.

Phase 1 Summary (Feb. 2019-Sep. 2019)

Phase One of the study validated the deep tunnel concept and provide preliminary information for further development in Phases Two and Three. Phase One assessed geotechnical and geologic conditions, hydraulic capacity and impacts, and scheduling and cost projections. The Phase 1 report is on the HCFCF website for download. The Phase 1 Study has determined that:

- Tunneling in Harris County is feasible based on the geotechnical conditions and project experience in similar soils.
- Tunnels can move a significant rate of stormwater operating entirely by gravity as an inverted siphon.
- Tunnel construction cost, including a 50% contingency, for a representative 10-mile-long, 25 and 40 foot diameter tunnel are \$1 billion and \$1.5 billion respectively.

Phase Two – Deep Stormwater Conveyance Tunnel Planning Analysis (Nov. 2019 – April 2021)

The purpose of the Phase 2 Tunnel Study is to identify unmet flood mitigation needs in Harris County's watersheds and develop distinct tunnel project concept(s) to meet these needs that provide sufficient benefit to justify their cost of construction. Phase 2 is split into two major components, a Planning Level Assessment and Alternatives Refinement and Conclusions.

The purpose of the Planning Level Assessment component is to perform an analysis on the feasibility and effectiveness of deep stormwater conveyance tunnels on various flood damage centers. Key components include.

- Development of success metrics for tunnels
- Identify tunnel alignment(s) that mitigate flooding along major bayous and creeks
- Determine the cost benefit ratio of tunnels as well as non-cost benefits
- Compare tunnel benefits and costs to other structural and nonstructural improvements, including consideration of delivery timelines.
- Identify environmental impacts and permit requirements
- Develop cost (including operations and maintenance) and schedule estimates for recommended tunnel(s)
- Investigate project funding sources for preliminary engineering, design and construction
- Develop scope of work and schedule for Phase 3

The Alternatives Refinement and Conclusions component will select no more than five potential actionable tunnel alignments from the previous step for further refinement. An actionable tunnel project is one that according to the opinion of HCFCF provides adequate flood damage reduction benefits to justify its cost to construct and operate. Typical tasks include.

- Alignment Corridor and Shaft Locations
- Inlet and Outlet structure locations
- Tunnel diameter, length and conveyance capacity curve (spreadsheet based)
- Estimate of Cost
- Estimated reduction in floodplain and flood damage reduction (cost and non-cost factors)

TUNNELS

Phase 2 is estimated to take 12 months from issuance of a work authorization (expected April 2020). A future Phase 3 will further develop the project(s). Based upon the results of Phase Two, it is feasible that no realistic tunnel alternatives warrant future action. If so, Phase 3 will not be conducted.

Future Phase Three – Preliminary Engineering Development (Estimated April 2021-April 2022)

Phase Three of the study is to advance projects to a level that the project benefits are proven, alignment and shaft locations are selected, geotechnical and fault investigations have validated design assumptions made during Phase One and Two so that funding sources for detailed design and/or construction can be obtained from internal and external sources. Depending on the recommendations from Phase 2 the scope of work for project development in Phase 3 will differ. As an example, if design-build delivery is recommended, Phase 3 may entail development of a design-build package for bidding. If design-bid-build delivery is recommended Phase 3 will likely be for the preliminary design (to 30%) of a tunnel or tunnel segment. This difference will impact the scope of work as well as the cost of Phase 3 for each segment. Phase 2 may recommend multiple tunnels or tunnel segments for further development. This recommendation should be provided during Phase 2 based on the potential benefit of the tunnel(s) and the funds available from HCFCD. Phase 3 may also develop deliverables tailored to potential funding sources.

Annual Report 2019 Tunnels

Scott R. Elmer, P.E.
Engineering Division Manager
Harris County Flood Control District



CYPRESS CREEK FLOOD CONTROL COALITION

12526 Texas Army Trail
Cypress, Texas 77429
Tel: 281-469-5161
Fax: 281-469-5468
e-mail: floodalliance@ccfcc.org
www.ccfcc.org

Arthur L. Storey, Jr., P.E., Executive Director
Harris County Public Infrastructure Department
1001 Preston, 5th Floor
Houston, Texas 77002

February 21, 2012

Subject: "Cypress Creek Overflow Management Study",

References:

- A) Art Storey letter to Harris County Commissioners Court, January 3, 2012
- B) Flood Protection Planning Grant application to Texas Water Development Board dated January 11, 2012

Dear Mr. Storey,

We are delighted Commissioners Court approved your recommendation allowing Harris County and Harris County Flood Control District (HCFCD) to submit a grant application to the Texas Water Development Board (TWDB) seeking funding assistance for the "Cypress Creek Overflow Management Study". (Reference "A" letter).

Our Board members have expressed concerns about the previous planning approach for Western Harris County flood mitigation for the reason it was done on a non-integrated basis; i.e. each watershed being done independent of the others. However, this study approach takes into account the unique hydrologic conditions in the upper watershed (prairie grasslands, abandoned rice farms, agricultural berms creating significant storage and the interaction dynamics between Cypress, Addicks and Barker and for this we are very much "on board" with how you are going about it. It's a fresh start.

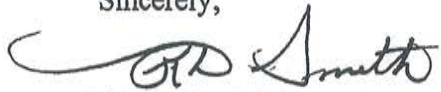
As you know, CCFCC has strong reservations that an overall stormwater management master plan for the entire Cypress Creek watershed presently does not exist. The only one adopted by Commissioners Court (TC&B 1984) was officially declared "outdated and obsolete" in June 2001. This announcement was made by the HCFCD/TWDB project team when it met with community representatives at the kickoff meeting for the "Major Tributaries In The Cypress Creek Watershed" project (TWDB Contract No. 2000-483-356). Although a conceptual plan for the tributaries was completed in February 2003, the corresponding plan for the main channel was not.

In view of these reservations, we request and will strongly support HCFCD now beginning work with Commissioners Court to formulate the groundwork for completing and adopting a master stormwater management master plan for the entire watershed utilizing the *Cypress Creek Overflow Management Study* findings as its foundation.

COPY

In closing, we wish to assure Harris County and the Texas Water Development Board of our highest endorsement of the published study purpose and goals as set forth in the grant application which is most worthy of funding approval. Thank you personally and on behalf of the watershed residents and business community for your always appreciated leadership efforts.

Sincerely,



Richard D. (Dick) Smith
President

Encl. Cypress Creek Watershed map

cc: Melanie Callahan, Executive Director
Texas Water Development Board

Commissioner Jack Cagle
Harris County Precinct 4

Commissioner Steve Radack
Harris County Precinct 3

Judge Glenn Beckendorff
Waller County

Commissioner Sylvia Cedillo
Waller County Precinct 3

Michael D. Talbott, P.E., Director
Harris County Flood Control District

Alan Potok, Engineering & Construction
Deputy Director, Harris County Flood Control District

Jude Wiggins, President
Greater Houston Neighborhood Association

L. Susan Hill
Hawes Hill Calderon LLP

Mary Anne Piacentini
Katy Prairie Conservancy

Mary Carter, President
Houston Audubon Society

continued next page.....

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Dan Patrick, District 7
Texas State Senator

Glen Hegar, District 18
Texas State Senator

Debbie Riddle, District 150
Texas House of Representatives

Patricia Harless, District 126
Texas House of Representatives

Allen Fletcher, District 130
Texas House of Representatives

Bill Callegari, District 132
Texas House of Representatives

Tommy Williams, District 15
Texas House of Representatives

Paul Hilbert, District 150
Texas House of Representatives

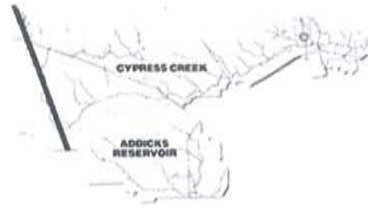
John Zerwas, District 28
Texas House of Representatives

Danny Marburger
Mayor, City of Waller

Jeff Taebel
Director, Community & Environmental Planning
Houston-Galveston Area Council

CCFCC Member Organizations

project description



STUDY AREA

The study area includes the Cypress Creek watershed upstream of US 290, the watersheds draining into Addicks Reservoir, and that portion of the drainage area (including the Cypress overflow) draining into Barker Reservoir that flows through Harris County. Approximately 60 square miles of the upper Cypress Creek watershed originate in Waller County and drain into Harris County.

Addicks and Barker reservoirs were constructed in the 1940's to protect downtown Houston from severe rainfalls that occur on the Buffalo Bayou watershed. The capacity of the reservoirs anticipated an overflow from Cypress Creek. However, no defined drainage systems were planned other than the natural tributary systems. These natural tributary systems include Langham Creek, Bear Creek, and South Mayde Creek.

Note: The portion of Cypress Creek downstream of US 290 is not in the study area.

Background	>
Goals	>
Scope	>
Supplemental Guidelines And Criteria	>
Next Steps	<

Currently, the U.S. Army Corps of Engineers is considering the Cypress Creek Overflow Management Plan study and its recommendations as part of the Corps-led Buffalo Bayou and Tributaries Resiliency Study, which began in October 2018.

Prairie Vegetation Rainfall/Runoff Study

As part of the "Prairie Vegetation Rainfall/Runoff" study that was conducted within the larger Cypress Creek Overflow study, the Flood Control District continues to gather rainfall and runoff data from three different types of monitoring sites in the study area: developed property, agricultural and range land property, and native prairie. That data will be evaluated and compared with the initial analysis conducted during the study effort, and the results will be posted when the study is complete.



Buffalo Bayou and Tributaries Resiliency Study

ABOUT THE STUDY

Study Authorization Section 216 of the Flood Control Act of 1970 (Authorizes review of completed projects)

Budget \$6 million

Timeline 3 Years

Study Start October 2018

Study Complete October 2021

Non-Federal Sponsor Harris County Flood Control District

Purpose Flood Risk Management

Goal Improve the effectiveness of the Addicks and Barker project and reduce the risk of flooding upstream and downstream along the Buffalo Bayou and its Tributaries

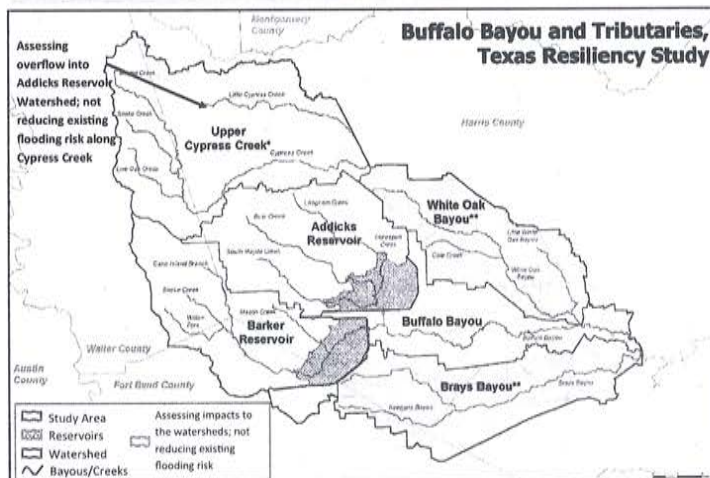
The US Army Corps of Engineers (USACE) Galveston District, in partnership with Harris County Flood Control District (HCFCD), began the Buffalo Bayou and Tributaries, Texas Resiliency Study (Study) in October 2018. The study will identify and evaluate the feasibility of reducing flood risks along Buffalo Bayou and its tributaries, both upstream and downstream of Addicks and Barker dams, in Harris and Fort Bend Counties, Texas. The study will also complete a Dam Safety Modification Evaluation on Addicks and Barker dams.

Problem

The Buffalo Bayou and Tributaries, Texas Project (Project) was authorized by Congress in the 1930s for the purpose of providing flood control for the City and Port of Houston. In the 1940s, Addicks and Barker dams were constructed and a portion of Buffalo Bayou was straightened as part of the completed Project. Since Project completion, a number of physical improvements and operational changes have been made. However, the watershed continues to experience major flood events, most recently and most significantly Hurricane Harvey in 2017. These recent flood events combined with documented increases in precipitation patterns and the potential for flooding events in the future indicate the Project may need to be modified to mitigate flood risks more effectively.

Study Area

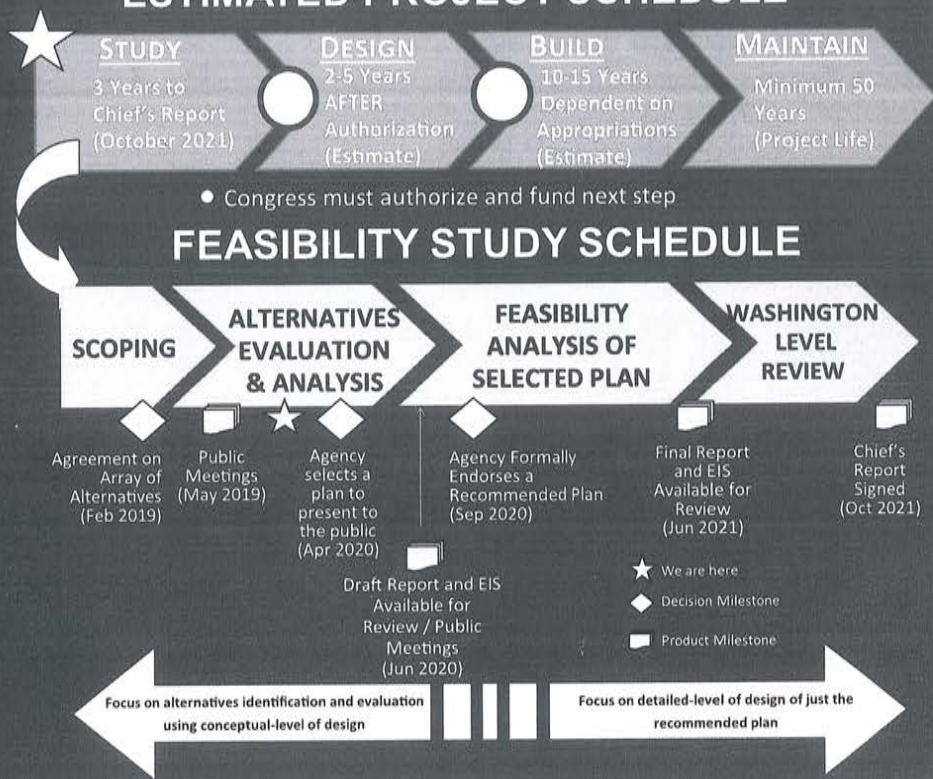
The study will look at ways to reduce flooding in three watersheds — Addicks Reservoir, Barker Reservoir, and Buffalo Bayou — focusing on areas upstream and downstream of Addicks and Barker reservoirs and along Buffalo Bayou. A portion of Cypress Creek Watershed is being considered because overflow from this watershed contributes to flooding in the Addicks Reservoir Watershed. Brays Bayou and White Oak Bayou could be affected by any measures benefiting Buffalo Bayou, so impacts to these watersheds will be evaluated. The study scope does not include identifying ways to lower the flood risk in the Lower Cypress Creek, Brays Bayou or White Oak Bayou watersheds. *(continued on page 2)*



WHAT IS A FEASIBILITY STUDY?

A feasibility study is the initial step in the USACE process for addressing many of the nation's significant water resources needs. A feasibility study establishes the Federal interest, engineering feasibility, economic justification and environmental acceptability of a project. An interdisciplinary team of hydrologists, engineers, biologists, and economists work together to identify the problems, develop and evaluate solutions, resolve conflicting interests, and prepare recommendations. The recommendation is presented in a Chief's Report that goes to Congress for authorization and construction.

ESTIMATED PROJECT SCHEDULE



(continued from page 1)

Dam Safety

The study will also evaluate dam safety concerns at Addicks and Barker dams. USACE maintains a robust Dam Safety Program. This program regularly assesses USACE dams in comparison to modern design criteria and expected performance under a wide range of scenarios. Addicks and Barker dams were rated as high hazard dams because of the potential for life loss and significant property damage if the dam failed. A 2013 evaluation recommended replacement of the outlet control structures at both dams to meet current design criteria and recommended a second study be done to assess the uncontrolled spillways. Construction is underway at both dams with expected completion in the summer of 2020. This study will take a focused look at the uncontrolled spillways of both dams in an effort to understand how they would perform if water were to go over the top of them.

ALTERNATIVES BEING CONSIDERED

No Action (Alt 1): Considers what would happen if the agency continued to operate and maintain the authorized project with no changes. The analysis provides a baseline for decision makers to compare benefits and impacts of the alternatives and determine whether or not involvement in some project is preferred over no action. Alternative is required by NEPA and planning policy.

STORAGE — Store water until safe to release storm water downstream

New Reservoir / Dam (Alt 2) **Increase Reservoir Storage (Alt 3)**

CONVEYANCE — Move more water through the system in a safe and more efficient manner

Tunnels (Alt 4) **Diversion (Alt 5)** **Channel Improvements (Alt 6)**

Changes to Auxiliary Spillway (Alt 7): Modifications to the Addicks and Barker uncontrolled spillways

Comprehensive (Alt 8): Combination of the most effective and efficient storage and conveyance alternatives

Nonstructural (Alt 9): Adapt to the natural characteristics of flooding without influencing or modifying the flow of water



GET INVOLVED!

The National Environmental Policy Act (NEPA) is a Federal Law that serves as the Nation's basic charter for environmental protection. While NEPA does not require an agency to achieve particular environmental results, it does require an agency to take a hard look at the potential environmental impacts of a proposed Federal action. NEPA promotes better decision making by ensuring that high quality environmental information is available to agency officials and the public before the agency decides whether and how to undertake a major Federal action.

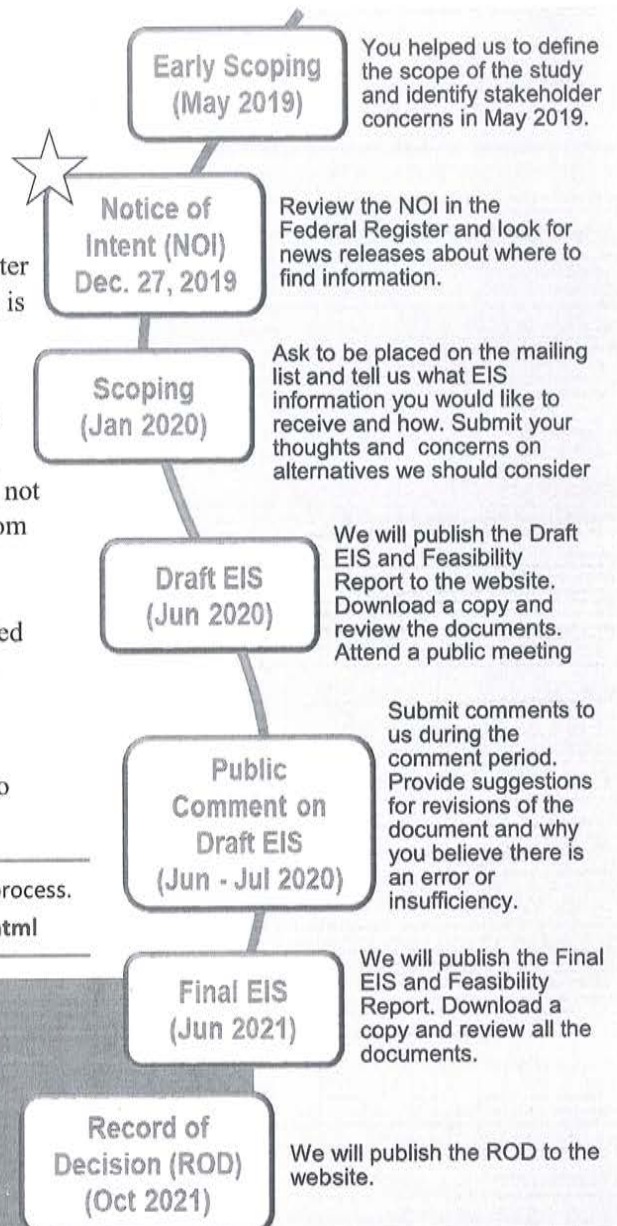
The study team determined that some of the measures could significantly affect the natural or human environment, so to comply with NEPA an **Environmental Impact Statement (EIS)** will be prepared. The EIS will not determine which alternative to choose, prevent environmental impacts from happening or prohibit any actions. The **Record of Decision (ROD)** will document the final decision, explain the reasons it was selected, and summarize any minimization and mitigation measures that will be included in the project to reduce overall impacts.

The NEPA process provides an opportunity for the agency to hear and consider the opinions and concerns of potentially affected communities. Federal decisions have the potential to affect many aspects of your life, so we encourage your involvement in the process.

A *Citizen's Guide to NEPA* is a great resources to learn more about the NEPA process. It is available at: https://ceq.doe.gov/get-involved/citizens_guide_to_nepa.html

NOTICE OF INTENT PUBLISHED IN FEDERAL REGISTER

Publication of the Notice of Intent (NOI) formally starts the NEPA process. An additional 30-day scoping period will begin on December 27, 2019. Submit comments by e-mail to BBTRS@usace.army.mil or by mail to USACE, Galveston District, Attn: BBTRS, P.O. Box 1229, Galveston, TX 77553.



SIGNIFICANT TASKS WE HAVE BEEN WORKING ON

Forecast Future Condition

The study team used the best available information to evaluate the potential impacts of future flood events if no actions are taken to reduce risks.

The National Oceanic and Atmospheric Administration provided revised rainfall data for the Houston area. The data shows that an event with 18 inches of rainfall has a 1% chance of occurring in any given year. The previous rate, 13 inches, now has a more frequent 4% chance of occurring in any given year within a 24-hour period.

Developed conceptual designs of flood risk management measures.

The study team has been developing and running models to evaluate the physical and economic performance of measures. In this phase of the study, the designs are very high-level, describing the volume of water the design can move or store and the general footprint to understand real estate costs and environmental impacts. The level of detail is enough that the team can identify differences and recommend a plan based on engineering feasibility, economic benefits and costs, and environmental acceptability. The design is not detailed enough to be constructed.

Identified potential impacts to many natural resources.

As part of the NEPA process, the study team has been looking at how the potential measures and plans could affect the natural, economic, and social environments. We have been working closely with HCFCD; other Federal agencies; state, local and Tribal governments; and non-profit organizations to better understand the potential environmental impacts.

MAY 2019 PUBLIC MEETINGS AND COMMENT PERIOD PROVIDE VALUABLE INPUT



From April 30 to May 9, 2019, the US Army Corps of Engineers (USACE) and Harris County Flood Control District (HCFCD) hosted the first opportunity for the public to learn about the Buffalo Bayou and Tributaries Resiliency Study and provide early input to help shape the focus of the study.

A total of 473 people attended the five public meetings held upstream of Addicks and Barker reservoirs and between the dams and downtown Houston. In general, attendees supported project goals and appreciated the information provided. Public concerns were focused on how long it would take before any on-the-ground action is taken.

During the early scoping period, 279 comment letters were submitted and 541 substantive comments were identified to be addressed in the Draft Feasibility Report and EIS or considered during the study

alternative development. A report summarizing all the comments received is available on the study website at: <https://www.swg.usace.army.mil/Missions/Projects/Buffer-Bayou-and-Tributaries-Resiliency-Study/>.

CONNECT WITH US

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3 COMMON CONCERNS

The study process takes too long.

1

The 3-year study process is designed to allow enough time to confirm the identified solution to the problem is a good use of tax dollars and that the project won't unacceptably affect the human and natural environment. The process takes time to ensure that the right decisions are made.

Floodplain regulations need to change.

2

USACE does not have the authority to recommend or implement policy changes to how or where development can occur. This is a local government responsibility. Both Harris County and the City of Houston have passed stricter regulations on floodplain development.

3

Nothing is being done to protect us now.

HCFCD and the City of Houston are working on a number of projects and policy changes that benefit the communities at risk. HCFCD is diligently working to implement projects approved under the 2018 Bond Program, such as detention basins in the Addicks watershed and excavation/de-silting of channels entering Addicks and Barker Reservoirs. HCFCD has also recently updated their flood warning system. Both Harris County and the City of Houston have completed a number of repairs to drainage networks and infrastructure allowing them to function as they were designed. Large-scale projects that will be most impactful, whether at the Federal or local level, take time to plan and construct and cannot be completed in a short period of time.

Flood Bond

August 25, 2018

Hurricane Harvey

- **Swamped 204,000 Harris County homes + apartments**
- **50 resident deaths**

Bond Vote

- **Record voter turn out**
- **\$2,500,000,000 for flood infrastructure to protect area in future storms**

Annual Report 2019 yard signs

File - Funding sources

=====

Funding breakout by Watershed (as of August 6, 2018)

• Sale of bonds\$ 872,493,750	
• Grants		<u>2,389,261,250</u>	
Sub-total			\$3,261,000
• Harris County additional funding ¹		<u>2,250,700,000</u>	
•			
Total planned funding	(as of August 6, 2018)		\$5,511,000

¹ . This is understood to mean that the source of this money is Harris County either through the issuance of Harris County bonds or through current funding (tax dollars)

DOUGLAS RAY @ EAO, HETV-NET

COL #1

COL #2

COL #3

COL #4

Project Breakdown by Watershed (as of August 6, 2018)

WATERSHEDS	LOCAL-ONLY	GRANT PARTNER	GRANT LOCAL	GRANT TOTAL
Addicks Reservoir	\$ 126,000,000.00	\$ 223,467,500.00	\$ 54,852,500.00	\$ 278,320,000.00
Armand Bayou	\$ 12,750,000.00	\$ 26,060,000.00	\$ 15,340,000.00	\$ 41,400,000.00
Barker Reservoir	\$ 30,000,000.00	\$ 27,132,500.00	\$ 19,137,500.00	\$ 46,270,000.00
Brays Bayou	\$ 63,450,000.00	\$ 132,220,000.00	\$ 90,530,000.00	\$ 222,750,000.00
Buffalo Bayou	\$ 88,700,000.00	\$ 21,380,000.00	\$ 16,595,000.00	\$ 37,975,000.00
Carpenters Bayou	\$ -	\$ 5,217,500.00	\$ 1,732,500.00	\$ 6,950,000.00
Cedar Bayou	\$ 249,500,000.00	\$ 2,070,000.00	\$ 680,000.00	\$ 2,750,000.00
Clear Creek	\$ 52,000,000.00	\$ 196,172,500.00	\$ 92,462,500.00	\$ 288,635,000.00
Cypress Creek	\$ 204,900,000.00	\$ 263,900,000.00	\$ 86,115,000.00	\$ 350,015,000.00
Galveston Bay	\$ 4,500,000.00	\$ 6,150,000.00	\$ 24,050,000.00	\$ 30,200,000.00
Goose Creek	\$ 31,000,000.00	\$ 6,637,500.00	\$ 2,212,500.00	\$ 8,850,000.00
Greens Bayou	\$ 8,000,000.00	\$ 222,575,000.00	\$ 57,040,000.00	\$ 279,615,000.00
Halls Bayou	\$ -	\$ 393,370,000.00	\$ 110,780,000.00	\$ 504,150,000.00
Hunting Bayou	\$ 20,500,000.00	\$ 78,835,000.00	\$ 12,940,000.00	\$ 91,775,000.00
Jackson Bayou	\$ 10,500,000.00	\$ 2,250,000.00	\$ 750,000.00	\$ 3,000,000.00
Little Cypress Creek	\$ 137,800,000.00	\$ 36,367,500.00	\$ 12,122,500.00	\$ 48,490,000.00
Luce Bayou	\$ 20,500,000.00	\$ 60,000.00	\$ 15,000.00	\$ 75,000.00
San Jacinto River	\$ 50,000,000.00	\$ 238,092,500.00	\$ 79,357,500.00	\$ 317,450,000.00
Sims Bayou	\$ 42,000,000.00	\$ 94,257,500.00	\$ 51,317,500.00	\$ 145,575,000.00
Spring Creek	\$ 60,500,000.00	\$ 17,798,750.00	\$ 14,236,250.00	\$ 32,035,000.00
Vince Bayou	\$ 15,500,000.00	\$ 600,000.00	\$ 175,000.00	\$ 775,000.00
White Oak Bayou	\$ 65,000,000.00	\$ 375,332,500.00	\$ 115,217,500.00	\$ 490,550,000.00
Willow Creek	\$ 67,600,000.00	\$ 2,115,000.00	\$ 660,000.00	\$ 2,775,000.00
z.Countywide	\$ 890,000,000.00	\$ 16,500,000.00	\$ 14,000,000.00	\$ 30,500,000.00
Countywide	\$ -	\$ 700,000.00	\$ 175,000.00	\$ 875,000.00
Grand Total	\$ 2,250,700,000.00	\$ 2,389,261,250.00	\$ 872,493,750.00	\$ 3,261,755,000.00

\$2.39 billion is the total amount of partnership projects

\$2.25 billion is the total amount of local-funded projects

\$5.51 billion is the total value of all projects if all grant projects are successfully awarded

(COL #1) 3261

2,250,000
+ 3261
5,511,000

PROJECT COUNT AND COST SUMMARY BY TYPE

PROJECT TYPE	LOCAL-ONLY	GRANT PARTNER	GRANT LOCAL	GRANT TOTAL
Buyout	\$ -	\$ 552,375,000.00	\$ 184,125,000.00	\$ 736,500,000.00
Local	\$ 2,091,200,000.00	\$ -	\$ -	\$ -
Partnership	\$ -	\$ 1,214,855,000.00	\$ 435,865,000.00	\$ 1,650,720,000.00
Storm Repair	\$ -	\$ 80,280,000.00	\$ 20,070,000.00	\$ 100,350,000.00
Sub. Drainage Imp.	\$ -	\$ 338,126,250.00	\$ 112,708,750.00	\$ 450,835,000.00
Community Input	\$ 159,500,000.00	\$ 203,625,000.00	\$ 119,725,000.00	\$ 323,350,000.00
Grand Total	\$ 2,250,700,000.00	\$ 2,389,261,250.00	\$ 872,493,750.00	\$ 3,261,755,000.00



Flood bond recommendation agreement County Judge Emmett with CCFCC officers (L to R) Jim Robertson, Dick Smith, Pete Smullen

411

Rural Development

/

Environmental



Rising Waters

MORE UPSTREAM DEVELOPMENT = MORE AND WORSENING DOWNSTREAM FLOOD WATER ISSUES

- **Property damage**
- **Flood insurance: Potential higher premiums**
- **School closures**
- **Hospital : Increased difficulties**
- **Fire and Police protection: Access issues**
- **Job access: Issues due to road closures / traffic congestion**

TEXAS FOREST SERVICE

The Texas A&M University System

December 7, 2001

Patsy Gillham
13110 Chavile
Cypress, TX 77429

Dear Ms. Gillham:

At your request as a member of the Cypress Creek Coalition, I conducted an American Forests "Citygreen" environmental analysis of a typical one-acre site that would be located in the Cypress Creek watershed. "Citygreen" is a computerized software program developed by American Forests, a national non-profit, which helps communities analyze the economic impact of trees, forests and vegetation in terms of pollution mitigation, energy conservation and stormwater management. In other words, "Citygreen" demonstrates that trees and vegetation are an essential part of the local infrastructure of a community.

In assessing this one-acre site, a satellite image was used to obtain canopy and ground coverage information and the Soil Survey of Harris County was referenced for soil type. In addition to the satellite imagery used to assess the canopy coverage, other factors considered were the size, species and condition of the trees. For purposes of simplifying the data it was determined that the species composition along Cypress Creek is mainly pine/oak, the average size of the trees on site were 10 inches diameter breast height (dbh) with an average height classification of greater than 45 feet in height and an overall health condition ranking of fair.

The following is a list of annual pollution removal benefits as calculated by the American Forests "Citygreen" software program that the trees on this site provide to the surrounding community:

<u>Pollutant</u>	<u>lbs. removed</u>	<u>Removal value in \$</u>
Ozone	32	\$99.00
SO2	11	\$8.00
NO2	17	\$52.00
PM 10	30	\$62.00
CO	4	\$2.00
Total:	94	\$223

In addition to the pollutants listed above, the trees on this site store an estimated 43 tons of carbon and sequester another 680 lbs./year.

In order to determine stormwater analysis several factors are considered including soil type, percent slope average 2-year 24-hour storm event, and vegetation type and coverage. The soil type was classified somewhat impervious, percent slope is 0-1% and the rainfall from the 2-year 24 hour storm event is listed as 5 inches. One advantage of using the Citygreen program in analyzing stormwater runoff on sites is that different scenarios can be modeled. For the purposes of this report, two scenarios were compared for modeling stormwater runoff increase; forested vs. all paved conditions. While it is acknowledged that

Michael Merriitt, Bayou Region Urban Forester
P.O. Box 691184 * Houston, TX 77269-1184
~~TEL (281) 477-6126~~
<http://txforestservicetamu.edu>

Ms. Gillham
December 7, 2001
Page 2

pavement may not cover 100 percent of any new development; modeling of this assumption will provide a base number to start from in reviewing future scenarios.

The following is the change in stormwater runoff characteristics between the two scenarios, scenario 1 which is forest and scenario 2 which is 100 percent pavement:

	<u>Scenario 1 (current)</u>	<u>Scenario 2 (paved)</u>
Runoff Depth	2.26 inches	4.74 inches
Peak Flow	1.98 cubic feet/second	5.15 cubic feet/second
Time of concentration	. hours (20 minutes)	0.07 hours (4 minutes)
Runoff volume	62,037 gallons	128,673 gallons

Other stormwater analysis results are as follows:

Runoff is increased by 107 percent.

Peak flow is increased by 162 percent.

Time of concentration is decreased by 61 percent.

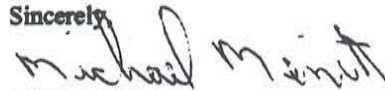
Storage volume required to mitigate the change in peak flow is 2,738 cubic feet.

Volume of runoff is increased by 66,636 gallons.

In developing the "Citygreen" program, American Forests uses formulas from the U.S. Natural Resources Conservation Service (NRCS) Technical Release 55 (TR55). TRR-55 is a model for estimating stormwater runoff in small urban watersheds, and is widely used across the country for stormwater planning and urban engineering analyses. In addition, Citygreen uses an air pollution and quality model, Urban Forests Effects (UFORE), developed by David Nowak, PhD of the U.S. Forest Service. This model estimates how any pounds of ozone, sulfur dioxide, nitrogen dioxide, PM10 and carbon monoxide are deposited in tree canopies as well as the amount of carbon sequestered. The UFORE model is based on data collected from 50 U.S. cities and the dollar values for air pollutants are based on the median value of the externality costs set by the State Public Service Commissions in those states.

The information detailed in this letter lists the stormwater and pollution mitigation benefits that the current canopy provides. No opinion as to the amount or type of development, proposed or otherwise, is made or implied by the Texas Forest Service. If you have questions or if I can be of further assistance please feel free to call me at 713-688-8931.

Sincerely,



Michael Merritt
Bayou Region Urban Forester
Texas Forest Service



The Katy Prairie Conservancy ("KPC") is a non-profit land trust working to protect coastal prairies and restore wetlands and prairie landscapes while also helping promote sustainable agriculture and sustainable flood mitigation with nature-based infrastructure. Until 2017, KPC worked primarily in Harris and Waller counties with a small seed bank in Ft. Bend County but then expanded its focus to include six more counties (Austin, Brazoria, Colorado, Jackson, Matagorda, and Wharton). Today, KPC has protected over 24,000 acres of land through acquisition and conservation easements. KPC also collaborates with other organizations on advocacy and public policy issues to ensure a vibrant and resilient community and we connect the public with nature through educational programming, public access, and outreach.

When Dick Smith asked me to write an article about KPC's work to protect the Katy and other coastal prairies for inclusion in CCFCC's annual report, I was especially pleased because we have been working with CCFCC since the early 2000s. I thought this would be a great way to update CCFCC folks about what the Katy Prairie is, what benefits it provides to the community, and what efforts KPC is undertaking to identify ways to use nature-based solutions and natural infrastructure like the protection of grasslands, wetlands, and riparian corridors to reduce flood risk and increase community resiliency.

Over nine million acres of prairie once blanketed the coasts of Texas and Louisiana. This pristine landscape was a vast complex of tall grasses, wildflowers and wetlands, wildlife habitat, air and water filtration systems, and incredible views. Much of these prairie lands were converted to agriculture first early in the 1900s and later to residential, commercial, and industrial development. Today, it is estimated that less than one percent of prairies remains in an "original" state; 15 to 20% of the grasslands that remain could be successfully restored. Inasmuch as Houston continues to be one of the fastest growing regions in the nation, its growth has spurred demand for additional development, which contributes to the loss of even more coastal prairie.

The 18,000-acre Katy Prairie Preserve is located in the middle of the Central Flyway and boasts more than 300 resident and migratory bird species; 110 species of mammals, amphibians, and reptiles; 700 species of wildflowers and grasses, and thousands of terrestrial insects and aquatic invertebrate species. The Katy Prairie has been designated a Global Important Bird Area by National Audubon - one of only 20 such sites in Texas - due in large part to the habitat available to upland grassland species in have been noted in decline. An additional 6,000 acres of coastal prairie have been protected in Jackson and Matagorda counties, and KPC is working on protecting more than 6,100 acres in Matagorda, Brazoria, and Galveston counties through conservation easements while also working on other land protection measures in its focus areas.

What does the protection of coastal prairies do for our community? Conservation efforts by the Katy Prairie Conservancy keep land in agriculture for local farmers and ranchers and provide one of the last strongholds for

wildlife in the region. KPC's ground-breaking community-based conservation programs provide a place for families to have nature-based adventures, and have earned KPC local, statewide, and national awards. And timelier than ever, these protected lands aid with flood control, contribute to the protection of our watersheds, and create a resilient landscape from the upland prairie to the Gulf Coast.

But more must be done as the loss of coastal prairie lands threatens the well-being of both people and wildlife in the Houston region. Hurricane Harvey and increased development have made robust protection of coastal prairies more critical than ever. Large, contiguous pieces of land must be protected to ensure a healthy and supportive environment for people and wildlife.

Land conservation, both large tracts of contiguous lands – as well as smaller patches of prairie – can help ensure healthier communities. Prairie grasses absorb and hold back floodwaters while sequestering carbon. Wetlands protect water quality and quantity. Diverse wildlife visit or live year-round on the prairie. KPC's long-term goal is to protect at least 30,000 acres of land on the Katy Prairie and to identify and protect coastal prairie in other large, contiguous blocks throughout its nine-county focus area.

KPC also works to restore and enhance protected lands. Wetlands, acre for acre, safeguard a greater number of species than any other habitat on the planet and provide resting, nesting, and roosting sites for migratory waterfowl. Wetlands are also *nature's kidneys*, removing sediments and pollutants as well as holding and slowing down floodwaters. The restoration of tallgrass prairie increases the amount of organic matter in the soil and leads to deep root systems with increased water holding capacity and enhanced soil porosity. The Natural Resources Defense Council estimates that every 1% increase in soil organic matter results in the soil holding an additional 20,000 gallons of water per acre.

KPC's education programs, which take place both on the prairie and in town, provide an opportunity for young and old alike to learn about the value of the prairie. The public can visit the prairie first-hand at the Matt Cook Memorial Wildlife Viewing Platform at Warren Lake or by walking the Ann Hamilton Trail at KPC's Indiangrass Preserve. When we provide a place for people to connect with nature, they are better able to understand the value of the prairie and the why and how of protecting the grasses, wetlands, and the creeks and bayous that intersect these lands.

The goal of KPC's public policy efforts is to encourage conservation of the prairie and ensure that its growing portfolio of protected lands is not compromised – either for the wildlife that reside on or winter on the prairie or for the people who enjoy the prairie as residents or visitors. KPC's research programs pinpoint the ways grasslands and wetlands provide natural benefits to a growing region, reintroduce species that were once prevalent on the prairie, and track how certain species depend on the prairie and what can be done to ensure that these species thrive. KPC also works with area universities to provide sites to accommodate faculty and student research.

Why should members of the Cypress Creek Flood Control Coalition care about preserving the Katy Prairie?

Extreme weather events have underscored the need for a comprehensive, regional approach to flood control. KPC is building upon a science-based conservation plan and other completed studies to identify and evaluate nature-based strategies and conceptual designs to reduce flooding vulnerabilities. Through this work, we and other conservation and environmental groups in the region can show that land conservation and restoration of

grasses, wetlands, forests, bayous, and marshes can significantly reduce the harmful effects of flooding at a lower initial capital cost and often at reduced operating cost than gray infrastructure, while also providing substantial co-benefits such as local foodstuffs, recreational opportunities, improved air and water quality, nature tourism, and improved quality of life to the community at large.

In order to better identify the value of the prairie in terms of its contributions to the community, KPC undertook three studies. The first study was completed in 2018 by the Trust for Public Land and looked at the economic value of the prairie in terms of enhancing farming and ranching, boosting recreation for residents and visitors, and increasing community and economic development. The study focused in part on KPC's operation of the 6,000-acre Warren Ranch and also on its work with farmers and ranchers to encourage best management practices that advance the dual goals of supporting prairie land restoration in concert with new economic viability for farmers. The study noted that hunters, birders, hikers, and other users spend money on food, travel, lodging, and other activities, generating economic activity on the Katy Prairie and throughout the surrounding counties. TPL stated that "One of KPC's greatest impacts, though it is the most elusive to quantify, is its creation of a sense of place and community for the next generation of residents. The full benefits of KPC's work go beyond dollars and cents, and they must be considered alongside the other benefits explored in this report." Copies of the TPL study can be found on KPC's [website](#) under reports and resources.

KPC engaged Applied Economic Services to complete a study released in 2019 titled *Ecosystem Services Valuation for the Katy Prairie Conservancy and Adjacent Lands*. The goals of the study were to (1) evaluate tangible ecological service values provided to the Greater Houston Region by Katy Prairie Conservancy protected lands, (2) create an economic model for protecting/restoring more land, and (3) determine restored grassland flood damages reduction values.

The study concluded that:

- Grasslands provided significant reduced runoff for mid-frequency storm events (i.e., 10, 25 and 50-yr storms).
- There was significantly less runoff from grasslands compared to suburban/urban land cover type locations (e.g., mowed lawns, park space, and vegetated rights-of-ways).
- With active restoration of existing and additional lands, benefits grow even further. Soil carbon levels will improve as grassland restoration progresses, improved grazing occurs, or reduced tillage agriculture is implemented in the Katy Prairie ecosystem lands, and the water-holding and water-infiltration capacity is expected to increase substantially over time as Katy Prairie lands are restored.

KPC has also been working with P. B. Bedient & Associates, Inc. to conduct a hydrologic and hydraulic impact analysis of the Katy Prairie. This study not only reviews the infiltration benefits of Katy Prairie lands, but also the detention storage benefits resulting from overland vegetation roughness and the retention storage potential of natural depressions in the prairie topography. It is anticipated that the final report will be released within the next few months.

After Hurricane Harvey in 2017, funding was provided to the U. S. Army Corps of Engineers to conduct the Buffalo Bayou & Tributaries and Resiliency Study, which had two goals (1) to identify and recommend an alternative that reduce the risk of flooding along Buffalo Bayou and its tributaries and upstream and downstream of Addicks and Barker Reservoirs due to changed physical and economic conditions since construction of the project in the 1940s, and (2) to reassess the integrity of Addicks and Barker Dams in light of changed hydrologic conditions and determine if and what measures are needed to address dam safety concerns.

KPC agreed to conduct an alternatives study in 2020 that would endeavor to achieve the objectives of the Corps' first goal (noted above) using nature-based solutions and natural infrastructure. The scope of the study will

1. offer a decentralized suite of solutions to afford multiple/redundant layers of protection,
2. provide appreciable individual water-holding capacity that when combined with other elements achieve greater flood risk reduction benefits overall,
3. utilize the Katy Prairie's inherent storage and infiltration benefits while retaining the conservation values found on the prairie,
4. comment on approaches that were recommended for further study but dropped from consideration by the Corps, and
5. investigate re-siting the Cypress Creek Reservoir off Katy Prairie lands where the project would not inundate preserve properties.

KPC hopes to work with CCFCC and others to increase protected lands and to ensure that these lands continue to provide flood mitigation and other benefits to the community. But time is of the essence, as the Katy Prairie Conservancy must protect and restore additional prairie before it is gone.

KPC will continue to build on its base of land protection, science and policy work, and prairie restoration. This expertise will allow KPC to make a substantial impact in flood control efforts, natural watershed protection, and resiliency planning for the region. Demand for change in the region has presented an opportunity to galvanize stakeholder support, maximize available funding, and move forward in an expansive and coordinated prairie protection effort. Thank you for continuing to be a part of a community of supporters dedicated to protecting the coastal prairie.





Cypress Creek Greenway Project – CCFCC Annual Report for 2019

During 2019 our coordination, advocacy, and visioning efforts continued for the development of the Cypress Creek Greenway Project (CCGP). The CCGP is a committee within the CCFCC and originated in 2004. The three goals of CCFCC are stated simply as flood mitigation, preservation, and education. The CCGP focuses primarily on the second of these, preservation, but this goal works hand in hand with the goal of flood mitigation.

The Cypress Creek Greenway (CCG) is a linear greenway along Cypress and Little Cypress Creeks and will extend from the Harris-Waller County line west of US 290 to the east where the CCG joins the Spring Creek Greenway, a distance of over 40 miles. The Greenway will connect existing and future anchor parks along Cypress Creek with a multi-use, all weather trail.

In addition to our efforts numerous partners are doing things to make the vision of the Greenway a reality. These partners include Harris County Precincts 3 and 4, MUDs, HCFCD, developers, and other entities. Since 2004 28 parks have been built or are under development within the Cypress Creek corridor and will eventually connect to the CCG. While we have not been the catalyst for all of these parks, the large number of parks which have been developed clearly demonstrates the interest that there is in creating amenities with the Cypress Creek corridor. Below is a list of the parks and major trail projects which have been opened, or are under development, within the Greenway.

Park Development Projects (includes trails both within and extending beyond the park area)

- Oak Meadow Park (Bridgeland) *Not open to public*
- Bud Hadfield Park (Precinct 3)
- Maxwell Road Park at 12622 Maxwell Road (Precinct 3)
- Little Cypress Creek Preserve (Bayou Land Conservancy and Precinct 4)
- Dragon Fly Pond and Park at Spring Cypress and Telge Road (Precinct 4)
- East Shadow Lake Park (Precinct 3)
- Cypress Park (Precinct 3)
- Grantwood Park (Precinct 3) – Under development
- Richard Taylor Park (Lake Forest UD)
- Lakewood Crossing Park (MUD 286)
- 100 Acre Wood Preserve (Bayou Land Conservancy and Precinct 4)
- Matzke Park (Precinct 4)
- Mandolin Gardens (MUD 230) – Also, installed two loop trails and landscaping around two additional detention ponds and planning to do a third.
- Kickerillo Mischer Preserve (Precinct 4)
- CyChamp Park (CyChamp UD)
- Champion Forest Park (Precinct 4)
- Cypress Forest Park (Cypress Forest PUD)
- Two (2) Terranova West Parks (Terranova West UD) *Not open to public*

- Lents Family Park West (CNP UD)
- Lents Family Park East (CNP UD)
- Ponderosa Forest Park (Ponderosa Forest UD)
- Lakes of Cypress Forest (LOCF HOA) *Not open to public*
- Cypress Forest Lakes (WCID 110) *Not open to public*
- Herman Little Park and Trails (Timber Lane UD)
- Cypress Creek Park and Trails (Timber Lane UD)
- Sandpiper Park and Trails (Timber Lane UD)
- Kickerillo Mischer Preserve south park (under development) (Precinct 4)
- YMCA lake restoration project (under development) (Precinct 4)

Trail Development Projects (trails extending significantly beyond core park area)

- Cypress Creek Trail – Phase 1 (Bridgeland) *Not open to public*
- Cypress Creek Trail – Phase 2 (Bridgeland) *Not open to public*
- Faulkey Gully Trail Extension (Faulkey Gully Greenbelt Association and Precinct 4)
- Charterwood Trail on Pillot Gully (Charterwood UD) – Extension to north later added
- Gourley Nature Trail and expansion of Collins Park and Meyer Park trails (Precinct 4)
- Cypresswood Proper Trails at Lower Collins Park (Precinct 4 and GHORBA)
- Cypress Creek Greenway Hike and Bike Trails on HCFCD Acreage (Timber Lane UD)
- Cypresswood Equestrian Trails Project – Equestrian and pedestrian trails (Precinct 4)
- MUD 286 Trail System along Anderson Ditch, Cypress Creek, and Faulkey Gully
- Trail along K142-05-00 north of Louetta (Malcomson Road UD)
- 1.0 mile sidewalk along Louetta Road, trail connection and extension along gas pipeline easement, and extension to the north (Malcomson Road UD)
- Anderson Ditch (K143-00-00) Trail (Precinct 4 and NW HC MUD 9)
- 100 Acre Wood Trail and extension (Precinct 4)
- Bridge across Cypress Creek and trails connecting Timber Lane UD trails with Mercer Botanical Gardens (Timber Lane UD, Precinct 4, TxDOT)
- Lower Cypress Creek trails and bridge over Cypress Creek connecting along Spring Creek Greenway (Precinct 4)
- Equestrian trails along Turkey Creek connecting to 100+ miles of equestrian trails at IAH (Precinct 4)
- Trail along Faulkey Gully north/upstream of Spring Cypress Road and trail connection from Spring Cypress at Faulkey Gully south to Spring Cypress at Little Cypress Creek totaling 5.1 miles (under development) (NWHC MUD 5)
- Paradise Valley Park Trail along K134-00-00 (Champions MUD)

Below are some additional highlights for the Cypress Creek Greenway Project in 2019.

- **Cypress Creek/SH 249 Area Trail Master Plan** – The 2015 master plan continues to be used as a model and guide for future trail connectivity and development in the area bordering Cypress Creek between North Eldridge Parkway and Cutten Road. Precinct 4 has continued efforts to obtain recreational easements for trails across private property in this area but progress has been challenging. Design work was done for the construction of trails under SH 249 both north and south of Cypress Creek and connecting to the Kickerillo-Mischer Preserve both north and south of Cypress Creek. Discussion was held with Precinct 4, the YMCA, Houston Northwest Church, and MUD 230 regarding future trail connectivity south of Cypress Creek and west of SH 249. The ultimate goal is to have connectivity on both the north and south sides of Cypress Creek from the Kickerillo Mischer Preserve to Jones Road which would create an exceptional loop trail connecting several user groups. This loop will tie to an existing upstream trail system providing access to thousands of residents.

- **Agreement between YMCA and Precinct 4** – An agreement was finalized between the D. Bradley McWilliams YMCA at Cypress Creek and Precinct 4 whereby Harris County obtained possession of the abandoned 7.3 YMCA forested park at the southeast corner of SH 249 and Cypress Creek, and the acreage including the YMCA lake which was damaged during and has been abandoned since the Tax Day Flood. Precinct 4 is deepening and restoring the YMCA lake and will open a playground for young children in the previously abandoned 7.3 acre park. The Cypress Creek Greenway main trail will pass through these two areas along the south side of Cypress Creek.
- **Trash Bash at Collins Park** – Bayou Preservation Association's Trash Bash event was held at Collins Park on Cypress Creek on Saturday, 3/30/19. The CCGP assists in the organization of this event. Approximately 411 volunteers participated in the event during which a significant amount of trash was picked up along Cypress Creek and its tributaries. There continues to be an increasing and successful focus on education at the event. In addition to getting a lot of trash removed from the waterways, the event results in volunteers experiencing the wonderful areas along Cypress Creek and gaining a greater appreciation for the value and benefits of the Cypress Creek natural corridor.
- **Cypress Creek Paddling Trail** – Although approval was received from TPWD to establish the Bayou Preservation Association-sponsored Paddling Trail on Cypress Creek from SH 249 to US 59, little progress was made on the project this year. The impact of Harvey on launch sites as well as other hurdles and challenges resulted in this effort to be something for future focus. The announcement that Precinct 4 will be building Edgewater Park on the north bank of the San Jacinto River has provided a good terminus for the downstream end of the paddling trail and has solved something which had been a continuing uncertainty.
- **Precinct 4 and HCFCD Activity** – Precinct 4 and HCFCD have worked together for several years to identify and purchase tracts along Cypress Creek that are and were suitable for floodplain preservation, many of which would be part of the Cypress Creek Greenway, and some of which would be suitable for detention. The CCGP has recommended tracts to be considered for acquisition and several of these have been acquired. The efforts for acreage acquisition have accelerated significantly with the availability of the 2018 Flood Bond funding and significant progress has been made in acquiring additional acreage for floodplain preservation. As a result of acreage acquisition and recreational easements the vast majority of the acreage needed to construct a multiuse, all weather trail along Cypress Creek from the confluence of Cypress Creek with the Spring Creek to Cypress Creek at Grant Road has been secured.
- **Precinct 3 Cypress Creek Greenway Activity** – Precinct 3 began development of the ~120 acre Grantwood Park at the southeast corner of Grant Road and Cypress Creek. Approximately 100 repeatedly flooded homes were bought out in this future park area. This forested park will include parking, restrooms, picnic pavilions, playground, and paved and natural surface trails. Discussions with potential partners to consider trail connectivity between several planned communities east and west of US290 and adjacent to Cypress and Little Cypress Creeks suggest that this is topic for future consideration.

Please feel free to contact me if you have questions or if I can provide any additional information.

Jim Robertson, Chairman, Cypress Creek Greenway Project

jhrver@aol.com, 281-370-8243

Project Breakdown by Watershed (as of August 6, 2018)

WATERSHEDS	LOCAL-ONLY	GRANT PARTNER	GRANT LOCAL	GRANT TOTAL
Addicks Reservoir	\$ 126,000,000.00	\$ 223,467,500.00	\$ 54,852,500.00	\$ 278,320,000.00
Armand Bayou	\$ 12,750,000.00	\$ 26,060,000.00	\$ 15,340,000.00	\$ 41,400,000.00
Barker Reservoir	\$ 30,000,000.00	\$ 27,132,500.00	\$ 19,137,500.00	\$ 46,270,000.00
Brays Bayou	\$ 63,450,000.00	\$ 132,220,000.00	\$ 90,530,000.00	\$ 222,750,000.00
Buffalo Bayou	\$ 88,700,000.00	\$ 21,380,000.00	\$ 16,595,000.00	\$ 37,975,000.00
Carpenters Bayou	\$ -	\$ 5,217,500.00	\$ 1,732,500.00	\$ 6,950,000.00
Cedar Bayou	\$ 249,500,000.00	\$ 2,070,000.00	\$ 680,000.00	\$ 2,750,000.00
Clear Creek	\$ 52,000,000.00	\$ 196,172,500.00	\$ 92,462,500.00	\$ 288,635,000.00
Cypress Creek	\$ 204,900,000.00	\$ 263,900,000.00	\$ 86,115,000.00	\$ 350,015,000.00
Galveston Bay	\$ 4,500,000.00	\$ 6,150,000.00	\$ 24,050,000.00	\$ 30,200,000.00
Goose Creek	\$ 31,000,000.00	\$ 6,637,500.00	\$ 2,212,500.00	\$ 8,850,000.00
Greens Bayou	\$ 8,000,000.00	\$ 222,575,000.00	\$ 57,040,000.00	\$ 279,615,000.00
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Spring Creek	\$ 60,500,000.00	\$ 17,798,750.00	\$ 14,236,250.00	\$ 32,035,000.00
Vince Bayou	\$ 15,500,000.00	\$ 600,000.00	\$ 175,000.00	\$ 775,000.00
White Oak Bayou	\$ 65,000,000.00	\$ 375,332,500.00	\$ 115,217,500.00	\$ 490,550,000.00
Willow Creek	\$ 67,600,000.00	\$ 2,115,000.00	\$ 660,000.00	\$ 2,775,000.00
z.Countywide	\$ 890,000,000.00	\$ 16,500,000.00	\$ 14,000,000.00	\$ 30,500,000.00
Countywide	\$ -	\$ 700,000.00	\$ 175,000.00	\$ 875,000.00
Grand Total	\$ 2,250,700,000.00	\$ 2,389,261,250.00	\$ 872,493,750.00	\$ 3,261,755,000.00

\$2.39 billion is the total amount of partnership projects

\$2.25 billion is the total amount of local-funded projects

\$5.51 billion is the total value of all projects if all grant projects are successfully awarded

PROJECT COUNT AND COST SUMMARY BY TYPE

PROJECT TYPE	LOCAL-ONLY	GRANT PARTNER	GRANT LOCAL	GRANT TOTAL
Buyout	\$ -	\$ 552,375,000.00	\$ 184,125,000.00	\$ 736,500,000.00
Local	\$ 2,091,200,000.00	\$ -	\$ -	\$ -
Partnership	\$ -	\$ 1,214,855,000.00	\$ 435,865,000.00	\$ 1,650,720,000.00
Storm Repair	\$ -	\$ 80,280,000.00	\$ 20,070,000.00	\$ 100,350,000.00
Sub. Drainage Imp.	\$ -	\$ 338,126,250.00	\$ 112,708,750.00	\$ 450,835,000.00
Community Input	\$ 159,500,000.00	\$ 203,625,000.00	\$ 119,725,000.00	\$ 323,350,000.00
Grand Total	\$ 2,250,700,000.00	\$ 2,389,261,250.00	\$ 872,493,750.00	\$ 3,261,755,000.00

Mtg #	Watershed	Event Location	Event Date	Meeting Attendance	Comments received
1	Sims Bayou	Hiram Clarke Multi Service Center	Tuesday, June 5, 2018	88	24
2	Armand Bayou	Bay Area Community Center	Thursday, June 7, 2018	91	86
3	White Oak Bayou	White Oak Conference Center	Tuesday, June 12, 2018	218	155
4	Carpenters Bayou	ML Flukinger Community Center	Thursday, June 14, 2018	13	6
5	Cypress Creek	Raveneaux Country Club	Friday, June 15, 2018	533	330
6	Greens Bayou	Magnum-Howell Center	Saturday, June 16, 2018	29	44
7	Halls Bayou	North East Harris County Community Center	Wednesday, June 20, 2018	55	17
8	Addicks Reservoir	Richard & Meg Weekley Community Center	Thursday, June 21, 2018	242	135
9	Hunting Bayou	Kashmere Multi-Service Center	Saturday, June 23, 2018	41	17
10	Jackson Bayou	Crosby Community Center	Monday, June 25, 2018	20	10
11	Spring Creek	Big Stone Lodge at Dennis Johnston Park	Wednesday, June 27, 2018	61	37
12	Goose Creek	Baytown Community Center	Thursday, June 28, 2018	14	3
13	Brays Bayou	Pershing Middle School	Monday, July 9, 2018	350	179
14	San Jacinto River	Kingwood Park High School	Tuesday, July 10, 2018	700	840
15	Clear Creek	El Franco Lee Community Center	Tuesday, July 17, 2018	189	82
16	Willow Creek	Klein ISD Multipurpose Center	Wednesday, July 18, 2018	87	15
17	Cedar Bayou	May Community Center	Thursday, July 19, 2018	50	25
18	Luce Bayou	May Community Center	Monday, July 23, 2018	45	16
19	San Jacinto / Galveston Bay	Sylvan Beach Pavilion	Tuesday, July 24, 2018	24	8
20	Vince Bayou	Pasadena Convention Center	Wednesday, July 25, 2018	18	1
21	Buffalo Bayou	Memorial Drive United Methodist Church	Monday, July 30, 2018	590	318
22	Little Cypress Creek	Richard & Meg Weekley Community Center	Tuesday, July 31, 2018	104	23
23	Barker Reservoir	Memorial Parkway Junior High School	Wednesday, August 1, 2018	279	44
			Total	3,841	2,415

Meeting Attendance is based on meeting attendee cards, which were converted into a meeting attendance spreadsheet.

For **ANNUAL REPORT**
The email you requested is shown below.

ADDITIONAL \$ FUNDING
Required in order ed to complete total watershed Drainage Plan

Bill St. Clair
Independent CFO
281-382-1943
<https://www.linkedin.com/in/billstclair/>

Sent from Mail for Windows 10

From: Bill St Clair
Sent: Monday, March 2, 2020 9:24 AM
To: Cypress Creek Flood Control Coalition
Subject: RE: Returned mail: see transcript for details

Dick,

I appreciate your pointing out my email problem. I will get that fixed. I look forward to hearing from Pete for our next meeting.

For the annual report I suggest "We know that many large projects, such as a 3rd reservoir function and conveyance (e. g. tunneling, etc.) will be required to properly mitigate the Cypress Creek watershed. However, Harris County is woefully unprepared for the matching money required to initiate these types of projects. The total estimated cost of proper flood mitigation for Harris County is \$35 billion. Sufficient federal legislation has been passed to fund this but it requires a 25% match of local funds, so we need about \$9 billion of local money to access the necessary federal funds. Less than \$1 billion is expected from the Harris County bond money and recent state legislation in Austin for matching purposes. Thus we need a plan to come up with \$8 billion more, and we are not aware of any such plans at this time."

Bill
Annual Report 2019 Funding Requirments

CCFCC
2019 Budget

Funds/Expense		2019 Budget	Total 2019	2020 Budget
Funds				
	Bank Balance Checking			
	Bank Balance Savings			
	Total Funds Available			
1-1	MUD/HOA Contributions			
1-2	Resident Vountary Contribution	\$22,000.00	\$23,699.27	\$25,000.00
1-3	Grant Applications			
	3a.- Houston Endowment			
	3b. - Other Sources (See Treasurer's Report)(Web site)		\$131.81	\$200.00
Total	1-3 Grant Applications			
	Cypress Preservation Assoc			
1-4	Interest Earnings (Includes cking & savings)	\$8.00	\$28.45	\$30.00
Total	Income	\$22,007.00	\$23,859.53	\$25,230.00
Expense				
1	Membership Bus. & Community Outreach			
2	Annual Meeting			
3	Preservation Committee			
4	IT Mgt-Evaluation Comm.			
5	AWBD Committee			
6	Legal & Accounting Fees & Banking fees			
7	Administration Expense+ Off site storage + phone conf	\$2,200.00	\$1,491.45	\$2,000.00
8	Fed Income Tax Preparation			
9	ATT Internet Service	\$1,400.00	\$1,074.79	\$1,100.00
10	Office Supplies,Print Postage	\$3,200.00	\$1,631.61	\$2,000.00
11	Computer ops & maint.	\$3,000.00	\$1,616.03	\$1,500.00
12	D&O Liability Insurance	\$1,000.00	\$914.00	\$1,000.00
13	Contributions & membership Dues	\$1,000.00	\$150.00	\$300.00
14	Houston-Galveston Area Council			
15	Publications Web Site	\$2,000.00		\$3,000.00
16	Environmental Affairs Committee			
17	Seminar/Conference Expense	\$100.00	\$0.00	
Total 1->17		\$13,900.00	\$7,647.78	\$10,900.00
18	Engr / Tech Consultation			
	18-1 PY Work to be Paid in '2019			
	Rice Univ. NAI Project			
	LG Dunbar-Engineering Consulting	\$40,000.00	\$0.00	
Total 18-1 PY Work to be Paid in '20		\$40,000.00	\$43.00	\$40,000.00
	18-ii CY 2018 Work			
	Rice Univ-stream gage study			
	Future Conditions-begin 4/1/10 (L Dunbar)			
	Houston Endowment for Future Conditions)(Encumbered Grant)			
	Aerial Photo's			
Total 18-ii-CY 2019 Work				
Total 18	Engr / Tech Consultation	\$40,000.00	\$0.00	\$40,000.00
19	Reserve for Future Requirements			
20	Grant Proposal Expense			
21	Operator Fee - Customer Billing			
22	Bookkeeping			
23	Cypress Creek Greenway Project-J Robertson	\$2,500.00	\$2,244.12	\$2,500.00
	23a Meyer Park / REI (Encumbered Grant)			
	23b Memorial Lady Bug (Encumbered Grant)			
	23d Cypress Creek Greenway Project-other			
Total 23	Cypress Creek Greenway project	\$2,500.00	\$2,244.12	\$2,500.00
24	Detention Pond Committee			
25	Contingencies			
	Misc. office Equipment			
Total expense		\$56,400.00	\$10,266.87	\$53,400.00
Total Income		\$22,007.00	\$23,859.53	\$25,230.00

02/18/20

Cypress Creek Flood Control Coalition Balance Sheet Standard

As of December 31, 2019

	<u>Dec 31, '19</u>
ASSETS	
Current Assets	
Checking/Savings	
1.1110 — Checking - Amegy Bank 365...	55,615.85
1.1130 — Investments - Amegy	<u>16,104.76</u>
Total Checking/Savings	<u>71,720.61</u>
Total Current Assets	71,720.61
Fixed Assets	
1.1300 — Computer & Office Equipment	<u>2,334.30</u>
Total Fixed Assets	<u>2,334.30</u>
TOTAL ASSETS	<u><u>74,054.91</u></u>
LIABILITIES & EQUITY	
Equity	
3000 — Opening Bal Equity	24,870.64
3900 — Retained Earnings	35,590.58
Net Income	<u>13,593.69</u>
Total Equity	<u>74,054.91</u>
TOTAL LIABILITIES & EQUITY	<u><u>74,054.91</u></u>

02/18/20

Cypress Creek Flood Control Coalition
Profit and Loss Standard
January through December 2019

	<u>Jan - Dec '...</u>
Ordinary Income/Expense	
Income	
Web Site Donations	131.81
I - 2 — Resident Voluntary Contribu...	23,699.27
I - 4 — Interest Earnings	<u>29.48</u>
Total Income	23,860.56
Expense	
9- — ATT internet service	1,074.79
10 — Office Supplies, Print, Postage	1,185.35
13 — Contributions & Membership ...	150.00
18 — Engineering/Technical Consu...	43.00
23 — Cypress Creek Greenway Pr...	2,244.12
2 — Annual Meeting	135.58
7 — Administration Expense	2,239.34
8 — Fed Income Tax Preparation	19.90
11 — Computer ops and maintenanc...	1,510.79
12 — D&O L Liability Insurance	914.00
15 — Publications	<u>750.00</u>
Total Expense	<u>10,266.87</u>
Net Ordinary Income	<u>13,593.69</u>
Net Income	<u><u>13,593.69</u></u>

Cypress Creek Flood Control Coalition
Board of Directors / Officers / Committees
December 31, 2019

Mark W. Adam	BLEYL Enginneering
Todd A Burrer`	Inframak
John Porea, Treasurer	Harris County MUD 383
James H. Robertson	Enclave at Lakewood POA
John J. (Jack) Sakolosky, Secretary	Lake Forest Utility District
Richard D. (Dick) Smith, President	Timberlake Improvement District (MUD)
Peter R. Smullen, Vice President	Ravensway/Saracen Park Home Assoc.
Carl Zeitler	Malcomson Road Utility District

Committees

<u>Committee</u>	<u>Chair</u>
Communications Committee	Dick Smith
Cypress Creek Greenway Committee	Jim Robertson
Environmental Affairs Committee	Open
Membership, Business & Community Outreach Committee	Open
Preservation Committee	Patsy Gillham
Technical Information / Management Committee	Pete Smullen
IT (Information Technology) Management	Joe Velasco

Please join this neighborhood regional alliance in making our community a less flood-prone and more parks & trails friendly place to live. Thanks for your continuing support.



Cypress Creek Flood Control Coalition
Annual Meeting, April – 2020 ¹
Supporting Members Cast

Administration

Lisa Foley - Coles Crossing

Billboard (Website)

Nick Lyras - Grantwood

Flood Bond Election Chairman

Auggie Campbell, Lakewood Forest

CFO Consultant

Bill St Clair - Harris County

Cheerleader

Patsy Gillham - Tower Oaks

. Emergency Rescue, Fire Chief

Richard Leider, ESD 13/Tower Oak Bend

Emergency Rescue Assistant Fire Chief

Jason Blackman, ESD 13, Tower Oak Bend

Flood Bond Election Management

Auggie Campbell - Lakewood Forest

Roster Management

Carl Zeitler, Lakewood Grove

Storm Emergency Boat Rescues

Bryan Kendall – Ravensway / Saracen Park

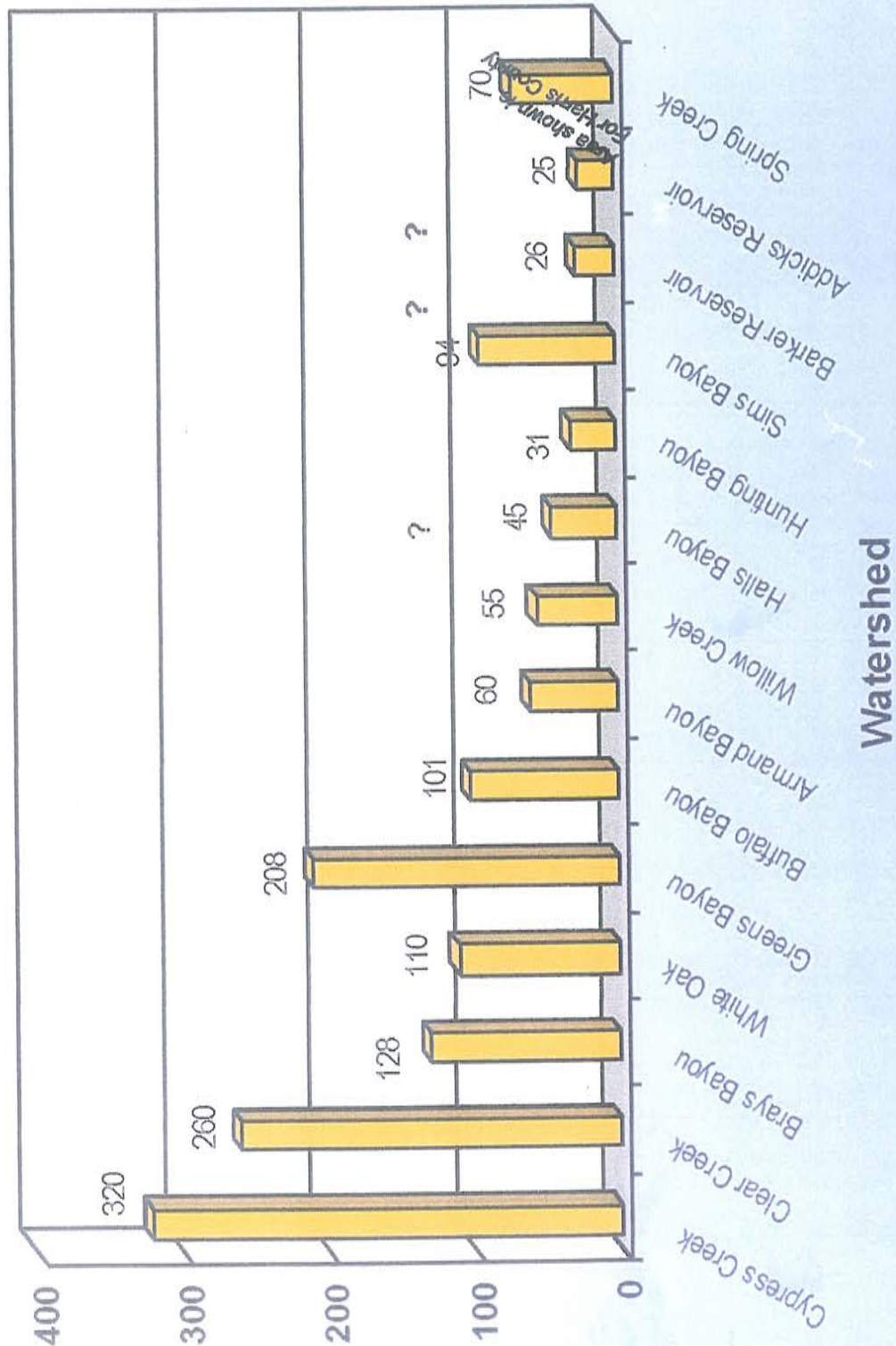
Annual Meeting 2019 Supporting Cast

¹ This planned meeting was changed to a virtual meeting due to the CIVID-19 pandemic. These persons were planned to be honored for their supporting actions for CCFCC. All are CCFCC “Supporting Members”

Exhibits

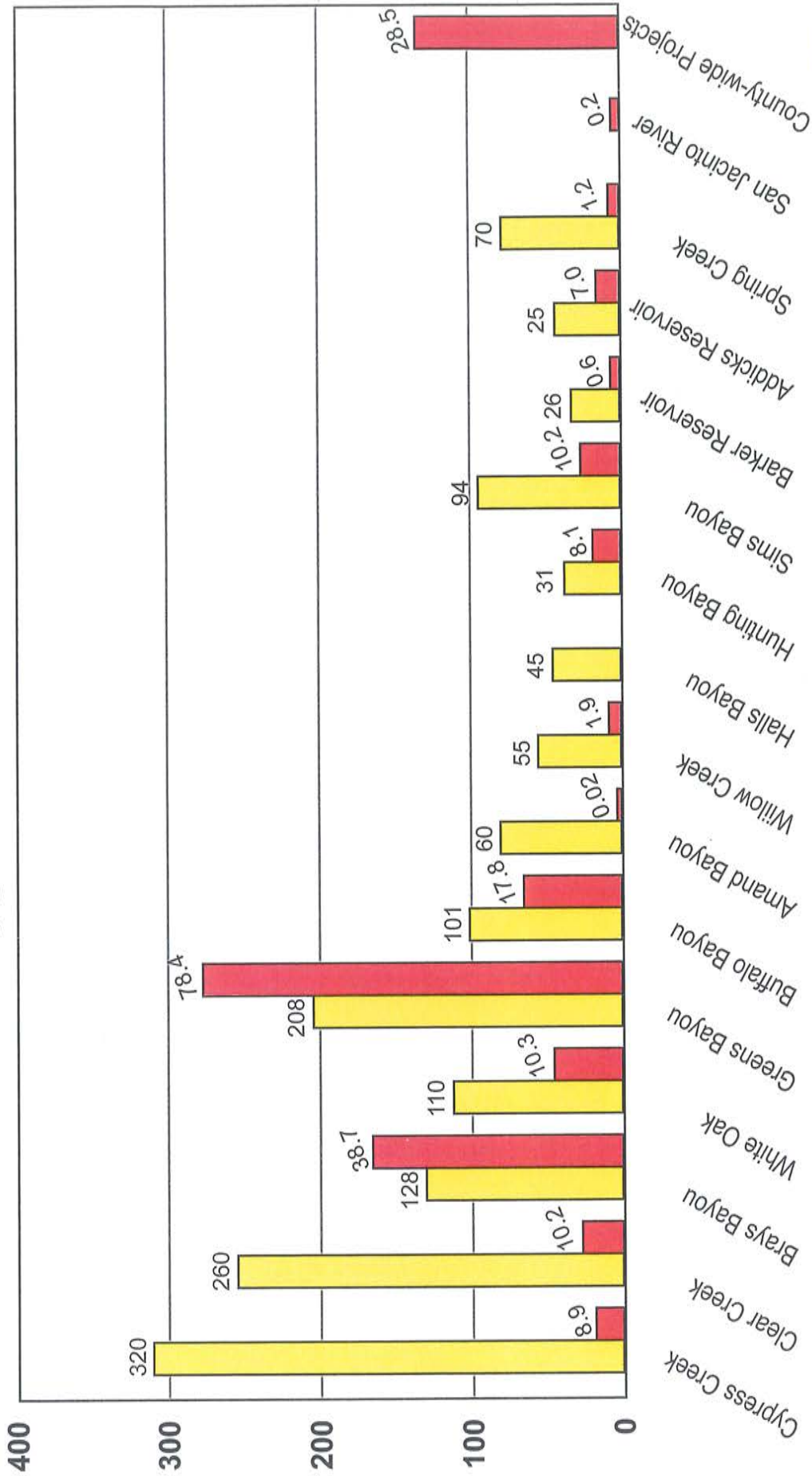
	<u>Page...</u>
.....	
#1 Harris County Watersheds, land area comparison	61
#2 Watersheds, land area to \$ CIP funding comparison	62
#3 Bond \$ funding by watershed graph	63
#4 Yard Signs promoting get out the vote, 2018 Flood Bond election	64
#5 <i>"Less than 2 cents per day" donation on your water bill for CCFCC expense</i>	65
#6 Flood Plain Administrators, (Cypress Creek Watershed locations	66-67
7. Regulations of Harris County Texas For Flood Plain Management, Conditions Of A Class "II" Permit (Section 4.05)	68-70
8 Katy Prairie Conservancy, Cypress Creek Watershed mapped location	71

LAND AREA COMPARISON



AREA TO CAPITAL COMPARISON

(5-year Period – 2017-2021)



Watershed
(5 year period)



Area shown is
for Harris County



Data for the June 2017 Capital Improvement Plan submitted by Harris County Flood Control District for a five-year period, fiscal year 2017 - fiscal year 2021.
(Appendix A "Currently Funded Projects")

The total 5-year Capital Improvement Plan of \$222.5M includes \$2.9M in 2017-2018 for home-buyout.

Funding Breakout by Watershed 2018 Flood Bond Report Amounts as of August 6, 2018

\$600,000,000

\$500,000,000

\$400,000,000

\$300,000,000

\$200,000,000

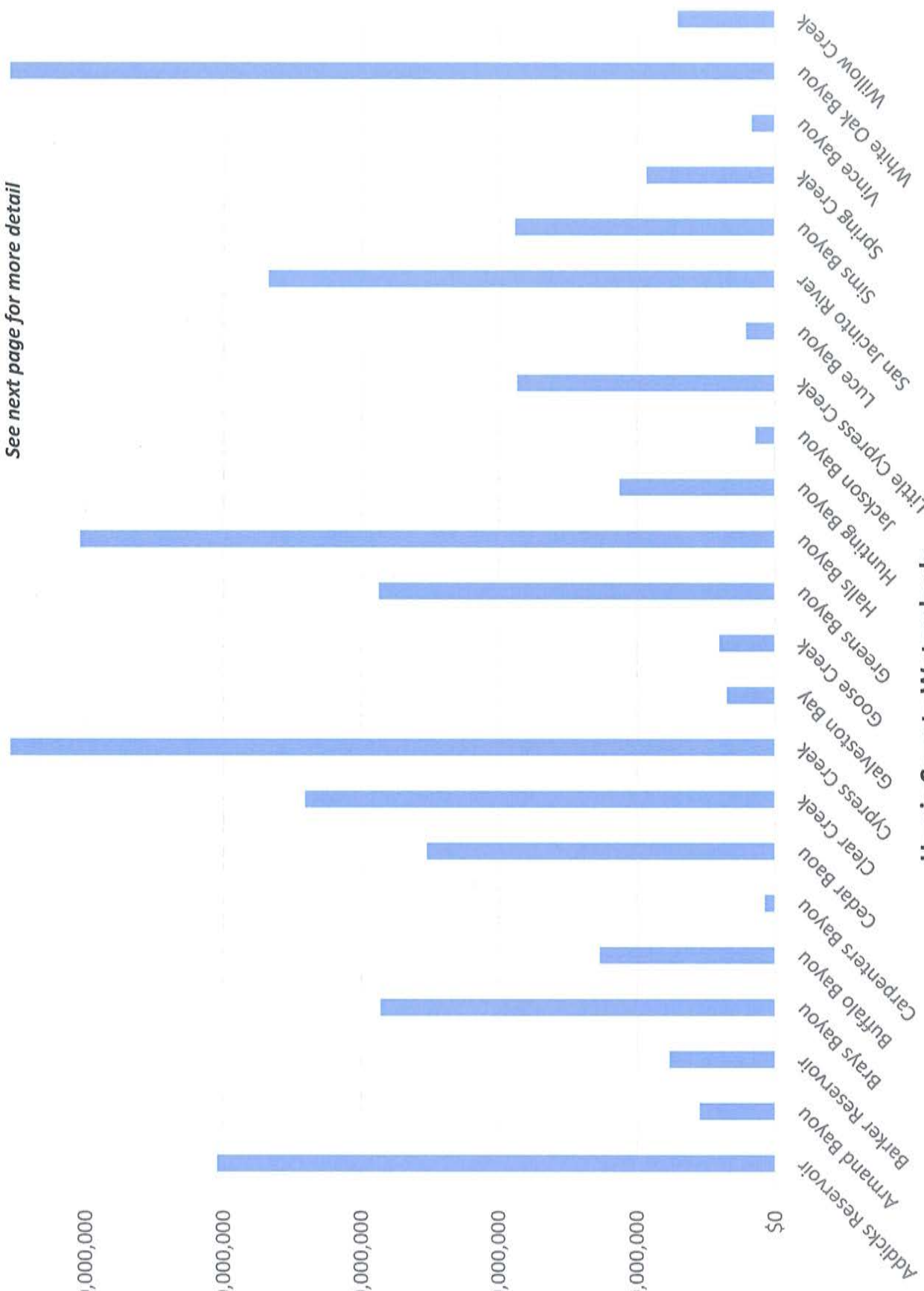
\$100,000,000

05

2018 Total Funding \$ Amount

See next page for more detail

149



Harris County Watersheds

Source: Harris County Flood Control

**HELP FIGHT
FLOODING**

✓ VOTE For Prop A
August 25

**YARD SIGNS
CYPRESS VOLUNTEERS**

**HELP FIGHT
FLOODING**

✓ VOTE For Prop A
NOW

Cypress Creek Flood Control Coalition
From: Bobby Lieb - Bobby.Lieb@houstonwhchamber.org
To: "Cypress Creek Flood Control Coalition" <goodalliance@ccec.org>
Subject: Signs are here
Cc: The next round of yard signs have arrived. Please advise on location of quantities you would like me to deliver.
Bobby Lieb
Vice President of Community & Economic Development
Houston TX 77068
1930 Cypress Creek Parkway Suite 120
Houston TX 77068
Office: 970-258-5064
Mobile: 281-410-4160
<http://goodalliance.org>



Less than 2 cents per day. . .

. Your voluntary donations is how all CCFCC *out-of-pocket* costs are paid - - - it is the only ongoing source of paying all costs.
. This is done by including 50-cents on your monthly water bill.

~

This pays for: - - - -

- Engineering / technical consultants (*the greatest expense*)
- Web site and computer
- Office supplies and printing
- Professional dues (National and state Flood Plain Managers Association)
- All other expenses (There are no paid employees - - - all are unpaid volunteers)
- **Bottom Line: It covers all expenses.**

Note: CCFCC directors are unpaid, volunteers elected by members living in the Cypress Watershed. In addition to monthly board meetings their hundreds of hours per year work are spent in meetings, correspondence and other sessions with:

- Government representatives - - - Local, state and federal (agency employees and elected officials including :
 - Harris County Flood Control District
 - Harris County Engineering management and staff
 - Harris County Commissioners Court Precinct 3 and 4 (Commissioners and Judge_
 - Elected State of Texas representatives
 - Elected United States congressional representatives

Floodplain Administrators ¹
Cypress Creek and Addicks Watersheds
Harris and Waller County, Texas

Harris County
Shawn Sturhan
10555 Northwest Fwy, Houston, TX 77092
Phone: 713-274-3753
FloodplainAdministrator@eng.hctx.net

City Of Tomball
Craig T. Meyers
501 James St, Tomball, TX 77375
Phone: 281-290-1412
cmeyers@tomballtx.gov

City Of Waller
Mr. Gene Schmidt
1118 Farr St, Waller, TX 77484
Phone: 936-372-3880
gschmidt@wallertexas.com

City Of Katy
Cindy Kuykendall
901 Avenue C, Katy, TX 77493
Phone: 281-391-4830
ckuykendall@cityofkaty.com



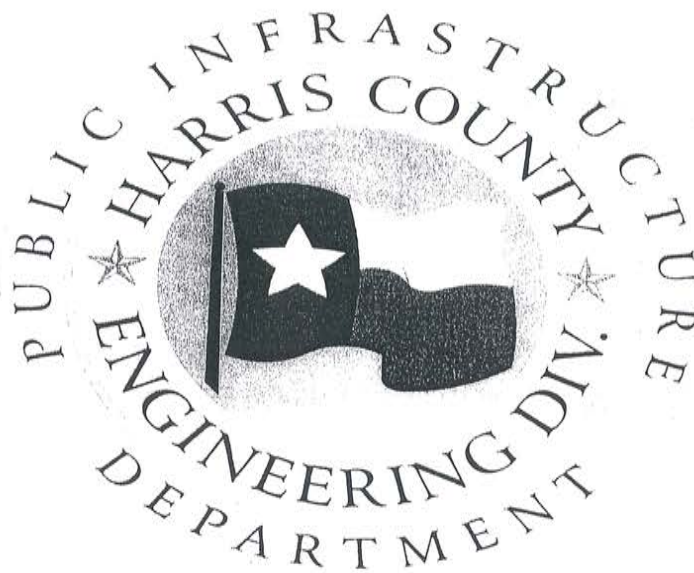
DUTIES OF A LOCAL FLOODPLAIN ADMINISTRATOR

The Floodplain Administrator is responsible for implementing the community's local floodplain ordinance and ensuring that the community is complying with minimum NFIP standards and enforcing any locally imposed higher standards:

1. Require, review, and evaluate floodplain development permit applications for all development located in a Special Flood Hazard Area (SFHA). This includes minor development (fences, accessory structures, grading, et al) that may not require building permits.
2. Provide information related to the Base Flood Elevation and answer general questions about floodplain/floodway boundaries.
3. Review elevation certificates for completeness and accuracy. Identify deficiencies before accepting as part of a development application.
4. Review development plans and specifications for compliance with the floodplain ordinance.
5. Discourage development in the floodplain when alternatives are possible and restrict development in the floodway (if allowed by local ordinance) to that which will not cause a rise in the elevation of the base flood. Review engineering analyses to ensure local regulations are being met.
6. Advise applicants of other State, federal or local permits or approvals that may be necessary when developing in an SFHA.
7. Notify FEMA of any changes to watercourses within corporate limits.
8. Inspect floodplain construction to verify location relative to the floodplain/floodway and ensure compliance with local floodplain ordinance.
9. Educate community members and local officials about floodplain management.
10. Ensure building officials are fully aware of building code requirements related to floodplain development.
11. Maintain complete documentation and records of all floodplain activities. Records should be maintained indefinitely.
12. Investigate violations of the floodplain ordinance and initiate corrective action.

Read your local floodplain ordinance. There may be additional duties assigned to this role.

REGULATIONS OF HARRIS COUNTY, TEXAS
FOR
FLOODPLAIN MANAGEMENT



AS
ADOPTED 5 JUNE 2007
EFFECTIVE 18 JUNE 2007
AMENDED 8 NOVEMBER 2011

HARRIS COUNTY
PUBLIC INFRASTRUCTURE DEPARTMENT
ENGINEERING DIVISION

PERMIT OFFICE
10000 NORTHWEST FRWY, STE 102
HOUSTON, TEXAS 77092-8620
(713) 956-3000

REGULATIONS OF HARRIS COUNTY, TEXAS FOR FLOOD PLAIN MANAGEMENT

PART 1 - PRELIMINARY PROVISIONS

SECTION 1.01 - AUTHORITY

These Regulations are adopted by the Commissioners' Court of Harris County, Texas, acting in its capacity as the governing body of Harris County and the Harris County Flood Control District. The authority of Harris County to adopt these Regulations and for the contents hereof is derived from the following statutes: Texas Local Government Code Section 240.901, as amended; Texas Transportation Code Sections 251.001 - 251.059 and Sections 254.001 - 254.019, as amended; the Harris County Road Law, as amended; and the Flood Control and Insurance Act, Subchapter I of Chapter 16 of the Texas Water Code, as amended. These Regulations may be amended at any time by a majority of Commissioners' Court as approved by the appropriate federal authorities.

SECTION 1.02 - AREA COVERED BY REGULATIONS

These Regulations apply in all unincorporated areas of Harris County, Texas.

SECTION 1.03 - PURPOSE

The purpose of these Regulations is to provide land use controls necessary to qualify unincorporated areas of Harris County for flood insurance under requirements of the National Flood Insurance Act of 1968, as amended, to protect human life and health; to avoid increasing flood levels or flood hazards or creating new flood hazard areas; to minimize public and private losses due to flooding; to reduce the need for expenditures of public money for flood control projects; to reduce the need for rescue and relief efforts associated with flooding; to prevent or minimize damage to public facilities and utilities and to aid the public in determining if a property is in a potential flood area.

CONFIDENTIAL

PART 4 PERMITS

PART 4 - PERMITS


SECTION 4.01 - PERMITS REQUIRED

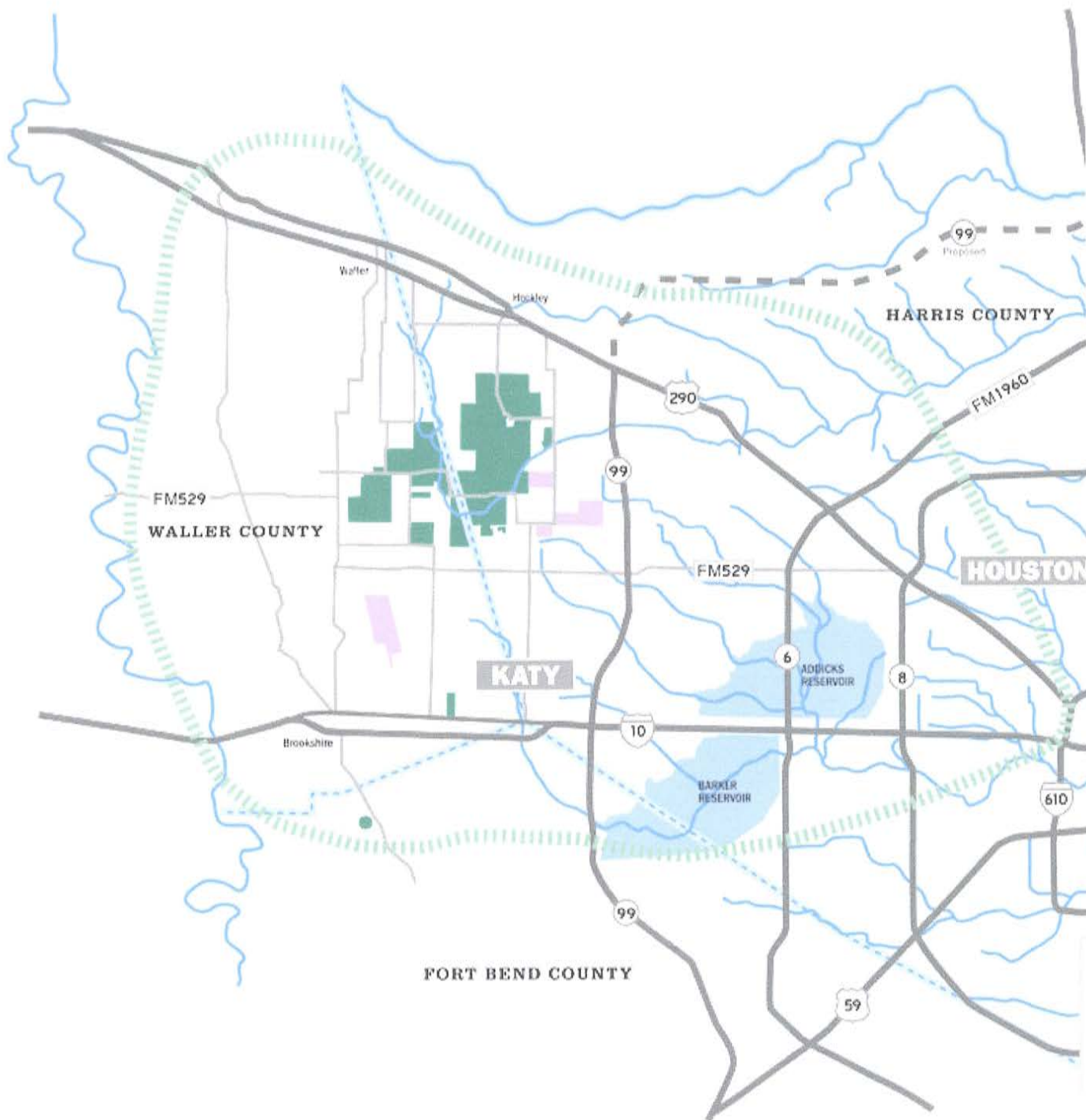
All development within the unincorporated areas of Harris County without first securing a permit is prohibited.

SECTION 4.02 - APPLICATION FOR PERMIT

The application for a permit will be on a form prescribed by the County Engineer and must be supported by the following:

- (a) Two copies of a site plan detailing the dimensions of the property to be developed and showing the position of the development on the property along with a sufficient description to locate the property. The site plan shall be to scale or have sufficient dimensioning to clearly detail the location of the development. The County Engineer may require submittal of a survey map and metes and bounds description of the property to be developed.

- 
- (k) Notwithstanding any other provision of these regulations, no permit will be issued if the County Engineer determines that the development will increase flood hazards.



MAP: KATY PRAIRIE CONSERVANCY

SOURCE: INTERNET OCT 4, 2018

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